WHAT IS THE EFFECT OF IMMIGRATION ON THE CHANGES OF SUBJECTIVE WELL-BEING FOR NATIVE-BORN CANADIANS?

by

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To all people who live outside their country of birth.

Thank you for your hard work to make a host country to be a home.

To people who make a contribution to enact the immigrant selection policy

Thank you for your generosities to make immigrants live better in your home.

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ABSTRACT

This paper investigates how the immigration ratio affects the subjective well-being of native-born Canadians. I use microdata from the Canadian Community Health Survey during the period 2009 to 2010 and employ ordered probit and OLS models to examine this question. The results show that the geographic concentration of immigrants in Canada has a negative effect on native-born Canadians' subjective well-being. Specifically, an increase of one standard deviation in the immigrant share in each health region is estimated to decrease life satisfaction by 1.28 standard deviation unit for natives. In addition, the effect of the immigration ratio on the life satisfaction of immigrants is significantly negative as well. Results indicate that the current immigrant selection policy in Canada does not benefit both natives and immigrants in the context of subjective well-being.

LIST OF ABBREVIATIONS USED

CCHS	Canada Community Health Survey
CASIM	Canadian Socio-Economic Information Management System
SWB	Subjective well-being

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CHAPTER 1 INTRODUCTION

International immigration is a controversial topic for both economists and policy makers across decades because of its complexity. No one can use a universal principle to judge whether it is a good thing or not. According to the International Organization for Migration, by 2012 there were 214 million international immigrants all over the world. Because of this tremendous social phenomenon, within the academic literature, there are a considerable number of studies related to migration and containing a wide range of diverse topics.

In general, "whether immigrants can help host countries" is an important question that most researchers in this field have to think about first. The question of the impact of immigration has been separated into many different categories. Some of them focus on the immigrants' side and others investigate from the perspective of natives. In recent years, a new branch of studies manage to combine well-being and migration. Unlike the previous studies, recent studies are more motivated to examine the relationship between immigration and subjective well-being. For example, Burton and Phipps (2010) find that immigrant parents and immigrant children have relatively lower self-reported life satisfaction than native-born Canadians. Moreover, they find that immigrants are less likely to have a sense of belonging to the society (Burton and Phipps, 2010). However, Akay et al. (2012) demonstrate that immigrants have a positive effect on natives' subjective well-being in Germany.

Canada is a major country for receiving millions of immigrants. According to the 2011 National Household Survey, approximately 20.6% of the total population was born

outside of Canada, which is the highest number in the most recent seventy-five years. Along with an aging population and relatively low birth rates, policy makers believe that immigration plays an important role in driving Canada's population growth. Even though a Demographic Review undertaken by the government indicates that immigration was not the solution to the problem of the aging population, policy makers still believe that at least a certain number of immigrants could generate economic growth in the long run. Green and Green (2004) summarize that a positive immigration ratio is purely a political process and a tool for lobbying. The situation of a large number of immigrants exists and the trends of continual inflow of immigrants are not likely to change both now and in the near future. Thus, it is reasonable to predict that immigrants play a role in shaping native Canadians' objective and subjective well-being.

In addition, according to the UN World Happiness Report published in 2012, Canada was the fifth happiest country in the world. In 2013, Canada was ranked 6th of over 150 countries in this report. This indicates that Canada is one of the happiest countries in the world. Compared to five other countries: Denmark, Norway, Switzerland, Netherlands and Sweden, Canada is the only country with a large proportion of immigrants. This raises the question of "how do immigrants affect native Canadians' happiness" or more precisely "do immigrants make native-born Canadians happy or unhappy"?

Most studies within Canada follow the traditional patterns which are concentrated on investigating the impact of immigrants on objective well-being (e.g., Grady, 2009; Jiong, 2010). The research that focuses on focus on immigrants and subjective well-being is much smaller (e.g., Burton and Phipps, 2010). In this paper, I am interested in whether the spatial concentration of immigrants within a health region will have an effect on

native Canadians' subjective well-being. For the purpose of this study, I use data from the Canadian Community Health Survey (CCHS), which includes information about subjective well-being at the individual level. My results show that the proportion of immigrants is negatively related to the life satisfaction of native-born Canadians. Immigrants also feel more dissatisfied with their lives as the migration ratio increases.

Before any further discussion, I want to clarify my key interest variable: subjective well-being. There is an intense debate in the fields of psychology and philosophy about whether happiness proxies objective well-being. Positive psychology tends to use the notion of subjective well-being as a substitution for happiness (Boniwell, 2011). This means that objective well-being does not belong to the concept of happiness. Meanwhile, in the subjective well-being literature, economists have not found a clear distinction between happiness and subjective well-being. In this paper, I will follow the approach taken by the economists that treats happiness and subjective well-being equally and will not differentiate between them.

The reminder of this thesis is organized as follows. Chapter 2 reviews the main features of immigration policy in Canada. Chapter 3 summarizes findings from the existing literature which focus on immigration and subjective well-being. Chapter 4 describes the data and provides descriptive statistics. Chapter 5 presents the empirical strategy. Chapter 6 provides the estimation results by using different measurements and econometric methodologies. Chapter 7 concludes with a brief discussion of policy implications.

CHAPTER 2 IMMIGRATION BACKGROUND IN CANADA

In this chapter, I will briefly summarize the historical development of immigration policy in Canada and address the main findings from the literature which are closely related to this policy evolution.

Canada has been a host country to immigrants throughout its 146 years of existence. Green and Green (2004) conclude that flexibility is a primary feature of immigration policy in Canada. The power of deciding who can migrate and how many immigrants inflow transferred from Parliament to the Cabinet (the 1910 Act), then to the Minister (the 1952 Act) and the Department of Citizenship and Immigration (the 1992 Act). Each of them has been granted unlimited power in the different time periods. The concentration of power could lead to efficiency: a quick reaction to a refugee crisis in 1956. Also, it could result in inefficiency: the government could say one thing then do another thing. Another key feature of immigration policy is that it focused on the absorptive capacity. Absorptive capacity explains a theory that requires a cut-back of immigrant inflows during the time of observing a high unemployment rate in the domestic labour market. For example, during Great Depression Canada's immigration ratio was near zero (Green and Green, 2004).

The "point system" was first established in 1967 which was regarded as a reference in immigrants' selection. Prior to the period of the "point system", the primary goal of immigration policy was to offset shortages in the labor market, which mainly referred to unskilled labour. For instance, before World War I, immigration policy was tasked with filling the empty land in the west in order to secure farmers, farm labour and female

domestics. During World War II, there was a need for unskilled labour for mining and forestry. The sources of immigrants were from so-called “preferred countries” which were Britain, United States, the Irish Free State, Australia, New Zealand and South Africa (Ferrer et al., 2012).

The “point system” was implemented to change the composition of immigrants in favor of more skilled immigrants because of the development of Industrial Revolution. In this system, personal characteristics such as age, education and language were used as standards associated with whether you are eligible to be an immigrant. This system created an “economic class” which is different from the “family class” and “refugee”. However, within a limited number of immigrants, “family class” and “refugee” are still top priority and “economic class” just a residual at that moment (Green and Green, 2004; Ferrer et al., 2012).

A new version of the “point system” was adopted in 1995, which created four categories of skilled occupations, including professionals, skilled administrators, technical occupations and trades (Green and Green, 2004; Ferrer et al., 2012). More importantly, this new version emphasized the importance of human capital, so that more points are rewarded to education attainment and language proficiency. This led to an increase in the education attainment of immigrants. In addition, the point system at this stage began to seek for a balance between economic and family class rather than to put any of them in the priority group. Throughout the 1990s, a majority of immigrants went to three main cities, Toronto, Montreal and Vancouver, in order to quickly merge into the labour market (Green and Green, 2004; Ferrer et al., 2012).

The “point system” was modified in 2002 and introduced an Immigration and Refugee Protection Act (IRPA). This act indicated a move away from the old system to satisfy the needs of the short-run labour market and emphasizes long-run economic development. At the same time, the relative importance of the “point system” had declined and a series of programs were implemented in the following years to make up the shortcomings of the point system in the process of immigrant selection. These programs include the Provincial Nominee Program, the Federal Skilled Worker program, the Temporary Foreign Worker Program and the Canadian Experience Class program (Ferrer et al., 2012).

Many studies related to immigrants in Canada mainly focus on earnings and unemployment issues. Along with a large number of immigrants arriving since the 1960s, the outcome of labour market for immigrants has deteriorated. Immigrants experience a barrier in labour market integration which results in a substantial income distinction between immigrants and native-born Canadians. In particular, white immigrants have seen higher earnings than immigrants who are visible minorities (Nakhaie, 2006). Immigrants’ entry earnings show a declining trend in the 1980s, and issues become more serious in the 1990s and the early 2000s. In addition, the return to foreign working experience disappeared from the 1980-82 entry cohorts (Green and Worswick, 2011). Ferrer and Riddell (2008) demonstrate similar results and find that years of schooling before entry also are valued less than native-born Canadians. Although immigration policy has shifted considerably since the 1990s, more immigrants are entering through the economic class, but their labor market performance did not improve according to up-to-date research.

Since the Census data cannot identify the source country of immigrants and the specific class of the immigrants, administrative data were adopted by recent researchers (DeSilva, 1997; Xue, 2010; Aydemir, 2011). Sweetman and Warman (2012) show that immigrants from the economic class have better earnings and employment performance than immigrants from other classes. Six months after landing, the employment ratio is relatively low: 22% for refugees, 41% for the family class and 62% for the economic class. They show that the employment ratio of immigrants increases apparently with more time spend in Canada; on average 68% of immigrants have found a job in four years after arrival (Xue, 2010; Picot and Sweetman, 2011). Therefore, these studies show that the employment issue is not as bad as earnings and unemployment.

Despite the fact that immigrants in Canada have very high educational attainment, studies indicate that their jobs are less likely to match their diploma and a large proportion of them work in low-skilled industries. Furthermore, studies also show that the poverty rate has seen a rise among immigrants due to the deterioration in the labour market (Ferrer et. al, 2012).

The reasons why immigrants have problem integrating into Canada's labour market are complex. There is no doubt that the previous immigration selection system (Immigration and Refugee Protection Act (IRPA)) did not work well in selecting appropriate immigrants. In addition, Reitz (2007) and Ferrer et al. (2012) document that education quality, language skill, macroeconomic circumstances, and source country of immigrants all could lead to a deterioration in labour market outcomes among immigrants. According to findings from Canadian research, policy has shifted substantially in recent years and aims at improving labour market outcomes of the immigrants.

CHAPTER 3 LITERATURE REVIEW

In this thesis, I examine the effect of immigrant share on the subjective well-being of native-born Canadians. Canada is a typical host country of immigrants and policy makers are concerned about the impact of international migration on the welfare of native-born Canadians. There is an increasing string of studies that are moving from traditional welfare measurements to a broader level: subjective well-being. It is crucial to apply this type of research to examine the direct impact of immigrants on the subjective well-being of the native population.

In this section, I will briefly summarize the findings of the existing literature worldwide that explores the impact of immigrants. Also, I discuss new features of recent economic research in terms of happiness. Then I combine these two strands of study together by emphasizing an analysis of the literature addressing the question "what is the impact of migration on happiness?"

For a long time, economists have been investigating the impact of migration on the host countries. A considerable number of these studies focus on the influence of immigrants on the labour market and education for both natives and immigrants. A branch of these studies is interested in investigating the impact of migration on the second generation of immigrants. Similarly, recent studies primarily estimate the influence of immigration on public spending and fiscal policy.

In general, the findings in the labour market vary by the host countries. For example, Ottaviano and Peri (2012) use a so-called "general equilibrium approach" to test the impact immigrants on the wage variation for workers who were born in the U.S during

the period 1990 to 2004. They find that foreign-born workers and natives are not perfect substitutes within the labour market, even if they have the same education and experience background. In fact, immigration has a positive and significant effect on the average income adjustment of native workers in the short and the long run. Conversely, other studies find that there is no evidence for a significant effect of immigration on Canadian unemployment in the long run (Islam, 2007), and that the wage growth rate of Canadian-born workers is not affected by increasing immigrant inflows (Tu, 2010).

In terms of the impact of migration on children, most researchers analyze the children's educational attainment and the results differentiate across countries. Worswick (2001) compares Canadian-born children's school performance with the children of immigrants. He finds that the there is no difference between children of immigrants and children of Canadian-born parents in terms of school performance overall. Ohinata and Ours (2011) find that the concentration of immigrants' children within a school has no effects on the academic performance of natives in Holland.

Recent studies also examine the relation between migrate ratio and public finance. For example, Dustmann et al. (2010) document that natives receive more state benefit than immigrants who origin from Central and Eastern European countries and migrated to the UK after EU enlargement in 2004; therefore, these immigrants had a positive effect on public finance. Barrett and Maitre (2011) conclude that immigrants in Europe are more likely to suffer from poverty because they have a relatively lower level of welfare receipt compared to natives. As the current welfare system fails to protect the benefits of immigrants, it raises the question about its effectiveness. However, the situation of immigrants in Canada is different from the findings in Europe just mentioned. Grubel and

Grady (2011) find that recent immigration to Canada has created a fiscal burden to the country's economics. They show that, on average, immigrants receive $6,051 more in benefits than the amount of their tax contribution. Even taking the alleged benefit brought by immigrants into account, the estimated numbers of the fiscal burden are still unchanged. This finding stems from the fact that immigrants' average income is only 72% of natives' average earnings, and the personal income tax regime in Canada is progressive. As a result, the income taxes paid by immigrants are only about 50% of natives' tax payments, but immigrants enjoy an equal level of social benefits. Thus, in order to eliminate this burden, they suggest a new immigrants' selection system which uses market forces to decide the number of immigrants inflowing annually.

While welfare and other traditional economic measurements are valuable in examining the impact of immigration, our understanding can be extended using a new method. The number of economic studies that analyze subjective well-being has increased substantially in recent years. Many studies in this field tend to investigate "the determinants of subjective well-being" (e.g., Clark et al. 2008; Deaton, 2008; DeVoe and Pfeffer, 2009; Blanchflower and Oswald, 2011). The main focus of these studies is "How happy people appear?" or "How happy countries appear?" Most researchers use a "happy equation" to measure "happiness". Generally, economists tend to use a cardinal version of "happiness" as a dependent variable in their analysis, and the independent variables include age, sex, marital status, educational attainment, income, personal characteristics, and geographical characteristics. Blanchflower and Oswald (2011) summarize the findings from a new interdisciplinary literature associate with subjective well-being. They report that age, marital status, employment status, educational attainment, health

status and income all have significant effects on people's happiness (e.g., Clark et al. 2008; Deaton, 2008; DeVoe and Pfeffer, 2009).

Other researchers tend to perform a cross-country comparison about happiness in general by using the World Value Survey or the General Social Survey. For example, Blanchflower and Oswald (2011) find that Western Europeans are happier than Eastern Europeans on average. Okulicz-Kozaryn (2011) compares the relationship between Americans and Europeans in terms of working hours and happiness. His analysis shows that Americans feel happier during work than Europeans, so he concludes "Europeans Work to Live and Americans Live to Work". However, Blanchflower and Oswald (2011) point out that in the multi-country studies the diversity of language and culture could affect the interpretation of the questionnaire and the accuracy of data. They suggest that researchers should caution about the validity of their results.

However, there are not many studies on the subject of happiness that talk about immigrants. One strand of the literature compares the subjective well-being of immigrants with natives. For example, Bartram (2011) contrasts native-born Americans' life satisfaction with that of immigrants, and finds that the life satisfaction of immigrants is relatively lower than natives. He also states that migration is probably a path to improve economic welfare, but a rise in income does not necessary lead to greater happiness. Because migrant direction is towards places where income is higher, from rural to urban or from developing countries to developed countries, and it could be the case that less happy people choose to migrate. Another strand attempts to observe the change in happiness for individuals after migration. For example, Nowok et al. (2011) investigate the question of "Does migration make you happy?" by analyzing how

happiness changes with time are associated with migration. They find that people who migrate within the UK will experience a decline in happiness just after the time of migration.

Another branch of studies may focus on the process of immigrants' integration to a host country through testing the immigrant's subjective well-being. However, the existing cross-sectional dataset cannot solve the problems of self-selection. To avoid this problem, Knight and Gunatilaka (2012) examine the change in happiness for people who move from rural to urban China, because they comprise 18% of the total population. The results show that this internal migration leads to a decline in happiness. A natural experiment and a unique survey are introduced by Stillman et al. (2012). They investigate the impact of migration from Tonga to New Zealand and try to find more reliable evidence to examine how happiness changes after migration. The research results confirm a decreasing trend in happiness, but an increasing trend in mental health.

There is another branch of economic study which explores the impact of migration on natives' subjective well-being. The paper written by Akay et al. (2012) is the first research that attempts to answer this question. They combine information from the German Socio-Economic Panel and data from INKAR for the period of 1997 to 2007, and examine "how the geographic concentration of immigrants affects the subjective well-being of natives and immigrants" (Akay et al., 2012). Their main finding is that immigration is positively related to the happiness of native Germans. After conducting robustness checks and sensitivity tests to address the endogeneity issues, the results still survive. However, there is no similar study in Canada that examines the direct effect of

migration on the subjective well-being of natives. To the best of my knowledge, this thesis is the first study that will examine this question.

CHAPTER 4 DATA AND SUMMARY STATISTICS

4.1 DATA SOURCES

The sources of empirical analysis used this paper are mainly from the Canadian Community Health Survey (CCHS). The CCHS has been widely used by researchers who in health economics and in the recent subjective well-being literature (e.g., Burton and Phipps, 2010). This cross-sectional survey, first launched in 2001 by Statistics Canada, provides a wide range of information on health status, lifestyle, and social conditions of the Canadian population at the health region level and combined health region level across Canada. Statistics Canada concludes that "the primary use of the CCHS data is for health surveillance and population health research. Federal and provincial departments of health and human resources, social service agencies, and other types of government agencies use the information collected from respondents to monitor, plan, implement and evaluate programs to improve the health of Canadians".[1] Prior to 2007, data were collected biannually. However, in order to improve flexibility and efficiency, data have been collected annually after 2007. The CCHS produces two types of datasets: "an annual microdata file" and "a file combining two years of data" (Statistics Canada). Data used in this research are selected from the CCHS two-year common content file from 2009 to 2010.

4.2 DESCRIPTION OF THE DATA

The subjective well-being measure is derived from the question: "*Using a scale of 0 to 10, where 0 means "very dissatisfied" and 10 means "Very satisfied", how do you feel about life as a whole right now?* "

[1] http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3226&lang=en&db=imdb&adm=8&dis=2

Table 1 shows the summary of responses for this question for immigrants and natives separately. We see from the table that natives have slightly higher life satisfaction level than immigrants on average. Furthermore, only 2.06% of immigrants and 3.08% of natives who rate their life satisfaction use a number less than "5". This indicates that a large proportion of people are relatively satisfied with their life rather than dissatisfied. In addition, it appears that immigrants are slightly more likely to be dissatisfied with their life. Moreover, summary statistics tell us that 32.26% of the natives and 31.16% of the immigrants choose to give an answer of "8" for this question, which accounts for one third of total interviewees, and is the highest concentration of choices among all eleven categories. It seems that in the questionnaire people prefer to claim that they are happy.

Table 1 Summary of Responses to "Life Satisfaction in General"

	Natives		Immigrants	
	Freq.	Percent	Freq.	Percent
0	594	0.57	133	0.61
1	189	0.19	26	0.15
2	474	0.45	79	0.47
3	700	0.68	140	0.83
4	1,238	1.19	228	1.35
5	5,804	5.6	1,311	7.76
6	5,037	4.86	1,034	6.12
7	15,320	14.78	2,695	15.94
8	33,433	32.26	5,268	31.16
9	19,777	19.08	2,867	16.96
10	21,084	20.34	3,154	18.66
Mean	8.01 (0.0052)		7.84 (0.0134)	
Total	103,650		16,950	

Another key variable of interest is the proportion of immigrants in each health region. The population census from CANSIM provides detailed information on the ratio of immigrants in different regions, and the proportion of immigrants who have stayed in

Canada for more than 5 years. Unfortunately, the health spatial units defined in CANSIM do not perfectly match with the CCHS, so it is inappropriate to use CANSIM in my analysis. However, there is a variable in the CCHS that indicates whether the interviewee is an immigrant or not. I use this variable to calculate the proportion of immigrants within a health region. But there is no variable in the CCHS that indicates how many years the specific immigrant has stayed in Canada after arrival; the "immigrant" I used in this thesis includes all the immigrants in each health region during the research period. In Canada, "Health regions are a governance model used by Canada's provincial governments to administer and/or deliver public health care to all Canadian residents".[2] In the CCHS 2009 to 2010, there are 98 health regions in total and they are organized according to geographic boundaries or operational lines. The formula for the immigrant share in each health region can be calculated as follows: Immigrant share in health region i = (the number of immigrants in health region i/the total population in health region i)*100.

4.3 The Correlation Between Immigrant Share And Life Satisfaction

Before any further empirical analysis, I want to investigate the relationship between life satisfaction and the immigrant share. Figures 1 and 2 report the underlying correlation between the key variable of interest: Figure 1 illustrates the correlation between life satisfaction of natives and the immigrant share, while Figure 2 depicts the correlation between life satisfaction of immigrants and the immigrant share. Every spot in the figure represents the average life satisfaction for that health region.

[2] http://www12.statcan.gc.ca/health-sante/82-228/help-aide/Q01.cfm?Lang=E

Figure 1 Immigrant share and Life Satisfaction of Natives

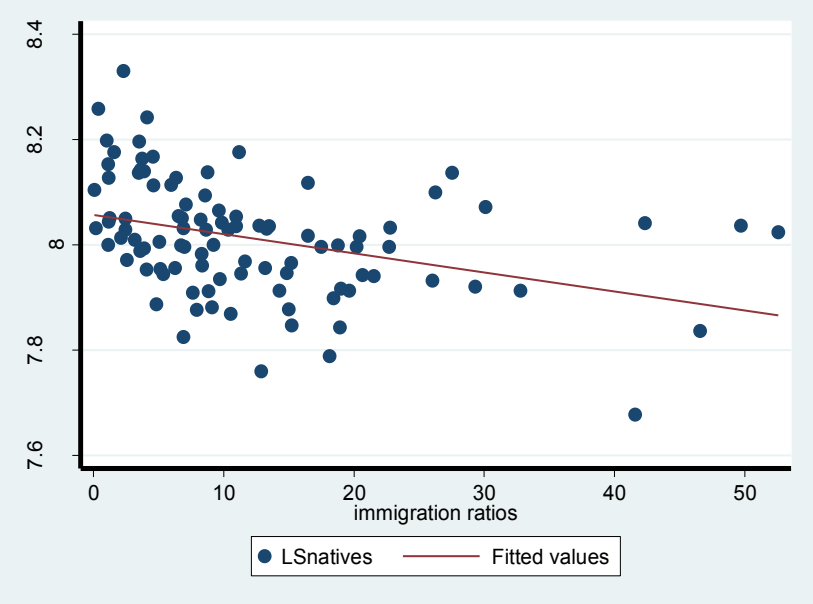
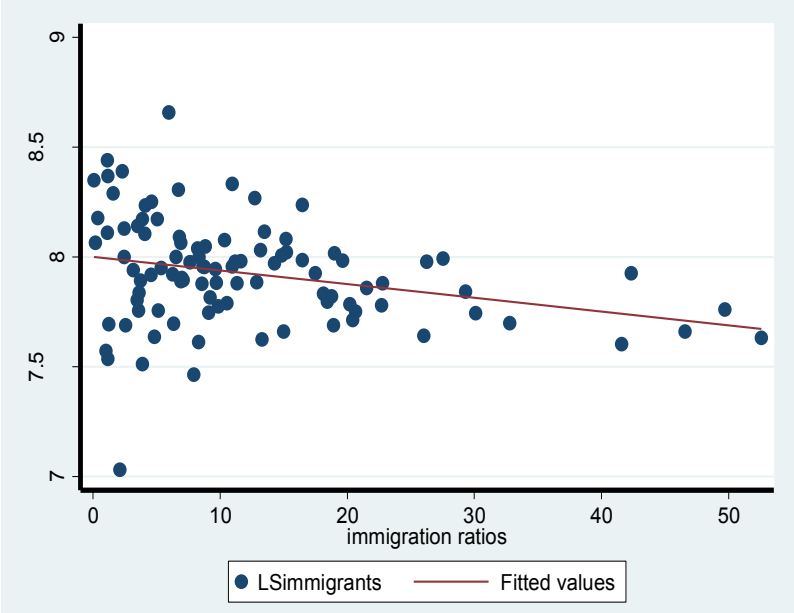


Figure 2 Immigrant share and Life Satisfaction of Immigrants



Although the pattern is noisy in both figures, the fitted values give us an intuitive vision about the existence of a negative relationship between life satisfaction and the immigrant

share. In summary, the two figures indicate that if there are more immigrants within a health region, the subjective well-being will decrease for both immigrants and natives. However, correlation cannot prove causality. This relationship does not demonstrate that a higher immigrant share leads to a decrease in life satisfaction. In addition, we are not sure whether this relationship will persist when more related factors are included in the equation. The econometric analysis in the following section will examine this problem carefully.

4.4 Summary Statistics

Summary Statistics are displayed in Table 2. There are 17,645 immigrants and 103,827 natives in total in my sample. I will introduce each variable in detail and make a comparison between natives and immigrants in the following paragraph.

First, we could conclude from Table 2 that the CCHS collected data from individuals who were at least 12 years old. Furthermore, there is a significant difference between immigrants and natives in terms of the variable "age". People who are in the "12 to 24" age group account for 18.46% of total native-born population, but only 9.72% of immigrants are under 24 years old. At the same time, 31.57% of immigrants are in the group of "65 years old or more". However, this group only accounts for 23.12% of natives. By simple calculation, we can infer that immigrants have a higher dependency ratio than native-born Canadians. According to these figures, it is reasonable to predict that immigrants do not help the aging population issues in Canada. This result coincides with the findings in the literature.

Moreover, native-born Canadians are taller and heavier than immigrants on average. More than half the immigrants are married and less than 20% of them are single. In contrast, more natives choose to be single, and only 40% have already been married. Not surprisingly, immigrants and natives have different ethnic origins. Approximately 90% of natives are white, whereas white people only account for 57.85% of the immigrants. The reason for this is likely stems from the fact that the sources of immigrants in Canada are mainly from Asia and South America, and they are not Caucasian. In terms of labour market characteristics, I consider two variables: working status and employment status. Employment status is a derived variable from working status; therefore, it is not possible to employ both of these variables in one regression.

Table 2 shows that immigrants are more likely to be self-employed, rather than working as employees, than natives. In addition, there is a higher unemployment ratio among immigrants than natives. Moreover, native households seem to be richer than immigrant households for the top income group ($80,000 or more). Meanwhile, the percentage of immigrants who have less than $40,000 in household income is 38.39%. This is higher than natives in the same group, which is 32.89%. The CCHS also shows that immigrants have higher average education level than native-born Canadians overall: 75% of immigrants have post-secondary graduate degrees, while only 68% of Canadian-born residents have post-secondary graduate degrees. Health status shows similar trends for both immigrants and natives. Few people report that they have a poor health situation. In fact, there are over 84.72% immigrants and 87.1% natives who believe that their health status is at least better than “good”.

Table 2 Summary Statistics

	Immigrants		Natives	
	percent	mean	percent	mean
Demographics				
Age				
1. 12 to 24 years	9.72		18.46	
2. 25 to 44 years	28.48		26.2	
3. 45 to 64 years	30.21		32.21	
4. 65 years to more	31.57		23.12	
Male	45.15		45.57	
Height		1.678		1.688
Weight		71.66		74.74
Marital Status				
married	53.84		40.11	
unmarried	46.16		59.89	
Cultural or racial origin				
white	57.85		91.24	
visible minority	42.15		8.76	
Labour market				
Working status				
employee	79.42		83.3	
self-employed	20.58		16.7	
Employment status				
Employed	58.71		63.14	
Unemployed	41.29		36.86	
Total household income from all source				
1 "no income or less than $20,000"	12.8		11.99	
2 "$20,000-$39,999"	25.59		20.99	
3 "$40,000-$59,999"	19.67		18.43	
4 "$60,000-$79,999"	14.4		15.2	
5 "$80,000 or more"	27.55		33.38	
Education				
1.less than secondary school	10.23		12.75	
2.secondary school graduation	11.13		12.73	
3.some post-secondary	4.26		5.71	
4.post-secondary graduation	74.38		68.81	

	Immigrants		Natives	
	percent	mean	percent	mean
Health Status				
1. poor	4.31		3.43	
2.fair	10.98		10.47	
3.good	31.45		29.58	
4.very good	33		37.39	
5.excellent	20.27		19.13	
N	17,645		103,827	

Note: 1. Gender, marital status, cultural or racial origins, working status and employment status are dummy variables.

2. Height and weight are in cardinal number; age, total household income from all source and health status in ordinal number.

CHAPTER 5 ESTIMATION STRATEGY

In this section, I will describe my methodology for examining the impact of immigration on the happiness of the Canadian-born population. It is common in the happiness literature to employ a utility function to investigate the determinants of subjective well-being. In this paper I will follow this methodology. Because my dependent variable is measured by an ordinal number from zero to ten, an ordered probit model will be more appropriate. The regression model is shown in the following form:

$$SWB_{irp} = \alpha IM_{rp} + \beta X_{irp} + \gamma E_{irp} + \lambda Y_{irp} + \mu_i \qquad (1)$$

Where SWB_{ip} captures the life satisfaction for individual i in health region r within province p; IM_{rp} represents the proportion of immigrants in health region r within province p; X_{irp} denotes the demographic characteristic of individual i in health region r within province p, including age, gender, weight, height and marital status; E_{irp} describes the education level achieved by individual i in health region r within province p; Y_i proxies labour market characteristics such as income and employment status of individual i in health region r within province p. μ_i is the error term that captures unobserved normally distributed variables. In this model, α is the main parameter of interest.

Although natural traits existing in the dependent variable favor a simple parametric model-ordered probit model, for simpler and better interpretation of results, I will run a linear regression (using ordinary least squares) in the first place. Furthermore, Ferrer-i-Carbonell and Frijters (2004) demonstrate that the estimation results do not show a significant difference whether using the cardinal model or the ordinal model. Thus, I will also present an ordered probit model only for comparison purposes. Moreover, Biewen

and Juhasz (2013) summarize that there is no easy way to control for unobserved characteristics in an ordinal model; one potential solution could be to collapse the ordinal scale variables into binary variables and run a fixed-effect logit regression. However, the efficiency will decrease if I adopt this strategy. The other solution could be to use an ordered probit model or a linear regression model with random effects (Boes and Winkelmann, 2010; Akay et al., 2012). Akay et al. (2012) use both random-effect and fixed-effect models to investigate the impact of migration on the life satisfaction of the German-born population and immigrants. They find that random effects and fixed effects have similar results, and have performed Hausman test to confirm this indifference. In this study, I will only use the fixed-effect model. Meanwhile, because I use a two-year longitudinal survey revised in one common file and there is no time indicator, the time variance problem will not be considered in my model. Another issue I should pay attention to is that in Canada, each province has distinct immigration policies, and this could affect the number of immigrants inflows every years and the composition of immigrants within a province. Therefore, I will use province fixed effects to control for the potential endogeneity problems.

There are some several shortcomings in this research. First, as I have mentioned in the data section, I calculate the immigrant share by using the variable "whether you are an immigrant or not". In small health regions, the immigrant share could contain a certain deviation in my dataset. For example, the proportion of immigrants in Canada should be around 19%, but in my sample, there is only 15% of the population who indicate that they are immigrants. One possible cause is that the CCHS only include people who are above 12 years old in the survey, and immigrants who are below 12 years old are not included.

This issue of data inconsistency could lead to a downward bias in the regression results, but this limitation cannot be solved at the moment. Second, whether life satisfaction is an appropriate measurement to estimate "subjective well-being" also may raise debates in psychology. However, Helliwell and Barrington-Leigh (2010) have given an extensive discussion in terms of the measurement issue, and have confirmed that both life assessments and emotions can be regarded as efficient tools to measure subjective well-being. Therefore, I am not going to discuss this question in depth in this paper. In the reminder of the thesis, I will use the happiness question as a measure of the subjective well-being.

CHAPTER 6 ESTIMATION RESULTS

6.1 MAIN RESULTS

In this section, I report the estimation results by using the equation (1) I described in the last section. In Table 3 to 8, I regress the impact of the immigrant share on the subjective well-being of natives, immigrants and the two groups together, respectively. In particular, Table 3, Table 5, and Table 7 report the results by using a linear regression model, and Table 4, Table 6, and Table 8 show the results from an ordered probit model. I will interpret the results from table to table, and then I will make comparisons within these interpretations among natives and immigrants.

In Table 3, the independent variables in column (1) are the immigrant share, age, age^2, sex, height, weight, marital status and cultural or racial origin. In column (2), I additionally include educational attainment as an independent variable. Similarly, in column (3) and column (4), I add labour market characteristics and health status, respectively. In column (5), I include all the independent variables and control for province fixed effects.

The immigrant share is my key variable of interest. In all columns of Table 3, we can see that the effects of the immigrant share are negative and statistically significant for all specifications. Examinations of the results demonstrate that the immigrant share has a significantly negative effect on natives' subjective well-being: the higher the immigrant share, the lower the level of life satisfaction. More specifically, the results presented in the column (5) imply that there is 0.0067 life satisfaction reduction in the 10-scale life satisfaction for natives associated with a 1% increase in the immigrant share in each

health region. Also, it can be presented as an increase of one standard deviation in the immigrant share in each health region is estimated to decrease life satisfaction by 1.28 standard deviation unit for natives. Comparing the coefficient on the immigrant share in column (4) with column (5), the size of the coefficient is decreasing. This implies that, ceteris paribus, there are some factors that change with provinces that also have an influence on natives' life satisfaction. Thus, we can conclude that a higher immigrant share in a health region is associated with a decline in the subjective well-being of native Canadians.

My results are different from other findings in the literature. Akay et al. (2012) find that immigrants have a positive effect on the change of native Germans' subjective well-being. There are some potential reasons. For instance, the source countries of immigrants in Germany are different from Canada. A large proportion of immigrants in Germany are from European countries, but in Canada immigrants mainly come from Asia in recent decades. People who have similar cultural backgrounds are more likely to be happy in the presence of each other and integrate to the new environment. In addition, this contrasting result would suggest that the immigration policy in Germany does a better job than Canada in selecting appropriate immigration candidates with respect to the demand of the labour market.

For all other variables that indicate personal characteristics, educational attainment, income level and health status, my findings are consistent with the previous literature. For example, age^2 and life satisfaction follow a "U"-shaped curve through a person's lifespan, suggesting that people will have the lowest level of subjective well-being in middle age. Males are less satisfied with life than females on average. Tall people are

more satisfied with their life than short people. People feel less happy if they are obese. Although some researchers claim that fat people have a "happy gene", stating that they are happier than the thin people (Samaan et al., 2012), I do not find supportive evidence for this result. It is interesting to see that the impact of height and weight are not significant after I control for health status. This indicates that height and obesity do not really matter to natives' life satisfaction as long as they have a good health status.

In addition, being married has a positive effect on individuals' life satisfaction. White people are more satisfied with their lives than people from other ethnic origins, if not controlling for health status and province fixed effects. Moreover, an increase in the educational attainment will lead to a higher level of life satisfaction. However, if I take health status and province fixed effects under control, the impact of education becomes significantly negative. Regarding education, natives who are self-employed are happier than those working as employees. More importantly, higher household income is positively and significantly correlated to native-born Canadians' life satisfaction. Although many people believe that money cannot buy happiness, my regression results indicate that money is a very crucial determinant of happiness in Canada.

Table 4 shows the results estimated using an ordered probit model. The sign of the coefficients for most variables remain consistent with those of Table 3. In general, the size of coefficients in the ordered probit model is somewhat smaller than those obtained using the OLS model. The only distinction exists in column (4); it shows that height has a negative effect on natives' life satisfaction when keeping all other variables constant.

Table 3 The impact of immigration on the life satisfaction of natives: OLS

VARIABLES	(1)	(2)	(3)	(4)	(5)
Immigrant share	-0.00563***	-0.00632***	-0.00937***	-0.00957***	-0.00673***
	(0.000462)	(0.000474)	(0.000590)	(0.000555)	(0.000678)
Age	-0.155***	-0.164***	-0.165***	-0.188***	-0.196***
	(0.00584)	(0.00606)	(0.0124)	(0.0117)	(0.0117)
Age^2	0.00666***	0.00763***	0.00925***	0.0115***	0.0120***
	(0.000334)	(0.000347)	(0.000783)	(0.000736)	(0.000738)
Sex	-0.107***	-0.0963***	-0.0627***	-0.0402**	-0.0571***
	(0.0146)	(0.0150)	(0.0198)	(0.0187)	(0.0187)
Height	0.959***	0.854***	0.619***	-0.163	-0.0805
	(0.0805)	(0.0830)	(0.107)	(0.102)	(0.102)
Weight	-0.00881***	-0.00839***	-0.00765***	9.97e-05	0.000447
	(0.000415)	(0.000425)	(0.000496)	(0.000478)	(0.000481)
Marital Status	0.598***	0.561***	0.348***	0.330***	0.350***
	(0.0120)	(0.0122)	(0.0150)	(0.0141)	(0.0145)
Racial origin	0.178***	0.157***	0.0788***	-0.0135	-0.0317
	(0.0203)	(0.0213)	(0.0269)	(0.0256)	(0.0259)
Education		0.103***	0.0158*	-0.0144*	-0.0210**
		(0.00600)	(0.00907)	(0.00862)	(0.00864)
Working status			-0.104***	-0.0492***	-0.0603***
			(0.0186)	(0.0175)	(0.0176)
Household income			0.149***	0.103***	0.107***
			(0.00637)	(0.00600)	(0.00605)
Health status				0.552***	0.550***
				(0.00873)	(0.00872)
Constant	7.508***	7.341***	7.702***	7.229***	7.099***
	(0.122)	(0.127)	(0.178)	(0.169)	(0.169)
Observations	97,203	92,033	45,054	45,043	45,043
R-squared	0.040	0.045	0.051	0.156	0.158
Province-fixed effect	N	N	N	N	Y

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4 The impact of immigration on the life satisfaction of natives: OP

VARIABLES	(1)	(2)	(3)	(4)
Immigrant share	-0.00429***	-0.00465***	-0.00738***	-0.00802***
	(0.000293)	(0.000302)	(0.000434)	(0.000436)
Age	-0.0964***	-0.102***	-0.121***	-0.148***
	(0.00373)	(0.00389)	(0.00934)	(0.00936)
Age^2	0.00441***	0.00496***	0.00694***	0.00923***
	(0.000211)	(0.000221)	(0.000587)	(0.000589)
Sex	-0.0654***	-0.0608***	-0.0525***	-0.0383***
	(0.00934)	(0.00967)	(0.0146)	(0.0147)
Height	0.510***	0.459***	0.417***	-0.169**
	(0.0504)	(0.0522)	(0.0785)	(0.0794)
Weight	-0.00554***	-0.00533***	-0.00559***	0.000156
	(0.000247)	(0.000254)	(0.000351)	(0.000361)
Marital status	0.379***	0.362***	0.271***	0.274***
	(0.00760)	(0.00780)	(0.0112)	(0.0113)
Racial origin	0.0932***	0.0845***	0.0509***	-0.0166
	(0.0126)	(0.0133)	(0.0196)	(0.0199)
Education		0.0523***	0.00277	-0.0200***
		(0.00366)	(0.00650)	(0.00658)
Working status			-0.0878***	-0.0507***
			(0.0140)	(0.0140)
Household income			0.102***	0.0734***
			(0.00457)	(0.00462)
Health Status				0.435***
				(0.00669)
Constant	1.029***	1.117***	1.111***	1.564***
	(0.0780)	(0.0811)	(0.131)	(0.132)
Observations	97,203	92,033	45,054	45,043

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 reports the results from "the effect of immigrant share on the life satisfaction of immigrants". I use the same method as Table 3 to test my research question. The coefficient suggests that the immigrant share is negatively and significantly correlated to the life satisfaction of immigrants. More specifically, a 1% increase in the immigrant share in each health region is associated with a 0.0053 scale reduction in immigrants' life satisfaction. In addition, the estimated effect from a one standard deviation increase in the immigrant share is a 0.39 standard deviation unit reduction in life satisfaction for immigrants. This result is consistent with the results presented in Table 3, although the size of the parameter for immigrants is smaller in magnitude than that of natives. Basically, there are two differences between immigrants and natives associated with the influences on life satisfaction. First, in the regression controlling for education and labour market factors, the effect of gender becomes insignificant. More remarkably, once I control for labour market characteristics, the impact of education is no longer significant. This could partially explain that once receiving an equal salary, immigrants do not pay much attention to each other's educational attainment.

Table 6 presents results from the ordered probit model. The signs of the coefficients in this model are exactly the same as those found in the OLS model. The fourth column in Table 6 also shows that an increase in height is associated with a decrease in immigrants' life satisfaction. This result is consistent with Table 4 wherein I use an ordered probit estimate on natives. Although the effect of cultural or racial origin is not all significant across column (1) to column (5) for natives in Table 4, in Table 6 it is economically and statistically significant for immigrants. It seems that among immigrants, white people are more satisfied with their life than people from other racial origins.

Table 5 The impact of immigration on the life satisfaction of immigrants: OLS

VARIABLES	(1)	(2)	(3)	(4)	(5)
Immigrant share	-0.00601***	-0.00618***	-0.00683***	-0.00568***	-0.00533***
	(0.000948)	(0.000964)	(0.00130)	(0.00124)	(0.00153)
Age	-0.218***	-0.229***	-0.354***	-0.311***	-0.313***
	(0.0176)	(0.0182)	(0.0421)	(0.0400)	(0.0401)
Age^2	0.00923***	0.0103***	0.0194***	0.0185***	0.0187***
	(0.000939)	(0.000973)	(0.00243)	(0.00230)	(0.00230)
Sex	-0.117***	-0.0991**	-0.0351	-0.0405	-0.0396
	(0.0383)	(0.0392)	(0.0554)	(0.0519)	(0.0519)
Height	1.080***	0.858***	0.183	-0.565**	-0.580**
	(0.218)	(0.223)	(0.305)	(0.287)	(0.288)
Weight	-0.00893***	-0.00847***	-0.00619***	0.00105	0.00107
	(0.00125)	(0.00129)	(0.00161)	(0.00153)	(0.00153)
Marital Status	0.530***	0.509***	0.365***	0.343***	0.346***
	(0.0307)	(0.0313)	(0.0421)	(0.0399)	(0.0400)
Racial origin	0.217***	0.228***	0.145***	0.0932**	0.0928**
	(0.0330)	(0.0335)	(0.0439)	(0.0416)	(0.0418)
Education		0.104***	0.0292	0.00294	0.00230
		(0.0162)	(0.0306)	(0.0284)	(0.0285)
Working status			-0.140***	-0.0886*	-0.0891*
			(0.0482)	(0.0456)	(0.0456)
Household income			0.152***	0.112***	0.115***
			(0.0169)	(0.0159)	(0.0160)
Health status				0.565***	0.565***
				(0.0228)	(0.0228)
Constant	7.569***	7.551***	8.903***	7.962***	7.970***
	(0.332)	(0.341)	(0.510)	(0.487)	(0.491)
Observations	16,159	15,400	6,730	6,726	6,726
R-squared	0.037	0.040	0.051	0.152	0.154
Province-fixed effect	N	N	N	N	Y

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6 The impact of immigration on the life satisfaction of immigrants: OP

VARIABLES	(1)	(2)	(3)	(4)
Immigrant share	-0.00435***	-0.00450***	-0.00530***	-0.00476***
	(0.000576)	(0.000590)	(0.000892)	(0.000895)
Age	-0.134***	-0.141***	-0.229***	-0.214***
	(0.0108)	(0.0112)	(0.0295)	(0.0297)
Age^2	0.00581***	0.00641***	0.0126***	0.0129***
	(0.000566)	(0.000590)	(0.00170)	(0.00171)
Sex	-0.0739***	-0.0638***	-0.0347	-0.0418
	(0.0231)	(0.0237)	(0.0375)	(0.0374)
Height	0.575***	0.454***	0.125	-0.401*
	(0.128)	(0.132)	(0.204)	(0.205)
Weight	-0.00502***	-0.00474***	-0.00417***	0.000781
	(0.000704)	(0.000726)	(0.00105)	(0.00106)
Marital Status	0.319***	0.308***	0.253***	0.253***
	(0.0181)	(0.0186)	(0.0284)	(0.0287)
Racial origin	0.139***	0.147***	0.103***	0.0722**
	(0.0199)	(0.0203)	(0.0298)	(0.0299)
Education		0.0515***	0.000469	-0.0177
		(0.00944)	(0.0197)	(0.0195)
Working status			-0.105***	-0.0753**
			(0.0333)	(0.0335)
Household income			0.0895***	0.0664***
			(0.0113)	(0.0113)
Health status				0.408***
				(0.0161)
Constant	0.966***	0.960***	0.233	0.937***
	(0.199)	(0.205)	(0.346)	(0.351)
Observations	16,159	15,400	6,730	6,726

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7 and Table 8 report the estimation results including both immigrants and natives in the regression. Still, the migrant ratio reveals a negative relationship with life satisfaction; a 1% increase in the immigrant share results in a decline of 0.0073 scales in people's life satisfaction in Canada. However, the coefficient on the immigrant share in the ordered probit model is somewhat larger than in the OLS estimates. This is different from the results for natives or immigrants. In addition, it is reasonable to observe that the coefficient on the immigrant share for both is relatively larger than it was when they were regressed separately. Furthermore, natives account for 85% of the total population in this research; results for both of them are more similar to results for natives than for immigrants (0.0067 for natives, 0.0053 for immigrants and 0.0073 for both). Overall, people in Canada are more satisfied with their life if they are married, self-employed, have high household incomes and are healthy. With the same health status, people with higher educational attainment are less satisfied with their life.

Table 7 The impact of immigration on the life satisfaction of immigrants and natives: OLS

VARIABLES	(1)	(2)	(3)	(4)	(5)
Immigrant share	-0.00655***	-0.00727***	-0.00944***	-0.00958***	-0.00734***
	(0.000399)	(0.000408)	(0.000516)	(0.000487)	(0.000596)
Age	-0.161***	-0.171***	-0.182***	-0.202***	-0.210***
	(0.00550)	(0.00570)	(0.0118)	(0.0111)	(0.0112)
Age^2	0.00686***	0.00784***	0.0102***	0.0123***	0.0128***
	(0.000311)	(0.000324)	(0.000736)	(0.000692)	(0.000695)
Sex	-0.112***	-0.102***	-0.0613***	-0.0442**	-0.0599***
	(0.0136)	(0.0140)	(0.0186)	(0.0175)	(0.0176)
Height	0.986***	0.867***	0.566***	-0.211**	-0.138
	(0.0755)	(0.0778)	(0.101)	(0.0959)	(0.0962)
Weight	-0.00868***	-0.00823***	-0.00736***	0.000387	0.000708
	(0.000393)	(0.000403)	(0.000473)	(0.000455)	(0.000458)
Marital Status	0.581***	0.547***	0.345***	0.324***	0.340***
	(0.0111)	(0.0114)	(0.0141)	(0.0133)	(0.0135)
Racial origin	0.212***	0.205***	0.118***	0.0471**	0.0432**
	(0.0158)	(0.0164)	(0.0208)	(0.0199)	(0.0200)
Education		0.101***	0.0156*	-0.0150*	-0.0210**
		(0.00562)	(0.00869)	(0.00824)	(0.00826)
Working status			-0.108***	-0.0542***	-0.0636***
			(0.0173)	(0.0163)	(0.0164)
Household income			0.150***	0.106***	0.110***
			(0.00594)	(0.00560)	(0.00564)
Health status				0.553***	0.551***
				(0.00816)	(0.00815)
Constant	7.465***	7.314***	7.800***	7.273***	7.146***
	(0.114)	(0.118)	(0.167)	(0.158)	(0.159)
Observations	113,362	107,433	51,784	51,769	51,769
R^2	0.040	0.045	0.052	0.156	0.158
Province-fixed effect	N	N	N	N	Y

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8 The impact of immigration on the life satisfaction of natives and immigrants: OP

VARIABLES	(1)	(2)	(3)	(4)
Immigrant share	-0.00487***	-0.00650***	-0.00732***	-0.00789***
	(0.000249)	(0.000351)	(0.000374)	(0.000377)
Age	-0.1000***	-0.125***	-0.131***	-0.155***
	(0.00348)	(0.00796)	(0.00879)	(0.00880)
Age^2	0.00452***	0.00678***	0.00743***	0.00965***
	(0.000196)	(0.000499)	(0.000547)	(0.000548)
Sex	-0.0698***	-0.0423***	-0.0518***	-0.0420***
	(0.00864)	(0.0128)	(0.0135)	(0.0136)
Height	0.529***	0.471***	0.383***	-0.194***
	(0.0468)	(0.0690)	(0.0731)	(0.0738)
Weight	-0.00537***	-0.00533***	-0.00534***	0.000351
	(0.000232)	(0.000317)	(0.000332)	(0.000340)
Marital Status	0.366***	0.339***	0.265***	0.266***
	(0.00697)	(0.00955)	(0.0104)	(0.0104)
Racial origin	0.122***	0.113***	0.0796***	0.0306**
	(0.00980)	(0.0139)	(0.0150)	(0.0152)
Education		0.0316***	0.00156	-0.0213***
		(0.00561)	(0.00614)	(0.00621)
Working status		-0.0759***	-0.0900***	-0.0541***
		(0.0121)	(0.0129)	(0.0129)
Household income			0.101***	0.0735***
			(0.00422)	(0.00426)
Health status				0.430***
				(0.00618)
Constant	1.063***	0.987***	1.038***	1.522***
	(0.0721)	(0.114)	(0.121)	(0.123)
Observations	113,362	57,936	51,784	51,769

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6.2 HETEROGENEITY IN SUBJECTIVE WELL-BEING

In order to get more detailed information, I examine the research question in this section by controlling for several specific characteristics. In Table 9, I present the coefficients on the immigrant share controlling for gender, marital status, employment status, education, and income in turn. All regressions in the section use a province-fixed effects model. The complete results are shown in the appendix from Table 10 to Table 14.

Results in Table 9 conclude the same trends as my benchmark results shown in the Table 3 and Table 5: the effects of the immigrant share are negatively statistically significant for life satisfaction for both natives and immigrants. An exception exists in the case of education: the immigrant share has no effect on the life satisfaction changes of immigrants who have less than 12 years of education. For natives, individuals who have less than 12 years of education are more easily affected by the immigrant share than those who have higher education. This may be driven by the competition in the labour market. In regards to gender, the effect of immigration on native males is slightly larger than the effect on females, but for immigrants, females suffer more life satisfaction losses than males. Furthermore, Table 7 reveals that the impact of the immigrant share on natives who are not married is much larger than the impact on married Canadians (0.007 vs. 0.005). Results for immigrants follow the same pattern as natives in terms of marital status. An interesting finding emerges across the natives and immigrants in the case of employment status. In general, the immigrant share shows larger influences on unemployed individuals. Results in Table 7 implicate the opposite conclusion. The estimated coefficients are larger for both employed natives and employed immigrants, even though the differences between employed natives and unemployed natives are very

small. Last but not least, the coefficient for natives with below-average income is almost doubled compared to individuals with above-average income (0.008vs.0.005). For immigrants, the coefficients for individuals who have a lower income are also larger. These results demonstrate that unmarried and poor individuals are more likely to suffer from the welfare loss which is caused by the increasing number of immigrants.

Table 9 OLS estimates for natives and immigrants subsample

		Natives		***Immigrants***	
Gender					
		Female	Male	Female	Male
		-0.00616***	-0.00708***	-0.00403**	-0.00546***
		(0.000792)	(0.000815)	(0.00161)	(0.00167)
	N	42,962	37,577	6,878	6,087
	R^2	0.212	0.216	0.214	0.193
Marital status					
		Married	Not married	Married	Not married
		-0.00493***	-0.00740***	-0.00533***	-0.00378**
		(0.000869)	(0.000741)	(0.00148)	(0.00184)
	N	33,579	46,960	7,333	5,632
	R^2	0.168	0.220	0.165	0.223
Employment status					
		Employed	Not employed	Employed	Not employed
		-0.00671***	-0.00634***	-0.00532***	-0.00448**
		(0.000677)	(0.000974)	(0.00152)	(0.00175)
	N	45,181	35,358	6,742	6,223
	R^2	0.158	0.254	0.153	0.241
Education					
		Less than 12 years education	More than 12 years education	Less than 12 years education	More than 12 years education
		-0.00731***	-0.00623***	-0.00438	-0.00437***
		(0.00148)	(0.000595)	(0.00292)	(0.00123)
	N	19,581	63,830	2,532	10,796
	R^2	0.202	0.209	0.230	0.192
Income					
		Below average income	Above average income	Below average income	Above average income
		-0.00775***	-0.00453***	-0.00477***	-0.00515***
		(0.000953)	(0.000619)	(0.00165)	(0.00134)
	N	41,170	50,811	7,418	7,966
	R^2	0.211	0.163	0.210	0.152

CHAPTER 7 CONCLUSION

The main objective of this study is to analyze whether the geographic concentration of immigrants in Canada has an impact on natives' and immigrants' subjective well-being. The main findings of this paper indicate that an increasing number of immigrants in each health region lead to a decrease in the subjective well-being of the native-born population. In other words, Canadians suffer welfare losses as the number of immigrants increases. In addition, immigrants feel more dissatisfied with their lives as the number of immigrants rises. In summary, an increasing number of immigrants do not please both native-born Canadians and immigrants. To the best of my knowledge, this is the first paper in Canada to examine the direct effect of migrant ratio on the subjective well-being of the natives and immigrants. Furthermore, this research confirms the findings in the existing happiness literature: personal characteristics, income and education have significant effects on individuals' subjective well-being.

The results presented here do seem to indicate that the current immigrant selection policy in Canada does not favor the welfare of the native population, at least in the context of subjective well-being. Although policy makers believe that immigrant inflows could relieve labour market shortages and boost the population growth rate, the psychological well-being of native Canadians also should be considered. According to Statistics Canada, Canada has the fastest population growth rate compared to other G8 countries, and international immigration has contributed to 2/3 of total population growth. The reason why Canada has such a rapid immigration growth rate is that the government has abandoned the capacity absorption, and maintained a high immigration level after 1960 which set 1% of the total population as a target. If my findings are creditable, continual

immigrant inflows could make native Canadians hostile to immigrants, while the relationship between immigrants is not healthy either. This is definitely not good for stability and harmony of the society. The goal of encouraging immigration is to help Canada's economic progress in the long run and to fill in labour market shortages in the short run. This is also a universal principle followed by many immigration-destination countries to enact immigration policy. If economic development is our priority, is it necessary to consider the influence of "life satisfaction"? I suppose that the answer is yes.

Some researchers in recent years have advocated a move away from simple GDP targeting to a more broad measurement that includes both objective and subjective measures, such as "happiness". In 2012, the United Nations even published the first World Happiness Report to have a detailed discussion in terms of happiness measurement. Although the concept of using "happiness" as a measurement is debatable and is not well-developed, it is still a trend that is worth following. In this situation, we can revise the ultimate goal of immigration policy in a broad way: to contribute to improve people's objective well-being and subjective well-being. To achieve this goal, policy makers probably should adjust the current immigration policy or maybe address a new policy that could make both natives and immigrants happy. The potential solution could be bring in more immigrants with higher life satisfaction, allow in immigrants from happier countries, or lead immigrants to distribute all over Canada instead of the current situation, which is concentrated in three cities (Toronto, Montreal, and Vancouver). In terms of which of them will be effective in improving the subjective well-being of Canadians, this needs to be carefully examined in further research.

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APPENDIX

Table 10 OLS estimates for natives and immigrants by gender

	Natives		Immigrants	
	(1)	(2)	(1)	(2)
VARIABLES	Female	Male	Female	Male
Immigrant share	-0.00616***	-0.00708***	-0.00403**	-0.00546***
	(0.000792)	(0.000815)	(0.00161)	(0.00167)
Age	-0.179***	-0.237***	-0.236***	-0.302***
	(0.00954)	(0.0106)	(0.0292)	(0.0305)
Age^2	0.0113***	0.0143***	0.0140***	0.0175***
	(0.000566)	(0.000638)	(0.00160)	(0.00171)
Height	-0.209*	-0.202*	-0.460	-0.402
	(0.115)	(0.115)	(0.310)	(0.315)
Weight	0.000284	0.00177***	-0.000830	0.00206
	(0.000576)	(0.000601)	(0.00174)	(0.00180)
Marital status	0.359***	0.403***	0.416***	0.358***
	(0.0170)	(0.0181)	(0.0430)	(0.0481)
Racial origin	-0.0379	-0.0213	0.0437	0.0853*
	(0.0299)	(0.0308)	(0.0481)	(0.0487)
Education	-0.0157*	0.00258	0.00964	0.0226
	(0.00847)	(0.00892)	(0.0225)	(0.0257)
Employment status	0.0514***	0.188***	0.0217	0.210***
	(0.0190)	(0.0220)	(0.0482)	(0.0600)
Household income	0.102***	0.126***	0.0875***	0.120***
	(0.00654)	(0.00693)	(0.0162)	(0.0179)
Health status	0.690***	0.639***	0.712***	0.627***
	(0.00962)	(0.00979)	(0.0228)	(0.0239)
Constant	7.820***	7.570***	7.135***	6.999***
	(0.244)	(0.260)	(0.490)	(0.509)
Observations	42,962	37,577	6,878	6,087
R-squared	0.212	0.216	0.214	0.193
Province-fixed effect	Y	Y	Y	Y

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11 OLS estimates for natives and immigrants by marital status

	Natives		Immigrants	
	(1)	(2)	(1)	(2)
VARIABLES	Married	Not married	Married	Not married
Immigrant share	-0.00493***	-0.00740***	-0.00533***	-0.00378**
	(0.000869)	(0.000741)	(0.00148)	(0.00184)
Age	-0.108***	-0.229***	-0.210***	-0.282***
	(0.0176)	(0.00867)	(0.0413)	(0.0277)
Age^2	0.00718***	0.0143***	0.0121***	0.0173***
	(0.000918)	(0.000534)	(0.00208)	(0.00161)
Gender	-0.0904***	-0.0839***	-0.179***	-0.0111
	(0.0238)	(0.0189)	(0.0507)	(0.0610)
Height	0.112	-0.366***	0.0723*	0.0359
	(0.128)	(0.104)	(0.0430)	(0.0553)
Weight	0.000586	0.00124**	-0.0239	0.0501**
	(0.000611)	(0.000555)	(0.0234)	(0.0244)
Cultural or racial origin	-0.0443	-0.0322	0.0437	0.178***
	(0.0362)	(0.0266)	(0.0463)	(0.0629)
Education	-0.00783	-0.00946	0.103***	0.0998***
	(0.00973)	(0.00789)	(0.0157)	(0.0190)
Employment status	0.00406	0.184***	0.616***	0.740***
	(0.0211)	(0.0196)	(0.0212)	(0.0256)
Household income	0.0894***	0.120***	0.0723*	0.0359
	(0.00814)	(0.00593)	(0.0430)	(0.0553)
Health status	0.621***	0.697***	-0.0239	0.0501**
	(0.0104)	(0.00908)	(0.0234)	(0.0244)
Constant	6.497***	6.917***	6.867***	7.467***
	(0.220)	(0.158)	(0.470)	(0.531)
Observations	33,579	46,960	7,333	5,632
R-squared	0.168	0.220	0.165	0.223
Province-fixed effect	Y	Y	Y	Y

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12 OLS estimates for natives and immigrants by employment status

	Natives		Immigrants	
	(1)	(2)	(1)	(2)
VARIABLES	Employed	Not employed	Employed	Not employed
Immigrant share	-0.00671***	-0.00634***	-0.00532***	-0.00448**
	(0.000677)	(0.000974)	(0.00152)	(0.00175)
Age	-0.198***	-0.196***	-0.320***	-0.267***
	(0.0117)	(0.00938)	(0.0400)	(0.0265)
Age2	0.0122***	0.0123***	0.0193***	0.0155***
	(0.000735)	(0.000529)	(0.00229)	(0.00142)
Gender	-0.0534***	-0.131***	-0.0369	-0.180***
	(0.0187)	(0.0234)	(0.0518)	(0.0583)
Height	-0.0717	-0.283**	-0.580**	-0.222
	(0.102)	(0.128)	(0.288)	(0.330)
Weight	0.000424	0.000756	0.00105	-0.000439
	(0.000480)	(0.000720)	(0.00152)	(0.00201)
Marital status	0.355***	0.425***	0.355***	0.440***
	(0.0144)	(0.0219)	(0.0398)	(0.0507)
Racial origin	-0.0272	-0.0361	0.104**	0.0114
	(0.0259)	(0.0360)	(0.0416)	(0.0580)
Education	-0.0204**	-0.00612	0.00247	0.0142
	(0.00862)	(0.00855)	(0.0285)	(0.0213)
Household income	0.106***	0.117***	0.113***	0.0914***
	(0.00603)	(0.00773)	(0.0160)	(0.0186)
Health status	0.550***	0.767***	0.565***	0.754***
	(0.00870)	(0.0103)	(0.0228)	(0.0231)
Constant	7.029***	6.586***	7.912***	6.746***
	(0.168)	(0.192)	(0.486)	(0.498)
Observations	45,181	35,358	6,742	6,223
R-squared	0.158	0.254	0.153	0.241
Province-fixed effect	Y	Y	Y	Y

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13 OLS estimates for natives and immigrants by education

	Natives		Immigrants	
	(1)	(2)	(1)	(2)
VARIABLES	Less than 12 years education	More than 12 years education	Less than 12 years education	More than 12 years education
Immigrant share	-0.00731***	-0.00623***	-0.00438	-0.00437***
	(0.00148)	(0.000595)	(0.00292)	(0.00123)
Age	-0.173***	-0.215***	-0.191***	-0.283***
	(0.0156)	(0.00777)	(0.0560)	(0.0221)
Age2	0.0111***	0.0132***	0.0119***	0.0164***
	(0.000861)	(0.000475)	(0.00284)	(0.00124)
Gender	-0.123***	-0.0798***	-0.302***	-0.0736*
	(0.0359)	(0.0154)	(0.0983)	(0.0411)
Height	-0.401**	-0.129	0.657	-0.596**
	(0.189)	(0.0853)	(0.538)	(0.235)
Weight	0.000509	0.000893**	0.000946	0.000207
	(0.000948)	(0.000442)	(0.00316)	(0.00133)
Marital status	0.384***	0.376***	0.446***	0.367***
	(0.0284)	(0.0134)	(0.0800)	(0.0339)
Racial origin	-0.119**	-2.33e-06	-0.0115	0.0760**
	(0.0506)	(0.0227)	(0.0976)	(0.0359)
Employment status	0.153***	0.112***	-0.0349	0.138***
	(0.0331)	(0.0156)	(0.104)	(0.0392)
Household income	0.137***	0.109***	0.174***	0.0973***
	(0.0112)	(0.00508)	(0.0379)	(0.0124)
Health status	0.724***	0.643***	0.790***	0.641***
	(0.0141)	(0.00763)	(0.0380)	(0.0178)
Constant	6.848***	6.654***	4.729***	7.632***
	(0.294)	(0.130)	(0.859)	(0.361)
Observations	19,581	63,830	2,532	10,796
R-squared	0.202	0.209	0.230	0.192
Province-fixed effect	Y	Y	Y	Y

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 14 OLS estimates for natives and immigrants by income

	Natives		Immigrants	
VARIABLES	(1) Below average income	(2) Above average income	(1) Below average income	(2) Above average income
Immigrant share	-0.00775***	-0.00453***	-0.00477***	-0.00515***
	(0.000953)	(0.000619)	(0.00165)	(0.00134)
Age	-0.227***	-0.151***	-0.284***	-0.209***
	(0.0102)	(0.00874)	(0.0272)	(0.0262)
Age^2	0.0140***	0.00864***	0.0164***	0.0118***
	(0.000580)	(0.000536)	(0.00147)	(0.00148)
Gender	-0.120***	-0.0239	-0.146***	-0.0732
	(0.0235)	(0.0165)	(0.0552)	(0.0453)
Height	-0.220*	-0.205**	-0.336	-0.252
	(0.126)	(0.0929)	(0.300)	(0.272)
Weight	0.00138**	-8.02e-05	0.000177	0.000458
	(0.000615)	(0.000494)	(0.00173)	(0.00154)
Marital status	0.478***	0.395***	0.438***	0.372***
	(0.0186)	(0.0146)	(0.0418)	(0.0406)
Racial origin	-0.0528	0.0203	0.0717	0.143***
	(0.0335)	(0.0238)	(0.0514)	(0.0384)
Education	0.0125*	0.00156	0.0385**	0.00606
	(0.00734)	(0.00848)	(0.0190)	(0.0239)
Employment status	0.199***	0.0566***	0.106**	0.155***
	(0.0206)	(0.0171)	(0.0497)	(0.0444)
Health status	0.748***	0.592***	0.744***	0.594***
	(0.00972)	(0.00832)	(0.0218)	(0.0207)
Constant	6.778***	7.279***	7.050***	7.296***
	(0.198)	(0.143)	(0.466)	(0.426)
Observations	41,170	50,811	7,418	7,966
R-squared	0.211	0.163	0.210	0.152
Province-fixed effect	Y	Y	Y	Y

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1