

Three Essays on the Labour Market Integration of Immigrants in Canada

by

Jennifer Frimpong

A Thesis submitted to the Faculty of Graduate Studies of

The University of Manitoba

in partial fulfilment of the requirements for the degree of

Doctor of Philosophy

Department of Economics

University of Manitoba

Winnipeg

Copyright ©2024 by Jennifer Frimpong

Examining Committee Membership

Supervisor: Dr. Janice Compton

Department of Economics, University of Manitoba

Co Supervisor: Dr. Wayne Simpson

Department of Economics, University of Manitoba

Internal Member: Dr. Ryan Compton

Department of Economics, University of Manitoba

Internal Member: Dr. Umut Oguzoglu

Department of Economics, University of Manitoba

External Member: Dr. Pinar Gunez

Department of Economics, University of Alberta

Abstract

The first chapter “Family Immigration Policy and Women’s Employment” co-authored with Dr. Janice Compton examined the impact of a change in Canadian immigration policy on women’s employment. The labour force participation of women with young children is positively impacted by close proximity to extended family members who may be available to provide regular or unanticipated childcare. Those who are available in close proximity to provide such care insurance are an underappreciated resource in the labour market. We use the Canadian Longitudinal Administrative Database (LAD) to estimate the impact of a policy shift away from family-based immigration on employment of immigrant women previously arrived. A triple difference approach allows us to pinpoint the impact of the policy on our treatment group – immigrant women with young children - relative to immigrant women without young children, and non-immigrant women with and without children. The results indicate that the reduction in family class immigration resulted in participation rates for immigrant mothers with young children that were 2.4 to 14.8 percentage points lower than expected. Ignoring this indirect impact of immigration on the labour supply of current residents may lead to an underestimation of the benefits of immigration.

The second chapter “Internal Migration and Economic Outcomes: Evidence Among Young Adult Immigrants” employs the Canadian Longitudinal Immigration Database (IMDB) to estimate the impact of parental internal migration on the economic outcomes of young adult immigrants. Previous research suggests that internal migration can influence children's health and education. Given the well-established relationship between education, health, and poverty, this study aims to investigate whether these effects have a long-term impact on the economic outcomes of children in adulthood. I use Heckman two-stage selection model and a linear probability model to estimate the coefficients. I argue that endogeneity might be absent or minimal because immigrants have already made a significant decision to relocate from their home countries. This implies that internal movements within Canada are less likely to be driven by unobserved traits, such as adaptability or ambition. The results show that internal migration reduces

employment earnings by 8.9 percentage change and increases the probability of low-income status by 3.5 percentage points among young adults whose parents entered the country through the refugee program, compared to those who entered through the economic class program. These findings offer valuable insights for both current immigrants and policymakers, shedding light on the consequences of internal migration.

The final chapter “Requirements for Credential Recognition and Economic Outcomes of International Medical Graduates” employs information and data sources from the websites of the Colleges of Physicians and Surgeons of Canada, email correspondences, and Statistics Canada’s Longitudinal Administrative Database (LAD) to address two research questions on IMGs in Canada. The first question examines whether the motivation behind medical regulations for family physician IMGs in Canada is driven by public interest or protectionism. A review of medical regulations for IMGs across the ten provinces in Canada suggests a protectionist motive behind these regulations. The second question examines the economic outcomes of immigrant IMGs in Canada. Analysis of the trends in the growth rate of employment earnings of immigrant IMGs from the first to the twentieth year in Canada shows an overall upward trend (except New Brunswick and Manitoba), with occasional fluctuations and periods of both increase and decrease. Regression results indicate a correlation between the province of residence and both the probability of positive employment income and employment earnings. These findings offer crucial insights for incoming IMGs, regulatory bodies, and policymakers aiming to create supportive policies for this group.

Acknowledgements

“Long time ago, people who sacrificed their sleep, family, food, laughter and other joys of life were called Saints, now they are called PhD students.”

Unknown.

The above quote reflects my journey to this day, and for all the sacrifices made, I would like to express my sincere gratitude to all those who have contributed to the successful completion of this PhD dissertation, a journey that has been both challenging and rewarding.

First and foremost, I am deeply thankful to my advisor, Dr. Janice Compton, for her guidance and constant encouragement throughout the entire research process. I remember a point in my Ph.D. journey when I contemplated quitting and returning to my home country. The loneliness of being in another country, compounded by the challenges of the pandemic, goes beyond the realm of academic work for a Ph.D. student. However, Janice made this period more manageable, and today, as the curtains close, I extend my gratitude. Thank you, Janice, for the flowers and for introducing me to Ethiopian cuisine, which remains my favourite to this day.

I am indebted to Dr. Wayne Simpson, Ryan Compton, and Umut Oguzoglu—other members of my dissertation committee—for offering their views, suggestions, and constructive criticism when necessary for the successful completion of this dissertation.

Special thanks go to Dr. Mikal Skuterud at the University of Waterloo for his feedback and comments that played an important role in bringing this Ph.D. to fruition. I also express my appreciation to Dr. Ian Clara at the Manitoba Research Data Centre (RDC) for his support throughout the cleaning and analysis of the datasets used in this dissertation.

To the staff and faculty at the Department of Economics, University of Manitoba, especially Dr. Julia Witt, Elizabeth Troutt, Laura Brown, and Erin Parsons, I express my appreciation for the opportunity to work and learn under your guidance.

To my friends and family, especially John, Johnson, Agnes, Francis, Nusrat, Thuhid, Iqbal, Sammy, Patrick and Anderson, I am grateful. I am proud to announce – I did it!

Dedication

I dedicate this work to my beloved husband, my parents, Mr. Bismark Yaw Frimpong and Mrs. Gladys Frimpong, and my siblings whose love and support have been my strength throughout this journey.

Table of Contents

Contents

Abstract	iii
Acknowledgements	v
Dedication	vii
List of Tables	xii
List of Figures	xiii
Introduction	1
1. Family Immigration Policy and Women’s Employment	5
1.1 Introduction.....	5
1.2 Policy Framework.....	10
1.3 Data Description and Summary Statistics.....	13
1.4 Empirical Analysis	17
1.4.1 Empirical Strategy.....	17
1.4.2 Regression Results	20
1.4.3 Heterogeneity	22
1.4.4 Differences by Education	25
1.5 Conclusion	27

References.....	29
Appendix A.....	34
2. Internal Migration and Economic Outcomes: Evidence Among Young Adult Immigrants	44
2.1 Introduction.....	44
2.2 Literature Review.....	47
2.2.1 Internal Migration and Children’s Outcomes.....	47
2.2.2 Changes in School and Children’s Outcomes	48
2.3 Data Description and Summary Statistics.....	50
2.4 Empirical Analysis.....	54
2.4.1 Empirical Strategy.....	54
2.4.2 Regression Results	60
2.4.2.1 Internal Migration and Economic Outcomes.....	60
2.4.2.2 Internal Migration and Economic Outcomes by Program of Entry.....	62
2.4.2.3 Possible mediators of Internal Migration and Economic Outcomes	68
2.5 Conclusion	79
References.....	81
Appendix B.....	85
3. Requirements for Credential Recognition and Economic Outcomes of International Medical Graduates.....	95

3.1 Introduction.....	95
3.2 Provincial Analysis of Current Entry Regulations.....	101
<i>Types of licensures Available to IMGs</i>	102
<i>General Requirements for licensure in Canada</i>	102
<i>Specific Requirements for licensure</i>	104
<i>Postgraduate Training</i>	104
<i>Examinations</i>	105
<i>Duration of Currency of Practice</i>	105
<i>Sponsorship</i>	107
<i>Assessments</i>	108
3.3 Historical Economic Trajectories of Immigrant IMGs in Canada.....	109
3.3.1 Overview	109
3.3.2 Data	110
3.3.3 Trends in Employment Earnings for Immigrant IMGs in Canada.....	112
<i>Newfoundland and Labrador</i>	113
<i>New Brunswick</i>	115
<i>Quebec</i>	118
<i>Ontario</i>	121
<i>Manitoba</i>	124
<i>Saskatchewan</i>	127

<i>Alberta</i>	130
<i>British Columbia</i>	133
3.3.4 Empirical Analysis	136
3.3.4.1 Methodology	136
3.3.4.2 Regression Results: Impact of Province of Residence on the Probability of Positive Employment Income and Employment Earnings.....	138
3.4 Conclusion	143
References.....	145
Appendix C	151
Summary and Conclusions	158

List of Tables

Table 1. 1: Proportion of Women with Positive Employment Income, by Immigrant Status and Presence of Young Children.....	17
Table 1. 2: Proportion of Immigrant Women with Positive Employment Income	15
Table 1. 3: Triple Difference. Probability of Positive Employment Income.	22
Table 1. 4: OLS Coefficients, Probability of Positive Employment Income. Triple Difference ..	24
Table 2. 1: Impact of Internal Migration on Economic Outcomes	61
Table 2. 2: Impact of Any Type of Migration on Economic Outcomes by Program of Entry	63
Table 2. 3: Impact of Interprovincial and Intraprovincial Migration on Economic Outcomes by Program of Entry.....	65
Table 2. 4: Impact of Frequency of Migration on Economic Outcomes by Program of Entry	67
Table 2. 5: Internal Migration and Employment Earnings by Possible Mediators	69
Table 2. 6: Any Type of Migration and Employment Earnings by Possible Mediators and Program of Entry.....	72
Table 2. 7: Interprovincial and Intraprovincial Migration and Employment Earnings by Possible Mediators and Program of Entry.....	73
Table 2. 8: Frequency of Migration and Employment Earnings by Possible Mediators and Program of Entry.....	75
Table 2. 9: Internal Migration and Employment Earnings by Age at Migration	78
Table 3. 1: Requirements of Currency of Practice for IMGs by Province.....	107
Table 3. 2: Estimates of the Probability of Employment of Immigrant IMGs	140
Table 3. 3: Estimates of Employment Earnings of Immigrant IMGs	142

List of Figures

Figure 1. 1: Economic Class, Family Class and Refugee Class Immigrants as a Proportion of All Immigrants	11
Figure 1. 2: Proportion of Immigrants Who are Parents or Grandparents of Current Canadian Residents.....	12
Figure 1. 3: Common Trend Assumption	20
Figure 1. 4: Marginal Effect of Policy on Labour Force Participation of Immigrant Mothers with Young Children, Relative to Immigrant Mothers Without Young Children.	26
Figure 3. 1: The Growth Rate in Average Annual Employment Earnings in Newfoundland.....	113
Figure 3. 2: The Growth Rate in Median Annual Employment Earnings in Newfoundland.....	114
Figure 3. 3: Average Annual Employment Earnings for Immigrant IMGs in Newfoundland in Year 1, 5, 10 and 20	115
Figure 3. 4: The Growth Rate in Average Annual Employment Earnings in New Brunswick....	116
Figure 3. 5: The Growth Rate in Median Annual Employment Earnings in New Brunswick	117
Figure 3. 6: Average Annual Employment Earnings for Immigrant IMGs in New Brunswick in Year 1, 5, 10 and 20	118
Figure 3. 7: The Growth Rate in Average Annual Employment Earnings in Quebec	119
Figure 3. 8: The Growth Rate in Median Annual Employment Earnings in Quebec	120
Figure 3. 9: Average Annual Employment Earnings for Immigrant IMGs in Quebec in Year 1, 5, 10 and 20.....	121
Figure 3. 10: The Growth Rate in Average Annual Employment Earnings in Ontario	122
Figure 3. 11: The Growth Rate in Median Annual Employment Earnings in Ontario	123

Figure 3. 12: Average Annual Employment Earnings for Immigrant IMGs in Ontario in Year 1, 5, 10 and 20.....	124
Figure 3. 13: The Growth Rate in Average Annual Employment Earnings in Manitoba	125
Figure 3. 14: The Growth Rate in Median Annual Employment Earnings in Manitoba	126
Figure 3. 15: Average Annual Employment Earnings for Immigrant IMGs in Manitoba in Year 1, 5, 10 and 20.....	127
Figure 3. 16: The Growth Rate in Average Annual Employment Earnings in Saskatchewan....	128
Figure 3. 17: The Growth Rate in Median Annual Employment Earnings in Saskatchewan.....	129
Figure 3. 18: Average Annual Employment Earnings for Immigrant IMGs in Saskatchewan in Year 1, 5, 10 and 20	130
Figure 3. 19: The Growth Rate in Average Annual Employment Earnings in Alberta.....	131
Figure 3. 20: The Growth Rate in Median Annual Employment Earnings in Alberta.....	132
Figure 3. 21: Average Annual Employment Earnings for Immigrant IMGs in Alberta in Year 1, 5, 10 and 20.....	133
Figure 3. 22: The Growth Rate in Average Annual Employment Earnings in British Columbia	134
Figure 3. 23: The Growth Rate in Median Annual Employment Earnings in British Columbia	135
Figure 3. 24: Average Annual Employment Earnings for Immigrant IMGs in British Columbia in Year 1, 5, 10 and 20	136

Introduction

The proportion of immigrants arriving in Canada has increased over time. According to data from Immigration & Canada (2016), the proportion of immigrants among the overall immigrants who arrived from 1981 to 2015 increased from 1.9 percent in 1980 to 3.7 percent by the end of 2015. These immigrants have been an important source of labour for the Canadian government. Some immigrants, particularly those in the economic class, are selected based on attributes such as job search skills, resilience, a positive attitude towards personal development, learning, and adaptability that are favourable to the success of the Canadian labour market. Others are chosen because they have family in Canada (family class immigrants) or are fleeing war or unrest in their home country (refugee class immigrants). Regardless of the type of immigrant arriving in Canada, the integration of these immigrants is important for the overall success of immigration policies. This thesis contributes to the growing knowledge on immigrant's integration by investigating questions on immigrant's labour market outcomes in Canada.

The thesis consists of three essays. In the essay co-authored with Dr. Janice Compton, we examined the impact of a shift away from family immigration on the employment outcomes of immigrant women with young children. In the mid-1995, Canadian immigration policy shifted from family immigration to economic immigration. This reduced family-class immigrants, especially the proportion of parents and grandparents who immigrated to Canada after the policy. Previous studies (see Oishi and Oshio (2004), Shen et al. (2016), Compton (2015), and Compton and Pollak (2014)) have highlighted the positive impact of close family proximity on the employment outcomes of women with young children. Essentially, any immigration policy influencing proximity to family members, especially parents and grandparents, is likely to affect the labour force participation of immigrant women with young children. Hence, in the essay, we hypothesize

that the 1995 shift in Canadian immigration policy that deemphasized family reunification reduced proximity to family among resident immigrants in Canada, and in turn, reduced the employment rates of immigrant women with young children – the demographic most sensitive to available care networks. We used the Statistics Canada 1983-2005 Longitudinal Administrative Databank (LAD) linked with the Longitudinal Immigration Database (IMDB) and a triple model to test this hypothesis. We found that after the policy change, refugee mothers were less likely to be in all types of employment, while economic immigrant mothers shifted both out of the workforce and from high- to low-income employment. We also estimated the impact of the policy on immigrant mothers by education. The results show that the policy had a stronger effect on immigrant mothers with the lowest and highest levels of education.

In the second essay, I used the Canadian Longitudinal Immigration Database (IMDB) to estimate the impact of parental internal migration on the economic outcomes of young adult immigrants aged 26 to 30 years. The literature (Deb and Seck 2009; Racaite et al. 2019; Wang and Mesman 2015; Xu et al. 2018; Lee and Park 2010; Liang, Guo, and Duan 2008; and Xu et al. 2018) has shown that internal migration by parents may have an effect on children's health and educational outcomes in the short run, whether the children move with their parents or are left behind. Given that research has established a correlation between education, health, and poverty (Arsani, Ario, and Ramadhan 2020; Hofmarcher 2021; Mihai, Țițan, and Manea 2015), I investigate whether the engagement of internal migration by a parent when their children were under the age of 18 years has a long-term impact on these children's economic outcomes when they become adults. The results from the Heckman two-stage selection model and a linear probability model show that parental internal migration reduces employment earning by 8.9 percentage change and increases the probability of low-income status by 3.5 percentage points among young adults whose parents

entered the country through the refugee program, compared to those who entered through the economic class program.

The final essay used information and data from the websites of the Colleges of Physicians and Surgeons of Canada, email correspondences, and Statistics Canada's Longitudinal Administrative Database (LAD) to address two (2) research questions on International Medical Graduates (IMGs) in Canada. The first question investigates whether the motive behind medical regulations for family physician IMGs in Canada is driven by public interest or protectionism. I document that there is a public interest in the supply and regulation of physicians, as the public requires a high supply of physicians to reduce wait times and improve access to healthcare. I argue that there is no need for differences in medical regulations across Canada since most health policies are national. In the case of protectionism, I argue that self-regulation of physicians has an associated motive to limit entry for potential physicians, which may decrease patient services and raise salaries to benefit the incumbent physicians. Considering the concepts of public interest and protectionism, I document that if the motive for medical regulation in Canada is public interest, then there should not be any provincial variability in requirements for the issuance of a medical license. The review of medical regulations for IMGs across the ten provinces in Canada suggests a protectionist motive in medical regulations across six dimensions: (1) types of licensures, (2) postgraduate training, (3) examinations, (4) currency of practice, (5) sponsorship, (6) assessments, and (7) other requirements. The second question examines the economic outcomes of immigrant IMGs in Canada. While previous studies (Blit et al., 2017; Boyd & Tian, 2018; Picot & Hou, 2018, 2020) have explored the economic outcomes of immigrants, I am unaware of any study that has focused on a single occupation and conducted a comprehensive analysis of its economic progression. Analysis of the trends in the growth rate of employment earnings of immigrant IMGs

from the first to the twentieth year in Canada shows an overall upward trend (except New Brunswick and Manitoba), with occasional fluctuations and periods of both increase and decrease. The estimates derived from both the linear probability and Heckman selection model reveal a correlation between the province of residence and economic outcomes.

The findings in this thesis serve as an important information to policymakers whose interests is to enact policies that will benefit the overall integration of immigrants in childcare, internal migration, and medical regulations in Canada.

1. Family Immigration Policy and Women's Employment

1.1 Introduction

The economic benefit of immigration to the receiving country is often described by the labour force participation (LFP) and work productivity of the immigrant population (Sweetman and Warman (2013), Richardson (2004), Hawthorne (2008)). Missing from these calculations are the spillover benefits that one immigrant may have on the labour force decisions of another. In particular, geographic proximity of family members may alter the labour-leisure decision of women juggling market work and childcare. Thus, changes to immigrant policies that affect family immigration may have indirect effects on employment of the resident immigrant population. In particular, we hypothesize that the 1995 shift in Canadian immigration policy that deemphasized family reunification reduced family proximity among resident immigrants in Canada, and in turn, reduced the employment rates of immigrant women with young children – the demographic most sensitive to available care networks. We use Statistics Canada's 1983-2005 Longitudinal Administrative Databank (LAD) linked with the Longitudinal Immigration Database (IMDB) to test our hypothesis.¹

Theoretically, the effect of close family proximity on employment of immigrant women is ambiguous and difficult to identify. On the one hand, immigrant women may reduce their labour supply if they have parents who arrive needing care, or if they co-reside with extended family and can ease their budget constraint by sharing fixed resources. On the other hand, immigrant women may increase their labour supply if the presence of extended family in close proximity lessens childcare constraints. The relationship is likely to be endogenous, as family members may be more likely to immigrate if there is a need for childcare or eldercare. Finally, the relationship between

¹ Data access is through the Statistics Canada Research Data Centres.

employment, family proximity, and transfers of care, also depends on the availability and cost of formal care services. If formal care is a substitute for familial care, the link between family proximity and labour force participation would be less in regions with generous formal care policies.

Empirically, the effect of close family proximity (or co-residence) has been shown to have a positive effect on the labour force participation of women, especially women with young children (Kolodinsky and Shirey (2000), Oishi and Oshio (2004), Shen et al. (2016), Compton (2015), Compton and Pollak (2014), and Aragao and Villanueva (2021)). To the best of our knowledge, the importance of family proximity specifically for immigrant women has not yet been empirically considered in the economic literature.

The LAD data is an administrative dataset containing the longitudinal tax returns of a 20 percent random sample of Canadian tax-filers. The sample size of the LAD allows us to identify immigrant women by immigrant class (economic, family, refugee, other).² However, as this is an administrative database, demographic information common to survey data is lacking in these administrative data. It is important to note that we do *not* have direct information on the proximity of extended family members, nor on transfers of informal childcare or eldercare. Our analysis estimates the impact of the policy change on our treated group (immigrant women with young children) and theorizes on the mechanism that links the policy change to LFP decisions for this demographic. The validity of our results therefore hinges on two key assumptions. First, all else equal, family proximity declined for immigrants relative to non-immigrants after the policy. Data from the Canadian General Social Survey indicates that while the proportion of non-immigrants

² Immigrants are classified through the program of entry. There are three main categories – Economic Class, Family Class, and Refugee Class. The remaining entrants, including immigrants who arrived in Canada through the backlog clearance program and administrative review program, are grouped as "other."

in Canada who saw their relatives more than once a month increased from 58 percent to 72 percent between 1985 and 2003 (perhaps due to ease in travel and health improvements of the older generation), there was a much smaller increase in the rates of monthly contact for resident immigrants (50 percent in 1985 and 51.7 percent in 2003). Thus, while close contact of immigrant relatives did not decline in absolute terms after 1995, it did decline relative to the overall trends of family proximity in Canada.³ Second, we assume that close family proximity increases the *potential* for informal childcare. Note that direct transfers of care are not required for there to be an effect of proximity on employment. Merely the availability of family members to provide unanticipated or irregular childcare may impact LFP decisions, even if this type of “childcare insurance” is never used (see Compton and Pollak (2014)).

To test our hypothesis that the decline in family-based immigration reduced the employment of immigrant women with young children, we use a triple difference model, focussing on the role of the policy change on immigrant women with young children. The comparison categories allow us to identify the impact of the policy by controlling for differences in LFP rates in the pre-and post policy years between (i) women with and without children (Bevelander and Groeneveld (2012), Joshil et al (1996), Drobnic et al (1999), Holland and deValk (2017), and Hynes and Clarkberg (2005)); (ii) immigrant and non-immigrant women; and (iii) immigrant women with young children and non-immigrant women with young children (Holland and de Valk (2017), Khoudja and Platt (2018); Kil et al. (2018); Rendall et al. (2010), and Vidal-Coso (2019)). Since the LAD data lacks detailed demographic information, the triple difference allows us to focus on the policies that would differentially impact immigrant women with young children.

³ Proximity to family members is only available for the years noted, it is not included in each annual survey. Information on changing household structure (three generation households) is available but does not capture proximity *per se*.

Compositional differences of immigrants no doubt occurred during this time frame due to the policy shift, but these compositional differences would impact all immigrants and not merely women with young children.

We estimate the policy effect on the extensive margin (positive employment income) and the intensive margin (high or low income), separately by immigrant class.⁴ Our results indicate that following the policy shift, the probability of employment for immigrant women with young children fell relative to the counterfactual. The effect is strongest for refugees (decline of 14 percent), who may have larger labour supply elasticities than other immigrant groups, and weakest for family class immigrants (decline of 2.4 percent), who by definition have some family in the country.

On the intensive margin, we observe a decline in both high- and low-income employment amongst refugee mothers. For economic class mothers, the policy change induced an increase in low-income employment and a fall in high-income employment, relative to the control groups (non-immigrants and immigrants without young children). That is, following the policy shift, refugee mothers were less likely to be in all types of employment; economic class immigrant mothers shifted both out of the workforce, and from high to low-income employment.

To bolster our hypothesis, we estimate a number of robustness tests. First, we estimate the regressions separately for women who immigrated to Canada as children, compared to those who immigrated as adults, as the policy change is much less likely to affect the family proximity of those who arrived as children. We find that the negative effect is observed only for immigrants who arrived as adults. Second, we estimate the regressions separately for immigrants living in Quebec versus the rest of Canada (ROC). In 1997, Quebec introduced a policy of universal, \$5/day

⁴ The size of the LAD-IMDB data allow us to consider women who arrived under different immigrant classifications separately.

childcare. To the extent that family-provided childcare and formal childcare are substitutes, we expect a weaker response to the immigration policy in Quebec. This is confirmed for economic class immigrants – the group that is most likely to use formal childcare. For this group, the motherhood gap falls in Quebec, but rises in the ROC.⁵ Third, we estimate the results separately for younger (age 20–39) and older (aged 40-54) mothers. We expect the results to be strongest for younger mothers; older mothers are likely to have established careers and social networks and thus less likely to alter their work behaviour in response to available informal childcare.

The impact of family proximity on the LFP of women with young children is likely to vary with education (Arpino et al. 2012; Kanji 2018). While the full LAD dataset is limited in demographic information, more complete information is available for the subsample of immigrants as the data is linked to the Longitudinal Immigration Database (IMDB). We next limit the sample to immigrant women and estimate the effect of the immigration policy change on employment by education. The results indicate an inverted U-shape relationship between education and the policy impact. The strongest negative effect of the policy is felt by immigrant women with the lowest and highest levels of education.

Our findings highlight the need to take a broad lens when quantifying the economics benefits of immigrants in the receiving country. Immigrants may contribute to the Canadian labour force not only directly, but indirectly by providing childcare and thus enabling family members to more fully participate in the labour market. Immigration policies that focus narrowly on the economic suitability of the immigrants omit the reality that the ability of an immigrant to fully participate in the labour market depends not only on the match between their skills and the needs of Canadian employers, but also on their ability to balance home and work responsibilities. To the

⁵ The motherhood gap is the difference in labour force outcomes (LFP and wages) between women without young children and women with young children.

best of our knowledge, this is the first study to quantify the indirect labour supply of Canadian immigrants.

The rest of the chapter is structured as follows: Section 1.2 provides an overview of the relevant policy changes. Section 1.3 describes the data and summary statistics. Section 1.4 presents the empirical analysis. Section 1.5 concludes.

1.2 Policy Framework

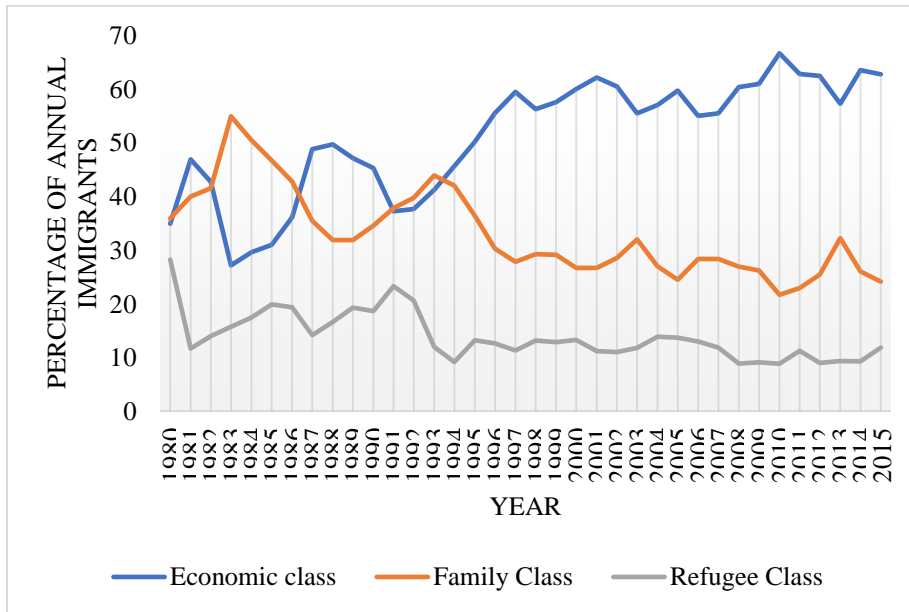
A summary of the key Canadian Immigration policies is provided in Appendix Table 1.1. Important for this analysis is to note that while the economic point system was introduced in 1967, family reunification and refugee class immigration comprised approximately 60 percent of all immigrants during the 1980s.⁶ Indeed, the primary objectives of immigration, outlined in the 1978 Act were family reunification, non-discriminatory methods of admission, immigration based on humanitarian reasons, and the importance of prioritizing the economic, social, and cultural goals of Canadians. During these 70s and 80s, absorptive capacity was paramount but not at the expense of family reunification and humanitarian objectives (Benjamin et al. 1998).

Following a policy shift in the mid-1990s, the proportions of economic and family/refugee immigration flipped, so that approximately 60 percent of immigrants arrived under the economic class. These proportions are shown in Figure 1.1. The policy shift was announced in the fall of 1994, and the policy enacted in late 1995. Immigration was pegged at 1 percent of the population, with greater emphasis to be placed on economic immigrants via the introduction of a new point system (Green and Green 2004; Neborak 2013). The new system placed more weight on language skills and labour market flexibility (job search skills, resilience, positive attitude towards personal

⁶ The point system allocates scores to applicants for education, age, work experience, official language proficiency, arranged employment in Canada and adaptability (see Triadafilopoulos 2013 for more information).

development, learning, and change). Although the proportion of family based immigrants had been declining the previous decade, the two periods (pre- and post-1995) show a level shift in family immigration.⁷

Figure 1. 1: Economic Class, Family Class, and Refugee Class Immigrants as a Proportion of All Immigrants



Note: The values are the proportion of economic, family and refugee class immigrants to the total immigrants that arrived in Canada from 1980 to 2015.

Source: Author’s own compilation based on data from Immigration & Canada (2016)

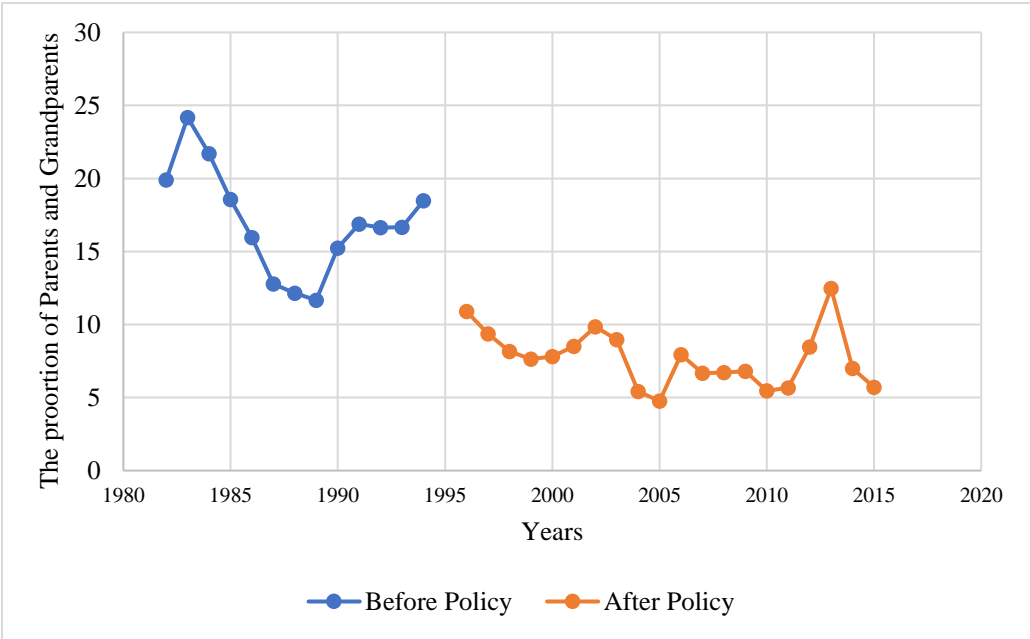
<https://open.canada.ca/data/en/dataset/ad975a26-df23-456a-8ada-756191a23695>

In Figure 1.2 we show the proportion of immigrants who are not only family class, but parents or grandparents of Canadian immigrants. Again, we see a reduction in the proportion of parents and grandparents among immigrants after the policy change compared to the years prior. This shift forms the foundation of this research. Although the primary change in immigration policy occurred in 1995, smaller policy adjustments narrowed the scope of family-based immigration in the years leading up to 1995. In 1992, there was an age limit placed on sponsored

⁷ Indeed, it is possible that the policy only *exacerbated* a declining trend in family based immigration relative to economic class immigration.

children so that only those under the age of 19 qualified. In 1993, the sponsorship program for assisted relatives was cancelled, and points allocated to family members who are not in the immediate family of the sponsoring immigrant were reduced. These prior years' adjustments may have reduced the arrivals of adult children and extended family members. We therefore omit 1992-1995 from our sample, focussing on the pre- and post- policy years as pre-1992 and post-1995. All analyses were also run omitting only 1995, with similar results. To the extent that the increase prior to 1992 was an 'anticipation' effect, this biases our analysis against finding any results. If individuals anticipated having children post-1995 and sponsored their parents pre-1992, then the policy change would not impact the proximity of family.

Figure 1. 2: Proportion of Immigrants Who are Parents or Grandparents of Current Canadian Residents



Note: The values are the proportion of parents and grandparents to the total immigrants that arrived in Canada from 1980 to 2015.

Source: Author's own compilation based on data from Immigration & Canada (2016) <https://open.canada.ca/data/en/dataset/ad975a26-df23-456a-8ada-756191a23695>

1.3 Data Description and Summary Statistics

The main data are sourced from Statistics Canada's 1983-2005 Longitudinal Administrative Databank (LAD), linked to the Longitudinal Immigration Database (IMDB). The LAD is an administrative panel dataset containing the annual tax returns for a random 20 percent sample of Canadian tax filers. The LAD is refreshed with new tax filers each year, and respondents are followed until they stop filing taxes. We restrict the sample to women aged 20 to 54 years who reside in Canada's ten provinces.⁸ Although the dataset is longitudinal, we collapse the data to a repeated cross-section since our identification comes not in a comparison within individuals over time, but within demographic groups of women over time. Our treatment group are immigrant women with children under 7 years. The control groups are non-immigrant women and immigrant women without young children under 7 years.⁹ The total sample used for the analysis includes over 154,000,000 person-year observations on individual tax information.¹⁰ Of these, 8.3 percent are immigrants, and 5.6 percent are immigrant mothers.¹¹ The LAD is linked with the IMDB, an administrative database that contains records of all immigrants since 1952. All records for immigrants in the LAD sample are linked to the IMDB demographic information that is collected at the time of entry. The primary benefit of the LAD-IMDB is its large sample size, which allows estimation by subgroup.

⁸ Territories in Canada were excluded due to low sample size and the lack of information on hourly wages in the Labour Force Survey (LFS).

⁹ We refer to women without children under 7 years as non-mothers for simplicity, however, note that the category of non-mothers includes both women without children and women with children 7 years and older. Our hypothesis is that the policy should impact only those with young children. If proximity to family also affects employment of women with children over the age of 7, then combining these two groups biases the analysis against finding an impact.

¹⁰ The sample increases monotonically from 5.8 million in 1983 to 7.8 million in 2005.

¹¹ The total immigrant samples comprise of 2,110,635 economic immigrants (1,598,040 non-mothers and 512,595 mothers), 8,211,815 family immigrants (5,447,480 non-mothers and 2,764,335 mothers), 1,929,605 refugee immigrants (1,281,480 non-mothers and 648,125 mothers) and 581,510 other immigrants (399,245 non-mothers and 182,265 mothers)

The primary downside of the LAD is the lack of demographic information available on tax forms. For the full sample, we are able to include the following covariates - gender, age, marital status, family size, area size, the total number of children, province of residence, and official language spoken (which are commonly used in the LFP literature, see for example Ho (2015), García-Morán & Kuehn (2017), and Adserà & Ferrer (2016)). Summary statistics are provided in Appendix Table 1.2. When we reduce the sample to include only immigrants, we also include years of education at time of entry, region of origin, intended province of destination, landing year, immigrant status of spouse, official language indicator, and occupation at landing. Summary statistics for the IMDB sample are provided in Appendix Table 1.3.

The LAD provides income information, but not work hours. We estimate the impact of family proximity on work participation rather than on earnings. Individuals are therefore defined to be in the workforce if they have positive earned income for the year.¹² We further split those with positive income into low- and high-income categories. To do so, we use estimates from the Labour Force Survey, and calculate a threshold value equal to the average weekly earnings of women under the age of 54 who work at least 30 hours in the reference week, in each year and province. These figures, multiplied by 50, provide a benchmark FYFT earnings level.¹³

In Table 1.1 we present the proportion of women with and without young children who report positive employment income for the full sample collapsed across all years. Immigrant women with young children have a relatively consistent level of participation across age groups (ranging from 57.7 percent to 63.2 percent). Employment rates among immigrant women without young children are highest among those aged 25-29 years and decline after. Non-immigrant

¹² We exclude those with negative (self-employed) earnings (approximately 0.5 percent of the total sample).

¹³ Full-year, full time (FYFT) refers to women who worked on a full-time basis for 52 weeks during the census year. Variable definitions are provided in Appendix Table 1.4.

women have higher employment rates overall relative to immigrant women (with the exception of the youngest and oldest groups of mothers). Participation of non-immigrant mothers follows an inverted u-shape over the age categories, with lows of 53.8 and 56.4 percent for the oldest and highest age groups, and a maximum of 73 percent for those aged 35-39. For both immigrants and non-immigrants, married mothers have higher participation levels compared to the non-married categories. The motherhood gap is highest for single mothers, followed by previously married mothers, and lowest for married mothers. For both immigrant and non-immigrant women, those in rural areas have a slightly larger motherhood gap than women in urban areas. An interesting geographic pattern is also found, with the motherhood gap for non-immigrant women being highest in the Western provinces (MB, SK, AB, BC) while the motherhood gap for immigrant women is lowest in the Eastern provinces. These provincial differences may reflect cultural and economic differences in the provinces, as well as the variation in source countries among immigrants across provinces.

In Table 1.2 we present participation rates for the sample of immigrant women with and without young children. As expected, economic class immigrants have the highest participation rates (81.7 percent), and only a 9 percentage point gap between mothers and non-mothers. In contrast, only 66 percent of refugee class immigrants are employed on average across the years considered, and there is a 19 percentage point motherhood gap between the participation rates of refugee mothers with and without children. There is only a small increase in participation rates and a small decline in the motherhood gap across education groups. The difference in participation between immigrant mothers and non-mothers is highest for those whose intended occupation was in “Education, law and social, community and government services” (occupations likely to be covered by union contracts) and lowest among those intending to enter management positions.

Finally, there are large differences in participation and motherhood gaps across source countries, and official language indicator.

Table 1. 1: Proportion of Women with Positive Employment Income, by Immigrant Status and Presence of Young Children.

	Non-Immigrant Women			Immigrant Women		
	Without young children	With young children	Mother-hood Gap	Without young children	With young children	Mother-hood Gap
Age group						
20 to 24 years	92.9	56.4	36.6	79.8	57.7	22.1
25 to 29 years	91.3	67.7	23.6	80.8	61.3	19.5
30 to 34 years	83.8	72.1	11.6	76.9	62.6	14.3
35 to 39 years	80.7	73.0	7.7	74.0	63.2	10.8
40 to 44 years	80.5	70.7	9.8	73.0	62.8	10.2
45 to 49 years	78.1	62.7	15.3	71.1	61.6	9.5
50 to 54 years	71.5	53.8	17.7	64.9	60.3	4.7
Marital status						
Single	88.3	56.3	32.0	81.1	57.7	23.3
Married/common law	81.0	72.1	8.8	72.2	63.5	8.7
Divorced	81.2	66.6	14.6	74.7	58.4	16.2
Separated	83.1	66.1	17.0	76.1	57.3	18.7
Widowed	71.9	56.8	15.1	55.9	35.0	20.9
Area size code						
Rural (less than 1,000)	74.1	58.5	15.7	72.7	55.6	17.1
Urban (1,000 – 14,999)	79.0	66.3	12.7	76.0	61.5	14.5
Urban (15,000 – 29,999)	80.0	68.0	12.0	77.3	62.9	14.4
Urban (30,000 – 99,999)	81.1	67.6	13.5	78.3	62.5	15.8
Urban (100,000 – 499,999)	83.1	71.0	12.1	75.8	61.0	14.8
Urban (500,000+)	84.1	71.6	12.5	74.0	62.2	11.8
Province of residence						
NF	77.5	66.5	11.0	70.6	55.6	15.0
PE	86.5	80.6	5.9	78.3	61.6	16.7
NS	78.7	66.2	12.5	70.0	54.2	15.8
NB	78.4	67.7	10.7	70.2	55.0	15.2
QC	78.7	67.3	11.4	67.8	52.6	15.2
ON	83.6	72.0	11.6	75.7	62.9	12.8
MB	83.1	64.2	18.9	82.3	69.9	12.3
SK	84.7	66.8	17.9	79.4	65.6	13.8
AB	86.7	70.0	16.7	82.7	69.1	13.6
BC	82.9	66.2	16.7	70.5	63.9	6.6

Source: Author's own computation using data from 1983 to 1994 and 1996 to 2005 Longitudinal Administrative Database (LAD)

Table 1. 2: Proportion of Immigrant Women with Positive Employment Income

	(A) All Immigrant Women	(B) Without young children	(C) With young children	(D) Diff (C) - (B)
Immigrant category				
Economic	81.74	83.92	74.89	9.03
Family	68.52	71.94	61.77	10.17
Refugee	66.28	72.75	53.54	19.21
Other	69.39	73.36	60.23	13.12
Years of schooling, at landing				
Less than 9 years	69.79	74.01	60.48	13.53
9 to 13 years	70.09	74.09	61.96	12.13
14 to 17 years	70.86	74.48	63.23	11.24
Above 17 years	72.44	75.67	64.48	11.19
Intended occupation, at landing				
Management	71.47	73.15	66.42	6.73
Investor, Business, finance, and administration	76.15	78.85	68.83	10.01
Natural and applied sciences	76.66	79.33	68.59	10.74
Health	80.68	83.27	74.27	9.00
Education, law and social, community and government services	74.73	78.78	64.23	14.55
Occupations in art, culture, recreation, and sport	74.05	77.07	64.70	12.38
Sales and service	81.61	85.62	71.52	14.10
Trades, transport, and equipment operators	72.07	76.23	64.33	11.91
Natural resources and agriculture	72.78	76.42	64.68	11.74
manufacturing and utilities	75.40	79.77	66.20	13.57
Other	67.22	71.18	59.45	11.73

Con't

	(A) All Immigrant Women	(B) Without young children	(C) With young children	(D) Diff (C) - (B)
Region of birth				
Northern America	72.35	77.36	62.17	15.19
The Caribbean	74.33	79.81	64.51	15.30
Northern Europe	74.81	78.42	65.98	12.44
Western Europe	78.86	83.32	67.29	16.03
Southern Europe	71.75	74.07	67.36	6.71
Eastern Europe	76.58	80.13	65.38	14.75
Africa	64.53	72.92	51.29	21.63
South Asia	72.39	74.01	70.09	3.92
Central Asia	54.36	60.78	42.71	18.07
Southeast Asia	64.83	65.95	61.30	4.65
East Asia	79.87	83.99	71.28	12.71
West Asia	46.60	50.51	37.90	12.61
Oceania	79.23	82.50	73.07	9.43
Official language indicator				
English	74.09	78.03	65.28	12.75
French	64.49	71.12	53.89	17.23
English and French	71.58	75.71	61.90	13.81
Neither	66.30	69.70	59.29	10.42

Note: Column A is the proportion of all immigrants who are employed, columns B and C is the proportion of immigrant women with\without young children who are employed, and column D is the motherhood gap(C-B=D) for immigrants.

Source: Author's own computation using data from 1983 to 1994 and 1996 to 2005 Longitudinal Administrative Database (LAD)

1.4 Empirical Analysis

1.4.1 Empirical Strategy

We begin with the full sample of immigrants and non-immigrants to estimate the impact of the policy shift on immigrant women with young children. In the following section, we will restrict the sample to immigrant women and examine variations in subgroups. The estimation employs a triple difference model (DDD) to examine the effect of the 1995 policy shift on the labour market attachment of immigrant women with young children.¹⁴ The triple difference approach is premised on the assumption that the policy change creates three-dimensional variations: (1) between immigrants and non-immigrants, (2) before and after the policy (3) between mothers and non-mothers. Since it is probable that the changes to the immigration policies in the early 1990s altered the composition of immigrant women, and that numerous factors would influence the labour force participation of women and mothers of young children over time, the DDD approach allows us to adjust for these common trends.

The DDD model estimated is shown in equation (1) below:

$$Y_{i,t} = \beta_0 + \beta_1 q^l + \beta_2 q_c + \beta_3 p_t + \beta_4 (q^l * q_c) + \beta_5 (q^l * p_t) + \beta_6 (q_c * p_t) + \beta_7 (q^l * q_c * p_t) + \varphi X_{i,t} + \gamma * year_t + \varepsilon_{i,t} \quad (1)$$

where the outcome $Y_{i,t}$ is either (i) the probability of earning positive employment income, estimated using a linear probability model, or (ii) the probability of earning high or low income for individual i in year t , estimated using multinomial logit regressions (MNL).¹⁵ The treatment variable q^l is a categorical variable that denotes whether the woman is an economic immigrant, family immigrant, refugee, or other immigrant. The base category includes all non-immigrants. The policy variable P_t is a dummy equal to 1 after the policy (1996 to 2005) and 0 otherwise

¹⁴ The triple difference model is also referred to as the difference-in-difference-in-difference (DDD) approach (Hardoy and Schöne, 2010).

¹⁵ Probit models were performed for the extensive margin, with similar results.

(1982 to 1991), with the policy years excluded.¹⁶ The young children variable q_c is equal to 1 if the woman has a child in the household under 7 years and 0 otherwise. $X_{i,t}$ is a vector of controls that includes age, marital status, area size, family size, total number of children, province of residence, and official language spoken. Year fixed effects are included in all models. $\varepsilon_{i,t}$ is the error term for individual i at time t . The key coefficient of interest is the triple difference estimator β_7 , which measures the additional impact of the policy on the labour market attachment of immigrant women with young children. We estimate (1) for the full sample of immigrants and non-immigrants and also for subsamples, separating the sample by current province (Quebec and ROC), age at immigration, and current age.

Finally, we limit the sample to include only immigrant women, and estimate differences by education. While the full LAD sample does not include many demographic variables, we are able to consider heterogeneous effects by education at time of arrival when we restrict the sample to immigrant women.¹⁷ We run the following triple difference equation on the sample of immigrant women, separately by immigrant group.

$$Y_{i,t} = \beta_0 + \beta_1 q^E + \beta_2 q_c + \beta_3 p_t + \beta_4 (q^E * q_c) + \beta_5 (q^E * p_t) + \beta_6 (q_c * p_t) + \beta_7 (q^E * q_c * p_t) + \varphi X_{i,t} + \gamma * year_t + \varepsilon_{i,t} \quad (2)$$

where the triple difference coefficient indicates differences in the motherhood gap before and after the policy change, by education. Control variables are now extended to include region of origin, intended province of destination, landing year, years of education, immigrant status of spouse, official language indicator, and occupation at landing. All other descriptions of parameters in equation (1) remain.

¹⁶ The analysis was also done with the exclusion of only 1995, extending the pre-policy years to 1994. Results are similar.

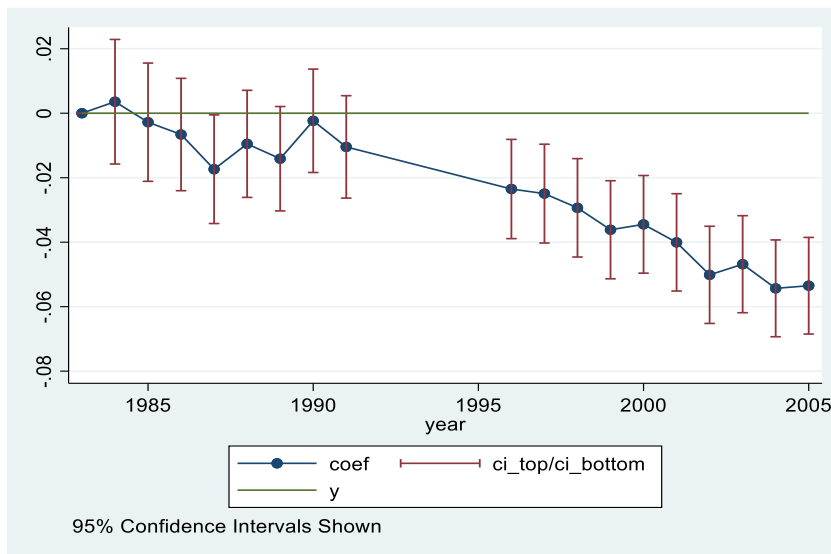
¹⁷ Regressions were also performed separately by region of origin. No discernable pattern was found in the policy response.

To satisfy the common trend assumption (Huntington-Klein (2021)), the motherhood gap in employment for immigrant and non-immigrant mothers should be parallel in the years prior to the policy change. That is, the additional effect of the policy on the probability of employment for immigrant women with young children should be statistically insignificant for the period 1983 to 1991. To show this, we run the following variation of equation (1):

$$Y_{i,t} = \beta_0 + \beta_1 q^I + \beta_2 q_c + \beta_3 * year_t + \beta_4 (q^I * q_c) + \beta_5 (q^I * year_t) + \beta_6 (q_c * year_t) + \beta_7 (q^I * q_c * year_t) + \varphi X_{i,t} + \gamma * year_t + \varepsilon_{i,t} \quad (3)$$

where the policy indicator variable is replaced with year dummies. We plot the coefficient on the interaction term β_7 in Figure 3. The pattern shows that the effect of the policy on the probability of employment is statistically insignificant for each year between 1983 to 1991, with the exception of 1987. Therefore, we argue that the common trend assumption is satisfied. Figure 3 also highlights that the effect of the policy increases over time, as we would expect.

Figure 1. 3: Common Trend Assumption



Note: Figure shows the effect of the policy on the probability of employment for immigrant women with young children.

Source: LAD data from 1983 to 1991 and 1996 to 2005.

1.4.2 Regression Results

The key coefficients for the main regression are presented in Column A of Table 1.3. The shift in immigration policy that occurred from 1992-1995 decreased the probability of employment for immigrant women with young children relative to the expected level – that is, relative to where they would be if the change in the motherhood gap for immigrant women after 1995 was equal to the change in the motherhood gap for non-immigrant women after 1995. Over this time frame, there was a general increase in the probability of employment for all mothers (the coefficient $\beta_5 > 0$) but the policy change slowed this increase for immigrant mothers relative to non-immigrant mothers. More specifically, the policy lowered the probability of employment for economic class and family class immigrants with young children by 4.8 and 2.4 percentage points respectively. The impact of the policy is even larger for women refugees and those in other immigrant classes, with an estimated reduction of 14 and 12 percentage points respectively. The coefficients are consistent with the stated expectation that the policy shift reduced the network of family members available to aid young mothers with childcare responsibilities. The lower response for economic class immigrants versus

refugees may reflect a more inelastic labour supply of economic class immigrants relative to the other immigrant women, as economic class immigrants are admitted based on high probability of success in the labour market. They have higher employment rates, are more highly educated, and may endure a stronger career penalty if they take time away for childcare. Those who arrived under the family class would, by definition, have (had) family members already residing in Canada and so would be less likely to be affected by the policy. The opposite is likely to be true for women who immigrate as refugees. Since refugees are admitted based on purely humanitarian reasons, they are not necessarily well prepared for the Canadian labour market. The opportunity cost for non-employment for these women with young children may be lower compared to economic class immigrants, and they are expected to have a more elastic labour supply.

In Column B of Table 1.3 we present the coefficients (as relative risk ratios) for the MNL regression on high or low employment income (relative to zero employment income). For women with young children who immigrated as refugees or other classes, the policy shift caused a reduction in both low- and high-income employment, relative to the comparison group. Following the policy, refugee women with young children were 49 percent less likely to earn a relatively high income (associated with the FYFT average) and 36 percent less likely to earn a relatively low income, than would have been expected in the absence of the policy. For the economic and family class immigrants, there was an increase in part-time/part-year employment (i.e. earnings that are less than the FYFT average for their province) and a decline in high income employment. For these women, the policy reduced the labour supply of immigrant mothers of young children on both the intensive and extensive margins.

Table 1. 3: Triple Difference. Probability of Positive Employment Income.

	(A) Full Sample	Low Income	(B) High Income
Immigrant groups X mothers X policy (Omitted: non-immigrants and non-mothers)			
Economic Class X Policy X Mother	-0.0478*** (0.0041)	1.1804*** (0.0405)	0.9738* (0.0361)
Family Class X Policy X Mother	-0.0241*** (0.0022)	1.1053*** (0.0152)	0.9899 (0.0176)
Refugee Class X Policy X Mother	-0.1379*** (0.0040)	0.6418*** (0.0156)	0.5279*** (0.0167)
Other X Policy X Mother	-0.1149*** (0.0115)	0.5906*** (0.0403)	0.7014*** (0.0619)
Sample Size	97,354,650	97,354,650	97,354,650

Note: Coefficients for the triple difference interaction term, Equation (1). All regressions include controls for immigrant groups (economic, family, refugee, and other immigrant class), post-1995, immigration groups X Post-1995, mothers, immigration groups X mother, Policy X mothers, age groups (20-24 years, 25-29 years, 30-34 years, 35-34 years, 35-39 years, 40-44 years, 45-49 years, and 50-54 years), marital status, the total number of children, Area size, family size and province of residence.

1.4.3 Heterogeneity

If market-provided childcare is a substitute for family-provided childcare, we might expect that the presence of family in close proximity would be less relevant for labour market decisions in regions where childcare is lower priced and available. However, one may argue that while family-provided *childcare* is a substitute for market provided childcare, family *proximity* is a complement. The use of market-provided childcare requires ‘backup plans’ for unexpected situations such as illness, work schedule issues, work-related travel, etc. Having family in close proximity provides insurance for such situations, and thus family proximity may increase the ease of using market-provided childcare. In 1997, Quebec introduced the universal provision of \$5/day childcare. Numerous papers have shown that the policy increased the labour force participation of women in Quebec (see for example Lefebvre and Merrigan (2008)). If the 1995 immigration policy reduced the availability of family in close proximity,

there is an ambiguous a priori effect of both policies in tandem on the labour force outcomes of immigrant women in Quebec. Mothers of young children in Quebec may be less likely to rely on family to provide childcare, but may still require family proximity as insurance, especially in cases where the mothers do not have flexibility in their work schedules. To investigate this further, we split the sample into two groups – Quebec and the Rest of Canada (ROC).¹⁸ The first panel of Table 1.4 indicates that after 1995 in Quebec, the motherhood gap for economic class immigrants fell (i.e. the coefficient is positive) relative to the motherhood gap of non-immigrants. For this group of women with strong labour market skills, the positive labour force effect of the childcare policy dominates the negative labour force effect of the immigration/family proximity policy. However, for the other immigration classes, the negative effect of the immigration policy dominates the positive effect of the childcare policy. It is possible that those women who arrived as family, refugee or other categories may have less flexibility in their employment schedules, so that family proximity insurance is more important to enter the labour market.

We next separate those immigrants who arrived in Canada as children (under the age of 18 at the time of arrival) and those who arrived as adults. We expect that the effect of the policy on the proximity of family will be lower for those who arrived as children. This is confirmed in panel (B) of Table 1.4.

¹⁸ The Rest of Canada (ROC) sample includes all other provinces except Quebec.

Table 1. 4: OLS Coefficients, Probability of Positive Employment Income. Triple Difference

	(A)	
	Quebec	Rest of Canada
Immigrant groups X mothers X policy (Omitted: non-immigrants and non-mothers)		
Economic Class X Policy X Mother	0.0807*** (0.0051)	-0.0370*** (0.0041)
Family Class X Policy X Mother	-0.0542*** (0.0062)	-0.0033 (0.0023)
Refugee Class X Policy X Mother	-0.1942*** (0.0106)	-0.1130*** (0.0042)
Other X Policy X Mother	-0.1503*** (0.0237)	-0.1132*** (0.0105)
Sample Size	25,089,595	72,265,055
	(B)	
	Child Immigrant	Adult Immigrant
Immigrant groups X mothers X policy (Omitted: non-immigrants and non-mothers)		
Economic Class X Policy X Mother	0.1822** (0.0877)	-0.0481*** (0.0041)
Family Class X Policy X Mother	0.0366* (0.0188)	-0.0305*** (0.0023)
Refugee Class X Policy X Mother	-0.1148*** (0.0228)	-0.1415*** (0.0042)
Other X Policy X Mother	-0.0030 (0.1254)	-0.1119*** (0.0117)
Sample size	404,550	96,950,100
	(C)	
	Young	Old
Immigrant groups X mothers X policy (Omitted: non-immigrants and non-mothers)		
Economic Class X Policy X Mother	-0.0559*** (0.0044)	-0.0130 (0.0133)
Family Class X Policy X Mother	-0.0392*** (0.0024)	0.0081 (0.0082)
Refugee Class X Policy X Mother	-0.1479*** (0.0043)	-0.0777*** (0.0150)
Other X Policy X Mother	-0.0971*** (0.0123)	-0.1501*** (0.0438)
Sample size	58,645,395	38,709,255

Finally, we split the sample into older (aged 40-54) and younger (aged 20-39) women, with the hypothesis that family proximity may be more important to the younger cohort. Younger mothers may have lower opportunity cost of exiting the labour force in order to care for children; older mothers may have more established social networks on whom to rely. Panel (C) of Table 1.4 shows the results for the two sub-samples and shows that the coefficients for older women in both the family and economic classes are insignificant but remain negative for the younger women. The coefficients are negative for both groups of refugees, but larger in magnitude for the younger cohort.

Overall, the result of the subsample analysis is consistent with our hypothesis that the mechanism through which the policy change impacted labour supply is through proximity of family, and the relationship between proximity and childcare availability.

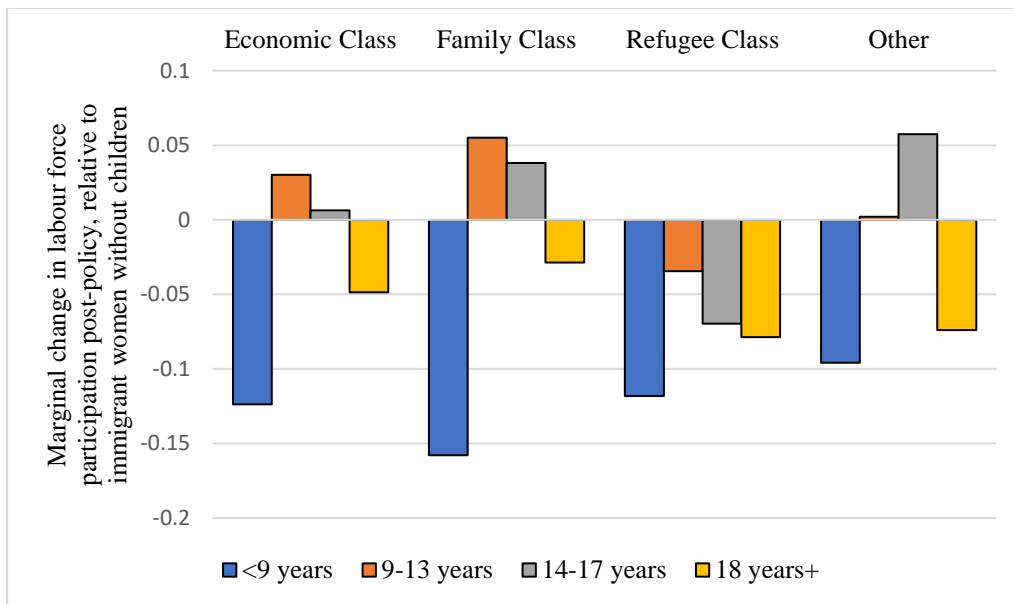
1.4.4 Differences by Education

Following the work of Arpino et al. (2012), who find that grandparent childcare has a lower effect on the labour force status of highly educated women compared to those with a low level of education, we hypothesize that the impact of the policy shift will be largest for those women with the highest opportunity cost of exiting the workforce. We next limit the sample to immigrants only and estimate differential changes in the motherhood gap pre- and post- policy, by education. Figure 1.4 shows graphically the marginal effect of the policy on immigrant women with young children (compared to immigrant women without young children) by immigrant class and education.¹⁹ We observe an inverted U-shape pattern across education categories. The impact of the policy is strongest for those with the lowest education levels. It is likely that the labour supply elasticity is higher for these women, relative to women with higher education, and so they are more likely to exit the labour force when faced with childcare

¹⁹ Regression results are available in Appendix Table 1.5.

difficulties. Contrary to expectations, those with high levels of education are also more negatively impacted by the policy. It may be that these women also have relatively high labour force supply elasticities due to a positive correlation between spouses' education and thus higher household income. Further research is necessary to better understand this relationship.

Figure 1. 4: Marginal Effect of Policy on Labour Force Participation of Immigrant Mothers with Young Children, Relative to Immigrant Mothers Without Young Children.



Note: from linear probability regressions on the probability of earning non-zero employment income, run separately on each of the four immigrant classes. Controls include an indicator for post-policy, education groups, mother, interactions of these three variables, age groups (20-24 years, 25-29 years, 30-34 years, 35-34 years, 35-39 years, 40-44years, 45-49 years and 50-54 years), marital status, total number of children, Area size, family size, province of residence, region of origin, intended province of destination, immigrant intended occupation at landing, immigrant official language indicator, and immigrant status of spouse.

Source: Author's own computation using data from 1983 to 1994 and 1996 to 2005 Longitudinal Administrative Database (LAD)

1.5 Conclusion

This paper employed the Longitudinal Administrative Database (LAD) and a triple difference identification strategy to examine how a change in Canadian immigration policy that reduced family reunification immigration altered the labour market attachment of immigrant women with young children. The policy change that prioritizes economic immigration has altered the composition and performance of immigrants in the Canadian labour market. However, the indirect contribution that other family members make to the Canadian economy has been largely ignored.

Our paper helps to fill this gap. We estimate the effect of the policy on the motherhood gap for immigrant women compared to non-immigrant women. Our results are consistent with our hypothesis that (i) the policy change reduced the proximity of immigrant women and family members, (ii) proximity of family members increase the availability of childcare, and therefore (iii) a reduction in family immigration may lower employment rates among immigrant women with young children. Regression results indicate that following the policy change, the motherhood gap among immigrant women was larger than expected, relative to the motherhood gap for non-immigrants.

Heterogeneity results strengthen the hypothesis that family proximity impacts labour supply of immigrant women. The policy effect is weaker for immigrants least likely to be reliant on new immigrant family members for care transfers – those who arrived as children and older immigrants. For economic immigrants, the policy effect is also weaker in Quebec, where formal childcare affordability was greatly increased during this time period. We also find that the negative impact of the policy is strongest for immigrants with highest and lowest education, however we are unable to identify the mechanisms driving this pattern with the limited demographic information available in the data. Further research focusing on the indirect

labour force supply of immigrants may help identify the demographic groups most reliant on family support.

Policy makers are increasingly aware of the many faceted determinants of women's labour supply. For immigrant women with young children, success in the labour market requires not only marketable skills and language proficiency but also a reliable care structure on which they can rely. Our results suggest that family immigration provides a spillover benefit to immigrants already in residence, and this should be included in cost-benefit analysis of immigration. A focus only on the direct labour market outcomes of the immigrants themselves undervalues the contributions made by (mostly women) immigrants who enable the LFP of others. A less individual approach to the cost-benefit analysis is warranted.

References

- Aassve, A., Arpino, B., & Goisis, A. (2012). Grandparenting and mothers' labour force participation: A comparative analysis using the generations and gender survey. *Demographic Research*, 27, 53–84.
- Adserà, A., & Ferrer, A. (2016). Occupational skills and labour market progression of married immigrant women in Canada. *Labour Economics*, 39, 88–98.
- Aragao, C., & Villanueva, A. (2021). How do mothers work? Kin coresidence and mothers' work in Latin America. *Demographic Research*, 45, 917–956.
- Arpino, B., Pronzato, C., & Tavares, L. P. (2012). *Mothers' labour market participation: Do grandparents make it easier?* IZA Discussion Papers, No. 7065, Institute for the Study of Labour (IZA), Bonn
- Bevelander, P., & Groeneveld, S. (2006). Patterns of transition: Female native Dutch and ethnic minority employment patterns in the Dutch labour market, 1991 and 2002. *Journal of Ethnic and Migration Studies*, 32(5), 785–807.
- Bevelander, P., & Groeneveld, S. (2012). How many hours do you have to work to be integrated? Full-time and part-time employment of native and ethnic minority women in the Netherlands. *International Migration*, 50, e117–e131.
- Blau, F. D. (2015). Immigrants and gender roles: Assimilation vs. culture. *IZA Journal of Migration*, 4(1), 1–21.
- Blau, F. D., Kahn, L. M., Liu, A. Y.-H., & Papps, K. L. (2013). The transmission of women's fertility, human capital, and work orientation across immigrant generations. *Journal of Population Economics*, 26(2), 405–435.
- Blau, F. D., Kahn, L. M., & Papps, K. L. (2011). Gender, source country characteristics, and labour market assimilation among immigrants. *The Review of Economics and Statistics*, 93(1), 43–58.
- Bratti, M., Frattini, T., & Scervini, F. (2016). Grandparental availability for child care and maternal employment: Pension reform evidence from Italy. *Centro Studi Luca d'Agliano Development Studies Working Paper*, 391.

- Compton, J. (2015). Family proximity and the labour force status of women in Canada. *Review of Economics of the Household*, 13(2), 323–358.
- Compton, J., & Pollak, R. A. (2014). Family proximity, childcare, and women's labour force attachment. *Journal of Urban Economics*, 79, 72–90.
- Drobnic, S., Bloosfeld, H.-P., & Rohwer, G. (1999). Dynamics of Women's Employment Patterns over the Family Life Course: A Comparison of the United States and Germany. *Journal of Marriage and Family*, 61(1), 133–146.
<https://doi.org/10.2307/353889>
- Du, F., Dong, X., & Zhang, Y. (2019). Grandparent-provided childcare and labour force participation of mothers with preschool children in urban China. *China Population and Development Studies*, 2(4), 347–368.
- Fernández, R., & Fogli, A. (2009). Culture: An empirical investigation of beliefs, work, and fertility. *American Economic Journal: Macroeconomics*, 1(1), 146–177.
- Frank, K., & Hou, F. (2016). Beyond culture: Source country female labour force participation and the earnings of immigrant women. *Work, Employment and Society*, 30(3), 410–435.
- García-Morán, E., & Kuehn, Z. (2017). With strings attached: Grandparent-provided child care and female labour market outcomes. *Review of Economic Dynamics*, 23, 80–98. <https://doi.org/10.1016/j.red.2016.09.004>
- Green, A. G., & Green, D. (2004). The goals of Canada's immigration policy: A historical perspective. *Canadian Journal of Urban Research*, 102–139.
- Hardoy, I., & Schøne, P. (2010). Incentives to work? The impact of a 'Cash-for-Care' benefit for immigrant and native mothers labour market participation. *Labour Economics*, 17(6), 963–974.
- Hawkins, F. (1991). *Critical years in immigration: Canada and Australia compared*. McGill-Queen's Press-MQUP.
- Hawthorne, L. (2008). The impact of economic selection policy on labour market outcomes for degree-qualified migrants in Canada and Australia. IRPP.

- Holland, J. A., & de Valk, H. A. G. (2017). Differences in labour force participation by motherhood status among second-generation Turkish and majority women across Europe. *Population Studies*, 71(3), 363–378.
<https://doi.org/10.1080/00324728.2017.1319495>
- Ho, C. (2015). Grandchild care, intergenerational transfers, and grandparents' labour supply. *Review of Economics of the Household*, 13(2), 359–384. <https://doi.org/10.1007/s11150-013-9221-x>
- Hou, F., & Frank, K. (2015). *Source-country female labour force participation and the wages of immigrant women in Canada*. Statistics Canada, Analytical Studies Branch.
- Hynes, K., & Clarkberg, M. (2005). Women's employment patterns during early parenthood: A group-based trajectory analysis. *Journal of Marriage and Family*, 67(1), 222–239. <https://doi.org/10.1111/j.0022-2445.2005.00017.x>
- Immigration, Refugees and Citizenship Canada (2016). *Permanent Residents – Ad Hoc IRCC (Specialized Datasets)—Open Government Portal*. Retrieved August 12, 2021, from <https://open.canada.ca/data/en/dataset/ad975a26-df23-456a-8ada-756191a23695>
- Johnston, D. W., Schurer, S., & Shields, M. A. (2014). Maternal gender role attitudes, human capital investment, and labour supply of sons and daughters. *Oxford Economic Papers*, 66(3), 631–659. <https://doi.org/10.1093/oenp/gpt039>
- Joshil, H., Macran, S., & Dex, S. (1996). Employment after childbearing and women's subsequent labour force participation: Evidence from the British 1958 birth cohort. *Journal of Population Economics*, 9(3), 325–348.
<https://doi.org/10.1007/BF00176691>
- Kanji, S. (2018). Grandparent care: A key factor in mothers' labour force participation in the UK. *Journal of Social Policy*, 47(3), 523–542.
- Kelley, N., & Trebilcock, M. J. (1998). *The making of the mosaic: A history of Canadian immigration policy*. University of Toronto Press.
- Khoudja, Y., & Fleischmann, F. (2017). Labour force participation of immigrant women in the Netherlands: Do traditional partners hold them back? *International Migration Review*, 51(2), 506–541.

- Khoudja, Y., & Platt, L. (2018). Labour market entries and exits of women from different origin countries in the UK. *Social Science Research*, *69*, 1–18.
<https://doi.org/10.1016/j.ssresearch.2017.10.003>
- Kil, T., Neels, K., Wood, J., & De Valk, H. A. G. (2018). Employment After Parenthood: Women of Migrant Origin and Natives Compared. *European Journal of Population*, *34*(3), 413–440. <https://doi.org/10.1007/s10680-017-9431-7>
- Kolodinsky, J., & Shirey, L. (2000). The impact of living with an elder parent on adult daughter's labour supply and hours of work. *Journal of Family and Economic Issues*, *21*(2), 149–175.
- Muchomba, F. M., Jiang, N., & Kaushal, N. (2020). Culture, labour supply, and fertility across immigrant generations in the United States. *Feminist Economics*, *26*(1), 154–178.
- Neborak, J. (2013). Family Reunification? A Critical Analysis of Citizenship and Immigration Canada's 2013 Reforms to the Family Class. Ryerson centre for immigration and settlement.
- Ogawa, N., & Ermisch, J. F. (1996). Family structure, home time demands, and the employment patterns of Japanese married women. *Journal of Labour Economics*, *14*(4), 677–702.
- Oishi, A. S., & Oshio, T. (2004). *Coresidence with parents and a wife's decision to work in Japan*. Institute of Economic Research, Hitotsubashi University.
- Posadas, J., & Vidal-Fernandez, M. (2013). Grandparents' childcare and female labour force participation. *IZA Journal of Labour Policy*, *2*(1), 1–20.
- Rendall, M. S., Tsang, F., Rubin, J. K., Rabinovich, L., & Janta, B. (2010). Contrasting trajectories of labour-market integration between migrant women in Western and Southern Europe. *European Journal of Population/Revue Européenne de Démographie*, *26*(4), 383–410.
- Richardson, S., Lester, L. H., & Richardson, S. (2004). *A comparison of Australian and Canadian immigration policies and labour market outcomes*. Citeseer.
- Shen, K., Yan, P., & Zeng, Y. (2016). Coresidence with elderly parents and female labour supply in China. *Demographic Research*, *35*, 645–670.

Sweetman, A., & Warman, C. (2013). Canada's Immigration Selection System and Labour Market Outcomes. *Canadian Public Policy*, 39(Supplement 1), S141–S164.
<https://doi.org/10.3138/CP.39.Supplement1.S141>

Triadafilopoulos, T. (2013). Dismantling white Canada: Race, rights, and the origins of the points system. In *Wanted and Welcome?* (pp. 15–37). Springer.

Vidal-Coso, E. (2019). Female employment following childbirth: Differences between native and immigrant women in Switzerland. *Journal of Ethnic and Migration Studies*, 45(9), 1667–1692. <https://doi.org/10.1080/1369183X.2018.1444983>

Appendix A

Appendix Table 1.1: Major Canadian Immigration Regulations 1869 to 1995

Year	Regulations
1869	The act was to encourage open immigration in the West for the sole purpose of seeking access to the regions natural resources and creating a market for manufactured goods while protecting immigrants during passage and exploitation when they arrive in Canada
1906	The act was a more restrictive immigration policy, that was enacted to admit immigrants based on their cultural and ethnic origins rather than their economic potentials.
1910	The act was established to admit immigrants as farmers, farmworkers, and domestic workers from traditional source countries (Britain, the United States, and Northwestern Europe).
1919	The immigration act was amended due to the high unemployment and the widespread communism that followed the first world war.
1952	The new act was established to strengthen the authority of the federal cabinet and to invest new powers in the minister of citizenship and immigration
Oct 1967	The Point system was established using the order-in-council. The new regulation was established to reduce the discretionary powers of immigration officials. Immigrants were given a score based on education and training, personal character, occupational demand; occupational skill, age, pre-arranged employment, knowledge of French and English, the presence of a relative in Canada and employment opportunities at the intended place of destination
1976	The new act was the first policy that clearly states the objectives of Canadian immigration policy and plans for future immigration. The main objectives outlined include family reunification, inclusive immigration, humanitarian motives, and Canada's economic, social, and cultural goals(Hawkins 1991). The act recognized three classes of immigrant groups namely independent class, family, and the refugee class. The act came into force in April 1978
1992	A major change was made to the family class, where sponsored children were restricted to children under 19 years (previously of any age which came to effect in 1988)
Jan 1993	The existing regulation was amended by canceling the sponsorship programs for assisted relatives and reduced points allocated to family members who are not directly related to the immigrant
Fall 1994	A new announcement was made regarding lowering immigration and shifting away from family reunification.
November 1995	A new immigration policy framework was introduced by the liberals in a document named "Into the 21 st Century: A Strategy for Immigration and Citizenship. In the document, the immigration levels were set at 1 percent of the total population in Canada. A clear objective of maintaining equality of the family and the economic class. The policy proposes placing family class (excluding spouses and dependent children) under a different category and allocating limits to the number of immigrants who will be admitted under that category. A new form of the point system was also established.

Source: Authors own compilation using information from Kelley & Trebilcock(1998); Canadian council of refugees, Canadian Museum of Immigration at Pier 21; Green and Green(2004); Hawkins(1991); Triadafilopoulos (2013) and Neborak (2013).

Appendix Table 1.2: Summary Statistics, LAD Sample.

	Immigrants		Non-immigrants	
	Without young children	With young children	Without young children	With young children
Probability of employment				
Positive Employment Income	74.7	62.8	82.5	69.4
Type of employment				
Zero	25.8	37.6	17.9	31.0
Low Income	43.9	42.8	38.5	40.7
High Income	30.4	19.6	43.6	28.3
Age group				
20 to 24 years	12.7	7.6	14.6	12.0
25 to 29 years	11.9	21.7	11.2	26.7
30 to 34 years	12.2	32.6	10.0	32.0
35 to 39 years	16.2	25.5	14.1	20.9
40 to 44 years	19.3	10.4	17.8	6.9
45 to 49 years	16.5	1.9	17.0	1.3
50 to 54 years	11.2	0.2	15.3	0.3
Marital Status				
Single	28.1	9.6	29.8	13.4
married/common law	59.4	81.1	54.8	75.8
Divorced	4.5	2.2	7.0	3.4
Separated	6.1	6.3	6.3	6.7
Widowed	1.8	0.7	2.0	0.8
Area size code				
Rural (less than 1,000)	85.3	84.1	47.1	41.3
Urban (1,000 – 14,999)	9.0	9.5	17.5	17.2
Urban (15,000 – 29,999)	1.8	2.0	8.1	8.6
Urban (30,000 – 99,999)	0.7	0.8	3.7	4.0
Urban (100,000 – 499,999)	2.7	3.0	18.8	22.1
Urban (500,000+)	0.5	0.6	4.8	6.8

Con't

Province of residence				
NFLD	0.1	0.1	2.0	2.3
PEI	0.0	0.0	0.5	0.5
NS	0.6	0.5	3.4	3.5
NB	0.2	0.3	2.8	2.9
QC	13.6	15.8	26.6	25.1
ON	55.1	56.3	36.1	35.6
MB	2.1	2.3	3.8	4.3
SK	0.7	0.8	3.2	4.1
AB	8.2	8.3	9.8	10.6
BC	19.4	15.6	12.0	11.0
Sample Size		154,675,325		
	12,833,565		141,841,760	
Women with/without Children	68.0	32.0	75.8	24.3

Source: Longitudinal Administrative Databank. 1983-2005.

Appendix Table 1.3: Summary Statistics, IMDB Sample

		Immigrant Women Aged 20- 54	
		Without young children	With young children
Immigrant Class			
	Economic	18.2	12.4
	Family	62.7	68.0
	Refugee	14.7	15.6
	Other	4.3	3.9
Years of schooling, at landing			
	Less than 9 years	19.2	18.3
	9 to 13 years	46.6	48.2
	14 to 17 years	28.8	28.9
	Above 17 years	5.4	4.7
Intended occupation, at landing			
	Management	0.8	0.5
	Investor, Business, finance and administration	9.1	6.8
	Natural and applied sciences	3.7	2.7
	Health	2.9	2.4
	Education, law and social, community and government services	2.4	1.9
	Occupations in art, culture, recreation, and sport	1.5	1.0
	Sales and service	8.6	7.3
	Trades, transport, and equipment operators	2.0	2.1
	Natural resources and agriculture	0.3	0.3
	manufacturing and utilities	2.0	2.0
	Other	66.6	73.0

Con't

Region of birth			
	Northern America	3.0	3.0
	The Caribbean	13.3	15.5
	Northern Europe	4.2	3.5
	Western Europe	7.4	5.9
	Southern Europe	2.1	2.0
	Eastern Europe	9.9	6.6
	Africa	6.0	8.3
	South Asia	8.3	12.8
	Central Asia	6.4	7.7
	Southeast Asia	17.3	12.0
	East Asia	15.9	16.7
	West Asia	6.3	6.0
Official language indicator			
	English	51.6	49.2
	French	4.2	5.5
	English and French	4.2	3.8
	Neither	40.0	41.4

Source: Longitudinal Administrative Databank. 1983-2005.

Appendix Table 4: Variable definition

Variables	Definitions
Dependent Variables	
<i>Probability of earning positive employment income</i>	It measures the probability that the tax filer reported positive employment income at the end of the year. It is a dummy equal to 1 if the tax filer has positive employment income and 0 if otherwise.
<i>Probability of earning high, low or zero income</i>	It measures whether the tax filer has high, low or zero employment income at the end of the year. This is coded as 0 if the tax filer has no employment income, 1 if the employment income is less than the province's specified annual income cut-off and high income if otherwise. Proxy for whether the woman works FYFT or less.
Independent variables	
<i>Treatment</i>	These are treatment variables that indicate the type of group the tax filer belongs to based on their citizenship or their immigration category. These are four (4) dummies that are coded as 1 to represent the various immigrant's classes and 0 if the woman is non-immigrant.
<i>Policy</i>	This variable indicates the before and after the policy years. It is a dummy equal to 1 if the years are after the policy (1996 to 2005) and 0 if the years are 1983 to 1991.
<i>The mother of young children indicator</i>	It indicates if the tax filer has a child under 7 years old. It is a dummy equal to 1 if the individual has a child under 7 years and 0 if otherwise.

Con't

Control variables

A. Individual level information

<i>Age</i>	This is the age of the tax filer as at the 31st of the tax year. It is calculated by subtracting the year of birth from the tax year of the data. And it is coded as follows: 18-24=1; 25-29=2; 30-34=3; 35-39=4; 40-44=5; 45-49=6 and 50-54=7.
<i>Marital Status</i>	This indicates the marital status of the tax filer. It is coded as 1 if the tax filer is single; 2 if married\common law; 3 if divorced; 4 if separated and 5 if widowed.
<i>Area size</i>	It shows the area size of the location of the tax filer as of 31st December of the tax year, which is grouped based on specific urban or rural size. The groups include Urban area, population 500,000+ =1; Urban area, population 100,000–499,999=2; Urban area, population 30,000 – 99,999=3; Urban area, population 15,000–29,999=4; Urban area, population 1,000–14,999=5 and Rural area, population less than 1,000+=6.
<i>Family Size</i>	This measures the total size of the family by counting the number of persons in the family. It is groups as 1= 5 or less; 2=6 to 10; 3=more than 10.
<i>Total number of children</i>	Measures the total number of children in a family. And a child is defined as someone who is single and living with one or both parents. This is grouped as 1 if the tax filer has 1 or 2 children; 2 if the total number of children is higher than 2 and 0 if the tax filer has no child.
<i>Province of residence</i>	This indicates the province of residence of the tax filer as of December 31st of the tax year. It is coded as follow; Newfoundland and Labrador=1; Prince Edward Island=2; Nova Scotia=3; New Brunswick=4; Quebec=5; Ontario=6; Manitoba=7; Saskatchewan=8; Alberta=9 and British Columbia=10.
<i>Language spoken in Canada</i>	It is the language on the tax form that the tax filer submits. It is used as a proxy for the language spoken in Canada. It is coded as 1 when the person speaks English and 0 if French.
<i>Individual status</i>	This measures whether the tax filer has an immigrant spouse, non-immigrant spouse, non-married immigrant, or non-immigrant.

Con't

B. Immigrant subsample information

<i>Intended Place of destination</i>	It indicates the individual place of intended place of destination at the time of landing. It is coded as follows: Newfoundland=1; Prince Edward Island=2; Nova Scotia=3; New Brunswick=4; Quebec=5; Ontario=6; Manitoba=7; Saskatchewan=8; Alberta=9 and British Columbia=10
<i>Region of Birth</i>	It measures the region of birth of the immigrant. Using country of birth, the groupings include Northern America=1; The Caribbean, Central and Southern America =2; Northern Europe=3; Western Europe=4; Southern Europe=5; Eastern Europe=6; Africa=7; South Asia=8; Central Asia=9; Southeast Asia=10 East Asia=11; West Asia=12 and Oceania=13
<i>Years of Schooling</i>	It indicates the number of formal schoolings successfully completed at landing by immigrants. Coded as less than 9 years =1; completed 9 to 16 years of education=2; completed 14 to 17 years of schooling=3 and more than 18 years of education=4.
<i>Landing Year</i>	Year of arrival
<i>Occupation at landing</i>	It indicates the intended occupation at the time of landing. It is grouped as follows: Management occupations=1; Investor, Business, finance and administration occupations=2; Natural and applied sciences and related occupations=3; Health occupations=4; occupation in education, law and social, community and government services=5; Occupations in art, culture, recreation and sport=6; Sales and service occupations=7; Trades, transport and equipment operators and related occupations=8; Natural resources, agriculture and related production occupation=9 Occupations in manufacturing and utilities=10 and other=11.
<i>Language at landing</i>	It identifies the immigrants self-reported knowledge of Canadian's official language at immigration. Codes as 1 if the person reported English, 2 if French, 3 if both English and French and 4 if Neither.

Source: Author's own compilation using information from Statistics Canada LAD technical report

Appendix Table 1.5: Regression Results. Immigrant Sample, by Education.

	Immigrant Class			
	Economic	Family	Refugee	Other
Post Policy Indicator	-0.1258*** (0.0074)	-0.1588*** (0.0032)	-0.1933*** (0.0058)	-0.1613*** (0.0158)
Young children	-0.1237*** (0.0122)	-0.1578*** (0.0047)	-0.1182*** (0.0061)	-0.0958*** (0.0239)
Policy X Young Children	-0.0350** (0.0159)	0.0616*** (0.0051)	-0.0413*** (0.0070)	-0.0229 (0.0251)
Education (Base: Less than 9 years)				
9-13 years	0.0161*** (0.0056)	-0.0172*** (0.0029)	0.0139*** (0.0051)	-0.0373** (0.0159)
14-17 years	-0.0032 (0.0060)	-0.0484*** (0.0037)	0.0080 (0.0064)	0.0144 (0.0192)
18+ Years	-0.0026 (0.0075)	-0.0855*** (0.0069)	-0.0024 (0.0121)	-0.1771*** (0.0435)
9-13 years X Policy	0.0332*** (0.0072)	0.0070** (0.0031)	0.0116** (0.0055)	0.0236 (0.0165)
14-17 years X Policy	0.0571*** (0.0074)	0.0240*** (0.0038)	0.0468*** (0.0067)	-0.0318 (0.0199)
18+ Years X policy	0.0459*** (0.0088)	0.0456*** (0.0072)	0.0728*** (0.0130)	0.1764*** (0.0446)
9-13 years X Young Children	-0.0066 (0.0132)	0.0069 (0.0054)	-0.0051 (0.0080)	-0.0037 (0.0281)
14-17 years X Young Children	0.0452*** (0.0137)	0.0226*** (0.0064)	0.0121 (0.0106)	0.0391 (0.0346)
18+ Years X Young Children	0.1243*** (0.0168)	0.0865*** (0.0113)	0.0609*** (0.0235)	0.0263 (0.0908)
9-13 years X Young Children X Policy	0.0652*** (0.0169)	-0.0064 (0.0059)	0.0069 (0.0092)	0.0249 (0.0295)
14-17 years X Young Children X Policy	0.0420** (0.0172)	-0.0335*** (0.0069)	0.0057 (0.0121)	-0.0019 (0.0362)
18+ Years X Young Children X Policy	-0.0137 (0.0204)	-0.0903*** (0.0122)	-0.0373 (0.0268)	-0.0511 (0.0934)
Observations	325720	1272985	286030	87435
R-squared	0.1660	0.1529	0.2046	0.1549
Year FE	YES	YES	YES	YES
Province FE	YES	YES	YES	YES

Note: Longitudinal Administrative Database (LAD) 1983 to 1994 and 1996 to 2005. Immigrant Women aged 20-54, IMDB Sample.

All regressions include age groups (20-24 years, 25-29 years, 30-34 years, 35-34 years, 35-39 years, 40-44years, 45-49 years and 50-54 years), marital status, the total number of children, Area size, family size. province of residence, region of origin, intended province of destination, immigrant status of spouse, and occupation at landing.

2. Internal Migration and Economic Outcomes: Evidence Among Young Adult Immigrants

2.1 Introduction

According to data from the Longitudinal Immigration Database (IMDB), 64.6 percent of immigrants between the ages of 18 and 64 years in Canada engaged in internal migration from 1982 to 2019. This trend has prompted the development of immigration programs aimed at strategically redistributing immigrants across the country (Immigration, 2020)²⁰. Thus, investigating internal migration and economic outcomes for immigrants in Canada becomes imperative to understand the implications of these relocation choices. In this paper, I investigate the influence of childhood internal migration on economic outcomes during early adulthood. Previous studies have typically concentrated on the short-term effects of internal migration on children. However, this study employs the Longitudinal Immigration Database (IMDB) to explore the long-term impact of internal migration on children. The results indicate a statistically significant, potentially adverse impact on young adult immigrants.

Several studies focus solely on the short-term impacts of internal migration on children, disregarding potential long-term effects. For instance, previous research has analyzed how internal migration influences children's health outcomes (Deb and Seck 2009; Fellmeth et al. 2018; Racaite et al. 2019; Wang and Mesman 2015; Xu et al. 2018). Similarly, other studies have investigated the effects of internal migration on children's educational outcomes (Lee and Park 2010; Liang, Guo, and Duan 2008; Xu et al. 2018; Zhou, Murphy, and Tao 2014). However, these studies only address the immediate impact of parental migration on children's health and education, overlooking the potential long-term impact as these children mature into adults. Given that research has established a correlation between education, health, and poverty

²⁰Examples of immigration programs implemented to achieve a balanced distribution of immigrants across Canada include the Provincial Nominee Program, the Atlantic Immigration Program, and the Rural and Northern Immigration Pilot (Immigration 2020).

(Arsani, Ario, and Ramadhan 2020; Hofmarcher 2021; Mihai, Țițan, and Manea 2015), this study seeks to examine whether parental internal migration has a long-term effect on the economic outcomes of children. To the best of my knowledge, the migration literature has not explored the long-term effects of internal migration.

The IMDB contains administrative records of all immigrants who have arrived in Canada since 1952. However, information about immigrant individuals who are not permanent residents is only accessible from 1980 onward. The IMDB is linked to immigrants' tax files starting from 1982.

To examine the long-term effect of internal migration on economic outcomes, I employ the Heckman two-stage selection model and a linear probability model. I first estimate the impact of internal migration on the economic outcomes for young adults without considering their parent's program of entry. The results clearly indicate a long run negative effect of childhood migration on economic outcomes. In particular, compared to no parental migration, parental internal migration leads to a 2.8 percent decrease in employment earnings and a 1.7 percent increase in the probability of low-income status. And the effect is larger for those whose parents engage in interprovincial migration and more than two internal migrations.

The estimates by program of entry show that internal migration has a large negative effect on young adults whose parent's program of entry is refugee. In particular, compared to economic immigrants, any type of migration reduces employment earnings by an additional 8.9 percentage change and raises the probability of low-income status by an additional 3.5 percentage points for young adults whose parent's program of entry is refugee. Similarly, intraprovincial migration results in an 8.7 percent decrease in employment earnings and a 3.6 percent increase in the probability of low-income status for refugees when compared to economic immigrants.

I estimate the impact of internal migration on employment earnings for young adults by possible mediators. The findings reveal that parental internal migration increases employment earnings for female young adults in comparison to their male counterparts. The estimates by program of entry show that parental internal migration only has an effect on females whose parent's program of entry is family class. The estimates of the impact of internal migration on employment earnings by sibling and sports were not statistically significant. This implies that the presence of a sibling or involvement in sports might not mediate the impact of internal migration on the economic outcomes of immigrant young adults.

Finally, I examine the influence of age on the relationship between internal migration and economic outcomes. The results indicate that the age of young adults at the time of migration impacts their employment earnings. In particular, internal migration leads to a 3.2 percentage change decrease in employment earnings for young adults whose parents engaged in internal migration when they were under the age of 13 years, as compared to those whose parents did not engage in any internal migration. The findings related to age at the interprovincial or intraprovincial migration indicator and age at the frequency of migration reveal a similar pattern, showing a higher negative effect of migration on young adults whose parents engaged in interprovincial migration or more than two intraprovincial migrations when the young adults were under the age of 13 years.

The findings of this paper offer valuable insights for immigrants and policymakers responsible for formulating strategies to encourage immigrants to remain in their initially chosen destination province. It informs individuals that internal migration can have short-term impacts on children, influencing their health, education, and eventually, their long-term effects on economic outcomes. Policymakers may use these insights to refine existing policies and formulate new ones that promote immigrant's retention in their initial destination province.

The rest of this chapter is organized as follows: Section 2.2 presents a review of the relevant literature on the impact of internal migration and changes in schools on children's outcomes. Section 2.3 outlines the data and summary statistics. Section 2.4 details the empirical approach and findings. Section 2.5 concludes.

2.2 Literature Review

2.2.1 Internal Migration and Children's Outcomes

Evidence suggests that internal migration can impact children, regardless of whether they migrate with their parents (migrant children) or are left behind. Studies have shown that internal migration affects the health outcomes of children. For instance, it negatively affects the emotional well-being of children left behind (Fellmeth et al. 2018; Hu, Lu, and Huang 2014; Lee and Park 2010; Wang and Mesman 2015; Xu et al. 2018), leading to reported episodes of illness and a higher risk of chronic and acute diseases (Deb and Seck 2009; Racaite et al. 2019).

Internal migration can also affect the weight and height of left-behind children, with lower weight and height for age z scores found in left-behind adolescents (Fellmeth et al. 2018).

However, some studies suggest that internal migration may have no effect on certain aspects of left-behind children's well-being. After controlling for child and school characteristics, no difference in emotional symptoms, conduct problems, and hyperactivity problems was observed between left-behind children and those whose parents did not migrate (Hu et al. 2014). Similarly, another study found no difference in unintentional injury, abuse, or diarrhea between left-behind children and non-migrant children (Fellmeth et al. 2018). Regarding migrant children, findings are mixed, showing that they may experience both positive and negative health outcomes compared to local children. Some studies indicate that migrant children enjoy better nutrition, growth, and overall health status (Cockx 2022; Xu and

Xie 2015) while others suggest that they may face issues such as loneliness, depression, and anxiety (Wang and Mesman 2015).

Additionally, internal migration can affect the educational performance of both migrants and left-behind children. It impacts enrollment rates, with migrant children less likely to be enrolled in school (Lee and Park 2010) and left-behind children showing reduced attachment to school (Xu et al. 2018). However, there are studies indicating a positive effect of internal migration on school enrollment for migrant children in Chinese cities, though they might be less likely to attend middle school compared to elementary school (Liang et al. 2008). Furthermore, internal migration has been associated with lower test scores in subjects like Chinese and mathematics (Hu 2013; Zhou et al. 2014), but some studies show higher cognitive ability test scores for migrant children compared to non-migrant children (Xu et al. 2018). Internal migration also affects the educational aspirations and school adaptation of children, with migrant children having lower educational aspirations (Xu et al. 2018) and poor school adaptation (Wang and Mesman 2015) compared to non-migrant children.

In summary, internal migration can have short-term significant implications for the health and educational outcomes of both migrants and left-behind children. Existing studies have produced mixed results on these effects. In this chapter, I contribute to the internal migration literature by investigating whether the immediate impacts of internal migration on children's outcomes can extend into the future, ultimately influencing the long-term economic outcomes of immigrant young adults.

2.2.2 Changes in School and Children's Outcomes

Internal migration leads to migrants settling in different areas, causing shifts in population distribution within a country. This affects schools in both the area of origin and destination, resulting in changes in student demographics and enrollment patterns. These

changes in schools have significant implications for children, impacting their education, emotional well-being, social life, and overall school climate.

The research presents a mixed picture, with varying findings on the impact of school changes on children's outcomes. Some studies indicate significant effects, while others show no significant impact.

Some studies found a positive effect of change in school on children's outcomes. For instance, changing schools across districts improved mathematics test scores for all demographic groups, except for blacks (Hanushek, Kain, and Rivkin 2004). Moreover, changes in schools resulted in a slight increase in children's attendance rates (Conger and Rebeck 2001). After controlling for student and family characteristics, Rumberger et al.(1999) found that students who changed schools between eighth and twelfth grades were more likely to complete high school.

However, the majority of studies found a negative effect of change in school on children's outcomes. Grigg (2012) showed that different types of student mobility had a negative association with reading and mathematics test scores. Burkam, Lee, and Dwyer (2009) focused on kindergarten-year school changes and found a negative effect on reading and mathematics development. Mehana and Reynolds (2004) show that changing schools was associated with negative reading test scores, even after controlling for academic and background characteristics. Mehana and Reynolds (2004) conducted a meta-analysis and discovered that school mobility between kindergarten and sixth grade resulted in lower levels of reading and math achievements, leading to a performance disadvantage of 3-4 months in reading and mathematics scores. Swanson and Schneider (1999) showed that students with a greater number of school changes before eighth grade were significantly more likely to leave school between the eighth and tenth grades compared to students who did not change schools. Lash and Kirkpatrick (1990) pointed out that students who change schools may experience

gaps in their education, leading to a lack of comprehensive understanding of their studies, sense of impermanence and restlessness. Dupere et al. (2015) found that school changes, along with family instability, can lead to social isolation and the formation of friendships with socially dysfunctional peers. Norford and Medway (2002) discovered that adolescents who frequently change schools and come from divorced families tend to have the lowest involvement in extracurricular activities. Fabian (2003) found evidence of mixed feelings among pupils who changed schools, particularly about missing their old friends, and adjusting to being the new person in the school.

On the other hand, some studies reported no significant effects of change in school on children outcomes. Hanushek et al. (2004) showed that changing schools within a district had no significant effect on mathematics test scores. Grigg (2012) found that between non-compulsory school changes had no statistically significant effects on reading test scores. Conger and Rebeck (2001) concluded that school changes had no effect on reading scores for children in foster care. Burkam et al. (2009) also reported no impact on cognitive development when changing schools during the first four years of schooling or between the end of first grade and the end of third grade.

The literature shows that school changes can arise due to internal migration, household instability, or job changes. In this paper, I am specifically focused on the effects of school changes resulting from internal migration. I aim to investigate whether school changes, which impact academic performance, emotional well-being, and social relationships, may have long-term implications for the economic outcomes of immigrant young adults.

2.3 Data Description and Summary Statistics

The data for the analysis are sourced from Statistics Canada's 2019 Longitudinal Immigration Database (IMDB). The IMDB comprises official immigration records for all immigrants since 1952 and non-permanent residents since 1980. However, the IMDB is linked

to immigrant's tax files starting from 1982. To construct a longitudinal dataset that tracks the economic trajectories of immigrant young adults aged 26 to 30, I employed the IMDB's core and children's modules. In the children's module, I retained the IMDB identifiers and relevant parent and children variables for the study.²¹ I used province of residence and postal code variables to create indicators for internal migration of parents. Subsequently, I merged the children's module with the core module using the IMDB identifiers and narrowed down the sample to immigrants aged 26 to 30 years. The final sample consists of young adults aged 26 to 30 who immigrated to Canada before turning 18. In this paper, my focus is on whether parents of young adults have engaged in internal migration and its subsequent impact on their children when they reach ages 26 to 30. To achieve this, I collapse the five years of data into a single indicator for each young adult. For the dependent variables, I use the five years of employment income and low-income status to create the average inflation adjusted employment income and the probability of low-income status, respectively. This captures the long-term employment and income status. As for the control variables, I use the last available data entry, typically available at age 30 for the majority of young adults (Böckerman et al., 2023).

The measures of parent's internal migration are any type of migration, an interprovincial or intraprovincial migration indicator, and frequency of migration. The independent variables for measuring economic outcomes are Average Inflation Adjusted Employment Earnings and Probability of Low-Income Status.²² The analysis includes a total sample of over 422,000 young adults, among which 49.1 percent have parents who engaged in Intraprovincial migration when they were children, and 7.7 percent engaged in Interprovincial

²¹ Ages 26 to 30 were chosen because individuals in this age range are more likely to have made significant life choices, such as completing their education, entering the workforce, and settling into a particular geographic location (Böckerman et al., 2023).

²² The Employment Earnings were adjusted for inflation using the 2019 CPI source from the World Bank's World Development Indicators (World Bank, 2023).

migration. The primary benefit of the IMDB is that it provides information on parents and young adults during childhood. However, the main issue with the IMDB is the lack of adequate demographic and educational information on young adults when they were children. To reduce this limitation, I control for child variables such as child landing year, landing age, sibling status, and siblings whose age is within 2 years. In addition, I include parental variables from when the young adults were children, such as their minimum and maximum employment income, program of entry indicator, immigrant status, Canadian reported official language, region of last permanent residence, years of schooling, origin, and destination province. Summary Statistics are provided in Appendix Table 2.1 and Appendix Table 2.2. I also control for young adult characteristics, including gender, family size, marital status, total number of children, children younger than 5 years indicator, and student status. Summary statistics for the young adult variables are provided in Appendix Table 2.3.

The IMDB has a measure of employment income, which includes wages, salaries, employment-based commissions, training stipends, tips, gratuities, self-employment earnings, Indian exempt employment earnings, and Indian exempt self-employment earnings. I used this variable to construct the first measure of economic outcomes. The first measure is a 5-year average of inflation-adjusted employment earnings.²³ I use the Low-Income Status measure from the IMDB to create the final measure of economic outcome.²⁴ The probability of low-income status, which is equal to 1 if the young adult has low-income status in any of the 5 years, and 0 otherwise.

The IMDB children module contains province of residence and postal code data for parents of the young adult. These variables were used to create three measures of internal

²³ For simplicity, the Inflation Adjusted Employment Earnings is referred to as employment earnings throughout the remainder of the paper.

²⁴ The Low-income variable identifies low-income young adults using a Low-Income Measure (LIM). The LIM threshold is determined by the adjustment of the young adult's total income for household size. Note that low-income status is determined using the total income of the young adults. See Statistics Canada for up-to-date LIM thresholds and family size (Government of Canada (2023)).

migration. The measures of internal migration include any type of migration, interprovincial or intraprovincial migration indicator, and frequency of migration. Any type of migration indicates whether the parent of a young adult engages in either internal migration (within-province and out-of-province) or no internal migration. It is equal to 1 if the young adult engages in within or out-of-province migration and 0 if otherwise. The next migration measure is the interprovincial or intraprovincial indicator, which measures whether the young adult's parents engaged in migration within the province or moved out of the province. It takes the value of 1 if the parent of the young adult engages in intraprovincial migration, 2 if interprovincial migration, and 0 if otherwise.²⁵ The final measure of migration is the frequency of migration, which determines whether the parent engage in one or two internal migrations or more than two internal migrations. A value of 1 indicates that the parent engages in one or two intraprovincial migration, 2 if more than two intraprovincial migration, 3 if one or two interprovincial migrations, 4 represents more than two interprovincial migrations and 0 if otherwise.²⁶

To examine the impact of children's age during migration on the relationship between internal migration and economic outcomes, I use the measures of migration to create three (3) age related migration variables. The first variable is age at any type of migration, which indicates whether internal migration took place during the young adult's teenage years. It is coded as 0 if no migration, 1 if the young adult's parent engaged in internal migration when the young adult was under 13 years old, and 2 if the parent engaged in internal migration when the young adult was 13 years or older. The second measure is the age at which interprovincial or intraprovincial migration occurred, indicating whether the parents of the young adult engaged in such migrations during the young adult's teenage years. It is coded as follows: 0 for no

²⁵ Intraprovincial migration includes all moves that take place within the same province, whether they involve movements between Census divisions, Census metropolitan areas (CMA), or Census subdivisions. The low sample size does not allow further groupings of internal migration.

²⁶ Variable definitions are shown on Appendix Table 2.4.

migration, 1 for intraprovincial migration when the young adult was under 13 years old, 2 for intraprovincial migration when the young adult was 13 years or older, 3 for interprovincial migration when the young adult was under 13 years old, and 4 for interprovincial migration when the young adult was 13 years or older. The last measure is age at frequency of migration, it indicates whether the parents engaged in either one or two internal migrations, or more than two internal migrations during the young adult's teenage years. It is coded as follows: 0 for no migration, 1 for one or two intraprovincial migrations when the young adult was under 13, 2 for one or two intraprovincial migrations when the young adult was 13 years or older, 3 for more than two intraprovincial migrations when the young adult was under 13, 4 for more than two intraprovincial migrations when the young adult was 13 years or older, 5 for one or two interprovincial migrations when the young adult was under 13 years, 6 for one or two interprovincial migrations when the young adult was 13 years or older, 7 for more than two interprovincial migrations when the young adult was under 13 years, and 8 for more than two interprovincial migrations when the young adult was 13 years or older.

2.4 Empirical Analysis

2.4.1 Empirical Strategy

The analysis is divided into three (3) parts. The first part estimates the impact of parental migration on economic outcomes without considering the parent's program of entry. The second part estimates the impact of parental migration on economic outcomes by program of entry. The last part considers possible mediators, such as sibling status, sport status, gender, and age in the relationship between internal migration and employment earnings.

The Heckman two-stage selection model is used to address selection bias that arises from individuals self-selecting into employment (Antonakis et al. 2010; Heckman 1979). Equation (1) below illustrates its application in estimating the impact of parental migration on employment earnings for young adults:

$$Y_i = X_i\ell + W_i\theta + R_i\sigma + intmig_i\beta_{1i} + \varepsilon_i \text{ if } s_i = 1 \quad (1)$$

$$y_i = 0 \text{ if } s_i = 0$$

$$\Pr(s_i) = z_i\gamma + v_i \quad s = (0,1) \text{ Selection Equation}$$

$$s_i = 1 \text{ if } z_i\gamma + v_i > 0$$

$$s_i = 0 \text{ if } z_i\gamma + v_i \leq 0$$

The outcome variable Y_i is log employment earnings. The measure of internal migration $intmig$ is either (1) any type of migration or (2) interprovincial or intraprovincial migration indicator or (3) frequency of migration. The vector of parent controls, denoted as X_i includes minimum and maximum employment, program of entry, Canadian reported official language, region of last place of permanent residence, years of schooling, origin, and destination region. The vector of children controls, represented as W_i includes landing year, landing age, sibling status and sibling whose age is 2 years or lower indicator. The vector of young adult controls, labeled as R_i includes gender, family size, marital status, total number of children and age dummies. The Heckman selection model is used to correct for sample selection bias, as employment earnings are only available for those who have positive employment income.

The selection equation is a probit model that determines whether the young adult selects into employment in the tax year. The vector of controls z_i includes all controls in equation (1) as well as an indicator for children younger than 5 years (Dasgupta and Goldar 2005; Mulligan and Rubinstein 2008). ε_i and v_i represent the error term for individual i in equation (1) and the selection equation, respectively. The key coefficient of interest is β_{1i} , which measures the effect of parental migration on employment earnings for young adults who selected into employment.

The estimation of the impact of internal migration on the probability of low-income status for young adults is presented in equation (2) below:

$$Y_i = X_i\ell + W_i\theta + R_i\sigma + intmig_i\delta_1 + \varepsilon_i \quad (2)$$

The outcome variable Y_i represents the probability of low-income status. Coefficients are estimated using the Linear Probability model.²⁷ The key coefficient of interest is δ_1 , which measures the effect of parental migration on the probability of low-income status, including all young adults, not just those who selected into employment. ε_i represent the error term for individual i in equation (2). All other definitions are the same as in equation (1). Coefficients are clustered around the young adult's region of residence.

The major econometric problem in the estimation of the effect of migration is the issue of endogeneity. Migration is a voluntary choice and not an exogenous decision. Individuals who migrate may differ from non-migrants. For instance, the ability to adapt to new situations or being ambitious may positively influence both migration willingness and labour market success. This trait may also be passed down to children through genetics or learned behavior, resulting in a similar positive correlation in children. This indicates that Ordinary Least Square (OLS) estimation of parental migration on economic outcomes may lead to inconsistent estimates. In this paper, I argue that this type of endogeneity may not be a problem in the model because immigrants are people who have made a 'big' decision to move away from their home country. Hence, selection into internal migration in Canada may be less influenced by the ability to adapt to new situations or ambition. However, immigrants in Canada differ based on their program of entry. The migration traits might be correlated with immigrant type. Consequently, lumping all immigrants together may result in underestimation or

²⁷ Logit and Probit model were estimated with similar results.

overestimation of the true effect of parental migration on economic outcomes. Therefore, I also estimate equations (1) and (2) by the program of entry of the parent of the young adult as shown on equation (3) and equation (4):

$$Y_i = X_i\ell + W_i\theta + R_i\sigma + intmig_i\beta_{1i} + ProgEnt_i\beta_{2i} + intmig_i * ProgEnt_i\beta_{3i} + \varepsilon_i \quad (3)$$

$$Y_i = X_i\ell + W_i\theta + R_i\sigma + intmig_i\delta_1 + ProgEnt_i\omega + intmig_i * ProgEnt_i\gamma_i + \varepsilon_i \quad (4)$$

The program of entry dummy $ProgEnt_i$ is equal to 0 if the parent of the young adult is an economic immigrant, 1 if family class immigrant and 2 if refugee. The coefficient β_{3i} in equation (3) measures the additional impact of internal migration on the employment earnings of young adults who choose to work in the tax year, while the coefficient γ_i in equation (4) measures the additional impact of internal migration on the probability of low-income status of all young adults. All other descriptions of variables are the same as equation (1) and equation (2). In the estimation, I expect that the effect of internal migration will be more pronounced for children whose parents immigrated through the refugee or family class programs, compared to those whose parents immigrated through the economic class program. This expectation arises from the notion that estimates of internal migration on economic outcomes for children of refugee or family-class immigrants might include both the true effect and potential endogeneity resulting from unobserved ambitious and non-ambitious attributes. In contrast, economic class immigrants are likely to consist of those who already exhibit migration traits, thereby allowing estimates to constitute the true effect and the endogeneity arising from migration traits. I argue that this endogeneity may be weaker in the case of immigrants, as the act of relocating to Canada represents a significant decision, making internal movement within the country less likely to stem from unobserved factors like adaptability or ambition.

Although endogeneity may be minimal or absent in my estimates, caution should be exercised when inferring causality and generalization due to two reasons. First, the IMDB lacks information on children demography and education, average earnings in the province, a measure of living standard and the coldness of the province. Secondly, the sample used for estimation constitutes only a small fraction of all immigrants to Canada. It comprises young adults who immigrated to Canada as children and were observable over time as they became adults. Nonetheless, conducting this study is crucial for gaining insight into the relocation choices of immigrants.

In the final section, I examine the impact of possible mediators in the relationship between internal migration and employment earnings. I first investigate the impact of parental migration based on sibling status, sport involvement and gender by incorporating interaction effect in the models. The last part employs age-related internal migration measures to examine the relationship between internal migration and employment earnings.

Existing literature on changes in school has showed that moving from one school to another can lead to feelings of isolation and a prolonged period for students to adapt to their new environment (Fabian 2003). I examine whether the presence of siblings or engagement in sports mediates some of the negative effects that parental migration may have on their economic outcomes. Furthermore, if the impact of internal migration is positive, does it further enhance the positive effect on young adults? Gender may also mediate some of the impact of parental migration on economic outcomes. Studies on gender and resource allocation have shown a positive relationship between family resources and gender allocation (Antman 2015). Considering this, I further explore whether being a boy or a girl when one's parents engaged in internal migration has any effect on adult economic outcomes.

I estimate how sibling status, sport involvement and gender influence the relationship between parental migration and employment earnings for young adults as shown on equation (5) and (6) below:

$$Y_i = X_i\ell + W_i\theta + R_i\sigma + intmig_i\beta_1 + Mediator_i\beta_2 + (intmig_i * Mediator_i)\beta_3 + \varepsilon_i \quad (5)$$

$$Y_i = X_i\ell + W_i\theta + R_i\sigma + intmig_i\beta_1 + ProgEnt_i\beta_2 + Mediator_i\beta_3 + (intmig_i * ProgEnt_i)\beta_4 + (intmig_i * Mediator_i)\beta_5 + (ProgEnt_i * Mediator_i)\beta_6 + (intmig_i * ProgEnt_i * Mediator_i)\beta_7 + \varepsilon_i \quad (6)$$

Where the possible mediator's variable $Mediator_i$ can take one of three (3) values: (i) sibling status, indicating whether the young adult had a sibling when they were less than 18 years old, (ii) sports status, indicating if the parent of the young adult claimed a fitness amount for them during childhood, or (iii) gender, indicating whether the young adult was a boy or a girl during childhood. In equation (5), β_3 measures the impact of parental internal migration on employment earnings, accounting for potential mediators. In equation (6), β_7 measures the additional impact of parental migration on employment earnings, of young adults, while considering potential mediators. The descriptions and the selection equation in equation (1) are applicable to equations (5) and (6) as well.

The age of the young adult when their parents engage in internal migration might affect the impact internal migration may have on their economic outcomes. To examine how age of the young adult during childhood might affect the relationship between internal migration and economic outcomes, I use the internal migration measures to generate age related internal migration variables ($agemig_i$) as shown on equation (7) and equation (8):

$$Y_i = X_i\ell + W_i\theta + R_i\sigma + agemig_i\beta_1 + \varepsilon_i \quad (7)$$

$$Y_i = X_i\ell + W_i\theta + R_i\sigma + agemig_i\beta_1 + ProgEnt_i\beta_2 + (agemig_i * ProgEnt_i)\beta_3 + \varepsilon_i \quad (8)$$

The age at migration variable $agemig_i$ can take three (3) values: (1) age at type of migration, indicates whether internal migration took place during the young adult's teenage years. (2) age at interprovincial or intraprovincial migration, indicates whether the parents of the young adult engaged in intraprovincial or interprovincial migrations during the young adult's teenage years. (3) age at frequency of migration, indicates whether the parents engaged in either one or two internal migrations, or more than two internal migrations during the young adult's teenage years. The coefficient of interest β_1 measures the impact of parental internal migration on the employment earnings of young adults, considering the ages at which migration took place. The coefficient of interest in equation (8) is β_3 , which measures the additional impact of internal migration on employment earnings, also considering the ages at which internal migration occurred. All other descriptions and the selection equation in equation (1) apply to both equations (7) and (8).

2.4.2 Regression Results

2.4.2.1 Internal Migration and Economic Outcomes

The key coefficients for equation (1) are presented in Column A of Table 2.1. The results indicate that internal migration during childhood decreases employment earnings for young adults compared to no internal migration. More specifically, any type of migration by parents during childhood decreases employment earnings by 2.8 percent. The estimates based on the interprovincial or intraprovincial indicator reveal that interprovincial migration lowers employment earnings more relative to intraprovincial migration, with decreases of 2.5 and 5.6 percent, respectively. Regarding the frequency of migration, engagement in more than two internal migrations during childhood leads to greater reductions in employment earnings

compared to other measures of frequency. The estimates range from 1.2 percent for those whose parents engaged in one or two intraprovincial migrations to 11.8 percent for those whose parents engaged in more than two intraprovincial migrations.

Table 2. 1: Impact of Internal Migration on Economic Outcomes

	(A)	(B)
	Employment earnings	Probability of Low-Income Status
Regression 1: Incidence of Migration (Reference: No Migration)		
Any type of Migration	-0.0284*** (0.0037)	0.0169*** (0.0031)
Regression 2: Interprovincial or Intraprovincial migration indicator (Reference: No Migration)		
Intraprovincial Migration	-0.0250*** (0.0037)	0.0145** (0.0037)
Interprovincial Migration	-0.0562*** (0.0073)	0.0363*** (0.0049)
Regression 3: Frequency of migration (Reference: No Migration)		
One or Two Intraprovincial	-0.0115*** (0.0038)	0.0068 (0.0035)
More than Two Intraprovincial	-0.1184*** (0.0069)	0.0683*** (0.0066)
One or Two Interprovincial	-0.0595*** (0.0074)	0.0381*** (0.0054)
More than Two Interprovincial	-0.1039*** (0.0322)	0.0689*** (0.0095)
Sample Size	420730	420730

Notes: Longitudinal Immigration Database (IMDB). Young adults aged 26 to 30 years. I estimated 9 models for each dependent variable. The coefficients presented for each dependent variable are from model 9 where all controls were included. Model 1 to 8 are available upon request.

All regressions include parent's variables such as minimum and maximum employment income, program of entry, immigrant status, Canadian reported official language, region of last place of permanent residence, years of schooling, origin, and destination province, and child and young adult variables such as landing age, landing year, gender, family size, marital status, total number of children, children younger than 5 years indicator, and student status.

Coefficients in column B are presented with clustered standard errors in parentheses. (***) $p < 0.01$; (**) $p < 0.05$; (*) $p < 0.1$

In Column B of Table 2.1, I present the coefficients from the Linear Probability Model for the probability of low-income status (relative to no low-income status). Parental migration during childhood increases the likelihood of low-income status. Interprovincial migration has a stronger effect on probability of low-income status compared to intraprovincial migration. Furthermore, individuals whose parents engaged in more than two internal migrations have a higher likelihood of low-income status compared to those whose parents engage in one or two internal migrations. Specifically, if young adult's parents engage in any type of migration, it increases the probability of low-income status by 1.7 percentage point. Intraprovincial migration raises the probability of low-income status by 1.5 percentage point, while interprovincial migration raises it by 3.6 percentage points. Engagement in more than two intraprovincial and interprovincial migrations increases the probability of low-income status by 6.8 and 6.9 percentage points, respectively compared to 3.8 percentage points for those whose parents engage in one or two interprovincial migrations. The coefficient for one or two intraprovincial migrations is statistically not different from zero.

2.4.2.2 Internal Migration and Economic Outcomes by Program of Entry

The coefficients for the effect of any type of migration on employment earnings, categorized by program of entry, are presented in Column A of Table 2.2. The interaction term in equation (3) shows that engagement in any type of migration decreases employment earnings for young adults whose parent's program of entry is refugee relative to economic class. Specifically, any type of migration decreases employment earnings by 8.9 percentage change for young adults whose parents immigrated to Canada under the refugee class relative to economic class immigrants. The coefficients for the effect of any type of migration on the probability of low-income status are shown in Column B of Table 2.2. The estimates show that any type of migration increases the probability of low-income status for young adults whose parent's program of entry is refugee class, relative to economic class. Specifically, any type of

migration increases the probability of low-income status by 3.5 percentage points for young adults whose parent's program of entry is refugee, compared to economic class.

Table 2. 2: Impact of Any Type of Migration on Economic Outcomes by Program of Entry

	(A)	(B)
	Employment earnings	Probability of Low-Income Status
Any type of Migration (Reference: No Migration)	-0.0254*** (0.0040)	0.0154*** (0.0034)
Program of Entry (Reference: Economic class)		
Family	0.0803*** (0.0070)	0.0261** (0.0097)
Refugee	0.0098 (0.0225)	0.0046 (0.0181)
Any type of migration* Program of entry (Reference: No Migration and Economic Class)		
Any form of migration* Family	-0.0104 (0.0084)	0.0052 (0.0051)
Any form of migration* Refugee	-0.0885*** (0.0340)	0.0352* (0.0170)
Sample Size	420730	420730

Notes : Longitudinal Immigration Data base (IMDB). Young adults aged 26 to 30 years. I estimated 9 models for each dependent variable. The coefficients presented for each dependent variable are from model 9 where all controls were included. Model 1 to 8 are available upon request.

All regressions include parent's variables such as minimum and maximum employment income, immigrant status, Canadian reported official language, region of last place of permanent residence, years of schooling, origin, and destination province, and child and young adult variables such as landing age, landing year, gender, family size, marital status, total number of children, children younger than 5 years indicator, and student status.

Coefficients in column B are presented with clustered standard errors in parentheses. (***) $p < 0.01$; (**) $p < 0.05$; (*) $p < 0.1$

The coefficients for the effects of interprovincial or intraprovincial migration on economic outcomes, by program of entry, are presented in Table 2.3. Column A shows that intraprovincial migration decreases employment earnings by 8.7 percent for young adults whose parents immigrated under the refugee class relative to economic class program. Column B shows the result for interprovincial or intraprovincial migration on the probability of low-income status for young adults. The results show that both interprovincial and intraprovincial migration increases the probability of low-income status for young adults whose parent's program of entry is refugee relative to economic class. In particular, intraprovincial migration increases the probability of low-income status by 3.6 percentage points for young adults whose parent's program of entry is the refugee class.

Table 2. 3: Impact of Interprovincial and Intraprovincial Migration on Economic Outcomes by Program of Entry

	(A)	(D)
	Employment earnings	Probability of Low-Income Status
Interprovincial or Intraprovincial indicator (Reference: No Migration)		
Intraprovincial Migration	-0.0223*** (0.0041)	0.0139** (0.0037)
Interprovincial Migration	-0.0531*** (0.0085)	0.0293*** (0.0060)
Program of Entry (Reference: Economic class)		
Family	-0.0803*** (0.0070)	0.0261** (0.0097)
Refugee	0.0101 (0.0225)	0.0044 (0.0181)
Interprovincial or Intraprovincial * Program of Entry (Reference: No Migration and Economic Class)		
Intraprovincial Migration * Family	-0.0091 (0.0087)	0.0016 (0.0045)
Intraprovincial Migration * Refugee	-0.0865** (0.0348)	0.0358* (0.0166)
Interprovincial Migration * Family	-0.0096 (0.0145)	0.0193* (0.0076)
Interprovincial Migration * Refugee	-0.1297 (0.1005)	0.0335 (0.0463)
Sample Size	420730	420730

Notes : Longitudinal Immigration Data base (IMDB). Young adults aged 26 to 30 years. I estimated 9 models for each dependent variable. The coefficients presented for each dependent variable are from model 9 where all controls were included. Model 1 to 8 are available upon request.

All regressions include parent's variables such as minimum and maximum employment income, immigrant status, Canadian reported official language, region of last place of permanent residence, years of schooling, origin, and destination province, and child and young adult variables such as landing age, landing year, gender, family size, marital status, total number of children, children younger than 5 years indicator, and student status.

Coefficients in column B are presented with clustered standard errors in parentheses. (**p<0.01; **p<0.05; *p<0.1)

In Column A of Table 2.4, I present the coefficient for the frequency of migration on employment earnings for young adults. With the exception of the coefficient on refugees for one or two intraprovincial migration, the interactions are not statistically significant. In Column B of Table 2.4, I present the result for frequency of migration and the probability of low-income status. The results indicate that one or two intraprovincial migrations increase the probability of low-income status for young adults whose parents entered through the family class program compared to the economic class program. However, more than two interprovincial migrations decrease the probability of low-income status for young adults whose parents entered as refugees rather than through the economic class program. Specifically, one or two intraprovincial migration increases the probability of low-income status by 4.3 percentage points while more than two interprovincial migration decreases the probability of low-income status by 42.1 percentage points.

Table 2. 4: Impact of Frequency of Migration on Economic Outcomes by Program of Entry

	(A)	(B)
	Employment earnings	Probability of Low-Income Status
Frequency of Migration (Reference:No Migration)		
Moderate Intraprovincial	-0.0101** (0.0043)	0.0072* (0.0034)
Frequent Intraprovincial	-0.1158*** (0.0081)	0.0663*** (0.0074)
Moderate Interprovincial	-0.0551*** (0.0086)	0.0301*** (0.0066)
Frequent Interprovincial	-0.1197*** (0.0424)	0.0774*** (0.0075)
Program of Entry (Reference: Economic class		
Family	-0.0806*** (0.0070)	0.0263** (0.0098)
Refugee	0.0116 (0.0225)	0.0036 (0.0179)
Frequency of Migration * Program of Entry (Reference: No Migration and Economic Class)		
One or Two Intraprovincial * family	-0.0024 (0.0091)	-0.0036 (0.0041)
One or Two Intraprovincial *refugee	-0.1002*** (0.0362)	0.0426* (0.0200)
More than Two Intraprovincial *family	-0.0088 (0.0146)	0.0068 (0.0060)
More than Two Intraprovincial * refugee	0.0011 (0.0818)	-0.0069 (0.0176)
One or Two Interprovincial * family	-0.0123 (0.0147)	0.0217** (0.0081)
One or Two Interprovincial *refugee	-0.1263 (0.1010)	0.0370 (0.0482)
More than Two Interprovincial *family	0.0254 (0.0647)	-0.0208 (0.0192)
More than Two Interprovincial * refugee	-0.4357 (0.9844)	-0.4208*** (0.0155)
Sample Size	420730	420730

Notes : Longitudinal Immigration Data base (IMDB). Young adults aged 26 to 30 years. I estimated 9 models for each dependent variable. The coefficients presented for each dependent

variable are from model 9 where all controls were included. Model 1 to 8 are available upon request.

All regressions include parent's variables such as minimum and maximum employment income, immigrant status, Canadian reported official language, region of last place of permanent residence, years of schooling, origin, and destination province, and child and young adult variables such as landing age, landing year, gender, family size, marital status, total number of children, children younger than 5 years indicator, and student status.

Coefficients in column B are presented with clustered standard errors in parentheses. (**p<0.01; *p<0.05; *p<0.1)

2.4.2.3 Possible mediators of Internal Migration and Economic Outcomes

In this section, I present the results for how possible mediators, such as sibling, sports, gender, and age, may affect the relationship between internal migration and employment earnings for young adults. Table 2.5 presents the estimates for internal migration on employment earnings without considering the program of entry of their parents. Column C of Table 2.5 shows that gender mediates the relationship between internal migration and employment earnings. In Particular, being a girl when your parents engage in any type of migration increases employment earnings by 4.3 percentage change relative to being a boy. In the case of the intraprovincial or interprovincial migration indicators, it is observed that intraprovincial migration leads to higher increases in employment earnings compared to interprovincial migration. Specifically, being a girl increases employment earnings by 4.3 percent for young adults whose parents engage in intraprovincial migration, while for interprovincial migration, it increases employment earnings by 3.6 percentage change. Regarding the frequency of migration, except for more than two interprovincial migrations, all other measures increase employment earnings for girls compared to boys.

Table 2. 5: Internal Migration and Employment Earnings by Possible Mediators

	(A)	(B)	(C)
	Sibling (Omitted: No Sibling)	Sports (Omitted: No sports)	Gender (Omitted: Male)
Regression 1: Incidence of Migration*			
Possible Mediators (Reference: No Migration)			
Any type of Migration	-0.0226*** (0.0048)	-0.0136 (0.0105)	-0.0480*** (0.0049)
Possible mediator	0.0310*** (0.0059)	0.0135 (0.0322)	-0.1657*** (0.0057)
Any type of Migration * Possible mediator	-0.0112* (0.0067)	0.0415 (0.0408)	0.0425*** (0.0067)
Regression 2: Interprovincial or Intraprovincial migration* Possible Mediators (Reference: No Migration)			
Intraprovincial	-0.0200*** (0.0050)	-0.0112 (0.0108)	-0.0453*** (0.0050)
Interprovincial	-0.0451*** (0.0095)	-0.0344 (0.0224)	-0.0698*** (0.0096)
Possible mediator	0.0308*** (0.0059)	0.0135 (0.0322)	-0.1655*** (0.0057)
Intraprovincial * Possible mediator	-0.0102 (0.0070)	0.0407 (0.0419)	0.0434*** (0.0069)
Interprovincial * Possible mediator	-0.0165 (0.0132)	0.0486 (0.0791)	0.0362*** (0.0131)
			Con't

Regression 3: Frequency of migration*Possible Mediators (Reference: No Migration)			
1 or 2 Intraprovincial	-0.0067 (0.0051)	0.0002 (0.0109)	-0.0325*** (0.0052)
more than 2 Intraprovincial	-0.1077*** (0.0089)	-0.1289*** (0.0224)	-0.1377*** (0.0094)
1 or 2 Interprovincial	-0.0482*** (0.0097)	-0.0316 (0.0226)	-0.0727*** (0.0098)
more than 2 Interprovincial	-0.1076*** (0.0414)	-0.3490*** (0.1196)	-0.1343*** (0.0457)
Possible mediator	0.0305*** (0.0059)	0.0119 (0.0322)	-0.1657*** (0.0057)
1 or 2 Intraprovincial*Possible mediators	-0.0095 (0.0073)	0.0367 (0.0433)	0.0447*** (0.0072)
more than 2 Intraprovincial*Possible mediators	-0.0251* (0.0131)	0.0692 (0.0808)	0.0407*** (0.0130)
1 or 2 Interprovincial*Possible mediators	-0.0203 (0.0134)	0.0303 (0.0804)	0.0353*** (0.0133)
more than 2 Interprovincial*Possible mediators	0.0126 (0.0653)	0.5813 (0.3664)	0.0624 (0.0639)
Sample Size	420730	78495	420730

Notes : Longitudinal Immigration Database (IMDB). Young adults aged 26 to 30 years. I estimated 9 models for each of the possible mediator's variables. The coefficients presented are from model 9 where all controls were included. Model 1 to 8 are available upon request.

All regressions include parent's variables such as minimum and maximum employment income, program of entry, immigrant status, Canadian reported official language, region of last place of permanent residence, years of schooling, origin, and destination province, and child and young adult variables such as landing age, landing year, gender, family size, marital status, total number of children, children younger than 5 years indicator, and student status.

(***p<0.01; **p<0.05; *p<0.1)

The key coefficients for equation (6) are presented in Columns A to C of Table 2.6 to 2.8. The results show that gender mediates the effect of internal migration on young adults whose parent's program of entry is family class relative to economic class. Column C in Table 4a reveals that among young adults whose parents engaged in any type of migration and entered through the family class program, being a girl results in a 3.4 percent increase in employment

earnings when compared to boys. Meanwhile, Column C in Table 2.7 illustrates that, among young adults whose parents engaged in intraprovincial and interprovincial migration and entered through the family class program, being a girl leads to a 3.0 and 5.7 percentage change increase in employment earnings, respectively. Similarly, in Table 2.8, Column C indicates that being a girl increases employment earnings for individuals whose parents entered through the family class program and for those whose parent engaged in both more than two intraprovincial migrations and one or two interprovincial migrations. These results align with the family resource and allocation literature, which suggests that when family resources increase, there is a corresponding increase in resource allocation to girls.

Table 2. 6: Any Type of Migration and Employment Earnings by Possible Mediators and Program of Entry

	(A)	(B)	(C)
	Sibling (Omitted: No Sibling)	Sports (Omitted: No sports)	Gender (Omitted: Male)
Any type of Migration	-0.0171*** (0.0054)	-0.0143 (0.0116)	-0.0442*** (0.0054)
Family class	-0.0727*** (0.0096)	-0.1106*** (0.0195)	-0.0445*** (0.0093)
Refugee class	0.0406 (0.0266)	-0.1706*** (0.0466)	-0.0176 (0.0303)
Any type of Migration*Family class	-0.0211* (0.0117)	0.0084 (0.0243)	-0.0252** (0.0116)
Any type of Migration*Refugee class	-0.1040** (0.0410)	-0.0616 (0.0769)	-0.0612 (0.0465)
Possible mediator	0.0354*** (0.0064)	0.0076 (0.0354)	-0.1525*** (0.0062)
Any type of Migration * Possible mediator	-0.0171** (0.0077)	0.0507 (0.0446)	0.0403*** (0.0076)
Family *Possible mediator	-0.0167 (0.0132)	0.0332 (0.0887)	-0.0779*** (0.0132)
Refugee * Possible mediator	-0.1043** (0.0469)	0.0354 (0.2199)	0.0555 (0.0428)
Any type of migration* Family* Possible mediator	-0.0142 (0.0437)	-0.0713 (0.1167)	0.0342** (0.0167)
Any type of migration* Refugee* Possible mediator	-0.0761 (0.1513)	0.1381 (0.3361)	-0.0587 (0.0680)
Sample Size	420730	78495	420730

Notes : Longitudinal Immigration Data base (IMDB). Young adults aged 26 to 30 years. I estimated 9 models for each of the possible mediator's variables. The coefficients presented are from model 9 where all controls were included. Model 1 to 8 are available upon request.

All regressions include parent's variables such as minimum and maximum employment income, immigrant status, Canadian reported official language, region of last place of permanent residence, years of schooling, origin, and destination province, and child and young adult variables such as landing age, landing year, gender, family size, marital status, total number of children, children younger than 5 years indicator, and student status.

(***p<0.01; **p<0.05; *p<0.1)

Table 2. 7: Interprovincial and Intraprovincial Migration and Employment Earnings by Possible Mediators and Program of Entry

	(A) Sibling (Omitted: No Sibling)	(B) Sports (Omitted: No sports)	(C) Gender (Omitted: Male)
Interprovincial or Intraprovincial migration (Reference: No Migration)			
Intraprovincial	-0.0144*** (0.0055)	-0.0111 (0.0119)	-0.0420*** (0.0056)
Interprovincial	-0.0411*** (0.0112)	-0.0409 (0.0251)	-0.0644*** (0.0115)
Family class	-0.0727*** (0.0096)	-0.1104*** (0.0195)	-0.0445*** (0.0094)
Refugee class	0.0407 (0.0266)	-0.1703*** (0.0466)	-0.0173 (0.0303)
Intraprovincial Migration * Family class	-0.0216* (0.0122)	0.0054 (0.0253)	-0.0220* (0.0120)
Intraprovincial Migration * Refugee class	-0.0987** (0.0419)	-0.0713 (0.0793)	-0.0597 (0.0476)
Interprovincial Migration * Family class	-0.0134 (0.0201)	0.0301 (0.0468)	-0.0351* (0.0199)
Interprovincial Migration * Refugee class	-0.1924 (0.1257)	0.0290 (0.2140)	-0.0935 (0.1395)
Possible Mediators	0.0352*** (0.0064)	0.0076 (0.0354)	-0.1524*** (0.0062)
Interprovincial * Possible Mediators	-0.0168** (0.0079)	0.0555 (0.0457)	0.0415*** (0.0078)
Intraprovincial * Possible Mediators	-0.0188 (0.0162)	0.0162 (0.0882)	0.0305* (0.0161)
Family class * Possible Mediators	-0.0167 (0.0132)	0.0331 (0.0887)	-0.0779*** (0.0132)
Refugee class * Possible Mediators	-0.1041** (0.0469)	0.0351 (0.2199)	0.0554 (0.0428)
			Con't

Intraprovincial Migration * Family* Possible			
Mediators	0.0270	-0.1236	0.0300*
	(0.0173)	(0.1217)	(0.0173)
Intraprovincial Migration * Refugee* Possible			
Mediators	0.0337	0.1321	-0.0591
	(0.0751)	(0.3478)	(0.0695)
Interprovincial Migration * Family * Possible			
Mediators	0.0097	0.1782	0.0567**
	(0.0287)	(0.2048)	(0.0287)
Interprovincial Migration * Refugee * Possible			
Mediators	0.2162	0.1636	-0.0532
	(0.2088)	(0.7964)	(0.2008)
Sample Size	420730	78495	420730

Notes : Longitudinal Immigration Database (IMDB). Young adults aged 26 to 30 years. I estimated 9 models for each of the possible mediator variables. The coefficients presented are from model 9 where all controls were included. Model 1 to 8 are available upon request.

All regressions include parent's variables such as minimum and maximum employment income, immigrant status, Canadian reported official language, region of last place of permanent residence, years of schooling, origin, and destination province, and child and young adult variables such as landing age, landing year, gender, family size, marital status, total number of children, children younger than 5 years indicator, and student status.

(***p<0.01; **p<0.05; *p<0.1)

Table 2. 8: Frequency of Migration and Employment Earnings by Possible Mediators and Program of Entry

	(A)	(B)	(C)
	Sibling (Omitted: No Sibling)	Sports (Omitted: No sports)	Gender (Omitted: Male)
One or Two Intraprovincial	-0.0019 (0.0057)	0.0010 (0.0122)	-0.0317*** (0.0058)
More than Two Intraprovincial	-0.1049*** (0.0104)	-0.1379*** (0.0252)	-0.1270*** (0.0111)
One or Two Interprovincial	-0.0420*** (0.0113)	-0.0364 (0.0253)	-0.0663*** (0.0116)
More than Two Interprovincial	-0.1400*** (0.0538)	-0.4904*** (0.1587)	-0.1371** (0.0619)
Family class	-0.0732*** (0.0096)	-0.1108*** (0.0194)	-0.0448*** (0.0093)
Refugee class	0.0424 (0.0266)	-0.1689*** (0.0466)	-0.0159 (0.0303)
One or Two Intraprovincial * family	-0.0172 (0.0128)	0.0041 (0.0263)	-0.0084 (0.0126)
One or Two Intraprovincial *refugee	-0.1122** (0.0437)	-0.0988 (0.0818)	-0.0719 (0.0492)
More than Two Intraprovincial *family	-0.0109 (0.0196)	0.0361 (0.0505)	-0.0506** (0.0203)
More than Two Intraprovincial * refugee	-0.0179 (0.0962)	0.1907 (0.2222)	0.0224 (0.1205)
One or Two Interprovincial * family	-0.0189 (0.0204)	0.0257 (0.0474)	-0.0366* (0.0203)
One or Two Interprovincial *refugee	-0.1937 (0.1257)	0.0470 (0.2180)	-0.0871 (0.1407)
More than Two Interprovincial *family	0.0748 (0.0839)	0.3449 (0.2424)	-0.0162 (0.0916)
More than Two Interprovincial * refugee	-0.3865 (0.9766)	-0.0923 (1.0459)	-0.3733 (0.9768)
Possible Mediators	0.0349*** (0.0064)	0.0060 (0.0353)	-0.1525*** (0.0062)
One or Two Intraprovincial* Possible Mediators	-0.0175** (0.0082)	0.0513 (0.0470)	0.0455*** (0.0081)
More than Two Intraprovincial * Possible Mediators	-0.0243 (0.0157)	0.0000 (0.0000)	0.0236 (0.0155)

Con't

One or Two Intraprovincial* Possible Mediators	-0.0209 (0.0164)	0.0904 (0.0878)	0.0307* (0.0163)
More than Two Intraprovincial * Possible Mediators	0.0612 (0.0873)	-0.0108 (0.0898)	0.0371 (0.0848)
Family class * Possible Mediators	-0.0166 (0.0132)	0.8299** (0.4003)	-0.0779*** (0.0132)
Refugee class * Possible Mediators	-0.1042** (0.0469)	0.0330 (0.0886)	0.0556 (0.0428)
One or Two Intraprovincial * family* Possible Mediators	0.0315* (0.0182)	-0.1284 (0.1268)	0.0377 (0.2198)
One or Two Intraprovincial *refugee* Possible Mediators	0.0338 (0.0778)	0.1542 (0.3548)	-0.0622 (0.0725)
More than Two Intraprovincial *family* Possible Mediators	0.0048 (0.0293)	-0.1168 (0.2304)	0.0901*** (0.0291)
More than Two Intraprovincial * refugee* Possible Mediators	0.0483 (0.1834)	-0.0971 (1.0864)	-0.0470 (0.1642)
One or Two Interprovincial * family* Possible Mediators	0.0151 (0.0291)	0.2175 (0.2072)	0.0535* (0.0291)
One or Two Interprovincial *refugee* Possible Mediators	0.2300 (0.2105)	0.1685 (0.7973)	-0.0596 (0.2016)
More than Two Interprovincial *family* Possible Mediators	-0.1092 (0.1322)	-1.2542 (1.1321)	0.1094 (0.1297)
More than Two Interprovincial * refugee* Possible Mediators			
Sample Size	420730	78495	420730

Notes: Longitudinal Immigration Database (IMDB). Young adults aged 26 to 30 years. I estimated 9 models for each of the possible mediator variables. The coefficients presented are from model 9 where all controls were included. Model 1 to 8 are available upon request.

All regressions include parent's variables such as minimum and maximum employment income, immigrant status, Canadian reported official language, region of last place of permanent residence, years of schooling, origin, and destination province, and child and young adult variables such as landing age, landing year, gender, family size, marital status, total number of children, children younger than 5 years indicator, and student status.

(***p<0.01; **p<0.05; *p<0.1)

Finally, the coefficients of equation (7) are presented in Table 2.9. The results indicate that age has a negative effect on the relationship between internal migration and employment earnings. In particular, the result for age at any type of migration indicates that migration has a higher negative effect on young adults whose parents engaged in internal migration when they were under 13 years (decline of 3.2 percent) compared to those age 13 years or older

(decline of 2.8 percentage change). The results for the interprovincial and intraprovincial migration indicators reveal that migration has a higher negative impact on young adults whose parents engaged in interprovincial migration when they were under 13 years old, compared to other categories. In particular, engagement in intraprovincial migration decreases employment earnings by 8.3 percent for young adults whose parents engaged in internal migration when they were under 13 years old, compared to those whose parents did not engage in any internal migration.

Likewise, the estimates for age at frequency of migration indicates that migration has a higher negative effect on those whose parents engaged in more than two interprovincial migrations when they were under 13 years. The coefficients for equation (8) show less precise estimates because most of the results were statistically significant due to sample size issues.²⁸ The reason for these results remains unclear; further research is needed to determine the role of age in the relationship between internal migration and employment earnings.

²⁸ Tables for equation (8) are available upon request.

Table 2. 9: Internal Migration and Employment Earnings by Age at Migration

Regression 1: Any type of Migration (Reference: No Migration)	
Migration Less than 13 years	-0.0319*** (0.0056)
Migration at 13 years or more	-0.0275*** (0.0038)
Regression 2: Interprovincial or Intraprovincial migration indicator (Reference: No Migration)	
Intraprovincial migration Less than 13 years	-0.0238*** (0.0059)
Intraprovincial migration at 13 years or more	-0.0258*** (0.0039)
Interprovincial migration Less than 13 years	-0.0832*** (0.0115)
Interprovincial migration at 13 years or more	-0.0433*** (0.0084)
Regression 3: Frequency of migration (Reference: No Migration)	
One or Two Intraprovincial at Less than 13 years	-0.0018 (0.0064)
One or Two Intraprovincial at 13 or more	-0.0145*** (0.0040)
More than Two Intraprovincial at Less than 13 years	0.1210*** (0.0100)
More than Two Intraprovincial at 13 or more	-0.1157*** (0.0085)
One or Two Interprovincial at Less than 13 years	-0.0885*** (0.0118)
One or Two Interprovincial at 13 or more	-0.0449*** (0.0085)
More than Two Interprovincial at Less than 13 years	-0.1336*** (0.0456)
More than Two Interprovincial at 13 or more	0.0836* (0.0449)

Notes : Longitudinal Immigration Database (IMDB). Young adults aged 26 to 30 years. I estimated 9 models for each of the possible mediator's variables. The coefficients presented are from model 9 where all controls were included. Model 1 to 8 are available upon request.

All regressions include parent's variables such as minimum and maximum employment income, program of entry, immigrant status, Canadian reported official language, region of last place of permanent residence, years of schooling, origin, and destination province, and child

and young adult variables such as landing age, landing year, gender, family size, marital status, total number of children, children younger than 5 years indicator, and student status.

(*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$)

2.5 Conclusion

This chapter employed the Longitudinal Immigration Database (IMDB) along with the Heckman two-stage selection model and a linear probability model to investigate the impact of parental internal migration during childhood on the economic outcomes of young adult immigrants aged between 26 and 30 years. While previous studies have focused solely on the short-term effects of internal migration on children, they have overlooked its long-term impact on these individuals once they reach adulthood.

This paper addresses this gap by leveraging the IMDB dataset. Specifically, the children module of the IMDB provides information into whether parents undertook internal migration during the young adult's childhood. Additionally, the core IMDB data provides information on young adult's outcomes as they transition into adulthood. To assess the impact of internal migration on the economic outcomes of young adults, I employ three measures of parental internal migration. The results obtained without accounting for the parent's entry program reveal a consistent trend: all measures of parental internal migration have a negative effect on employment earnings and the probability of low-income status. However, the results by program of entry indicate that internal migration only has a negative impact on the economic outcomes of young adults whose parents immigrated to Canada as refugees. This result is true for two measures of internal migration: any type of migration and intraprovincial or interprovincial migration indicator.

The possible mediator's results help to understand if the relationship between internal migration and economic outcomes can be mediated by sibling status, engagement in sports, or gender. The findings reveal that gender serves as a possible mediator in the impact of internal migration on the employment earnings of immigrant's young adult. Specifically, in comparison to boys, being a girl is associated with higher employment earnings. Notably, this effect holds true solely for young adult immigrants whose parents immigrated to Canada through the family class program. These results align with existing literature concerning the role of family resources and their allocation, particularly towards girls.

I also examine whether a potential mediator, such as the age of the young adult during migration, may influence the relationship between internal migration and employment earnings. The results indicate that the age of young adults at the time of migration has a negative impact on their employment earnings. In particular, internal migration leads to a 3.2 percent decrease in employment earnings for young adults whose parents engaged in internal migration when they were under the age of 13, as compared to those whose parents did not engage in any internal migration.

The findings of this paper offer insights to both current immigrants and policymakers regarding the long-term implications of internal migration. It informs existing immigrants that internal migration affects not only the short-term outcomes of children but also their long-term prospects. Policymakers can use this information to strengthen existing policies and create new ones aimed at encouraging immigrants to remain in their current destination province.

References

- Antman, F. M. (2015). Gender discrimination in the allocation of migrant household resources. *Journal of Population Economics*, 28(3), 565–592.
<https://doi.org/10.1007/s00148-015-0548-x>
- Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. (2010). On making causal claims: A review and recommendations. *The Leadership Quarterly*, 21(6), 1086–1120.
- Arsani, A. M., Ario, B., & Ramadhan, A. F. (2020). Impact of education on poverty and health: Evidence from Indonesia. *Economics Development Analysis Journal*, 9(1), 87–96.
- Böckerman, P., Haapanen, M., & Jepsen, C. (2023). Early parental death and its association with children's mental and economic well-being in adulthood: A nationwide population-based register study. *J Epidemiol Community Health*.
https://jech.bmj.com/content/early/2023/07/04/jech-2023-220692.abstract?casa_token=5if64N3cd7YAAAAA:fvltBfyRbA5kQDnL2MKWfWnyfDPI-CAnWt85n0GTvDSkAJw0c9cWsnkotdeZxwUadMV9mL74F4Ly
- Burkam, D. T., Lee, V. E., & Dwyer, J. (2009). School mobility in the early elementary grades: Frequency and impact from nationally-representative data. *Prepared for the Workshop on the Impact of Mobility and Change on the Lives of Young Children, Schools, and Neighborhoods, Washington, DC, June 29–30*.
- Cockx, L. (2022). Moving toward a Better Future? Migration and Children's Health and Education. *Economic Development and Cultural Change*, 70(3), 1229–1293.
- Conger, D., & Rebeck, A. (2001). How children's foster care experiences affect their education. *New York: New York City Administration for Children's Services*.
<https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=e1aee2a27a44b03901f78eca0253a6169091d754>
- Dasgupta, P., & Goldar, B. (2005). *Female labour supply in rural India: An econometric analysis*. Institute of Economic Growth Delhi.
- Deb, P., & Seck, P. (2009). *Internal migration, selection bias and human development: Evidence from Indonesia and Mexico*. Human Development Research Paper No. 31,

United Nations Development Programme, Human Development Report Office.

<https://mpra.ub.uni-muenchen.de/19214/>

Dupere, V., Archambault, I., Leventhal, T., Dion, E., & Anderson, S. (2015). School mobility and school-age children's social adjustment. *Developmental Psychology*, *51*(2), 197.

Fabian, H. (2003). Young Children Changing Schools: Disruption or Opportunity? *European Early Childhood Education Research Journal*, *11*(sup1), 99–107.

<https://doi.org/10.1080/1350293X.2003.12016708>

Fellmeth, G., Rose-Clarke, K., Zhao, C., Busert, L. K., Zheng, Y., Massazza, A., Sonmez, H., Eder, B., Blewitt, A., & Lertgrai, W. (2018). Health impacts of parental migration on left-behind children and adolescents: A systematic review and meta-analysis. *The Lancet*, *392*(10164), 2567–2582.

Grigg, J. (2012). School Enrollment Changes and Student Achievement Growth: A Case Study in Educational Disruption and Continuity. *Sociology of Education*, *85*(4), 388–404. <https://doi.org/10.1177/0038040712441374>

Government of Canada (2023). Low-income measure (LIM) thresholds by income source and household size. Available at: Statistics Canada.

<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110023201>

Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2004). Disruption versus Tiebout improvement: The costs and benefits of switching schools. *Journal of Public Economics*, *88*(9–10), 1721–1746.

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica: Journal of the Econometric Society*, 153–161.

Hofmarcher, T. (2021). The effect of education on poverty: A European perspective. *Economics of Education Review*, *83*, 102124.

Hu, F. (2013). Does migration benefit the schooling of children left behind? Evidence from rural northwest China. *Demographic Research*, *29*, 33–70.

Hu, H., Lu, S., & Huang, C.-C. (2014). The psychological and behavioral outcomes of migrant and left-behind children in China. *Children and Youth Services Review*, *46*, 1–10.

- Immigration, Refugees and Citizenship Canada. 2020. Immigrate to Canada. Retrieved August 18, 2023 (<https://www.canada.ca/en/immigration-refugees-citizenship/services/immigrate-canada.html>)
- Lash, A. A., & Kirkpatrick, S. L. (1990). A Classroom Perspective on Student Mobility. *The Elementary School Journal*, 91(2), 177–191. <https://doi.org/10.1086/461645>
- Lee, L., & Park, A. (2010). *Parental migration and child development in China*. https://repository.upenn.edu/gansu_papers/24/
- Liang, Z., Guo, L., & Duan, C. (2008). Migration and the well-being of children in China. *The Yale-China Health Journal*, 5, 25–46.
- Mehana, M., & Reynolds, A. J. (2004). School mobility and achievement: A meta-analysis. *Children and Youth Services Review*, 26(1), 93–119.
- Mihai, M., Țițan, E., & Manea, D. (2015). Education and poverty. *Procedia Economics and Finance*, 32, 855–860.
- Mulligan, C. B., & Rubinstein, Y. (2008). Selection, investment, and women’s relative wages over time. *The Quarterly Journal of Economics*, 123(3), 1061–1110.
- Norford, B. C., & Medway, F. J. (2002). Adolescents’ mobility histories and present social adjustment. *Psychology in the Schools*, 39(1), 51–62.
- Racaite, J., Surkiene, G., Jakubauskiene, M., Sketerskiene, R., & Wulkau, L. (2019). Parent emigration and physical health of children left behind: Systematic review of the literature. *European Journal of Public Health*, 29(Supplement_4), ckz186-024.
- Rumberger, R. W., Larson, K. A., Ream, R. K., & Palardy, G. J. (1999). *The Educational Consequences of Mobility for California Students and Schools. Research Series*. <https://eric.ed.gov/?id=ED441040>
- Swanson, C. B., & Schneider, B. (1999). Students on the move: Residential and educational mobility in America’s schools. *Sociology of Education*, 54–67.
- The World Bank (2023). World development indicators. DataBank. Available at: <https://databank.worldbank.org/reports.aspx?source=World-Development-Indicators>

- Wang, L., & Mesman, J. (2015). Child development in the face of rural-to-urban migration in China: A meta-analytic review. *Perspectives on Psychological Science, 10*(6), 813–831.
- Xu, D., Wu, X., Zhang, Z., & Dronkers, J. (2018). Not a zero-sum game: Migration and child well-being in contemporary China. *Demographic Research, 38*, 691–726.
- Xu, H., & Xie, Y. (2015). The causal effects of rural-to-urban migration on children's well-being in China. *European Sociological Review, 31*(4), 502–519.
- Zhou, M., Murphy, R., & Tao, R. (2014). Effects of parents' migration on the education of children left behind in rural China. *Population and Development Review, 40*(2), 273–292.

Appendix B

Appendix Table 2.1: Summary Information for Parents Variables

	Non-migrants	Migrants	
		Interprovincial	Intraprovincial
Landing Age			
Less than 5 years	7.67	30.10	21.78
5 to 9 years	18.70	33.96	34.13
10 to 15 years	50.72	31.94	39.05
More than 15 years	22.91	4.00	5.03
Landing Year			
1980 to 1991	31.69	44.50	35.47
1992 to 1995	25.19	25.34	25.91
1996 to 2010	43.12	30.18	38.62
sibling			
no sibling	53.34	53.65	54.97
sibling	46.66	46.37	45.03
sibling two years in age			
no sibling 2 years	77.11	75.57	77.20
sibling 2 years	22.89	24.44	22.80

Note: The proportions represent young adults aged 26 to 30 who immigrated to Canada before reaching the age of 18.

Source: The data used for this compilation is sourced from the Longitudinal Immigration Database (IMDB).

Appendix Table 2.2: Summary Information for Parents Variables

	Non-migrants	Migrants	
		Interprovincial	Intraprovincial
Program of Entry			
Economic	80.79	64.71	75.63
Family	17.80	34.90	23.62
Refugee	1.41	0.40	0.75
Immigrant Status			
dependents of principal applicant	35.83	41.17	36.65
Principal applicant	64.17	58.83	63.35
Official Language			
English	53.01	45.49	50.10
French	4.38	4.27	4.77
English and French	3.76	4.35	4.21
Neither English nor French	38.85	45.89	40.92
Region of last Permanent Residence			
The United States (U.S) and Northern America	12.84	9.03	12.86
The Caribbean, Central and Southern America	2.61	1.14	2.52
Europe	20.06	25.74	24.17
Africa	6.52	9.04	6.69
Asia	57.27	54.47	53.27
Oceania	0.70	0.62	0.50
			Con't

Years of Schooling			
Less than 9 years	19.41	17.49	16.06
9 to 13 years	42.47	40.35	41.39
14 to 17 years	30.27	32.01	34.34
More than 17 years	7.86	10.14	8.21

Origin Region

The Atlantic	5.88
Quebec	23.70
Ontario	29.08
The Prairie	27.71
West Coast	13.50
Territories	0.12

Destination province

The Atlantic	2.25
Quebec	8.64
Ontario	44.48
The Prairie	21.02
West Coast	23.44
Territories	0.15

Note: The proportions represent young adults aged 26 to 30 who immigrated to Canada before reaching the age of 18.

Source: The data used for this compilation is sourced from the Longitudinal Immigration Database (IMDB).

Appendix Table 2.3: Summary Information for Young Adult Variables

	Non-migrants	Migrants	
		Interprovincial	Intraprovincial
Probability of low-income status	34.24	33.23	30.76
Gender			
Men	52.85	52.03	51.71
Women	47.14	47.97	48.29
Family Size			
Less than 5	93.25	93.27	93.40
5 or more	6.75	6.73	6.60
Marital status			
Single	58.45	60.09	60.16
Married/common law	38.11	36.27	36.54
Other (widowed, divorced and separated)	3.44	3.64	3.30
Total Number of Children			
none	45.69	50.60	47.00
1 or 2	46.81	41.93	45.59
more than 2	7.50	7.47	7.41
Children Younger than 5 years			
No	96.45	97.08	97.07
Yes	3.56	2.92	2.93

Con't

Official language spoken			
French	8.30	4.51	9.35
English	91.69	95.49	90.65
Studentship			
Not a student	85.61	83.35	84.46
Student	14.39	16.65	15.54
Sports			
No Sports	95.25	93.38	93.35
Sports	4.75	6.62	6.65

Note: The proportions represent young adults aged 26 to 30 who immigrated to Canada before reaching the age of 18.

Source: The data used for this compilation is sourced from the Longitudinal Immigration Database (IMDB).

Appendix Table 2.4: Variable definition

Variables	Definition
Dependent Variables	
Measures of Economic Outcomes	
<i>A. Inflation Adjusted Log Employment Earnings</i>	It measures a 5-year average of inflation adjusted total employment income. The employment income includes wages, salaries, commissions from employment, training allowances, tips and gratuities and self-employment income (net income from business, profession, farming, fishing, and commissions), Indian exempt employment income, Indian exempt self-employment income. The Employment Earnings were adjusted for inflation using the 2019 CPI source from the World Bank's World Development Indicators (World Bank, 2023).
<i>B. Probability of Low-Income Status</i>	It measures whether the young adult has a low-income status in any of the 5 years that they are in the sample. The low-income status identifies low-income individuals and families according to the low-income measure (LIM). The LIM is one-half of the adjusted median family income, where "adjusted" indicates consideration of family size. Total Income was used to establish the LIM threshold. The probability of low-income status is equal to 1 if the young adult has any year of low-income status and 0 if otherwise.
Independent variables	
Measures of Internal Migration	
<i>A. Any type of migration</i>	Any type of migration indicates whether the parent of a young adult engages in either internal migration (within-province and out-of-province) or no migration. It is equal to 1 if the young adult engages in within or out-of-province migration and 0 if otherwise.
<i>B. Interprovincial or Intraprovincial migration indicator</i>	It measures whether the young adult's parents engaged in migration within the province or moved out of the province. It takes the value of 1 if the parent of the young adult engages in intraprovincial migration, 2 if interprovincial migration, and 0 if otherwise.

Con't

<i>C. Frequency of Migration</i>	It determines whether the parent engage in one or two internal migrations or more than two internal migrations. A value of 1 indicates that the parent engages in one or two intraprovincial migration, 2 if more than two intraprovincial migration, 3 if one or two interprovincial migrations, and 4 represents more than two interprovincial migrations.
<i>D. Age at any type of migration</i>	It indicates whether internal migration took place during the young adult's teenage years. It is coded as 0 if no migration, 1 if the young adult's parent engaged in internal migration when the young adult was under 13 years old, and 2 if the parent engaged in internal migration when the young adult was 13 years or older.
<i>E. Age at interprovincial or intraprovincial migration indicator</i>	It indicates whether the parents of the young adult engaged in such migration during the young adult's teenage years. It is coded as follows: 0 for no migration, 1 for intraprovincial migration when the young adult was under 13 years old, 2 for intraprovincial migration when the young adult was 13 years or older, 3 for interprovincial migration when the young adult was under 13 years old, and 4 for interprovincial migration when the young adult was 13 years or older.
<i>F. Age at Frequency of Migration</i>	It indicates whether the young adult's parents engaged in either one or two internal migrations, or more than two internal migrations during the young adult teenage years. It is coded as follows: 0 for no migration, 1 for one or two intraprovincial migrations when the young adult was under 13, 2 for one or two intraprovincial migrations when the young adult was 13 years or older, 3 for more than two intraprovincial migrations when the young adult was under 13, 4 for more than two intraprovincial migrations when the young adult was 13 years or older, 5 for one or two interprovincial migrations when the young adult was under 13, 6 for one or two interprovincial migrations when the young adult was 13 years or older, 7 for more than two interprovincial migrations when the young adult was under 13 years, and 8 for more than two interprovincial migrations when the young adult was 13 years or older.

Con't

Control variables**A. Child Variables***Landing Year*

It indicates the landing year the young adult immigrated to Canada as a child. It is coded as 1 if the landing year is between 1980 and 1991, 2 if it is between 1992 and 1995 and 3 if it is between 1996 and 2010.

Landing Age

It identifies the landing age of the young adult when they immigrated to Canada as a child. It is coded as 1 if the landing age is less than 5 years, 2 if it is between 5 and 9 years, 3 if is between 10 and 15 years, 4 if it is more than 15 years.

Sibling status

It identifies whether the young adult have a sibling or not when they were under the age of 18 years. It is coded as 1 if the young adult has a sibling and 0 if otherwise.

Sibling two years in age

It identifies whether the young adult has a sibling who the difference between their ages is 2 years or less. It is coded as 1 if the young adult has a sibling for which the difference in age is 2 years or less and 0 if otherwise.

B. Parent Variables*Minimum Employment income*

It measures the minimum employment income for the parent of the young adult. It is coded as 1 if the parent's minimum employment income is less than the median employment income, 2 if is equal to the median or more than the median employment income and 0 if otherwise.

Maximum Employment income

It measures the maximum employment income for the parent of the young adult. It is coded as 1 if the parent's maximum employment income is less than the median employment income, 2 if is equal to the median or more than the median employment income and 0 if otherwise.

Con't

<i>Program of Entry</i>	It indicates the program of entry of the parent of the young adult. It is coded as 0 if the immigrant category is Economic class, 1 if it is Family class and 2 if it is refugee class.
<i>Immigrant status</i>	It indicates the role of the parent of the young adult within the immigration process. It is coded as 0 if the role is dependent and 1 if the role is principal applicant.
<i>Canadian reported Official Language</i>	It identifies the Parent immigrant's self-reported knowledge of Canadian official language at immigration. It is coded as 1 if the person reported English, 2 if French, 3 if both English and French and 4 if Neither.
<i>Region of last Permanent Resident</i>	It measures the region of the last place of permanent resident of the parent of the young adult. Using the country of last place of permanent resident, the groupings include The United States (U.S) and Northern America=1; The Caribbean, Central and Southern America =2; Europe=3; Africa=4; Asia=5; and Oceania=6.
<i>Years of Schooling</i>	It indicates the number of formal schoolings successfully completed at landing by immigrants. Coded as less than 9 years =1; completed 9 to 13 years of education=2; completed 14 to 17 years of schooling=3 and more than 17 years =4.
<i>Origin Region of Residence</i>	It identifies the young adult's parent's region of residence before internal migration at the end of the tax year. It is coded as 1 if the origin is The Atlantic, 2 if Quebec, 3 if Ontario, 4 if The Prairie, 5 if the West coast and 6 if Territories.
<i>Destination Region of Residence</i>	It identifies the young adult's parent's region of residence after internal migration at the end of the tax year. It is coded as 1 if the destination is The Atlantic, 2 if Quebec, 3 if Ontario, 4 if The Prairie, 5 if the West coast and 6 if Territories. Note: The origin and destination region of residence for Intraprovincial migration are the same since migration is within province.

Con't

C. Young Adult Variables

<i>Gender</i>	It measures the sex of the young adult. It is equal to 1 if the young adult is a woman and 0 if otherwise.
<i>Family Size</i>	It measures the total size of the family of the young adult by counting the number of persons in the family. It is coded as 1 if the young adult's family size is 5 or more and 0 if the family size is less than 5.
<i>Total Number of Children</i>	It measures the total number of children in a family of a young adult. A child is defined as someone who is single and living with one or both parents. It is coded as 1 if there are less than 3 children in the family, 2 if the number of children is 3 or more and 0 if otherwise.
<i>Children Younger than 5 years</i>	It identifies young adults who have children under the age of 5. It is coded as 1 if the young adult has a child under the age of 5 and 0 if otherwise.
<i>Language of correspondents</i>	It is the language on the tax form that the taxfiler submits. It is used as a proxy for the language spoken in Canada. It is coded as 1 when the person speaks English and 0 if French.
<i>Student status</i>	It indicates whether the young adult was a student the year they filed taxes. It is coded as 1 if the young adult is a student and 0 if otherwise.
<i>Sports</i>	It measures the fitness tax credit claim by the parent of the young adult when he/she was a child. It is coded as 1 if the parent claim fitness amount and 0 if otherwise.
<i>Region of Residence</i>	It identifies the young adult's region of residence at the end of the tax year. It is coded as 1 if the origin is The Atlantic, 2 if Quebec, 3 if Ontario, 4 if The Prairie, 5 if the West Coast and 6 if Territories.

3. Requirements for Credential Recognition and Economic Outcomes of International Medical Graduates

3.1 Introduction

The shift in Canadian immigration policy, from family-based immigration to economic immigration, has led to an increase in the proportion of immigrants who intend to pursue a career as physicians in Canada according to data from 1980 to 2013.²⁹ The data retrieved from Statistics Canada's Longitudinal Administrative Databank (LAD) indicates a notable rise in the proportion of immigrant International Medical Graduates (IMGs) among the total immigrant IMGs who arrived in Canada from 1980 to 2013. This proportion surged from 1 percent in 1980 to 7 percent by the end of 2013. This rise has drawn considerable media attention regarding the challenges faced by IMGs in acquiring medical licensure within Canada. Recent data from the Organisation for Economic Co-operation and Development (OECD) in 2022 ranks Canada at 27 out of 37 countries in terms of the number of doctors per 1,000 inhabitants. This shows that Canada has 2.8 physicians for every 1,000 Canadians, which is much lower than other OECD nations such as Germany (4.53 per 1,000 Germans) and the United Kingdom (3.18 per 1,000 British).³⁰ Hence, it is imperative to enhance discussions and studies on licensing, registration, and economic outcomes of IMGs to increase the number of physicians per 1,000 Canadians.

In this paper, I employ information and data from the websites of the Colleges of Physicians and Surgeons of Canada, email correspondences, and Statistics Canada's Longitudinal Administrative Database (LAD) to address two research questions on IMGs in Canada. The first question examines whether the motive for medical regulations for family physician IMGs in Canada is driven by public interest or protectionism.³¹ A review of medical

²⁹ IMGs are individuals who graduated from a medical school outside Canada or the USA. This includes both immigrant and non-immigrant IMGs.

³⁰ Appendix Figure 1 shows the number of Doctors Per 1,000 Inhabitants using 2022 OECD Data.

³¹ Throughout the remainder of this paper, I will refer to family physician IMGs as IMGs.

regulations for IMGs across the ten provinces in Canada suggests a protectionist motive in medical regulations in Canada. The second question examines the economic outcomes of immigrant IMGs in Canada. While previous studies have explored the economic outcomes of immigrants, I am unaware of any study that has focused on a single occupation and conducted a comprehensive analysis of its economic progression. Analysis of the trends in the growth rate of employment earnings of immigrant IMGs from the first to the twentieth year in Canada shows an overall upward trend (except New Brunswick and Manitoba), with occasional fluctuations and periods of both increase and decrease. The estimates derived from both the linear probability and Heckman selection model reveal a correlation between the province of residence and economic outcomes.

The theory of economic regulation draws a comparison between occupational regulations and two primary motives: (1) public interest and (2) protectionism, also known as regulatory capture (Stigler, 2021). There is a public interest in the supply and the regulations of physicians. Where the public requires a high supply of physicians to reduce the wait time to access health care. They also desire access to high-quality healthcare services. However, there is information asymmetry such that patients might lack information about a doctor's past performance, making it challenging for them to assess quality accurately. Patients must trust that their doctors have the qualifications to provide quality healthcare. So, there is a need for that trust to be backed by entry regulations. The differences in regulations across provinces are difficult to justify based on the goal of easing information asymmetries. Health policies that are not influenced by population health tend to be consistent across the country, for example, chemotherapy procedures.³² Hence, any provincial differences may suggest protectionism because self-regulation institutionalizes the incumbent physician's authority over the entry

³² Though health policies, such as those surrounding COVID-19 measures, were more local, as they respond to population health.

requirements (Warman et al., 2015). Self-regulation of physicians in most cases may provide the incentive to restrict new entrants to benefit existing physicians. Peterson et al. (2014) argue that the self-regulation of physicians has an associated motive to limit entry for potential physicians that will decrease patient services and raise salaries to benefit the incumbent physicians. With the idea of public interest and protectionism motive, in this paper, I examine the current entry regulations for IMGs in Canada. The aim is to discern the degree of variability that might suggest evidence of a protectionist motive.

Though several studies (Blit et al., 2017; Boyd & Tian, 2018; Picot & Hou, 2018, 2020) have investigated the economic outcomes of immigrants, I am unaware of any study that has concentrated on immigrants in a single occupation and has observed them over time. In this paper, I focus specifically on immigrant IMGs and observe their employment earnings from the first to the twentieth year in Canada. I construct graphs to show the trends in average and median employment earnings. I also estimate regressions on the impact of province of residence on the probability of positive employment income and employment earnings.

The information and data for the analysis was sourced from the websites of the Colleges of Physicians and Surgeons of Canada, email correspondences, and the Statistics Canada's LAD. The LAD, linked to the Longitudinal Immigration Database (IMDB) is an administrative panel dataset containing the annual tax returns for a random 20 percent sample of Canadian tax filers.

The review of the current entry requirements for practicing as physician in Canada suggest protectionist motive on six key dimensions:

1. Types of licensures available to IMGs: CFPC eligible IMGs in Newfoundland, New Brunswick, Quebec, and Ontario have the option to apply for either a full or provisional license. Meanwhile, those in Prince Edward Island, Manitoba, Saskatchewan, British Columbia, Nova Scotia, and Alberta are eligible solely for a provisional license.

2. **Postgraduate Training:** The regulatory authorities in Manitoba and Saskatchewan accept a minimum of 12 months of postgraduate training and 3 years of independent practice as an alternative to the standard 24 months of postgraduate training. In contrast, other provinces typically require a minimum of 24 months of postgraduate training.
3. **Examinations:** In Manitoba, IMGs are not required to pass the MCCQE or attain LMCC status before applying for a provisional license. However, in other provinces, IMGs might be required to pass the MCCQE, attain an LMCC status or provide an acceptable alternative.
4. **Currency of practice:** The duration of currency of practice is more lenient in Manitoba followed by Saskatchewan, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, Ontario, British Columbia, Alberta, and Quebec.³³
5. **Sponsorship:** In Newfoundland and Labrador, Nova Scotia, New Brunswick, Quebec, Manitoba, Alberta, and British Columbia, IMGs must secure sponsorship before the issuance of provisional license whereas in Prince Edward Island, Ontario, and Saskatchewan sponsorship is not a requisite.
6. **Assessments:** In Quebec, Saskatchewan, and Alberta, all IMGs applying for a provisional license are required to undergo an assessment, whereas in all remaining provinces, not all IMGs are required to undergo an assessment.
7. **Other requirements:** In Prince Edward Island, Quebec, Manitoba, and British Columbia, IMGs are required to fulfill additional requirements such as province-specific exams, training, a ministerial certificate, and a description of continual professional development.

³³ Currency of practice is the current, up-to-date knowledge, skills and practices that physicians are required to have.

The variation in the types of licensures, postgraduate training, examinations, sponsorship, assessments, and other requirements suggest evidence of protectionist motive in the medical regulations in Canada.

In the second section, I estimate the historical economic outcomes of immigrant IMGs in Canada. I first present trends in growth rate of average and median employment earnings for immigrant IMGs by tracking their employment earning from their first year in the country to the twentieth year. The graph presented by province of residence of the immigrant IMG show an overall upward trend (except New Brunswick and Manitoba) from the first to the twentieth year, with occasional fluctuations involving periods of both increase and decrease.

Next, I also present graphs that show the level of average employment earnings by province of residence at their first, fifth, tenth and twentieth year in the country.³⁴ These graphs offer insights into the employment earnings of immigrant IMGs at a specific year in the country. The graphs show five key findings: (1) In Quebec and Newfoundland, there is an upward increase in average employment earnings at Year 1, Year 5, Year 10, and Year 20. (2) In Ontario, the data reveal a substantial rise in earnings within the first decade and a plateau in average earnings between the tenth and the twentieth years. (3) In Alberta and British Columbia, there is a significant growth within the first decade, followed by a more gradual increase in earnings over the subsequent years. (4) In Manitoba and Saskatchewan there is a significant increase in average earnings within the first decade followed by a decline in the second decade. (5) Lastly, In New Brunswick, there is a slight increase in average employment earnings within the first decade, followed by a decrease in average employment earnings from the tenth to the twentieth year.

³⁴ The median employment earnings at Year 1, Year 5, Year 10, and Year 20 exhibit a comparable pattern to the average employment earnings. Therefore, only average employment earnings at Year 1, Year 5, Year 10, and Year 20 are shown.

To further understand the economic progression of immigrant IMGs, I employ a linear probability model and Heckman two-stage selection model to estimate the impact of province of residence on economic outcomes. The estimates show correlation between the province of residence and both the probability of positive income and employment earnings. Specifically, residing in any other province, except Quebec, increases the probability of having positive employment income compared to Ontario. And residing in Manitoba, Saskatchewan, Alberta, and British Columbia decreases employment earnings compared to residing in Ontario. I estimate the impact of province of residence on economic outcomes by cohorts. The Four (4) cohorts by landing years are: (1) 1981 to 1985 (2) 1986 to 1990, (3)1991 to 1994 and (4)1995 to 1999. The estimations based on cohorts reveal variations in the probability of having positive employment income and differences in employment earnings based on the arrival cohort.

The findings in this paper offer valuable resources for IMGs, regulatory authorities, and policymakers seeking to create favorable policies for IMGs. The information on the current entry regulations provides newcomers with insight into the requirements for recognition and practicing in Canada. Regulatory authorities can leverage findings on the requirements for licensure from other provinces to refine their own standards. The insights into the economic progression of immigrant IMGs provide policymakers with vital information to understand the historical economic trajectories of past IMGs. This can aid in formulating strategies to ensure the future success of IMGs in Canada.

The rest of the chapter is structured as follows: Section 3.2 presents the provincial analysis of current entry regulations to determine if medical regulations in Canada suggest public interest motive or protectionist motive. Section 3.3 presents the historical economic trajectories of immigrant IMGs in Canada. Section 3.4 concludes.

3.2 Provincial Analysis of Current Entry Regulations

In Canada, IMGs are individuals who graduated from medical schools outside of the United States (US) or Canada. IMGs whose specialty is family medicine can be classified into two (2) broad categories: (1) IMGs who graduated from medical schools in CFPC-approved jurisdictions, such as Australia, Ireland, and the United Kingdom, are eligible for CFPC certification. And (2) IMGs who graduated from medical schools listed in the World Directory of Medical Schools (WDMS) but not CFPC-approved are ineligible for CFPC certification.³⁵ The IMGs from approved jurisdictions can be further categorized into two (2) main groups: (1) those eligible for CFPC certification without examination and (2) those eligible for CFPC certification with examination. By analyzing information on these different types of IMGs, I examine whether the medical regulations for IMGs in Canada are motivated by public interest or protectionist motive. This investigation involves reviewing the current entry regulations for obtaining licensure as a family physician in Canada. I argue that any variability in entry regulations might indicate a protectionist motive, whereas uniformity could suggest a motive driven by public interest.

Using information from the websites of the Colleges of Physicians and Surgeons of Canada, supplemented by direct communication with the colleges via email, I first present the types of licenses available for IMGs upon their arrival in Canada.³⁶ The second section present the general requirements for obtaining family physician license. The third section presents the specific requirements, acknowledging potential variations across provinces, which may suggest protectionist motives. The last section provides a summary of the variability of entry regulations, which may suggest a protectionist motive.

³⁵ Visit <https://www.wdms.org/> to access the most current and comprehensive information on globally recognized medical schools.

³⁶ Email was sent to all colleges, response was received from College of Physicians and Surgeons of Ontario (CPSO), College of Physicians and Surgeons of British Columbia (CPSBC), College of Physicians and Surgeons of Nova Scotia (CPSN), College of Physicians and Surgeons of Manitoba (CPSM), College of Physicians and Surgeons of Saskatchewan (CPSS) and College of Physicians and Surgeons of New Brunswick (CPSNB). The websites of the various colleges are listed in Appendix Table 3.1A.

Types of licensures Available to IMGs

The review of the entry regulations in Canada reveal that IMGs in Canada may apply for either a full or provisional license, depending on their eligibility status with the CFPC.³⁷

- IMGs ineligible for CFPC certification have the option to apply only for a provisional license.
- IMGs eligible for CFPC certification may apply for either a full or provisional license in Newfoundland, New Brunswick, Quebec, and Ontario while in the other provinces, they can only apply for a provisional license.

In summary, CFPC eligible IMGs in Newfoundland, New Brunswick, Quebec, and Ontario have more licensure options compared to those in Prince Edward Island, Manitoba, Saskatchewan, British Columbia, Nova Scotia, and Alberta.

General Requirements for licensure in Canada

The general requirements for licensure in Canada are the possession of an accredited Doctor of Medicine (M.D.) degree, certificate of professional conduct, being legally entitled to work in Canada, proof of Canadian language proficiency, provide three (3) letters of reference, and successfully complete a criminal record check.

- To practice in Canada, IMGs must have an accredited medical degree from a university listed in the WDMS and have a Canadian sponsor note.³⁸ However, IMGs in France

³⁷ To ensure consistency across provinces, I categorize licenses with no restrictions as provisional licenses, and those with restrictions as full licenses. Licenses without restrictions include Full license, Regular license, Independent Practice Certificate, General licensure, and Independent Permit under the General register. Licenses with restrictions include Provisional license, Defined license, Special license, Restrictive Clinician license, Restrictive Arrangement de Reconnaissance Mutuelle (ARM) Quebec-France permits, Restricted certificate, and Independent Permit under the provisional register. Therefore, in this paper, a full license grants individuals unrestricted rights to practice medicine once they have fulfilled all the necessary requirements for independent practice. Meanwhile, a provisional license is restricted, allowing individuals to practice medicine under specific limitations, such as scope of knowledge, duration, or operation. Appendix Table 3.1B outlines the various colleges and the types of licensures in all ten (10) provinces in Canada.

³⁸ To proceed to satisfy other requirements, IMGs must achieve an approved status for their credentials in the Medical Council of Canada (MCC) physician account. The physiciansapply.ca website can be accessed here <https://fileaccess.physiciansapply.ca/Account/Login>.

applying through the Quebec-France mutual agreement must hold a medical degree issued by an accredited medical school in France.

- To demonstrate professional conduct, IMGs need to submit documents issued by the relevant regulatory authorities in each jurisdiction where they have previously been registered or licensed to practice medicine.
- IMGs must hold Canadian citizenship, permanent residency status, or a work permit. However, IMGs applying for postgraduate training in Canada must be either a Canadian citizen or permanent resident of Canada.
- To acquire licensure in Canada, IMGs must proof proficiency in French or English depending on the province of registration. In Quebec, the Collège des médecins du Québec (CMQ) require IMGs to demonstrate proficiency in French through specific language tests administered by the Office québécois de la langue française (OQLF). However, in accordance with the Charter of the French language, IMGs who meet all the conditions for a regular permit may still be granted a 1-year temporary permit, even if they do not meet the French language requirement. In all other provinces, IMGs applying for licensure must demonstrate proficiency in English. To demonstrate English proficiency, IMGs are required to attain a minimum score of 7.0 in each of the components of the International English Language Testing System (IELTS) and 9.0 in the Canadian English Language Proficiency Index Program (CELPIP) General examination. Alternatively, IMGs can also demonstrate English proficiency by achieving a minimum grade of B in each component of the Occupational English Test (OET) examination.³⁹ However, IMGs may be exempted from English Language requirements if their undergraduate or postgraduate medical education took place in a

³⁹ In all provinces, the English Language test must be completed within 24 months of submitting applications for licensure.

country identified by the Federation of Medical Regulatory Authorities of Canada as having English as a first or native language or if a majority of their patient care was conducted in English.⁴⁰

- IMGs must provide a criminal record check from every jurisdiction where they have practiced medicine or lived.

In conclusion, the path to licensure for medical practitioners in Canada involves a comprehensive set of criteria and obligations. The general requirements include the possession of an accredited Doctor of Medicine (M.D.), a certificate of professional conduct, legal entitlement to work in Canada, proficiency in Canadian languages, submission of reference letters, and successful completion of a criminal record check.

Specific Requirements for licensure

In this section, I present the varying requirements for obtaining provisional license across different provinces. These requirements include postgraduate training, examinations, duration of currency of practice, sponsorship, assessments, and other necessary criteria.

Postgraduate Training

Licensure in the provisional register necessitates completion of postgraduate training in family medicine. Specifically, the registration for a provisional license requires that family medicine IMGs have a minimum of 24 months of postgraduate training.

The review of the postgraduate training requirements reveals a disparity where Manitoba and Saskatchewan have more leniency compared to the other provinces. IMGs applying for licensure in Manitoba and Saskatchewan, without the standard 24 months of postgraduate training, may alternatively qualify with a minimum of 12 months of postgraduate

⁴⁰ The countries identified by the Federation of Medical Regulatory Authorities are Australia, Bahamas, Bermuda, British Virgin Islands, Canada, Ireland, New Zealand, Singapore, South Africa, United Kingdom, United States of America, US Virgin Islands, and the Caribbean Islands of Anguilla, Antigua and Barbuda, Barbados, Dominica, Grenada, Grenadines, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent, Trinidad, and Tobago.

training and 3 years of independent practice within 5 years. However, in other provinces, IMGs are required to have a minimum of 24 months of postgraduate training.

Examinations

The issuance of a medical license in Canada may require IMGs to pass the medical council of Canada Qualifying Examinations (MCCQE) or provide an acceptable alternative.⁴¹ The main examinations required for licensure are the MCCQE Part 1 and MCCQE Part 2. IMGs who pass MCCQE Part 1 or both MCCQE Part 1 and MCCQE part 2 may attain a Licentiate of the Medical Council of Canada (LMCC) status and be included in the Canadian Medical Register.⁴²

The review of these requirements reveals that Manitoba is the most lenient regarding the MCCQE or LMCC status. In contrast to other provinces, Manitoba does not require a pass in MCCQE or the attainment of LMCC status prior to issuing a provisional license.

Duration of Currency of Practice

The application for provisional license requires IMGs to provide evidence of currency of practice. Table 3.1 presents the duration of currency of practice based on province of residence.

The review of these requirements shows that Manitoba has the most lenient duration of currency of practice.

- IMGs applying for licensure in Manitoba must show evidence that they have remained actively engaged in General/Family Practice, and the period of not practicing independently as a General/Family Practitioner should not exceed five years.

⁴¹ Acceptable alternatives to the MCCQE include the Medical Council of Canada Evaluating Examination (MCCEE), the United States Medical Licensing Examination (USMLE) Step 1,2 and 3; Educational Commission for Foreign Medical Graduates (ECFMG) certification plus USMLE Step 3; Federation Licensing Examination (FLEX) component 1 and component 2; The National Board of Medical Examiners (NBME) Part 1, 2 and 3; The Comprehensive Osteopathic Licensing Examination (COMLEX – USA) Levels 1, 2 and 3 and Examen Clinique Objectif Structuré (ECOS) of the Collège des Médecins du Québec.

⁴² See <https://mcc.ca/services/lmcc/> for LMCC eligibility criteria.

- In Saskatchewan, IMGs must provide evidence of participation in independent practice within the last three years and a minimum of five months accumulated practice within the past five years.
- The medical registration application in New Brunswick requires IMGs to have a minimum of 450 hours (6 months) of clinical practice within the five years before the application.
- IMGs whose province of registration is Newfoundland, Nova Scotia and Prince Edward Island are required to provide evidence of a minimum of six months (450 hours) of clinical practice within the three years preceding the application.
- To meet the currency of practice requirement in Ontario and British Columbia, applicants should present evidence of 24 weeks (equivalent to 960 hours) of hands-on clinical experience as a family physician or general practitioner within the last three years.
- In Alberta, IMGs must show evidence of engagement in discipline-specific postgraduate training or independent practice for a duration of 12 months within the past three years.
- In Quebec, IMGs are required to provide evidence of having participated in medical activities relevant to family practice for twelve (12) months within the last two (2) years before submitting their application.

The duration of currency of practice is more lenient in Manitoba followed by Saskatchewan, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, Ontario, British Columbia, Alberta, and Quebec.

Table 3. 1: Requirements of Currency of Practice for IMGs by Province

Province	Currency of practice
Newfoundland and Labrador	6 months (450 hours) within 3 years
Prince Edward Island	6 months (450 hours) within 3 years
Nova Scotia	6 months (450 hours) within 3 years
New Brunswick	450 hours within 5 years
Quebec	12 months within 2 years
Ontario	24 weeks (960 hours) within 3 years
Manitoba	independent practice within 5 years
Saskatchewan	Independent practice within the last 3 years and at least 5 months within 5 years
Alberta	12 months within 3 years
British Columbia	24 weeks (960 hours) within 3 years

Source: Author's own compilation using information from the various provincial websites

Sponsorship

The registration for a provisional license may necessitate IMGs to acquire sponsorship from the Regional Health Authority (RHA) of the province. The review of this requirement across provinces reveals that some provinces may offer a smoother process to obtain a provisional license as they do not require securing sponsorship prior to license issuance.

Specifically, IMGs applying for a provisional license in Newfoundland and Labrador, Nova Scotia, New Brunswick, Quebec, Manitoba, Alberta, and British Columbia are required to obtain sponsorship before license issuance. However, in Prince Edward Island, Ontario, and Saskatchewan, sponsorship is not required. Therefore, certain provinces have more relaxed sponsorship requirements compared to others.

Assessments

IMGs applying for provisional license may need to successfully complete a Practice Ready Assessment (PRA).

The review of the assessment requirements across provinces highlights two (2) disparities:

1. Quebec, Saskatchewan, and Alberta impose the strictest assessment requirements for IMGs. In these provinces, all IMGs applying for a provisional license must undergo an assessment. In contrast, in Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario, Manitoba, and British Columbia not all IMGs seeking licensure are required to complete an assessment. Specifically, in Newfoundland and Labrador, Nova Scotia, Ontario, Manitoba, and New Brunswick, only CFPC ineligible IMGs are required to undertake an assessment.⁴³ Additionally, in British Columbia, assessments are necessary only for IMGs eligible for CFPC certification with examination or those who are ineligible for CFPC certification.
2. Alberta has the lengthiest assessment period compared to other provinces. CFPC ineligible IMGs are required to complete over 6 months of assessment (PRA and a Supervised Practice Assessment (SPA)) when applying for a provisional license. Those who are CFPC-eligible must successfully complete over three (3) months of SPA. In contrast, in all other provinces, the assessment duration is only 12 weeks.

The assessments requirement is stricter in Quebec, Saskatchewan, and Alberta compared to other provinces. Additionally, Alberta imposes the lengthiest assessment duration.

⁴³ The assessment programs in Canada are the Newfoundland Practice Ready Assessment (PRA-NL) program, Nova Scotia Practice Ready Assessment Program (NSPRAP), Quebec evaluation program, Practice Ready Ontario (PRO), University of Manitoba Practice Ready Assessment Program (PRA MB-FP), Saskatchewan International Physician Practice Assessment (SIPPA) program, Practice Readiness Assessment (PRA-AB) in Alberta and Practice Ready Assessment (PRA-BC) Program.

Other Requirements

In Prince Edward Island, Quebec, Manitoba and British Columbia, IMGs are expected to fulfill additional requirements.

The additional requirements are as follows:

- In Prince Edward Island, IMGs must pass the Prince Edward Island Provincial Exam (PEI Provincial Exam).
- The Collège des médecins du Québec (CMQ) requires IMGs to fulfill the additional requirement of the ALDO-Quebec training activity.
- The College of Physicians and Surgeons of Manitoba (CPSM) requires IMGs to hold a certificate from the Minister of Health along with a description of ongoing professional development.
- The College of Physicians and Surgeons of British Columbia (CPSBC) requires IMGs to undergo a phone interview. The licensure interview is scheduled a maximum of two weeks before the assessment commences.

Provinces such as Prince Edward Island, Quebec, Manitoba, and British Columbia require IMGs to fulfill additional requirements, while some other provinces may not have such additional requirements.

Summary

The variation in the types of licensures, postgraduate training, examinations, sponsorship, assessments, and other requirements suggest evidence of a protectionist motive within the medical regulations in Canada.

3.3 Historical Economic Trajectories of Immigrant IMGs in Canada

3.3.1 Overview

Obtaining information on the current entry requirements for IMGs in Canada was difficult as there is no central depository for this information. Obtaining information on the

historical entry requirements proved out of reach entirely. Therefore, in this section, I analyze the differences in economic outcomes for immigrant IMGs who arrived in Canada between 1981 to 1999, separately by province, but without considering the historical entry regulations.

The remaining of this chapter is structured as follows: The first section describes the data. The second section presents the trends in employment earnings for immigrant IMGs based on their province of residence. The final section presents the empirical analysis on the impact of province of residence on the probability of positive employment income and employment earnings.

3.3.2 Data

The data used for this research was sourced from Statistics Canada's 1982-2018 LAD linked to the Longitudinal Immigration Database (IMDB). The LAD is an administrative panel dataset containing the annual tax returns for a random 20 percent sample of Canadian tax filers. The LAD is refreshed with new tax filers each year, and respondents are followed until they stop filing taxes. I restrict the sample to immigrants who arrived between 1981 and 1999, whose intention at the time of arrival was to practice as a physician in Canada and who currently reside in any of the ten provinces, excluding Prince Edward Island and Nova Scotia.⁴⁴

To construct a longitudinal dataset that tracks physicians over time, I used the immigrant file, the LAD register, and the LAD tax files. I constructed a sample of immigrant IMGs who arrived in Canada between 1981 and 1999. To track these immigrants from their first to their twentieth year in Canada, I organized the sample based on their year of arrival, subsequently appending relevant tax files. For instance, for those who arrived in 1981, tax files from 1982 to 2001 were appended; for those arriving in 1982, tax files from 1983 to 2002 were

⁴⁴ The LAD is a 20 percent random sample of Canadian tax filers and I restrict the sample to immigrants whose intended occupation is a physician. Hence territories in Canada, Prince Edward Island and Nova Scotia were excluded due to low sample size.

included. This process was repeated for all landing years within the 1981 to 1999 range. The final sample includes 21,893 individuals who were observed for 20 years in Canada.⁴⁵

The primary advantage of using the LAD for this study is its capacity to be linked with the Longitudinal Immigration Database (IMDB). This linkage enables the identification of immigrant's intended occupations upon landing, their program of entry, Canadian official language at landing, and the specific year of arrival. Information on intended occupations is particularly valuable in identifying immigrants whose intended occupation is physician. Moreover, the landing year serves as a crucial tool in tracing immigrant IMGs over their stay in Canada, spanning from their first to their twentieth year in the country. The main limitation of the LAD is its lack of information on immigrant's occupations within Canada, thereby making it impossible to determine whether immigrant IMGs were able to practice as physicians in the country. However, even if I had information on occupations, I would not want to determine my sample with this information to avoid the selection bias of only selecting immigrant IMGs who have succeeded in becoming physicians in the country. Therefore, my research does not exclusively concentrate on those who have become physicians, but rather includes all immigrant IMGs who relocated to Canada aspiring for a medical career. I estimate regressions on the economic outcomes of immigrant IMGs, adjusting for age (quadratic), gender, presence of children under 5 years, years since migration, approved jurisdiction indicator, family physician indicator, migration status indicator, program of entry, and year fixed effects. Summary Statistics are provided in Appendix Table 3.2

The LAD includes a measure of employment income which includes wages, salaries, employment-based commissions, training allowances, tips, gratuities, self-employment earnings, and Indian-exempt employment earnings. I constructed two dependent variables

⁴⁵ The final sample is 21, 893 individuals, where the number of immigrants IMGs in Ontario is 9,538; Newfoundland is 605; New Brunswick is 249; Quebec is 3,073; Manitoba is 1021; Saskatchewan is 978; Alberta is 2,499 and British Columbia is 3,930.

based on employment income. The first variable represents the probability of positive employment income, which is a dummy variable equal to 1 if the immigrant IMG earned positive employment income in the tax year and 0 otherwise. The second dependent variable is inflation-adjusted log employment earnings for each immigrant IMG within the sample.⁴⁶

The key independent variable is the province of residence for the immigrant IMG. The province of residence variable in the LAD indicates the province where the immigrant IMG was residing as of December 31st of the tax year.

3.3.3 Trends in Employment Earnings for Immigrant IMGs in Canada

To understand the historical economic trends among immigrant IMGs who came to Canada between 1981 and 1999, I used the LAD employment earnings adjusted for 2019 CPI. This allowed me to calculate the average and median employment earnings for each immigrant IMG during their first to twentieth year in Canada.⁴⁷ Afterward, I used these values to calculate the growth rates for both average and median employment earnings, using the first year as a base category.

In the remaining part of this section, I first present the trends in real growth rate of average and employment earnings for immigrant IMGs from their first to the twentieth year in Canada based on their province of residence. Second, to understand the trends in employment earnings at specific years in Canada, I present the level of real average employment earnings by province of residence for immigrant IMGs at Year 1, Year 5, Year 10, and Year 20. The values used in this section represent raw real average and median employment earnings, unadjusted for any immigrant controls.

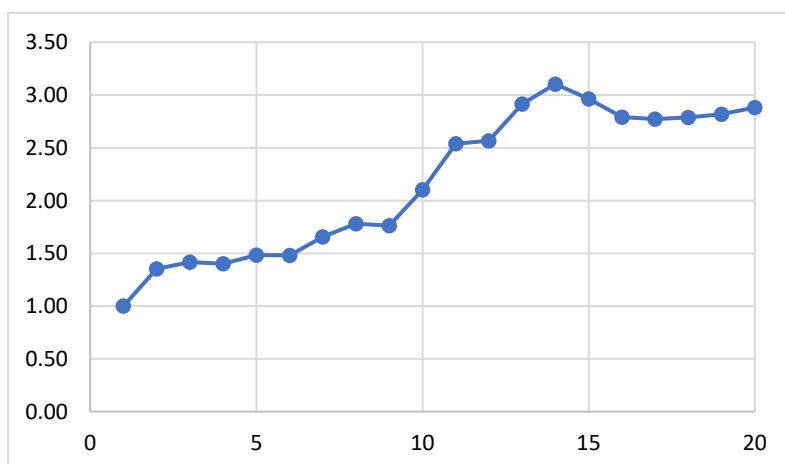
⁴⁶ The Employment Earnings were adjusted for inflation using the 2019 Consumer Price Index (CPI) obtained from the World Bank's World Development Indicators (World Bank, 2023). Having zero employment income does not indicate a non-tax filer.

⁴⁷ The use of both real growth rate in average and median employment earnings provide different perspective on income distribution because real average employment earnings give a general overview by summing up all employment income and dividing by the total number of earners whiles the median income represents the middle value when income are arranged in ascending or descending order.

Newfoundland and Labrador

- The growth rate in real average employment earnings for physicians in Newfoundland is shown in Figure 3.1. The growth rate in average employment earnings shows some variations across the years spent in Canada. There are periods of stability where the growth rate in average employment earnings remains consistent from the third to the sixth year, fluctuating within a narrow range between 1.4 and 1.5. There is a significant spike in the growth rate in average employment earnings. In particular, the growth rate in average employment earnings increased from 2.1 in the tenth year to 3.1 at the end of the fourteenth year indicating a substantial increase in employment earnings compared to the base year. After the spike, the growth rate in average employment earnings stabilizes but does not show further substantial increases, indicating a plateau in later years compared to the initial increase observed in the first decade.

Figure 3. 1: The Growth Rate in Average Annual Employment Earnings in Newfoundland

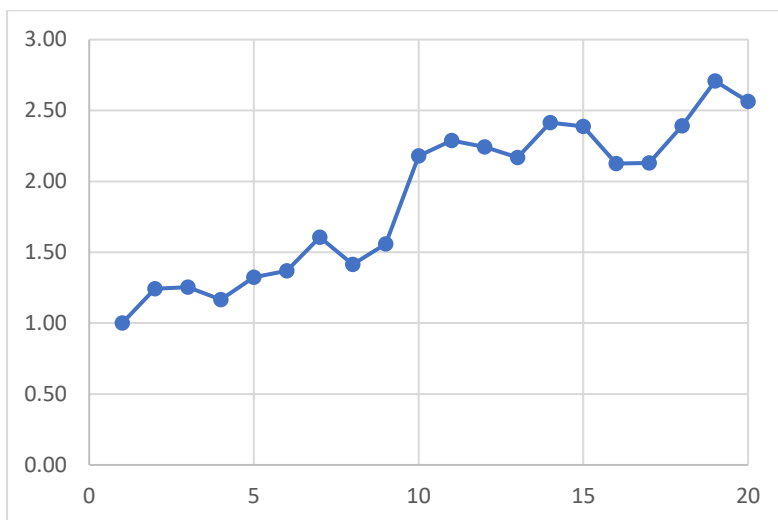


Note: The values indicate how much the average employment earnings grow each year compared to the average employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- The growth rate in real median employment earnings for physicians in Newfoundland is shown in Figure 3.2. The growth rate in employment earnings for physicians in Newfoundland shows periods of moderate growth initially, followed by spikes in earnings growth in the mid to later years. In particular, the growth rate in employment earnings shows incremental increases during the second to the sixth Year, fluctuating between 1.2 and 1.4, indicating moderate growth in employment earnings compared to the base year. In addition, a high spike occurs between the seventh and the eleventh years, reaching a peak of 2.3 in the eleventh year, indicating a significant increase in employment earnings compared to the base year. However, after this spike, the growth rate fluctuates between 2.1 and 2.7, indicating variability but maintaining a higher level compared to the base year.

Figure 3. 2: The Growth Rate in Median Annual Employment Earnings in Newfoundland



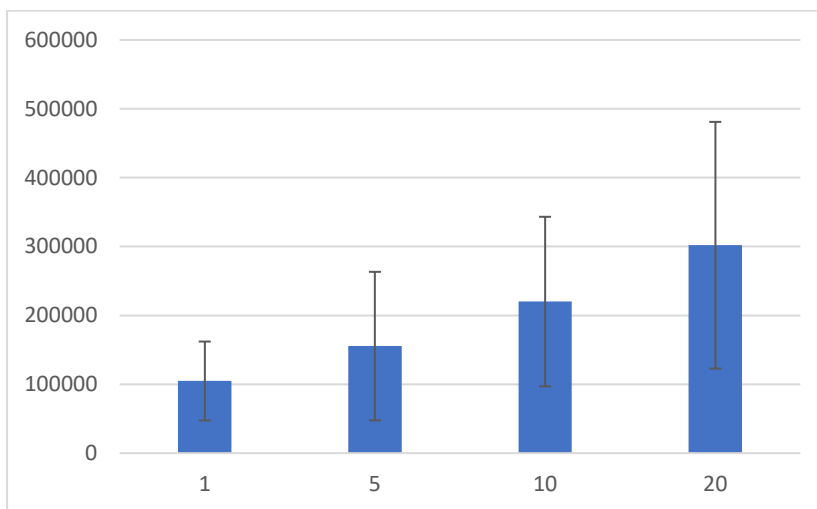
Note: The values indicate how much the median employment earnings grow each year compared to the median employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- In Figure 3.3, I present the level of average employment earnings for Physicians in Newfoundland at Year 1, Year 5, Year 10, and Year 20. The data shows a clear upward trend in average earnings for individuals in Newfoundland as years in Canada increases. The average earning for physicians in the first year in Newfoundland is approximately

\$105,000.⁴⁸ By the fifth year, the level of average earnings increased to \$155,000, indicating about a 48 percent rise from the first year. After a decade in Canada, the average earnings further increased to \$220,000 indicating continued significant growth in employment earnings. Once the physicians have spent two decades in Canada, average employment earnings increase to \$302,000 indicating a significant growth over the years.

Figure 3. 3: Average Annual Employment Earnings for Immigrant IMGs in Newfoundland in Year 1, 5, 10 and 20



Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

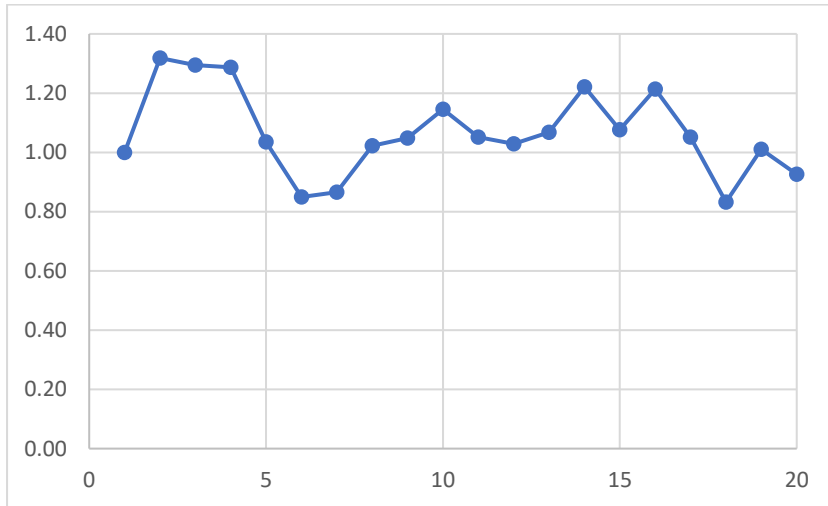
New Brunswick

- The growth rate in average employment earnings for physicians in New Brunswick is shown in Figure 3.4. The growth rate in average employment earnings for physicians in New Brunswick shows a mix of moderate increases, fluctuations, and intermittent decreases over the twenty years. In particular, the growth rate in average employment earnings shows incremental increases from the second to the fourth year, indicating a moderate to slightly higher growth in average employment earnings compared to the base

⁴⁸ All dollar values are rounded to the nearest thousand.

year. In addition, from the fifth to the twentieth year, a fluctuating pattern was observed where the growth rate in average employment earnings fluctuates, sometimes falling below the base year's rate, indicating periods of a decrease in employment earnings.

Figure 3. 4: The Growth Rate in Average Annual Employment Earnings in New Brunswick

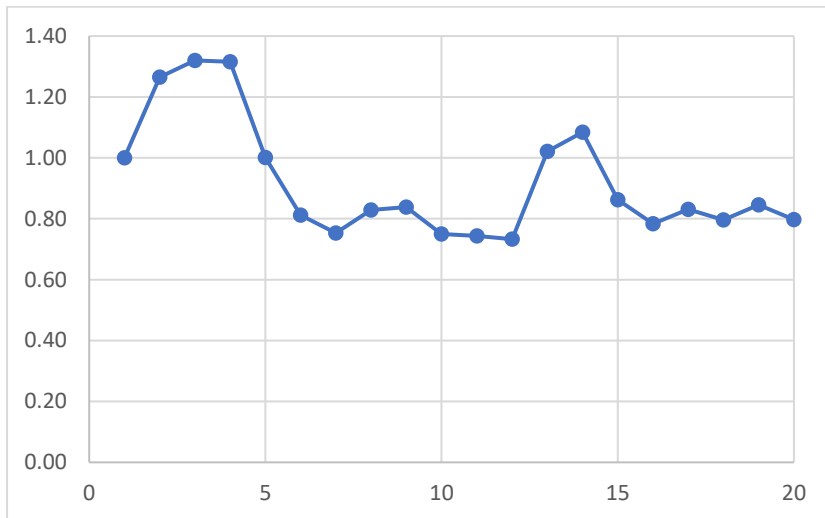


Note: The values indicate how much the average employment earnings grow each year compared to the average employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- The growth rate in median employment earnings for physicians in New Brunswick is shown in Figure 3.5. The growth rate in employment earnings for physicians in New Brunswick indicates a mix of moderate increases, declines and fluctuations over the twenty-year period. In particular, the growth rate in employment earnings increases between the second and the fourth year, indicating moderate to slightly higher growth in employment earnings compared to the base year. In addition, after the fourth year, there is a decline in the growth rate in median employment earnings, particularly in the fifth and tenth years, where it declines below the base year's rate. And from the eleventh to the twentieth year, the growth rate fluctuates around 0.7 to 1.1, indicating variability and inconsistent growth in median employment earnings compared to the base year.

Figure 3. 5: The Growth Rate in Median Annual Employment Earnings in New Brunswick

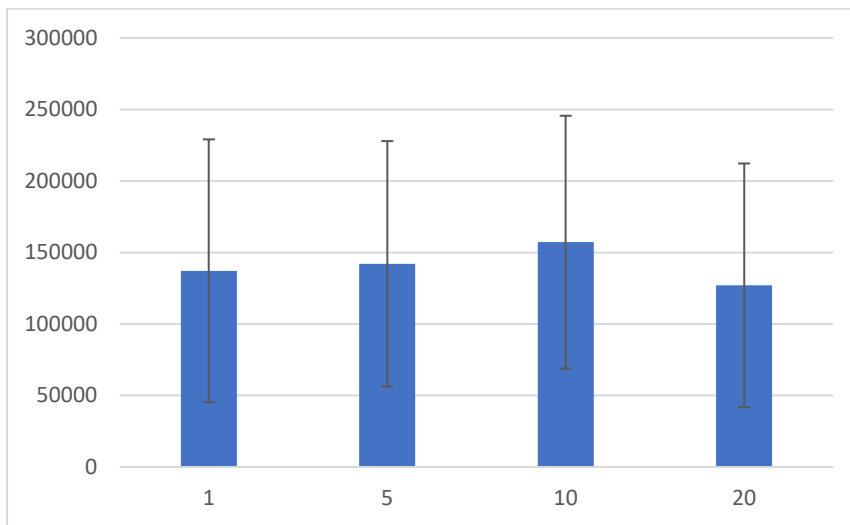


Note: The values indicate how much the median employment earnings grow each year compared to the median employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- In Figure 3.6, I present the level of average employment earnings for Physicians in New Brunswick at Year 1, Year 5, Year 10, and Year 20. The data shows a slight increase in average employment earnings in the first decade, followed by a decrease in average employment earnings from the tenth to the twentieth year. Specifically, the average employment earnings for physicians in their first year in Canada is \$137,000. By the fifth year, the average employment earnings are \$142,000, indicating a slight increase compared to the first year. After a decade in Canada, the average employment earning is \$157,000, indicating moderate growth over the ten years. However, after two decades in Canada, the average employment earning is \$127,000, showing a decrease in average employment earnings compared to the tenth year.

Figure 3. 6: Average Annual Employment Earnings for Immigrant IMGs in New Brunswick in Year 1, 5, 10 and 20

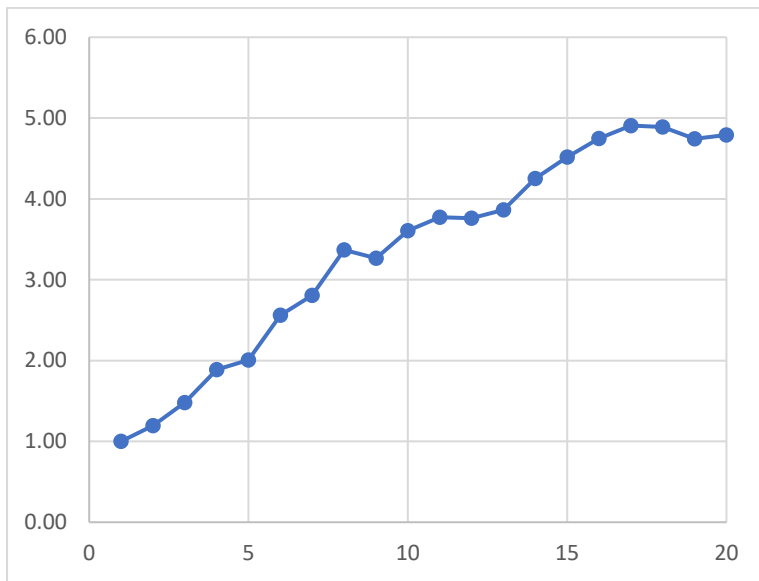


Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

Quebec

- The growth rate in average employment earnings for physicians in Quebec is shown in Figure 3.7. The growth rate in average employment earnings for physicians in Quebec shows a remarkable upward trend, especially from the fifth to the twentieth year, indicating consistent and substantial growth in earnings over the twenty years. In particular, the growth rate in employment increased between the second and fourth year, indicating moderate to slightly higher growth in employment earnings compared to the base year. After the fourth year, the growth rate in employment earnings shows a consistent upward trend, indicating a substantial increase over time.

Figure 3. 7: The Growth Rate in Average Annual Employment Earnings in Quebec

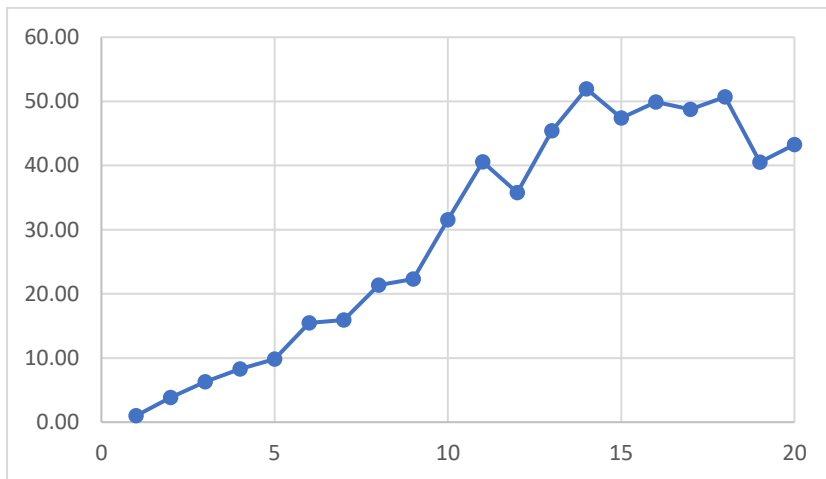


Note: The values indicate how much the average employment earnings grow each year compared to the average employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- The growth rate in median employment earnings for physicians in Quebec is shown in Figure 3.8. The growth rate in median employment earnings shows a substantial increase in employment earnings in the first decade, followed by fluctuations and a decrease in growth rate after reaching peak values. Specifically, compared to the first year, the growth rate in median employment earnings increase significantly between the second and the tenth year, fluctuating between 3.9 and 31.5 showing rapid and substantial growth. In addition, there is a peak in growth rate in the eleventh year, indicating the highest increase in median employment earnings, and then it fluctuates but remains at high levels compared to the base year. Finally, from the fifteenth to the twentieth year, the growth rate in median employment earnings fluctuates and decreases compared to the peak years, indicating volatility and a reduction in the growth of median employment earnings compared to the earlier years.

Figure 3. 8: The Growth Rate in Median Annual Employment Earnings in Quebec

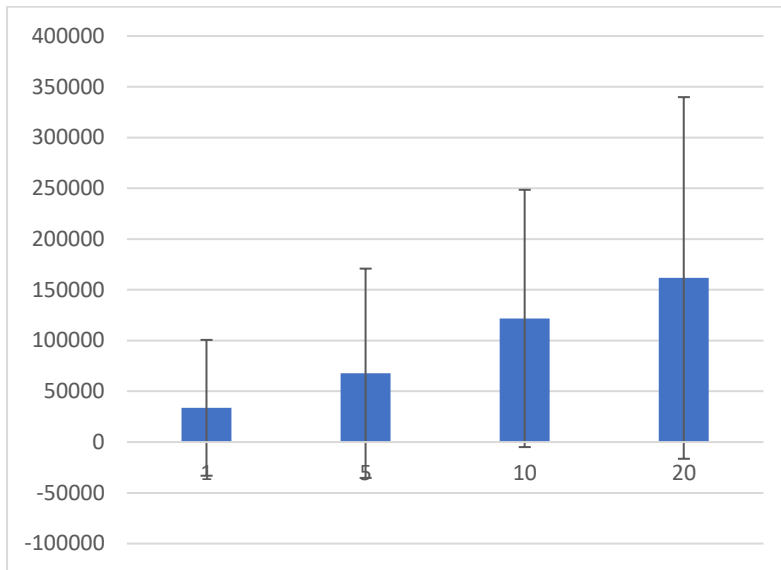


Note: The values indicate how much the median employment earnings grow each year compared to the median employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- In Figure 3.9, I present the level of average employment earnings for Physicians in Quebec at Year 1, Year 5, Year 10, and Year 20. The data reveals a clear upward trend in average employment earnings for physicians in Quebec as they spend more time in Canada. In particular, the average employment earning for physicians in their first year in Canada is \$34,000. By the fifth year, the average employment earning has increased to \$68,000, indicating a significant rise compared to the first year. After a decade in Canada, the average earnings further increase to \$122,000 indicating a continued substantial growth over the ten years. Once they had spent two decades in Canada, the average employment earnings increased to \$162,000, indicating continued growth in employment earnings.

Figure 3. 9: Average Annual Employment Earnings for Immigrant IMGs in Quebec in Year 1, 5, 10 and 20

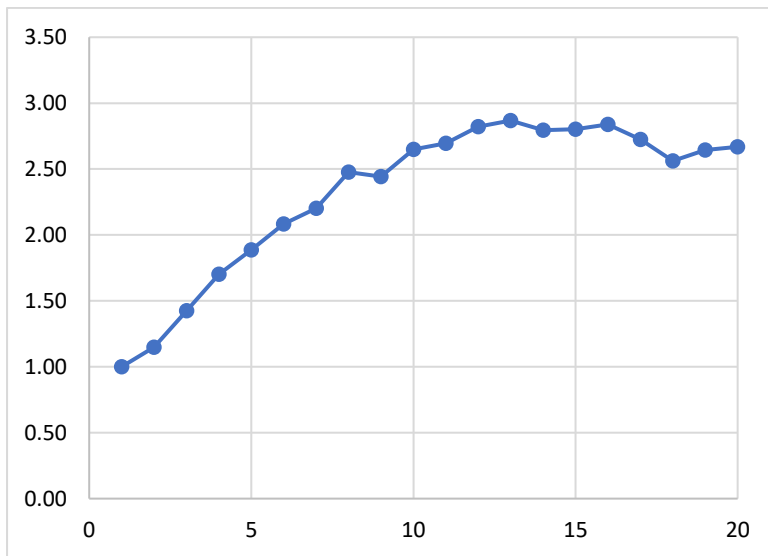


Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

Ontario

- The growth rate in average employment earnings for physicians in Ontario is shown in Figure 3.10. The growth rate in average employment earnings shows an upward trend over the 20 years, though with some fluctuations. Periodically, the rate of increase rises, as seen between years sixth to eighth year where the growth rate of employment increases more rapidly. Then there are fluctuations in the growth rate around years ninth to eleventh and a slight decrease in years thirteen to seventh years before the growth rate of employment earnings stabilizes again.

Figure 3. 10: The Growth Rate in Average Annual Employment Earnings in Ontario

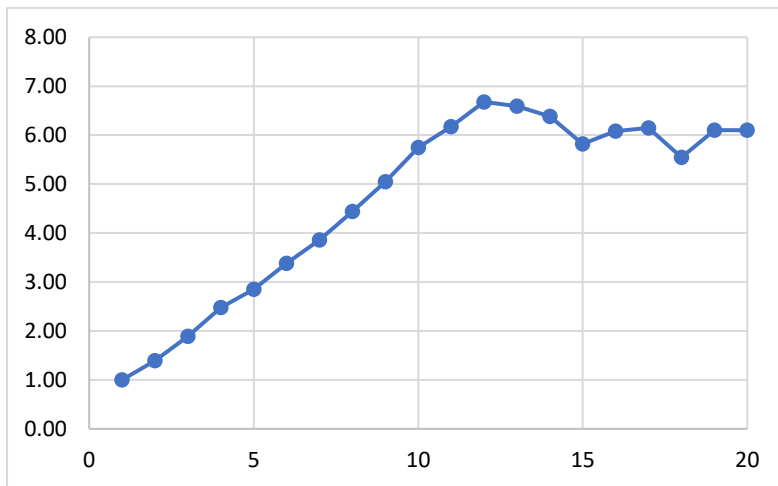


Note: The values indicate how much the average employment earnings grow each year compared to the average employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- The growth rate in median employment earnings for physicians in Ontario is shown in Figure 3.11. The growth rate in median employment earnings grew significantly in the initial years but experienced some fluctuations after the twelfth year. More specifically, the growth rate in median employment earnings rises from 1.0 to a peak of 6.7 in the twelfth year before gradually decreasing. There is a peak in the 12th year, and after that, the growth rate fluctuates but generally remains above the base year.

Figure 3. 11: The Growth Rate in Median Annual Employment Earnings in Ontario

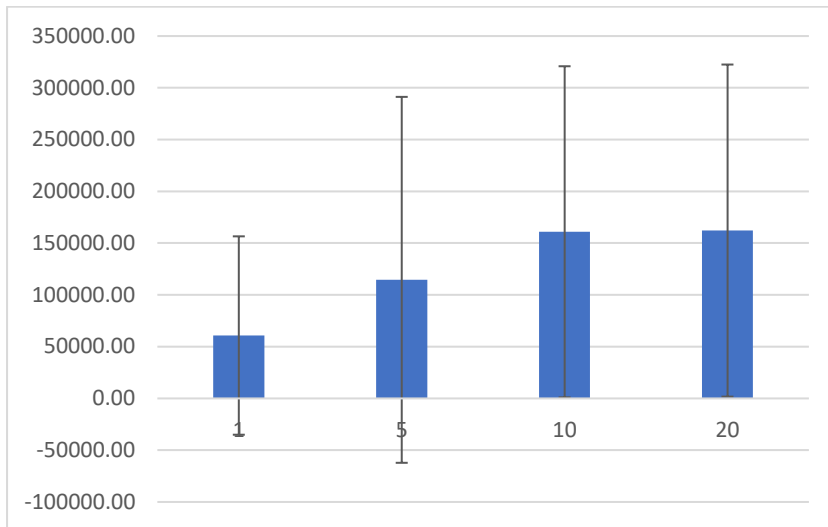


Note: The values indicate how much the median employment earnings grow each year compared to the median employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- In Figure 3.12, I present the level of average employment earnings for Physicians in Ontario at Year 1, Year 5, Year 10, and Year 20. The data reveals a substantial rise in earnings within the first decade and a plateau in average earnings between the tenth and the twentieth years. In particular, the average employment earnings for physicians in Ontario is \$61,000. By the fifth year, the average employment earnings had increased to \$115,000, which is more than a 50% increase from the first year. At tenth year in Canada, the average employment earnings further increased to \$161,000, indicating continued significant growth. The average employment earnings in the twentieth are \$162,000 showing a minimal change from the earnings in the tenth year.

Figure 3. 12: Average Annual Employment Earnings for Immigrant IMGs in Ontario in Year 1, 5, 10 and 20

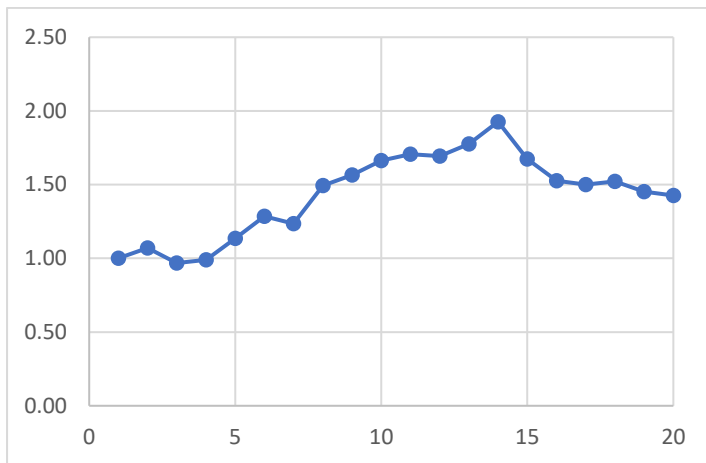


Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

Manitoba

- The growth rate in average employment earnings for physicians in Manitoba is shown in Figure 3.13. The growth rate in average employment earnings for physicians in Manitoba shows variations and a significant increase in employment earnings growth from the eighth to the fourteenth year, followed by a decrease in growth rate in the later years. Specifically, from the eighth to the fourteenth year, there is an overall increase in the growth rate of average employment earnings, reaching its peak at 1.9 in the fourteenth year, indicating a significant rise in employment earnings compared to the base year. Finally, after the fourteenth year, the growth rate fluctuates but generally decreases, stabilizing around 1.4 in the twentieth year.

Figure 3. 13: The Growth Rate in Average Annual Employment Earnings in Manitoba

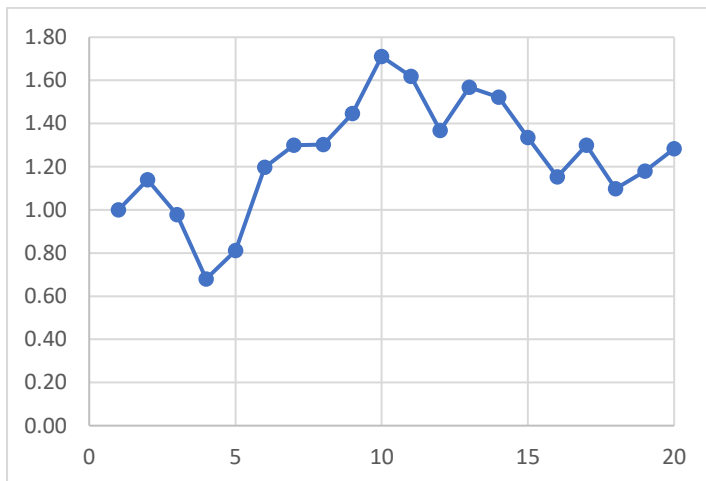


Note: The values indicate how much the average employment earnings grow each year compared to the average employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- The growth rate in median employment earnings for physicians in Manitoba is shown in Figure 3.14. The data reveal that the growth rate in employment earnings for physicians in Manitoba shows fluctuations and periods of both increase and decrease, with a notable increase in the middle years followed by a decline in growth rates in the later years. Specifically, there is an initial increase in the growth rate of median employment earnings in the second year, followed by a decline to 0.7 in the fourth year. Then the growth rate in the median employment earnings began to increase, reaching its peak at 1.7 in the tenth year, indicating a substantial growth in employment earnings compared to the base year. After a decade in Canada, the growth rate in employment earnings fluctuates but shows a downward trend, stabilizing around 1.3 in the twentieth year, indicating a decrease in median employment growth compared to the earlier years.

Figure 3. 14: The Growth Rate in Median Annual Employment Earnings in Manitoba

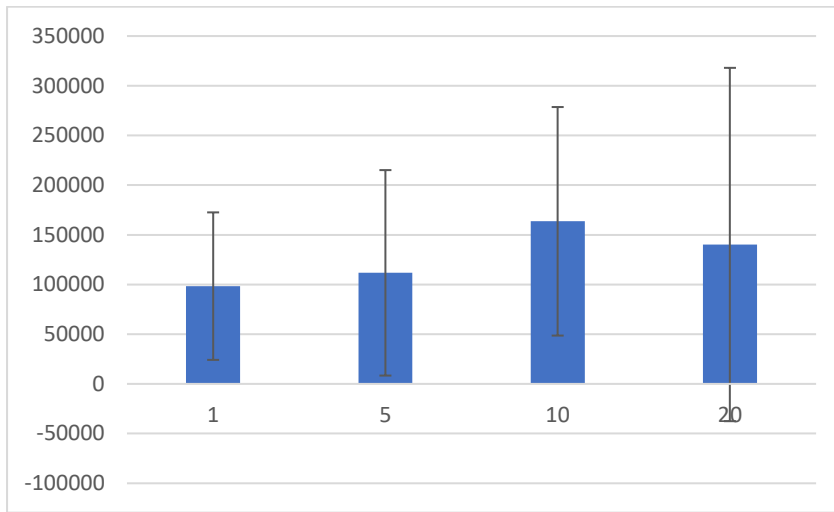


Note: The values indicate how much the median employment earnings grow each year compared to the median employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- In Figure 3.15, I present the level of average employment earnings for Physicians in Manitoba at Year 1, Year 5, Year 10, and Year 20. The data presents an interesting trend: a significant increase in average earnings within the first decade followed by a decline in the second decade. In particular, the average employment earnings for physicians in Manitoba increased from \$98,000 in the first year to \$164,000 at the end of the tenth year. And, once they spend two decades, average employment earning is \$140,000, indicating a slight decrease in average employment earnings compared to the tenth year.

Figure 3. 15: Average Annual Employment Earnings for Immigrant IMGs in Manitoba in Year 1, 5, 10 and 20

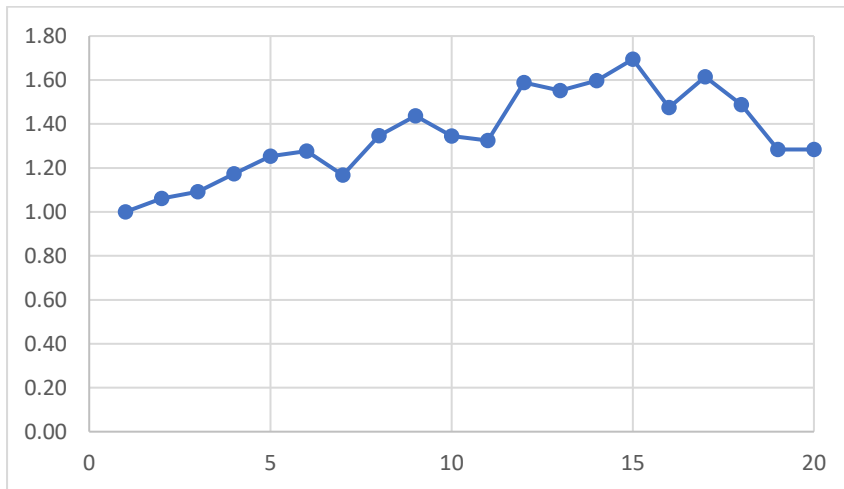


Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

Saskatchewan

- The growth rate in average employment earnings for physicians in Saskatchewan is shown in Figure 3.16. The growth rate in average employment earnings in Saskatchewan shows fluctuations and periods of both increase and decrease over the twenty years. Specifically, there is a consistent increase in the growth rate of average employment earnings from the second to the sixth year, indicating moderate to slightly higher growth in average employment earnings compared to the base year. After the sixth year, the growth rate in average employment earnings fluctuates, there are periods of both increase and decrease compared to the base year, with peaks at the fifteenth and seventieth years, and then a decline towards the nineteenth and twentieth years.

Figure 3. 16: The Growth Rate in Average Annual Employment Earnings in Saskatchewan

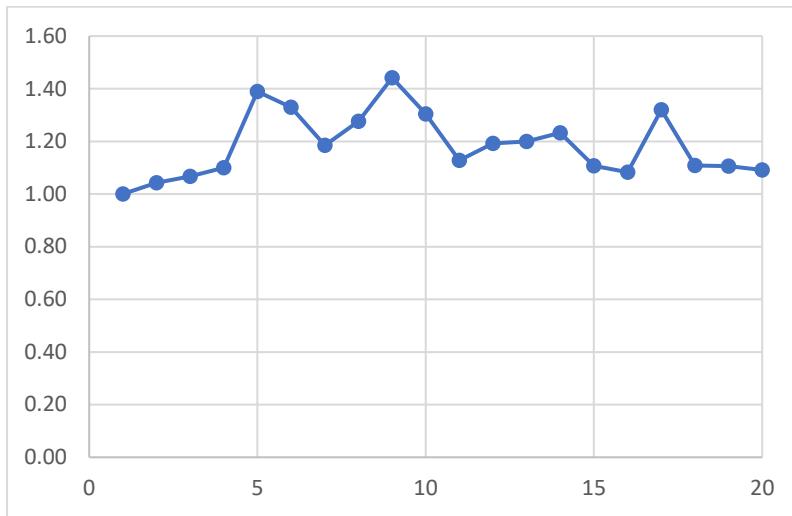


Note: The values indicate how much the average employment earnings grow each year compared to the average employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- The growth rate in median employment earnings for physicians in Saskatchewan is shown in Figure 3.17. The growth rate in median employment earnings for physicians in Saskatchewan shows fluctuations and variability over the twenty years, with notable peaks occurring intermittently. There is a steady increase in the growth rate of median employment earnings from the second to the fourth year, indicating consistent but moderate growth in median employment earnings compared to the base year. In addition, there is a notable peak in the growth rate at the fifth year, indicating a substantial increase in median employment earnings compared to the base year. After the fifth year, the growth rate fluctuates but generally remains higher than the base year.

Figure 3. 17: The Growth Rate in Median Annual Employment Earnings in Saskatchewan

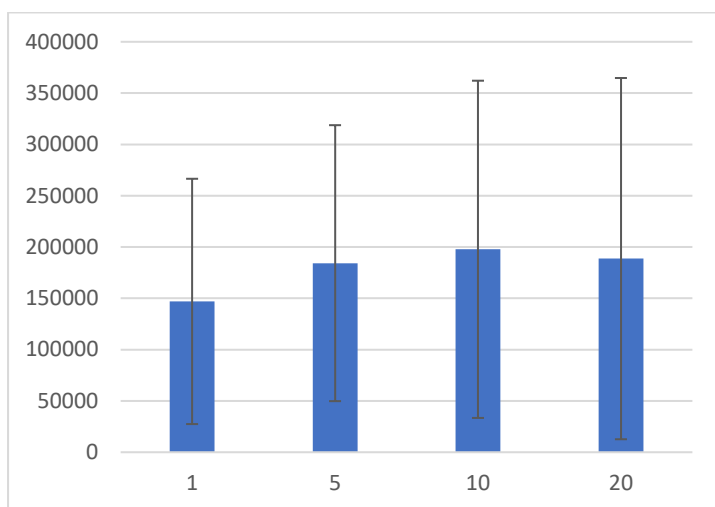


Note: The values indicate how much the median employment earnings grow each year compared to the median employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- In Figure 3.18, I present the level of average employment earnings for Physicians in Saskatchewan at Year 1, Year 5, Year 10, and Year 20. The data shows that there is a significant increase in the first decade, but between the tenth and twentieth years, there is a decline in average employment earnings. Specifically, the average employment earning in the first year is \$147,000. In the tenth year, the average employment earnings increased to \$198,000 indicating a substantial growth. However, in the twentieth year, the average employment earnings declined to \$189,000, indicating a decrease compared to the tenth year.

Figure 3. 18: Average Annual Employment Earnings for Immigrant IMGs in Saskatchewan in Year 1, 5, 10 and 20

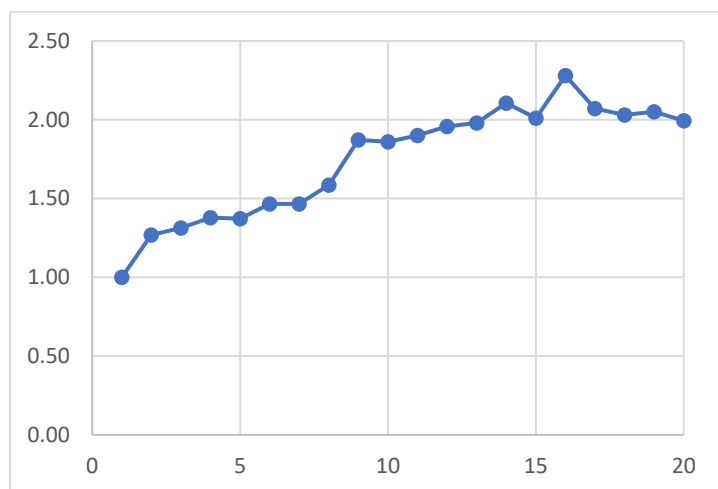


Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

Alberta

- The growth rate in average employment earnings for physicians in Alberta is shown in Figure 3.19. The growth rate in average employment earnings for physicians in Alberta shows fluctuations and variability over the twenty years, with a significant increase in earnings growth observed until the fourteenth year. Specifically, there is a consistent increase in growth rate from the second to the fourteenth year, indicating steady average employment growth compared to the base year. There is a peak observed at the sixteenth year, indicating significant growth in employment earnings compared to the base year. After the sixteenth year, the growth in average employment earnings decrease but remains above the base year.

Figure 3. 19: The Growth Rate in Average Annual Employment Earnings in Alberta

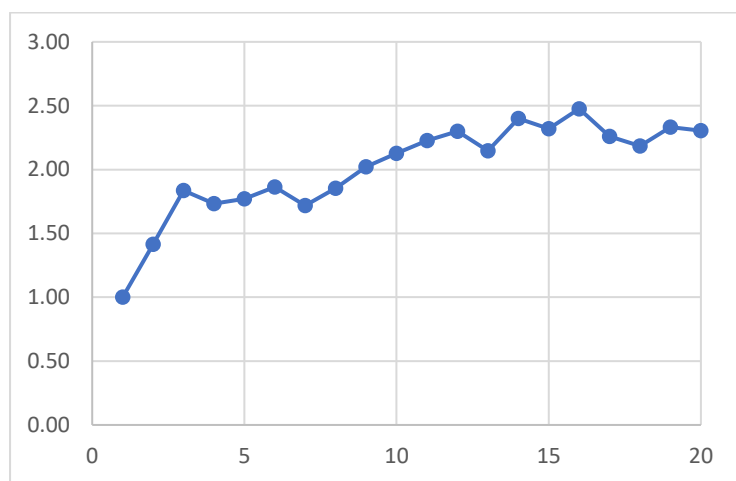


Note: The values indicate how much the average employment earnings grow each year compared to the average employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- The growth rate in median employment earnings for physicians in Alberta is shown in Figure 3.20. The graph shows consistent growth in median employment earnings over the twenty years, with fluctuations across different years. Specifically, there is a consistent increase in the growth rate in median employment income from the second to the third year, indicating a significant growth in employment earnings compared to the base year. After the third year, the growth rate fluctuates but generally remains higher than the base year, indicating variability in the growth rate with a peak around the sixteenth year. In addition, there are some fluctuations but a slight decrease towards the twentieth year compared to the peak observed around the sixteenth year.

Figure 3. 20: The Growth Rate in Median Annual Employment Earnings in Alberta

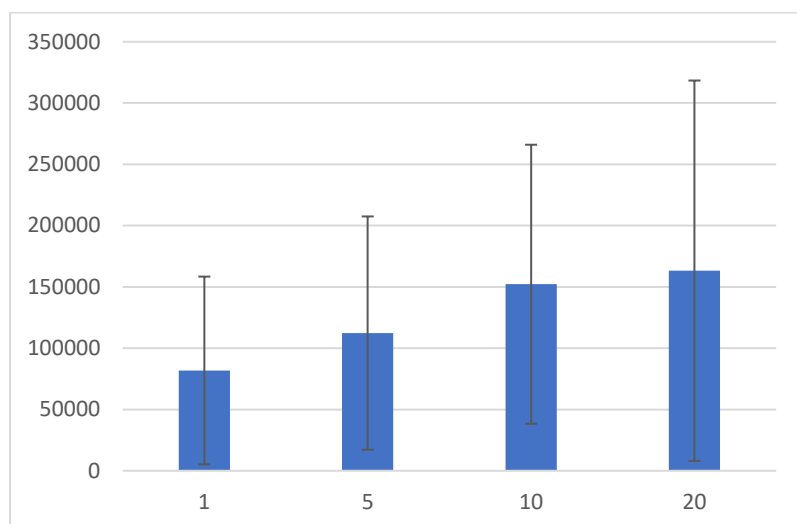


Note: The values indicate how much the median employment earnings grow each year compared to the median employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- In Figure 3.21, I present the level of average employment earnings for Physicians in Alberta at Year 1, Year 5, Year 10, and Year 20. The graph shows an upward trend in average employment earnings for physicians in Alberta. There is a significant growth within the first decade, followed by a more gradual increase in earnings over the subsequent years. Specifically, the average employment earnings for physicians in Alberta in their first year is \$82,000. At the tenth year, the average employment earnings increased to \$152,000, indicating continued substantial growth. And in the twentieth year, the average employment earnings increased to \$163,000, showing a gradual increase compared to the tenth year.

Figure 3. 21: Average Annual Employment Earnings for Immigrant IMGs in Alberta in Year 1, 5, 10 and 20

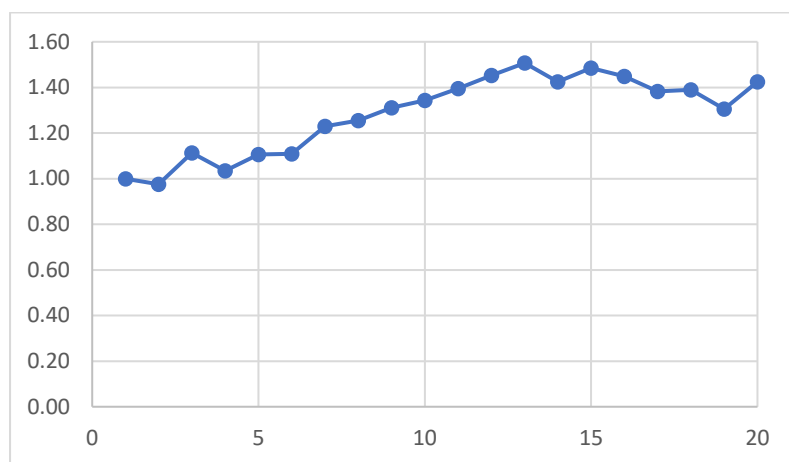


Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

British Columbia

- The growth rate in average employment earnings for physicians in British Columbia is shown in Figure 3.22. The growth rate in employment earnings for individuals in British Columbia shows fluctuations and variability over the twenty years, with some peaks observed intermittently. Specifically, the growth rates from the second to the fourth year show fluctuations, generally remaining close to the base year. In addition, from the fifth to the thirteenth year, there is a fluctuating pattern with growth rates varying slightly above the base year, reaching a peak at the thirteenth year (1.5), indicating a notable increase in earnings compared to the base year. After the thirteenth year, the growth rates fluctuate, generally maintaining levels above the base year, indicating variability in average employment earnings growth with some peaks and declines observed intermittently.

Figure 3. 22: The Growth Rate in Average Annual Employment Earnings in British Columbia

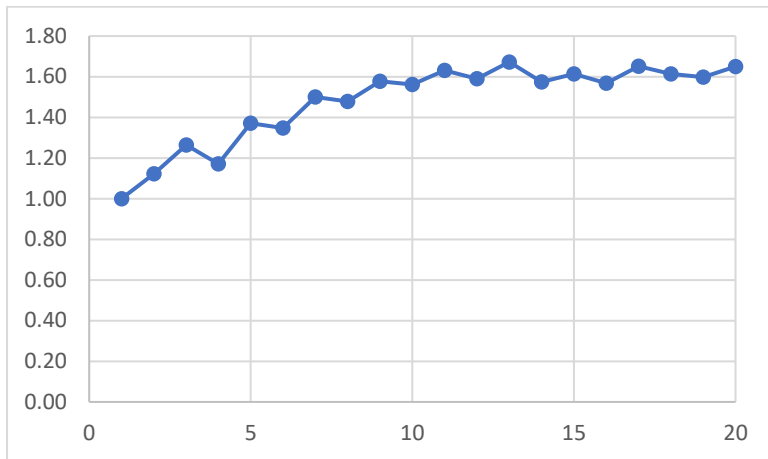


Note: The values indicate how much the average employment earnings grow each year compared to the average employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- The growth rate in median employment earnings for physicians in British Columbia over 20 years is shown in Figure 3.23. The growth rate in average employment earnings for physicians in British Columbia shows fluctuations initially, followed by consistent and substantial growth compared to the base year. Specifically, the growth rates fluctuate from the second to the fourth year, with minor variations. And from the fifth to the ninth year, there was significant increase in growth rates, indicating substantial growth in average employment earnings compared to the base year. The growth rates range between 1.4 and 1.6 during this period. After the ninth year, the growth rates show fluctuations but generally remain higher than the base year, fluctuating between 1.6 and 1.7, indicating continued growth in average employment earnings compared to the base year.

Figure 3. 23: The Growth Rate in Median Annual Employment Earnings in British Columbia

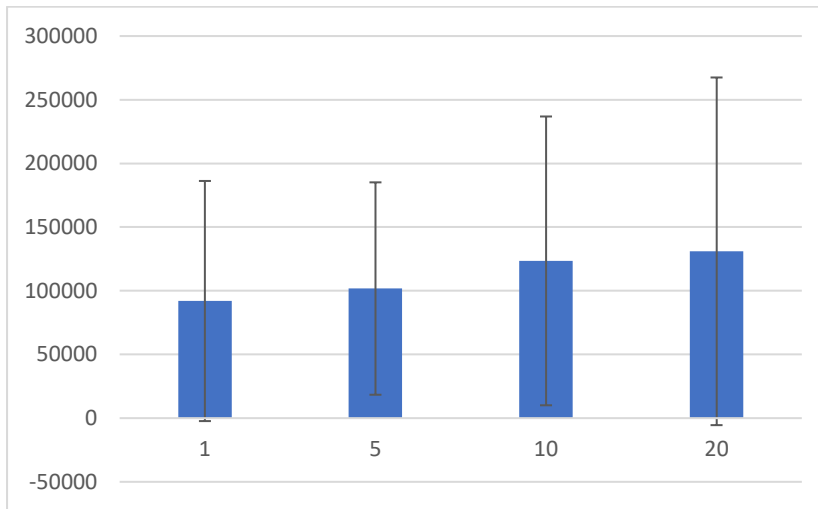


Note: The values indicate how much the median employment earnings grow each year compared to the median employment earnings of physicians in their first year in Canada.

Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

- In Figure 3.24, I present the level of average employment earnings for Physicians in British Columbia at Year 1, Year 5, Year 10, and Year 20. This data indicates a generally upward trend in average employment earnings for physicians in British Columbia. There is high growth within the first decade, followed by a more gradual increase in average employment earnings over the subsequent years. Specifically, the average employment earnings in the first year is \$92,000. At the tenth year, the average employment earnings increase to \$123,000, indicating continued growth over the ten-year period. Finally, in the twentieth year, the average employment earnings further increase to \$131,000, indicating a gradual increase compared to the tenth year.

Figure 3. 24: Average Annual Employment Earnings for Immigrant IMGs in British Columbia in Year 1, 5, 10 and 20



Source: Authors own compilation using data from the Longitudinal Administrative Database (LAD)

3.3.4 Empirical Analysis

3.3.4.1 Methodology

The analysis of economic outcomes for immigrant IMGs in Canada estimates the impact of province of residence on the probability of positive employment income and employment earnings.

Following Ferrer et al., (2023), I begin by estimating the impact of province of residence on the probability of positive employment income using equation (1) across pooled cross-sections of the LAD.

$$Y_{it} = \beta_1 X_{it} + \beta_2 Prov_{it} + \varepsilon_{it1} \quad (1)$$

where the dependent variable Y_{it} represents the probability of positive employment income for immigrant IMG i at time t . The province of residence variable $Prov_{it}$ is the province of residence for immigrant IMG i at time t . The vector of controls X_{it} include age(quadratic), years since migration and year fixed effects, in line with Ferrer et al., (2023). Gender is included to account for differences in labour force participation between males and females. To

differentiate between immigrants from approved or unapproved jurisdictions, I include an indicator for approved jurisdictions. Additionally, immigrant IMGs in Canada can be categorized as either family physicians or specialty physicians, hence I include an indicator for family physicians. Given variations in immigrants based on their program of entry, I include a control for program of entry. Lastly, an indicator for whether the immigrant IMG changed province of residence at any time during the sample period (migration status) is also included.⁴⁹ ε_{it1} represents the error term in equation (1). The key coefficient of interest, β_2 , measures the impact of province of residence on the probability of positive employment income. The coefficient is estimated using the Linear Probability Model, with standard errors clustered at the province level.⁵⁰

Next, I estimate the impact of province of residence on log employment earnings using a Heckman model (Antonakis et al., 2010; Heckman, 1979).

$$Y_{it} = \beta_1 X_{it} + \delta_1 Prov_{it} + \varepsilon_{it2} \text{ if } s_i = 1 \quad (2)$$

$$S_{it} = \varphi_1 X_{it} + \tau_2 Prov_{it} + \tau_3 Child_{it} + \varepsilon_{it2}$$

Where the dependent variable Y_{it} is inflation adjusted log employment earnings. The vector of controls X_{it} includes age (quadratic), gender, approved jurisdiction indicator, family physician indicator, migration status indicator, program of entry, years since migration and year fixed effects. The selection equation is a probit model that determines whether the immigrant IMG selects into employment in the tax year. The indicator for the presence of children under 5 years $Child_{it}$, indicates whether the immigrant IMG have a child under 5 years. ε_{it2} represents the error term in equation (2). The key coefficient of interest is δ_1 , which measures the impact of

⁴⁹ See Appendix Table 3 for the definition of variables.

⁵⁰ Logit and Probit models were estimated with similar results.

province of residence on employment earnings of immigrants IMGs who selected into employment.

3.3.4.2 Regression Results: Impact of Province of Residence on the Probability of Positive Employment Income and Employment Earnings

The key coefficients for equation (1) are presented in Column A of Table 3.2. The coefficients on the province of residence show variations in the estimated probabilities of positive employment income for immigrant IMGs. The results show that immigrants IMGs who reside in Saskatchewan, followed by Newfoundland, Alberta, Manitoba, British Columbia, and New Brunswick (increase between 6.0 to 12.8 percentage points) have a higher likelihood of having positive employment income compared to those residing in Ontario. However, immigrant IMGs who resides in Quebec (8.0 percentage points) have a lower likelihood of having positive employment income compared to those in Ontario.

I divided the sample into four (4) cohorts based on years of arrival: (1) 1981 to 1985, (2) 1986 to 1990, (3) 1991 to 1994, and (4) 1995 to 1999. The coefficients for each cohort are presented in the last four (4) columns of Table 3.2. The coefficients reveal variations in the probability of positive employment income based on the cohort of arrival. Three (3) key findings were observed: (1) Among immigrants IMGs residing in Newfoundland and Alberta, those in cohort 2 have a higher likelihood of having positive employment income compared to those in other cohorts. Specifically, among IMGs who reside in Newfoundland and Labrador, being in cohort 2 increases the probability of positive employment income by 13.9 percentage points in comparison to other cohorts (an increase ranging from 1.5 to 12.0 percentage points). Moreover, for IMGs residing in Alberta, being in cohort 2 increases the probability of employment by 15.5 percentage points compared to other cohorts (an increase ranging from 3.3 to 7.5 percentage points). (2) Among immigrants IMGs whose province of residence is New Brunswick, being in cohort 1 and 3 decreases the probability of positive employment income (a decrease of 2.3 and 63.6 percentage points, respectively), while being in cohort 2

and 4 increases the probability of positive employment income (an increase of 12.9 and 13.0 percentage points, respectively) and (3) Immigrants IMGs residing in Saskatchewan and in cohort 1 have a higher likelihood of having positive employment income (16.2 percentage points) compared to those in the other cohorts (an increase ranging from 9.3 to 13.9 percentage points). The estimates show variability in the probability of employment based on the cohort of arrival in Canada.

Table 3. 2: Estimates of the Probability of Employment of Immigrant IMGs

	A	B	C	D	E
Province of Residence (Rel. Ontario)	Whole Sample	Cohort 1	Cohort 2	Cohort 3	Cohort 4
Newfoundland	0.1115*** (0.0056)	0.1197*** (0.0187)	0.1389*** (0.0104)	0.0851*** (0.0054)	0.0154 (0.0639)
New Brunswick	0.0604*** (0.0058)	0.0229*** (0.0057)	0.1293*** (0.0189)	-0.6358*** (0.0306)	0.1301*** (0.0229)
Quebec	-0.0806* (0.0413)	-0.0491 (0.0447)	-0.0748* (0.0350)	-0.1559** (0.0474)	-0.0494 (0.0549)
Manitoba	0.0728*** (0.0040)	0.0132 (0.0156)	0.1724*** (0.0128)	0.0072 (0.0167)	0.0654** (0.0198)
Saskatchewan	0.1280*** (0.0046)	0.1612*** (0.0107)	0.0934*** (0.0057)	0.1109*** (0.0119)	0.1394*** (0.0237)
Alberta	0.0749*** (0.0031)	0.0584*** (0.0134)	0.1349*** (0.0074)	0.0332*** (0.0054)	0.0423*** (0.0109)
British Columbia	0.0609*** (0.0036)	0.0143*** (0.0035)	0.1184*** (0.0166)	0.0516*** (0.0051)	0.0219 (0.0137)
Approved Jurisdiction (Rel. Unapproved Jurisdiction)	Yes	Yes	Yes	Yes	Yes
Family physician (Rel. Specialist physician)	Yes	Yes	Yes	Yes	Yes
Immigrant category, Canadian official language	Yes	Yes	Yes	Yes	Yes
Age, gender, and Child	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Sample Size	16,395	3660	4620	4845	3270

Note: Sample of immigrant IMGs who arrived in Canada between 1981 and 1999 and have been observed from their first to their twentieth year in the country. The regressions were adjusted for age (quadratic), gender, presence of children under 5 years, approved jurisdiction indicator, family physician indicator, migration status, program of entry, years since migration and year fixed effects.

The cohorts were constructed based on the year of landing in Canada. They are as follows: Cohort 1 spans from 1981 to 1985, Cohort 2 from 1986 to 1990, Cohort 3 from 1991 to 1994, and Cohort 4 from 1995 to 1999.

Source: Data from the Longitudinal Administrative Databank (LAD)

Coefficients are presented with clustered standard errors in parentheses. (***) $p < 0.01$; **) $p < 0.05$; *) $p < 0.1$)

The key coefficients for equation (2) are presented in Column A of Table 3.3. The coefficients show that residing in British Columbia have a higher negative effect on employment earnings (decrease of 60.0 percent) followed by Alberta, Manitoba, and Saskatchewan (decreases ranging from 27.0 to 49.4 percent) compared to residing in Ontario. However, the coefficients on Newfoundland, New Brunswick and Quebec are not statistically different from zero.

In the last four (4) columns of Table 3.3, I present the estimated coefficients for the cohorts. The coefficients show variability in employment earnings depending on the cohort and province of residence. The key results show that among those who reside in British Columbia compared to Ontario, IMGs in cohort 2 have higher negative effect on employment earnings (decrease of 67.2 percent) compared to those in the other cohorts (with decreases ranging from 17.8 to 56.6 percent). Additionally, most of the coefficients in Table 3.3 were not statistically different from zero.

Table 3. 3: Estimates of Employment Earnings of Immigrant IMGs

	A	B	C	D	E
Province of Residence (Rel. Ontario)	Whole Sample	Cohort 1	Cohort 2	Cohort 3	Cohort 4
Newfoundland	-0.0481 (0.1655)	0.1565 (0.2608)	0.1819 (0.1688)	0.1224 (0.1133)	-0.0379 (0.2881)
New Brunswick	-0.2857 (0.2127)	-0.0924 (0.2364)	-0.3739* (0.2212)	-1.8582* (0.9647)	-0.1092 (0.2541)
Quebec	-0.0442 (0.1035)	0.0829 (0.1362)	-0.0704 (0.0979)	-0.4132*** (0.1085)	0.4522*** (0.1361)
Manitoba	-0.3933*** (0.1225)	0.3754*** (0.1427)	-0.3386** (0.1662)	-0.2946*** (0.0979)	0.1179 (0.1620)
Saskatchewan	-0.2696** (0.1359)	-0.4036** (0.1837)	0.1330 (0.1429)	0.1568 (0.1143)	0.0445 (0.1724)
Alberta	-0.4941*** (0.0896)	0.3455*** (0.1196)	0.5587*** (0.1005)	-0.3605*** (0.0665)	0.1203 (0.1227)
British Columbia	-0.5991*** (0.0731)	-0.1779* (0.0988)	0.6727*** (0.0862)	-0.5658*** (0.0582)	-0.1886** (0.0918)
Approved Jurisdiction (Rel. Unapproved Jurisdiction)	Yes	Yes	Yes	Yes	Yes
Family physician (Rel. Specialist physician)	Yes	Yes	Yes	Yes	Yes
Immigrant category, Canadian official language	Yes	Yes	Yes	Yes	Yes
Age, gender, and Child	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Sample Size	16,395	3660	4620	4845	3270

Note: Sample of immigrant IMGs who arrived in Canada between 1981 and 1999 and have been observed from their first to their twentieth year in the country. The regressions were adjusted for age (quadratic), gender, presence of children under 5 years, approved jurisdiction indicator, family physician indicator, migration status, program of entry, years since migration, and year fixed effects.

The cohorts were constructed based on the year of landing in Canada. They are as follows: Cohort 1 spans from 1981 to 1985, Cohort 2 from 1986 to 1990, Cohort 3 from 1991 to 1994, and Cohort 4 from 1995 to 1999.

Source: Data from the Longitudinal Administrative Databank (LAD)

Coefficients are presented with clustered standard errors in parentheses. (***) $p < 0.01$; (**) $p < 0.05$; (*) $p < 0.1$)

3.4 Conclusion

The rise in the proportion of immigrant IMGs immigrating to Canada has drawn media attention to the challenges these professionals face in practicing within the country. This necessitates discussions and studies on licensing, registration, and economic outcomes of IMGs to increase the number of physicians per 1,000 Canadians. This paper contributes to the ongoing discussions on IMGs by providing answers to two questions about Canadian IMGs. The first question examines whether the motive for medical regulations for family physician IMGs in Canada is driven by public interest or protectionism. The second question examines the economic progression of immigrant IMGs in Canada. Though previous studies have examined the economic outcomes of immigrants, I am unaware of any studies that concentrated on a single occupation and did a detailed analysis on their economic progression.

To examine the motive behind medical regulations in Canada, I used information from the websites of the Colleges of Physicians and Surgeons of Canada and directly contacted the colleges through email correspondences. A review of medical regulations for IMGs across the ten (10) provinces in Canada suggests a protectionist motive across six dimensions: (1) types of licensures available to IMGs, (2) postgraduate training, (3) examinations, (4) duration of currency of practice, (4) sponsorship, (5) assessments and (6) other requirements.

To fill the gap in the literature on immigrant economic outcomes, I employ data from the Statistics Canada's Longitudinal Administrative Database (LAD). I first present graph of average and median employment earnings to examine the trends in growth rate of employment earnings for immigrant IMGs from the first to the twentieth year in Canada. The graphs show an upward increase (except New Brunswick and Manitoba) in the growth rate of employment earnings, with some fluctuations and period of increase and decrease. Next, I use the level of average and median employment earnings to show five (5) observations in employment earnings: (1) Quebec and Newfoundland show a consistent upward trend in employment earnings over 20 years. (2) Ontario shows a significant increase in the first decade, followed

by a stabilization between the tenth to the twentieth year. (3) Alberta and British Columbia experience significant growth in the first decade, followed by a more gradual increase. (4) Manitoba and Saskatchewan experience an increase in employment earnings in the first decade followed by a decline in the second decade. (5) New Brunswick exhibits a slight rise in employment earnings in the first decade, followed by a decrease from the tenth to the twentieth year. Finally, I use the Heckman two-stage selection model and a linear probability model to present regressions that estimate the impact of province of residence on the probability of positive employment income and employment earnings. The findings indicate a correlation between the province of residence and both the probability of positive employment income and employment earnings.

In summary, there exist provincial variations in the current entry regulations for IMGs, spanning dimensions such as types of licensures, postgraduate training, duration of currency of practice, sponsorship, assessments, examinations, and other requirements. Moreover, there are disparities in the historical economic patterns among the provinces. While it would be intriguing to explore a potential links between these differences, I would require access to the database of entry regulations from 1981 to 1999 to conduct such an analysis.

The findings presented in this paper offer valuable insights for IMGs, regulatory bodies, and policymakers seeking to establish supportive policies for IMGs. The insights into the current entry regulations serve as a crucial resource for incoming IMGs aspiring to practice medicine in Canada. Regulatory authorities can leverage the findings on licensure requirements from different provinces to refine and align their own standards. Moreover, the insights into the economic progression of immigrant IMGs provide policymakers with vital information to understand the historical economic trajectories of past IMGs. This can aid in formulating strategies to ensure the future success of IMGs in Canada.

References

- Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. (2010). On making causal claims: A review and recommendations. *The Leadership Quarterly*, 21(6), 1086–1120.
- Blit, J., Skuterud, M., & Zhang, J. (2017). Immigration and innovation: Evidence from Canadian cities. https://papers.ssrn.com/Sol3/papers.cfm?abstract_id=2956784
- Boyd, M., & Tian, S. (2018). Is STEM Education Portable? Country of Education and the Economic Integration of STEM Immigrants. *Journal of International Migration and Integration*, 19(4), 965–1003. <https://doi.org/10.1007/s12134-018-0570-4>
- Picot, G., & Hou, F. (2018). Immigrant STEM Workers in the Canadian Economy: Skill Utilization and Earnings. *Canadian Public Policy*, 1–12. <https://doi.org/10.3138/cpp.2017-036>
- Picot, G., & Hou, F. (2020). A Canada-US Comparison of the Economic Outcomes of STEM Immigrants. Analytical Studies Branch Research Paper Series. ERIC. <https://eric.ed.gov/?id=ED609391>
- CBC News. (2023, April 05). Are medical licensing rules worsening Canada's doctor shortage? Your questions answered. Retrieved from <https://www.cbc.ca/news/canada/medical-licensing-rules-doctor-shortages-1.6800655>
- Collège des médecins du Québec. (2023). International medical graduate (IMG). Retrieved from <http://www.cmq.org/hub/en/diplome-international-medecine-dim-deux-voies-exercice.aspx>
- College of Physicians and Surgeons of Ontario (CPSO). (2023a). International medical graduate (IMG). Retrieved from <https://www.cpso.on.ca/en/Physicians/Registration/International-Medical-Graduates>
- College of Physicians & Surgeons of Alberta (CPSA). (2023a). Apply for Independent Practice. Retrieved from <https://cpsa.ca/physicians/registration/apply-for-registration/apply-for-independent-practice/>

College of Physicians and Surgeons of British Columbia (CPSBC). (2023a). Retrieved from Registration and Licensing. <https://www.cpsbc.ca/registrants/current-registrants/registration-and-licensing>

College of Physicians & Surgeons of Nova Scotia (CPSNa). (2023a). Retrieved from I am internationally trained. <https://cpsns.ns.ca/registration-licensing/future-practice/apply-for-licensure/i-am-internationally-trained/>

College of Physicians & Surgeons of Manitoba (CPSM). (2023a). Retrieved from Are you an international medical graduate? <http://www.cpsm.mb.ca/registration/are-you-an-international-medical-graduate>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023a). Requirements for licensure. Retrieved from <https://www.cps.sk.ca/iMIS/Documents/Registration/Licensure/Requirements/English%20Language%20Proficiency.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023b). Requirements for licensure. Retrieved from <https://www.cps.sk.ca/iMIS/Documents/Registration/Licensure/Requirements/Credentia%20Verification.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023c). Requirements for licensure. Retrieved from <https://www.cps.sk.ca/iMIS/Documents/Registration/Licensure/Requirements/Examinations.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023d). Requirements for licensure. Retrieved from <https://www.cps.sk.ca/iMIS/Documents/Registration/Licensure/Requirements/Currency%20of%20Practice.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023e). Requirements for licensure. Retrieved from <https://www.cps.sk.ca/iMIS/Documents/Registration/Licensure/Requirements/Good%20Character.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023f). Requirements for licensure. Retrieved from <https://www.cps.sk.ca/iMIS/Documents/Registration/Licensure/Requirements/Good%20Standing.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023g). Requirements for licensure. Retrieved from <https://admin.cps.sk.ca/imis/Documents/Registration/Licensure/License%20types/2.3%20American%20tr.%20FP%20with%20CFPC%20elig.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023h). Requirements for licensure. Retrieved from <https://www.cps.sk.ca/iMIS/Documents/Registration/Licensure/License%20types/2.4%20American%20tr.%20SP%20wout%20RCPSC%20elig.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023i). Requirements for licensure. Retrieved from <https://www.cps.sk.ca/iMIS/Documents/Registration/Licensure/License%20types/2.5%20American%20tr.%20SP%20with%20RCPSC%20elig.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023j). Requirements for licensure. Retrieved from <https://admin.cps.sk.ca/iMIS/Documents/Registration/Licensure/License%20types/2.6%20IMG%20FP%20with%20CFPC%20elig.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023k). Requirements for licensure. Retrieved from <https://www.cps.sk.ca/iMIS/Documents/Registration/Licensure/License%20types/2.7%20IMG%20SP%20without%20RCPSC%20elig.pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023l). Requirements for licensure. Retrieved from <https://www.cps.sk.ca/iMIS/Documents/Registration/Licensure/License%20types/2.8%20IMG%20SP%20with%20RCPSC%20elig..pdf>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023n). Requirements for licensure. Retrieved from <https://admin.cps.sk.ca/iMIS/Documents/Registration/Licensure/License%20types/6.2%20IMG%20FP%20without%20CFPC%20elig.%20-%20Educ.pdf>

College of Physicians and Surgeons of Prince Edward Island (CPSPEI). (2023a). Retrieved from Registration. <https://www.cpspei.ca/registration/>

College of Physicians and Surgeons of New Brunswick (CPSNB). (2023). Retrieved from Licensure in New Brunswick. (2023). <https://cpsnb.org/en/licensure-in-new-brunswick>

college of physicians and surgeons of British Columbia (CPSBC). (2023b). Retrieved from Laws and legislation. (2023). <https://www.cpsbc.ca/about/laws-and-legislation>

College of Physicians and Surgeons of Ontario (CPSO). (2023b). Requirements. Retrieved from <https://www.cpsso.on.ca/Physicians/Registration/Requirements>

College of Physicians & Surgeons of Alberta (CPSA). (2023b). Governance. Retrieved from <https://cpsa.ca/about-cpsa/governance/>

College of Physicians & Surgeons of Nova Scotia (CPSNB). (2023b). Registration & Licensing Policies and guidelines. Retrieved from <https://cpsns.ns.ca/registration-licensing/registration-policies-and-guidelines/>

College of Physicians & Surgeons of Manitoba (CPSMb). (2023b). Retrieved from Legislation, acts & regulations. <https://cpsm.mb.ca/laws-and-policies/laws-and-policies-overview>

College of Physicians and Surgeons of Saskatchewan (CPSS). (2023o). Legislation, Bylaws and Code of Ethics. Retrieved from https://www.cps.sk.ca/imis/CPSS/Legislation_ByLaws_Policies_and_Guidelines/Legislation_and_Bylaws.aspx?Legislation_BylawsCCO=Legislation

College of Physicians and Surgeons of Prince Edward Island (CPSPEI). (2023b). *Policies & guidelines*. Retrieved from <https://www.cpspei.ca/policies/>

- Dasgupta, P., & Goldar, B. (2005). Female labour supply in rural India: An econometric analysis. Institute of Economic Growth Delhi.
- Ferrer, A., Pan, Y., & Schirle, T. (2023). The Work Trajectories of Married Canadian Immigrant Women, 2006–2019. *Journal of International Migration and Integration*. <https://doi.org/10.1007/s12134-023-01011-1>
- Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica: Journal of the Econometric Society*, 153–161.
- Medical Council of Canada. (2023a). Medical Council of Canada Qualifying Examination Part I. Retrieved from <https://imgbc.med.ubc.ca/path-to-residency/mccqe1/>
- Medical Council of Canada. (2023b). Therapeutics decision-making examination - Medical Council of Canada. Retrieved from <https://www.mcc.ca/assessments/therapeutics-decision-making-examination/>
- Medical Council of Canada. (2023c). National Assessment Collaboration. Retrieved from <https://mcc.ca/about/nac/>
- Medical Council of Canada. (2023d). Practice-ready assessment | medical council of Canada. Retrieved from <https://mcc.ca/assessments/practice-ready-assessment/>
- Medical Council of Canada. (2023e). Licentiate of the Medical Council of Canada (LMCC). Retrieved from <https://mcc.ca/services/lmcc/>
- Mulligan, C. B., & Rubinstein, Y. (2008). Selection, investment, and women's relative wages over time. *The Quarterly Journal of Economics*, 123(3), 1061–1110.
- Organization for Economic Co-operation and Development. (2023). OECD Data. Retrieved from <https://data.oecd.org>
- Royal College of Physicians and Surgeons of Canada. (2023) International Medical Graduates. Retrieved from <https://www.royalcollege.ca/>
- Peterson, B. D., Pandya, S. S., & Leblang, D. (2014). Doctors with borders: Occupational licensing as an implicit barrier to high skill migration. *Public Choice*, 160(1), 45–63.

Stigler, G. J. (2021). The theory of economic regulation. In *The political economy: Readings in the politics and economics of American public policy* (pp. 67–81). Routledge.
<https://www.taylorfrancis.com/chapters/edit/10.4324/9781315495811-8/theory-economic-regulation-george-stigler>

The College of Family Physicians of Canada. (2023a). Recognized training and certification from outside Canada. (2023f). Retrieved from <https://www.cfpc.ca/en/education-professional-development/examinations-and-certification/alternative-pathways-to-certification-in-family-me/recognized-training-in-certification-outside-canad>

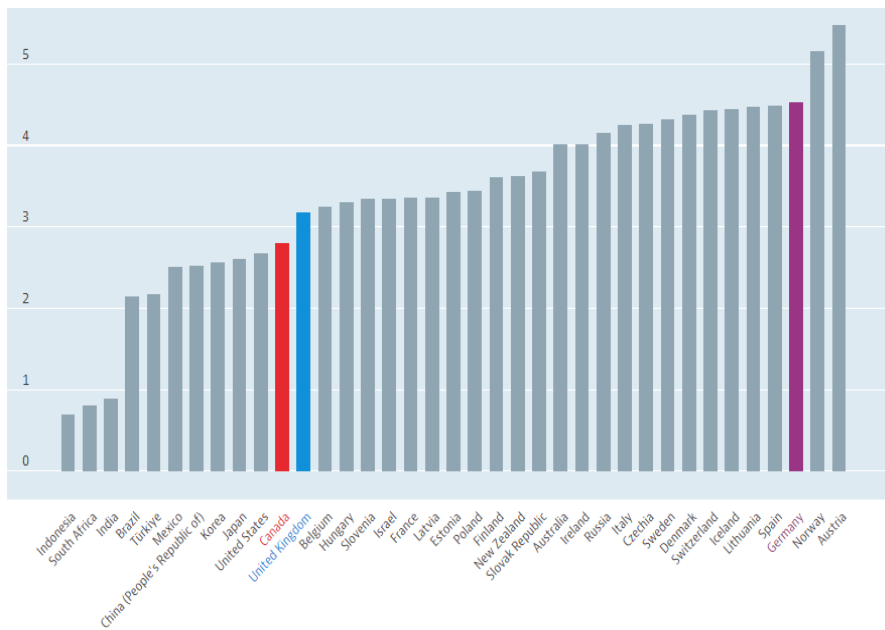
The College of Family Physicians of Canada. (2023b). Certification Examination in Family Medicine. Retrieved from <https://www.cfpc.ca/en/education-professional-development/examinations-and-certification/certification-examination-in-family-medicine>

Warman, C., Sweetman, A., & Goldmann, G. (2015). The portability of new immigrants' human capital: Language, education, and occupational skills. *Canadian Public Policy*, 41(Supplement 1), S64–S79.

World Directory of Medical Schools. (2023). World Directory of Medical Schools Search. Retrieved from <https://search.wdoms.org/>

Appendix C

Appendix Figure 3.1: The number of Doctors Per 1,000 Inhabitants using 2022 OECD Data



Source: Data for the figure was source from the Organization for Economic Co-operation and Development (OECD) 2022 data files (<https://data.oecd.org/healthres/doctors.htm#indicator-chart>)

Appendix Table 3.1A: Provincial Colleges and their Websites

Province	College	Website
Newfoundland and Labrador	College of Physicians and Surgeons of Newfoundland and Labrador (CPSNL)	https://cpsnl.ca/
Prince Edward Island	College of Physicians and Surgeons of Prince Edward Island (CPSPEI)	https://www.cpspei.ca/
Nova Scotia	College of Physicians and Surgeons of Nova Scotia (CPSN)	https://cpsns.ns.ca/
New Brunswick	College of Physicians and Surgeons of New Brunswick (CPSNB)	https://cpsnb.org/en/
Quebec	The Collège des médecins du Québec (CMQ)	https://www.cmq.org/fr
Ontario	College of Physicians and Surgeons of Ontario (CPSO)	https://www.cpsso.on.ca/
Manitoba	College of Physicians and Surgeons of Manitoba (CPSM)	http://www.cpsm.mb.ca/
Saskatchewan	College of Physicians and Surgeons of Saskatchewan (CPSS)	https://www.cps.sk.ca/imis
Alberta	College of Physicians and Surgeons of Alberta (CPSA)	https://cpsa.ca/
British Columbia	College of Physicians and Surgeons of British Columbia (CPSBC)	https://www.cpsbc.ca/

Source: Authors own compilation using information from the websites of the Colleges of Physicians and Surgeons of Canada

Appendix Table 3.1B: Provincial Colleges and the Types of Licensures

Province	College	Types of Licensures
Newfoundland and Labrador	College of Physicians and Surgeons of Newfoundland and Labrador (CPSNL)	Full Licence Provisional Licence
Prince Edward Island	College of Physicians and Surgeons of Prince Edward Island (CPSPEI)	General Licensure Provisional Licensure
Nova Scotia	College of Physicians and Surgeons of Nova Scotia (CPSN)	Full Licence Defined Licence
New Brunswick	College of Physicians and Surgeons of New Brunswick (CPSNB)	Regular Licence Defined Licence Special Licence
Quebec	The Collège des médecins du Québec (CMQ)	Regular Licence Restrictive Clinician Licence Restrictive ARM Quebec-France Permit
Ontario	College of Physicians and Surgeons of Ontario (CPSO)	Independent Practice certificate Restricted certificate
Manitoba	College of Physicians and Surgeons of Manitoba (CPSM)	Full Licence Provisional Licence
Saskatchewan	College of Physicians and Surgeons of Saskatchewan (CPSS)	Regular Licensure Provisional Licensure
Alberta	College of Physicians and Surgeons of Alberta (CPSA)	Independent permit (General register) Independent permit (Provisional register)
British Columbia	College of Physicians and Surgeons of British Columbia (CPSBC)	Full Licence Provisional Licence

Source: Authors own compilation using information from the websites of the Colleges of Physicians and Surgeons of Canada

Appendix Table 3.2: Summary Information on Immigrant IMGs

Province of Residence	
Ontario	43.57
Newfoundland	2.76
New Brunswick	1.14
Quebec	14.04
Manitoba	4.66
Saskatchewan	4.47
Alberta	11.41
British Columbia	17.95
Gender	
Women	31.30
Men	68.70
Presence of children under 5 years	
Yes	9.57
No	90.43
Approved Jurisdiction Indicator	
Approved Jurisdiction	82.57
Unapproved Jurisdiction	17.43
Family physician indicator	
Family physicians	51.04
Specialist Physicians	48.96
Migration status	
Migrants	3.57
Non-migrants	96.43
Program of entry	
Economic class	43.14
Family class	42.83
Refugee	14.03

Con't

Years since migration	
1 to 5 years	24.33
6 to 10 years	25.00
11 to 15 years	25.34
16 to 20 years	25.33

Note: The proportions represent immigrants whose intended occupation is physicians and who immigrated to Canada from 1981 to 1999.

Source: Data from the Longitudinal Administrative Databank (LAD)

Appendix Table 3.3: Definition of Variables

Variables	Definition
Dependent Variables	
Measures of Economic Outcomes	
<i>A. Probability of Positive Employment Earnings</i>	It measures the probability that the immigrant IMG have positive employment earnings in the tax year. The employment income includes wages, salaries, commissions from employment, training allowances, tips and gratuities and self-employment income (net income from business, profession, farming, fishing, and commissions), Indian exempt employment income, Indian exempt self-employment income. The probability of positive employment earnings is equal to 1 if the immigrant IMG has positive employment income in the tax year and 0 if otherwise.
<i>B. Inflation Adjusted log Employment Earnings</i>	It measures the annual log employment earnings for the immigrant IMGs. The employment income includes wages, salaries, commissions from employment, training allowances, tips and gratuities and self-employment income (net income from business, profession, farming, fishing, and commissions), Indian exempt employment income, Indian exempt self-employment income. The Employment Earnings were adjusted for inflation using the 2019 CPI source from the World Bank’s World Development Indicators (World Bank, 2023).
Independent variable	
<i>Province of Residence</i>	It indicates the province of residence where the immigrant IMG resides on December 31st of the tax year. It is coded as follows: 0 for Ontario, 1 for Newfoundland and Labrador, 2 for Quebec, 3 for Manitoba, 4 for Saskatchewan, 5 for Alberta, and 6 for British Columbia.

Con't.

Control variables

<i>Age</i>	It indicates the age of the young adult, calculated by subtracting the immigrant IMG's birth year from the tax year.
<i>Gender</i>	It measures the sex of the immigrant IMG. It is equal to 1 if the immigrant IMG is a woman and 0 if otherwise.
<i>Presence of children under 5 years</i>	It identifies immigrant IMGs who have children under the age of 5. It is coded as 1 if the immigrant IMG has a child under the age of 5 and 0 if otherwise.
<i>Approved jurisdiction indicator</i>	This indicates whether the immigrant IMG is from a College of Family Physicians of Canada (CFPC) approved jurisdiction. IMGs from approved jurisdictions include graduates from medical schools in Australia, Ireland, and the United Kingdom. IMGs from unapproved jurisdictions refer to those who graduated from medical schools listed in the World Directory of Medical Schools (WDMS) but it is not CFPC-approved.
<i>Family physician indicator</i>	This indicator determines whether the immigrant IMG is a family physician or a specialist. It is equal to 1 if the immigrant IMG is a family physician and 0 otherwise.
<i>Migration status</i>	This indicates whether the immigrant IMG engaged in secondary migration (changing province) at any point in the sample year. It is equal to 1 if the immigrant IMG engages in secondary migration and 0 otherwise.
<i>Program of entry</i>	It indicates the program of entry of the immigrant IMG at the time of arrival in Canada. It is coded as 1 if the immigrant category is Economic class, 2 if it is Family class and 3 if it is refugee class.
<i>Years since migration</i>	It indicates the number of years since migrating to Canada. It is equal to 0 for 1 to 5 years, 1 for 6 to 10 years, 2 for 11 to 15 years, and 3 for 16 to 20 years.

Summary and Conclusions

The proportion of immigrants arriving in Canada has increased over time, reaching 3.65 percent of the overall immigrant population by the end of 2015. With the increase in the number of immigrants to Canada, their integration and success in the labour force are vital for the overall development of the country. To contribute to the body of literature on the integration of immigrants, this thesis examined three different essays on immigrant labour market outcomes in Canada. The first essay examined the impact of a shift away from family immigration on the employment outcomes of immigrant women with young children. The second essay estimates the impact of parental internal migration on the economic outcomes of immigrant young adults aged 26 to 30 years. The third essay addressed two questions on International Medical Graduates (IMGs) in Canada. The first question investigates whether the motive behind medical regulations for family physician IMGs in Canada is driven by public interest or protectionism. The second question examines the economic outcomes of immigrant IMGs in Canada.

The first essay co-authored with Dr. Janice Compton investigates the impact of the 1995 shift in Canadian immigration policy from family to economic immigration on the employment outcomes of immigrant women with young children. Using the Statistics Canada 1983-2005 Longitudinal Administrative Databank (LAD) linked with the Longitudinal Immigration Database (IMDB) and a triple model, we found that after the policy change, refugee mothers were less likely to be employed in all types of jobs, while economic immigrant mothers shifted both out of the workforce and from high- to low-income employment. The impact of the policy on immigrant mothers varied by education, with a stronger effect observed among those with the lowest and highest levels of education.

The second essay contributes to the literature on internal migration by using the Canadian Longitudinal Immigration Database (IMDB) to examine the long-term impact of

parental migration on the economic outcomes of immigrant young adults. The results, estimated from the Heckman two-stage selection model and a linear probability model, indicate that parental internal migration reduces employment earnings by 8.9 percentage points and increases the probability of low-income status by 3.5 percentage points among young adults whose parents entered the country through the refugee program, compared to those who entered through the economic class program.

The final essay used information and data from the websites of the Colleges of Physicians and Surgeons of Canada, email correspondences, and Statistics Canada's Longitudinal Administrative Database (LAD) to address two research questions on IMGs in Canada. The first question investigates whether the motive behind medical regulations for family physician IMGs in Canada is driven by public interest or protectionism. The review of medical regulations for IMGs across the ten provinces in Canada suggests a protectionist motive in medical regulations where there was provincial variability in the types of licensures, postgraduate training, examinations, currency of practice, sponsorship, assessments, and other requirements. The second question contributes to the literature on immigrant's economic outcomes by concentrating on a single occupation and conducting a comprehensive analysis of its economic progression. Analysis of the trends in the growth rate of employment earnings of immigrant IMGs from the first to the twentieth year in Canada shows an overall upward trend (except New Brunswick and Manitoba), with occasional fluctuations and periods of both increase and decrease. The estimates derived from both the linear probability and Heckman selection model reveal a correlation between the province of residence and economic outcomes.

The findings in this thesis provide crucial information for policymakers whose goal is to enact policies that will benefit the overall integration of immigrants in childcare, internal migration, and medical regulations in Canada.