Barriers to Foreign Credential Recognition, Access to Regulated Professions and Successful

Integration into the Canadian Labour Market

by

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ABSTRACT

Using the master data file of the 2011 Census of Canada National Population Survey, this thesis addresses a long-asked question: are foreign trained immigrants in the regulated professions less likely to be working in their field of study than their Canadian-born counterparts? The findings of this study indicate that although foreign trained immigrants have higher educational qualifications than Canadian born, they are significantly less likely to work in regulated professions that match their field of study (29.6%) compared to Canadian-born and foreign-trained (57.6%) who are working in the field for which they were trained. We would expect if our economy was truly meritocratic, that Canadian-born and Canadian-trained workers (54.5%) would be as likely as Canadian-trained immigrants (35.4%) in accessing regulated profession that commensurate their trained field. Newcomers working in health fields are the most likely (63.2%) of all immigrants to be working in their chosen profession, compared to immigrants working in other fields (25%). Among Canadian-born Canadian-trained workers in the health profession, 84% are working in the health fields, compared to 48.5% of Canadians working in other fields. This research uses Critical Race Theory to explain why this inequality happens, by discussing the role of institutionalized racism in immigrants' labour market outcomes. This research also makes reference to Human Capital Theory because of its predominant use in Canadian immigration research. It provides useful framework in explaining the effects of one's place of education on her/his labour market outcomes.

Keywords: foreign credential recognition, regulated professions, Canadian labour market outcome, Internationally-Educated Immigrants, Office of the Manitoba Fairness Commission

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DEDICATION

Glory and honour be to the Almighty Allah who saw me through this restless journey of the master's program at the University of Manitoba in general and this thesis in particular. I wish to dedicate this thesis to my late sweet mother, Kuburatu Abubakar (I will forever miss you mother) and my sweet father, Abdul-Karim Yakubu for their love, care, protection, and assistance they have shown me throughout my life. I also dedicate this thesis to my inspirational, motivational and ever helpful supervisor, Dr. Lori Wilkinson, for her proactive supervision, useful comments, caring, cooperation and above all, her personality which saw me through this thesis.

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OPERATIONAL DEFINITIONS

The following conceptual definitions were used for the purpose of this thesis.

Canadian-born, Canadian-trained (CBCT): are persons born in Canada and also had their post-secondary educational training in any of the provinces or territories in Canada.

Canadian-born, Foreign-trained (CBFT): are persons who were born in Canada but had their educational training outside Canada.

Foreign-born, Canadian-trained (FBCT): are immigrants and refugees but had their educational training in any of the provinces or territories in Canada.

Foreign-born, Foreign-trained (FBFT): This represents immigrants and refugees who were born and trained outside Canada.

Foreign Credential Recognition: A foreign credential is a professional or regulated training received overseas. Recognition of foreign credentials refers to the recognition, by a Canadian regulatory body, of credentials attained overseas.

Immigrant: An immigrant is anyone born outside of Canada, holds a citizenship other than Canadian and has moved from her/his home country of origin.

Labour market success: is attained when the individual is able to work in an occupation that matches her/his educational credential.

Newcomer: Newcomer is a term that is often times used interchangeably with immigrant but is inclusive of other migrants including refugees.

Regulated Profession: is a profession that has recognition from a regulatory authority to practice or to use an occupational title. There are thirty-one regulated professions in Manitoba.

CHAPTER 1

1   INTRODUCTION
1.1   Immigration and Canada

Migration usually represents a response to 'push' and 'pull' factors in the countries of origin and destination respectively. According to the United Nations Department of Economics and Social Affairs Population Division (2017), 258 million people around the world, representing 3.4% of the global population, were living in a country other than the one in which they were born in 2017, with half of these immigrants living in the higher income countries. On annual basis, Canada, United States, Australia and New Zealand combined together, account for between 1.1 and 1.3 million permanent residents annually, subsequently resulting in referring these countries as "Traditional" Countries of Immigration (TCI) (International Organization for Migration, 2008). The World Bank Group (2016) reports that today, only four OECD countries (including Australia, Canada, United Kingdom and United States) constitute the destination of almost 70% of the 28 million highly skilled immigrants in 2010. This represents an increase of 130% since 1990.

Historically, immigration to Canada has made significant contributions to the growth, introduced a significant change in Canada's economic and social landscapes. By 2016, the immigrant population constituted 21.9% of the nation's total population (Statistics Canada, 2017). Despite the fact that Canada has a great international image of having an open and tolerant society, it has, nonetheless, been criticized of its failure to recognize immigrants' prior credentials and work experience, which is seen as the most outstanding policy issue in the 21st century (Guo, 2009). Immigration is increasingly viewed at the provincial and municipal governments as a significant tool to address issues of aging Canadian population and declining

birth rates and to ensure future availability of skilled workers in the country. Despite their value, devaluation of newcomers' foreign credentials in the Canadian labour market continues to be a significant barrier to their successful integration into the provincial and local labour force.

Recent immigrants are much more likely to hold credentials in particular regulated professions such as pharmacy, medicine, dentistry and other health related professions than are the Canadian-born (Owusu and Sweetman 2015), yet they are less likely to be employed in these professions. Complications and difficulties in occupational regulations have resulted in significant numbers of recent immigrants employed in occupations outside of their training. This problem is more apparent as more recent newcomers have even higher educational levels than previous cohorts but decreasing labour market outcomes partly due to the devaluation of their foreign credentials, labour market experience and language knowledge skills (Owusu and Sweetman 2015). This research focuses on regulated professions in Manitoba because of provincial differences in requirements into regulated professions and differences in occupation-specific requirements and processes across Canada. The thesis addresses the research question: *What are the barriers to immigrants' foreign credential recognition, access to regulated occupations and successful integration into the Canadian labour market? And do immigrants' labour market outcomes differ by occupation*?

Canada's immigration policy is largely based on economic contributions of immigrants by putting significant emphasis on educational qualification and work experience in the selection process. In fact, for over three decades, economic immigrants have outnumbered all other classes of entry, accounting for over 60% of all immigrants entering Canada. For instance, economic principal applicants are admitted based on their potential and ability to contribute significantly to the Canadian economy. They are admitted through a points-based system which is based on their

labour market attributes including education level, work experience, age, and other positively perceived attributes. The Canadian labour market is also presumed by government and political bodies to be based on a meritocracy – a system which is believed to operate in an equitable and fair distribution of jobs based on people's labour market qualities. My thesis seeks to examine whether immigrants with these qualities have equal opportunities in accessing regulated professions in Manitoba and whether the "system of meritocracy", as the baseline proposition for any government report, is actually operating in the labour market.

1.2 Significance of the study

The study of labour market outcomes and opportunities of internationally-trained professionals has become imperative because of existing challenges some immigrants face in finding employment in occupation in which they were trained. This has highlighted the complications immigrants face, despite their highly education background compared to their Canadian-born counterparts. The main purpose of my thesis is to critically examine the complications and difficulties internationally-educated professionals confront in their attempt to have their credentials assessed and be able to work in their trained professions in Manitoba. In doing so, the nature and extent of barriers to the recognition of immigrants' foreign credentials in the Canadian labour market are examined. The thesis examines which group of respondents (Canadian-born and trained, Canadian-born and foreign-trained, foreign-born and Canadian-trained, and foreign-born and trained) has the greatest likelihood of having access to regulated professions in Manitoba.

Additional research in this area is necessary because the inequities faced by foreign-trained professionals continue to exist today. The study provides feedback for immigration

policy at a time when the levels and composition of immigration continues to be one of the key social policy issues in Canada.

1.3 Immigration Context

Currently, there are millions of people living outside of their country of origin (UNDESAPD, 2017). The majority of immigrants in the world are located in the United States, Canada, Australia and New Zealand (IOM, 2008). The actual numbers of migrants in the world has been progressively increasing since the nineties.
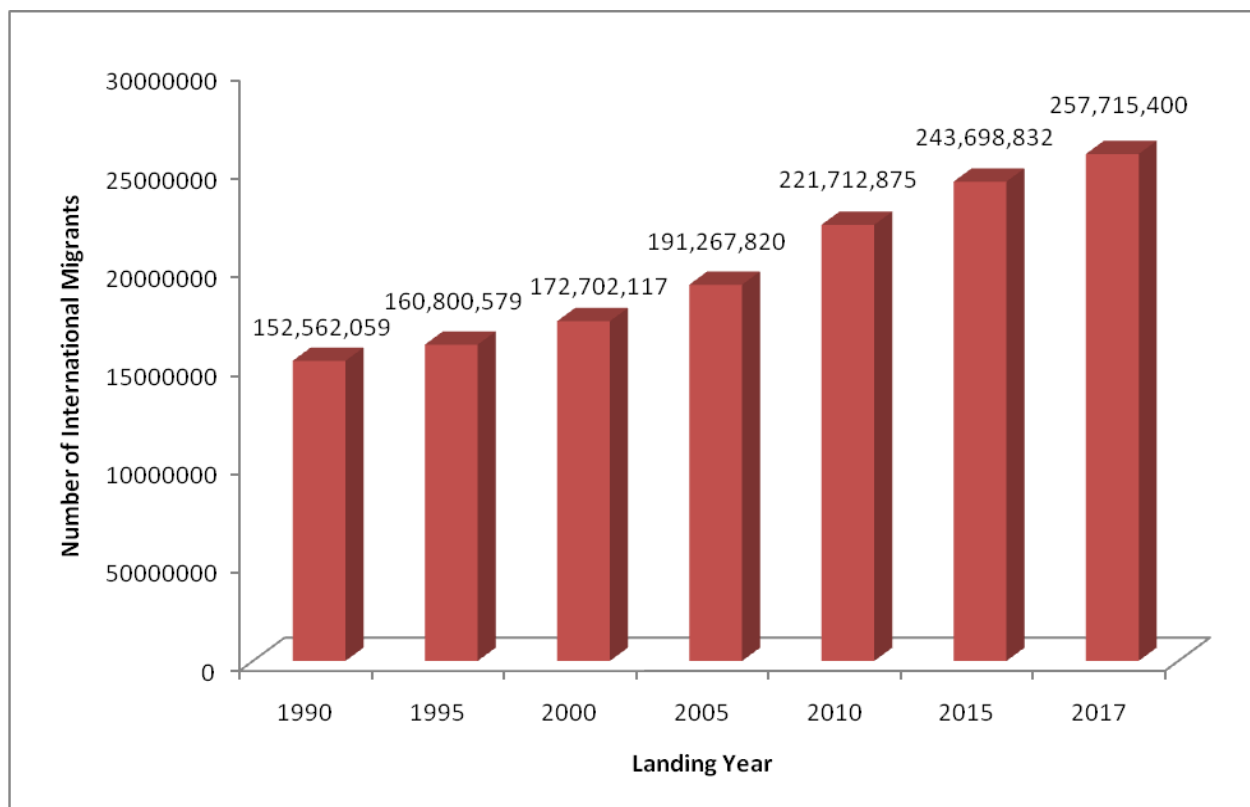
Figure 1.1: **International Migration, 1990 – 2017**

Source: United Nations, Department of Economic and Social Affairs, Population Division (2017)

There has been progressive increment in the number of international migrants over the years due to variety of international and destination country's specific immigration policies and conditions as well as their continuous efforts to welcome and settle migrants, as shown on figure 1.1. Between 1990 and 2000 for instance, the annual average of international migrants was 162,021,585, which increased to almost 219 million between 2005 and 2015. By 2017, the number of global migrants increased to 258 million, an increase of 1.5 times in 25 years. Migrants make up 3.4% of the world's population (UNDESA, 2017).
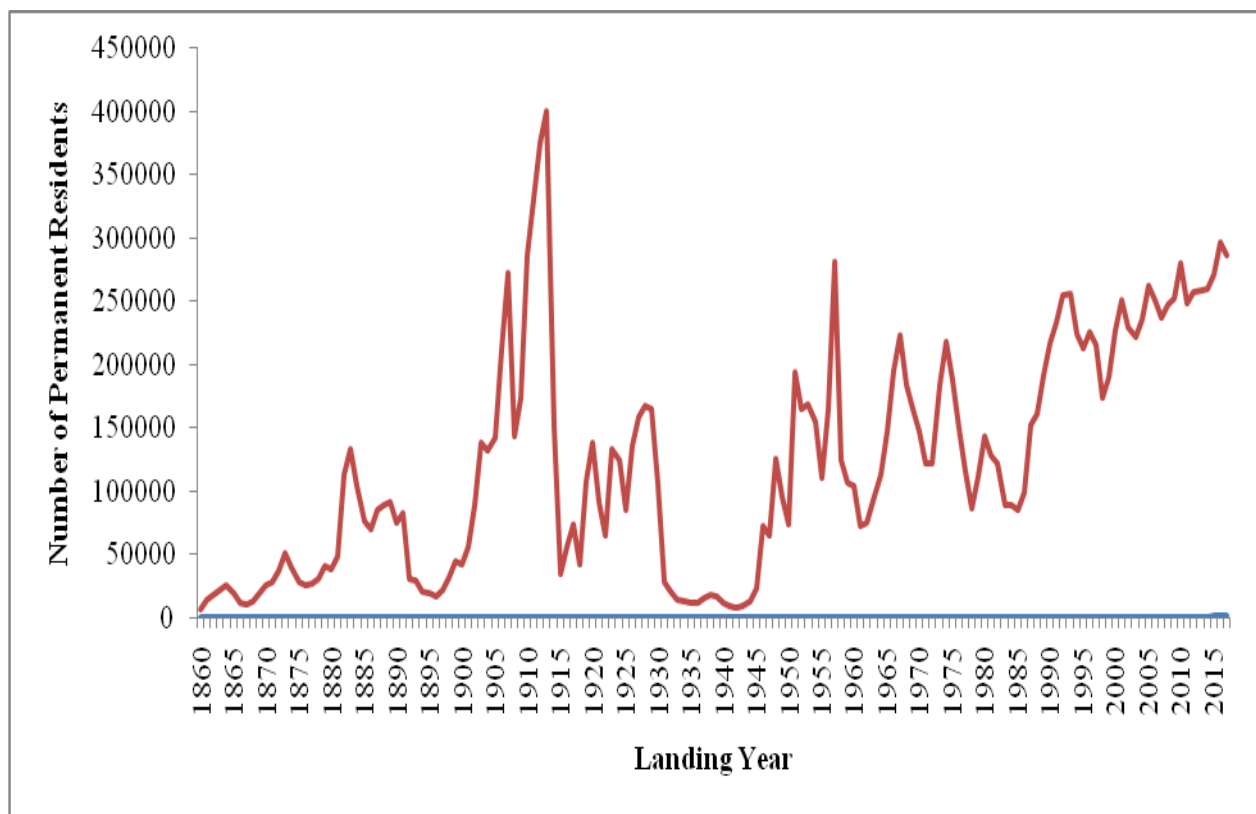
Figure 1.2: Admission of Permanent Residents, Canada, 1860 – 2017

Source: Immigration, Refugee and Citizenship Canada (2015 & 2017)

As a country that is founded on immigration, Canada has welcomed numbers of immigrants with majority of them intending to make the nation their homes. Figure 1.2 shows the numbers of permanent residents to Canada from 1860 through 2017. The numbers of immigrants to Canada over the years have been fluctuating with 1913 recording the highest number of newcomers (400,870) representing 5.3% of the Canadian population since 1860. In the 21st century however, the highest numbers of immigrants to Canada (296,375) was recorded in 2016 but had declined to 286,465 by 2017.
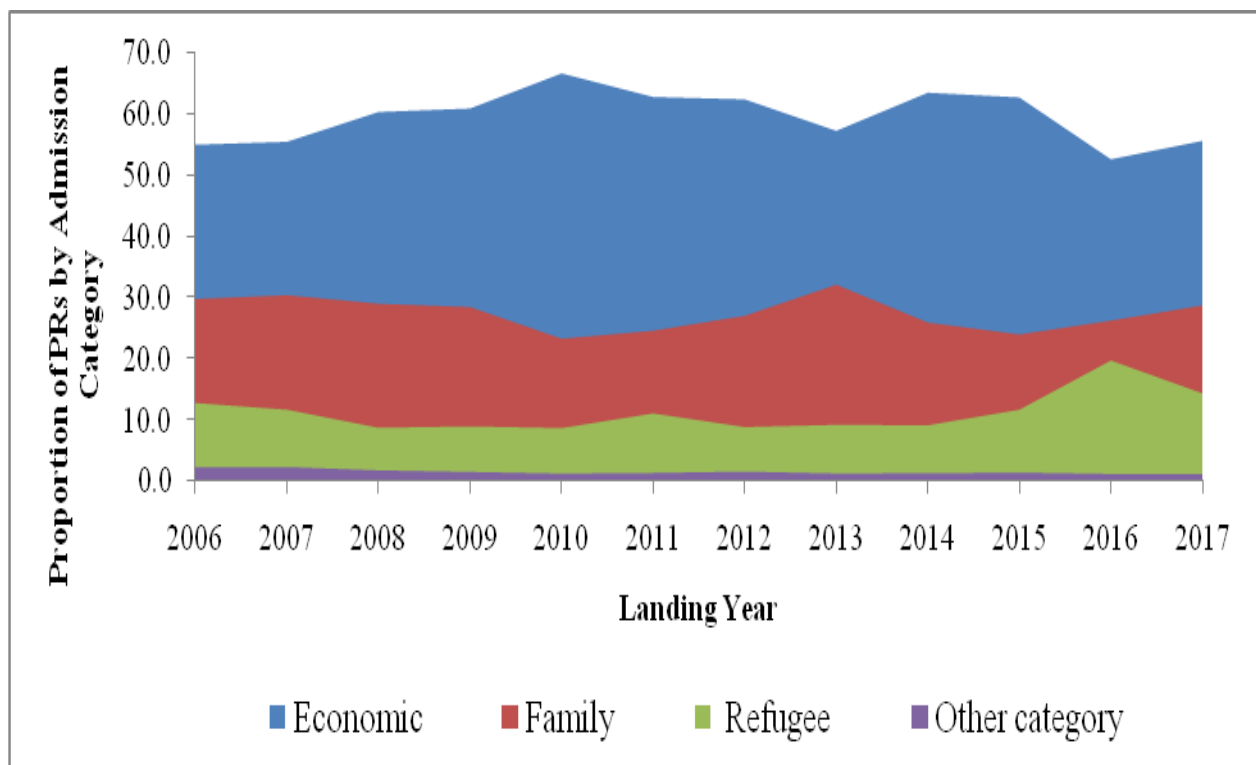
Figure 1.3 Proportion of Immigration Admission Category, Canada, 2006 – 2017.

Source: Immigration, Refugee and Citizenship Canada (2017)

Historically, immigration to Canada has made a significant contribution to the growth and quality of the Canadian labour force. Immigrants enter Canada under different categories

including economic class (e.g. skilled workers, business, Provincial Nominee etc.), family class, and as refugees. Figure 1.3 shows the numbers of immigrants admitted to Canada by admission category from 2006 to 2017. Majority of newcomers to Canada come through the economic category (comprising of skilled class, business etc) followed by family class, and then by refugees, with least people coming through other categories.
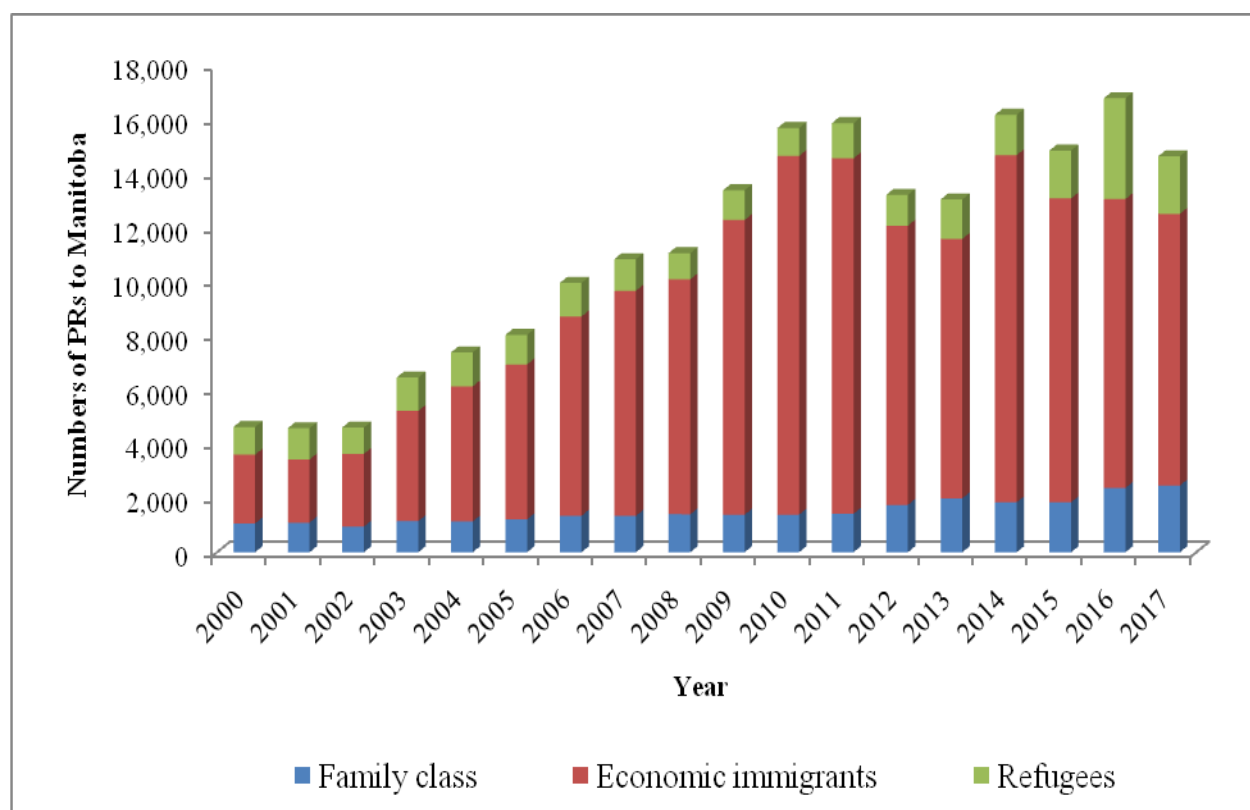
Figure 1.4 Admission of Permanent Residents to Manitoba, 2000 – 2017

Source: Immigration, Research and Citizenship Canada (2017)

Just as in the national picture, majority of newcomers to Manitoba come through the economic category, with family class and refugees having fluctuating rates of admission, as shown on figure 1.4.

1.4   Thesis Overview

The thesis is organized as follows. The first chapter discusses the background of the study including: recognition of foreign credentials in Canada, responsibilities and information about the Office of the Manitoba Fairness Commissioner, research questions, and the significance of the study/justification of the topic. The review of relevant literature on barriers to immigrants and refugees' foreign credential recognition and access to regulated professions is presented in chapter two. The theoretical framework, which is discussed in chapter three (3), includes extensive discussions of the theoretical traditions related to the research question that inform my thesis. The theoretical framework provides useful and comprehensive structure for this research and guides the approach in investigating the main research question.

The methodology, which outlines data source, research method and design, sample size and data, analysis of variables including the main dependent and independent measures, is presented in chapter four (4). Ethical considerations and the limitations of this study are also acknowledged in the fourth chapter. The fifth chapter presents the core findings of the research as well as detailed and comprehensive discussions with relevant literature on foreign credential recognition and access to regulated professions in Canada. The final chapter provides conclusion by focusing on the summary of the study, the contribution to sociological research, and to policy relevance, and finally how the findings help comprehend the research problem under study.

CHAPTER 2

2 LITERATURE REVIEW
2.1 Introduction

Immigration researchers such as academics focus almost exclusively on economic issues. In Canada, although over 70% of research focuses on economic issues, it still fails to study the differences among the regulated professions (Satzewich, 2015). Canada has been associated with a favorable history of effective immigration and integration programs and policies, especially the points system of selecting skilled- immigrants which was established in 1967 and removed the last overtly racist selection policies and procedures (The Conference Board of Canada, 2016). Yet there is often times a lack of effort among all stakeholders (governments, employers, etc.) to ensure that newcomers can practice in their profession once they enter the country (McDonald, Warman and Worswick, 2015). The Conference Board of Canada suggests that better recognition and retention of immigrants in immigration is needed to sustain Canada's position because research shows that the recent cohort of internationally-trained immigrants have not caught up with the Canadian-born and trained and the earlier immigrant cohorts in terms of labor market outcomes. Many newcomers with foreign professional credentials are unable to have equal opportunity in accessing regulated occupations and successful integration into the labour market compared to the Canadian-born counterparts. This is because they face significant challenges in meeting academic and experience requirements to be licensed and employed in the Canadian labour market. Period of entry into Canada also influences newcomers' access to regulated professions and better labour market outcomes. Despite recent immigrants' highly educated background compared with earlier cohorts and the Canadian-born, they nonetheless experience

poor returns on their education and experiences in the host country's labour market (Zietsma, 2010; Gilmore, 2009).

2.2   Review of Literature

On average, approximately 275,000 immigrants have landed as permanent residents in Canada every year for more than a decade (Jantzen, 2015) because of Canada's immigration policy, which puts emphasis on educational qualification and work experience in selecting immigrants (Rashid et al., 2013). Immigrants enter Canada under three main categories including economic class (e.g. skilled workers, business, Provincial Nominee etc.), family class, and as refugees (Houle and Yssaad 2010; Citizenship and Immigration Canada 2008). Immigrants who migrate to Canada as economic principal applicants are selected for their potential and ability to contribute significantly to the Canadian economy. Skilled-worker principal applicants are, unlike those entering in other categories, selected through a points-based system which is based on their labour market attributes including educational level, language ability in English/French, labour market experience, age, and arranged employment in Canada before immigrating (Oreopoulos, 2011; Citizenship and Immigration Canada, 2008), among others. More points are assigned to features that are perceived to increase the development of the Canadian economy. Virtually every immigrant who comes to Canada under the point system has at least an undergraduate degree or its equivalence (Oreopoulos, 2011). As reported by Statistics Canada (2017), the overall percentage of newcomers to Canada with an undergraduate degree or its equivalence is about 60 percent, compared to 26 percent for Canadian-born of similar age.

Immigration has been a key component in the host country's nation building, social and economic development. Most immigrants migrate because of perceived better opportunities, higher earnings and job satisfaction, better working conditions, improved quality of life, diverse

labor market and working experiences, health reasons, unification of families, and to give their children better chance of education (Buzdugan and Halli, 2009; Curtis and Dube, 2015; Ferrer and Riddell, 2008; Frenette and Morissette, 2003; Hall and Sadouzai, 2010). Within the past decade, about 1.2 million immigrants have reached Canada with the intention to work (Hawthorne, 2007). This does not imply that life is easy for them once they arrive. A study conducted by Schellenberg & Maheux (2007) revealed that difficulties in having their foreign credentials recognized and in finding job constituted the most things newcomers dislike about Canada, despite the country's generosity towards immigrants. Other studies reveal that internationally-trained professionals continue to experience significant barriers to be licensed and subsequently employed in their field of specialization (Girard & Smith 2013; Picot & Sweetman 2012; Zietsma 2010).

Many newcomers continuously struggle to realize the economic success and other associated benefits that come with their foreign-earned credentials, labor market experiences and skills in the host country's labour market many years after arrival. The recognition of foreign credentials and pre-migration labour market experience are some of the explanations of newcomers' deteriorating labor market outcomes at entry. Despite the provincial and local growing efforts in ensuring transparency, openness and justice in the licensure processes to ensure the achievement of the foreign qualification goals (Augustine 2015b), newcomers nonetheless experience barriers in successfully integrating into the labor market due to lack of recognition of foreign qualifications, systemic discrimination and racism (Owusu & Sweetman 2015), and sometimes lack of efforts to focus on the evaluation of immigrants' competency rather than other perceived discriminatory measures such as place of birth, place/country of

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training and work experience and immigrants' ability to fluently speak and understand host country's official language.

2.2.1   Foreign Credential Recognition

Canada has historically been identified as one of the best destinations for immigrants to realize their dreams, due to the perception that there are plentiful labour market opportunities. Canadian legislators have historically been adoptive to professional regulations than their counterparts in the United States and United Kingdom, with regulation generally as a provincial concern (Hawthorne, 2007). Thus, every province in Canada has given authoritative powers to regulatory bodies to decide the entry requirements into professions under their mandate with the aim of ensuring that qualified and competent professionals are allowed to use an occupational title or to practice in a regulated profession. Immigrants who wish to work in Canada are expected to possess the value or equivalence, of their foreign-earned credentials in terms of the standards recognized in Canada. Immigrants are supposed to demonstrate the extent of their formal education before considered to be eligible for certification to practice in a profession in which she/he was trained in. Each provincial government in Canada has a jurisdiction to regulate the requirements for an individual to access the labour market in the province. In some professions such as accounting, engineering, law, medicine, dentistry, agrology, social work, among others, responsibility for regulating practitioners is delegated to self-regulated groups, commonly known as professional associations or regulatory bodies (Hawthorne, 2007). These professional associations or regulatory bodies are responsible for allowing qualified practitioners to use occupational titles in their technical fields. The widely held presumption among government and political bodies alike is that the Canadian labour market is based on a

meritocracy—which orderly and fairly distributes jobs based mainly on credential acquisition and work experience (Bauder, 2006 and 2003).

A variety of evaluative procedures have been established in the regulated professions to assess the competence level of candidates who have received their training and work experience outside of Canada. Foreign credentials are evaluated to determine whether the candidate is prepared to sit for the certification exam to acquire certification to practice in a particular profession. Despite the continuous increase in the number of foreign-trained professionals with their corresponding higher level in educational qualifications, professional and regulatory bodies sometimes adopt prejudicial strategies in evaluating the credentials these professionals migrate with (Hall and Sadouzia, 2010). This is partly due to perceived lower quality of foreign credentials and work experience relative to credentials obtained in Canada, regulators and employers' lack of knowledge about foreign credentials, their desire to engage in protectionism and broader societal discrimination (Hawthorne, 2007).

Foreign credentials are expected to be evaluated by experts in the profession to ensure that they meet specific standards before these internationally-educated professionals are permitted to work in their area of training. Foreign credentials could be fully accepted, partially accepted or not accepted in respect to established standards and requirements set by regulatory bodies and employers in the Canadian labour market. Internationally-attained credentials are recognized when they have been fully approved, accepted and deemed to be equivalent to credentials obtained in Canada (Houle and Yssaad, 2010).

Immigrants who have previous work experience abroad are slightly more likely to have their credentials recognized in Canada than those without previous work experience. Houle and Yssaad (2010) report that about 28% of internationally-educated professionals without prior

work experience in Canada had received recognition of their credentials, while 39% of those who had previously worked abroad had their foreign work experience recognized. Some immigration policies, such as the points system is contradictory in the sense that it can also create systemic barriers in foreign credential recognition. For instance, as reported by McDonald, Warman and Worswick (2015), internationally-educated professionals are less likely to be employed in their professions compared to their counterparts in the United States where entry to the country is based on employer nominations and existing job offers. As a result, the points system sets up unrealistic expectations for newcomers because points are awarded for entry but are not guaranteed for employment in the labour market.

2.2.2 Regulated Professions in Manitoba, Canada

Foreign credential recognition has historically been identified as a crucial contributor to immigrants' successful economic integration and employment outcomes in Canada, if we believe the meritocracy argument. In order to ensure that internationally-educated professionals have access to fair, impartial, objective, coherent and transparent credential assessments and recognition processes, *Regulated Professions Act* was implemented in Canada to give some bodies the mandate to oversee the processes to ensure fairness. Regulated professions are occupations that require high degree of expertise, and recognition from a regulatory authority to practice or to use an occupational title. In Manitoba, just as in other Canadian provinces, there are legislated regulatory bodies responsible for the establishment of entry requirements for the occupations under their mandate, to recognize educational credentials, training and experiences and to issue license required to work in that occupation.

The creation of the Office of the Manitoba Fairness Commission was intended to show the province's commitment in recognizing the qualifications of Internationally-Educated

Professionals. *The Fair Registration Practices in Regulated Professions Act*, as legislation in Canada and Manitoba, was proclaimed on April 15, 2009 to set out the key responsibilities of the office in ensuring that registration practices to enter into regulated professions in Manitoba are transparent, impartial, objective, and fair (Office of the Manitoba Fairness Commissioner, 2010). The office reviews the registration practices of regulated professions and determines compliance with requirements of the Act. They work with regulators (to promote fair registration practices), Internationally Educated Professionals (to learn their experiences with qualification recognition in the province) and to advise other stakeholders involved in the assessment of qualifications in the call for fairness in the assessment process. Assisting immigrants to fairly access the credential assessment and recognition processes will subsequently strengthen Canada's ability to sustain the increasingly knowledge-based economy (Ikura, 2007). The office is interested in the thesis in finding out which regulated profession is doing better or otherwise in recognizing internationally-educated newcomers' qualifications to enable them access their chosen careers. The Office has been helpful in contributing significantly to the processes and requirements of the regulated professions in the province, which helped me in the coding and other related processes.

Regulated professions are governed by independent provincial regulatory bodies and/or professional associations. There are thirty-one self-regulated professions in the province of Manitoba. To work in any of these regulated professions here, one's educational training and experience must first be evaluated by one of the professional regulatory bodies before she or he is licensed to work in that profession. Each regulator sets their own standards for assessments which make comparisons across professions difficult. More distressingly, there is no consistency across provinces. For example, the way social workers are regulated in Manitoba is different than in Saskatchewan, even though they are the same profession.

The table 2.1 below shows list of the 31 self-regulated professions with their respective

organizations in the province of Manitoba:

Table 2.1: List of 31-Self-regulated profession with their respective regulatory bodies in Manitoba

Professions	Regulatory bodies
Financial Auditors and Accountants	Chartered Professional Accountants Manitoba
Agrologists and Technical Agrologists	Manitoba Institute of Agrologists
Architects	The Manitoba Association of Architects
Audiologists and Speech-Language Pathologists	College of Audiologists and Speech-Language Pathologists of Manitoba
Chiropractors	The Manitoba Chiropractors Association
Dental Hygienists	College of Dental Hygienists of Manitoba
Dentists	The Manitoba Dental Association
Denturists	Denturists Association of Manitoba
Dietitians	College of Dieticians of Manitoba
Engineers and Geoscientists	Engineers Geoscientists Manitoba
Engineering and Applied Science Technician or Technologist	Certified Technicians and Technologists Association of Manitoba
Land Surveyor and Technologists	Association of Manitoba Land Surveyors
Lawyers	The Law Society of Manitoba
Medical Laboratory Technologists	College of Medical Laboratory Technologists of Manitoba
Midwives	College of Midwives of Manitoba
Naturopaths, Podiatrists and Chiropodists	The Manitoba Naturopathic Association and College of Podiatrists of Manitoba
LPN- Licensed Practical Nurses	College of Licensed Practical Nurses of Manitoba
RN- Registered Nurse and RPN- Registered Psychiatric Nurses	College of Registered Nurses and College of Registered Psychiatric Nurses
Occupational Therapists	College of Occupational Therapists of Manitoba
Opticians	The Opticians of Manitoba
Optometrists	Manitoba Association of Optometrists
Pharmacists	College of Pharmacists of Manitoba
Physicians	The College of Physicians and Surgeons of Manitoba
Physiotherapists	College of Physiotherapists of Manitoba
Psychologists	The Psychological Association of Manitoba
Respiratory Therapists	The Manitoba Association of Registered Respiratory Therapists
Social Workers	Manitoba College of Social Workers
Veterinarians	Manitoba Veterinary Medical Association

(Source: OMFC, 2010)

Complications and challenges in having foreign-earned credentials assessed and be able to access employment in regulated professions that commensurate immigrants' educational qualification have received much attention in recent times (Augustine, 2015b). The requirements to license and the costly, time consuming and frustrating procedures in the licensure exams mostly present unbearable obstacles to internationally-educated professionals by delaying and discouraging, and often times preventing them from entering regulated professions in Canada. The requirement to have "Canadian experience" also presents challenges to many immigrants, because employers and regulatory bodies expect these professionals to possess Canadian experience, even if it is not a requirement in the licensure exams. As reported by Hall and Sadouzai (2010), employers are less likely to accept labour market experience from outside of Canada in regulated professions compared to non-regulated professions. It is well documented in the literature that foreign-born and trained residents of Canada are ones most likely to have complications in accessing regulated professions compared to their counterparts. For instance, according to Statistics Canada (2011), immigrants who studied for a regulated profession outside Canada were less likely to be working in their commensurable occupation in 2006 than both immigrants who had studied in Canada and persons who were born and studied in Canada. Out of 284,000 employed foreign-educated immigrants with degrees in fields of study that would normally lead to work in regulated professions such as medicine, law, and accounting, 76% worked in professions that did not match their studies (Statistics Canada, 2010). In contrast, however, the mismatch rate was 47% among 163,000 employed immigrants who had attained their credentials in Canada, with Canadian-born and educated persons recording the lowest un-matched rate of 38% (Statistics Canada, 2010). This means that Canadians who are born and educated in Canada are more likely to work in their anticipated professions than foreign-born

immigrants who studied in Canada, with foreign-born and educated immigrants less likely to work in an occupation that matches their education.

With respect to field of study, match rates for foreign-educated professionals were lowest for law graduates (12%), followed by immigrants who studied engineering (19%), but with both doctors and nurses recording the highest match rates (56%) (Statistics Canada, 2010). Although foreign-educated immigrants were less likely to have their credentials evaluated and be able to access regulated professions, immigrants educated in Canada had higher education-job match rates. For instance, Statistics Canada (2010) reports that foreign-educated immigrants had a match rate of 31% compared with 55% for Canadian-educated immigrants and 62% for the Canadian born. Foreign-educated immigrants who were not working in the regulated occupations that commensurate their field of study were often working in clerical occupations, sales and service occupations and as scientists and technicians (Statistics Canada, 2010).

2.2.3 Occupational regulations

The introduction of legislative bodies in establishing entry requirements into regulated professions in countries such as United Kingdom, Australia, United States and Canada is increasingly popular (Humphris, Kleiner and Koumenta 2010; Gomez et al. 2005). Although occupational regulation in the Canadian labour market has its merits, it sometimes perpetuates systemic discrimination and racism by providing regulators and employers some degree of monopolistic power that negatively affects adult immigrants' successful integration into the Canadian labour market, earnings, job satisfaction and subsequently has the potential of resulting in loss of productivity to the society as a whole (Sweetman, McDonald and Hawthorne, 2015). Occupational regulations, to some extent, hinder the labor market integration of newcomers to

Canada due to costly and time consuming review processes and conditions in attaining accreditation and employment in one's field.

Evidence suggests that newcomers who had pre-arranged employment or previous knowledge of Canadian society are more likely to succeed in getting their credentials recognized because they are more likely to be aware of the labour market conditions and the potential challenges in having foreign credentials recognized (Houle and Yssaad, 2010). After four years of residence in Canada, Houle and Yssaad (2010) report that newcomers who had a job arranged before coming to Canada had the highest rate of foreign credential recognition (40%) than internationally-educated immigrants without planned arrangement (29%). Again, the majority of newcomers with previous Canadian experience had their foreign credentials recognized (59%).

The trend of increasing regulation of previously unregulated professions in Canada is common especially the health sector, but with little or no direct evidence regarding the trends in the number of licensed or regulated workers in Canada (Sweetman, McDonald and Hawthorne, 2015). Gomez, Gunderson, Huang & Zhang (2015), for instance, report that licensing of occupations in the Canadian labor market raises immigrant workers wages more than for their non-immigrant counterparts with similar characteristics; however the probability of being in an occupationally licensed job in Canada is lower for immigrants as compared to non-immigrants. Newcomers' success in meeting the requirements of the licensure process primarily depends on their financial condition (financial capital), language skills and competency in professional vocabulary (cultural capital) Bourgeault (2015), and connection in the labor market (social capital) (Schellenberg & Maheux, 2007).

Compared to regulated occupations, more studies have been done regarding newcomers' labor market outcomes in unregulated professions. Through occupational regulations, labour

market shelters prevent immigrants' entry into certain professions or push them into labour markets with unpleasant working conditions and lower rate of pay (Buzdugan & Halli, 2009). Some requirements of licensure which includes licensure exam, Canadian experience or an apprenticeship/practicum, a certain level of education, language fluency among others, make it difficult for newcomers to successfully integrate into the host country's labor market.

2.2.4   Barriers to Foreign Credential Recognition

Educational attainment and labour market experience are among valuable assets immigrants bring to the economies of host countries. In 2016, almost 60% of immigrants to Canada had attained university degree (Statistics Canada, 2017). Despite their anticipated contribution to the Canadian society and the economy, newcomers nonetheless face barriers that may impede the recognition of their internationally-attained credentials and work experience that could aid them in their labour market performance and successful integration within the Canadian society. Some of the potential factors however include country of origin/location of study (Owusu and Sweetman 2015; Jantzen 2015; Warman, Sweetman and Goldmann 2015; Zietsman 2010; Houle and Yssaad 2010; Xue 2008), labour market discrimination based on racism (Oreopoulos 2011; Buzdugan and Halli 2009), level of education (Picot and Sweetman 2011; Bonikowska, Hou and Picot 2011; Picot 2008; Hawthorne 2008), field of study (Uppal and LaRochelle-Cote 2014; Houle and Yssaad 2010; Zietsma 2010; Boyd and Schellenberg 2007), visible minority status, gender, age, (Warman, Sweetman and Goldmann 2015; Jantzen 2015; Pendakur and Pendakur 2010; Houle and Yssaad 2010; Meares 2010; Oreopolous 2009; Xue 2008; Palameta 2007), years since landing, class of immigrant (Houle and Yssaad 2010; Zietsma 2010; Gilmore 2009; Xue 2008), language ability in English or French (Zietsma 2010; Xue 2008), frustrating entry procedures in some professions (Bourgeault 2015; Schellenberg and

Maheux 2007), newcomers' knowledge and experience in the Canadian society (Houle and Yssaad, 2010) among others. As a result of these systemic barriers, many newcomers experience difficulties in transferring their foreign credentials and labor market experience into the Canadian labor market.

The effect of country of origin on labour market outcomes such as earnings or education-job mismatch has been comprehensively documented (Houle and Yssaad, 2010). Source country of immigrant's highest level of education is one crucial factor related to the likelihood of foreign credential recognition. Statistics Canada (2010) reports that internationally educated professionals who obtained their professional training outside Canada in a regulated occupation were less likely to have their credentials assessed and work in that occupation in 2006 compared to both immigrants who had studied in Canada and their Canadian-born counterparts. Previous research has documented that newcomers' income disparity is resulted by differences in place of training which is characterized by educational quality. The majority of newcomers are highly educated with university degrees and college or vocational training, but those with qualifications from developed economies are more likely to have their credentials recognized than their counterparts. Country of education/place of training constitutes a significant determinant of internationally-educated immigrants' education - job match and hence considered to be the driver of gaps in the match rate between regulated professions and relevant training.

A recent study conducted by Owusu and Sweetman (2015) also confirms that location of training is a statistically and economically significant determinant of the likelihood of internationally-educated immigrant working in her/his trained profession. According to Buzdugan & Halli (2009), immigrants from developing countries experience the most acute devaluation of their foreign educational credentials and labour market experience because their

education from outside Canada is largely unrecognized by employers. Immigrants educated in Asia, the Caribbean and Latin America are less likely to obtain a job that matches their educational qualification because they score lower pass rates on Canadian licensure exams compared to their counterparts with highest educational qualifications obtained from developed countries (Owusu and Sweetman 2015; Jantzen 2015; and Zietsman 2010).

Relative to their native-born counterparts, recent cohorts of newcomers to host countries including Canada, United States and European countries have faced generally deteriorating labour market outcomes at entry over the last few decades (Warman, Sweetman & Goldmann, 2015). Immigrants receive comparatively lower rates of return with respect to labour market earnings to foreign educational credentials (Sweetman, McDonald & Hawthorne 2015). The systemic discrimination and racism against immigrants is the result of the historical process in the host country's institutional structures and mechanisms (Buzdugan & Halli 2009). Despite having greater educational background and qualifications compared to native-born Canadians (Shirpak et al., 2011), many newcomers are unable to find employment in fields related to their educational qualification due to labour market discrimination based on racism. Non-recognition of foreign credentials leads to loss of self-confidence on the part of newcomers to Canada (Rashid et al., 2013). Immigrants are mostly optimistic about a better career in Canada given their advanced qualifications, but to their dismay, the systemic barriers in the Canadian work force make them unable to secure employment that commensurate with their education. Oreopoulos (2011) also reports that ethnic/racial discrimination in the Canadian labour market is responsible for newcomers' inability of having fair rate of return to their education attained in their home countries. Immigrants' entry earnings are affected by the structure of the host society's own mainstream institutions including its educational system and labour market which

negatively have impact on racial minority immigrants. According to Lowe (2012 cited in Augustine 2015a), immigration policy, as an institutional arrangement, can also create systemic barriers in foreign credential recognition.

Each year, 275,000 or more highly qualified people migrate to Canada from different countries because of Canada's immigration policy, which emphasizes on educational and occupational qualifications in selecting immigrants (Jantzen, 2015; Rashid et al., 2013). Foreign-trained professionals have relatively high employment probabilities in professions where the earning gaps are insignificant (Owusu and Sweetman, 2015). Although some internationally-educated professionals are able to access professions that match their educational qualifications such as physicians, dentists, pharmacists, physiotherapists (Owusu and Sweetman, 2015), others in certain professions are only able to access employment in their trained areas when there are labour shortages in the host country. According to the screening hypothesis, for instance, foreign credentials and experience are less valued in the labor market because it is the 'label' of a Canadian credential and not the knowledge of an educational degree that is recognized and valued in the labor market (Buzdugan & Halli, 2009). As indicated by McDade (1988), although some occupations in the Canadian labour market devise objective and equitable entry evaluation exams or sometimes establish objective panels to assess the academic preparation of applicants for appropriate certification, others nonetheless, refuse to recognize any education obtained outside of Canada. For instance, in some occupations such as accountancy, pharmacy and engineering, some overseas educational credits are given for equivalent work experience in the host country, but in other professions such as architecture, psychology, and law, candidates are expected to repeat the required period of work experience in the province where they wish to practice (McDade, 1988).

The language skills of host country are critical to having formal education credentials recognized in the Canadian labor market. Singh & Sochan (2010), for instance, report that the barriers to recent immigrants practicing their profession in Canada include lack of language proficiency, financial constraints and differing educational standards and practice expectations between their country of origin and Canada. Skilled workers are mostly expected to have their credentials and labor market recognized because they are selected based on their labor market attributes including education, work experience, knowledge of official languages, age, arranged employment in Canada before immigration, among others (CIC, 2008), but this is often not the case, as they are the ones that face more complications in accessing their chosen profession.

Language ability has been shown to enhance labour market outcomes among internationally-educated immigrants (Adamuti-Trache and Sweet, 2005) and has as a result been considered as a significant aspect of one's job search and in accreditation and registration processes. Newcomers from English-speaking regions tend to have higher rate of foreign credential recognition, compared to their counterparts from non-English speaking regions. According to Zietsma (2010), internationally-educated immigrants from countries such as South Korea had the lowest match rates between occupation and field of study because they had their training from non-English speaking region. Internationally-educated professionals from developed countries such as United Kingdom, United States and western part of Europe are able to have their credentials recognized and be more successful in the Canadian labor market compared to their counterparts from developing countries (Reitz 2001; Boyd and Thomas 2002; and Adamuti-Trache and Sweet 2005). Houle and Yssaad (2010) also confirm that only 12% of these immigrants worked in a regulated occupation that matched their field of study which is similar to those who attained their highest qualifications in other non-English speaking regions

such as China, India, Cuba, Haiti, Philippines and El Salvador, with Asia recording the lowest match rates between field of study and occupation. Although official language difficulties are associated with immigrants from non-English speaking regions, class of immigrants has also been identified as a factor in immigrant's ability to speak Canada's official language. Xue (2008), for instance, reports that refugees and other economic immigrants had the most official Canadian language problem compared to their counterparts from other categories.

Immigrants' years since landing and class of entry also influence their likelihood of having their foreign credentials recognized and be able to work in their trained professions. New immigrants experience a higher rate of unemployment compared to established immigrants and their native born counterparts. As indicated by Zietsman (2007), established immigrants (thus, immigrants who landed more than 10years ago) had comparable labour market opportunities and outcomes compared to the Canadian-born population, but very recent immigrants (thus, those who landed in Canada for five years or less) unfortunately had the poorest labour market outcomes due to unequal labour market opportunities among this population. An analysis of the 2006 Canadian Census by Houle and Yssaad (2010) reveals that 24% of internationally-educated newcomers with a university degree were working in a regulated occupation that matched their field of study, compared to 62% of their Canadian-born counterparts. Among newcomers whose occupation did not match their field of study, 77% worked in jobs that do not require a degree, compared to 57% of their Canadian-born graduate counterparts (Zietsma, 2010).

Education- to- job mismatch is, as a result, very prevalent among recent immigrants with foreign university degrees, because finding employment is very challenging and they mostly lag behind those of other groups. In 2008, about 66% of recent immigrants were working in occupations that usually required at most a diploma or apprenticeship, compared to 55% of

established immigrants and 40% of native Canadians (Gilmore, 2009). Prolonged unemployment or underemployment leads to deterioration of professional skills and confidence of recent newcomers which negatively affect their long-term labor market outcomes. Class of entry also significantly influences internationally-educated immigrant's likelihood of having their credentials assessed and be able to have equal opportunity and better labour market outcome. Xue (2008), for instance, highlights that although employment rates for all immigration categories increased with number of years spent in Canada, yet immigrants' entry class significantly influenced their employment growth in the Canadian labour market. Throughout all immigration categories admitted to Canada, skilled worker principal applicants had the highest proportion reporting difficulties in finding employment that match their educational qualification, with foreign credential recognition problem as particularly pertinent for this group of immigrants, throughout the first four years of their arrival (Xue, 2008). Four years of arrival, for instance, 29% of skilled worker principal applicants cited difficulties in having their foreign-earned credentials assessed as the most challenging in entering the labour market, followed by skilled worker spouse and dependents (25%), and by family class (16%), with business class and refugees reporting the least percentage in difficulties having their foreign-earned credentials assessed (11%) (Xue, 2008). Labby (2016) also reports that one out of every ten recent refugees from Syria are professionals with highest educational qualifications and many years of labour market experience but are having challenges finding work in their field, due to the structural discrimination in the Canadian labour market.

There are sectional differences in the composition of the labour market. A higher concentration of certain groups of people such as visible minorities, women and immigrants are in labour market characterized by unstable and short-term jobs, poor working conditions instead

of being in labour market characterized by better pay, relatively pleasant working conditions and employment securities (Buzdugan & Halli, 2009). Other research has shown that the devaluation of foreign credentials particularly affects certain groups such as visible minorities (Pendakur and Pendakur, 2010; Oreopolous, 2009; Palameta 2007; Basran and Zong, 1998;) and women (Warman, Sweetman and Goldmann, 2015; Jantzen, 2015; Houle and Yssaad, 2010).

Previous research shows that visible minority immigrants especially Blacks/Africans/Caribbeans and South-Asians can face substantial labour market disparity, which may be worsening over time, and that the gaps do not disappear for Canadian born minorities (Palameta, 2007). According to Pendakur and Pendakur (2010), despite the increasingly growing 'home-grown' minority populations in Canada, earning gaps between white and visible minority workers, which first widened in the 1990s, remain very large, due to labour market discrimination based on racism. Newcomers who are racialized minorities are less likely to have their credentials recognized. Thirty-one percent of newcomers who were racialized minorities had lower likelihood of having their foreign-earned credentials assessed, compared to 28 percent of their counterparts (Houle and Yssaad, 2010).

Men and younger internationally-educated immigrants are more likely to have their foreign credentials recognized compared to women and older immigrants. There exist significant gaps between men and women with foreign credentials with respect to foreign credential recognition. For instance after four years of landing in Canada, 33% of men had their foreign credentials recognized, compared to 22% of women (Houle and Yssaad, 2010). As reported by Xue (2008), female immigrants had a lower participation rate in the Canadian labour market and were less likely to obtain employment and better their labour market outcomes compared to male immigrants. According to Statistics Canada (2008), the overall unemployment rate for immigrant

women is 4 per cent higher than for their male counterparts. Immigrant women, compared to their male counterparts are marginalized from the work force, and without equal opportunity in entering the labor market or sometimes withdrawn from paid work to take care of their families, engaged in parenting, domestic chores and other resettlement activities (Meares, 2010). Age of newcomers is also a strong correlate of foreign credential recognition, because younger internationally-educated immigrants are more likely to have their credentials recognized than their older counterparts. Houle and Yssaad (2010), indicate that younger immigrants are more likely to have their credentials recognized than their older counterparts. Immigrants in the prime working age group (thus, from 25 to 44years) had the highest participation and employment rates (75%) compared to 60% of immigrants aged 15 to 24 and 65% of immigrants aged 45 to 64. Unemployment rate, nonetheless, was higher for immigrants of retirement age (thus 65years and over), since out of 22% of immigrants in this age group looked for jobs, only 12% found employment (Xue, 2008).

Immigrants with higher education levels are the most likely to experience problems having their foreign credentials recognized. The higher the educational level, the more regulatory bodies and employers control access to professions. And recently, immigrants are finding it more difficult to enter the regulated professions. According to Mittelstadt (2016), between 2011 and 2015, almost 50% of immigrant adults entering the United States held bachelor's degree or more, but most experienced skills underutilization, which constitutes "brain waste" in the American economy. The report adds that 29% of immigrants who earned their college degrees abroad experienced brain waste, compared to 21% of immigrants educated in the United States. Immigrants' labour market earnings have significantly declined in recent times, despite their higher level of education compared to their Canadian-born counterparts (Picot, 2008;

Hawthorne, 2008; Picot & Sweetman, 2011; Bonikowska, Hou & Picot, 2011). Despite the significant increment in young people's educational levels with their corresponding employment in professional occupations, many with university degrees, nonetheless, work in occupations that require low levels of education, and they are as a result under-employed. Statistics Canada (2010), for instance, reports that foreign-educated immigrants who were not working in the regulated occupations were working in clerical occupations and sales and service occupations in Canada.

According to Uppal and LaRochelle-Cote (2014), 43% of women and 35% of men who are internationally graduated immigrants are overqualified for their jobs because they work in occupations that require lower level of education. This means that immigrants are more at risk to be under-employed than the Canadian-born. For instance, a 2009 European study on newcomers reveals that 36 percent of immigrants of working age were over-qualified for their jobs, compared with only 28 percent of people born within the European Union (EU) and 21 percent of native-born people (Augustine, 2015a). The disparity rate between internationally graduate immigrants and their locally graduate counterparts is even more pronounced in Canada (Uppal and LaRochelle, 2014).

Field of study, to some extent, influences immigrant's foreign credential recognition. For instance, foreign-trained immigrants in engineering and health related programs had higher probabilities of their credentials being recognized and to be working in their field of training than their counterparts in humanities, social sciences, education, commerce, management and business administration (Houle and Yssaad, 2010). This is similar to Statistics Canada (2010) report that immigrants with fields of study in health professions had higher match rates than those who studied to be teachers, lawyers and engineers. Labby (2016) reported similar

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challenges internationally-educated immigrants from specific fields of studies encounter in their effort to work in their trained professions. Labby (2016) indicated that the requirement for post-graduate training, which is also known as residency, constitute one of the biggest stumbling blocks for internationally-trained physicians. This is because a minimum residency of two years is required to be a family doctor in Canada and a minimum of four years to be a psychiatrist and specialist which is different than in other countries. According to Xue (2008), lack of job opportunities, labour market connections and jobs in immigrants' field of study constituted the commonly reported challenges in trying to enter the Canadian labour market. Four years after arriving in Canada, however, about 48% of the immigrants who were employed worked in a field that commensurate with their educational qualifications (Xue, 2008). Field of study also tends to determine whether or not educated graduates are overqualified for their jobs. Immigrants trained as health professionals are more likely to have successful credential recognition than their counterparts with non-health related qualifications. Underemployment has been a critical issue in the utilization of the country's diverse human capital capacity. As indicated by Uppal and LaRochelle-Cote (2014), graduates from programs including humanities, social sciences and administration were more likely to be overqualified for their jobs compared to graduates in other fields. Immigrants' inability to pursue their professional goals and interests may erode their sense of self, self-esteem and their ability to integrate into the Canadian community.

Earlier studies have nonetheless indicated that some regulated professions such as engineering and physician are very difficult to enter due to accreditation complications and frustrating certification requirements and processes such as high cost of accreditation, longer length of time in the registration processes, among others (Boyd and Schellenberg, 2007).

2.3   Conclusion

This chapter reviews pertinent literature on foreign credential recognition of immigrants in Canada. A review of literature reveals that much academic work has been conducted on immigrants' labour market outcomes with respect to their ability to have a profession that commensurate with the educational qualification and labour market experience they immigrated with. There is, nonetheless, surprisingly little or lack of quantitative academic research in this area in Canada, unlike in the United States. Relatively little is known about the processes by which well-educated immigrants from overseas establish themselves in the Canadian labour force. Existing literature suggests that there exist complications with recognition of credentials earned outside of Canada. There is, nonetheless, little or no systematic and quantitative investigation of the challenges internationally-educated professionals encounter in their attempt to access the Canadian labour market. Also, little is known about the kind of occupations immigrants who are unable to find jobs that commensurate their educational qualifications engage themselves in.

CHAPTER 3

3 THEORETICAL FRAMEWORK
3.1 Introduction

It has been documented that newcomers have lower labour market outcomes compared to both non-immigrants and earlier immigrant cohorts, partly due to non-recognition of foreign-earned credentials and the limited labour market experience recent immigrants arrive with (Frenette and Morissette 2003; Little 2003). The result is lower economic returns to foreign qualifications than to domestic education in the Canadian labour market. There are many theories that can help understand immigrants' inability to have their foreign credentials assessed including Critical Race Theory (Aylward, 1999; Ladson-Billing 1998; Ladson-Billing and Tate 1995; Matsuda, 1996), Human Capital Theory (Becker 1971; Osberg 1981; McDade 1988), Labour Market Shelters Theory (Harrison and Sum 1979), Split Labour Market Theory (Bonaich, 1979), Dual Labour Theory (Osberg 1981), and Screening Hypothesis (Little 2003). The theoretical underpinnings of my research, however, rely on Critical Race Theory because it provides the most comprehensive and convincing arguments and analyses that aid in identifying the barriers immigrants are confronted with in their attempt to have their internationally-earned qualifications recognized and be able to access regulated professions in the Canadian labour market. This research also makes reference to Human Capital Theory because of its predominant use in immigration studies and research. Critical Race Theory helps address the research question and advocate for full utilization of internationally educated professionals by having their credentials assessed and being able to work in their trained professions. Conflict Theory, as a broader theoretical paradigm is discussed and related to Critical Race Theory, which is

preceded by a discussion of Human Capital Theory, in relation to Structural Functionalism as a broader sociological theory.

3.2   Structural functionalism

Structural Functionalism, as a broader sociological paradigm, attempts to explain why society functions the way it does by primarily focusing on the relationship between and among the various social institutions (education, economy, health, political, religion, family etc.) that make up society. Structural Functionalism, to some extent, helps in comprehending why there exist income disparities in the Canadian labour market. According to Structural Functionalists, some people earn less and are destined to be subordinates to others with higher pay, because that allows the society to functions smoothly (Tepperman, 2015). Functionalists tend to believe that inequality in the labour market is universal because it serves important purpose in society by motivating workers' effort, striving and productive competition which consequently encourages excellence and higher productivity. Put succinctly, the labour market needs low skilled low paid labour to do important but menial tasks at the same time as it needs high skilled high paid labour to complete more complex tasks. It relies on the presumption of a meritocracy and a free labour market. (Sociologists know this to be untrue, which I discuss below)

This theory places significant emphasis on the fact that people possess different qualities and qualifications and as a result are expected to hold different positions and earn different income in the labour market, which justifies the persisting differing employment outcomes of immigrants and their Canadian-born counterparts, due to differing source and quality in education and labour market experience. Professions that require a higher education and bring in a higher income such as law, medicine, or a university level training are generally considered highly desirable and prestigious. In contrast, occupations that require little education and that

bring in low income like restaurant server, cleaner or unskilled labourer are considered undesirable and less prestigious. Structural Functionalism recognizes different labour market positions, and hence justifies the non-recognition of foreign credentials and work experience to ensure that these immigrants work in occupations or positions that are left unfilled, to ensure smooth running of the society. Thus, since individuals have different personal investments, they are equally supposed to occupy different positions in the labour market hierarchy and hence justifies to some extent, the earning differences between immigrants and non-immigrants in the Canadian labour market. Society is believed to operate on the basis of meritocracy – which is what motivates people to go to school and increase their training/skill-set. The theory argues that the labour market has a bias-free sorting mechanism.

3.3   Human Capital Theory

As an economic theory, human capital is most closely associated with structural functionalism. One of the most influential economic approaches in explaining earning differences and labour market outcomes of individuals is Human Capital Theory (Osberg, 1981). Human Capital Theory provides useful framework in explaining the effect of one's origin on her/his labour market outcomes including recognition of foreign credentials, by providing empirical evidence of earning differences between newcomers and their Canadian-born counterparts. Origin of degree and place of schooling provide an understanding of the different valuation of education in the Canadian labour market. Businesses and professional associations argue that credentials gained outside of high income countries are more "valid" than those gained in low or middle income countries (Buzdugan and Halli, 2009). In their analysis of the Longitudinal Survey of Immigrants to Canada, Houle and Yssaad (2010) find that newcomers who had studied in the United States or the United Kingdom were more likely to get recognition

for their credentials than those with qualifications attained outside of these countries. Compared to degrees obtained in developed countries in Western and Northern Europe and in Australia, all other degrees are less valued and hence less recognized in the Canadian labour market (Buzdugan and Halli, 2009). According to Bourdieu (1985), human capital is economically bounded and a by-product of the bearer's personal investment that yield economic profit. The government and businesses make us believe that the labour market works perfectly because it operates on the basis of meritocracy, with a bias-free sorting mechanism. Human Capital Theory provides a useful framework to formulate precise hypotheses about the lack of recognition of internationally-earned credentials.

According to McBride (2000), Human Capital Theory holds that education and experience result in accumulation of knowledge which subsequently increases work productivity which in turn is reflected in individual's level of earnings. This theory views education as a form of investment which, in the short-term, is costly for individuals in terms of time and money invested into training. In the long-term, however, results in significant benefit for the individual in society. There is a positive correlation between education attainment and labour market earnings according to the Human Capital Theory. Human Capital Theory, however, suggests that education and work experience are the key factors determining labour market earnings. Career knowledge and skills gained pre-immigration through prior education and professional experience are forms of human capital already held by immigrants.

Due to the theory's focus on education and labour market experience, the cause of earning differences between immigrants and non-immigrants are to some extent justified, because human capital reflects an individual's ability and the Canadian society is believed to operate as a meritocracy (Buzdugan and Halli, 2009). The value of human capital is as a result

derived from its acquisition. Earning differentials between recent immigrants and the earlier cohorts and the Canadian-born is thus explained by recent immigrants' perceived intelligence level, lack of motivation, inability to speak good English or French and poor educational quality, according to Human Capital Theory. Other researchers have refuted the notion that recent immigrants' human capital has diminished, and rather attributes earning differences between immigrants and non-immigrants to labor market discrimination. According to Li (2003), recent immigrants to Canada have higher educational qualifications compared to the Canadian-born and earlier cohorts, but with little or zero economic returns to their foreign credentials due to other factors such as labour market discrimination based on racism since experience and education obtained outside of Canada is often devalued.

Recognition of foreign credentials is sometimes associated with pre-arrival factors such as relative quality of the institution and country that issued the credential, the language of instruction of such institution (language and literacy skills), whether from a developing country or developed country; and post-arrival factors including time in Canada (Zietsma, 2010; Owusu and Sweetman, 2015), connection to labour market, and success in licensure requirements. Newcomers with credentials from low-income countries are much less likely to be working in their trained fields compared to their counterparts from higher income countries (Owusu and Sweetman, 2015). Employers favour newcomers from English-speaking backgrounds or western countries characterized by training systems similar to those in Canada (Hawthorne, 2007). Bonikowska, Green and Riddell (2008) observed that newcomers in Canada have lower scores on international standardized tests on official language literacy, due to their language experiences in their country of origin.

The failure to screen credentials during pre-migration is a major contributor to negative outcomes of internationally-educated professionals. Much of the delays in getting credentials evaluated can be reduced if regulatory bodies were willing to assess credentials prior to newcomers' arrival. Furthermore, non-recognition of foreign credentials and work experience by regulatory bodies and employers in the Canadian labour market often lead to underutilization of the "human capital" of diverse skilled immigrants to Canada. In the light of recent research, growing debates exists in Canada on the effectiveness of the human capital-based selection system (Sweetman 2004). A substantial literature now documents skilled immigrants' deteriorating employment outcomes, including their level of economic marginalization, differential wage rates, unemployment and risk of "skills discounting" (Picot and Hou, 2003). According to Hawthorne (2008), the human capital model has dominated Canada's recent selection of economic immigrants, allowing them to arrive prior to having their credentials screened, which means that delays in finding work are very common. Canada's practice is in marked contrast to the system now operating in Australia. Within two years of Australia's abandonment of the human capital model of selection for instance, 81% of economic immigrants were employed within the first six months of arrival (compared to 60% in Canada), a figure that rose to 83% by 2006 (Hawthorne, 2008). This is largely due to the fact that prospective newcomers were able to have their credentials assessed before their arrival, meaning they could make informed decisions about whether or not to migrate. As indicated by Bourgeault (2007) when newcomers are unable to work in their trained occupations, partially due to labour market conditions and regulations of occupations, it constitutes loss of human capital to the host country's economic development in addition to the losses of individuals' experience.

The Canadian labour market's recognition and valuation of foreign qualification and of pre-migration labour market experience in particular, has declined in recent times with roughly zero or sometimes negative rate of return with respect to labour market earnings (Green & Worswick, 2010; Warman, Sweetman & Goldmann, 2015). Ferrer and Riddell (2008) find that newcomers receive lower average of returns to pre-migration years of schooling than do immigrants whose schooling was obtained post-migration in Canada, which subsequently limits the portability of pre-immigration Human Capital and results in poor earning outcomes of newcomer youth.

3.3.1   Theoretical importance

According to Hawthorne (2008), the Human Capital model has dominated Canada's recent selection of economic immigrants, allowing them to arrive prior to having their credentials screened, which is in marked contrast to the system now operating in Australia. As indicated by Wong and Guo (2018), Canadian immigration policy is a form of human capital to determine potential eligibility of admitting newcomers based on their level of education, job skills, occupation, work experience, age and knowledge of an official language. Human Capital Theory provides useful framework in explaining the effects of one's origin on her/his labour market outcomes including recognition of foreign-earned credentials, by providing empirical evidence of earning differences between newcomers and their Canadian-born counterparts. It also assists in providing useful framework in formulating precise hypotheses about the lack of recognition of internationally-earned credentials in Canada. The government and businesses make us believe and think that the labour market operates on the basis of meritocracy, which constitutes the major driving force for immigrants' desire to come to Canada and Canada's desire to have more newcomers in the country. Proponents of this theory believe that the labour market has a bias-

free sorting mechanism that ensures that qualified individuals are able to access employment that matches their chosen career.

As a theory, human capital contributes in understanding the problem understudy by presenting comprehensive arguments to the reason why newcomers have difficulties in having their credentials recognized and subsequently be able to work in occupations that match their educational credentials. Also, Human Capital Theory is overwhelmingly used by researchers in this area – so ignoring it would be "weird". Human Capital Theory attributes newcomers' inability of having their internationally-earned qualifications recognized to poor educational quality of credentials obtained from their home countries, newcomers' inability to speak good English and French, lack of confidence and motivation, and their diminishing intelligence level. Thus, Human Capital Theory attributes newcomers' inability of having their credentials recognized to the quality of education and experience and level of competency they immigrate with (Houle and Yssaad, 2010). The state uses Human Capital Theory as an assumption and that is the way it is used in this thesis.

3.3.2 Limitations of Human Capital Theory

Despite the fact that Human Capital Theory is able to provide comprehensive explanation of the earning differences between recent immigrants and the Canadian-born and earlier cohorts, it has been severely criticized of its rationalistic assumption. This theory assumes that education increases productivity in the work setting which subsequently results in higher individual wages, but fails to provide insight into the processes through which education and labour market experience are translated into higher wages in the labour market. Although the government and businesses make us believe and understand that the labour market is fairly organized due to the existence of bias-free sorting mechanism, there are nonetheless very high rates of immigrant

unemployment, with many people overqualified for the jobs they are currently working. As indicated by Camfield (2017), there is a much better way of organizing society because the one that dominates the world today (i.e., capitalism) is the root cause of unemployment, increasingly insecure jobs which make life harder for people. This means that HCT fails to explain why some groups of people suffer wage and occupational penalties than other groups with similar educational levels. Human Capital Theory is used to "sell" immigration to the Canadian public, by focusing exclusively on favourable labour market attributes of immigrants as determinants of entry. Economic researchers who work in this area use this theory exclusively and discuss how educational quality is associated with country of origin rather than looking at actual quality.

In spite of this criticism, Human Capital Theory has proven to be a valid framework in investigating and analyzing barriers that immigrants confront with in having their foreign-earned credentials assessed in Canada.

3.4 Conflict Paradigm

Another broader sociological paradigm that explains differences in the labour market outcomes between immigrants and their Canadian-born counterparts is the Conflict perspective. As a macro-level oriented paradigm in sociology, Conflict perspective views society as an arena of social and economic inequality that constantly generate disagreement, conflict and social change, by seeing social life as a competition and focuses on the distribution of resources and power (Tepperman, 2015). It holds that there are always misunderstanding between dominant group (in this case, non-immigrants) and the minority group (immigrants), with programs and policies favouring the dominant group. Those who favour the conflict approach always look for power inequalities and exploitation, because this group benefits from the way power is organized in the workplace.

Conflict Theorists tend to suggest that marginalized people are oppressed by the dominant group in the labour force by not ensuring that they have equal chance of accessing professional occupations in which they are trained in. The dominant group in society, according to this theory, controls the assessment of foreign credentials and working experience, with the intention of exploiting the racialized minorities, despite having higher level of education qualification compared to their Canadian-born counterparts. The more powerful group as a results benefits more than the marginalized group from exclusion, differentiation and institutional racism, by promoting the creation and preservation of racial stereotypes and ethnic boundaries. For instance, through exclusionary regulations, the dominant group tends to hire and promote on racial grounds instead of judging on the basis of competency, job qualifications and work experience. Much research in Canada and elsewhere has revealed clear patterns of mass discrimination against racialized minorities in the labour market. As indicated by Bertrand and Mullainathan, (2004) and Oreopolous (2011), there is evidence in the literature that applicants with identifiably 'black' first names are far less likely to be considered for employment compared to their counterparts with identifiably 'white' first names.

Critical Race Theory is part of the Conflict Paradigm. It is the primary theoretical framework for analyzing the results of my data analysis and is discussed below.

3.5   Critical Race Theory

Other theories are concerned about the existence of inequality and lack of foreign credential recognition among immigrants, but see things a bit differently. Critical Race Theory which examines society and the intersection of race, law and power, was first used as an analytical framework to analyze the role of race and racism in perpetuating social disparities between dominant and marginalized racial groups in the United States (Decuir and Dixson,

2004). The Critical Race approach began as a movement of academics and scholars who were interested in studying the relationship and intersection between race, racism and power (Delado and Stefancic, 2012) and why these unequal relationships are maintained despite existing legislation. Critical Race Theory recognizes that racism is engrained in the fabric and that the systems in which institutions are organized are inherently racist. Blacks and racialized peoples have not been recognized as equal because of the systemic discrimination in Canadian society (Aylward, 1999).

At the heart of Critical Race Theory is the thesis that the Canadian society and economy has ignored the fact that discrimination based on racism is promoted by the host country's institutional arrangements (Matsuda, 1996). This implies that discrimination based on racism is rooted in institutional arrangements and structures of the host country including educational system and the labour market. According to Critical Race Theorists, law is born of racism, perpetuates, and as a result responsible for labour market discrimination. Critical Race Theory proposes that white supremacy and racial power are maintained overtime and continues to claim that the law may play a role in the process. It suggests that power structures are based on white privilege and white supremacy, which perpetuates the marginalization of racialized people. In the labour market then, it is not surprising that foreign credentials of immigrants are largely unrecognized.

In its conception, Critical Race Theory begins with the idea that racism appears as "normal" to many people in North American society as it has been intertwined in the foundation of this society, such that they see it quite normal and natural (Ladson-Billings, 1998). In its process, Critical Race Theory encourages the utilization and recognition of experiential knowledge of the marginalized people and communities in society (Ogbuagu and Baffoe, 2015)

and advocates for cultural and social inclusion in service and provision and creation which ensure equal opportunities and elimination of barriers in having foreign credentials recognized and equal access to regulated professions. Li (2000), for instance, attributes the difficulties newcomers experience in achieving better labour market outcome partly to discrimination which is embedded within the way the economy works. According to Merton (1948), discrimination in the labour market can take place when people other than the employers have discriminatory preferences described as 'unprejudiced discrimination'.

3.5.1 Theoretical importance

Critical Race Theory contains and presents comprehensive argument and explanations that make it useful for comprehending why internationally-educated immigrants find it difficult in having their credentials recognized and be able to access regulated professions in the Canadian labour market. The licensure processes by the Professional regulatory bodies in evaluating the value of internationally-earned credentials and work experience significantly undermine newcomers' access to regulated professions that match their trained field compared to Canadian-born and trained applicants because of its bias and discriminatory system (Pittis 2017; Labby, 2016, Girard and Bauder, 2007). As also reported by Boyd and Thomas (2001) and Boyd (2000), the requirements set by professional regulatory bodies are often times described as a form of systemic discrimination that have disproportionate effects in restricting access to regulated professions among foreign-born and educated professionals.

As a theory, it explains that newcomers are unable to have equal opportunity of having their credentials recognized compared to the native-born due to discrimination based on racism in the labour market. Thus, Critical Race Theory which helps answer the research question under study, explains the role of institutionalized racism in immigrant's likelihood of having their

credentials recognized to subsequently enable them work in an occupation that matches their educational credentials. It also helps explain why newcomers from certain countries are able to have their credentials recognized compared to their counterparts from other countries and of racialized minority status, and the reason why newcomers are not able have fair rates of returns with respect to their labour market earnings to their foreign credentials.

3.5.2 Limitations of Critical Race Theory

Despite its outstanding contribution to the understanding of why certain groups of people in the Canadian labour market are disadvantaged with regards to access to regulated professions, Critical Race Theorists have been criticized on their over reliance on storytelling and narrative as major sources of information so it has not been used with quantitative data very often. The problem with using quantitative and critical race theory is that it can be difficult to identify the structural basis for discrimination using data collected from individuals and not institutions.

3.6 Conclusion

This chapter describes the theoretical frameworks that inform the thesis. Despite the fact that several theories could help explain immigrants' difficulties in having their foreign credentials recognized and be able to work in regulated professions, Critical Race Theory stand as the main theoretical framework that helped inform this thesis because it provides useful, convincing and comprehensive analyses on inequality and injustices in the Canadian labour market resulting in negative labour market outcomes for internationally-educated professionals. This research also makes reference to Human Capital Theory, which is used by the state in admitting immigrants into the country, in aiding understanding of the economic outcomes of immigrants to Canada.

CHAPTER 4

4   METHODOLOGY
4.1   Introduction

This chapter, which is organized into five (5) subsections, describes the method used in the study. The first subsection describes the characteristics of the study population, with emphasis on description and source of data as well as discussion of potential limitations of the study data. It is followed by the second subsection, which indicates details of how individuals were included in the 2011 National Household Survey (NHS), with information on those who were excluded from the data. Sampling and details of data collection technique is presented in subsection three. The next subsection discusses the data analysis technique adopted, which includes operationalization of variables used in the study and discussion of the benefits and limitations in using secondary data in data analysis. Ethical considerations are also discussed in subsection four. The last subsection, however, concludes the chapter by summarizing the methodological approach used in the study.

4.2   Description of Sample

In 2010 for the first time ever, the Canadian government cancelled the mandatory long-form of the Census. It was a devastating blow to Statistics Canada and the thousands of organizations who depend on the quality data collected. As a new voluntary and self-administered survey distributed to about 30% of Canadian census households, the 2011 NHS was designed to replace the long-form census questionnaire which were distributed to one in five households every five years (Statistics Canada, 2015).

The database is designed to collect and provide demographic, social and economic information about the entire Canadian population, with the primary aim of providing information

for small geographic areas and small population groups. The objective of the NHS is to produce estimates from a number of questions for a wide range of geographies (such as provinces, territories, census metropolitan areas, neighbourhoods and municipalities), and for various population groups (such as immigrants and refugees) (Statistics Canada, 2013).

The 2011 NHS micro-data file is a hierarchical dataset which contains 6,719,223 records or observations and 379 variables (Statistics Canada, 2013). These variables were constructed using responses which were taken directly from the short and long-form questionnaires together with the derivations performed during the edit and imputation processes by Statistics Canada (Statistics Canada, 2013). The NHS micro-data file has a record that represents each respondent's level response which aids in distinguishing persons in economic from those not in economic families.

The survey covers all persons who live in Canada, in the provinces and the territories. The 2011 NHS is a reliable basis for the estimation of immigration population, as Canada's sub-population group in the provinces, territories and municipal areas. When compared to all other censuses in Canada, the response rate was abysmal, with only 74% of Canadians (Statistics Canada, 2015), completing it, compared with 98% who completed the compulsory census in 2016). It provides information about the characteristics of the immigrant population and their economic participation in the Canadian labor market to aid in strengthening and/or development of inclusionary policies and evaluation of governmental activities at various levels to better integrate all Canadian population regardless of attributes in the labour force. This study was restricted to those living in Manitoba who are labour force respondents, between the ages of 25 and 64 who were sub-sampled from the 2011 National Household Survey of Statistics Canada. Persons who are retired, in school or otherwise not in the labour market were not included. Three

(3) variables, out of the 379 variables were used to select the sub-sample, including age of respondent, whether or not a respondent has looked for a paid work, and whether the respondent is a resident of Manitoba. Respondents whose age fell below 25 years and between 65 and 109 years were excluded from the analysis. This age group was selected because 25 years is when the "typical" person has finished school and is entering the labour market permanently and 65 years is the "typical" retirement age. Even though we know that "typical" does not include everyone who is working at an earlier or a younger age, it lends itself to a more homogeneous sample needed to test the hypotheses of our study. Also, virtually every single other study places the same restrictions on the data analysis of "working age" adults. Respondents who were not active in the labour force such as persons taking care of their personal or family responsibilities were taken out of the analysis. And lastly, respondents who reside outside Manitoba were removed from the analysis.

The primary aim of this study is assessing the labour market outcomes of four population subgroups in Manitoba based on their place of birth and location of study. These subgroups includes Canadian-born, Canadian-trained (i.e. those who were born and trained in Canada), Canadian-born, foreign-trained (i.e. those who were born in Canada but were trained outside of Canada), Foreign-born, Canadian-trained (i.e. those who were born outside of Canada, but trained in Canada), and finally Foreign-born, foreign-trained (i.e. those who were born and trained outside of Canada). Hence, this analysis focused on access to regulated professions of Canadians and immigrants in relation to their location of study and place of birth.

Data were collected via online questionnaire, or printed questionnaire and interview by Statistics Canada enumerators. Out of the total sample of 3,496,792 participants (Statistics Canada, 2013) who responded to the survey, a sub-sample of 1,945,410 (representing 55.6%)

represents the active labour force population in Canada. Given that the regulatory bodies are independent, meaning that practices vary significantly across professions and by provinces within the same profession, I limited the sample to Manitoba only. Originally, I had hoped to compare the results from Manitoba with other provinces, but on the advice of labour market analysts and the Office of the Manitoba Fairness Commissioner, and because regulations within each profession differ by province, I decided it was more precise to focus only on Manitoba at this time. The complexity of the dataset and the inter-occupational comparisons has made me realize why no other researcher has attempted to do a cross-Canada comparison on this topic.

The Statistical Package for Social Sciences is the software the researcher used in analyzing the data. The analyzed results were rounded and weighted to ensure that respondents' identities are not disclosed. This procedure was done in accordance with the rules and guidelines established by the Statistics Canada. Although I am submitting this work in partial fulfillment of the requirements of the degree of Masters of Arts to the Faculty of Graduate Studies of University of Manitoba, I am also writing a report for the Office of the Manitoba Fairness Commissioner and submission of a product to the Manitoba Research Data Centre in return for accessing the data.

4.3   Data source

The 2011 NHS used in this study was accessed from Statistics Canada through the Manitoba Research Data Centre of the University of Manitoba with a project name, Abdul-Karim 5218. This project uses Statistics Canada's public use master data file for individuals of the 2011 National Household Survey to answer the research question. As the most recent data available to study immigration related issues such as the economic participation of immigrants in the Canadian labour market, the 2011 NHS is the only data set that provides occupational codes

at the level needed to distinguish occupational skills. It is also the only dataset that has information on place of birth and country where highest degree of respondents was attained, aside other variables that are useful in answering the research question. As a primary source of labour market data, the 2011 NHS permits the user to distinguish between immigrant status, country/place of birth, generational status/period of entry, age, sex, visible minority status, country where highest level of education was attained, occupational codes (which is used to distinguish regulated from non-regulated professions in Manitoba) and the impact of labour market programs when analyzing newcomers' labour market behavior. Sadly, the 2016 Census of Canada Public Use Microdata File is not currently available for use by academics and researchers.

This project considers active labour market Canadians and immigrants who are currently in the labour force and have ever immigrated to Canada and whose information is contained in the 2011 National Household Survey. The project was centered on Canadian-born, Canadian-trained respondents (CBCT); Canadian-born Foreign-trained respondent (CBFT); Foreign-born, Canadian-trained respondents (FBCT); and Foreign-born, Foreign-trained respondents (FBFT) in the province of Manitoba. The survey captures information of Canadians including immigrant population on areas of education, training and skills, ethnic diversity and immigration, mobility and migration, language, labour, place of work, and basic demographics (Statistics Canada, 2013). The database is, however, managed by Statistics Canada on behalf of a Federal-Provincial Consortium which is led jointly by Immigration Refugees and Citizenship Canada and Statistics Canada (CIC) (Statistics Canada, 2015).

4.3.1   Limitations of the Data

The 2011 NHS can measure various aspects of immigrants' short and long-term labour market outcomes directly with their characteristics at admissions such as entry class, country of origin, location of study, knowledge of official language, highest educational qualification and intended occupation. The fact that it is compulsory for all Canadian residents to complete means that the survey is very important. Sadly, in 2010, the Conservative government decided to make it voluntary—which meant that the response rate for the 2011 NHS is significantly lower than in previous years. This issue is discussed in greater detail on page 50. The survey also has couple of limitations and usage. Firstly, the survey does not include some important variables such as entrance category of immigrants (economic, family or humanitarian class), which was revealed in the literature as one of the major explanatory factors in foreign credential recognition and access to regulated professions. For instance, as reported by Xue (2008), comparing across all immigration categories admitted to Canada, skilled worker principal applicants had the highest proportion reporting difficulties in finding employment that match their educational qualification, with foreign credential recognition problem as particularly pertinent for this group of immigrants, throughout the first four years of their arrival. The absence of this variable in the 2011 NHS did not allow the researcher to examine which entrance category of immigrants has higher likelihood of accessing regulated professions.

Also, there are inconsistencies with respect to the definition and use of variables, which may occur in the responses of individuals, who for instance, obtained a certificate, diploma or degree through a joint program or by distance learning with credentials granted by an institution in another province, territory or country. As reported by Statistics Canada (2013) that a number of respondents reported a location of study for a university credential in one of the territories (i.e.

Yukon, Northwest Territories, Nunavut), even though there were no educational institutions in the territories with the authority to grant university degrees.

4.4   Sampling and data collection technique

Sampling is a methodological technique of selecting a representative part of a population with the primary aim of determining the characteristics of the entire population (Blair et al., 2014). Sampling technique was adopted for the data collection because of its cost-effectiveness, reduction in respondent's burden and quicker means of obtaining results (Statistics Canada, 2015). It was primarily used to select dwellings to be included in the National Household Sample. As a voluntary survey, Canada's National Statistical Agency (Statistics Canada), which is responsible for collecting demographic, social and economic data of the entire Canadian population, encouraged the sampled respondents or households to participate in the 2011 NHS, by outlining the general and specific objectives of the survey, how data collected will be used for statistical purposes, and the anticipated benefits of the survey to the Canadian community at large. A methodology was designed to encourage sampled households to respond to the online questionnaire promptly by reducing the risk of a decline in overall response rate and the need for costly field follow-up. The NHS was implemented during the 2011 census cycle, where Canadians were invited to respond to the survey questionnaires in spring and summer 2011. Respondents were asked to complete the questionnaire online or on paper and then a follow-up were conducted by enumerators with households who had not yet responded. In remote areas and on Indigenous persons reserves, however, sampled respondents' information was gathered in a face-to-face interview.

4.4.1 Details of method

The 2011 census is one of the major sources of information on immigration and ethno-cultural diversity in Canada. Data was collected through three (3) main options including an online questionnaire (where sampled respondents completed their census questionnaire online), a paper/printed questionnaire (where sampled households/respondents who did not respond to the online questionnaire could complete a printed version of the questionnaire), and an interview with a Statistics Canada enumerator (where sampled respondents who were in remote areas, or on reserves and in non-response follow-up were interviewed). This method also ensured that those who wanted to complete the questionnaire via telephone were given the opportunity to be interviewed.

As a sample survey of a voluntary nature, a random sample of 4.5 million dwellings was selected and invited for the NHS (Statistics Canada, 2013), which was selected from the 2011 Census of population dwelling list. Information previously collected by the mandatory long-form census questionnaire was collected as part of the new voluntary National Household Survey. The data collection stage of the 2011 Census of Canada ensured that each of the 4.5 million dwellings in Canada received a census questionnaire (Statistics Canada, 2015). However, out of the total of 3,496,792 sampled and invited households, 1,945,410 (representing 55.6%) actually participated in the 2011 NHS. The survey was conducted in spring and summer of 2011, with the reference date as May 10, 2011 (the date of the 2011 Census of the Canadian population) (Statistics Canada, 2015).

Households selected to participate were under no obligation to do so as this was the first time in Canadian history that the long-form version of the Census was not mandatory. The voluntary 2011 NHS was collected from May to August 2011 through three (3) successive

waves, which is also a departure from previous censuses which collected data on the same day (May 15). Wave methodology was designed to encourage more online participation by giving sampled households an alternative way of completing the questionnaire if they are unable or not comfortable completing the questionnaire. Households without internet or who were unable or not comfortable completing the questionnaire online were given paper forms or interviewed in person or by telephone.

The 2011 NHS questionnaire comprised of 54 individual questions and took between 25 to 35 minutes to complete (Statistics Canada, 2015). The questionnaire covered wide range of subjects, including, basic demographics, ethnic diversity and immigration, language, mobility and migration, education, labour, and place of work (Statistics Canada, 2013). Two types of questionnaires were developed for the NHS including N1 (The Generated household questionnaire) - a questionnaire for the self-administered collection method, and N2 (The Canvasser questionnaire for reserves) - a questionnaire for collection on Indigenous reserves and in remote areas, where almost all the sampled respondents/households were interviewed by a Statistics Canada enumerator (Statistics Canada, 2013).

4.5   Data Analysis technique

The Statistical Package for Social Sciences (SPSS) is the software that was used in analyzing the data, with the final results weighted to avoid disclosure of respondents' identity. Cells that had counts of less than ten were suppressed to avoid possible disclosure of respondents' identity. Descriptive statistics including univariate and crosstabs are used to show the number of newcomers currently working in regulated professions in the province of Manitoba, by their location of study and place of birth. The dependent variable in this study, which is categorical in nature, is recognition of foreign credentials. Recognition of foreign

credentials is defined as individual's ability to have a job in a profession in which she or he was trained in, or in an equivalent profession. In this case, respondent's ability to access employment in any of the 28 self-regulated professions in the province of Manitoba that matches her/his field of study.

The present analysis presents descriptive analysis by outlining list of univariate and cross tabulations including Major fields of study of respondents by location of study and place of birth, employment match rate by place of birth and location of study, employment match rates by highest level of education attained, education leading to a regulated profession, top ten field of study, alternative occupations of Internationally-educated immigrants and source countries of internationally-educated immigrants and refugees. The descriptive analysis aids in showing how immigrants' location, outside of Canada, and labour market experience and other control variables influence their ability to work in occupations that match their educational qualifications.

Respondents' location of study and place of birth was cross-tabulated with major field of study to find out which group of respondents holds what kind of degree and to see if they are employed in their intended occupations. Each subpopulation group was also cross-tabulated with their current occupation to know which subpopulation group is employed in what kind of profession the most. Immigrants' location of study was cross-tabulated with their current occupation to know which country or part of the world have more of their representative immigrants having their foreign-earned credentials recognized than the other. Immigrants' highest level of education was also correlated with their current occupation to see if they are working in their anticipated occupations, or are underemployed. This also aided in identifying the kind of education that lead to regulated professions in Manitoba. Field of study was used to

examine whether or not internationally-educated immigrants are employed in an occupation or its equivalent in the Canadian labor market and to determine alternative occupations unmatched Internationally-Educated Professionals are engaged in.

Further descriptive statistics were used to show how foreign credential recognition and access to regulated professions changes according to given characteristics of immigrants after admission. Other important attributes of immigrants such as sex, visible minority status/population group were also correlated to see their impact on their probability of having access to regulated professions. This helped in identifying the kind of jobs immigrants who are not able to find job in a profession or its equivalence that she/he was trained in, are working in. Immigrants who are able to have a profession or an equivalent, in which she/he was trained, are considered to be able to have successful foreign credential recognition and access to the Canadian labour market.

4.5.1 Operationalization of variables

This section outlines how the variables used in this thesis were operationalized. The main objective of the study is to examine the complications and difficulties immigrants confront in their attempt to have their foreign credentials and labour market experiences evaluated, to enable them have equal opportunity of accessing regulated professions in Canada. The subsections below operationalize the dependent and independent measures.

4.5.2 Dependent measure

Education and labour market experience are significant determinants of newcomers' likelihood of having their foreign-earned qualifications assessed in the Canadian labour market. I worked closely with the Office of the Manitoba Fairness Commissioner to identify the professions that require regulation, as we initially thought that it would be easy but NOC codes

are very complicated. The office also assisted in identifying the education/credentials needed to practice the profession, because it is not straightforward and many of the regulatory bodies are highly secretive about the qualifications required. The dependent variable in this study, which is categorical in nature, is recognition of foreign credentials and is coded as 1= yes and 0 = no. Recognition of foreign credentials is created using the 2011 National Occupation Classification (NOC) codes. A respondent's ability to work in any of the regulated professions that matches her or his field of study is considered as job-education match, and if she/he is not able work in her/his chosen career, it is then considered as no job-education match. Recognition of foreign credentials was constructed by using immigrant's highest level of education, along with current job.

4.5.3 Independent measures

Out of the total sample of 3,496,792 respondents who completed the 2011 NHS online questionnaire, I selected active labour force population using the AGE variable to select those aged 25 through 64, and question on whether or not they have looked for work (LOKWK), pre-coded as '-5' (working), '-3' (not applicable or less than the age of 15), '1' (No, did not looked for work), '1'(Yes, looked for full-time work) and '3' (Yes, looked for part-time work). I was restricted to using persons only in Manitoba because of the complexity of the regulatory bodies in Canada. As mentioned earlier, within a single profession, for example, accounting, each province has their own regulatory body and rules – meaning that the rules and procedures for being recognized in Manitoba will be different from other provinces.

The main independent variable in this study is respondent's location of study. This variable is used to identify the countries and/or institutions newcomers obtained their credentials. Location of study is defined as the province or territory in Canada, or country outside Canada or

the institution from which the highest postsecondary certificate, diploma or degree was obtained. Respondents' location of study (LOC_STUDY) was re-coded into three (in Manitoba, other Canada and outside Canada). Manitoba, as the focused province of residence was re-coded as '1', other provinces in Canada as '2' and countries outside Canada as '3'. The LOC_STUDY variable was re-coded again into 'region of study' including '1' as North America, '2' as Central America, '3' South America, '4' as Europe, '5' as Africa, '6' as Asia, '7' as Australia and '8' as no post-secondary education. The variable was further re-coded into two major income divisions, as 1 = high income country and 2 = low/medium income country, with code 3 representing those who do not have a post-secondary certificate.

Respondents' place of birth was also used to differentiate Canadians by birth from immigrants. The place of birth was also re-coded into three (in Manitoba, other Canada and outside Canada). Manitoba, as the focused province of residence was re-coded as '1', other provinces in Canada as '2' and countries outside Canada as '3'. The variable was re-coded again into 'region of study' including '1' as North America, '2' as Central America, '3' South America, '4' as Europe, '5' as Africa, '6' as Asia, and '7' as Australia. It was further re-coded into two major income divisions, as 1 = high income country and 2 = low/medium income country.

These two variables assisted in distinguishing the four subpopulation groups of the analysis including Canadian-born, Canadian-trained respondents (CBCT), Canadian-born, Foreign-trained respondents (CBFT), Foreign-born, Canadian-trained respondents (FBCT), and Foreign-born, foreign trained respondents (FBFT) and to investigate whether or not an immigrant was schooled or trained in an institution located in a developed or developing country. This differentiation is important because one's place of training influences her/his likelihood of

accessing regulated profession or its equivalence related to her/his educational qualification or labour market training (Houle and Yssaad 2010; Buzdugan and Halli 2009). Other secondary barriers which are identified include major Fields of study, population group, visible minority status, level of education, labour force status, gender and age.

Major Field of study refers to respondents' discipline or area of learning or specialization with a particular course or program of study. In the 2011 NHS, the major field of study of the highest postsecondary certificate, diploma or degree of the respondent was classified using the newly updated Classification of Instructional Programs (CIP) Canada 2011 (Statistics Canada, 2013). Major Field of study variable (CIP2011) was re-coded, in consultation with the Office of the Fairness Commissioner, to reflect the educational requirements in entering any of the 28 self-regulated professions in Manitoba. For details of all the CIP 2011 codes that were re-coded as well as the educational requirements or fields of study that lead to working in any of the 28 regulated professions in the province of Manitoba, please see appendix 2.

The labour force status variable classifies respondents into three mutually exclusive categories: employed, unemployed or not in the labour force. The labour force, however, includes employed and unemployed respondents. Since the labour force status variable was not available, an indicator on whether respondent is working or has looked for work (LOKWK) was used to create a labour force status variable for the analysis. In order to ensure that those who are active in the labour force (employed and unemployed) are separated from those who are not active, the LOKWK variable was re-coded as '1 - employed', '2 – Unemployed' and '3 – not in the labour force'. Those who indicated of having not looked for work because they were students or working for their individual or family responsibilities as well those who were below the age of 15 were re-coded to be excluded from the analysis.

Visible minority status as an independent variable in this study represents the category of immigrants who are non-Caucasian in race and who do not belong to the Indigenous group (Statistics Canada, 2009). The visible minority population in the NHS consists of South Asians, Chinese, Blacks, Filipinos, Latin Americans, Arabs, Southeast Asians, West Asians, Koreans, and Japanese (Statistics Canada, 2013). Population group was re-coded as '1' representing 'White", '2' representing 'Visible Minority', '3' representing 'Multiple Visible Minority' and '4' representing 'Indigenous'. Although this is not ideal, the numbers of persons in Manitoba in these categories was small so I was unable to differentiate them any further.

Highest level of educational attainment, which was re-coded as '1' (Registered apprenticeship certificate or other relevant certificate), '2' (College, CEGEP or other non-university certificate), '3' (University certificate or diploma below bachelors level), and '4' (University certificate or degree at bachelors level or above) is used to measure respondents' highest level of educational attainment earned in their respective home countries before immigrating to Canada or in Canada.

Gender refers to whether the respondent identifies as a male or female, and represents the social and cultural differences of population groups in Canada. In this study, age of respondents refer to the age of a person of interest's last birthday or relative to a specified and well-defined reference date, which is used to select active labour force respondents from the NHS data set. The age variable in the data set was re-coded to include only active respondents in the labour force. Active respondents in this analysis refer to persons who are between the ages of 25 and 64.

The Fair Registration Practices in Regulated Professions Act of the OMFC applies to 31 Self-regulated professions, government regulated professions and the trades with the aim of eradicating if not, minimizing the difficulties internationally-educated professionals have in

having their credentials assessed due to frustrating entry requirements into certain regulated professions.

4.5.4   Regulated Professions in Manitoba

There are many regulated professions in Canada, but this research focuses on the 31 self-regulated professions in the province of Manitoba. My current analysis uses 28 regulated professions because some of the professions had to be merged because they have same NOC code(s), and others have no separate codes although with different regulatory bodies. Engineers and Geoscientists were combined because both have the same regulatory body – the Engineers Geoscientists Manitoba. Also, Registered Nurses (RN) were merged with Registered Psychiatric Nurses (RPN) because both professions have the same NOC codes, although with different regulatory bodies – College of Registered Nurses of Manitoba and College of Registered Psychiatric Nurses of Manitoba respectively. And lastly, Naturopaths and Podiatrists were put together as one regulated profession because they have same NOC code but different regulatory bodies. For details of the duties and responsibilities of the 28 regulated professions in Manitoba, see appendix 1.

In order to separate regulated professions from non-regulated professions from the 2011 NHS, the variable NOC 2011 (which comprised of respondents' occupation based on the NOC 2011) was re-coded to include only regulated profession in the analysis.

The table 4.1 below summarizes how the NOC codes were re-coded to include 28 regulated professions in Manitoba in the analysis.

Table 4.1: Regulated Professions in Manitoba with their respective NOC codes

Professions	NOC codes and categories
Financial Auditors and Accountants	**1111** Financial auditors and accountants
Agrologists and Technical Agrologists	**2121** Biologists and related scientists, **2123** Agricultural representatives and specialists,

Professions	NOC codes and categories
	2224 Conservation and fishery officers
Architects	**2151** Achitects, **0212** Architecture and science managers, **2251** Architectural technologists and technicians
Audiologists and Speech-Language Pathologists	**3141** Audiologists and speech-language pathologists
Chiropractors	**3122** Chiropractors
Dental Hygienists	**3222** Dental hygienists and dental therapists
Dentists	**3113** Dentists, **3411** Dental assistants
Denturists	**3221** Denturists
Dietitians	**3132** Dieticians and nutritionists
Engineers and Geoscientists	**0211** Engineering managers, **2113** Geoscientists and oceanographers, **2131** Civil engineers, **2132** Mechanical engineers, **2133** Electrical and electronic engineers, **2134** Chemical engineers, **2141** Industrial and manufacturing engineers, **2142** Metallurgical and materials engineers, **2143** Minning engineers, **2144** Geological engineers, **2145** Petroleum engineers, **2146** Aerospace engineers, **2147** Computer engineers (except software engineers and designers, **2148** Other professional engineers n.e.c.
Engineering and Applied Science Technician or Technologist	**2211** Chemical technologists and technicians, **2212** Geological and mineral technologists and technicians, **2221** Biological and technologists and technicians, **2231** Civil engineering technologists and technicians, **2232** Mechanical engineering technologists and technicians, **2233** Industrial engineering and manufacturing technologists and technicians, **2241** Electrical and electronics engineering technologists and technicians, **2242** Electronic service technicians (household and business equipment), **2243** Industrial instrument technicians and mechanics, **2244** Aircraft instrument electrical and avionics mechanics technicians and inspectors, **2252** Industrial designers, **2253** Drafting technologists and technicians, **2261** Non-destructive testers and inspection technicians, **7243** Power system electricians
Land Surveyor and Technologists	**2254** Land Survey technologists and technicians

Professions	NOC codes and categories
Lawyers	**4111** Judges, **4112** Lawyers and Quebec notaries
Medical Laboratory Technologists	**3211** Medical laboratory technologists
Midwives	**3124** Allied Primary Health Practitioners
Naturopaths, Podiatrists and Chiropodists	**3125** Other professional occupations in health diagnosing and treating
LPN- Licensed Practical Nurses	**3233** Licensed practical nurses
RN- Registered Nurse and RPN- Registered Psychiatric Nurses	**3011** Nursing co-ordinators and supervisors, **3012** Registered nurses and registered psychiatric nurses
Occupational Therapists	**3143** Occupational therapists
Opticians	**3231** Opticians
Optometrists	**3121** Optometrists
Pharmacists	**3131** Pharmacists
Physicians	**3111** Specialist physicians, **3112** General practitioners and family physicians
Physiotherapists	**3142** Physiotherapists
Psychologists	**4151** Psychologists
Respiratory Therapists	**3214** Respiratory therapists, clinical perfusionists and cardiopulmonary technologists
Social Workers	**4152** Social workers
Veterinarians	**3114** Veterinarians

Office of the Manitoba Fairness Commission (2017)

4.5.5   Benefits and Limitations of using Secondary Data

Several benefits are associated with the use of secondary survey data in research work. Firstly, secondary data saves the time and financial resources required by the researcher to invest in undertaking a research survey. The time involved in searching for secondary data for analytical purposes, although not always, is much less than the time needed to complete primary data collection, especially when larger sample size is preferred in reducing standard errors. Secondary data are cheaper and quickly obtainable compared to primary data, and may also be available when primary data cannot be obtained at all. Although some secondary data requires

payments to be made before they are made available to researchers, they are relatively less expensive, quick to obtain and comparatively have larger sample size.

The availability of the secondary data could also assist the researcher in choosing appropriate variables even before the start of the analysis. Secondary data help in well defining the population under study and in appropriately structuring the sample to be taken. A thorough and critical examination of secondary data can yield more accurate information than through primary data collection exercise, because they are mostly censuses and have larger sample size.

In my case, using the Census is appropriate because it would be impossible to obtain a sample large enough to examine job-match rates any other way. Statistics Canada also encourages students to use this data as this is a public document (despite being held in a secure location).

4.5.5.1 Limitations of using Secondary Data

Despite the above discussed usefulness in secondary data source, their use comes with considerable shortcomings. Firstly, access to the 2011 NHS was very difficult, because the researcher had to obtain permission from Immigration, Refugee and Citizenship Canada (IRCC) and Statistics Canada through the Manitoba Research Data Centre (RDC) which takes much time and effort. It took the researcher much time to access the data from Statistics Canada through Social Sciences and Humanities Research Council (SSHRC) online application portal, which is complicated to complete. Also, other processes my supervisor and I went through before the data was released and accessed including security screening process, signing of the Oath of Office and Secrecy, participating in an RDC Orientation session and signing a Micro-data Research Contract with Statistics Canada were time consuming and involved the two of us and delayed the thesis.

Secondly, oftentimes researchers using secondary survey data are not able to get appropriate variables to test theories and hypotheses. Some data carry insufficient information and as a result misses some variables that are useful for the theoretical framework in the study. The 2011 NHS for instance misses entry category of immigrants which is very useful in distinguishing access to regulated professions of internationally-educated immigrants by entry category.

Lastly, the use of secondary data for analysis also posses questions to definition of variables/concepts, measurement errors, reliability, source bias and time scale. Initial definition of concepts such as gender, geography among others, may change over time and may lead to erroneous conclusions if the researcher fails to recognize these changes. For instance, definition of gender may be confined to two categories: male or female during the initial stage of data collection and documentation, but may change to include lesbian, gay, bisexual, transgender, queer at the time of data usage. Some geographic areas used during data collection stage may have their boundaries redefined at the time of data usage. Also, inaccuracies in measurement through standard deviation and error may not be published in secondary data and may lead to measurement bias. Again, the statistical agency may have different interest in the population from what the researcher who uses the data have, which causes source bias. Moreover, data reliability becomes questionable since the systems of data collection by the statistical agency may change over time without any indication to the reader or user of published statistics. The time period during which secondary data was first compiled may have a substantial effect on the nature of the data and subsequently affect its contemporary use. Most censuses take place at large intervals and hence data from this source may be out-of-date at the time the researcher wants to make use of the statistics.

4.5.6 Ethical considerations

As this is secondary data, there are few ethical considerations affecting my research directly. The secondary data that this study uses was obtained from Statistics Canada through the Manitoba Research Data Centre (RDC) at the University of Manitoba. The use of this data was as a result conducted in full compliance with Statistics Canada ethics, rules and guidelines, as well as the agreements and contracts established and signed with the Manitoba Research Data Centre in order to prevent the release of personal information.

Data disseminated by the NHS were subjected to a variety of automatic and manual processes in determining whether the data needed to be suppressed. This was done to ensure non-disclosure of individual respondent's identity and characteristics (which ensures confidentiality) and to limit the dissemination of data of unacceptable quality (Statistics Canada, 2015). Tabular outputs were suppressed to ensure that access to them will not aid identification of individual respondents. Data was as a result modified in the product or removed completely from the product before release by the Manitoba RDC analyst after going through vetting of output processes, with the aim of reflecting the suppression rules required by Statistics Canada. Again, to ensure that individual respondent's identity and characteristics are not disclosed and to limit the dissemination of data of unacceptable quality, geographic areas were suppressed from the data and analytical tabular outputs (Statistics Canada, 2015).

Administrative data obtained by Statistics Canada are used solely for statistical purposes and are treated with the same degree of scrutiny, confidentiality and security, as data collected in surveys. At Statistics Canada, the use and protection of all data including administrative data is governed by the Statistics Canada, Privacy and Access to Information Acts (Statistics Canada, 2016). Statistics Canada is prohibited by law from releasing any data which would divulge

information obtained under the Statistics Act that relates to any identifiable person, business or organization without the prior knowledge or the consent in writing of that person, business or organization (Statistics Canada, 2016).

As a census, the expected sample size of the population of interest was sufficient to complete the analysis and ensure respect and protection of respondents' confidentiality. Since the data was accessed from Statistics Canada through the Research Data Centre, the use of these data were conducted in full compliance with the government of Canada ethics, rules and guidelines. In order to ensure that the identity of the respondents are not disclosed, weighted cells that contain less than ten (10) information on respondents were excluded from the analysis.

4.6 Conclusion

This chapter discusses the methodology of the thesis by outlining the characteristics of the study population, data source and description, sampling and data collection technique, and data analysis technique adopted including how the variables were operationalized, data analysis limitations and ethical considerations.

CHAPTER 5

5   RESULTS AND DISCUSSION
5.1   Introduction

A review of relevant literature on access to regulated professions in Canada identified several barriers that people confront in their effort to work in professions that commensurate their educational training and credentials (e.g. Owusu and Sweetman, 2015; Augustine, 2015b; Picot and Sweetman, 2011; Girard and Bauder, 2007). These factors include location of study, place of birth, major field of study, educational level, population group, visible minority status, citizenship status, age, sex among others. Using univariate and bivariate analyses, the researcher is able to determine the efficacy of both Human Capital Theory and Critical Race Theory in explaining the difficulties immigrants, refugees and other groups of people face whilst accessing regulated professions in Canada. This chapter presents the results of data analysis using SPSS and subsequently discusses the results with existing literature. The first section presents descriptive statistics of both dependent and independent measures. This section includes presentation of univariate and bivariate analyses to understand how respondents' access to regulated professions is influenced by their place of birth, location of study, major field of study and other important measures. Discussion of the main findings with relevant literature in determining whether the present results confirm what is in this field of research or contradicting existing literature on foreign credential recognition is presented in section 2. This section further discusses how the used theoretical frameworks are explained and significantly relate to the results produced. This chapter concludes by summarizing the major observations in the data analysis.

5.2 Descriptive statistics

This section presents the rate at which each subgroups including Canadian born and trained respondents (CBCT), Canadian-born Foreign-trained respondents (CBFT), Foreign-born Canadian-trained respondents (FBCT) and Foreign-born and trained respondents (FBFT), access regulated professions in Manitoba on measures including sex, educational level and population group. It presents some descriptors of the population in order to get a better and comprehensive sense of the population composition.

Out of the 152,985 respondents, 77,210 (50.1%) are females and almost half (49.9%) are males which is similar to the actual population distribution of the province. With the exception of Canadian-born and trained respondents (48.3%), males outnumbered females in all categories (CBFT 59%, FBCT 51.2% and FBFT 54.4%). Evidence has long suggested that young people have a difficult time finding employment that matches their educational qualifications, and this study is no exception (e.g. Statistics Canada, 2017; Uppal and LaRochelle-Cote, 2014). Among immigrants, that problem is significantly bigger, even among those who were educated in Canada. Foreign-born and educated immigrants are the group most likely to be under-employed in the Canadian labour market. Results from the data analysis reveal that Canadian-born/Canadian-trained persons have the lowest rate of university degree completion (37.1%) while Canadian-born/foreign-trained group has the highest (76.2%). Immigrants fall in the middle, where 40.5% of the newcomer/Canadian trained have university degrees and 56.3% of the newcomer/foreign trained (see Table 5.1).

Table 5.1: Demographic descriptors for study group, 2011

Variables	CBCT	CBFT	FBCT	FBFT	TOTAL
Gender:					
Female	51.7	41.0	48.8	45.6	50.1
Male	48.3	59.0	51.2	54.4	49.9
N	117,335	2,170	14,150	19,330	152,985
Educational level:					
Reg. apprenticeship cert. or other relevant cert.	19.0	3.9	20.3	11.5	18.0
College, CEGEP or other non-University certificate	36.4	12.9	31.6	19.6	33.5
University cert. or dip. below bachelors level	7.5	6.9	7.6	12.6	8.1
University degree at bachelors level or above	37.1	76.2	40.5	56.3	40.4
N	117,330	2,165	14,150	19,325	152,970
Population group:					
White	85.6	85.7	45.6	27.3	74.6
Visible Minority	2.1	5.5	51.2	70.7	15.4
Multiple Visible Minority	0.6	1.6	2.8	1.8	1.0
Indigenous People	11.7	7.1	0.4	0.1	9.1
N	117,330	2,170	14,145	19,330	152,970

Sex: $X^2 = 346.852$; Educational level: $X^2 = 5248.86$: Population group: $X^2 = 77832.766$, all

significant at $P < 0.001$.

Out of the 152,970 respondents, a majority of them (74.6%) are white, followed by

visible minority respondents, comprising single and multiple visible minority respondents

(16.4%) and lastly Indigenous peoples (9.1%) which is close to the actual population estimates

for the province, thus 79.4%, 18.4% and 2.2% respectively (Statistics Canada, 2017).
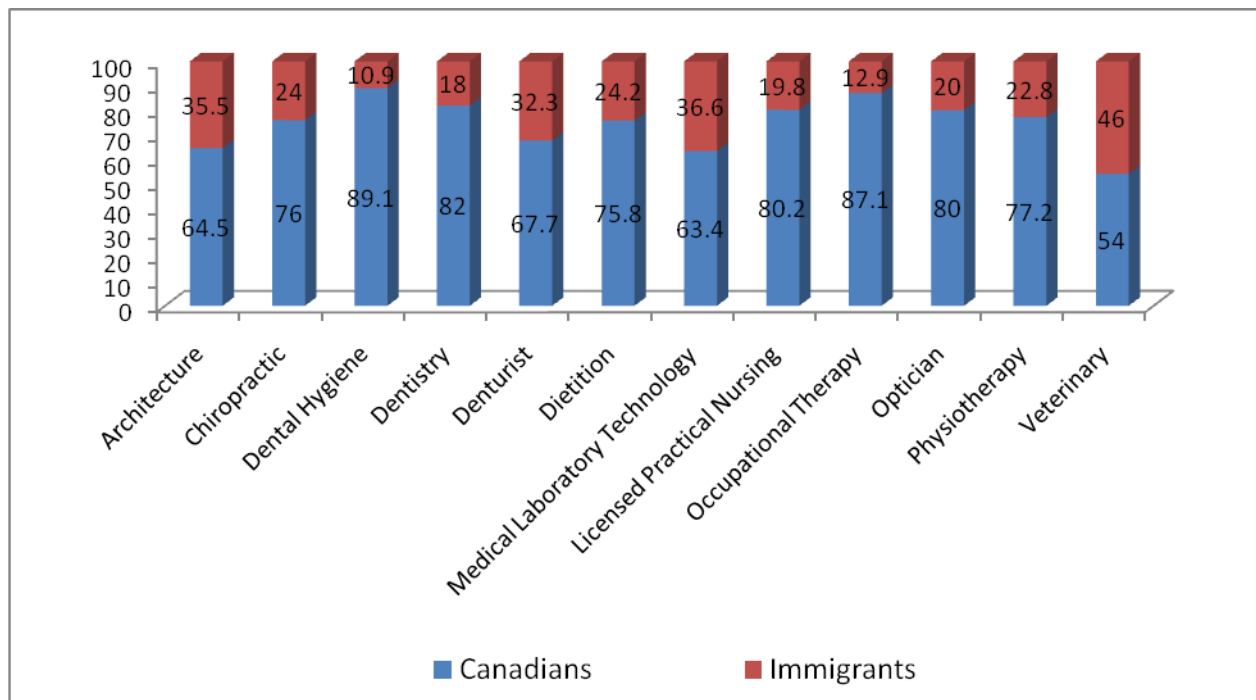
Figure 5.1: Field of Study for Canadians and Newcomers, 2011

Figure 5.1 compares the fields of study by immigrant status only (I examine the field of study/area of study issue in figure 5.2 later). Compared to their Canadian-born counterparts, newcomers are less likely to hold qualifications that could lead to working in any of the regulated professions in Manitoba. For example, Canadian-born are more likely to be trained in dentistry (82%) compared to only 18% of their immigrant counterparts. Also, Canadians make up the largest proportion of dieticians in term of field of study (75.8%), compared to their foreign-born counterparts (24.2%). Again, higher numbers of Canadians hold relevant degrees in occupational therapy (87.1%) compared to only 12.9% of newcomers to Manitoba. Although newcomers are less likely to hold degrees in regulated professions in Manitoba, they have considerable numbers with veterinary medicine degrees (46%) and architectural degrees (35.5%), as compared with their Canadian-born counterparts.
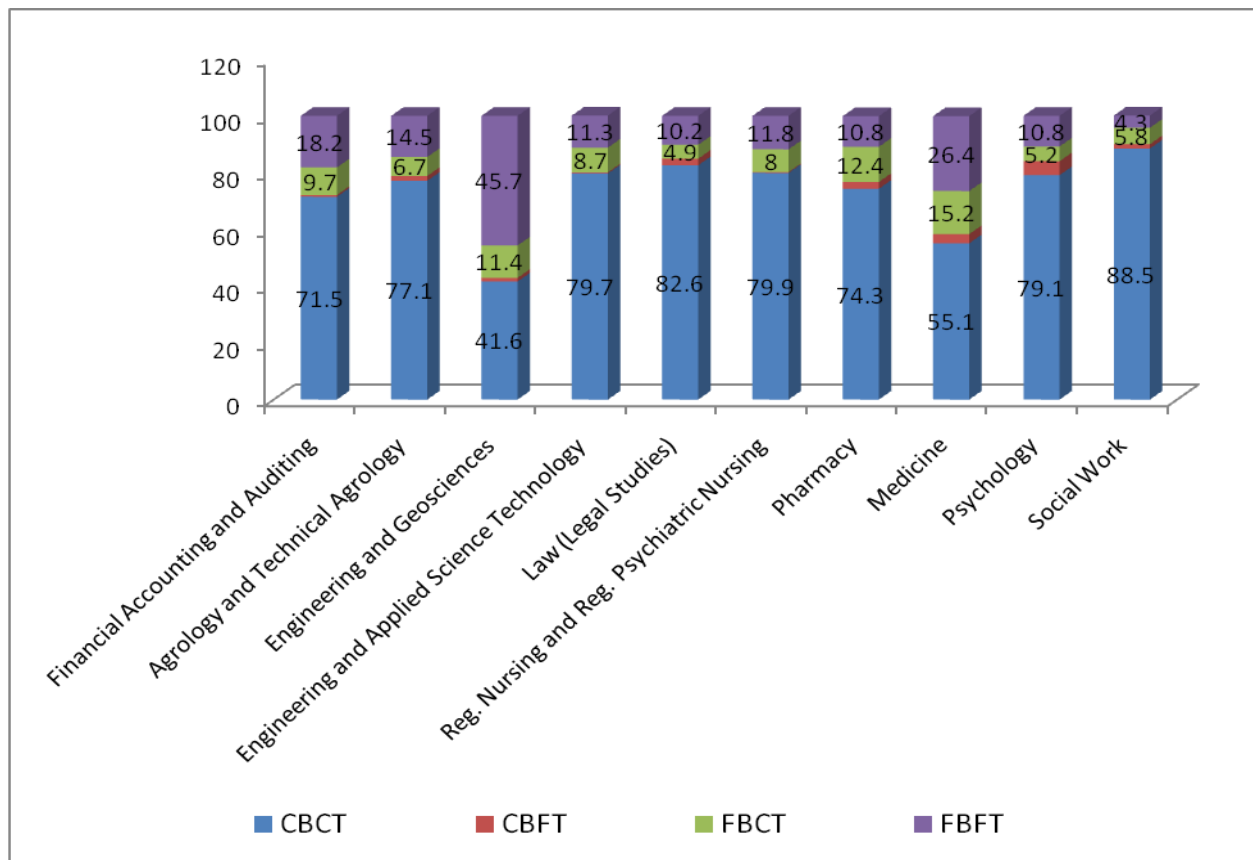
Figure 5.2: Field of Study by Canadian/Newcomer and Location of Training, Manitoba, 2011

In Figure 5.2, I examine the influence of where credentials were attained and immigrant status. CBCT greatly outnumber the other groups working in law, nursing, pharmacy, psychology, social work, agrology and accounting. In general, very few Canadians go abroad for training in any professions compared to their foreign-born counterparts. Of all professions, immigrants are most likely to be trained as engineers and geoscientists. Out of 6,190 respondents with degrees in the engineering and geosciences field, the majority of them are FBFT (2,830, 45.7%), followed by CBCT (41.6%), and then by FBCT (11.4%), and with CBFT least likely to have degrees in this field (1.3%).

Figure 5.2 also shows that FBFT respondents have a significant numbers who are working in regulated professions. For example, 26.4% with degrees in medicine are FBFT compared to CBCT (55%). Foreign-born physicians are more likely to be trained outside of Canada (26.4%) than in Canada (15.2%) and very few CBFT (3.2%) are trained as physicians outside of the country. Canadian trained/Canadian born physicians make up the largest proportion of medical degree holders in the province (55.1%). Also, Foreign-born/foreign-trained newcomers have higher numbers with relevant degrees in nursing (11.8%) than their immigrant counterparts who are trained in Canada (8%).

Table 5.2 Percentage of Top 10 Major Fields of Study of Internationally-Educated Newcomers, Manitoba, 2011

Fields of Study	Percentage
Engineering and Geosciences	37.4
Financial Auditing and Accounting	17.6
Registered Nursing and Reg. Psychiatric Nursing	10.7
Agrology and Technical Agrology	9.2
Engineering and Applied Science Technology	8.3
Medicine	5.9
Psychology	3.2
Architecture	2.2
Medical Laboratory Technology	1.8
Law/Legal Studies	1.8
Pharmacy	1.8
N	7570

X^2= 13012.416 significant at P < 0.001. Source: Author's calculations based on the 2011 NHS micro data file (Statistics Canada, 2013)

Table 5.2 shows the top ten degrees held by internationally-educated immigrants in Manitoba. Greater numbers of internationally-educated immigrants in Manitoba (2,830 i.e., 37.4%) hold relevant degrees in engineering and geosciences, which is not surprising, given that at times, nearly one-quarter of all economic class immigrants to Canada have engineering

degrees. The next most popular degree held by immigrants is in financial accounting (17.6%), registered nursing and registered psychiatric nursing (10.7%). More than two-thirds of immigrants (68.2%) hold relevant degrees in non-health related professions, but are less likely than their counterparts in the health professions to work in those occupations.
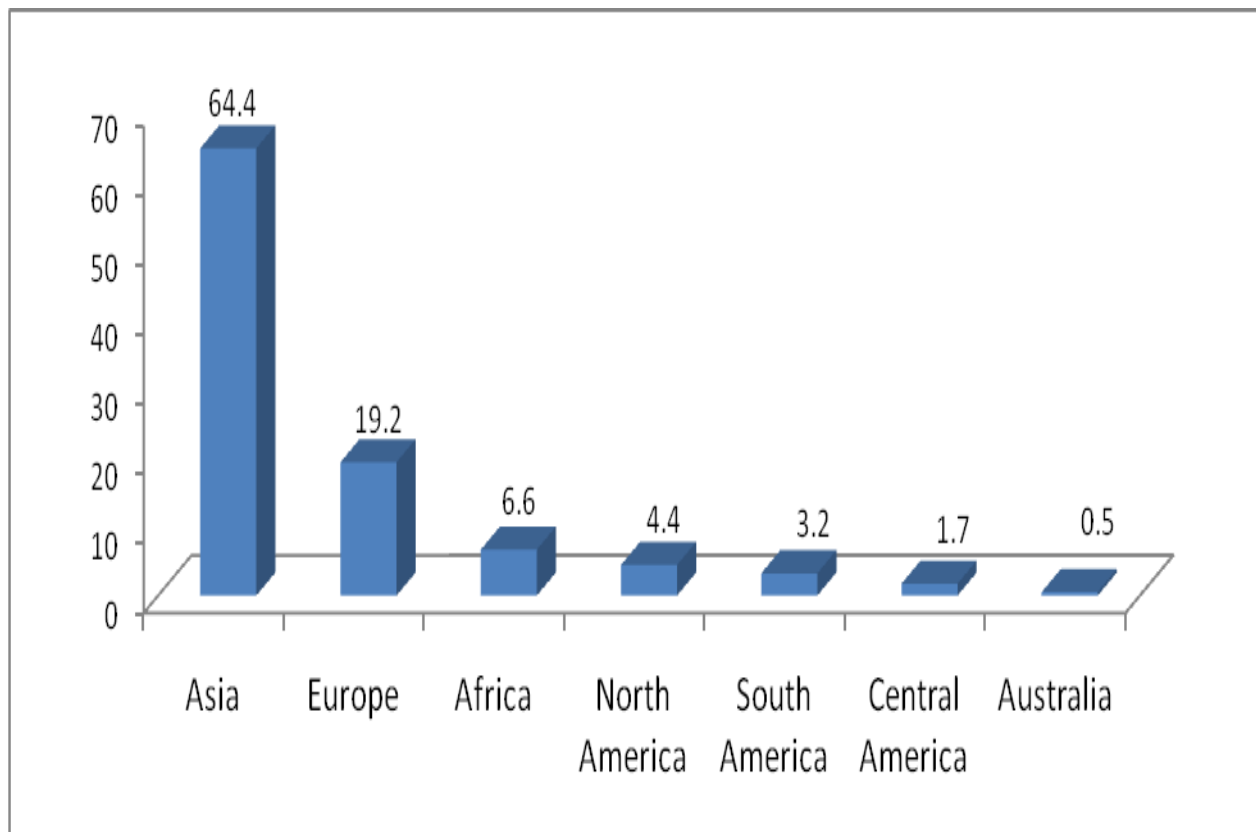
Figure 5.3: Continent of Origin of Internationally-Educated Newcomers, Manitoba, 2011

$X^2 = 152742.789$ significant at $P < 0.001$.
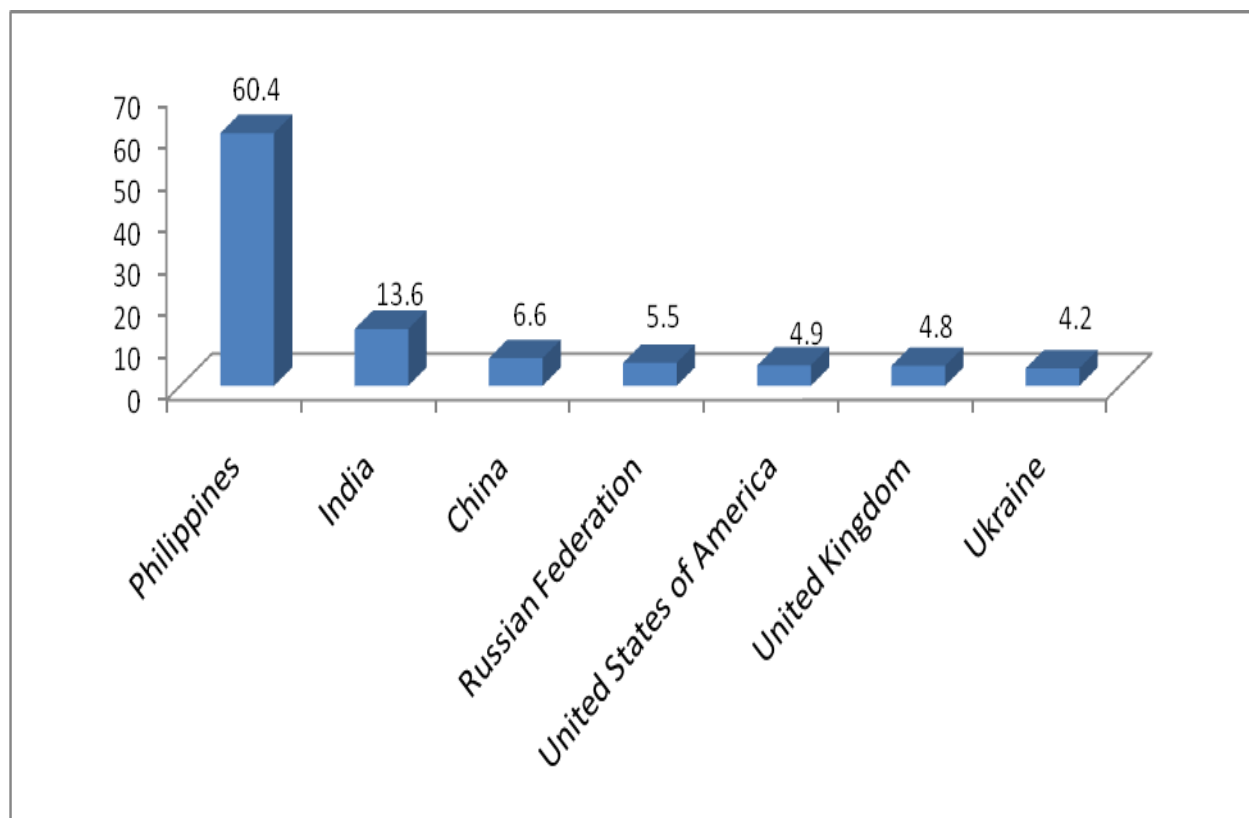
Figure 5.4: Percentage of Top 7 Source Countries of Internationally-Educated Newcomers, Manitoba, 2011

$X^2 = 192385317$ significant at $P < 0.001$.

Internationally-educated immigrants working in regulated professions in Manitoba mostly originate from low/middle income continents such as Asia and Africa. For instance, as revealed in this study, a majority of internationally-educated immigrants originate from low/middle income continents/countries such as Asia, Africa, South America and Central America. Seventy-six percent (76%) of internationally-educated immigrants were born in low/middle income countries, with almost two-thirds (64.4%) coming from Asia. Figure 5.4 presents detailed source countries of internationally-educated immigrants, with majority of them (80.6%) coming from the Philippines, India and China (the top three immigrant sending

countries to Canada), with the remaining 19.4% originating from Russia, United States, United Kingdom and Ukraine. Out of the 13,340 internationally-educated immigrants in Manitoba, 60.4% originate from the Philippines. The results are aligned with Hawthorn's (2007) findings that major source countries of internationally-educated professionals such as engineers, architects and builders among others include China, India, and Philippines.
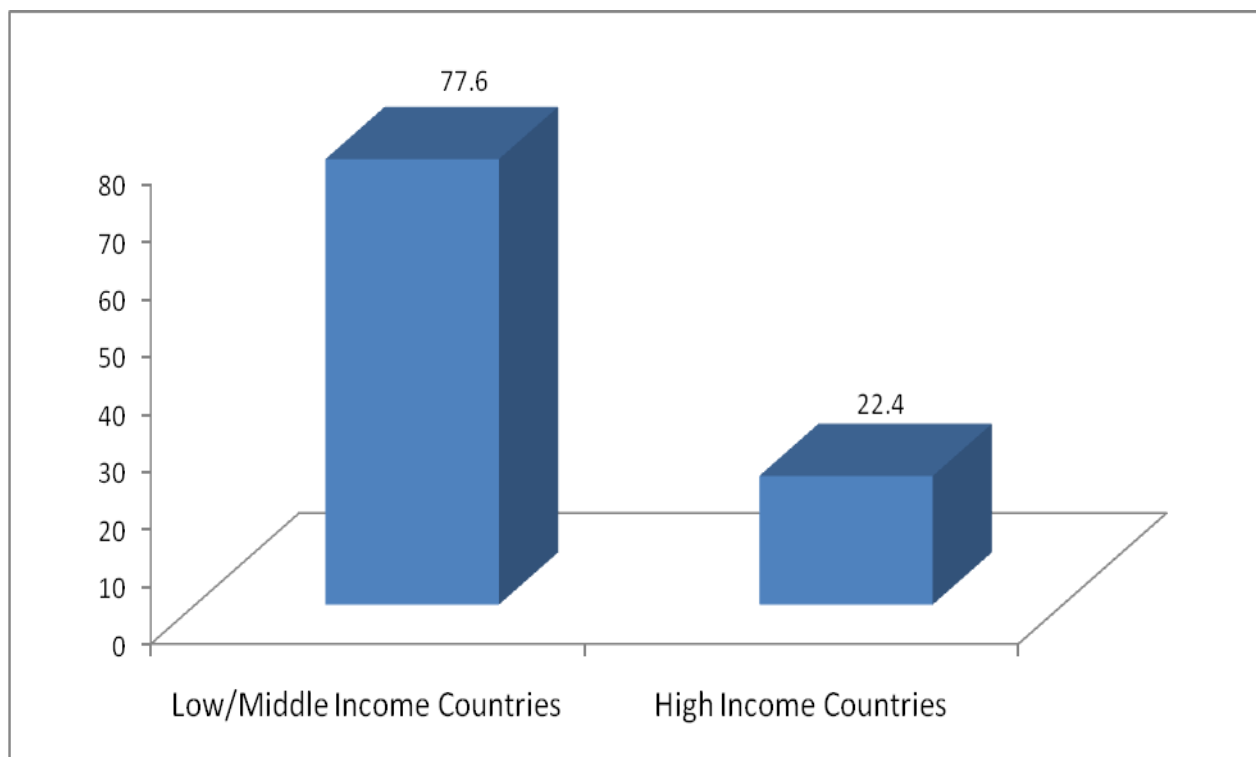
Figure 5.5: Location of Study of Internationally-Educated Newcomers, Manitoba, 2011
$$X^2 = 114574.44 \text{ significant at P} < 0.001.$$

Location of study has been identified as a crucial predictor of probability of working in an occupation that matches an individual's field of training or chosen career. Immigrants trained in higher income countries are more likely to access regulated professions that commensurate

their eduational training, compared to their counterparts who were trained in low/middle income economies. As shown on figure 5.5, a majority of internationally-educated immigrants (77.6%) had their highest educational qualifications or degrees in low/middle income economies, whilst only 22.4% had their highest degrees from higher income economies. This explains why internationally-educated immigrants are confronted with challenges in having their foreign-attained credentials assessed and be able to access regulated professions in the Canadian labour market.
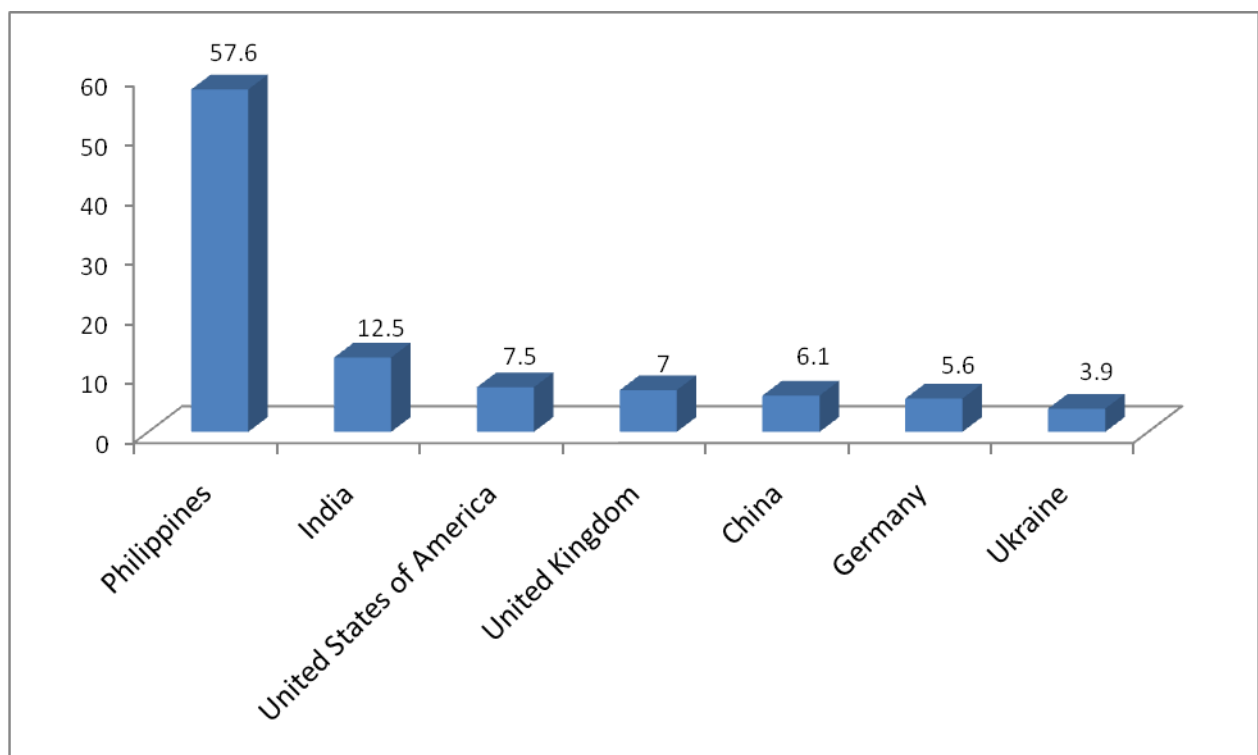
Figure 5.6: Detailed Location of Study of Internationally-Educated Newcomers, Manitoba, 2011

$X^2 = 231098.556$ significant at $P < 0.001$.

Figure 5.6, which displays detailed location of study of internationally-educated immigrants in Manitoba, shows that 76.2% of immigrants had their highest degrees from the

Philippines, India and China. More than half (57.6%) of internationally-educated immigrants, however, had their highest degrees from the Philippines.

Table 5.3: Access to selected regulated professions by place of birth, Manitoba, 2011

Regulated Professions	Canadians	Immigrants	Total (%)	N
Architects	82.4	17.6	100	370
Audiologist and Speech Lang. Pathologists	94.3	5.7	100	175
Chiropractors	85.0	15.0	100	100
Dental Hygienists	83.1	16.9	100	295
Dentists	85.9	14.1	100	710
Dieticians	79.3	20.7	100	145
Medical Laboratory Technologists	81.7	18.3	100	410
Midwives	73.7	26.3	100	95
Licensed Practical Nurses	75.6	24.4	100	840
Occupational Therapists	82.0	18.0	100	250
Opticians	61.1	38.9	100	90
Pharmacists	83.7	16.3	100	675
Physiotherapists	90.0	10.0	100	300
Psychologists	88.4	11.6	100	215
Respiratory Therapists	85.0	15.0	100	100
Social Workers	88.1	11.9	100	1005
Veterinarians	64.1	35.9	100	195
N				5970

$X^2 = 6491.316$ significant at $P < 0.001$. Source: Author's calculations based on the 2011 NHS micro data file (Statistics Canada, 2013).

Place of birth significantly influences the likelihood of working in regulated profession in Manitoba, as shown on Table 5.3. Due to small numbers in some professions, I was only able to produce information by combining Canadian-born Canadian-trained together and compared with foreign-born foreign-trained respondents. Canadians (50.6%) are more likely to work in regulated professions than immigrants (39.6%). For instance, a greater number of architects

(82.4%) are Canadians and 17.6% are immigrants. Among audiologists and speech language pathologists in Manitoba, 94.3% are Canadians and only 5.7% are immigrants. Also, 85% of chiropractors are Canadians and 15% are immigrants. Again, 83.1% of dental hygienists are Canadians and 16.9% are immigrants. Moreover, 85.9% of dentists in Manitoba are Canadians and 14.1% are immigrants. Nine out of every ten physiotherapists in Manitoba are Canadians and only one out of ten is an immigrant. Among pharmacists, 83.7% are Canadians and only 16.3% are immigrants, among others, as shown on Table 5.3. In summary, the Manitoba labour market, at least in regard to the regulated professions, is not being dominated by immigrants in any particular occupation except with regard to Veterinarians (35.9%) and Opticians (38.9%) and midwives (26.3%), three occupations where training is very difficult to obtain in Canada.

Table 5.4: Percentage of CBCT, CBFT, FBCT and FBFT Currently Working in Selected Regulated Profession, Manitoba 2011

REGULATED PROFESSIONS	CBCT	CBFT	FBCT	FBFT	TOTAL
Financial Auditors and Accountants	78.3	1.0	12.7	7.8	2,445
Agrologists and Technical Agrologists	82.4	2.7	4.7	10.1	740
Engineers and Geoscientists	66.6	0.9	12.4	20.1	2,665
Engineering and Applied Science Technologists	74.8	1.0	10.1	14.2	3,215
Lawyers	91.4	1.9	4.9	1.9	815
Registered Nurses and Reg. Psychiatric Nurses	82.9	0.4	8.3	8.5	5,615
Physicians (Doctors)	57.4	4.0	16.2	22.4	1,360
N					16,860

X^2 = 6491.316 significant at P <0.001 Source: Author's calculations based on the 2011 NHS micro data file (Statistics Canada, 2013)

Table 5.4 presents the distribution of each of the population subgroup working in regulated professions in Manitoba. Out of half of the respondents with successful education-job match, CBFT is the group with the highest match rate (57.6%) of all groups, followed by FBCT (55.4%), and then CBCT (54.5%) and then with FBFT least likely to have successful match rate

(29.6%). In short, there is a preference for Canadian-trained workers across most professions in Manitoba, with a preference for Canadian-born Canadian-trained professional over foreign-born foreign-trained professionals.

Substantial numbers of lawyers in Manitoba are CBCT (91.4%), followed by FBCT (4.9%), with both FBFT and CBFT least likely to be employed in the legal profession (1.9%). Among registered nurses and registered psychiatric nurses, 82.9% are CBCT, followed by FBFT (8.5%), FBCT (8.3%) with CBFT least likely to be working in the nursing profession (0.4%). Among agrologist and technical agrologists, 82.4% are CBCT followed by FBFT (10.1%), FBCT (4.7%) with CBFT recording the lowest rate (2.7%). Most of those working as financial auditors and accountants (78.3%) are CBCT, followed by FBCT (12.7%), FBFT (7.8%), with CBFT least likely to be working in the accounting profession (1.0%). Again, among engineers and geoscientists, two-thirds are CBCT (66.6%), followed by FBFT (20.1%), FBCT (12.4%) with CBFT least likely to work as engineers and geoscientists (0.9%). And lastly among physicians in Manitoba, 57.4% are CBCT, followed by FBFT (22.4%), FBCT (16.2%) with CBFT least likely to be physicians (4.0%). This means that among the regulated professions, CBCT are still predominant despite their least likelihood in holding university degrees. My analysis also shows that even among Canadians, the system doesn't really "value" foreign-trained persons.
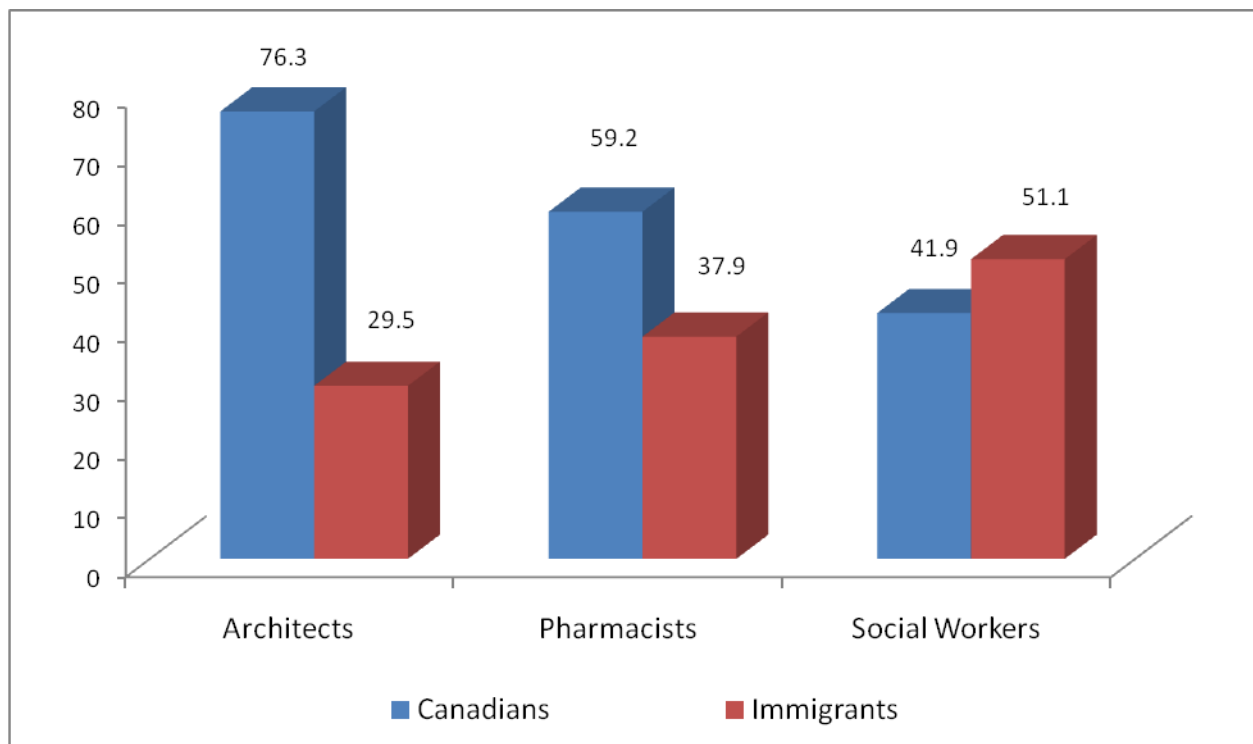
Figure 5.7: Percentage of Canadians and immigrants working in selected regulated professions that match their fields of study, Manitoba, 2011

Figure 5.7 shows that access to regulated professions is strongly influenced by immigrant status (note that these three were the only professions that had sufficient numbers to allow me to examine them this way). As reflected on figure 5.7, with the exception of social work, where immigrants had higher rate of working in the field (51.1% as against 41.9% of that of Canadian-born), immigrants with relevant degrees in architecture and pharmacy are less likely to work in their chosen field, compared to their native born counterparts. Out of 60% of respondents with a job-education match in architecture, a majority of them (76.3%) are Canadians compared to 29.5% immigrants. Similarly, out of the 54.4% of job-education match in the pharmacy profession, 59.2% are Canadians compared to immigrants (37.9%).

Table 5.5: Percentage of CBCT, CBFT, FBCT and FBFT Currently Working in Selected Regulated Profession that <u>Matches Their Field of Study</u>, Manitoba, 2011

Regulated professions	CBCT	CBFT	FBCT	FBFT	Total
Financial Auditors and Accountants	36.6	55.6	43.7	14.3	33.4
Agrologists and Technical Agrologists	16.4	25.0	10.8	10.7	15.3
Engineers and Geoscientists	68.9	31.3	46.8	18.9	43.2
Engineering and Applied Science Technologists	52.5	100	64.9	70.6	57.5
Lawyers	67.9	50.0	61.5	11.1	62.0
Registered Nurses and Reg. Psychiatric Nurses	84.9	100	85.3	58.6	82.0
Physicians/Doctors	83.0	100	84.6	67.8	79.8

X^2 = 6491.316 significant at P <0.001 Source: Author's calculations based on the 2011 NHS micro data file (Statistics Canada, 2013)

Table 5.5 shows the percentage of people working in their profession as a function of where they were trained. The news is bad for FBFT immigrants in Manitoba. They are the least likely to find work in their chosen profession. Of the professions listed on table 5.5, RNs have the highest job-education match rate (82%), meaning that more than eight out of every ten persons trained as nurses are actually working as nurses. The second highest job-education match rate is the medical profession, with almost 80% of trained medical doctors working in the medical profession. This is then followed by trained lawyers (62%), then by engineering and applied science technologists (57.5%), then by engineers and geoscientists (43.2%), then by financial auditors and accountants (33.4%) and then with agrologists and technical agrologists having the least job-education match rate (15.3%)

Of the Canadian-born Canadian-trained Engineers and Geoscientists, 68.9% are working in this field. Almost half (46.8%) of immigrants who were trained in Canada are working as engineers or geoscientists. Among those trained overseas, 31.3% of CBFT have jobs in this field while for FBFT, only 18.9% found jobs in engineering and geosciences. Similarly, out of 62% of respondents who had education-job rate in the legal profession in Manitoba, only 11% of FBFT

lawyers are currently working as lawyers in Manitoba compared to over two-thirds (67.9%) who are CBCT, followed by FBCT (61.5%). What is striking is that CBFT (50%) lawyers, who should have "equivalent" legal status as foreign trained lawyers still work as lawyers in Manitoba compared to FBFT who are least likely to have education-job match in the legal profession (11.1%).

CBFT respondents, however, are also doing very well in the nursing, medical, agrology and accounting professions than the other groups. For instance, among 82% of respondents with job-education matches as RNs and RPNs, all CBFT (100%) work in their trained profession, followed by FBCT (85.3%), then closely by CBCT (84.9%), with FBFT least likely to be working in the nursing profession (58.6%). Similarly, out of 79.8% of respondents who have a job-education match in the medical profession, all CBFT (100%) work as physicians, followed by FBCT (84.6%), and then closely by CBCT (83%) with FBFT recording the lowest job-education match (67.8%). Among agrologists and technical agrologists, only 15.3% have training to match this occupation. Among those working as agrologists and technical agrologists, 25% of CBFT have a job-education match, followed by CBCT (16.4%), then FBCT (10.8%) and closely by FBFT (10.7%).

Among those in the financial and accounting professions, 33.4% of respondents have a job-education match in this field. Interestingly, more than half (55.6%) of CBFT have a job-education match, followed by FBCT (43.7%), CBCT (36.6%), with FBFT recording the lowest match rate (14.3%). This is a non-sensical pattern where Canadian born don't have the upper hand with regard to higher job-education match rates unlike most other professions. With respect to the engineering and applied science engineering profession, FBFT are actually outperforming all other groups in terms of job-education match rates. All CBFT (100%) work in this field,

followed by FBFT (70.6%), then FBCT (64.9%) with CBCT least likely to be working in this profession (52.5%). In summary, CBCT nurses (82%) are the most likely to be working in their profession, with FBFT agrologists in agrology profession least likely to be employed (15.3%).
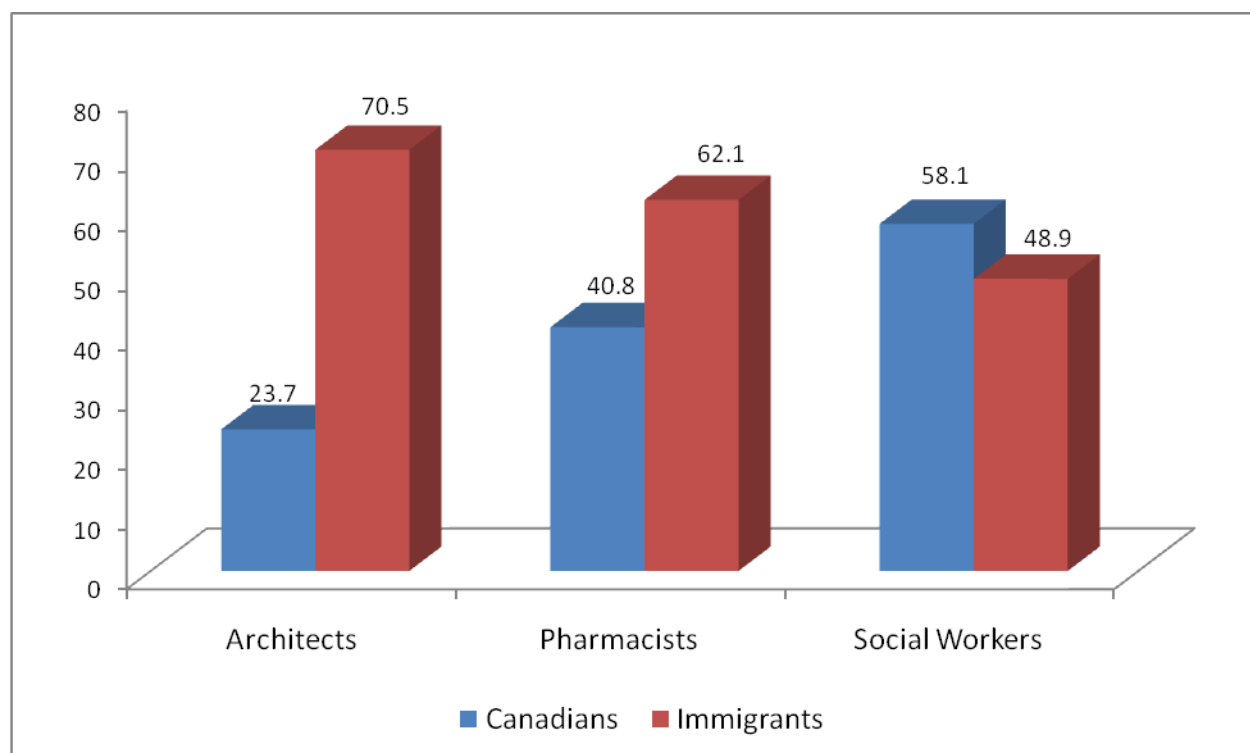
Figure 5.8: Percentage of Canadian/Newcomer Currently Working in Selected Unrelated Profession in Manitoba, 2011

Now we turn to look at the percentage of workers who are employed in a regulated profession that matches their field of study. As pointed out earlier, immigrants are more likely to work in unrelated occupations than their Canadian-born counterparts except in the social work profession (48.9%), as shown on figure 5.8. Over 70% of immigrants with degrees in architecture were working in unrelated professions, compared to only 23.7% of their Canadian-born counterparts. This is also similar to foreign-born pharmacists (62.1%) compared to the

native-born counterparts (40.8%). In the Social work profession, however, Canadians have the higher likelihood in working in unrelated profession (58%) compared to 49% of their newcomer counterparts.

It is not uncommon for youth to experience job-education mismatch unlike their more experienced counterparts. Most youth have to work in unrelated occupations before finding their way into their chosen professions, even those educated in Canada (Owusu and Sweetman 2015, Picot and Sweetman 2011). My study results reveal however, that the problem of job-education mismatch is greater for internationally-educated immigrants as shown on table 5.6.

Table 5.6: Percentage of CBCT, CBFT, FBCT and FBFT Currently Working in Selected Unrelated Professions in Manitoba, 2011

Regulated professions	CBCT	CBFT	FBCT	FBFT	Total
Financial Auditors and Accountants	63.4	44.4	56.3	85.7	66.6
Agrologists and Technical Agrologists	83.6	75.0	89.2	89.3	84.7
Engineers and Geoscientists	31.1	68.7	53.2	81.1	56.8
Engineering and Applied Science Technologists	47.5	0	35.1	29.4	42.5
Lawyers	32.1	50.0	38.5	88.9	38.0
Registered Nurses and Reg. Psychiatric Nurses	15.1	0	14.7	41.4	18.0
Physicians/Doctors	17.0	0	15.4	32.2	20.2

Source: Author's calculations based on the 2011 NHS micro data file (Statistics Canada, 2013)

Table 5.6 examines the rate at which people trained in one profession are actually working in a very different profession. Highest numbers of trained agrologists (84.7%) are working in an unrelated profession, followed by two-thirds of people who are trained as financial auditors and accountants. This is followed by trained engineers and geoscientists (56.8%), then by trained engineering and applied science technologists (42.5%), then by trained lawyers (38%), then by trained doctors (20.2%), and then with trained RNs and RPNs least likely to work in an unrelated profession (18%).

In health professions, CBCT with degrees in medicine are slightly more likely to work in unrelated professions (17%) than their CBCT counterparts trained as RNs and RPNs (15%). All CBFT medical doctors, RNs and RPNs, however, are practicing as such in Manitoba, with no likelihood in working in unrelated professions. FBCT doctors are more likely to work in an unrelated profession (15.4%) compared to their counterparts trained as RNs and RPNs (14.7%). Among FBFT, those with degrees in RN and RPN are more likely to work in an unrelated profession (41.4%) than their counterparts trained as doctors (32.2%). This means that FBFT perform poorly in terms of job-education match in the health profession than other groups. In other professions, however, the unmatched rates are even much higher for FBFT respondents. CBCT with degrees in agrology are more likely to work in unrelated professions (83.6%) than CBCT in engineering and applied science technology (47.5%) or in engineering and geosciences (31.1%). Among CBFT, those trained as agrologists are more likely to work in unrelated professions (75%) than as engineers and geoscientists (68.7%) with all CBFT practicing in the engineering and applied science technology profession. Also, FBCT with degrees in agrology are more likely to have unmatched rate (89.2%) than in engineering and geosciences (53.2%) than in engineering and applied science technology (35%). Among FBFT, those who are trained as agrologists are more likely to work in unrelated professions (89.3%), than in engineering and geosciences (81%) than in engineering and applied science technology (29.4%). This means that respondents trained as agrologists are more likely to have unmatched rates among other professions, with FBFT performing very poorly except in the engineering and applied science technology profession (29.4% unmatched rate). This also clearly shows that access to regulated professions in Manitoba differs by occupational type, since professionals in health related

professions are more likely to find employment in their field of study than those trained in other

fields.

5.3 Discussion

Anyone who seeks to practice in any regulated professions in Canada must be licensed by the appropriate regulatory bodies in the province which they are working, Manitoba is no exception. Internationally-educated professionals must have their basic knowledge in the profession evaluated, pay the required fees, meet all admission requirements such as passing the occupation-specific examination and sometimes, (dependent on the occupation), required to have some years of postgraduate training or experience in the field to practice in the chosen career. There are considerable numbers of immigrants with foreign-earned credentials who intend to work in regulated professions in their destination-country. Out of the 88,930 sampled immigrants from the Longitudinal Survey of Immigrants to Canada (LSIC) who planned of working in Canada, Tufts et al (2010) reported that 36% intended to work in regulated professions. This is very similar to a report by Hawthorne (2007) that 34% of landed immigrants who arrived between 1996 and 2005 intended to work in regulated professions, compared to just 15% of the Canadian population. My study found that almost half (49.6%) of people who are trained in a regulated profession were actually working in that profession.

Access to regulated professions (including engineers, physicians, financial auditors and accountants, architects, dentists, among others) is restricted under provincial regulations in Canada. The need to use an occupational title through accreditation processes unfortunately creates major barriers to the full utilization of the skills of immigrants from diverse educational backgrounds (Tufts et al., 2010; Boyd and Schellenberg, 2007). Research shows that "Canadian" experience and educational qualifications are preferred in the Canadian labour market (Li, 2003). As indicated by Tufts et al. (2010), although it is possible for an immigrant to find work in regulated profession without accreditation, many Canadian employers, nonetheless, prefer

immigrants with Canadian education or those who have passed the accreditation process to foreign-educated immigrants. Employers, for instance, view Canadian engineering schools as more advanced than non-Canadian schools and are often not familiar with credentials from foreign-educated immigrants (Tufts et al., 2010). My study confirms earlier findings that immigrants perform poorly with respect to working in regulated professions that match their educational training due to discriminatory factors including location of education and place of birth.

5.3.1 Educational level and major field of study

Recent research reveals that immigrants' labour market earnings have significantly declined in recent times, despite their increasingly higher levels of education compared to previous immigrant cohorts and their Canadian-born counterparts (Owusu and Sweetman 2015; Picot 2008; Hawthorne 2008; Picot & Sweetman 2011; Bonikowska, Hou& Picot 2011). As revealed in this study, CBCT respondents had the lowest rate in holding university degrees or higher (37.1%) but had the highest job-match rate for almost all professions. The result is similar to earlier research conducted in the United States by Zeng and Xie (2004), who reported that U.S.-born non-Hispanic whites have the lowest educational attainment compared to U.S.-educated Asian immigrants and foreign-educated Asian immigrants but have better labour market outcomes. Statistics Canada (2010) also reported that out of 284,000 employed foreign-educated immigrants who had degrees in fields of study that would lead to work in a regulated profession such as medicine, law, among others, but only 24% had a job-education match. In contrast, the job-education match was 53% among Canadian-educated immigrants, compared to the job-education match rate of 62% among the Canadian born. In summary, the findings of this thesis do confirm that in many cases (engineering, law, accounting, nursing, medicine,

architecture and pharmacy), there is a preference for Canadian training among some employers –
but this does not explain all the differences in outcomes between Canadian born and foreign born
workers in selected regulated professions (engineering and applied science technology, and
social work).

5.3.2 Working in regulated professions in Canada

Despite Canadian immigration policies favouring the admission of professionally-trained
immigrants such as the skilled worker program and its point system, or the Canadian experience
Class and its point system, for example, immigrants often have difficulties finding employment
in their chosen careers. Foreign trained immigrants are the least likely to be employed in
professions that match their educational qualifications and labour market experiences, compared
to their Canadian-trained immigrants and Canadian-born and trained counterparts (Hou and Lu,
2017; Statistics Canada 2011; Statistics Canada 2010). Even more worrying, however, is the
evidence that suggests that *immigrants with Canadian-acquired training still have lower labour
market returns to their education compared to those born and trained in Canada in many
professions*. This supports the growing body of evidence showing that there is likely more to the
labour market sorting mechanisms that continue to disadvantage those born outside of Canada
(Oreopolous, 2011). Canadian-educated immigrants with a university degree, on average, still
had much lower earnings than the Canadian-born population but higher earnings than foreign-
educated immigrants both in the short term and in the long term (Hou and Lu, 2017; Statistics
Canada 2011; Statistics Canada 2010).

The discrimination is evident when we examine the differences within professions. The
system doesn't always treat respondents who are born outside of Canada fairly, even when they
are trained here, since place of birth is a crucial predictor to working in one's chosen career.

CBCT and FBCT groups are generally favoured in all the regulated professions than their counterparts born and trained outside of Canada. An analysis of the findings of my thesis, for instance, reveals that more than two-thirds (68.9%) of CBCT have a job-education match in the Engineers and Geoscientists professions in Manitoba, followed by FBCT (46.8%), then CBFT (31.3%), with FBFT performing poorly in the job-education match rate (18.9%). Also, more than two-thirds of CBCT (67.9%) lawyers have a job-education match, followed by FBCT (61.5%), then CBFT (50%), with FBFT least likely to work as lawyers (11.1%).

If the Manitoba labour market were truly meritocratic, then the Canadian trained immigrants and Canadian born would have similar job-education match rates while foreign trained immigrants and foreign-trained Canadians would have similar but lower rates. This clearly is not the case. Also, respondents who were born in Canada and had their highest qualifications outside of Canada are favoured than the FBCT, with FBFT performing poorly in the match rates. For instance, all CBFT respondents with relevant degrees in medicine work in their trained field, followed by FBCT (84.6%) but only 67.5% of FBFT work as Physicians. Similarly, all CBFT have jobs as Registered Nurses in Manitoba, followed by 85.3% of all FBCT, and 84.9% of all CBCT, but only 58.6% of all FBFT nurses work in the profession.

Table 5.7: Comparing Manitoba results on Access to Regulated Professions with Owusu and Sweetman's (2015) findings.

	Abdul-Karim's (2018) Manitoba Results				Owusu and Sweetman's (2015) Canada-wide findings			
Profession	CBCT	CBFT	FBCT	FBFT	CBCT	CBFT	FBCT	FBFT
Physician	83.0	100	84.6	67.8	89.4	61.7	87.1	40.7
RN and RPN	84.9	100	85.3	58.6	63.7	52.7	64.4	44.6

Note: RN and RPN means Registered Nurse and Registered Psychiatric Nurse

Although the present analysis focused on residents of Manitoba, the findings are, nonetheless, aligned with Owusu and Sweetman's (2015) work on access to regulated health

professions by place of birth and training in Canada. As shown on Table 5.7, there are mixed results on which group has the most likelihood of working in regulated health professions, it is nonetheless obvious that FBFT fare worse in both analysis. For instance, as reported by Owusu and Sweetman (2015), almost two-thirds (64.4%) of FBCT are currently working as nurses, followed by CBCT (63.7%), CBFT (52.7%), with FBFT nurses the least likely to be working in the profession (44.6%). The current results indicate that of respondents with a job-education match in any regulated profession in Manitoba, Canadians (50.6%) are more likely to be positively matched than their immigrant counterparts (39.6%). This confirms earlier research by Statistics Canada that foreign-educated immigrants were less likely to be working in the regulated occupation that commensurate their training in 2006 than both Canadian-educated immigrants and persons who were born and educated in Canada (Statistics Canada, 2010). Out of 284,000 employed foreign educated immigrants with degrees in fields of study that would normally lead to work in regulated professions, only 24% worked in their trained field, compared to 53% of their Canadian trained and 62% of the Canadian-born and trained counterparts. The present results also show that only 29.6% of FBFT are currently working in the profession for which they are trained compared to 35.5% of FBCT and 54.5% of CBCT counterparts. This is similar to the findings of Houle and Yssaad (2010) who used the 2006 Census to find that 24% of internationally-educated immigrants with a university degree were working in a regulated occupation that matched their field of study, compared to 62% of their Canadian-born and trained counterparts.

As reported by Engineers Canada (2017), as of December 31, 2016, 288,870 people work as Engineers and Geoscientists in Canada, with 8,256 in Manitoba (Engineers and Geoscientists Manitoba, 2018). In the engineering profession, foreign-born and trained engineers encounter

more challenges having their credentials recognized to enable them work as professional engineers in Canada in recent times compared to their Canadian-educated immigrants and the Canadian-born counterparts (Tong 2010; Boyd and Schellenberg, 2007; Boyd and Thomas, 2001). My study shows that Canadian born and trained engineers are very likely to be working as engineers (69%) compared with immigrants trained in Canada (46.8%), 31% of CBFT but only 19% of FBFT. This is a very significant contrast. The results are consistent with the patterns found in Boyd and Thomas' data where the majority of CBCT engineers are working in the field compared with other groups. Boyd and Schellenberg (2007) in a separate study also report that 41% of Canadian born and trained engineers hold jobs in engineering profession, compared to only 26% of the foreign-born and foreign-trained engineers.

Results from my study reveal that within medicine, there is a distinct disadvantage to being foreign-born, even if the person was trained in Canada. As revealed in this current study and shown on table 5.7, every CBFT physician is working as a physician in Manitoba (100%), followed by FBCT (84.6%), and then CBCT (83%), but only 67.8% of FBFT are currently working as physicians. These findings are in line with Owusu and Sweetman's (2015) findings that substantial number of Canadian-born and trained physicians (89.4%) worked in their trained profession, followed by FBCT (87.1%) and then by CBFT (61.7%) but only 40.7% of their foreign-born and trained counterparts. This implies that Manitoba is doing better in terms of foreign-trained physicians accessing their chosen field compared to the national average. This results also confirms earlier research by Boyd and Schellenberg (2007) that 90% of the Canadian-born and trained physicians are working as physicians in Canada, compared to 55% of the professionals who were born and trained outside Canada, with one in three foreign trained physicians employed in occupations that are completely unrelated to either medicine or health

related professions. Also, only 2% of the Canadian born and trained professionals in medical field of study were not able to work as physicians, compared to 12% of their foreign-born and trained physicians. The authors further added that out of 5,400 foreign-trained physicians in Canada, only 16% of them were working as doctors in 2001 (Boyd and Schellenberg, 2007). In summary, there is a penalty for being an immigrant in the Manitoba labour market – even when they are trained in Canada!

5.3.3   Gender and population group/Visible minority status of respondents:

There is gender disparity in the recognition and access to regulated professions in Canada, although the data we could access would allow only a cursory examination of gender differences. There is significant gap between men and women with respect to foreign credential recognition, since internationally-educated immigrant men are more likely to be working in regulated professions than their female counterparts. According to Tong (2010), gender plays a substantial role in earnings disadvantage because the earnings gap between foreign educated engineers and native-born and educated female engineers is narrower than that between their male counterparts. Immigrant women were more likely to have lower participation rate in engineering, lower full-time status, take more time to find their first job, experience longer jobless spells, and have lower hourly wages than immigrant men. According to Uppal and LaRochelle-Cote (2014), 43% of women and 35% of men who are internationally trained immigrants are overqualified for their jobs because they work in occupations that require lower level of education. Out of the 32,060 who intended to work in regulated professions, 57% were males and the remaining 43% were females (Tufts et al., 2010). According to Boyd and Schellenberg (2007) almost 20% of internationally-educated engineers are women. Before becoming permanent residents, Canadian-educated immigrants workers earned on average 50%

less (for women) to 60% less (for men) than Canadian-born workers in the 1991 cohort. Part of the earnings gap was related to the fact that most Canadian-educated immigrants belonged to a visible minority group, and they tended to spend more time pursuing additional education (Hou and Lu, 2017).

As reported by Xue (2008), female immigrants had a lower participation rate and were less likely to obtain employment and better their labour market outcomes compared to male immigrants. According to Statistics Canada (2008), the overall unemployment rate for immigrant women is 4 per cent higher. Immigrant women, compared to their male counterparts are marginalized from the work force, and without equal opportunity in entering the labor market or sometimes withdrawn from paid work to take care of their families, engaged in parenting, domestic chores and other resettlement activities (Meares, 2010).

Despite having higher educational qualifications compared to their Canadian-born counterparts, immigrants who belong to racialized groups are less likely to be working in professions that commensurate their field of study. Immigrants educated in Asia, the Caribbean, Africa and Latin America are less likely to obtain jobs that match their educational qualification according to the results in my study. According to Nakhaie (2006) visible minority immigrants experienced a lower rate of return on their educational investments and earned substantially less or deteriorated than their British counterparts. As reported by Buzdugan and Halli (2009) that internationally-educated immigrants from low/middle income countries experience the most acute devaluation of their foreign educational credentials and labour market experience because their education from outside Canada is largely unrewarded and not recognized by employers. Houle and Yssaad (2010) also confirm that only 12% of these immigrants worked in a regulated occupation that matched their field of study which is similar to those who attained their highest

qualifications in other non-English speaking regions such as China, India, Cuba, Haiti, Philippines and El Salvador, with Asia recording the lowest match rates between field of study and occupation. Boyd and Schellenberg (2007) also revealed that half of internationally-educated professions with medical fields of study but worked in an occupation that do not match their qualification were members of a visible minority. Similarly, more than half of internationally-educated engineers were members of a visible minority compared to 3% of Canadian-born and trained engineers.

Immigrants from Asia have represented about one in three of all foreign-born men in the active labour force age group (25-64) who enter Canada with engineering as their intended occupation have Bachelor's degree or higher, but are unable to access engineering profession (Zeng and Xie, 2004). Of the CBFT respondents, my study revealed that 76.2% hold bachelor degrees or above, followed by FBFT (56.3%), FBCT (40.5%), with CBCT recording the lowest rate (37.1%) (see Table 1). Also, of the FBFT respondents, majority of them (72.5%) belong to a visible minority group in Canada, than among FBCT (54%), than among CBFT (7.1%) than CBCT (2.7%). Boyd (2000) reports that compared to the Canadian-born population that studied engineering as their major field of study, the Asian born and other foreign-born educated engineers including those from China, India, and Hong Kong are more likely to have received masters and PhD degrees rather than only bachelors' degrees. This is in line with statistics released by the U.S. Census Bureau (cited in Zeng and Xie, 2004) that in 2000, 44% and 40% of Asian men and women respectively over 25 years had completed college education, compared to 28% and 26% of non-Hispanic white men and women. Thirty-one percent of newcomers who were racialized minorities had lower likelihood of having their foreign-earned credentials assessed, compared to twenty-eight percent of their counterparts (Houle and Yssaad, 2010).

Despite their educational level, foreign-born engineers from Asia in the United States and Canada are more likely than their white American born counterparts to be employed in technical and unrelated work instead of engineering profession (Boyd, 2000), which constitutes underemployment, under-utilization of skills and blocked mobility for visible minority groups in society.

Zeng and Xie (2004) also report that foreign-educated Asian immigrants received their highest education before leaving China, Philippine, Japan, and India but have lower earnings than do their counterparts who studied in the host country and whites within the same levels of education due to lower value of their credentials earned in Asia. For instance, foreign-educated Asian immigrants earn approximately 16% less than their counterparts who studied in the host country and the native-born and trained counterparts (Zeng and Xie, 2004). Only foreign-born and educated men from the U.S., the U.K., in Europe (perceived as developed economies) have occupation-education pattern that are similar to the Canadian born, compared to those from Asia, India, China, Hong Kong, Philippines among others. African/Black and Caribbean immigrants' internationally-earned credentials are devalued, not recognized and subsequently not able to work in their chosen career. This study shows that majority of internationally-educated immigrants (71%) from Asia and Africa have a lower probability of accessing regulated professions that match their field of study. This confirms Bratsberg and Terrell (2002) findings that African and Caribbean Black immigrants receive lower returns to their foreign education in the U.S. labour market than the native-born counterparts. Some other racialized minorities such as Koreans, Arabs, Chinese, East Indians, West Asians, South Asians, Filipinos and South-east Asians have higher levels of education but are also under-represented in higher occupations in the Canadian labour market. For instance, while 19.8% and 14.4% of the British and Canadians

respectively who have a bachelor's or higher degrees, more than half (50.5%) of Koreans, 37.7% of Filipinos, 42.7% of Arabs, 39.1% of Chinese, 29.1% of South Eastern Asians, 34.7% of Eastern Indians, and 40.5% of West Asians have Bachelor's or post graduate degrees (Nakhaie, 2006).

5.3.4 Human Capital Theory and Access to Regulated Professions in Canada:

Income disparities between Canadian-born and their internationally-born and educated counterparts are believed by proponents of Human Capital Theory to be the results of the location of training. Training from LMIC is believed by some to be of lower "quality" than education attained in HIC, without regard to the profession or to the particular institution where they studied. This is the prevailing explanation made by economists who suggest that the reason immigrants today are not meeting parity with incomes of Canadians is because they are more likely to come from LMICs which have, by their definition, lower quality of education in all aspects. Internationally-educated professionals from developed countries such as United Kingdom, United States and western part of Europe are able to have their credentials recognized and be more successful in the Canadian labour market compared to their counterparts from low/middle income countries (Reitz 2001; Boyd and Thomas 2002; and Adamuti-Trache and Sweet 2005).

Human Capital theory suggests that workers, irrespective of their origin or location of study, enter the labour market under conditions of perfect competition and secure employment on the basis of their educational training, previous work experience, labour market skills related to the occupation, and age. Internationally-trained professionals, nonetheless, find it difficult to find jobs in Canada that match their educational training (Girard and Bauder, 2007). As reported by Zeng and Xie (2004) foreign education is generally viewed as a barrier to access to one's

chosen profession and socioeconomic mobility due to devaluation of foreign credentials. In a truly meritocratic society, the labour market outcomes of FBFT are expected to be same as the FBCT, but the present results of this study prove otherwise. Although Canadian-trained immigrants do better most times than foreign-trained foreign born immigrants, there still remains an unexplainable distance in outcomes between CBFT and FBCT immigrants. For instance, 46.8% of FBCT engineers work in that profession compared to only 18.9% of their FBFT counterparts. Also, all Physicians (100%) are CBFT compared to only 67.8% of their FBFT counterparts. This means that although immigrants encounter complications and difficulties having their credentials assessed, those with highest qualifications from destination-country (international students) fare better than those with foreign credentials (economic immigrants).

Some mechanisms have often been invoked to explain empirical findings that immigrants who received destination-country education outperform Foreign-educated immigrants and even perform similar to native-born workers in the labour market (Hou and Lu, 2017). The possible mechanisms that explain differentials in labour market outcomes of Canadian-educated immigrants, foreign-educated immigrants and their Canadian-born counterparts include educational quality (Li and Sweetman, 2014), proficiency in official language (Bleakley and Chin, 2004), acculturation (Tong, 2010), and credentialism (Oreopoulos, 2011) (Cited in Hou and Lu, 2017).

According Tong (2010) completing college or educational institution in the host country plays a significant role in closing the earning gaps between foreign-educated immigrants and their Canadian educated counterparts. University education in Canada is considered by employers and governments to be of higher quality and of greater relevance to advanced economies than those received in developing countries from which most contemporary

immigrants to Canada originate (Li and Sweetman, 2014). Professionals who are trained in Canada complete "recognized" (by employers) programs of study, be proficient in the language of employment in the Canadian labour market and are able to have Canadian work experience, compared to their foreign trained professionals (Boyd and Schellenberg, 2007). At least, this is how the system should work if meritocracy was actually occurring, but the results of this research show otherwise. Instead, we see that immigrants trained in Canada are at times less likely than their Canadian born counterparts with similar education to be employed in regulated occupations for which they are trained. As well, we see more CBFT working in their profession than FBFT—who should, theoretically, pay the same economic penalty for their foreign acquired education.

A majority of internationally-educated immigrants in this study (77.6%) had their highest qualifications from developing economies compared to 22.4% from developed or western economies. The current result, however, confirms earlier research by Boyd and Schellenberg (2007), and Buzdugan and Halli (2009) who reported that western-trained engineers are more likely to have job-education match compared to their counterparts who are trained in non-western countries. Internationally educated engineers who were born in North America (excluding Canada), Europe or Oceania had almost the same probability of working in their trained profession by the Canadian-born population (39% and 40% respectively), with internationally-educated engineers from South East Asia recording the lowest (15%) (Boyd and Schellenberg, 2007).

The only way to measure educational quality is to obtain 'institutional'-level data, which is not available to researchers. We all know that some schools are better than others even within

the same country. Taking the United States as an example, many schools provide superior educational and vocational training. In fact, many of these schools would be considered world-class. At the same time, however, there are many educational institutions of questionable quality in the United States. Credentials from these organizations are largely meaningless in the labour market. In India, many engineering programs are considered also among the world's best, yet when economists consider "educational quality" they lump all Indian-acquired education into the "poor quality" category and all the American-acquired education in the "high quality" category with no control or regard for institutional level quality. As this example shows, educational quality cannot be assumed simply by using country of origin as an indicator. Although economic researchers have been able to provide proof of country differentials with Low and Middle-income Countries (LMIC) having lower results (Zeng and Xie, 2004), no researcher has been able to provide ranks for 'institution level' data, which makes it highly debatable to argue that education in some countries are of low quality and hence inferior. University educations in some countries are considered not relevant because they are sometimes not recognized, by not only international organizations, but also and more importantly by locally-based institutions responsible for the accreditation and approval of certificates or degrees acquired in those universities. For instance, as reported by Choudhury (2017), only four out of 122 "Deemed universities" (certified universities) in India, which offered distance learning programs in engineering through correspondence courses in the last 16 years did not receive approval from the University Grants Commission (their version of SSHRC) and all the India Council for Technical Education (AICTE), as recognized and accredited institutions, for such courses, making certificates obtained from these universities illegal, despite the Distance Education Council's (DEC) approval. The Supreme Court in India declared on Friday, November 3, 2017

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that degrees obtained in these universities are invalid because the regulatory system in India was compromised as the courses were being run for more than a decade without attracting serious scrutiny (Choudhary, 2017). That said, however, for the most part, engineers trained in India are highly regarded and more often than not, find well paid work in countries like Canada. Because four universities have been declared fraudulent doesn't mean that all university education from this country fails to meet Canadian "standards".

There are other reasons why using a human capital theory to explain the lower occupational attainment of immigrants is faulty. Acquiring education in the receiving country would immerse Canadian-educated immigrants English or French which ought to give them an "edge" in the Canadian labour market if human capital theory were correct (Bleakley and Chin, 2004). As my data clearly shows, even those immigrants who complete a credential in Canada using English or French are less likely to work in many regulated professions in Canada than their fellow students who were born in Canada.

The fact that Canadian-educated newcomers often have worse job-skills match rates than their colleagues is also a blow to human capital theory's ability to explain labor market differences. Because they arrive younger and spend more years in Canada than foreign-educated immigrants, international students ought to gain better knowledge about the labour market and have more opportunities to establish social networks that could help their job search (Tong, 2010). Canadian employers are supposedly more familiar with Canadian educational qualifications than foreign ones and thus may prefer Canadian-educated immigrants to foreign-educated immigrants (Oreopoulos, 2011). The truth is that this is not always the case. Some professions have favoured graduates who were born in Canada over immigrants, even though they are trained in Canada.

There is evidence to suggest that there are countries of origin exceptions to the preference of hiring Canadian trained graduates first. Hawthorne (2007) reports that employers favoured internationally-educated immigrants from English-Speaking backgrounds such as South Africa, Australia and New Zealand, or western countries such as United Kingdom and Ireland, West Europe, and the United Kingdom because they have educational training systems that are directly comparable to the systems in Canada. In general, however, Hou and Boniskowska (2017) and Lowell and Avato (2014) among other contemporary researchers report that the earnings advantages of Canadian-educated immigrants over foreign-educated or economic immigrants is either small or non-existent. Despite this counter reports, HCT provides comprehensive understanding as to why Canadian-educated immigrants fare better in accessing regulated professions in Canada, compared to their foreign trained counterparts. What it fails to explain is why immigrants who have been trained in Canada still suffer wage and occupational penalties compared to their similarly educated Canadian colleagues. Internationally-educated professionals who received medical or engineering training in European countries other than Eastern Europe or in South Asian countries are the most likely to practice medicine or to work as engineers (Boyd and Schellenberg, 2007). This is important because much of the Canadian immigration system is dependent on human capital variables as determinants of entry to the country, such as the points system for skilled workers.

5.3.5   Critical Race Theory and Access to Regulated Professions in Canada:

Critical Race Theory holds that there exist systemic and institutional discrimination in accessing regulated professions based on racism. People who belong to the racialized minority are not able to work in professions that match their field of training because of the inherent discrimination and racism in the Canadian labour market, which explains why significant

numbers of racialized and people who are visible minority do not have equal opportunity in accessing employment that commensurate their educational qualification . As reported by Girard and Bauder (2007) the licensure processes by the Professional Engineers Ontario (PEO) in assessing the value of internationally-earned credentials and work experience undermine immigrants' access to the engineering profession compared to Canadian-born and trained applicants. The time consuming, costly and frustrating system in recognizing foreign-earned qualifications and labour market experience discriminates against immigrants and subsequently limits and sometimes prevents their access to regulated professions. According to Boyd (2000), one explanation for existing labour market disparities between groups of engineers is that specific place of birth or racially defined groups lack the requisite human capital skills, represented by training, work experience and high levels of official language proficiency. This is similar to what Boyd and Thomas (2001) reported that the certification requirements in Canada are often described as a form of systemic discrimination that have disproportionate effects in restricting access to regulated professions among foreign-born and educated professionals. Place of birth is an important issue in internationally-educated engineers' likelihood of working as engineers because the Canadian Council of Professional Engineers has mutual agreements in recognizing and assessing accredited engineering programs in some countries including UK, US, Australia, France, New Zealand, and Hong Kong (Boyd and Schellenberg, 2007).

As reported by Pittis (2017), an internationally-educated immigrant expressed his dissatisfaction of the discriminatory Canadian labour market by indicating that "Because I am an immigrant, I am not free to do what I like to do as far as employment is considered, because I am an immigrant, my Canadian experience and my education from the Philippines is not recognized here" (p.1). This report is similar to one by a Syrian physician who has decades of experience

treating patients in Syria, by saying that "I'm a physician, graduated from Syria, but the problem is that the Alberta's health care system doesn't recognize the internationally-graduated professionals" (Labby, 2016: p.1). Highly educated and experienced immigrants as a result of the systemic discrimination languish in dead-end jobs due to their attributes, instead of evaluating their competency. They are subsequently de-skilled into a level C category job such as taxi driving, sales and service occupations, which usually requires secondary school and/or occupation-specific training. CRT contributes significantly to the understanding of why foreign educated immigrants and even those who have been trained in Canada still suffer wage and occupation penalties compared to their Canadian educated with similar qualifications. This theory attributes this issue to the systemic discrimination in the Canadian educational system and labour market requirements.

5.3.6   Do immigrants' labour market outcomes differ by occupation?

Although on average, foreign-educated immigrants fared worse in accessing most regulated professions compared to their counterparts trained in Canada, in some cases their labour market outcomes differed by their occupation. My study reveals that internationally-educated immigrants in health related professions were more likely to be employed in their field, compared to their immigrant counterparts in other fields. For instance, FBFT have higher education-job match rates in the medical profession (67.8%), followed by the nursing profession (58.6%), compared to only 14.3% in the accounting profession and 11.1% in the legal profession. According to Statistics Canada (2010), the match rate of immigrants accessing occupations that recognize their training varied by the occupation for which they studied. Some regulated professions such as engineering are very difficult to enter due to accreditation complications and frustrating certification requirements and processes such as high cost of

accreditation, longer length of time in the registration processes, among others (Boyd and

Schellenberg, 2007).

Table 5.8: Comparing Manitoba Results on Foreign-trained immigrants' access to Regulated Professions with Statistics Canada's (2010) findings.

	Abdul-Karim's (2018) Results	Statistics Canada's (2010) Findings
Profession	%	%
Doctors	67.8	56
Nurses	58.6	56
Engineers	18.9	19
Lawyers	11.1	12

Immigrants with fields of study in health professions had higher match rates than those

who studied to be engineers and lawyers. For instance, match rates for foreign-trained doctors in

the present analysis is 67.8%, followed by foreign-trained nurses (58.6%), with foreign-trained

engineers and lawyers recording the lowest match rates (18.9% and 11.1%). These results are

very similar to Statistics Canada's (2010) findings, that match rates for foreign-trained doctors

and nurses were both 56% compared to 19% for those who studied engineering, and 12% for

those who studied law as shown on table 5.8. Foreign-trained immigrants in engineering and

health related programs had higher probabilities of their credentials being recognized and to be

working in their field of training than their counterparts in humanities, social sciences, education,

commerce, management and business administration (Houle and Yssaad, 2010). This is similar

to Statistics Canad'a (2010) report that immigrants with fields of study in health professions had

higher match rates than those who studied to be teachers, lawyers and engineers. As indicated by

Uppal and LaRochelle-Cote (2014), graduates from programs including humanities, social

sciences and administration were more likely to be overqualified for their jobs compared to

graduates in other fields. This is because access to foreign credential recognition among professions is individualized. For instance, it is difficult to compare lawyers to doctors because their exams and licensure practices are different. For lawyers, a lawyer in Ghana for instance has learned a different framework than in Canada. In the nursing or medical field however, the body is the same no matter what country you are working in.

5.3.7 Alternative occupations of immigrants with unmatched occupations:

My study also reveals that majority of internationally-educated immigrants work in occupations that do not commensurate their educational training. For instance, higher percentages of foreign-trained agrologists (89.3%), lawyers (88.9%), accountants (85.7%) and engineers (81.1%) in Manitoba work in occupations that do not match the educational qualification they emigrated with. This begs the question, where do they work? Foreign-educated immigrants who were not working in the regulated professions associated with their field of study often work in technical occupations related to natural and applied sciences such as scientists and technicians (Xu, 2012; Statistics Canada 2011; Statistics Canada 2010; Boyd and Schellenberg, 2007; Zeng and Xie, 2004; Boyd and Thomas, 2001; Boyd, 2000). Among newcomers whose occupation did not match their field of study, 77% worked in jobs that do not require a degree, compared to 57% of their Canadian-born graduate counterparts (Zietsma, 2010). Large shares of these immigrants, however, were also working in clerical occupations and sales and service occupations (Statistics Canada, 2010). Using the 2006 Census of Canada data, Xu (2012) found that 50% of over 50,000 taxi drivers in Canada were immigrants with PhD, MD and related degrees from their home countries. Boyd and Schellenberg (2007) similarly report that more than 50% of foreign-trained engineers worked in technical or occupations that were unrelated to engineering. Smaller proportion of Canadian-born and trained engineers work in

unrelated occupations (17%) compared to 28% of their foreign-born and trained counterparts. Boyd and Thomas (2001) also concluded that internationally-educated engineers and physicians are more likely to be unemployed or less likely to be employed in medical, managerial or engineering roles compared to the Canadian-born and trained engineers. For instance, One out of three of internationally-educated doctors and over one-third of internationally-educated engineers (35%) worked in unrelated occupations in 2001 (Boyd and Thomas, 2001). This is also confirmed in a recent statistics Canada report that 20% of Canadians with university degrees don't work in their field of studies (Statistics Canada, 2017).

Table 5.9: Comparing Manitoba Results on Fields of Study of CBCT and FBFT with Xu's (2012) Findings

| | Abdul-Karim's (2018) Results | | Xu's (2012) Findings | |
	CBCT	FBFT	CBCT	FBFT
Field of Study	%	%	%	%
Architecture	64.5	35.5	28.1	13.7
Engineering	41.6	45.7	2.2	13.4
Engineering Technology	79.7	11.3	6.9	8.9

Although over qualification occurs both among the Canadian-born population and immigrant taxi drivers, the rate was higher among immigrants. For instance, more than half of immigrant taxi drivers (53%) had at least some postsecondary education, compared to 35% of their Canadian-born counterparts (Xu, 2012). A sizable portion of highly-educated immigrant taxi drivers (20.2%) hold bachelor's degree or higher, compared to 4.8% of their Canadian-born taxi-driving counterparts. Seventy-eight percent (78%) of immigrants out of 255 taxi drivers with doctorate or medicine and related degree holders, with foreign credentials were engaged in taxi driving in 2006 (Xu, 2012). Out of 6,040 taxi drivers that held a bachelor's or master's degree, majority of them (80.7%) were foreign-educated immigrants (Xu, 2012).

The distribution pattern of field of study for postsecondary-educated taxi drivers was quite different between Canadian-born and trained and foreign-education immigrants, explained by differences in occupation. Out of the total of 22,100 taxi drivers who studied to work in regulated professions in Canada, foreign-educated immigrants constituted 60% compared to 40% of their Canadian-born counterparts. Both Architecture and related technologies and health professions (including chiropractors, dentists, audiologists, denturists, optometrists, physicians, opticians, and pharmacists among others) had higher share of Canadian-born population studying in those professions than foreign-educated professional. Out of 22,100 taxi drivers in Canada, 6.4% of Canadian-born studied to become health professions compared to 3.6% of immigrants who were educated outside Canada. As shown on table 5.9, my results are similar to Xu's (2012) findings on major fields of study of Canadian born compared with foreign-educated immigrants. Almost two thirds of Canadian-born (65%) in my study have degree in architecture, compared to 36% of their foreign-educated immigrants' counterparts. This is similar to Xu's (2012) findings that almost one third of Canadian-born had a degree in architecture and related technologies, compared to 13.7% of their foreign-educated immigrants' counterparts. In contrast, 45.7% of foreign-educated immigrants had a degree in engineering that could lead to become engineers, compared to 41.6% of their Canadian-born counterparts. This is also similar to Xu's (2012) findings with foreign-educated immigrants more likely to be trained as engineers (13.4%) than Canadian born and educated counterparts (2.2%). Again, 8.9% of immigrants with foreign credentials studied to become engineering technologies and technicians, compared to 6.9% of their Canadian-born counterparts (Xu, 2012).

The points system of admitting skilled workers in Canada assume (either implicitly or explicitly) that the number of years of education is of the same "quality" regardless of where the

education is obtained. Yet, place of education constitutes significant role in the probability of working in one's chosen profession, due to perceived differences in the educational quality (Li and Sweetman, 2014; Painter 2013; Zeng and Xie, 2004). Analysis of the results revealed that a majority of internationally-educated immigrants (76.2%) was trained in the Philippines, India and China. Place of birth has significant influence on the likelihood of working as a physician in Canada, because immigrants born in some regions have a better chance in finding employment as a physician in Canada than others from other regions. Internationally-educated doctors born in countries where English or French are spoken or used as medium of instruction (for instance from UK, US, North and West European countries) are more likely to have a greater probability in working in their trained field as doctors, because they are more likely to be familiar with Canada's official languages and language of employment. Out of 13,340 internationally-educated immigrants sampled for this study, a majority of them (80.6%) come from the Philippines, India and China. This is in line with earlier research by Boyd and Schellenberg (2007) that 92% of Canadian-born and trained physician had the probability of working as physicians, compared to 87% and 85% of South Asian and African educated physicians respectively, with internationally-educated physicians from Asia or Eastern Europe recording the lowest likelihood (66%) in working as physicians.

According to Boyd and Schellenberg (2007), over one third of internationally-educated immigrants working in unrelated professions came from Asia and another one-fifth came from Africa. Xu (2012) also confirms that internationally-educated immigrants from countries such as India, Pakistan, Lebanon, Haiti and Iran were significantly overrepresented among immigrant taxi drivers. For instance, immigrant taxi drivers with university degrees from India or Pakistan accounted for 18.8% and 11.8% of the total number of taxi drivers respectively. Of note is that

one out of every three postsecondary-educated immigrant taxi drivers has a Canadian degree. Out of the 255 PhD and MD taxi drivers, 70.6% were foreign-educated immigrants, of which 19.4% had degrees from India. Almost one in two internationally-educated engineers were born in Asia and over 25% were born in Eastern Europe. Under-utilization of skills is most common among foreign trained immigrants born in South East Asia and East Asia who are taxi drivers.

5.4 Conclusion

Foreign educational credentials and labour market experiences are often devalued in Canada by denying many immigrants with foreign-earned credentials the opportunity to practice in their occupation of training. Despite newcomers' highly-educational background compared to their Canadian-born counterparts, they still lag behind in finding occupation in their chosen careers because they may had their training in economies associated with lesser educational quality, born in developing country, belong to visible minority group, being a female and sometimes because of her/his chosen profession. According to Boyd and Schellenberg (2007), differences between Canadian-born population and foreign-born and educated professionals in labour market outcomes with respect to access to regulated profession in one's field of study is related to certification process in Canada which may not view programs of study in foreign schools as equivalent to those by Canadian schools. Also, internationally-educated immigrants' access to regulated professions in Manitoba is significantly influenced by occupational type. Immigrants with relevant degrees in health and other related fields are more likely to access employment than their counterparts with degrees in social sciences, humanities and business administration.

CHAPTER 6

6   POLICY, PRACTICAL IMPLICATIONS AND CONCLUSION
6.1   Introduction

Although much work has been done about the lack of foreign credential recognition in Canadian labor markets, little or no systematic inquiry on the barriers to immigrants' foreign credential recognition and access to regulated occupations has yet been conducted. Little quantitative research has been done on foreign credential recognition and access to regulated professions in Canada, especially in the province of Manitoba in response to increasing scale of skilled immigrants. The purpose of this thesis is to partially fill this gap using the 2011 National Household Survey from Statistics Canada to examine the occupational, educational and other factors that influence employment among immigrants to Manitoba. The research highlighted significant findings that aid in identifying priorities, drafting of proposals and reports, development of programs and services and carrying out advocacy and inclusionary policies that improve the Canadian labour market orientation and integration.

6.2   Academic and policy Recommendations from the study

The findings of this study indicate that FBFT have higher educational qualifications but are less likely to work in regulated professions that match their field of study. Among immigrants, however, those with highest educational degrees obtained in Canada (international students) are more likely to access employment in their trained field compared to their counterparts with foreign-earned credentials. A majority of internationally-educated immigrants (77.6%) in the study originate and had their highest educational qualifications from developing economies such as the Philippines, India, China (Asia) and Africa, which significantly explains why they are less likely to be recognized and accepted by local employers. Occupational type

also constituted a significant factor in accessing regulated professions in Manitoba, since immigrants with relevant degrees in health professions were more likely to work in their trained fields than their counterparts trained in other fields such as social sciences, humanities and business administration.

According to Hawthorne (2008), the Human Capital model has dominated Canada's recent selection of economic immigrants, allowing them to arrive prior to having their credentials screened, which is in marked contrast to the system now operating in Australia. Within two years of Australia's abandonment of the Human Capital model of selection for instance, 81% of economic immigrants were employed within the first six months of arrival (compared to 60% in Canada), a figure that rose to 83% by 2006 (Hawthorne, 2008). Despite newcomers' highly-educational background compared to their Canadian-born counterparts, they still lag behind in finding occupation in their chosen careers because they may not have social networks to support and aid in their job search, not familiar with the structure of the Canadian labour market, lack of Canadian official language fluency, and more importantly, not possessing Canadian work experience. As indicated by Boyd and Schellenberg (2007), the immigration policies of admitting highly skilled immigrants based on immigrants' educational level, age, work experience among others and the presence of the professional accreditation process creates a paradox, because the requirements internationally-trained professionals must meet often times act as barriers to their access to regulated professions and full utilization of their diverse skills.

Highly skilled immigrants face a range of barriers to employment at their skill levels, such as, difficulty getting foreign credentials recognized, unfamiliarity with the Canadian labour market, employers' negative perceptions of the quality of foreign education and work experience, limited official language skills and a shortage of education programs to bridge skills

deficits. Many of these barriers could be addressed or at least alleviated through targeted programs and policies. More equitable opportunities for all and access to the labour market can help connect workers of every background to jobs that match their skill sets in order to make the Canadian economy stronger and more diverse. Access to professional occupations in Canada is institutionally regulated to the disadvantage of foreign-born and trained immigrants, and excludes them from the upper segments of the Canadian labour market (Girard and Bauder, 2007). It is very important to make access to regulated professions in Canada barrier-free by recognizing internationally-educated immigrants' competency levels instead of discriminatory processes based on place of birth, location of study and population group. It is as a result recommended for the fairness commissioners and other arms of government to continue to ensure that the general benefits of regulations are maintained but access to regulated professions is not restricted to people by location of study, place of birth and/or population group. As advised by Sweetman (2017), Fairness Commissioners and their staff can do excellent work in identifying barriers at the regulatory stage to make Canadian labour market barrier-free environment for internationally-educated professionals. I would also suggest that professional regulatory bodies assess the institutions where newcomers attained their highest educational qualifications and not the country as a whole when they are making these decisions, since evaluating country of origin constitutes discrimination against some newcomers.

As reported by Boyd and Schellenberg (2007), political or economic disruptions in the internationally-educated professionals' country of origin may sometimes mean she or he may not be able to produce sufficient documentation or credentials for accreditation processes, and hence could also contribute to large share of foreign professionals not able to access profession that match their field of training. The regulatory practices that aim at ensuring that access to regulated

professions are fair, objective and open in keeping out unskilled and incompetent practitioners shouldn't limit entry to practice by place of birth, location of training, ethnicity/race, class background, among other discriminatory factors. There is the need to provide opportunities for the foreign-trained professionals to utilize their skills, whilst ensuring control over entry into regulated professions. The regulated professions are encouraged to be more transparent and equitable in their assessment of qualifications as part of making the policy that Canada is a good destination for immigrants.

Despite the provincial and national efforts to improve the recognition of foreign credentials to allow foreign-trained immigrants to access regulated professions, there is the need for further actions to be done to make the foreign credential recognition barrier-free for immigrants. Firstly, there is the need for foreign-educated immigrants to access the specific information on Canada's foreign credential recognition system and processes to aid their successful integration into the labour market, since most immigrants are under the impression that they will be able to resume employment in their trained profession as soon as they arrive in Canada. Immigrants should be pre-informed that their credentials will need to undertake assessment processes to be licensed in order to practice in Canada.

6.3 Policy, Academic and Practical Implications

Despite the highly documented challenges newcomers go through in having their internationally-earned credentials recognized and having access to regulated professions, there is surprisingly lack of quantitative academic research in this area in Canada, unlike in the United States. This research as a result provides a fertile ground for policy implications and to have great impact in the era of increasing immigration and occupational regulatory policies. This recent study adds to the international debate and negotiations by national bodies to ensure that all

requirements of licensure are necessary and relevant to ensure newcomers' successful integration into the host country's labour force. The findings of this study help in focusing on the evaluation of immigrants' competency rather than discriminatory measures such as place of birth, country of education or experience, visible minority status, gender, to help newcomers to have equitable opportunity for licensing and employment, and subsequently eradicate systemic discrimination and racism against immigrants.

The study offers quantitative analysis and insight to the challenges internationally-educated professionals encounter in having their credentials accepted, accessing regulated professions and being able to successfully integrate into the labour market of the host country. Understanding of these concerns is imperative in developing policies that aimed at assisting newcomers to have their credentials recognized and be able to access regulated professions. The findings of the study also encourage employers, regulators, professionals and other stakeholders to provide the needed support for immigrants to improve their labour market outcomes in response to their highly educational background so as to utilize the diverse skills these internationally-educated professionals migrate with.

6.4   Future Research

This study opens numerous new avenues for future research on recognition of foreign credentials in Canada, and in Manitoba in particular. Firstly, the present study can be further extended to compare nationally accredited programs to those without national accreditation programs, comparing outcomes in health versus other disciplines, and comparing outcomes of Prior Learning Assessment and Recognition (PLAR) versus non-PLAR professions with the aim of identifying which area has more challenges in the foreign credential recognition processes so as to work on improving those areas. Also, each of the barriers identified in this study is worthy

of a more in-depth investigation to make Canadian labour market a barrier-free environment for internationally-educated immigrants. This study needs to be replicated in the other 9 provinces and using more recent, 2016 Census data.

Much more research is, however, needed to understand pre and post-arrival factors that hinder newcomers foreign credential recognition and access to regulated professions. According to Hou and Lu (2017), while education might have become less indicative of the earning potentials of internationally-educated immigrants, the level of their pre-landing Canadian earnings, as a proven record of success in the Canadian labour market, might come to be more effective in capturing the unobserved skills of immigrants. Due to restrictions in data usage, the researcher couldn't investigate into access to regulated professions of internationally-educated immigrants by entry category, which has been recorded in the literature as one of the essential factors in the likelihood of having foreign credentials recognized in Canada. It is as result recommended for future research to look into how immigrants who enter Canada as skilled worker class, other economic class, humanitarian or refugee class, and family class among others access regulated professions in Canada, something that can be done once the 2016 Census is released as it has these data embedded within it.

Also, destination-country work experience is a proven record that can be used to identify immigrants who will likely be able to access regulated professions and subsequently be successful in the labour market. Successful labour market outcome has been proven not to only associated with educational level and field of study, but also destination-country work experience. It is recommended for future research to look into both origin-country and destination-country work experiences in determining the likelihood of having foreign credentials

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evaluated and is able to be successful in the Canadian labour market. As opined by Hou and Lu (2017), the Canadian experience was initially introduced in 2008 with the primary objective of providing a direct and positive pathway for Canadian-educated immigrants and skilled temporary foreign workers to be successful in the Canadian labour market. The key factor differentiating the post-immigration earnings of Canadian-educated immigrants from the earnings of the Canadian-born population and foreign-educated immigrants is whether Canadian-educated immigrants held a well-paid job in Canada before becoming permanent residents (Hou and Lu, 2017).

Again, this current research couldn't investigate the effect of official language ability on the probability of having foreign-earned credentials assessed and be able to access regulated professions in Canada. Origin-country's official language as well as destination-country's official language has proven to influence immigrants' ability to integrate successfully into the Canadian labour market. Official language ability in the destination country has been shown to enhance labour market outcomes among internationally-educated immigrants (Zietsma, 2010; Adamuti-Trache and Sweet, 2005; Boyd and Thomas, 2002; Reitz, 2001). Lastly, some way of identifying institutional-level data would help address the question of quality in a way that is equitable and identifies that the quality of education varies within the country and between professions. Right now, all the research presumes that education attained from one country, say Vietnam, is poor quality while all education attained in the United Kingdom is of high quality. This is simply not the case. Until we take these variations into account, we cannot adequately evaluate "quality of education" by using country or region of origin as a proxy.

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APPENDICES

Regulation is the legislative limiting of the practice of certain jobs to those with specific training, education and credentials with the primary aim of protecting public safety as well as to ensure that work is done ethically. The province of Manitoba has regulatory bodies established to set up entry standards and oversee professional conduct and to aim competency by requiring new practitioners to pass an examination. Regulation restricts access to professional occupations but it does so to ensure competence and public well-being.

7 APPENDIX 1: REGULATED PROFESSIONS IN MANITOBA WITH THEIR RESPECTIVE PROFESSIONAL DUTIES.

Regulated Professions	Duties/responsibilities
Financial Auditor and Accountant	Financial auditors and accountants, as one of the self regulated professions in Manitoba examine and analyze the financial records and accounting of establishments and individuals with the aim of ensuring that the activities of the establishments or individuals conform to the established standards and procedures in the province. This profession is regulated by Chartered Professional Accountants Manitoba.
Agrologist and Technical Agrologist	Agrologists and Technical Agrologists are professionally responsible for the provision of advisory services to support agriculture and its related productions. The Manitoba Institute of Agrologists was founded in 1950 as a self-regulated body operating under the authority from "The Agrologists Act" of Manitoba (Manitoba Institute of Agrologists 2017). This body regulates the profession of Agrology and Technical Agrology in Manitoba to ensure safe, competent and ethical practices.

Regulated Professions	Duties/responsibilities
Architect	Architects, as a regulated profession in the province of Manitoba are responsible for the planning, designing and reviewing the construction of buildings. This profession is regulated by The Manitoba Association of Architects, which is mandated by the province of Manitoba, as self-governing professional association, under "Architect Act" to ensure that the practices of the profession aim in protecting public safety.
Audiologist and Speech-Language Pathologist	Audiologists and Speech-Language Pathologists are health-care professionals whose specialty is centered on identifying, diagnosing, treating and monitoring of disorders of the auditory portions of the ear. College of Audiologists and Speech-Language Pathologists of Manitoba is a self-regulatory body responsible for ensuring that this profession practices in safe and healthy conditions.
Chiropractor	Chiropractors, as one of the regulated professions in Manitoba, are health care professionals whose main focus is on the diagnosis and treatment of neuromuscular disorders, with primary emphasis on treatment through manual adjustment and/or manipulation of the spine. Chiropractors are regulated by The Manitoba Chiropractors Association, as a self-regulatory body to ensure that their practices gears toward public well-being and safety.
Dental Hygienist	Dental Hygienists are professionally responsible for cleaning of teeth and examining of patients for signs of oral diseases and provide other preventive

Regulated Professions	Duties/responsibilities
	dental care. They are regulated by the College of Dental Hygienists of Manitoba as mandated by the "Regulated Health Professions Act" (RHPA), to ensure that patients' safety is strengthened.
Dentist	Dentists as health-care professionals are regulated by the Manitoba Dental Association whose role within dentistry is to articulate, interpret and supervise dentists' conduct in relation to the obligations taken by these professionals.
Denturist	Denturists are dental laboratory technicians who are permitted to fabricate dentures directly for patients without the prescription of a dentist. They are regulated by the Denturist Association of Manitoba to ensure that their operations are in accordance with the established standards and codes of ethics.
Dietitian	Dieticians are required, as a self-regulated profession in Manitoba, to draw on their understanding and knowledge of the sciences of nutrition and of medicine, and on their ability to interpret these into lay person's terms. Dieticians in Manitoba are regulated by the College of Dieticians of Manitoba to ensure safety nutritional advises and practices.
Engineer and Geoscientist	Engineers and Geoscientists generally use scientific knowledge and tools to design products, structures and machines, and apply theory and science to solve problems. The Engineers Geoscientists Manitoba, has been mandated as a self-regulatory body to monitor and regulate the activities of Engineers

Regulated Professions	Duties/responsibilities
	and Geoscientists in Manitoba to ensure public safety. All engineers, regardless of where they received their training or were born, require certification from EGM to practice professional engineering in Manitoba and use the occupational title (i.e. P.Eng). By law, one may offer engineering services to the public unless they first obtain a license from one of the 12 provincial and territorial engineering associations that have been mandated by provincial law in Canada.
Engineering and Applied Science Technician or Technologist	Applied Engineering technologists and technicians are specialists who are dedicated to the development and implementation of engineering and technology. They are regulated by the Certified Technicians and Technologists Association of Manitoba, who are mandated to ensure that qualified applicants are admitted into the profession and to go by the established standards and codes of ethics.
Land Surveyor and Technologist	Land Surveyors, as one of the regulated professions in Manitoba, work with other regulated professions such as engineers, architects and builders to produce precise descriptions – with respect to surveys and maps, of surface features of the Earth. Their activities are regulated by the Association of Manitoba Land Surveyors.
Lawyer	Lawyers are legal practitioners and professionals who are qualified to offer advice about the law of a territory or represent someone or establishment in legal matters. The Law Society of Manitoba is the self-regulated body

Regulated Professions	Duties/responsibilities
	responsible for admitting qualified lawyers and ensures that lawyers adhere to the established standards and codes of ethics they are obliged by law to.
Medical Laboratory Technologist	Medical Laboratory Technologists are health care professionals who perform chemicals, hematological, immunologic, histopathological, cytopathological, microscopic and bacteriological diagnostic analyses of the body. Their activities are regulated by the College of Medical Laboratory Technologists of Manitoba to ensure safety medical and health performances.
Midwife	Midwives are trained health professionals who help healthy women during labour, delivery and after the birth of their babies. The College of Midwives of Manitoba regulates the activities of midwives to ensure public safety.
Naturopaths, Podiatrist Chiropodist	Naturopaths are health practitioners who apply natural therapies and treat human diseases. As a regulated profession, Naturopaths are regulated by The Manitoba Naturopathic Association to ensure that qualified candidates are admitted into the profession. Podiatrists are doctors of podiatric medicine who diagnose and treat conditions of the foot, ankle, and related structures of the leg, and their operations are regulated by the College of Podiatrists of Manitoba.
LPN- Licensed Practical Nurse	Licensed Practical Nurses (LPNs) are nurses who care for people who are sick, injured or disabled, and work under the direction of registered nurses or physicians. Their caring responsibilities are regulated and monitored by

Regulated Professions	Duties/responsibilities
	the College of Licensed Practical Nurses of Manitoba.
RN- Registered Nurse and RPN- Registered Psychiatric Nurse	Registered Nurses (RNs) are nurses who have graduated from a nursing program and met the requirements outlined by a country, state, province or similar licensing body (i.e. College of Registered Nurses of Manitoba) to obtain a nursing license. Registered Psychiatric Nurses (RPNs) are nurses who specialize in caring for those with mental health needs, and assist in interdisciplinary team in the treatment of the patient's psychiatric illness and symptoms. Their operations are regulated by the College of Registered Psychiatric Nurses of Manitoba.
Occupational Therapist	Occupational therapists work with clients to assist them achieve a fulfilled and satisfied state in life through the use of interventions that promote health, prevent injury or disability and which develop, improve, sustain or restore one's condition. Occupational therapists are regulated by the College of Occupational Therapists of Manitoba to ensure that their activities conform to the established standards.
Optician	Opticians are technical practitioners who design, fit and dispense corrective lenses for the correction of a person's vision. Opticians determine the specifications of various ophthalmic appliances that will give the necessary correction to a person's eyesight. The operations of Opticians in ensuring the appropriate appliances are recommended for people with sight issues are regulated by the Opticians of Manitoba.

Regulated Professions	Duties/responsibilities
Optometrist	Optometrists are eye doctors who have earned the Doctor of Optometry (OD) degree, and examine eyes for both vision and health problems, and correct refractive errors by prescribing eyeglasses and contact lenses. Their activities are regulated by the Manitoba Association of Optometrists. As reported by the Office of the Manitoba Fairness Commission (2017), many internationally-educated optometrists who come to the province of Manitoba pursue licensure as opticians as alternative care, because of their relatedness.
Pharmacist	Pharmacists are healthcare professionals who practice pharmacy as a field of health sciences focusing on safe and effective use of medication. Pharmacists are regulated by the College of Pharmacists of Manitoba.
Physician	Physicians or medical practitioners/doctors are professionals who practices medicine, which is concerned with promoting, maintaining or restoring health through the study, diagnosis, and treatment of disease, injury and other physical and mental impairments. A self-regulatory body knows as The College of Physicians and Surgeons of Manitoba is responsible for organizing licensure exams to ensure that qualified candidates into the profession are selected.
Physiotherapist	Physiotherapists are professionals who help those affected by illness, injury or disability through exercise and movement, manual therapy, education and advice. To become a physiotherapist in the province of Manitoba, one

Regulated Professions	Duties/responsibilities
	has to pass the licensure exams organized by the College of Physiotherapists of Manitoba.
Psychologist	Psychologists are mental health professionals who evaluate and study human behaviour and mental processes and provide appropriate advice to the client. The Psychological Association of Manitoba is the regulatory body responsible for recruiting qualified psychologists into the profession.
Respiratory Therapist	Respiratory Therapists are specialized healthcare practitioners who are trained in pulmonary medicine in order to work therapeutically with people suffering from pulmonary disease, who have graduated from a university and passed a national board certifying examination. Their operations are governed and monitored by The Manitoba Association of Registered Respiratory Therapists.
Social Worker	Social Workers are professional workers who are concerned with helping individuals, families, groups and communities to enhance their individual and collective well-being. Their activities are regulated by the Manitoba College of Social Workers.
Veterinarian	Veterinarians or Veterinary physicians are health professionals who practice veterinary medicine by treating diseases, disorders and injuries in animals. Their operations are regulated by the Manitoba Veterinary Medical Association.

Office of the Manitoba Fairness Commission (2010) and (2017)

8 APPENDIX 2: FIELDS OF STUDY WITH THEIR RESPECTIVE CIP 2011 CODES AND CATEGORIES

Professions	CIP 2011 codes and categories
Financial Auditing and Accounting	52.0301 Accounting, 52.0302 Accounting technology/technician and bookkeeping, 52.0303 Auditing, 52.0304 Accounting and finance, 52.0305 Accounting and business/management, 52.0399 Accounting and related services - other, 52.0801 Finance -general, 52.0803 Banking and financial support services, 52.0804 Financial planning and services, 52.0806 International finance, 52.0807 Investments and securities, 52.0808 Public finance, 52.0809 Credit management, and52.0899 Finance and financial management services – other.
Agrology and Technical Agrology	01.0000 Agriculture - general, 01.0101 Agricultural business and management – general, 01.0102 Agribusiness/agricultural business operations, 01.0103 Agricultural economics, 01.0104 Farm/farm and ranch management, 01.0105 Agricultural/farm supplies retailing and wholesaling, 01.0106 Agricultural business technology, 01.0199 Agricultural business and management – other, 01.0201 Agricultural mechanization – general, 01.0204 Agricultural power machinery operation, 01.0205 Agricultural mechanics and equipment/machine technology, 01.0299 Agricultural mechanization – other, 01.0301 Agricultural production operations – general, 01.0302 Animal/livestock husbandry and production, 01.0303 Aquaculture, 01.0304 Crop production, 01.0306 Diary husbandry and production, 01.0307 Horse husbandry/equine science and management, 01.0308 Agroecology and sustainable agriculture, 01.0309 Viticulture and enology, 01.0399 Agricultural production operations – other,

Professions	CIP 2011 codes and categories
	01.0401 Agricultural and food products processing, 01.0601 Applied horticulture/horticulture operations – general, 01.0603 Ornamental horticulture, 01.0604 Greenhouse operations and management, 01.0605 Landscaping and groundskeeping, 01.0606 Plant nursery operations and management, 01.0607 Turf and turfgrass management, 01.0608 Floriculture/floristry operations and management, 01.0699 Applied horticulture/horticultural business services – other, 01.0901 Animal sciences – general, 01.0902 Agricultural animal breeding, 01.0903 Animal health, 01.0904 Animal nutrition, 01.0905 Dairy science, 01.0906 Livestock management, 01.0907 Poultry science, 01.0999 Animal sciences – other, 01.1001 Food science, 01.1002 Food technology and processing, 01.1099 Food science and technology – other, 01.1101 Plant science – general, 01.1102 Agronomy and crop science, 01.1103 Horticultural science, 01.1104 Agricultural and horticultural plant breeding, 01.1105 Plant protection and integrated pest management, 01.1106 Range science and management, 01.1199 Plant sciences – other, 01.1201 Soil science and agronomy – general, 01.1202 Soil chemistry and physics, 01.1203 Soil microbiology, 01.1299 Social science – other, 01.9999 Agriculture, agriculture operations and related sciences – other, 03.0101 Natural resources/conservation – general, 03.0104 Environmental science, 03.0199 Natural resources conservation and research – other, 03.0201 Natural resources management and policy – general, 03.0204 Natural resource economics, 03.0205 Water, Wetlands and marine resources

Professions	CIP 2011 codes and categories
	management, 03.0206 Land use planning and management/development, 03.0208 Natural resources law enforcement and protective services, 03.0299 Natural resources management and policy – other, 03.0301 Fishing and fisheries sciences and management, 03.0601 Wildlife, fish and wildlands science and management, 03.9999 Natural resources and conservation – other, 14.0301 Agricultural engineering, 14.0501 Bioengineering and biomedical engineering, 15.0506 Water quality and wastewater treatment management and recycling technology/technician, 26.0404 Developmental biology and embryology, 26.0406 Cell/cellular and molecular biology, 26.0407 Cell biology and anatomy, 26.0505 Parasitology, 26.0506 Mycology, 26.0701 Zoology/animal biology – general, 26.0702 Entomology, 26.0707 Animal physiology, 26.0708 Animal behavior and ethology, 26.0709 Wildlife biology, 26.0799 Zoology/animal biology – other, 26.0804 Animal genetics, 26.0805 Plant genetics, 26.0807 Genome sciences/genomics, 26.0899 Genetics – other, 26.0905 Reproductive biology, 26.1201 Biotechnology, and 40.0605 Hydrology and water resources science.
Architecture	04.0201 Architecture (BArch, BA, BS, BSc, MArch, MA, MS, MSc, PhD), 04.0401 Environmental design/architecture, Landscape architecture (BS, BSc, BSLA, BLA, MSLA, MLA, PhD), 04.0902 Architectural and building sciences/technology (BArch, BA, BS, BSc, MArch, MA, MS, MSc, PhD), and 14.0401 Architectural engineering.
Audiology and Speech-	51.0201 Communication sciences and disorders – general, 51.0202

Professions	CIP 2011 codes and categories
Language Pathology	Audiology/audiologist, 51.0203 Speech-Language pathology/pathologist, 51.0204 Audiology/audiologist and speech-language pathology/pathologist and 51.0299 Communication disorders sciences and services – other.
Chiropractic	51.0101 Chiropractic
Dental Hygiene	51.0602 Dental Hygiene/hygienist
Dentistry	51.0401 Dentistry, 51.0501 Dental clinical sciences, general (MS, MSc, PhD), 51.0502 Advanced general dentistry (Cert., MS, MSc, PhD), 51.0503 Oral biology and oral and maxillofacial pathology (MS, MSc, PhD),
Denturist	51.0603 Dental laboratory technology/technician, 51.0699 Dental support services and allied professions – other.
Dietetics/ Dietitian	51.3101 Dietetics/dietitian (RD), 51.3102 Clinical nutrition/nutritionist, 51.3103 Dietetic technicians (DTR), 51.3104 Dietician assistant, and 51.3199 Dietetics and clinical nutrition services – other.
Engineering and Geosciences	14.0101 Engineering – general, 14.0102 Pre-engineering, 14.0601 Ceramic sciences and engineering, 14.0701 Chemical engineering, 14.0702 Chemical and biomolecular engineering, 14.0799 Chemical engineering – other, 14.0801 Civil engineering – general, 14.0803 Structural engineering, 14.0804 Transportation and highway engineering, 14.0805 Water resources engineering, 14.0899 Civil engineering – other, 14.0901 Computer engineering – other, 14.0902 Computer hardware engineering, 14.0903 Computer software engineering, 14.0999 Computer engineering – other, 14.1001 Electrical and

Professions	CIP 2011 codes and categories
	electronics engineering, 14.1003 Laser and optical engineering, 14.1004 Telecommunications engineering, 14.1099 Electrical, electronics and communications engineering – other, 14.1101 Engineering mechanics, 14.1201 Engineering physics/applied physics, 14.1301 Engineering science, 14.1401 Environmental/environmental health engineering, 14.1801 Materials engineering, 14.1901 Mechanical engineering, 14.2001 Metallurgical engineering, 14.2101 Mining and mineral engineering, 14.2201 Naval architecture and marine engineering, 14.2301 Nuclear engineering, 14.2401 Ocean engineering, 14.2501 Petroleum engineering, 14.2701 Systems engineering, 14.2801 Textile sciences and engineering, 14.3201 Polymer/plastics engineering, 14.3301 Construction engineering, 14.3401 Forest engineering, 14.3501 Industrial engineering, 14.3601 Manufacturing engineering, 14.3701 Operations research, 14.4001 Paper science and engineering, 14.4101 Electromechanical engineering, 14.4201 Mechatronics, robotics, and automation engineering, 14.4301 Biochemical engineering, 14.4401 Engineering chemistry, 14.4501 Biological/biosystems engineering, and 14.9999 Engineering – other.
Engineering and Applied Science Technician or Technology	15.0000 Engineering technology – general, 15.0101 Architectural engineering technology/technician, 15.0201 Civil engineering technology/technician, 15.0303 Electrical, electronic and communications engineering technology/technician, 15.0304 Laser and optical technology/technician, 15.0305 Telecommunications technology/technician, 15.0306 Integrated

Professions	CIP 2011 codes and categories
	circuit design, 15.0399 Electrical and electronic engineering technologies/technicians – other, 15.0401 Biomedical technology/technician, 15.0403 Electromechanical technology/electromechanical engineering technology, 15.0404 Instrumentation technology/technician, 15.0405 Robotics technology/technician, 15.0406 Automation engineer technology/technician, 15.0499 Electromechanical and instrumentation and maintenance technologies/technicians – other, 15.0501 Heating, ventilation, air conditioning and refrigeration engineering technology/technician, 15.0503 Energy management and systems technology/technician, 15.0505 Solar energy technology/technician, 15.0507 Environmental engineering technology/environmental technology, 15.0508 Hazardous materials management and waste technology/technician, 15.0599 Environmental control technologies/technicians – other, 15.0607 Plastic and polymer engineering technology/technician, 15.0611 Metallurgical technology/technician, 15.0612 Industrial technology/technician, 15.0613 Manufacturing engineering technology/technician, 15.0614 Welding engineering technology/technician, 15.0615 Chemical engineering technology/technician, 15.0616 Semiconductor manufacturing technology, 15.0699 Industrial production technologies/technicians – other, 15.0701 Occupational safety and health technology/technician, 15.0702 Quality control technology/technician, 15.0703 Industrial safety technology/technician, 15.0704 Hazardous materials information systems technology/technician, 15.0799 Quality control and safety

Professions	CIP 2011 codes and categories
	technologies/technicians – other, 15.0801 Aeronautical/aerospace engineering technology/technician, 15.0803 Automotive engineering technology/technician, 15.0805 Mechanical engineering/mechanical technology/technician, 15.0899 Mechanical engineering related technologies/technicians – other, 15.0901 Mining technology/technician, 15.0903 Petroleum technology/technician, 15.0999 Mining and petroleum technologies/technicians – other, 15.1001 Construction engineering technology/technician, 15.1103 Hydraulics and fluid power technology/technician, 15.1199 Engineering-related technologies – other, 15.1201 Computer engineering technology/technician – general, 15.1202 Computer technology/computer systems technology, 15.1203 Computer hardware technology/technician, 15.1204 Computer software technology/technician, 15.1299 Computer engineering technologies/technicians – other, 15.1301 Drafting and design technology/technician – general, 15.1302 CAD/CADD drafting and/or design technology/technician, 15.1303 Architectural drafting and architectural CAD/CADD, 15.1304 Civil drafting and civil engineering CAD/CADD, 15.1305 Electrical/electronic drafting and electrical/electronic CAD/CADD, 15.1306 Mechanical drafting and mechanical drafting CAD/CADD, 15.1399 Drafting/design engineering technologies/technicians – other, 15.1401 Nuclear engineering technology/technician, 15.1501 Engineering/industrial management, 15.1502 Engineering design, 15.1503 Packaging science,

Professions	CIP 2011 codes and categories
	15.1599 Engineering-related fields – other, 15.1601 Nanotechnology, and 15.9999 Engineering technologies and engineering-related fields – other.
Land Surveying and Technology	14.0802 Geotechnical and geoenvironmental engineering, 14.3801 Surveying engineering, 14.3901 Geological/geophysical engineering, 15.1102 Surveying technology/surveying, 45.0702 Geographic information science and cartography, and 45.0799 Geography and cartography – other.
Law/Legal Studies	22.0000 Legal studies – general, 22.0001 Pre-law studies, 22.0101 Law (LLB, JD, BCL), 22.0201 Advanced legal research/studies – general (LLM, MCL, MLI, MSL, LLD, JSD/SJD), 22.0202 Programs for foreign lawyers (LLM, MCL), 22.0203 American/US law/legal studies/jurisprudence (LLM, MCJ, LLD,JSD/SJD), 22.0204 Canadian law/legal studies/jurisprudence (LLM, MCJ, LLD, JSD/SJD), 22.0205 Banking, corporate, finance and securities law (LLM, LLD, JSD/SJD), 22.0206 Comparative law (LLM, MCJ, LLD, JSD/SJD), 22.0207 Energy, environment and natural resources law (LLM, MS, MSc, LLD, JSD/SJD), 22.0208 Health law (LLM, MJ, LLD, JSD/SJD), 22.0209 International law and legal studies (LLM, LLD, JSD/SJD), 22.0210 International businesses, trade and tax law (LLM, LLD, JSD/SJD), 22.0211 Tax law/taxation (LLM, LLD, JSD/SJD), 22.0212 Intellectual property law (LLM, LLD, JSD/SJD), 22.0299 Legal research and advanced professional studies (post-LLB/JD) – other, and 22.9999 Legal professions and studies – other.
Medical Laboratory	26.0802 Molecular genetics, 51.1001 Blood bank technology specialist,

Professions	CIP 2011 codes and categories
Technology	51.1002 Cytotechnology/cytotechnologist, 51.1003 Hematology technology/technician, 51.1004 Clinical/medical laboratory technician, 51.1005 Clinical/medical laboratory technician, 51.1007 Histologic technology/histotechnologist, 51.1008 Histologic technician, 51.1009 Phlebotomy technician/phlebotomist, 51.1010 Cytoogenetics/genetics/clinical genetics technology/technologist, and 51.1099 Clinical/medical laboratory science and allied professions – other.
Midwifery	51.3401 Direct entry midwifery (LM, CPM) and 51.3807 Nurse midwife/nursing midwifery.
Naturopaths, Podiatry Chiropody	51.2101 Podiatric medicine/podiatry (DPM), 51.3303 Naturopathic medicine/naturopathy (ND), 60.0601 Podiatric medicine and surgery residency programs – 24, 60.0602 Podiatric medicine and surgery residency programs – 36, and 60.0699 Podiatric medicine residency programs – other.
LPN- Licensed Practical Nursing	51.3901 Licensed practical/vocational nurse training (LPN, LVVN, RPN, Cert., Dipl., ASS), 51.3902 Nursing assistant/aid and patient care assistant/aid, 51.3999 Practical nursing, vocational nursing and nursing assistants – other and 51.9999 Health professions and related clinical sciences – other.
RN- Registered Nursing and RPN- Registered Psychiatric Nursing	51.3801 Registered nursing/registered nurse (RN, ASN, BSN, BScN, MScN), 51.3802 Nursing administration (MSN, MS, MScN, MSc, PhD), 51.3803 Adult health nurse/nursing, 51.3804 Nurse anesthetist, 51.3805 Primary health care nurse/nursing and family practice nurse/nursing, 51.3806 Maternal/child

Professions	CIP 2011 codes and categories
	health and neonatal nurse/nursing, 51.3808 Nursing science (MS, MSc, PhD), 51.3809 Pediatric nurse/nursing, 51.3810 Psychiatric/mental health nurse/nursing, 51.3811 Public health/community nurse/nursing, 51.3812 Perioperative/operating room and surgical nurse/nursing, 51.3813 Clinical nurse specialist, 51.3814 Critical care nurse/nursing, 51.3815 Occupational and environmental health nurse/nursing, 51.3816 Emergency room/trauma nurse/nursing, 51.3817 Nursing education, 51.3818 Nursing practice, 51.3819 Palliative care nurse/nursing, 51.3820 Clinical nurse leader, 51.3821 Geriatric nurse/nursing, 51.3822 Women's health nurse/nursing, 51.3823 Registered psychiatric nurse/nursing (CAN), and 51.3899 Registered nursing, nursing administration, nursing research and clinical nursing – other.
Occupational Therapy	51.2306 Occupational therapy/therapist, 51.2314 Rehabilitation science, and 51.2399 Rehabilitation and therapeutic professions – other.
Opticianry or Optician	51.1801 Opticianry/ophthalmic dispensing optician, 51.1802 Optometric technician/assistant, 51.1803 Ophthalmic technician/technologist, 51.1804 Orthoptics/orthoptist, and 51.1899 Ophthalmic and optometric support services and allied professions – other.
Optometry	51.1701 Optometry (OD)
Pharmacy	51.0805 Pharmacy technician/assistant, 51.2001 Pharmacy (PharmD, BS, BSc, BPharm)
Medicine/Physician	51.0801 Medical/clinical assistant, 51.0912 Physician assistant, 51.1201

Professions	CIP 2011 codes and categories
	Medicine (MD), 51.1401 Medical scientist (MS, MSc, PhD), all 60.04s Medical residency programs – general certificates, and all 60.05 Medical residency programs – subspecialty certificates.
Physiotherapy	51.2308 Physical therapy/therapist, 51.2309 Therapeutic recreation/recreation therapy, and 51.2310 Vocational rehabilitation counseling/counselor.
Psychology	42.0101 Psychology – general, 42.2801 Clinical psychology, 42.2802 Community psychology, 42.2803 Counselling psychology, 42.2804 Industrial and organizational psychology, 42.2805 School psychology, 42.2806 Educational psychology, 42.2807 Clinical psychology, 42.2808 Environmental psychology, 42.2809 Geropsychology, 42.2810 Health/medical psychology, 42.2811 Family psychology, 42.2812 Forensic psychology, 42.2813 Applied psychology, 42.2814 Applied behavior analysis, 42.2899 Clinical, counseling and applied psychology – other, 42.9999 Psychology – other,
Respiratory Therapy	51.0908 Respiratory care therapy/therapist
Social Work	44.0701 Social work – general, 44.0702 Youth services/administration, 44.0799 Social work – other, 51.1501 Substance abuse/addiction councelling, 51.1502 Psychiatric/mental health services technician, 51.1503 Clinical/medical social work, 51.1504 Community health services/liaison/counseling, 51.1505 Marriage and family therapy/counseling, 51.1506 Clinical pastoral counseling/patient counseling, 51.1507 Psychoanalysis and psychotherapy, 51.1508 Mental health

Professions	CIP 2011 codes and categories
	counseling/counselor, 51.1509 Genetic counseling/counselor, and 51.1599 Mental and social health services and allied professions – other.
Veterinary	51.2401 Veterinary medicine (DVM) and all 60.03s Veterinary residency programs

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