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The retention of international students to their place of study upon permanent resident status

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Abstract

International students have become an increasingly important source of permanent migration in meeting regionalization policy goals. However, little is known about their retention to their place of study after they transition to permanent resident status. Using data from the Longitudinal Immigrant Database (IMDB), this study examines how elements of international students' pre-immigration experience in Canada are related to their retention when they later become permanent residents in Canada. Results show that length of study and region of study are positively associated with the likelihood of international students landing in their place of study. Conversely, higher Canadian educational attainment and Canadian work experience prior to landing increase chances of international students landing somewhere outside their place of study in Canada. Policies designed to evenly distribute landed international students could focus more on time spent during their studies and those with trade certificates as criteria that would encourage their retention at landing.

Keywords

International students; Retention; Internal migration

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Chapter 1

1 Introduction

Identifying and understanding the factors which influence international students' decisions to stay in their place of study when they transition to permanent resident status is important for immigrant regionalization policies throughout Canada, particularly among struggling economies (see Government of Nova Scotia, 2016 for example). For their host communities, international students provide a new source of skilled labour to aging populations and assist in their ability to compete in a global, knowledge-based economy (Government of Canada, 2014).

Their pre-landed Canadian experiences potentially incentivize international students to stay in their place of study when they become permanent residents. In this study, pre-landed Canadian experiences are defined as elements of permanent residents' life in Canada while living in the country as a temporary resident. Examining how various factors that define this experience are related to their retention at landing has important implications: this knowledge furthers our understanding of which factors encourage international students' decisions to stay after permanent residence, where encouraging the retention of highly skilled labour is key to improving the economic vitality of Canada as a whole (Ashton & Green, 1996)

International students are becoming an increasingly important source of permanent migration in Canada. The assumption is that, with their Canadian education and possible work experience, international students will better integrate into the Canadian labour market than immigrants directly from abroad whose foreign credentials are not well recognized by Canadian employers (Chakma et al., 2012, pp. 12-13). Especially among smaller regions with declining labour force, the retention of international students can provide a new source of high-skilled labour that will contribute to their growth and prosperity. Throughout this study, "landing" refers to the point at which foreign-born individuals became permanent residents in Canada.

Unsurprisingly, permanent residents are concentrated in Canada's largest cities—namely Toronto, Montreal, and Vancouver—and is a consequence of both international and internal migration flows (Grant & Sweetman, 2004). This tendency to concentrate in large metropolitan areas—particularly since the 1970s—is reflective of the tendency for people to be drawn to

places with more economic opportunities (Hou, 2007; Krahn, Derwing & Abu-Laban, 2005; Haan, 2009). The clear majority (~95%) of Canada's immigrant population lives in four provinces: Ontario, British Columbia, Quebec and Alberta with Toronto, Montreal, and Vancouver being the home of just under two-thirds of the nation's total immigrant population (Statistics Canada, 2013). Furthermore, immigrants who are the most mobile tend to be younger, and more educated (possess at least a Bachelor's degree) (Moore & Pacey, 2004; Islam & Choudhury, 1990**;** Champion, Fotheringham, Rees, Boyle & Stillwell, 1998). Examining how pre-landed Canadian experience is associated with the retention of landed international students would provide a deeper understanding of which immigration applicants are more likely to stay in their place of study after becoming permanent residents.

Empirical findings on the influence of landed international students' pre-landed Canadian experience on life during permanent residency is scarce. Pre-landed Canadian education is found to have varied effects on the economic outcomes of Canada's foreign-born (Sweetman & Warman, 2014), but knowledge on how multiple dimensions of pre-landed Canadian experiences shape international students' destination at landing is still needed. This is mainly because smaller regions throughout Canada continue to lose immigrants to robust metropolises that have greater employment opportunities and larger ethnic communities (Pendakur & Young, 2013). These losses consequently hinder the economic and population growth needed to attract and retain subsequent immigrant groups (Pendakur & Young, 2013). These issues underline an evident need for research on the mobility of landed international students because the full extent of how various aspects of pre-landed Canadian experience influence retention and, whether they do, is still unknown.

The concentration of immigrants in Canada's urban cores separate regions into "haves" and "have-nots" (Higgins & Savoie, 1997) and has important implications for the settlement of future immigrant arrivals (Pendakur & Young, 2013). In addition to greater employment opportunities, Pendakur and Young (2013) found that the diversity of the existing population is a significant factor in the draw to large cities. Hou (2007) also suggested that immigrants' tendency to settle in large cities persisted since the 1990s primarily because of a shift in source regions. However, it is unknown to what extent immigrants with pre-landed Canadian experience outside urban cores can influence destination locations. With a lack of empirical evidence on the relationship

between international students' pre-landed Canadian experiences and their retention, it is unclear as to whether landed international students—especially those who lived in rural Canada—will also concentrate in cities, or whether certain factors during their studies will contribute to policy efforts from the local to the federal level in the regionalization of new immigrants. It is important to study these factors given the unique circumstances of international students, whose Canadian credentials and familiarity of a community may make it worthwhile to explore smaller labour markets, or may be better suited to pursue employment and residency in Canada's largest cities.

This study will examine how pre-landed Canadian experience is associated with the retention of international students to their place of study at landing. By using multiple indicators of pre-landed Canadian experience, comprised of measures of Canadian human capital and indicators of geographic context, it aims to better capture this period and the role it plays in shaping international students' decision to remain in their place of study. Such research is important because there are few studies that examine the effects of pre-landed Canadian experience on permanent residents, and there is especially a lack of knowledge on how these experiences are separately related to international students' retention after permanent migration.

Chapter 2

2 Background

2.1 Literature Review

2.1.1 Differentiating between foreign capital and pre-immigration host country capital

Economic outcomes are important drivers in immigrant settlement patterns (Reitz, 2007; Li P. S., 2003; Edin, Fredriksson & Åslund, 2003) and without the mandatory capital to find employment, entry into a local labour market and subsequent settlement into the area becomes difficult. Capital refers to the social, cultural, and economic resources which an individual possesses which enable social and economic mobility (Bourdieu, 1986). It is well established within the literature that immigrants who arrive in Canada directly from abroad face barriers to economic well-being based on employers' lack of recognition and relevance of foreign human capital (Sweetman & Warman, 2014; Reitz, 2001). Canada's immigration system prioritizes high human capital such as a university education and Official language ability. However, because the system treats all degrees as equal regardless of their likelihood to be recognized by Canadian employers (McBride & Sweetman, 2004; Hiebert, 2006) and does not independently screen for Official language ability, many immigrants are admitted with and unrecognized education qualifications (Li & Sweetman, 2014; Hawthorne, 2008) and limited fluency in English or French (Ferrer, Green & Riddell, 2006).

In contrast to the immigrant group above, international students undergo a process of two-step migration where they may qualify for permanent residence—and eventually citizenship—in Canada after they have graduated from a designated Canadian educational institution. This is a process which Hawthorne (2012) describes a method of producing "designer immigrants". During their temporary residence, international students obtain Canadian education and possible Canadian work experience that is more readily recognized by Canadian employers than foreign credentials. In addition, their language skills and Canada- and region-specific knowledge are presumably appropriate to the local labour market in which they studied and should ease their social and economic integration if, and when, they become permanent residents. As a result, they

are seen as individuals who will be more likely to thrive in Canada and contribute to its economic growth, prosperity, and global competitiveness (Government of Canada, 2014).

In 2002, the minister of citizenship and immigration proposed a strategy for the redistribution of skilled immigrants across Canada which would use skilled immigration as a tool for regional development, since an increase in populations will encourage economic development (Ferrer, Picot & Riddell, 2014). At the same time, international students are becoming a more important source of skilled immigrants. Changes in federal and provincial immigration policy have reflected this desire to encourage their permanent migration—albeit outside Canada's traditional immigrant destinations. For example, graduate international students now receive Post-Graduation Work Permit with their study permit so they can gain the work experience needed to qualify for permanent resident status (Government of Canada, 2017). In addition, when applying for permanent resident status, applicants are awarded additional points for indicating intentions to live outside of Toronto, Montreal, and Vancouver, or can apply to a Provincial Nominee Program (PNP) which are designed to increase immigration to provinces throughout Canada (Government of Canada, 2017).

2.1.2Pre-landed Canadian Experience and Retention of Landed International Students

Canada's international student population is more dispersed than immigrants in Canada (CIC, 2003). This may benefit policy efforts to regionalize new immigrants because exposure to non-traditional immigrant destinations can facilitate decisions to stay when they become permanent residents. In a survey of international students studying in Atlantic Canada, 29 per cent intended to find a job in the Atlantic region whereas 13 per cent wanted to find a job elsewhere in Canada (ACOA, 2006). A similar trend is found among international students in Manitoba: 43 per cent of international students in Manitoba intended to settle in the province after graduation whereas 22 per cent intended to settle elsewhere in Canada (Mandal, 2010). These findings are promising as their permanent migration—particularly among those who studied in smaller regions—may translate into a more even distribution of immigrant arrivals. With region-specific knowledge, landed international students are presumably better equipped than newcomers at navigating their local labour markets, finding employment, and settling in these communities permanently.

On the other hand, despite being more dispersed, international students' places of residence may not stay the same when they become permanent residents. The above respondents' intentions to stay in their province of study is limited in so far as it is not evidence of their *actual* settlement upon permanent residency. Immigrant out-migration from their intended landing destinations occurs in all provinces. Even for Ontario, Canada's largest immigrant destination province, 46 per cent of immigrants destined to this province were found residing in Alberta. Conversely, about 38 per cent of immigrants destined to Alberta moved to Ontario (Haan & Prokopenko, 2016). In addition, former international students were found to still face barriers entering Canadian labour markets as permanent residents. Despite their Canadian education, Sweetman and Warman (2014) found that international students do not receive returns to their education after landing. Although these mostly immigrants witness a positive return on their education, the results were universally statistically insignificant. Similar outcomes are found in Australia where landed international students had lower annual salaries, weekly wages, and job satisfaction than the Australian-born and those who immigrated directly from abroad (Hawthorne, 2010). After interviewing landed international students in Canada, Scott, Trilokekar, and El Masri (2015) concluded that these immigrants still had issues entering the labour market citing language abilities, poor connectedness to host communities, and perceived employer discrimination against international students. Labour market opportunities are integral to settlement decisions and if students are dissatisfied in their search for employment, leaving their initial place of residence may be the solution to their problems.

Neoclassical economics theory explains that patterns of migration and settlement are ultimately the outcome of individual decision-making processes shaped by individual and contextual factors (Borjas, 1990). For international students, their pre-landed Canadian experience could play an important role in this decision-making process and influence where they perceive to see the greatest returns on their investments and where they ultimately move to.

The literature on landed international students is scarce and studies that have been conducted tend to focus on their economic outcomes. Such findings remain useful to internal migration research as employment prospects are integral to international students' destination locations. International students interviewed by Arthur & Flynn (2011) expressed motivations to become permanent residents for enhanced job opportunities and Canada's high standard of living.

Meanwhile, barriers to permanent migration include a fear of not securing employment as well as cultural and linguistic barriers. The prospect of employment is also found to be a concern among Chinese international students in Australia where they focus on comparing labour market opportunities in their host and home countries. In a case study by Guo (2010), students with families that are economically well-off and well-connected are more drawn to returning home to take advantage of their families' resources and connections. Furthermore, the "pull" of the China's labour market is continuing to overshadow Australia's pull factors as the presence of multinationals in China are increasing and Chinese companies are expanding globally. For those whose families are not as well off, they tended to prefer to settle in Australia. To enhance our understanding of the mechanisms connecting international student's pre-landed Canadian experience and their retention to their place of study at landing, the remainder of this chapter will incorporate empirical evidence on the economic outcomes of international students after permanent residency in addition to the literature on immigrant mobility in general.

2.1.2.1 Length of Studies

Findings on when immigrants are mobile, relative to when they arrived in Canada, may offer insight into the influence of students' study length on their retention at landing. Since immigrants are typically more mobile in the first few years following their arrival (CIC, 2001; Haan, 2008; Morency, Malenfant & MacIsaac, 2017), international students who have been studying in a region for longer lengths of time may be less likely to leave their place of study when they become permanent residents. This could be the case because time spent in a given location increases chances of building social networks which increase chances of economic opportunities, attachment to place, and eventual settlement. For example, as time since landing progressed, Manitoba PN's increasingly participated in activities outside of their own ethnic or cultural group. After 3 years since landing, participation in wider community activities rose from 28 per cent among recent arrivals to 40 per cent (Carter et al., 2009).

Furthermore, it is well established in the literature that immigrants' length of stay in Canada is strongly related to labour market outcomes (Statistics Canada, 2016), although this effect is more pronounced for non-visible minorities than visible minorities (Reitz & Sklar, 1997). In a similar manner, international students' time spent in Canada prior to landing could result in similar

effects. International students have the opportunity to learn about labour market conditions during their studies. Unlike newcomers who lack Canadian labour market experience, international students, with time, gain knowledge about employment opportunities and workplace culture which will help to find suitable employment and a place of residence.

2.1.2.2 Pre-landed Canadian education

International students' education may have a negative effect on the likelihood of them staying in their place of study considering immigrants that are more educated tend to be more mobile (Nogle, 1994; Bartel, 1989; Reher & Silvestre, 2009). However, recent studies show that this trend varies according to education levels and province. Provincial retention of individuals with Trade certificates is highest in Nova Scotia, Quebec, Ontario, Alberta, and British Columbia and still somewhat higher than other education levels in other provinces. Doctoral degrees are also generally associated with high provincial retention rates. However, MAs have consistently low retention rates compared to doctoral degrees. These variations in retentions rates among immigrants, along with variations in retention rates among international students at landing, may reflect the different types of occupations associated with each education level (van Huystee & St Jean, 2014).

The difference in mobility between master's- and doctoral-level immigrants could indicate that greater numbers of international students will leave their place of study in addition to a greater number of international students landing in their place of study. This may be the case since international students are gaining higher levels of Canadian education credentials. From 2004-2005 to 2013-14, the proportion of international students in undergraduate and graduate programs increased. During this period, the proportion at the bachelor's level rose steadily from approximately six per cent to nine per cent. In 2004-2005, the proportion at the master's and doctoral level was, approximately, 12.5% and 21%, respectively, and by 2014-2015, the proportion at the master's and doctoral level rose to approximately 17% and 28%, respectively. (Statistics Canada, 2016).

Alternatively, higher education levels may have mixed results due to the ethnic composition of the population. Highly educated international students have difficulties finding employment in

large part because agencies tend to focus on refugee or family issues instead of individual skilled workers (CIC, 2003, p. 11). However, this issue may affect landed international students differently based on their origins. In the Atlantic region, Akbari (2011) found that, even among immigrants who had a degree from an English-speaking country, those from India, Pakistan, and South Korea had high unemployment rates whereas other nationalities had lower rates of unemployment (Akbari, 2011).

2.1.2.3 Pre-landed Canadian work experience

Pre-landed Canadian work experience is also an important aspect to consider for retention outcomes. When Sweetman & Warman (2014) found that international students appear to have relatively low economic outcomes after landing, they note that their study sample did not have pre-landed Canadian work experience. They argue that, in light of their findings, there is still the possibility that international students who enter under the Canadian Experience Class (CEC) will have better outcomes. The CEC program requires at least 12 months of Canadian work experience shortly prior to their application (Government of Canada, 2017). With policy changes designed to facilitate finding employment, they propose that more recent cohorts of permanent residents who were international students will see a significant positive return to their education and have a greater ability to adapt to the labour market in their province of study.

Empirical studies on former Temporary Foreign Workers (TFWs) show promising returns to pre-landed Canadian work experience. Federal Skilled Workers who were TFWs had higher earnings and better employment outcomes than economic immigrants without prior Canadian human capital, regardless of their year of arrival (Hou & Bonikowska, 2015; Warman, 2009; Warman, 2010). Furthermore, former TFWs tend to earn more than the average of Canadian-born workers in their first year of arrival (Krahn, Derwin & Abu-Laban, 2005). The labour market advantages of pre-landed Canadian work experience may be a solution to Canada's immigrant population which does not benefit from years of foreign work experience (Warman, 2010; Schaafsma & Sweetman, 2001; Aydemir & Skuterud, 2005). Moreover, international students with pre-landed Canadian work experience may be better adept at integrating into the Canadian labour market. However, this could be indicative of participating in either the labour market in their place of study or in another region. As previously discussed, landed international students' labour market

knowledge could motivate them to remain in the place where they gained their experience, or it could motivate them to pursue other employment opportunities elsewhere.

2.1.2.4 Province of study

All provinces have witnessed an increase in their proportion of enrolled international students. The largest change in proportions between 2004-2005 and 2013-2014 were, in descending order, British Columbia (+6.7%), the Atlantic Provinces (between +5.2% and +6.3%), and Saskatchewan (+4.6%) (Statistics Canada, 2016). In terms of their distribution across Canada, Ontario had the largest number of international students in 2014 followed by British Columbia and Quebec (CIC, 2015). Still, international students are more dispersed across Canada than the general immigrant population and policy makers are hopeful that those living in smaller provinces will be more likely to stay there when they gain permanent resident status (CIC, 2003).

However, provinces outside of Ontario, British Columbia, and Quebec will face a number of challenges attracting and retaining international students as permanent residents. They must try to attract them away from these provinces with their large gateway cities and robust economies, and they have to create better incentives for immigrants to settle in smaller communities outside of their capital regions.

Fortunately, efforts to slow down the secondary migration of immigrants to other regions in Canada have proven successful. Retention rates in all provinces have increased between 2000 and 2006, including the Atlantic region (Akbari 2009). Atlantic Provinces offer fewer opportunities for recent immigrants to work in their own communities since these communities tend to concentrate in a few large towns and do not compare in institutional capacity to those in larger provinces (Chiswick & Miller, 2001). Nevertheless, retention rates in the region still rose from under 50% in the mid-1990s to around 80% in the early 2000's (Akbari 2009). Evaluations of Manitoba's PNP also provide promising results for the province's ability to retain new immigrants. So far, the Manitoba PNP has been among the more effective programs in attracting immigrants to smaller regions in Canada (Carter, Morrish & Amoyaw, 2008). Since the Manitoba PNP, the province has increased its share of the national immigration total from 1.7%

to 4%. A year after it was introduced in 1998, the program's share of new immigrants to Manitoba was 11%. In 2006, the program's share rose to 66% of new arrivals.

This growing trend of immigrants living in smaller provinces may be applicable to international students after landing since there are also patterns of highly-educated immigrants living in these provinces. For example, the education levels among new immigrants in Atlantic Canada is increasing. Among those who arrive between 1981 and 2009, there was a decline in the proportion of those who have a high school education or less, whereas the percentage of university degree holders increased sharply (Akbari, 2011). In Newfoundland and Labrador, immigrants were 1.8 per cent of its total population but were 6.7 per cent of its university degree holders. In Manitoba, despite having the lowest proportion of immigrants with university degrees in Canada, the share of immigrants with a university degree is still larger than the share of their Canadian-born counterparts (King, 2009). The extent to which former international students make up for these well-educated immigrant populations, however, is unknown. Regardless, the rise in highly educated immigrants in smaller provinces may be a promising finding for the retention of their former international students.

2.1.2.5 Region of study

In addition to the province of study, the region of study may play a greater role in the relationship between international students' geographical context and their retention at landing since intra-provincial migration in Canada is more robust than interprovincial migration (Sergerie, 2016). This may because of the role of distance in migration decisions where the distance between economic centers has a significant negative influence on migration (Amirault, de Munnik & Miller, 2013). Furthermore, even when distance, language differences, and provincial fixed effects are controlled for, provincial borders themselves have a negative impact on inter-regional migration (Amirault, de Munnik & Miller, 2013).

91 per cent of Canada's immigrant population unsurprisingly lives in a census metropolitan area (CMA) (Statistics Canada, 2016). 65 per cent of whom live in either Toronto, Montreal, or Vancouver (Statistics Canada, 2016), and these cities continue to grow in large part due to

increased settlement in the peripheral municipalities surrounding these metropolitan areas (Vézina & Houle, 2017).

Smaller cities may attract international students because of their universities but will face difficulties attracting and retain a population that has already graduated and is moving onto finding a job. The population size of both origin and destination within Canada has a significantly positive effect on the number of migrants that move from one economic region to another where a 10 per cent increase in the destination's population will increase the predicted migration to that region by about 8 per cent. For example, where Halifax has a population of approximately 356,000 in 2001, a 10 per cent increase in its population will increase total predicted by migration by about 4,900 people over a 5-year period (Amirault, de Munnik & Miller, 2013). Looking at the retention rate of refugees in second- and third- tier cities, Krahn, Derwin, and Abu-Laban (2005) found that second-tier cities had higher retention rates than third tier cities. In second-tier cities such as Edmonton and Calgary, the retention rates were 69 per cent and 77 per cent respectively, whereas third-tier cities Grande Prairie and Fort McMurray retained around one-third of their refugees (31% and 35%, respectively). In general, most cities with less than a million people are not successful in attracting new arrivals (CIC, 2006). However, it is not simply a question of population size that may attract landed international students as much as it is a question of the capacity for the reception and integration of landed international students.

In smaller, more remote communities, the conditions for immigrant settlement are fundamentally different from large CMAs. Although there is the opportunity for international students to study and obtain a degree, the conditions in smaller communities are arguably not conducive to receiving and integrating them as permanent residents. Small- and mid-size cities tend to have relatively small or non-existent communities which may disadvantage their ability to navigate the local labour market. Ethnic communities—which are more robust in larger cities—is a network that helps immigrants' search for employment (Bauder, 2006; Patacchini & Zenou, 2012; Sanders, Nee & Sernau, 2002). This is especially true for the most recent cohorts of immigrants in Canada who are unique in for their strong attachment to their ethnic communities (Pendakur & Young, 2013). Likewise, international students consider their ethnic communities as an important resource for navigating their host country's labour market. In New Zealand,

international students from India emphasized social networks as crucial to their transition from temporary to permanent resident status. They cited social networks to facilitate and structure opportunities for permanent settlement such as finding suitable employment and transitioning to permanent residence. For these students, the presence of strong family networks was a source of support on information about the skills in demand; recommendations about migration agencies; and, most importantly, how to financially invest prior to and after their education (Joseph, 2016, p. 178).

Alternatively, the competitive labour market in bigger cities may be a deterrent for international students when they land. Recent trends regarding the internal migration of Canada's immigrants appear to be reflecting tendencies to move away from the nation's largest labour markets and into smaller ones. In the 2014/2015 period, Toronto and Montreal witnessed the lowest net internal migration flow among all CMAs with net flows of -27,700 and -14,000 migrants, respectively. In contrast, Edmonton, Calgary, and Victoria—three medium-sized cities—had the highest net internal migration during the same period with net flows of 19,200, 14,600, and 3,400 migrants, respectively (Sergerie, 2016).

International students may also consider living outside of Canada's major cities since immigrants living outside of these urban cores appear to have more promising labour market outcomes, compared to their Canadian-born counterparts and to immigrants living in cities. Immigrants living in large cities tend to earn less and face greater difficulty finding work and housing (Akbari, 2013). However, immigrants in third tier cities are earning, on average, 109 per cent that of the Canadian-born living in the same regions. When comparing averages outside of cities, immigrants earn 113% that of their Canadian-born counterparts (CIC, 2005, p. 95). Regarding the share of immigrants with incomes below one-half of the national median, the share of those living in third-tier cities (17%) is lower than the share living in Toronto, Montreal, or Vancouver (at least 21%). Interviews with immigrants living in Manitoba revealed that immigrants living in rural Manitoba had an easier time finding employment that immigrants who settled in Winnipeg (Carter et al., 2009). Differences between these groups were in large part due to Manitoba's PNP where immigrants destined outside Winnipeg would already have jobs upon arrival. Conversely, immigrants in Winnipeg arrive under a greater variety of immigration categories and would, therefore, be less likely to arrive with a job. The decision to move away from large cities may

also reflect lifestyle decisions such as family circumstances and quality of life considerations (Molloy, Smith & Wozniak, 2011; Dillman, 1979).

I add to the previous literature by examining the effects of pre-landed Canadian experience on the retention of international students to their place of study at landing. While this study focuses on the Canadian context, findings from this study are also informative to policy makers in other countries since it explores whether the local retention of temporary residents with host country experience is beneficial for regionalization goals. First, I contribute to immigration literature by examining differences between international students who remain in their place of study and those who do not, based on pre-immigration host country capital, regional contexts of temporary residency, demographic characteristics, and admission characteristics for permanent resident status. Second, I examine the likelihood of international students landing in their place of study in relation to these separate aspects. Lastly, I further examine how these associations may be affected when measures of pre-landed Canadian education, pre-immigration work experience, province of study, and region of study are considered.

2.2 Theoretical Foundations

2.2.1 Network Theory

According to Massey et al.'s (1993) network theory, migrants develop interpersonal networks which connect migrants and non-migrants in origin and destination areas through ties of kinship, friendship, and shared community origin. These networks lower costs and risks of migration and increase expected net returns to migration, increasing the likelihood of migration (Massey et al, 1993). With this perspective, international students who know people in their place of study, are more likely to be drawn to migrate there, because it decreases potential psychological and financial costs and increase social security (Castles, 1998, p. 26). Furthermore, network theory stresses the critical role of personal relations between migrants and non-migrants as these relationships assist in their integration into their local labour markets and host communities. As social networks grow over time, they provide more social and cultural resources which should encourage and aid a smoother transition to permanent resident status.

2.2.2 Neoclassical Economic Theory

Neoclassical economic theory frames the immigration process as the outcome of individual decision-making. When the individual anticipates that there are benefits to moving—which may not necessarily financial—compared to staying, the decision to migrate occurs (Da Vanz 1981 p.93; Wilson 1985 p. 279). In other words, migration is the participation in an activity that progresses towards a desired goal, otherwise it would not be done (Sell and DeJong, 1989, p. 326). However, the decision to move does not guarantee the actual attainment of said goals, but the expectation that there will be benefits in return of the costs of migration (Dex, 1985).

This theory is particularly helpful in immigration studies as it highlights the importance of, and relationship between, human capital and economic opportunities in prospective destinations. Individuals must consider a cost-benefit analysis where the expected net return is determined by expected earnings minus the total monetary, social, and psychological costs of re-location. Their *expected* earnings are judged by multiplying perceived wage in a potential destination by the probability of finding employment in the same destination. After such analysis, people make the decision to remain in, or migrate to, places with the greatest expected net return along legal constraints which regulate international migration (Bauer & Zimmerman, 1999; Massey et al., 1993).

The neoclassical framework also includes a macro-level framework in relation to micro-level explanations of migration where differences in labor supply and demand between labor-rich versus capital-rich countries, and their resulting differences in wages, drives migration. Related to the push-pull framework (Bauer &Zimmerman, 1999), the central argument of neoclassical theory focuses on wages. However, critiques of this theory argue that this approach is rigid and assumes a linear relationship between wage differentials and migration flows (Bauer and Zimmerman, 1999l Massey et al., 1993; Borjas, 2008). It reduces determinants of migration, ignores labour market imperfections, and homogenizes migrants and migrant societies (Massey at al., 1998). Other theoretical perspectives sought to go beyond the push-pull framework of the neoclassical approach and analyze the interaction between individuals, motivations, and contexts better than the neoclassical framework (Massey et al., 1998, p. 16).

2.2.3Dual labor market theory

Unlike the neoclassical approach, dual labour market theory explains migration dynamics regarding structural changes in the economy of the demand side in migration (Massey et al., 1993). The theory is premised upon the notion of divergent occupational structures and a dual pattern of economic organization in advanced economies (Piore, 1979). This duality occurs along two types of economic organization: the capital intensive—where skilled and unskilled labor are utilized—and labor intensive—where unskilled labor prevails. The central thesis of dual labor market theory is that conditions of labor market demand as opposed to supply is what drives migration. When immigration becomes a solution to labour market shortages, changes in policy to increase immigration occur in response to demands in the labour market. This theory is useful in its explanation of the coexistence of persistent demand for foreign labour despite structural unemployment in receiving countries (Arango, 2000).

2.3 Hypotheses

I propose five hypotheses regarding the influence of pre-landed Canadian experience on whether international students remain in their place of study when they transition to permanent resident status:

H_1: International students who spend more years studying in their place of study are more likely to remain in their place of study.

> Rationale: Immigrant mobility declines over years since landing (CIC, 2001; Haan, 2008; Morency, Malenfant & MacIsaac, 2017; Carter et al., 2009).

H_2: International students with pre-landed Canadian higher educational attainment are more likely to land outside their place of study.

> Rationale: Immigrants with higher education credentials are more mobile (Nogle, 1994; Bartel, 1989; Reher & Silvestre, 2009; Statistics Canada, 2016).

H3: International students with pre-landed Canadian work experience are more likely to remain in their place of study.

> Rationale: Pre-immigration work experience provides opportunities for developing social networks and establishing employment that will ease the transition to permanent

residence (Hou & Bonikowska, 2015; Warman, 2009; Warman, 2010; Krahn, Derwin & Abu-Laban, 2005).

H4: International students with pre-landed Canadian work experience are more likely to remain in their place of study if they studied in traditional immigrant destinations Ontario, Quebec, and British Columbia

Rationale: International students will reflect patterns of immigrant mobility which are drawn to provinces that contain large urban cores and ethnic communities (CIC, 2015).

H_5: International students are more likely to remain in their place of study if they studied in a larger census metropolitan area (CMA).

Rationale: Immigrants are drawn to larger regions with more economic opportunities and cultural resources (Statistics Canada, 2016; Bauder, 2006; Patacchini & Zenou, 2012; Sanders, Nee & Sernau, 2002; Pendakur & Young, 2013).

Chapter 3

3 Methods

3.1 Data

3.1.1 Database

To examine how the retention of landed international students varies according to pre-landed Canadian experience, demographic characteristics and permanent resident (PR) admission characteristics, data were acquired from the 2014 Longitudinal Immigrant Database (IMDB). The IMDB comprises of temporary resident permit files, administrative landing records, and tax returns since 1980. It is managed by Statistics Canada (STC) on behalf of a Federal-Provincial Consortium led by Citizenship and Immigration Canada (CIC). Permits and landing records contain demographic data, immigrant program data, and personal attributes. Tax records provide information such as place of residence at year's end.

3.1.2 Sampling design

The 2014 IMDB contains all tax-filing immigrants who landed between 1980 and 2014 and is updated annually. Temporary residents since 1980 are included if they have a landing record linked to their file by December 31, 2014 (Statistics Canada, 2016). The goal of the IMDB is to provide detailed and reliable data on the characteristics and behaviour of Canada's immigrants. With permit files, landing files, and tax records, the IMDB enables the observation and analysis of the "life cycle" of migration to Canada from arrival to citizenship (Statistics Canada, 2016).

3.2 Analytic Sample

Individuals included in the analysis held their first study permit between January 1, 2005, and December 31, 2014, issued in a Canadian province prior to permanent residence, subsequently obtained permanent resident status by the end of 2014 and filed a tax return in the same year of landing.

Landed international students whose first study permit was issued prior to 2005 are excluded from the analysis to focus on the more recent international student population to Canada. Data from the last ten years available in the IMDB were chosen to maintain a robust analytical sample. International students in the Territories were excluded from the analysis due to low cumulative counts (N=50).

Individuals with study permits at the secondary school level or below (N= 42,025) were excluded from the data. The focus of immigration policy is directed at international students with high skills that can contribute to the prosperity of Canada's knowledge economy (Government of Canada, 2014). In the same manner, the analysis requires a focus on the retention of high-skilled landed international students. Only individuals who are Principal applicants at landing are included in the data and those who are Spouses and/or dependents of the principal applicant are removed from the data. The outcomes of immigrants who land in Canada as dependents are more so affected by whom they are dependent on rather factors which solely affect themselves (Banarjee & Phan, 2015; Dobb-Clark, Connolly & Worswick, 2005). Since the characteristics of the individuals whom they are "dependent" on are not a focus and, as such, are not included, dependents were omitted from the analysis, although they were used to identify the family characteristics of the international student.

Individuals who did not file taxes in their year of landing (N=9,000) were removed from the final sample. The purpose of the study is to measure how pre-landed Canadian experiences among international students influence their retention once they become permanent residents of Canada. If retention was looked at the 1-year mark after migration or beyond, other factors after landing would need to be accounted for. For example, total income or unemployment status would need to be accounted for as individual financial resources are significant in the secondary migration of immigrants (Chiswick, 2000). This is evidenced when regressions were run on the retention rates of landed international students 5 years after their year of landing. Models displayed lower levels of significance among the main explanatory variables as well as control variables.

3.2.1Sample Size

Due to the binary nature of the dependent variable for the main analysis, a logistic regression analysis was selected as the measure of analysis. To ensure the validity of the study, the sample satisfies the rule of thumb recognized by statisticians when employing logistic regression analyses in which at least 10-15 events per variable (EPV) for every event that is analyzed. Problems can occur when a logit model contains too few events (i.e., staying in one's place of study) relative to the number of independent variables that are evaluated (Peduzzi et al, 1996). This is a potential validity concern if the EPV is too small in a logistic regression model because the ratio of numbers per event for each variable analyzed would be too small. Scott Long (1997) recommends a total of 500 observations is sufficient for most models. More observations are recommended in the case of variables with high collinearity or the dependent variable has little variation. The final sample met these conditions.

Chapter 4

4 Measures

4.1 Outcome Variable: Retention

Retention was defined by the presence of a landed international student in their place of study in their year of landing. The level of geography used to define the *place* of study and of residence was the census metropolitan area (CMA) indicated in the temporary resident file and the tax return, respectively. Immigrants indicate their intended destination at landing, however, this category is arbitrary since the Charter enables freedom of mobility. To accurately know where students choose to live when they become permanent residents, their place of residence as indicated in their tax files at their year of landing is used.

CMA is defined by an area which consists of one or more municipalities situated around population centre (known as the core). A CMA must have a population of at least 100,000 of which at least half live in the core. All individuals in the IMDB are designated a CMA category (sometimes indicated as “other”).

Retention was not defined at the provincial level since it would not capture the migration of landed international students between labour markets of varying sizes. Conversely, retention was not defined more specifically using census divisions since migration between census divisions would not necessarily indicate changes in types of labour markets in which employment is sought. Settlement patterns of Canada’s population are witnessing a growth in suburbanization at the periphery of urban cores due to cheaper housing and greater opportunities for social integration with the host population, however, employment opportunities and levels remain concentrated in urban cores (Vézina & Houle, 2017). While migration may occur within CMAs (between census divisions), economic activity is likely to remain in the labour market specific to their CMA of residence. Therefore, CMA is an ideal level of geography in the definition of retention as it defines a central core area that remains geographically, socially, and economically integrated with adjacent areas because of its linkages with the central core (Puderer, 2008)

4.2 Key Explanatory Variables

The following study defines pre-landed Canadian experience as the period of time when a foreign-born individual resided in Canada with a Temporary Residence (TR) Permit, specifically a study permit. To examine the effect of pre-landed Canadian experience on international students' retention at landing, study length, pre-landed Canadian education level, pre-landed Canadian work experience, province of study, and region of study are employed as key explanatory variables. Study length is continuous, provinces of study and pre-landed Canadian work experience are coded as indicators, and the remaining variables are coded as ordinal variables. The following chapter outlines how this study examines these key variables of pre-landed Canadian experience on the odds of international students landing in their place of study when they transition to permanent resident status.

Study length was calculated by taking the difference, in years, between the effective date of the individual's first study permit and the expiry date of the individual's last study permit.

Canadian education level was taken from the study level of individuals' last study permit issued. Categories "Trade certificate" and "Bachelor's Degree" are coded from the respective categories in the original variable. The category "Graduate degree" captures the categories Master's Degree and Doctorate Degree of the original variable. Coded category "Other post-secondary education" includes individuals with education level recorded as Other Studies, Other Post-Secondary, and Language Training.

The categories for Province of Study were taken directly from the province in which the international student's visa(s) were issued in. Virtually all international students who held multiple study permits had the same province indicated in each permit.

CMA categories were based on (Statistics Canada, 2017)'s total population size estimates for 2016. CMAs with a population between 100,000 and 499,999 people were coded as "CMA (<500K)". CMAs with populations between 500,000 and 1,000,000 people were coded as "CMA (500K – 1M)". CMAs with more than one million people were coded as "CMA (>1M)". All other CMA classifications from the original variable were coded as "Rural".

Pre-immigration Work experience equalled one when an individual held a work visa prior to landing as a permanent resident and zero otherwise.

4.3 Control Variables: Demographic Characteristics and Characteristics at Landing

4.3.1 Demographic Characteristics

Among migration research, variables that are used to describe students' demographic characteristics that have been included to examine their effect on immigrant mobility are gender, age at landing, marital status, and region or country of citizenship (King & Newbold, 2011; CIC, 2000; Greenwood, 1997; Sergerie, 2016). Of the various demographic characteristics, single male adults in their twenties and early thirties are the most mobile (Greenwood, 1997; CIC, 2015; Islam & Choudhury, 1990; Champion, Fotheringham, Rees, Boyle, & Stillwell, 1998). Furthermore, individuals belonging to a visible minority group are less likely to re-settle and this is likely due to selecting initial destinations where the economic and cultural opportunities are known among their community to provide the necessary resources for their settlement (MacIsaac, 2017; Carter, Polevychok, Osborne, Adeler, & Friesen, 2009).

Examining these factors help to determine if there are other factors outside of students' migration experience that prevent them from staying in their place of study. To control for sex, I use a binary indicator that equals one if the individual is female and zero if they are male. Marital status is the original variable and includes the original categories "Single", "Married, common law partner", and "Annulled marriage, separated, divorced, widowed". Age is a continuous variable is the age of the landed international student at their time of landing. Countries of citizenship are organized in the original variable according to regions which organize the categories in the original variable. Accordingly, the variable country/region of citizenship was coded as "the United Kingdom", "Europe" "Africa", "Asia", "Oceania", "United States", "Central and South America", and "Caribbean".

4.3.2Permanent Resident (PR) Admission Characteristics

I also control for individuals' characteristics at landing by including education at landing, knowledge of Official language, and immigration category. Controlling for these factors is important because individual characteristics that they file to become permanent residents are greatly related to their mobility in Canada, as well as their preferred place of settlement (Chiswick & Miller, 2001; MacIsaac, 2017; Clement, 2002; Pandey and Townsend, 2011; 2013). Therefore, characteristics at landing may be confounding the relationships I am examining, or may simply be covariates that influence retention, making it important to control for these factors.

Mobility also varies by education level where individuals with higher levels of education are more mobile (Bartel, 1989; Reher & Silvestre, 2009; Nogle, 1994). To control for the influence of education, the variable education at landing was coded as it is in the original variable with categories "Trade certificate", "Non-university diploma", "Bachelor's degree", and "Graduate degree". The coded category "Graduate degree" includes the original categories Master's degree and Doctorate. The Provincial Nominee Program (PNP) has shown promising results in the retention of new immigrants to smaller regions. Provincial nominees are more likely to stay in their province of destination (Pandey & Townsend, 2011; 2013). However, these findings pertain to retention of immigrants who arrive directly from abroad to their initial destination at landing. To control for possible effects of immigrant class on international student retention at landing, immigration category was also included and defined based on the original immigration category as indicated in the landing files. "Family class", "Provincial nominees", and "Canadian experience class" remained the same. The following immigration categories were recoded: "Skilled workers" includes Skilled workers and Skilled trades; "Refugees" include all refugee categories and Humanitarian and compassionate cases; "Business class and other" includes those labeled Entrepreneurs, Self-employed, Investors, Business class, Other business class, Live-in caregivers Backlog clearance program, Administrative review program, and Other immigrants. Among the knowledges of Official language, immigrants who know both English and French are shown to be more likely to migrate (MacIsaac, 2017). Where knowledge of Official language has shown to increase the propensity for internal migration among Canada's foreign-born population (Reher & Silvestre, 2009), this factor was controlled for at different stages of the analysis and was coded as it is in the original IMDB variable with categories "English", "French", "Both", and "Neither".

Table 1. Variable descriptions

Variable Name	Definition
Dependent Variable	
Stay	Dichotomous Variable 0= CMA of residence in year of landing is not CMA of study 1= CMA of residence in year of landing is CMA of study
Pre-landed Canadian experience	
Length of study	Continuous Variable A continuous measure of years studying in Canada ranging from 0 (rounded) to 17
Pre-landed Canadian education	Categorical Variable 1= Trade certificate 2= Bachelor's degree[a] 3= Graduate degree 4= Other post-secondary
Province of study	Categorical Variable 1= Newfoundland and Labrador 2= Prince Edward Island 3= Nova Scotia 4= New Brunswick 5= Quebec 6= Ontario[a] 7= Manitoba 8= Saskatchewan 9= Alberta 10= British Columbia
Region of study (population size)	Categorical Variable 1= Rural 2= CMA (<500K) 3= CMA (500K-1M) 4= CMA (>1M)[a]
Pre-immigration work indicator	Dichotomous Variable 0= Did not work in Canada prior to permanent residence 1= Worked in Canada prior to permanent residence[a]
Demographic characteristics	
Sex	Categorical Variable 1= Male 2= Female
Marital status	Categorical Variable 1= Single 2= Married, common law partner 3= Separated, Divorced, Widowed
Age	Continuous Variable A continuous measure of individual age at time of transition to permanent resident status
Country/Region of Citizenship	Categorical Variable 1= United Kingdom 2= Europe 3= Africa 4= Asia 5= Oceania 6= United States

(Continued)

(Table 1 continued)

	7= Central and South America 8= Caribbean
PR admission characteristics	
Education level	Categorical Variable 1= High school or less 2= Trade certificate 3= Non-university diploma 4= Bachelor's degree[a] 5= Graduate degree
Immigration category	Categorical Variable 1= Family class 2= Skilled Worker[a] 3= Provincial Nominee Program 4= Canadian Experience Class 5= Refugee 6= Business class and other
Knowledge of Official language	Categorical Variable 1= English[a] 2= French 3= English and French 4= Neither language

[a] Reference category

Chapter 5

5 Analytic Strategy

First, I examined the characteristics of the sample for all landed international students, and by those who left their place of study at landing ("movers") and those who stayed ("stayers"), where I include the measures for length of study, pre-landed Canadian education level, province of study, region of study, and pre-landed Canadian work experience (Table 2). Differences in mean values for movers and stayers are tested using *t*-tests for independent samples. Then, cross-tabulations comparing the distributions for movers and stayers across covariates for demographic characteristics and PR admission characteristics are also examined. These results (Table 3) compare percentage distributions between the two groups of older adults, and chi-square tests are used to test the bivariate associations.

To analyze whether pre-landed Canadian experience is related to the retention of international students to their place of study when they land, I use bivariate logistic regression models to estimate the likelihood of staying at landing. Logistic regression is used due to the dichotomous nature of the retention outcome. In the second step of the analysis, bivariate regressions on the length of study, pre-landed Canadian education, pre-landed Canadian work experience, province of study, and place of study are run separately on retention at landing (α). These regressions test the independent relationships between retention and each of the key predictor, the results of which are presented in Table 4.

Next, multivariate regression models are estimated to examine each of the hypotheses presented in Chapter 3. First, I estimate a series of five nested models where each model examines the length of study, pre-landed Canadian education level, province of study, region of study, and pre-landed Canadian work experience separately, controlling for demographic characteristics (Table 5). Demographic controls included in the multivariate models are sex (X_S), age (X_A), marital status (X_M) and source country or region (X_{SR}). Then, the results of when permanent resident (PR) admission characteristics are introduced into each of the previous five models are presented in Table 6. Education at landing (X_{LE}), immigration category (X_{IC}), and knowledge of Official language (X_{KOL}) are the measures included as controls for landing characteristics.

In table 7, I examine study length, pre-landed Canadian education level, province of study, region of study, and pre-landed Canadian work experience together. Model 1 examines all pre-landed Canadian experience variables together only controlling for international students' demographic characteristics:

Model (1): $\ln\frac{\alpha}{1-\alpha} = \beta_0 + \beta_1 X_{SL} + \beta_2 X_{TC} + \beta_3 X_{GD} + \beta_4 X_{OD} + \beta_5 X_{NW} + \beta_6 X_{NF} + \beta_7 X_{PE} + \beta_8 X_{NS} + \beta_9 X_{NB} + \beta_{10} X_{QC} + \beta_{11} X_{MN} + \beta_{12} X_{SK} + \beta_{13} X_{AB} + \beta_{14} X_{BC} + \beta_{15} X_{RR} + \beta_{16} X_{SR} + \beta_{17} X_{MR} + \beta_{18} X_S + \beta_{19} X_A + \beta_{20} X_M + \beta_{21} X_{SR} + \varepsilon$

Model 2 examines study length, pre-landed Canadian education level, province of study, region of study, and pre-landed Canadian work experience together with demographic and PR admission controls:

Model (2): $\ln\frac{\alpha}{1-\alpha} = \beta_0 + \beta_1 X_{SL} + \beta_2 X_{TC} + \beta_3 X_{GD} + \beta_4 X_{OD} + \beta_5 X_{NW} + \beta_6 X_{NF} + \beta_7 X_{PE} + \beta_8 X_{NS} + \beta_9 X_{NB} + \beta_{10} X_{QC} + \beta_{11} X_{MN} + \beta_{12} X_{SK} + \beta_{13} X_{AB} + \beta_{14} X_{BC} + \beta_{15} X_{RR} + \beta_{16} X_{SR} + \beta_{17} X_{MR} + \beta_{18} X_S + \beta_{19} X_A + \beta_{20} X_M + \beta_{21} X_{SR} + \beta_{22} X_{LE} + \beta_{23} X_{IC} + \beta_{24} X_{KOL} + \varepsilon$

where,

X_{SL} is length of study,

X_{TC} is pre-landed Canadian trade certificate,

X_{GE} is pre-landed Canadian graduate degree,

X_{OD} is other pre-immigration post-secondary education,

X_{NW} is no pre-landed Canadian work experience,

X_{NF} is studied in Newfoundland and Labrador,

X_{PE} is studied in Prince Edward Island,

X_{NS} is studied in Nova Scotia,

X_{NB} is studied in New Brunswick,

X_{QC} is studied in Quebec,

X_{MN} is studied in Manitoba,

X_{SK} is studied in Saskatchewan,

X_{AB} is studied in Alberta,

X_{BC} is studied in British Columbia,

X_{RR} is studied in a rural region,

X_{SR} is studied in a CMA with 100,000 to 499,999 people, and

X_{MR} is studied in a CMA with 500,000 to 1,000,000 people.

Chapter 6

6 Results

6.1 Descriptive Statistics

Table 2 presents descriptive statistics of the sample comprised of 55,435 landed international students. Table 1 presents summary statistics for indicators included in the measures of pre-landed Canadian experience for landed international students. First, among international students who landed in their place of study, the average time spent studying in Canada is 2.93 years which is statistically significantly different from the 2.62 years of those that did not ($p<.001$). Second, the overall measure of pre-landed Canadian education (Mean=2.81; SD=1.04) shows that stayers have lower education credentials than movers. In addition, the discrepancy between the groups in mean levels of overall pre-landed Canadian education appears to be the result of differences in trade certificate, bachelor's degree, and other post-secondary education. The separate measures of educational qualifications in **Table 2** indicate that relative to those who left, landed international students who stayed in their place of study have significantly higher mean scores for trade certificates but significantly lower mean scores for bachelor's degrees and other post-secondary education. For international students that landed outside their place of study, the mean for trade certificate is 0.10, whereas it is 0.14 for those who stayed ($p<.001$). At the bachelor's level, the mean among those that left is 0.26 and the mean of those that stayed is 0.23.

Among all landed international students, the mean for the pre-immigration work experience indicator is high (Mean=0.83; SD=0.38). The significant difference between those who stay in and those who leave their place of study is based on discrepancies in pre-landed Canadian work experience between the two groups. As **Table 2** demonstrates, among international students who remain in their place of study, the average for pre-landed Canadian work experience is 0.81 compared to 0.89 among those that leave.

The relative means between provinces of study is similar among international students that stayed in their place of study and among those that landed elsewhere but the difference in means for each province between the groups are all statistically significant ($p<.001$). The mean for movers that studied in the Atlantic region is higher than the mean for stayers. The means of

movers that studied in Nova Scotia or New Brunswick are respectively 0.04 and 0.03 whereas the mean of stayers who studied in either province is 0.01. However, when looking at those who studied in Albert and British Columbia, the means among those that stayed were higher (0.10 and 0.17, respectively) than the means of those who left (0.08 and 0.14, respectively). Interestingly, the mean of international students that studied in Ontario but landed elsewhere is higher (0.50) than the mean of international students that studied and landed in Ontario (0.40).

Table 2. Weighted Summary Statistics for Measures of Pre-landed Canadian Experience among Landed International Students (LIS) (2005-2014 landing years)

	All LIS N=55,435	**LIS (Movers) N=16,940**	**LIS (Stayers) N=38,495**	**Movers vs. Stayers**
	Mean(SD)	Mean(SD)	Mean(SD)	
Length of study	**2.87(1.72)**	**2.62(1.57)**	**2.93(1.74)**	*******
Pre-landed Canadian education	**2.82(1.02)**	**2.88(1.00)**	**2.81(1.04)**	*******
Trade Certificate	0.13(0.33)	0.10(0.30)	0.14(0.35)	***
Bachelor's Degree	0.25(0.43)	0.26(0.44)	0.23(0.42)	***
Graduate Degree	0.31(0.46)	0.29(0.45)	0.30(0.46)	*
Other Post-Secondary Education	0.32(0.47)	0.35(0.48)	0.32(0.47)	***
Pre-landed Canadian work experience	**0.83(0.38)**	**0.89(0.31)**	**0.81(0.39)**	*******
Province of study	**6.67(1.98)**	**6.49(1.89)**	**6.76(1.91)**	*******
Newfoundland and Labrador	0.01(0.09)	0.00(0.00)	0.00(0.00)	***
Prince Edward Island	0.00(0.04)	0.00(0.00)	0.00(0.00)	***
Nova Scotia	0.02(0.15)	0.04(0.21)	0.01(0.11)	***
New Brunswick	0.02(0.12)	0.03(0.16)	0.01(0.08)	***
Quebec	0.22(0.41)	0.15(0.36)	0.24(0.43)	***
Ontario	0.42(0.49)	0.50(0.50)	0.40(0.49)	***
Manitoba	0.03(0.18)	0.03(0.17)	0.04(0.19)	***
Saskatchewan	0.02(0.14)	0.03(0.17)	0.02(0.19)	***
Alberta	0.09(0.28)	0.08(0.27)	0.10(0.31)	***
British Columbia	0.17(0.38)	0.14(0.34)	0.17(0.38)	***
Region of study	**3.52(0.78)**	**3.06(1.10)**	**3.72(0.68)**	*******
Rural	0.05(0.30)	0.12(0.33)	0.02(0.14)	***
CMA (<500K)	0.10(0.29)	0.21(0.41)	0.06(0.25)	***
CMA (500K-1M)	0.10(0.47)	0.15(0.35)	0.09(0.28)	***
CMA (>1M)	0.66(0.21)	0.52(0.50)	0.83(0.38)	***

p<00.1 *** p<.01 ** p<.05 * p<.10 †
Note: Movers vs. Stayers reports results of *t*-test for independent samples.
Source: Longitudinal Immigrant Database (IMDB)

Measures in the region of study demonstrate that, in general, stayers studied in larger regions of Canada than movers. Stayers have a significantly smaller mean in all regions with one million people or less. Looking at international students from rural regions, the mean for those who left

their place of study is 0.12 but is only 0.02 among their staying counterparts. The ratio between the two groups become smaller for larger regions of study. For landed international students who left, the mean for studying in a CMA with 500,000 to one million people is 0.15 while it is 0.09 for landed international students that stayed ($p<.001$). The relative difference in means reverses with respect to those who studied in a CMA with at least one million people, as stayers, whose mean is 0.83, is larger than movers, whose mean score is 0.52 ($p<.001$). As **Table 2** shows, international students that stayed at landing are more likely to have studied in a large CMA than are those who landed somewhere else.

Descriptive statistics on the sociodemographic and landing characteristics of the sample are presented in **Table 3**. All differences between international students who leave outside their place of study and those who stay are statistically significant at the $p<.001$ level, except for age which is not statistically significant. First, results show that most (69.44%) international students who become permanent residents remain in their place of study.

With respect to the sociodemographic characteristics of landed international students, males comprised a larger proportion of landed international students than did females. The sex distribution for landed international students who stayed is similar to all landed international students however the distribution was more uneven for landed international students who left ($p<.001$). Males accounted for 56% of all landed international students and 54% of landed international students who stayed, whereas males accounted for 60% of landed international students who left. The overall composition of marital status was also similar for movers and stayers with the greatest proportion of landed international students being single, followed by those who are married or a common-law partner, and finally, those who are separated, divorced or widowed. However, the share of movers (71.66%) who were single was higher than among stayers (63.69%) and the share of movers who were married or a common-law partner (27.01%) was lower than among stayers (34.35%). The two groups also shared a relatively similar distribution in countries/regions of citizenships. The highest proportion of landed international students who come from—in descending order—Asia, Africa, and Europe. However, since the proportion of landed international students who land outside their place of study from Oceania (0.61%) is less than two-thirds the proportion of those who stay in their place of study (0.95%),

Oceania, followed by United Kingdom, are the least common citizenship among movers whereas the United Kingdom, followed by Oceania, is the least common citizenship among stayers. The majority of landed international students hold a university degree at landing. However, it appears that international students that leave their place of study at landing have higher educational attainment than their staying counterparts. Movers with a trade certificate (3.77%) or a non-university diploma (13.65%) are smaller than the share of those that stay (4.23% and 19.49%, respectively). On the other hand, the share of those who leave and hold a university degree at landing (83%) is greater than the share of those who stay and hold a university degree (76%). The two groups differ considerably in their immigration categories. The greatest share of international students for those who leave and those who stay at landing gain permanent residence through a Skilled Worker program, followed by the Provincial Nominee Program. However, the proportion of movers that arrive through the Provincial Nominee Program is more than double that of the proportion of their staying counterparts. Among international students that stay in their place of study at landing, 14.5% arrived as a provincial nominee compared to the 32.0% of international students that leave at landing. Lastly, landed international students who left and stayed had similar distributions in their knowledge of Canada's Official languages, with a notable difference in the share of those who knew English and the share of those who knew both English and French. The share of those who left their place of study at landing (80.07%) and knew English was greater than their staying counterparts (72.06%). Conversely, the share of movers that knew both English and French (14.10%) was less than three-quarters of the share of stayers that knew both languages (20.85%).

Similarities in the leading categories of source regions and of immigration categories are reflective of changes in Canada's immigration system. Changes in Canada's immigration policies since the 1970s has led to a more diverse immigrant population where Asia has become the nation's largest source of immigrants, particularly over the past decade (Statistics Canada, 2016). Regarding the most common method of entry, the Skilled Worker Program, this avenue uses a point-based metric that evaluates the likelihood that an applicant will successfully adjust to life in Canada. Applicants who score 67 out of 100 points based on criteria such as education, work experience, age, language ability, and adaptability are eligible for admission (Government of Canada, 2017). For international students, their pre-landed Canadian education and work

experience award them more points—and therefore better chances for PR—compared to immigrants who score similarly on other criteria but lack pre-landed Canadian experience.

Table 3. Weighted Summary Statistics for Covariates among Landed International Students (LIS) (2005-2014 landing years)

	All LIS N=55,435	**LIS (Movers) N=16,940**	**LIS (Stayers) N=38,495**	**Movers vs. Stayers**
	%	%	%	
Landed in place of study				
Yes	69.44	--	100.00	
No	30.56	100.00	--	
Demographic Characteristics				
Sex				***
Male	56.27	60.37	54.47	
Female	43.73	39.63	45.53	
Marital Status				***
Single	66.13	71.66	63.69	
Married, common law partner	32.11	27.01	34.35	
Separated, Divorced, Widowed	1.77	1.33	1.96	
Age	33.59[μ]	33.64[μ]	33.53[μ]	
Country/Region of Citizenship				***
United Kingdom	0.84	0.86	0.83	
Europe	10.44	8.15	11.45	
Africa	14.45	12.86	15.15	
Asia	62.45	68.87	59.62	
Oceania	0.84	0.61	0.95	
United States	2.75	2.72	2.76	
Central and South America	5.95	3.98	6.81	
Caribbean	2.29	1.95	2.43	
PR Admission Characteristics				
Education Level				***
Trade Certificate	4.09	3.77	4.23	
Non-university Diploma	17.71	13.65	19.49	
Bachelor's Degree	49.56	53.39	47.88	
Graduate Degree	28.64	29.19	28.40	
Immigration Category				***
Family Class	17.34	14.62	18.53	
Skilled Workers	37.19	29.42	40.61	
Provincial Nominee Program	19.86	32.06	14.49	
Canadian Experience Class	17.19	18.79	16.49	
Refugee	7.64	4.72	8.92	
Business class and other	0.78	0.39	0.95	
Knowledge of Official Language				***
English	74.51	80.07	72.06	
French	3.33	2.63	3.64	
Both	18.78	14.10	20.85	
Neither	3.38	3.21	3.45	

p<.001 *** p<.01 ** p<.05 *

Note: Movers vs. Stayers reports results of Chi^2 test.

[μ] Mean age; Movers vs. Stayers for age reports results of *t*-test for independent samples.

Source: Longitudinal Immigrant Database (IMDB)

The observed differences in **Table 3** between international students who leave their place of study upon landing and those who stay reflect patterns of immigrant internal migration in Canada. Immigrants who are the most mobile in Canada tend to be male, in their twenties and early thirties, single, and more educated (King & Newbold, 2011; CIC, 2000; Greenwood, 1997; Sergerie, 2016). Differences between movers and stayers who gain permanent residence under the Provincial Nominee Program is also consistent with previous findings. Despite the program's design to attract and retain new immigrants away from traditional destinations, provincial nominees appear to be the most mobile compared to other immigrants from other categories. Among immigrants who landed in Canada between 2006 and 2011, provincial nominees stayed the least in their intended destination province followed by Skilled Workers (van Huystee & St Jean, 2014). These findings on immigrant mobility offer potential explanations for the patterns observed among international students who remain in their place of study and those who do not in sex, age, marital status, education, and immigration category.

6.2 Bivariate Results

Odds ratios from bivariate logistic regression models predicting international students landing in their place of study by each of the key independent variables and covariates are presented in **Table 4**. First, when examining the extent to which years international students spent studying in Canada prior to landing is related to their retention at landing, results indicate that study length has a significant positive association with the propensity to stay. International students who had one standard deviation above the mean in length of study had higher odds of staying at landing than international students with average years of Canadian schooling (O.R. 1.14; $p<.001$). However, higher levels of pre-landed Canadian education appear to have negative associations with retention. As results show, international students that had a trade certificate were 13% more likely to remain in their place of study than international students that had Other post-secondary education whereas international students who obtained a graduate degree were 24% less likely to remain in their place of study. Based on the size of the coefficients, education credentials at the graduate level (O.R. 0.76; $p<.001$) appear to have a stronger effect in their differentiation from Other post-secondary education than trade certificates (O.R.1.13; $p<.001$). Thus, when considered alone, and without taking into account international students' demographic and landing characteristics, higher levels of pre-landed Canadian education were found to hinder

retention at landing. An exception is among those with a Bachelor's degree, as reflected in the lack of statistical significance for the odds ratio of international students with a Bachelor's degree compared to those with Other post-secondary education. Similar to pre-landed Canadian education, not having pre-immigration work experience is significantly positively associated with retention at landing. The odds ratios from these analyses show that having pre-landed Canadian work experience is associated with greater odds of landing outside one's place of study among international students (O.R. 1.18; $p<.001$).

When looking at the separate measures of province of study, the bivariate results indicate the province of study is indeed significantly associated with retention. The odds ratio from this analysis shows that provinces of study are differently associated with the retention of international students at landing, compared to Ontario. International students who studied in Nova Scotia, Quebec, and Alberta were respectively 7%, 7%, and 14% less likely than international students from Ontario to remain in their place of study ($p<.001$). Conversely, international students from PEI, New Brunswick, Manitoba, Saskatchewan, and British Columbia were more likely to remain in their place of study but these ratio estimates were less statistically significant than the first group of provinces. As might be expected, international students who studied in smaller regions are less likely to remain in their place of study than those who studied in CMAs with at least one million people. Those who studied in a CMA with 500,000 to 1,000,000 people have almost 70% lower odds of staying in their place of study compared to those who study in a CMA with more than one million people, and the likelihood of international students staying at landed continues to decrease for each successively smaller region of study. Thus, as might be expected, without controlling for demographic and characteristics at landing, larger regions of study were found to play a beneficial role for retention of international students at landing.

Bivariate associations between the covariates and retention show that some demographic characteristics and many PR admission characteristics are also statistically significantly related to landing in one's place of study. First, female international students are 9% more likely to remain in their place of study than males. Next, any differences in age or in marital status appear to not have a meaningful difference in the likelihood of landing in one's place of study. Citizenship is, however, significantly associated with retention at landing, and results show that

international students who have United States citizenship are 6% less likely remain in their place of study than those with citizenship from Asia (p<.01). On the other hand, compared landed international students from Asia, those with citizenship from Central or South America (O.R.1.45, p<.05) are slightly more likely to remain in their place of study than those from Europe not including the United Kingdom.

Table 4. Odds Ratios from Bivariate Logistic Regression Models Predicting Retention at Landing among Landed International Students (2005-2014 landing years)

	Bivariate
Length of study	1.12***
Pre-landed Canadian education (Bachelor's Degree)	
Trade Certificate	1.52***
Graduate Degree	1.14
Other Post-Secondary	1.04***
Pre-landed Canadian work experience (Yes)	
No	1.98***
Province of study (Ontario)	
Newfoundland and Labrador	0.50***
Prince Edward Island	0.60†
Nova Scotia	0.35***
New Brunswick	0.26***
Quebec	1.98***
Manitoba	1.50***
Saskatchewan	0.88
Alberta	1.64***
British Columbia	1.55***
Region of study (CMA (>1M)	
Rural	0.11***
CMA (<500K)	0.19***
CMA (500K-1M)	0.38***

p<001 *** p<.01 ** p<.05 * p<.10 †
N=55,435
Source: Longitudinal Immigrant Database (IMDB)

Intentions to land one's place of study are greatly related to retention outcomes. As might be expected, international students who do not indicate intentions to remain in their place of study are 99% less likely to remain in their place of study compared to landed immigrants who do indicate intentions to remain in their place of study. International students who become permanent residents under a Family Class (O.R. 0.93, p<.001) or the PNP (O.R. 0.85, p<.001) are less likely to remain in their place of study than those who landed under a Skilled Worker stream. In contrast, international students who obtain permanent residency under Business or another category, are more than twice as likely as Skilled Workers to remain in their place of study. The only knowledge of Official language that is significantly different knowing English is

knowing both English and French. International students who claim to know both languages at landing are less likely to remain in their place of study than international students who claim to know English at landing.

6.3 Multivariate Results

The remaining tables examine to what extent length of studies, pre-landed Canadian education, pre-landed Canadian work experience, province of study, and region of study are associated with the retention of international students to their place of study at landing when controlling for demographic characteristics only (Table 5) and when controlling for demographic and PR admission characteristics (Table 6). Odds ratios from a series of multivariate logistic regression models predicting retention at landed are presented. In **Table 5**, each of the five predictors are individually examined holding constant demographic characteristics. **Table 6** also examines the five predictors separately controlling for demographics and PR admission characteristics. In both tables, Model 1 considers the role of study length, Model 2 considers the role of pre-landed Canadian education, and Model 3 considers the role of pre-landed Canadian work experience. The following two models, Model 4 and Model 5, assess province of study and region of study, respectively. Lastly, **Table 7** assesses all key predictors simultaneously, net of covariates for demographics (Model 1), and net of covariates for both demographics and PR admission characteristics.

Length of studies and region of study differ from pre-landed Canadian work experience in their association with retention at landing, net of international students' demographic characteristics. The first five models of **Table 5** show that when demographic characteristics are considered, length of study and region of study are positively associated with retention at landing. However, pre-landed Canadian work experience is negatively associated with international students landing in their place of study when controlling for demographic characteristics. Alternatively, the likelihood of landing in one's place of study is dependent on the specific type of pre-landed Canadian education received and the specific province of study, when demographic characteristics are controlled. An increase of one standard deviation above the average length of study is associated with 1.14 the odds of landing in one's place of study ($p<.001$). Similarly, larger regions of study are associated with greater odds of staying at landing. Compared to those

Table 5. Odds Ratios from Logistic Regression Models Predicting Retention at Landing by Measures of Pre-landed Canadian Experience and Demographic Covariates among Landed International Students (2005-2014 landing years)

	Model 1	Model 2	Model 3	Model 4	Model 5
Length of study	1.14***				
Pre-landed Canadian education (Bachelor's Degree)					
Trade Certificate		1.54***			
Graduate Degree		1.11***			
Other Post-Secondary		0.98			
Pre-landed Canadian work experience (Yes)					
No			1.88***		
Province of study (Ontario)					
Newfoundland and Labrador				0.50***	
Prince Edward Island				0.63*	
Nova Scotia				0.36***	
New Brunswick				0.26***	
Quebec				1.90***	
Manitoba				1.58***	
Saskatchewan				0.90†	
Alberta				1.62***	
British Columbia				1.53***	
Region of study (CMA (>1M)					
Rural					0.10***
CMA (<500K)					0.19***
CMA (500K-1M)					0.36***
Sex (Male)					
Female	1.26***	1.25***	1.26***	1.23***	1.24***
Age	1.00	1.00	1.00	1.00	1.00
Marital Status					
Married, common law partner	1.43***	1.4***	1.28***	1.35***	1.42***
Separated, Divorced, Widowed	1.50***	1.45***	1.44***	1.40***	1.37***
Country/Region of Citizenship (Asia)					
United Kingdom	1.10	1.03	1.02	1.01	1.31
Europe	1.63***	1.61***	1.57***	1.71***	1.66***
Africa	1.39***	1.38***	1.35***	1.54***	1.64***
Oceania	1.85***	1.77***	1.79***	1.80***	1.71***
United States	1.04	1.04	1.00	1.04	1.10
Central and South America	1.97***	1.90***	1.84***	1.88***	1.86***
Caribbean	1.44***	1.36***	1.42***	1.48***	1.56***
Education Level (Bachelor's Degree)					
Trade Certificate					
Non-university Diploma					
Graduate Degree					
Immigration Category (Skilled Worker)					
Family Class					
Provincial Nominee Program					
Canadian Experience Class					
Refugee					
Business class and other					
Knowledge of Official Language (English)					
French					
Both					
Neither					
Log-likelihood	-33384.6	-33533.4	-33381.2	-32819.2	-30511.7

p<001 *** p<.01 ** p<.05 * p<.10 †
N=55,435
Source: Longitudinal Immigrant Database (IMDB)

studying in Canada's largest CMAs with at least one million people, international students studying in rural areas are 90% less likely to remain in their place of study (p<.001). This gap decreases as the population size of international student's region of study increases to where those who study in CMAs with 500,000 to one million people are 44% less likely to remain in their place of study than students from CMAs with at least one million people (p<.001). Alternatively, pre-landed Canadian experience decreases the likelihood of landing in one's place of study. When demographic characteristics are controlled, not having pre-landed Canadian work experience is associated with 1.88 the odds of staying at landing compared to having pre-landed Canadian work experience. Regarding pre-landed Canadian education, international students with a Canadian trade certificate degree or a Canadian graduate degree prior to landing are more likely to remain in their place of study than those with a Canadian bachelor's degree prior to landing. Relative to international students with a pre-landing Canadian Bachelor's degree, those with a Canadian trade certificate or with a Canadian graduate degree are correspondingly 52% and 14% more likely to remain in their place of study at landing (p<.001). Compared to international students who studied in Ontario, international students who studied in in Quebec, Manitoba, Alberta, and British Columbia are associated with respectively 1.90, 1.58, 1.62, and 1.53 the odds of landing in their place of study (p<.001). Conversely, international students who studied in an Atlantic Province and Saskatchewan are less likely to stay in their place of landing compared to those who studied in Ontario, when demographic characteristics are accounted for.

Net of demographic characteristics, retention at landing's association with province of study and region of study stays relatively the same compared to odds without demographic controls (Table 4). On the other hand, controlling for international student's demographic characteristics strengthens retention at landing's association with study length. The greater odds of landing in their place of study among international students with more lengths of study increases relative to the bivariate results in Table 4 (O.R. 1.12, p<.001). Similarly, accounting for demographic characteristics increases the greater odds of retention at landing with a Canadian trade certificate prior to landing compared to having a Canadian bachelor's degree prior to landing. The inclusion of demographic characteristics, however, decreases the difference in odds of retention at landing between Canadian graduate degrees and Canadian bachelor's degrees compared to Table 4 (O.R. 1.14). In addition, the greater odds of landing in one's place of study and owning a Canadian graduate degree prior to landing becomes statistically significant when demographic

characteristics are accounted for but the opposite is true for international students with Other post-secondary education which becomes statistically insignificant in **Table 5**. The positive association between no work experience and retention becomes weaker when demographics are controlled where the greater odds of staying with no work experience has decreased compared to the unadjusted estimate in Table 4 (O.R. 1.98, p<.001). Another notable difference in **Table 5** is the increase in significance levels for PEI and Saskatchewan's odds of retention at landing relative to Ontario where taking demographic characteristics into account increases the significance of PEI from the 90% level to the 95% level, and the significance of Saskatchewan become significant at the 90% level.

In **Table 6**, length of study, no pre-landed Canadian work experience and region of study remain positively associated with retention at landing among international students, even when considering their PR admission characteristics. As results in Model 1 show, when controls for PR admission characteristics are added, international students who have one standard deviation above the average in length of study still have 15% greater odds of staying at landing (O.R. 1.15, p<.001). In Model 3, the association between retention at landing to pre-landed Canadian work experience becomes weaker (O.R. 1.55, p<.001) when PR admission characteristics are additionally held constant compared to Model 3 in Table 5. Similarly, Model 5 shows that when demographic and PR admission characteristics are held constant, the odds of retention at landing and studying in smaller regions compared to large CMAs becomes weaker. Net of demographic and PR admission characteristics, international students who studied in rural areas were 89% less likely than international students in CMAs with at least one million people to remain in their place of study. These differences between regions of study and CMA (>1M) decrease as the population size of the students' region of study increases, where those studying in CMAs with 500,000 to one million people are 59% less likely to land in their province of study compared to those who studied in CMAs with populations of at least one million people. The reduction in the odds of staying in **Table 6** relative to the respective models in Table 5 indicates that international students' PR admission characteristics account for part of how retention at landing is associated with pre-landed Canadian work experience and region of study. Nevertheless, pre-immigration work experience and region of study remain significantly strong predictors of international students landing in their place of study when they transition to permanent resident status. In

Table 6. Odds Ratios of Logistic Regression Models Predicting Retention at Landing by Measures of Pre-landed Canadian Experience and Covariates among Landed International Students (2005-2014 landing years)

	Model 1	Model 2	Model 3	Model 4	Model 5
Length of study	1.15***				
Pre-landed Canadian education (Bachelor's Degree)					
Trade Certificate		1.40***			
Graduate Degree		1.05			
Other Post-Secondary		0.94*			
Pre-landed Canadian work experience (Yes)					
No			1.55***		
Province of study (Ontario)					
Newfoundland and Labrador				0.62**	
Prince Edward Island				0.89	
Nova Scotia				0.44***	
New Brunswick				0.27***	
Quebec				1.48***	
Manitoba				2.81***	
Saskatchewan				1.30***	
Alberta				1.84***	
British Columbia				1.86***	
Region of study (CMA (>1M)					
Rural					0.11***
CMA (<500K)					0.20***
CMA (500K-1M)					0.41***
Sex (Male)					
Female	1.22***	1.22***	1.22***	1.18***	1.22***
Age	1.00	1.00	1.00	1.00	1.00
Marital Status					
Married, common law partner	1.21***	1.19***	1.16***	1.17***	1.26***
Separated, Divorced, Widowed	1.19*	1.17†	1.18*	1.17†	1.19*
Country/Region of Citizenship (Asia)					
United Kingdom	1.05	0.97	0.98	0.96	1.24†
Europe	1.24***	1.22***	1.24***	1.15***	1.33***
Africa	0.93*	0.97	0.97	0.98	1.25***
Oceania	1.43**	1.38**	1.40**	1.36**	1.46**
United States	0.96	0.97	0.95	0.90†	1.03
Central and South America	1.6***	1.55***	1.53***	1.46***	1.64***
Caribbean	1.07	1.05	1.07	1.17*	1.35***
Education Level (Bachelor's Degree)					
Trade Certificate	1.25***	1.22***	1.23***	1.17**	1.11*
Non-university Diploma	1.53***	1.48***	1.54***	1.51***	1.47***
Graduate Degree	0.96†	0.98	0.96†	1.01	1.08**
Immigration Category (Skilled Worker)					
Family Class	0.79***	0.79***	0.78***	0.79***	0.75***
Provincial Nominee Program	0.36***	0.36***	0.39***	0.31***	0.40***
Canadian Experience Class	0.61***	0.66***	0.73***	0.70***	0.66***
Refugee	1.26***	1.17**	1.20***	1.26***	0.96
Business class and other	1.86***	1.53**	1.65***	1.58**	1.77***
Knowledge of Official Language (English)					
French	1.04	1.04	1.01	0.88†	1.02
Both	1.20***	1.22***	1.20***	1.07	1.05
Neither	0.89*	0.93	0.94	0.92	0.89*
Log-likelihood	-32246.7	-32450.2	-32418.0	-31726.6	-29814.0

p<001 *** p<.01 ** p<.05 * p<.10 †
N=55,435
Source: Longitudinal Immigrant Database (IMDB)

Model 2, the greater odds of landing in one's place of study and having a Canadian trade certificate, compared to a Canadian bachelor's degree, prior to landing weakens when PR admission characteristics are also controlled (O.R. 1.40, p<.001). The greater odds of retention at landing among international students with pre-landing Canadian graduate degrees relative to international students with pre-landing Canadian bachelor's degree prior to migration also weakens in addition to becoming statistically insignificant. For those with Other post-secondary education, their odds of retention compared to a bachelor's degree become statistically significant again when PR admission characteristics are controlled (O.R. 0.94, p<.05). Therefore, controls for PR admission characteristics, when held constant, mediate the difference in odds of retention at landing between having a Canadian trade certificate and having a Canadian bachelor's degree prior to landing. Model 4 shows that holding PR admission characteristics constant diminishes the lower odds of retention at landing if studying in an Atlantic province compared to studying in Ontario to becoming statistically insignificant. All provinces with greater odds of retention at landing compared to Ontario in Table 5 become stronger in **Table 6** with the exception of Quebec where differences from Ontario in odds of retention of landing become smaller. The odds of retention and studying Saskatchewan changes markedly when PR admission characteristics are held constant. International students who studied in Saskatchewan become more likely to remain in their place of study than international students in Ontario, and this association becomes more statistically significant (p<.001). Thus, PR admission characteristics, when held constant, mediate the odds of retention at landing for all provinces of study compared to Ontario except for Manitoba, Alberta, and British Columbia.

Table 7 shows that when all factors of pre-landed Canadian experience are examined together with demographic characteristics (Model 1), the length of study remains significantly positively related to international students landing in their place of study (O.R. 1.14, p<.001). However, compared to Table 5, the greater odds of retention with a pre-landed Canadian trade certificate as opposed to a pre-landed Canadian bachelor's degree decreases and becomes statistically insignificant when the remaining pre-landed Canadian experience factors are examined simultaneously. At the same time, Canadian graduate degrees' greater odds of retention compared to that of Canadian bachelor's degrees decrease and become less significant (O.R. 0.99, p<.05). When controlling for all factors of pre-landed Canadian experience, the lower odds of having other post-secondary education compared to a bachelor's degree increases and

Table 7. Odds Ratios from Logistic Regression Models Predicting Retention at Landing by All Measures of Pre-Immigrations Canadian Experience and Covariates among Landed International Students (2005-2014 landing years)

	Model 1	Model 2
Length of study	1.15***	1.16***
Pre-landed Canadian education (Bachelor's Degree)		
Trade Certificate	1.42	1.25***
Graduate Degree	0.99*	0.97
Other Post-Secondary	0.93***	0.89***
Pre-landed Canadian work experience (Yes)		
No	1.81***	1.53***
Province of study (Ontario)		
Newfoundland and Labrador	2.28***	2.73***
Prince Edward Island	4.89***	6.7***
Nova Scotia	1.93***	2.24***
New Brunswick	1.56***	1.6***
Quebec	1.67***	1.35***
Manitoba	3.90***	6.92***
Saskatchewan	4.25***	5.71***
Alberta	1.24***	1.38***
British Columbia	1.44***	1.73***
Region of study (CMA (>1M)		
Rural	0.08***	0.07***
CMA (<500K)	0.13***	0.13***
CMA (500K-1M)	0.27***	0.25***
Sex (Male)		
Female	1.23***	1.19***
Age	1.00	1.00
Marital Status		
Married, common law partner	1.36***	1.22***
Separated, Divorced, Widowed	1.57***	1.28**
Country/Region of Citizenship (Asia)		
United Kingdom	1.39**	1.34*
Europe	1.77***	1.4***
Africa	1.71***	1.2***
Oceania	1.85***	1.5**
United States	1.05	0.97
Central and South America	2.18***	1.92***
Caribbean	1.87***	1.49***
Education Level (Bachelor's Degree)		
Trade Certificate		1.12*
Non-university Diploma		1.48***
Graduate Degree		1.05
Immigration Category (Skilled Worker)		
Family Class		0.73***
Provincial Nominee Program		0.34***
Canadian Experience Class		0.7***
Refugee		1.4***
Business class and other		2.72***
Knowledge of Official Language (English)		
French		1.06
Both		0.99
Neither		0.87*
Log-likelihood	-29243.6	-28395.8

p<001 *** p<.01 ** p<.05 * p<.10 †
N=55,435
Source: Longitudinal Immigrant Database (IMDB)

becomes statistically significant again. The positive association between no pre-landed Canadian work experience and retention at landing also increases compared to Table 5 (O.R. 1.81, p<.001). The role of the province of study on international students landing in their place of study becomes markedly different when examined concurrently with the remaining factors of pre-landed Canadian experience. When the province of study was examined alone, net of demographic controls, the odds retention varied between Ontario and the other provinces. However, **Table 7** demonstrates that net of demographic characteristics, the odds of retention for all provinces is greater than Ontario. Furthermore, provinces with greater odds of retention than Ontario lessen in difference when controlling for the remaining factors of pre-landed Canadian experience, except for Manitoba which becomes markedly greater (O.R. 3.90, P<.001). In contrast, controlling for all factors of pre-landed Canadian experience strengthens the extent to which smaller regions of study differ from CMAs with at least one million people in the odds of international students landing in their place of study, net of demographic characteristics. Compared to Table 5, the lower odds of rural international students landing in their place of study decreased (O.R. 0.08, p<.001). The same occurs for international students who studied in CMAs with less than 500,000 people (O.R. 0.13, p<.001), and for those who studied in CMAs with 500,000 to one million people (O.R. 0.27, p<.001).

When PR admission controls are added to the previous model, the positive association between international students' length of study and landing in their place of study become stronger, where an increment of one standard deviation above the mean study length is associated with 16 per cent greater odds of international students landing in their place of study (p<.001). Similarly, the odds of retention at landing for international students with other Canadian post-secondary education remain lower to that of Canadian bachelor's degrees prior to landing and are stronger when PR admission characteristics are also controlled (O.R. 0.89, p<.001). Conversely, pre-landed Canadian trade certificate education remains significantly higher than a bachelor's degree but this difference weakens, where international students with a Canadian trade certificate are 25 per cent more likely to remain in their place of study than those with a Canadian bachelor's degree (p<.001). The effect of having a Canadian graduate degree compared to a bachelor's degree stays statistically insignificant when accounting for PR admission characteristics. PR admission characteristics also mediate the association between pre-landed Canadian work experience and retention at landing where the greater odds for those without pre-landed

Canadian work experience is lower and 1.53 the odds of retention for individuals with pre-landed Canadian work experience ($p<.001$). Lastly, region of study remains significantly positively associated with international students landing in their place of study. When all variables are examined together, the lower likelihood of international students from smaller regions landing in their place of study compared to international students in CMAs with at least one million people generally become stronger. Model 2 shows that when all variables are examined at the same time, international students in rural areas, CMAs with less than 500,000 people, and CMAs with 500,000 to one million people are 93%, 87%, and 75% less likely to remain in their place of study compared to international students in CMAs with at least one million people ($p<.001$).

Chapter 7

7 Discussion and Conclusion

International students are a growing source of permanent migration in Canada, which has made it increasingly important to understand the factors that influence their retention at landing. Human capital and geography-level factors have been widely researched as drivers of internal migration for immigrants (Nogle, 1994; Bartel, 1989; Reher & Silvestre, 2009; Amirault, de Munnik & Miller, 2013). However, pre-landed Canadian experience has yet to be examined in its association with immigrant mobility. Furthermore, indicators of pre-landed Canadian experience tend to be looked at for their effects on economic outcomes (Sweetman & Warman, 2014). As a result, the regional implications of international students' pre-landed Canadian experiences are not yet understood. These consequences may also vary according to what types of pre-landed Canadian capital they carry with them and where they studied, yet limited research has explicitly compared how these dimensions of pre-landed Canadian experiences relate to retention among international students.

The goal of this study was to fill these gaps in the literature by examining study length, pre-landed Canadian education, work experience, province or study, and region of study as separate concepts with potential implications for international student retention at landing. This study sought to compare how these factors varied between international students that landed in their place of study and those who did not. In addition, this study sought to take into account an important distinction about how international students transition into permanent residence; that the accumulation of host country capital and familiarity in a certain region do not necessarily reflect an attachment to place. Therefore, the goal of this analysis was to also examine whether there are differences in how time, pre-landed Canadian capital, and geographic contexts shape retention depending on international student's length of study, level of Canadian education, work experience, and the specific province and region in which they studied.

By employing multiple indicators of pre-landed Canadian capital and geographic context as separate aspects of international students' pre-landed Canadian experience, this study has built on previous research regarding immigrants and internal migration by highlighting the importance of these concepts. It was consistently observed that greater lengths of study were significantly

positively associated with the retention of international students to their place of study at landing. Similarly, international students who obtained a Canadian trade certificate prior to landing were consistently significantly more likely than international students with Canadian bachelor's degree to remain in their place of study. However, international students with Canadian graduate degree were significantly more likely to remain in their place of study compared to those with Canadian bachelor's degrees only when demographic characteristics are held constant and become significantly less likely to stay when all pre-landed Canadian experiences and demographic characteristics are controlled. These findings show that length of studies and pre-landed Canadian education credentials are not interchangeable measures, especially when considering their mobility-related implications. Instead, they capture different aspects of studying in Canada which international students experience and appear to have distinct associations with retention to one's place of study at landing. While more years spent studying in a community has positive implications for retention at landing, skills-based education rather university education appears to be more beneficial to regionalization goals. Thus, the results of this study emphasize the need to distinguish between the time that is spent study and qualifications that are pursued among landed international students, especially when considering the different aspects of Canadian education experience during temporary residency (Carter et al., 2009; van Huystee & St Jean, 2014). Furthermore, differences in the skills and type of occupations associated with a trade certificate compared to university education have important implications on international students' ability to navigate Canadian labour markets. In attempts to retain international students at landing, local governments may find it to be more effective to invest in college enrollment, where international students can develop the skills that are in demand and specific to local economies.

This study also demonstrated that pre-landed Canadian work experience is another form of host country capital that increases the chance of international students landing outside their place of study. Not having pre-landed Canadian work experience was significantly positively associated with the retention of international students at landing. This association for pre-landed Canadian work experience remained regardless of which combination of factors were examined simultaneously. These findings suggest that more pre-immigration host country capital plays deter the retention of international students to their place of study when they become permanent residents. In addition, findings also indicate that pre-landed Canadian work experience is more

important than pre-landed Canadian education in the retention of international students at landing, as the stronger influence underscores the importance of labour market experiences in for international students' decisions to stay. Familiarity with the Canadian labour market and knowledge regarding employment opportunities and workplace culture become a resource for international students' pursuit of employment and settlement upon permanent residence, where they may perceive to be more capable of navigating other labour markets.

Studying in Quebec, Manitoba, Alberta, and British Columbia consistently showed greater odds of landing in one's place of study among international students compared to studying Ontario. Regions in Atlantic Provinces were also more likely to retain their international students when they transitioned to permanent resident status but only when the remaining facets of pre-landed Canadian experience were accounted for. Otherwise, when the provinces of study were evaluated on their own, regardless of controlling for demographic and PR admission characteristics, studying in an Atlantic province made it less likely than studying in Ontario to land in one's place of study. Differences in retention at landing between studying in Ontario and studying in Saskatchewan varied greatly but would see greater likelihoods for retention at landing when all pre-immigration experiences are examined. These findings suggest that policy efforts to regionalize new immigrants to Canada play a role in where international students decide to land. It is unsurprising that, in general, international students studying in Ontario, Quebec, and British Columbia are more likely to remain in their place of study. Whereas for Manitoba, the introduction and implementation of its PNP show that in addition to its effectivity of attracting new immigrants in general, retention efforts are especially effective in welcoming international students as permanent residents (Carter, Morrish & Amoyaw, 2008). Furthermore, retention levels of international students to their place of study in smaller provinces reflect the growing number of immigrants in these provinces with education credentials greater than a high school diploma (Akbari, 2011; King, 2009).

The observation that international students studying in Canada's largest CMAs with at least one million people are more likely to remain in their place of study compared to all other regions is an important finding, showing that landed international students have similar mobility patterns of immigrants in general. Previous research emphasizes relative population sizes between origins and destinations to significantly affect the direction and level of internal migration (Amirault, de

Munnik & Miller, 2013). It is also important in addressing assumptions about their pre-landed Canadian experience. Canada's federal and provincial governments see international students' temporary residency across Canada as a stepping stone for regionalization efforts. However, the role of the region of study for retention found in this study underscores the importance of meeting the economic and cultural needs of landed international students. Similar to other immigrants and new labour market entrants, relying on international students' familiarity with a smaller region is limited when considering what influences their destination decisions. Evaluating the distinctness of Canada's largest cities from everywhere else, and making those resources robust in smaller regions, may be a more fruitful focus for future regionalization efforts.

By considering how pre-landed Canadian experiences differ between international students that remain in their place of study and those who do not, this analysis has helped provide a better understanding of the pre-landed Canadian factors that are associated with the destination decisions among international students. Although the topic of temporary-to-permanent migration is growing within immigration literature, none of the research has focused on their settlement patterns. This is because data on temporary resident information, let alone their permanent migration information, has only become recently available. This limitation, combined with economic outcomes being a dominant measure of immigrant outcomes, explains the current lack of research on the regional retention of landed international students. However, because international students account for a growing share of immigrant arrivals, and policy efforts have been created with a focus on their regionalization after permanent residence, it is important to identify the mechanisms that that shape their decisions to remain in their place of study, and to understand if they do so differently relative to those that leave.

This study has contributed to filling this gap by demonstrating that length of studies is linked to international students landing in their place of study. More time spent in a given location may benefit international students for various reasons that are related to integration. For example, longer lengths of stay give international students more time to build and maintain social ties with native residents. Research in Canada shows that, over time, immigrants in Manitoba increasingly participate in activities outside their own ethnic or cultural group, notably after 3 years since landing (Carter et al., 2009). In addition, the length of studies may play a larger role for

networking and employment which contributes to landing in their place of study. Previous studies show that landed international students found social networks to be crucial in their transition from temporary to permanent residents (Joseph, 2016). Access to informal networks increases opportunities to find employment, a resource that is especially important for rural immigrants (Matthews, Pendakur & Young, 2009). Therefore, giving permanent resident status to international students who have spent more years studying in smaller regions of Canada may be particularly advantageous after their transition, if they have developed a network that will assist in their pursuit of employment and in their social integration. These findings thus highlight that time plays a beneficial role in the retention of international students after they land.

In addition, results of this analysis revealed that international students who hold trade certificates are more likely to remain in their place of study than those with university-level credentials. Immigrants that are mobile tend to be more educated since higher human capital maintains their competitive position in a wider array of labour markets (Morency, Malenfant & MacIsaac, 2017). Lower skilled immigrants' calculation of their perceived ability to compete in other labour markets may, therefore, be a significant factor in choosing to leave their place of study (Dex, 1985). Additionally, international students' technical skills may be better matched to the manufacturing and primary industries that are more integral to rural and small-town areas in Canada (Beshiri, 2010). Trade certificate qualifications may be strongly linked to the retention of international students after they land by moderating decision-making of where they may receive the greatest return on their investments (Arthur & Flynn, 2011). Alternatively, the decision to obtain a trade certificate may have been premised on knowing about industry-specific employment opportunities in their local labour market (Hossler, Schmit & Vesper, 1999). Policy efforts to encourage international students to stay in their place of study can focus on processes which facilitate their employment outcomes by admitting those with the appropriate skill sets and levels specific to regional labour markets.

Findings from this study also show that policies which require pre-landed Canadian work experience result in lower likelihood of international students remaining in their place of study when they become permanent residents. Instead, policy efforts to attract and retain international graduates should focus on individuals without this experience. In January 27, 2017, the Atlantic Canada Opportunities Agency launched the Atlantic Immigration Pilot designed to attract and

retain international graduates, along skilled workers, in Atlantic Canada (ACOA, 2017). Under this pilot program, international students from Canada do not require work experience to apply for permanent migration (Government of Canada, 2017). Findings from this study provide support for this decision and may be useful for other regions' immigration selection criteria regarding admitting international students who will contribute to regionalization efforts.

The present study is not without limitations. The IMDB is limited to administrative information which limits the extent to which pre-landed Canadian experience and transition to a permanent residence can be defined, measured, and while also limiting permanent resident admission characteristics.

First, details of international students' programs are not available in the IMDB. Information such as the program of study and language of study could not be included in the analysis. International students' decisions to migrate are based on perceived returns to migration and human capital in a potential destination, where occupation fields and language are forms of investment capital (Borjas, Bronars & Trejo, 1992). Knowledge of Official language at landing is included as a control however this is not a reliable indicator for their language of studies. This is mainly because international students are required to know at least one Official language to be enrolled in a designated learning institution (IRCC, 2016) thus we should expect there to be no individuals who declare to know neither Official language at landing. However, this is not the case since around four per cent of landed international students said they knew neither Official language at landing. Since the full extent of international students' pre-landed Canadian capital is unknown, future studies should examine whether these factors are related, and to what extent they are related to international students' mobility when they become permanent residents. Future research can incorporate NOC codes which are intended in occupations at landing that classifies intended industry and skill level. This variable was not included in the present study since it is not the real labour market outcome of immigrants. However, the inclusion of the variable may be useful for future research when looking at the dynamics of matching landed international students' skills with local labour market opportunities.

Similarly, this analysis does not account for interpersonal characteristics which may influence immigrant destination locations including the presence of family members in Canada at the time

of landing (Borjas & Bronars, 1991) and arranged employment (de Haas, 2010). Instead, immigration category results may act as a proxy for such conditions if needed. However, this is not recommended since programs like the PNP, which generally require arranged employment, vary in rules and regulations between provinces. Future research using qualitative methods could compare temporary residents pursuing permanent migration and permanent residents who previously held study visas prior to migration. Many qualitative studies on international students focus on experience temporary residency (Arthur & Flynn, 2011; Guo, 2010) with a minority focusing on international students after permanent residence (Scott, Trilokekar & El Masri, 2015; Joseph, 2016). The insight that can be drawn from qualitative research, as well as emphasis on the outcomes after they have permanent resident status, would provide more depth in the role of pre-landed Canadian capital and geographic context of a study on retention at landing than what is presented here.

Another limitation of the findings concerns the category "Other post-secondary education" under pre-landed Canadian education. The difficulties with accurately comparing the influence of "other postsecondary education" on retention are due to its ambiguity. This variable could mean any education level from Language Training as a prerequisite to studying at a designated education institution to a post-doctorate after completing a Doctorate Degree. As such, the comparability of this education level is only useful in so far as it is indicative of the acquisition of post-secondary education. Future research might consider the omission of this category for a more focused examination of the influence of levels of pre-landed Canadian education on international student outcomes after landing. This step was not taken in this study since removing individuals with this credential (N=39,900) would remove 65 percent of the analytic sample. However, significant results may still result with the omission of this category in future research using the IMDB and study permits.

In sum, the findings from this analysis further understandings of the pre-immigration host country experiences, and their implications for international student outcomes after they transition to permanent resident status. Results show that dimensions of pre-landed Canadian capital and geographic context of study are both associated in different ways with the retention of international students to their place of study at landing. Pre-landed Canadian capital appears to have a negative influence on the retention of international students to their place of study at

landing, whereas larger regions of study encourage landing in one's place of study. The fact that pre-landed Canadian education and work experience were associated with out-migration, when demographic characteristics are controlled or when all key indicators and covariates are controlled, highlights that training international students to be a highly skilled source of labour may potentially lead to unfavourable geographic distributions. On the other hand, the positive relationship between the length of studies and retention at landing suggest that time spent in a community may be an important facet of selecting permanent residents who will stay in non-traditional immigrant destinations. Enhancing international students' opportunities to develop and maintain social networks, while also focussing on technical skills that are employable in their place of study may be important factors to consider in future policy efforts aimed at retaining students to their place of study when they become permanent residents, particularly among those in smaller regions of Canada.

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