

# Immigrant Retention in New Brunswick

An Analysis Using Linked Federal-Provincial Administrative Data



Ted McDonald, PhD  
Pablo Mich, MA, MSc

## **PROJECT TITLE**

Immigrant retention in New Brunswick: An analysis using linked federal-provincial administrative data

## **PRINCIPAL INVESTIGATOR**

Ted McDonald, Director, NB-IRDT

## **RESEARCH TEAM**

Pablo Miah, Data Analyst, NB-IRDT

## **PUBLICATION DATE**

Published July 2021

Updated December 2021

## **ACKNOWLEDGEMENTS**

Funding for this project was provided by the Government of New Brunswick, Department of Post-Secondary Education, Training and Labour (PETL) as part of a five-year research agreement between PETL and NB-IRDT. The views expressed in this study do not necessarily represent those of PETL or their partners.

## **HOW TO CITE THIS PRODUCT**

McDonald, T., & Miah, P. (2021). Immigrant retention in New Brunswick: An analysis using linked federal-provincial administrative data. Fredericton, NB: New Brunswick Institute for Research, Data and Training.

# TABLE OF CONTENTS

Abbreviations & Definitions.....	vi
Executive Summary .....	1
Highlight of Findings.....	1
Introduction .....	3
Background.....	4
Studies Related to Immigrant Retention in NB .....	5
Data & Methodology .....	7
Data.....	7
Methodology.....	7
Limitations .....	10
Results .....	10
Average Time for Active Medicare Status in the Citizen Database After & Before Landing (Matched Primary Applicants) .....	10
Annual Landings, Matching Rates, & Retention Rates .....	12
All Immigrants .....	14
Primary Applicants.....	16
Immigration Stream .....	18
Education Level .....	23
Occupation .....	28
Country of Citizenship .....	32
Language .....	35
CMA/CA .....	40
Results from the Immigration NB Database (INB).....	43
Discussion & Conclusion.....	47
Comparison with Other Studies.....	47
Increased Retention Rates in 2018 .....	48
References.....	50
Appendix: Immigrant Retention in NB – A Comparison of Results Based on Medicare & Tax Data (2006-2015 Cohorts) .....	51
Calculating Immigrant Retention in New Brunswick – Methodological Differences.....	51
Comparing Final Samples: Tax Records vs Medicare Records .....	53
Immigrant Landings by Data Source.....	54
Does NB Immigrant Retention Vary by Data Source?.....	55

# LIST OF TABLES

Table 1: Average Time for Active Status in Citizen Database After Landing ..... 11

Table 2: Average Time for Active Status in Citizen Database (Active Medicare) Before Landing ..... 11

Table 3: Number of Days for Active Status in Citizen Database (Primary Applicants) After Landing by Year ..... 12

Table 4: Annual Landings and Matching Rate of All Immigrants (Primary Applicants & Dependents) ..... 14

Table 5: Retention Rates of All Immigrants (Primary Applicants & Dependents) ..... 15

Table 6: Annual Landings and Matching Rate of Primary Applicants Only ..... 16

Table 7: Retention Rates of Primary Applicants Only ..... 17

Table 8: Pooled Landings and Matching Ratio of Primary Applicants by Immigration Stream (2005-2018) ..... 18

Table 9: Annual Landings (Matched) of Primary Applicants by Immigration Stream ..... 19

Table 10: 1-Year Retention Rates of Primary Applicants by Immigration Stream ..... 20

Table 11: 3-Year Retention Rates of Primary Applicants by Immigration Stream ..... 21

Table 12: 5-Year Retention Rates of Primary Applicants by Immigration Stream ..... 21

Table 13: Pooled Landings and Matching Ratio of Primary Applicants by Education Level (2005-2018) ..... 24

Table 14: Annual Landings (Matched) of Primary Applicants by Education Level ..... 24

Table 15: 1-Year Retention Rates of Primary Applicants by Education Level ..... 25

Table 16: 3-Year Retention Rates of Primary Applicants by Education Level ..... 26

Table 17: 5-Year Retention Rates of Primary Applicants by Education Level ..... 26

Table 18: Annual Landings (Matched) of Primary Applicants by Occupation ..... 28

Table 19: 1-Year Retention Rates of Primary Applicants by Occupation ..... 29

Table 20: 3-Year Retention Rates of Primary Applicants by Occupation ..... 30

Table 21: 5-Year Retention Rates of Primary Applicants by Occupation ..... 30

Table 22: Annual Landings (Matched) of Primary Applicants by Country of Citizenship ..... 32

Table 23: 1-Year Retention Rates (%) of Primary Applicants by Country of Citizenship ..... 33

Table 24: 3-Year Retention Rates (%) of Primary Applicants by Country of Citizenship ..... 34

Table 25: 5-Year Retention Rates (%) of Primary Applicants by Country of Citizenship ..... 34

Table 26: Pooled Landings and Matching Ratio of Primary Applicants by Language (2005-2018) ..... 36

Table 27: Annual Landings (Matched) of Primary Applicants by Language ..... 36

Table 28: Annual Landings (Matched) of Primary Applicants by CMA/CA\* ..... 40

Table 29: Differences Between Actual & Intended CMA/CA ..... 41

Table 30: 1-Year Retention Rates of Primary Applicants by CMA/CA (Retained in NB) ..... 41

Table 31: 1-Year Retention Rates of Primary Applicants by CMA/CA (Local Area) ..... 42

Table 32: Annual Landing, Matching Rate, and Retention Rate of PNP Primary Applicants in 2018 (INB) ..... 45

Table 33: Annual Landings (Matched) and Retention Rates of PNP Primary Applicants by Immigration Stream .....	46
Table 34: A Comparison of Methodologies Using Tax and Medicare Records to Calculate Student Retention .....	51
Table 35: Sample Comparison between Tax and Medicare Records .....	53
Table 36: Annual Landings of Primary Applicants Only.....	54
Table 37: Retention Rates of All Immigrants (Primary Applicants and Dependents) by Year(s) Since Landing (YSL) .....	56
Table 38: Retention Rates of Primary Applicants Only by Year(s) Since Landing (YSL) .....	56
Table 39: Retention Rates of Provincial Nominees (Primary Applicants Only) by Year(s) Since Landing (YSL) .....	57
Table 40: Retention Rates of Primary Applicants Only (Bachelor's Degree Holders) by Year(s) Since Landing (YSL) .....	57
Table 41: Retention Rates of Primary Applicants Only (Post-Graduate Degree Holders) by Year(s) Since Landing (YSL) .....	58

## LIST OF FIGURES

Figure 1: Kaplan-Meier Survival Analysis of Primary Applicants by Immigration Stream .....	22
Figure 2: Kaplan-Meier Survival Analysis of Primary Applicants by Education Level .....	27
Figure 3: Kaplan-Meier Survival Analysis of Primary Applicants by Occupation.....	31
Figure 4: 1-Year Retention Rates of Primary Applicants by Language .....	37
Figure 5: 3-Year Retention Rates of Primary Applicants by Language .....	38
Figure 6: 5-Year Retention Rates of Primary Applicants by Language .....	38
Figure 7: Kaplan-Meier Survival Analysis of Primary Applicants by Language .....	39

## Abbreviations & Definitions

**IRCC** - Immigration, Refugees and Citizenship Canada

**Matched Immigrants** – Individuals in IRCC landings records who are matched to the Citizen Database

**Unmatched Immigrants** – Individuals in IRCC landings records who are not matched to the Citizen Database

**Retention Rate** – Retention (of Matched Immigrants) is measured from the time of landing date as indicated in the IRCC landing records. An “Active” eligibility status in the Citizen Database implies that an immigrant is residing in the province. An individual is defined to have left the province if the individual’s eligibility status is classified as “Left the Province” or “Left Country,” as well as anyone whose status was terminated for other reasons and remained as such for at least 6 months.

**PNP Immigrants** – Immigrants arriving through the NB Provincial Nominee Program (PNP)

**AIP Immigrants** – Immigrants arriving through the Atlantic Immigration Pilot (AIP)

**Syrian Refugee Flag** – Indicator to identify immigrants in NB who are Syrian refugees

**Official Languages Spoken** – Official NB language (English, French, Both, None) as indicated in the Permanent Resident Landing File

**Intended Destination Municipality** – Immigrants’ intended landing municipality (Census Subdivision/Census Metropolitan Area) indicated in the landing records (Fredericton, Moncton, Saint John, and others)

**Occupation** – Immigrants’ occupation under the National Occupational Classification (NOC) Level 1 2011, indicated in the landing records. To meet disclosure requirements, occupations under “Art, culture, recreation and sport” and “Natural resources, agriculture and related production” and “Not stated” are included in “Other” categories.

## Executive Summary

The Government of New Brunswick (GNB) has identified immigration as a key strategy for addressing stagnant population growth and a shrinking labour force. GNB invests significant resources and efforts to attract more immigrants to the province and retain them. However, to understand if current policies are effective or need to be altered, it is important to know the retention rates of immigrants arriving in New Brunswick (NB) and which factors influence these rates.

In 2019, NB-IRDT released a report titled “Immigrant retention in New Brunswick: Results from BizNet and Citizen Database” (Leonard et al.), in which data from Biznet (the Provincial Nominee Program database) and the Citizen Database (Medicare registry) were used to estimate the retention rates of **immigrants who arrived through the Provincial Nominee Program (PNP)**.

The current study provides an update of results and extends the 2019 report by using matched federal data from the Permanent Resident Landing File of Immigration, Refugees and Citizenship Canada (IRCC) and the Citizen Database to estimate the retention rates of **all immigrants who intended to arrive in NB**. This report also employs an updated<sup>1</sup> methodology for measuring retention.

As such, this study investigates

- Which streams of immigrants have higher retention rates.
- Factors influencing the decision to leave NB.
- Retention rates of immigrants in the Atlantic Immigration Pilot (AIP) program.

It also examines retention rates for PNP and immigration streams within PNP using data from Immigration New Brunswick (previously BizNet) and the Citizen Database for additional granularity in settlement streams not available in the IRCC data. These databases have been matched through the Department of Health using the name, gender, and birthdate of individuals, and they were stripped of any personal identifiers (e.g., addresses) and pseudonymized (de-identified) before being sent to NB-IRDT.

### Highlight of Findings

- Half of all primary applicants who land in NB register for Medicare within 2 days after landing.

---

<sup>1</sup> A revised methodology is employed to account for the fact that some terminations in Medicare status among NB residents are not because of a departure from the province but simply a lapse in renewal. We adopt a decision rule where we assume that terminated status indicates a departure from the province if the person's Medicare is not reactivated within six months of the termination.

- Approximately 84% of all immigrants and 85% of primary applicants in the IRCC whose intended destination is NB could be matched to the Citizen Database.
- The highest matching rates (primary applicants) are among AIP immigrants (90.1%) and Syrian refugees (94.6%).
- 81% of *all immigrants* between 2005-2018 are retained 1 year after landing.
- 81% of *primary applicants* remain in NB after 1 year, and more than half (58.7%) remain after 5.
- Almost 79% of Provincial Nominees (PNP) remain in NB for at least 1 year.
- The 1-year retention rate for immigrants in the AIP is 82.8%.
- The 1-year retention rate for Syrian Refugee is about 84.3%.
- Immigrants in the Sponsored Family stream exhibit higher retention rates than other streams, indicating the impact of family ties in the province.
- Those landing in the Moncton CMA are more likely to stay in NB (83.2%) and the Moncton CMA (79.5%).
- The 1-year retention rate for the 2018 cohort has increased compared to earlier years. This is a consistent pattern across several immigrant subgroups defined by immigration stream, country of previous residence, education level, and occupation.
- The Philippines is the source country with the highest retention rate in NB: 92.9% of immigrants from the Philippines remain in the province 1 year after arriving.

## Introduction

This study examines the arrivals and retention rates of immigrants whose intended landing province is New Brunswick (NB). In 2019, an NB-IRDT study (Leonard et al.) estimated the retention rates of immigrants who arrived through the Provincial Nominee Program (PNP) between 2005 and 2017. The current study is both an update (2005-2018) and an extension to the previous report, and it addresses the following questions:

- Which stream of immigrants has a higher likelihood of remaining in the province?
- What other characteristics are associated with a higher likelihood of retention, and can any causal relationship be inferred?
- Does the Atlantic Immigration Pilot program have higher retention rates compared to other immigration entry streams?

This study combines data from the Permanent Resident Landing File (providing immigration landing records) and the Citizen Database (providing Medicare eligibility and status), available through the NB-IRDT secure data platform. The assumption is that an immigrant's NB Medicare eligibility/status reveals whether they remained in the province and, if so, for how long.

The rationale behind the use of the provincial Medicare registry lies not only in its coverage of almost all NB permanent residents/citizens and its retrospective, longitudinal nature, but also in the ease with which it can be obtained and linked to other provincial administrative data. Challenges with migration modelling often circle around a lack of timely and accessible data, and the use of the provincial Medicare registry addresses this issue.

Our sample consists of immigrants with an active Medicare registry in NB at any point between 2005 and 2019 for which data is available. Linking immigrant landing records and Medicare registry records allows us to observe entry into NB based on the date of registration for Medicare. Exits from the province are observed based on the date of termination in the Medicare registry. Death and other reasons for termination that cannot be interpreted as leaving are observed as well. New immigrants are identified based on variables stating their date of landing and country of citizenship.

The extent to which immigrant landing records can be matched to Medicare registration is important, as this reflects immigrants who indicate NB as their intended province of residence but who do not actually move to NB. However, unmatched records can arise from differences or gaps in recorded personal information used for matching. A recent NB-IRDT report (Leonard et al., 2020) estimates that a large proportion of unmatched records among PNPs are likely to be due to the former.

In addition to estimating retention rates by various immigration streams, we report the retention rates from the Atlantic Immigration Pilot (AIP) program in NB. AIP was launched in March 2017 as part of the Atlantic Growth Strategy with the intention of supporting the Atlantic provinces in

meeting specific labour market demands by providing businesses a platform to fill job vacancies quickly using permanent immigration programs.

This report presents the following:

- Descriptive statistics on the matching rate between the Permanent Resident Landing File and the Citizen Database.
- The number of landings and retention rates of immigrants in New Brunswick (2005 - 2018).
- Statistical survival analyses to estimate the probability of an immigrant being retained from the time of arrival to some future time.

The results are mainly focused on primary applicants and disaggregated by immigration stream, country of citizenship, level of education, occupation, language, and Census Metropolitan Area (CMA) or Census Agglomeration (CA).<sup>2</sup>

This study also links data from the updated Immigration New Brunswick (INB) database, previously known as BizNet, with the Citizen Database to provide 2018 retention rates for specific subcategories of the Provincial Nominee Program (PNP).

## Background

Generally, immigration has played two key roles in developed nations:

- It has contributed to economic growth through the import of highly skilled workers.
- It has offset population decline or stagnation, which is often due to low domestic fertility rates.

However, the extent to which immigration contributes in either way depends on the number of immigrants arriving and the duration of their stay in the intended region. According to Abdurrahman Aydemir and Chris Robinson (2006), "The issue of return or onward migration and particularly who stays is increasingly recognized as an important issue requiring further study."

Canada is faced with the problem of an aging and shrinking population, and immigration is often promoted as an avenue to rectify this issue. Of the various Canadian regions, Atlantic Canada is most highly affected by this demographic challenge. The public policy response to this has been to set immigration as one of the pillars for regional economic growth. This

---

<sup>2</sup> A Census Metropolitan Area (CMA) or a Census Agglomeration (CA) is formed by one or more adjacent municipalities centred on a population centre (also known as a core). A CMA must have a total population of at least 100,000, of which 50,000 or more must live in the population centre. A CA must have a core population of at least 10,000.

promotion of immigration is selective in nature, favouring younger and more highly skilled candidates. Not only are population decline and stagnation addressed in this way, but economic growth is also more likely to occur. However, research shows that decisions to come to Atlantic Canada do not necessarily translate to decisions to remain in the region. Newcomers, once issued permanent residency, are free to live anywhere in Canada, and many make the decision to leave the region.

In the context of NB, a recent report by the Public Policy Forum (2018) identifies the province as having one of the lowest rates of immigrant retention among the Canadian provinces. Not only is NB suffering from stagnant population growth and a shrinking labour force, but retaining newcomers has also become an issue that needs to be addressed. Existing literature on immigration and mobility in Canada, including Atlantic Canada, sheds some light on factors that might be influencing immigrant retention in NB.

Aydemir and Robinson (2006) used two separate data combinations to study return migration and onward migration in Atlantic Canada. The first was a combination of tax filing data and landing records, and the other was a combination of census data and landing records. Their evidence shows that return migration varies by source country, visa class, gender, and length of time. Of the sample studied, male immigrants of working age who were either entrepreneurs or highly skilled were found to be highly internationally mobile.

Harvey Krahn, Tracey M. Derwing, and Baha Abbu-Laban's (2005) survey analysis reveals that immigrants residing in second-tier cities like Edmonton and Calgary are less likely to move than those living in third-tier (smaller) cities. The primary factors behind immigrants' decisions to leave appear to be employment and educational opportunities.

Using a regression analysis to study economic and non-economic determinants of an immigrant's destination choice, Ather H. Akabrair and Colin Sun (2006) also show that employment is a large factor in the decision to leave or stay. Their results suggest that new immigrants are more inclined to settle in rural areas if they are able to secure employment and/or if the area has an existing or visible minority population.

## Studies Related to Immigrant Retention in NB

### **Immigrant Income and Labour Market Outcomes: 2006 – 2015 Cohorts**

A recent NB-IRDT study (Boco et al., 2021) uses the Longitudinal Immigrant Database (IMDB), a dataset that links IRCC landing records to tax filer information, to examine the labour market outcomes and retention rates of immigrants in NB from 2006 to 2015. The study finds that, among major cities, Moncton has the highest interprovincial (retained in NB) and intra-provincial (retained locally) retention rates. Among economic streams, PNP immigrants have a higher retention rate compared to other streams, including the Canadian Experience Class, Skilled Worker, and Skilled Trades, Business, or Caregivers programs. Bilingual immigrants (English and French speakers) exhibit a 1-year retention rate of 75% compared to just English-speaking (72%) or French-speaking (69%) immigrants.

## **Immigrant Retention in New Brunswick: Results from BizNet and Citizen Database**

Philip Leonard, Ted McDonald, and Pablo Miah (2019) similarly investigated the arrival and retention of immigrants in NB between 2005 and 2017, with an emphasis on the Provincial Nominee Program. Their study used two provincial datasets: Biznet, which is a record of all Provincial Nominees migrating to NB, and the Citizen Database, which contains provincial Medicare registry records. Their findings show that after 1 year, 75.3% of PNP primary applicants and 83% of non-PNP immigrants are retained. 3-year and 5-year retention rates for PNP primary applicants who arrive in the province are 60.3% and 49.5%, respectively. Country-level analysis reveals that PNP immigrants from the Philippines are more likely to remain in the province, with a 1-year retention rate of 87%.

## **Evaluation of the Atlantic Immigration Pilot – IRCC Survey**

Immigration, Refugees and Citizenship Canada (IRCC) has conducted an evaluation to assess the early implementation and outcomes of the AIP program. The evaluation covers the period from AIP's implementation in March 2017 to the end of the 2019-2020 fiscal year (March 2020), with retention indicators measured by linking 2017 longitudinal immigration IMDB data and 2018 T4 earnings (tax files). In the case of NB, the retention rates for PNP immigrants in the 2017 tax year are 70.5% after 1 year (landed in 2016), 50.3% after 3 years (landed in 2014), and 47.5% after 5 years (landed in 2012).

The administrative data used (2017 IMDB data and 2018 T4 earnings) have a lag of approximately 2 years, which limits estimations for AIP immigrants. Therefore, to obtain the retention rates of AIP newcomers, the IRCC has conducted an online survey with 1,089 respondents across all 4 Atlantic provinces (representing 41% of AIP primary applicants).

A large proportion of AIP newcomers report living in Atlantic Canada after their first year. About 94% of AIP primary applicants (surveyed in 2020) are retained in NB after 1 year, which is higher than the retention rates of respondents in the PNP and Express Entry (surveyed in 2018) streams, which have retention rates of 87% and 90% respectively. After 2 years, approximately 82% of AIP primary applicants remain in the province, which is still higher than the rates for both PNP (71%) and Express Entry (79%).

The focus of this study is to use updated administrative data from IRCC and from the Province of NB to analyze recent immigrant mobility outcomes in NB – in particular, the first cohort of AIP immigrants – using Medicare registration as an indicator for residence in the province.

## Data & Methodology

### Data

This study uses a combination of immigrant landing records and Medicare data available through the New Brunswick Institute for Research, Data and Training (NB-IRDT) – the sole administrative data repository in NB.

The **Citizen Database** (Medicare Registry) provides Medicare eligibility and status of residents in NB. The database indicates whether an individual (i.e., immigrant) still resides in the province or has left, as well as the duration of their stay in NB. For this study, the range of the database is from the beginning of 2005 until the end of 2019.

The **Permanent Resident Landing File (IRCC Landing Records)** is a federal database provided by IRCC. The database provides immigration landing records of all immigrants (primary applicants and dependents), as well as information such as landing dates, country of citizenship, education level, occupation, language, and intended destination municipality (CMA/CA). The database ranges from 1985 to 2018; however, to avoid small counts and to obtain a substantial sample size, the IRCC data observed in this study range from 2005 to 2018.

The **Immigration New Brunswick (INB)** database (previously known as **BizNet**) holds information on immigrants who applied for permanent residency in Canada through NB's Provincial Nominee Program (PNP).<sup>3</sup> The IRCC Landing Records do not break down NB Provincial Nominees into other PNP immigration streams. Thus, the INB database is used to provide supplementary information on NB Provincial Nominees (from the PNP). This database contains information on Provincial Nominees, including their landing dates, country of citizenship, language, education level, and immigration stream. Information on newcomers arriving through the AIP is also available in INB. Since arrival numbers and retention rates for 2005-2017 are reported in Leonard et al. (2019), only updated numbers for 2018 are provided in this study.

### Methodology

The analysis in this study is based on longitudinal administrative data and includes both descriptive statistics and survival analyses. New immigrants to NB are identified based on available variables in both datasets (the Permanent Resident Landing File and the Citizen Database). The sample includes all valid NB Medicare numbers from 2005 to 2019.

Immigrants in the IRCC Landing Records are matched to the Citizen Database by the NB Department of Health based on the name, gender, and birthdate of individuals. The datasets are stripped of names, addresses, and other personal identifiers, and these pseudonymized (de-

---

<sup>3</sup> In the INB database, the variable used as the official landing date is "CONFIRMATION\_OF\_LANDING\_DATE," and in BizNet it is "LANDING\_DATE." The difference in numbers is minor, apart for the years 2010, 2011, and 2012. There are notable variations from BizNet in 2010 & 2011, with numbers dropping by 24% and 9% respectively. In 2012, INB numbers are 33% higher than BizNet numbers. However, 1-, 3-, and 5-year retention rate estimations for these and other years (2005-2017) show only slight differences.

identified) datasets are transferred to NB-IRDT for analysis. Landing records starting from 2005 are used when a large enough sample of immigrants is available to meet disclosure requirements.

Unmatched records can occur either because nominees never arrived in NB or left before they could establish Medicare eligibility, or possibly because of mismatched or incomplete information in one of the records (e.g., a different spelling of a name). For the purposes of this study, any unmatched immigrant is assumed not to have landed in the province. A 2020 NB-IRDT report (Leonard et al.) on unmatched immigrants (NB PNP Provincial Nominees) indicates that the ratio of unmatched records is likely attributed to PNP primary applicants not arriving in NB.

Even though all application categories (immigration streams) are available, our overall analysis is limited to immigrants whose intended destination at landing is NB. Only individuals who indicated NB as their destination have been matched to the Citizen Database.

To estimate retention rates, the assumption is that an immigrant's NB Medicare eligibility status reveals whether they remained in the province and, if so, how long they stayed. The landing date of an immigrant in the IRCC Landing Records indicates the date of first legal entry into Canada as a permanent resident. An "Active" eligibility status in the Citizen Database implies that an immigrant is residing in the province. Departure of an immigrant is indicated with a "Left the Province" or "Left Country" status. Additionally, an individual with a "Terminated" or "Inactive" status for no justifiable reason (i.e., death) is assumed to have left the province if Medicare status is not reactivated within 6 months of termination.<sup>4</sup>

Retention rates are measured only for immigrants who are matched to the Citizen Database, as duration of retention in the province can only be estimated for matched individuals. Statistics on matching rates are also provided in this report and can be used to provide an upper bound of the incidence at which immigrants indicating NB as their intended destination never actually settle in the province.

The examination of matching rates and retention rates is presented across a range of personal characteristics, including immigration stream, country of citizenship, level of education, language, occupation (NOC), and intended CMA/CA. In addition to descriptive statistics on retention, a Kaplan-Meier survival analysis is conducted. The Kaplan-Meier survival analysis estimates the probability of the retention of a non-NB-born resident (i.e., immigrant) from the time of arrival/landing to some future time. These estimates provide the likelihood of retention over the continuum of time after landing.

Like the IRCC Landing Records, the INB database is also matched with the Citizen Database using the same methodology, and retention rates are estimated in a similar manner. The purpose of using this database is to provide supplementary retention rates for the PNP and

---

<sup>4</sup> This methodology is different from the 2019 NB-IRDT study (Leonard et al., 2019), in which any "Terminated" or "Inactive" status indicated departure from the province. This updated methodology considers an individual's transitory "Terminated" status (i.e., delay in renewing expired Medicare); thus, anyone reactivating their expired Medicare within 6 months is treated as not having left NB.

immigration streams within it as an update to Leonard et al. (2019), and to provide a comparison for rates of PNP primary applicants in this study.

## Limitations

This study is limited to individuals who indicate NB as their intended province of residence. Future work will include a wider analysis of the subsequent mobility decisions of immigrants to Canada indicating a location other than NB as their intended destination.

Because the current version of the IRCC database does not identify members of the same family/household, we are unable to study how the location decisions of family members vary by the characteristics of all members of the immigrant household.

## Results

### Average Time for Active Medicare Status in the Citizen Database After & Before Landing (Matched Primary Applicants)

This section estimates the average duration of time it takes for an immigrant to register for provincial Medicare after landing, as registering for Medicare is not automatic, and landed immigrants may not immediately take up residence in NB. Therefore, registration for Medicare, which we assume to indicate an individual becoming a resident in the province, will typically lag the date of legal landing. Further, there is generally a 3-month waiting period for coverage to start for a new resident (i.e., a new resident would be eligible for NB Medicare 3 months after establishing permanent residence in the province).

However, as of June 2010, on a case-by-case basis, foreign nationals and out of country residents (Canadians coming back from abroad) are exempt from the 3-month waiting period and are eligible for coverage from the first day of their arrival.

Table 1 below shows the mean and median time it takes for a landed immigrant to register for Medicare. The results indicate that 50% of those who arrive in the province register for Medicare within 2 days after landing. On average, it takes 110 days, or 3 and a half months, for landed immigrants to register for Medicare.

The marked difference between the median and mean duration reflects a small number of arrivals with very long delays between landing and Medicare registration, during which they were likely not resident in NB. Statistics for the subset of immigrants who arrive as PNPs are very similar.

**Table 1: Average Time for Active Status in Citizen Database After Landing**

	Mean (days)	Median (days)
<b>Number of Days for Activation after Landing</b> (All Matched Primary Applicants)	110.0	2.0
<b>Number of Days for Activation after Landing</b> (Matched Provincial Nominees)	109.1	1.0

It is also possible for some classes of temporary residents to be eligible for Medicare prior to becoming permanent residents, such as international students after 2017, in which case the date of Medicare registration precedes the date of legal landing as a permanent resident.

50% of those individuals who are already in the province and eligible for provincial Medicare, such as individuals with a work permit and international students, become permanent residents within 2 years (Table 2). On average, it takes about 2 and a half years for these individuals to become permanent residents.<sup>5</sup>

**Table 2: Average Time for Active Status in Citizen Database (Active Medicare) Before Landing**

	Mean (days)	Median (days)
<b>Number of Active Days before Landing</b> (All Matched Primary Applicants)	916.7	758.0
<b>Number of Active Days before Landing</b> (Matched Provincial Nominees)	1018.7	918.5

In Table 3, we break down the analysis for number of days for Medicare activation after landing disaggregated by each landing year cohort (Table 3). Results show that between 2005 and 2009, half of those arriving in NB register for Medicare in around 2 and a half months (median). However, from 2010, the median for Medicare registration drops to 1 day, and then to 0 from 2015 onwards. This decrease in 2010 coincides with the introduction of the 3-month waiting period exemption for foreign nationals and out of country residents.

The average number of days (mean) for Medicare activation after landing also starts gradually declining from 2010. By 2018, it takes 1 week on average for a landed immigrant (primary applicant) to have an active status in the Medicare registry.

---

<sup>5</sup> Note that even for immigrants who initially arrived in NB as temporary residents, we measure retention from the date of legal landing as a permanent resident, though we are able to consider the impact of such prior experience on retention decisions and will investigate it in future work.

**Table 3: Number of Days for Active Status in Citizen Database (Primary Applicants) After Landing by Year**

Year	Mean	Median
2005	133.9	75.0
2006	208.0	81.0
2007	195.8	80.0
2008	232.6	84.0
2009	239.9	83.0
2010	147.0	1.0
2011	136.4	1.0
2012	148.3	1.0
2013	77.4	0.0
2014	75.5	1.0
2015	55.5	0.0
2016	29.7	0.0
2017	24.0	0.0
2018	7.0	0.0

Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.

### Key Findings

- Half of all primary applicants who land in NB register for Medicare within 2 days after landing.
- The average number of days for Medicare activation after landing has been steadily declining since 2010.

## Annual Landings, Matching Rates, & Retention Rates

This portion of the report presents findings on annual landings, matching rates, and retention rates of immigrants in the Permanent Resident Landing File (IRCC Landing Records) across various characteristics such as immigration stream, country of citizenship, education level, language, occupation (NOC), and intended CMA/CA. The matching rate indicates how many immigrants in the IRCC Landing Records are matched to the Citizen Database.

The retention rates of matched immigrants are estimated from the time of landing indicated in the IRCC Landing Records. A survival analysis is also conducted to estimate the probability of

retention after landing. The analysis in this section is mostly focused on primary applicants apart from the "All Immigrants" category, which includes primary applicants and their dependents.

## All Immigrants

The estimates in this section exhibit annual landings, matching rates, and retention rates (matched) of all immigrants in the Permanent Resident Landing File. The “All Immigrants” category includes primary applicants in all immigration streams and their dependents.

### Annual Landings & Matching Rates

The number of all immigrants (primary applicants and dependents) landing in NB has been gradually rising since 2005 (Table 4). There was a sudden spike in 2016, which can be attributed to the arrival of Syrian refugees. However, the number of landings in 2017 and 2018 is also much higher than in previous years (pre-2016), indicating that there has been a general uptake of permanent residents in the province.

Table 4 also shows the matching rates for this study – that is, the proportion of permanent residents in the IRCC Landing Records able to be matched to the Citizen Database. This rate generally hovers around or above 80% from year to year. Overall, between 2005 and 2018, 83% of immigrants whose intended destination was NB could be matched to the Citizen Database. Earlier work (Leonard et al., 2020) suggests it is likely that the majority of unmatched immigrants are unable to be matched simply because they are not moving to NB after legal landing.

**Table 4: Annual Landings and Matching Rate of All Immigrants (Primary Applicants & Dependents)**

Year	All Immigrants	Matched Immigrants	Matching Rate
2005	1,085	920	84.8%
2006	1,645	1,425	86.6%
2007	1,635	1,440	88.1%
2008	1,855	1,580	85.2%
2009	1,910	1,595	83.5%
2010	2,125	1,730	81.4%
2011	1,965	1,650	84.0%
2012	2,215	1,910	86.2%
2013	2,020	1,785	88.4%
2014	2,845	2,400	84.4%
2015	2,570	2,000	77.8%
2016	4,665	3,840	82.3%
2017	3,635	2,890	79.5%
2018	4,600	3,700	80.4%

*Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.*

**Retention Rates**

Retention rates are calculated as the proportion of immigrants registering for Medicare who still have active Medicare status 1 year, 3 years, or 5 years later. In Table 5, 1-year retention rates for all immigrants (primary applicants & dependents) are typically between 75% and 80% from 2005 to 2017. For the 2018 cohort, over 85% of all immigrants are retained, which is a marked increase (~6 percentage point) in 1-year retention from the average of previous years.

This comparative higher 1-year retention rate for 2018 landings is common to many categories and disaggregation of immigrants considered, as will be presented later in this report.

About two-thirds (66.9%) of all immigrants remain in the province 3 years after arriving. After 5 years, more than half (56.1%) of all newcomers are retained in NB (Table 5).

**Table 5: Retention Rates of All Immigrants (Primary Applicants & Dependents)**

Year	1-Year	3-Year	5-Year
2005	75.5%	63.0%	55.4%
2006	82.8%	69.1%	57.2%
2007	85.1%	74.0%	62.2%
2008	87.0%	68.4%	55.4%
2009	85.0%	71.8%	57.7%
2010	80.4%	67.6%	56.4%
2011	80.0%	63.6%	53.9%
2012	77.5%	63.6%	53.7%
2013	80.4%	67.2%	56.9%
2014	76.9%	60.4%	54.4%
2015	78.8%	66.3%	
2016	80.3%	68.8%	
2017	78.4%		
2018	85.1%		
<b>Overall</b>	<b>81.0%</b>	<b>66.9%</b>	<b>56.1%</b>

**Key Findings**

- The province has observed a general uptake in permanent immigrant landings since 2016.
- 83% of immigrants whose intended destination was NB could be matched to the Citizen Database. The majority of unmatched immigrants are assumed to have never moved to NB after legal landing.
- The 2018 cohort of all immigrants had an 85.1% 1-year retention rate, notably higher compared to previous arrival cohorts.

## Primary Applicants

### Annual Landings & Matching Rate

Primary applicants, or principal applicants, are the individuals who apply for permanent residence in Canada through various immigration streams (e.g., Provincial Nominee Program). Anyone else included in the application is considered a dependent.

The remainder of this report focuses on the landings and retention rates of principal applicants disaggregated by different categories. The tables and figures below illustrate descriptive statistics for all primary applicants in the IRCC Landing Records (for all immigration streams).

Table 6 shows that the number of primary applicants arriving in the province has been rising over the years, with a notable spike in 2016, which coincides with the arrival of Syrian refugee in NB. Similarly, annual landings in 2017 and 2018 are much higher than in previous years.

85% of primary applicants could be matched to the Citizen Database. Dependents cannot officially land in Canada unless the primary applicant lands, and thus the trends for primary applicants only and all immigrants (primary applicants and dependents) are similar.

**Table 6: Annual Landings and Matching Rate of Primary Applicants Only**

Year	Total Primary Applicants	Matched Primary Applicants	Matching Rate
2005	540	470	87.0%
2006	770	685	89.0%
2007	775	695	89.7%
2008	855	735	86.0%
2009	860	725	84.3%
2010	900	750	83.3%
2011	895	775	86.6%
2012	935	820	87.7%
2013	920	820	89.1%
2014	1,105	960	86.9%
2015	1,020	820	80.4%
2016	1,645	1,375	83.6%
2017	1,545	1,275	82.5%
2018	2,060	1,700	82.5%
<b>Total</b>	<b>14,826</b>	<b>12,605</b>	<b>85.0%</b>

Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.

## Retention Rates

Between 2005 and 2018, annual 1-year retention rates hovered around 80%, though it is notable that this retention rate has been maintained even as overall numbers of immigrants have increased. Overall, the 1-year retention rate of all primary applicants (matched) is 81%. For the 2018 cohort, 82.1% of primary applicants were retained in the province after 1 year, which is higher than the previous 6 cohorts (2012-2017). There is an increase of about 4.5 percentage points in 2018 compared to the 2017 cohort.

This increase could reflect the impact of shifts in provincial immigration policies. These include the revamping of the PNP Entrepreneurial Stream in 2017, an increased focus on nominations with job offers, and additional investments in settlement support services.

**Table 7: Retention Rates of Primary Applicants Only**

Year	1-Year	3-Year	5-Year
2005	79.8%	66.0%	59.6%
2006	82.5%	67.9%	56.9%
2007	84.2%	71.2%	61.2%
2008	86.4%	70.1%	59.2%
2009	84.1%	70.3%	58.6%
2010	80.0%	68.7%	58.0%
2011	81.9%	67.1%	58.1%
2012	80.5%	66.5%	57.3%
2013	81.1%	71.3%	61.6%
2014	78.7%	63.5%	57.3%
2015	78.7%	67.7%	
2016	79.3%	68.7%	
2017	77.7%		
2018	82.1%		
<b>Overall</b>	<b>81.0%</b>	<b>68.2%</b>	<b>58.7%</b>

The 3-year retention rates of matched primary applicants in Table 7 reveal that more than two-thirds (68.2%) of immigrants are retained in NB. For each landing cohort, retention rates generally remain over 65%.

For each year between 2005 and 2014, more than half of primary applicants remain in the province 5 years after landing, with an overall 5-year retention rate of 58.7%.

### Key Findings

- 85% of primary applicants could be matched to the Citizen Database, which is similar to the matching rate observed for all immigrants.
- 82.1% of primary applicants were retained in the province after 1 year.
- 1-year retention rates have hovered near 80% over the years even as overall numbers of primary applicants have increased.
- 58.7% of primary applicants are still in NB after 5 years.

## Immigration Stream

An individual can become a permanent resident in Canada (and NB) through various immigration streams. The streams presented in this study are the Provincial Nominee Program (PNP), Sponsored Family (i.e., sponsored by a Canadian Citizen or Permanent Resident), Skilled Worker, Resettled Refugees (excluding Syrian Refugees), Syrian Refugees, the Atlantic Immigration Pilot (AIP), and Other programs (including categories such as Protected Person and Entrepreneur, which are grouped together in the results due to small cell counts).

### Annual Landings & Matching Rates

In Table 8, Syrian refugees and immigrants landing through the AIP exhibit the highest matching rate (over 90%), while 85% of Provincial Nominees (PNP) are matched to the Citizen Database.

Immigrants in the Skilled Worker program have the lowest matching rate, indicating that 29% of them either did not actually settle in NB and/or could not be matched due to missing or incomplete data.

**Table 8: Pooled Landings and Matching Ratio of Primary Applicants by Immigration Stream (2005-2018)**

Immigration Stream	Total	Matched	Matching Ratio
Provincial Nominee	7,490	6,365	85.0%
Sponsored Family	3,660	3,135	85.7%
Skilled Worker	1,080	765	70.8%
Resettled Refugee	950	795	83.7%
Other	915	805	88.0%
Syrian Refugee	370	350	94.6%
AIP	355	320	90.1%

*Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.*

Table 9 disaggregates the number of matched primary applicants by immigration stream in each year. The number of Provincial Nominees (PNP) is consistently the highest of all immigration streams. The number of primary applicants arriving through the Sponsored Family category ranges between 180-220 per year. On the other hand, the number of immigrants in the Skilled Worker, Resettled Refugee, and Other categories is usually below 100.

Most Syrian refugees landed in NB in 2016. In the case of the AIP (launched in March 2017), most of the primary applicants landed in 2018.

**Table 9: Annual Landings (Matched) of Primary Applicants by Immigration Stream**

Year	Provincial Nominee	Sponsored Family	Skilled Worker	Resettled Refugee	Other	Syrian Refugee	AIP
2005	135	200	65	45	25		
2006	300	225	80	50	20		
2007	295	240	90	45	20		
2008	315	255	100	35	25		
2009	345	215	85	50	25		
2010	385	185	100	35	45		
2011	370	245	60	50	40		
2012	490	190	40	45	50		
2013	440	235	30	60	45		
2014	595	175	30	60	95		
2015	475	180	15	45	80	15	
2016	655	250	25	50	60	330	
2017	765	235	20	120	115	5	15
2018	800	305	25	105	160		305

*Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.*

### 1-Year Retention Rates

Immigrants in the Sponsored Family category exhibit the highest 1-year retention rate (89%) over the study period (Table 10). This high retention rate may be due to these individuals' already-existing networks (i.e., family) in NB. Regarding primary applicants in the PNP, almost 79% remain in NB at least 1 year over the study period, which is somewhat higher from earlier findings in a previous report (75%; Leonard et al., 2019) owing to reduced out-migration from the province.

Individuals in the Skilled Worker stream exhibit one of the lowest retention rates (73.9% overall). Approximately 84.3% of Syrian refugees are retained after 1 year. Table 10 shows that, for some immigration streams, the 2018 cohort exhibits markedly higher 1-year retention rates compared to earlier years. This suggests that the increase in overall retention rates in 2018 is due to more

than the inclusion of new immigrant categories with higher expected retention rates, such as the AIP. It should be noted that the matching rate for AIP is substantially higher than for other categories, meaning that more nominees are choosing to move to NB upon landing in Canada.

**Table 10: 1-Year Retention Rates of Primary Applicants by Immigration Stream**

Year	Provincial Nominee	Sponsored Family	Skilled Worker	Resettled Refugee	Other	Syrian Refugee	AIP
2005	74.1%	85.0%	76.9%	55.6%	80.0%		
2006	83.3%	91.1%	68.8%	50.0%	100.0%		
2007	83.1%	89.6%	66.7%	77.8%	75.0%		
2008	82.5%	92.2%	80.0%	85.7%	80.0%		
2009	82.6%	90.7%	70.6%	80.0%	80.0%		
2010	79.2%	89.2%	70.0%	85.7%	66.7%		
2011	75.7%	89.8%	75.0%	90.0%	75.0%		
2012	75.5%	92.1%	75.0%	66.7%	90.0%		
2013	79.6%	87.2%	83.3%	75.0%	77.8%		
2014	79.0%	85.7%	83.3%	58.3%	79.0%		
2015	75.8%	88.9%	66.7%	66.7%	75.0%	100.0%	
2016	73.3%	88.0%	80.0%	70.0%	83.3%	84.9%	
2017	75.2%	87.2%	75.0%	87.5%	60.9%	0.0%	100.0%
2018	83.1%	88.5%	80.0%	81.0%	71.9%		82.0%
<b>Overall</b>	<b>78.5%</b>	<b>89.0%</b>	<b>73.9%</b>	<b>74.8%</b>	<b>75.2%</b>	<b>84.3%</b>	<b>82.8%</b>

### 3-Year Retention Rates

Similar to its 1-year retention rates, the Sponsored Family category consistently has the highest 3-year retention rates across cohorts: 79% of these primary applicants are retained in NB after 3 years (Table 11).

The overall 3-year retention rate for Provincial Nominees is 64%. Meanwhile, three-fourths (~75.4%) of Syrian refugees still reside in NB after 3 years.

**Table 11: 3-Year Retention Rates of Primary Applicants by Immigration Stream**

Year	Provincial Nominee	Sponsored Family	Skilled Worker	Resettled Refugee	Other	Syrian Refugee
2005	63.0%	75.0%	53.9%	44.4%	60.0%	
2006	70.0%	75.6%	56.3%	30.0%	75.0%	
2007	69.5%	81.3%	55.6%	55.6%	75.0%	
2008	65.1%	80.4%	55.0%	57.1%	80.0%	
2009	68.1%	79.1%	58.8%	70.0%	60.0%	
2010	64.9%	83.8%	55.0%	85.7%	44.4%	
2011	63.5%	79.6%	50.0%	50.0%	62.5%	
2012	62.2%	79.0%	50.0%	55.6%	70.0%	
2013	65.9%	78.7%	66.7%	66.7%	66.7%	
2014	61.3%	74.3%	66.7%	41.7%	63.2%	
2015	62.1%	80.6%	66.7%	55.6%	56.3%	66.7%
2016	59.5%	80.0%	60.0%	70.0%	75.0%	75.8%
<b>Overall</b>	<b>64.0%</b>	<b>79.0%</b>	<b>56.3%</b>	<b>56.1%</b>	<b>64.2%</b>	<b>75.4%</b>

### 5-Year Retention Rates

After 5 years, 72.7% of primary applicants arriving through the Sponsored Family category remain in NB, which is the highest retention rate among all immigration streams. Over half of Provincial Nominees (53.8%) are retained after 5 years. Meanwhile, there are some notable fluctuations in retention rates for the Other category due to small counts in this immigration stream (Table 12).

**Table 12: 5-Year Retention Rates of Primary Applicants by Immigration Stream**

Year	Provincial Nominee	Sponsored Family	Skilled Worker	Resettled Refugee	Other
2005	55.6%	72.5%	46.2%	33.3%	60.0%
2006	56.7%	71.1%	43.8%	30.0%	50.0%
2007	55.9%	70.8%	50.0%	55.6%	75.0%
2008	49.2%	76.5%	50.0%	42.9%	60.0%
2009	53.6%	72.1%	47.1%	60.0%	60.0%
2010	55.8%	75.7%	45.0%	57.1%	44.4%
2011	51.4%	73.5%	50.0%	40.0%	62.5%

<b>2012</b>	51.0%	73.7%	50.0%	44.4%	60.0%
<b>2013</b>	55.7%	72.3%	66.7%	58.3%	55.6%
<b>2014</b>	54.6%	68.6%	50.0%	41.7%	63.2%
<b>Overall</b>	<b>53.8%</b>	<b>72.7%</b>	<b>48.5%</b>	<b>46.3%</b>	<b>59.0%</b>

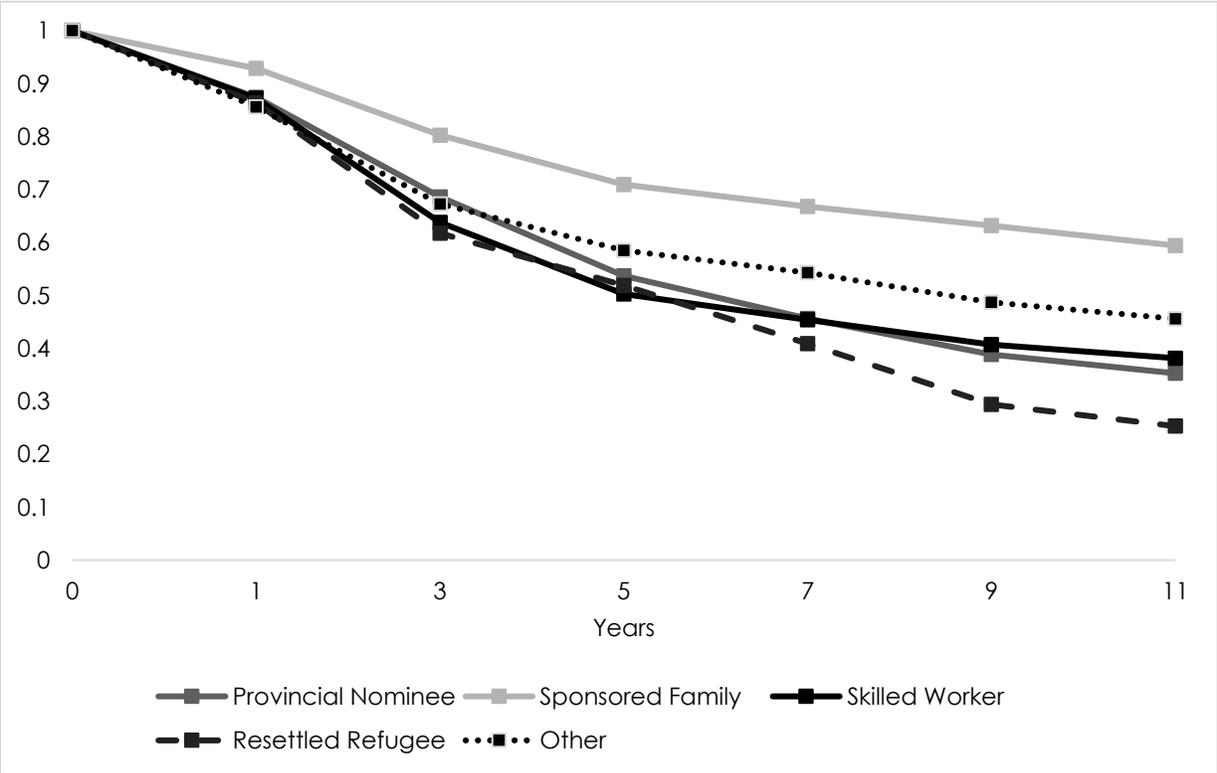
**Kaplan-Meier Survival Analysis**

The below Kaplan-Meier survival analysis estimates the probability of retaining a non-NB-born resident (i.e., immigrant) from time of arrival to some future time. This form of analysis enables us to compare various immigrant groups, including immigration streams, to illustrate which categories are more or less likely to be retained in NB over time.

The findings in Figure 1 echo the descriptive statistics in this section. For instance, immigrants in the Sponsored Family category are more likely to remain in the province compared to those in other streams, as after 11 years around 60% of these individuals are expected to still live in NB.

Even though the probability of retaining Provincial Nominees declines for some years, it stabilizes towards the end of the study period; and over the span of 11 years, about 40% are expected to remain in the province. On the other hand, Figure 1 illustrates that those in the Resettled Refugee category are more likely to leave NB, with just over 25% likely to be retained after 11 years.

**Figure 1: Kaplan-Meier Survival Analysis of Primary Applicants by Immigration Stream**



Consistently high retention rates for the Sponsored Family category indicate that individuals in this stream seem to arrive and stay in NB due to personal ties in the province, such as a family member who might have sponsored the application. Additionally, the rise in 1-year rates for some streams such as Provincial Nominee implies an impact of overall policy changes and not just the introduction of AIP.

### **Key Findings**

- Syrian refugees and AIP immigrants had the highest matching rate (over 90%) while Skilled Workers had the lowest (70.8%).
- PNP immigrants consistently have the highest number of (matched) landings of all immigration streams across cohorts.
- Sponsored family members have the highest 1-, 3-, and 5-year retention rates, with 72.7% remaining 5 years after landing.
- The 2018 cohort exhibits higher 1-year retention rates compared to earlier years.
- Kaplan-Meier Survival Analysis suggests 40% of Provincial Nominees will remain in NB after 11 years.

## **Education Level**

Estimates for primary applicants according to their reported education level at landing are presented in this section. The indicator for education level in the IRCC Landing Records is available for all immigrants in both economic (Skilled Worker, PNP, AIP) and non-economic streams (Sponsored Family, Resettled Refugee, Syrian Refugee, and Other).

For the purpose of analysis, the highest education level of immigrants is disaggregated into 5 categories – Bachelor, Masters & PhD, Diploma, Secondary or Less (any education under high school), and Not Stated/None. Due to disclosure requirements, the Not Stated/None category includes indicators for “Non-Notated” (education is not reported or unknown), “None” (no education), and “Non-Degrees.”

A significant portion of the Not Stated/None category consists of primary applicants in the non-economic immigration streams, such as Sponsored Family, Resettled Refugee, Syrian Refugee, or Other. There are some primary applicants from NB's PNP under the Not Stated/None education category who are mostly in the occupation categories (NOC) for Trades, Transport, & Equipment and Other.

### **Annual Landings & Matching Rate**

The matching rate in Table 13 shows that immigrants with either a master's degree or PhD have the lowest matching rate (79.5%). Almost 88% of newcomers with a diploma and secondary

education or less are matched to the Citizen Database. The matching rate for primary applicants with a bachelor's degree is around 85%.

**Table 13: Pooled Landings and Matching Ratio of Primary Applicants by Education Level (2005-2018)**

Education Level	Total	Matched	Matching Rate
Bachelor	4,220	3,600	85.3%
Master & PhD	2,070	1,645	79.5%
Secondary or Less	2,515	2,210	87.9%
Diploma	2,390	2,100	87.9%
Other	3,595	3,025	84.1%

*Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.*

Primary applicants with a bachelor's degree have the highest representation in Table 14. There is a noteworthy rise in numbers for immigrants with secondary education or less in 2016, and for newcomers with unknown, no education, or non-degrees (Not Stated/None) in 2016 and 2017. These increases coincide with the influx of Syrian refugees in 2016 and a doubling in the number of immigrants in the Resettled Refugee and Other immigration streams. An increase in Sponsored Family numbers from 2016 to 2018 could also contribute to these spikes.

**Table 14: Annual Landings (Matched) of Primary Applicants by Education Level**

Year	Bachelor	Master & PhD	Secondary or Less	Diploma	Not Stated / None
2005	145	60	100	95	80
2006	235	110	135	135	65
2007	235	105	150	125	70
2008	260	115	130	175	55
2009	260	110	120	170	60
2010	230	130	145	195	50
2011	210	100	155	160	145
2012	230	90	105	140	260
2013	220	110	120	135	230
2014	325	155	115	145	215
2015	290	125	140	120	145
2016	305	155	425	180	310
2017	215	125	170	130	630
2018	440	155	200	195	710

*Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.*

### 1-Year Retention Rates

The 1-year retention rates in Table 15 show that there is not much difference in retention among various education levels. However, primary applicants with master's degrees or higher tend to have lower 1-year retention rates (78.7% overall). On the other hand, individuals with secondary education or less have the highest rate (82.4%). Around 80% of immigrants with a bachelor's degree still reside in the province after 1 year.

**Table 15: 1-Year Retention Rates of Primary Applicants by Education Level**

Year	Bachelor	Master & PhD	Secondary or Less	Diploma	Not Stated / None
2005	79.3%	66.7%	85.0%	73.7%	87.5%
2006	78.7%	86.4%	81.5%	88.9%	84.6%
2007	83.0%	85.7%	90.0%	76.0%	78.6%
2008	86.5%	82.6%	88.5%	85.7%	81.8%
2009	86.5%	81.8%	83.3%	79.4%	91.7%
2010	78.3%	80.8%	86.2%	79.5%	90.0%
2011	78.6%	75.0%	83.9%	81.3%	86.2%
2012	82.6%	72.2%	76.2%	78.6%	80.8%
2013	81.8%	81.8%	83.3%	85.2%	80.4%
2014	78.5%	83.9%	65.2%	79.3%	81.4%
2015	77.6%	84.0%	78.6%	79.2%	79.3%
2016	75.4%	74.2%	83.5%	80.6%	80.7%
2017	79.1%	68.0%	82.4%	76.9%	77.0%
2018	79.6%	74.2%	80.0%	87.2%	85.2%
<b>Overall</b>	<b>80.3%</b>	<b>78.7%</b>	<b>82.4%</b>	<b>81.2%</b>	<b>81.8%</b>

### 3-Year Retention Rates

In Table 16, 3-year retention rates by education level appear more differentiated. Immigrants with a master's degree or higher still have the lowest retention rate at 64.1%, which is about 6 percentage points less than the highest overall 3-year retention rate of 70.4% for the Secondary or Less category. This suggests that more highly educated immigrants may be leaving NB to seek greater opportunities available elsewhere in Canada.

**Table 16: 3-Year Retention Rates of Primary Applicants by Education Level**

Year	Bachelor	Master & PhD	Secondary or Less	Diploma	Not Stated / None
2005	69.0%	58.3%	75.0%	63.2%	68.8%
2006	66.0%	63.6%	70.4%	70.4%	69.2%
2007	70.2%	66.7%	80.0%	68.0%	64.3%
2008	67.3%	69.6%	76.9%	71.4%	72.7%
2009	75.0%	68.2%	70.8%	64.7%	75.0%
2010	65.2%	61.5%	75.9%	69.2%	90.0%
2011	61.9%	60.0%	64.5%	71.9%	75.9%
2012	71.7%	55.6%	66.7%	64.3%	65.4%
2013	70.5%	72.7%	45.8%	70.4%	71.7%
2014	63.1%	64.5%	56.5%	62.1%	67.4%
2015	65.5%	64.0%	71.4%	70.8%	69.0%
2016	63.9%	61.3%	75.3%	72.2%	67.7%
<b>Overall</b>	<b>67.2%</b>	<b>64.1%</b>	<b>70.4%</b>	<b>68.5%</b>	<b>69.7%</b>

**5-Year Retention Rates**

After 5 years, more than half (53.5%) of primary applicants in the Master & PhD category remain in the province while, overall, 56% of those with a bachelor's degree remain. Immigrants in the Secondary or Less and Not Stated/None categories mostly exhibit higher retention rates compared to other education levels (Table 17).

**Table 17: 5-Year Retention Rates of Primary Applicants by Education Level**

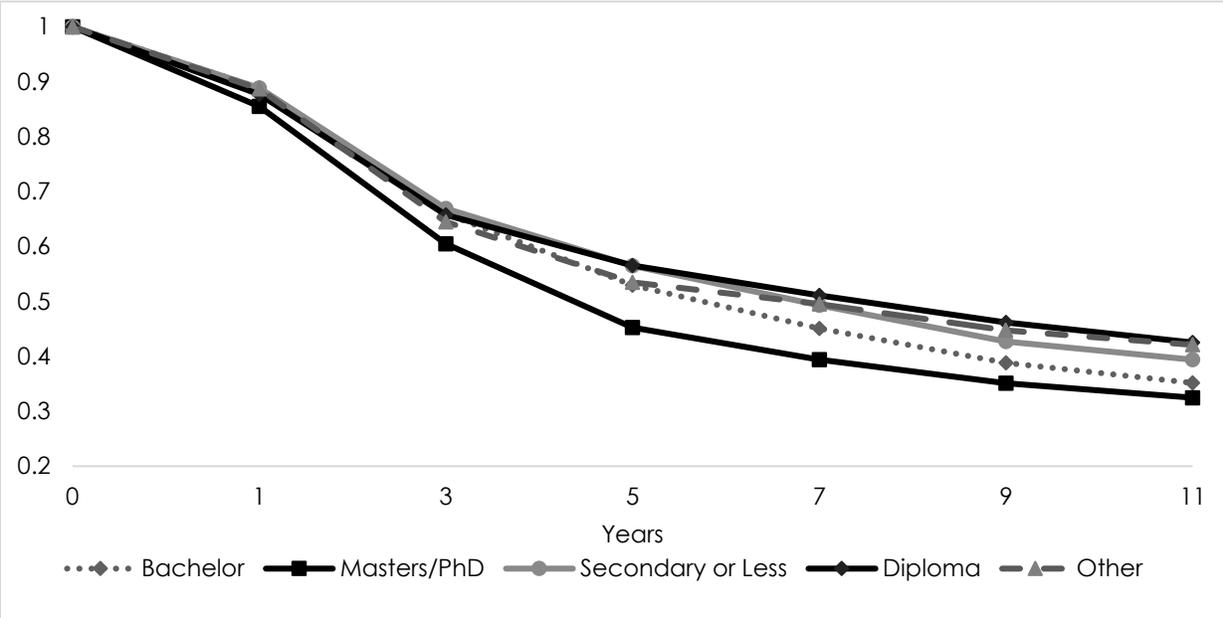
Year	Bachelor	Master & PhD	Secondary or Less	Diploma	Not Stated / None
2005	58.6%	50.0%	70.0%	57.9%	62.5%
2006	53.2%	54.6%	63.0%	59.3%	53.9%
2007	57.5%	57.1%	70.0%	56.0%	57.1%
2008	53.9%	52.2%	65.4%	65.7%	72.7%
2009	59.6%	59.1%	62.5%	50.0%	66.7%
2010	52.2%	53.9%	65.5%	59.0%	80.0%
2011	50.0%	50.0%	58.1%	62.5%	65.5%
2012	58.7%	50.0%	57.1%	53.6%	59.6%
2013	61.4%	54.6%	62.5%	63.0%	63.0%

<b>2014</b>	55.4%	51.6%	52.2%	58.6%	62.8%
<b>Overall</b>	<b>56.0%</b>	<b>53.5%</b>	<b>62.7%</b>	<b>58.6%</b>	<b>63.0%</b>

**Kaplan-Meier Survival Analysis**

Kaplan-Meier survival analysis exhibits the likely decline in probability of remaining in NB with higher education levels (Figure 2). After 11 years, less than 40% of immigrants with bachelor's degrees and higher levels of education (Master & PhD) are likely to remain in the province.

**Figure 2: Kaplan-Meier Survival Analysis of Primary Applicants by Education Level**



The difference in retention rates by education level does not appear significant initially. However, over longer periods of time, the difference becomes larger and suggests that immigrants with higher education are less likely to remain in the province, possibly indicating higher mobility in terms of job opportunities compared to those with lower levels of education.

**Key Findings**

- 88% of newcomers with a diploma or secondary education are matched to the Citizen Database.
- There is not much variation in retention rates among education levels initially, with all categories near 80%. However, Kaplan-Meier survival analysis suggests differences in retention rates become larger as time in NB increases.
- After 5 years, over half (53.5%) of immigrants with a master's degree or higher remain in NB.

## Occupation

The identified occupations of primary applicants presented below are based on the National Occupational Classification (NOC) Level 1 2011 indicated in the IRCC landing records. This is the third revision of the NOC, which has been developed and revised by Human Resources and Skills Development Canada and Statistics Canada. The IRCC Landing Records indicate occupations for all immigrants in the database (all immigration streams) prior to their arrival to Canada (i.e., the occupation listed in their permanent residence application and not necessarily their field of occupation after landing in Canada).

Ten broad NOC Level 1 categories are represented in this study. However, to meet disclosure requirements, occupations under "Art, culture, recreation and sport" and "Natural resources, agriculture and related production" and "Not stated" are included as "Other." For similar reasons, we present primary applicant numbers and retention rates from 2010 instead of 2005.

### Annual Landings

The numbers in Table 18 show that annual landings have increased for several occupation categories in recent years, including Management; Business, Finance & Admin; Natural & Applied Sciences; and Sales and Services. The increase in these categories corresponds to the rapid rise of PNP primary applicant arrivals over a similar period (2016-2017). In early years, counts for all categories apart from Other are not very large.

**Table 18: Annual Landings (Matched) of Primary Applicants by Occupation**

Occupation	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Management</b>	185	115	90	25	35	25	45	100	135
<b>Business, Finance &amp; Admin</b>	25	30	20	25	30	25	60	125	140
<b>Natural &amp; Applied Sciences</b>	55	55	65	55	70	55	125	275	300
<b>Health</b>	35	30	40	15	25	20	25	15	35
<b>Education, Law &amp; Social</b>	45	50	40	35	30	25	25	40	55
<b>Sales &amp; Services</b>	35	55	55	65	80	100	105	100	285
<b>Trades, Transport &amp; Equipment</b>	75	65	65	65	60	70	85	80	140
<b>Manufacturing &amp; Utilities</b>	25	15	30	40	40	25	25	40	95
<b>Other</b>	270	355	415	495	585	470	870	500	510

*Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.*

### 1-Year Retention Rates

Due to small counts and random rounding, retention rates for categories such as Manufacturing & Utilities appear to fluctuate over the years (Table 19). Occupation categories such as Management, Natural & Applied Sciences, and Other seem to have somewhat stable rates over the years, with overall 1-year retention rates of 76.8%, 76.8%, and 82.2% respectively.

Overall, 87.5% of immigrants occupied in Health categories are retained in the province after 1 year. This is the highest 1-year retention rate by occupation.

**Table 19: 1-Year Retention Rates of Primary Applicants by Occupation**

Occupation	2010	2011	2012	2013	2014	2015	2016	2017	2018	Overall
Management	73.0%	73.9%	77.8%	60.0%	71.4%	80.0%	66.7%	80.0%	88.9%	<b>76.8%</b>
Business, Finance, & Admin	60.0%	83.3%	75.0%	100.0%	66.7%	80.0%	75.0%	76.0%	85.7%	<b>79.2%</b>
Natural & Applied Sciences	72.7%	90.9%	84.6%	81.8%	85.7%	63.6%	72.0%	70.9%	80.0%	<b>76.8%</b>
Health	85.7%	83.3%	75.0%	100.0%	100.0%	100.0%	100.0%	66.7%	85.7%	<b>87.5%</b>
Education, Law, & Social	77.8%	80.0%	87.5%	71.4%	66.7%	80.0%	60.0%	75.0%	81.8%	<b>76.8%</b>
Sales & Services	85.7%	90.9%	81.8%	76.9%	81.3%	80.0%	76.2%	80.0%	75.4%	<b>79.0%</b>
Trades, Transport, & Equipment	93.3%	76.9%	61.5%	76.9%	50.0%	71.4%	64.7%	62.5%	67.9%	<b>69.5%</b>
Manufacturing & Utilities	80.0%	66.7%	100.0%	87.5%	87.5%	100.0%	100.0%	87.5%	94.7%	<b>91.0%</b>
Other	87.0%	83.1%	81.9%	81.8%	79.5%	80.9%	81.6%	82.0%	85.3%	<b>82.2%</b>

### 3-Year Retention Rates

The 3-year retention rates presented in Table 20 below exhibit fluctuations due to small counts. Over 70% of primary applicants with an occupation in Health and 85% Manufacturing & Utilities are retained in NB after 3 years. Individuals in the Other category (which is a collection of many occupations) exhibit comparatively steady rates and have an overall 3-year retention rate of 68.5%.

**Table 20: 3-Year Retention Rates of Primary Applicants by Occupation**

Occupation	2010	2011	2012	2013	2014	2015	2016	Overall
Management	56.8%	69.6%	61.1%	60.0%	57.1%	80.0%	66.7%	<b>62.5%</b>
Business, Finance & Admin	40.0%	66.7%	75.0%	80.0%	66.7%	60.0%	58.3%	<b>62.8%</b>
Natural & Applied Sciences	45.5%	63.6%	69.2%	72.7%	64.3%	54.6%	60.0%	<b>61.5%</b>
Health	85.7%	66.7%	62.5%	66.7%	60.0%	75.0%	100.0%	<b>73.7%</b>
Education, Law & Social	55.6%	70.0%	75.0%	71.4%	66.7%	80.0%	60.0%	<b>68.0%</b>
Sales & Services	71.4%	63.6%	63.6%	69.2%	75.0%	70.0%	71.4%	<b>69.7%</b>
Trades, Transport & Equipment	80.0%	69.2%	46.2%	69.2%	41.7%	57.1%	58.8%	<b>60.8%</b>
Manufacturing & Utilities	80.0%	66.7%	83.3%	87.5%	87.5%	80.0%	100.0%	<b>85.0%</b>
Other	75.9%	67.6%	67.5%	71.7%	61.5%	67.0%	70.7%	<b>68.5%</b>

**5-Year Retention Rates**

Five years after landing, 58% of primary applicants in the Other category still live in the province. Immigrants in the Health category exhibit the highest 5-year retention rate (65.5%) among all occupations. The retention rates in Table 21 exhibit fluctuations due to small counts.

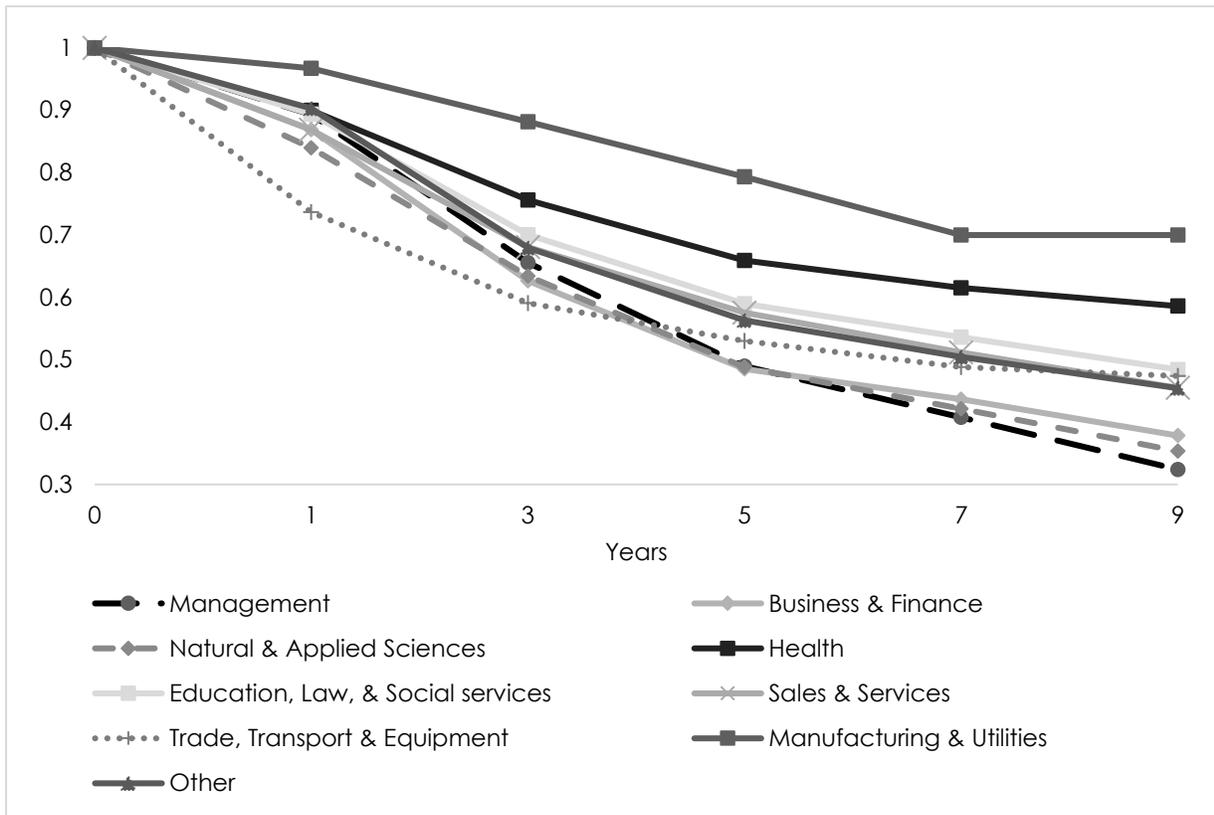
**Table 21: 5-Year Retention Rates of Primary Applicants by Occupation**

Occupation	2010	2011	2012	2013	2014	Overall
Management	46.0%	56.5%	55.6%	60.0%	57.1%	<b>52.2%</b>
Business, Finance, & Admin	40.0%	66.7%	75.0%	60.0%	66.7%	<b>61.5%</b>
Natural & Applied Sciences	36.4%	54.6%	69.2%	63.6%	57.1%	<b>56.7%</b>
Health	71.4%	66.7%	62.5%	66.7%	60.0%	<b>65.5%</b>
Education, Law & Social	55.6%	60.0%	75.0%	57.1%	66.7%	<b>62.5%</b>
Sales & Services	42.9%	54.6%	63.6%	61.5%	68.8%	<b>60.3%</b>
Trades, Transport & Equipment	73.3%	61.5%	46.2%	61.5%	33.3%	<b>56.1%</b>
Manufacturing & Utilities	60.0%	66.7%	83.3%	75.0%	87.5%	<b>76.7%</b>
Other	64.8%	59.2%	54.2%	61.6%	53.9%	<b>58.0%</b>

## Kaplan-Meier Survival Analysis

Figure 3 demonstrates that immigrants under the Health occupation category are more likely to remain in the province. Meanwhile, individuals in Management are least likely to be retained compared to other NOC categories, with about 35% retained after 9 years.

**Figure 3: Kaplan-Meier Survival Analysis of Primary Applicants by Occupation**



Despite fluctuating retention rates due to low counts, both descriptive statistics and Kaplan-Meier survivor analysis indicate that immigrants in the Health occupation are one of the groups least likely to leave the province compared to other categories.

### Key Findings

- Annual landings have increased across several occupations in recent years, corresponding to the rapid rise of PNP primary applicant arrivals.
- Immigrants previously employed in Health-related occupations have the highest retention rate after 1- and 5-years (87.5% and 65.5%, respectively). Kaplan-Meier survival analysis also suggests they are least likely to leave the province compared to other categories.

## Country of Citizenship

This section presents information on primary applicants' country of citizenship, which is indicated in the Permanent Resident Landing File. However, we only include countries with cumulative counts of at least 300 primary applicants between the years 2005 and 2018. Disaggregation by country of citizenship results in small counts for 2005-2007; therefore, we present numbers and retention rates from 2008 onward.

### Annual Landings

The number of primary applicants in Table 22 demonstrates that China is generally the source country of the highest number of immigrants landing in NB over the years. The number of newcomers from Korea has been gradually tapering off, especially since 2012. The Philippines has exhibited an increasing trajectory, eventually overtaking China in 2017. The spike in arrivals from Syria in 2016 is due to the arrival of Syrian refugees in that year.

**Table 22: Annual Landings (Matched) of Primary Applicants by Country of Citizenship**

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
China	125	120	135	100	115	155	235	125	215	145	75
France	15	20	10	30	25	25	20	25	40	40	40
India	25	20	25	20	20	30	40	35	50	110	175
Iran	5	15	20	30	75	30	30	30	20	25	35
Korea	120	95	80	75	70	45	35	15	25	10	35
Philippines	25	20	30	30	65	80	115	140	135	215	270
Romania	15	20	40	30	15	35	30	25	15	10	15
Syria	0	0	0	0	0	0	0	20	335	45	65
Ukraine	5	5	0	10	10	10	15	15	40	85	70
UK	40	45	50	45	30	40	25	20	30	30	35
USA	85	70	50	65	50	70	45	40	65	60	70
Vietnam	5	10	15	30	30	20	75	55	25	15	20

Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.

### 1-Year Retention Rates

A combination of low counts and random rounding to the nearest 5 results in highly variable 1-year retention rates for several countries, such as Iran, India, and Ukraine. Table 23 shows that immigrants from the USA and the Philippines consistently exhibit high 1-year retention rates, with overall rates of 94.8% and 92.9% respectively. Even with fluctuating rates, it appears that most countries exhibit higher 1-year retention rates in 2018 compared to previous years.

**Table 23: 1-Year Retention Rates (%) of Primary Applicants by Country of Citizenship**

Country	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	Over-all
China	76.0	70.8	66.7	85.0	87.0	83.9	80.9	76.0	67.4	75.9	73.3	<b>76.4</b>
France	100.0	75.0	100.0	83.3	80.0	60.0	75.0	80.0	87.5	75.0	87.5	<b>81.0</b>
India	100.0	75.0	80.0	75.0	75.0	83.3	75.0	57.1	70.0	54.6	74.3	<b>70.9</b>
Iran	100.0	100.0	75.0	33.3	73.3	66.7	66.7	66.7	75.0	80.0	71.4	<b>69.8</b>
Korea	87.5	94.7	81.3	80.0	85.7	77.8	71.4	66.7	80.0	50.0	71.4	<b>82.6</b>
Philippines	80.0	100.0	83.3	100.0	100.0	93.8	95.7	92.9	96.3	90.7	90.7	<b>92.9</b>
Romania	66.7	75.0	87.5	83.3	33.3	71.4	83.3	40.0	66.7	50.0	66.7	<b>70.0</b>
Syria								100.0	86.6	88.9	92.3	<b>88.2</b>
Ukraine	100.0	100.0	N/A	50.0	100.0	50.0	66.7	100.0	75.0	64.7	71.4	<b>71.7</b>
UK	100.0	100.0	90.0	100.0	83.3	87.5	100.0	75.0	83.3	83.3	71.4	<b>89.7</b>
USA	94.1	100.0	100.0	92.3	100.0	100.0	88.9	100.0	84.6	91.7	92.9	<b>94.8</b>
Vietnam	0.0	100.0	66.7	66.7	33.3	25.0	66.7	63.6	60.0	33.3	75.0	<b>58.3</b>

### 3-Year Retention Rates

Three years after landing, immigrants from the Philippines and the USA still exhibit high retention rates, with overall rates of 86.7% and 89.8% respectively (Table 24). On the other hand, 57% of primary applicants from China are retained in the province after 3 years.

**Table 24: 3-Year Retention Rates (%) of Primary Applicants by Country of Citizenship**

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	Overall
China	48.0	54.2	51.9	70.0	69.6	74.2	53.2	56.0	46.5	<b>57.0</b>
France	100.0	75.0	50.0	66.7	80.0	60.0	50.0	80.0	75.0	<b>71.4</b>
India	80.0	50.0	60.0	75.0	25.0	50.0	50.0	57.1	50.0	<b>54.7</b>
Iran	0.0	100.0	50.0	16.7	40.0	50.0	50.0	50.0	50.0	<b>45.1</b>
Korea	70.8	84.2	75.0	66.7	71.4	66.7	71.4	66.7	80.0	<b>73.2</b>
Philippines	80.0	75.0	83.3	83.3	76.9	87.5	91.3	85.7	92.6	<b>86.7</b>
Romania	33.3	25.0	87.5	66.7	33.3	71.4	50.0	40.0	66.7	<b>57.8</b>
Syria								75.0	76.1	<b>76.1</b>
Ukraine	100.0	0.0	0.0	50.0	100.0	50.0	33.3	100.0	62.5	<b>63.6</b>
UK	87.5	88.9	80.0	77.8	66.7	87.5	100.0	75.0	83.3	<b>83.1</b>
USA	88.2	92.9	100.0	84.6	100.0	85.7	88.9	87.5	84.6	<b>89.8</b>
Vietnam	0.0	50.0	33.3	33.3	33.3	25.0	46.7	45.5	40.0	<b>39.6</b>

**5-Year Retention Rates**

5-year retention rates for the Philippines are consistently higher in Table 25 than for most other countries, as over four-fifths of arrivals from the Philippines still reside in NB 5 years after landing. Meanwhile, less than one-third of primary applicants from Vietnam are retained after 5 years.

**Table 25: 5-Year Retention Rates (%) of Primary Applicants by Country of Citizenship**

Country	2008	2009	2010	2011	2012	2013	2014	Overall
China	36.0	41.7	40.7	55.0	52.2	58.1	46.8	<b>47.2</b>
France	66.7	75.0	50.0	50.0	80.0	60.0	50.0	<b>62.1</b>
India	80.0	25.0	60.0	50.0	25.0	50.0	50.0	<b>50.0</b>
Iran	0.0	66.7	50.0	16.7	33.3	33.3	33.3	<b>34.1</b>
Korea	50.0	63.2	56.3	46.7	57.1	55.6	57.1	<b>54.8</b>
Philippines	80.0	75.0	83.3	83.3	76.9	81.3	87.0	<b>82.2</b>
Romania	33.3	25.0	62.5	50.0	33.3	57.1	50.0	<b>48.6</b>

<b>Ukraine</b>	100.0	0.0	0.0	50.0	50.0	50.0	33.3	<b>45.5</b>
<b>UK</b>	87.5	88.9	70.0	66.7	66.7	62.5	80.0	<b>74.5</b>
<b>USA</b>	82.4	85.7	90.0	84.6	90.0	78.6	77.8	<b>83.9</b>
<b>Vietnam</b>	0.0	50.0	33.3	16.7	16.7	25.0	40.0	<b>29.7</b>

Retention rates in this section indicate that newcomers from the Philippines will probably increase in number and are more likely to remain in the province.

**Key Findings**

- China is generally the source country of the highest number of immigrants landing in NB over the study period.
- The 2018 arrival cohort exhibits higher 1-year retention rates compared to previous years for most countries, with arrivals from the USA and the Philippines consistently exhibiting the highest.
- 82.2% of arrivals from the Philippines still reside in NB 5 years after landing.

## Language

IRCC Landing Records hold information on whether an immigrant speaks either of the official languages of Canada (English and French). The language variable is available for all immigrants (primary applicants and dependents in all immigration streams) and indicates whether an individual speaks English, French, Both, or Neither/Not Stated.

The combined category of Neither/Not Stated consists of individuals who do not have language proficiency in either of the official languages (Neither). The category is also comprised of immigrants whose language proficiency has not been reported or unknown (Not Stated); thus, these individuals could still be proficient in either of the languages.

Most of the primary applicants in the Neither/Not Stated language category are in Sponsored Family, Resettled Refugee, Syrian Refugee, or Other streams (i.e., non-economic streams).

### Annual Landings & Matching Rates

The matching rates by language in Table 26 do not show many differences between groups. However, individuals who speak Neither/Not Stated exhibit the lowest matching rate, at 83%.

**Table 26: Pooled Landings and Matching Ratio of Primary Applicants by Language (2005-2018)**

Language	Total	Matched	Matching Rate
Both	1,565	1345	86%
English	10,680	9,100	85%
French	665	580	87%
Neither/Not Stated	1,885	1,570	83%

Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.

The number of primary applicants who speak English is by far the highest among all groups. In fact, since 2016, annual landings of English speakers in the province have been on an upward trajectory (Table 27). There is also a notable rise in 2016 for the Neither/Not Stated language category. This could be due to the increased landings of Syrian Refugees, as well as a rise in arrivals from the Resettled Refugee, Sponsored Family, and Other immigration streams in 2016.

**Table 27: Annual Landings (Matched) of Primary Applicants by Language**

Year	Both	English	French	Neither / Not Stated
2005	55	320	30	70
2006	60	495	35	85
2007	60	490	40	100
2008	65	525	45	105
2009	95	495	45	95
2010	85	510	30	120
2011	100	525	40	105
2012	80	640	40	60
2013	80	630	40	70
2014	80	765	25	90
2015	90	635	35	60
2016	115	870	50	340
2017	145	955	45	135
2018	235	1,245	80	135

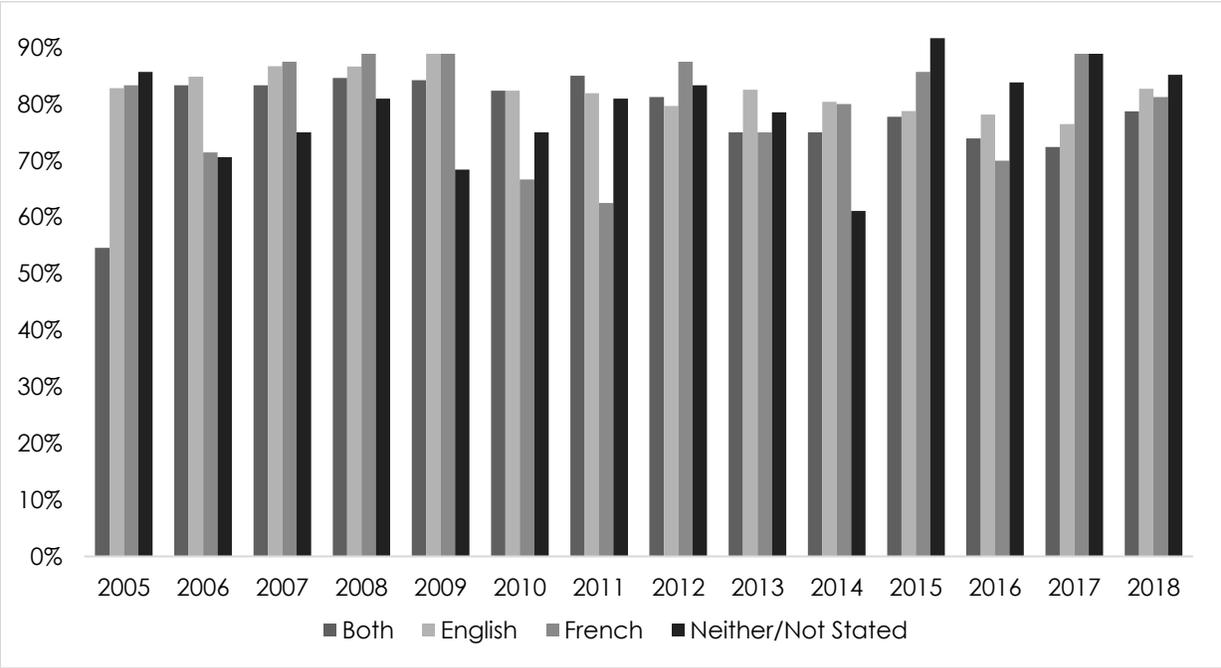
Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.

**1-Year Retention Rates**

Overall, the 1-year retention rates of immigrants by official languages spoken (Figure 4) over the 2005-2018 study period do not show much difference between categories. Primary applicants who speak both languages exhibit an overall 1-year retention rate of 78.1%. For English and French speakers, the overall rates are 81.8% and 80.2% respectively. Among individuals in the Neither/Not Stated category, 79.9% are retained after 1 year.

Among all groups, the retention rates for English speakers are quite stable due to high numbers in this category. English and Both categories exhibit higher retention rates in 2018 compared with the earlier couple of years.

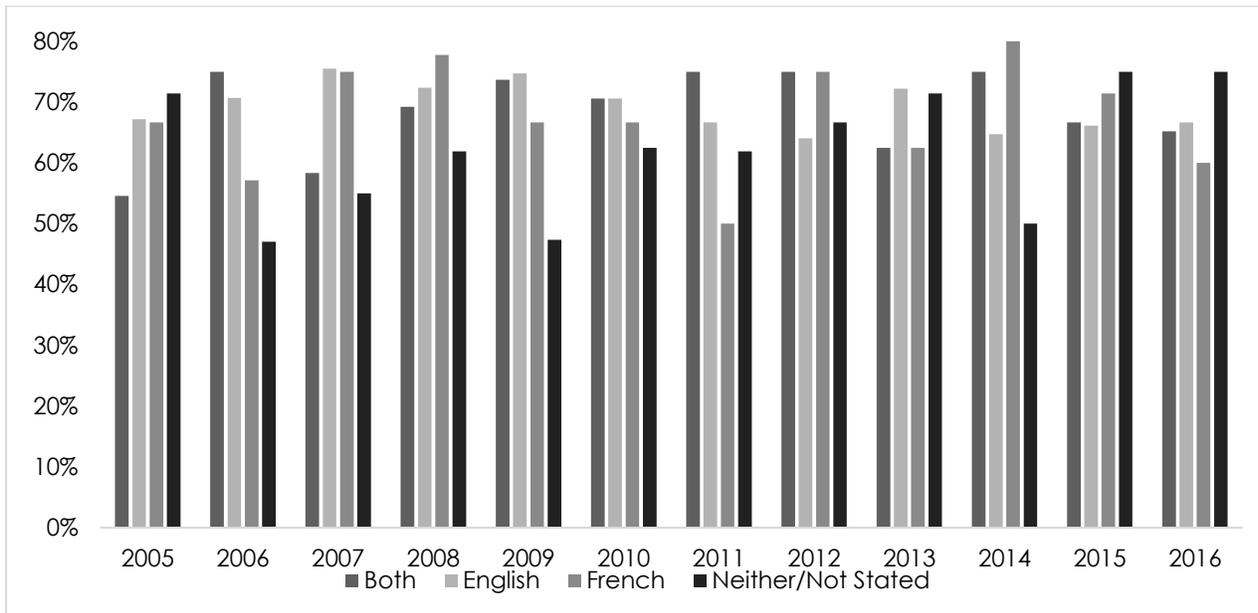
**Figure 4: 1-Year Retention Rates of Primary Applicants by Language**



**3-Year Retention Rates**

Over two-thirds (~68.9% overall) of primary applicants who speak only English still reside in the province 3 years after arriving (Figure 5). Retention rates are similar for primary applicants who speak only French (67%) and both official languages (68.9%), while those in the Neither/Not Stated language category have an overall 3-year retention rate of 63.8%.

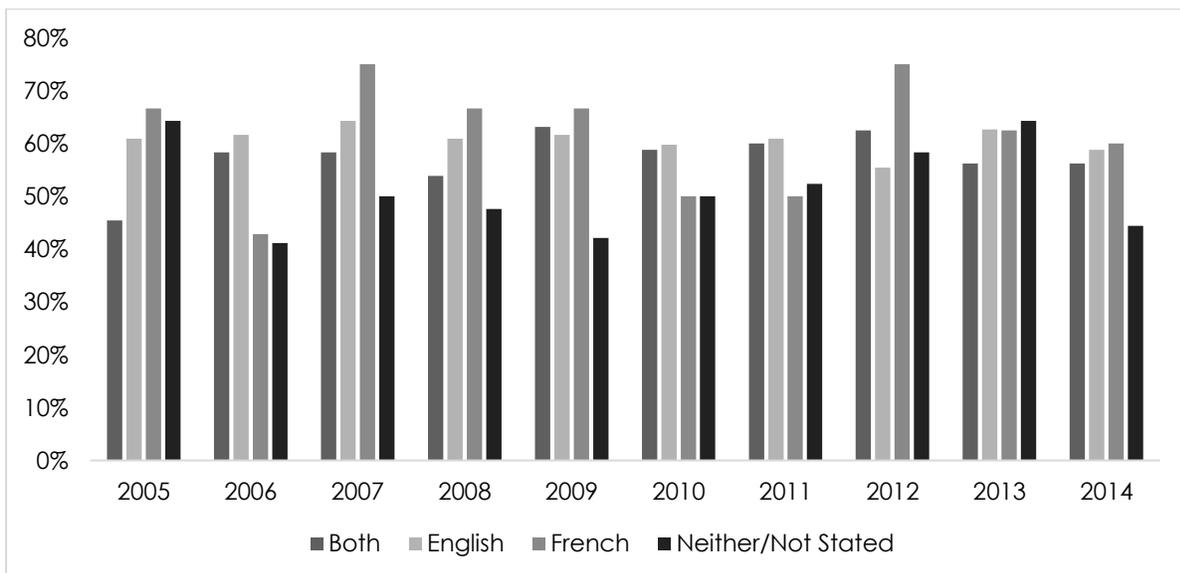
**Figure 5: 3-Year Retention Rates of Primary Applicants by Language**



**5-Year Retention Rates**

Figure 6 indicates that 5 years after landing, the difference in retention rates among the 4 language categories is slightly more pronounced. French-speaking immigrants who arrive in the province generally show higher 5-year retention rates from 2005 to 2014, with an overall rate of 62.2%. Primary applicants in the English and Both categories have overall 5-year retention rates of 60.5% and 57.9%, respectively. Meanwhile, about half of immigrants (50.6%) who indicated speaking neither English nor French (or did not state their language) still reside in the province after 5 years.

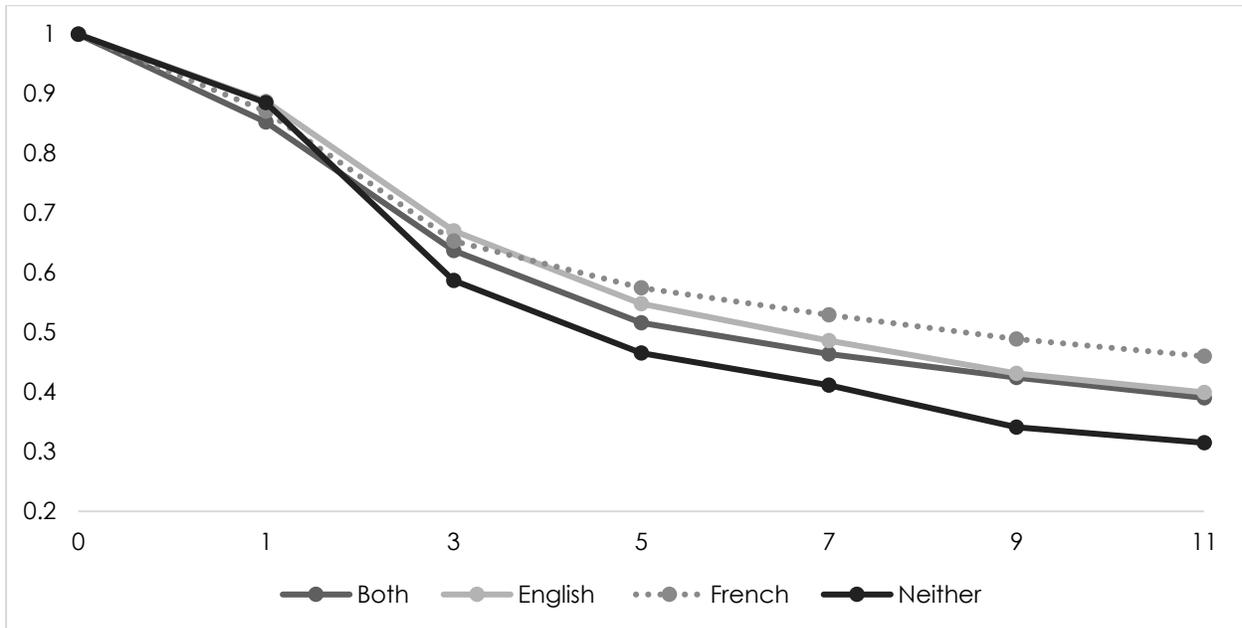
**Figure 6: 5-Year Retention Rates of Primary Applicants by Language**



## Kaplan-Meier Survival Analysis

The survival analysis in Figure 7 portrays how, initially, there is virtually no difference in the likelihood of retention between the 4 language categories. However, as more years pass, the difference becomes clearer, illustrating how French-speaking immigrants are more likely to be retained while newcomers who speak neither English nor French are least likely to be retained.

**Figure 7: Kaplan-Meier Survival Analysis of Primary Applicants by Language**



The findings in this section imply that, in the long term, French-speaking primary applicants have a higher likelihood of residing in NB compared to immigrants in the 3 other language categories.

### Key Findings

- The number of primary applicants who speak English has constituted a large majority of landings.
- There is not much difference in retention rates of immigrants by official languages spoken, even 5 years after landing.
- Primary applicants who speak both English and French or English only exhibit higher retention rates in 2018 compared with the earlier couple of years.

## CMA/CA

The Permanent Resident Landing File holds information on the intended municipality of immigrants. Because of small sample sizes, this study examines the intended Census Metropolitan Area (CMA) or Census Agglomeration (CA), which are comprised of one or more adjacent municipalities centred on a population centre (known as the core).<sup>6</sup> Newcomers to the province could end up in a different location than initially indicated in their applications (IRCC Landing Records). Thus, in this section, we present results by actual and intended destinations for the province's two CMAs (Moncton and Saint John), the Fredericton CA, and the Rest of NB.

### Annual Landings

Table 28 presents annual landings of immigrants (primary applicants) in various CMAs/CAs in NB. However, instead of the intended destination, these locations are based on the addresses used during Medicare registration. These numbers suggest that Moncton receives the highest number of immigrants compared to the other CMA/CA and the Rest of NB, especially in later years.

**Table 28: Annual Landings (Matched) of Primary Applicants by CMA/CA\***

CMA/CA	Fredericton	Moncton	Saint John	Rest of NB
2005	125	95	120	125
2006	195	130	195	155
2007	145	165	190	190
2008	190	165	190	190
2009	170	200	190	160
2010	190	180	180	195
2011	205	200	160	205
2012	245	200	205	170
2013	230	220	165	205
2014	280	285	220	170
2015	185	260	175	195
2016	425	360	345	245
2017	380	405	245	240
2018	365	640	305	375

\*As indicated during Medicare registration

Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.

<sup>6</sup> A CMA must have a total population of at least 100,000, of which 50,000 or more must live in the core. A CA must have a core population of at least 10,000.

Not all immigrants who arrive in NB immediately reside in their intended destination as indicated in the IRCC Landing Records. Table 29 reveals the cumulative counts for actual and intended CMAs/CAs and the differences between them. It appears that Moncton experiences net positive immigrant landings – i.e., more immigrants landed in Moncton than intended, at the expense of other areas of the province.

**Table 29: Differences Between Actual & Intended CMA/CA**

<b>CMA/CA</b>	<b>Intended**</b>	<b>Actual*</b>	<b>Difference</b>
<b>Fredericton</b>	3,355	3,325	<b>-30</b>
<b>Moncton</b>	3,285	3,510	<b>225</b>
<b>Saint John</b>	2,985	2,900	<b>-85</b>
<b>Rest of NB</b>	2,935	2,830	<b>-105</b>

*Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality. As a result, the differences noted in the last column do not sum to 0.*

*\*As indicated during Medicare registration*

*\*\*As indicated in the Permanent Resident Landing File*

### **1-Year Retention Rates – Retained in NB**

Retention rates in Table 30 are estimated for actual CMAs/CAs as indicated in the Citizen Database. This table shows that Moncton and the Rest of NB exhibit higher 1-year retention rates compared to Fredericton and Saint John. Primary applicants arriving in Saint John are the least likely to be retained within the province, with an overall retention rate of 76.4%. Meanwhile, 83.2% of newcomers landing in Moncton remain in NB after 1 year.

**Table 30: 1-Year Retention Rates of Primary Applicants by CMA/CA (Retained in NB)**

<b>CMA/CA</b>	<b>Fredericton</b>	<b>Moncton</b>	<b>Saint John</b>	<b>Rest of NB</b>
<b>2005</b>	72.0%	79.0%	70.8%	84.0%
<b>2006</b>	76.9%	84.6%	71.8%	77.4%
<b>2007</b>	82.8%	84.9%	79.0%	86.8%
<b>2008</b>	76.3%	84.9%	79.0%	89.5%
<b>2009</b>	82.4%	82.5%	68.4%	87.5%
<b>2010</b>	79.0%	80.6%	69.4%	87.2%
<b>2011</b>	75.6%	82.5%	71.9%	87.8%
<b>2012</b>	73.5%	87.5%	78.1%	85.3%
<b>2013</b>	76.1%	81.8%	78.8%	85.4%
<b>2014</b>	75.0%	82.5%	75.0%	88.2%

<b>2015</b>	70.3%	86.5%	77.1%	84.6%
<b>2016</b>	81.2%	86.1%	78.3%	85.7%
<b>2017</b>	76.3%	80.3%	79.6%	83.3%
<b>2018</b>	78.1%	82.0%	83.6%	84.0%
<b>Overall</b>	<b>77.0%</b>	<b>83.2%</b>	<b>76.4%</b>	<b>85.5%</b>

### 1-Year Retention Rates – Retained in CMA/CA (Local Area)

Table 31 presents 1-year retention rates of immigrants within their actual CMA/CA – that is, whether after 1 year an immigrant remains within the CMA/CA they indicated during Medicare registration. About 70% of primary applicants who initially land in Fredericton and Saint John still reside in those locations after 1 year. Moncton generally exhibits the highest 1-year retention rates over the years, with around 80% of immigrants retained locally 1 year after settling there.

The retention rates of immigrants within NB (Table 30) are higher than the rates for local areas in NB (Table 31). For immigrants who landed in Moncton, the rates of individuals retained in NB are about 4 percentage points higher than those retained within Moncton. This implies that individuals either stay in Moncton or leave the province instead of moving elsewhere within NB.

On the contrary, immigrants who arrive in Fredericton and the Rest of NB are more likely to move intra-provincially, as retention rates within CMAs/CAs (i.e., retained in Local Area) are 7 to 8 percentage points lower than provincial retention rates (retained in NB).<sup>7</sup>

**Table 31: 1-Year Retention Rates of Primary Applicants by CMA/CA (Local Area)**

<b>CMA/CA</b>	<b>Fredericton</b>	<b>Moncton</b>	<b>Saint John</b>	<b>Rest of NB</b>
<b>2005</b>	64.0%	73.7%	66.7%	80.0%
<b>2006</b>	76.9%	84.6%	66.7%	64.5%
<b>2007</b>	75.9%	78.8%	73.7%	81.6%
<b>2008</b>	73.7%	81.8%	73.7%	81.6%
<b>2009</b>	73.5%	82.5%	65.8%	75.0%
<b>2010</b>	73.7%	77.8%	63.9%	69.2%
<b>2011</b>	70.7%	77.5%	62.5%	70.7%
<b>2012</b>	67.4%	82.5%	73.2%	73.5%
<b>2013</b>	65.2%	75.0%	69.7%	78.1%

<sup>7</sup> One caveat with the use of Medicare registration data is that unlike interprovincial migration where an exchange of health care cards is required to access health services in the destination province (typically after a waiting period of 3 months), individuals moving within NB may be less likely to update their home address in their Medicare registration. Therefore, these estimates may overstate the extent of retention within NB by CMA.

<b>2014</b>	67.9%	79.0%	61.4%	76.5%
<b>2015</b>	62.2%	82.7%	74.3%	76.9%
<b>2016</b>	62.4%	84.7%	72.5%	71.4%
<b>2017</b>	68.4%	77.8%	75.5%	72.9%
<b>2018</b>	69.9%	76.6%	72.1%	70.7%
<b>Overall</b>	<b>68.8%</b>	<b>79.5%</b>	<b>69.8%</b>	<b>74.1%</b>

**Key Findings**

- Moncton receives the highest number of immigrants compared to other CMAs/CAs and the rest of the province, especially in later years of the study period.
- More immigrants settle in Moncton than those who stated they intended to, at the expense of other areas in the province.
- Moncton (83.2%) and the Rest of NB (85.5%) exhibit higher 1-year retention rates compared to Fredericton (77%) and Saint John (76.4%).
- Individuals were more likely to stay in Moncton or leave the province than move elsewhere within NB, while immigrants who arrive in Fredericton and the Rest of NB are more likely to move intra-provincially.

Results from the Immigration NB Database (INB)

**PNP Primary Applicants in 2018**

In Table 32, the number of matched Provincial Nominee (PNP) primary applicants in the Immigration New Brunswick (INB) database is very close to the number of matched PNP primary applicants in the Permanent Resident Landing File (IRCC Landing Records) in 2018 and in previous years<sup>8</sup> (2005-2017). There is some difference (about 15-25 individuals) between the 2 datasets in terms of total PNP primary applicants (matched and unmatched). These differences could be due to differences in the stored records (mainly unmatched) in the 2 databases – such as IRCC Landing Records not picking up individuals who are nominated by the province (despite indicating NB as their intended destination) or vice versa. Random rounding of counts also partially contributes to these differences.

83.2% of Provincial Nominees (PNP) are retained after 1 year, which is very similar to the rate obtained for PNP primary applicants when using IRCC Landing Records. With the updated

<sup>8</sup> Leonard, P., McDonald, T., & Miah, P. (2019). Immigrant retention in New Brunswick: Results from BizNet and Citizen Database. Fredericton, NB: New Brunswick Institute for Research, Data and Training.

methodology for estimating retention, the 1-year retention rate for the 2018 landing cohort is higher (around 10 percentage points) than previous years as reported by Leonard et al. (2019).<sup>9</sup>

---

<sup>9</sup> In the current report, using IRCC Landing Records and updated methodology, the 1-year retention rate for the 2018 cohort of PNP primary applicants is about 8 percentage point higher than earlier years.

**Table 32: Annual Landing, Matching Rate, and Retention Rate of PNP Primary Applicants in 2018 (INB)**

Year	All PNP Primary Applicants	Matched PNP Primary Applicants	Matching Rate	1-Year Retention Rate	3-Year Retention Rate (2016 Landings)	5-Year Retention Rate (2014 Landings)
2018	970	805	83%	83.2%	59.9%	54.5%

Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.

### Immigration Streams of PNP Immigrants

Table 33 breaks down the Provincial Nominee Program (PNP) into different immigration streams, including streams not reported in the 2019 NB-IRDT study (Leonard et al.). These streams include Business, Skilled Worker, Atlantic Immigration Pilot (AIP), Strategic Initiative, and NB Express Entry. As noted, this disaggregation by stream is not possible with the IRCC data provided but can be accomplished with INB data.

The Strategic Initiative stream is targeted towards French-speaking workers who intend to live in the province. NB Express Entry consists of the primary applicants who are in the Federal Express Entry system for Canadian permanent residence and nominated by NB.

The Business and Skilled Worker categories are derived by collapsing several other sub-categories under these streams. Thus, Business includes Business Plan – Deposit and Business – Escrow, while Skilled Worker Consists of Skilled Worker – Employer, Skilled Worker – Family, and Skilled Worker – Community.

The number of primary applicants in the Business stream for the year 2018 has declined by more than 50% relative to 2017 landings, which is a continuation of a downward trend since 2014. This could be a reflection of the overhaul of the PNP Entrepreneurial Stream in 2017 and the strengthening of rules in regard to not meeting conditions required of PNPs in this stream.

Out of the 55 primary applicants in the Business stream, almost 82% are retained after 1 year. Among the Provincial Nominees in the Skilled Worker stream, 1-year and 5-year retention rates are 77.1% and 63.8%, respectively. For 2018, Strategic Initiative and NB Express Entry streams retain 81.8% and 89.9% of their applicants after 1 year for the 2018 arrival year. The primary applicants in the AIP have a 1-year retention rate of 81%.

**Table 33: Annual Landings (Matched) and Retention Rates of PNP Primary Applicants by Immigration Stream**

PNP Immigration Stream	2018 Landings	1-Year Retention Rate (2018 Landings)	5-Year Retention Rate (2014 Landings)
Business	55	81.8%	47.8%
Skilled Worker	305	77.1%	63.8%
Strategic Initiative	55	81.8%	62.5%
NB Express Entry*	395	89.9%	
AIP*	315	81.0%	

*Note: All counts in this report have been rounded to the nearest 5 to protect confidentiality.*

*\*NB Express Entry & AIP appear in data post-2014; hence, these streams do not have 5-year rates.*

#### **Key Findings**

- 83.2% of Provincial Nominees from the INB dataset are retained after 1 year, similar to the rate obtained when using IRCC Landing Records.
- The NB Express Entry streams had the highest number of landings in 2018 and had the highest 1-year retention rate (89.9%).
- Less than half (47.8%) of the 55 individuals in the Business stream remain in NB after 5 years.

## Discussion & Conclusion

The aim of this report is to estimate the retention rates of immigrants whose intended destination is New Brunswick (NB), as indicated in the Permanent Resident Landing File (IRCC Landing Records). Results are based on permanent residents (mainly primary applicants) who are matched (linked) with the Citizen Database (Medicare Registry), and are broken down by immigration stream, education level, occupation, language, country of citizenship, and location/municipality of residence (CMA/CA).

Along with estimating retention rates for the recently launched Atlantic Immigration Pilot (AIP), this study considers possible factors associated with changing retention rates in the province. For further disaggregation within the PNP class, retention rates are estimated using the Immigration New Brunswick (INB) database (previously known as BizNet). This is done to update 2018 numbers for the previous report by Leonard et al. (2019) and to compare results with the IRCC Landing Records.

Our findings are discussed below, along with comparisons with other studies and their implications.

### Comparison with Other Studies

#### PNP

This study finds that almost 79% of Provincial Nominees (PNP) stay in the province for at least 1 year (for the period 2005-2018). After 3 and 5 years, the overall retention rates for PNP primary applicants are 64% and 53.8%, respectively. Estimates using the Immigration NB database (Leonard et al., 2019) to show retention rates for PNP primary applicants are not far off, at 75.3% (1 year), 60.3% (3 years), and 49.5% (5 years). The numbers updated in this report for the 2018 cohort remain close, showing 1-year retention rates of 83.2% and 3-year and 5-year rates of 59.9% and 54.5%, respectively.

Using the Longitudinal Immigrant Database (IMDB), Boco et al. (2021) find that among Provincial Nominee principal applicants, 73% remain after 1 year, and around half remain within 5 years of landing in the province (study period 2006-2015) based on income tax returns.

The IRCC evaluation using linked 2017 IMDB and 2018 T4 earnings (tax files) reveals that the 1-year retention rate for NB PNP immigrants (primary applicants) is 70.5%, and in 3 years the rate drops to 50.3%, and then to 47.5% 5 years after landing.

All these studies adopt various methodologies and utilize different datasets. However, findings indicate that the retention rates of PNP primary applicants are not vastly different across studies, as 1-year rates fall between 70% and 79%, and all show that about half immigrants are retained in NB after 5 years.

## **Atlantic Immigration Pilot (AIP)**

This study sheds light on the AIP program launched in March 2017. Among AIP primary applicants who are matched with Medicare records, approximately 83% still reside in NB 1 year after landing. For AIP primary applicants landing in 2018, 82% are retained after 1 year. When using the INB database instead, this study finds a comparable 81% of AIP primary applicants in 2018 are still in the province after 1 year. It is important to note that match rates for AIP are higher than for other categories except Syrian refugees, with the implication that larger numbers of nominees are still in NB 1 year after landing than the other streams, including PNP.

A survey conducted by IRCC (2020) to assess outcomes of the AIP reveals that 94% of AIP primary applicants who responded to the survey are still living in NB. This rate is higher than the AIP rates in this study. However, in the same IRCC study, survey results also indicate that the overall 1-year retention rate for PNP primary applicants who responded to the survey is 87%, as opposed to a 1-year rate of 70.5% produced using administrative data. This may indicate that the individuals who responded to the survey are also the ones who are more likely to remain in the province, with the different rates likely due to differences in methodology.

## **Municipality CMA/CA**

Findings indicate that for 2005-2018, immigrants landing in Moncton are more likely to remain in NB, while immigrants landing in Saint John exhibit the lowest retention rates. Among newcomers who initially reside in Moncton after arriving in NB, 79.5% are found to be living in the same CMA after 1 year (highest rate). Saint John is found to retain the least immigrants locally after 1 year.

Boco et al. (2021) similarly suggest that Moncton is usually the CMA with the highest retention rates, while Saint John generally exhibits lowest rates (retained in NB and within the CMA/CA). Their study shows that over 80% of immigrants destined to Moncton remain within the same CMA 1 year after landing.

## **Increased Retention Rates in 2018**

One of the notable findings produced using the Permanent Resident Landing File (IRCC Landing Records) is that 1-year retention rates for the 2018 cohort have increased markedly compared to earlier years. Initially, this may appear to reflect the impact of the AIP program. However, this trend does not only appear in estimates for AIP but is repeated in several other immigrant subgroups categorized by immigration stream, education level, occupation, and country of citizenship.

One factor that may have prompted this increase is the growing timeframe between landing date and Medicare activation date (registration). For example, an immigrant could land in Canada and in 6 months move to NB and register for Medicare, and then leave 7 months after registration. Even though this individual would have stayed in the province for less than a year (7 months), it would appear as if they stayed in NB for more than 1 year (6 + 7 = 13 months) due to the gap between landing date and Medicare registration. Thus, this report estimates the number

of days for Medicare activation after landing, disaggregated for each landing year cohort. The findings reveal that the number of days (median and mean) between landing and Medicare registration is the lowest for the 2018 cohort (Table 2). This suggests that the retention rate spike is probably not caused by the increase in time between landing date and Medicare activation.

Having ruled out these possibilities, we find this robust result likely points towards several policy changes related to immigration in NB as the potential cause of improved retention rates. The combination of GNB policies that may positively affect the latest retention rates include the following:

- Revamping the PNP Entrepreneurial Stream in 2017 and tightening rules on not returning refundable deposits if conditions are not met. In fact, results from INB for immigration streams within PNP streams show a significant decline of primary applicant numbers in the Business (Entrepreneur) category over the years.
- Increasing focus on nominations with job offers, providing more incentive to remain in the province.
- Focusing on increasing language requirements for new immigrants within this timeframe (2017-2018), which could aid a new immigrant in economic assimilation, thus contributing to improved retention.
- Introducing the AIP in 2017, which may have resulted in much better matching between employers and newcomers in the province in 2018. This could be making it easier for both primary applicants and their spouses to find employment in NB.
- Ramping up investments in settlement support services during the period in which the AIP was launched.

The results in this study shed light on recent immigrant retention in NB. The results for the AIP and 2018 cohort in general seem positive.

It is still too early to fully review and understand the impact of the AIP and other policy changes mentioned above. However, results do point towards an encouraging trajectory for immigrant retention in the province. Analysis of retention rates in 2019 for other provinces would provide some indication regarding whether the improved results in NB are due to NB policies or are a reflection of broader trends in immigration.

## References

- Akbari, A. H. & Sun, C. (2006). Immigrant attraction and retention: What can work and what is being done in Atlantic Canada. *Our Diverse Cities*, 2, 129-133.
- Aydemir, A., & Robinson, C. (2008). Global labour markets, return and onward migration. *Canadian Journal of Economics/Revue Canadienne d'Économique*, 41 (4), 1285-1311.
- Boco, E., Emery, H., McDonald, T., & Mokhtar, R. (2021). Immigrant income and labour market outcomes: 2006 - 2015 cohorts. Fredericton, NB: New Brunswick Institute for Research, Data and Training.
- Immigration, Refugee and Citizenship Canada. (2020). *Evaluation of the Atlantic Immigration Pilot*. Ottawa: Immigration, Refugees and Citizenship Canada.
- Krahn, H., Derwing, T. M., & Abu-Laban, B. (2005). The retention of newcomers in second and third tier cities in Canada. *International Migration Review*, 39(4), 872-894. Doi: [10.1111/j.1747-7379.2005.tb00292.x](https://doi.org/10.1111/j.1747-7379.2005.tb00292.x)
- Leonard, P., McDonald, T., & Miah, P. (2019). Immigrant retention in New Brunswick: Results from BizNet and Citizen Database. Fredericton, NB: New Brunswick Institute for Research, Data and Training.
- Leonard, P., McDonald, T., & Miah, P. (2020). Analysis of unmatched immigrants in the BizNet Database. Fredericton, NB: New Brunswick Institute for Research, Data and Training.
- McDonald, T., & Miah, P. (2021). Immigrant retention in New Brunswick: An analysis using linked federal-provincial administrative data. Fredericton, NB: New Brunswick Institute for Research, Data and Training.
- The Public Policy Forum (2018). *The People Imperative: Strategies to Grow Population and Prosperity in Atlantic Canada* (Vol. 1). Ottawa: The Public Policy Forum.

# Appendix: Immigrant Retention in NB – A Comparison of Results Based on Medicare & Tax Data (2006-2015 Cohorts)

In 2021, NB-IRDT released two reports on immigrant retention:

- *Immigrant income and labour market outcomes: 2006 – 2015 cohorts* (Boco et al., 2021).
- *Immigrant retention in New Brunswick: An analysis using linked federal-provincial administrative data* (McDonald & Miah, 2021).

While Boco et al. (2021) use tax data to calculate their results, McDonald and Miah (2021) base their findings on Medicare data.

This appendix compares the immigrant retention rates presented in each report and highlights similarities and differences in the datasets, associated methodologies, and results.

## Calculating Immigrant Retention in New Brunswick – Methodological Differences

**Table 34: A Comparison of Methodologies Using Tax and Medicare Records to Calculate Student Retention**

Tax Records	Medicare Records
<p>The Longitudinal Immigrant Database (IMDB) links administrative files on immigrant admissions from Immigration, Refugees and Citizenship Canada (IRCC) with tax files from the Canadian Revenue Agency.</p>	<p>The Permanent Resident Landing File (IRCC Landing Records) of Immigration, Refugees and Citizenship Canada (IRCC) is linked with the Citizen Database (a prepared version of the Medicare Registry).</p>
<p>The retention measure used here is based on the province of taxation on December 31st of the specified year after landing so that a 1-year retention rate, for instance, refers to the percentage of immigrants still in NB at the end of the calendar year following the year of landing. The province of residence reported by immigrants on their tax returns relays information on whether they are still residing in the province.</p>	<p>Retention of <b>matched</b> immigrants is measured from the time of landing date as indicated in the IRCC Landing Records. Otherwise, a “Left the Province” and “Left Country” status would flag an individual left the province. Additionally, a “Terminated” status for no valid reason for at least 6 months would also indicate an individual has left NB.</p>

<p>Because taxes are based on December 31<sup>st</sup> of the tax year, 'x'-year retention is not always for the full year. It varies depending on the month the immigrant lands. Whatever value 'x' is equals the longest amount of time that can pass since landing.</p>	<p>Retention for each year is based on the full year after the immigrant lands.</p>
<p>The IMDB only includes immigrants who have been <b>matched</b> with their own Canadian tax records at some point in time. Unmatched records are excluded, and it is unknown whether unmatched immigrants are present in Canada.</p>	<p>Landing records for all immigrants are available, but only immigrants who are <b>matched</b> to the Citizen Database are included in estimating the duration of retention in NB.</p>
<p>Non-filers in a given year are not seen in the tax filer data for that year, and therefore the actual location of the individual during that year is not known.</p> <p>In computing retention rates, non-filers in a given year are excluded and therefore are not a part of the numerator or denominator of retention calculations for that year.</p> <p>For instance, an immigrant who lands in 2010 and files taxes in 2011, 2012, and 2014 but not 2013 is included in 1-year retention rate calculations (2011) but not 3-year calculations (2013). This is because the tax filer data for 2013 does not include said immigrant, as they did not file taxes in that year.</p>	<p><b>Unmatched</b> immigrants are individuals in IRCC Landing Records who are not matched to the Citizen Database. Individuals can be unmatched for various reasons:</p> <ul style="list-style-type: none"> <li>○ Immigrants may have never arrived in NB or left before they could establish Medicare eligibility.</li> <li>○ Immigrants may be present in NB, but their records are not able to be matched because of missing information or information that is not reported consistently across both datasets.</li> </ul> <p>Incorporating <b>unmatched</b> immigrants in the analysis would result in <b>lower bound</b> retention estimates by including all individuals with NB as their intended destination, even if they never arrived in NB. Doing so assumes that all unmatched individuals did not stay in NB. Including only <b>matched</b> immigrants provides an <b>upper bound</b> estimate in that it is conditional on immigrants who arrived in NB and stayed long enough to register for Medicare.</p>

## Comparing Final Samples: Tax Records vs Medicare Records

**Table 35: Sample Comparison between Tax and Medicare Records**

<b>Similarities</b>	
Both reports include identification of principal/primary applicants.	
Retention calculations are dependent on an immigrant being matched with an administrative record.	
Both reports limit their consideration of immigrants to those individuals who indicated NB as their intended province in their permanent residency application.	
Both datasets are created using administrative records. Neither was originally collected with the intent of being used to determine geographic mobility.	
The linkage for both datasets – tax data (with IMDB) and Medicare data (with IRCC Landing Records) – uses probabilistic matching based on an individual's name, sex, and date of birth.	
<b>Differences</b>	
IMDB only includes individuals who are matched to the tax filer data at least once. This results in lower landings records compared to results in the Medicare study.	IRCC Landing Records include all immigrant landing records, regardless of whether they are matched to the Medicare data. Therefore, the Medicare study shows more landings in NB compared to the results using tax filer data.
Tax files for immigrants in the IMDB were made available to researchers up until 2017.	The database ranges from 1985 to 2018. However, to avoid small counts and to obtain substantial sample size, analysis covers only the 2005 to 2018 landing cohorts.
Provincial nominees include those nominated by provinces other than NB but who indicate NB as their intended destination.	Provincial nominees include only those nominated by NB.
The IMDB dataset is restricted to immigrants aged 15 or older in the specified year – dependents and spouse inclusive.	The final sample in the McDonald and Miah (2021) study has no age restrictions. However, principal/primary applicants in Provincial Nominee Programs and other economic streams (e.g., skilled worker) are 18 years and over.
The “All Immigrants” category includes principal/primary applicants and their dependents who are at least 15 years old.	The “All Immigrants” category includes principal/primary applicants and their dependents of all ages (spouse, children, and any other listed dependents in the application).

## Immigrant Landings by Data Source

Table 36 below shows the number of immigrant landings reported based on administrative records made available by both datasets. Counts of landed immigrants each year are consistently higher in the provincial data (Medicare data) compared to the IMDB, but the number of matched immigrants in the provincial data is consistently lower. The differences in annual landings between the data sources are due in large part to matching as well as to the exclusion of certain age groups.

- Individuals in the IMDB include only those matched at least once to their tax filer data, filed anywhere in Canada. This means if an immigrant's landing records are not matched to any personal income tax records, they are not in the IMDB. Of the immigrants who landed in any year from 1990 to 2017, 85% were able to be linked to at least one T1FF record (StatCan, 2020). The IRCC permanent resident landing file statistics include all landed immigrants in Canada, and matching refers to whether the immigrant's landing record has been matched to an NB Medicare Health Insurance Number.
- The IMDB sample excludes immigrants below the age of 15 while the IRCC Landing Records sample has no age restrictions.
- For Medicare (and IRCC Landing Records), individuals below age 15 are included, and this group is mostly comprised of individuals who are sponsored by a family member.<sup>10</sup>

**Table 36: Annual Landings of Primary Applicants Only**

Landing Year	IMDB (Tax Data)	Permanent Resident Landing Files (Medicare Records)	
		Total (Matched & Unmatched)	Matched
2006	700	770	685
2007	720	775	695
2008	790	855	735
2009	780	860	725
2010	830	900	750
2011	825	895	775
2012	870	935	820
2013	865	920	820
2014	1,015	1,105	960
2015	935	1,020	820

<sup>10</sup> If the age of primary applicants (IRCC Landing Records) is restricted to 15 and above, the difference between the two databases is reduced by about 20 individuals on average.

## Does NB Immigrant Retention Vary by Data Source?

- In the case of all immigrants, retention rates using Medicare data are higher than estimates using tax filer data (Table 37). This is mainly because estimates using provincial Medicare data are based on matched records only and therefore include immigrants who arrived in NB and remained long enough to register for Medicare.<sup>11</sup> About 85% of primary applicants in IRCC Landing Records could be matched to Medicare data.
- Both datasets exhibit gradual declining retention rates for arrival cohorts in later landing years over the 2006-2015 period (Table 37). Notably, there is consistency across both datasets in that the 1-year retention rate is highest in 2008 and the 5-year retention rate is highest in 2007.
- Table 38 exhibits estimates using primary applicants only, and again the retention rates calculated from Medicare data are consistently higher than those from tax filer data. The retention trajectories in both studies gradually decline between 2006 and 2015.
- The difference in rates between the two datasets and corresponding reports can be partially attributed to differences in data source, sample size, and methodologies.
  - For tax filer data (Boco et al., 2021), the denominator is anyone destined for NB, even if they filed taxes anywhere else in Canada (i.e., they are included even if they are not present in NB, as long as they are matched in the tax filer data).
  - In the Medicare study (McDonald & Miah, 2021), the denominator includes only immigrants who are matched (i.e., individuals in the IRCC Landing Records who are registered for provincial Medicare).
  - Thus, calculations using tax filer data have larger denominators, resulting in lower retention rates compared to calculations using Medicare data.<sup>12</sup>
- When IMDB data is used, the overall retention rate among principal/primary applicants to the Provincial Nominee Program (PNP) is 72.5% on average one year after landing and around 50% five years after landing (Table 39).
- Table 39 shows that in the Medicare data, 79.2% of NB PNP primary applicants stay in the province for at least one year (for the period 2006-2015). After five years, the overall retention rate for NB PNP primary applicants in the same period is 53.7%.
- By level of education, Medicare data shows that 79.4% of primary applicants with a bachelor's degree are still in NB one year after landing, while 51.1% remain five years

---

<sup>11</sup> Unmatched records are individuals in IRCC Landings Records who are not matched to the Citizen Database.

<sup>12</sup> This is the case when researchers include all primary applicants (matched and unmatched) in the analysis and assume that all unmatched arrivals did not arrive in NB long enough to apply for Medicare, or at all. This approach would result in retention rates somewhat lower than what was estimated using matched IMDB data.

after landing (Table 40, 2010-2015 cohorts only). Tax data shows that an average of 72.6% of primary applicants with a bachelor's degree at landing are still in NB one year after landing, while 53.1% remain five years after landing.

- For primary applicants with post-graduate degrees, results based on Medicare data show average 1-year and 5-year retention rates of 80.3% and 52.2%, respectively, while results based on tax data show average rates of 72.1% and 51.8% (Table 96).

**Table 37: Retention Rates of All Immigrants (Primary Applicants and Dependents) by Year(s) Since Landing (YSL)**

Tax Filer Data			Medicare Data		
Landing Year	1 YSL	5 YSL	Landing Year	1 YSL	5 YSL
2006	73.6%	56.9%	2006	82.8%	57.2%
2007	74.5%	57.6%	2007	85.1%	62.2%
2008	75.4%	51.6%	2008	87.0%	55.4%
2009	73.0%	52.7%	2009	85.0%	57.7%
2010	68.6%	48.7%	2010	80.4%	56.4%
2011	68.9%	47.9%	2011	80.0%	53.9%
2012	70.4%		2012	77.5%	
2013	73.3%		2013	80.4%	
2014	67.3%		2014	76.9%	
2015	63.3%		2015	78.8%	

Note: Retention using Medicare Data is for matched immigrants only.

**Table 38: Retention Rates of Primary Applicants Only by Year(s) Since Landing (YSL)**

Tax Filer Data			Medicare Data		
Landing Year	1 YSL	5 YSL	Landing Year	1 YSL	5 YSL
2006	75.0%	58.1%	2006	82.5%	56.9%
2007	74.6%	57.6%	2007	84.2%	61.2%
2008	76.4%	56.7%	2008	86.4%	59.2%
2009	74.6%	55.3%	2009	84.1%	58.6%
2010	70.2%	52.7%	2010	80.0%	58.0%
2011	72.8%	54.0%	2011	81.9%	58.1%
2012	73.0%		2012	80.5%	
2013	75.5%		2013	81.1%	
2014	69.9%		2014	78.7%	
2015	67.0%		2015	78.7%	

Note: Retention using Medicare Data is for matched immigrants only.

**Table 39: Retention Rates of Provincial Nominees (Primary Applicants Only) by Year(s) Since Landing (YSL)**

Tax Filer Data			Medicare Data		
Landing Year	1 YSL	5 YSL	Landing Year	1 YSL	5 YSL
2006	80.7%	58.2%	2006	83.3%	56.7%
2007	77.6%	55.4%	2007	83.1%	55.9%
2008	74.2%	50.8%	2008	82.5%	49.2%
2009	75.0%	53.6%	2009	82.6%	53.6%
2010	68.8%	50.0%	2010	79.2%	55.8%
2011	69.9%	48.6%	2011	75.7%	51.4%
2012	73.7%		2012	75.5%	
2013	72.2%		2013	79.6%	
2014	70.0%		2014	79.0%	
2015	62.9%		2015	75.8%	

*Note: Retention using Medicare Data is for matched immigrants only.*

**Table 40: Retention Rates of Primary Applicants Only (Bachelor's Degree Holders) by Year(s) Since Landing (YSL)**

Tax Filer Data			Medicare Data		
Landing Year	1 YSL	5 YSL	Landing Year	1 YSL	5 YSL
2010	70.2%	51.1%	2010	78.3%	52.2%
2011	73.5%	55.1%	2011	78.6%	50.0%
2012	77.0%		2012	82.6%	
2013	75.9%		2013	81.8%	
2014	72.6%		2014	78.5%	
2015	66.2%		2015	77.6%	

*Note: Retention using Medicare Data is for matched immigrants only.*

**Table 41: Retention Rates of Primary Applicants Only (Post-Graduate Degree Holders) by Year(s) Since Landing (YSL)**

Tax Filer Data			Medicare Data		
Landing Year	1 YSL	5 YSL	Landing Year	1 YSL	5 YSL
2010	73.1%	56.0%	2010	80.8%	53.9%
2011	75.0%	47.6%	2011	75.0%	50.0%
2012	69.2%		2012	72.2%	
2013	76.9%		2013	81.8%	
2014	74.3%		2014	83.9%	
2015	64.3%		2015	84.0%	

*Note: Retention using Medicare Data is for matched immigrants only.*