

A woman with long dark hair, wearing a patterned top and a brown skirt, is seen from behind. She has a black backpack and is holding a coffee cup. She is looking at a large digital departure board in an airport. The board displays flight information in yellow and red text. In the background, other people are visible, and a sign for 'FAST TRACK' is partially visible.

# Manitoba Centre for Health Policy

## The Diversity of Immigrants to Manitoba, Migration Dynamics and Basic Healthcare Service Use

Autumn 2020

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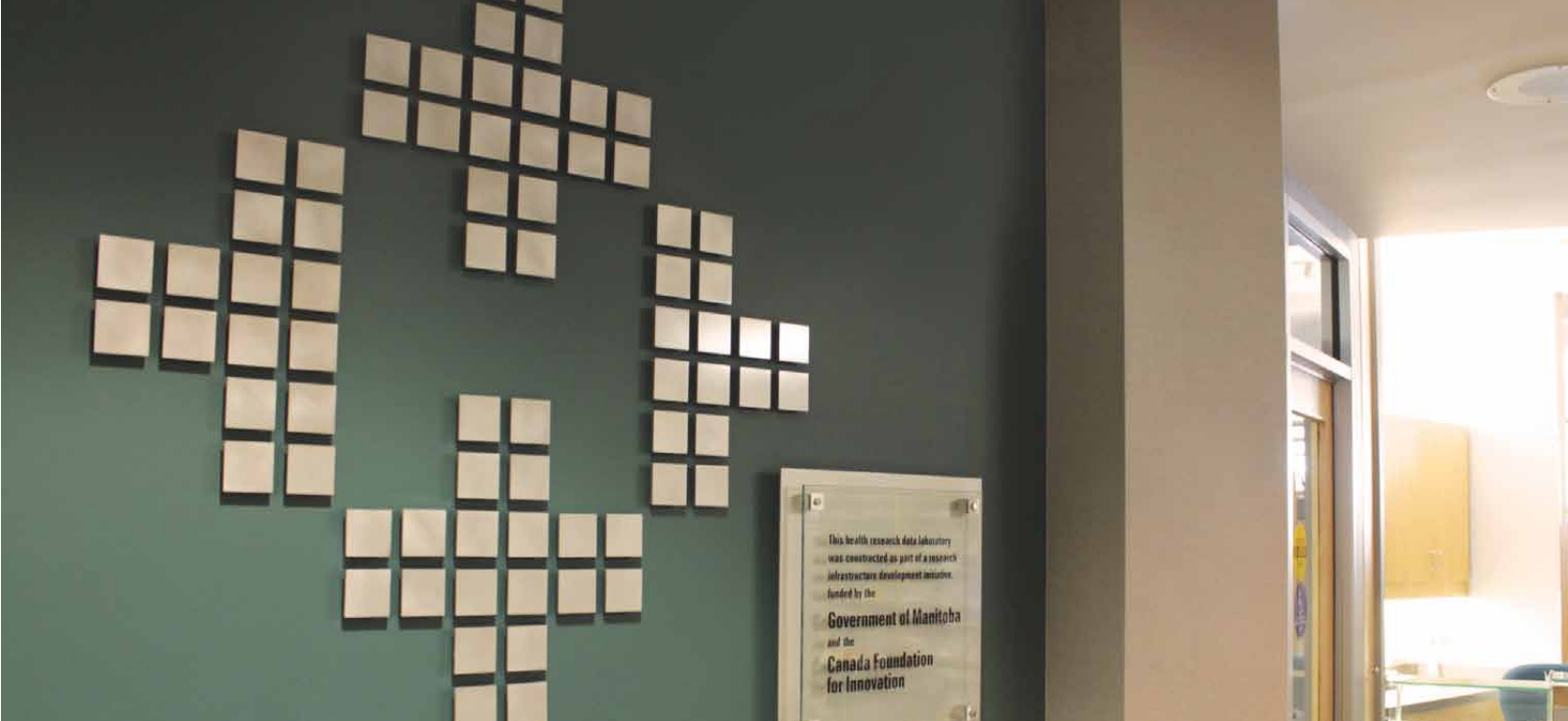
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# About the Manitoba Centre for Health Policy

The Manitoba Centre for Health Policy (MCHP) is located within the Department of Community Health Sciences, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba. The mission of MCHP is to provide accurate and timely information to healthcare decision-makers, analysts and providers, so they can offer services which are effective and efficient in maintaining and improving the health of Manitobans. Our researchers rely upon the unique Manitoba Population Research Data Repository (Repository) to describe and explain patterns of care and profiles of illness and to explore other factors that influence health, including income, education, employment, and social status. This Repository is unique in terms of its comprehensiveness, degree of integration, and orientation around an anonymized population registry.

Members of MCHP consult extensively with government officials, healthcare administrators, and clinicians to develop a research agenda that is topical and relevant.

This strength, along with its rigorous academic standards, enables MCHP to contribute to the health policy process. MCHP undertakes several major research projects, such as this one, every year under contract to Manitoba Health, Seniors and Active Living. In addition, our researchers secure external funding by competing for research grants. We are widely published and internationally recognized. Further, our researchers collaborate with a number of highly respected scientists from Canada, the United States, Europe, and Australia.

We thank the Research Ethics Board on the Bannatyne Campus at the University of Manitoba, for their review of this project. MCHP complies with all legislative acts and regulations governing the protection and use of sensitive information. We implement strict policies and procedures to protect the privacy and security of anonymized data used to produce this report and we keep the provincial Health Information Privacy Committee informed of all work undertaken for Manitoba Health, Seniors and Active Living.

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# Abbreviations

<b>BVOR</b>	Blended Visa Office-Referred
<b>GAR</b>	Government Assisted Refugee
<b>ICES</b>	ICES (previously known as Institute for Clinical Evaluative Sciences)
<b>IMDB</b>	Longitudinal Immigration Database
<b>IRCC</b>	Immigration, Refugees, and Citizenship Canada
<b>MCHP</b>	Manitoba Centre for Health Policy
<b>MHIR</b>	Manitoba Health Insurance Registry
<b>MHSAL</b>	Manitoba Health, Seniors and Active Living
<b>PHIN</b>	Personal Health Information Number
<b>PSR</b>	Private Sponsorship of Refugees
<b>RHA</b>	Regional Health Authority
<b>UNHCR</b>	United Nations High Commissioner for Refugees





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# Executive Summary

Immigration is a key component of Canada's social fabric and plays an important role in population growth, the economy and cultural environment. In Manitoba, immigration is a significant driver of economic and population growth, accounting for 88% of the labour force growth since 2014 [1]. Over the last two decades, Manitoba (and particularly Winnipeg) has received an increasing share of immigrants to Canada; Winnipeg is home to 2.2% of Canada's total population, but 4.3% of all Canadian immigrants who arrived between 2011 and 2016 have settled there [2].

Immigration characteristics are important determinants of health status, well being and use of social and healthcare services [3,4], but immigration-related information is not systematically collected in most of Manitoba's administrative databases. Linking the Immigration, Refugees, and Citizenship Canada Permanent Resident Database (the Permanent Resident Database) to the Manitoba Health Insurance Registry (the Registry) adds an important new layer of information to characterize Manitoba residents and their unique patterns of social and healthcare service use. The Registry comprises all Manitoba residents who have been registered for healthcare insurance with Manitoba Health, Seniors and Active Living and therefore represents the "spine" for any new linkage of datasets housed in the Manitoba Population Research Data Repository (the Repository) at the Manitoba Centre for Health Policy (MCHP).

This report focuses on the immigrant population of Manitoba, which includes international immigrants (people born outside Canada) and interprovincial migrants (people born in other Canadian provinces). We first describe the linkage of the Permanent Resident Database to the Registry. The Repository comprises over 90 population-based administrative databases that provide information about the health and social outcomes of Manitoba residents, but until now there has been a paucity of data on immigrants to Manitoba. We then describe how the addition of the Permanent Resident Database to the Repository and its linkage to the Registry provide the foundation to identify and characterize immigrants according to their sociodemographic characteristics, the circumstances of their immigration, and their subsequent social and health trajectories in future studies.

We examine and compare three groups of people:

Immigrants to Manitoba (hereafter also simply referred to as “Immigrants;” individuals born outside of Canada who now live in Manitoba), Interprovincial Migrants (individuals born in other Canadian provinces who have made Manitoba their home) and All Other Manitobans (those who were born in Manitoba, or who have resided in Manitoba since before the creation of the Registry in 1970). Further, this report provides estimates of migration dynamics for these three groups, including retention, outmigration and return migration patterns. Finally, the report compares basic healthcare use metrics and mortality rates for Immigrants, Interprovincial Migrants and All Other Manitobans.

The linkage of the Permanent Resident Database to the Registry, described in Chapter 2, resulted in a cohort of 263,711 Immigrants who landed in Canada between January 1, 1985 and December 31, 2017 and whom we successfully linked to a valid personal health information number (or PHIN). Most of these people (87%) declared in their application for immigration that their intended province of destination was Manitoba. After taking into account the fact that not all those who intended to settle in Manitoba actually did so, and that some Immigrants who originally settled in another province subsequently moved to Manitoba, the adjusted linkage rate was 96.2%. When stratified according to sociodemographic characteristics such as age, sex and marital status, the linkage rates did not vary substantially, suggesting that there was little differential bias.

Chapter 3 describes the sociodemographic characteristics of Immigrants, Interprovincial Migrants and All Other Manitobans. Generally, most of the Immigrants to Manitoba group arrived in the last decade, immigrated directly from their countries of birth, originated from Asian countries, were working-age adults, were admitted under the economic category or as provincial nominees, were married or in common-law relationships, and had post-secondary education. Approximately 40,000 (15%) of the Immigrants to Manitoba were refugees.

Chapter 3 also examines retention, outmigration, and return migration rates for Immigrants, Interprovincial Migrants and All Other Manitobans. These indicators were approximated based on information about the reasons for cancellation of healthcare coverage and subsequent re-registration. Retention rates, defined as the percent of newcomers still residing in the province after a certain period of time, were consistently higher for Immigrants than for Interprovincial Migrants. Overall, five-year retention rates for Immigrants were 84% compared to 68% for Interprovincial Migrants. Among the three groups we compared, Interprovincial Migrants were most likely to leave Manitoba to go to another province or country during

the study period (42%), followed by Immigrants (21%) and then All Other Manitobans (15%). An additional 20% of Interprovincial Migrants, 11% of Immigrants, and 5% of All Other Manitobans were categorized with a “cannot locate” cancellation code in the Registry, which may be applied to individuals who leave the province without a destination being recorded. Among those who moved out of the province and indicated a destination upon cancellation of coverage, All Other Manitobans were the most likely to return to the province (32%), followed by Interprovincial Migrants (14%), while Immigrants were the least likely to return (8%).

Chapter 4 provides basic measures of healthcare service use and mortality, based on matched cohorts for the three groups. Immigrants and Interprovincial Migrants had comparable rates of ambulatory visits, but these were lower than rates for All Other Manitobans. Hospitalization rates were highest among All Other Manitobans, followed by Interprovincial Migrants and Immigrants. Mortality rates were lower among Immigrants than the other two groups, although the magnitude of the difference varied according to age group. These findings are consistent with the so-called “healthy immigrant” phenomenon, according to which healthier individuals are more likely to emigrate and be admitted to another country as permanent residents. However, the lower mortality among Immigrants may partly be affected by the “salmon bias,” a phenomenon by which immigrants who return to their country of origin and die there frequently remain registered on population registries for a long time, thus inflating the denominator and leading to an underestimation of their mortality [5].

There are some important limitations to this report. First, the analysis is limited to permanent residents (i.e., landed immigrants); therefore, temporary immigrants (i.e., those with a student visa or temporary work permit or those who are refugee claimants awaiting a decision) residing in Manitoba who did not obtain their permanent residency between 1985 and 2017 could not be identified. Second, the identification of international immigrants is limited to first generation immigrants (i.e., those born outside of Canada). We did not include second generation immigrants (i.e., the children of immigrant parents born in Manitoba or in another province) in this analysis. Third, the report is descriptive only and the analysis was not meant to be exhaustive or to explain every finding in full detail. Additional focused studies will be needed to explain or more fully understand some of the broader patterns found in this report.

Despite these limitations, this report provides a first glance at numerous characteristics of the Manitoba population from an immigration perspective, many of which will be worth exploring in future studies, particularly in relation to health and social outcomes.

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# Chapter 1: Introduction

## 1.1. Background

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Immigration is a key component of Canada's social fabric and plays an important role in population growth, the economy and cultural environment. Natural population growth in Canada is declining because of low birth rates and population aging. Migratory increase through immigration is playing an increasingly important role in population growth. The Canadian population grew from 23.5 million in 1976 to 29.6 million in 1996 [6,7]. By 2016, the Canadian population had increased to 35.1 million, and an estimated 7.5 million (21.9%) of that population was born outside Canada [8]. It is estimated that by the year 2030, immigrants will be the only source of population growth in Canada [9]. Consequently, the Department of Immigration, Refugees and Citizenship (IRCC) has been implementing gradual increases in the annual intake of immigrants, from 260,404 in 2014 to a projected 350,000 in 2021 [10].

In Manitoba, immigration is a significant driver of economic and population growth, and has accounted for 88% or more of labour force growth since 2014 [1]. According to the 2016 Census, Manitoba ranks fifth among Canadian provinces in immigration, attracting 5.2% of all recent immigrants to Canada after Ontario (39%), Quebec (17.8%), Alberta (17.1%), and British Columbia (14.5%) [2]. Despite this relatively small share of the overall immigrant population, Manitoba has attracted an increasingly large proportion of immigrants in recent years, particularly to Winnipeg. Winnipeg is home to 2.2% of Canada's total population but was the destination of 4.3% of all immigrants to Canada who arrived between 2011 and 2016.

Immigration characteristics, such as country of origin and admission category (e.g., economic class vs refugee status), are important determinants of health status, well being and use of social and healthcare services [3,4]. Despite the importance of provincial immigration-related information, these data are fragmented and not systematically collected in the administrative databases housed in the Manitoba Population Data Research Repository (the Repository) at the Manitoba Centre for Health Policy (MCHP).<sup>1</sup>

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<sup>1</sup> Additional information about the Repository and the administrative data it houses is available on the MCHP website at [http://umanitoba.ca/faculties/health\\_sciences/medicine/units/chs/departamental\\_units/mchp/resources/repository](http://umanitoba.ca/faculties/health_sciences/medicine/units/chs/departamental_units/mchp/resources/repository)

This report describes the immigrant population of Manitoba. We focus mainly on international immigrants but also include interprovincial migrants. The report first covers the linkage of IRCC's Permanent Resident Database (1985-2017) to the Manitoba Health Insurance Registry (the Registry). The Repository houses over 90 population-based administrative databases that provide information about the health and social outcomes of Manitoba residents. However, until now there has been a paucity of data on immigrants to Manitoba. The addition of the Permanent Resident Database provides the foundation to conduct future studies on immigrants, including the ability to identify and characterize immigrants according to sociodemographic characteristics, their circumstances of migration, and their subsequent health and social trajectories.

In this report, we examine and compare three groups: Immigrants to Manitoba (also referred to simply as "Immigrants," these are individuals born outside of Canada who now live in Manitoba), Interprovincial Migrants (individuals born in other Canadian provinces who have made Manitoba their home) and All Other Manitobans (those who were born in Manitoba, or who have resided in Manitoba since before the creation of the Registry in 1970).

We provide estimates of migration dynamics for these three groups, including retention, outmigration and return migration. Finally, we compare basic healthcare use metrics and mortality between the groups.

## 1.2. Objectives

---

This report describes:

1. The linkage of the Permanent Resident Database with the Registry, including the methodology and the results of the linkage.
2. The basic sociodemographic characteristics of Immigrants, Interprovincial Migrants and All Other Manitobans.
3. The migration dynamics of Immigrants, Interprovincial Migrants and All Other Manitobans, including outmigration, return migration and retention.
4. The healthcare use and mortality of Immigrants compared to Interprovincial Migrants and All Other Manitobans.

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# Chapter 2: Data Linkage

## 2.1. Background

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Data linkage is a method that allows information on an individual from one data source to be linked to information on the same individual from another or multiple data sources. Thus, each additional data source linked to the original data source provides a new layer of information that, if combined with previous information, can be used to understand new traits of the population. In the Repository, the original data source (the “spine”) to which all the different databases are linked is the Registry. The linkage process consists of attaching a unique identifier (the Personal Health Information Number) to each individual record in the incoming database to make it linkable to all other data holdings in the Repository.

The Registry is a longitudinal population-based database maintained by Manitoba Health, Seniors and Active Living (MHSAL), containing all individuals who have been registered with MHSAL at some point since the creation of the Registry in 1970. The Registry receives semi-annual “snapshot files” of data from MHSAL. These files include individual-level demographics, family composition information, residential postal codes, and data fields for registration, birth, entry into province, and migration out of the province. The Registry thus compiles the requisite information to track residents for longitudinal and intergenerational analyses. The linkage of the Permanent Resident Database to the Registry adds an important new layer of information to characterize Manitoba residents and, in combination with existing linkages, their unique patterns of health and social service use.



## 2.2. Methods

### Study Period and Data Sources

This study is based on administrative databases in the Repository at MCHP. In order to identify immigrants to Manitoba, we linked the Registry with the Permanent Resident Database (1985-2017). The Permanent Resident Database is composed of two smaller databases that correspond to the evolution of IRCC information systems over time: the Legacy Database (1985-1999) and the Permanent Resident Database (2000-2017). These immigration databases were brought into the Repository as part of a tri-party data sharing agreement between the University of Manitoba, IRCC and MHSAL. The two immigration databases correspond with changes in the layout of the database. Virtually all the information collected under one system can be found in the other.

The Permanent Resident Database contains all records of immigrants who landed in Canada between January 1, 1985 and December 31, 2017. The data sharing agreement between the University of Manitoba, IRCC, and MHSAL includes future updates of the Permanent Resident Database. These data contain several variables that form part of the permanent residence application (immigration category, applicant family status, landing date, intended destination, knowledge of official languages), including sociodemographic characteristics of the applicants (e.g., marital status, education, country of birth, last permanent residence, mother tongue, age, sex).

The Permanent Resident Database was linked to the Registry, which encompasses all individuals who have been registered with MHSAL for healthcare coverage at some point since the creation of the Registry in 1970 up to March 31, 2019.

After the linkage process was completed, aggregate statistics obtained from the Immigration Longitudinal Database (IMDB) were used to adjust linkage rates (see *Crude and Adjusted Linkage Rates later in this chapter*). The IMDB was accessed at the Statistics Canada Research Data Centres.

### Linkage Methodology

The methods for linking the Permanent Resident Database and the Registry build on previous work conducted in Ontario [11]. However, our methods, analysis and results have important distinctions from the Ontario linkage process. The main difference is that the Permanent Resident Database files we used in our analyses include *all* immigrants to Canada, while the file used in Ontario included only the subset of immigrants whose intended destination at the time of the application was Ontario.

This has two main implications. First, the use of the national database allows the linkage of a larger number of individuals, by including those who initially immigrated to provinces other than Manitoba and migrated to Manitoba some time later. Second, a different linking strategy was needed, since about 96% of immigrants to Canada intended to settle in provinces other than Manitoba. Because the probability of settling in the province of intended destination is much higher than that of settling in other provinces, the linkage process was conducted separately according to the province of intended destination: Manitoba versus the rest of Canada.

Table 2.1 shows the characteristics of all immigrants who obtained permanent residency in Canada from 1985 to 2017, by province of intended destination (Manitoba versus rest of Canada), as per the original unlinked Permanent Resident Database records. Overall, the immigrants who intended to settle in Manitoba were not very different from those who chose other destinations. However, based on standardized differences larger than 20%, which indicate that the differences were unlikely to be due to chance, and compared to those intending to settle in the rest of Canada, immigrants intending to settle in Manitoba were less common in the late 1990s and were instead more likely to arrive in the last decade (2010-2017). They were also more likely to be admitted as economic immigrants (i.e., immigrants who have been selected for their ability to contribute to Canada's economy) than to be admitted as family members of Canadian citizens. The number of immigrants who chose Manitoba as their province of intended destination also increased over the course of the study period.

**Table 2.1: Immigration Data Records by Intended Destination and Sociodemographic Characteristics, 1985-2017**

All records in the Permanent Resident Database

Sociodemographic Characteristics	All Records for Canada by Intended Destination				Standardized Differences (%)
	Manitoba		Rest of Canada		
	N	%	N	%	
Age at Landing (Years)					
0-14	69,614	25.76	1,494,253	20.76	11.87
15-24	41,654	15.42	1,097,278	15.24	0.48
25-44	126,922	46.98	3,487,564	48.45	2.95
45-64	26,464	9.79	861,322	11.97	6.98
65-84	5,204	1.93	246,193	3.42	9.27
85 and Older*	332	0.12	11,780	0.16	1.08
Sex					
Female	134,000	49.59	3,693,521	51.31	3.43
Male	136,168	50.40	3,503,966	48.68	3.44
Other or Missing	22	0.01	842	0.01	0.36
Landing Year					
1985-1989	23,078	8.54	665,833	9.25	2.49
1990-1994	26,435	9.78	1,158,612	16.10	18.89
1995-1999	17,963	6.65	1,001,151	13.91	24.08
2000-2004	27,821	10.30	1,136,472	15.79	16.36
2005-2009	53,895	19.95	1,196,140	16.62	8.62
2010-2017	120,998	44.78	2,040,182	28.34	34.65
Immigration Category					
Family	53,385	19.76	2,234,348	31.04	26.14
Economic	173,401	64.18	3,908,024	54.29	20.22
Refugee	42,324	15.66	942,982	13.10	7.31
Other	1,074	0.40	110,470	1.53	11.65
No categorization	6	0.00	2,566	0.04	2.43
Birth Region					
Americas	23,673	8.76	980,125	13.62	15.45
Europe	44,958	16.64	1,125,044	15.63	2.75
Asia and Pacific	167,500	61.99	4,354,665	60.49	3.08
Africa	33,994	12.58	733,505	10.19	7.53
Other or Not Stated	65	0.02	5,051	0.07	2.13
Marital Status					
Married or Common-Law	130,924	48.46	3,747,281	52.06	7.21
Separated, Divorced, Widowed	6,246	2.31	228,229	3.17	5.26
Single	131,932	48.83	3,169,134	44.03	9.64
Not Stated	1,088	0.40	53,746	0.75	4.55
Education Level					
Secondary or Less	104,271	38.59	2,816,547	39.13	1.10
Some Post-Secondary	45,068	16.68	1,208,351	16.79	0.28
Bachelor Degree or Higher	70,239	26.00	1,993,596	27.70	3.83
None or Not Stated	50,612	18.73	1,179,896	16.39	6.16
Occupational Skill Level					
Skilled	56,864	21.05	1,652,517	22.96	4.61
Unskilled	22,923	8.48	370,568	5.15	13.27
Other	190,403	70.47	5,175,305	71.90	3.15
Total	270,190	-	7,198,390	-	-

\* Fewer than 6 records (under 1%) for each intended destination were missing age in the Permanent Resident Database.

## Linkage of the Permanent Resident Database to the Registry

In linking the Permanent Resident Database to the Registry, we used blocking schemes for deterministic, probabilistic and manual matching of records, as described below and in Figure 2.1. All analyses were carried out using SAS® version 9.4.

### Blocking Schemes

A blocking (stratification) scheme was implemented on Permanent Resident Database records with the intended destination of Manitoba and those intending to reside in the rest of Canada. This method partitioned the Permanent Resident Database and the Registry files into mutually exclusive and exhaustive subsets, and we looked sequentially for matches within each subset. The entire Permanent Resident Database was divided into records that indicated Manitoba as the intended destination (3.6%, Table 2.2) and records that indicated another Canadian province as the intended destination (96.4%, Table 2.2). Since the same linkage variables were available on all records, both groups were processed using the same blocking schemes for deterministic, probabilistic and manual matching.

Blocking is a way to reduce the number of comparisons made when linking two files. In the absence of blocking, the number of comparisons made is the product of the number of records in each file. Records agreeing only on sex or month of birth, and nothing else, are not likely members of the set of valid links. For example, using last name as a blocking variable requires all valid links to agree on last name. This greatly reduces the number of comparisons made because any pair of records disagreeing on last name is not considered a valid link. Not all valid links agree on last name, so a number of blocking schemes are used in a sequence of linkage passes, so that records disagreeing on last name but agreeing on birthdate and other variables can be linked in a later pass.

The sequence of the blocking schemes involved deterministic, probabilistic and manual matches (Figure 2.1).

**Deterministic Match:** An exact match on a combination of personal identifiers such as first name, second name, first initial of second name, last name, sex, and/or date of birth.

**Probabilistic and Manual Linkages:** Probabilistic record linkage involves comparing records from two different files on a number of attributes ('linkage keys'), such as name, sex, birth date, and region of residence. The probabilistic linkage to the Registry was done using LinkPro, a SAS®

macro-based probabilistic record linkage package [12]. The following linkage keys were used in LinkPro: first name, initial of first name, first three characters of first name, tokenized (i.e., selection of elements in a string of characters) first name, second name, initial of third name, last name, first initial of last name, first three characters of last name, town of intended destination in Manitoba, birth year, birth month, birth day, and sex.

Records agreeing on multiple linkage keys likely refer to the same individual (i.e., are valid links). This likelihood is formalized in the creation of a linkage score, which adds up the agreement or disagreement of all the linkage keys, each weighted by their ability to discriminate between valid and invalid links. Decisions about which links to accept or reject are made on the basis of this score.

Because records of those not intending to settle in Manitoba were far more numerous than those who intended to settle in Manitoba, the threshold for distinguishing between links and non-links was increased in the probabilistic passes for non-Manitoba records. Their greater number, together with the expectation that the vast majority of them will never be seen in Manitoba, required a higher threshold to reduce the likelihood of false positives.

Phonetic matches on surname were done using Soundex coding. Soundex is an algorithm for encoding names in such a way that names which sound alike receive the same code. Misspellings or transcription errors of names can prevent valid links in a system like LinkPro, where agreement between two records is based on an exact match of several linkage keys. Matching on Soundex code of last name in an additional pass, after exact matches have been accounted for, allows for non-exact but close matches on last name. The Soundex code alone is never the only basis for a match; other variables such as first name, sex and birth date must also agree.

Links produced at any of the probabilistic blocking schemes were screened on the basis of the total linkage weight and divided into three categories: Accept, Reject and Review. Links equal to or above a threshold T1, which varied according to the linkage parameters, were accepted automatically. Links equal to or below a threshold T2, where  $T2 < T1$ , were rejected automatically. Any links with weight ( $w$ ) in the range  $T2 < w < T1$  were reviewed manually at MHSAL's secure terminals by MCHP Data Analysts with extensive data linkage experience. The manual review was based on personal identifiers such as first name, second name, first initial of second name, last name, sex, and/or date of birth, and blinded to other individual characteristics. The data used for analysis at MCHP were de-identified prior to transfer to the Repository.



## Data Quality Checks

Data quality assessments were conducted using the MCHP data evaluation framework to ensure that linked records corresponded to unique individuals, and that the data were accurate, consistent and plausible [13]. We used the following set of criteria:

- Duplicate records in the Permanent Resident Database and Registry:
  - Permanent Resident ID numbers appearing multiple times with different landing dates. The ID number with the earliest landing date was selected.
  - Linkage to the Registry showed that about 0.5% (1,358 out of 277,883) of the Permanent Resident ID numbers linked to the same scrambled (anonymized) personal health information number (PHIN). Only one record per scrambled PHIN (again, the record with the earliest landing date) was selected.
- Permanent Resident Database records with scrambled PHINs not found in the Registry:
  - The Registry file used for linkage is a copy of the current Registry in use at MHSAL. MCHP receives snapshots of this file every six months, so it is possible that some very recent additions to the current file have not yet been added to the installed Repository. Since these very recent additions will also not have any healthcare use data (which are updated annually), they were removed from the subset used for analysis.
- Individuals with erroneous health insurance coverage (zero days or before birth):
  - If coverage starts before birth, it may indicate an invalid link or some error in coverage or birthdate. Coverage for zero days occurs when the coverage start date is equal to the coverage end date. This may occur if the scrambled PHIN is registered in error. A coverage interval of zero days does not allow for analyses of healthcare use.
- Individuals whose health insurance coverage ends before their landing date:
  - This group represents people whose coverage in Manitoba occurred entirely before their landing date, and thus were not permanent residents during their time in Manitoba. They were likely residents of another province as of landing date.
- Individuals whose health insurance coverage started after the end of our observation period (March 31, 2019):
  - This group has coverage which starts outside the current boundaries of data held at MCHP. Healthcare use for this group can be determined only after MCHP receives data for the 2019 fiscal year.

This assessment led to the exclusion of 14,172 records containing duplicates or implausible combinations of variables suggesting a high probability of false matches (Figures 2.2-2.3).

## Crude and Adjusted Linkage Rates

Linkage rates are interpreted as a measure of the success of the linkage process and the quality of the data. The higher the rate, the more complete the linkage of eligible individuals. A linkage rate can only reach 100% if all individuals in dataset A exist in dataset B. However, this is not necessarily the case in the linkage of immigration data. From the time of preparing an application to the time immigrants actually settle in Canada, their intended province of destination may change. This poses a problem to the calculation of the linkage rates because this mobility affects the denominators. Not all those whose intended destination was Manitoba ended up landing in or later residing in the province. The Permanent Resident Database contains information on intended destination and the data are last updated at the port of entry upon landing. Therefore, the database does not provide information on whether a person actually settled in the intended province after landing. Immigrants who stated that Manitoba was their province of intended destination but who never came to the province are not eligible to be linked and therefore should not be part of the denominator. Including them in the denominator would artificially underestimate linkage rates.

Although there is no exact way of determining the true denominator based only on the Permanent Resident Data that we received from IRCC, a more accurate value can be estimated using the annual tax filing information on all immigrants to Canada available in the Immigration Longitudinal Database (IMDB). The IMDB is based on a linkage between the Permanent Resident Database and the “T1 Family File” created by Statistics Canada based on personal income tax returns filed from 1980 to 2016 and provided to Statistics Canada by the Canada Revenue Agency [14]. The denominator from our linkage process was adjusted by a correction factor derived from the IMDB that excludes the proportion of linked individuals who never filed taxes in the province of intended destination. For that purpose, the IMDB was accessed at the Statistics Canada Research Data Centres to obtain aggregate data on the number of immigrants who ever filed taxes in Manitoba by their intended destination.

We first calculated the crude linkage rate as the percent of individuals in the Permanent Resident Database that linked to the same individuals in the Registry. We calculated the rate separately for those whose intended destination was Manitoba and for those whose intended destination was the rest of Canada. Secondly, we calculated the linkage rate corrected for the estimated number of immigrants most likely settling in Manitoba, based on the tax filing behaviour available in the IMDB by intended destination.

## 2.3. Results

### Linkage to Registry

The Permanent Resident Database contained 7,468,580 landing records from the period January 1, 1985 to December 31, 2017. These landing records included 270,190 (3.62%) records with Manitoba as the intended

destination (Table 2.2). The linkage to the Registry shows that 40,161 records of immigrants who at the time of landing indicated other Canadian provinces as an intended destination ultimately ended up in Manitoba. Similarly, 32,468 records of immigrants with Manitoba as their intended destination were not found or could not be linked to the record of a Manitoba resident.

Table 2.2: Overlap Between Records in the Permanent Resident Database and the Manitoba Health Insurance Registry, 1985-2017

Present in Manitoba Health Insurance Registry	Province of Intended Destination in Permanent Resident Database		
	Manitoba	Rest of Canada	Total
Yes	237,722 (85.55%)	40,161 (14.45%)	277,883
No	32,468 (0.45%)	7,158,229 (99.55%)	7,190,697
Total	270,190 (3.62%)	7,198,390 (96.38%)	7,468,580

Deterministic matching obtained linkage rates above 90% (263,657 individuals; Figure 2.1 and Table 2.3). This step was followed by resolution of potential matches in the

probabilistic and manual steps, which added 10,541 and 3,685 matches, respectively.



Figure 2.1: Blocking Schemes for Linkage of Records in the Permanent Resident Database and the Manitoba Health Insurance Registry

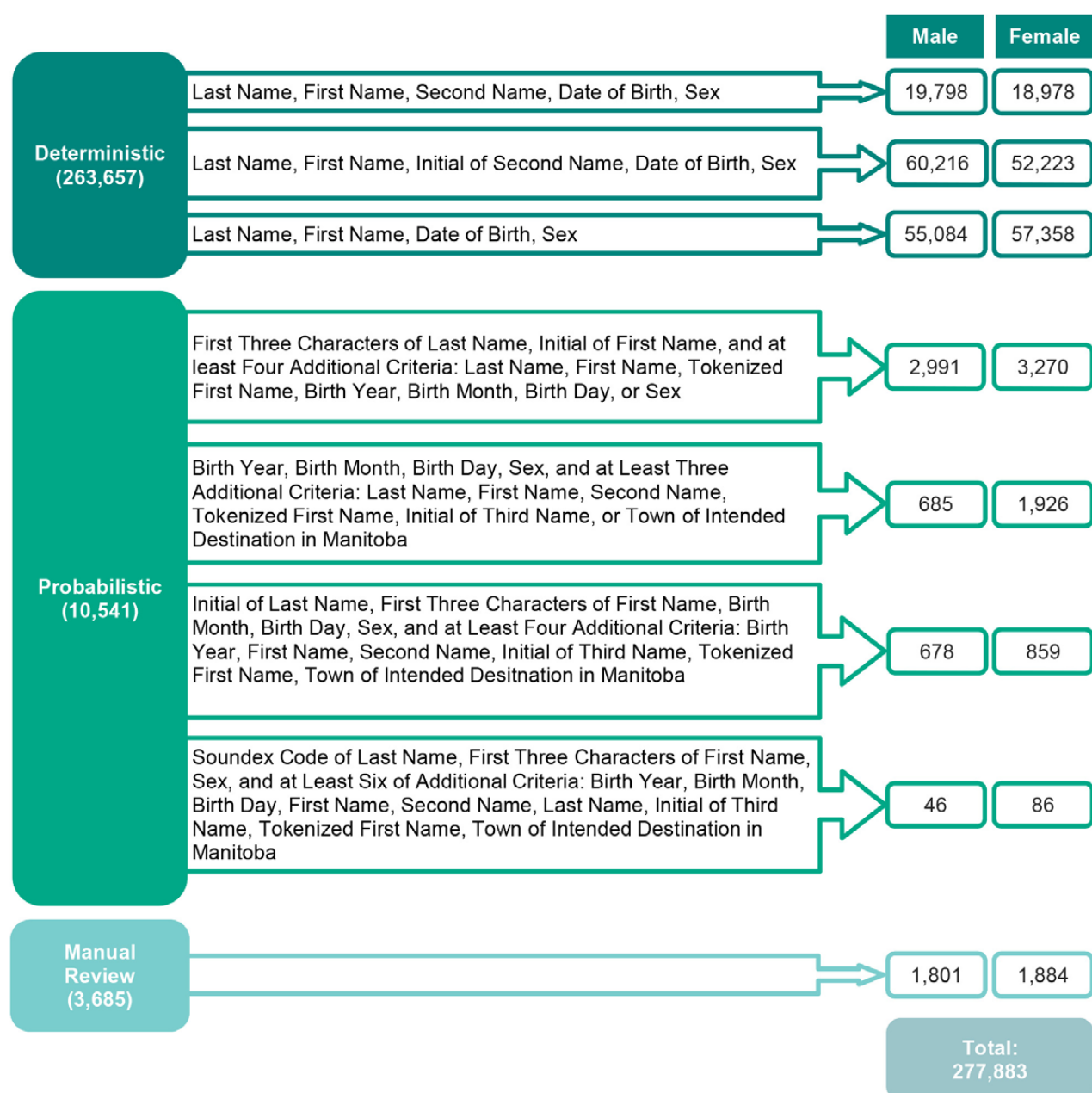


Table 2.3: Linkage of Records in the Permanent Resident Database with the Registry by Method and Intended Destination, 1985-2017

Intended Destination	Number and Percent of Records					
	Overall	Unlinked	Linked	Linked Records by Method		
				Deterministic	Probabilistic	Manual
Manitoba	270,190	32,468 (12.02%)	237,722 (87.98%)	226,467 (95.27%)	8,577 (3.61%)	2,678 (1.13%)
Rest of Canada	7,198,390	7,158,229 (99.44%)	40,161 (0.56%)	37,190 (92.60%)	1,964 (4.89%)	1,007 (2.51%)
Total	7,468,580	7,190,697	277,883	263,657	10,541	3,685

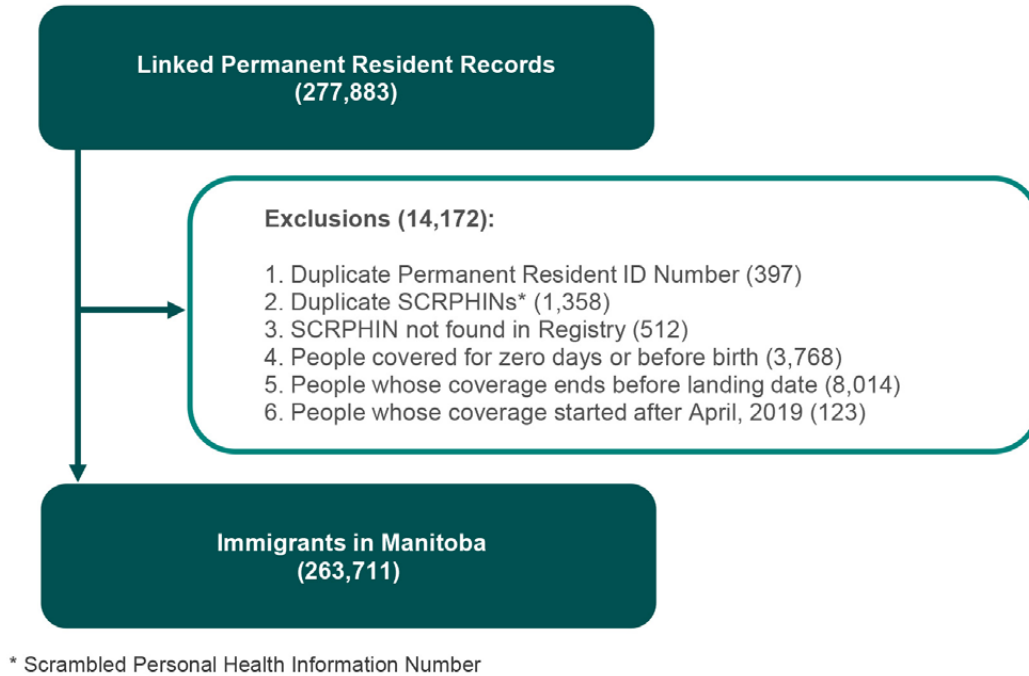
## Data Quality Checks

### Immigrants

After linking 277,883 records, we excluded 14,172 records

(5.1%) based on data quality criteria described in Figure 2.2, giving a final population of 263,711 unique permanent residents who at some point resided in Manitoba based on a valid registration in the Registry.

Figure 2.2: Exclusion Criteria for Linked Records from the Permanent Resident Database 1985-2017

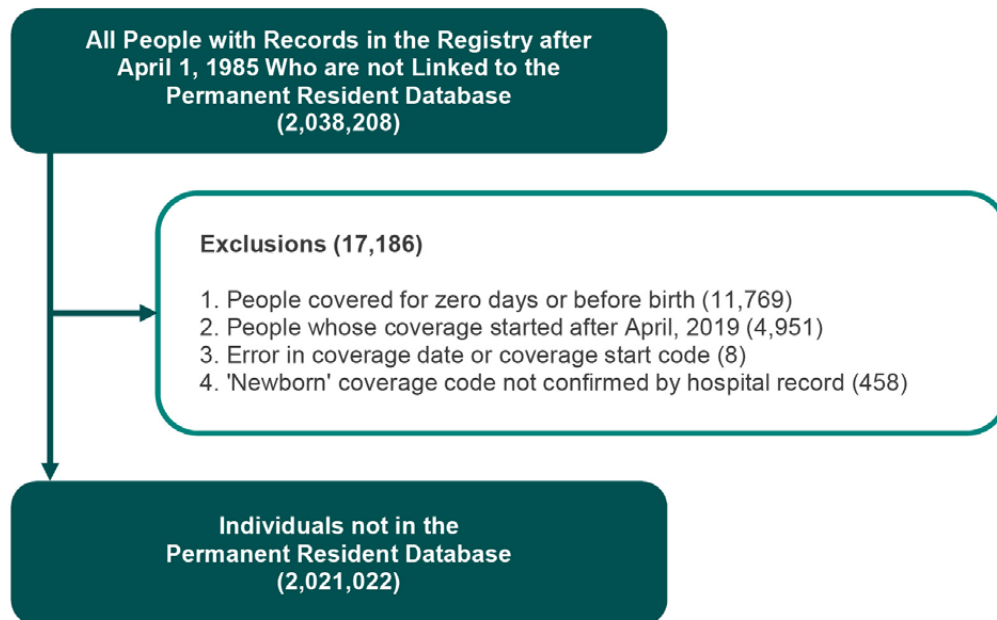


## Comparison Groups

Data quality checks were also applied to the remainder of the records in the Registry not linked to the Permanent Resident Database to create comparison groups of non-immigrants who could then be compared with immigrants in

Chapters 3 and 4. These checks resulted in the exclusion of 17,186 records (Figure 2.3). After exclusions, we identified 2,021,022 individuals with at least one valid Registry registration who did not have a record in the Permanent Resident Database.

**Figure 2.3: Exclusion Criteria for Records from the Manitoba Health Insurance Registry That were not Linked to the Permanent Resident Database, 1985-2017**



## Linkage Rates

### Crude Linkage Rates for Individuals with the Intended Destination of Manitoba

Among the 270,190 records with Manitoba as the intended destination in the original database, 229,025 unique individuals were deemed to have valid links to PHINs in the Registry (crude linkage rate 84.8%; Table 2.4). The sociodemographic characteristics of uniquely linked individuals with the intended destination of Manitoba were comparable to the unlinked records with the intended destination of Manitoba. Overall, linkage rates were consistent across levels of sociodemographic characteristics,

suggesting little bias, if any, associated with the linkage process. Large standardized differences (above 20%), indicating differences between unlinked and linked individuals that are unlikely to be due to chance, were only found among immigrants who obtained their permanent residency between 2005 and 2009, the period with the highest linkage rate. Other potential differences (standardized differences between 15% and 20%) included poorer linkage rates among immigrants who landed in the 1990s, among refugees and among those born in Africa. The crude linkage rate among those whose intended destination was not Manitoba was 0.5%. Characteristics of linked and unlinked records were not compared for this group.

Table 2.4: Linkage of Immigrants with Intended Destination Manitoba by Sociodemographic Characteristics, 1985-2017

All individuals in the Permanent Resident Database

Sociodemographic Characteristics	Individuals with Intended Destination Manitoba				Standardized Differences (%)	Linkage Rate (%)
	Unlinked		Unique Linked			
	N	%	N	%		
Age at Landing (Years)						
0-14	9,294	22.58	60,320	26.34	8.76	86.65
15-24	6,315	15.34	35,339	15.43	0.25	84.84
25-44	20,876	50.71	106,046	46.30	8.83	83.55
45-64	3,764	9.14	22,700	9.91	2.62	85.78
65-85	798	1.94	4,406	1.92	0.11	84.67
85 and Older*	118	0.29	214	0.09	4.44	64.46
Sex						
Female	20,424	49.61	113,576	49.59	0.05	84.76
Male	20,719	50.33	115,449	50.41	0.15	84.78
Other or Missing	22	0.05	0	0.00	3.27	0.00
Landing Year						
1985-1989	4,180	10.15	18,898	8.25	6.59	81.89
1990-1994	5,861	14.24	20,574	8.98	16.46	77.83
1995-1999	4,383	10.65	13,580	5.93	17.18	75.60
2000-2004	3,806	9.25	24,015	10.49	4.16	86.32
2005-2009	5,233	12.71	48,662	21.25	22.88	90.29
2010-2017	17,702	43.00	103,296	45.10	4.23	85.37
Immigration Category						
Family	7,010	17.03	46,375	20.25	8.28	86.87
Economic	25,312	61.49	148,089	64.66	6.58	85.40
Refugee	8,455	20.54	33,869	14.79	15.12	80.02
Other	388	0.94	686	0.30	8.19	63.87
No categorization	0	0.00	6	0.00	0.72	100.00
Birth Region						
Americas	3,710	9.01	19,963	8.72	1.04	84.33
Europe	6,368	15.47	38,590	16.85	3.75	85.84
Asia and Pacific	24,042	58.40	143,458	62.64	8.67	85.65
Africa	7,017	17.05	26,977	11.78	15.04	79.36
Other or Not Stated	28	0.07	37	0.02	2.53	56.92
Marital Status						
Married or Common-Law	19,902	48.35	111,022	48.48	0.26	84.80
Separated, Divorced or Widowed	957	2.32	5,289	2.31	0.10	84.68
Single	20,068	48.75	111,864	48.84	0.19	84.79
Not Stated	238	0.58	850	0.37	3.01	78.13
Education Level						
Secondary or Less	15,900	38.63	88,371	38.59	0.08	84.75
Some Post-Secondary	6,865	16.68	38,203	16.68	0.01	84.77
Bachelor Degree or Higher	10,931	26.55	59,308	25.90	1.50	84.44
None or Not Stated	7,469	18.14	43,143	18.84	1.79	85.24
Occupational Skill Level						
Skilled	9,500	23.08	47,364	20.68	5.80	83.29
Unskilled	3,502	8.51	19,421	8.48	0.10	84.72
Other	28,163	68.41	162,240	70.84	5.27	85.21
Total	41,165	-	229,025	-	-	84.76

\* Fewer than 6 records (under 1%) were missing age in the Permanent Resident Database.



## Correction of Linkage Rates

From the time an immigrant begins preparing an application to the time they settle in Canada, their intended province of destination may change. This poses a problem to the calculation of the linkage rates because this mobility affects the denominators. Not all those whose intended destination was Manitoba ended up landing in or later residing in the province. As previously mentioned, including those whose intended destination was Manitoba in the denominator underestimates linkage rates by including individuals who never showed up in the province and therefore are not eligible to be found in the Registry. To estimate the proportion of immigrants whose intended destination was Manitoba and who then resided in the province, we examined tax filing behaviour using data obtained from IMDB and accessed at the Statistics Canada Research Data

Centre. (We also followed a similar process for those whose intended destination was a Canadian province other than Manitoba). Filing taxes in a province was used as a proxy to identify those who had ever resided in that province. To correct the denominator, we estimated the number of individuals who never appeared in tax returns filed in Manitoba, which was subtracted from the denominator. The correction provides a denominator that excludes those for whom there was no evidence of having resided in the province (i.e., never filed taxes in the province).


Using this corrected denominator, the adjusted linkage rates were 97.6% among those whose intended destination was Manitoba and 88.0% among those who intended to settle in other provinces, giving an overall estimated linkage rate of 96.2% (Table 2.5).

**Table 2.5: Corrected Linkage Rates by Intended Destination, 1985-2017**

Correction based on the Longitudinal Immigration Database

Intended Destination	Total Number of Records (Denominator)	Correction Factor for Denominator	Number of Linked Individuals	Corrected Linkage Rate (%)
<b>Observed</b>				
Manitoba	270,190	-	229,025	84.76
Rest of Canada	7,198,390	-	34,686	0.48
Overall	7,468,580	-	263,711	-
<b>Adjusted</b>				
Manitoba	234,703	0.8687	229,025	97.58
Rest of Canada	39,432	0.0055	34,686	87.96
Overall	274,135	-	263,711	96.20

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# Chapter 3: Sociodemographic Characteristics and Migration Dynamics of Immigrants and Non-Immigrants in Manitoba

## 3.1. Background

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This chapter focuses on the sociodemographic characteristics of the study's three main comparison groups, International Immigrants, Interprovincial Migrants and All Other Manitobans. These characteristics were defined using information from the Permanent Resident Database and the Registry.

To differentiate the groups, we use the following terminology: International Immigrants, hereafter simply referred to as “Immigrants” or “Immigrants to Manitoba,” are individuals born outside Canada and identified by their presence in the Permanent Resident Database. Non-Immigrants include two distinct groups: individuals born in other Canadian provinces or territories who subsequently became Manitoba residents are referred to hereafter as “Interprovincial Migrants;” all other individuals who were born in Manitoba or were entered in the Registry before 1970 are classified as “All Other Manitobans.”

The linkage of the Permanent Resident Database to the Registry represents a key advance to overcome the lack of information on Immigrants to Manitoba and their use of health and social services. This linkage, building on existing information in the Registry, also allows identification of a wider spectrum of migration dynamics such as secondary migration (migration from a country other than an immigrant's country of birth), outmigration and return migration to the province.

## Migration Dynamics in Canada

Secondary migration has been growing over the last two decades [15]. Among immigrants, this phenomenon is associated with favourable socioeconomic profiles, upward socioeconomic mobility and therefore with positive health outcomes [15]. However, among refugees, it may be indicative of a hazardous migration journey (e.g., forced migration and exposure to refugee camps), and it is often associated with adverse, life-altering outcomes in this group [16,17].

The concept of retention reflects the ability of a province to retain the immigrants it has attracted. Immigrants to Canada are required to state their intended province of destination at the time of the application for permanent residence. Not all successful applicants settle in their intended province, and among those who do, some may not remain there for long and may instead migrate to another province or country. In the period 1999-2010, the percent of immigrants who actually settled in the province of intended destination in the first year after arrival varied across Canadian provinces, from roughly 33% in Prince Edward Island to over 80% in the Northwest Territories and Nunavut and major census metropolitan areas in Quebec, Alberta, British Columbia and Ontario [18]. The percent in Manitoba was approximately 79% [18]. Five-year retention rates among those landing in 2011 were highest in Ontario (91%), Alberta (90%), British Columbia (87%) and Quebec (81%) [19]. Prince Edward Island, New Brunswick and Newfoundland & Labrador had the lowest five-year retention rates for immigrants admitted in 2011 (16-51%), while the retention rate in Manitoba was 78% [19].

This geographical imbalance led to the creation of provincial nominee programs, which allowed provinces and territories to nominate individuals wishing to immigrate to Canada and settle in a particular province or territory to meet the economic and demographic needs of that jurisdiction, and to receive priority for immigration processing [20].

## Provincial Nominee Programs and Refugee Settlement Programs

Provincial nominees are part of the economic immigrant admission category, which also includes workers and investors [21]. The Manitoba Provincial Nominee Program, the oldest Canadian nominee program, was created in 1996 and implemented in 1998. The program has had significant success, accounting for over half of all immigrants to the province since 2005. The program is also recognized as a significant driver of economic growth in Manitoba since 2007 [22].

Unlike economic immigrants, refugee claimants (or asylum seekers) are admitted on humanitarian grounds. Refugees can be admitted as protected persons in Canada, as dependants abroad or as resettled refugees. Refugee claimants are those who seek refugee protection at an inland office or at a port of entry and who fear persecution or would be in danger if they had to leave Canada. They are

granted temporary residence and considered for potential admission as permanent residents following the processing of their application claim. Refugee claimants obtain protected person status after a successful hearing at the Immigration and Refugee Board of Canada. Only those whose claims are successful are granted permanent residency and are included in the Permanent Resident Database.

Resettled refugees can be admitted to Canada through several streams, such as through the Government Assisted Refugee (GAR) program, the Private Sponsorship of Refugees (PSR) program, and Blended Visa Office-Referred (BVOR) refugee programs.

### The Government Assisted Refugee (GAR) Program

Under the GAR program, individuals who have been living outside of their home country or country of residence are referred by the United Nations Refugee Agency (UNHCR) or other referral organisations for resettlement to Canada [23]. They are selected on the basis of a well-founded fear of persecution for reasons of race, religion, nationality, membership in particular social group or political opinion if they return to their country. The PSR program provides additional opportunities for individuals to immigrate to Canada by engaging Canadian citizens and permanent residents in the resettlement of refugees from abroad.

### Private Sponsorship of Refugees (PSR)

The PSR program does not rely on public resources, but rather taps the energy and funds of faith communities, ethnic groups, families and other benevolent associations. These groups and organizations typically raise funds or use their personal income to provide for and support the sponsored individual or family for their first year in Canada. As members of organizations, associations and groups, Canadian citizens and residents can sponsor refugees overseas as a Group of Five, as Community Sponsors or as Sponsorship Agreement Holders. If the sponsored refugees do not have the funds to support themselves and any dependants after they arrive in Canada, the private sponsor provides the cost of food and accommodation, and helps with general settlement tasks such as school enrollment and registration with health services, for twelve months, or until the refugee becomes self-sufficient. However, sponsorship may be extended to a maximum of 36 months in exceptional circumstances if the refugees require more time to become established in Canada [24].

### Blended Visa Office-Referred (BVOR) Refugees

Similar to refugees admitted under the GAR program, refugees admitted through BVOR programs are selected while living outside of their home country or country of residence and who have been granted permanent resident status on the basis of a well-founded fear of returning to that country. However, BVOR refugees receive resettlement assistance from both the federal government and private sponsors. The first immigrants admitted under a BVOR

program landed in Canada in 2013. They are first assessed for eligibility for the GAR program, and once eligibility is confirmed, are then further assessed to determine whether they may be a potential candidate for the BVOR program. After admissibility to Canada is established, the application is reviewed by the Refugee Sponsorship Training Program, which comprises groups who wish to sponsor a refugee under the BVOR program. When a potential sponsor selects such a case, the sponsor must submit an application to determine whether or not they have the ability to provide adequate financial, emotional and settlement support as required by their sponsorship undertaking. A refugee may be eligible for the BVOR provision where both the Government of Canada and a private sponsor provide financial support, with the sponsor providing additional settlement support for the year after the refugee arrives in Canada.

## 3.2. What is Included in this Chapter

The first part of this chapter describes the methods used in this part of the analysis, including a description of data sources, and formation of the study cohort and comparison groups.

Then, we present our results, starting with the Immigrants to Manitoba group, categorizing them according to primary or secondary immigration and examining their sociodemographic characteristics. The sociodemographic and immigration characteristics of Immigrants described in this chapter include age, sex, marital status, and educational attainment at landing. We also categorize this group according to their admission categories and sub-categories, such as economic immigrants (with emphasis on provincial nominees), family and refugee class. Several of the above-mentioned characteristics are shown according to landing year (for international immigrants) and start of healthcare coverage (when applicable).

Finally, we describe the key sociodemographic characteristics of the three main comparison groups, including their age, sex, and area of residence, year of start of healthcare coverage, years of residence in Manitoba and their income quintiles (area-level household income). We examine the migration dynamics (outmigration, return migration and retention rates) of the three groups, where applicable.

## 3.3. Methods

### Study Period and Data Sources

This chapter uses individual-level data from the Permanent Resident Database (1985-2017) and the Registry (1970-2019), and area-level data from the Canadian Census (years 1986, 1991, 1996, 2001, 2006, 2011 and 2016).

### Measures and Indicators

This section provides brief definitions<sup>2</sup> of key measures and indicators used in this chapter that are not unique variables in the Permanent Resident Database:<sup>3</sup>

- **Healthcare coverage:** Individuals with Manitoba provincial health insurance coverage at some point during the study period, evidenced by records in the Registry and a valid PHIN. Individuals who were born in Manitoba are covered from birth, while Immigrants, Interprovincial Migrants and All Other Manitobans who were registered before 1970 may have obtained coverage at any age.
- **Secondary migration**
  - Primary immigrants: Individuals immigrating to Canada directly from their country of birth.
  - Secondary immigrants: Individuals immigrating to Canada from a country other than their country of birth.
- **Interprovincial migration:** The movement of people from one Canadian province or territory to another with the intention of settling, permanently or temporarily, in the new province or territory. This may apply to both international immigrants and non-immigrants born in other Canadian provinces or territories. For simplicity of terminology, we refer to international immigrants as “Immigrants” and individuals born in the rest of Canada as “Interprovincial Migrants,” unless otherwise specified.

<sup>2</sup> Detailed definitions of key indicators and measures are available in Appendix 1 of the online supplement for this report at <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

<sup>3</sup> Additional information about variables from the Permanent Resident Database that are presented in this chapter can be found here: <https://www.canada.ca/en/services/immigration-citizenship/helpcentre/glossary.html>



- **Number of years of permanent residence in Manitoba:** Completed years of residence based on the sum of all non-overlapping days of coverage from the later of landing or coverage start date up to the end of the study period (March 31, 2019). For immigrants who may have already resided in Canada under one or several temporary immigration categories before applying for permanent residency, we did not consider healthcare coverage episodes that began and ended before the individual's landing date and only considered the first episode of an immigrant as one that begins on or after the landing date, or includes the landing date if it begins before it. We refer to this as the "first coverage on or after landing." Therefore, this indicator does not count a person's time spent in the province as a temporary immigrant unless the person stayed in the province until becoming a permanent resident.
- **Outmigration:** Leaving Manitoba to settle, permanently or temporarily, in another province or country. We defined outmigration as the percent of individuals who lost their healthcare coverage for over 360 days, based on the dates of their first healthcare coverage episode and subsequent registrations and cancellations, if any. We identified three distinct broad categories based on the reason for cancellation of healthcare coverage: moved (to another province or country), cannot locate, and other (military personnel, member of the Royal Canadian Mounted Police, inmate, ward of the state, temporary resident, or student on a visa with a specified future coverage end date). The "other" category was not included in the estimation of outmigration or return migration.
- **Return migration:** A new registration in the Registry after having resided in Manitoba and leaving the province for at least 360 days, based on cancellation of coverage followed by a new registration.
- **Retention rate:** The proportion of newcomers to the province that are found still residing three or five years after the first start of coverage for Interprovincial Migrants and the latter of start of coverage or landing date for Immigrants. Retention rates were not calculated for individuals whose coverage started within three or five years from the end of our study period (March 31, 2019), for the three- and five-year rates, respectively.
- **Income quintiles:** Grouping of the population into two urban (Winnipeg and Brandon) and five rural (all other Manitoba areas) groups by ranked average neighborhood household income, with approximately 20% of the population in each group.

## Description of Study Cohort and Comparison Groups

We developed a group of international immigrants to Manitoba ("Immigrants") based on the linked individuals from the Permanent Resident Database. The non-immigrant groups ("Interprovincial Migrants" and "All Other Manitobans") were defined based on individuals in the Registry who were not linked to the Permanent Resident Database (Figures 3.1-3.2). The three main comparison groups were further subdivided into 11 mutually exclusive groups. Groups that comprised individuals who were part of the Registry but were not linked to the Permanent Resident Database were identified based on the date and reason for start of health insurance coverage. The reason for start of coverage (referred to as "coverage code") identifies whether coverage started at birth, after a move from another province, after a move from another country, or for other (unidentified) reasons.<sup>4</sup>

The eleven groups are defined briefly below (Figures 3.1-3.2).<sup>5</sup> These groups include individuals who were also linked to the Permanent Resident Database and who had a valid PHIN in the Registry, suggesting that they resided in Manitoba at some point during the study period.

### Groups 1-4

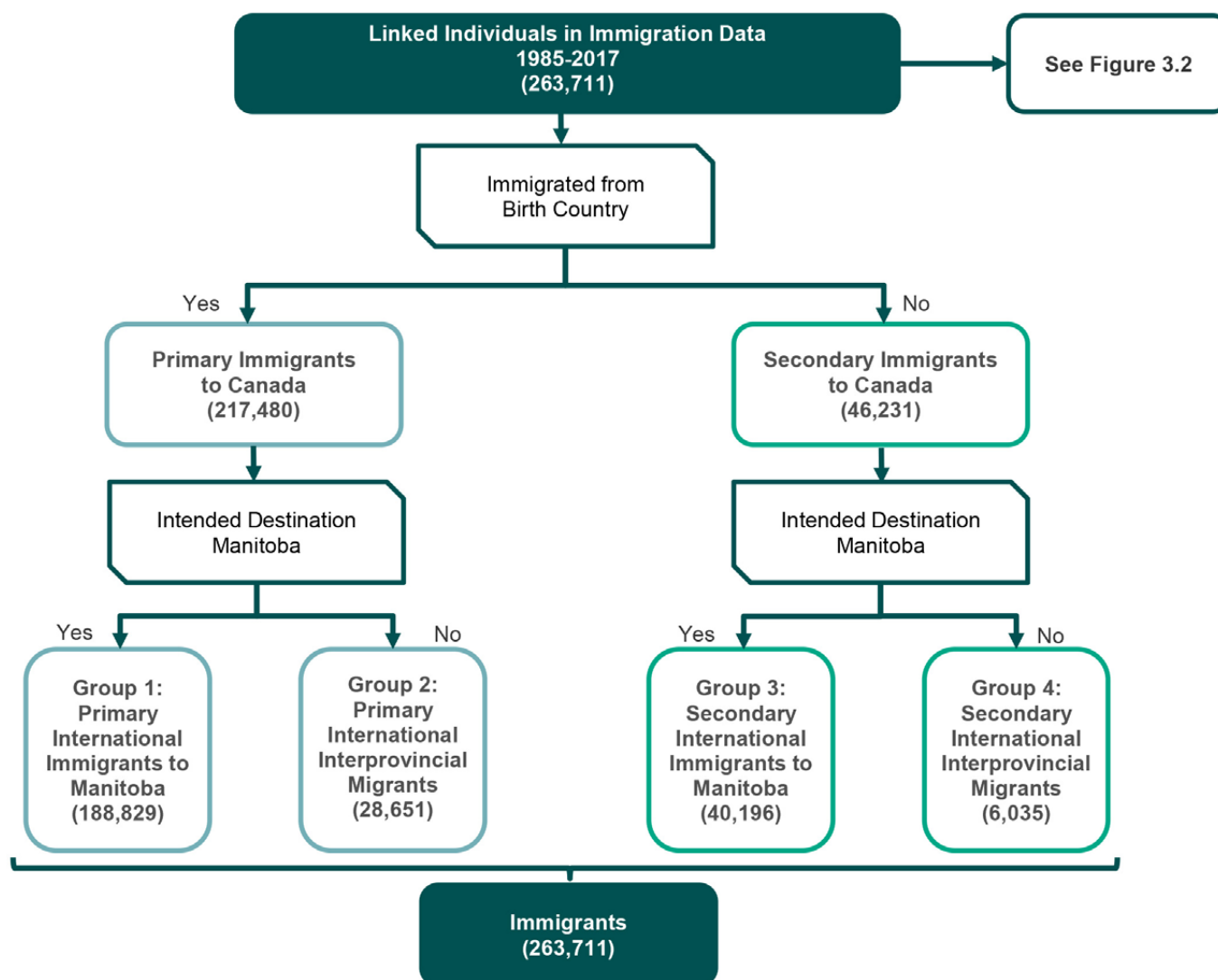
1. **Primary International Immigrants to Manitoba:**  
These are individuals who immigrated to Canada from their birth country, and indicated Manitoba as a province of intended destination.
2. **Primary International Interprovincial Migrants:**  
These individuals immigrated to Canada from their birth country, but they did not indicate Manitoba as a province of intended destination.
3. **Secondary International Immigrants to Manitoba:**  
These individuals immigrated to Canada from a country different from that of their birth country, and indicated Manitoba as a province of intended destination.
4. **Secondary International Interprovincial Migrants:**  
These individuals immigrated to Canada from a country different from that of their birth country, and did not indicate Manitoba as a province of intended destination.

<sup>4</sup> Coverage start in the Registry was coded as "unknown" in more than 99% of registrations before 1974. Starting in 1974, the coverage start code became informative and reliable.

<sup>5</sup> The number and percent of individuals in each of the 11 groups are available in Appendix 2 of the online supplement for this report.

**Figure 3.1: Cohort of Immigrants to Manitoba, 1985-2017**

Number of individuals linked to the Permanent Resident Database



## Groups 5-11

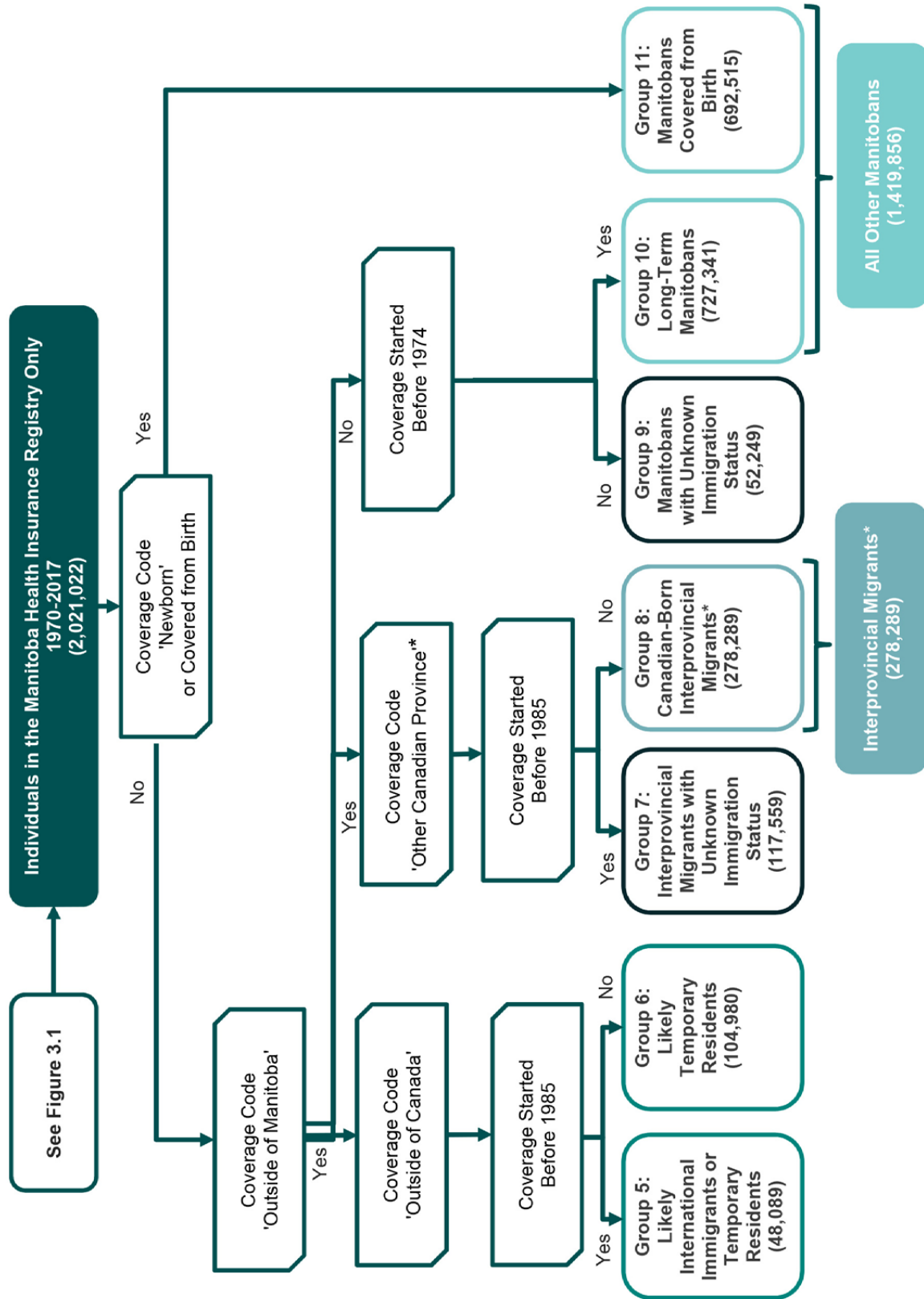
Individuals in groups 5 to 11 were identified through the Registry,<sup>6</sup> and were not linked to the Permanent Resident Database. We used the date and reason for start of health insurance coverage to assign individuals to one of these remaining 7 groups. The four groups whose immigration status could not be confirmed through the coverage status code (groups 5, 6, 7 and 9) were excluded from our main comparison groups. They were likely immigrants who became Manitoba residents before 1985, temporary residents, interprovincial migrants who entered the province between 1970 and 1985, and other Manitobans with unknown immigration status. A large number of individuals in groups 5 and 6 are likely temporary residents (e.g., students) who did not obtain permanent residency in the period between 1985 and 2017. However, we could not establish this because the Permanent Resident Database does not contain information on temporary residents. Although many temporary residents eventually become permanent residents, the Permanent Resident Database does not provide information during the period when they were not yet permanent residents.

5. **Likely Immigrants or Temporary Residents:** These individuals immigrated to Manitoba from another country between 1974<sup>7</sup> and 1984, so we could not link them to the Permanent Resident Database to distinguish between permanent residents and temporary immigrants.
6. **Likely Temporary Residents:** These individuals came from outside Canada after 1985 but were not linked to the Permanent Resident Database. Given our high linkage rate, most of them are likely temporary immigrants who had not yet obtained permanent residency between 1985 and 2017.
7. **Interprovincial Migrants with Unknown Immigration Status:** These individuals entered Manitoba between 1974 and 1984 from another Canadian province. Therefore, we were unable to link them to the Permanent Resident Database to determine if they were originally from another country (international interprovincial migrants) or born in another Canadian province.
8. **Canadian-Born Interprovincial Migrants:** These individuals migrated from another Canadian province after 1985 and are not linked to the Permanent Resident Database.<sup>6</sup>
9. **Manitobans with Unknown Immigration Status:** The immigration status of this group is unknown because they were not covered from birth. In addition, they were covered from 1974 but the reason for their coverage start was not a move from outside of Manitoba.
10. **Long-Term Manitoba Residents:** The coverage of these individuals started before 1974 and the coverage start reason was not a move from outside of Manitoba.
11. **Manitoba Residents Covered from Birth:** These individuals were born in the province after 1970, and had provincial health insurance coverage from birth.

<sup>6</sup> Individuals moving from Nunavut to Manitoba were excluded because the Registry does not provide a unique coverage code.

<sup>7</sup> Although the Registry began in 1970, the reason for which coverage started was coded as "unknown" in over 99% of new registrations before 1974, and therefore the origin of registrants could not be determined prior to that year. Individuals who did not obtain first coverage at birth and were first registered during 1970-1973 were classified as "Long-Term Manitoba Residents."

**Figure 3.2: Cohorts of Manitobans Not Linked to the Permanent Resident Database**  
 Number of individuals in the Manitoba Health Insurance Registry based on first ever registration, 1970-2017



\* Excludes individuals who moved from Nunavut due to lack of unique code in the Registry.

### Comparison Groups

- Immigrants ( $n = 263,711$ ; Figure 3.1)  
This group consists of all Manitoba residents who were born outside Canada and obtained permanent residency between 1985 and 2017. These individuals were linked to a record in the Permanent Resident Database (groups 1-4).
- Interprovincial Migrants ( $n = 278,289$ ; Figure 3.2)  
This group consists of Manitoba residents who were born in another Canadian province and moved to Manitoba (group 8).
- All Other Manitobans ( $n = 1,419,856$ ; Figure 3.2)  
All Other Manitobans are those who were born in the province after 1970 and were “covered” since birth (group 11) and those who have lived in the province since before the Registry was created in 1970 (group 10).

## 3.4. Results

We first present the sociodemographic characteristics of immigrants who landed between 1985 and 2017 and ever resided in Manitoba between 1985 and 2019, overall and by landing year. We provide a summary of the number of immigrants to Manitoba by immigration category (e.g., refugees).

Finally, we examine the number of immigrants in Manitoba by years of residence and time to obtaining healthcare coverage.

We then focus on the three main comparison groups (Immigrants, Interprovincial Migrants, and All Other Manitobans), and briefly describe their sociodemographic characteristics.

Lastly, we compare the groups based on their migration dynamics: retention, outmigration (indicated by reasons for cancellation of healthcare coverage) and return migration.

### 3.4.1. Immigrants

#### Overall Characteristics

The majority of the Immigrants to Manitoba group landed in Canada after 1999 (198,114; 75%) (Table 3.1). Many (47%) arrived as young adults aged 25-44 years, and 26% were children and youth under 15. The predominant immigration categories were economic (63%) and family (21%). Most Immigrants were married or in a common-law relationship (70%), and many had a bachelor degree or higher (43%). Most principal applicants admitted as economic migrants were skilled workers (72%). Most Immigrants originated from Asia (162,923; 62%), particularly Southeast and Southern Asia.

Table 3.1: Sociodemographic Characteristics of Immigrants in Manitoba, 1985-2017

Sociodemographic Characteristics	Immigrants	
	N	%
<b>Landing Year</b>		
1985-1989	21,831	8.28
1990-1994	25,069	9.51
1995-1999	18,697	7.09
2000-2004	31,330	11.88
2005-2009	55,440	21.02
2010-2017	111,344	42.22
<b>Age at Landing (Years)</b>		
0-14	68,450	25.96
15-24	41,310	15.66
25-44	123,232	46.73
45-64	25,615	9.71
65-84	4,882	1.85
85 and Older*	222	0.08
<b>Sex</b>		
Female	130,198	49.37
Male	133,513	50.63
<b>Immigration Category</b>		
Family	55,088	20.89
Economic	167,667	63.58
Refugee	40,008	15.17
Other	918	0.35
No categorization	30	0.01
<b>Marital Status (18 and Older)</b>		
Married or Common-Law	127,829	69.61
Single	48,822	26.58
Separate, Divorced or Widowed	6,019	3.28
Not Stated	979	0.53
<b>Education Level (25 and Older)</b>		
Secondary or Less	41,585	27.01
Some Post-Secondary	35,533	23.08
Bachelor Degree or Higher	66,549	43.23
None or Not Stated	10,282	6.68
<b>Occupational Skill Level (15 and Older)**</b>		
Skilled	45,132	71.91
Unskilled	14,606	23.27
Other	3,022	4.82

\* Includes fewer than 6 records (under 1%) in the Permanent Resident Database that were missing age data.

\*\* Restricted to principal applicants in the economic immigration category. Applicants in the economic business group (entrepreneurs, investors, and self-employed) were excluded.



Table 3.1: Continued

Sociodemographic Characteristics	Immigrants	
	N	%
<b>Birth Region</b>		
<b>Americas</b>		
North America	5,720	2.17
Central America	7,757	2.94
Caribbean and Bermuda	3,513	1.33
South America	6,508	2.47
<b>Europe</b>		
Western Europe	10,268	3.89
Eastern Europe	20,336	7.71
Northern Europe	6,671	2.53
Southern Europe	6,440	2.44
<b>Africa</b>		
Western Africa	7,654	2.90
Eastern Africa	14,971	5.68
Northern Africa	5,825	2.21
Central Africa	2,389	0.91
Southern Africa	1,889	0.72
<b>Asia</b>		
West Central Asia and the Middle East	17,839	6.76
Eastern Asia	26,286	9.97
Southeast Asia	76,653	29.07
Southern Asia	42,145	15.98
<b>Oceania</b>	799	0.30
<b>Unclassified</b>	48	0.02
<b>Total</b>	<b>263,711</b>	<b>100</b>

### Characteristics by Landing Year

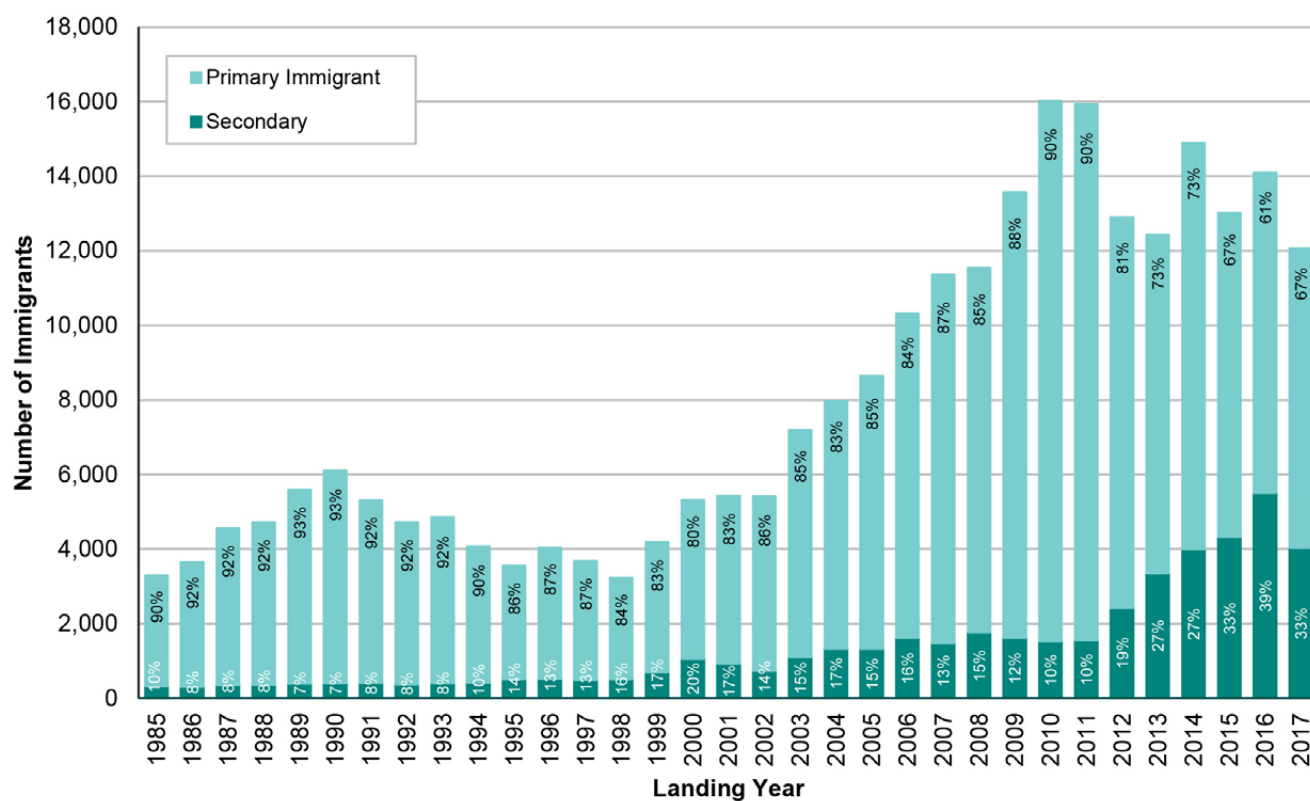
The number of Immigrants to Manitoba increased steadily during the 2000s and remained high from 2010 onwards (Figure 3.3).<sup>8</sup> The majority of Immigrants were primary immigrants who came directly from their country of birth. However, the percent of secondary immigrants has increased since the early 2000s, and more prominently since 2011, reaching a peak of 39% in 2016.

Many Immigrants who eventually settled in Manitoba indicated that they intended to land in Manitoba; only a small percent indicated that they intended to land in another province (Figure 3.4). The number of Immigrants who intended to come to Manitoba has increased steadily since the early 2000s; in 2017, this proportion was as high as 95% of all Immigrants to Manitoba.

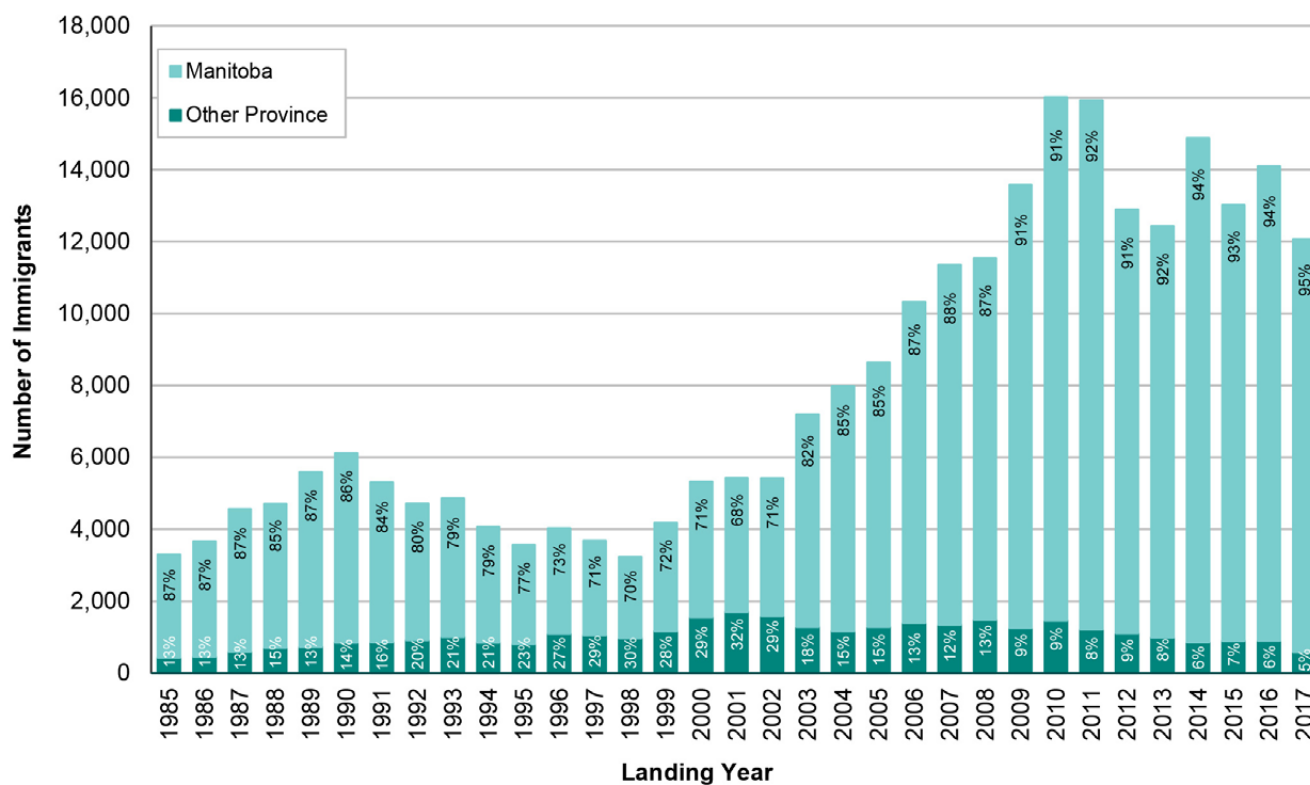
<sup>8</sup> According to the Manitoba Immigration Facts Report 2016 (<http://www.immigratemanitoba.com/data-portal/facts-report-2016/>), the number of new immigrants to Manitoba in 2014 and 2016 was comparable to the number in 2010 and 2011. However, in our data, 2014 and 2016 show smaller counts. This may be partially due to poorer linkage rates in those years (90% and 85%, respectively) compared to 94% and 95% in 2010 and 2011, respectively. The Manitoba Immigration Facts Report 2016, however, seems to refer to landings according to intended destination, rather than actual settlement. In other words, some immigrants who landed in the most recent years may have landed in other provinces and may not show up in our current data. Future updates of the linkage may provide more accurate counts.

**Figure 3.3: Primary and Secondary Immigrants in Manitoba by Landing Year, 1985-2017**

All ages

**Figure 3.4: Province of Intended Destination of Immigrants to Manitoba and Landing Year, 1985-2017**

All ages



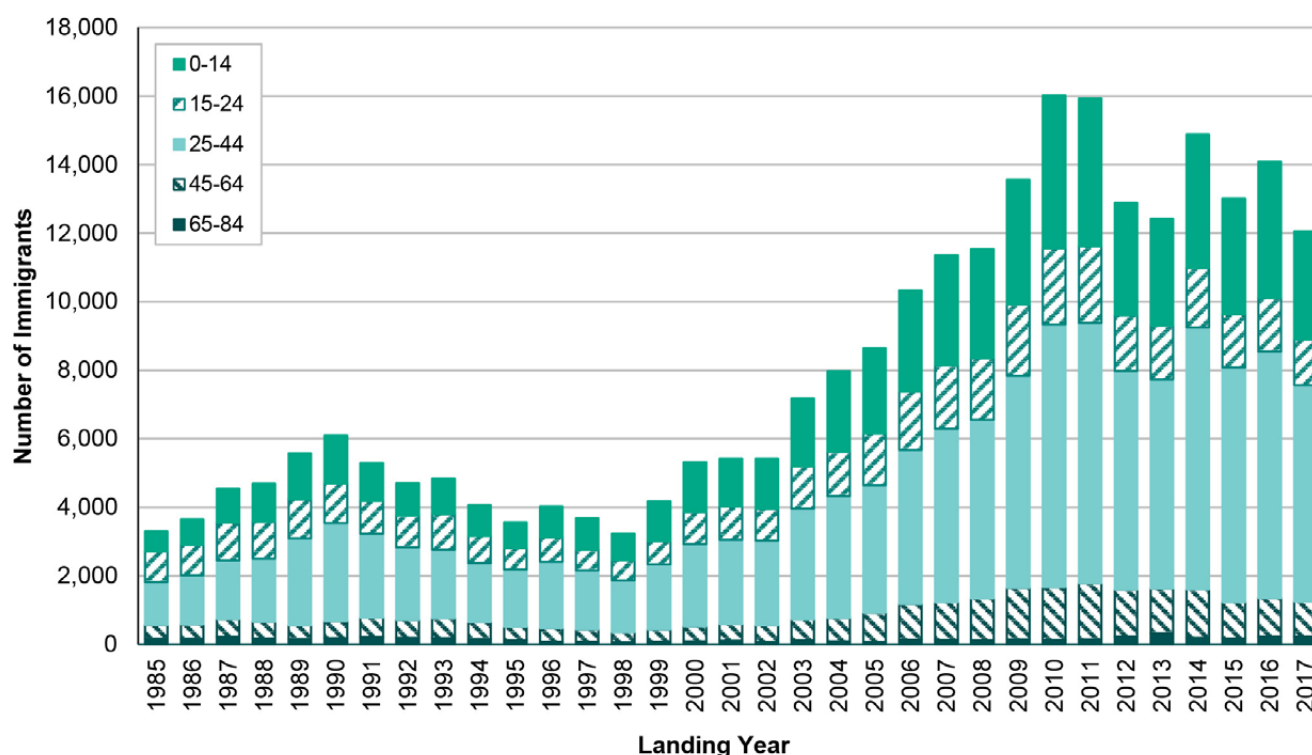


Immigrant age at landing has shifted slightly over the years to a larger percent of Immigrants being age 25-44 years, followed by those age 0-14 years, and fewer older adults (Figure 3.5). The percent of Immigrants age 45-64 years appears to have declined over time, from 17% in 1985 to 10% in 2016. The percent of female and male immigrants has remained relatively stable over time (Figure 3.6). The percent of Immigrants who are married or in common-law relationships increased over time, from a low of 55% in 1990 to a high of 76% in 2016 (Figure 3.7). The number

and percent of Immigrants who immigrated as spouses or dependants increased slightly over time; in 2017, over 30% of Immigrants were dependants and over 20% were spouses of primary applicants (Figure 3.8). Since 1985, the majority of Immigrants to Manitoba have been born in Asia,<sup>9</sup> this proportion increased over time from 48% in 1985 to 70% in 2017 (Figure 3.9). The proportion of Immigrants from Africa also increased over time, outnumbering Europeans in recent years.

**Figure 3.5: Age of Immigrants in Manitoba by Landing Year, 1985-2017**

All ages

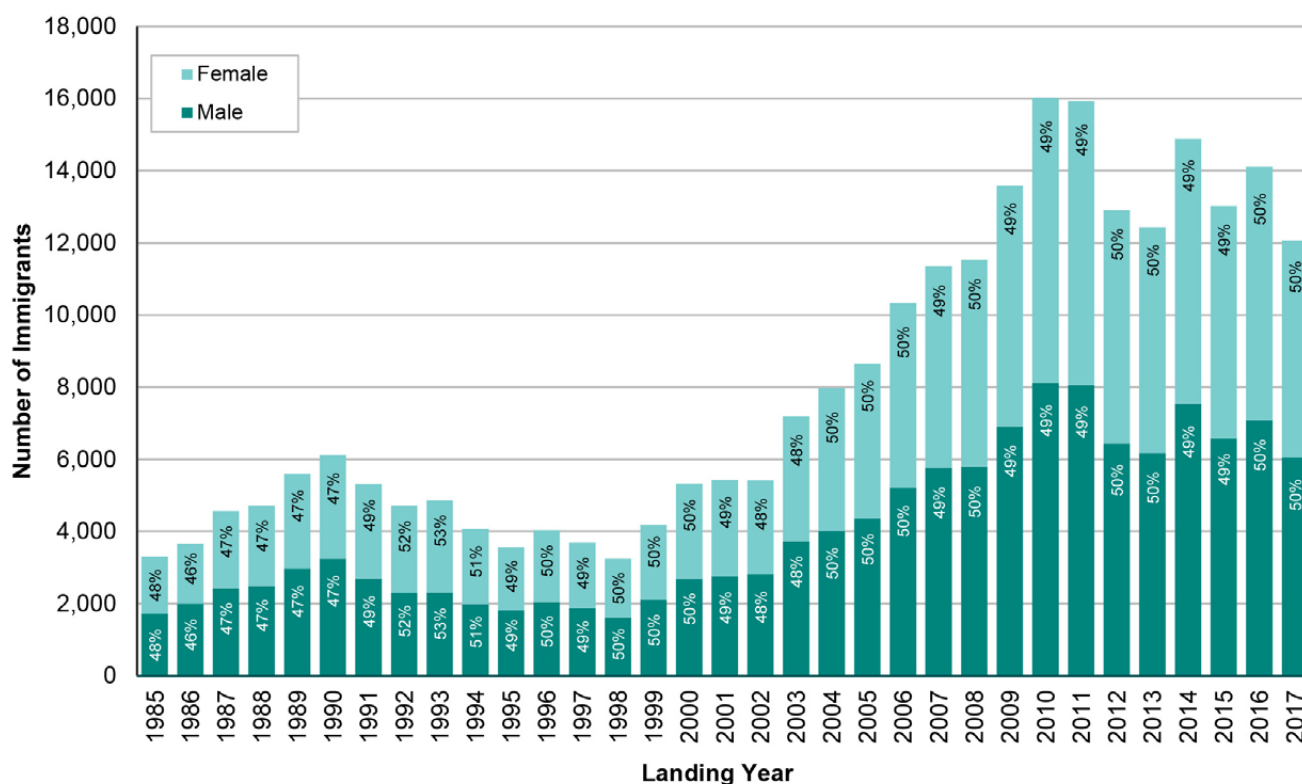


Note: Age group "85 and Older" and records with missing age were suppressed due to small numbers.

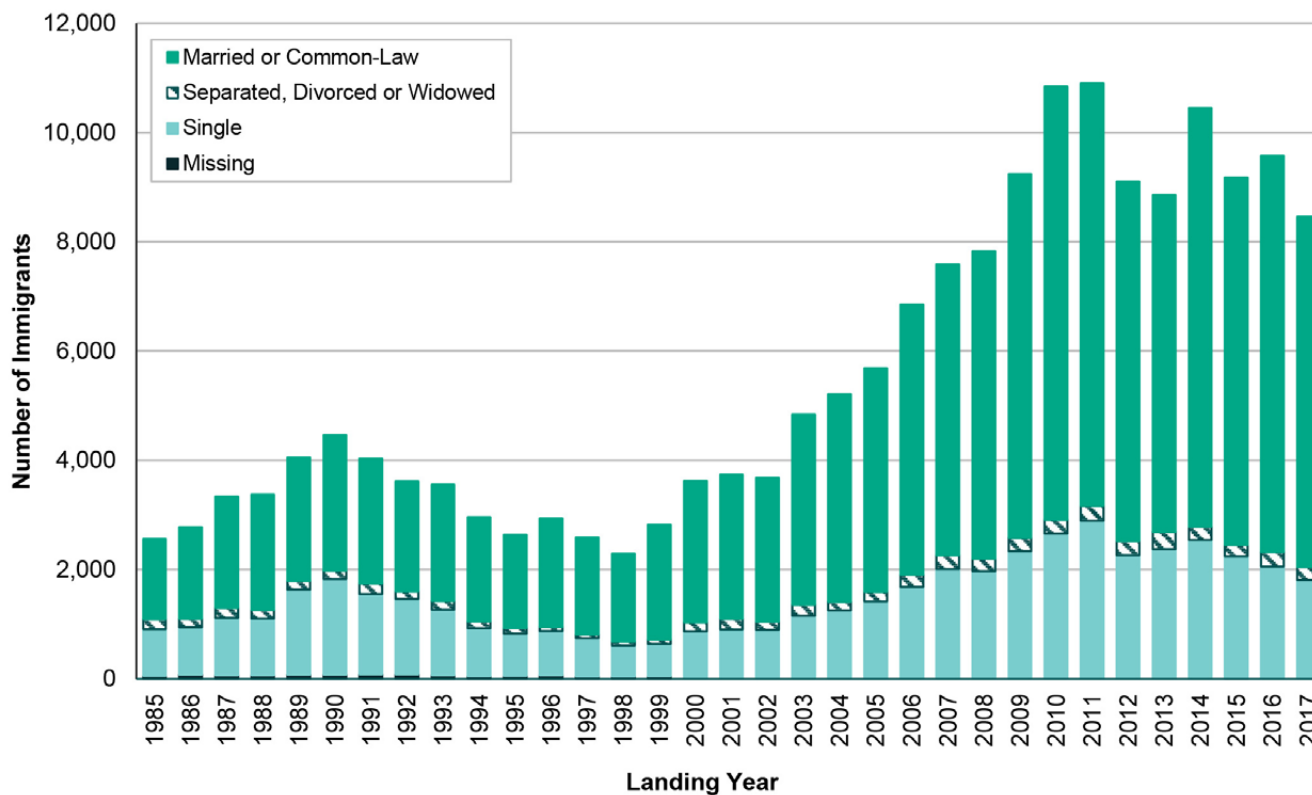
<sup>9</sup> Results for Oceania were combined with Asia due to small numbers (ranging from 13 to 55 Immigrants per year). Results by sub-region of birth are available in Appendix 3 of the online supplement.

**Figure 3.6: Sex of Immigrants in Manitoba by Landing Year, 1985-2017**

All ages

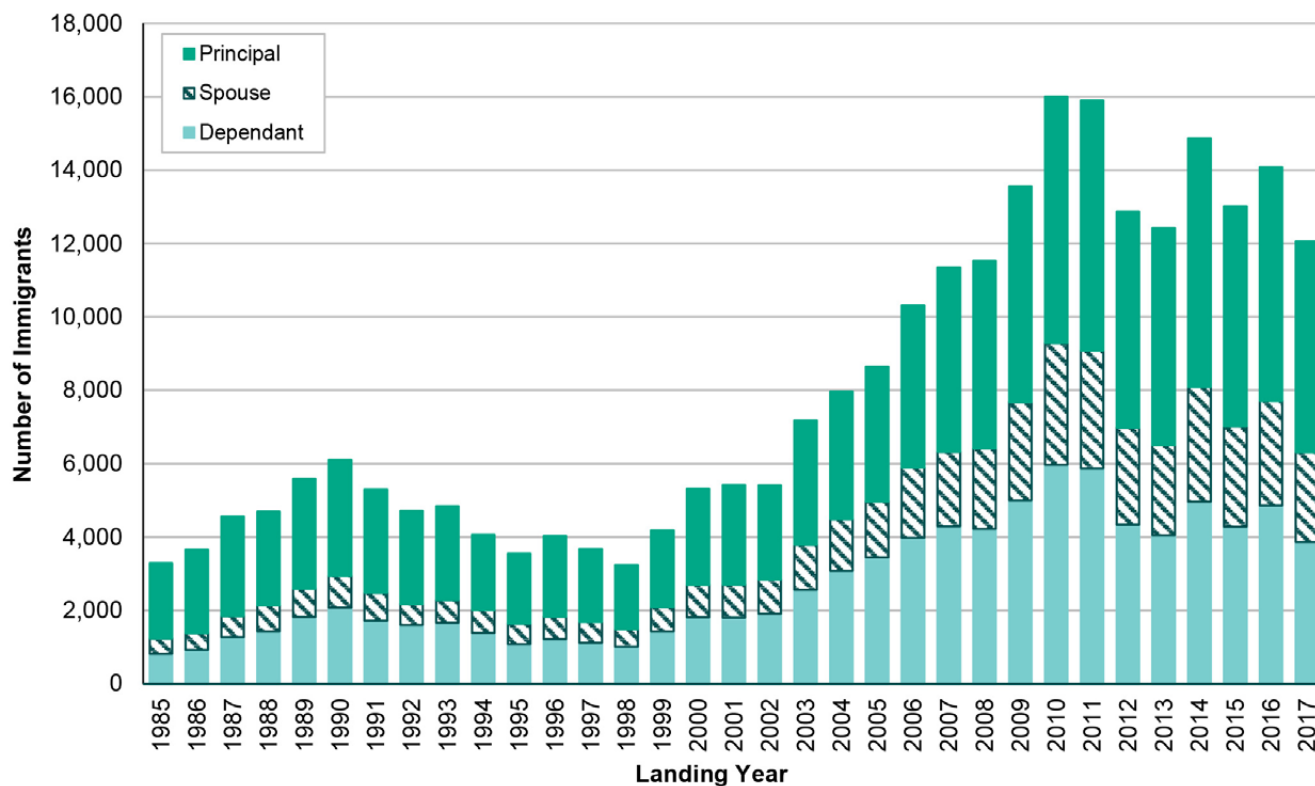
**Figure 3.7: Marital Status of Immigrants in Manitoba by Landing Year, 1985-2017**

Ages 18 and older

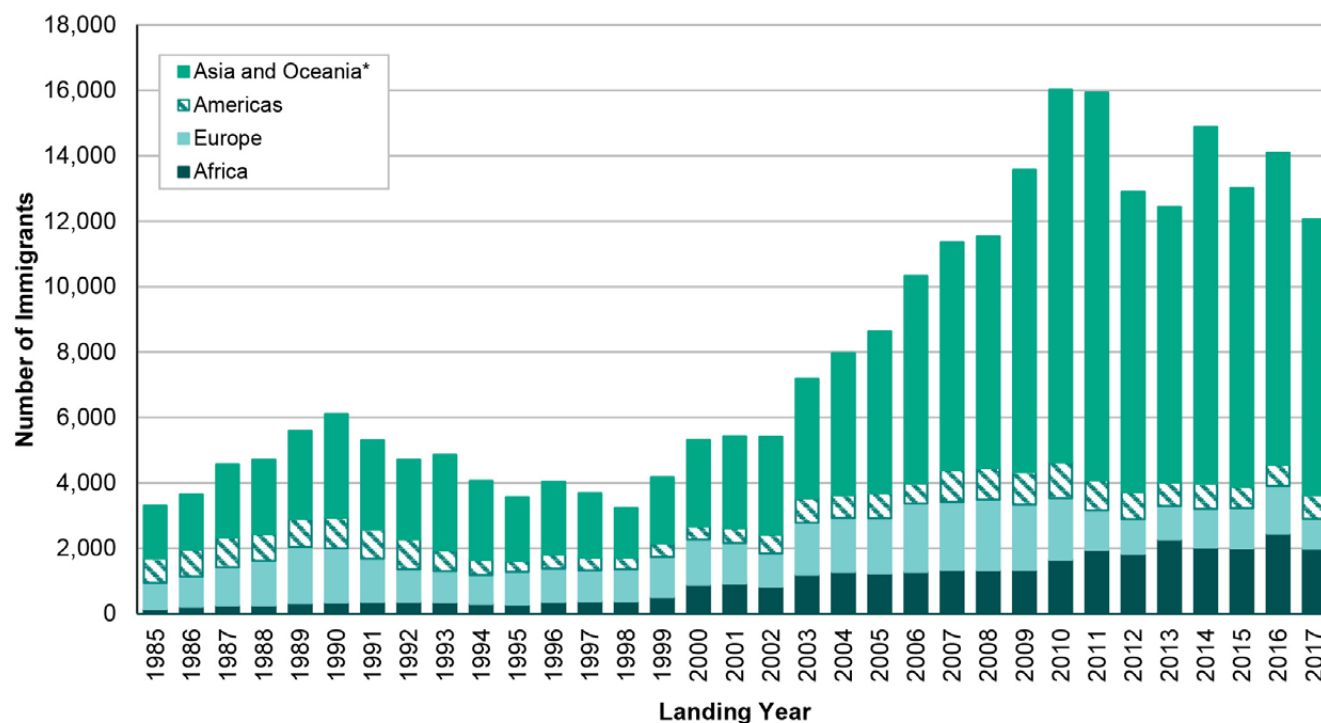


**Figure 3.8: Family Status of Immigrants in Manitoba by Landing Year, 1985-2017**

All ages

**Figure 3.9: Region of Birth of Immigrants in Manitoba by Landing Year, 1985-2017**

All ages



\* Oceania was combined with Asia due to the small number of Immigrants from Oceania landing in each year (range: 13-55).

Note: The category "not stated" was suppressed due to small numbers in all years except 1998 (n = 8)

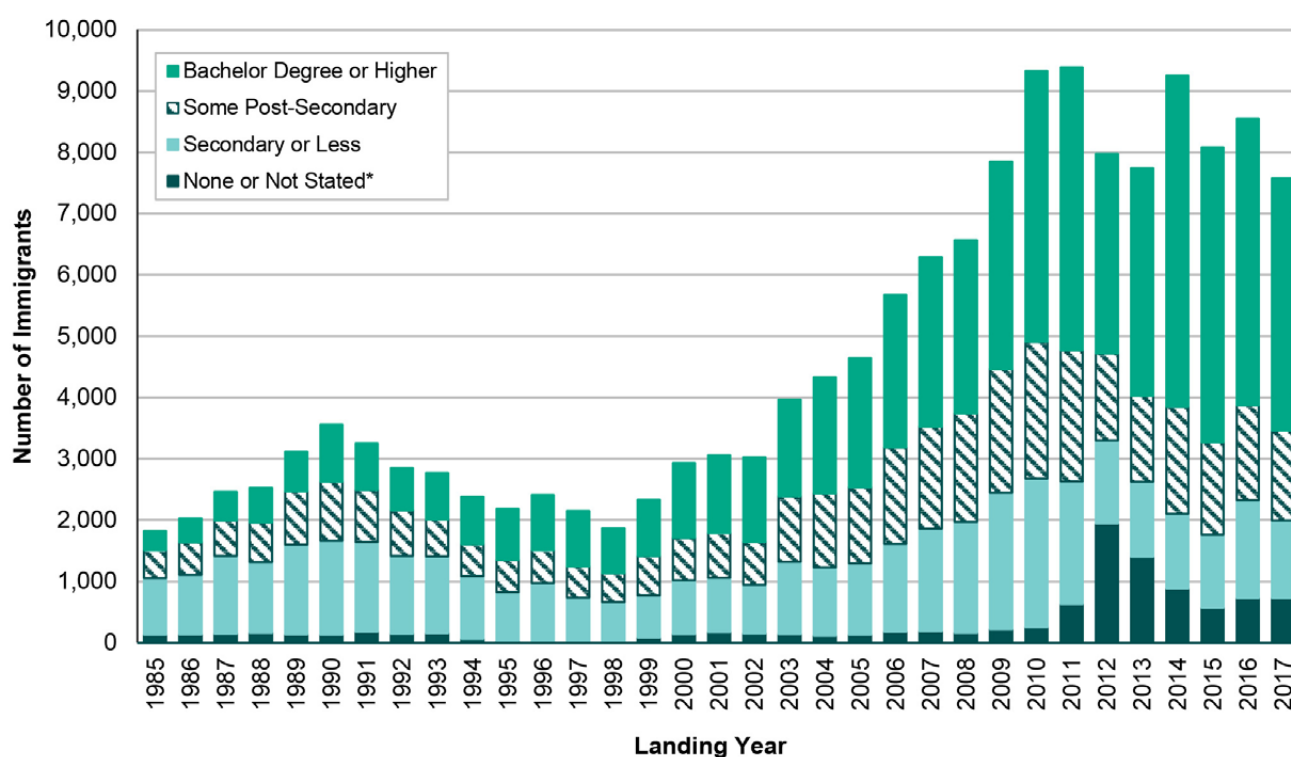
The education level for most Immigrants increased gradually from 2000 onwards; in recent years, up to 60% of Immigrants had Bachelor's Degrees or higher, while a smaller percent of Immigrants had some post-secondary, secondary or less education. Most Immigrants in Manitoba landing in the 1980s and early 1990s had only secondary or less education (Figure 3.10).

The number and percent of skilled Immigrants in the economic category who were principal applicants were consistently the majority group, and remained over 70% from 2012 onwards (Figure 3.11). Economic immigrants are people selected for their skills and ability to contribute to Canada's economy. Skill level is assessed with the

National Occupational Classification. Skilled immigrants are those classified as having experience in management, professional and technical jobs and skilled trades that usually require some post-secondary education or higher. Unskilled immigrants include clerical staff, industrial workers and labourers while the "other" category includes new workers, students, non-workers, and those who didn't state their skill level. Overall, 72% of economic Immigrants who were principal applicants ages 25 and older were classified as skilled, 23% as unskilled and 5% as other. Unskilled workers have become more common since the early 2000s, but still made up only a small proportion of all Immigrants.

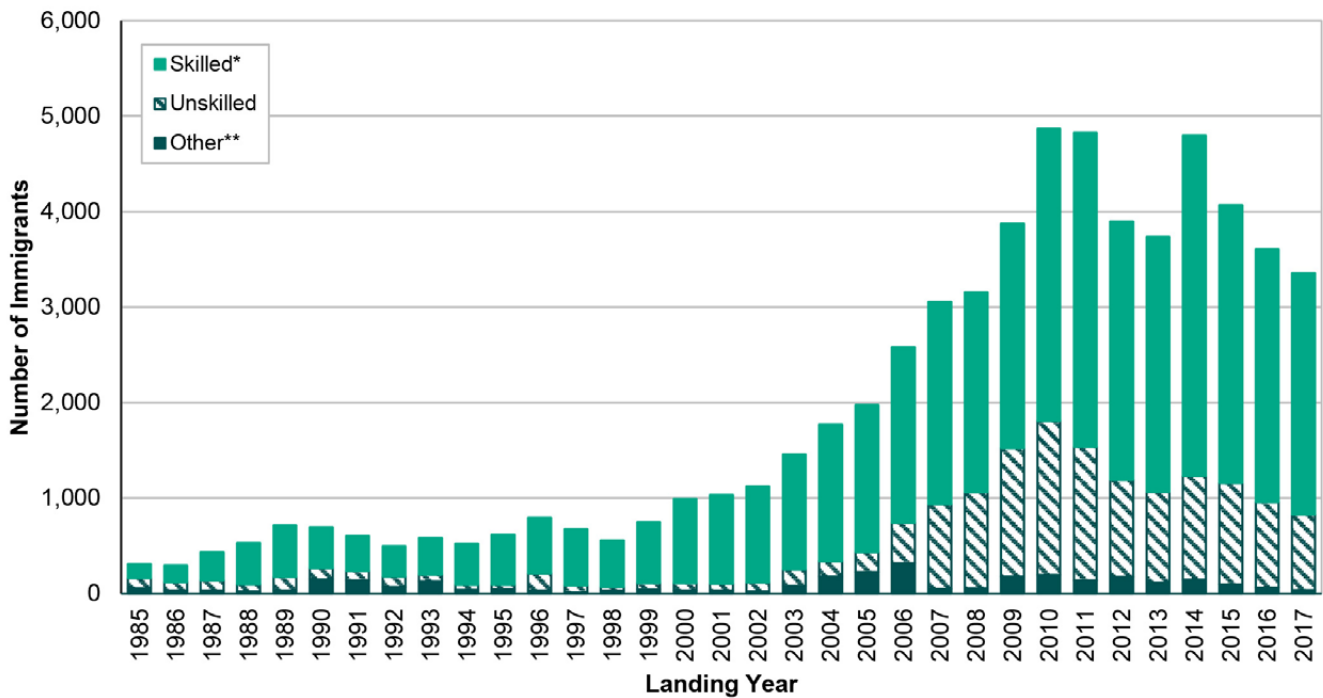
**Figure 3.10: Education Level of Immigrants in Manitoba by Landing Year, 1985-2017**

Age 25 and older



\* Includes Immigrants without formal education. In 2015-2017, the category also included immigrants who did not state their education level.

**Figure 3.11: Occupational Skill Level of Economic Immigrants as Principal Applicants in Manitoba by Landing Year, 1985-2017**  
Age 15 and older



\* Excludes economic Immigrants in the business category (entrepreneurs, investors, and self-employed).  
 \*\* Includes students, industrial workers, non-workers, and those who did not state their skill level.

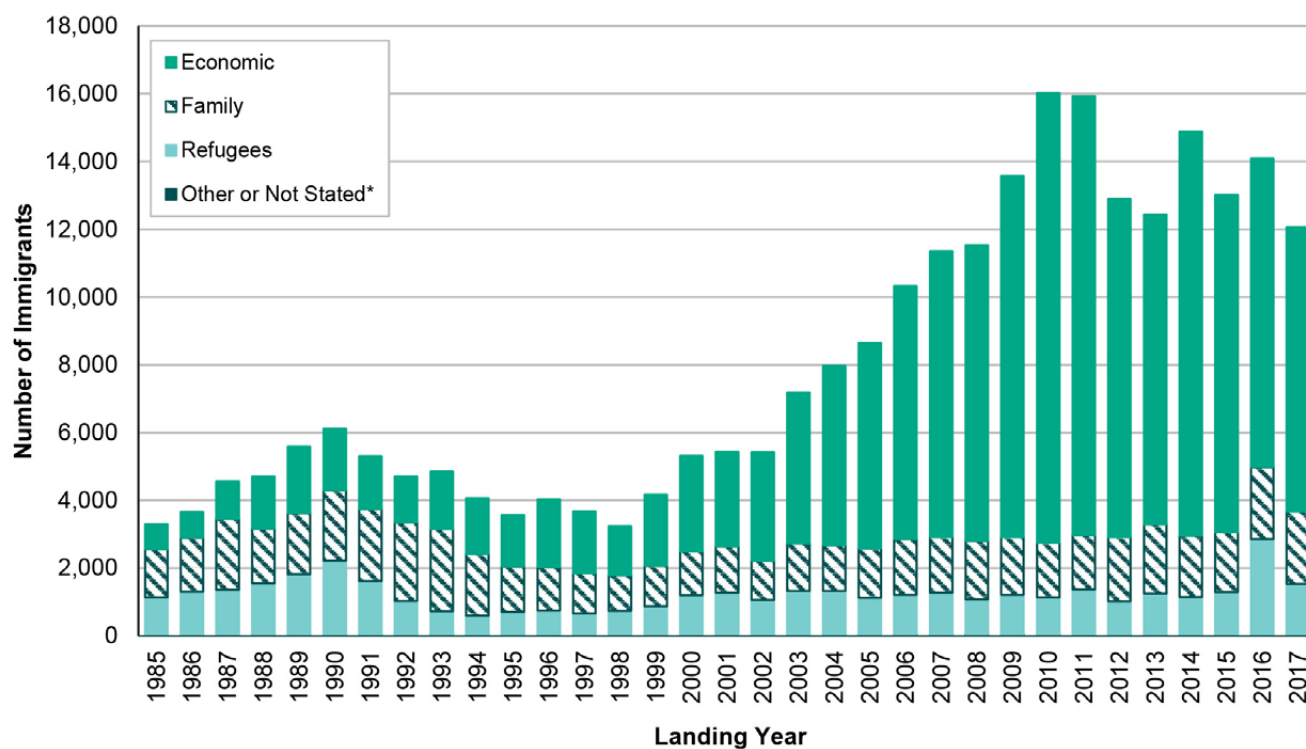
Before 1995, most Immigrants to Manitoba fell into the family immigration category (32-50%; Figure 3.12). In more recent years, there has been a shift to the economic immigration category, with over 40% of Immigrants in the late 1990s and more than 60% from 2002 onwards falling into this latter category. Although the absolute number of refugee Immigrants remained relatively stable, the percent of Immigrants who were refugees declined steadily from 33% in 1985 to under 10% in 2008-2012, and increased slightly in more recent years.<sup>10</sup>

Figure 3.13 shows the number of provincial nominees in Manitoba by landing year. Although the program was implemented in 1998, a pilot program was introduced in 1996 which recruited foreign garment workers to work mainly in Winnipeg [25]. This explains the small number of provincial nominee numbers in 1996 (229) and 1997 (47). After 1998, the percent of provincial nominees increased considerably, and has been above 60% since 2006.

<sup>10</sup> The number of refugees in Manitoba reached a peak of 1,233 in 2016 owing to the resettlement of Syrian refugees in Manitoba (data not shown).

**Figure 3.12: Immigration Category of Immigrants in Manitoba by Landing Year, 1985-2017**

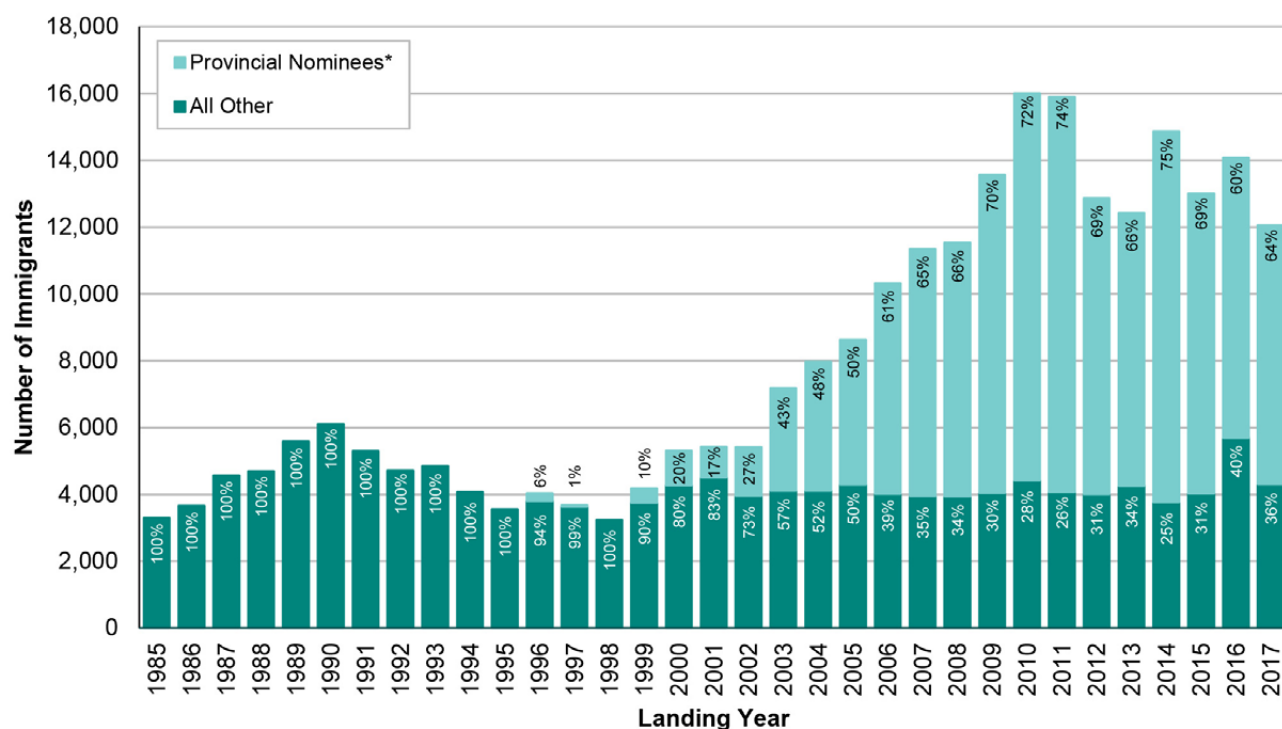
All ages



\* Includes 0-62 individuals per year, including fewer than 9 individuals without a stated category.

**Figure 3.13: Provincial Nominees in Manitoba by Landing Year, 1985-2017**

All ages



\* The Provincial Nominee Program started with a pilot program in 1996 and was implemented officially in 1998.



Since 1985, Manitoba has received over 1,000 refugees per year, with the exception of the 1990s (Figure 3.14). The overall number of refugees peaked in 2016, which coincides with the National Syrian Refugee Resettlement Initiative in Canada [26]. The number of Syrian refugees in Manitoba increased from 227 in 2015 to 1,279 in 2016. The majority (81%) of these Syrian refugees were secondary international immigrants with an intended destination of Manitoba (data not shown). Secondary international migration may reflect exposure to refugee camps [17,27].

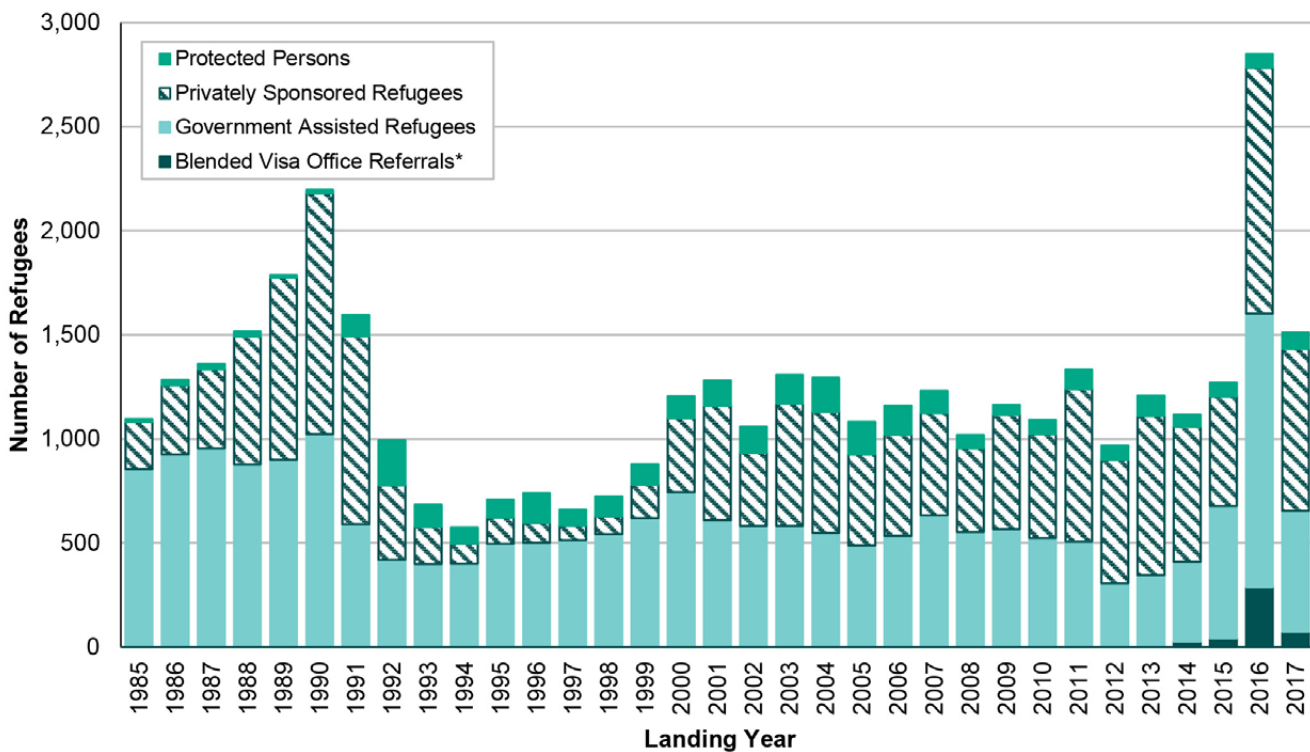
Government assisted refugees (GARs) constitute a main refugee subgroup in Manitoba. They are selected from applicants referred by the UN Refugee Agency (UNHCR) and other referral organizations. The number of GARs in Manitoba has fluctuated around 500 arrivals per year, other than the higher numbers seen in the late 1980s and in 2016, coinciding with the Syrian resettlement program (Figure 3.14).

Privately sponsored refugees (PSRs) have a long history in Manitoba. In 1979, the Bergthaler Mennonite Church in Lowe Farm, Manitoba became one of the first private sponsors of refugees in Canada [28]. Since then, private sponsorship of refugees in Manitoba has continued each year, although the proportion of refugees who are privately sponsored has fluctuated over time, reaching a low of 11% in 1997 and a peak of 63% in 2013 (Figure 3.14).

Under the Blended Visa Office-Referred (BVOR) refugee program, implemented in 2013, both the Government of Canada and a private sponsor provide financial support for refugees. The sponsor provides additional settlement support for one year post-arrival. Refugees admitted under the BVOR program have accounted for less than 5% of refugees in Manitoba since 2013, with the exception of 2016 (at the height of the Syrian civil war), when they accounted for 10% of all refugees to the province (Figure 3.14).

**Figure 3.14: Refugees in Manitoba by Refugee and Landing Year, 1985-2017**

All ages



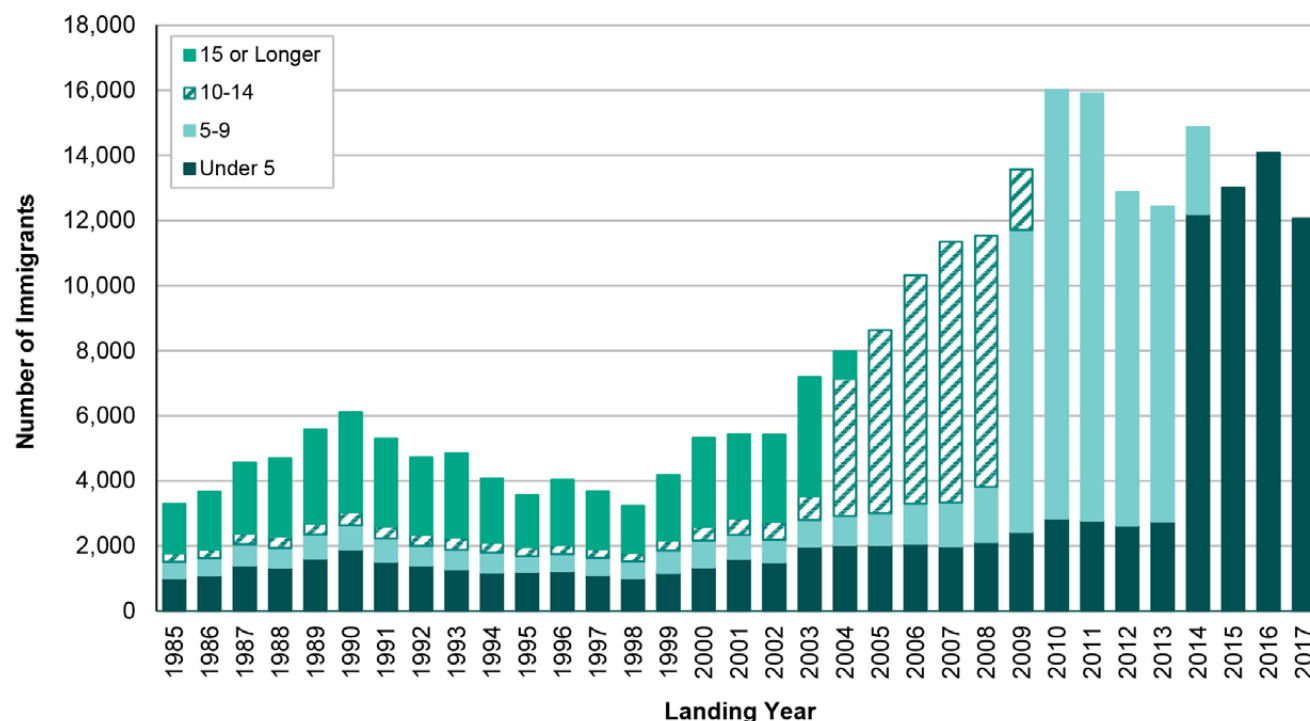
\* Blended Visa Office Referrals in Manitoba started in 2013. Data for this year were suppressed due to small numbers.

Many Immigrants to Manitoba have made this province their long-term home (Figure 3.15).<sup>11</sup> About half of the Immigrants to Manitoba who landed before 2003 (46-53%) have lived in the province for 15 years or longer; over 50% of those landing in 2003-2008 have lived in Manitoba

for 10-14 years, and 68-82% of those landing in 2009-2013 have lived in the province for 5-9 years. More details about outmigration and return migration are provided on pages 40-43.

**Figure 3.15: Years of Permanent Residence in Manitoba Among Immigrants by Landing Year, 1985-2017**

Number of years of residence\* from landing date to March 31, 2019, all ages



\* Cumulative years of residence from landing date until March 31, 2019, including periods of return migration. Time spent in the province as temporary resident is excluded.

<sup>11</sup> Results by region of birth are available in Appendix 3 of the online supplement at <http://mchp-appserv.cpe.umanitoba.ca/deliverablesList.html>.

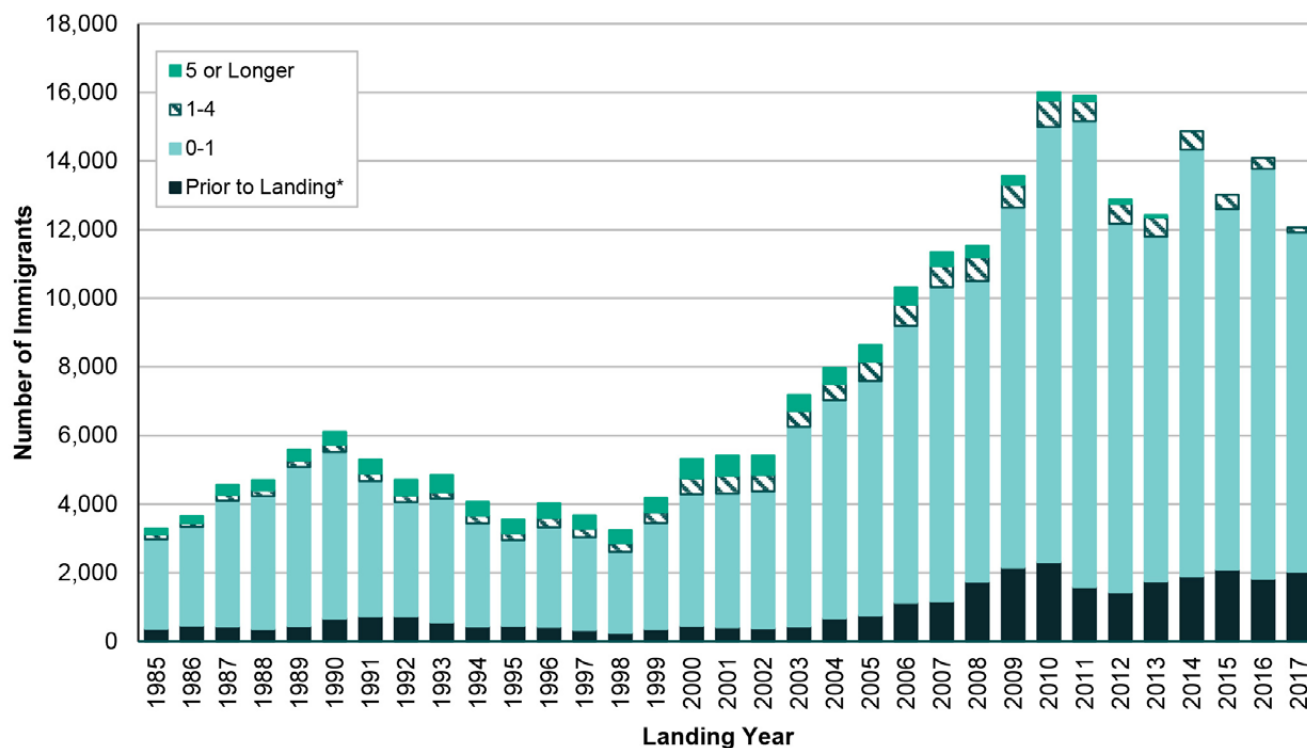


Almost all Immigrants in Manitoba gained access to public health insurance within one year of landing (Figure 3.16). Overall, 12% of Immigrants in Manitoba gained access to public health insurance before their landing date, indicating that they resided in Manitoba as temporary residents (i.e.,

work permit, student visa or refugee claimant) before becoming permanent residents. This group has increased in size since 2003, suggesting that temporary immigration to the province is an increasingly important pathway to permanent residency.

**Figure 3.16: Time to Start of First Healthcare Coverage for Immigrants in Manitoba by Landing Year, 1985-2017**

Number of years between landing year and start of coverage, all ages



\* Represents temporary immigrants residing in Manitoba with healthcare coverage before landing as permanent residents.

### 3.4.2. Immigrants, Interprovincial Migrants and All Other Manitobans

The sociodemographic characteristics of the three main comparison groups are presented in Figure 3.17.<sup>12</sup> Immigrants and Interprovincial Migrants have a different demographic composition than All Other Manitobans. Since most of the All Other Manitobans group was born in the province, their start of healthcare coverage typically began at birth and their length of residence in the province is far longer than the other two groups. Meanwhile, many Immigrants and Interprovincial Migrants only started healthcare coverage when they were 25-44 years old (47% and 36%, respectively); only about 20% first received coverage when they were 0-14 years old. Very few individuals (<5%) in any of the three groups were older adults (65+) at the start of coverage.

The majority of Immigrants to Manitoba in our study received provincial healthcare coverage in the year 2000 or later (Figure 3.17), which reflects the increasing immigration trends in recent years (Figure 3.3). There were more Interprovincial Migrants receiving Manitoba healthcare coverage in the 1980s and 1990s than there have been in recent years. Approximately 57% of All Other Manitobans acquired healthcare coverage before the 1980s, and only about 11% started coverage in later time periods, largely due to this population being covered from birth.

Among All Other Manitobans, 79% have resided in Manitoba for at least 15 years, while the other two groups

have lived in the province for much shorter time periods (Figure 3.17). Among Interprovincial Migrants, 48% have lived in the province for fewer than 5 years and almost 70% for under 10 years. About 38% of Immigrants have lived in Manitoba for under five years, and 67% under 10 years. However, these high proportions reflect a short follow-up period for the large number of Immigrants who arrived in the last decade and who could not be followed beyond the end of our observation period of March 31, 2019.

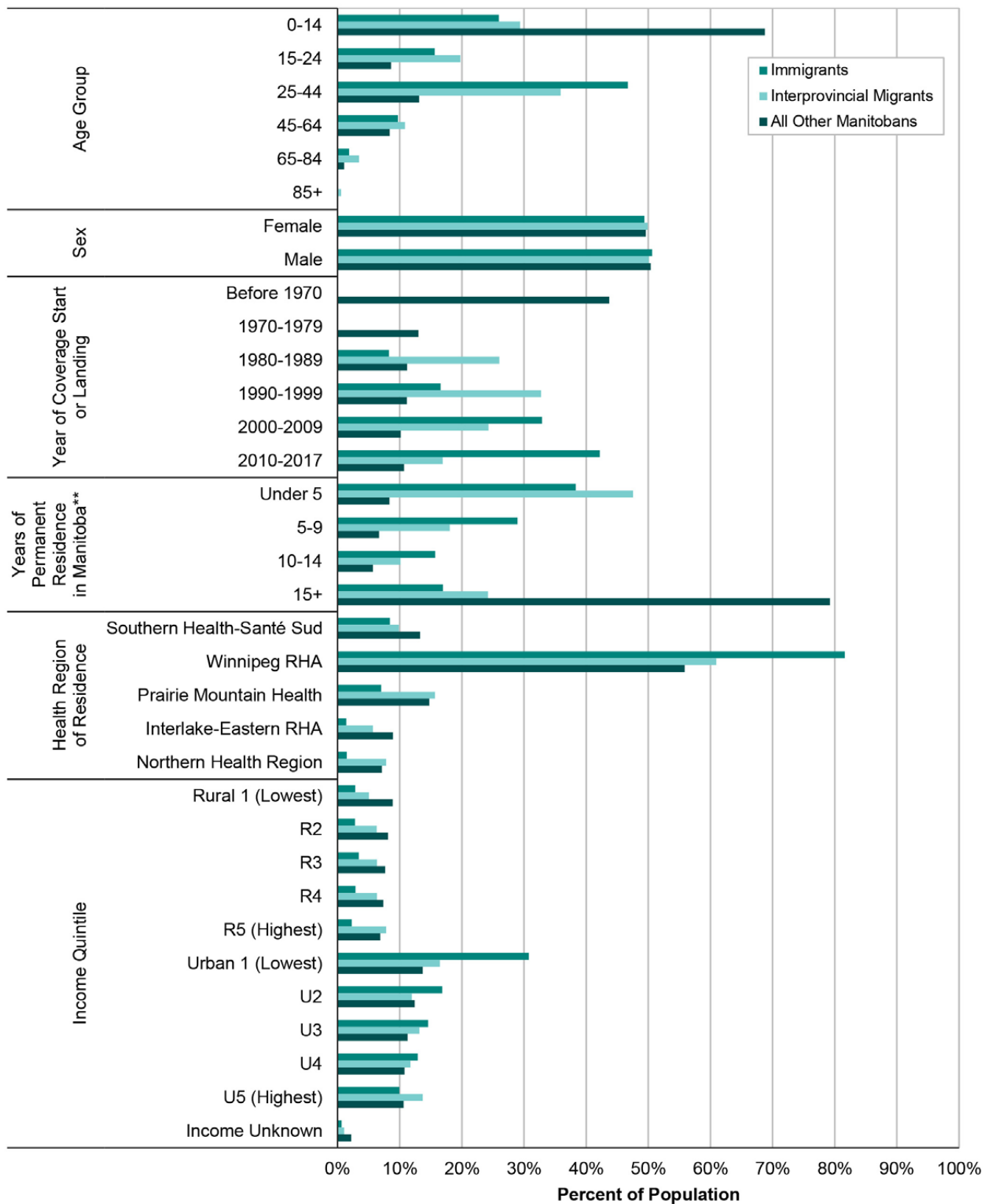
Upon landing or start of coverage, more than 80% of Immigrants lived in the Winnipeg RHA, and 8% lived in Southern Health-Santé Sud (Figure 3.17). Similarly, the majority of Interprovincial Migrants and All Other Manitobans in our cohort lived in Winnipeg RHA (60% and 68% respectively), and a small number lived in Southern Health-Santé Sud.

Many Immigrants initially settled in urban areas with the lowest average household income (31% in U1), while only 16% of Interprovincial Migrants and 14% of All Other Manitobans lived in U1 (Figure 3.17). Interprovincial Migrants were more likely to live in urban areas with the highest average household income (14% in U5) than the other two groups. There was a clear decreasing gradient in the distribution of Immigrants from low to high income in urban areas, while All Other Manitobans were evenly distributed across income quintiles U2-U5. In rural areas, Immigrants were uniformly distributed across income quintiles; Interprovincial Migrants favoured the highest rural income areas, while All Other Manitobans exhibited an increasing gradient towards lower income areas.

<sup>12</sup> Sociodemographic characteristics of the 11 study cohort and comparison groups are available in Appendix 4 of the online supplement.

**Figure 3.17: Sociodemographic Characteristics of Immigrants, Interprovincial Migrants and All Other Manitobans 1985-2017**

On the later of coverage start or landing, January 1, 1970-March 31, 2017\*, all ages



\* Immigrants and Interprovincial Migrants: January 1, 1985-March 31, 2017.

\*\* Years of permanent residence is based on length of time from coverage start to March 31, 2019.

### 3.4.3. Migration Dynamics of Immigrants, Interprovincial Migrants and All Other Manitobans

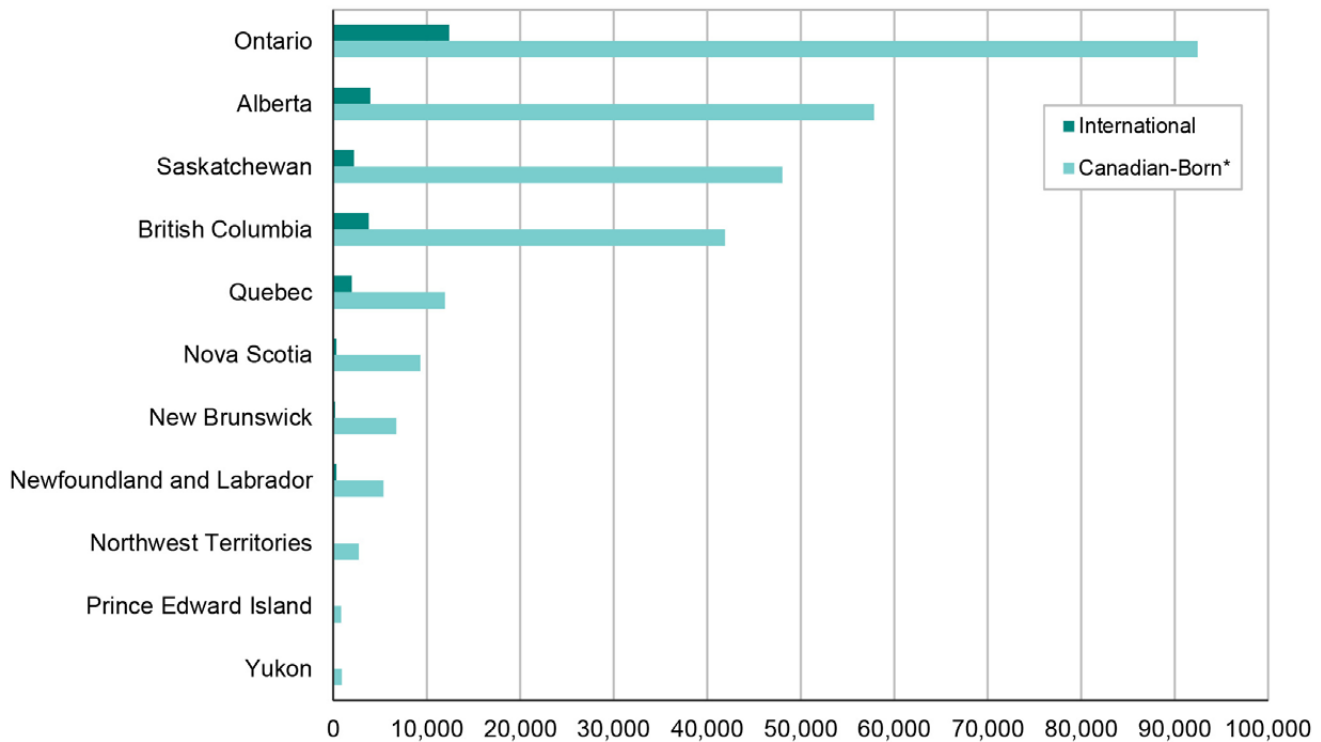
#### Origin of Interprovincial Migrants to Manitoba

Figure 3.18 examines the origin of people who moved to Manitoba during the study period. This group includes International Interprovincial Migrants to Manitoba (immigrants who landed in a province or territory other than Manitoba during the period 1985-2017 and subsequently

moved to Manitoba), and Canadian-born Interprovincial Migrants (individuals who were born in other Canadian provinces and territories or immigrated to other Canadian provinces before 1985 and subsequently moved to Manitoba).<sup>13</sup> Among Canadian-Born Interprovincial Migrants to Manitoba, most came from Ontario (92,477; 49%) and Alberta (57,850; 21%), followed by Saskatchewan (48,053; 17%) and British Columbia (41,914; 15%). Among Immigrants who moved from another province to Manitoba, most came from Ontario (12,423; 49%), followed by Alberta (3,972; 16%) and British Columbia (3,808; 15%).

**Figure 3.18: Origin of International and Canadian-Born Interprovincial Migrants to Manitoba, 1985-2017**

All ages



\* Excludes individuals who moved from Nunavut due coding limitations in the Manitoba Health Insurance Registry.

<sup>13</sup> Migrants originating in Nunavut were excluded because the Registry does not provide a unique coverage code for Nunavut.

## Retention

Retention rate is defined as the number of individuals residing in the province after a certain period of time among all individuals who migrated to the province. Retention is an important indicator to evaluate the return of investments in attracting immigrants, as well as for population and economic growth projections. We calculated retention rates for Immigrants and Interprovincial Migrants.

Among Immigrants, 3-year and 5-year retention rates were 84.4% and 77.6%, respectively, and these increased over time (Table 3.2)<sup>14</sup>. However, the gap between the 3-year and 5-year rates diminished after 2001, driven mainly by an increasing 5-year retention rate, which surpassed 80% after 2005.

Retention rates among Immigrants were consistently higher than among Interprovincial Migrants, regardless of the decade of arrival in the province and follow-up period (three or five years; Figure 3.19).<sup>15</sup> This suggests diverging mobility patterns of permanent relocation among Immigrants and temporal relocation among Interprovincial Migrants. Retention rates were consistent with outmigration rates for both groups, with Immigrants more likely to stay in the province longer than Interprovincial Migrants. We saw steady increases in retention rates in both groups, with the exception of a drop in the 3-year retention rate among Immigrants in the 1990s.

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<sup>14</sup> Counts for each indicator in this table are available in Appendix 5 of the online supplement for this report.

<sup>15</sup> Retention, outmigration and return migration rates for the 11 study cohort and comparison groups are available in Appendix 6 of the online supplement.

Table 3.2: Retention and Outmigration Rates for Immigrants to Manitoba by Landing Year, 1985-2017

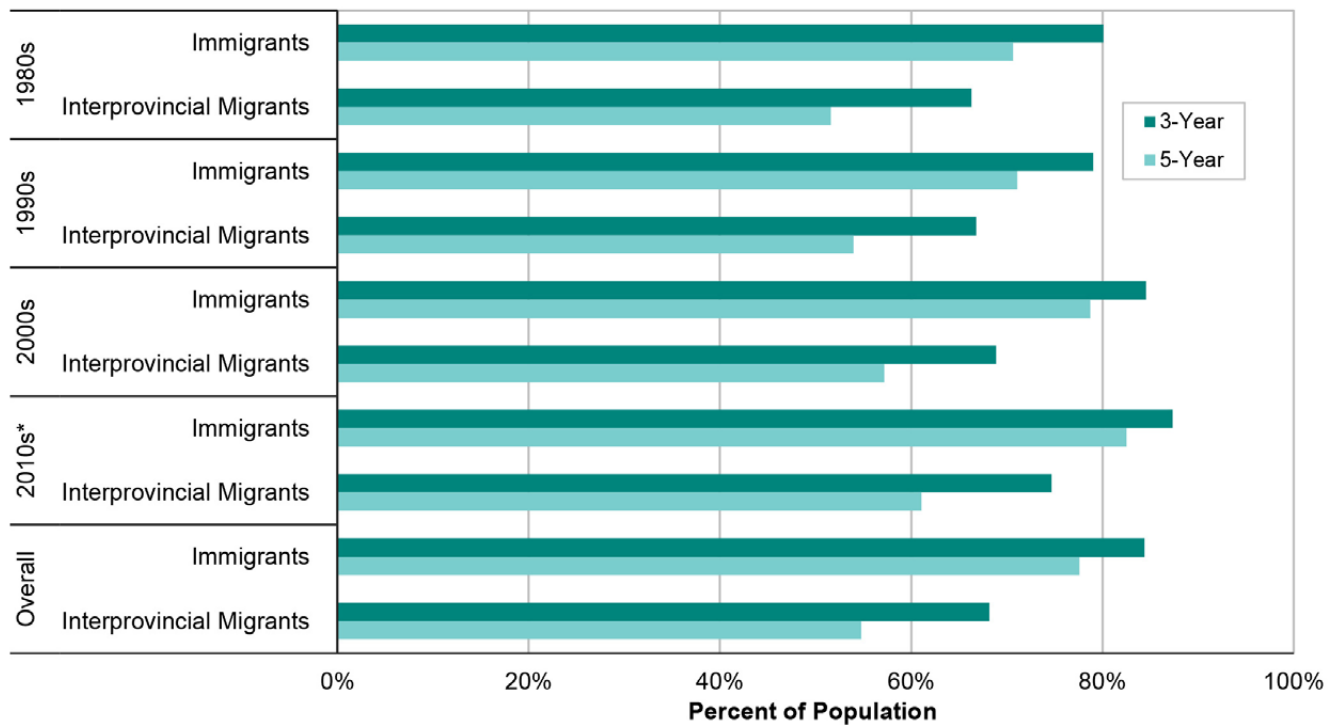
All ages

Landing Year	Immigrants (Denominator)	Retention*		Outmigration by Reason for Coverage Cancellation	
		3-Year	5-Year	Moved	Cannot Locate
	N	%		%	
1985	3,295	78.3	68.6	34.9	26.8
1986	3,661	78.3	68.6	31.9	27.4
1987	4,561	79.1	68.6	32.8	26.5
1988	4,700	80.9	71.0	32.0	24.7
1989	5,586	78.9	70.2	33.6	22.1
1990	6,109	77.0	68.6	38.6	17.8
1991	5,303	79.1	70.6	34.9	19.3
1992	4,714	78.4	69.9	33.6	18.6
1993	4,850	80.2	72.9	32.0	17.0
1994	4,069	79.1	70.9	35.6	18.2
1995	3,557	75.2	66.4	38.7	18.8
1996	4,033	77.7	69.6	33.9	17.8
1997	3,679	80.1	70.4	35.4	16.9
1998	3,235	76.8	69.7	37.0	16.9
1999	4,174	79.2	72.4	35.1	14.6
2000	5,314	82.6	74.7	32.6	12.8
2001	5,424	79.7	71.2	33.2	12.8
2002	5,416	81.8	73.5	29.2	13.5
2003	7,185	80.3	72.9	28.8	12.1
2004	7,970	80.9	75.0	26.6	11.7
2005	8,637	82.8	77.5	23.6	11.0
2006	10,320	86.1	81.6	19.4	10.5
2007	11,346	87.8	83.9	16.3	9.4
2008	11,533	87.9	83.0	17.9	9.0
2009	13,567	88.4	83.8	15.3	8.8
2010	16,009	88.7	84.2	14.7	7.4
2011	15,906	89.2	84.8	13.3	6.7
2012	12,873	87.9	83.6	12.8	7.5
2013	12,427	87.6	83.1	12.8	5.4
2014	14,874	88.9	84.3	10.8	4.8
2015	13,012	86.8	-	11.3	3.8
2016	14,085	87.0	-	9.1	2.7
2017	12,060	-	-	6.2	1.8
<b>Overall</b>	<b>263,484</b>	<b>84.4</b>	<b>77.6</b>	<b>20.8</b>	<b>10.7</b>

\* Health insurance coverage start dates after March 31, 2016 and March 31, 2014 were excluded for 3-year and 5-year retention rates, respectively.

**Figure 3.19: Three- and Five-Year Retention Rates for Immigrants and Interprovincial Migrants by Coverage Start Decade, 1985-2019**

Three- and five-year periods from coverage start on or after landing\*, January 1, 1985-March 31, 2019, all ages



\* Immigrants and Interprovincial Migrants with coverage start after March 31, 2016 and March 31, 2014 were excluded from 3- and 5-year retention rates, respectively.



## Outmigration

We examined reasons for cancellation of healthcare coverage to explore the phenomenon of outmigration. The three main broad reasons for cancellation, as recorded in the Registry, are “moved,” “cannot locate” and “other.” Individuals in the “moved” category had their coverage cancelled when MHSAL was informed of an out-of-province move, either by the individuals themselves or by another province (except if they moved to British Columbia, as Manitoba does not have an interprovincial reporting agreement with this province).

While we can be sure that individuals in the “moved” category have left the province, there is less certainty regarding the outmigration of those whose cancellation is coded as “cannot locate.” This group includes individuals whose coverage was cancelled due to not having used any health services for 12 months and not having completed a registration verification card subsequently sent by MHSAL to their last known address. If the person contacts MHSAL confirming that they are still in province, their original start code is reinstated and the “cannot locate” code is overridden. To increase certainty of actual outmigration in this group, we only included “cannot locate” cancellations followed by 360 days without new registrations for coverage, meaning that these individuals have not been in contact with MHSAL for two years.

Finally, individuals in the “other” category include those who cancelled their provincial coverage because they obtained Federal coverage (e.g., wards of the state, military personnel, RCMP, inmates, and persons with temporary visas) and those with unknown status. As such cancellations may not necessarily reflect geographical movements, this category was not considered as outmigration. The percent of individuals whose cancellation was classified as “other” was 0.4% among Immigrants and Interprovincial Migrants and 0.9% among All Other Manitobans (data not shown).

In our study, 32% of International Immigrants left Manitoba at some point: 21% had evidence of having moved out of province, and 11% could not be located (Table 3.2). We observed lower outmigration rates in more recent years. However, these may not necessarily reflect lower outmigration but shorter follow-up times due to proximity to the end of the observation period (i.e., meaning that they could not be followed for long enough to witness their outmigration).

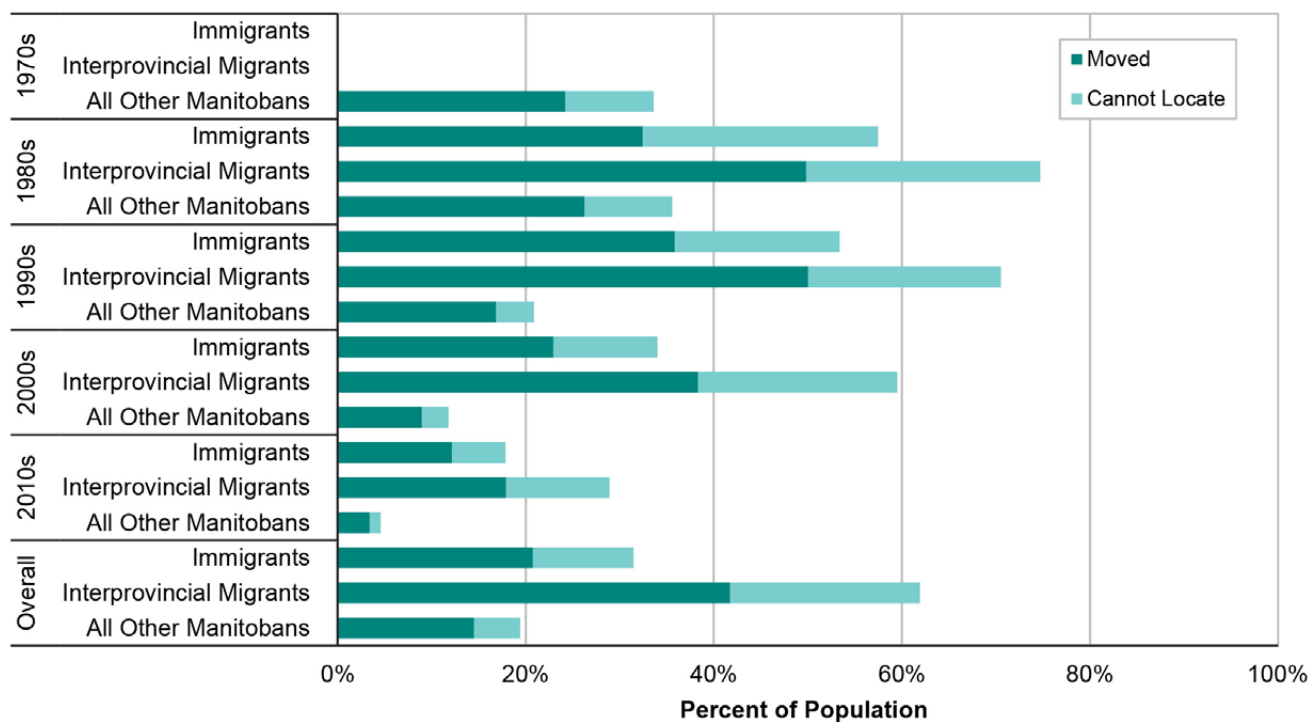
The percent of Immigrants recorded in the Registry as “cannot locate” declined from more than 20% in the 1980s to under 10% from 2007 onwards (Table 3.2). The trends in recent years may also be a result of truncated follow-up, which is particularly important for the resolution of “cannot locate” codes in the Registry. Interestingly, return migration rates among those who could not be located were comparable to the rates of those who definitely left the province, suggesting that most individuals who could not be located and remained as such for more than 360 days did actually leave the province. An unknown, albeit very small, proportion of those who were classified as returning may not have left the province.

Unlike outmigration and return migration rates, fixed 5-year retention rates are not affected by truncated follow-up, except for the most recent years for which rates could not be calculated. Retention rates among Immigrants have increased over time, from 69% in the mid-1980s to over 80% from 2006 onwards (Table 3.1).

In examining the reasons for outmigration between the three main groups (Figure 3.20), we see that cancellation of healthcare coverage during 1985-2019 was the most common reason for outmigration among Interprovincial Migrants at 62% (42% involved certain outmigration and 20% could not be located). One out of three Immigrants (32%) had a cancellation of healthcare coverage (21% moved away and 11% could not be located). One in five All Other Manitobans (20%) had a healthcare coverage cancellation since the creation of the Registry in 1970 (15% moved away and 5% could not be located).

**Figure 3.20: Outmigration Rates for Immigrants, Interprovincial Migrants and All Other Manitobans by Reason for Coverage Cancellation and Coverage Start Decade, 1970-2019**

Coverage start on or after landing, January 1, 1970-March 31, 2019\*, all ages



\* Immigrants and Interprovincial Migrants: January 1, 1985-March 31, 2019.

### Return Migration

The return migration rate is defined as the number of new registrations to the provincial healthcare insurance plan that occurred 360 days after coverage cancellation among all those with a coverage cancellation recorded as “moved” or “cannot locate.”

Overall, 6,219 Immigrants (2.4% of all Immigrants) returned to Manitoba (Tables 3.2 and 3.3). The return migration rate among Immigrants who cancelled their coverage due to moving out of province was 8% and 7% among those who could not be located (Table 3.3). Return migration rates fluctuated between 7% and 12% until the year 2000, when they began decreasing over time. Such a decrease may reflect insufficient follow-up time for the outmigration and return migration cycle to complete before the end of the study period.

Return migration rates were 14% and 11% among Interprovincial Migrants who moved and could not be located, respectively (Figure 3.21). Among All Other Manitobans, 32% of those who moved out of province subsequently returned, the highest percentage among the three groups. However, only 2% of All Other Manitobans who could not be located actually had a new registration episode.

When examined by reason for cancellation of coverage, the return migration rate for individuals with the cancellation code “moved” was lowest among Immigrants (8%), while among Interprovincial Migrants the rate was 14%, and among All Other Manitobans it was 32% (Figure 3.21). The return migration rate among individuals with the cancellation code “cannot locate” was highest among Interprovincial Migrants (11%), and lower among Immigrants (7%) and All Other Manitobans (2%).

**Table 3.3: Return Migration Rates for Immigrants to Manitoba by Reason for Coverage Cancellation and Landing Year, 1985-2017**

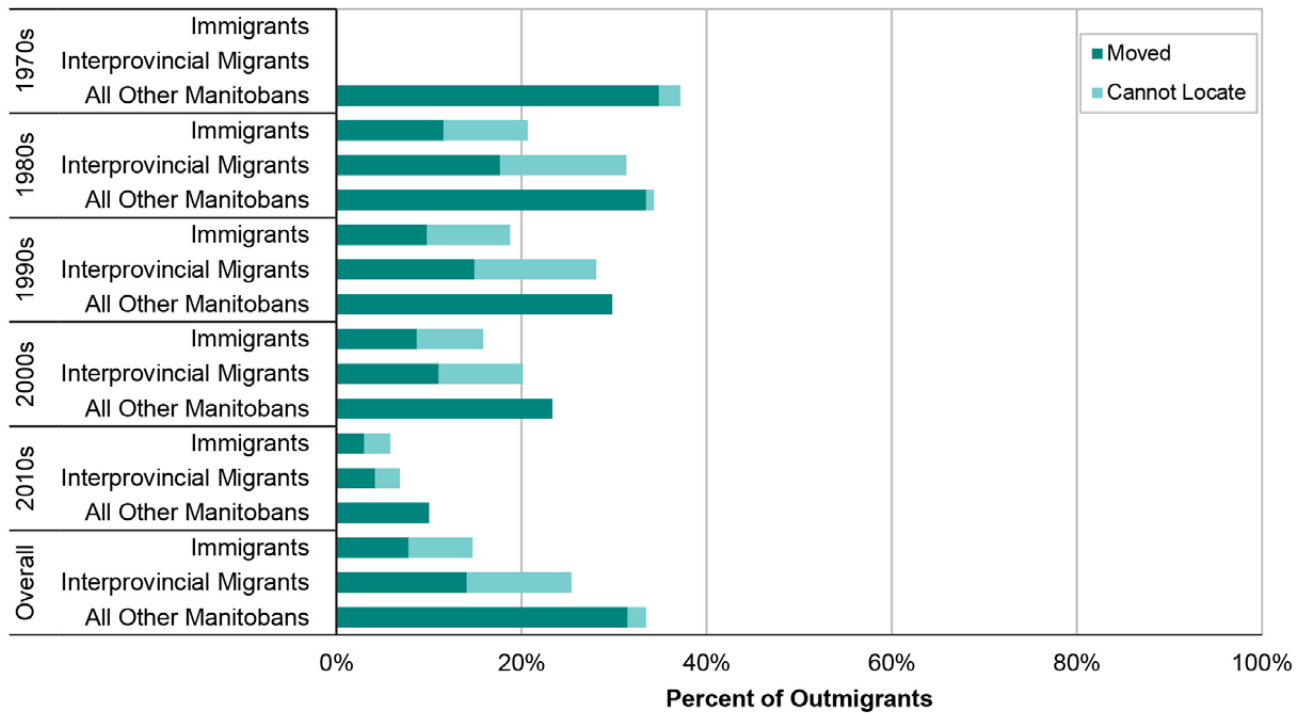
All ages

Landing Year	Outmigration (Denominator)		Return Migration Rate	
	Moved	Cannot Locate	Moved	Cannot Locate
	N		%	
1985	1,150	882	10.2	9.9
1986	1,169	1,004	13.1	9.3
1987	1,497	1,210	11.6	6.5
1988	1,504	1,162	10.5	9.7
1989	1,875	1,232	11.5	9.1
1990	2,356	1,087	9.7	10.1
1991	1,849	1,026	11.2	9.1
1992	1,583	876	8.8	6.5
1993	1,552	826	10.6	10.0
1994	1,448	740	8.6	7.6
1995	1,376	670	8.0	8.1
1996	1,369	716	8.8	7.0
1997	1,302	623	10.7	8.7
1998	1,196	547	7.7	8.8
1999	1,464	608	9.1	8.4
2000	1,733	679	12.2	9.9
2001	1,801	693	11.0	7.2
2002	1,580	731	6.7	8.2
2003	2,068	872	9.0	7.6
2004	2,117	932	9.2	8.2
2005	2,041	951	7.7	8.4
2006	1,998	1,088	8.3	6.2
2007	1,850	1,072	7.6	6.0
2008	2,059	1,039	6.8	6.3
2009	2,081	1,193	5.9	4.1
2010	2,348	1,191	5.0	4.5
2011	2,113	1,070	4.1	2.5
2012	1,654	960	4.0	3.1
2013	1,595	671	2.9	3.1
2014	1,609	708	2.4	s
2015	1,466	497	0.8	3.6
2016	1,279	375	0.8	s
2017	750	219	0.9	0.0
<b>Overall</b>	<b>54,832</b>	<b>28,150</b>	<b>7.8</b>	<b>6.9</b>

s Indicates data suppressed due to small numbers.

**Figure 3.21: Return Migration Rates for Immigrants, Interprovincial Migrants and All Other Manitobans by Reason for Coverage Cancellation and Coverage Start Decade, 1970-2019**

Coverage start on or after landing, January 1, 1970-March 31, 2019\*, all ages\*\*



\* Immigrants and Interprovincial Migrants: January 1, 1985-March 31, 2019.

\*\* The denominator within each cancellation category comprises individuals in the corresponding category with a previous outmigration.

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# Chapter 4:

## Healthcare Service Use and Mortality of Immigrants, Interprovincial Migrants and All Other Manitobans

### 4.1. Background

---

This chapter provides basic information on the healthcare service use and mortality rates of Immigrants, Interprovincial Migrants and All Other Manitobans. It is not meant to be exhaustive or explanatory but instead offers a first glance at health service use among Immigrants born outside of Canada, Interprovincial Migrants born in other Canadian provinces who move to Manitoba, and All Other Manitobans.

Most of the literature on immigration and health compares health indicators among immigrants and non-immigrants, but very little attention has been given to domestic or internal migration. A common finding observed in many settings is that immigrants are as healthy or healthier than non-immigrants [29]. This foreign-born health advantage has been referred to as the “healthy immigrant effect” or “healthy immigrant bias,” according to which individuals who self-select for emigration are healthier than those who did not migrate and remained in their homeland. However, the healthy immigrant effect associated with primary and secondary migration may not apply to non-voluntary migrants, such as refugees [16]. In addition, Canadian immigration admission policies further select applicants based on their potential contribution to the Canadian economy [30]. This two-fold selection process may contribute to the observation that immigrants are healthier than the local populations, although the immigrant advantage may depend on the health profile of the local population and the health outcome being compared [31].

A related finding is that, despite their health advantage, immigrants use fewer health services and have a disadvantaged socioeconomic profile [31]. Since lower use of preventive services and socioeconomic disadvantage are factors associated with poor health outcomes, the observation of a health advantage among immigrants has sometimes been referred to as the “immigrant paradox.” The immigrant paradox, however, may not apply to all immigrant groups and all health outcomes [31]. Further research is needed to understand the peculiarities of the immigrant population in Manitoba and their unique healthcare needs.

Moreover, very little is known about Interprovincial Migrants, who are as numerous as Immigrants in Manitoba (see Chapter 3). This report is the first to identify this sizeable population group and provide information on their sociodemographic and basic healthcare use. Further research will be required to better understand the factors affecting the living conditions and healthcare needs of Interprovincial Migrants.

## 4.2. Methods

### Study Period and Data Sources

This chapter examines a subset of the main three groups defined in Chapter 3: Immigrants, Interprovincial Migrants and All Other Manitobans. We used the following administrative databases from the Repository<sup>16</sup>:

- Permanent Resident Database (January 1, 1985 – December 31, 2017)
- Registry (January 1, 1985 – March 31, 2019)
- Hospital Abstracts (January 1, 1985 – March 31, 2019)
- Medical Services (January 1, 1985 – March 31, 2019)
- Area-level data from Canadian censuses (1986, 1991, 1996, 2001, 2006, 2011 and 2016)

The observation period for these analyses spanned from January 1, 1985 to March 31, 2019.

### Comparison Groups and Matching of Immigrants

Immigrants and Interprovincial Migrants have a different demographic composition from All Other Manitobans. Further, as most of the All Other Manitobans were born in the province, most have healthcare coverage from birth and their length of residence in the province is far longer than those in the other two groups, who are likely to have migrated to Manitoba during adulthood (see Chapter 3 for more details). Thus, in order to make fair comparisons between the three groups, we employed matching techniques to construct the study cohort.

Immigrants were matched to All Other Manitobans at a 1:1 ratio using exact matching of the same birth year, sex and place of residence, defined as a Community Area within Winnipeg or a Regional Health Authority District (RHA District) outside Winnipeg; the person with the closest agreement was selected (Table 4.1). Exact matching was possible because of the large number of individuals in the All Other Manitobans group. Note that the All Other Manitobans group was assigned the same follow-up start date as the date coverage started for their Immigrant matches.

Due to the relatively limited pool of Interprovincial Migrants available for exact matching, we used a more flexible matching technique called propensity score matching. We employed logistic regression models to predict the outcome of being an Immigrant or being an Interprovincial Migrant based on birth year, sex, place of first residence in Manitoba (Winnipeg Community Area within Winnipeg, RHA District outside Winnipeg) and date of immigration to Manitoba (within five years). The resulting probability for each group was the propensity score. We matched Immigrants with Interprovincial Migrants on propensity score using a caliper width of 0.05 (that is, no case differed from their matched control by more than 5% in the predicted probability). The number of individuals that were retained after matching in each of the three groups was 139,422, giving a total pooled sample of 418,266 individuals.

### Indicators

The indicators used in this chapter are listed below. Detailed definitions are available in Appendix 1 of the online supplement for this report.

- **First healthcare contact:** The first time an immigrant or interprovincial migrant made contact with a physician or nurse practitioner for an ambulatory visit or inpatient hospitalization.
- **Time to first healthcare contact:** The time from start of healthcare coverage to first healthcare contact.
- **Ambulatory visits:** A visit to a physician or nurse practitioner in an outpatient setting in Manitoba. The physician could be a family physician or a specialist physician. Outpatient settings may include office visits, walk-in clinics, visits to outpatient departments in a hospital and home visits. Visits made by patients who are admitted to an acute care hospital, or have a diagnostic test or procedure done are not considered ambulatory visits.
- **Inpatient hospitalization:** A patient is admitted to the hospital for diagnostic, medical, or surgical treatment and typically stays for one or more days. Multiple hospital admissions of the same person are counted as separate events. Out-of-province hospitalizations for Manitoba residents are also included.
- **Mortality:** Five- and ten-year mortality rates were calculated from deaths that occurred between landing or start of coverage, and the end of study period or end of five-year or ten-year follow-up time (whichever came first). The date of death for individuals in all three groups was determined by examining Registry records for coverage cancellation due to death.

<sup>16</sup> Additional information about the Repository and the administrative data it houses is available on the MCHP website at [http://umanitoba.ca/faculties/health\\_sciences/medicine/units/chs/departamental\\_units/mchp/resources/repository/index.html](http://umanitoba.ca/faculties/health_sciences/medicine/units/chs/departamental_units/mchp/resources/repository/index.html)



### 4.3. Results

The results are presented as unadjusted rates based on all ages (unless otherwise noted). Because we used matching to create the comparison groups, comparison of rates is not confounded by the matching variables (e.g., sex, age and place of residence).

Table 4.1 shows the characteristics of the three main groups. The distribution of age, sex, region of residence,

and start of coverage is similar across the groups because these variables were used in the matching process. The distribution of total person-years used in the analyses and income quintiles varied considerably across the three groups. The distribution of sociodemographic characteristics in the matched groups is representative of the characteristics of Immigrants, Interprovincial Migrants and All Other Manitobans described in Chapter 3 (Figure 3.17).

**Table 4.1: Sociodemographic Characteristics for Matched Cohorts of Immigrants, Interprovincial Migrants, and All Other Manitobans, 1985-2019**

All ages, January 1, 1985 - March 31, 2019

Sociodemographic Characteristics*	Immigrants		Interprovincial Migrants		All Other Manitobans	
	N	%	N	%	N	%
<b>Age at Start of Coverage (Years)</b>						
Mean	27	-	27	-	27	-
Under 50	126,576	90.79	125,204	89.80	126,519	90.75
50-74	11,818	8.48	12,075	8.66	11,873	8.52
75 and Older	1,028	0.74	2,143	1.54	1,030	0.74
<b>Total Person-Years from Start of Coverage** to End of Coverage or March 31, 2019</b>						
Under 50	1,312,128	-	946,325	-	1,555,475	-
50-74	123,780	-	89,064	-	153,079	-
75 and Older	7,553	-	11,002	-	7,766	-
<b>Sex</b>						
Female	68,239	48.94	68,387	49.05	68,239	48.94
Male	71,183	51.06	71,035	50.95	71,183	51.06
<b>Start of Health Insurance Coverage</b>						
1985-1989	19,570	14.04	19,522	14.00	19,570	14.04
1990-1999	35,812	25.69	35,774	25.66	35,812	25.69
2000-2009	44,417	31.86	44,434	31.87	44,417	31.86
2010-2019	39,623	28.42	39,692	28.47	39,623	28.42
<b>Region of Residence at Start of Coverage</b>						
Southern Health-Santé Sud	12,622	9.05	12,695	9.11	12,622	9.05
Winnipeg RHA	105,616	75.75	105,108	75.39	105,616	75.75
Prairie Mountain Health	13,694	9.82	13,971	10.02	13,694	9.82
Interlake-Eastern RHA	3,683	2.64	3,792	2.72	3,683	2.64
Northern Health Region	3,807	2.73	3,856	2.77	3,807	2.73
<b>Income Quintile at Start of Coverage</b>						
Rural 1 (Lowest)	4,026	2.89	3,672	2.63	3,775	2.71
R2	5,138	3.69	5,215	3.74	5,114	3.67
R3	6,145	4.41	5,876	4.21	5,692	4.08
R4	5,911	4.24	6,270	4.50	5,705	4.09
R5 (Highest)	5,232	3.75	5,471	3.92	5,236	3.76
Urban 1 (Lowest)	41,531	29.79	33,798	24.24	39,877	28.60
U2	23,027	16.52	21,271	15.26	20,627	14.79
U3	18,202	13.06	19,174	13.75	20,933	15.01
U4	15,089	10.82	17,128	12.29	15,421	11.06
U5 (Highest)	14,348	10.29	20,362	14.60	13,894	9.97
Income Unknown	773	0.55	1,185	0.85	3,148	2.26

\* Cohorts were matched on age, sex, and region of residence at start of coverage using exact matching and propensity scores.

\*\* Follow up for All Other Manitobans began on the start of coverage date of their Immigrant matches



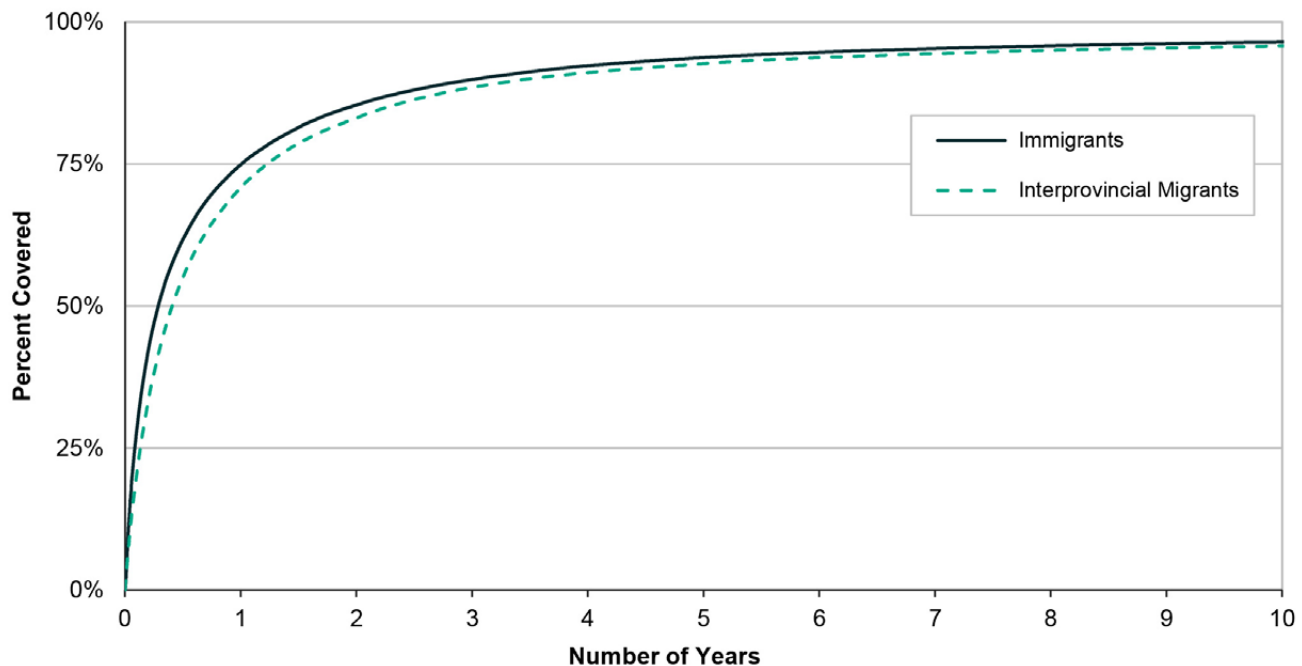
## Healthcare Service Use

Figure 4.1 shows the time between start of coverage (first ever registration in the provincial healthcare plan) to the first healthcare contact (first inpatient hospitalization or ambulatory visit, which may involve receipt of preventive services like vaccination). Approximately 97% of the matched Immigrant group and 96% of the matched

Interprovincial Migrant group had their first healthcare contact within the first 10 years of healthcare coverage. As expected, the two distributions are skewed towards shorter times, particularly among Immigrants (data not shown). Overall, about 3 in 4 individuals in both groups used healthcare services within one year of start of coverage. However, Immigrants had a slightly faster rate of use, particularly in the first few years after start of coverage.

**Figure 4.1: Time From Start of Coverage to First Healthcare Contact Among Immigrants and Interprovincial Migrants, 1985-2019**

Years from start of coverage date to first ambulatory physician visit or inpatient hospitalization, January 1, 1985 to March 31, 2019, all ages



Hazard ratio for Immigrants: 1.15 (1.14-1.16),  $p < 0.0001$ .

Groups were matched on sex, birth year and place of residence at start of coverage.

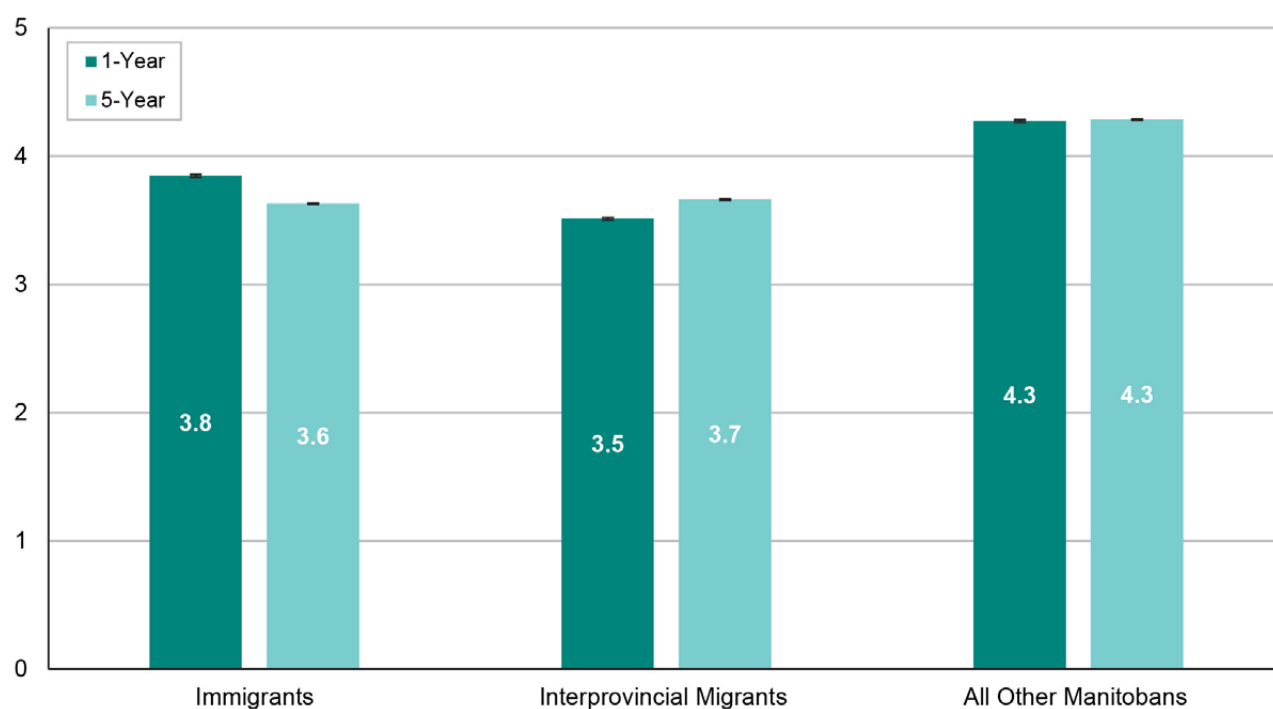
### Ambulatory visits

Ambulatory visit rates were comparable between Immigrants and Interprovincial Migrants, and were somewhat lower than among All Other Manitobans (Figure

4.2). This may reflect a “healthy migrant advantage” that is shared by both Interprovincial Migrants and Immigrants, or perhaps simply lower use of healthcare services irrespective of health status.

**Figure 4.2: One-Year and Five-Year Ambulatory Visit Rates for Immigrants, Interprovincial Migrants and All Other Manitobans, 1985-2019**

Average crude rates and 95% confidence intervals per person-year, January 1, 1985 to March 31, 2019, all ages



Groups were matched on sex, birth year and place of residence at start of coverage.

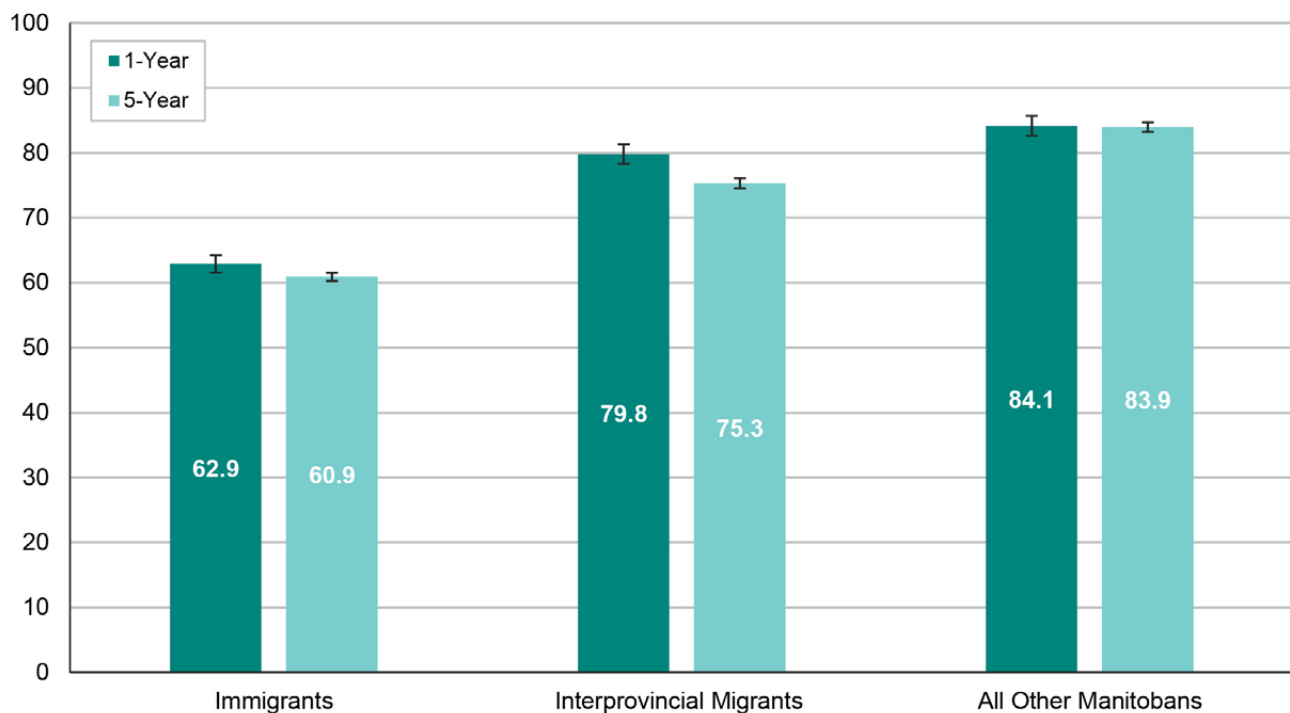
### Inpatient hospitalizations

Inpatient hospitalization rates were lowest among Immigrants and highest among All Other Manitobans (Figure 4.3). Five-year rates were lower than 1-year rates among Immigrants and Interprovincial Migrants, but not

among All Other Manitobans, suggesting that there may be hospitalization-related factors affecting risk during the early post-migration period. Note that these rates reflect *all* hospitalizations and that disease-specific patterns may vary substantially between groups.

**Figure 4.3: One-Year and Five-Year Inpatient Hospitalization Rates for Immigrants, Interprovincial Migrants and All Other Manitobans, 1985-2019**

Average crude rates and 95% confidence intervals per 1,000 person-years, January 1, 1985 to March 31, 2019, all ages



Groups were matched on sex, birth year and place of residence at start of coverage.

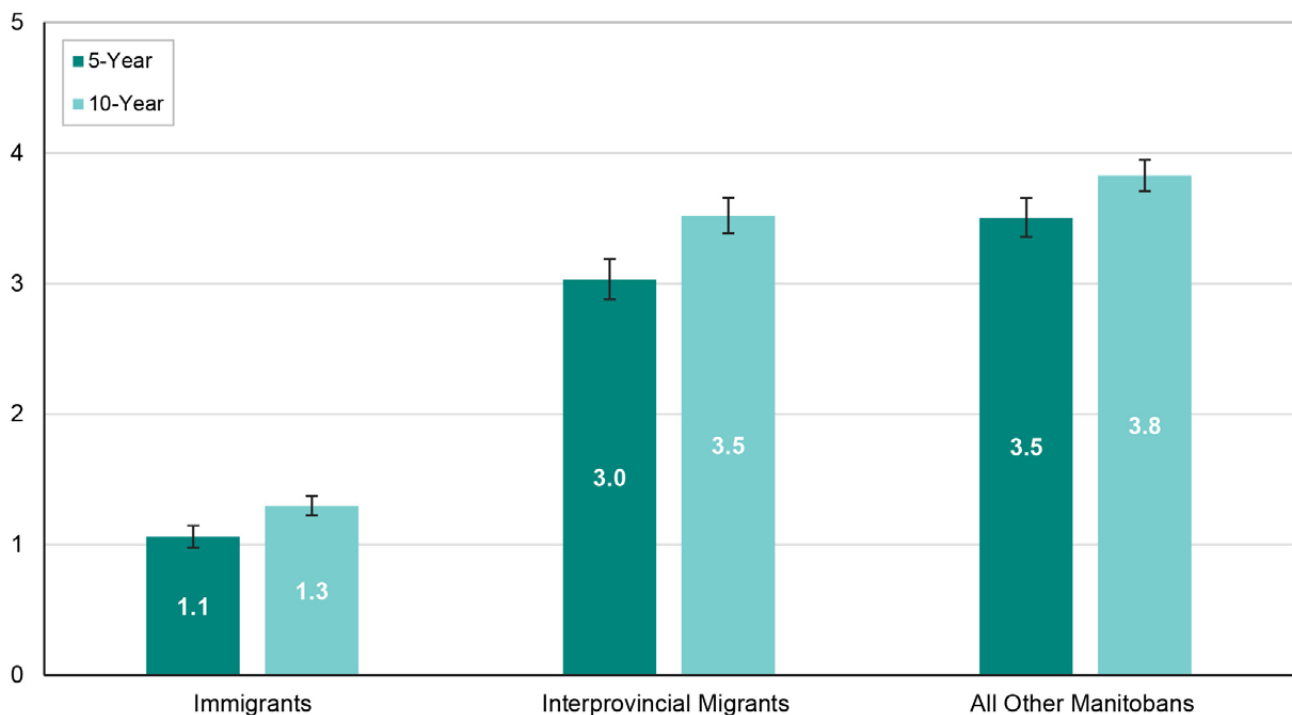
## Mortality

Five-year and ten-year crude mortality rates among Immigrants were remarkably lower than among the Canadian-born groups, both overall (Figure 4.4) and within specific age groups (Figure 4.5). All Other Manitobans had the highest mortality rates overall and in age groups up to 74 years, but mortality among Interprovincial Migrants was higher among those age 75 and older (Figure 4.5).

The higher premature mortality rate among All Other Manitobans could be attributed to the higher mortality rate among First Nation peoples who have a lower life expectancy compared to the general population [32]. Comparisons with non-Indigenous Manitobans are expected to narrow the gaps. It could also be attributed to the “salmon bias” phenomenon, by which immigrants return to their places of origin after retirement or due to health concerns [33].

**Figure 4.4: Five-Year and Ten-Year Mortality Rates for Immigrants, Interprovincial Migrants and All Other Manitobans, 1985-2019**

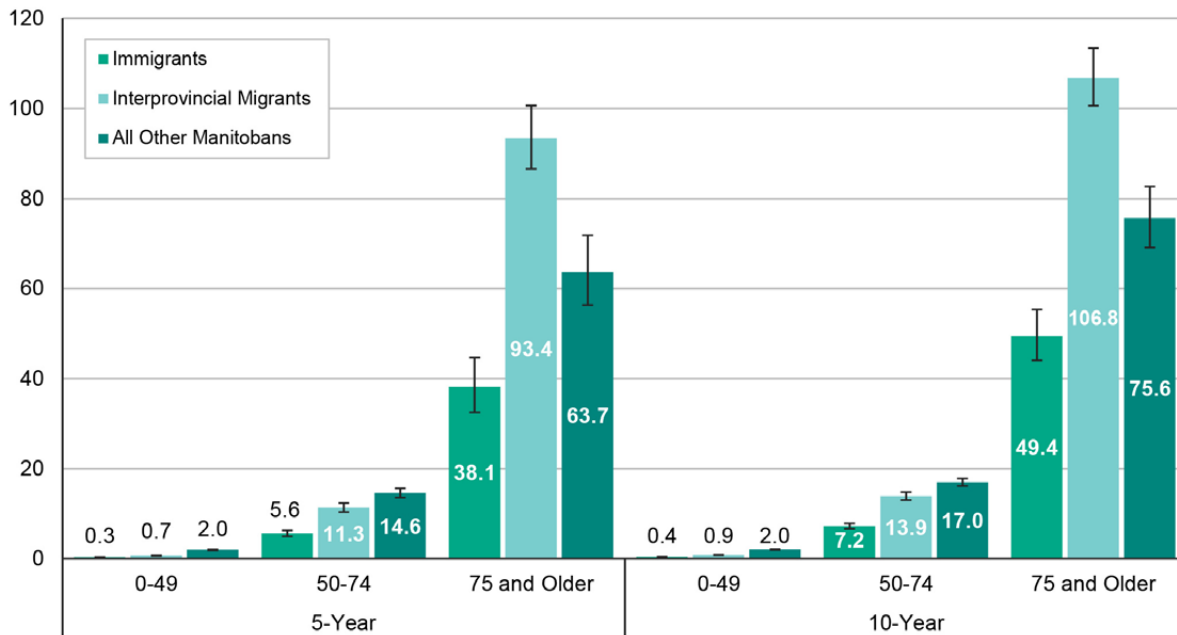
Average crude rates and 95% confidence intervals per 1,000 person-years, January 1, 1985 to March 31, 2019



Groups were matched on sex, birth year and place of residence at start of coverage.

**Figure 4.5: Five-Year and Ten-Year Mortality Rates for Immigrants, Interprovincial Migrants and All Other Manitobans by Age Group at Start of Coverage, 1985-2019**

Average crude rates and 95% confidence intervals per 1,000 person-years, January 1, 1985 to March 31, 2019



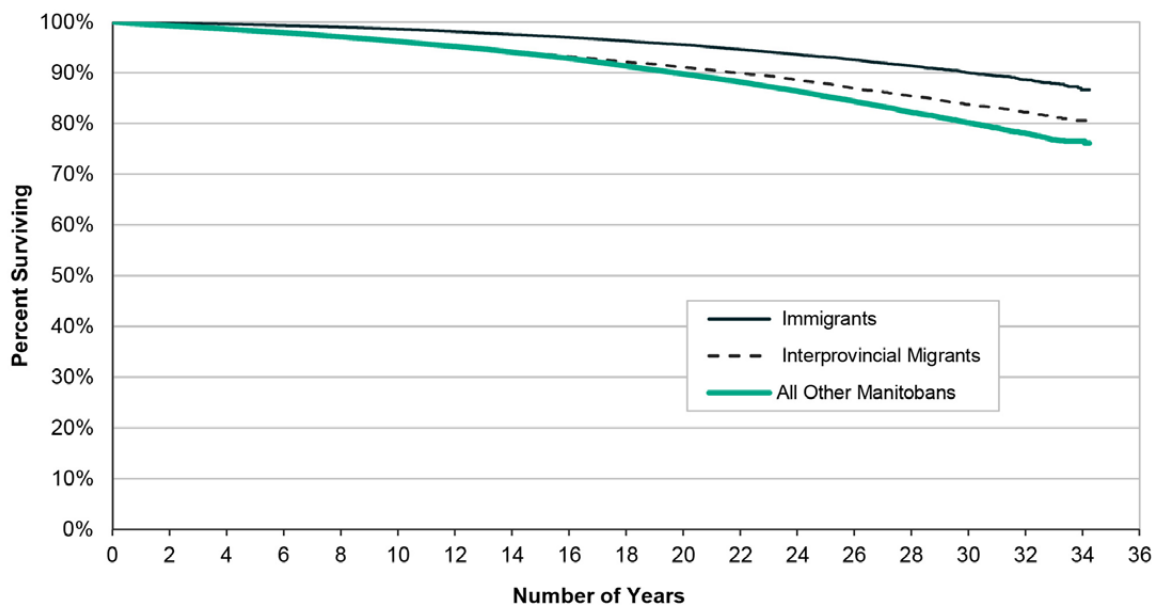
Groups were matched on sex, birth year and place of residence at start of coverage.

Figure 4.6 shows the survival analysis for the three main groups. Immigrants seemed to have higher survival rates than Interprovincial Migrants and All Other Manitobans, even after 34 years in the province. About 50% (median) of Immigrants who died did so within 13 years of their start of healthcare

coverage, while this number was 8 years for Interprovincial Migrants and 12 years for All Other Manitobans (data not shown). Interprovincial Migrants had a similar survival trend to All Other Manitobans in the first 15 years after coverage start, with a slightly better survival rate after that.

**Figure 4.6: Survival Curve for Immigrants, Interprovincial Migrants, and All Other Manitobans, 1985-2019**

Start of coverage to death January 01, 1985 to March 31, 2019, all ages



Hazard ratio for Immigrants: 0.42 (0.41-0.44),  $p < 0.001$ .

Hazard ratio for Interprovincial Migrants: 0.88 (0.85-0.91),  $p < 0.0001$ .

Groups were matched on sex, birth year and place of residence at start of coverage.

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## Chapter 5:

# Conclusions

In this study, we identified 263,711 Immigrants to Manitoba by linking the Permanent Resident Database and the Registry. The individuals in this cohort obtained permanent residency in Canada between January 1, 1985 and December 31, 2017; most declared in their application for immigration that their intended province of destination was Manitoba. This cohort generally had similar sociodemographic characteristics to immigrants who settled in other Canadian provinces, but were more likely to have landed in the last decade of the study (2010-2017) and to have applied as economic immigrants, and were less likely to be family members of Canadian citizens.

### **Data Linkage**

Linkage rates between the Permanent Resident Database and the Registry were high. Taking into account the fact that not all those who intended to settle in Manitoba actually did so, and that some immigrants who first settled in another province later migrated to Manitoba, the adjusted linkage rate was 96.2%. When stratified according to sociodemographic characteristics, the linkage rates did not vary substantially, suggesting that differential bias was not a concern.

### **Characterizing Immigrants, Interprovincial Migrants and Other Manitobans**

Overall, a large proportion of the immigrants to Manitoba we examined arrived in the last decade (42.2% of the cohort arrived between 2010 and 2017). Eighty-two percent were primary migrants (meaning that they emigrated directly from their countries of birth), and 61.8% originated in Asian countries. Seventy-two percent were working-age adults; 63.6% were admitted under the economic category and 59.7% were admitted as provincial nominees (among those who landed since 1998, which is when the program was implemented). Seventy percent were married or in common-law relationships, and 66.3% had post-secondary education. Refugees accounted for 15.2% of the cohort, and among refugees, 40.6% were admitted as privately sponsored refugees.

This study also characterized Interprovincial Migrants (individuals who moved to Manitoba from other provinces) and All Other Manitobans (who were either born in Manitoba or have resided in Manitoba since before the creation of the Registry in 1970). We identified 278,289 Interprovincial Migrants, a group similar in size to Immigrants. The All Other Manitobans

group in our study contained 1,419,856 individuals.

Immigrants tended to concentrate in the Winnipeg RHA (82%), whereas Interprovincial Migrants and All Other Manitobans lived mostly in the Winnipeg RHA (61% and 56%, respectively), Prairie Mountain Health (16% and 15%, respectively), and Southern Health-Santé Sud (10% and 13%, respectively). Upon first settlement, 31% of Immigrants lived in the lowest income urban areas, compared to 16% and 14% of Interprovincial Migrants and All Other Manitobans, respectively. Although many immigrants eventually move to higher income neighborhoods, those who remain in low income neighborhoods may be more likely to experience adverse outcomes [31,34].

### Retention, Outmigration and Return Migration

This report also sheds light on retention, outmigration and return migration dynamics. These indicators were approximated based on information on the reasons healthcare coverage was cancelled and subsequently re-instated. Retention rates were consistently higher for Immigrants than for Interprovincial Migrants, both for the whole study period overall and over smaller time periods. Overall five-year retention rates were 78% for Immigrants and 55% for Interprovincial Migrants. Interprovincial Migrants were most likely to leave the province to go to another province or country during the study period (42%), followed by Immigrants (21%) and All Other Manitobans (15%). An additional 21% of Interprovincial Migrants, 11% of Immigrants, and 5% of All Other Manitobans were categorized with a “cannot locate” cancellation code in the Registry, which may include individuals who left the province without a destination being recorded. Among those we are certain moved out of province, All Other Manitobans were the most likely to return to Manitoba (31%), followed by Interprovincial Migrants (14%) and Immigrants (8%).

### Healthcare Service Use and Mortality

The report provides basic measures of healthcare utilization and mortality based on a matched cohort of the three main groups. About 3 out of 4 newcomers had their first healthcare contact within one year of having obtained provincial healthcare coverage, although the first healthcare use occurred slightly faster among Immigrants than among Interprovincial Migrants. Interestingly, 12% of Immigrants gained access to public health insurance before becoming permanent residents, particularly after 2003, suggesting that temporary immigration to the province is an increasingly important pathway to permanent residency.

Immigrants and Interprovincial Migrants had comparable rates of ambulatory visits, but the rates were lower

than among All Other Manitobans. Hospitalization rates were highest among All Other Manitobans, followed by Interprovincial Migrants and lowest among Immigrants. Mortality rates among Immigrants were about one-third of the rates for the other two groups, although the magnitude of the difference varied according to age group. These findings are consistent with the so-called “healthy immigrant” phenomenon, which associates migration with selection of healthier individuals.

## Limitations

The sociodemographic profiles we provide in this report are limited to the information available in the Permanent Resident Database and the Registry. The Permanent Resident Database is limited to landing records (i.e., acquisition of permanent residency) and therefore temporary immigrants (i.e., those with a student visa or temporary work permit, or refugee claimants awaiting a decision) who were residing in Manitoba but did not obtain their permanent residency from 1985 to 2017 could not be identified in the current report. We expect to add the IRCC Temporary Residents Database to the Repository in the near future.

A second limitation is that this report is limited to first generation immigrants (i.e., people born outside of Canada) and we did not measure second generation immigrants (i.e., the children of immigrant parents born in Manitoba or another province). Although they are technically Canadian-born, they are raised in immigrant families and constitute a distinct group that may share some characteristics of immigrant families (e.g., English as a second language) and some characteristics of the Canadian-born (e.g., schooling and socialization). Future reports may focus on this population.

The purpose of this report was to describe the immigrant population and we did not intend it to be exhaustive or to explain every finding. Additional focused studies will be needed to help us fully understand the patterns found in this report, such as mortality differences between groups. Additional characteristics available in other data holdings could also be accessed to better understand the observed patterns.

Despite these limitations, this report provides a first look at various characteristics of the Manitoba population from an immigration perspective and sets the stage for an informed incorporation of migration dynamics in future studies of the Manitoba population. Further use of other linked datasets available in the Repository will allow us to explore the health and social profiles of the different immigrant and non-immigrant groups in Manitoba in more detail.



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