



Manitoba Centre for Health Policy

Appendices for: The Diversity of Immigrants to Manitoba, Migration Dynamics and Basic Healthcare Service Use

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Marcelo Urquia, PhD, MSc
Randy Walld, BSc, BComm (Hons)
Heather Prior, MSc

Gilles Detillieux, BSc
Nkiruka D. Eze, MSc, LL.M
Ina Koseva, MSc



University
of Manitoba

Rady Faculty of
Health Sciences

Appendix 1: Technical Definitions of Key Measures and Indicators Used in This Report

Details of data formats and codes beyond what is available in this report and online supplement are available upon request from the authors.

Appendix 1.1: Data Linkage

Blocking Schemes: Blocking is a method that reduces the number of comparisons made when linking two files. Without 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. Therefore, using last name for example as a blocking variable requires all valid links to agree on last name and greatly reduces the number of comparisons made. Not all valid links agree on last name, so a number of blocking schemes are used in a sequence of linkage passes; this allows records that disagree on last name but agree on birthdate and other variables to be linked in a later pass.

The sequence of blocking involved deterministic, probabilistic and manual review.

- Deterministic Linkage:** 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 Linkage:** Compares records from two different databases on a number of attributes ('linkage keys'), such as name, sex, birth date, and region of residence, to assess the probability that two records refer to the same individual. Agreement or disagreement on these keys is summarized in a total linkage weight, which is divided into three regions by comparing the weight with upper and lower thresholds for Acceptance or Rejection, respectively, with the intermediate region being flagged for Manual Review. In this report, the following linkage keys were used: first name, initial of first name, first three characters of first name, tokenized 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.
- Manual Review:** Review of links below the threshold weight for Acceptance from the probabilistic linkage by MCHP Data Analysts. 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. This stage is intended to catch misspellings, nicknames, transpositions of letters, and other types of errors that are difficult to program into a computer but relatively easy for a human reviewer to spot.

Corrected Linkage Rate: A linkage rate that is corrected using proxy measures (e.g. tax filing to ascertain those who ever resided in Manitoba) to estimate the true denominator excluding those with no evidence of ever having resided in the province.

Linkage Rate: A linkage rate is simultaneously a measure of two things: 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.

Soundex Coding: An algorithm for encoding names so that names that sound alike receive the same code. This allows for close matches on last name where some types of misspellings or transcription errors can prevent valid links. 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.

Appendix 1.2: Sociodemographic and Immigration Indicators

Arrival Date: Date of arrival in Canada as a temporary or permanent resident. This may occur before the Landing Date for those who move to Canada on a temporary visa and later receive their Permanent Residence. For immigrants with no history of temporary visas, the Arrival Date equals the Landing Date.

Birth Region: The region of an immigrant's birth as stated on their immigration application. For the purposes of tabulation, the IRCC birth country codes were classified into Statistics Canada's Standard Classification of Countries and Areas of Interest (SCCAI) regions (and sub-regions) as follows: Americas (North America, Central America, Caribbean and Bermuda, South America), Europe (Western Europe, Eastern Europe, Northern Europe, Southern Europe), Africa (Western Africa, Eastern Africa, Northern Africa, Central Africa, Southern Africa), Asia (West Central Asia and the Middle East, Eastern Asia, Southeast Asia, Southern Asia), Oceania, Antarctica and Adjacent Islands. For more information on the SCCAI regions, see Statistics Canada's website: <https://www.statcan.gc.ca/eng/subjects/standard/sccai/2018/index>

Cancellation of Healthcare Coverage: A Manitoba resident may have their provincial healthcare coverage cancelled in the Manitoba Health Insurance Registry for a variety of reasons including death, move out of province, joining the military or RCMP, becoming an inmate of a federal prison, no longer a ward of the province, expiration of a visa for temporary residents or international students, or cannot be located. A cancellation of coverage code and date are always specified for temporary residents or students on a visa based on the visa expiry date.

Cannot Locate: Manitoba residents who have not contacted Manitoba Health Seniors and Active Living (MHSAL) nor accessed any healthcare services within the province such as going to the doctor or hospital or filling a prescription for over one year may have their healthcare coverage in the Manitoba Health Insurance Registry cancelled as "Cannot Locate". MHSAL attempts to contact the resident with a registration verification card at last known address. If the returned card indicates that the person has moved or no longer lives at this address, then their healthcare coverage is cancelled and the "Cannot Locate" cancellation code is assigned as reason for cancellation of coverage. Residents who subsequently contact MHSAL to say they have remained in province will have their healthcare coverage reinstated.

Coverage End Date: The date a Manitoba resident's provincial healthcare coverage was cancelled in the Manitoba Health Insurance Registry due to one of the reasons described above under Cancellation of Healthcare Coverage. For temporary residents or students on a visa, the Coverage End Date is the visa expiry date.

Coverage Start Date: The date a Manitoba resident's provincial healthcare coverage started. Coverage may start at birth or upon registration after becoming a new resident of Manitoba. Individuals who migrate into the province from another province are not eligible for coverage until residential status is achieved (three months after the move into the province), meaning that their Coverage Start Date will be three months after moving to Manitoba, and in that three month period they will retain the healthcare coverage from the province or territory they migrated from. This three month waiting period does not apply to individuals immigrating from outside of Canada. Nearly all residents are covered under Manitoba Health's Health Insurance Registry with the exception being people covered under a federal healthcare plan such as military personnel or members of the RCMP (as of April 1, 2013 members of the RCMP living in Manitoba are covered by Manitoba Health).

Duration of Residence in Manitoba: The total number of days of permanent residence in Manitoba for international immigrants starting on the later of their Landing Date or Coverage Start Date, and ignoring gaps in residence of 360 days or less. Days of residence before the Landing Date (i.e., as a temporary resident) are not considered in this report. For interprovincial migrants, the Coverage Start Date is considered as the start of the residence period.

Education Level: The level of education achieved by an immigrant as stated on their immigration application, categorized as: Secondary or Less, Some Post-Secondary (includes Diploma or Certificate for a Trade, Non-University Certificate or Diploma, University - No Degree), Bachelor Degree or Higher (includes Post-Graduate - No Degree, Master's Degree, Doctorate/PhD) or None/Not Stated. When describing the characteristics of immigrants in Manitoba (Chapter 3 of the report), this indicator is limited to immigrants age 25 and older as of Landing Date.

Family Status: The relationship to applicant for all family members immigrating to Canada as stated on their immigration application. These were categorized as Principal Applicant, Spouse (includes Married and Common-Law) or Dependant (includes all other relations). Information was not available for a small number of immigrants and these were labelled as "Not Stated".

Immigration Category: Individuals may apply to immigrate into Canada under one of the following categories: Economic, Family, Refugee or Other. Economic immigrants are individuals who have been selected for their ability to contribute to Canada's economy through their ability to meet labour market needs, to own and manage or to build a business, to make a substantial investment, to create their own employment or to meet specific provincial or territorial labour market needs. Individuals who immigrate to Canada under the Family category are individuals who were sponsored by a Canadian citizen or permanent resident and were granted permanent resident status on the basis of their relationship either as the spouse, partner, parent, grand-parent, child or other relative of this sponsor. The terms "family class" or "family reunification" are sometime used to refer to this category. Individuals under the Refugee category are those who were granted permanent resident status on the basis of a well-founded fear of returning to their home country for reasons of race, religion, nationality, membership in particular social group or for political opinion (Geneva Convention refugees) as well as persons who had been seriously and personally affected by civil war or armed conflict, or have suffered a massive violation of human rights. Some refugees were in Canada when they applied for refugee protection for themselves and their family members (either with them in Canada or abroad). Others were abroad and were referred for resettlement to Canada by the United Nations Refugee Agency, another designated referral organization or private sponsors. Other immigrants include those who were granted permanent resident status under a program that does not fall in neither the economic immigrants, the immigrants sponsored by family or the refugee categories. A small number of immigrants could not be categorized into one of these four groups and are labelled as "No Categorization".

Income Quintile: A grouping of the population by average neighbourhood household income. Income quintiles are first divided into two population categories: Urban (Winnipeg and Brandon) and Rural (all other Manitoba areas), and then into five groups (quintiles) within each population category, with approximately 20% of the population in each group. The groups are ordered from lowest to highest neighbourhood income. As a result of this process, the income range within each quintile may not be equal across quintiles. Income quintiles are often used as a proxy measure of socio-economic status. The postal code of residence used was the one closest to the date of landing or start of coverage. Income quintiles cannot be calculated for years before 1979 so postal code information was ignored prior to 1985 for this indicator. This affects the statistics reported for Long-term Manitoba residents and individuals with Unknown Immigration Status pre-1985.

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. Interprovincial migration applies to both Immigrants (International Interprovincial Migration) and non-immigrants (Canadian-born Interprovincial Migration).

Landing Date: The date an individual receives their Permanent Residency (PR) status in Canada (previously known as Landed Immigrant). The Landing Date is when an individual crosses a Canadian port of entry with their valid passport and Canada Immigration PR Visa. On this date an individual is considered "Landed" in Canada. An individual's Landing Date may differ from their date of arrival in Canada as many immigrants first come to Canada as temporary residents and then apply for PR status.

Marital Status: The marital status of an immigrant as stated on their immigration application, categorized as: Married or Common-Law, Separated, Divorced or Widowed, Single or Not Stated. When describing the characteristics of immigrants in Manitoba (Chapter 3 of the report), this indicator is limited to immigrants age 18 and older as of Landing Date.

Occupational Skill Level: The occupational skill level of an immigrant as stated on their immigration application, categorized as: Skilled (includes Managerial, Professionals, Skilled and Technical Individuals), Unskilled (includes Labourers, Intermediate Skilled, Clerical and Elemental Skilled Individuals) or Other (includes Students, Retired Individuals and Individuals Not in Labour Force). In Chapter 3 of this report, analyses of occupational skill level focus on principal applicants in the economic immigration category, age 15 and older as of landing date, and exclude applicants in the economic business category (entrepreneurs, investors, and self-employed individuals).

Outmigration: Also known as Emigration. In the context of this report, it entails leaving Manitoba to settle, permanently or temporarily, in another province or country. Outmigration rate was defined as the percent of individuals whose healthcare coverage was cancelled for over 360 days with a cancellation due to move out of province or Cannot Locate among all those with healthcare coverage. See Cancellation of Healthcare Coverage and Coverage End Date for more information.

Primary Immigrant: An individual who has immigrated to Canada directly from their birth country.

Privately Sponsored Refugee Status: Refugees who immigrated to Canada as part of the Private Sponsorship of Refugees Program. This category includes immigrants who have been selected abroad while outside of their home country or country where they normally lived, who were granted permanent resident status on the basis of a well-founded fear of returning to that country and who were privately sponsored by organizations, groups of Canadian citizens and/or permanent residents, or had the funds to support themselves and any dependants after they arrived in Canada. Private sponsors include incorporated organisations who have signed a formal sponsorship agreement with IRCC, sponsorship groups, community sponsors, and groups of five or more people who are at least 18 years old and live in the expected community of settlement. The private sponsor provides the cost of food, accommodation, and general settlement assistance such as school enrollment, and registration with health services, for twelve months, or until the refugee become self-sufficient, whichever is sooner. However, sponsorship may be extended to a maximum of 36 months in exceptional circumstances if the refugee requires more time to become established in Canada [1].

Province of Intended Destination: The Canadian province or territory indicated on their immigration application as the intended destination. Occasionally, an individual may Land and settle in a different province or territory than their intended region.

Provincial Nominee Program: A sponsorship immigration program designed to recruit skilled workers into Canada who want to become permanent residents. This program allows Canadian provinces and territories to nominate individuals who wish to immigrate to Canada and who are interested in settling in a particular province. The Manitoba Provincial Nominee Program (MPNP), created in 1996 and implemented in 1998, is the oldest Canadian nominee program and has accounted for over half of all immigrants to the province since 2005.

Refugee: An immigrant who seeks asylum in another country. This immigration category includes immigrants who were granted permanent resident status on the basis of a well-founded fear of returning to their home country. This category includes persons who had a well-founded fear of persecution for reasons of race, religion, nationality, membership in particular social group or for political opinion (Geneva Convention refugees) as well as persons who had been seriously and personally affected by civil war or armed conflict, or have suffered a massive violation of human rights. Some refugees were in Canada when they applied for refugee protection for themselves and their family members (either with them in Canada or abroad). Others were abroad and were referred for resettlement to Canada by the United Nations Refugee Agency, another designated referral organization or private sponsors. Refugees are classified into Protected person in Canada or dependant abroad and Resettled refugees, which include Government-assisted refugees, Privately sponsored refugees and Blended visa office-referred refugees (BVOR) [2].

Remigration: There is some ambiguity in the use of this term. Remigration has been used as return migration (please see Return Migration) and also as a subsequent migration to a different destination.

Retention Rate: The percent of new residents with a three or five-year stay in Manitoba since their arrival. Start of residence is approximated by Coverage Start Date for Interprovincial Migrants and by the later of the Landing Date or Coverage Start Date for Immigrants. Retention rates are based on a snapshot, and therefore include residents with a continuous stay (i.e., a health coverage episode with no gap in coverage longer than 360 days), and residents who left and returned to the province before the three- or five-year mark. We excluded individuals whose coverage started within three or five years from the end of our study period (March 31, 2019), when calculating the three or five-year retention rate, respectively.

Return Migration Rate: The percent of individuals who left Manitoba to settle in other provinces or countries and then subsequently returned. It was defined as a re-registration in the Manitoba Health Insurance Registry for those who resided in Manitoba and then left the province for at least 360 days, based on cancellation of healthcare coverage due to move out of province or "Cannot Locate".

Secondary Immigrant: An individual who has immigrated to Canada from a country different from that of their birth.

Urban/Rural Residence: The cities of Winnipeg and Brandon are consider Urban; the rest of Manitoba is considered Rural. Residence is determined via postal code from the Manitoba Health Insurance Registry.

Appendix 1.3: Health Status and Healthcare Use Indicators

Ambulatory Visit Rate: Rate of ambulatory visits one and five years after Coverage Start Date, calculated as visits per person-year. For long-term Manitobans, rates were calculated as of the Coverage Start Date of their corresponding immigrant matched case. Ambulatory visits include almost all contacts with physicians (family physicians and specialists) and nurse practitioners: regular office visits, walk-in clinic visits, home visits, nursing home visits, and visits to outpatient departments. Services provided to patients while admitted to hospital and emergency department visits are excluded. Data range included medical claims from January 1, 1985 to March 31, 2019.

Inpatient Hospitalization Rate: Rate of inpatient hospitalizations one and five years after Coverage Start Date, calculated as hospitalizations per 1,000 person-years. For long-term Manitobans, rates were calculated as of the Coverage Start Date of their corresponding immigrant matched case. Multiple admissions of the same person were counted as separate events. All Manitoba hospitals were included; personal care homes (PCHs), nursing stations, and long-term care facilities were excluded (Deer Lodge Centre, Manitoba Adolescent Treatment Centre, Rehabilitation Centre for Children, and Riverview Health Centre). Out of province hospitalizations for Manitoba residents were also included. In cases of birth, newborn hospitalizations were excluded (the mother's hospitalization was included). Data range included hospital abstracts from January 1, 1985 to March 31, 2019.

Mortality Rate: Rate of death five and ten years after Coverage Start Date, calculated as deaths per 1,000 person-years. For long-term Manitobans, rates were calculated as the Coverage Start Date of their corresponding immigrant matched case. Data range included Manitoba Health Insurance Registry deaths from January 1, 1985 to March 31, 2019.

Time to First Healthcare Contact: Time to first healthcare contact was measured in days from Coverage Start Date to first inpatient hospitalization or ambulatory visit. Individuals were censored if they died, moved out of province, were lost to follow-up (i.e., Cannot Locate), or reached the end of the study period without a healthcare contact (whichever came first). Data range included hospital abstracts and medical claims from January 1, 1985 to March 31, 2019.

Time to Death (Survival Analysis): Time to death was measured in days from Coverage Start Date to date of death as recorded in the Manitoba Health Insurance Registry. Individuals were censored if they moved out of province, were lost to follow-up (i.e., Cannot Locate), or reached the end of the study period without a healthcare contact (whichever came first). Data range included hospital abstracts and medical claims from January 1, 1985 to March 31, 2019.

Appendix 2: Study Cohort and Comparison Groups 1-11

Appendix Table 2.1: Study and Comparison Cohort Groups, 1985-2017

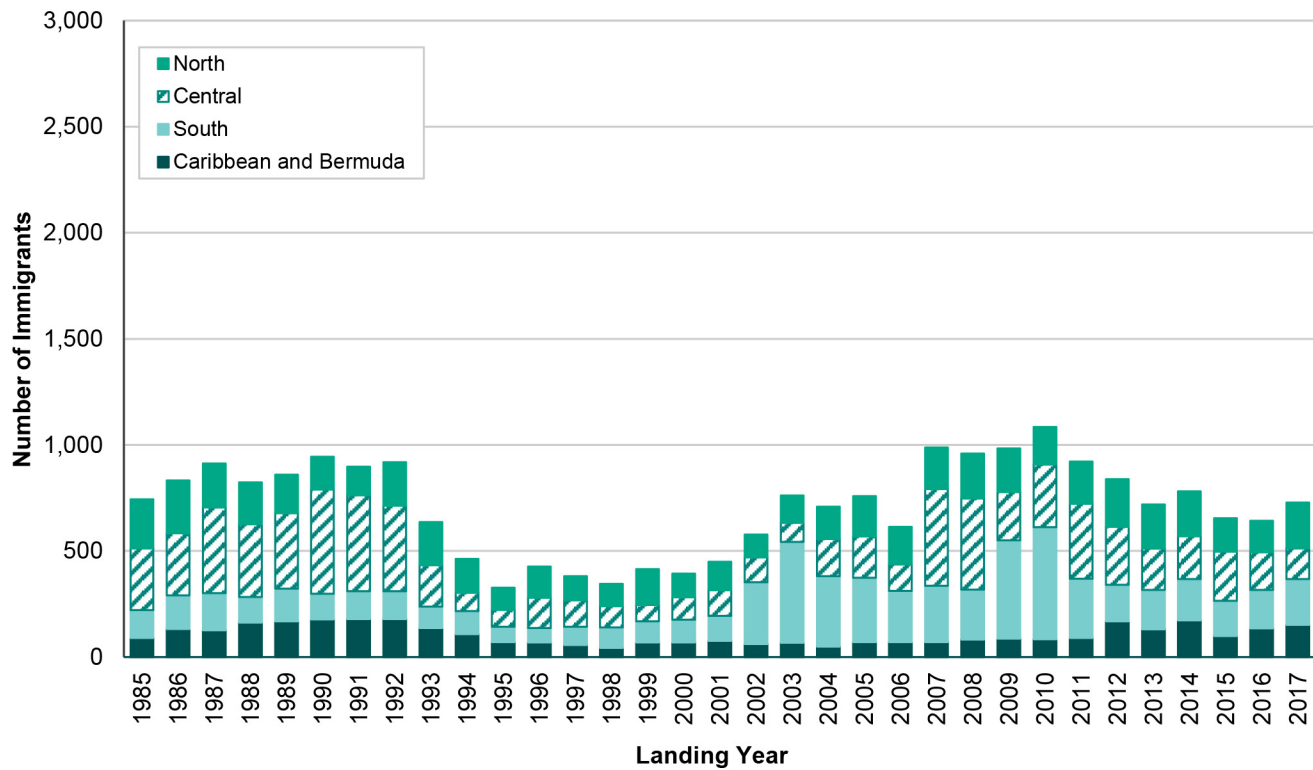
Individuals linked to the Permanent Resident Database and/or the Manitoba Health Insurance Registry

Groups		Number	Percent
Linked Individuals in the Permanent Resident Registry		263,711	-
Group 1	Primary International Immigrants to Manitoba	188,829	71.60
Group 2	Primary International Interprovincial Migrants	28,651	10.86
Group 3	Secondary International Immigrants to Manitoba	40,196	15.24
Group 4	Secondary International Interprovincial Migrants	6,035	2.29
Individuals Only in the Manitoba Health Insurance Registry		2,021,022	-
Group 5	Likely International Immigrants or Temporary Residents	48,089	2.38
Group 6	Likely Temporary Residents	104,980	5.19
Group 7	Interprovincial Migrants with Unknown Immigration Status	117,559	5.82
Group 8	Canadian-Born Interprovincial Migrants	278,289	13.77
Group 9	Manitobans with Unknown Immigration Status	52,249	2.59
Group 10	Manitobans Covered from Birth	692,515	34.27
Group 11	Long-Term Manitobans	727,341	35.99

Appendix 3: Sociodemographic Characteristics of Immigrants

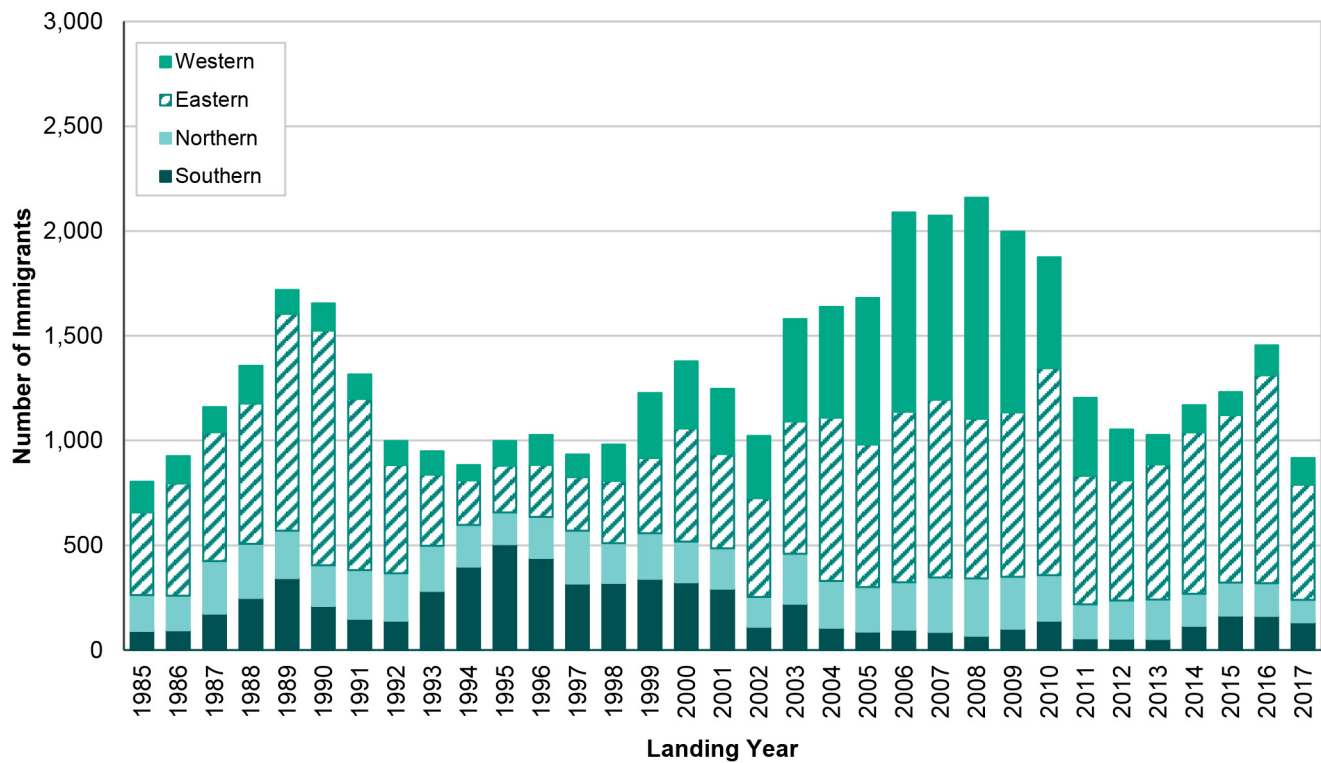
Appendix Figure 3.1: Immigrants in Manitoba by American Sub-Region of Birth and Landing Year, 1985-2017

All ages



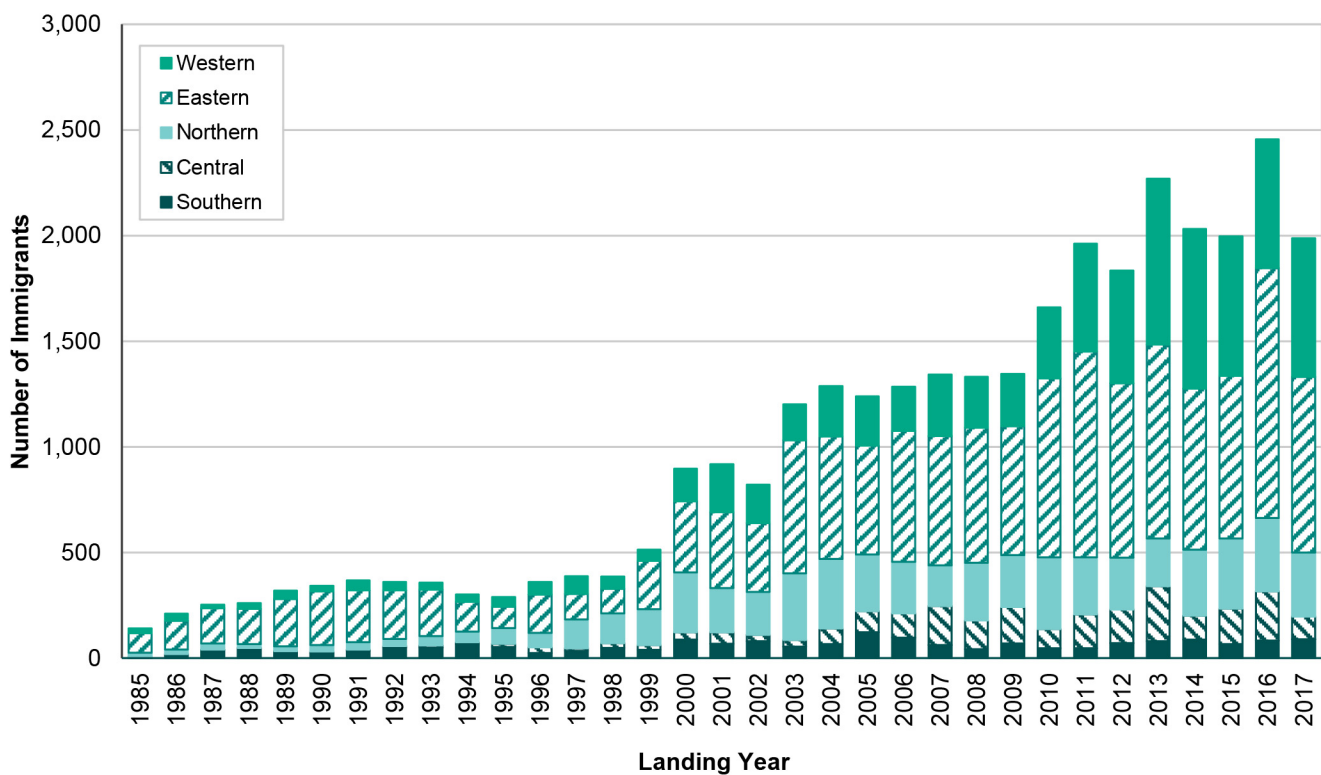
Appendix Figure 3.2: Immigrants in Manitoba by European Sub-Region of Birth and Landing Year, 1985-2017

All ages



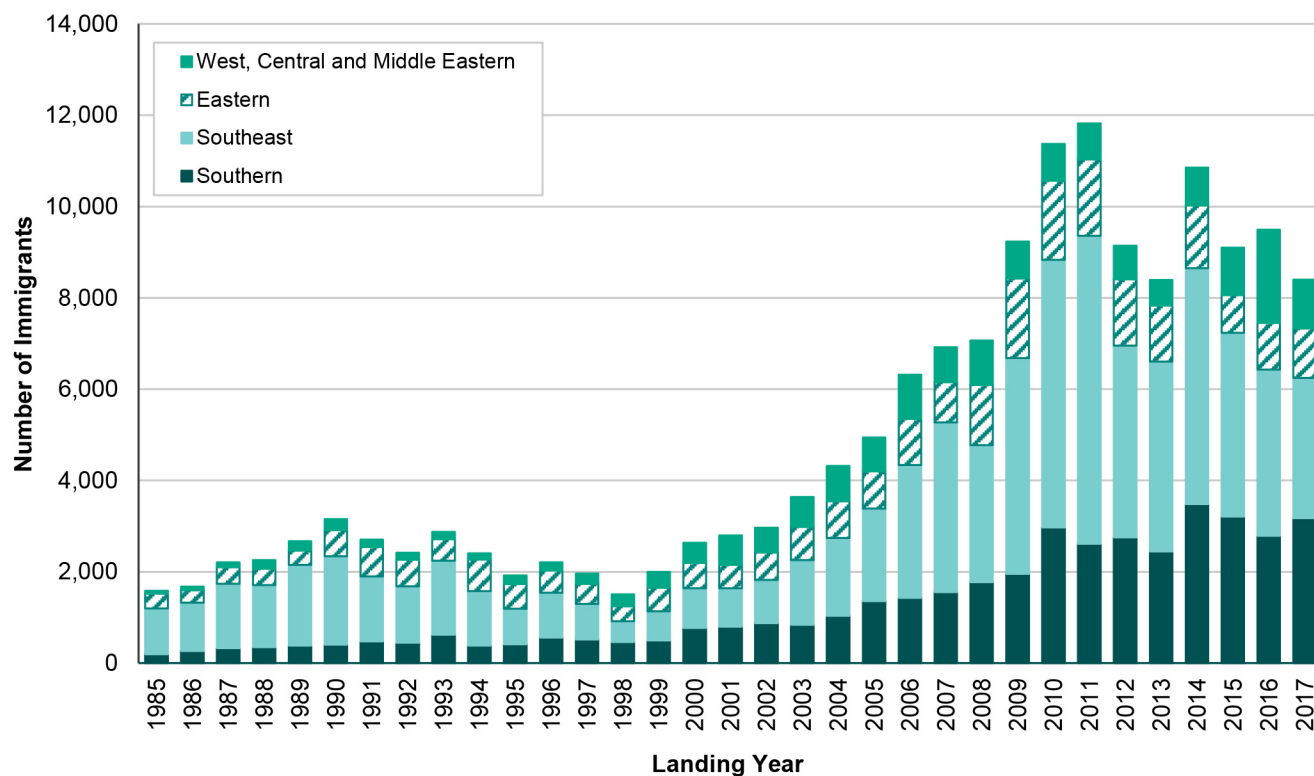
Appendix Figure 3.3: Immigrants in Manitoba by African Sub-Region of Birth and Landing Year, 1985-2017

All ages

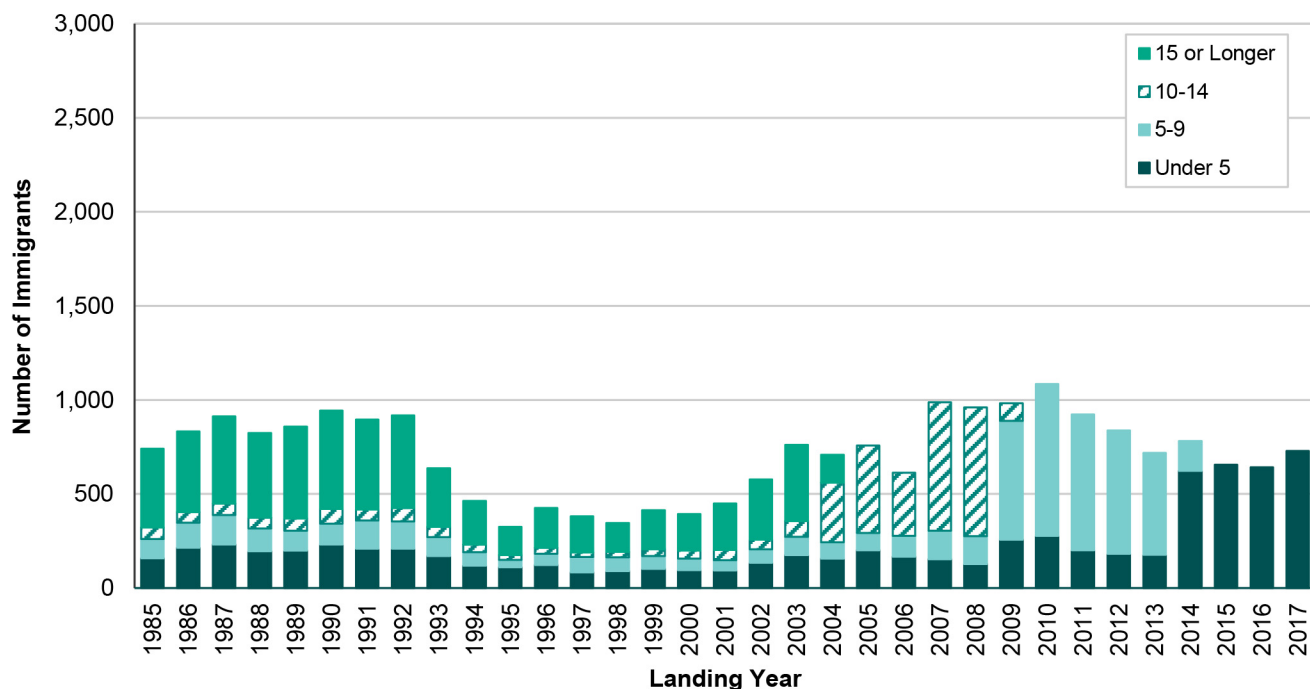


Appendix Figure 3.4: Immigrants in Manitoba by Asian Sub-Region of Birth and Landing Year, 1985-2017

All ages

**Appendix Figure 3.5: Years of Permanent Residence in Manitoba Among Immigrants Born in North or South America by Landing Year, 1985-2017**

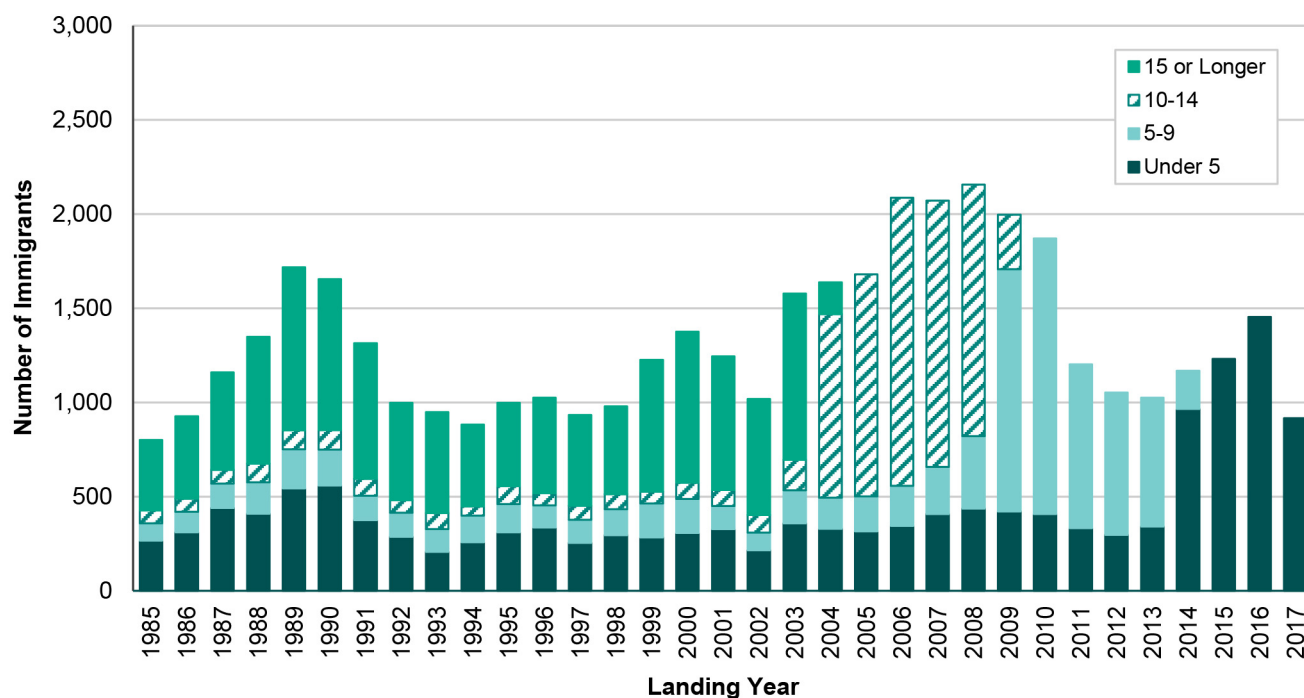
Number of years of residence* from landing date to March 31, 2019, all ages



* Time spent in Manitoba reflects cumulative years of residence from landing date until March 31, 2019, including remigration spells. Time spent in the province as temporary resident is excluded.

Appendix Figure 3.6: Years of Permanent Residence in Manitoba Among Immigrants Born in Europe by Landing Year, 1985-2017

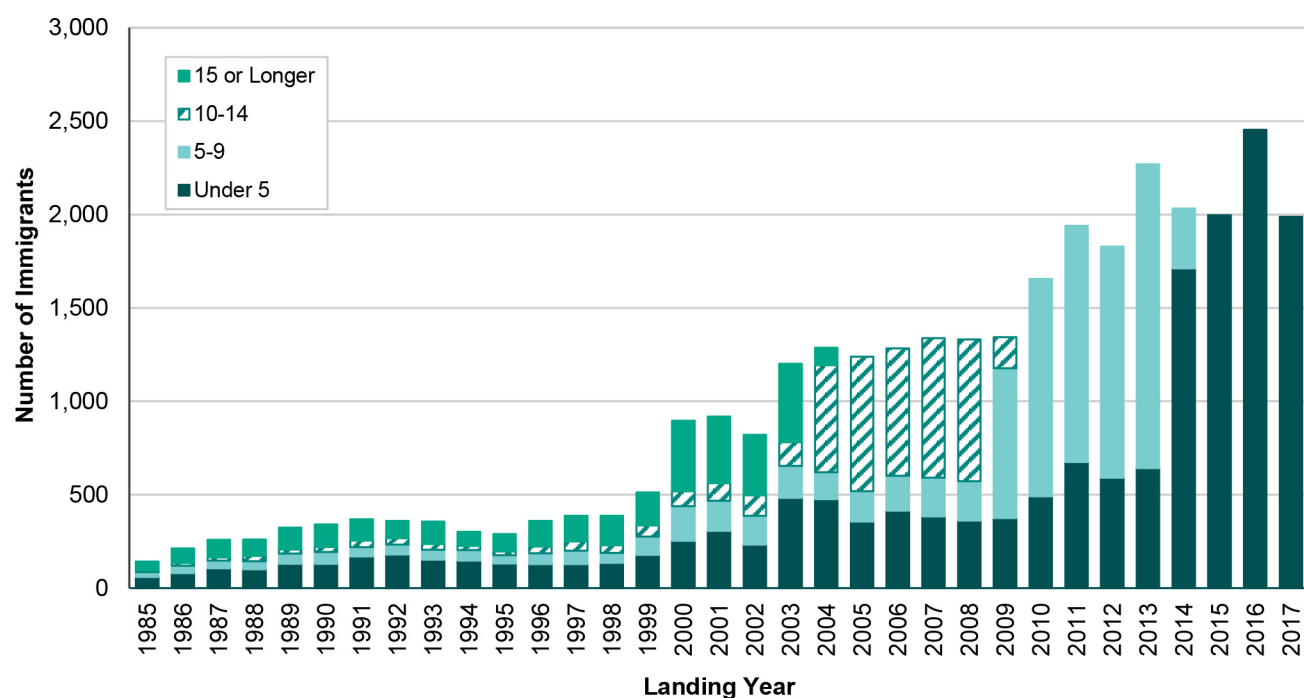
Number of years of residence* from landing date to March 31, 2019, all ages



* Time spent in Manitoba reflects cumulative years of residence from landing date until March 31, 2019, including remigration spells. Time spent in the province as temporary resident is excluded.

Appendix Figure 3.7: Years of Permanent Residence in Manitoba Among Immigrants Born in Africa by Landing Year, 1985-2017

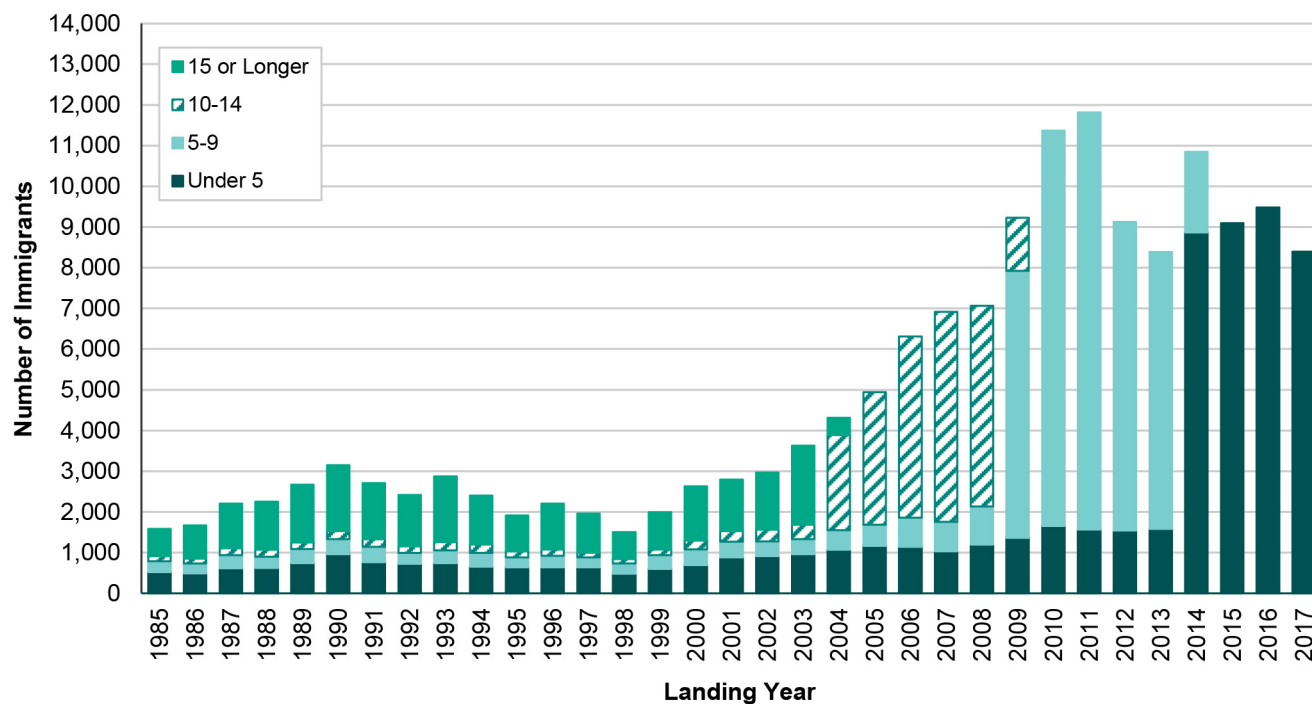
Number of years of residence* from landing date to March 31, 2019, all ages



* Time spent in Manitoba reflects cumulative years of residence from landing date until March 31, 2019, including remigration spells. Time spent in the province as temporary resident is excluded.

Appendix Figure 3.8: Years of Permanent Residence in Manitoba Among Immigrants Born in Asia by Landing Year, 1985-2017

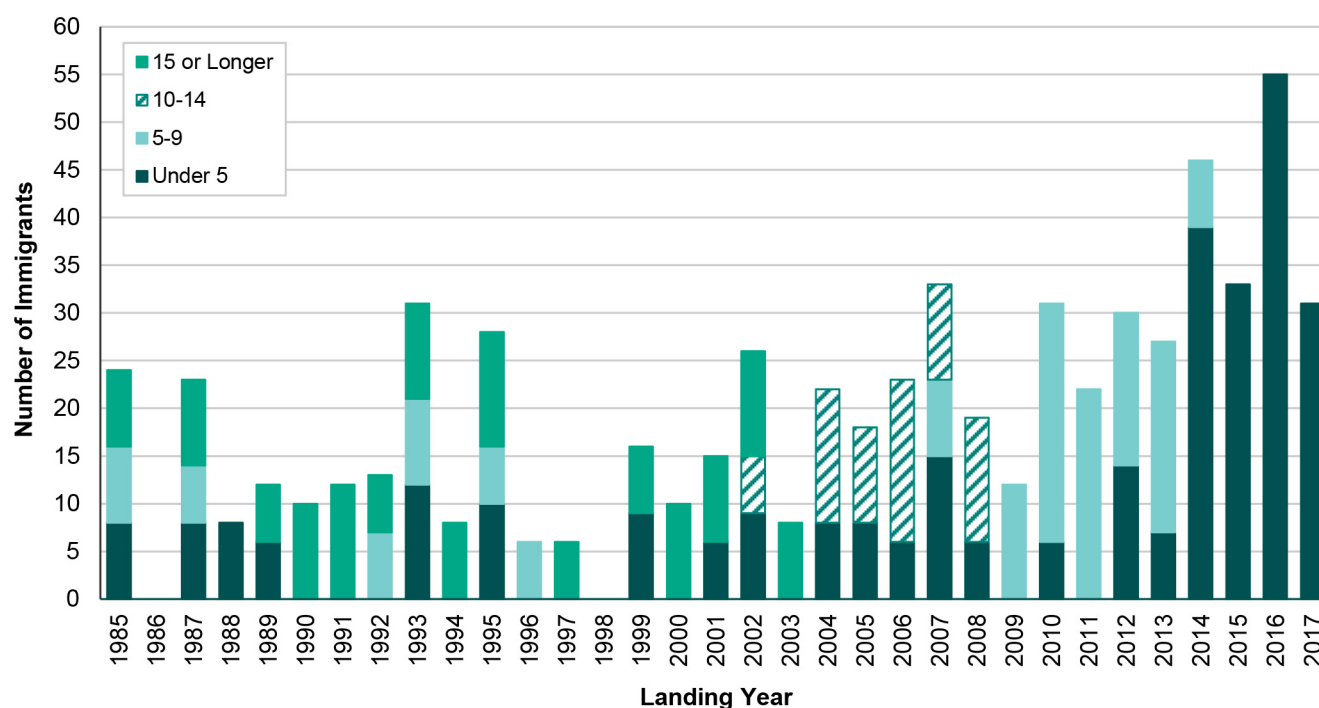
Number of years of residence* from landing date to March 31, 2019, all ages



* Time spent in Manitoba reflects cumulative years of residence from landing date until March 31, 2019, including remigration spells. Time spent in the province as temporary resident is excluded.

Appendix Figure 3.9: Years of Permanent Residence in Manitoba Among Immigrants Born in Oceania by Landing Year, 1985-2017

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

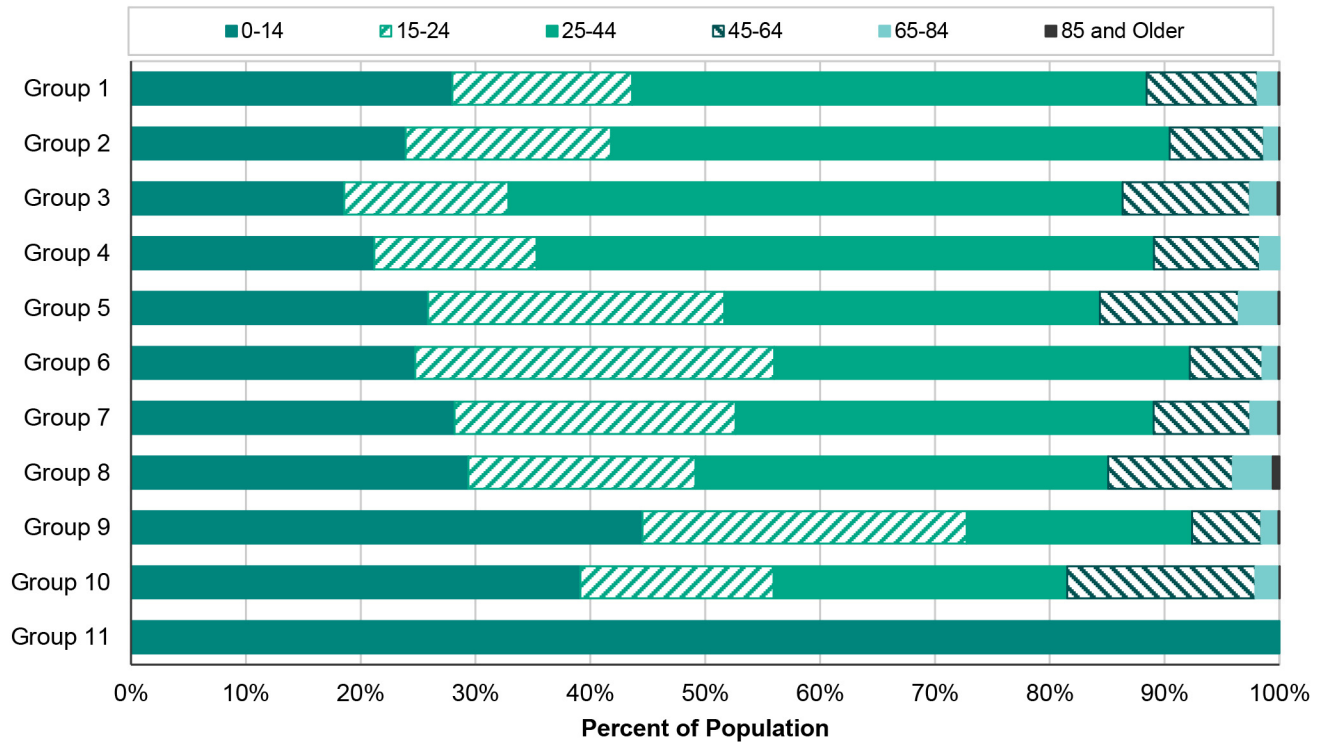


* Time spent in Manitoba reflects cumulative years of residence from landing date until March 31, 2019, including remigration spells. Time spent in the province as temporary resident is excluded.

Appendix 4: Sociodemographic Characteristics of Study Cohort and Comparison Groups 1-11

Appendix Figure 4.1: Age in Groups 1-11*

Age group (years) on the later of coverage start or landing, January 1, 1970-March 31, 2017**

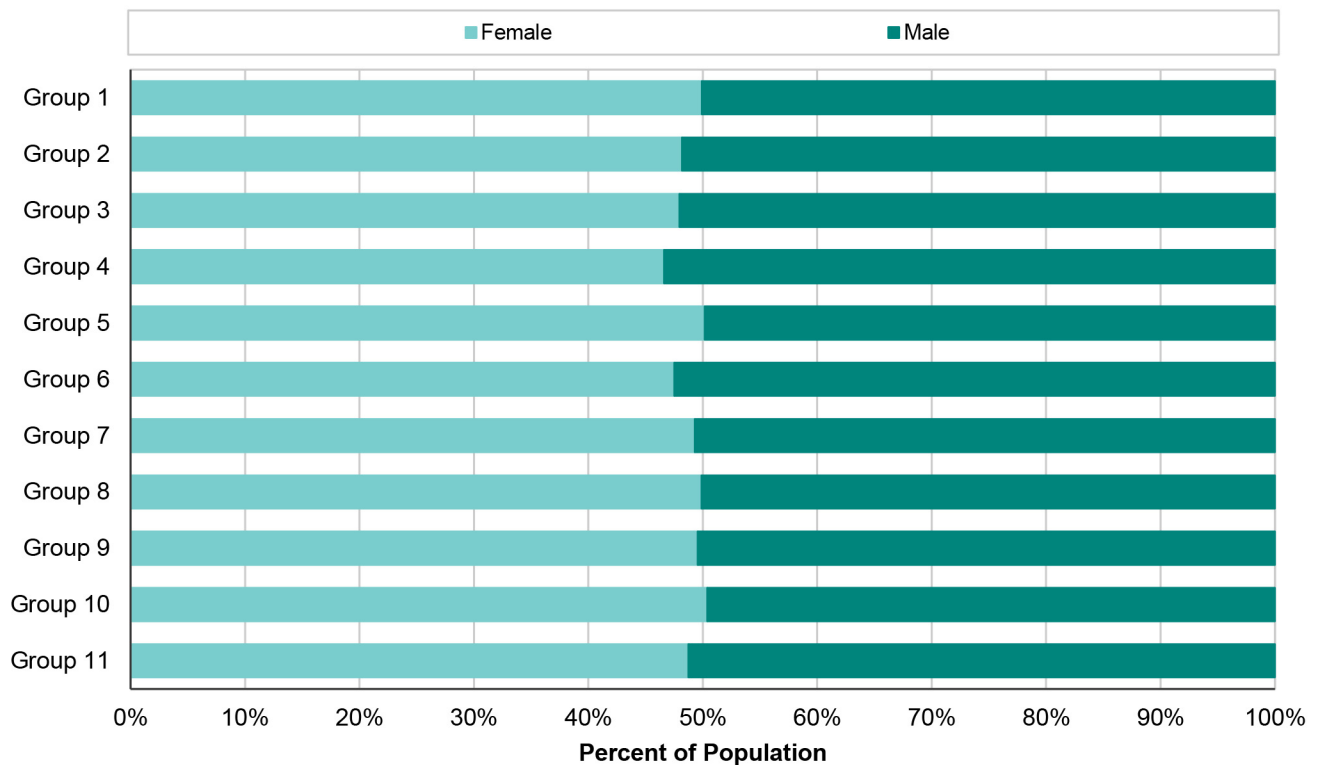


* Group 11 comprises Manitobans covered from birth.

** Groups 5, 7, 9: January 1, 1974-March 31, 2017. Groups 1-4, 6, 8: January 1, 1985-March 31, 2017.

Appendix Figure 4.2: Sex in Groups 1-11

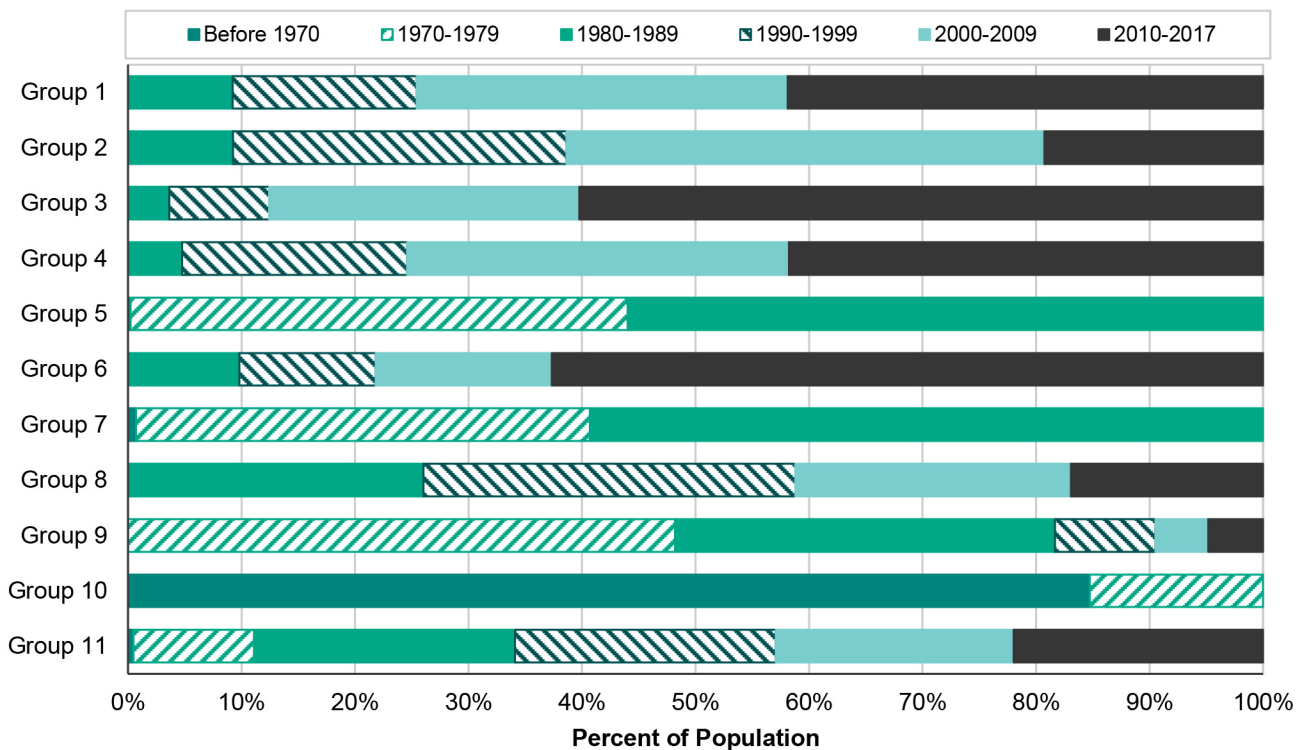
On the later of coverage start or landing, January 1, 1970-March 31, 2017*, all ages



* Groups 5, 7, 9: January 1, 1974-March 31, 2017. Groups 1-4, 6, 8: January 1, 1985-March 31, 2017.

Appendix Figure 4.3: Year of Start of First Healthcare Coverage in Groups 1-11*

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

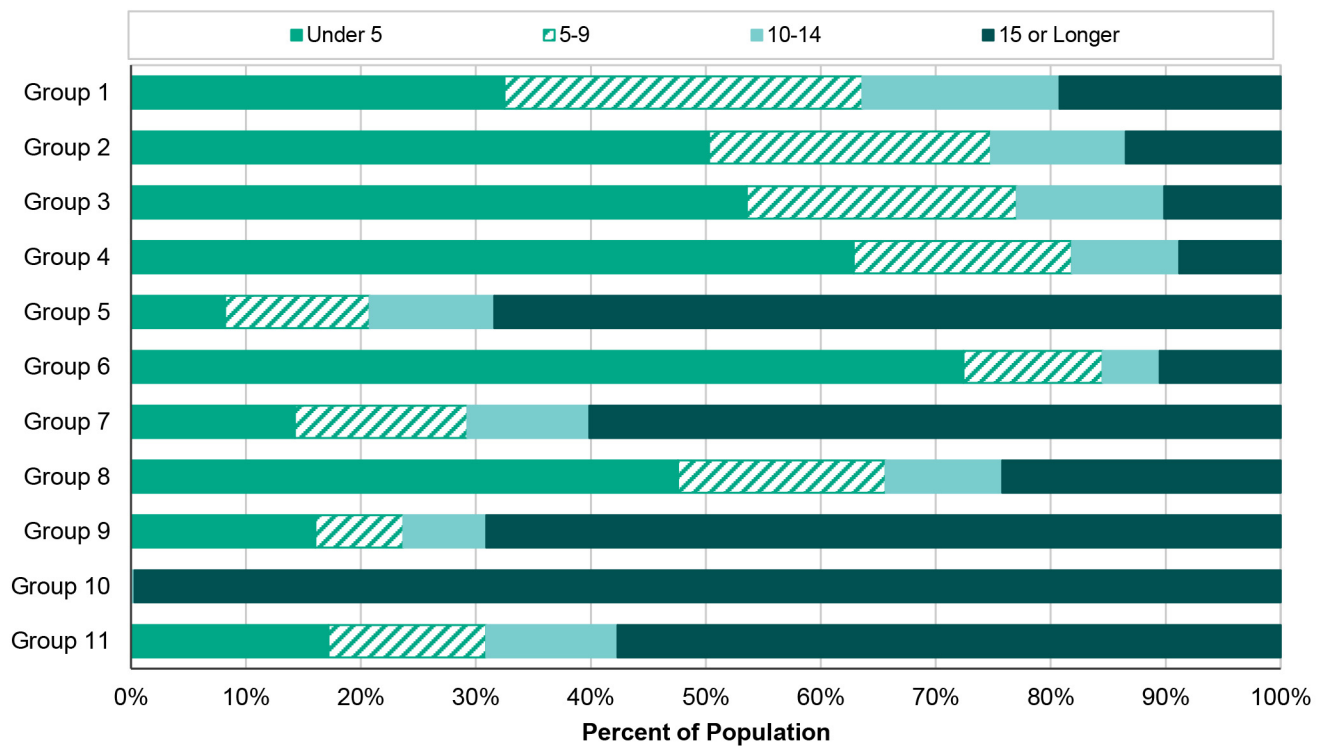


* Group 10 comprises Long-Term Manitobans.

** Groups 5, 7, 9: January 1, 1974-March 31, 2017. Groups 1-4, 6, 8: January 1, 1985-March 31, 2017.

Appendix Figure 4.4: Years of Permanent Residence in Manitoba for Groups 1-11*

On the later of coverage start or landing, January 1, 1970-March 31, 2019**, all ages

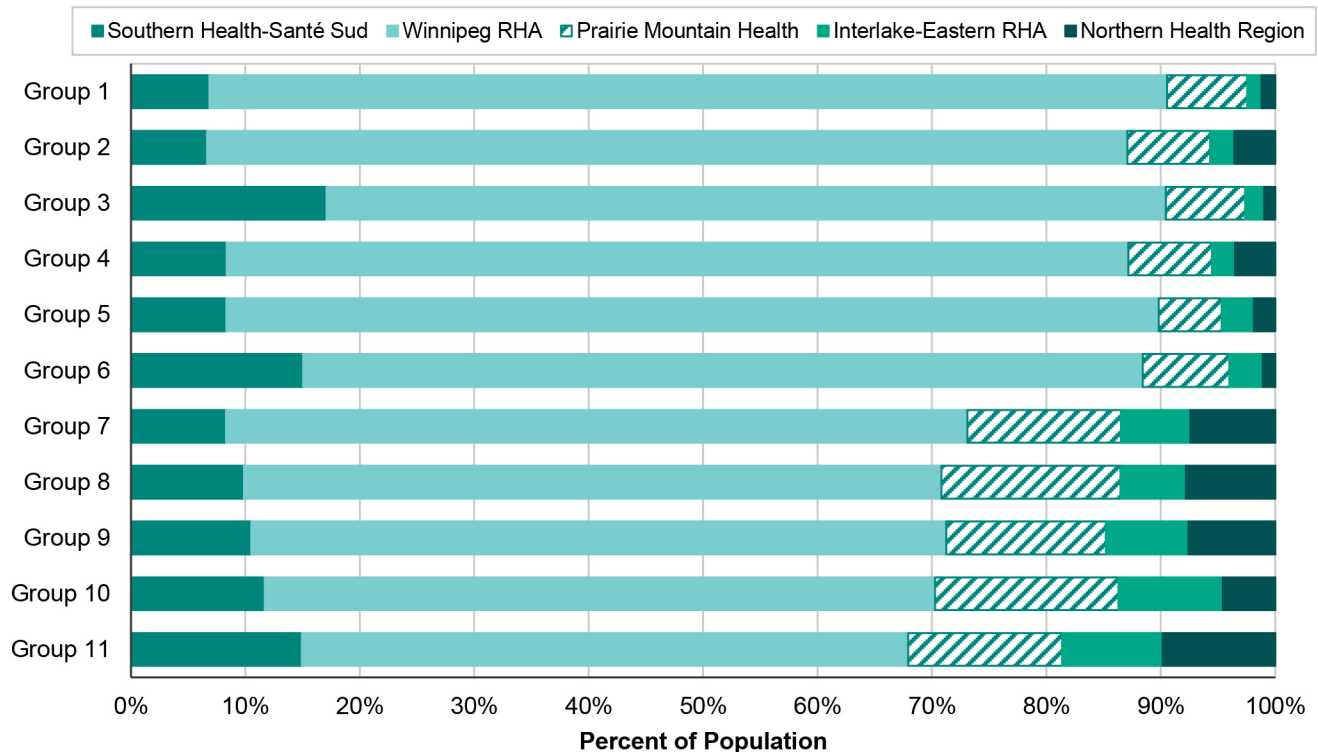


* Groups 10 and 11 comprise Long-Term Manitobans and Manitobans covered from birth, respectively.

** Groups 5, 7, 9: January 1, 1974-March 31, 2019. Groups 1-4, 6, 8: January 1, 1985-March 31, 2019.

Appendix Figure 4.5: Health Region of Residence in Groups 1-11

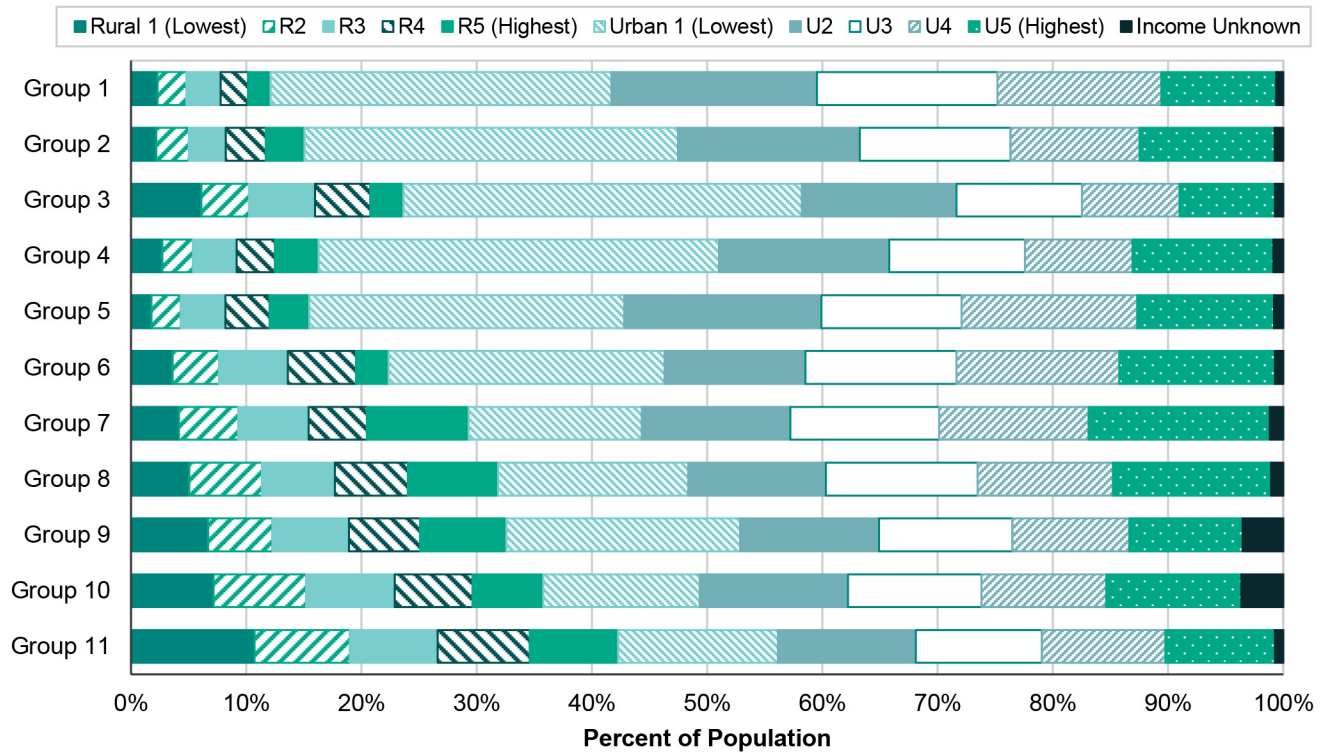
On the later of coverage start or landing, January 1, 1970-March 31, 2017*, all ages



* Groups 5, 7, 9: January 1, 1974-March 31, 2017. Groups 1-4, 6, 8: January 1, 1985-March 31, 2017.

Appendix Figure 4.6: Rural and Urban Income Quintiles in Groups 1-11

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



* Groups 5, 7, 9: January 1, 1974-March 31, 2017. Groups 1-4, 6, 8: January 1, 1985-March 31, 2017.

Appendix 5: Migration Dynamics of Immigrants

Appendix Table 5.1: Retention, Outmigration, and Return Migration Counts for Immigrants to Manitoba by Landing Year, 1985-2017

All ages

Landing Year	Overall	Retention*†		Outmigration by Reason for Coverage Cancellation*		Return Migration by Reason for Coverage Cancellation‡	
		3-Year	5-Year	Moved	Cannot Locate	Moved	Cannot Locate
	N	N	N	N	N	N	N
1985	3,295	2,574	2,253	1,150	882	117	87
1986	3,661	2,857	2,499	1,169	1,004	153	93
1987	4,561	3,591	3,104	1,497	1,210	174	79
1988	4,700	3,788	3,310	1,504	1,162	158	113
1989	5,586	4,399	3,902	1,875	1,232	216	112
1990	6,109	4,679	4,160	2,356	1,087	228	110
1991	5,303	4,170	3,708	1,849	1,026	207	93
1992	4,714	3,674	3,256	1,583	876	139	57
1993	4,850	3,859	3,484	1,552	826	164	83
1994	4,069	3,185	2,841	1,448	740	125	56
1995	3,557	2,643	2,315	1,376	670	110	54
1996	4,033	3,100	2,752	1,369	716	120	50
1997	3,679	2,904	2,526	1,302	623	139	54
1998	3,235	2,453	2,208	1,196	547	92	48
1999	4,174	3,274	2,955	1,464	608	133	51
2000	5,314	4,329	3,877	1,733	679	212	67
2001	5,424	4,268	3,758	1,801	693	198	50
2002	5,416	4,356	3,866	1,580	731	106	60
2003	7,185	5,697	5,124	2,068	872	186	66
2004	7,970	6,373	5,841	2,117	932	194	76
2005	8,637	7,069	6,522	2,041	951	158	80
2006	10,320	8,780	8,198	1,998	1,088	166	67
2007	11,346	9,844	9,313	1,850	1,072	141	64
2008	11,533	10,016	9,356	2,059	1,039	141	65
2009	13,567	11,868	11,115	2,081	1,193	122	49
2010	16,009	14,039	13,144	2,348	1,191	118	53
2011	15,906	14,017	13,128	2,113	1,070	86	27
2012	12,873	11,090	10,290	1,654	960	66	30
2013	12,427	10,611	9,729	1,595	671	46	21
2014	14,874	12,882	2,686	1,609	708	38	s
2015	13,012	10,847	-	1,466	497	12	18
2016	14,085	3,024	-	1,279	375	10	s
2017	12,060	-	-	750	219	7	0
Overall	263,484	200,260	161,220	54,832	28,150	4,282	1,950

* The denominator for outmigration and retention comprises all immigrants.

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

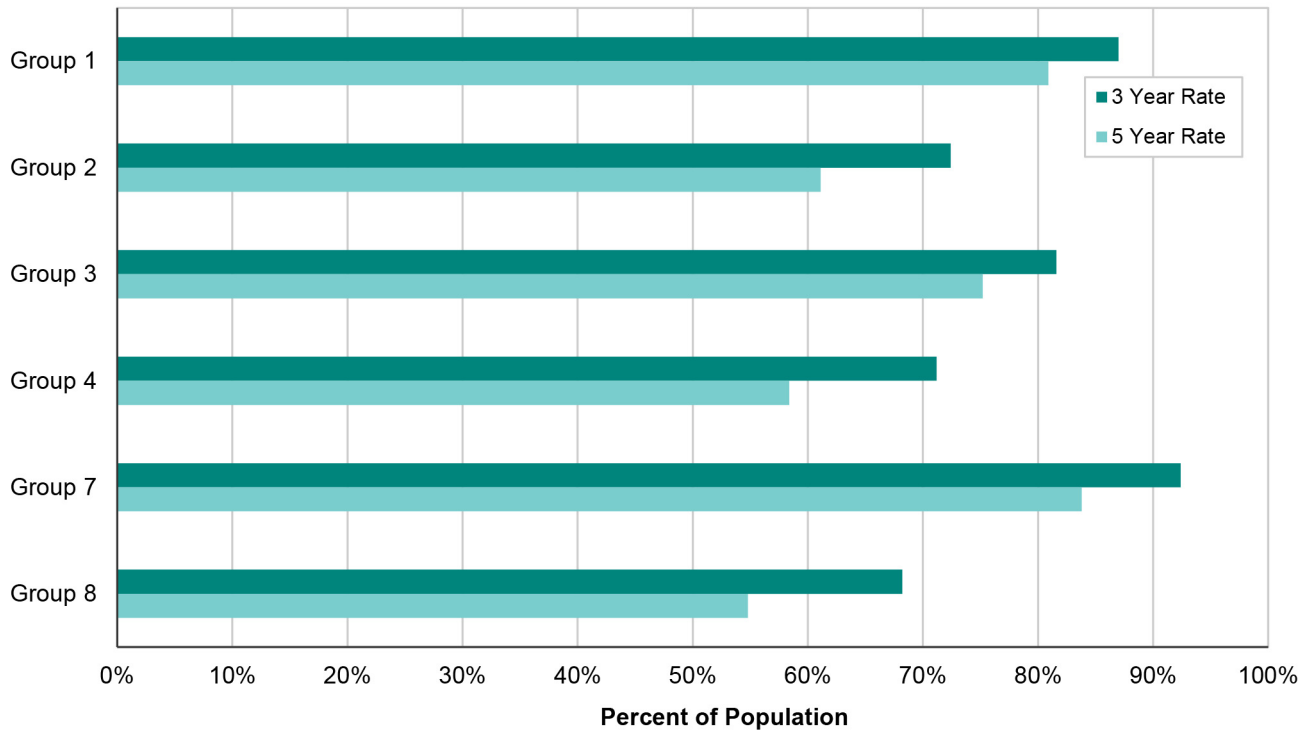
‡ The denominator for return migration within each cancellation category comprises immigrants in the corresponding category with a previous outmigration.

s Indicates data suppressed due to small numbers (under 6).

Appendix 6: Migration Dynamics of Study Cohort and Comparison Groups 1-11

Appendix Figure 6.1: Three- and Five-Year Retention Rates in Groups 1-4 and 7-8

Three- and five-year periods from coverage start on or after landing*, January 1, 1970-March 31, 2019**, all ages

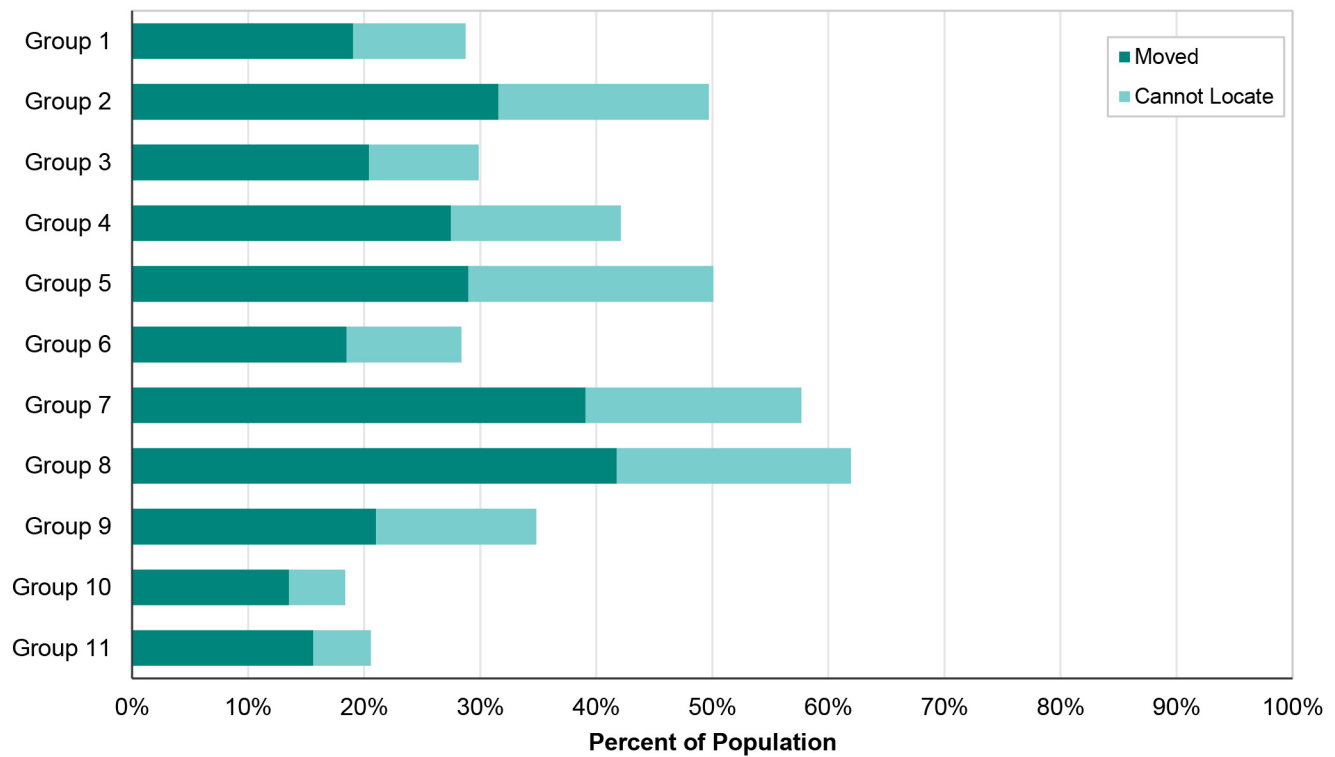


* Individuals with coverage start after March 31, 2016 and March 31, 2014 were excluded from 3- and 5-year retention rates, respectively.

** Groups 5, 7, 9: January 1, 1974-March 31, 2019. Groups 1-4, 6, 8: January 1, 1985-March 31, 2019.

Appendix Figure 6.2: Outmigration Rates in Groups 1-11 by Reason for Coverage Cancellation

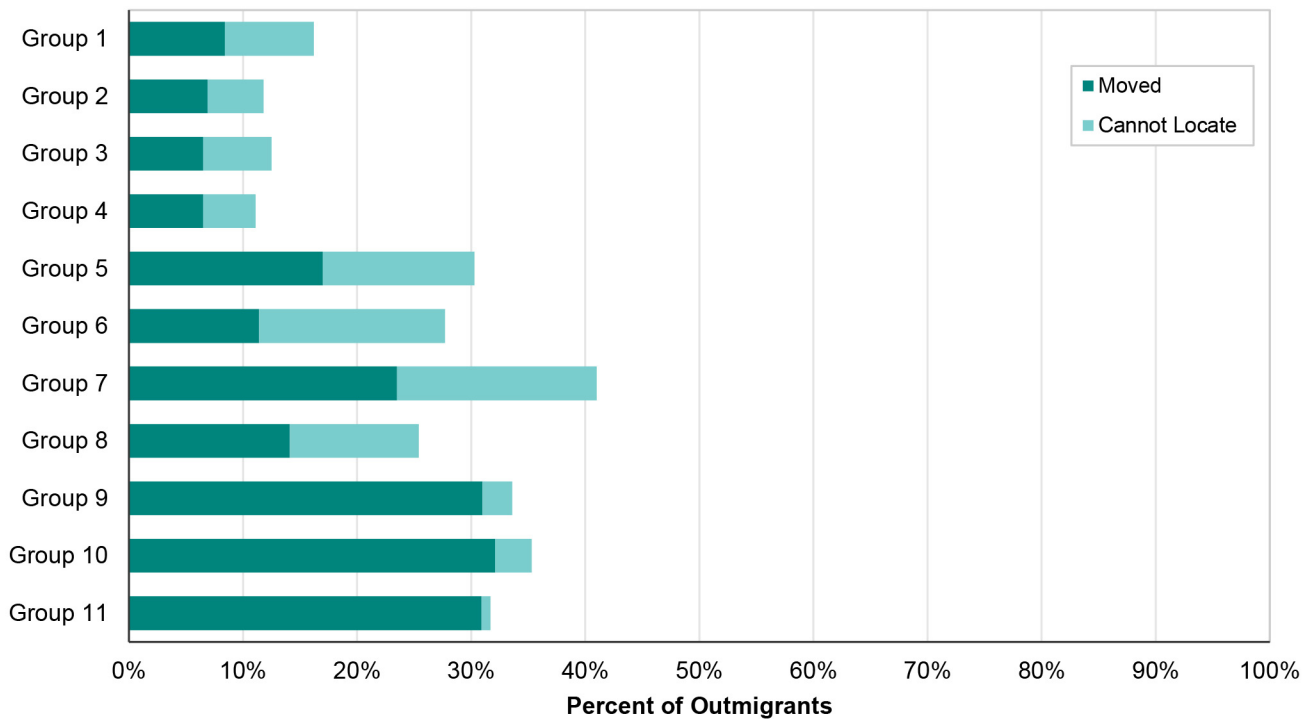
Coverage start on or after landing, January 1, 1970-March 31, 2019*, all ages



* Groups 5, 7, 9: January 1, 1974-March 31, 2019. Groups 1-4, 6, 8: January 1, 1985-March 31, 2019.

Appendix Figure 6.3: Return Migration Rates in Groups 1-11 by Reason for Coverage Cancellation

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



* Groups 5, 7, 9: January 1, 1974-March 31, 2019. Groups 1-4, 6, 8: 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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University of Manitoba
Max Rady College of Medicine
Rady Faculty of Health Sciences

408-727 McDermot Avenue
Winnipeg, Manitoba, Canada
R3E 3P5

Tel: (204) 789-3819

Fax: (204) 789-3910

Email: reports@cpe.umanitoba.ca

www.mchp.ca