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Recent immigrants and non-permanent residents missed in the 2011 Census

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Recent immigrants and non-permanent residents missed in the 2011 Census

by **Julien Bérard-Chagnon**, **Stacey Hallman** and **Geneviève Caron**

Highlights

- Recent immigrants, or those who landed in the country in the five years preceding the census, and non-permanent residents (NPRs) were much more likely to be missed in the 2011 Census than the rest of the population.
 - ▶ The missed rates for these two groups, estimated at 17.8% and 43.2% respectively, were much higher than that for the total population (8.3%).
- Several characteristics of recent immigrants were associated with being missed in the 2011 Census.
 - ▶ Nearly 20% of recent immigrants from Asia or Oceania and over 30% of those whose mother tongue was Punjabi were missed.
 - ▶ More than one-third of recent immigrants who landed in 2011 and about a quarter of those who landed in 2010 were missed.
 - ▶ About 12% of recent immigrants admitted in the refugee categories were missed.
 - ▶ Knowledge of official languages, age and marital status were also correlated with the propensity for being missed in the 2011 Census.
- Some characteristics of NPRs were also related to the propensity for being missed in the 2011 Census.
 - ▶ Almost half of NPRs who were not in a couple were missed.
 - ▶ More than 50% of NPRs who were granted temporary residence status in Canada no more than six months before the census were missed.
 - ▶ Age and having a temporary residence permit for the first time were also relatively correlated with the propensity for being missed in the 2011 Census.

Introduction

International migration is playing an increasingly important role in Canada's demographic dynamics. Since 1995/1996, international migration has always been the main driver of population growth (Statistics Canada 2016a: 16). If recent demographic trends continue, international migration may become the driver of almost all the country's population growth over the next few decades (Statistics Canada 2015a: 10).

The two major groups that make up international migration are immigrants and non-permanent residents (NPRs). An immigrant is a person who has been granted the right to live in Canada permanently by immigration authorities. An NPR is a person who has legally been granted the right to live in Canada on a temporary basis under the authority of a temporary resident permit, such as a work permit (Statistics Canada 2016b).

These two demographic groups are growing in Canada. In 2011, immigrants made up 20% of the Canadian population and could represent more than a quarter of the Canadian population in 2036 (Statistics Canada 2017a). Moreover, the number of NPRs more than tripled between 1997 and 2014, from 234,400 to 770,600 (Martel and D'Aoust 2016).

In parallel to that fast demographic growth, these two populations face a number of significant socioeconomic issues. For example, immigrants, particularly recent immigrants, are more likely to be overqualified (Uppal and Larochelle-Côté 2014), to have less success on literacy and numeracy proficiency tests (Statistics Canada 2013) and to live in a low-income situation (Picot and Hou 2014). The sharp increase in temporary resident permits in the last few years also raises some issues with respect to the actual need for temporary labour to support the Canadian economy (McQuillan 2013). The Canadian government acknowledges many of these barriers and is developing various policies to promote the integration of immigrants into Canadian society and the entry of temporary residents (Immigration, Refugees and Citizenship Canada 2016).

Many issues specific to international migration are studied using census data. However, while the census strives to provide comprehensive coverage of the population, some groups are less likely to be enumerated. This is known as undercoverage. Not only has it increased in recent decades, but it is especially pronounced among recent immigrants¹ and NPRs (Statistics Canada 2010; Statistics Canada 2015b). The relatively higher undercoverage observed for these groups affects the quality of census data by making them less representative of the population and potentially diminishing the scope of the studies conducted based on these data.

Despite the growing proportion of immigrants and NPRs in the Canadian population, the magnitude of the socioeconomic issues faced by these two groups and their undercoverage in censuses, the specific mechanisms associated with being missed in censuses remain largely unknown. The purpose of this paper is to examine the characteristics associated with being missed in the 2011 Census, for recent immigrants and NPRs, using data from the Reverse Record Check (RRC).

The next section presents issues related to census undercoverage. The data used are described in the second section. The last two sections present the 2011 omissions rates for recent immigrants and NPRs, respectively, by different characteristics available in the RRC and data from Immigration, Refugees and Citizenship Canada (IRCC).

1. Census coverage issues

Censuses are the cornerstone of a country's demographic measure. In contrast to surveys, censuses strive to provide a comprehensive enumeration of the population and its main demographic, economic and social characteristics (Bryan 2004). However, in reality, despite considerable efforts, censuses fail to count the entire population. According to the United Nations Economic Commission for Europe (UNECE): "Census designers and administrators must keep in mind that no matter how much effort is expended, complete coverage and accuracy in the census data are unattainable goals." (UNECE 2015: §366).

1. In this study, recent immigrants are defined as immigrants who arrived in the five years preceding a census.

UNECE identifies two main types of errors that can occur during a census. In general, content errors are due to inaccurate statements or incorrect records, while coverage errors result from omissions or duplication during enumeration.

Coverage errors are the ones we are interested in for this study. As mentioned above, they can be divided into two categories. Undercoverage occurs when people who should have been counted were not, while overcoverage counts individuals more than once or counts those who should not have been counted (Statistics Canada 2015b). Coverage errors can occur for a variety of reasons, such as refusals to respond to the census, individuals who are counted in the wrong place, natural disasters that affect collection operations, or collection errors in the field.

Undercoverage is generally greater than overcoverage, making it a prevalent issue for most statistical agencies and data users. If a segment of the population is undercounted, the census figures are less representative of this population, which could decrease the relevance of the census data and affect the results obtained as well as the policies developed using these data.

1.1. Undercoverage in Canadian censuses

Due to the potential consequences of coverage errors, the UNECE (2015: §373) recommends assessing the completeness and accuracy of [census] data and publishing the findings, as much as possible: “along with the initial census results, including a detailed description of the methods used. Additional results can be released at a later date”.

Several countries are therefore using different statistical operations to assess the coverage of their censuses. For example, the U.S. Census Bureau uses a Demographic Analysis (DA) and a Census Coverage Measurement (CCM) study (U.S. Census Bureau 2014), while the Office for National Statistics (ONS) in the United Kingdom conducts a Census Coverage Survey (Office for National Statistics 2012).

In Canada, Statistics Canada has performed coverage studies to measure the coverage of the Canadian censuses since 1961 (Dolson 2010). The results of the coverage studies are published on the Statistics Canada website approximately 28 months after each census and the technical report is published a few months later. The technical report provides information on the methods used to estimate coverage and the level of coverage error.

The issues relative to undercoverage in the censuses notably attracted attention in the 1980s. Some studies at the time shed light on the possible effects of census coverage errors on different demographic indicators (Malo 1981; Bourbeau and Robitaille 1980) and demographic estimates² used to apply many laws based on population counts (Fellegi 1980; Keyfitz 1989). These studies led Statistics Canada to consider adjusting census data for coverage in order to calculate demographic estimates. The series of demographic estimates based on the 1991 Census was the first series adjusted for net undercoverage. This was done by combining coverage studies data with statistical models (Dick 1995). Moreover, the 1991 Census was the first census to include NPRs in its universe.

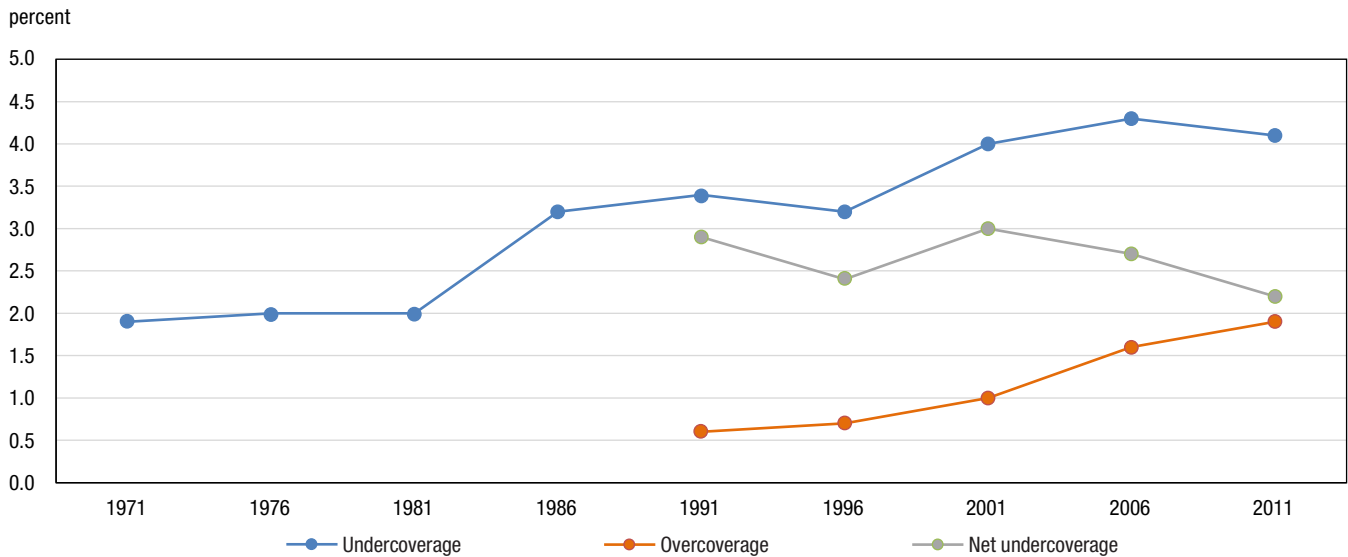
More recently, the results of the coverage studies have also been used to assess the quality of demographic estimates (Morissette and Bérard-Chagnon 2014), to produce population projections and to improve collection operations for harder-to-reach groups.

2. Demographic estimates are calculated using the latest census data adjusted for net undercoverage plus the components of population growth. These components are mainly modelled using administrative data.

1.1.1. Extent of undercoverage

While the coverage of Canadian censuses is very high, undercoverage is not insignificant. The chart below illustrates how coverage errors have changed since the 1971 Census.³

Chart 1
Census undercoverage, overcoverage and net undercoverage rates, 1971 to 2011, Canada



Source: Statistics Canada, Census Coverage Studies, 1971 to 2011.

In 2011, undercoverage was estimated at 4.1%, or twice the rate estimated in 1981. However, because overcoverage also rose, net undercoverage⁴—estimated at 2.2% in 2011—has remained constant at between 2% and 3% over time.

Technical reports on census coverage provide descriptive results for some basic demographic characteristics.⁵ Undercoverage in censuses is notably higher among young adults (above 10% among men aged 25 to 34 in 2011), men, people who are not in a couple, and people whose mother tongue is not an official language.

1.1.2. Undercoverage of recent immigrants and non-permanent residents

While some basic characteristics related to undercoverage are relatively well known, the reasons for it are generally less well understood. This is especially true for recent immigrants and NPRs. However, a number of signals indicate that these two groups are more likely to be missed in Canadian censuses.

A comparison of the numbers of recent immigrants in the National Household Survey (NHS)⁶ and from IRCC data reveals significant differences. The NHS counted approximately 1,162,900 immigrants who landed between January 1, 2006 and May 10, 2011, while IRCC data show that more than 1,345,500 permanent resident permits were granted during this period.⁷ This is a difference of about 15%. While some recent immigrants may have died or left Canada (a non-negligible phenomenon), these two demographic events cannot account for the entire gap observed between the two sources.

3. It should be noted that methods for estimating census coverage change over time (Dolson 2010). For example, linkage techniques are constantly being refined. These changes may explain some of the variations observed over time.

4. Net undercoverage is the difference between undercoverage and overcoverage.

5. For example, see Statistics Canada (2010, 2015b).

6. In 2011, the National Household Survey, a voluntary survey administered to private dwellings only, replaced the census long form. The study of recent immigrants and NPRs using this survey can potentially raise coverage and universe issues. However, the differences observed for these two populations are relatively similar to those noted in 2016.

7. The NHS and censuses only ask for the year that the immigrants landed, while immigration data provide information on the exact date of landing. For consistency purposes, the data from the two sources are compared for the period from January 1, 2006 to 2011 census day.

Undercoverage of NPRs is believed to be even greater than that of recent immigrants. The NHS enumerated 356,385 NPRs, while the Demographic Estimates Program (DEP) estimated this number on May 1, 2011 at just over 615,700, based on temporary resident permits.⁸

As shown later in this study, the results of the RRC echo the results for these two demographic groups, in that they have significantly higher rates of omission than the general population.

This situation does not seem to be unique to Canada. A number of international studies have also revealed higher undercoverage of immigrants. Net undercoverage for the 2006 and 2011 Australian censuses was higher for several immigrant groups than for the general population, especially for those born in China and India (Australian Bureau of Statistics 2007, 2012).⁹

In the United States, immigrants are also more likely to not respond to the American Community Survey (ACS)¹⁰ (Jensen et al. 2015). This is truer for undocumented immigrants and recent immigrants (Gonzalez-Barrera 2017). Recent immigrants are also thought to be more likely to be missed in an enumerated household (Fein and West 1988).

Integration into a new country is a gradual, multidimensional process that can take several years. This is why several factors can contribute to the relatively higher undercoverage of recent immigrants and NPRs.

The factors associated with responding to the census and to surveys have some similarities. Thus, the characteristics associated with survey non-response could also be related to undercoverage in censuses. In this regard, some studies indicate that immigrants are less likely to respond to social surveys and panels than the rest of the population (Ahlmarm et al. 2014; Swain and Dolson 1998; Bérard-Chagnon 2007). An analysis of data from the New Immigrant Survey (NIS), an American longitudinal survey that followed several cohorts of immigrants, found that among immigrants, those with a lower level of education, who are men, who rent their home, who have fewer children in the household, and who come from the Middle East, North Africa or East Asia are less likely to respond to the survey (Massey et al. 2017). In Canada, the Longitudinal Survey of Immigrants to Canada (LSIC) team used information such as age, sex, country of birth and immigration category in the poststratification of the survey weights. This strategy reveals the relationship between these characteristics and non-response to this survey (Statistics Canada 2003).¹¹

Language barriers faced by many recent immigrants to Canada may also contribute to higher undercoverage of this group. IRCC data show that annually, between 24.8% and 33.1% of immigrants who landed between 2006 and 2011 did not know English or French when landing (Citizenship and Immigration Canada 2012). While many immigrants learn an official language shortly after they land in Canada, their proficiency in the official languages may only be moderate. In this regard, data from the Programme for the International Assessment of Adult Competencies (PIAAC) indicate that many recent immigrants seem to have significant difficulty speaking English or French. More than one-third of immigrants who landed between 2002 and 2012 reported having, at best, fair proficiency in the language in which they took the survey's proficiency tests.¹² As a result, immigrants whose mother tongue is not an official language may have higher levels of undercoverage than the rest of the population.

Since recent immigrants and NPRs are new to the country, they may also be less aware of the Canadian census tradition, the obligation to complete the questionnaire and the importance of the results. In this sense, participating in the census could be seen as a marker of social participation in Canada. Some studies reveal that recent immigrants face certain barriers to social integration. They are thought to be less likely to vote (Uppal and Laroche-Côté 2012) or to volunteer (Thomas 2012).

8. There are two limitations to this comparison. First, in the NHS and censuses, NPRs are identified indirectly through questions on citizenship and immigrant status for the population living in private dwellings. This could somewhat affect the enumeration of NPRs. Second, the IRCC data used by the DEP deal with the number of valid permits on census day. However, some NPRs may not have been living in Canada on census day, even though they had a valid permit on that date. The 2011 RRC data suggest that almost 15% of NPRs with valid permits on May 10, 2011 were abroad or deceased. The DEP also adjusts the data for NPRs who hold multiple permits at the same time.

9. In the 2016 Census, the Australian Bureau of Statistics (2017) reported that the level of undercoverage of people born in Australia was similar to that of immigrants from several countries of origin.

10. The ACS is a mandatory survey that replaced the long-form questionnaire of the U.S. census.

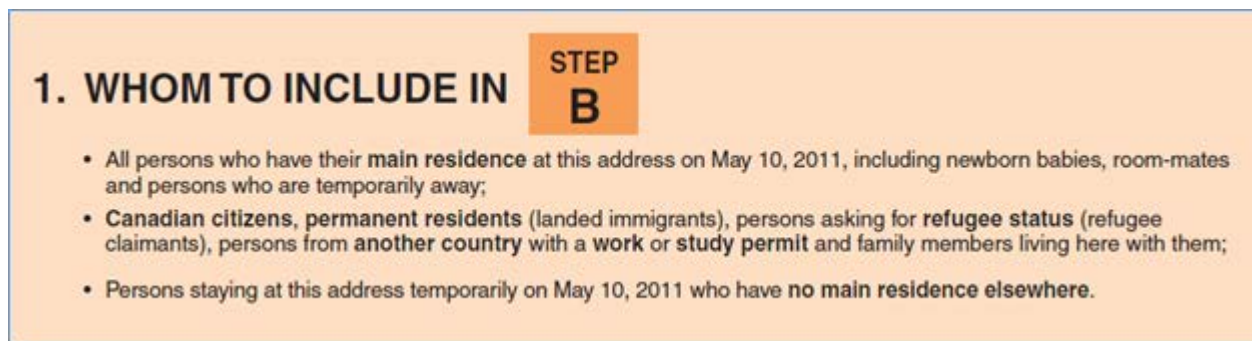
11. The characteristics used for poststratification of a survey are also selected based on other criteria.

12. The PIAAC proficiency tests could be taken in either English or French.

In addition to the above factors, recent immigrants are in a transition period, and this could contribute to their likelihood of being missed in the census. It can take immigrants several years to settle, including finding a stable job or a place to reside permanently. In that regard, recent immigrants are much more mobile than the rest of the population, especially in the first few months after landing in Canada (Houle 2007; Dion 2010). Interprovincial migration is generally associated with higher undercoverage levels (Burgess 1988). This “hypermobility” of recent immigrants could therefore increase their propensity of omission from the census because they may maintain residential ties with more than one place at the same time, or they may not be associated with a particular dwelling.

For NPRs, some limitations to the residency rules for including NPRs in the census universe can be added to the aforementioned issues. As the following figure shows, refugee claimants, work or study permit holders and their families must be included in the census (rule 2). However, if they are in Canada temporarily, only individuals whose main residence is not elsewhere must be enumerated (rule 3). Due to the temporary nature of their permit, many NPRs may believe that their main residence is in another country, especially if their temporary residence permit in Canada is short-term or was obtained shortly before census day. As a result, some NPRs might think they are not part of the census universe, and so they do not have to complete the questionnaire. Moreover, some NPRs might not fully understand the residency rules, such as passages that deal with different types of permits, or they might not read the rules at all.

Figure 1
2011 Census Form - 2A form, section on residency rules



Source: Statistics Canada, 2011 Census.

2. Data

This study is based on data from the 2011 RRC and IRCC. This section presents these two data sources and characteristics examined in this analysis.

2.1. Reverse Record Check

Since 1961, the Reverse Record Check (RRC) has measured the number of people missed by Canadian censuses. The 2011 RRC sample was drawn from the following six sampling frames:

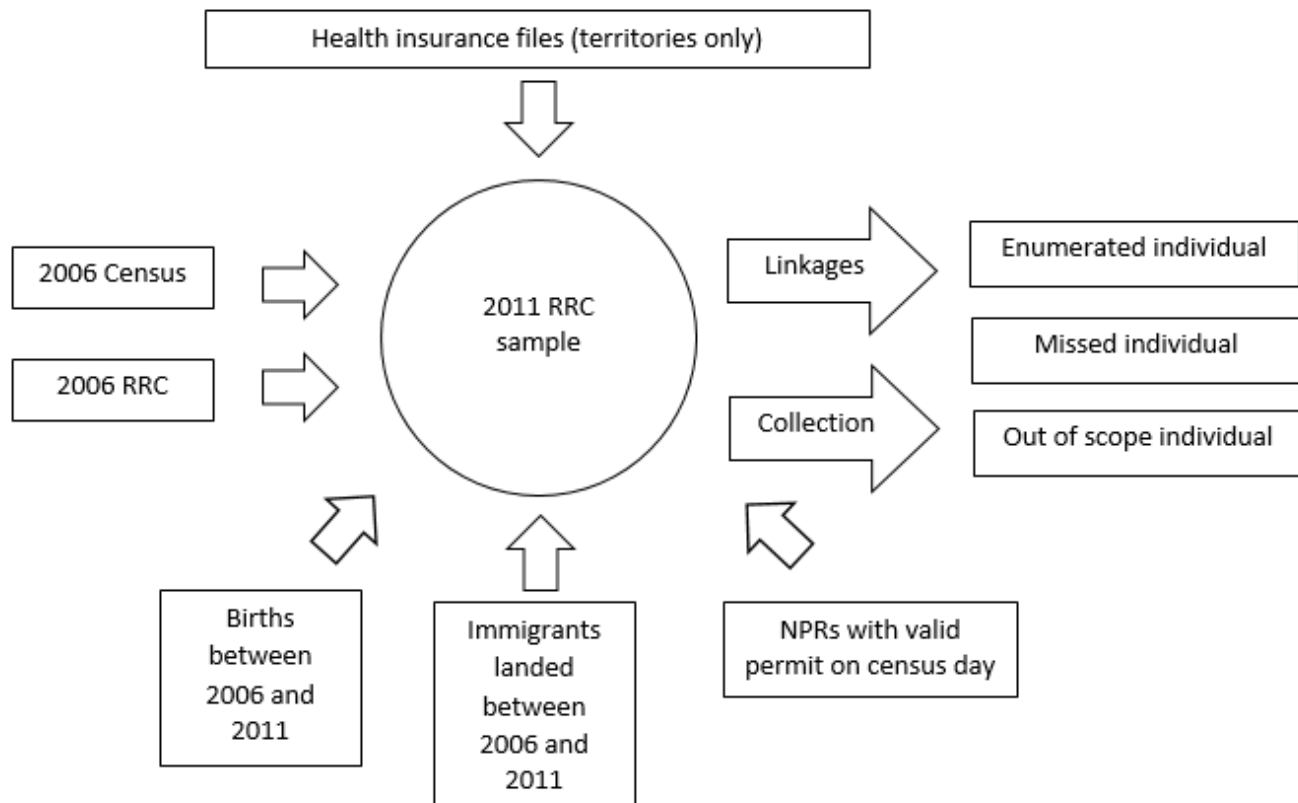
- People enumerated in the 2006 Census;
- People classified as missed by the 2006 RRC;
- Births that occurred between May 16, 2006 and May 10, 2011, obtained from vital statistics and tax data;
- Immigrants admitted between May 16, 2006 and May 10, 2011, obtained from IRCC data;
- Non-permanent residents whose permit was valid on May 10, 2011, according to IRCC data;
- People appearing in health insurance records on May 10, 2011 (for the territories only).

These frames provide a sample that is not only independent of the 2011 Census, but that also almost completely replicates the census universe.¹³

The RRC then classifies the sampled individuals according to whether they were enumerated, missed or out of scope.¹⁴ To do this, the sample is first linked with the census response database.¹⁵ Then, it locates and interviews sampled individuals who could not be linked in order to collect information to determine their status. Linkages are also made with other sources, such as death records or tax data, to support tracing.

The following figure summarizes the major steps in the development of the 2011 RRC.¹⁶

Figure 2
The 2011 RRC illustrated



Source: Statistics Canada, Reverse Record Check, 2011.

13. Certain very specific subpopulations are not covered by the RRC sampling frames. For example, Canadians who were abroad in 2006 and who returned to Canada between 2006 and 2011 are not in any of the frames. This population represents approximately 250,000 people. The census universe is described in the appendix.
 14. Out-of-scope individuals represent people who were not in the census universe on census day. This can occur, for example, for people who have died or emigrated.
 15. For operational reasons, this version of the response database differs slightly from the final version.
 16. For more details on the RRC, refer to the 2011 Census Technical Report: Coverage (Statistics Canada 2015b).

The following table shows the sample size of each 2011 RRC frame.

Table 1
Sample size and classification, by sampling frame, 2011

Survey frame	Sample size	Classification (unweighted)			
		Enumerated individuals	Missed individuals number	Out of scope individuals	Non-respondents
2006 Census	54,772	47,854	3,152	2,343	1,423
Missed individuals from 2006	5,431	3,787	737	452	455
Births	3,619	3,223	226	55	115
Immigrants	2,548	1,900	332	110	206
Non-permanent residents	1,470	670	298	82	420
Health insurance files	76,711	74,889	901	591	330

Source: Statistics Canada, 2011 Census Coverage Error Table B.1.1A.

For the purposes of this study, the immigrant and non-permanent resident frames were used. Therefore, recent immigrants are defined as those who obtained a permanent residence permit between May 16, 2006 and May 10, 2011. These dates correspond to the 2006 and 2011 census days. In addition to the operational benefits of using the immigrant frame exclusively, this definition of recent immigrants is also often used in the literature (Vézina and Houle 2017; Hudon 2015).

The immigrant and NPR frames comprise 2,548 respondents and 1,470 respondents, respectively. In addition, among these two samples, 2,232 immigrants and 968 NPRs were classified as enumerated or missed. These are sufficient numbers for conducting descriptive analyses and certain multivariate analyses. It should be noted that the number of non-respondents in the NPR frame is relatively high. While the weighting was adjusted to account for non-response, it must still be taken into account when interpreting the results.

Furthermore, it is important to note that the immigrant and NPR frames do not completely represent the number of immigrants who landed between 2006 and 2011 or the number of NPRs with a valid permit on census day. For example, some immigrants may have been living in Canada in 2006 as NPRs, and may have already been covered by the 2006 Census and missed frames. At the same time, NPRs may have had a valid permit on 2011 census day and 2006 census day, and thereby also be covered by those two frames. To avoid sampling these people more than once, the coverage studies team identified and removed them from the immigrant and NPR frames.¹⁷ This affected just over 120,000 immigrants and about 50,000 NPRs in 2011.

The bootstrap weights developed by the coverage studies team was used to ensure that the variance estimates accounted for the complex survey design.

2.1.1. Components of undercoverage

A key aspect of using the RRC for this study is that the concept of a missed person as measured by the RRC is not identical to the concept of undercoverage. According to the RRC, a person is missed if he or she is in the census target population and has not been enumerated. However, the RRC cannot determine the status of three subpopulations that are included in the census.

The first group consists of the individuals imputed by the Dwelling Classification Study (DCS). This survey estimates the number of non-responding dwellings that were occupied on census day. Following this survey, census data are adjusted for non-responding dwellings and for occupied dwellings incorrectly classified as unoccupied using whole household imputation (WHI). The people added through this statistical operation are missed since they did not complete the census questionnaire, but they are not undercovered because of the correction made by the WHI.

The second group consists of late enumerations, which cannot be included in the RRC for operational reasons.

17. This is called overlap.

The last group is made up of enumerations that were considered too incomplete to be used by the RRC to determine whether or not a person was enumerated. The RRC needs basic information from the sampled individuals, such as date of birth, in order to trace them through linkages or field collection.

Undercoverage is calculated by subtracting these three groups from the missed population.

The following table provides the counts for each component of undercoverage for 2011.

Table 2
Components of the estimation of undercoverage error, 2011

Elements	Components of undercoverage	Number
(1)	Missed individuals	2,828,228
(2) = (3) + (4) + (5)	Census population that cannot be identified in the RRC as being enumerated ¹	1,436,257
(3)	Persons imputed by the Dwelling Classification Study ¹	780,737
(4)	Late enumerations ¹	95,757
(5)	Incomplete enumerations according to the RRC ¹	559,763
(6) = (1) - (4) - (5)	Collection undercoverage	2,172,708
(7) = (1) - (2)	Undercoverage	1,391,971

1. These data are counts and not estimates.

Source: Statistics Canada, Reverse Record Check, 2011.

The total number of missed people is approximately twice the undercoverage. The difference between the two groups stems mainly from DCS imputations and incomplete enumerations.

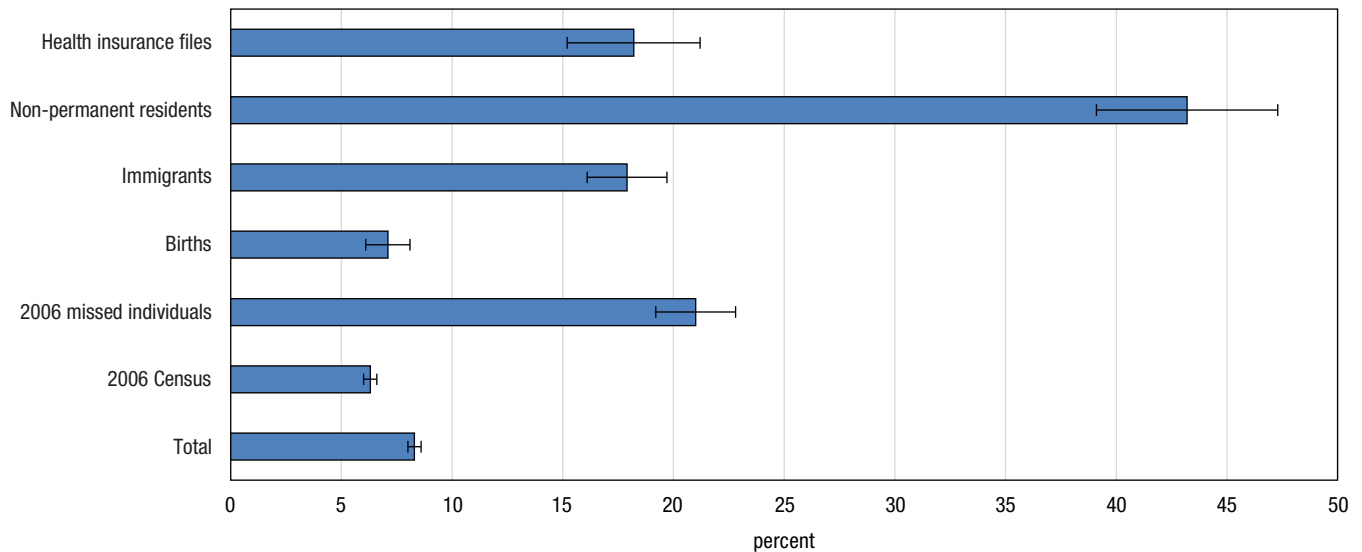
This study examines the population missed from the census and not undercoverage because it is based on the RRC and because it is impossible to determine the immigrant or NPR status of many individuals in the three groups mentioned above. For example, the fact that some enumerations are incomplete greatly limits the possibility of using record linkages with IRCC data to identify immigrants and NPRs. The results presented here represent to some extent an upper bound relative to the undercoverage of recent immigrants and NPRs.

The missed rate was calculated using a ratio of the number of missed to the sum of this population and the number of enumerated individuals estimated by the RRC. Out-of-scope individuals are excluded from the analysis as they were no longer in the census universe on census day.

2.1.2. Missed rates by survey frame

Examining the missed rates of the different survey frames reveals that recent immigrants and NPRs are more likely to be missed in the 2011 Census than the rest of the population. The following chart illustrates this.

Chart 2
Missed rates by survey frame, 2011



Note: Confidence intervals are calculated at a 95% confidence level.

Source: Statistics Canada, Reverse Record Check, 2011.

The overall missed rate in the 2011 Census was just over 8%.¹⁸ However, respondents in some frames had much higher missed rates, with the highest rate in the NPR frame, at over 40%. The missed frame and immigrant frame came next, with the missed rate from the two hovering around 20%. One consequence of the higher missed rates from these frames is that 13.6% of persons missed came from the immigrant and NPR frame, though these two frames accounted for only 3.6% of the RRC population. These results are consistent with data from the 2006 RRC (Statistics Canada 2010).

2.2. Immigration, Refugees and Citizenship Canada data

The IRCC¹⁹ is the department responsible for issuing permanent and temporary residence permits under the *Department of Citizenship and Immigration Act*. The IRCC sends files to Statistics Canada every month essentially for the computation of demographic estimates. As previously mentioned, these data are used to create the RRC immigrant and NPR frames. Some of the information in the IRCC data is relevant for this study.

2.3. Characteristics examined

The RRC data contain a limited number of demographic characteristics. As a result, the majority of the characteristics studied here come from IRCC data. The characteristics examined in this study are largely based on those identified in the literature. It should be noted that some characteristics are only available for only one of the two studied groups.

18. The undercoverage rate in 2011 was 4.1% for the entire country. A table in the appendix shows the missed rates by province, age group and sex.

19. This department was previously called Citizenship and Immigration Canada (CIC).

The list below presents the characteristics examined in this study.

Characteristics examined in this study:

Recent immigrants

- Immigrant category
- Sex
- Age on census day
- Level of education at landing
- Year of landing
- Region of birth
- Province of residence on census day¹
- NPR status prior to landing
- De facto marital status on census day¹
- Mother tongue at landing
- Knowledge of official languages at landing
- Interprovincial migration since landing

Non-permanent residents

- Type of temporary residence permit
- Length of stay in the country
- Sex
- Age on census day
- Region of birth
- Province of residence on the most recent permit
- Holder of several temporary residence permits
- First permit held
- Mother tongue on census day¹
- De facto marital status on census day¹

1. Characteristics from the RRC for missed persons and from the census for enumerated individuals.

Some characteristics were derived indirectly.

NPR status prior to landing refers to whether the immigrant already held one or more temporary resident permits before moving to the country as an immigrant.

Information on interprovincial migration of immigrants is obtained indirectly by comparing the intended province of residence in the IRCC data with the province of residence in 2011. This approach has two limitations. First, the intended province of residence does not always reflect the actual province where immigrants landed (Bonikowska et al. 2015). Just under 10% of immigrants admitted between 2011 and 2015 who completed a tax return in the year that they landed did not have the same province of residence in both sources (Bérard-Chagnon 2018). If this phenomenon could be the consequence of the high interprovincial mobility of recent immigrants, it could also result from a conceptual difference between the intended province and the actual landing province. This situation could contribute to slightly overestimating interprovincial migration by introducing a “false” migration between the intended province and the landing province. Second, the period during which immigrants can migrate depends on the year of landing. Immigrants who arrived in 2006 had more time to change provinces than those who arrived a few months before the census.

Length of stay is the length of time that the NPR has a temporary permit on census day without a continuous break of 30 days, regardless of the type of permit. This period corresponds to the period used by the DEP to calculate the net NPR estimates.

Just over one-quarter of NPRs in the RRC sample had more than one valid permit on census day. In this situation, if they are different types of permits, the type of permit is determined by following the DEP hierarchy: refugee claimant, work permit, study permit or minister’s permit.

The characteristics available in the IRCC files correspond to the characteristics at the time the permit was issued. Some of them could have changed between then and census day. For this reason, the results for characteristics that can change rapidly over time, such as knowledge of official languages, must be interpreted with some caution.

The data on mother tongue compiled by the RRC combines non-official languages into one category. However, given the very diverse origins of immigrants, this represents a significant limitation for the analysis. For this reason, information from the IRCC data was used for immigrants even if it is also available in the RRC. However, for NPRs, the mother tongue identified in the RRC data and the census was used because this information is not available in the IRCC files currently provided to Statistics Canada.

Finally, some characteristics were coded differently for the immigrant and NPR analysis because of the sometimes very different distributions between the two groups and the number of observations available in the two frames.

3. Recent immigrants missed in the 2011 Census

This section presents the results of the evaluation of the missed rates for recent immigrants by different characteristics. It begins with a presentation of the missed rates for the characteristics examined in the study. Then, the results of regression models built to isolate the effect of each factor are presented.

3.1. Missed rates by characteristic

The table below presents the missed rates of recent immigrants based on their characteristics.

Table 3
Distribution of immigrants in the RRC immigrant frame and missed rates, Canada, 2011

Characteristic	Distribution	Missed rates
	percent	
2011 RRC	...	8.3
Immigrant frame	100	17.8
Province of residence¹		
Atlantic	1.9	12.6
Quebec	18.6	12.5
Ontario (ref.)	43.2	19.4
Prairies	19.1	18.1
British Columbia	17.2	20.0
Age group on census day		
0 to 9 years	11.2	14.6
10 to 19 years	14.2	14.1
20 to 29 years	18.7	21.0
30 to 39 years (ref.)	27.0	19.4
40 to 49 years	16.0	16.2
50 years and over	12.9	18.9
Sex		
Men	48.0	19.0
Women (ref.)	52.0	16.7
Region of birth		
Europe (ref.)	16.0	11.8
Africa	13.7	17.2
Asia or Oceania	56.4	20.2***
North America, Central America or South America	13.9	15.8
De facto marital status on census day		
Single, widowed, separated or divorced	42.9	18.7
Married or common law (ref.)	57.1	16.9
Mother tongue at landing		
English or French (ref.)	13.0	14.8
Arabic	9.8	22.7
Mandarin	9.4	18.0
Tagalog	9.1	15.0
Punjabi	7.2	31.1**
Spanish	6.4	12.2
Other languages	45.4	16.9
Knowledge of official languages at landing		
Yes (ref.)	69.0	19.2
No	31.0	14.9
Level of education at landing		
High school or less	53.3	16.4
Postsecondary studies	14.3	19.8
Undergraduate degree	22.1	18.5
Postgraduate studies (ref.)	10.4	21.0
Interprovincial migration		
No (ref.)	90.2	17.4
Yes	9.8	22.2
Year of landing		
2006 (ref.)	12.0	11.4
2007	17.7	15.6
2008	19.2	14.6
2009	20.3	13.8
2010	23.5	23.4**
2011	7.4	35.6***
Immigrant category		
Economic (ref.)	57.3	19.7
Family class	28.3	17.0
Refugee	14.5	12.3**
Non-permanent status prior to landing		
Has never been an NPR (ref.)	85.2	18.6
Has already been an NPR	14.8	13.6

... not applicable

** significantly different from the reference category ($p < 0.05$)

*** significantly different from the reference category ($p < 0.01$)

1. The RRC immigrant frame does not contain any immigrants who live in a territory.

Sources: Statistics Canada, 2011 Reverse Record Check and Immigration, Refugees and Citizenship Canada, Permanent Resident Landing File.

Some characteristics of recent immigrants are statistically associated with being omitted.

The region of origin and mother tongue are closely related to being missed in the 2011 Census. Close to 20% of immigrants born in Asia or Oceania were missed in the 2011 Census, a statistically higher proportion than that of immigrants born in Europe (11.8%). This is mostly due to immigrants born in India (28.2%). At the same time, immigrants whose mother tongue is Punjabi, a language spoken in India and Pakistan, were much more likely to be missed (31.1%) than immigrants whose mother tongue was an official language. This is not unique to Canada. People born in Asia were also more likely than the rest of the population to be missed in the 2006 and 2011 Australian censuses (Australian Bureau of Statistics 2007, 2012). Two factors may account for this in Canada. First, mastering Canada's official languages could be a considerable barrier for these immigrants. PIAAC data suggest that about 40% of immigrants who landed between 2002 and 2012 and whose mother tongue is Punjabi reported having, at best, fair proficiency in the language of the interview. This compares with just under 30% of other immigrants.²⁰ Although census questionnaires are translated into multiple languages, respondents must request one, which may be harder for people whose mother tongue is neither English nor French who have lower proficiency in an official language. In addition to language skills, cultural factors may also account for the higher probability for these immigrant groups of being missed. The social integration in Canada of Sikhs, Buddhists and Hindus—groups generally associated with Punjabi—is thought to be slower than that of other immigrant groups (Reitz et al. 2009). This study examined different social integration markers, such as the sense of belonging to Canada, reporting Canadian identity, and voting in the most recent federal election, using data from the Ethnic Diversity Survey (EDS). One of the highlights of the analysis is that “Muslims, Sikhs, Buddhists and Hindus are slower to integrate socially, mainly because they are mostly racial minorities.”

The likelihood to be missed in the 2011 Census follows a clear gradient based on the year of landing. Immigrants who settled in 2011, i.e., just a few months before census day, had a missed rate of 35.6%. This proportion is double that for the entire immigrant frame (17.8%) and four times higher than the entire RRC sample (8.3%). Immigrants who settled in Canada in 2010 had a missed rate of 23.4%. At the other end of the spectrum, 11.4% of immigrants who landed in 2006 were missed. This proportion is relatively close to that of the entire population. Immigrants who landed shortly before census are usually less advanced in their settlement process in Canada. The higher missed rates for these immigrants could be a reflection of that situation.

Simultaneously analyzing the year of landing and having been an NPR in the past sheds new light on the link between the year of landing and the propensity for being missed. In general, immigrants who were NPRs before getting their permanent residence permit were slightly less likely to be missed than immigrants who had never had an NPR permit.²¹ However, when we also consider the year of landing, immigrants who landed in 2008 or 2009 and who had previously been temporary residents had a missed rate of 6.9%, compared with 15.4% for immigrants who had never been an NPR. Although the differences are only statistically significant for two years, they tend to support the assumption mentioned in the previous paragraph.

Interestingly, refugees (12.3%) were less likely than immigrants from the economic categories (19.7%) to be missed in the 2011 Census. Yet, these immigrants tend to have different characteristics from immigrants in the other categories, who are selected based on criteria likely to foster their integration into the country, such as level of education, knowledge of the official languages, or having relatives in Canada. Two reasons could explain the lower likelihood for refugees to be missed. First, refugees tend to be in contact with the Canadian government more often than immigrants of other categories. Refugees usually maintain this contact after getting permanent residence because the IRCC has several programs to help them integrate into Canadian society. Some refugees are also sponsored by individuals or organizations that can also help them settle in Canada. Second, refugees land in Canada as immigrants because of a well-founded fear of returning to their home country, which could foster a different sense of belonging to Canada from that among other immigrant groups. This sense of belonging to Canada could be a factor in reducing their likelihood to be missed.

Some dynamics associated with being missed in the 2011 Census are different between recent immigrants and the general population.²² This is notably the case for age where the missed rates for immigrants were relatively similar from one group to another. For example, they rose from 14.1% among immigrants aged 10 to 19 years to 21.0%

20. This difference is not statistically significant at the 95% confidence level, but it is at the 90% confidence level.

21. However, this gap is not statistically significant, even at the 90% confidence level.

22. The missed rates by age group, province, and sex for the entire population are provided in the appendix.

among those aged 20 to 29. However, for the general population, the missed rates among adults in their twenties were much higher than in other age groups. They were above 15% for individuals aged 25 to 29, nearly twice that of the entire population. Young adults are in a phase in their lives marked by frequent transitions, such as moving away from their parents and joining the labour market. Such situations could make it more likely for the general population to be missed in the census. However, since recent immigrants are very often in a transition period, regardless of their age, this may have less of an influence on the missed rates of this subpopulation.

3.2. Multivariate analysis

The table below presents the results of logistic regression models that examine the relationship between the different characteristics of recent immigrants and the propensity for being missed in the 2011 Census. The odds ratios of univariate models only include the characteristic studied, while the odds ratios of multivariate models take other factors into account.

Table 4
Odds ratios of the propensity for being missed for the immigrant frame, 2011

Characteristics	Univariate model	Multivariate model
	odds ratios	
Province of residence¹		
Atlantic	0.60	0.55*
Quebec	0.60**	0.49**
Ontario (ref.)	1.00	1.00
Prairies	0.92	0.96
British Columbia	1.04	1.10
Age group on census day		
0 to 9 years	0.71	0.43**
10 to 19 years	0.68	0.43***
20 to 29 years	1.10	0.93
30 to 39 years (ref.)	1.00	1.00
40 to 49 years	0.80	0.78
50 years and over	0.97	0.98
Sex		
Male	1.17	1.16
Female (ref.)	1.00	1.00
Region of birth		
Europe (ref.)	1.00	1.00
Africa	1.55	1.33
Asia or Oceania	1.90***	1.69**
North, Central or South America	1.40	2.04*
De facto marital status on census day		
Single, widowed, separated or divorced	1.11	1.93***
Married or common-law (ref.)	1.00	1.00
Mother tongue at landing		
English or French (ref.)	1.00	1.00
Arabic	1.69*	2.32**
Mandarin	1.26	1.33
Tagalog	1.01	0.69
Punjabi	2.58***	2.37**
Spanish	0.79	0.71
Other languages	1.16	1.30
Knowledge of official languages at landing		
Yes (ref.)	1.00	1.00
No	0.74**	0.67**
Level of education at landing		
High school or less	0.74	0.99
Postsecondary studies	0.93	1.29
Undergraduate studies	0.85	0.97
Postgraduate studies (ref.)	1.00	1.00
Interprovincial migration		
No (ref.)	1.00	1.00
Yes	1.36	1.33

Table 4
Odds ratios of the propensity for being missed for the immigrant frame, 2011

Characteristics	Univariate model	Multivariate model
	odds ratios	
Year of landing		
2006 (ref.)	1.00	1.00
2007	1.44	1.51
2008	1.33	1.33
2009	1.24	1.36
2010	2.37***	2.74***
2011	4.31***	5.38***
Immigrant category		
Economic (ref.)	1.00	1.00
Family class	0.84	0.79
Refugee	0.57**	0.59**
Non-permanent status prior to landing		
Has never been an NPR (ref.)	1.00	1.00
Has already been an NPR	0.69*	0.56**
	percentage	
R-squared (Cox and Snell)	...	7.4%
	number	
Number of observations (unweighted)	...	2,232

... not applicable

* significantly different from the reference category ($p < 0.10$)

** significantly different from the reference category ($p < 0.05$)

*** significantly different from the reference category ($p < 0.01$)

1. The RRC immigrant frame does not contain any recent immigrants in the territories.

Note: Univariate models are built only from the mentioned characteristic, while multivariate models contains all characteristics.

Sources: Statistics Canada, 2011 Reverse Record Check and Immigration, Refugees and Citizenship Canada, Permanent Resident Landing File.

Overall, the results of the multivariate model and the descriptive analysis tend to be similar.

When accounting for the effect of other factors, including knowledge of official languages at landing, recent immigrants whose mother tongue is Punjabi and whose birth country is in Asia or Oceania were still more likely to be missed in the 2011 Census. Moreover, when taking other factors into account, recent immigrants with Arabic as their mother tongue were also more likely to be missed. Just under a quarter of these immigrants were missed in 2011. These results tend to support the assumption that these groups may face particular obstacles that could explain their higher rates of being missed.

Immigrants who landed in 2010 or 2011 were still much more likely to be missed than those who landed in 2006. In addition, when accounting for other factors, immigrants who were not NPRs before landing in the country as immigrants were also more likely to be missed. These results back the assumption that the time spent in the country as a temporary or permanent resident is an important correlate of being missed in the 2011 Census.

Refugees were still less likely to be missed than immigrants from the economic categories. Some potential factors that decrease this likelihood include the context in which refugees were admitted to Canada, their sense of belonging to the country, and the contact they have with the Canadian government and various organizations.

The multivariate analysis also reveals a correlation between knowledge of official languages and being missed among recent immigrants. However, the direction of this correlation is very interesting. When accounting for other factors, immigrants who did not know English or French at landing were less likely to be missed than those who knew English, French or both official languages.²³

Different factors may explain this result. First, because of the critical importance of learning an official language to integrate into Canada, recent immigrants are very likely to take language courses organized by the IRCC or by private, public or community organizations.²⁴ According to LSIC data, 45% of immigrants reported having taken

23. Interaction terms between knowledge of official languages, mother tongue, immigrant category and year of landing were tested. These terms are not statistically significant at the 95% confidence level. Alternative models were also built from subsamples to evaluate the model's robustness. The results were very similar to those of the full model.

24. Some courses are also free.

language training in English and 10% in French in their first four years in the country (Grondin 2007). Immigrants who took these courses may be more exposed to information about life in Canada, such as the need to complete the census, or be more inclined to collaborate with the federal government.

Second, thanks in part to language training, recent immigrants usually learn one of the two official languages quickly. As a result, knowledge of the official languages at landing, as reported in IRCC data, may not be fully representative of the level of knowledge on census day, particularly for immigrants who claimed to not know English or French at landing. LSIC data showed that six months after arriving, i.e., in cycle 1, 58% of immigrants spoke English well or very well. This proportion rose to nearly 70% starting in the second cycle of the LSIC, i.e., two years after arrival (Grondin 2007). Data from the Refugee Resettlement Project also point to immigrants learning the official languages quickly a few years after landing. According to these data, which are about refugees from Southeast Asia, 16.3% of the refugees in the survey did not speak English when they first completed the survey, i.e., no more than two years after landing. This proportion fell to 8.4% approximately four years after they landed (Hou and Beiser 2006).

The concept of knowledge of official languages and its measurement are different in the IRCC and census data. Not only does IRCC's information include knowledge of official languages at landing, but immigrants from certain economic categories must also pass language proficiency tests by an IRCC-approved organization to demonstrate their proficiency in the official languages.²⁵ On the other hand, census information consists of a self-reported assessment of knowledge of official languages and is often obtained by proxy.²⁶ However, the perception recent immigrants have of knowledge of official languages on a dichotomous scale like that of census may not fully reflect the complexity of the language learning process. As mentioned earlier, PIAAC data have shown that many recent immigrants report a partial proficiency in the official languages. Some immigrants may think they can conduct a conversation in an official language for the census, but did not get a passing mark in the language tests requested by the IRCC.²⁷

Some methodological factors might also explain this result. For example, recent immigrants who did not know English or French at landing may have different characteristics than other immigrants, characteristics that cannot be measured using the data in this study. Often referred to as missed bias, this could result in certain statistical associations not moving in the expected direction (Schuit et al. 2013).

A similar situation was observed in the NIS (Massey et al. 2017). The American survey data revealed that, when accounting for a number of other factors, the probability of responding to the second wave of the survey was lower among immigrants who said they understood English very well than among immigrants who did not understand it at all. However, the study does not provide an explanation for this discrepancy.

While the results show different dynamics for recent immigrants, the results by age, marital status and province of residence also reflected the mechanisms observed for the entire population.

The results of the regression model report links between the probability of being missed and age, which were not as obvious in the descriptive analysis. Recent immigrants aged 19 or under were less likely than those between 30 and 39 years to be missed. These results tend to reflect the dynamics observed for the general population, where young adults generally had much higher missed rates than those in other age groups.

At the same time, immigrants who were not in a couple on census day were more likely to be missed than those who were in a couple. These results were also consistent with the undercoverage observed in Canadian censuses (Statistics Canada 2015b).

Finally, the regression analysis also illustrates that immigrants who were residing in Quebec were less likely to be missed than those residing in Ontario. Quebec generally has lower missed rates than the national average, which could also be seen among recent immigrants.

25. This is notably the case for the Skilled Worker Program, in the Canadian Experience Class, and the Provincial Nominee Program. For more details, see the [Help Centre](#) (page consulted: 2017-12-01).

26. Only one census questionnaire is sent for each household.

27. Two charts in the appendix compare knowledge of the official languages between the 2011 Census and IRCC data. The differences observed in these charts may be the result of differences between the two data sources and of recent immigrants learning one or both official languages.

4. Non-permanent residents missed in the 2011 Census

This section presents the results of the evaluation of NPR missed rates for different characteristics. As in the previous section, it begins with a presentation of the missed rates for the characteristics examined in the study. Then, the results of regression models built to isolate the effect of each factor are presented. Due to the smaller sample size, the comments in this section not only focus on statistically significant results at the 95% confidence level, but also on those significant at the 90% level.

4.1. Missed rates by characteristic

The following table presents the missed rates of NPRs based on their characteristics.

Table 5
Distribution of NPRs in the RRC non-permanent resident frame and missed rates, Canada, 2011

Characteristics	Distribution	Missed rates
	percent	
2011 RRC	...	8.3
NPR frame	100	43.2
Province of residence¹		
Atlantic	3.7	48.2
Quebec	17.9	36.4
Ontario (ref.)	40.0	45.0
Prairies	17.7	40.6
British Columbia	20.6	47.0
Age group		
Under 20 years	15.9	46.7
20 to 24 years	24.1	49.4*
25 to 29 years	20.1	48.8
30 to 34 years (ref.)	13.0	31.4
35 years and over	27.0	37.1
Sex		
Male	49.3	44.6
Female (ref.)	50.7	41.9
Region of birth		
Europe	21.8	46.4
Africa	9.6	40.7
Asia or Oceania	48.7	43.9
United States (ref.)	6.3	48.5
Central or South America	13.7	34.8
De facto marital status on census day		
Single, widowed, separated or divorced	69.0	47.3**
Married or common-law (ref.)	31.0	32.7
Mother tongue on census day²		
English (ref.)	21.7	47.0
French	9.2	37.0
Non-official language	69.1	42.8
First NPR permit		
No (ref.)	63.7	41.7
Yes	36.3	46.0
Holds more than one permit		
No (ref.)	71.0	45.0
Yes	29.0	39.1
Length of stay in Canada		
0 to 6 months	22.4	53.1*
6 to 12 months	20.1	50.4
12 to 24 months	24.4	38.0
24 months or more (ref.)	33.0	36.4
Type of permit		
Refugee status claimant	20.5	31.5*
Work permit (ref.)	52.4	46.2
Study or minister's permit ³	27.2	46.5

... not applicable

* significantly different from the reference category ($p < 0.10$)

** significantly different from the reference category ($p < 0.05$)

1. The RRC NPR frame does not contain any NPRs in the territories.

2. Due to the sample size, respondents whose mother tongue was English and a non-official language or French and a non-official language were combined with English- or French-mother-tongue respondents, respectively. In addition, respondents whose mother tongues were English and French (with or without another mother tongue) were combined with English-mother-tongue respondents. The latter applied to two respondents.

3. Because very few minister's permits are issued, they were combined with study permits. These cases represent less than 1% of the NPR frame sample.

Sources: Statistics Canada, 2011 Reverse Record Check and Immigration, Refugees and Citizenship Canada, files on refugee claimants, work permits, study permits and temporary residents.

While the overall missed rate of NPRs was above 40% in 2011, rates sometimes fluctuate significantly depending on their characteristics.

As with the general population, age and marital status were correlated with being missed. Nearly half of NPRs aged 20 to 24 were missed in the 2011 Census, compared with just under one-third of NPRs 30 to 34 years. Furthermore, NPRs who were not in a couple had a missed rate of almost 50%, almost 15 percentage points higher than that of NPRs who were in a couple.

The likelihood of being missed followed a very clear gradient based on the length of stay in the country. More than half of the NPRs who were granted temporary residence less than six months before census day were missed. On the other hand, 36.4% of NPRs who were granted temporary residence in Canada two or more years before census day were missed. Due to the residency rules mentioned earlier, NPRs whose stay began shortly before the census might be more likely to consider their usual residence to be outside the country, and therefore not respond to the census. Conversely, NPRs whose residency permit has been valid for at least two years might be more likely to consider their usual place of residence to be in the country. NPRs who received their permit shortly before the census may also be in a transition period following their very recent arrival in the country, which could increase the propensity for being missed.

The type of permit also plays a role in the likelihood of being missed. Refugee status claimants were less likely to be missed (31.5%) than NPRs who held a work permit (46.2%). There could potentially be three reasons for this. First, refugee status claimants have a very different profile from other NPRs. They were older and more likely to have had the right to live in Canada on a temporary basis for a long time, two factors that decreased their likelihood to be missed. Second, refugee status claimants must keep contact with the Canadian government on a regular basis for the processing of their refugee claim. As a result, they may be more likely to collaborate with the government for other purposes, such as completing the census. Third, refugee claimants often come from countries where their situation was difficult, so they may be less likely to consider keeping a usual place of residence in their home country. Finally, the results observed for refugee status claimants and immigrants in the refugee category are consistent with those of the other groups of NPRs and immigrants. This result was expected because the majority of refugee status claimants who get a permanent resident permit obtain it in the refugee category.

4.2 Multivariate analysis

The following table presents the results of logistic regression models that examine the relationships between the characteristics of NPRs and the propensity for being missed in the 2011 Census. The odds ratios of the univariate models only include the characteristic studied, while the odds ratios of the multivariate model take other factors into account.

Table 6
Odds ratios of the propensity for being missed for the NPR frame, 2011

Characteristics	Univariate models	Multivariate model
	odds ratios	
Province of residence¹		
Atlantic	1.14	0.92
Quebec	0.70	0.80
Ontario (ref.)	1.00	1.00
Prairies	0.84	0.72
British Columbia	1.09	0.91
Age group		
Under 20 years	1.91*	1.77
20 to 24 years	2.14**	1.95*
25 to 29 years	2.08**	1.88*
30 to 34 years (ref.)	1.00	1.00
35 years and over	1.30	1.35
Sex		
Male	1.12	1.06
Female (ref.)	1.00	1.00
Region of birth		
Europe	0.92	0.69
Africa	0.73	0.86
Asia or Oceania	0.83	0.77
United States (ref.)	1.00	1.00
Central or South America	0.57	0.63
De facto marital status on census day		
Single, widowed, separated or divorced	1.85**	1.64*
Married or common-law (ref.)	1.00	1.00
Mother tongue on census day²		
English (ref.)	1.00	1.00
French	0.66	0.77
Non-official language	0.84	0.98
First NPR permit		
No (ref.)	1.00	1.00
Yes	1.19	0.60*
Holds more than one permit		
No (ref.)	1.00	1.00
Yes	0.78	0.84
Length of stay in Canada		
0 to 6 months	1.98***	2.24**
6 to 12 months	1.78*	2.09*
12 to 24 months	1.07	1.11
24 months or more (ref.)	1.00	1.00
Type of permit		
Refugee status claimant	0.54*	0.53
Work permit (ref.)	1.00	1.00
Study or minister's permit ³	1.01	0.77
R-squared (Cox and Snell)	percent	7.0
	number	
Number of observations (unweighted)	...	937

... not applicable

* significantly different from the reference category ($p < 0.10$)

** significantly different from the reference category ($p < 0.05$)

*** significantly different from the reference category ($p < 0.01$)

1. The RRC NPR frame does not contain any NPRs in the territories.

2. Due to the sample size, respondents whose mother tongue was English and a non-official language or French and a non-official language were combined with English- or French-mother-tongue respondents, respectively. In addition, respondents whose mother tongues were English and French (with or without another mother tongue) were combined with English-mother-tongue respondents. The latter applied to two respondents.

3. Because very few minister's permits are issued, they were combined with study permits. These cases represent less than 1% of the NPR frame sample.

Note: Univariate models are built only from the characteristic mentioned, while the multivariate model contains all characteristics.

Sources: Statistics Canada, 2011 Reverse Record Check and Immigration, Refugees and Citizenship Canada, files on refugee claimants, work permits, study permits and temporary residents.

Overall, as evidenced by the odds ratios produced using the regression models, the factors associated with being missed in the 2011 Census are quite similar to those in the descriptive stage when the effect of other factors is taken into account.

Taking into account other factors, respondents aged 20 to 24 years and 25 to 29 years were still significantly more likely to be missed than those aged 30 to 34. This was also the case for NPRs who were not in a couple.

The links between the length of stay in the country and the missed rates observed at the descriptive stage remain statistically significant even when considering other characteristics. For example, NPRs who were granted temporary residence status in Canada less than one year before the 2011 Census were more likely to be missed than those who were granted temporary residence at least two years before census day. This result supports the assumption that NPRs who had the right to temporarily live in Canada for a shorter time would be more likely to consider their usual residence to be abroad, and therefore not respond to the census.

Considering several characteristics also sheds light on new associations between certain characteristics and the propensity for being missed in the 2011 Census.

NPRs whose temporary residence permit was their first permit were less likely to be missed than NPRs who had obtained other permits in the past. This differs from the observations in the descriptive stage, where 46.0% of NPRs with a first permit were missed, compared with 41.7% of those who have had a permit in the past. This difference was not statistically significant. NPRs with a first permit differed from other NPRs because they were more likely to have obtained the right to live in Canada temporarily not long before the census. When accounting for other factors, the association between having a first permit and the propensity for being missed in the 2011 Census is apparent. However, it is difficult to explain this association.²⁸

Finally, when taking the effect of various factors into account, refugee status claimants no longer had a statistically higher propensity for being missed than NPRs who held a work permit. Accounting for specific characteristics of NPRs in this category—such as age and length of stay in Canada—could therefore largely explain the lower missed rates observed for refugee status claimants.

5. Conclusion

Recent immigrants and NPRs are growing segments of the Canadian population. While censuses strive to provide comprehensive coverage of the population, these groups are less likely to be enumerated. The purpose of this analysis was to examine the factors associated with the propensity for being missed in the 2011 Census for recent immigrants and NPRs using RRC data.

According to the RRC, just under 20% of recent immigrants and more than 40% of NPRs were missed by the 2011 Census, compared with 8.3% of the total population. While missed rates are not a direct reflection of undercoverage but are rather one of the elements of undercoverage, they are still a clear sign that these two populations could have been less covered than the rest of the population in the 2011 Census.

Some characteristics of recent immigrants and NPRs are associated with the propensity for being missed.

First of all, this study highlighted the close links between the year at landing and the propensity of recent immigrants for being missed. More than one-third of immigrants who settled in 2011 and almost a quarter of those who settled in 2010 were missed in the 2011 Census. Immigrants who held a temporary residence permit before being admitted as immigrants were also slightly less likely to be missed, when the effect of other characteristics are accounted for.

About 30% of recent immigrants whose mother tongue was Punjabi were missed in the 2011 Census. The multivariate analysis also highlighted the higher likelihood for immigrants with an Arabic mother tongue to be missed. These results might stem from cultural factors specific to immigrants from certain countries, notably regarding social integration to Canada.

The context in which immigrants are admitted to the country might also affect the likelihood to be missed in the census. While a fifth of immigrants were missed in 2011, 12.3% of refugees were missed. These immigrants fled very difficult situations in their home country and usually maintain contacts with the Canadian government on a regular basis. For these reasons, they may have a better relationship with the government.

28. The p-value of the statistical test for this characteristic is statistically significant only at the 90% confidence level.

Multivariate analysis identified additional correlates of the likelihood for recent immigrants to be missed. Immigrants who were in a couple, who were living in Quebec and who were under the age of 20 were less likely to be missed. These results are similar to the ones observed for the entire Canadian population.

Knowledge of the official languages is a very important marker of integration into a new country. Recent immigrants who reported not speaking English or French at landing seem to be less likely to be missed. This could be because they take language training classes, which might introduce them to the topic of the census, because they learn an official language shortly after landing, and because of differences in concepts and measurement of concepts between census data and IRCC data. It would be very relevant to examine the 2016 RRC data when they become available to see if there is the same finding.

For NPRs, the duration of the permit held by NPRs played a role in being missed in the 2011 Census. For example, more than half of NPRs who received their temporary resident permit no more than six months before the census were missed in 2011. Because they arrived in the country very recently, these NPRs may consider their usual residence to still be in their country of origin, and therefore not consider themselves part of the census universe. Conversely, 36.4% of NPRs who were granted temporary residence two or more years before census day were missed.

Missed rates for NPRs were above 45% for NPRs who were not in a couple. NPRs in their twenties were also more likely to be missed. As with immigrants, these results tend to be similar to the results of the general population.

When accounting for the effect of other factors, NPRs who held their first temporary permit were less likely to be missed than those who already had a permit in the past. This is difficult to interpret and could be studied a second time when the 2016 RRC data become available. It should be noted that the sample from the NPR frame was increased in 2016; as a result, more precise analyses could be conducted for this subpopulation when the data become available.

Refugee status claimants were less likely to be missed than other NPRs. However, the multivariate analysis revealed that much of this difference could come from the specific characteristics of refugee claimants, including their length of stay in the country.

The results of this study have some analytical and methodological implications.

First, they indicate that census data on recent immigrants and NPRs have some coverage gaps. Users should therefore be aware of this when interpreting the data. For example, counts of groups with higher missed rates, such as very recent immigrants, could be underestimated in censuses. This could also cause some biases for data analysis, in particular when these analyses focus on specific population groups.

The results of this study also show that the period of arrival in the country is a major correlate of the propensity for being missed for both recent immigrants and NPRs. This finding reaffirms that social integration into a new country, which could include participation in the census, is a gradual process and that these two demographic groups face several challenges in this regard.

Coverage issues are especially significant for NPRs. Some findings from this study, such as the length of stay in Canada, support the assumption that higher missed rates among NPRs may be partly due to the census residency rules. It may be harder to apply these rules for this subpopulation. This grey area could be explored further to clarify the definition of the census universe for future censuses, for example, by changing the rules of residency or how to present them to respondents.

In addition, it may be worthwhile to conduct a study to examine the relationship between the probability for being missed and the permit expiry date of NPRs. It is possible that NPRs whose permit expires shortly after the census and who do not intend to obtain another permit may feel less concerned by the census, and as a result, may be more likely to be missed.

Census coverage errors are divided into two parts: undercoverage and overcoverage. This study examined missed rates, the main component of undercoverage. However, it cannot provide an adjusted census count for

recent immigrants and NPRs. In this regard, Castonguay (2005) proposed an adjustment of language data for net undercoverage and suggested that the effect of coverage errors on Quebec's linguistic composition could be significant. In addition, the Castonguay study indicated that coverage errors could also have a certain effect on other characteristics measured by censuses, such as level of education. A review of the mechanisms associated with overcoverage and with the other elements of undercoverage for these two groups would also be appropriate to examine both types of coverage errors.

Several statistical agencies, including Statistics Canada, are increasingly examining the potential of administrative data to support or replace certain census-related operations (Statistics Canada 2017b). Recent immigrants and NPRs are probably two of the segments of the population most likely to be missed in Canadian censuses for which relatively complete administrative data are available. The legal aspect of permanent and temporary residence permits ensures that they cover both populations very well. However, IRCC permits also have significant limitations in measuring the population. For example, data on temporary resident permits include information on permits issued, but not on the number of permit holders who may arrive in Canada after obtaining the permit or leave before the permit expires. On the other hand, permanent residence permits provide information on the immigrant's intended destination, but not on the one where the immigrant actually landed. Moreover, at this time, these data do not contain information on the permit holder's specific place of residence. Therefore, this raises the question of to what extent these administrative data could support census operations for these two segments of the population.

Finally, censuses are regularly used to obtain information on international migration that is comparable from one country to another (United Nations 2017: §84). However, the fact that recent immigrants and NPRs are missed more often than the rest of the population reaffirms the significance of the challenges associated with measuring international migration. In a context where these dynamics could become more important and more complex, an accurate measure of recent immigration and temporary immigration is increasingly crucial in order to inform public debate, develop appropriate policies and make international comparisons.

Appendices

2011 Census of Population universe

The population universe (target population) of the 2011 Census includes the following groups (Statistics Canada 2015b):

- Canadian citizens (by birth or by naturalization) and landed immigrants with a usual place of residence in Canada;
- Canadian citizens (by birth or by naturalization) and landed immigrants who are abroad, either on a military base or attached to a diplomatic mission;
- Canadian citizens (by birth or by naturalization) and landed immigrants at sea or in port aboard merchant vessels under Canadian registry and Canadian government vessels;
- persons with a usual place of residence in Canada who are claiming refugee status and family members living with them;
- persons with a usual place of residence in Canada who hold study permits (covering census day) and family members living with them;
- persons with a usual place of residence in Canada who hold work permits (covering census day) and family members living with them.

For census purposes, these last three groups of people are referred to as “non-permanent residents.” They have been included since 1991.

2011 Census missed rates

Table A.1
Missed rates for certain demographic characteristics, 2011

Characteristics	Missed rate percent	Standard error
Provinces	8.3	0.1
Province of residence		
Newfoundland and Labrador	7.1	0.5
Prince Edward Island	7.1	0.6
Nova Scotia	7.7	0.5
New Brunswick	6.6	0.4
Quebec	6.5	0.3
Ontario	8.4	0.3
Manitoba	8.2	0.4
Saskatchewan	10.4	0.5
Alberta	9.7	0.4
British Columbia	10.1	0.4
Age group		
0 to 4 years	7.4	0.5
5 to 9 years	6.6	0.6
10 to 14 years	6.6	0.6
15 to 19 years	9.0	0.6
20 to 24 years	14.3	0.6
25 to 29 years	15.0	0.7
30 to 34 years	11.8	0.6
35 to 39 years	9.5	0.7
40 to 44 years	8.0	0.6
45 to 49 years	7.6	0.6
50 to 54 years	6.3	0.6
55 to 59 years	5.4	0.6
60 to 64 years	5.0	0.5
65 to 69 years	6.7	1.0
70 to 74 years	4.4	0.7
75 to 79 years	4.0	0.6
80 to 84 years	6.7	1.1
85 years or over	9.2	1.3
Sex		
Male	9.4	0.2
Female	7.2	0.2

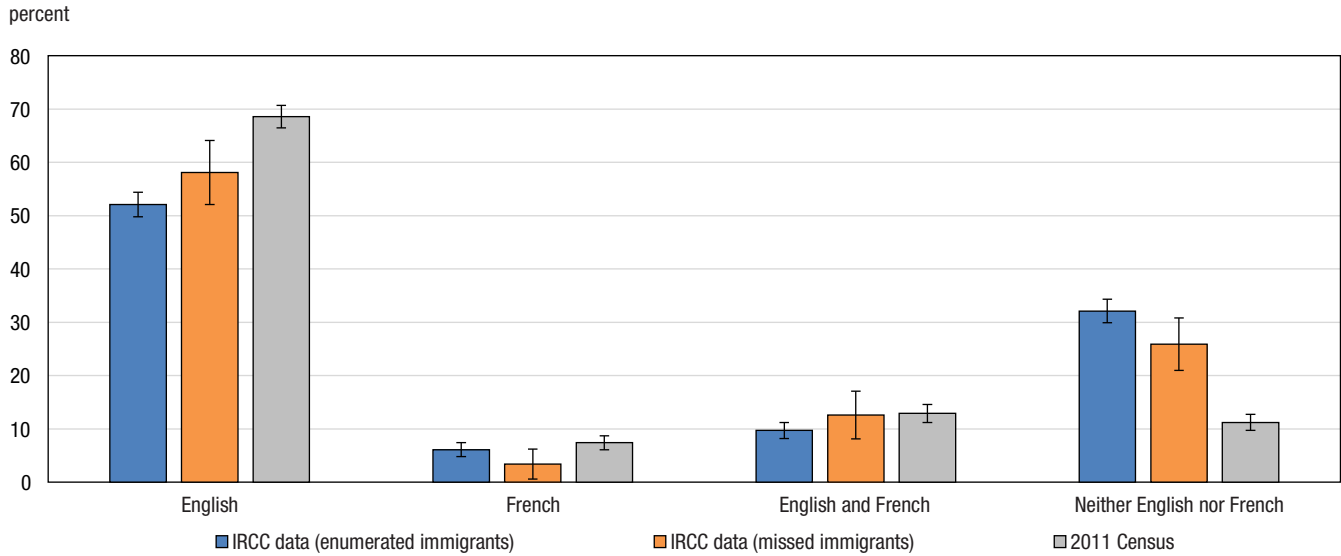
Note: The data in this table exclude the territories because bootstrap weights are not available for this frame.

Source: Statistics Canada, 2011 Reverse Record Check.

Knowledge of official languages

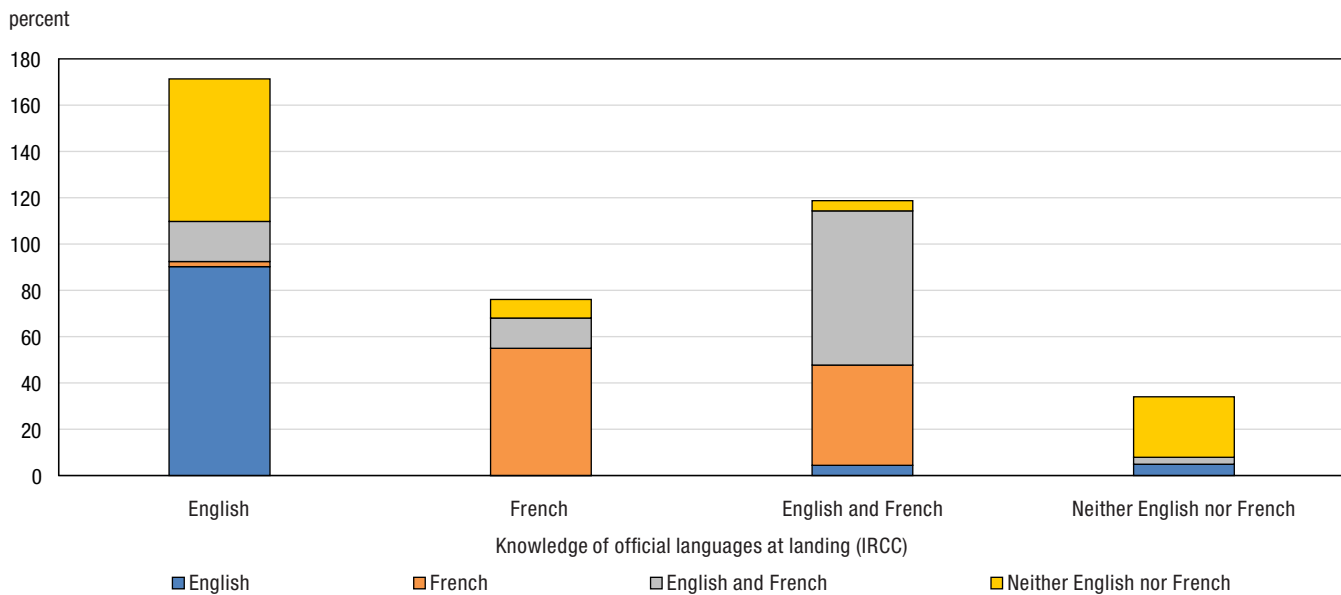
The following tables illustrate the differences in knowledge of official languages between RRC and 2011 Census data.

Chart A.1
Knowledge of official languages according to IRCC and 2011 Census data respondents of the RRC immigrants frame, 2011



Note: The information on knowledge of official languages from IRCC data is based on knowledge at landing, while the census information relates to the knowledge on census day.
Sources: Statistics Canada, 2011 Reverse Record Check, 2011 Census of Population; Immigration, Refugees and Citizenship Canada, Permanent Resident Landing File.

Chart A.2
Knowledge of official languages of the 2011 Census by that of IRCC data for enumerated respondents of the RRC immigrants frame, 2011



Notes: The information on knowledge of official languages from IRCC data is based on knowledge at landing, while the census information relates to the knowledge on census day. The data in this chart cover only immigrants enumerated by the RRC.
Sources: Statistics Canada, 2011 Reverse Record Check, 2011 Census of Population; Immigration, Refugees and Citizenship Canada, Permanent Resident Landing File.

Acronyms

ACS = American Community Survey

CCM = Census Coverage Measurement

CIC = Citizenship and Immigration Canada

DA = Demographic Analysis

DCS = Dwelling Classification Study

DEM = Demography Division

DEP = Demographic Estimates Program

EDS = Ethnic Diversity Survey

IRCC = Immigration, Refugees and Citizenship Canada

LSIC = Longitudinal Survey of Immigrants to Canada

NHS = National Household Survey

NIS = New Immigrant Survey

NPR = Non-permanent resident

PIAAC = Programme for the International Assessment of Adult Competencies

RRC = Reverse Record Check

SASD = Social and Aboriginal Statistics Division

SSMD = Social Survey Methods Division

UNECE = United Nations Economic Commission for Europe

WHI = Whole Household Imputation

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