Annual Demographic Estimates: Canada, Provinces and Territories 2024

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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Notice to readers

The estimates released in this publication are based on 2021 Census counts adjusted for census net undercoverage (CNU), incompletely enumerated reserves and settlements (IERS) and demographic adjustment (DA), to which are added the population growth estimates for the period from May 11, 2021 to the date of the estimate.

These estimates are not to be mistaken with the 2021 Census counts.

The analysis in this publication is based on preliminary data. These data will be revised over the coming year, and it is possible that some trends described in this publication will change as a result of these revisions. Therefore, this analysis should be interpreted with caution.

Most of the components, used to produce preliminary population estimates, are estimated using demographic models or based on data sources less complete or reliable, albeit more timely, than those used for updated or final estimates.

Statistics Canada collaborates closely with Immigration, Refugees and Citizenship Canada (IRCC) and other federal departments to estimate the number of non-permanent residents (NPRs) living in Canada. Caution should be exercised before comparing data on non-permanent residents from Statistics Canada's Demographic Estimates Program with temporary residents and asylum claimants from IRCC, due to the different objectives of the two data sources.

Acknowledgements

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Statistical tables

Total annual demographic estimates for Canada, the provinces and the territories, and fertility indicators are available in Tables 13-10-0417-01, 13-10-0418-01, 17-10-0008-01, 17-10-0009-01, 17-10-0021-01, 17-10-0022-01, 17-10-0121-01 and 17-10-0147-01.

Demographic estimates by age and gender, for Canada, the provinces and the territories are available in Tables 17-10-0005-01, 17-10-0006-01, 17-10-0014-01, 17-10-0015-01, 17-10-0016-01 and 17-10-0158-01.

Interactive dashboards are available (71-607-X):

- Quarterly demographic estimates, provinces and territories: Interactive dashboard
- Interprovincial migrants by province or territory of origin and destination: Interactive dashboard
- Demographic estimates by age and gender, provinces and territories
- Interprovincial migration indicators, provinces and territories: Interactive dashboard

Highlights

Total population, July 1, 2024

- The population of Canada reached an estimated 41,288,599 on July 1, 2024. With a quarterly growth rate of 0.6%, this means that 250,229 people were added to the Canadian population from April 1 to July 1, 2024.

- This growth was slower than in the same quarter of 2023 (+334,606, +0.8%) and 2022 (+253,510, +0.7%) marking the first time since 2020 that quarterly growth has been slower than in the same quarter a year earlier.

- In the second quarter of 2024, there was a net increase of 117,836 non-permanent residents. This was the smallest net increase since the first quarter of 2023 (+97,845 people) and marks the third quarter in a row of smaller net increases in the number of non-permanent residents.

- From July 1, 2023, to July 1, 2024 (2023/2024), Canada's population grew by 1,205,115 people (+3.0%).

- While the annual growth rate has been increasing since the low level seen at the start of the pandemic (+0.6% in 2020/2021, +211,226 people), the growth rate in 2023/2024 was only 0.1 percentage point higher than the growth in 2022/2023 (+2.9%, +1,147,550 people).

- Alberta saw the highest growth rate of all provinces and territories in 2023/2024 at +4.3%. Only Quebec (+2.3%), Ontario (+3.2%), Alberta (+4.3), and Nunavut (+1.1%) grew faster in 2023/2024 than in 2022/2023. Every province and territory experienced positive population growth in 2023/2024.

- On July 1, 2024, there were just over three million non-permanent residents living in Canada (3,002,090). This is a net increase of 775,091 people from July 1, 2023, and the second year in a row where the net increase in non-permanent residents was over 700,000 (+712,751 in 2022/2023). Previously, the annual net increase in non-permanent residents had only exceeded 200,000 once, which occurred in 2021/2022 (+208,689).

- In 2023/2024, Canada welcomed 464,265 immigrants, which was similar to the number of immigrants admitted in 2022/2023 (468,913) and in 2021/2022 (493,236).

- In the two years following the pandemic, there were an increased number of people who moved to another province or territory, totaling 348,777 in 2021/2022 and 343,079 in 2022/2023. The number of interprovincial migrants in 2023/2024 (306,756) was closer to, although still slightly above, pre-pandemic levels, which ranged from around 250,000 to around 305,000 from 2000/2001 to 2020/2021.

- Alberta had the biggest gains from other provinces and territories in 2023/2024 (+43,750 people), as it did in 2022/2023 (+39,408).

- The only other provinces or territories that had net gains from interprovincial migration were the four Atlantic provinces: Newfoundland and Labrador (+598 people), Prince Edward Island (+82 people), Nova Scotia (+2,252 people), and New Brunswick (+2,803 people). However, all four provinces had smaller net gains in 2023/2024 than they did in 2022/2023, which were themselves smaller than the net gains seen in 2021/2022.

Population by age and gender

- For the third year in a row, the median age in Canada decreased slightly (by -0.3 years), reaching 40.3 years on July 1, 2024, while the average age saw no change from July 1, 2023 (41.6 years). This contrasts with the general trend of an increasing median and average age from 1967 to 2021. The decrease in the median age and stability of the average age of the population is the result of high levels of international migration in recent years, as immigrants and non-permanent residents tend to be on average younger than Canada's population.

- Between July 1, 2021, when higher levels of international migration began, and July 1, 2024, more than 1.1 million people have joined the millennials (born between 1981 and 1996) in Canada (1,109,591, +12.2%), with 416,583 joining in the past year (+4.4% increase from 2022/2023).

- During 2023/2024, among all age groups, the largest increase in number was in the age group of 30-34 (162,450 people, +5.3%) while the largest increase in percent was in the 20-24 age group (148,255 people, +5.6%).

- From July 1, 2023, those aged 0 to 14 years increased by 1.2% (+77,411 people) while those aged 15 to 64 years old increased by 3.2% (+865,310 people). People aged 65 and older increased by 3.4% (+262,394 people), mainly due to the aging of the large baby boomer cohorts.

- At the provincial and territorial level, Newfoundland and Labrador had the highest median (47.8 years) and average (45.7 years) age while the lowest median (26.8 years) and average (29.3 years) age was recorded in Nunavut.

- On July 1, 2024, there were 20,638,255 men and 20,650,344 women living in Canada. The ratio of the number of men to 100 women has varied little from the late 1980s to 2016, fluctuating between 98.0 and 98.5. This ratio reached 99.9 as of July 1, 2024.

- The recent increase in this ratio is due to the arrival of a significant number of non-permanent residents. Among non-permanent residents, there are 126.6 men for every 100 women and that ratio has varied from 126.6 to 133.1 since 2021.

Methodology

This section describes the concepts, data sources and methodology used to produce the population estimates. Population estimates are produced to measure the population counts according to various characteristics and geographies between two censuses. The demographic estimates are the official population estimates at the national, provincial and territorial levels.

Postcensal estimates are based on the 2021 Census.

Population Estimates

Estimates of the total population

Types of estimates

Population estimates can be either intercensal or postcensal. Intercensal estimates are produced using the counts from two consecutive censuses adjusted for census net undercoverage (CNU)[1] and postcensal estimates. The production of intercensal estimates involves updating the postcensal estimates using the counts from a new census adjusted for CNU.[1]

Postcensal estimates are produced using data from the most recent census adjusted for CNU[1] and the components of demographic growth. In terms of timeliness, postcensal estimates are more up-to-date than data from the most recent census adjusted for CNU,[1] but as they get farther from the date of that census, they become more variable.

Levels of estimates

The production of the population estimates between censuses entails the use of data from administrative files or surveys. The quality of population estimates therefore depends on the availability of a number of administrative data files that are provided to Statistics Canada by Canadian and foreign government departments. Since some components are not available until several months after the reference date, three kinds of postcensal estimates are produced preliminary postcensal (PP), updated postcensal (PR) and final postcensal (PD). The time lag between the reference date and the release date is three months for preliminary estimates and two to three years for final estimates. Though it requires more vigilance on the part of users, the production of three successive series of postcensal estimates is the strategy that best satisfies the need for both timeliness and accuracy of the estimates. All tables indicate the level of the estimates they contain.

Calculation of postcensal population estimates

Population estimates – preliminary, updated and final – are produced by the component method. This method consists of taking the population figures from the most recent census, adjusted for the CNU[1] (census undercoverage minus census overcoverage), and adding or subtracting the number of births, deaths, and components of international and interprovincial migration.

A. Provincial / territorial estimates of total population

Population estimates are produced for the provinces and territories first; then they are summed to obtain an estimate of the population of Canada.

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1. In this case, the adjustment for the census net undercoverage also includes the incompletely enumerated reserves and settlements (IERS) and the demographic adjustment (for the estimates by age and gender).

The component-method formula for estimating the total provincial / territorial populations is as follows:

$$P_{(t+i)} = P_{(t)} + B_{(t,t+i)} - D_{(t,t+i)} + I_{(t,t+i)} - E_{(t,t+i)} + RE_{(t,t+i)} + \Delta NPR_{(t,t+i)} + \Delta N\text{inter}_{(t,t+i)} + Resid_{(t,t+i)}$$

where, for each province and territory:

$(t, t+i)$	=	interval between times t and t+i;
$P_{(t+i)}$	=	estimate of the population at time t+i;
$P_{(t)}$	=	base population at time t (census adjusted for (CNU)[1] or most recent estimate);
B	=	number of births;
D	=	number of deaths;
I	=	number of immigrants;
E	=	number of emigrants;
RE	=	number of returning emigrants;
ΔNPR	=	net non-permanent residents;
$\Delta Ninter$	=	net interprovincial migration;
$Resid$	=	residual deviation (for intercensal estimates).

B. Provincial / territorial estimates of the population by age and gender

Population estimates by age and gender are produced by applying the component method to each age-gender cohort in the base population. Estimates are produced for each age-gender cohort up to 119 years but are grouped for ages 100 years and older for dissemination purposes.

At age 0:

$$P_{(t+1)}^{0} = B_{(t,t+1)} - D_{(t,t+1)}^{-1} + I_{(t,t+1)}^{-1} - E_{(t,t+1)}^{-1} + RE_{(t,t+1)}^{-1} + \Delta NPR_{(t,t+1)}^{-1} + \Delta Ninter_{(t,t+1)}^{-1} + Resid_{(t,t+1)}^{-1}$$

From 1 to 119 years:

$$P_{(t+1)}^{a+1} = P_{(t)}^{a} - D_{(t,t+1)}^{a} + I_{(t,t+1)}^{a} - E_{(t,t+1)}^{a} + RE_{(t,t+1)}^{a} + \Delta NPR_{(t,t+1)}^{a} + \Delta Ninter_{(t,t+1)}^{a} + Resid_{(t,t+1)}^{a}$$

For age group 120 years and older:

$$P_{(t+1)}^{120+} = P_{(t)}^{119+} - D_{(t,t+1)}^{119+} + I_{(t,t+1)}^{119+} - E_{(t,t+1)}^{119+} + RE_{(t,t+1)}^{119+} + \Delta NPR_{(t,t+1)}^{119+} + \Delta Ninter_{(t,t+1)}^{119+} + Resid_{(t,t+1)}^{119+}$$

where, for each province and territory:

(t,t+1):	interval between times t and t+1;
a:	age;
$P_{(t+1)}$:	estimate of the population at time t+1;
$P_{(t)}$:	base population at time t (census adjusted for (CNU),[1] or most recent estimate);
B:	number of births;
D:	number of deaths;
I:	number of immigrants;
E:	number of emigrants;
RE:	number of returning emigrants;
ΔNPR:	net non-permanent residents;
$\Delta Ninter$:	net interprovincial migration;
$Resid$:	residual deviation (for intercensal estimates).

C. Levels of estimates

The difference between preliminary[2] and final postcensal population estimates lies in the timeliness of the components. When all the components are preliminary, the population estimate is described as preliminary postcensal (PP). When they are all final, the estimate is referred to as final postcensal (PD). Any other combination of levels is referred to as updated postcensal (PR).

Base population and components of demographic growth

A. Base population

The base populations are derived from the quinquennial censuses between 1971 and 2021. The population universe of the 2021 Census includes the following groups:

- Canadian citizens (by birth or by naturalization), landed immigrants (permanent residents), and (since 1991) non-permanent residents. Non-permanent residents are persons who have claimed refugee status [asylum claimants], or persons who hold a work or study permit and their family members living with them[3]. All such persons are included in the population provided they have a usual place of residence in Canada.

- The total population also includes certain Canadian citizens and landed immigrants (permanent residents) living outside the country: government employees working outside Canada; embassy staff posted to other countries; members of the Canadian Armed Forces stationed outside Canada; and Canadian crew members of merchant vessels and their families. Together, they are referred to as 'persons living outside Canada.'

- Foreign residents are excluded from census data: for example, residents of another country visiting Canada temporarily, government representatives of another country posted in Canada and members of the armed forces of another country stationed in Canada.

These base populations are adjusted as follows:

- adjustment of the population for CNU;[1]
- addition of independent estimates for incompletely enumerated reserves and settlements in 1991, 1996, 2001, 2006, 2011, 2016 and 2021;
- adjustment for early enumeration in 1991 and 1996 in parts of Northern Quebec, Newfoundland and Labrador, the Yukon and the Northwest Territories;
- addition of estimates of NPRs in 1971, 1976, 1981 and 1986. Since 1991, NPRs are included in the census universe;
- estimation of the July 1 base population by addition or subtraction of the components of growth between Census Day and June 30;
- demographic adjustment for the population at advanced ages is an age structure adjustment of censal estimates for 2001, 2006, 2011, 2016 and 2021 by gender for each province and territory. An adjustment for the population at age zero is also done for the same period.

Adjustment for the census net undercoverage (CNU)[1]

The adjustment for CNU[1] is important. CNU[1] is the difference between the number of persons who should have been enumerated but were missed (undercoverage) and the number of persons who were enumerated but should not have been or who were counted more than once (overcoverage).

Coverage studies provide undercoverage estimates for the 1991, 1996, 2001, 2006, 2011, 2016 and 2021 censuses at the provincial and territorial levels, and for the 1971, 1976, 1981 and 1986 censuses at the provincial level only. Estimates of overcoverage at the provincial and territorial levels are available only for the last seven censuses (1991 to 2021). Overcoverage for previous censuses was estimated by assuming that the overcoverage-to-undercoverage ratio for each census between 1971 and 1986 was the same as in 1991. The CNU[1] for the Yukon and the Northwest Territories prior to 1991 was estimated by assuming that the ratio between the CNU[1] for each territory and the 10 provinces for each census between 1971 and 1986 was the same as in 1991.

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2. Unless otherwise noted, the term preliminary include both preliminary and updated estimates.
3. The census universe also includes people with a usual place of residence in Canada, who hold a temporary resident permit (formerly known as a Minister's Permit), and their family members living with them.

For consistency, the 1991 Census undercoverage and overcoverage were revised in 1998 to take into account the methodological improvements made in the 1996 Census coverage studies. This revision altered CNU[1] in all censuses between 1971 and 1986. Similarly, the 1996 Census undercoverage and overcoverage were revised in 2003.

Various methods were used to produce the estimates of census net undercoverage (CNU)[1] by age and sex for 1991, 1996, 2001, 2006, 2011 and 2016 and the estimates of CNU[1] by age and gender for 2021. First, the national estimates of CNU[1] based on the coverage studies by age and sex (or gender) were smoothed. Then an Empirical Bayes regression model was used to generate the provincial and territorial estimates of CNU[1] by broad age groups, and a synthetic model produced estimates by single year of age. Lastly, raking was used to ensure that CNU[1] estimates were consistent with the provincial and territorial CNU[1] totals and the national estimates by age and sex (or gender). For 2021, the raking incorporated additional controls based on gender ratios in the older ages that were calculated from administrative data. For the 1971 to 1986 periods, CNU[1] estimates by age and sex were prorated to the revised CNU[1] estimates for the total population.

Demographic adjustment at age 0

To minimize inconsistencies with vital statistics information, the base population estimates at age 0 are adjusted to match the postcensal estimates at the same age. The differences between census counts and the results of the demographic adjustment were redistributed among the population aged 5 to 74 years, by their relative weight per province or territory and by gender. This way, the total population by province or territory was left unchanged.

Demographic adjustment for very elderly populations

For the 2021 base population, adjustments were performed for the population aged 95 and older.

Two methods were used to compute this adjustment. The extinct cohort method was used for cohorts deemed to have no survivors. For these cohorts, population estimates were derived using the number of deaths from vital statistics, by summing all deaths for each cohort to reconstruct its population.

For non-extinct cohorts (cohorts deemed to still have survivors), the adjustment was based on two data sources: administrative data from the Office of the Chief Actuary of Canada (OCA) and the extinct cohorts estimates (EC). A relatively stable relationship for extinct cohorts of previous years exists in the EC population estimates and Old Age Security (OAS) data. The demographic adjustment was calculated in two steps. First, average ratios by province or territory, age and gender were calculated with the EC data and population estimates based on OAS data. Second, the ratios were applied to population estimates from 2021 OAS for non-extinct cohorts.

Similarly to the demographic adjustment at age 0, the differences between census counts and the results of this demographic adjustment were redistributed among the population aged 5 to 74 years, by their relative weight per province or territory and by gender.

B. Births and deaths

The numbers of births and deaths are derived directly from the vital statistics database of Statistics Canada's Centre for Population Health Data. Although Statistics Canada manages the National system of vital statistics, the central vital statistics registries of the provinces and territories are responsible for collecting and processing the information from those administrative files. Under provincial/territorial vital statistics statutes (or similar legislation), all live births and all deaths must be registered, and all provinces and territories provide this information to Statistics Canada.

The vital statistics universe applied to the population estimates includes births and deaths occurring in Canada, in which the usual place of residence of either the birth mother or the deceased is Canada. Any death or birth occurring outside of Canada, even if the mother or the deceased is Canadian, is excluded from the vital statistics population.

Vital statistics by province or territory of residence are used to produce our final estimates of births and deaths. However, before 2011, the final estimates may differ from the data released by the Centre for Population Health Data due to the imputation of certain unknown values. In addition, for estimates of deaths, the age represents age at the beginning of the period (July 1) and not the age at the time of occurrence, as with the Centre for Population Health Data. The Centre for Population Health Data now releases preliminary data that the Centre for Demography uses. However, these data are not final.

When there are no vital statistics, the number of births is estimated using quarterly fertility rates by the mother's age group. The number of deaths is estimated by using quarterly mortality rates by age group and gender. These methods are used to calculate preliminary[2] estimates.

Special treatment for preliminary[2] estimates for Quebec, British Columbia and Yukon

Quebec, British Columbia and Yukon provide their most recent estimates of births and deaths. The figures are used to produce preliminary[2] estimates. For the final estimates, births and deaths for Quebec and British Columbia are derived from the vital statistics compiled by the Centre for Population Health Data. As of 2017, the total number of births and deaths for Yukon come from their statistical agency.

With regard to the preliminary[2] estimates, the number of births by gender is derived by applying an average proportion by gender for each province and territory to the total births. These proportions are calculated using the births from vital statistics from the past 10 years.

With regard to the preliminary[2] estimates, the number of deaths by age and gender is derived by applying mortality rates by age and gender for each province and territory to the total deaths. These mortality rates are calculated using the deaths from vital statistics from the past 2 final years.

Quebec provides its most recent estimates of births by gender and deaths by age and gender. They are used for the preliminary[2] estimates.

In the absence of births and deaths from vital statistics for Yukon, the 2016 distribution is used to generate births by gender and deaths by age and gender.

Levels of estimates

For information on the differences between preliminary[2] and final estimates, see section **B. Births and Deaths**, above.

C. Immigrants

An immigrant refers to a person who is a permanent resident or a landed immigrant. Such a person has been granted the right to live in Canada permanently by immigration authorities. Persons who are born abroad to a Canadian parent are not immigrants but are included in the returning emigrant component.

For Statistics Canada's Demographic Estimates Program, the terms "immigrant", "landed immigrant" and "permanent resident" refer to the same concept.

Like the numbers of births and deaths, Canadian immigration statistics must be kept by law. In Canada, immigration is regulated by the *Immigration and Refugee Protection Act* (IRPA) of 2002. This statute superseded the *Immigration Act*, which was passed in 1976 and amended more than 30 times in the years thereafter. Immigration, Refugees and Citizenship Canada (IRCC) collects and processes permanent residents' administrative files. It then provides Statistics Canada with information from Global Case Management System (GCMS) files (until October 2015, data came from the Field Operational Support System files (FOSS)). The information is used to estimate the number and characteristics of people granted permanent resident status by the federal government on a given date.

Estimates of the number of immigrants are based mainly on the date on which the person was granted permanent residence or landed in Canada.

The estimates of immigrants by age and gender are derived from the Global Case Management System (GCMS).

Levels of estimates

The difference between preliminary[2] and final postcensal estimates lies in the timeliness of the source used to estimate this component. Since the GCMS files are continually being updated, new calculations are carried out each year to update the immigration estimates. Immigration estimates are preliminary the first year and final the second year.

D. Non-permanent residents

Non-permanent resident refers to a person from another country with a usual place of residence in Canada and who has a work or study permit or who has claimed refugee status (asylum claimants, protected persons and related groups).

Family members living with work or study permit holders are also included unless these family members are already Canadian citizens, landed immigrants (permanent residents), or non-permanent residents themselves.

For Statistics Canada's Demographic Estimates Program, the terms "non-permanent resident" and "temporary immigrant" refer to the same concept.

Like the numbers of births and deaths, Canadian immigration statistics must be kept by law. In Canada, temporary residents and asylum claimants are regulated by the *Immigration and Refugee Protection Act* (IRPA) of 2002. This statute superseded the *Immigration Act*, which was passed in 1976 and amended more than 30 times in the years thereafter. Immigration, Refugees and Citizenship Canada (IRCC), along with other government departments, collect and process the administrative files of asylum claimants. IRCC also collects and processes the administrative files of the holders of work, study and temporary residence permits in Canada. It then provides Statistics Canada with information from Global Case Management System (GCMS) files (until October 2015, data came from the Field Operational Support System files (FOSS)). This information is used as the basis for obtaining the number and characteristics of people who are granted temporary resident status by the federal government, or who are asylum claimants, protected persons and related groups. Statistics Canada then applies various methodological adjustments, notably from the linkage of census and IRCC data, to obtain estimates of non-permanent residents (NPR).

The number of non-permanent residents, which have been provided by IRCC's administrative data, are estimated as of a specific reference date. To calculate the inflows and outflows of NPRs, the estimated number of NPRs at the end of the period is subtracted from the number of NPRs at the beginning of the period. These estimates allow us to calculate the net change in the number of NPRs, which is then used in the calculation of the population estimates.

All non-permanent residents who have been admitted to Canada at a date prior to the reference date are included in the estimate. In the case of asylum claimants, protected persons and related groups, they are counted as NPR from the date of their application for refugee status in Canada.

A person will be excluded from the non-permanent resident estimate if their permit expiries before the reference date, if they obtain permanent resident status (in which case they leave the NPR population to be counted as an immigrant), or if they are deported. The same conditions apply to asylum claimants, protected persons and related groups. Also, since an asylum application has no end date, the person is considered to be in the country for a maximum of ten years.

In 2024, the method for estimating the number of NPRs in Canada was changed. The adjustment concerns only asylum claimants, protected persons and related groups. Postal code information from IRCC's "mailing address file" is used to determine the province or territory of residence at a reference date. If this information is missing, the province or territory where the claim was filed is used.

> The estimates of number and net non-permanent residents by age and gender are derived from the Global Case Management System (GCMS). The age and gender structure of NPR family members is derived from the 2021 Census.

Levels of estimates

The difference between preliminary[2] and final estimates lies in the timeliness of the source used to estimate this component. Since the GCMS files are continually being updated, the figures are recalculated each year to update the estimates of the net number of NPRs. Non-permanent resident (NPR) estimates are preliminary the first year and updated the following year. They become final two to four years after the reference year, when all other components are also final.

E. Emigrants

Emigrants is divided into long-term and short-term emigrants for the purposes of calculating the number of emigrants. Short-term emigrants used to be included in the net temporary emigration. Only estimates of the number of emigrants are published.

An emigrant is a Canadian citizen or immigrant who has left Canada to establish a long-term or short-term residence in another country, involving a change in usual place of residence. The number of long-term emigrants is estimated using data from the Office of Immigration Statistics, U.S. Department of Homeland Security, data collected by the Canada child benefit (CCB) program and data from the T1 Family File (T1FF[4]). The first source is used to estimate emigrants to the United States. CCB data are used to estimate emigrants to other countries. The estimates of the number of child emigrants must be adjusted because the CCB is not universal and does not provide direct information on the number of adult emigrants. As a result, four adjustment factors are considered:

- incomplete coverage due to a delay in the receipt and processing of the files of children eligible for the CCB. Since it seems to take four years after the reference period for CCB administrative files to become complete, the adjustment is made when the estimates are used before this date. The factor is derived from the two-year ratios of emigrant children based on two versions of the CCB files;

- the program's partial coverage, that is, people who do not apply for the CCB or who are not eligible. This factor is obtained by comparing the estimated number of children in the population with the number of children in CCB files;

- the differential propensity to emigrate between children who are eligible for the CCB and children who are not. This factor is obtained by comparing the emigration rates of CCB-eligible children with the rates for all children (aged 0 to 17). This factor is calculated for each province and territory and is based on the last three available years of T1FF;[4]

- the differential propensity to emigrate between adults and children. This factor generates the emigration rate for the population aged 18 and over.

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4.   The T1 family file (T1FF) is derived from the Canada Revenue Agency (CRA) T1 file by Statistics Canada Centre for Income and Socioeconomic Well-being Statistics.

Estimates for adults migrating to the United States are taken directly from the Homeland Security data. As the CCB program does not provide direct information on adult emigrants, the last adjustment factor was used to estimate the number of adults emigrating to countries other than the United States.

The number of adult emigrants combined with the number of child emigrants (once adjusted for the coverage and differential emigration factors) generate the number of long-term emigrants for the entire population.

Long-term emigrants are disaggregated by province and territory based on the emigrants in the tax data (T1FF)[4] adjusted for the variability of the T1FF[4] coverage by province and territory.

Estimates of the number of short-term emigrants are taken from the Census Undercoverage Study (CUS). The CUS provides an estimate of the number of people who left Canada temporarily during an intercensal period and who are still abroad at the end of the period.

The five-year estimates of the number of short-term emigrants are first calculated for Canada as a whole. They are then distributed by province and territory by month according to the distribution of long-term emigrants for the intercensal period. The number of short-term emigrants can only be estimated for the intercensal period preceding the last census. For the postcensal period, the rate of the last available year (2020/2021) is applied to the beginning of the year population estimate to be estimated.

Finally, the number of emigrants is calculated by adding long-term and short-term emigrants.

Please note that the estimates for the most recent periods are expected to be very similar. In the absence of more up-to-date data sources, the emigration rate of the last available year is applied to the beginning of the year population estimate to be estimated.

> The estimates of the emigrants by age and gender are obtained by using the data by five-year age group, gender, province and territory from T1FF[4] files adjusted for the coverage. We distribute these estimates by single year of age using Sprague coefficients.

Levels of estimates

The difference between preliminary and final estimates lies in the timeliness of the sources used to estimate this component. The same estimation method is used.

F. Returning emigrants

A returning emigrant is a Canadian citizen or immigrant who has previously emigrated from Canada and subsequently returned to the country. Using a similar method to that for emigrants, calculations are made separately for long-term returning emigrants and short-term returning emigrants.

To estimate the number of long-term returning emigrants, we use the data from the Canada child benefit (CCB) file from the Canada Revenue Agency (CRA) and the T1FF[4] file. Adjustment factors are applied to compensate for the fact that the CCB program is not universal, and an adult/child ratio is used to estimate the number of adult returning emigrants. As a result, four adjustment factors are considered:

- incomplete coverage due to a delay in the receipt and processing of the files of children eligible for the CCB. Since it seems to take four years after the reference period for CCB administrative files to become complete, the adjustment is made when the estimates are used before this date. The factor is derived from the two-year ratios of returning emigrant children based on two versions of the CCB files;

- the program's partial coverage, that is, people who do not apply for the CCB or who are not eligible. This factor is obtained by comparing the estimated number of children in the population with the number of children in CCB files;

- the differential propensity to emigrate between children who are eligible for the CCB and children who are not. This factor is obtained by comparing the emigration rates of CCB-eligible children with the rates for

    all children (aged 0 to 17). This factor is calculated for each province and territory and is based on the last three available years of T1FFs;[4]

- the adult / child ratio, which is based on the data from the 2021 Census.

Estimates of the number of short-term returning emigrants are derived from two sources: the census and the Centre for Demography's estimates of the number of long-term returning emigrants. The census provides data on the number of people who were outside Canada at the previous census and who returned to the country during the intercensal period. As this population excludes children under 5, an adjustment is calculated to estimate the number of short-term returning emigrants at these ages. To calculate the number of short-term returning emigrants, we subtract the number of long-term returning emigrants estimated by the Centre for Demography from the number derived from the census.

The five-year estimates of the number of short-term returning emigrants are calculated at national level. The distribution by province and territories by month and the method used to produce estimates for the postcensal period, are the same as those used for short-term emigrants.

Finally, the number of returning emigrants is calculated by adding long-term and short-term returning emigrants.

Please note that the estimates for the most recent periods are expected to be identical or very similar. In the absence of more up-to-date data sources, the assumption is made that levels remain similar.

On September 27, 2023, the estimated numbers of emigrants and returning emigrants have been revised going back to July 2016. Before this date, short-term emigrants and short-term returning emigrants were included in the "net temporary emigration" component. After this date, they are included in the emigrant and returning emigrant components, using the methodology described above. Due to this change, the net temporary emigration component is no longer calculated from July 2016 onwards.

> The age and gender distribution of long-term returning emigrants is based on the census at the national level. Characteristics of long-term returning emigrants are derived from the census question on location of residence one year ago, after excluding non-permanent residents and immigrants. From 2021/2022, the distribution by age and gender derived from the 2021 Census is used. The age and gender distribution of the short-term returning emigrants is derived from short-term emigrants age and gender distribution.

Levels of estimates

The difference between preliminary and final estimates lies in the timeliness of the sources used to estimate this component. The same estimation method is used.

G. Interprovincial migration

Interprovincial migration represents movements from one province or territory to another, involving a change in usual place of residence. As is the case for emigration, there is no provision for recording interprovincial migration in Canada. Consequently, such movements have to be estimated using data from the Canada child benefit (CCB) of Canada Revenue Agency (CRA) and T1FF.[4]

Final estimates of interprovincial migration are obtained by comparing addresses indicated on personal income tax returns over two consecutive tax years. However, the migration status of tax filers' dependants has to be imputed. An adjustment is also required to take into account migrants who do not file income tax returns. From 2001/2002 to 2005/2006, the adjustment was slightly modified (for further information, see Wilkinson, 2004). From 2006/2007, this adjustment has been slightly modified (Cyr, 2008 – Internal document).

Since income tax returns are not available at the time preliminary[2] estimates are produced, the estimation of preliminary[2] interprovincial migration is based on CCB administrative files, which provide counts of child migrants (aged 0 to 17) registered to the program. The estimates have to be adjusted later for children who are not registered to the CCB program. Finally, the number of adult migrants is calculated using the number of child migrants and factors derived from the T1FF.[4] As a result, three adjustment factors are used to take into account:

- the program's partial coverage, that is, people who are not registered to the CCB program. This factor is obtained by comparing the estimated number of children in the population with the number of children in CCB files;

- the differential propensity to migrate between children who are registered to the CCB program and children who are not. This factor is obtained by comparing the out-migration rates of children registered to the CCB program with the rates for all children (aged 0 to 17). This factor is calculated for each province and territory and is based on the last available year of T1FF;[4]

- the differential propensity to migrate between adults and children. This factor generates the out-migration rate of the population aged 18 and over for each province / territory of origin and destination. It is obtained by calculating the ratio of the central migration rate for adults to the rate for children. It is estimated using data from the last three available years of T1FF.[4]

The adult migration rate is then applied to the estimated adult population. The number of adult migrants is then added to the number of child migrants to produce the number of interprovincial migrants for the entire population.

Since 2015, the method to estimate the interprovincial migration has been modified. This new method is applied from July 2011 onward. In order to reduce the differences between the preliminary annual series (which was derived from the sum of 12 monthly migration matrices) and the final annual series, CCB microdata have been used. Using microdata is allowing estimating migration for various periods (monthly, quarterly and annually). It also allows improving the comparability between preliminary and final estimates. Final annual estimates (T1FF)[4] are now distributed by quarter on the basis of preliminary[2] quarterly estimates derived from CCB microdata. It is important to note that, as a result of using CCB microdata, it is not possible to add the quarterly interprovincial in-migrants and out-migrants estimates to get the annual estimates. It is however possible to add the quarterly net interprovincial migration estimates to get the annual estimates.

Interprovincial migration by age and gender is derived from T1FF[4] data and counts from the last available census (question on location of residence one year ago). From 2021/2022, the age and gender distribution is based solely on the T1FF[4] file.

Levels of estimates

For information on the differences between preliminary[2] and final estimates of total interprovincial migration, see section **G. Interprovincial migration** above.

Intercensal population estimates

Intercensal estimates – population estimates for reference dates between two censuses – are produced following each census. They reconcile previous postcensal estimates with the new census counts adjusted for the CNU.[1]

There are two main steps in the production of intercensal estimates:

- calculation of the error of closure;
- linear distribution of the error of closure.

The error of closure is defined as the difference between the postcensal population estimates on Census Day and the population enumerated in that census adjusted for CNU.[1]

The error of closure is spread uniformly over the intercensal period of days within each month.

Quality of demographic data

The estimates contain certain inaccuracies stemming from two types of errors:

- errors in the census data;
- imperfections in other data sources and the method used to estimate the components.

Census data

A. Coverage, response and imputation errors

The errors attributable to census data can be divided into two groups: response and processing errors, and coverage errors. The first group implies non-response error, misinterpretation by respondents, incorrect coding and non-response imputation. Errors in the second group primarily result from undercoverage and, to a lesser extent, overcoverage. It should be noted that both types of errors are intrinsic to any survey data.

The coverage errors occur when dwellings and/or individuals are missed, incorrectly included (except for the 2006, 2011, 2016 and 2021 censuses, where people incorrectly included were not considered in the Census Overcoverage Study) or counted more than once. Following each census, Statistics Canada undertakes coverage studies to measure these errors. The main studies are the Census Undercoverage Study (CUS) and the Census Overcoverage Study (COS). Based on these studies, estimates of census undercoverage and overcoverage are produced. The Centre for Demography adjusts the population enumerated in the census by province and territory using these estimates.

When creating base populations, the Demographic Estimates Program (DEP) corrects the census populations only for coverage errors. This correction, which is based on the findings of coverage studies, is primarily subject to sampling errors, and to a lesser extent, processing errors. Statistical tests indicate that coverage adjustments improve the quality of census data. The DEP uses the estimates from coverage studies for the provinces and territories. However, given the size of the samples in these studies, estimates by age and gender are modelled. Furthermore, it is assumed that the coverage rates estimated for a province or territory apply to the regions within that geographic area. Prior to 1993[5], the DEP used census data that was unadjusted for coverage errors. Coverage studies had been done to measure undercoverage, but none measured overcoverage. Following the decision to integrate a correction for the coverage to the enumerated population in 1991, the DEP had to revise the population estimates for the period from 1971 to 1992. The correction is based on the findings of the coverage studies conducted during this period and on hypotheses regarding the ratio between the overcoverage and undercoverage levels based on the findings of subsequent coverage studies.

The corrections to the census data due to CNU improved, in general, the quality of the estimates by compensating for the differential undercoverage by age, gender and by province/territory across censuses.

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5. In September 1993, the DEP took advantage of the integration of the 1991 Census counts to produce a series of estimates beginning in 1971 and including census net undercoverage.

Text table 1
Estimated census net undercoverage, Canada, provinces and territories, 2001 to 2021 censuses

Geography	Census population	Census net undercoverage	Incompletely enumerated reserves and settlements	Adjusted population	Rate
	A	B	C	D=A+B+C	(B+C)/D*100
			number		percent
2021[1]					
Canada	**36,991,981**	**1,142,239**	**58,480**	**38,192,700**	**3.14**
Newfoundland and Labrador	510,550	16,234	0	526,784	3.08
Prince Edward Island	154,331	6,901	0	161,232	4.28
Nova Scotia	969,383	27,852	0	997,235	2.79
New Brunswick	775,610	13,624	0	789,234	1.73
Quebec	8,501,833	42,868	18,759	8,563,460	0.72
Ontario	14,223,942	585,370	18,693	14,828,005	4.07
Manitoba	1,342,153	39,283	9,063	1,390,499	3.48
Saskatchewan	1,132,505	34,912	11	1,167,428	2.99
Alberta	4,262,635	153,165	11,108	4,426,908	3.71
British Columbia	5,000,879	212,846	846	5,214,571	4.10
Yukon	40,232	2,467	0	42,699	5.78
Northwest Territories	41,070	3,589	0	44,659	8.04
Nunavut	36,858	3,128	0	39,986	7.82
2016[1]					
Canada	**35,151,728**	**849,727**	**27,790**	**36,029,245**	**2.44**
Newfoundland and Labrador	519,716	9,774	0	529,490	1.85
Prince Edward Island	142,907	3,464	0	146,371	2.37
Nova Scotia	923,598	17,809	0	941,407	1.89
New Brunswick	747,101	15,735	0	762,836	2.06
Quebec	8,164,361	35,191	11,985	8,211,537	0.57
Ontario	13,448,494	381,542	11,640	13,841,676	2.84
Manitoba	1,278,365	31,895	0	1,310,260	2.43
Saskatchewan	1,098,352	34,844	0	1,133,196	3.07
Alberta	4,067,175	115,968	4,043	4,187,186	2.87
British Columbia	4,648,055	197,267	122	4,845,444	4.07
Yukon	35,874	2,370	0	38,244	6.20
Northwest Territories	41,786	2,939	0	44,725	6.57
Nunavut	35,944	929	0	36,873	2.52
2011[1]					
Canada	**33,476,688**	**759,125**	**37,392**	**34,273,205**	**2.32**
Newfoundland and Labrador	514,536	10,192	0	524,728	1.94
Prince Edward Island	140,204	3,386	0	143,590	2.36
Nova Scotia	921,727	21,911	0	943,638	2.32
New Brunswick	751,171	3,930	0	755,101	0.52
Quebec	7,903,001	73,240	16,882	7,993,123	1.13
Ontario	12,851,821	369,874	14,926	13,236,621	2.91
Manitoba	1,208,268	21,698	608	1,230,574	1.81
Saskatchewan	1,033,381	29,580	768	1,063,729	2.85
Alberta	3,645,257	128,584	4,094	3,777,935	3.51
British Columbia	4,400,057	91,280	114	4,491,451	2.03
Yukon	33,897	1,356	0	35,253	3.85
Northwest Territories	41,462	1,977	0	43,439	4.55
Nunavut	31,906	2,117	0	34,023	6.22
2006[1]					
Canada	**31,612,897**	**868,658**	**40,115**	**32,521,670**	**2.79**
Newfoundland and Labrador	505,469	5,046	0	510,515	0.99
Prince Edward Island	135,851	1,903	0	137,754	1.38
Nova Scotia	913,462	24,558	0	938,020	2.62
New Brunswick	729,997	16,059	0	746,056	2.15
Quebec	7,546,131	60,751	16,600	7,623,482	1.01
Ontario	12,160,282	465,824	15,391	12,641,497	3.81
Manitoba	1,148,401	34,330	0	1,182,731	2.90
Saskatchewan	968,157	22,594	739	991,490	2.35
Alberta	3,290,350	111,353	7,272	3,408,975	3.48
British Columbia	4,113,487	121,551	113	4,235,151	2.87
Yukon	30,372	1,805	0	32,177	5.61
Northwest Territories	41,464	1,620	0	43,084	3.76
Nunavut	29,474	1,264	0	30,738	4.11

Text table 1
Estimated census net undercoverage, Canada, provinces and territories, 2001 to 2021 censuses

Geography	Census population	Census net undercoverage	Incompletely enumerated reserves and settlements	Adjusted population	Rate
	A	B	C	D=A+B+C	(B+C)/D*100
	number				percent
2001[1]					
Canada	**30,007,094**	**924,430**	**34,539**	**30,966,063**	**3.10**
Newfoundland and Labrador	512,930	9,401	0	522,331	1.80
Prince Edward Island	135,294	1,325	0	136,619	0.97
Nova Scotia	908,007	24,521	0	932,528	2.63
New Brunswick	729,498	20,095	0	749,593	2.68
Quebec	7,237,479	140,232	12,648	7,390,359	2.07
Ontario	11,410,046	436,349	15,960	11,862,355	3.81
Manitoba	1,119,583	30,903	110	1,150,596	2.70
Saskatchewan	978,933	21,231	581	1,000,745	2.18
Alberta	2,974,807	69,857	4,977	3,049,641	2.45
British Columbia	3,907,738	164,542	263	4,072,543	4.05
Yukon	28,674	1,423	0	30,097	4.73
Northwest Territories	37,360	3,295	0	40,655	8.10
Nunavut	26,745	1,256	0	28,001	4.49

1. The levels and rates are based on the Reverse Record Check (RRC), the Census Undercoverage Study (CUS) and the Census Overcoverage Study (CUS). They include non-permanent residents.
Source: Statistics Canada, Centre for Demography.

The adjustment also incorporates the results of a study on the estimates of the number of people living on incompletely enumerated reserves and settlements to complete the corrections for coverage errors in the census. The results of the coverage studies contain mainly sampling errors.

These adjustments have a direct impact on:

- the error of closure and its distribution by age and gender within a province or a territory as well as by province/territory as the CNU[1] and its distribution vary from one census to another;

- within-cohort consistency of population estimates. If for example, the male cohort of children in age group 0 to 4 in 1981 was tracked up to the 2001 Census (unadjusted for CNU)[1] the age group 20 to 24 would be noticeably smaller in 2001 than the age group 15 to 19 in 1996. Since Canada receives many immigrants within these age groups, the opposite would be expected. However, only after adjustment for CNU,[1] the cohort size increases from 1996 to 2001.

Text table 2
Census adjustment rates by age group, 2001 to 2021 censuses, Canada

	2001	2006	2011	2016	2021
All ages	**3.10**	**2.79**	**2.32**	**2.44**	**3.14**
0 to 4 years	3.38	1.91	0.95	2.14	3.81
5 to 9 years	2.18	0.96	-0.25	-0.94	0.86
10 to 14 years	1.07	0.95	0.08	-0.36	-0.71
15 to 19 years	2.93	3.14	2.90	2.90	2.27
20 to 24 years	7.09	7.56	6.76	5.98	8.70
25 to 29 years	8.26	8.88	8.26	6.97	9.53
30 to 34 years	6.38	6.83	6.70	6.09	6.58
35 to 39 years	4.62	4.95	4.12	4.66	4.80
40 to 44 years	2.70	4.14	2.51	3.55	3.91
45 to 49 years	1.49	1.73	1.91	2.93	3.16
50 to 54 years	1.33	0.66	0.98	2.36	2.47
55 to 59 years	1.14	0.00	0.03	1.53	1.94
60 to 64 years	0.69	-0.08	-0.27	0.51	1.43
65 to 69 years	0.75	-0.48	-0.41	-0.35	0.22
70 to 74 years	0.83	-0.73	-0.52	-0.99	-0.27
75 to 79 years	0.48	-0.48	-0.51	-1.36	-0.27
80 to 84 years	0.54	-0.70	-0.51	-1.15	-0.51
85 to 89 years	0.38	-0.33	-0.49	-0.89	-1.04
90 to 94 years	-0.14	-3.67	1.48	-0.76	-1.38
95 to 99 years	-1.99	-7.66	0.91	2.55	4.01
100 years and older	-8.27	-6.07	1.42	3.40	8.45

Note: The census adjustment represents the sum of census net undercoverage, incompletely enumerated reserves and settlements and demographic adjustment.
Source: Statistics Canada, Centre for Demography.

For further information regarding the main coverage studies, please see the following document on Statistics Canada's web site: 1996, 2001, 2006, 2011 and 2016 Census Technical Report on Coverage. The technical report on coverage for the 2021 Census will be available on October 23, 2024.

Components

Errors due to estimation methodologies and data sources other than the census can also be significant.

A. Births and deaths

Since the law requires the recording of vital statistics, the final estimates for births and deaths data meet very high standards. Nevertheless, since preliminary[2] estimates are derived, they can be slightly different from final estimates.

B. Immigrants and non-permanent residents

Immigration, Refugees and Citizenship Canada (IRCC), along with other government departments, administers data files that allow the measurement of the numbers of immigrants, asylum claimants, protected persons and related groups as well as work, study and temporary resident permit holders in Canada. As immigration is controlled by law, data on permanent and temporary immigration are collected upon and after arrival in Canada. These data include only regular immigrants and are considered to be of very high quality.

Differences may exist for the province or territory of destination: the one envisaged by the immigrant at the time of arrival may differ from the one where they will actually reside. Non-permanent residents (NPR) estimates are more error-prone than immigrant data, notably because the province or territory of residence of certain groups of permit holders is missing, the number of family members living with permit holders needs to be modeled, and finally, data sources on NPR exiting Canada are limited.

C. Emigrants and returning emigrants

Of all the components that are used by the DEP, the emigrants and returning emigrants are the most difficult to estimate with accuracy. Canada does not have a complete border registration system. While immigration and non-permanent residents (NPRs) are better documented by the federal government, Statistics Canada has always used indirect techniques for the estimation of the number of persons leaving the country. For this reason, available statistics regarding these two components have historically been of a lower quality than other components.

Estimates of the number of long-term emigrants and long-term returning emigrants are both derived using Canada child benefit (CCB) data provided by Canada Revenue Agency (CRA). Estimates must be adjusted to consider the incomplete coverage of the program and to derive the adult emigrants and adult returning emigrants.

These adjustments and the delay in obtaining the data are the two main sources of errors. As current information on the number of short-term emigrants and short-term returning emigrants does not exist, estimates are based on the Census Undercoverage Study (CUS) and the census. Estimates for the intercensal period are distributed according to the long-term emigrants. Moreover, assumptions were made to allow for the distribution of national estimates by province and territory and of annual estimates to a quarterly level. Assumptions must also be made to establish the variation for the postcensal period. Any geographical or quarterly variation may introduce error in the estimation of these components.

D. Interprovincial migration

Since July 1993, preliminary[2] interprovincial migration estimates have been based on Canada child benefit (CCB) files. As this program covers only children, various adjustments must be done in order to derive the migration of adults. Consequently, preliminary[2] CCB based estimates are subject to larger error than final estimates derived from Canada Revenue Agency (CRA) tax files.

> **E. Level of detail of components**
>
> As a more detailed breakdown of the data introduces a greater risk of inaccuracy into the estimates, the possibility of error in the components is augmented by the method used to distribute the estimates by age and gender. It seems that, in general, the initial errors should be minimal where the distribution of annual estimates of births, deaths and immigrants is concerned, and more significant with regard to the distribution of other components (non-permanent residents, emigrants, returning emigrants and interprovincial migrants). Finally, the size of error due to the age and gender distribution may vary by period and errors in some components may have a greater impact on a given age group or gender.

Quality assessment

To assess the quality of our estimates, two evaluation measures are used: precocity errors and errors of closure.

A. Precocity error

The quality of preliminary estimates of components is evaluated using precocity errors. Precocity error is defined as the difference between preliminary and final estimates of a particular component in terms of its relative proportion of the total population for the relevant geographical area. The precocity error can be calculated for both population and component estimates. The precocity error measures the impact of the trade-off of accuracy in favour of timeliness on the estimated population. The annual precocity error of a component is calculated as:

$$PE_{(t-1,t)} = \frac{\left(N_{(t-1,t)}^{preliminary} - N_{(t-1,t)}^{final} \right)}{P_{(t-1)}^{postcensal}} \text{ x } 1,000$$

where:

$PE_{(t-1,t)}$ = the precocity error for the period from t-1 to t;

$N_{(t-1,t)}^{preliminary}$ = the preliminary estimate of a component of demographic change;

$N_{(t-1,t)}^{final}$ = the final estimate of a component of demographic change;

$P_{(t-1)}^{postcensal}$ = postcensal estimates of population for the relevant geographical area at time t-1.

Precocity error allows for useful comparisons between components, as well as between provinces and territories having different population size. Precocity error can either be positive or negative. A positive precocity error denotes that the preliminary estimate is larger than the final estimate while a negative precocity error indicates the opposite. As precocity errors measure differences between preliminary and final estimates, small precocity errors refer to those that are close to zero per thousand.

Precocity error by component for Canada

At the national level, the immigration component yielded the smallest precocity errors in absolute values, with error values close to zero per thousand throughout the years under consideration. On the other hand, interprovincial in-migrants and out-migrants[6] yielded the largest precocity errors in absolute values, reaching respectively 0.98 and 0.94 per thousand in 2018/2019 and 2020/2021 (see Table 3).

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6. At the national level, net interprovincial migration equals to zero as the sum of interprovincial in-migrants is equivalent to the sum of interprovincial out-migrants.

Text table 3
Most up-to-date annual precocity errors for components, Canada, provinces and territories

Year/Component	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
						per thousand								
Births														
2017/2018	0.24	0.67	0.96	0.39	0.20	0.00	0.27	0.05	0.40	0.79	-0.03	0.38	0.24	-0.21
2018/2019	0.25	0.14	0.58	0.53	0.25	0.00	0.36	0.50	0.65	0.42	-0.01	0.57	-0.04	0.37
2019/2020	0.09	0.03	0.06	0.22	0.11	-0.02	0.15	0.09	-0.01	0.28	-0.02	1.96	0.20	-0.77
2020/2021	-0.08	-0.30	-0.59	-0.02	-0.08	-0.02	-0.01	-0.93	-0.18	-0.08	-0.06	-0.55	-0.57	-1.73
Deaths														
2017/2018	-0.11	0.08	-1.24	-0.39	-0.21	-0.05	-0.16	-0.05	0.06	-0.08	-0.05	-0.18	0.22	0.21
2018/2019	0.12	0.29	0.44	0.19	0.24	-0.07	0.21	0.32	0.12	0.28	-0.05	-0.72	0.53	-1.26
2019/2020	0.08	-0.11	-0.25	-0.13	0.46	0.00	0.21	-0.04	0.06	0.02	-0.05	-0.85	-0.13	0.03
2020/2021	0.00	0.04	-0.01	0.01	0.47	-0.06	0.00	0.26	-0.05	0.01	-0.08	-0.52	-0.53	-0.56
Immigration														
2019/2020	0.01	0.00	0.02	-0.01	0.00	0.00	0.01	0.04	-0.02	0.01	0.02	0.00	0.00	0.00
2020/2021	0.00	0.00	0.01	-0.02	0.00	0.00	0.00	0.01	-0.03	-0.01	0.00	0.00	0.00	0.00
2021/2022	-0.01	0.00	-0.02	-0.02	-0.01	0.00	-0.01	0.00	-0.01	0.00	0.00	-0.02	0.00	-0.02
2022/2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
Net emigration														
2018/2019	0.36	0.33	0.25	-0.01	0.08	0.40	0.50	0.00	-0.24	0.12	0.47	0.37	1.62	0.68
2019/2020	-0.20	-0.03	0.17	0.29	0.30	0.08	-0.36	-0.43	-0.47	-0.50	-0.02	0.39	0.47	0.46
2020/2021	0.03	0.02	0.04	0.13	0.12	0.12	0.10	-0.43	-0.28	-0.22	0.05	-1.73	0.75	0.10
2021/2022	-0.18	0.23	-0.14	-0.10	-0.02	0.15	-0.31	-1.10	-0.22	-0.42	0.02	-0.05	0.18	0.37
Net non-permanent residents														
2017/2018	0.09	0.56	0.37	0.69	0.37	-0.50	0.65	0.69	0.42	-0.05	-0.87	-0.38	0.22	-0.05
2018/2019	0.07	0.30	-0.87	0.16	0.25	-0.47	0.69	0.73	0.30	-0.06	-0.93	-1.04	-0.80	0.10
2019/2020	0.05	0.12	0.24	-0.16	-0.01	-0.48	0.54	-0.13	0.09	-0.04	-0.29	-1.36	-0.29	-0.18
2020/2021	0.23	0.13	-0.40	0.27	-0.09	-0.15	0.54	-0.16	0.15	0.07	0.35	-1.00	-0.44	-0.18
In-migrants														
2019/2020	-0.17	0.51	-7.65	-1.37	-0.35	0.03	-0.36	-0.33	0.44	0.83	-0.56	-6.47	0.40	12.71
2020/2021	0.94	1.45	2.11	1.47	1.76	0.43	0.61	-2.33	1.39	1.98	2.24	-1.00	4.38	9.41
2021/2022	0.02	1.27	3.56	2.12	3.67	-0.13	-0.52	-2.31	0.79	2.68	-1.31	-4.03	2.09	16.51
2022/2023	0.14	0.53	0.31	1.39	3.17	-0.18	-0.39	-0.41	0.39	3.00	-1.15	0.64	8.13	17.23
Out-migrants														
2019/2020	-0.17	-0.53	2.59	0.35	0.76	-0.34	-0.20	-0.04	0.30	-0.21	-0.30	0.07	3.50	7.67
2020/2021	0.94	0.95	3.53	0.40	2.66	0.26	0.53	2.66	3.29	2.52	0.51	4.87	6.23	16.23
2021/2022	0.02	-0.87	0.24	-0.24	0.26	-0.69	0.56	-0.31	-0.64	-0.92	0.64	4.35	3.90	7.76
2022/2023	0.14	1.51	-0.38	-0.10	0.87	-0.67	0.42	-0.18	0.16	-0.73	1.02	9.64	4.73	17.43
Net interprovincial migration														
2019/2020	…	1.04	-10.24	-1.72	-1.11	0.38	-0.17	-0.29	0.14	1.05	-0.25	-6.54	-3.10	5.04
2020/2021	…	0.49	-1.43	1.07	-0.90	0.17	0.09	-4.99	-1.90	-0.54	1.73	-5.87	-1.85	-6.82
2021/2022	…	2.13	3.32	2.36	3.41	0.56	-1.08	-2.00	1.43	3.61	-1.95	-8.38	-1.82	8.76
2022/2023	…	-0.97	0.69	1.50	2.30	0.49	-0.81	-0.23	0.23	3.73	-2.17	-9.00	3.41	-0.20

... not applicable
Source: Statistics Canada, Centre for Demography.

For the period under consideration, precocity errors in absolute values ranged from 0.08 per thousand in 2020/2021 to 0.25 per thousand in 2018/2019. Precocity errors for deaths were positive for three of the past four years under consideration. Only the year 2017/2018 had a negative precocity error at -0.11 per thousand, the other years ranging from 0.00 per thousand (2020/2021) to 0.12 per thousand (2018/2019).

Precocity errors for net emigration were mostly positive. During the years under consideration, precocity error in absolute values for emigration was lowest in 2020/2021 (0.03 per thousand) and largest in 2018/2019 (0.36 per thousand).

Over the period 2017/2018 to 2020/2021, precocity error of the net non-permanent residents ranged from 0.05 per thousand in 2019/2020 to 0.23 per thousand in 2020/2021.

Precocity error by component for provinces and territories

The precocity error is typically more prone to higher volatility for smaller provinces or territories as it is an error measurement relative to the population size. At the provincial and territorial level, precocity errors in absolute values for births ranged from close to zero per thousand (Quebec from 2017/2018 to 2020/2021)[7] to 1.96 per thousand (in Yukon for 2019/2020). Precocity errors for births were positive in most provinces and territories from 2017/2018 to 2019/2020. However, errors were negative in every jurisdiction in 2020/2021.

For the years under consideration, the largest precocity error in absolute value for deaths was 1.26 per thousand (Nunavut in 2018/2019).

Compared to the other demographic components, precocity errors for immigration were low among the provinces and territories. The largest absolute error value was 0.04 per thousand for Manitoba in 2019/2020. Precocity errors in absolute values for emigration ranged from zero per thousand (in Manitoba for 2018/2019) and 1.73 per thousand (in Yukon for 2020/2021).

Precocity errors in absolute values for the net change in the number of non-permanent residents were less than or equal to 1.36 per thousand across the provinces and territories, during the years 2017/2018 to 2020/2021.

Most of the time, precocity errors for interprovincial in-migrants and out-migrants were positive during the years under consideration, meaning that final estimates were mostly lower than preliminary estimates. Precocity errors for these two components were comparatively larger at the territorial level than for the provinces mainly due to the smaller population size of the territories.

At the provincial level, the largest absolute precocity error value for net interprovincial migration was 10.24 per thousand (Prince Edward Island in 2019/2020), while the smallest was 0.09 per thousand (Ontario in 2020/2021). At the territorial level, precocity errors for net interprovincial migration were comparatively higher. These errors in absolute value ranged from 0.20 per thousand in Nunavut in 2022/2023 to 9.00 per thousand in Yukon for the year 2022/2023.

Contribution of components to the sum of precocity errors

When looking at aggregated estimates of precocity errors, there is the potential for a "netting-out" effect, referring to negative precocity errors in one component canceling out positive errors in another component. The analysis of the contribution of each component to the sum of precocity errors without the netting-out effect can be done by using absolute values of the precocity errors. A mean absolute percentage precocity error by component is calculated by dividing the mean absolute precocity error by component by its sum and expressed in percentage. In this case, the mean absolute precocity error by component is the mean of the absolute precocity errors for the 2016/2017 to 2020/2021 period, the latest 5-year period that annual precocity errors by all components are available.

At the national level, the mean absolute precocity error for the net emigration[8] component contributed the most to the sum of mean absolute precocity errors (41.25%), followed by the errors related to births (28.91%), net non-permanent residents (15.86%) and deaths (13.56%). Immigration (0.43%) accounted the least to the sum of mean absolute precocity errors (refer to Table 4).

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7. As mentioned in the Methodology Section, the provincial statistical agencies of Quebec, British Columbia, and Yukon provide their most recent estimates of births and deaths to Statistics Canada. The figures are used to produce preliminary estimates.
8. Mean absolute percentage precocity error for net emigration includes the mean absolute percentages for emigration and returning emigration.

Text table 4
Mean absolute percentage precocity error by components, 2016/2017 to 2020/2021, Canada, provinces and territories

	Births	Deaths	Immigration	Net emigration[1]	Net non-permanent residents	Net interprovincial migration
				percent		
Canada	28.91	13.56	0.43	41.25	15.86	0.00
Newfoundland and Labrador	9.51	6.19	0.24	7.46	12.84	63.75
Prince Edward Island	7.53	7.55	0.40	4.00	7.29	73.22
Nova Scotia	12.80	9.02	0.48	8.70	15.88	53.12
New Brunswick	7.59	15.89	0.21	8.54	10.56	57.22
Quebec	1.01	5.56	0.18	26.48	41.13	25.64
Ontario	13.19	9.48	0.29	22.88	31.30	22.87
Manitoba	12.94	5.27	0.97	8.27	13.23	59.31
Saskatchewan	18.44	6.60	0.71	17.99	20.00	36.25
Alberta	22.20	6.01	0.26	17.36	7.82	46.35
British Columbia	1.63	2.63	0.34	9.83	35.67	49.91
Yukon	6.72	3.91	0.04	9.29	7.11	72.93
Northwest Territories	6.39	4.89	0.11	9.21	5.35	74.05
Nunavut	10.00	8.23	0.00	8.34	1.44	71.98

1. Net emigration includes emigration and returning emigration.
Source: Statistics Canada, Centre for Demography.

At the provincial and territorial level, the contribution of the individual components to the sum of mean absolute precocity errors was not uniform across the country. Net interprovincial migration accounted for the largest share of the sum of mean absolute precocity errors in eleven out of the thirteen provinces and territories, ranging for those eleven jurisdictions between 36.25% in Saskatchewan to 74.05% in the Northwest Territories. In Quebec (41.13%) and Ontario (31.30%), it is net non-permanent residents that explains the largest share of the mean absolute precocity errors (refer to Table 4).

On the other hand, immigration accounted for the smallest share of the sum of mean absolute precocity errors in all provinces and territories, ranging from close to zero per thousand in Nunavut to 0.97% in Manitoba.

> Precocity errors by age and gender are not currently available.

B. Error of closure

The error of closure measures the accuracy of the final postcensal estimates. It is defined as the difference between the final postcensal population estimates on Census Day and the enumerated population of the most recent census adjusted for census net undercoverage (CNU[1]). A positive error of closure means that the postcensal population estimates have overestimated the population.

The error of closure comes from three sources: errors primarily due to sampling when measuring the starting (2016) and end of period (2021) censuses coverage and errors related to the components of population growth over the intercensal period. For each five-year intercensal period, the error of closure can only be calculated following the release of census data and estimates of CNU.[1] The error of closure can be calculated for the total population of each province and territory as well as by age and gender. For the moment, the error is only available for total population by province and territory.

Table 5 shows postcensal population estimates on May 11, 2021 and census counts adjusted for CNU[1] and the errors of closure for Canada, provinces and territories from 2001 to 2021.

For Canada as a whole, the error of closure was estimated at -41,269 or -0.11% in 2021. This is a decrease over the error for 2016 (+0.33%).

The population estimates underestimated the population of six provinces, one territory and the country as a whole. Five jurisdictions posted errors of closure greater than 1% or less than -1%. Of these places, only the Northwest Territories' estimated population differed from the adjusted census population by more than 2% (+2.57%). In 2016, five provinces and one territory posted errors of closure greater than 1% or less than 1%.

By considering the variance in CNU, it is possible to identify errors of closure that are statistically significant. Table 5 shows the results of this analysis.

The error of closure is statistically significant for five provinces and one territory. This means that the population estimates significantly overestimated or underestimated the adjusted census population in these jurisdictions. As noted above, these results are due to both the sampling for census coverage studies and errors in the components of population growth over the intercensal period. Among these components, interprovincial migration and emigration are mostly associated with large errors of closure.

Text table 5
Error of closure of the population estimates, Canada, provinces and territories, 2001 to 2021

Geography	Postcensal estimate on Census Day	Census adjusted for CNU[1]	Error of closure		CNU standard error[2]	t value[3]
	A	B	C=A-B	D=C/B*100	E	F=C/E
	number			percent	number	
2021						
Canada	**38,151,431**	**38,192,700**	**-41,269**	**-0.11**	**38,241**	**-1.08**
Newfoundland and Labrador	520,244	526,784	-6,540	-1.24	1,829	-3.58
Prince Edward Island	163,796	161,232	2,564	1.59	995	2.58
Nova Scotia	987,291	997,235	-9,944	-1.00	3,452	-2.88
New Brunswick	788,917	789,234	-317	-0.04	2,731	-0.12
Quebec	8,597,350	8,563,460	33,890	0.40	16,829	2.01
Ontario	14,784,027	14,828,005	-43,978	-0.30	28,636	-1.54
Manitoba	1,387,415	1,390,499	-3,084	-0.22	5,145	-0.60
Saskatchewan	1,179,830	1,167,428	12,402	1.06	4,464	2.78
Alberta	4,428,921	4,426,908	2,013	0.05	12,527	0.16
British Columbia	5,185,199	5,214,571	-29,372	-0.56	16,069	-1.83
Yukon	42,849	42,699	150	0.35	174	0.86
Northwest Territories	45,805	44,659	1,146	2.57	228	5.03
Nunavut	39,787	39,986	-199	-0.50	250	-0.80
2016						
Canada	**36,149,289**	**36,029,245**	**120,044**	**0.33**	**43,844**	**2.74**
Newfoundland and Labrador	530,587	529,490	1,097	0.21	2,015	0.54
Prince Edward Island	149,277	146,371	2,906	1.99	870	3.34
Nova Scotia	948,802	941,407	7,395	0.79	3,042	2.43
New Brunswick	756,844	762,836	-5,992	-0.79	2,777	-2.16
Quebec	8,300,572	8,211,537	89,035	1.08	20,613	4.32
Ontario	13,910,005	13,841,676	68,329	0.49	33,316	2.05
Manitoba	1,315,618	1,310,260	5,358	0.41	4,829	1.11
Saskatchewan	1,145,688	1,133,196	12,492	1.10	4,651	2.69
Alberta	4,231,077	4,187,186	43,891	1.05	13,530	3.24
British Columbia	4,741,243	4,845,444	-104,201	-2.15	16,561	-6.29
Yukon	37,853	38,244	-391	-1.02	191	-2.05
Northwest Territories	44,678	44,725	-47	-0.11	257	-0.18
Nunavut	37,045	36,873	172	0.47	229	0.75
2011						
Canada	**34,431,763**	**34,273,205**	**158,558**	**0.46**	**57,546**	**2.76**
Newfoundland and Labrador	513,607	524,728	-11,121	-2.12	2,912	-3.82
Prince Edward Island	145,686	143,590	2,096	1.46	923	2.27
Nova Scotia	948,713	943,638	5,075	0.54	5,346	0.95
New Brunswick	756,533	755,101	1,432	0.19	3,335	0.43
Quebec	7,969,916	7,993,123	-23,207	-0.29	23,660	-0.98
Ontario	13,357,838	13,236,621	121,217	0.92	44,121	2.75
Manitoba	1,252,038	1,230,574	21,464	1.74	6,104	3.52
Saskatchewan	1,055,950	1,063,729	-7,779	-0.73	6,306	-1.23
Alberta	3,774,590	3,777,935	-3,345	-0.09	18,046	-0.19
British Columbia	4,543,776	4,491,451	52,325	1.16	19,494	2.68
Yukon	35,356	35,253	103	0.29	303	0.34
Northwest Territories	44,197	43,439	758	1.74	323	2.35
Nunavut	33,563	34,023	-460	-1.35	608	-0.76

Text table 5
Error of closure of the population estimates, Canada, provinces and territories, 2001 to 2021

	Postcensal estimate on Census Day	Census adjusted for CNU[1]	Error of closure		CNU standard error[2]	t value[3]
	A	B	C=A-B	D=C/B*100	E	F=C/E
Geography	number			percent	number	
2006						
Canada	**32,561,079**	**32,521,670**	**39,409**	**0.12**	**53,926**	**0.73**
Newfoundland and Labrador	508,694	510,515	-1,821	-0.36	2,710	-0.67
Prince Edward Island	137,723	137,754	-31	-0.02	701	-0.04
Nova Scotia	934,023	938,020	-3,997	-0.43	4,885	-0.82
New Brunswick	748,729	746,056	2,673	0.36	3,105	0.86
Quebec	7,643,258	7,623,482	19,776	0.26	24,077	0.82
Ontario	12,666,029	12,641,497	24,532	0.19	41,363	0.59
Manitoba	1,176,754	1,182,731	-5,977	-0.51	6,469	-0.92
Saskatchewan	987,799	991,490	-3,691	-0.37	4,805	-0.77
Alberta	3,358,106	3,408,975	-50,869	-1.49	16,091	-3.16
British Columbia	4,296,271	4,235,151	61,120	1.44	16,591	3.68
Yukon	31,150	32,177	-1,027	-3.19	194	-5.29
Northwest Territories	42,227	43,084	-857	-1.99	236	-3.63
Nunavut	30,316	30,738	-422	-1.37	176	-2.40
2001						
Canada	**31,016,117**	**30,966,063**	**50,054**	**0.16**	**44,749**	**1.12**
Newfoundland and Labrador	533,707	522,331	11,376	2.18	1,782	6.38
Prince Edward Island	138,098	136,619	1,479	1.08	775	1.91
Nova Scotia	941,548	932,528	9,020	0.97	4,170	2.16
New Brunswick	754,177	749,593	4,584	0.61	3,555	1.29
Quebec	7,390,018	7,390,359	-341	0.00	21,033	-0.02
Ontario	11,873,903	11,862,355	11,548	0.10	33,472	0.35
Manitoba	1,149,562	1,150,596	-1,034	-0.09	5,423	-0.19
Saskatchewan	1,016,758	1,000,745	16,013	1.60	4,333	3.70
Alberta	3,051,252	3,049,641	1,611	0.05	11,308	0.14
British Columbia	4,068,158	4,072,543	-4,385	-0.11	15,598	-0.28
Yukon	29,735	30,097	-362	-1.20	372	-0.97
Northwest Territories	41,151	40,655	496	1.22	362	1.37
Nunavut	28,050	28,001	49	0.17	411	0.12

1. Census net undercoverage includes the incompletely enumerated reserves and settlements.
2. The standard error of census net undercoverage excludes the incompletely enumerated reserves and settlements.
3. An error of closure with a t value greater than 1.96 or less than -1.96 is statistically significant at the 95% confidence level.
Source: Statistics Canada, Centre for Demography.

The error of closure can be calculated for total population estimates and for age and gender.

Text table 6
Error of closure of the estimates of population by age and gender, 2021, Canada

	Total - Gender		Men+		Women+	
	number	percent	number	percent	number	percent
All ages	**-41,269**	**-0.11**	**-65,227**	**-0.34**	**23,958**	**0.12**
0 to 4 years	-14,297	-0.75	-5,806	-0.60	-8,491	-0.91
5 to 9 years	-28,133	-1.36	-17,558	-1.65	-10,575	-1.05
10 to 14 years	-23,858	-1.13	-23,494	-2.16	-364	-0.04
15 to 19 years	-190	-0.01	-8,485	-0.80	8,295	0.83
20 to 24 years	46,224	1.92	29,691	2.37	16,533	1.43
25 to 29 years	-37,936	-1.42	-23,304	-1.68	-14,632	-1.14
30 to 34 years	-10,011	-0.37	-5,771	-0.42	-4,240	-0.32
35 to 39 years	10,315	0.39	514	0.04	9,801	0.75
40 to 44 years	-5,926	-0.24	-15,377	-1.23	9,451	0.76
45 to 49 years	-3,754	-0.16	-4,952	-0.42	1,198	0.10
50 to 54 years	-1,582	-0.07	2,742	0.23	-4,324	-0.35
55 to 59 years	1,108	0.04	-2,522	-0.19	3,630	0.27
60 to 64 years	-12,744	-0.49	-9,718	-0.76	-3,026	-0.23
65 to 69 years	5,458	0.25	1,283	0.12	4,175	0.37
70 to 74 years	-116	-0.01	-2,916	-0.33	2,800	0.29
75 to 79 years	13,455	1.07	4,337	0.73	9,118	1.37
80 to 84 years	699	0.08	2,598	0.70	-1,899	-0.41
85 to 89 years	6,463	1.24	5,643	2.70	820	0.26
90 to 94 years	3,613	1.42	4,188	4.95	-575	-0.34
95 to 99 years	6,977	9.79	2,761	15.71	4,216	7.86
100 years and older	2,966	28.48	919	50.89	2,047	23.77

Source: Statistics Canada, Centre for Demography.

Appendix A – Glossary

Age
Age as of July 1.

Aging (of a population)
An increase in the **number of older persons** as a percentage of the total population.

Average absolute error of closure
Defined as the mean of the absolute differences between the **postcensal estimates** on Census Day and the results of the **Census adjusted for the census net undercoverage**.

Average age
The average age of a population is the average age of all its members.

Census coverage

> **Census net undercoverage:** Difference between undercoverage and overcoverage.

> **Overcoverage:** Number of persons who should not have been counted in the census or who were counted more than once.

> **Undercoverage:** Number of persons who were intended to be enumerated in the census but were not.

Cohort
Represents a group of persons who have experienced a specific demographic event during a given year. In the case of births, persons born within a specified year are referred to as a generation.

Components of demographic growth
All demographic events (births, deaths and migrations) that influence the size or the age and gender composition of the population.

Demographic dependency ratio
The **ratio of the combined population** aged from **0 to 14 years old** and the population **aged 65 years and older** to the population aged from **15 to 64 years old**.

Emigrant
Canadian citizen or **immigrant** who has left Canada to establish a residence in another country, involving a change in usual place of residence. Emigrants may be either long-term or short-term.

Error of closure
Difference between the **postcensal estimate** at the census date and the results of the census adjusted for **census net undercoverage** (including adjustment for incompletely enumerated reserves and settlements).

Gender

> Gender refers to an individual's personal and social identity as a man, woman or non-binary person (a person who is not exclusively a man or a woman).

> Gender includes the following concepts:

> - gender identity, which refers to the gender that a person feels internally and individually;

> - gender expression, which refers to the way a person presents their gender, regardless of their gender identity, through body language, aesthetic choices or accessories (e.g., clothes, hairstyle and makeup), which may have traditionally been associated with a specific gender.

> A person's gender may differ from their sex at birth, and from what is indicated on their current identification or legal documents such as their birth certificate, passport or driver's licence. A person's gender may change over time.

> Some people may not identify with a specific gender.

Gender ratio
The ratio of the number of men+ to the number of women+. This ratio is usually expressed as an index, with the number of women+ taken to be a base of 100.

Generation
Unless otherwise specified, refers here to a group of persons born within a given period. The 2006 generation represents people born during the year 2006.

Immigrant
An immigrant refers to a person who is a permanent resident or a landed immigrant. Such a person has been granted the right to live in Canada permanently by immigration authorities. Persons who are born abroad to a Canadian parent are not immigrants but are included in the returning emigrant component.

For Statistics Canada's Demographic Estimates Program, the terms "immigrant", "landed immigrant" and "permanent resident" refer to the same concept.

Incompletely enumerated reserves and settlements
Reserves and settlements for which enumeration either was not permitted or could not be completed for various reasons, such as evacuations because of forest fires or access restrictions due to the COVID-19 pandemic.

International migration
International migration represents movement of population between Canada and a foreign country which involves a change in the usual place of residence. A distinction is made with regard to **immigrants**, **emigrants**, **returning emigrants** and **net non-permanent residents**.

Interprovincial migration
Interprovincial migration represents all movement from one province or territory to another involving a change in the usual place of residence. A person who takes up residence in another province or territory is an **out-migrant** with reference to the province or territory of origin and an **in-migrant** with reference to the province or territory of destination.

Long-term emigrant
Citizen or landed **immigrant** who has left the country to take up long-term residence in another country.

Long-term returning emigrant
Canadian citizen or landed **immigrant** who has already emigrated from Canada on a long-term basis and subsequently returned to live in Canada.

Median age
The median age is an age "x", such that exactly one half of the population is older than "x" and the other half is younger than "x".

Men+
The gender category "Men+" includes men (and/or boys), as well as some non-binary persons.

Natural increase
Variation in the population size over a given period as a result of the difference between the numbers of births and deaths.

Net emigration
Net emigration is obtained according to the following formula: **Emigrants - Returning emigrants**. For estimates from 1991 to June 2016, net emigration is obtained according to the following formula: (**Emigrants + Net temporary emigration) - Returning emigrants**.

Net international migration
Net international migration is obtained according to the following formula: **Immigrants + Net non-permanent residents – Net emigration**.

Net interprovincial migration
Net interprovincial migration represents the difference between **in-migrants** and **out-migrants** for a given province or territory.

Net non-permanent residents
Net non-permanent residents represent the difference between the inflows and outflows of non-permanent residents to Canada between two dates for a given province or territory.

Net temporary emigration

For demographic estimates from 1991 to June 2016, net temporary emigration represents the variation in the number of temporary emigrants between two dates. Temporary emigration includes Canadian citizens and **immigrants** living temporarily abroad who have not maintained a usual place of residence in Canada. From July 2016, net temporary emigration is distributed among emigrants and returning emigrants.

Non-permanent residents

Non-permanent resident refers to a person from another country with a usual place of residence in Canada and who has a work or study permit or who has claimed refugee status (asylum claimants, protected persons and related groups).

Family members living with work or study permit holders are also included unless these family members are already Canadian citizens, landed immigrants (permanent residents), or non-permanent residents themselves.

For Statistics Canada's Demographic Estimates Program, the terms "non-permanent resident" and "temporary immigrant" refer to the same concept.

Non-permanent residents, inflows

The number of people entering Canada to work, study or claim asylum status along with their family members who are not Canadian citizens or landed immigrants (permanent residents).

Non-permanent residents, outflows

The number of work and study permit holders leaving Canada, along with their family members who are not Canadian citizens or landed immigrants (permanent residents).

This also includes permit holders and asylum claimants, protected persons and related groups staying in Canada who have been granted permanent resident status. In this case, these persons will be added to the immigrant component.

Asylum claimants and related groups who have been deported are counted as outflows.

Non-permanent resident type

Refers to the temporary residence status for which a **non-permanent resident** has been authorized to enter Canada. This category is defined according to the type(s) of permit(s) and/or refugee claim valid on given date. The non-permanent resident types are mutually exclusive and are derived in the following order of classification:

1. asylum claimants, protected persons and related groups;
2. permit holders and their family members.

Consequently, there are no asylum claimants, protected persons and related groups among the permit holder types.

> **Asylum claimants, protected persons and related groups**
>
> Asylum claimants, protected persons and related groups are defined as:

- Asylum claimant refers to a foreign national who has made a refugee claim while in Canada on a temporary basis and whose claim is pending decision.

- Protected person refers to a person who has made a claim in Canada and received a positive decision. For population estimates, protected persons leave this population if they obtain permanent residence.

- Related groups include those who received a negative decision or withdrew or abandoned their claim and have not yet regularized their status or departed Canada.

> This type includes the following subtypes:
>
> **Asylum claimants, protected persons and related groups with work permit only**
>
> Asylum claimants, protected persons and related groups who only have a work permit. A work permit is a document issued by Immigration, Refugees and Citizenship Canada that authorizes a person to work on a temporary basis in Canada.

Asylum claimants, protected persons and related groups with study permit only
Asylum claimants, protected persons and related groups who only have a study permit. A study permit is a document issued by Immigration, Refugees and Citizenship Canada that authorizes a person to study at a designated learning institution in Canada.

Asylum claimants, protected persons and related groups with work and study permits
Asylum claimants, protected persons and related groups who have both a work and study permit at the same time.

Asylum claimants, protected persons and related groups without work or study permits
Asylum claimants, protected persons and related groups with a valid claim but neither a work nor study permit.

Permit holders and their family members
Permit holders and their family members are non-permanent residents who are not asylum claimants, protected persons and related groups, but who hold a permit (for work, study or temporary residence). This classification also includes their family members who are not Canadian citizens, landed immigrants (permanent residents) or non-permanent residents themselves. This type includes the following subgroups:

Work permit holders only
Non-permanent residents who only have a work permit. A work permit is a document issued by Immigration, Refugees and Citizenship Canada that authorizes a person to work on a temporary basis in Canada. This subtype does not include family members.

Study permit holders only
Non-permanent residents who only have a study permit. A study permit is a document issued by Immigration, Refugees and Citizenship Canada that authorizes a person to study at a designated learning institution in Canada. This subtype does not include family members.

Work and study permit holders
Non-permanent residents who have both a work and study permit at the same time. This subtype does not include family members.

Other
"Other" mainly refers to family members living with permit holders, unless these family members are already Canadian citizens, landed immigrants, or non-permanent residents themselves. This type of non-permanent resident also refers to holders of other permits (e.g. temporary resident permits, formerly known as "Minister's Permits").

Population
Estimated population and population according to the census are both defined as being the number of Canadians whose usual place of residence is within that area, regardless of where they happened to be on Census Day. Also included are any Canadians staying in a dwelling in that area on Census Day and having no usual place of residence elsewhere in Canada, as well as those considered **non-permanent residents**.

Population estimate

Postcensal: Population estimate produced by using data from the most recent available census adjusted for **census net undercoverage** (including adjustment for incompletely enumerated reserves and settlements) and estimate of the **components of demographic growth** since that last census. This estimate can be preliminary, updated or final.

Intercensal: Population estimate derived by using **postcensal estimates** and data adjusted for **census net undercoverage** (including adjustment for incompletely enumerated reserves and settlements) of censuses preceding and following the year in question.

Population growth or total growth
Variation of population size between two dates. It can also be obtained by summing the **natural increase**, **total net migration** and if applicable, add **residual deviation**. It can be positive or negative.

Precocity error
Difference between preliminary and final estimate in terms of its relative proportion of the total population for the relevant geographical area. It can be calculated for either population estimates or components of population growth.

Rate

Refers to the ratio of the number of events estimated in a year (t, t+1) to the average populations at the beginning and the end of the period. In this regard, births, deaths, immigration rates, etc. are calculated. Generally, the rates are expressed in per 1,000.

Census net undercoverage of population rate: Difference between the census **undercoverage rate** and the census **overcoverage rate**.

Demographic growth rate or population growth rate: Ratio of population growth between the year t and t+1, to the average **population** of both these years. The rate is generally expressed in per 1,000.

Overcoverage of population rate: The ratio of the number of persons who should not have been counted in the census or who were counted more than once to the total number of persons that should have been enumerated in the census. Generally, the rate is expressed in percentage.

Undercoverage of population rate: The ratio of the estimated number of persons not enumerated in the census (who were intended to have been enumerated) to the total number of persons that should have been enumerated in the census. Generally, the rate is expressed in percentage.

Residual deviation
Difference between demographic **population growth** calculated using **intercensal estimates** of population between two dates and that obtained by the sum of the components for the same period. This deviation results from the distribution of the **error of closure** (based on the number of days) over the months related to the five-year period.

Returning emigrant
Canadian citizen or **immigrant** who has previously emigrated from Canada and subsequently returned to the country. Returning emigrants may be either long-term or short-term.

Sex at birth
Sex at birth refers to sex assigned at birth. Sex at birth is typically assigned based on a person's reproductive system and other physical characteristics.

Sex at birth may also be understood as the sex recorded at a person's birth (for example, what was recorded on their birth certificate).

Short-term emigrant
Citizen or landed **immigrant** who has left the country to take up short-term residence in another country.

Short-term returning emigrant
Canadian citizen or landed **immigrant** who has already emigrated from Canada on a short-term basis and subsequently returned to live in Canada.

Sprague coefficients
Series of factors which, when multiplied to a population distributed by multiples age groups, give a distribution of the same population by single years of age.

Total net migration
Sum of **net international** and **net interprovincial** migration.

Vital statistics
Includes all the demographic events (births, deaths, marriages and divorces) for which there are a legal requirement to inform the Provincial or Territorial Registrar's Office.

Women+
The gender category "Women+" includes women (and/or girls), as well as some non-binary persons.

Year
Unless otherwise specified, the term "year" refers to the period beginning July 1 of a given year and ending June 30 of the following year.

Appendix B – Sources and remarks

Base population:

May 11, 2021 Census of Population adjusted for census net undercoverage and incompletely enumerated reserves and settlements.

2021 Census: Statistics Canada, Census of Canada, 2021, Table: 98-10-0001-01.

Census net undercoverage: See The Daily, September 27, 2023.

Incompletely enumerated reserves and settlements: See The Daily, September 27, 2023.

Births and deaths

Statistics Canada, the Centre for Population Health Data.

Statistics Canada, the Centre for Demography, Catalogue no. 91-215-X, annual.

Births
Fertility rates for 2023 based on preliminary count of births by age group of the mother provided by the Centre for Population Health Data applied to the woman+ population estimates by age group at the beginning of the quarter. Births for Quebec, British Columbia and Yukon were provided by their respective agencies.

Note: Births provided by the Centre for Population Health Data were incomplete for Nova Scotia for August to December 2021 and for Manitoba for all of 2021 and 2022. For these two places, birth counts were replaced by estimates based on the fertility rates from 2020. The distribution of births by gender for Manitoba for 2021 and 2022 were based on the gender breakdown of births in Manitoba from 2017/2018 to 2019/2020.

Deaths
Mortality rates for 2022 based on preliminary count of deaths by age group and gender provided by the Centre for Population Health Data applied to the population estimates by age group and gender at the beginning of the quarter. Deaths for Quebec, British Columbia and Yukon were provided by their respective agencies.

Immigrants

Estimates are produced by the Centre for Demography using the Immigration, Refugees and Citizenship Canada (IRCC) immigrant file received on August 20, 2024.

For methodological reasons, the total estimates of immigrants by province and territory released by the Demographic Estimates Program may differ from those released by IRCC. In the event of a discrepancy between the two sources, the official numbers of immigrants will continue to be those released by IRCC.

Non-permanent residents

Estimates are produced by the Centre for Demography using the Immigration, Refugees and Citizenship Canada (IRCC) files received on August 20, 2024:

- immigrant file;
- asylum claims;
- removals;
- permit files (work, study and temporary residence);
- mailing address file.

Further methodological adjustments, notably derived from a linkage between censuses and IRCC data, are then applied.

Since March 17, 2022, persons with the Canada-Ukraine Authorization for Emergency Travel (CUAET) who are on Canadian soil are included.

Emigrants

For long-term emigrants, the estimates are produced by the Centre for Demography using:

- data from Canada Revenue Agency (CRA) Canada child benefit files (CCB) program. The last year of data used is 2021/2022
- tax data calculated using T1FF file provided by Statistics Canada Centre for Income and Socioeconomic Well-being Statistics. The last year of data used was 2021/2022
- data provided by the U.S. Department of Homeland Security, Office of Immigration Statistics. The last year of data used was 2021/2022
- data on the number of adult and children emigrants from T1FF file used for the provincial distribution of adults. The last year of data used was 2021/2022.

For estimates after 2021/2022, we:

- calculated the 2021/2022 emigration rate for Canada
- applied this rate to Canada's population on July 1 at the beginning of the period to be estimated
- distributed the number of emigrants for Canada by the province and territory according to the provincial distribution of 2021/2022
- distributed these data by month according to the provincial or territorial emigration seasonality of 2021/2022.

For short-term emigrants, for the intercensal period, data are produced by the Centre for Demography using:

- data from 2021 Census Undercoverage Study (CUS)

For postcensal estimates, we:

- calculated the 2020/2021 short-term emigration rate for Canada
- applied this rate to the population of Canada on July 1 of the start of the period to be estimated
- distributed the estimated short-term emigrants by province and territory by month, according to the distribution of long-term emigrants.

Finally, the number of emigrants is calculated by adding long-term and short-term emigrants.

Returning emigrants

For long-term returning emigrants, the estimates are produced by the Centre for Demography using:

- data from Canada Revenue Agency (CRA) Canada child benefit files (CCB) program. The last year of data used was 2021/2022
- 2021 Census – 1 year mobility.

For estimates after 2021/2022, we:

- calculated the 2021/2022 returning emigration rate for Canada
- applied this rate to Canada's population on July 1 at the beginning of the period to be estimated
- distributed the number of returning emigrants for Canada by the province and territory according to the provincial distribution of 2021/2022
- distributed these data by month according to the provincial or territorial returning emigration seasonality of 2021/2022.

For short-term returning emigrants, for the intercensal period, data are produced by the Centre for Demography using:

- 2021 Census question on place of residence 5 years ago
- estimates of returning long-term emigrants for the intercensal period 2016 to 2021
- the monthly distribution by province and territory of short-term emigrants.

For postcensal estimates, we:

- calculated the 2020/2021 short-term returning emigration rate for Canada
- applied this rate to Canada's population on July 1 at the beginning of the period to be estimated
- distributed the number of short-term returning emigrants by month and by province and territory according to the short-term emigrant distribution

Finally, the number of returning emigrants is calculated by adding long-term and short-term returning emigrants.

Net temporary emigration

Before July 2016, short-term emigrants and short-term returning emigrants were included in the "net temporary emigration" component. After this date, they are included in the emigrant and returning emigrant components, using a slightly different methodology. Due to this change, the net temporary emigration component is no longer calculated from July 2016 onwards.

Interprovincial migration

The estimates are produced by the Centre for Demography using:

- adjusted migration data for children from Canada child benefit (CCB) program from Canada Revenue Agency (CRA)
- factors ($_jG$) corresponding to the ratio of the migration rate of all children to the migration rate of who are registered to the CCB program children calculated using 2022/2023 tax file data
- factors ($_{jk}F$) used to calculate adult migration and corresponding to the ratio of the adult to child migration rates, calculated on a three-year basis using tax file data for 2020/2021, 2021/2022 and 2022/2023.

Notes: Due to a change in methodology, we remind you that the in- and out- interprovincial migrants cannot be summed in order to obtain a different period (for example, the sum of the quarterly estimates is not equal to the annual estimates). This method has been applied starting with July 2011.

Related products

Publications

91-003-X	Canadian Demographics at a Glance
91-209-X	Report on the Demographic Situation in Canada
91-214-X	Annual Demographic Estimates: Subprovincial Areas
91-215-X	Annual Demographic Estimates: Canada, Provinces and Territories
91-520-X	Population Projections for Canada, Provinces and Territories
91-528-X	Population and Family Estimation Methods at Statistics Canada

Tables

17-10-0005-01	Population estimates on July 1, by age and gender
17-10-0006-01	Estimates of deaths, by age and gender, annual
17-10-0008-01	Estimates of the components of demographic growth, annual
17-10-0009-01	Population estimates, quarterly
17-10-0014-01	Estimates of the components of international migration, by age and gender, annual
17-10-0015-01	Estimates of the components of interprovincial migration, by age and gender, annual
17-10-0016-01	Estimates of births, by gender, annual
17-10-0020-01	Estimates of the components of interprovincial migration, quarterly
17-10-0021-01	Estimates of the components of interprovincial migration, annual
17-10-0022-01	Estimates of interprovincial migrants by province or territory of origin and destination, annual
17-10-0040-01	Estimates of the components of international migration, quarterly
17-10-0060-01	Estimates of population as of July 1st, by marital status or legal marital status, age and sex
17-10-0045-01	Estimates of interprovincial migrants by province or territory of origin and destination, quarterly
17-10-0061-01	Estimates of the number of census families as of July 1st
17-10-0059-01	Estimates of the components of natural increase, quarterly
17-10-0121-01	Estimates of the number of non-permanent residents by type, quarterly
17-10-0158-01	Estimates of the number of non-permanent residents on July 1, by age and gender
13-10-0708-01	Deaths, by month
13-10-0709-01	Deaths, by age group and sex
13-10-0415-01	Live births, by month
13-10-0416-01	Live births, by age of mother
13-10-0417-01	Mean age of mother at time of delivery (live births)
13-10-0418-01	Crude birth rate, age-specific fertility rates and total fertility rate (live births)
13-10-0710-01	Deaths and mortality rates, by age group

Surveys

3231	Statistics Canada, Canadian Vital Statistics - Birth database (CVSB)
3233	Statistics Canada, Canadian Vital Statistics - Death database (CVSD)
3601	Quarterly Demographic Estimates (QDE)
3604	Annual Demographic Estimates: Canada, Provinces and Territories
3605	Estimates of population, by marital status or legal marital Status, age and sex for July 1, Canada, provinces and territories
3606	Estimates of the number of census families for July 1st, Canada, provinces and territories