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Annual Demographic Estimates: Canada, Provinces and Territories

2020

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Notice to readers

Estimates released in this publication are based on the 2016 Census counts adjusted for census net undercoverage (CNU) and incompletely enumerated Indian reserves (IEIR) to which is added the estimated demographic growth for the period going from May 10, 2016 to the date of the estimate.

These estimates are not to be mistaken with the 2016 Census counts.

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

Acknowledgements

The completion of this publication and the dissemination of the annual demographic estimates rests on the assiduous and meticulous work of the members of the Population Estimates Section of the Centre for Demography.

The contribution of editorial, communications, translation and dissemination services staff of Statistics Canada was essential to the project's achievement and is appreciated.

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Demographic estimates, annual and by age and sex, for Canada, the provinces and the territories are available in Tables 17-10-0005-01, 17-10-0006-01, 17-10-0008-01, 17-10-0014-01, 17-10-0015-01, 17-10-0016-01, 17-10-0021-01 and 17-10-0022-01, which are linked in the *Related products section*.

The article "Technical Supplement: Production of Demographic Estimates for the Second Quarter of 2020 in the Context of COVID-19" (91F0015M) is now available.

Highlights

Total population

- Canada's population surpassed the 38-million mark between July 1, 2019 and June 30, 2020 to reach an estimated 38,005,238 on July 1, 2020.
- The population increased by 411,854 between July 1, 2019 and July 1, 2020. This increase was lower than has been seen in the past three years, but was similar to the increase found from 2015 to 2016 (+406,579).
- The population growth of 1.1% was also lower than in the past three years, but was the same as was found from 2015 to 2016 (+1.1%).
- The main reason for the slower growth observed in 2019/2020 was the impact of the restrictions on international borders due to the COVID-19 pandemic on international migration and, to a lesser extent, the excess deaths due to the pandemic, both of which began in March 2020.
- International migratory growth in 2019/2020 (+337,283) was down from record highs set in 2017/2018 (+426,858) and 2018/2019 (+442,960). It returned to the level found in 2016/2017 (+330,106).
- Although lower than it was in 2018/2019 (83.9%), international migratory increase still accounted for more than 80% of Canada's growth in 2019/2020 (81.9%).
- Lower levels of international migratory growth were due to a reduction in the number of immigrants (9.3% lower in 2019/2020 than in 2018/2019) as well as lower levels of net non-permanent residents (54.2% lower in 2019/2020 than in 2018/2019). The vast majority of immigrants and non-permanent residents came to Canada before the border restrictions began in March 2020.
- Natural increase (births minus deaths) was at the lowest level (+74,571) since the beginning of the current demographic accounting system (1971/1972). This is the result of deaths being at the highest level over the same period (300,314), due both to population aging as well as excess mortality due to the COVID-19 pandemic.
- In 2019/2020, the population growth rate was highest in Nunavut (+1.9%) and lowest in Newfoundland and Labrador (-0.3%).
- All provinces and territories experienced a decrease in their rate of growth in 2019/2020 as compared to 2018/2019, except for Newfoundland and Labrador (-0.3%), the Northwest Territories (+0.3%), and Nunavut (+1.9%).
- Following four years of losses, Alberta posted interprovincial migratory gains in 2019/2020 (+2,183), according to preliminary estimates. While still posting a gain from interprovincial migration, the gain in Ontario fell from 6,629 in 2018/2019 to 363 in 2019/2020.

Population by age and sex

- Although the COVID-19 pandemic resulted in excess mortality among those 80 and over as well as a drop in the number of international migrants, these changes did not significantly affect the age and sex structure of the population over the year 2019/2020.
- The aging of the population continues, due to fertility being below the generation replacement threshold since the early 1970s and an almost continuous increase in life expectancy. The advancing age of baby boomers, the large generations born between 1946 and 1965, is accelerating this demographic aging. More than one in two seniors (55.6%) were from the baby boom generations on July 1, 2020.

- As of July 1, 2020, 18.0% of Canadians (6,835,866 people) were 65 years of age or older. The gap is widening compared to the number of children aged 0-14, which stood at 6,038,647 (15.9%).
- In 2020, the average age of Canadians was 41.4. The average age has increased by 4.1 years since 2000, when it was 37.3 years.
- As of July 1, 2020, for every 100 people of working age, Canada had 51.2 people aged 0 to 14 or 65 and older. The demographic dependency ratio has been rising steadily since 2009 (44.1).
- As of July 1, 2020, Newfoundland and Labrador was the province with the highest average age (44.8 years), while the lowest average age was recorded in Nunavut (28.5 years).

Analysis: Total population

The estimates in this publication are based on 2016 Census counts, adjusted for census net undercoverage and incompletely enumerated Indian reserves, plus the estimated population growth for the period from May 10, 2016, to the date of the estimate. The analysis in this publication is based on preliminary data. These data will be revised over the coming years, and some trends described in this publication could change as a result of these revisions. Therefore, this publication should be interpreted with caution.

The analyses in this document focus on the period July 1, 2019 to June 30, 2020. During this time period, in the first two quarters of 2020, COVID-19 began to impact Canada. The estimates for some demographic components were adjusted to take into account the effect of the global pandemic on the population of Canada.

For an explanation of how the population estimates have taken COVID-19 into account, please see: *Technical Supplement: Production of Demographic Estimates for the Second Quarter of 2020 in the Context of COVID-19.*

This section presents the population estimates for Canada, the provinces and territories on July 1, 2020, along with a concise analysis of the various components of population growth between July 1, 2019, and July 1, 2020.

Canada's population surpasses 38 million

On July 1, 2020, Canada's population was estimated at 38,005,238, an increase of 411,854 from July 1, 2019 (+1.1%). Population growth had been over 500,000 for the two previous years (2017/2018 and 2018/2019, both +1.4%). The rate of growth in 2019/2020 is similar to that seen in 2015/2016 (+406,579, +1.1%). The slower growth seen in 2019/2020 results from the impact of the COVID-19 pandemic, both in the increased number of deaths and in the restrictions placed on international borders, leading to a significant reduction in international migration in the second quarter of 2020 (+99,701, +0.4%).

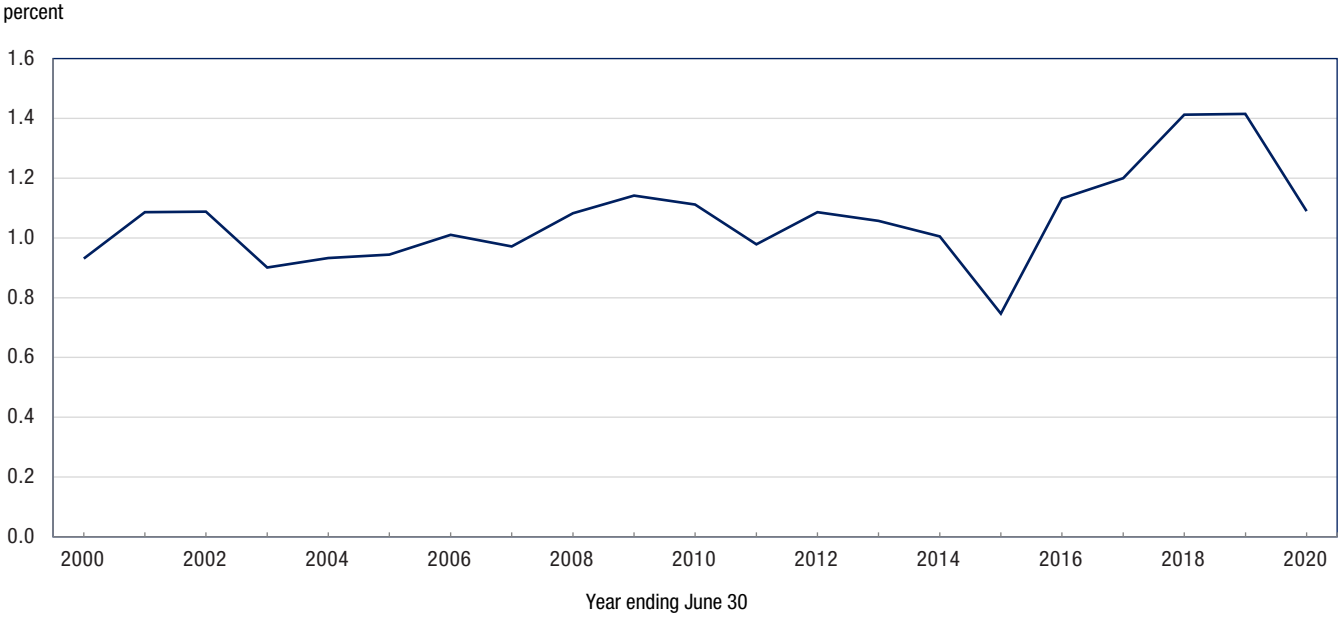
Population growth during the last year sets both a record-high and a record-low

The third quarter of 2019 had the highest growth ever recorded for a third quarter, since the beginning of the current demographic accounting system in 1971 (+208,659, +0.6%). As per usual, growth was slower in the fourth quarter of 2019 (+97,234, +0.3%) than in the third quarter, however, this was still the highest growth in a fourth quarter since 1988.

The global COVID-19 pandemic first came to Canada in the first quarter of 2020, in January. The demographic impacts began at the end of that quarter, in March, as the first death was reported on March 9[1] and there were restrictions placed on international borders mid-month. This led to a slight reduction in growth for the first quarter of 2020 (+80,577 in the first quarter of 2020, as opposed to +92,916 in the first quarter of 2019). The number of COVID-19 deaths increased in the second quarter of 2020[2] and the restrictions on international borders continued. The result being that the growth in the second quarter (+25,384, +0.1%) was the lowest growth in a second quarter since the beginning of the current demographic accounting system.

1. The death was first reported on the news on March 9. According to the Public Health Agency of Canada (PHAC), the death occurred on March 8.
2. PHAC reports 96 deaths from COVID-19 in the first quarter of 2020 and 8,495 in the second quarter.

Chart 1.1
Population growth rate, 1999/2000 to 2019/2020, Canada



Source: Statistics Canada, Centre for Demography.

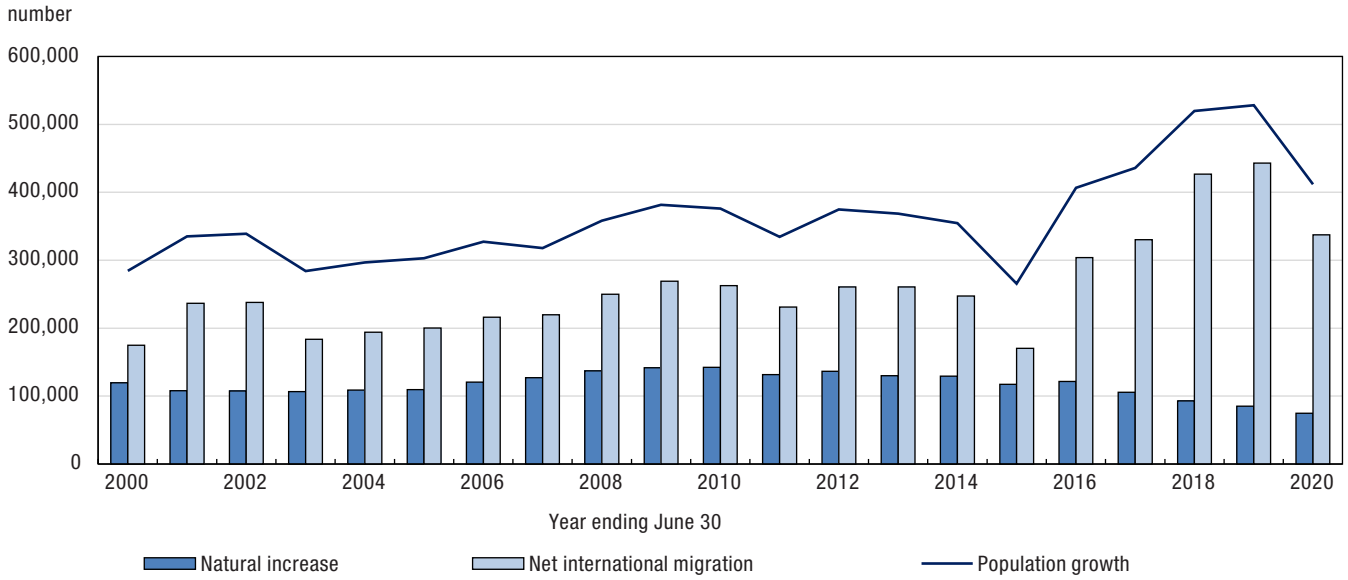
International migration remains the main source of population growth

At the national level, population growth is a result of two factors: international migration[3] and natural increase (births minus deaths). Between July 1, 2019 and July 1, 2020, 81.9% of Canada's growth came from international migration, representing a net increase of 337,283 persons. This was lower than the percentage found in 2018/2019 (83.9%, +442,960 persons). Since international migration was reduced in the second quarter of 2020, natural increase accounted for slightly more of the growth in 2019/2020 than in the previous two years. However, the percentage of growth accounted for by international migration in 2019/2020 was still higher than it was in every year from 1971/1972 to 2016/2017.

In 2019/2020, natural increase (+74,571) was responsible for 18.1% of the total growth or the difference between 374,885 births and 300,314 deaths. This is the lowest level ever recorded in Canada, since the beginning of the current demographic accounting system. This value has been steadily decreasing since 2015/2016 (+121,492), which is to be expected due to an increasing number of deaths resulting from population aging. The excess mortality resulting from COVID-19 also contributed to the smaller value for natural increase.[4]

3. International migration is the sum of immigrants, non-permanent residents, and returning emigrants, minus emigrants and net temporary emigrants.
4. The Public Health Agency of Canada (PHAC) reports that there were 8,591 deaths due to the COVID-19 pandemic from the first death in March to the end of June, 2020.

Chart 1.2
Factors of population growth, 1999/2000 to 2019/2020, Canada



Note: Until 2016 inclusively, population growth is not equal to the sum of natural increase and international migratory increase because residual deviation must also be considered in the calculation. For further information, please see publication *Population and Family Estimation Methods at Statistics Canada*, Catalogue No. 91-528.
Source: Statistics Canada, Centre for Demography.

COVID-19 border restrictions change immigration patterns

International migration levels dropped rapidly as the pandemic restrictions were implemented. This was found for both immigrants and for non-permanent residents. In the third quarter of 2019, migratory increase was at an all-time high (+176,038).[5] The fourth quarter of 2019 was also at an all-time high for this period of the year (+81,168). By the first quarter of 2020 (January to March, with travel restrictions starting in March), total migratory growth began to decline (+70,377, where it had been over 80,000 in the first quarters of both 2018 and 2019). However, it was similar to levels seen in the first quarter of 2017 (+69,158).

With the travel restrictions firmly in place, the second quarter of 2020 saw a migratory increase of only +9,700, a low never before seen in a second quarter[4] (the next lowest was the second quarter of 1978, with +12,931). To put this in perspective, the second quarter of 2018 saw a migratory increase of +140,156 persons, and the second quarter of 2019 saw a migratory increase of +152,487. The second quarter of 2020 was also the only quarter since the fourth quarter of 2018 to have a negative net number of non-permanent residents (-24,768). This means that there were more non-permanent residents at the start of the quarter (April 1, 2020) than at the end of the quarter (June 30, 2020), mainly due to a reduction in the number of study permit holders and, to a lesser extent, the number of asylum claimants. This is consistent with the travel restrictions imposed due to the COVID-19 pandemic.

The components of emigration were also lower in 2019/2020 than in 2018/2019, again the result of COVID-19 imposed border restrictions. The number of people estimated to have left the country, emigrants, decreased by 23.7% over the past year, from 51,290 to 39,129. However, only 141 left during the second quarter of 2020. Similarly, returning emigrants, or those returning to Canada after having lived abroad, decreased by 15.0%, from 39,663 in 2018/2019 to 33,732 in 2019/2020. During the first quarter of 2020, which represents the early part of the pandemic, Canadians were urged to return home before the border restrictions began at the end of March. The first quarter of 2020 thus saw the most returning emigrants ever seen in a first quarter[4] (10,040 persons), an 82.6% increase over the numbers seen in the first quarter of 2019 (5,497). In the second quarter of 2020, following the implementation of the border restrictions, only 413 people returned to Canada.

5. Since the beginning of the current demographic account system (July 1971).

International migratory growth lower in almost all provinces and territories

Every province and territory saw a smaller increase from international migration in 2019/2020 than in 2018/2019 (except for Nunavut). Among the provinces, the decreases in international migration from 2018/2019 to 2019/2020 ranged from -10.8% (207 fewer people) in Newfoundland and Labrador to -40.5% (25,211 fewer people) in British Columbia.

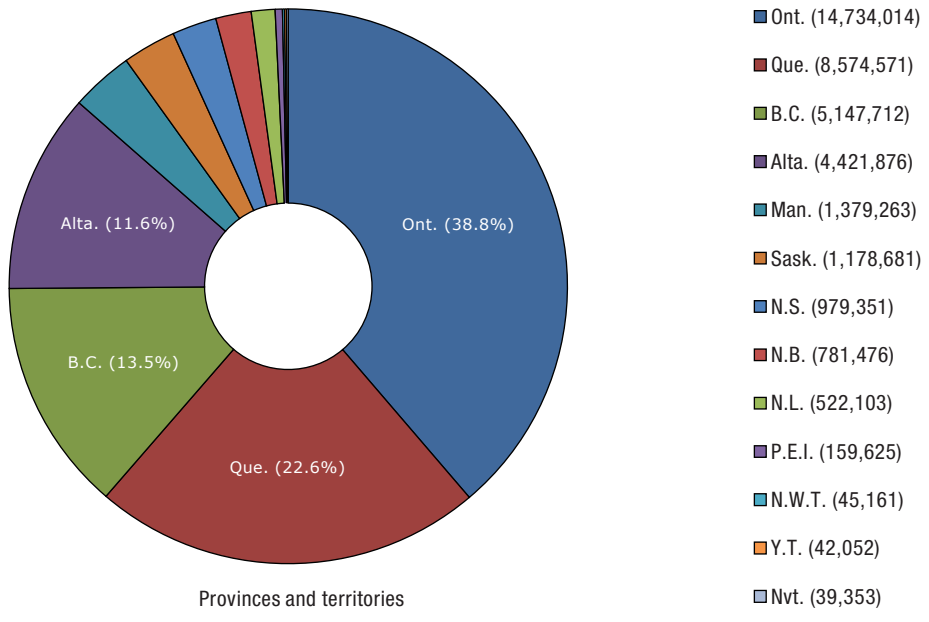
Lower international migratory increase in 2019/2020 was due to two factors. First, there were fewer immigrants admitted (284,387 as compared to 313,601 in 2018/2019, a 9.3% decrease). However, the number of immigrants admitted in 2018/2019 was the second highest since 1971/1972. The 284,387 immigrants admitted in 2019/2020 was similar to the number admitted in 2016/2017 (272,707). Among the provinces, the greatest percent reduction in the number of immigrants was found in Quebec (-25.8%) and in Alberta (-12.8%). British Columbia was the only province to increase in the number of immigrants from 2018/2019 to 2019/2020 (+4.1%).

Second, the number of non-permanent residents increased by 77,172 during the last year. This is lower than the increases recorded over the preceding two years, which had the highest levels of non-permanent residents since the beginning of the current demographic accounting system (1971/1972), with +162,290 in 2017/2018 and +168,662 in 2018/2019. The reduction from 2018/2019 to 2019/2020 was by more than half (-54.2%). Reductions in the numbers of non-permanent residents from 2018/2019 to 2019/2020 were found in all provinces and territories (except for the Northwest Territories). However, the net number of non-permanent residents was positive in all provinces and territories, except for Manitoba, British Columbia, Yukon and the Northwest Territories. COVID-19 travel restrictions made it difficult for those holding non-permanent resident permits to enter the country for non-essential reasons in the second quarter of 2020.

More people live to the west of Ontario and in the territories than to the east

Ontario is Canada's largest province by population (14,734,014), accounting for 38.8% of all residents. There are 12,254,098 (32.2%) people living in the provinces to the west of Ontario and in the territories[6] and 11,017,126 (29.0%) people living in the provinces to the east of Ontario.[7] The distribution of the population among Canada's provinces and territories remained virtually unchanged since 2018/2019. The three most populous provinces after Ontario are Quebec (8,574,571), British Columbia (5,147,712), and Alberta (4,421,876).

Chart 1.3
Population distribution by province or territory, July 1, 2020



Source: Statistics Canada, Centre for Demography.

6. Manitoba (3.6%), Saskatchewan (3.1%), Alberta (11.6%), British Columbia (13.5%), Yukon (0.1%), the Northwest Territories (0.1%), and Nunavut (0.1%).
7. Newfoundland and Labrador (1.4%), Prince Edward Island (0.4%), Nova Scotia (2.6%), New Brunswick (2.1%), and Quebec (22.6%).

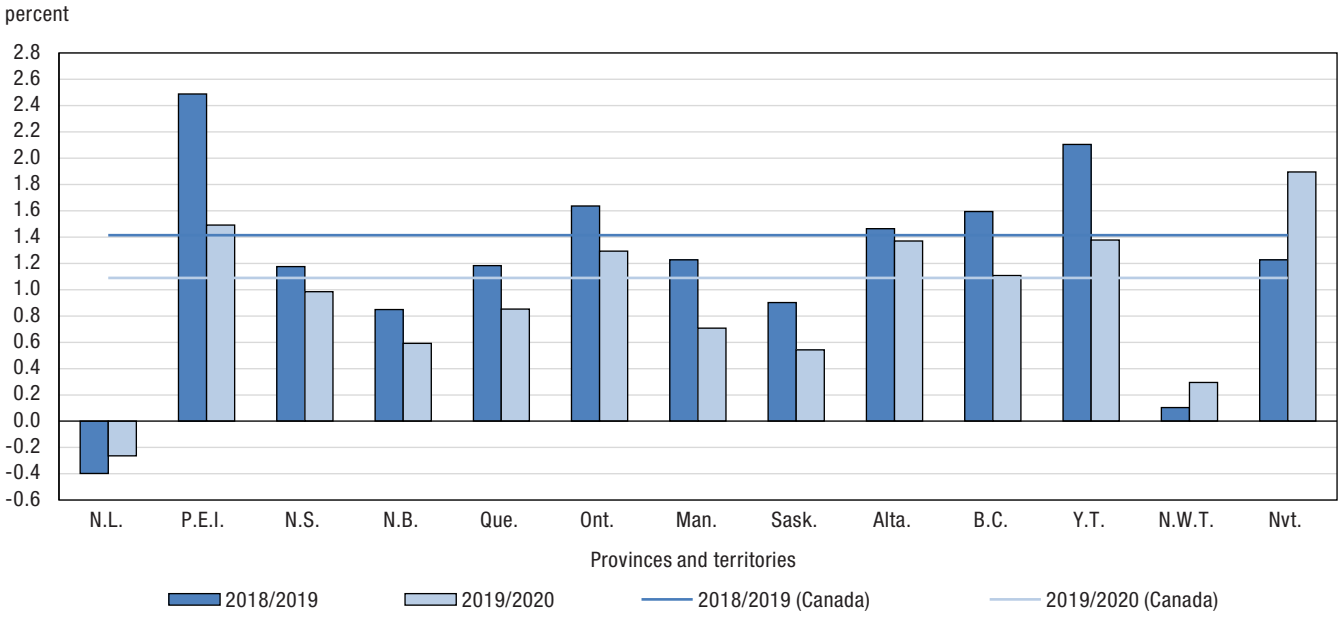
Population growth lower in almost all provinces and territories

Almost all provinces and territories experienced a decrease in their rate of growth in 2019/2020 as compared to 2018/2019. The exceptions to this are Newfoundland and Labrador (-0.3%), the Northwest Territories (+0.3%), and Nunavut (+1.9%). While the rate of loss was slower in Newfoundland and Labrador than it was in 2018/2019 (-0.4%), it was the only province or territory to lose population in 2019/2020.

The reduced growth in Canada in 2019/2020 is mainly the result of lower growth in the three largest provinces. At a growth rate of +1.3%, down from +1.6% in 2018/2019, Ontario grew by 46,725 fewer people than the year before. Similarly, Quebec grew by 27,097 fewer people (going from a growth rate of +1.2% in 2018/2019 to +0.9% in 2019/2020). The third largest province, British Columbia, went from a growth rate of +1.6% in 2018/2019 to a rate of +1.1% in 2019/2020, resulting in a growth of 23,722 fewer people than the year before.

While the growth rates were lower in almost all provinces and territories in 2019/2020 than they were in 2018/2019, they were not at record lows. In most cases, each province and territory has seen a similar or lower growth rate at some point within the last ten years. The exceptions to this are Manitoba (+0.7%), which had not seen a similar growth rate since 2007/2008 (+0.7%) and Saskatchewan (+0.5%), for which the last year to record a lower growth rate was 2005/2006 (-0.1%).

Chart 1.4
Population growth rate, 2018/2019 and 2019/2020, Canada, provinces and territories



Source: Statistics Canada, Centre for Demography.

International migratory growth remains the main driver of population growth in the provinces

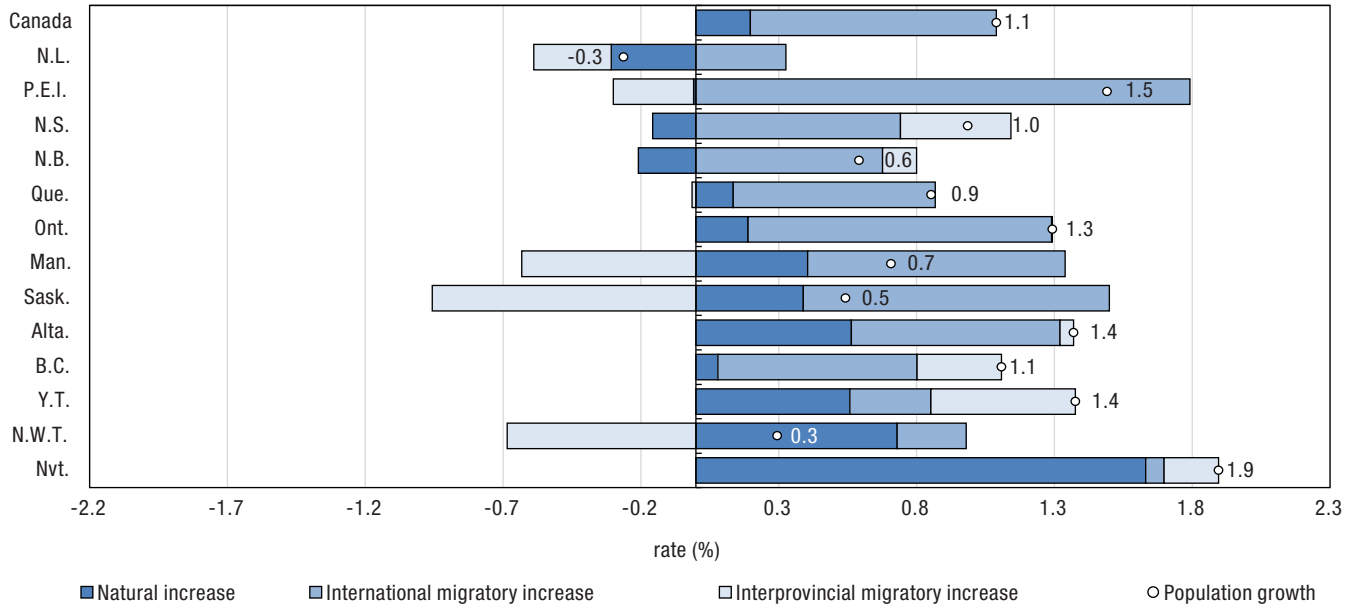
Ontario, Alberta, and British Columbia were the only provinces where each of the three population growth factors contributed positively to population growth.[8] In Ontario and British Columbia, population growth stemmed mainly from international migratory growth. Interprovincial migration contributed almost nothing to the growth in Ontario (+363 persons).

8. The three population growth factors at the provincial and territorial level are: natural increase (births minus deaths), international migratory increase (immigrants, net non-permanent residents and returning emigrants minus emigrants and net temporary emigrants), and interprovincial migration.

All four Atlantic provinces[9] had negative natural increase, meaning that there were more deaths in 2019/2020 than births (as has been the case since 2016/2017). Newfoundland and Labrador, Prince Edward Island, Quebec, Manitoba, and Saskatchewan all lost population to other provinces through interprovincial migration. In the case of Newfoundland and Labrador, the gains from international migration (+1,704) were not enough to compensate for losses to natural increase (-1,608) and to other provinces (-1,469) leading to a decrease in population.

Natural increase was the main contributor to growth in all three territories. However, in Yukon, interprovincial migration (+219) was almost equal to natural increase (+233). The Northwest Territories lost population to interprovincial migration (-309), while Yukon (+219) and Nunavut (+77) both gained. International migratory increase was smaller in the territories than in the provinces, and accounted for an increase of 26 people in Nunavut. Growth in that territory mainly resulted from natural increase (+636), a rate of +1.6% being by far the highest rate in the country (next highest was the Northwest Territories, at +0.7%). However, the rates of natural increase in both Nunavut and the Northwest Territories were the lowest ever experienced in the each territory.

Chart 1.5
Factors of population growth, 2019/2020, Canada, provinces and territories



Source: Statistics Canada, Centre for Demography.

Ontario continues to attract the most immigrants

In 2019/2020, 44.7% of all immigrants to Canada settled in Ontario, a level similar to what was observed in 2018/2019 (44.4%), which exceeds the demographic weight of the province (38.8%). Immigrants to the Prairie provinces[10] accounted for a similar percent in 2019/2020 (22.4%) than in 2018/2019 (22.5%). However, this was down from (28.0%) in 2015/2016. Immigrants to Manitoba and Saskatchewan remained relatively stable over this time period, with the decline in immigrants to the Prairie provinces being mainly due to a reduction of the share of immigrants going to Alberta (17.9% in 2015/2016 and 12.5% in 2019/2020). The percentage of all immigrants settling in Quebec (11.7%) has been decreasing since 2016/2017 (19.5%) while the percentage of immigrants going to the Atlantic provinces (5.2%) has been generally trending upwards recently (more than doubling in the last ten years, from 2.5% in 2009/2010).

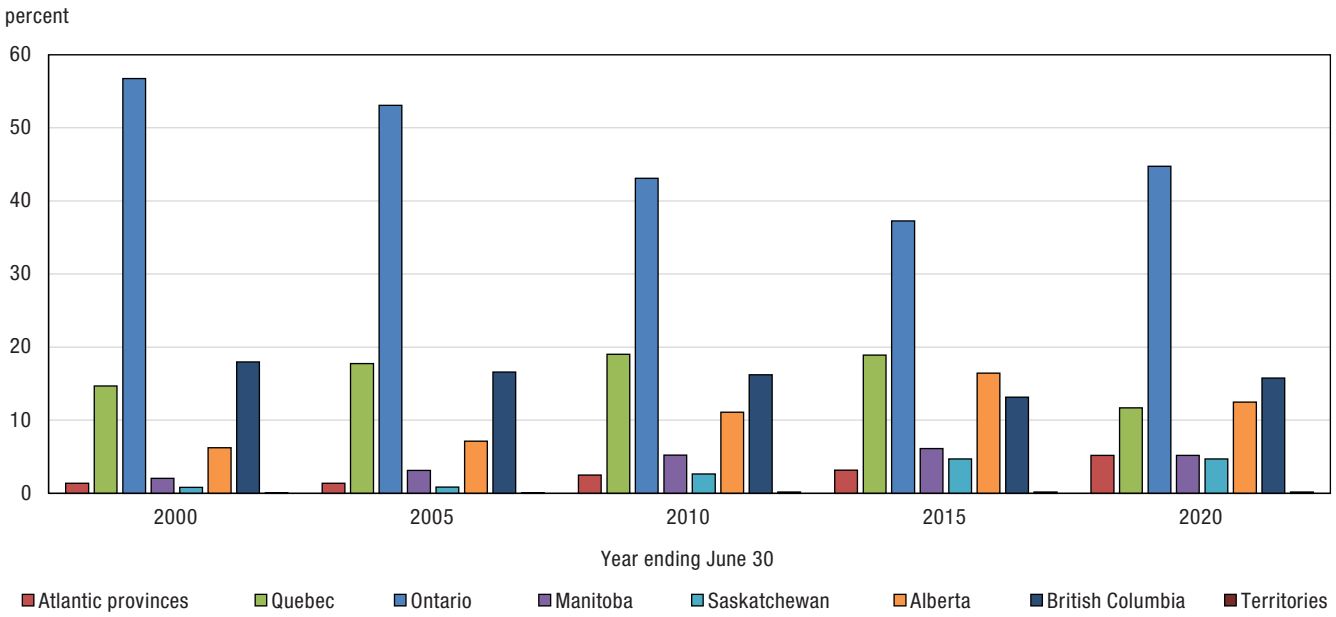
9. Newfoundland and Labrador, Prince Edward Island, Nova Scotia, and New Brunswick.
10. Manitoba, Saskatchewan, and Alberta.

The estimated number of immigrants by province and territory is based on their intended province or territory of residence, as collected by Immigration, Refugees and Citizenship Canada (IRCC). This also applies to the calculation of international migratory growth and provincial and territorial population growth.

All provinces and territories saw a smaller increase in the net number of non-permanent residents (NPRs) in 2019/2020 from 2018/2019 (except for the Northwest Territories). Nevertheless, the net number of NPRs was still positive in most provinces and territories (except for Manitoba, British Columbia, Yukon, and the Northwest Territories).

Moreover, the lower net number of non-permanent residents did not reach record lows, since all provinces and territories had seen similar, or lower, numbers within the last ten years (except for Manitoba (-1,493) and Yukon (-175), both of which had the lowest recorded numbers of non-permanent residents since the beginning of the current demographic accounting system in 1971/1972).

Chart 1.6
New immigrants distribution by province or territory, 1999/2000 to 2019/2020



Source: Statistics Canada, Centre for Demography.

After four years of losses, Alberta gained population from other provinces

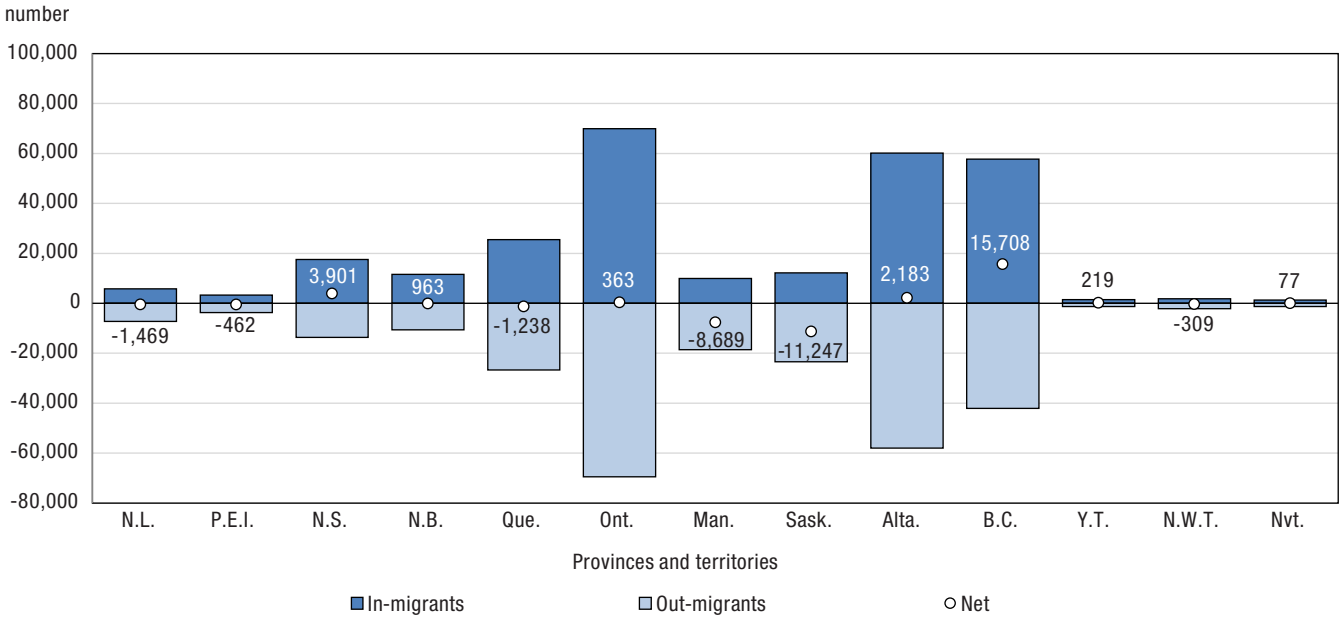
At the provincial and territorial level, population growth is the result of natural increase, international migration, and interprovincial migratory exchanges. Three provinces and territories reversed their trends in interprovincial migration in 2019/2020. Prince Edward Island had been gaining population from other provinces and territories since 2015/2016, but more people left the province than chose to settle there in 2019/2020 (-462), with the most people going to Ontario. Alberta gained population from other provinces and territories (+2,183) for the first time since 2014/2015, with the majority of people coming from Ontario and British Columbia. Similarly, Nunavut gained population from other provinces and territories (+77) for the first time since 2012/2013, with the most people coming from Ontario. While still positive, gains in Ontario decreased from +6,629 in 2018/2019 to +363 in 2019/2020. Ontario has gained from interprovincial migration since 2015/2016, following twelve successive years of losses to other provinces and territories.

British Columbia had the highest gains from interprovincial migration in 2019/2020 (+15,708), with most people coming from Ontario and Alberta, an increase of 2,383 over 2018/2019 (+13,325). As in 2017/2018 and in

2018/2019, Manitoba (-8,689) and Saskatchewan (-11,247) had the highest losses to other provinces in 2019/2020. In both provinces, the majority of people left for Ontario, Alberta, or British Columbia. While Quebec continued to lose population to other provinces (-1,238, as it has for every year since the beginning of the current demographic accounting system in 1971), this was the smallest loss the province has seen since 2003/2004 (-822). Migrants from Quebec tended to go to Ontario.

Population growth and economic growth are often interrelated. For example, Canada's interprovincial migration flows can be either a source or a result of economic conditions, which can affect both employment and unemployment. Notably, Alberta experienced unemployment rates at 7.0% or higher between November 2015 and December 2017, mostly the result of a drop in oil prices which began in the fall of 2014.[11] At the same time, the province registered net interprovincial migration losses over 15,000 during both annual periods 2015/2016 and 2016/2017. Conditions were much improved in Alberta in 2018, as employment rose and the unemployment rate dropped.[12] It follows that, while Alberta still lost population to interprovincial migration in 2017/2018 and 2018/2019, losses had dropped to -3,247 in 2017/2018 and -2,032 in 2018/2019. The fact that Alberta drew more individuals from other provinces than Albertans who left the province in 2019/2020 could be related to the more stable economic conditions in the province through that period, until March 2020, when the COVID-19 pandemic intensified.

Chart 1.7
Interprovincial migration by province or territory, 2019/2020



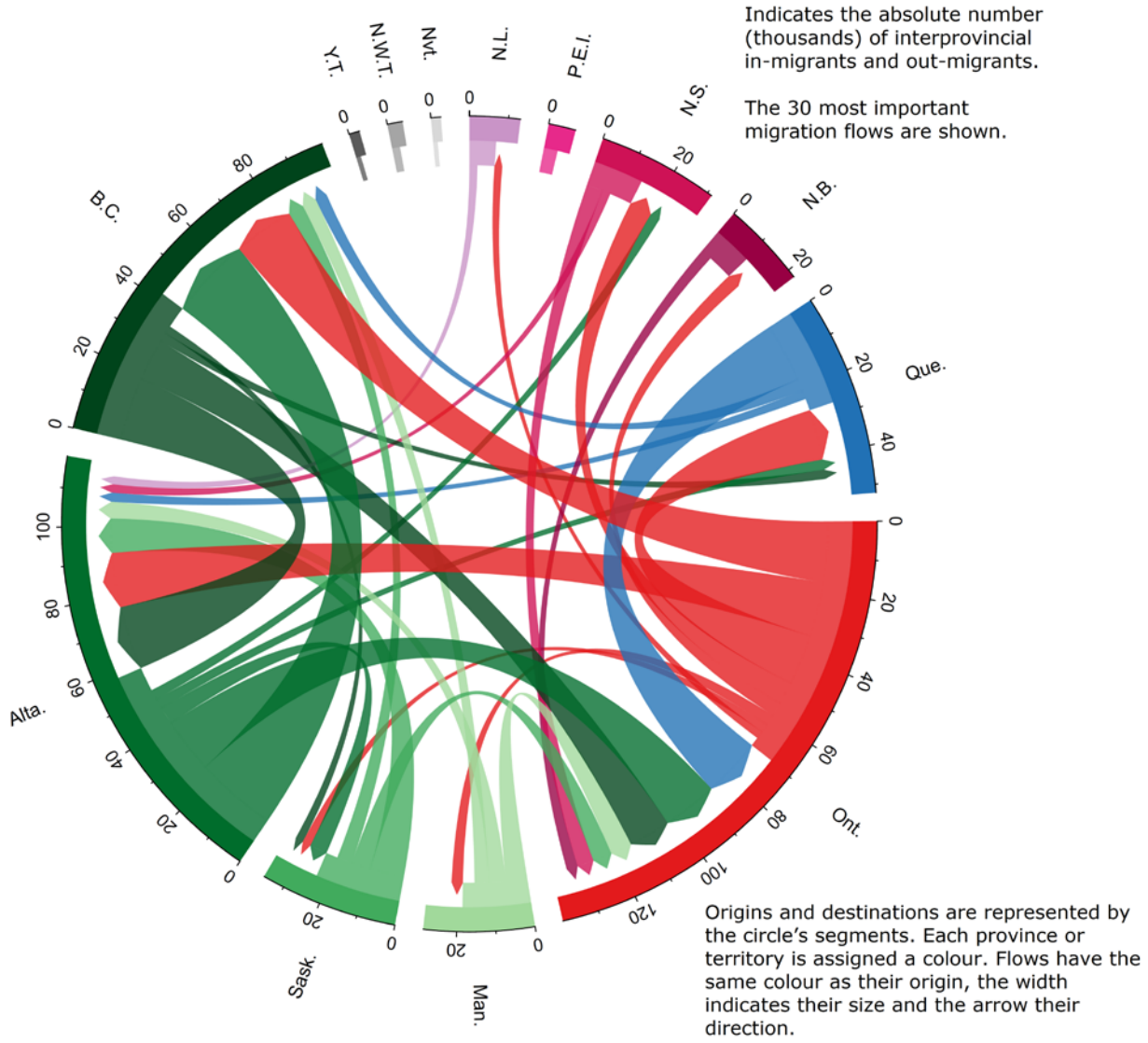
Source: Statistics Canada, Centre for Demography.

The largest migration flows involve exchanges between Ontario, Alberta and British Columbia

The 30 largest migration flows are shown in Chart 1.8, in which each province or territory is assigned a colour. Migration origins and destinations are represented by the circle's segments. Flows are the same colour as their origin, the width indicates their size and the arrow their direction.

11. Fields, Andrew, Emmanuelle Bourbeau, and Martha Patterson. 2018. "Annual review of the labour market, 2017." Labour Statistics: Research Papers, product No. 75-004-M in the Statistics Canada Catalogue.
12. Patterson, Martha, Myriam Hazel, and Dylan Saunders. 2019. "Annual review of the labour market, 2018." Labour Statistics: Research Papers, product No. 75-004-M in the Statistics Canada Catalogue.

Chart 1.8
Largest interprovincial migration flows, by province or territory of origin and destination, 2019/2020



Source: Statistics Canada, Centre for Demography.

Over the past year, the largest interprovincial migration flow was from Alberta to British Columbia (23,799). The second largest interprovincial migration flow in Canada was in the opposite direction, from British Columbia to Alberta (18,508). Taking into account these exchanges between the two provinces resulted in a gain of 5,291 for British Columbia, a gain that was 636 (10.7%) smaller than the gain to British Columbia from Alberta seen in 2018/2019 (+5,927). The increase in the gains to British Columbia from interprovincial migration mostly come from exchanges with Ontario. In 2018/2019, British Columbia gained 2,785 in its exchanges with Ontario, while in 2019/2020, British Columbia gained 5,483. The flow from Ontario to British Columbia (17,719) was the third largest interprovincial migration flow in Canada in 2019/2020.

Alberta's positive gain from interprovincial migration (+2,183, the first gain since 2014/2015) resulted from an increase in the number of people moving to Alberta from every province and territory (except for Newfoundland and Labrador and Prince Edward Island). The number of people leaving Alberta for other provinces and territories also increased from 2018/2019 to 2019/2020 (except for people moving to Prince Edward Island and Manitoba). However, the number of people moving to the province was greater than the number leaving, leading to a net interprovincial gain for Alberta.

In relative terms (expressed as rates[13]), the largest interprovincial migration flows among the provinces and territories were from the Northwest Territories to Alberta (1.7%), from Nunavut to Ontario (1.1%), from Yukon to British Columbia and from the Northwest Territories to British Columbia (both at 1.0%), and from Prince Edward Island to Ontario (0.9%).

13. Not shown in Chart 1.8. These rates are based on the averages of the start-of-period and end-of-period populations of the province of origin.

Table 1.1-1
Annual population estimates, July 1, Canada, provinces and territories - Population

	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
	number													
2016	36,109,487	529,426	146,969	942,790	763,350	8,225,950	13,875,394	1,314,139	1,135,987	4,196,061	4,859,250	38,547	44,649	36,975
2017	36,545,295	528,249	150,402	950,108	766,621	8,302,063	14,070,141	1,334,790	1,150,331	4,241,100	4,929,384	39,669	44,891	37,546
2018	37,065,178	525,560	153,396	958,406	770,301	8,401,738	14,308,697	1,352,825	1,161,767	4,298,275	5,010,476	40,613	44,981	38,143
2019	37,593,384	523,476	157,262	969,747	776,868	8,501,703	14,544,718	1,369,540	1,172,302	4,361,694	5,090,955	41,477	45,028	38,614
2020	38,005,238	522,103	159,625	979,351	781,476	8,574,571	14,734,014	1,379,263	1,178,681	4,421,876	5,147,712	42,052	45,161	39,353

Note: Estimates are final postcensal from 2016 to 2018, updated postcensal for 2019 and preliminary postcensal for 2020.
Source: Statistics Canada, Centre for Demography.

Table 1.1-2
Annual population estimates, July 1, Canada, provinces and territories - Total growth rates

	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
	rates per 1,000													
2016/2017	12.00	-2.23	23.09	7.73	4.28	9.21	13.94	15.59	12.55	10.68	14.33	28.69	5.41	15.32
2017/2018	14.13	-5.10	19.71	8.70	4.79	11.93	16.81	13.42	9.89	13.39	16.32	23.52	2.00	15.78
2018/2019	14.15	-3.97	24.89	11.76	8.49	11.83	16.36	12.28	9.03	14.65	15.93	21.05	1.04	12.27
2019/2020	10.90	-2.63	14.91	9.85	5.91	8.53	12.93	7.07	5.43	13.70	11.09	13.77	2.95	18.96

Note: Total growth is final for 2016/2017 and 2017/2018, updated for 2018/2019 and preliminary for 2019/2020.
Source: Statistics Canada, Centre for Demography.

Table 1.1-3
Annual population estimates, July 1, Canada, provinces and territories - Total growth

	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
	number													
2016/2017	435,808	-1,177	3,433	7,318	3,271	76,113	194,747	20,651	14,344	45,039	70,134	1,122	242	571
2017/2018	519,883	-2,689	2,994	8,298	3,680	99,675	238,556	18,035	11,436	57,175	81,092	944	90	597
2018/2019	528,206	-2,084	3,866	11,341	6,567	99,965	236,021	16,715	10,535	63,419	80,479	864	47	471
2019/2020	411,854	-1,373	2,363	9,604	4,608	72,868	189,296	9,723	6,379	60,182	56,757	575	133	739

Note: Total growth is final for 2016/2017 and 2017/2018, updated for 2018/2019 and preliminary for 2019/2020.
Source: Statistics Canada, Centre for Demography.

Table 1.2
Annual population estimates and factors of demographic growth - Canada

	Population at beginning period	Natural increase	Net interprovincial migration	Net international migration	Total net migration	Total growth	Population growth rate
	number						per 1,000
2016/2017	36,109,487	105,702	0	330,106	330,106	435,808	12.00
2017/2018	36,545,295	93,025	0	426,858	426,858	519,883	14.13
2018/2019	37,065,178	85,246	0	442,960	442,960	528,206	14.15
2019/2020	37,593,384	74,571	0	337,283	337,283	411,854	10.90
2020/2021	38,005,238	…	…	…	…	…	…

… not applicable

Note: See "Data quality, concepts and methodology — Explanatory notes for the tables" section.
Source: Statistics Canada, Centre for Demography.

Table 1.3
Annual estimates of components of demographic growth - Canada

	Natural increase		Interprovincial migration		International migration				
	Births	Deaths	In-migrants	Out-migrants	Immigrants	Emigrants	Returning emigrants	Net temporary emigrants	Net non-permanent residents
					number				
2016/2017	379,941	274,239	260,393	260,393	272,707	58,630	39,756	26,970	103,243
2017/2018	376,793	283,768	260,751	260,751	303,325	50,580	39,117	27,294	162,290
2018/2019	372,711	287,465	254,143	254,143	313,601	51,290	39,663	27,676	168,662
2019/2020	374,885	300,314	278,316	278,316	284,387	39,129	33,732	18,879	77,172

Note: See "Data quality, concepts and methodology — Explanatory notes for the tables" section.

Source: Statistics Canada, Centre for Demography.

Table 1.4
Annual estimates of interprovincial migrants by province or territory of origin and destination, Canada, July 1, 2019 to June 30, 2020

	Destination												
	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
Origin							number						
N.L.	…	110	1,226	411	375	2,051	83	66	2,326	446	52	67	50
P.E.I.	74	…	680	405	285	1,489	45	53	311	410	0	0	6
N.S.	759	506	…	1,822	1,058	4,808	347	152	2,404	1,472	29	152	172
N.B.	206	302	1,994	…	1,564	3,270	198	73	2,113	864	0	52	7
Que.	166	166	755	1,447	…	17,181	359	315	2,632	3,456	50	91	81
Ont.	2,238	1,336	6,607	4,016	14,696	…	3,256	2,470	15,905	17,719	305	343	627
Man.	107	66	535	211	836	6,239	…	1,503	4,858	4,143	27	50	42
Sask.	177	86	406	393	625	5,594	1,501	…	9,949	4,507	89	80	20
Alta.	1,484	445	2,946	1,844	2,992	16,053	2,179	5,096	…	23,799	385	648	119
B.C.	468	251	1,951	909	2,688	12,236	1,856	2,308	18,508	…	464	236	171
Y.T.	0	5	101	28	85	203	39	50	284	426	…	53	5
N.W.T.	48	23	144	51	116	335	44	69	778	434	68	…	31
Nvt.	67	0	237	69	141	422	21	25	105	78	29	60	…
In-migrants	5,794	3,296	17,582	11,606	25,461	69,881	9,928	12,180	60,173	57,754	1,498	1,832	1,331
Out-migrants	7,263	3,758	13,681	10,643	26,699	69,518	18,617	23,427	57,990	42,046	1,279	2,141	1,254
Net	-1,469	-462	3,901	963	-1,238	363	-8,689	-11,247	2,183	15,708	219	-309	77
Total number of migrants:							**278,316**						

... not applicable

Note: Preliminary estimates based on data from the Canada child benefit (CCB) program and $_{jk}F$ factors calculated using 2016/2017, 2017/2018 and 2018/2019 tax file data from Canada Revenue Agency.

Source: Statistics Canada, Centre for Demography.

Analysis: Population by age and sex

Impacts of COVID-19 on the age–sex structure of the population

The first case of COVID-19 in Canada was confirmed in late January 2020. The pandemic then gained momentum and led to the introduction of international border restrictions beginning in mid-March. Given that the reference period for the most recent annual estimates is from July 1, 2019, to June 30, 2020, the last three months of the period were mostly affected by the COVID-19 pandemic, particularly international migration and, to a lesser degree, deaths.

To understand the potential effects of the COVID-19 pandemic, a more in-depth analysis of the age–sex structure of immigrants and non-permanent residents was done. The age pyramids of these subpopulations remained similar to the previous year, as did their average ages, which follow the trends of recent years.

Special attention was also given to the population aged 80 and older, given that 72% (6,164)[14] of Canadians whose death was related to COVID-19 were in this age group. By comparison, 50.2% of deaths estimated in 2019/2020 were in the 80-and-over group. Despite the excess mortality observed among the very elderly as a result of the pandemic,[15] the estimated population aged 80 and older rose by 38,758 to 1,663,666 on July 1, 2020. This growth is driven by the large number of people aged 79 on July 1, 2019, who were still alive the following year (188,994), which considerably exceeded the number of estimated deaths among people aged 80 and older during the same period (150,609). In addition, the average age (86.1 years) of those 80 and over has remained stable over the past four years. Since international migration is less common at these ages, it does not have a strong impact on the growth of the population aged 80 and older. In short, the excess mortality among people 80 years and older did not cause a decline in their population, because the growth of the cohorts due to aging was greater than the impact of the excess deaths.

Lastly, despite the direct and indirect effects of the COVID-19 pandemic on several factors of the population growth (see the section *Analysis: Total population*), the average age of the Canadian population in 2020 followed the same upward trend as found in the population aging process.

In sum, COVID-19 had a limited impact on the age and sex profile of the population of Canada for the year 2019/2020.

For the purposes of this article, various indicators are used to measure population aging. These include the number, proportion and distribution of the population aged 0 to 14 years and 65 years and older, the demographic dependency ratio, and the average age. The average age of a population is the average age of all its members.

This section presents an analysis of the population estimates by age and sex for Canada, the provinces and territories on July 1, 2020, compared with July 1 estimates in previous years.

The aging of baby boomers accelerates Canada's population aging

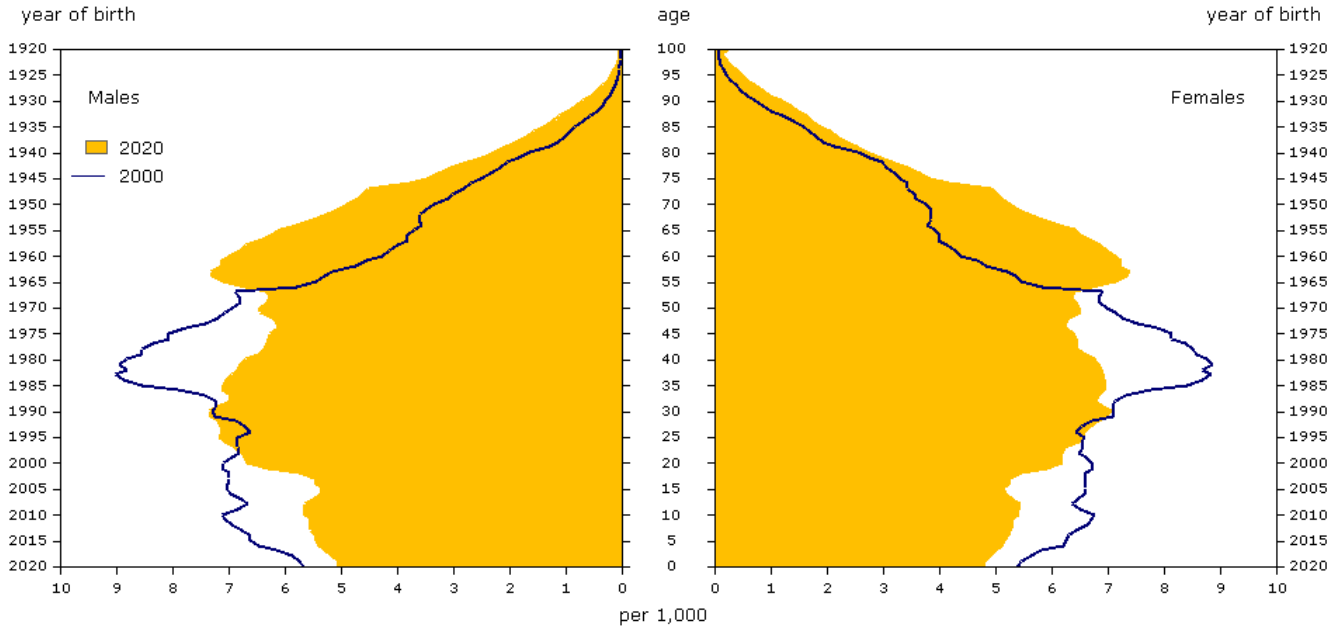
Population aging represents one of the major changes associated with Canada's age–sex structure, and it continues to shape Canada's society and economy. It is the result of baby boomers—cohorts born between 1946 and 1965—reaching more advanced ages, combined with a fertility rate below the replacement level (2.1 children per woman) since 1972[16] and a quasi-continuous increase in life expectancy for both men and women.[17]

The population pyramid opposite (Figure 2.1) shows the aging of Canada's population in recent decades by comparing the age–sex structure of the Canadian population on July 1 of 2000 and 2020. On July 1, 2000, baby boomers were in their 30s to mid-50s, as can be seen in the bulge in the pyramid at these ages. On July 1, 2020,

14. According to data from the Public Health Agency of Canada dated June 30, 2020 (accessed August 10, 2020).
15. Statistics Canada. Provisional death counts and excess mortality, January 2019 to June 2020 (accessed September 8, 2020).
16. Statistics Canada, "Fertility: Overview, 2012 to 2016," in *Report on the Demographic Situation in Canada*, Catalogue no. 91-209-X.
17. According to the most recent data, life expectancy at birth rose from 75.4 years to 82.0 years between 1982 and 2018.

individuals in the baby boom generation were between 54 and 74 years of age, as illustrated by the upward shift in the largest bulge in the pyramid observed 20 years earlier. Therefore, the number of people aged 54 and over was proportionally higher in 2020 (33.3%) than in 2000 (22.9%). In contrast, the number of younger people particularly people in their mid-30s to late 40s, as well as individuals aged 0 to 19, has proportionally decreased.

Figure 2.1
Population pyramid estimates as of July 1, 2000 and 2020, Canada



Source: Statistics Canada, Centre for Demography.

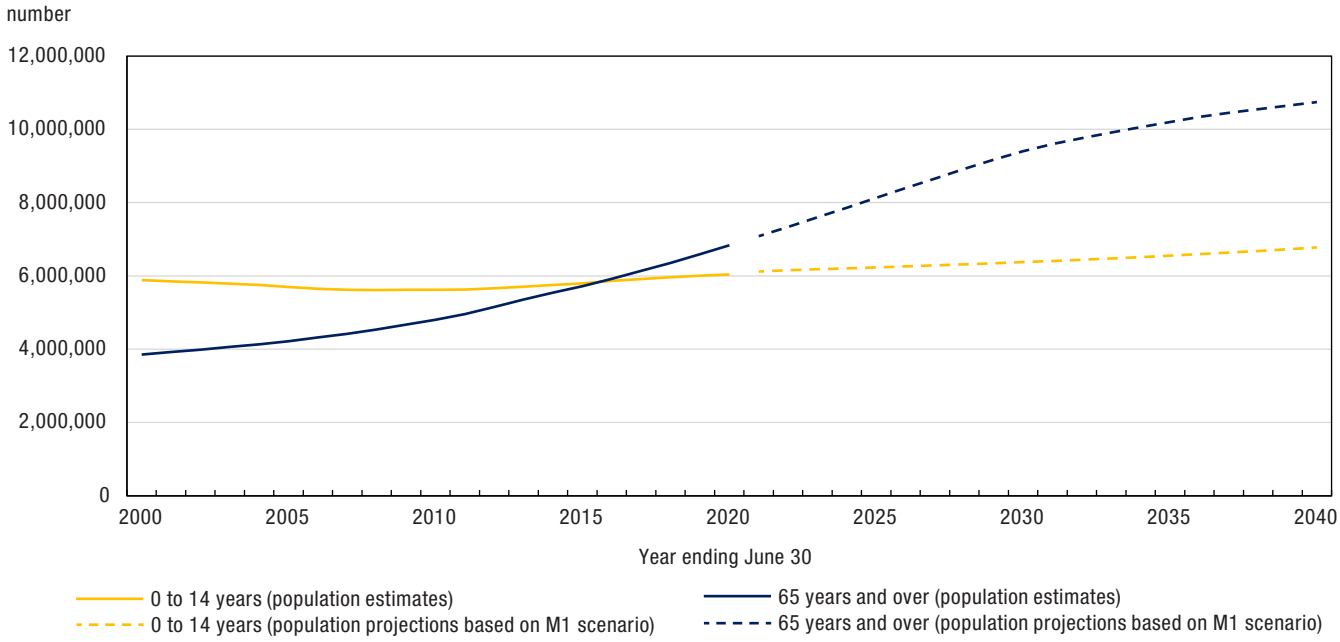
The gap widens between children and seniors

Since 2011, baby boomers have played a significant role in shifting the number of people aged 65 and older upward. In fact, people aged 65 and older outnumbered children aged 0 to 14 between July 1, 2015, and July 1, 2016. During the last annual period, the gap between these two age groups continued to widen. On July 1, 2020, a record number of Canadians (6,835,866, or 18.0% of the population) was at least 65 years of age.

By comparison, there were 6,038,647 children aged 0 to 14 (15.9%) in Canada. This number is increasing, but since the number of seniors is growing faster than the number of children, the population share of children has decreased in recent years. By comparison, prior to 1987, there were two to three times more children aged 0 to 14 than people aged 65 and older. According to the medium growth (M1) scenario in the most recent population projections,[18] the proportion of people aged 65 and older should exceed 20% between July 1, 2024, and July 1, 2025, and reach 25% in 2058/2059, while the proportion of children aged 0 to 14 should remain relatively stable at around 15% to 16% over the same period.

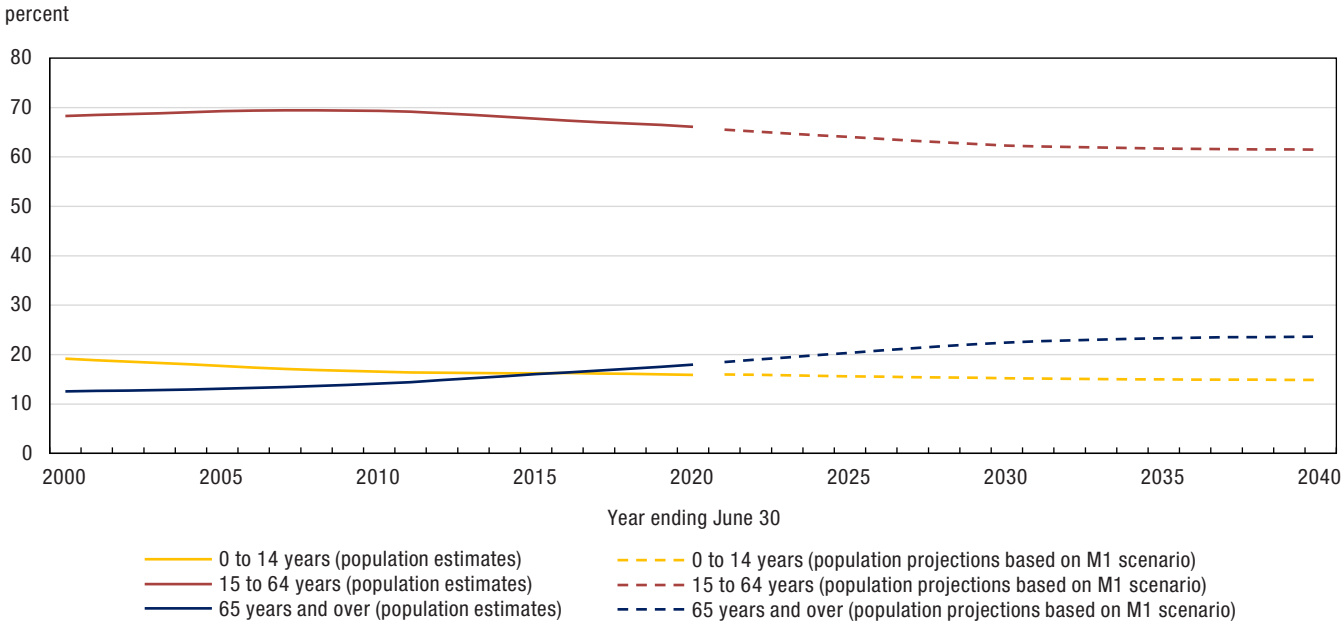
18. Statistics Canada. Table 17-10-0057-01 Projected population, by projection scenario, age and sex, as of July 1 (x 1,000) (accessed September 2, 2020). Calculations made by the author. The M1 medium growth scenario was considered.

Chart 2.1
Population aged 0 to 14 years and 65 years and over, 2000 to 2040, Canada



Note: From 2000 to 2020, population estimates. From 2021 to 2040, *Projected population by scenario, age and sex, as of July 1 (x1,000)*, Table no. 17-10-0057-01.
Source: Statistics Canada, Centre for Demography.

Chart 2.2
Proportion of the population aged 0 to 14 years, 15 to 64 years and 65 years and over, 2000 to 2040, Canada



Note: From 2000 to 2020, population estimates. From 2021 to 2040, *Projected population by scenario, age and sex, as of July 1 (x1,000)*, Table no. 17-10-0057-01.
Source: Statistics Canada, Centre for Demography.

Moreover, during the last annual period, the growth rate of the 65-and-over group was 3.6%, more than triple the growth rate of the population as a whole (1.1%). Children aged 0 to 14 had a growth rate of 0.5% in the same annual period. Since the beginning of the period covered by the current demographic accounting system (1971), the population growth rate for children has always remained lower than that of seniors, thereby contributing to population aging.

Children still outnumber seniors in the Prairies and the territories

Population aging affects all regions of the country. However, this process is playing out at an unequal pace, and certain provinces are aging faster than others. Consequently, the proportion of people aged 65 and older and that of children aged 0 to 14 varies significantly from east to west and from north to south of the country.

In Canada's eastern and central provinces and in British Columbia, the proportion of people 65 years and older was higher than the proportion of children 0 to 14 years on July 1, 2020. However, the Prairie provinces and the territories presented the opposite situation, with a higher proportion of children aged 0 to 14 than people 65 years and older. In 2009, Nova Scotia and New Brunswick were the top two provinces where the proportion of people aged 65 and older exceeded that of children aged 0 to 14.

On July 1, 2020, Newfoundland and Labrador had the highest proportion of people aged 65 and older (22.3%). This proportion rose 7.2 percentage points in 10 years, the largest increase among the provinces and territories. Conversely, Alberta (13.8%) had the lowest proportion of people aged 65 years and older among the provinces. As for the proportion of children aged 0 to 14 among the provinces, the highest was observed in Saskatchewan (19.6%) and the lowest in Newfoundland and Labrador (13.4%). These gaps are due to differences in the fertility rate between these two provinces.

The age structure of the population of the territories differs from that of the provinces. Higher fertility[19] and mortality[20,21] explain why the population share of children is especially larger than that of seniors. Nunavut stood out in particular, with children aged 0 to 14 making up 31.7% (close to one in three people) of the population and a low proportion of people aged 65 and older (4.0% - less than one in every 20 people).

Two in five baby boomers are 65 and older

Like the rest of the population, the baby-boom cohorts are aging. Moreover, 40.6% of baby boomers were 65 and older in 2020, compared with 35.7% in 2019. In 2031, the last of the baby boomers will have turned 65.

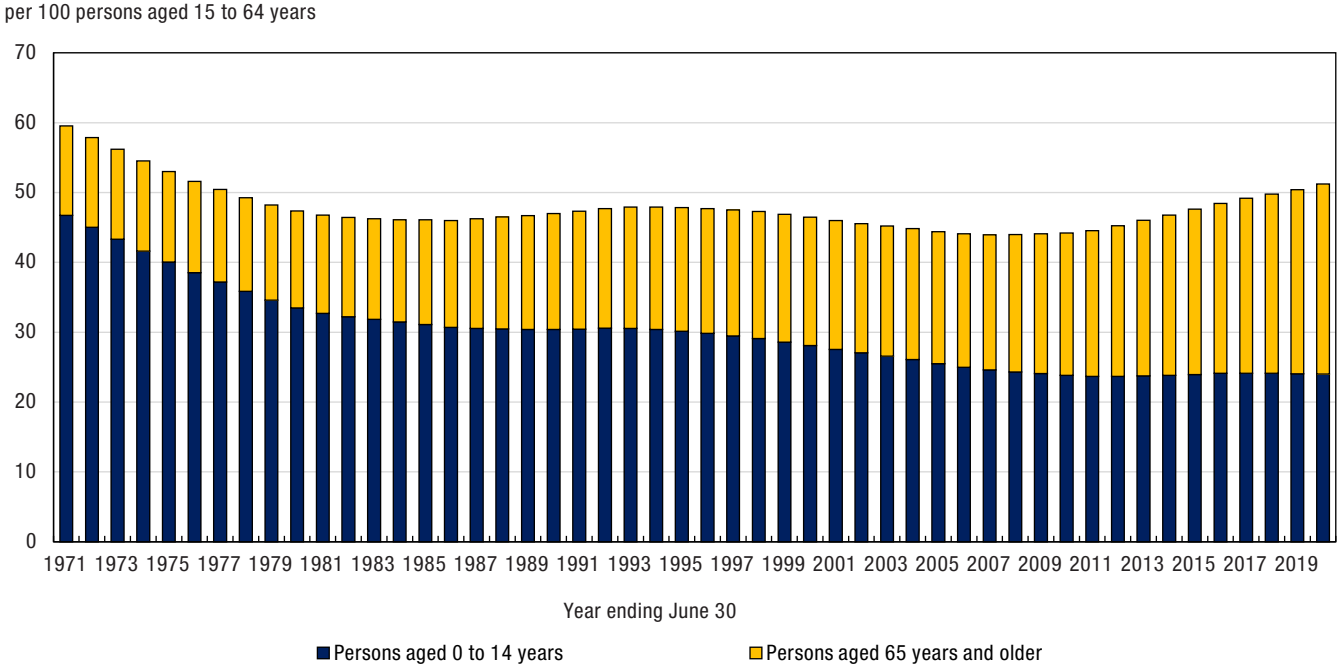
The demographic composition of the 65-and-older age group is changing rapidly. Before 2011, there were no members of the baby boom generation in this group. Since 2011, as the first baby boomers started turning 65, growth of this group has clearly accelerated. Consequently, on July 1, 2020, baby boomers made up 55.6% of seniors. However, their population share is decreasing, falling below the 25% mark (24.6%) in the last year. Given their advancing age, they become more and more at risk of dying.

Canada has just over one child or senior for every two working-age people

The demographic dependency ratio represents the number of children (0 to 14 years) and seniors (65 years and older) per 100 working-age people (15 to 64 years). On July 1, 2020, the ratio was 51.2. This indicator has been rising steadily since reaching a record low in 2007 and 2008 (44.0 each). It will continue to rise beyond 2031, when the youngest baby boomers will turn 65. Indeed, according to the medium growth (M1) scenario in the most recent population projections, the demographic dependency ratio should be 61.0 in 2031 and 67.8 in 2068.

19. Statistics Canada. Table 13-10-0418-01 Crude birth rate, age-specific fertility rates and total fertility rate (live births) (accessed September 3, 2020).
20. Statistics Canada. Table 13-10-0140-01 Life expectancy and other elements of the life table, Prince Edward Island and the territories (accessed September 3, 2020).
21. Statistics Canada. Table 13-10-0114-01 Life expectancy and other elements of the life table, Canada, all provinces except Prince Edward Island (accessed September 3, 2020).

Chart 2.3
Demographic dependency ratio, 1971 to 2020, Canada



Source: Statistics Canada, Centre for Demography.

Given their numbers, baby boomers have always had a tangible impact on the demographic dependency ratio. In 1971, the beginning of the period covered by the current demographic accounting system, a good number of baby boomers were still children. At that time, the demographic dependency ratio was 59.5. However, as the baby boomers reached adulthood, that ratio gradually dropped and remained low from 1980 to 2011, while all members of this generation were of working age. The recent increase in the demographic dependency ratio is explained by the baby boomers turning 65.

The number of people aged 55 to 64 per 100 youth aged 15 to 24 is increasing

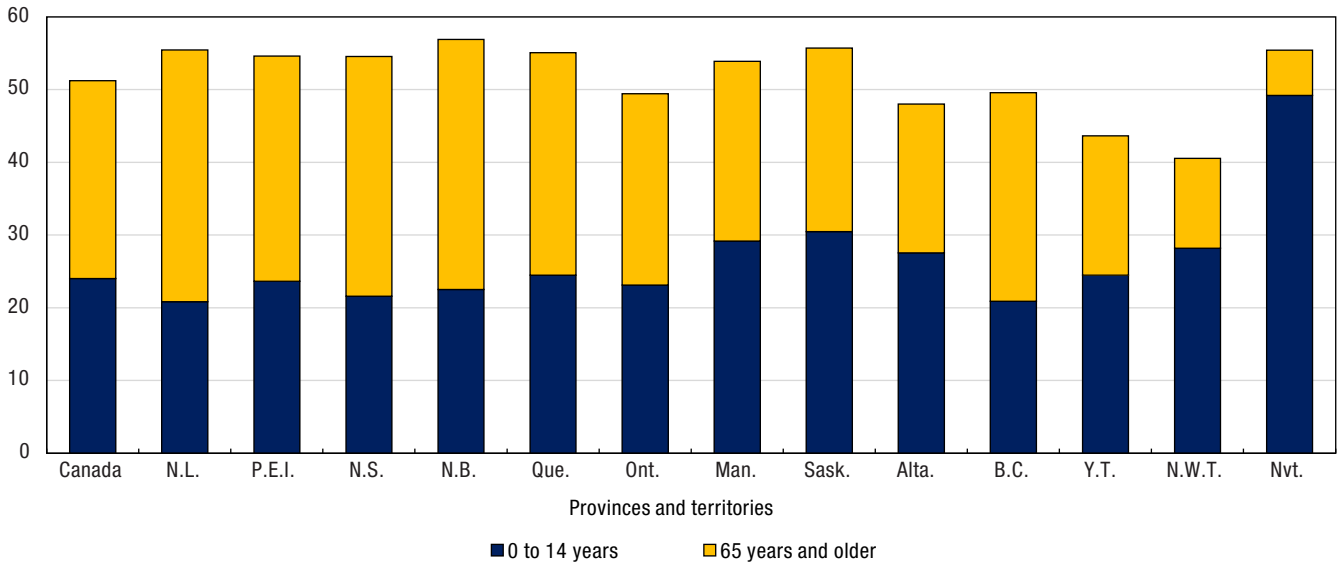
People aged 55 to 64 are often on the cusp of, or in retirement. In contrast, generally speaking, individuals aged 15 to 24 have recently, or are about to enter the labour market for the first time. On July 1, 2020, there were 116 people potentially leaving the labour market for every 100 potential entrants. These persons aged 55 to 64 years consist of the youngest baby boomers. By comparison, in 1984, Canada had two people aged 15 to 24 per person aged 55 to 64. Subsequent years were marked by a steady decrease in this ratio, such that starting in 2013, the number of people potentially leaving outnumbered the number of those potentially entering the labour market.

The demographic dependency ratio varies from one province and territory to another

In 2020, the Atlantic provinces and Quebec had a higher demographic dependency ratio than Canada (51.2) as a result of an increasing number of people aged 65 and older. Moreover, the demographic dependency ratio was also higher than that of the country in Manitoba (53.9) and in Saskatchewan (55.7). This situation was mainly due to the slightly higher proportion of children aged 0 to 14 in these provinces. Lastly, Nunavut (55.4) stood out from the other jurisdictions with the highest ratio of children and the lowest ratio of seniors.

Chart 2.4
Demographic dependency ratio, 2020, Canada, provinces and territories

per 100 persons aged 15 to 64 years



Source: Statistics Canada, Centre for Demography.

Text Table 2.1
Population estimates[1], age distribution, median age and average age as of July 1, 2020, Canada, provinces and territories

	Population	0 to 14 years	15 to 64 years	65 years and over	Median age	Average age
	number		percent		years	
Canada	**38,005,238**	**15.9**	**66.1**	**18.0**	**40.9**	**41.4**
Newfoundland and Labrador	522,103	13.4	64.3	22.3	47.4	44.8
Prince Edward Island	159,625	15.3	64.7	20.0	42.9	42.4
Nova Scotia	979,351	14.0	64.7	21.3	45.0	43.8
New Brunswick	781,476	14.3	63.7	21.9	46.1	44.3
Quebec	8,574,571	15.8	64.5	19.7	42.7	42.6
Ontario	14,734,014	15.5	66.9	17.6	40.4	41.2
Manitoba	1,379,263	18.9	65.0	16.1	37.6	39.1
Saskatchewan	1,178,681	19.6	64.2	16.2	37.8	39.2
Alberta	4,421,876	18.6	67.6	13.8	37.5	38.5
British Columbia	5,147,712	14.0	66.9	19.2	42.2	42.6
Yukon	42,052	17.0	69.6	13.3	39.4	39.6
Northwest Territories	45,161	20.0	71.1	8.8	35.5	36.1
Nunavut	39,353	31.7	64.3	4.0	26.2	28.5

1. Preliminary postcensal estimates.

Note: Figures in percent may not add up to 100% as a result of rounding.

Source: Statistics Canada, Centre for Demography.

The number of centenarians is growing rapidly

On July 1, 2020, preliminary estimates indicate that there were 11,517 centenarians in Canada. The number of centenarians in Canada is constantly growing mainly as a result of higher life expectancy.

Since 2001,[22] the number of centenarians has more than tripled. In the latest annual period, the growth rate of centenarians was 10.4%, or nearly 10 times the growth rate for the entire population (1.1%). Population growth of centenarians was greater than that of each five-year population age group.

22. 2001 is the first year for which population estimates for centenarians are available.

In relative numbers, there were 30 centenarians per 100,000 population in Canada. In 2001, the proportion was 11 centenarians per 100,000 population. Because women have a higher life expectancy than men, the vast majority of centenarians were women (81.3%).

Population aging among women higher

The main population aging indicators are all higher for females. On July 1, 2020, the proportion of women 65 and older (19.3%) was higher than the corresponding proportion of men (16.7%), though the gap has been narrowing since 1998. The average age was also higher for women (42.3 years) than for men (40.6 years). Furthermore, the centenarian group was comprised mostly of women (81.3%). These differences are mainly due to the fact that women, at all ages, have lower mortality levels than men. These mortality levels create a persistent yet narrowing gap in life expectancy in favour of females. The most recent data (2016 to 2018) show that the life expectancy at birth of females was 84.1 years, compared with 79.9 years for males, with females living an average of 4.2 years longer than males. Twenty years earlier, this gap was 5.6 years.[23]

The average age of the Canadian population continues to increase

In 2020, the average age[24] of Canadians was 41.4 years. The average age has increased by 4.1 years since 2000, when it was 37.3 years.

Average age varies considerably from province to province. On July 1, 2020, there was a difference of 6.3 years between the province with the highest average age (44.8 years in Newfoundland and Labrador) and the province with the lowest average age (38.5 years in Alberta). Taking the territories into consideration, Nunavut had the lowest average age, with 28.5 years.

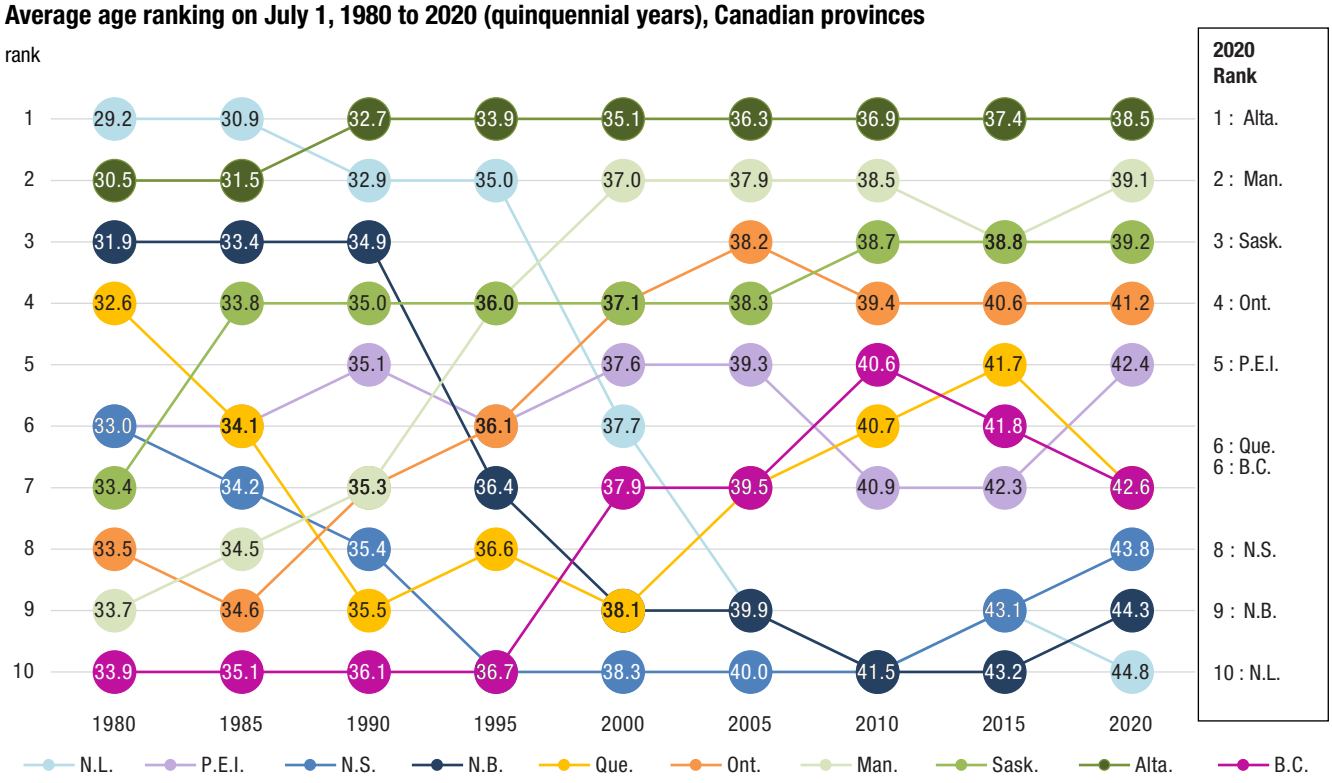
In 2000, the differences between the provinces were much smaller, with a gap of 3.2 years. The highest average age was in Nova Scotia (38.3 years) and the lowest in Alberta (35.1 years).

The situation in Newfoundland and Labrador indicates an especially rapid aging of its population. In just a little over 15 years, the average age in the province went from the lowest (32.5 in 1989) to the highest (40.4 years in 2006 and tied with Nova Scotia) in the country. During most of the period, Newfoundland and Labrador saw negative population growth. The main contributing factor is the departure of many young adults to other provinces and territories. Consequently, the province registered fewer births.

Conversely, the Prairie provinces topped the list of the youngest provinces on July 1, 2020, with an average age of 38.5 years in Alberta, 39.1 years in Manitoba and 39.2 years in Saskatchewan. This is mainly due to a higher proportion of Indigenous populations (Manitoba, Saskatchewan),[25] who are generally younger and with higher fertility rates, as well as a greater migratory inflow of young adults and families from other provinces and countries (Alberta).

23. Statistics Canada. Table 13-10-0114-01 Life expectancy and other elements of the life table, Canada, all provinces except Prince Edward Island (accessed September 4, 2020).
24. The average age of a population is the average age of all its members.
25. Statistics Canada. Aboriginal identity population by both sexes, total - age, 2016 counts, Canada, provinces and territories, 2016 Census – 25% Sample data (accessed September 4, 2020), author's calculations.

Chart 2.5
Average age ranking on July 1, 1980 to 2020 (quinquennial years), Canadian provinces

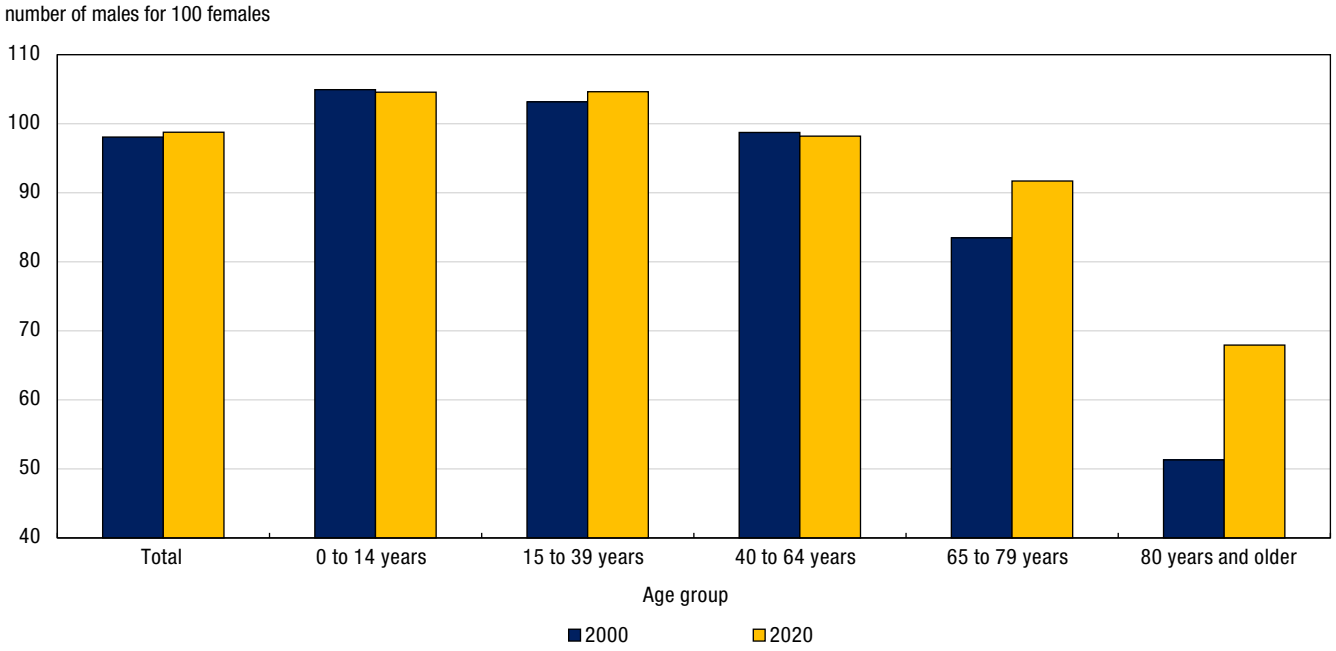


Source: Statistics Canada, Centre for Demography.

Men slightly outnumbered by women

On July 1, 2020, the sex ratio for the entire Canadian population was estimated at 98.8 males per 100 females. This ratio has been rising very slowly since 2000 (98.1). Males outnumber females up to the mid-30s, mainly because of the sex ratio at birth, which averages 105 males per 100 females. When people reach their early 60s, the number of men starts to fall significantly below the number of women because of excess mortality among males. This gap widens at more advanced ages: in the 65-to-79 age group, there were an estimated 91.7 males per 100 females on July 1, 2020. However, the gap between the sexes seems to be narrowing over time. Thirty years ago, the sex ratio for people aged 65 to 79 was 78.1 males per 100 females. Among the 80-and-over population, there were an estimated 67.9 men per 100 women on July 1, 2020, compared with a sex ratio of 52.1 on July 1, 1990. On July 1, 2020, centenarians were predominantly female, with a ratio of 23.0 males per 100 females.

Chart 2.6
Sex ratio by age group, 2000 and 2020, Canada



Source: Statistics Canada, Centre for Demography.

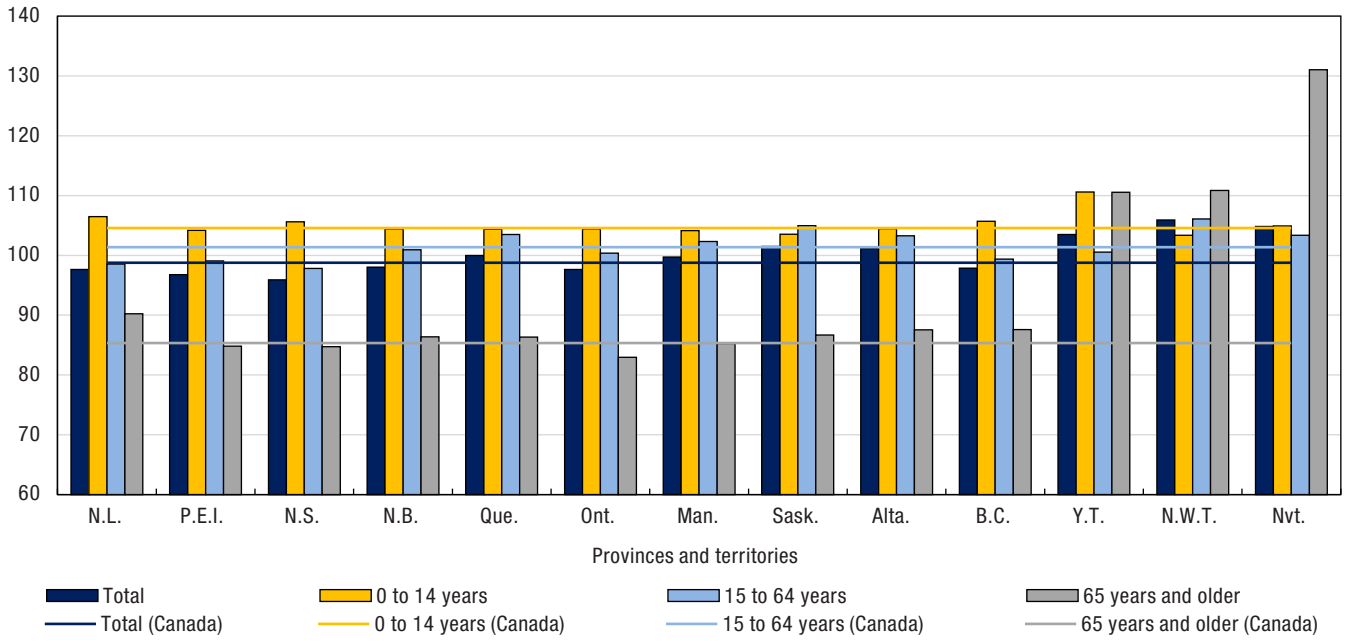
The sex ratio is lower in the Atlantic provinces and higher in the Prairie provinces

There are some regional differences in the sex structure of the population in Canada. On July 1, 2020, the province with the lowest sex ratio in the country was Nova Scotia, with 95.9 males per 100 females, and the highest sex ratio was in Saskatchewan (101.5 males per 100 females). The sex ratios in the Atlantic provinces were below the national average (98.8 males per 100 females), while in the Prairie provinces and in Quebec, they were all higher. Among other factors, this situation can be attributed to differences in the aging of Canada's regions: a younger population is usually a slightly more masculine population, and an older population is usually a more feminine population.

In 2020, males outnumbered females in all the territories because they are home to younger populations than elsewhere in Canada. The main differences between the sex structure in the territories and in Canada as a whole are at higher ages. At age 65 and older, Yukon and the Northwest Territories had 110.5 and 110.9 males per 100 females, respectively, compared with 85.3 males per 100 females nationally. In Nunavut, it was even higher, with 131.0 males per 100 females.

Chart 2.7
Sex ratio by age group, 2020, Canada, provinces and territories

number of males for 100 females



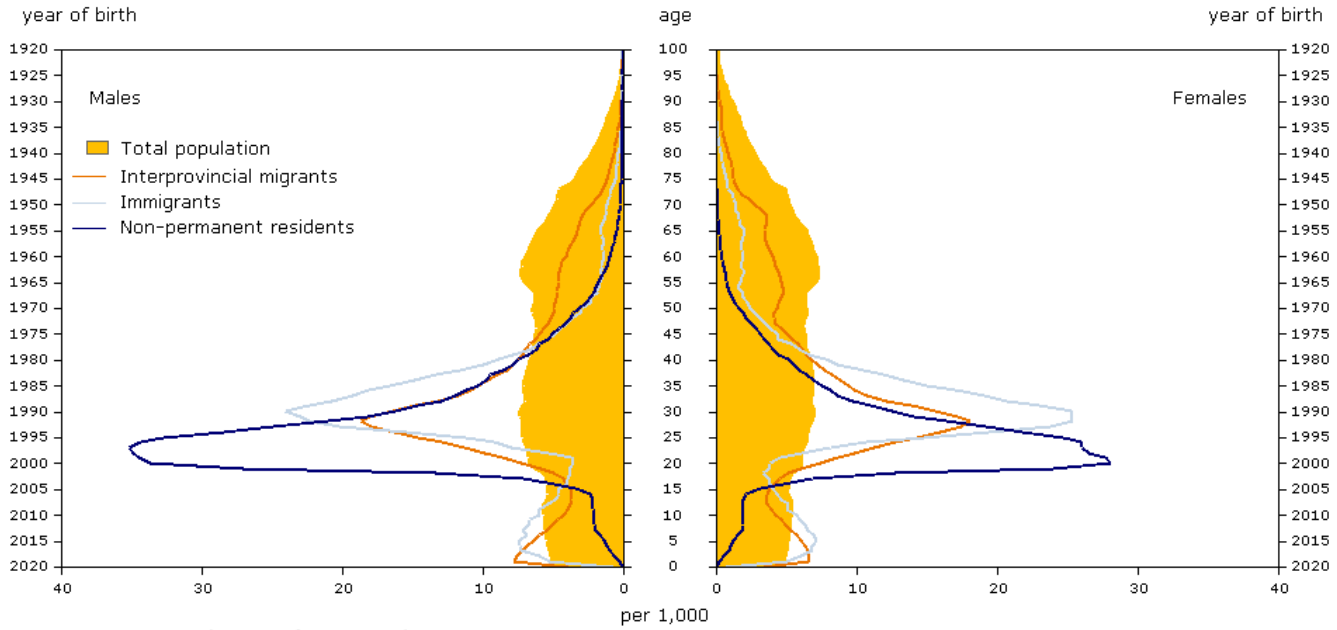
Source: Statistics Canada, Centre for Demography.

Mobile individuals are much younger than the entire population

The population pyramid opposite highlights the differences in the age–sex structure of interprovincial migrants, new immigrants, non-permanent residents and the total population.[26] On July 1, 2020, the proportion of the working-age population (aged 15 to 64) was considerably higher among immigrants (79.5%), interprovincial migrants (77.3%) and non-permanent residents (95.1%) than among the total population (66.1%). These subgroups also had a high concentration of young adults. A majority of non-permanent residents (60.6%) were between 18 and 29 years of age. Immigrants were slightly older compared to the latter, and less concentrated in some age groups, since 66.4% were in the 20-to-44 group. Lastly, 54.9% of interprovincial migrants were aged 20 to 44. Similarly, the average age of interprovincial migrants (33.8 years), non-permanent residents (28.1 years) and immigrants (30.5 years) was lower than the average age of the Canadian population (41.4 years) on July 1, 2020.

26. Interprovincial migrants and immigrants are those who migrated between July 1, 2019, and July 1, 2020, while non-permanent residents and the population are those accounted for on July 1, 2020.

Figure 2.2
Population pyramid of total population, interprovincial migrants, immigrants and non-permanent residents, 2020, Canada



Source: Statistics Canada, Centre for Demography.

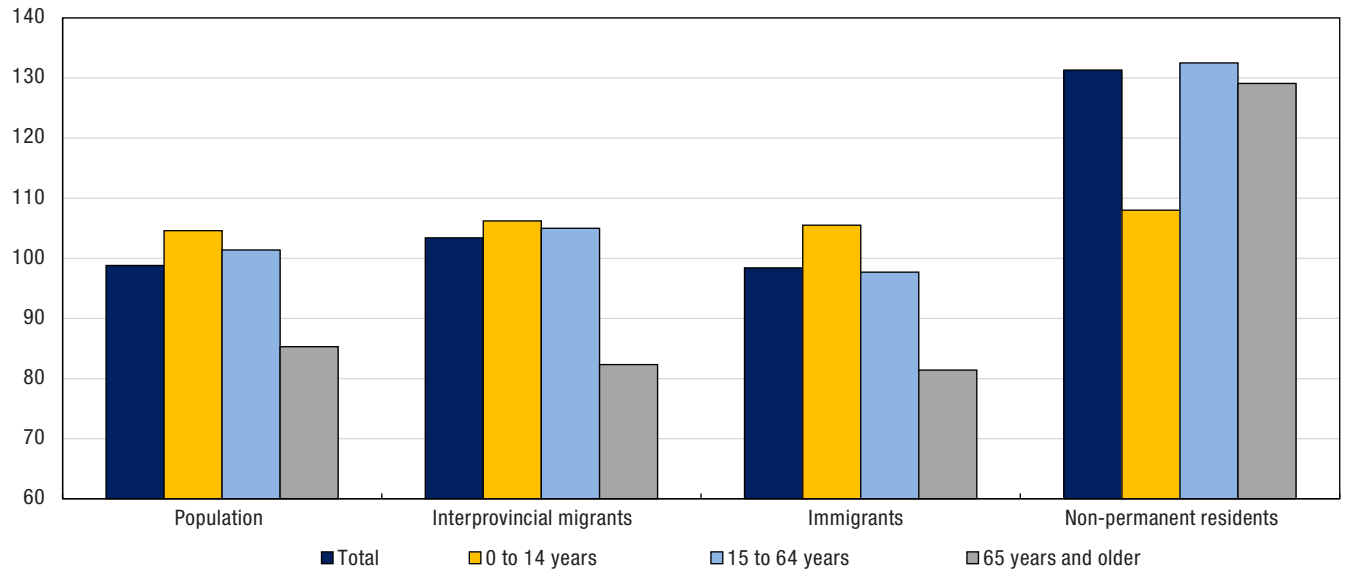
Immigrants stood out for having a population share of children aged 0 to 14 (17.1%) slightly higher than the total Canadian population (15.9%). By comparison, in 2020, 4.4% of non-permanent residents were in the 0-to-14 age group. The distinct age structure of non-permanent residents is mostly due to the fact that these people come to Canada mainly for the purpose of work or study, which mostly involves young adults who have no children (or who come to study or work without their young families).

Males outnumber females among non-permanent residents and interprovincial migrants

The sex structure also differs between each of the three subgroups. The number of males per 100 females was close to parity among immigrants (98.4 males per 100 females), comparable to the Canadian population (98.8 males per 100 females). However, males were overrepresented among non-permanent residents (131.3 males per 100 females) and, to a lesser degree, among interprovincial migrants (103.4 males per 100 females).

Chart 2.8
Sex ratio by age group of the population, interprovincial migrants, immigrants and non-permanent residents, 2020, Canada

number of males for 100 females



Source: Statistics Canada, Centre for Demography.

Table 2.1
Annual population estimates by age group and sex at July 1 - Canada

	2013	2014	2015	2016	2017	2018	2019	2020
	number							
Both sexes	**35,082,954**	**35,437,435**	**35,702,908**	**36,109,487**	**36,545,295**	**37,065,178**	**37,593,384**	**38,005,238**
0 to 4 years	1,924,654	1,927,705	1,928,878	1,942,791	1,941,873	1,940,561	1,932,463	1,921,944
5 to 9 years	1,892,730	1,931,039	1,969,492	2,003,223	2,021,564	2,033,313	2,041,032	2,044,603
10 to 14 years	1,886,668	1,893,264	1,895,463	1,919,810	1,948,681	1,992,389	2,032,988	2,072,100
15 to 19 years	2,154,873	2,118,889	2,092,961	2,083,843	2,090,598	2,106,395	2,114,539	2,100,865
20 to 24 years	2,416,433	2,423,034	2,395,623	2,387,191	2,401,419	2,436,459	2,475,546	2,482,802
25 to 29 years	2,393,577	2,413,496	2,429,557	2,466,106	2,513,657	2,575,089	2,626,058	2,645,240
30 to 34 years	2,411,649	2,447,837	2,460,501	2,488,660	2,515,087	2,553,299	2,605,101	2,661,723
35 to 39 years	2,317,467	2,349,272	2,371,229	2,410,025	2,455,926	2,517,339	2,581,173	2,630,680
40 to 44 years	2,374,735	2,362,412	2,349,922	2,342,178	2,353,731	2,381,576	2,422,043	2,464,247
45 to 49 years	2,577,529	2,503,611	2,445,816	2,431,118	2,418,092	2,407,567	2,397,851	2,390,116
50 to 54 years	2,760,814	2,786,582	2,783,350	2,734,564	2,664,893	2,580,128	2,504,437	2,449,915
55 to 59 years	2,508,170	2,566,359	2,614,668	2,665,850	2,696,687	2,728,012	2,751,377	2,744,896
60 to 64 years	2,110,672	2,171,609	2,243,211	2,313,160	2,388,059	2,457,490	2,513,706	2,560,241
65 to 69 years	1,741,051	1,822,528	1,903,004	1,969,181	1,996,039	2,036,232	2,097,784	2,167,275
70 to 74 years	1,248,201	1,304,022	1,357,712	1,423,187	1,533,342	1,625,617	1,707,580	1,786,622
75 to 79 years	939,265	961,547	983,024	1,014,301	1,057,693	1,109,688	1,164,798	1,218,303
80 to 84 years	723,748	730,784	735,007	742,579	751,645	766,502	788,451	811,370
85 to 89 years	448,403	457,587	467,165	480,677	493,690	503,779	511,996	517,710
90 to 94 years	198,537	208,837	214,926	223,290	229,680	236,508	242,294	248,593
95 to 99 years	46,722	49,296	53,488	59,110	63,937	67,778	71,787	74,476
100 years and over	7,056	7,725	7,911	8,643	9,002	9,457	10,380	11,517
Males	**17,401,165**	**17,581,697**	**17,712,801**	**17,916,496**	**18,136,222**	**18,406,337**	**18,678,507**	**18,885,261**
0 to 4 years	985,155	986,082	986,676	993,580	994,520	994,308	990,580	985,452
5 to 9 years	966,874	985,043	1,003,138	1,019,960	1,030,316	1,038,162	1,042,768	1,045,953
10 to 14 years	969,050	970,398	968,904	978,544	992,477	1,014,167	1,035,230	1,055,313
15 to 19 years	1,112,409	1,094,406	1,080,291	1,074,818	1,076,108	1,082,239	1,083,225	1,074,091
20 to 24 years	1,241,717	1,252,785	1,244,697	1,242,113	1,250,319	1,270,494	1,292,739	1,295,347
25 to 29 years	1,209,043	1,225,550	1,239,356	1,264,270	1,290,055	1,325,044	1,353,893	1,365,844
30 to 34 years	1,202,017	1,222,168	1,230,618	1,249,488	1,266,458	1,289,327	1,319,176	1,350,274
35 to 39 years	1,151,645	1,165,475	1,174,086	1,193,244	1,217,891	1,251,700	1,288,783	1,317,432
40 to 44 years	1,186,258	1,177,103	1,167,211	1,160,414	1,164,185	1,178,063	1,198,765	1,220,034
45 to 49 years	1,292,960	1,252,324	1,220,275	1,210,028	1,202,542	1,196,875	1,190,901	1,185,148
50 to 54 years	1,383,470	1,396,037	1,392,935	1,367,448	1,330,959	1,286,609	1,246,625	1,217,865
55 to 59 years	1,249,247	1,277,271	1,300,456	1,324,747	1,340,431	1,356,012	1,368,185	1,364,677
60 to 64 years	1,041,252	1,069,392	1,102,960	1,135,977	1,172,722	1,208,304	1,236,748	1,260,206
65 to 69 years	849,102	888,164	926,287	957,632	969,894	988,509	1,017,348	1,050,581
70 to 74 years	592,170	621,283	649,566	682,973	736,101	779,387	817,561	854,293
75 to 79 years	428,838	440,683	452,282	468,088	489,682	515,941	543,317	569,696
80 to 84 years	307,258	313,199	317,644	323,647	329,295	337,170	348,047	359,314
85 to 89 years	163,301	170,273	177,089	185,348	193,051	199,663	205,031	208,810
90 to 94 years	58,076	61,862	64,978	68,987	72,577	76,477	80,215	84,178
95 to 99 years	10,156	10,962	12,084	13,791	15,106	16,251	17,577	18,597
100 years and over	1,167	1,237	1,268	1,399	1,533	1,635	1,793	2,156

Table 2.1
Annual population estimates by age group and sex at July 1 - Canada

	2013	2014	2015	2016	2017	2018	2019	2020
	number							
Females	**17,681,789**	**17,855,738**	**17,990,107**	**18,192,991**	**18,409,073**	**18,658,841**	**18,914,877**	**19,119,977**
0 to 4 years	939,499	941,623	942,202	949,211	947,353	946,253	941,883	936,492
5 to 9 years	925,856	945,996	966,354	983,263	991,248	995,151	998,264	998,650
10 to 14 years	917,618	922,866	926,559	941,266	956,204	978,222	997,758	1,016,787
15 to 19 years	1,042,464	1,024,483	1,012,670	1,009,025	1,014,490	1,024,156	1,031,314	1,026,774
20 to 24 years	1,174,716	1,170,249	1,150,926	1,145,078	1,151,100	1,165,965	1,182,807	1,187,455
25 to 29 years	1,184,534	1,187,946	1,190,201	1,201,836	1,223,602	1,250,045	1,272,165	1,279,396
30 to 34 years	1,209,632	1,225,669	1,229,883	1,239,172	1,248,629	1,263,972	1,285,925	1,311,449
35 to 39 years	1,165,822	1,183,797	1,197,143	1,216,781	1,238,035	1,265,639	1,292,390	1,313,248
40 to 44 years	1,188,477	1,185,309	1,182,711	1,181,764	1,189,546	1,203,513	1,223,278	1,244,213
45 to 49 years	1,284,569	1,251,287	1,225,541	1,221,090	1,215,550	1,210,692	1,206,950	1,204,968
50 to 54 years	1,377,344	1,390,545	1,390,415	1,367,116	1,333,934	1,293,519	1,257,812	1,232,050
55 to 59 years	1,258,923	1,289,088	1,314,212	1,341,103	1,356,256	1,372,000	1,383,192	1,380,219
60 to 64 years	1,069,420	1,102,217	1,140,251	1,177,183	1,215,337	1,249,186	1,276,958	1,300,035
65 to 69 years	891,949	934,364	976,717	1,011,549	1,026,145	1,047,723	1,080,436	1,116,694
70 to 74 years	656,031	682,739	708,146	740,214	797,241	846,230	890,019	932,329
75 to 79 years	510,427	520,864	530,742	546,213	568,011	593,747	621,481	648,607
80 to 84 years	416,490	417,585	417,363	418,932	422,350	429,332	440,404	452,056
85 to 89 years	285,102	287,314	290,076	295,329	300,639	304,116	306,965	308,900
90 to 94 years	140,461	146,975	149,948	154,303	157,103	160,031	162,079	164,415
95 to 99 years	36,566	38,334	41,404	45,319	48,831	51,527	54,210	55,879
100 years and over	5,889	6,488	6,643	7,244	7,469	7,822	8,587	9,361

Note: Estimates are final intercensal up to 2015, final postcensal from 2016 to 2018, updated postcensal for 2019 and preliminary postcensal for 2020.
Source: Statistics Canada, Centre for Demography.

Table 2.2
Annual population estimates and factors of demographic growth by age group and sex, 2019/2020[1] - Canada

	Natural increase					
	Births	Deaths	Net interprovincial migration	Net international migration	Total net migration	Total growth
	number					
Both sexes	**374,885**	**300,314**	**0**	**337,283**	**337,283**	**411,854**
-1 year	374,885	1,563	0	307	307	373,629
0 to 4 years	...	449	0	19,439	19,439	18,990
5 to 9 years	...	175	0	19,983	19,983	19,808
10 to 14 years	...	255	0	18,481	18,481	18,226
15 to 19 years	...	825	0	76,953	76,953	76,128
20 to 24 years	...	1,502	0	42,563	42,563	41,061
25 to 29 years	...	1,870	0	46,017	46,017	44,147
30 to 34 years	...	2,179	0	45,315	45,315	43,136
35 to 39 years	...	2,466	0	29,624	29,624	27,158
40 to 44 years	...	3,116	0	15,183	15,183	12,067
45 to 49 years	...	4,643	0	7,039	7,039	2,396
50 to 54 years	...	7,697	0	2,914	2,914	-4,783
55 to 59 years	...	13,198	0	2,523	2,523	-10,675
60 to 64 years	...	18,880	0	3,766	3,766	-15,114
65 to 69 years	...	24,055	0	3,411	3,411	-20,644
70 to 74 years	...	31,650	0	2,251	2,251	-29,399
75 to 79 years	...	35,182	0	1,141	1,141	-34,041
80 to 84 years	...	41,942	0	389	389	-41,553
85 to 89 years	...	48,460	0	15	15	-48,445
90 to 94 years	...	39,201	0	-18	-18	-39,219
95 to 99 years	...	17,569	0	-13	-13	-17,582
100 years and over	...	3,437	0	0	0	-3,437

Table 2.2
Annual population estimates and factors of demographic growth by age group and sex, 2019/2020[1] - Canada

	Natural increase					
	Births	Deaths	Net interprovincial migration	Net international migration	Total net migration	Total growth
	number					
Males	**192,503**	**154,013**	**0**	**168,264**	**168,264**	**206,754**
-1 year	192,503	838	0	147	147	191,812
0 to 4 years	...	247	0	9,934	9,934	9,687
5 to 9 years	...	88	0	10,440	10,440	10,352
10 to 14 years	...	142	0	9,559	9,559	9,417
15 to 19 years	...	551	0	41,769	41,769	41,218
20 to 24 years	...	1,068	0	22,674	22,674	21,606
25 to 29 years	...	1,341	0	19,891	19,891	18,550
30 to 34 years	...	1,484	0	22,534	22,534	21,050
35 to 39 years	...	1,640	0	15,135	15,135	13,495
40 to 44 years	...	1,949	0	7,560	7,560	5,611
45 to 49 years	...	2,842	0	3,271	3,271	429
50 to 54 years	...	4,663	0	941	941	-3,722
55 to 59 years	...	8,042	0	376	376	-7,666
60 to 64 years	...	11,468	0	1,183	1,183	-10,285
65 to 69 years	...	14,274	0	1,286	1,286	-12,988
70 to 74 years	...	18,323	0	881	881	-17,442
75 to 79 years	...	19,703	0	502	502	-19,201
80 to 84 years	...	22,099	0	167	167	-21,932
85 to 89 years	...	22,929	0	34	34	-22,895
90 to 94 years	...	14,937	0	-17	-17	-14,954
95 to 99 years	...	4,764	0	-3	-3	-4,767
100 years and over	...	621	0	0	0	-621
Females	**182,382**	**146,301**	**0**	**169,019**	**169,019**	**205,100**
-1 year	182,382	725	0	160	160	181,817
0 to 4 years	...	202	0	9,505	9,505	9,303
5 to 9 years	...	87	0	9,543	9,543	9,456
10 to 14 years	...	113	0	8,922	8,922	8,809
15 to 19 years	...	274	0	35,184	35,184	34,910
20 to 24 years	...	434	0	19,889	19,889	19,455
25 to 29 years	...	529	0	26,126	26,126	25,597
30 to 34 years	...	695	0	22,781	22,781	22,086
35 to 39 years	...	826	0	14,489	14,489	13,663
40 to 44 years	...	1,167	0	7,623	7,623	6,456
45 to 49 years	...	1,801	0	3,768	3,768	1,967
50 to 54 years	...	3,034	0	1,973	1,973	-1,061
55 to 59 years	...	5,156	0	2,147	2,147	-3,009
60 to 64 years	...	7,412	0	2,583	2,583	-4,829
65 to 69 years	...	9,781	0	2,125	2,125	-7,656
70 to 74 years	...	13,327	0	1,370	1,370	-11,957
75 to 79 years	...	15,479	0	639	639	-14,840
80 to 84 years	...	19,843	0	222	222	-19,621
85 to 89 years	...	25,531	0	-19	-19	-25,550
90 to 94 years	...	24,264	0	-1	-1	-24,265
95 to 99 years	...	12,805	0	-10	-10	-12,815
100 years and over	...	2,816	0	0	0	-2,816

... not applicable
1. Period from July 1 to June 30.

Note: Preliminary estimates.
Source: Statistics Canada, Centre for Demography.

Table 2.3
Annual estimates of demographic components by age group and sex, 2019/2020[1] — Canada

	Natural increase		Interprovincial migration		International migration				
	Births	Deaths	In-migrants	Out-migrants	Immigrants	Emigrants	Returning emigrants	Net temporary emigrants	Net non-permanent residents
	number								
Both sexes	**374,885**	**300,314**	**278,316**	**278,316**	**284,387**	**39,129**	**33,732**	**18,879**	**77,172**
-1 year	374,885	1,563	1,990	1,990	352	287	269	138	111
0 to 4 years	...	449	18,845	18,845	18,506	2,703	2,443	1,299	2,492
5 to 9 years	...	175	14,005	14,005	18,428	2,259	1,887	1,089	3,016
10 to 14 years	...	255	10,396	10,396	13,821	1,623	1,746	765	5,302
15 to 19 years	...	825	14,934	14,934	10,773	1,069	2,263	503	65,489
20 to 24 years	...	1,502	31,659	31,659	23,070	3,289	4,120	1,600	20,262
25 to 29 years	...	1,870	47,789	47,789	63,717	5,480	4,300	2,676	-13,844
30 to 34 years	...	2,179	32,583	32,583	54,665	5,204	3,214	2,550	-4,810
35 to 39 years	...	2,466	22,534	22,534	31,524	4,017	2,478	1,948	1,587
40 to 44 years	...	3,116	17,177	17,177	16,328	3,178	2,264	1,520	1,289
45 to 49 years	...	4,643	13,207	13,207	9,626	2,728	1,975	1,296	-538
50 to 54 years	...	7,697	13,018	13,018	5,421	2,261	1,792	1,078	-960
55 to 59 years	...	13,198	12,075	12,075	4,777	1,634	1,409	785	-1,244
60 to 64 years	...	18,880	9,957	9,957	4,808	1,132	1,163	538	-535
65 to 69 years	...	24,055	8,552	8,552	4,024	851	942	410	-294
70 to 74 years	...	31,650	4,393	4,393	2,497	539	674	254	-127
75 to 79 years	...	35,182	2,708	2,708	1,297	384	447	191	-28
80 to 84 years	...	41,942	1,395	1,395	547	258	225	129	4
85 to 89 years	...	48,460	768	768	156	159	89	74	3
90 to 94 years	...	39,201	294	294	38	58	31	29	0
95 to 99 years	...	17,569	37	37	11	16	1	7	-2
100 years and over	...	3,437	0	0	1	0	0	0	-1
Males	**192,503**	**154,013**	**141,455**	**141,455**	**141,046**	**20,262**	**16,496**	**9,785**	**40,769**
-1 year	192,503	838	1,062	1,062	179	151	139	73	53
0 to 4 years	...	247	9,922	9,922	9,420	1,369	1,285	659	1,257
5 to 9 years	...	88	7,061	7,061	9,468	1,121	998	540	1,635
10 to 14 years	...	142	5,202	5,202	7,194	838	881	399	2,721
15 to 19 years	...	551	7,311	7,311	5,454	575	1,106	267	36,051
20 to 24 years	...	1,068	15,860	15,860	10,545	1,732	1,783	849	12,927
25 to 29 years	...	1,341	24,298	24,298	29,829	2,641	1,874	1,291	-7,880
30 to 34 years	...	1,484	16,949	16,949	27,625	2,554	1,493	1,251	-2,779
35 to 39 years	...	1,640	11,729	11,729	16,670	2,042	1,168	991	330
40 to 44 years	...	1,949	9,143	9,143	8,696	1,701	1,181	816	200
45 to 49 years	...	2,842	7,220	7,220	5,152	1,553	1,088	739	-677
50 to 54 years	...	4,663	6,519	6,519	2,774	1,309	991	622	-893
55 to 59 years	...	8,042	6,102	6,102	2,098	953	783	459	-1,093
60 to 64 years	...	11,468	4,935	4,935	2,083	623	601	302	-576
65 to 69 years	...	14,274	3,882	3,882	1,800	440	436	209	-301
70 to 74 years	...	18,323	2,087	2,087	1,110	266	321	128	-156
75 to 79 years	...	19,703	1,224	1,224	596	181	212	88	-37
80 to 84 years	...	22,099	611	611	251	121	105	60	-8
85 to 89 years	...	22,929	240	240	81	64	45	29	1
90 to 94 years	...	14,937	91	91	15	23	6	11	-4
95 to 99 years	...	4,764	7	7	5	5	0	2	-1
100 years and over	...	621	0	0	1	0	0	0	-1

Table 2.3
Annual estimates of demographic components by age group and sex, 2019/2020[1] — Canada

	Natural increase		Interprovincial migration		International migration				
	Births	Deaths	In-migrants	Out-migrants	Immigrants	Emigrants	Returning emigrants	Net temporary emigrants	Net non-permanent residents
	number								
Females	**182,382**	**146,301**	**136,861**	**136,861**	**143,341**	**18,867**	**17,236**	**9,094**	**36,403**
-1 year	182,382	725	928	928	173	136	130	65	58
0 to 4 years	...	202	8,923	8,923	9,086	1,334	1,158	640	1,235
5 to 9 years	...	87	6,944	6,944	8,960	1,138	889	549	1,381
10 to 14 years	...	113	5,194	5,194	6,627	785	865	366	2,581
15 to 19 years	...	274	7,623	7,623	5,319	494	1,157	236	29,438
20 to 24 years	...	434	15,799	15,799	12,525	1,557	2,337	751	7,335
25 to 29 years	...	529	23,491	23,491	33,888	2,839	2,426	1,385	-5,964
30 to 34 years	...	695	15,634	15,634	27,040	2,650	1,721	1,299	-2,031
35 to 39 years	...	826	10,805	10,805	14,854	1,975	1,310	957	1,257
40 to 44 years	...	1,167	8,034	8,034	7,632	1,477	1,083	704	1,089
45 to 49 years	...	1,801	5,987	5,987	4,474	1,175	887	557	139
50 to 54 years	...	3,034	6,499	6,499	2,647	952	801	456	-67
55 to 59 years	...	5,156	5,973	5,973	2,679	681	626	326	-151
60 to 64 years	...	7,412	5,022	5,022	2,725	509	562	236	41
65 to 69 years	...	9,781	4,670	4,670	2,224	411	506	201	7
70 to 74 years	...	13,327	2,306	2,306	1,387	273	353	126	29
75 to 79 years	...	15,479	1,484	1,484	701	203	235	103	9
80 to 84 years	...	19,843	784	784	296	137	120	69	12
85 to 89 years	...	25,531	528	528	75	95	44	45	2
90 to 94 years	...	24,264	203	203	23	35	25	18	4
95 to 99 years	...	12,805	30	30	6	11	1	5	-1
100 years and over	...	2,816	0	0	0	0	0	0	0

... not applicable
1. Period from July 1 to June 30.

Note: Preliminary estimates.
Source: Statistics Canada, Centre for Demography.

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 2016 Census.

Specific information regarding age and sex distributions is provided in boxes.

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 CNU1 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.

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

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

$$P_{(t+i)} = P_{(t)} + B_{(t,t+i)} - D_{(t,t+i)} + I_{(t,t+i)} - \left[E_{(t,t+i)} + \Delta TE_{(t,t+i)} \right] + RE_{(t,t+i)} + \Delta NPR_{(t,t+i)} + \Delta N\text{inter}_{(t,t+i)} - R\text{esid}_{(t,t+i)}$$

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;
ΔTE	=	net temporary emigration;
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 by age and sex

Population estimates by age and sex are produced by applying the component method to each age-sex cohort in the base population.

At age 0:

$$P^{0}_{(t+1)} = B_{(t,t+1)} - D^{-1}_{(t,t+1)} + I^{-1}_{(t,t+1)} - \left[E^{-1}_{(t,t+1)} + \Delta TE^{-1}_{(t,t+1)} \right] + RE^{-1}_{(t,t+1)} + \Delta NPR^{-1}_{(t,t+1)} + \Delta Ninter^{-1}_{(t,t+1)} - Resid^{-1}_{(t,t+1)}$$

From 1 to 99 years:

$$P^{a+1}_{(t+1)} = P^{a}_{(t)} - D^{a}_{(t,t+1)} + I^{a}_{(t,t+1)} - \left[E^{a}_{(t,t+1)} + \Delta TE^{a}_{(t,t+1)} \right] + RE^{a}_{(t,t+1)} + \Delta NPR^{a}_{(t,t+1)} + \Delta Ninter^{a}_{(t,t+1)} - Resid^{a}_{(t,t+1)}$$

For 100 years and over:

$$P^{100+}_{(t+1)} = P^{99+}_{(t)} - D^{99+}_{(t,t+1)} + I^{99+}_{(t,t+1)} - \left[E^{99+}_{(t,t+1)} + \Delta TE^{99+}_{(t,t+1)} \right] + RE^{99+}_{(t,t+1)} + \Delta NPR^{99+}_{(t,t+1)} + \Delta Ninter^{99+}_{(t,t+1)} - Resid^{99+}_{(t,t+1)}$$

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;
ΔTE	=	net temporary emigration;
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 2016. The population universe of the 2016[3] Census includes the following groups:

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

2. Unless otherwise noted, the term preliminary include both preliminary and updated estimates.
3. From 1991 to 2001 Census, "persons with a usual place of residence in Canada who hold Minister's permits (including extensions) and members of their families living with them" were included in the census universe.

For census purposes, the last three groups are referred to as non-permanent residents (NPR). They have been included in the census universe since 1991 but foreign residents are not included. Foreign residents are persons who belong to the following groups:

- government representatives of another country attached to the embassy, high commission or other diplomatic body of that country in Canada, and members of their families living with them;
- members of the Armed Forces of another country who are stationed in Canada, and family members living with them;
- residents of another country visiting Canada temporarily (for example, a foreign visitor on vacation or on business, with or without a visitor's permit).

These base populations are adjusted as follows:

- adjustment of the population for CNU;
- addition of independent estimates for incompletely enumerated Indian reserves in 1991, 1996, 2001, 2006, 2011 and 2016;
- 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 old age population is an age structure adjustment of censal estimates for 2001, 2006, 2011 and 2016 by sex 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)

The adjustment for CNU is important. CNU 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 and 2016 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 six censuses (1991 to 2016). 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 for the Yukon and the Northwest Territories prior to 1991 was estimated by assuming that the ratio between the CNU for each territory and the 10 provinces for each census between 1971 and 1986 was the same as in 1991.

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 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 CNU by age and sex for 1991, 1996, 2001, 2006, 2011 and 2016. First, the national estimates of CNU based on the coverage studies by age and sex were smoothed. Then an Empirical Bayes regression model was used to generate the provincial and territorial estimates of CNU by broad age groups, and a synthetic model produced estimates by single year of age. Lastly, two-way raking[4] was used to ensure that CNU estimates were consistent with the provincial and territorial CNU totals and the national estimates by age and sex.

For the 1971 to 1986 period, CNU estimates by age and sex were simply prorated to the revised CNU estimates for the total population.

Demographic adjustment at age 0

To minimize inconsistencies with vital statistics information, it was decided to adjust the censal population estimates at age 0 to the postcensal estimates at the same age.

Demographic adjustment for very elderly populations

An analysis of the age and sex structure of recent census counts and postcensal population estimates reveals that the very elderly population, particularly people aged 95 and older, can be affected by overestimation or underestimation that coverage studies do not manage to correct. For very elderly populations, the types of errors and their magnitude can vary from one census to another, from misreporting errors (voluntary and involuntary) to data capture and/or process errors.

On 2016 Census Day, postcensal estimates of the number of centenarians, still based on the 2011 Census, were significantly lower than the 2016 Census counts, translating into significant errors of closure. Specifically, among women, the postcensal estimates of the number of centenarians corresponded to only 59% of the 2016 Census counts and, among men, to only 4%. Historically, the enumerated centenarian population has often been overestimated; however, gaps of this size between census counts and postcensal estimates are symptomatic of a defect. This could indicate that the downward adjustment to the 2011 Census counts was too aggressive for the population aged 95 and over, the group that made up the centenarian population in 2016.

When the 2011 Census cycle was rebased, Statistics Canada's Population Estimates Program reviewed its demographic adjustment method for very elderly populations using the extinct cohort method and the survival ratio method. The resulting observations revealed that these approaches, although tested in the scientific literature, are highly sensitive to the choice of certain parameters, such as assumptions on the future evolution of survival rates. This could partially account for the unsatisfactory results recently observed following a comparison of the number of centenarians between the postcensal estimates and the 2016 Census counts.

In light of these findings, the demographic adjustment for very elderly populations for rebasing the 2016 Census cycle used a more holistic strategy to make use of a vast range of available data sources. First, administrative data from the Office of the Chief Actuary of Canada (OCA) as well as from the T1 Family File (T1FF) were considered to compare them with the census counts. Next, we also used the most recent life tables published by Statistics Canada. Using the mortality rates in these tables and deaths, as measured in vital statistics, enabled us to calculate a theoretical population centred on the date of the four most recent censuses. The very elderly populations were also calculated using the extinct cohort method and the survival ratio method, as a point of comparison.

For the entire period from 2001 to 2016, we simulated different scenarios, using the data sources and methods identified in the previous paragraph on their own or combined with others. Next, the age and sex structures produced by each scenario chosen were examined in detail, particularly to detect possible inconsistencies. Special attention was given to evaluating the ratios between men and women, given that the adjustments

4. *Two-way raking* is also referred to as the "Deming method", the "method of iterative proportions", and calibration (see Shryock, Siegel *et al.*, 1976: 547-549).

were calculated independently for each sex. A similar analysis was done on the basis of the probabilities of death calculated for each scenario chosen. Finally, a detailed analysis of errors of closure rounded out the comparative analysis of the scenarios being studied.

For the two most heavily populated provinces in Canada, Ontario and Quebec, the method that performed the best was the one based on the calculation of a theoretical population using data from the life tables and vital statistics. In the other provinces and territories, this method did not perform optimally, likely because the number of observations for deaths in very elderly populations drawn from vital statistics was too limited. The administrative data from OCA helped to produce a more consistent portrait of very elderly populations in terms of their age and sex structure and their death probabilities and generated the biggest error of closure decreases. The universe of these administrative data is more or less the universe of Old Age Security (OAS) program beneficiaries. For Quebec and Ontario, the administrative data from OCA were also used to revise the calculation of potential outliers. The adjusted censal estimate was therefore systematically capped to correspond to the value obtained using administrative data from OCA. This approach is based on the assumption that OCA has very complete data, which are more likely characterized by a very slight overestimation than by underestimation. Similarly, the adjusted censal estimate was systematically replaced by administrative data from the T1FF if the latter were higher than the former. This approach is based on the assumption that the T1FF data are characterized by slightly incomplete coverage, and therefore, constitute a lower limit.

To ensure the best possible consistency of estimates by cohort, the demographic adjustment for very elderly populations was carried out on the 2001, 2006, 2011 and 2016 census populations, by age and sex for each province[5]. These adjustments were performed from age 90 on. The surplus populations were redistributed among the population aged 5 to 74 years, by their relative weight per province or territory and by sex.

The robustness of this new adjustment method will be monitored throughout the 2016 cycle and research to improve its accuracy and coherence will continue.

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 1st) and not the age at the time of occurrence, as with the Centre for Population Health Data. The Centre for Population Health Data releases preliminary data that the Centre for Demography will use. However, this data will not be 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 sex. These methods are used to calculate preliminary[2] estimates.

5. Demographic adjustment was not deemed necessary in the territories.

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

Quebec and British Columbia provide their most recent estimates of births and deaths. The figures are used to produce preliminary[2] estimates. For the final estimates, the two provinces' births and deaths are derived from the vital statistics compiled by the Centre for Population Health Data.

With regard to the preliminary[2] estimates, the number of births by sex is derived by applying an average proportion by sex 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 sex is derived by applying mortality rates by age and sex 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 sex and deaths by age and sex. They are used for the preliminary[2] estimates.

Levels of estimates

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

C. Immigration

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 immigrants' administrative files. It then provides Statistics Canada with information from Global Case Management System (GCMS) files (until December 2010, data come 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. For the Centre for Demography, the terms immigrant and permanent resident are equivalent.

An immigrant is a person who is not a Canadian citizen by birth, but has been granted the right to live in Canada permanently by Canadian immigration authorities. The number of immigrants does not include persons born abroad to Canadian parents who are only temporarily outside the country.

Immigrants are usually counted on or after the date on which they are granted permanent resident status or the right to live in Canada.

The estimates of immigrants by age and sex 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. Net non-permanent residents

Like the numbers of births and deaths, Canadian immigration statistics must be kept by law. In Canada, the non-permanent residents (NPR) are regulated by the I*mmigration 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 the administrative files of immigrants and NPRs in Canada. It then provides Statistics Canada with information from Global Case

Management System (GCMS) files (until June 2011, data come from the Field Operational Support System files (FOSS)). The information is used to estimate the number and characteristics of people granted non-permanent resident status by the federal government.

NPRs are persons who are lawfully in Canada on a temporary basis under the authority of a temporary resident permit, along with members of their family living with them. NPRs include foreign workers, foreign students, the humanitarian population and other temporary residents. The humanitarian population includes refugee claimants and temporary residents who are allowed to remain in Canada on humanitarian grounds and are not categorized as either foreign workers or foreign students. For the Centre for Demography, the terms non-permanent resident and temporary resident are equivalent.

The number of people in IRCC's administrative system is estimated on a specific date in each period of observation. First, the end-of-period number of NPR is estimated, and then the start-of-period number of NPR is subtracted from that estimate. That yields the net NPRs used in the calculation of the population estimates.

Anyone who received non-permanent resident status prior to the observation date is counted. For refugee claimants, the date of their application is used. Permit holders and refugee claimants are excluded from the population if their permit has expired, if they receive permanent resident status, or if they are deported. In addition, refugee claimants are excluded if their file has been inactive for two years.

Since GCMS files are continually being updated, the figures are recalculated each year until the estimates of net NPR are final.

The estimates of net non-permanent residents by age and sex are derived from the Global Case Management System (GCMS).

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 three years after the reference year, when all other components are also final.

E. Emigration

The number of 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[6]). The first source is used to estimate emigration to the United States. CCB data are used to estimate emigration to other countries. The estimates of the number of child emigrants have to 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 taken into account:

- 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;[6]

6. 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.

- the differential propensity to emigrate between adults and children. This factor generates the emigration rate for the population aged 18 and over. It is obtained by (1) calculating the average ratio over three years of the adult and child emigration rates based on T1FF[6] data, (2) calculating the average ratio over three years of the adult and child emigration rates based on data from the Office of Immigration Statistics, U.S. Department of Homeland Security, and (3) taking the average of the two rates. This factor is calculated for Canada only.

The adult emigration rate is applied to the adult population. Adult emigration is distributed by province and territory using data from the T1FF[6] file. We calculate a ratio of the number of emigrant adults to the number of emigrant children from the T1FF[6] file. We then apply this ratio to the number of emigrant children from the CCB by province, which yields the number of adult emigrants whose provincial distribution will differ from that of the children.

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 emigrants for the entire population.

Emigration is disaggregated by province and territory based on the number of child emigrants adjusted for coverage and differential emigration.

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 sex are obtained by using the data by five-year age group, sex, province and territory from T1FF[6] files adjusted for the coverage. We distribute these estimates by single year of age using Sprague coefficients.

Levels of estimates

For information on the differences between preliminary[2] and final estimates, see section **E. Emigration**, above.

F. Net temporary emigration

Some people leave Canada to live temporarily in another country while others who were temporarily outside of Canada return. The net result of those departures and returns is the component known as “net temporary emigration”. Estimates of the number of departures are derived from the Reverse Record Check (RRC), the most important census coverage study. The RRC provides an estimate of the number of people who left Canada temporarily during an intercensal period and are still out of the country at the end of the period. Estimates of the number of returns are based on two sources: the census and the Centre for Demography estimates of returning emigrants. The census provides the number of people who were outside Canada at the time of the previous census and returned during the intercensal period. That number includes all returning emigrants. Then the Centre for Demography’s estimate of the returning emigrants component is subtracted to produce the number of returning temporary emigrants. The estimated numbers of departures (RRC) and returns (census and Centre for Demography) yield an estimate of net temporary emigration.

The five-year net temporary emigration is calculated first at the national level. It is then disaggregated by province or group of provinces based on RRC estimates of temporary emigration. For the Atlantic provinces and the territories, the estimate for the group is disaggregated on the basis of each province / territory’s proportion of the group’s total population.

This estimate is for the whole intercensal period; it is disaggregated into estimates for each of the five years in the period and then into monthly estimates using a seasonal adjustment that is an average between zero seasonality and the seasonality of emigration.

Net temporary emigration can be estimated only for the intercensal period preceding the most recent census. For the postcensal period, the rate of the last available year (2015/2016) is applied to the beginning of the year population estimate to be estimated.

The age and sex distribution of the net temporary emigration is derived from the emigration age and sex distribution.

Levels of estimates

The difference between preliminary[2] and final estimates lies in the timeliness of the emigration estimate used to calculate the seasonal adjustment for the net temporary emigration. The same estimation method is used.

G. Returning emigrants

A returning emigrant is a person who returns to Canada after having been classified as an emigrant. In a manner similar to the procedure used to calculate the number of emigrants, data from the Canada child benefit (CCB) file from Canada Revenue Agency (CRA) and T1FF[6] file are used to estimate the number of returning emigrants. 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 used to take into account:

- 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;[6]
- the adult / child ratio, which is based on the data from the 2016 Census.

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.

The age and sex distribution of returning emigrants is based on the census at the national level. Characteristics of returning emigrants are derived from the census question on location of residence one year ago, after excluding non-permanent residents and immigrants. From 2016/2017, the distribution by age and sex derived from the 2016 Census is used.

Levels of estimates

For information on the differences between preliminary[2] and final estimates, see section **G. Returning emigrants**, above.

H. 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.[6]

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.[6] 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;[6]
- 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.[6]

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)[6] 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 sex is derived from T1FF[6] data and counts from the last available census (question on location of residence one year ago). From 2016/2017, the 2016 Census age and sex distribution is used to split the broad age groups of the T1FF[6] file.

Levels of estimates

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

Intercensal estimates by age and sex are adjusted in the same way, i.e., by distributing the error of closure uniformly across the age-sex cohorts.

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 and 2016 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 Reverse Record Check Survey (RRC) 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 sex 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[7], 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, sex and by province/territory across censuses.

7. 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 2016 censuses

	Census population	Census net undercoverage	Incompletely enumerated Indian reserves	Adjusted population	Rate
	A	B	C	D=A+B+C	(B+C)/D*100
Geography	number				percent
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
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) and the Overcoverage Study and 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 Indian reserves 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 sex 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 2016 censuses, Canada

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

Note: The census adjustment represents the sum of census net undercoverage, incompletely enumerated Indian reserves 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.

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. Immigration and non-permanent residents

With respect to immigrants and non-permanent residents, Immigration, Refugees and Citizenship Canada (IRCC) administers special data files on both of these components. Since immigration is controlled by law, data on immigrants and NPRs are compiled upon arrival in Canada. These data represent only "legal" immigration and exclude illegal immigrants. Thus, for the "legal" part of international movement into Canada, the data are

considered to be of high quality. However, some biases such as the difference between the stated province of intended residence at the time of arrival and the actual province of residence, may persist. Finally, since information provided by the Visitor Data System (VDS) from IRCC is not complete (age and sex of dependents, province of residence for certain groups of permit holders), estimates of NPRs are more prone to error than data on immigrants.

C. Emigration, returning emigration and net temporary emigration

Of all the demographic components that are used by the DEP, the emigration, returning emigration and net temporary emigration are the most difficult to estimate with precision. Canada does not have a complete border registration system. While immigration and non-permanent residents (NPRs) are well 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 three components have historically been of a lower quality than other components.

Estimates of the number of emigrants and returning emigrants are both derived using Canada child benefit (CCB) data provided by Canada Revenue Agency (CRA). Estimates must be adjusted to take into account the incomplete coverage of the program and to derive the emigration and returning emigration of adults.

These adjustments and the delay in obtaining the data are the two main sources of errors. As current information on the number of persons living temporarily abroad does not exist, estimates are based on the Reverse Record Check (RRC) and the census. Estimates for the intercensal period are distributed equally among the five years. 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 sex. 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, net temporary emigrants and interprovincial migrants). Finally, the size of error due to the age and sex distribution may vary by period and errors in some components may have a greater impact on a given age group or sex.

Quality assessment

In order 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. It 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:

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

where,

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

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

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

$P^{postcensal}_{(t-1)}$ = 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 or geographical areas of 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, immigration component yielded the smallest precocity errors in absolute numbers, with values close to zero per thousand throughout the years under consideration. On the other hand, interprovincial in-migrants and out-migrants[8] yielded the largest precocity errors in absolute numbers, ranging between 0.22 per thousand and 0.98 per thousand during the period 2015/2016 to 2018/2019 (see Table 3).

8. 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														
2014/2015	0.15	-0.11	0.37	0.07	0.03	-0.05	0.32	-0.13	0.23	0.33	-0.03	0.76	0.50	-0.17
2015/2016	0.26	-0.37	-0.62	0.33	0.09	-0.01	0.53	0.48	0.40	0.27	-0.04	-0.24	-0.52	0.57
2016/2017	0.28	0.05	0.42	0.26	0.11	0.00	0.44	0.52	0.24	0.62	-0.05	-1.61	1.48	1.11
2017/2018	0.25	0.68	0.96	0.39	0.20	0.00	0.30	0.05	0.40	0.79	-0.03	-0.76	0.22	-0.08
Deaths														
2014/2015	0.05	-0.57	-0.14	-0.21	-0.46	0.00	0.20	-0.11	0.33	-0.01	-0.04	0.60	0.21	0.61
2015/2016	0.19	0.10	1.41	0.09	0.11	-0.03	0.40	0.19	0.18	0.24	-0.06	0.56	0.00	-0.33
2016/2017	0.12	0.25	0.68	0.28	-0.21	-0.04	0.26	-0.18	0.24	0.19	-0.05	0.52	-0.49	1.22
2017/2018	-0.10	0.10	-1.23	-0.39	-0.21	-0.04	-0.16	-0.05	0.06	-0.08	-0.05	0.08	0.27	0.35
Immigration														
2015/2016	-0.06	-0.03	-0.05	-0.06	-0.03	-0.03	-0.05	-0.13	-0.13	-0.11	-0.09	0.00	-0.02	0.00
2016/2017	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2017/2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2018/2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emigration														
2014/2015	-0.16	0.32	0.09	0.09	-0.32	-0.26	-0.17	-0.25	-0.33	-0.17	-0.01	1.06	0.55	-0.11
2015/2016	-0.10	-0.06	-0.20	-0.03	-0.05	-0.03	-0.13	-0.06	-0.25	-0.30	0.06	-1.02	0.00	0.11
2016/2017	0.24	-0.01	0.32	0.21	0.29	0.19	0.31	0.29	0.04	0.16	0.28	-1.53	-0.56	0.00
2017/2018	0.52	0.28	0.36	0.07	-0.14	0.39	0.69	0.26	0.33	0.63	0.51	0.66	-0.25	0.05
Returning emigration														
2014/2015	-0.06	0.04	0.31	0.10	0.05	0.07	-0.08	0.29	-0.20	-0.15	-0.27	0.00	0.34	-0.08
2015/2016	-0.06	0.08	0.29	-0.03	0.03	-0.06	-0.09	0.11	-0.06	0.09	-0.19	0.32	0.23	0.00
2016/2017	-0.02	-0.02	-0.23	-0.20	-0.04	-0.07	-0.03	0.00	-0.15	0.19	0.01	-0.26	-0.22	0.00
2017/2018	0.04	-0.08	-0.13	0.08	-0.11	0.07	-0.01	0.13	-0.03	0.05	0.17	0.08	-0.42	0.00
Net temporary emigration														
2014/2015	-0.23	-0.03	-0.03	-0.02	-0.03	-0.28	-0.46	0.05	-0.25	0.02	0.11	-0.27	-0.21	-0.28
2015/2016	-0.23	-0.03	-0.03	-0.02	-0.03	-0.28	-0.45	0.05	-0.25	0.02	0.11	-0.27	-0.18	-0.25
2016/2017	-0.24	-0.03	-0.03	-0.02	-0.03	-0.29	-0.46	0.05	-0.25	0.01	0.10	-0.26	-0.20	-0.24
2017/2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
Net non-permanent residents														
2014/2015	0.17	-0.04	-0.49	0.00	-0.01	0.07	0.28	-0.18	-0.54	-0.65	1.14	-0.79	-0.36	0.06
2015/2016	0.07	0.21	0.03	0.33	0.18	0.01	0.17	0.21	0.12	0.14	-0.34	0.05	0.00	-0.03
2016/2017	0.08	0.58	0.76	0.55	0.36	-0.23	0.42	0.50	0.69	0.57	-1.28	-0.91	0.25	0.11
2017/2018	0.09	0.55	0.34	0.64	0.38	-0.41	0.58	0.61	0.41	0.00	-0.78	-0.30	0.16	-0.03
In-migrants														
2015/2016	0.22	1.11	0.01	-0.49	0.53	0.04	-0.05	0.23	0.42	1.77	-0.21	-1.63	4.91	10.82
2016/2017	0.73	0.67	0.98	0.29	1.27	0.30	0.88	-0.01	1.70	1.25	0.49	-2.28	2.69	14.36
2017/2018	0.67	0.92	2.01	1.16	0.92	0.21	0.71	0.36	1.67	1.73	-0.09	7.29	1.31	11.91
2018/2019	0.98	0.55	2.35	1.64	1.46	0.37	0.72	0.68	2.43	3.02	0.43	-0.07	2.73	14.13
Out-migrants														
2015/2016	0.22	1.04	5.18	1.41	2.08	0.15	0.16	1.02	-0.08	-1.15	0.49	18.04	8.78	10.79
2016/2017	0.73	1.66	6.97	2.62	2.95	0.62	-0.01	1.35	1.58	1.15	1.04	15.64	13.04	7.90
2017/2018	0.67	2.67	6.15	1.57	1.61	0.34	0.15	1.90	2.20	0.63	1.17	7.99	12.05	4.85
2018/2019	0.98	4.18	5.82	1.98	2.84	0.25	0.36	2.08	2.64	1.26	1.87	13.91	5.60	10.88
Net interprovincial migration														
2015/2016	…	0.07	-5.17	-1.90	-1.55	-0.12	-0.21	-0.79	0.49	2.93	-0.71	-19.66	-3.87	0.03
2016/2017	…	-0.99	-5.99	-2.33	-1.68	-0.32	0.89	-1.36	0.13	0.10	-0.55	-17.93	-10.35	6.46
2017/2018	…	-1.75	-4.14	-0.41	-0.69	-0.13	0.56	-1.54	-0.53	1.10	-1.26	-0.71	-10.74	7.06
2018/2019	…	-3.62	-3.47	-0.34	-1.38	0.13	0.36	-1.40	-0.21	1.76	-1.44	-13.99	-2.87	3.25

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

Precocity errors for births were positive at the beginning of the period under consideration, ranging from 0.15 per thousand in 2014/2015 to 0.28 per thousand in 2016/2017, then falling to 0.25 per thousand in 2017/2018. Precocity errors for deaths were positive for the first three years of the given time period, with a value of 0.05 per thousand in 2014/2015, then 0.19 per thousand in 2015/2016, and 0.12 per thousand in 2016/2017, then becoming negative in 2017/2018 with a value of -0.10 per thousand.

Precocity errors for emigration and returning emigration were mostly negative. During the years under consideration, precocity error in absolute number for emigration was lowest in 2015/2016 at 0.10 per thousand and largest in 2017/2018 at 0.52 per thousand. For returning emigration, the absolute values ranged from 0.02 per thousand in 2016/2017 to 0.06 per thousand in 2014/2015 and 2015/2016. During the period 2014/2015 to 2016/2017, the precocity errors for net temporary emigration were fairly consistent, ranging between -0.24 and -0.23 per thousand, then became close to zero in 2017/2018.

Precocity error for net non-permanent residents was highest in 2014/2015 at 0.17 then fell to between 0.07 and 0.09 between 2015/2016 and 2017/2018.

Precocity error by component for provinces and territories

In general, precocity error is typically more prone to higher volatility for smaller provinces or territories as it is an error measurement relative to population size. At the provincial and territorial level, precocity errors for births in absolute numbers ranged from close to zero per thousand (Quebec in 2016/2017 and 2017/2018)[9] to 1.61 per thousand (Yukon in 2016/2017). Similar to births, precocity errors for deaths were predominantly positive. Over the years, the largest precocity error in absolute number for deaths was 1.41 per thousand (Prince Edward Island in 2015/2016).

Compared to other demographic components, precocity errors for immigration were low among the provinces and territories. The largest absolute error value was 0.13 per thousand in Manitoba and in Saskatchewan in 2015/2016. The precocity error values for all provinces and territories for each year from 2016/2017 to 2018/2019 was close to zero per thousand (except in Prince Edward Island in 2016/2017 when it was 0.01).

Precocity errors in absolute numbers for the net change in the number of non-permanent residents were less than or equal to 1.28 per thousand across the provinces and territories, during the years 2014/2015 to 2017/2018.

Precocity errors in absolute numbers for emigration ranged from the lowest at close to zero per thousand (Northwest Territories in 2015/2016 and Nunavut in 2016/2017) to the largest at 1.53 per thousand (Yukon in 2016/2017). Absolute precocity errors for returning emigration ranged from close to zero per thousand for some years in Manitoba, Yukon and Nunavut to 0.42 per thousand for the Northwest Territories in 2017/2018. Precocity errors for net temporary emigration were negative during the years 2014/2015 to 2016/2017, except for Manitoba, Alberta and British Columbia. The precocity errors were close to zero per thousand for all provinces and territories in 2017/2018, except for Nunavut, where it was -0.03 per thousand.

Precocity errors for interprovincial in-migrants and out-migrants were mostly 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 5.99 per thousand (Prince Edward Island in 2016/2017), while the smallest was 0.07 per thousand (Newfoundland and Labrador in 2015/2016). At the territorial level, precocity errors for net interprovincial migration were comparatively higher, the smallest absolute precocity error was 0.03 per thousand (Nunavut in 2015/2016) and the largest was 19.66 per thousand (Yukon in 2015/2016).

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

9. As mentioned in the Methodology Section, the provincial statistical agencies of Quebec and British Columbia provide their most recent estimates of births and deaths to Statistics Canada. The figures are used to produce preliminary estimates.

the 2013/2014 to 2017/2018 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 total emigration[10] component contributed the most to the sum of mean absolute precocity errors (50.69%), followed by births (24.12%) and deaths (13.33%) between 2013/2014 and 2017/2018. Immigration (2.32%) and net non-permanent residents (9.54%) accounted the least to the sum of mean absolute precocity errors (refer to Table 4).

Text table 4
Mean absolute percentage precocity error by components[1], 2013/2014 to 2017/2018, Canada, provinces and territories

	Births	Deaths	Immigration	Total emigration[2]	Net non-permanent residents	Net interprovincial migration
	percent					
Canada	24.12	13.33	2.32	50.69	9.54	0.00
Newfoundland and Labrador	9.35	7.10	0.27	6.54	10.65	66.10
Prince Edward Island	8.39	12.23	0.45	8.71	6.81	63.40
Nova Scotia	10.71	11.31	0.67	9.66	15.02	52.63
New Brunswick	8.10	14.30	0.52	14.16	10.94	51.99
Quebec	2.39	3.75	1.37	55.38	17.17	19.94
Ontario	18.14	12.45	0.83	35.55	15.46	17.58
Manitoba	10.63	6.19	2.15	15.04	14.31	51.69
Saskatchewan	11.95	8.65	1.70	20.53	15.53	41.63
Alberta	18.09	4.82	1.14	14.56	11.62	49.77
British Columbia	1.46	1.98	1.20	17.23	29.84	48.29
Yukon	6.28	3.65	0.08	12.40	3.77	73.83
Northwest Territories	7.71	2.72	0.14	8.77	2.54	78.12
Nunavut	5.58	6.45	0.00	3.45	0.83	83.68

1. Figures in percent may not add up to 100% as a result of rounding.

2. Total emigration includes emigration, returning emigration and net temporary emigration.

Source: Statistics Canada, Centre for Demography.

At the provincial and territorial level, the contribution of individual component 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 from 41.63% in Saskatchewan to 83.68% in Nunavut. In Quebec (55.38%) and Ontario (35.55%), it is total emigration 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 in Nunavut to 2.15% in Manitoba.

Precocity errors by age and sex 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 (2011) and end of period (2016) 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

10. Mean absolute percentage precocity error for total emigration includes the mean absolute percentages for emigration, returning emigration and net temporary emigration.

population of each province and territory as well as by age and sex. For the moment, the error is only available for total population by province and territory.

Text table 5 shows postcensal population estimates on May 10, 2016 and census counts adjusted for CNU[1] and the errors of closure for Canada, provinces and territories from 2001 to 2016.

For Canada as a whole, the error of closure was estimated at 110,310 or 0.31% in 2016. This is a decrease over the error for 2011 (0.42%).

The population estimates overestimated the population of eight provinces, one territory and Canada as a whole. Five provinces posted errors of closure greater than 1% or less than -1%. Of these jurisdictions, only British Columbia's estimated population differed from the adjusted census population by more than 2% (-2.07%). In 2011, four provinces and two territories 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. Text table 5 shows the results of this analysis.

The error of closure is statistically significant for Canada and seven provinces. 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 2016

	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	
2016						
Canada	**36,139,555**	**36,029,245**	**110,310**	**0.31**	**43,844**	**2.52**
Newfoundland and Labrador	530,465	529,490	975	0.18	2,015	0.48
Prince Edward Island	149,116	146,371	2,745	1.88	870	3.16
Nova Scotia	948,080	941,407	6,673	0.71	3,042	2.19
New Brunswick	756,736	762,836	-6,100	-0.80	2,777	-2.20
Quebec	8,297,802	8,211,537	86,265	1.05	20,613	4.18
Ontario	13,902,359	13,841,676	60,683	0.44	33,316	1.82
Manitoba	1,313,904	1,310,260	3,644	0.28	4,829	0.75
Saskatchewan	1,145,156	1,133,196	11,960	1.06	4,651	2.57
Alberta	4,231,285	4,187,186	44,099	1.05	13,530	3.26
British Columbia	4,745,041	4,845,444	-100,403	-2.07	16,561	-6.06
Yukon	37,927	38,244	-317	-0.83	191	-1.66
Northwest Territories	44,667	44,725	-58	-0.13	257	-0.23
Nunavut	37,017	36,873	144	0.39	229	0.63
2011						
Canada	**34,417,759**	**34,273,205**	**144,554**	**0.42**	**57,546**	**2.51**
Newfoundland and Labrador	513,622	524,728	-11,106	-2.12	2,912	-3.81
Prince Edward Island	145,759	143,590	2,169	1.51	923	2.35
Nova Scotia	948,457	943,638	4,819	0.51	5,346	0.90
New Brunswick	756,547	755,101	1,446	0.19	3,335	0.43
Quebec	7,968,651	7,993,123	-24,472	-0.31	23,660	-1.03
Ontario	13,345,467	13,236,621	108,846	0.82	44,121	2.47
Manitoba	1,251,999	1,230,574	21,425	1.74	6,104	3.51
Saskatchewan	1,055,858	1,063,729	-7,871	-0.74	6,306	-1.25
Alberta	3,774,557	3,777,935	-3,378	-0.09	18,046	-0.19
British Columbia	4,543,807	4,491,451	52,356	1.17	19,494	2.69
Yukon	35,356	35,253	103	0.29	303	0.34
Northwest Territories	44,139	43,439	700	1.61	323	2.17
Nunavut	33,540	34,023	-483	-1.42	608	-0.79

Text table 5
Error of closure of the population estimates, Canada, provinces and territories, 2001 to 2016

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	
2006						
Canada	**32,553,799**	**32,521,670**	**32,129**	**0.10**	**53,926**	**0.60**
Newfoundland and Labrador	508,874	510,515	-1,641	-0.32	2,710	-0.61
Prince Edward Island	137,746	137,754	-8	-0.01	701	-0.01
Nova Scotia	933,692	938,020	-4,328	-0.46	4,885	-0.89
New Brunswick	748,737	746,056	2,681	0.36	3,105	0.86
Quebec	7,644,701	7,623,482	21,219	0.28	24,077	0.88
Ontario	12,657,808	12,641,497	16,311	0.13	41,363	0.39
Manitoba	1,176,744	1,182,731	-5,987	-0.51	6,469	-0.93
Saskatchewan	987,706	991,490	-3,784	-0.38	4,805	-0.79
Alberta	3,357,637	3,408,975	-51,338	-1.51	16,091	-3.19
British Columbia	4,296,518	4,235,151	61,367	1.45	16,591	3.70
Yukon	31,146	32,177	-1,031	-3.20	194	-5.31
Northwest Territories	42,160	43,084	-924	-2.14	236	-3.92
Nunavut	30,330	30,738	-408	-1.33	176	-2.32
2001						
Canada	**31,016,011**	**30,966,063**	**49,948**	**0.16**	**44,749**	**1.12**
Newfoundland and Labrador	533,712	522,331	11,381	2.18	1,782	6.39
Prince Edward Island	138,102	136,619	1,483	1.09	775	1.91
Nova Scotia	941,533	932,528	9,005	0.97	4,170	2.16
New Brunswick	754,180	749,593	4,587	0.61	3,555	1.29
Quebec	7,390,137	7,390,359	-222	0.00	21,033	-0.01
Ontario	11,873,643	11,862,355	11,288	0.10	33,472	0.34
Manitoba	1,149,561	1,150,596	-1,035	-0.09	5,423	-0.19
Saskatchewan	1,016,762	1,000,745	16,017	1.60	4,333	3.70
Alberta	3,051,245	3,049,641	1,604	0.05	11,308	0.14
British Columbia	4,068,196	4,072,543	-4,347	-0.11	15,598	-0.28
Yukon	29,737	30,097	-360	-1.20	372	-0.97
Northwest Territories	41,152	40,655	497	1.22	362	1.37
Nunavut	28,051	28,001	50	0.18	411	0.12

1. Census net undercoverage includes the incompletely enumerated Indian reserves.

2. Census net undercoverage excludes the incompletely enumerated Indian reserves.

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 sex.

Text table 6
Error of closure of the estimates of population by age and sex, 2016, Canada

	Both sexes		Male		Female	
	number	percent	number	percent	number	percent
All ages	**110,310**	**0.31**	**46,349**	**0.26**	**63,961**	**0.35**
0 to 4 years	-6,932	-0.36	-955	-0.10	-5,977	-0.63
5 to 9 years	-22,391	-1.12	-5,447	-0.54	-16,944	-1.73
10 to 14 years	-34,237	-1.79	-11,105	-1.14	-23,132	-2.46
15 to 19 years	-13,941	-0.67	-9,851	-0.91	-4,090	-0.41
20 to 24 years	75,634	3.17	21,255	1.71	54,379	4.75
25 to 29 years	43,111	1.75	-2,018	-0.16	45,129	3.77
30 to 34 years	32,547	1.31	7,727	0.62	24,820	2.01
35 to 39 years	36,817	1.53	27,234	2.29	9,583	0.79
40 to 44 years	-409	-0.02	8,378	0.72	-8,787	-0.74
45 to 49 years	-19,783	-0.81	-3,663	-0.30	-16,120	-1.32
50 to 54 years	-29,205	-1.06	-9,376	-0.68	-19,829	-1.45
55 to 59 years	-18,258	-0.69	-3,759	-0.28	-14,499	-1.08
60 to 64 years	-15,130	-0.66	-394	-0.03	-14,736	-1.26
65 to 69 years	-1,060	-0.05	2,821	0.30	-3,881	-0.38
70 to 74 years	21,606	1.54	6,827	1.01	14,779	2.02
75 to 79 years	22,059	2.19	6,915	1.49	15,144	2.79
80 to 84 years	12,374	1.67	2,968	0.92	9,406	2.25
85 to 89 years	13,578	2.84	4,376	2.38	9,202	3.13
90 to 94 years	7,159	3.23	2,226	3.26	4,933	3.21
95 to 99 years	5,908	10.19	1,905	14.13	4,003	8.99
100 years and over	863	10.13	285	20.85	578	8.08

Source: Statistics Canada, Centre for Demography.

Explanatory notes for the tables

Text table 7
Annual population estimates and factors of demographic growth

Period	Population at beginning period	Natural increase	Net interprovincial migration	Net international migration	Total net migration	Total growth
2016/2017	PD	D	D	D	D	D
2017/2018	PD	D	D	D	D	D
2018/2019	PD	R	D	R	R	R
2019/2020	PR	P	P	P	P	P
2020/2021	PP	…	…	…	…	…
Modified since[1]	2016/2017	2016/2017	2018/2019	2016/2017	2016/2017	2016/2017

… not applicable

[1]Modified since indicates the year from which the data were revised since the last release. Last year's data were not modified as they are released for the first time.

Note: D: Final estimates. PD : Final postcensal estimates. R : Updated estimates. PR : Updated postcensal estimates. P : Preliminary estimates. PP : Preliminary postcensal estimates.

Source: Statistics Canada, Centre for Demography.

Text table 8
Annual estimates of components of demographic growth

Period	Births	Deaths	In-migrants	Out-migrants	Immigrants	Emigrants	Returning emigrants	Net temporary emigrants	Net non-permanent residents
2016/2017	D	D	D	D	D	D	D	D	D
2017/2018	D	D	D	D	D	D	D	D	D
2018/2019	R	R	D	D	D	R	R	R	R
2019/2020	P	P	P	P	P	P	P	P	P
Modified since[1]	2016/2017	2016/2017	2018/2019	2018/2019	2018/2019	2016/2017	2016/2017	2016/2017	2016/2017

[1]Modified since indicates the year from which the data were revised since the last release. Last year's data were not modified as they are released for the first time.

Note: D: Final estimates. R: Updated estimates. P: Preliminary estimates.

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 old persons** as a percentage of the total population.

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 a census but were not.

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

Components of demographic growth
Any of the classes of events generating population movement variations. Births, deaths and migrations are the components responsible for the variation since they alter either the total population or the age and sex distribution 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 over 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. Emigration may be either temporary or permanent. Where the term is used alone, it references to a person's permanent emigration which involves severing residential ties with Canada and acquiring permanent residency in another country.

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 Indian reserves).

Generation
Unless otherwise specified, refers here to a group of persons born within a given period. The 2001 generation represents people born during the year 2001.

Immigrant
Within the framework of this publication, the terms immigrant, landed immigrant and permanent resident are equivalent. An immigrant refers to a person who is or has ever been a landed immigrant (permanent resident) and who has been granted the right to live in Canada permanently by immigration authorities. Immigrants are either Canadian citizens by naturalization (the citizenship process) or permanent residents under Canadian legislation. Some immigrants have resided in Canada for a number of years, while others have arrived recently. Most immigrants are born outside Canada, but a small number are born in Canada. Also, children born in other countries to parents who are Canadian citizens that reside temporarily in another country are not included in the category as they become Canadian citizens at birth.

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**, **net temporary emigration** 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.

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".

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 international migration
Net international migration is obtained according to the following formula: **Immigrants** + **returning emigrants** + **net non-permanent residents** – (**emigrants** + **net temporary emigrants**).

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 variation in the number of non-permanent residents between two dates.

Non-permanent residents
A non-permanent resident is a person who is lawfully in Canada on a temporary basis and who holds a work, study or other (excluding visitor visas) permit issued for that person along with members of their family living with them. This group also includes individuals who seek refugee status upon or after their arrival in Canada and remain in the country pending the outcome of processes relative to their claim. Note that Immigration, Refugees and Citizenship Canada uses the term temporary resident rather than non-permanent resident.

Net temporary emigration
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.

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

a. **Postcensal:** Population estimate produced by using data from the most recent available census adjusted for **census net undercoverage** (including adjustment for incompletely enumerated Indian reserves) and estimate of the **components of demographic growth** since that last census. This estimate can be preliminary, updated or final.
b. **Intercensal:** Population estimate derived by using **postcensal estimates** and data adjusted for **census net undercoverage** (including adjustment for incompletely enumerated Indian reserves) 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, subtract **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** having previously emigrated from Canada and subsequently returned to the country.

Sex ratio
The ratio of the number of men to the number of women. This is not to be confused with the sex ratio at birth, which is the ratio of the number of live-born boys to the number of live-born girls. This ratio is usually expressed as an index, with the number of females taken to be a base of 100.

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.

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 10, 2016 Census of Population adjusted for census net undercoverage and incompletely enumerated Indian reserves.

2016 Census: Statistics Canada, Census of Canada, 2016, Catalogue no. 98-501-X.

Census net undercoverage: See The Daily, September 27, 2018.

Incompletely enumerated Indian reserves: See The Daily, September 27, 2018.

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 2019 based on preliminary count of births by age group of the mother provided by the Centre for Population Health Data applied to the female population estimates by age group at the beginning of the quarter. Births for Quebec and British Columbia were provided by their respective agencies.

Note: No adjustments were made to the usual estimating method as births of the 2020 second quarter were the result of fertility behaviors happening, between July and September 2019, before the start of the COVID-19 pandemic.

Deaths
Mortality rates for 2018 based on preliminary count of deaths by age group and sex provided by the Centre for Population Health Data applied to the population estimates by age group and sex at the beginning of the quarter. Deaths for Quebec and British Columbia were provided by their respective agencies.

Note: No further adjustments were made to the data from Quebec and British Columbia, as they already included virus-related deaths.

Death counts for the remaining provinces and territories (excluding Quebec and British Columbia) came from two sources. The Centre for Population Health Data provided provisional death counts for Newfoundland and Labrador, Prince Edward Island, Nova Scotia, Manitoba, Saskatchewan, Alberta, and the Northwest Territories. These data already included COVID-19 deaths and were not adjusted further.

For the other provinces and territories (New Brunswick, Ontario, Yukon, and Nunavut), provisional death counts from the Centre for Population Health Data were not available. For these jurisdictions, deaths were estimated according to the usual method. To account for pandemic-related excess mortality, the number of COVID-19 deaths as published by the Public Health Agency of Canada were added to these estimates.

Immigration

Estimates are based on the immigrant files provided by Immigration, Refugees and Citizenship Canada (IRCC) received on August 18, 2020.

Note: No adjustments related to COVID-19 were made to the usual estimating method as IRCC data were received as usual and were of normal quality.

Emigration

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 2017/2018

- 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 2017/2018
- data provided by the U.S. Department of Homeland Security, Office of Immigration Statistics. The last year of data used was 2017/2018
- 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 2017/2018.

For estimates after 2017/2018, we:

- calculated the 2017/2018 emigration rate for Canada
- applied this rate to Canada's population on July 1st 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 2017/2018
- distributed these data by month according to the provincial or territorial emigration seasonality of 2017/2018.

Note: An adjustment was made to the usual estimation method in order to take into account the travel restrictions, in Canada and in other countries, imposed within the COVID-19 context. The adjustment was applied from March to June 2020. It was calculated using the number of immigrant visas in the United States issued from U.S. consulates in Canada. The ratio between the number of immigrant visas from the United States and preliminary estimates of emigration for 2017, 2018 and 2019 was applied to the number of issued visas from March to June 2020. This adjustment resulted in lower estimates of emigration for March 2020 and a marked decrease from April to June.

Returning emigration

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 2017/2018
- 2016 Census – 1 year mobility.

For estimates after 2017/2018, we:

- calculated the 2017/2018 returning emigration rate for Canada
- applied this rate to Canada's population on July 1st 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 2017/2018
- distributed these data by month according to the provincial or territorial returning emigration seasonality of 2017/2018.

Note: An adjustment was made to the usual estimation method in order to take into account the travel restrictions, in Canada and in other countries, imposed within the COVID-19 context. The adjustment was applied from March to June 2020. It was calculated using two alternative sources: the number of entries in the country of Canadian citizens living abroad as given by the Frontier Counts data for Canadian airports with Primary Inspection Kiosks (PIK) and registered individuals in the Register of Canadians Abroad (ROCA). The monthly ratio between the number of PIK entries and preliminary estimates of returning emigration for 2018 and 2019 was applied to the number of entries of March to June 2020. Then, monthly rates of returning emigration were computed using ROCA for individuals who were abroad for 365 days or more. The monthly ratio between rates of returning emigration of 2020 and the average of 2018 and 2019 was applied to PIK data. This adjustment resulted in a marked increase of the number of returning emigrants in March 2020 and a decrease in the following months.

Net temporary emigration

The intercensal estimates are produced by the Centre for Demography using:

- data from the Reverse Record Check (RRC) of the 2016 Census
- 2016 Census – question on the place of residence 5 years ago
- estimates of returning emigrants for 2011 to 2016 intercensal period.

For the postcensal estimates, we:

- calculated the 2015/2016 net temporary emigration rate for Canada
- applied this rate to Canada's population on July 1st at the beginning of the period to be estimated
- distributed the result for the year into monthly estimates using an applied seasonality that is an average between zero seasonality and the seasonality of emigration
- distributed by province and territory the monthly estimates according to the provincial distribution of the intercensal data.

Note: An adjustment was made to the usual estimation method in order to take into account the travel restrictions, in Canada and in other countries, imposed within the COVID-19 context. The adjustment was applied from March to June 2020. Temporary departures and returns were adjusted independently. Temporary departures were adjusted in the same way as emigration but using non-immigrant visas from the United States. Temporary returns were adjusted in a similar way as returning emigration but by using individuals who were abroad for 180 to 364 days in ROCA. This adjustment resulted in a decrease in the estimates of net temporary emigration for March 2020 and a marked diminution from April to June.

Net non-permanent residents

The estimates are produced by the Centre for Demography using the Global Case Management System (GCMS) files from IRCC. These files, received on August 18, 2020, document the number of persons holding permits/ authorizations or claiming refugee status.

Note: No adjustments related to COVID-19 were made to the usual estimating method as IRCC data were received as usual and were of normal quality.

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 ($_{j}G$) corresponding to the ratio of the migration rate of all children to the migration rate of who are registered to the CCTB program children calculated using 2018/2019 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 2016/2017, 2017/2018 and 2018/2019.

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.

No adjustment were made to the usual estimating method. Estimates calculated with the usual method, as well as other data sources showed similar declines in the intensity of internal migration for the second quarter in most provinces and territories, as expected in the context of COVID-19.

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 1st, by age and sex
17-10-0006-01	Estimates of deaths, by age and sex, 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 sex, annual
17-10-0015-01	Estimates of the components of interprovincial migration, by age and sex, annual
17-10-0016-01	Estimates of births, by sex, 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
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	Vital Statistics - Birth Database
3233	Vital Statistics - Death Database
3601	Estimates of Total Population, Canada, Provinces and Territories
3604	Estimates of Population by Age and Sex for Canada, Provinces and Territories
3605	Estimates of Population by Marital Status, Legal Marital Status, Age and Sex for Canada, Provinces and Territories
3606	Estimates of the number of Census Families for Canada, Provinces and Territories