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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.

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Highlights

Total population

- On July 1, 2019, Canada's population was estimated at 37,589,262.
- The population increased by 531,497 between July 1, 2018 and July 1, 2019, the highest annual increase ever observed in Canada's history.
- The population growth rate of 1.4% observed in Canada in 2018/2019 was the highest since the early 1990s.
- In 2018/2019, Canada's population growth remained the highest among G7 countries.
- Last year, Canada's international migratory growth was the highest on record (+436,689), surpassing the record of 418,273 set in 2017/2018.
- In 2018/2019, international migratory growth accounted for more than 80% (82.2%) of Canada's population growth. This proportion has been increasing almost continuously since the early 1990s (40.4%).
- The high number of immigrants (313,580) along with the record increase in the number of non-permanent residents (+171,536) accounted for the significant international migratory growth.
- In 2018/2019, the population growth rate was highest in Prince Edward Island (+2.2%) and lowest in Newfoundland and Labrador (-0.8%).
- Compared with the previous year, the 2018/2019 population growth rate increased in Eastern and Central Canada, and in Alberta.
- Following three years of losses, Alberta started posting interprovincial migratory gains (+5,542) based on preliminary population estimates. Ontario posted a positive interprovincial migratory increase (+11,731) for a fourth consecutive year.

Population by age and sex

- Topping 10,000 for the first time, the number of centenarians (10,795) has more than tripled since 2001, as a result of increased life expectancy.
- Baby boomers now accounted for the majority (51.1%) of seniors as of July 1, 2019. Baby boomers consist of people born between 1946 and 1965.
- On July 1, 2019, 6,592,611 Canadians, or more than one out of six people (17.5%), were at least 65 years of age. The gap between this age group and the population aged 0 to 14 years (6,014,289 or 16.0%) is widening.
- In 2019, one out of two Canadians was at least 40.8 years. The median age has increased by 4.4 years since 1999, when it was 36.4 years.
- On July 1, 2019, for 100 working-age individuals, Canada had 50.5 individuals 0 to 14 years or 65 years or older. The demographic dependency ratio has been rising steadily since 2009 (44.1).
- Among the G7 countries, Canada (17.5%) had the second lowest proportion of persons aged 65 and older, just behind the United States (16%).
- On July 1, 2019, Newfoundland and Labrador had the highest median age (47.1 years), and Nunavut the lowest (26.2 years).

Analysis: Total population

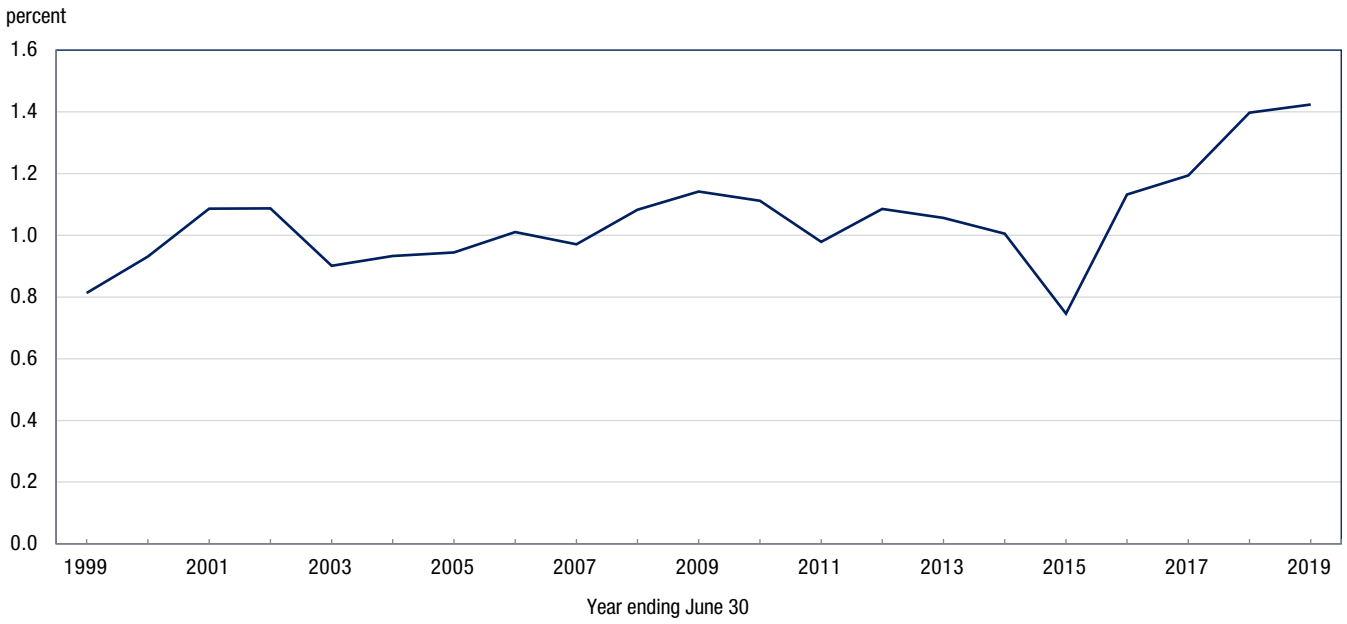
The estimates in this publication are based on 2016 Census counts, adjusted for census net undercoverage and incompletely enumerated Indian reserves, plus the estimated population growth for the period from May 10, 2016, to the date of the estimate.
The analysis in this publication is based on preliminary 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.

This section presents the population estimates for Canada, the provinces and territories on July 1, 2019, along with a concise analysis of the various components of population growth between July 1, 2018, and July 1, 2019.

Canada's population reaches 37.6 million

On July 1, 2019, Canada's population was estimated at 37,589,262, up 531,497 from July 1, 2018. The increase is above the 500,000-mark for a second consecutive year and represents the strongest growth, in absolute numbers, since Confederation,[1] surpassing the previous maximum of 529,200 seen in 1956/1957, in the peak baby-boom period and at a time when many Hungarian refugees arrived in the country.[2]

Chart 1.1
Population growth rate, 1998/1999 to 2018/2019, Canada



Source: Statistics Canada, Centre for Demography.

Canada posts the strongest population growth among the G7 countries

Canada's population maintained its growth rate at 1.4%[3] in 2018/2019, the highest rate since 1989/1990 (+1.5%).

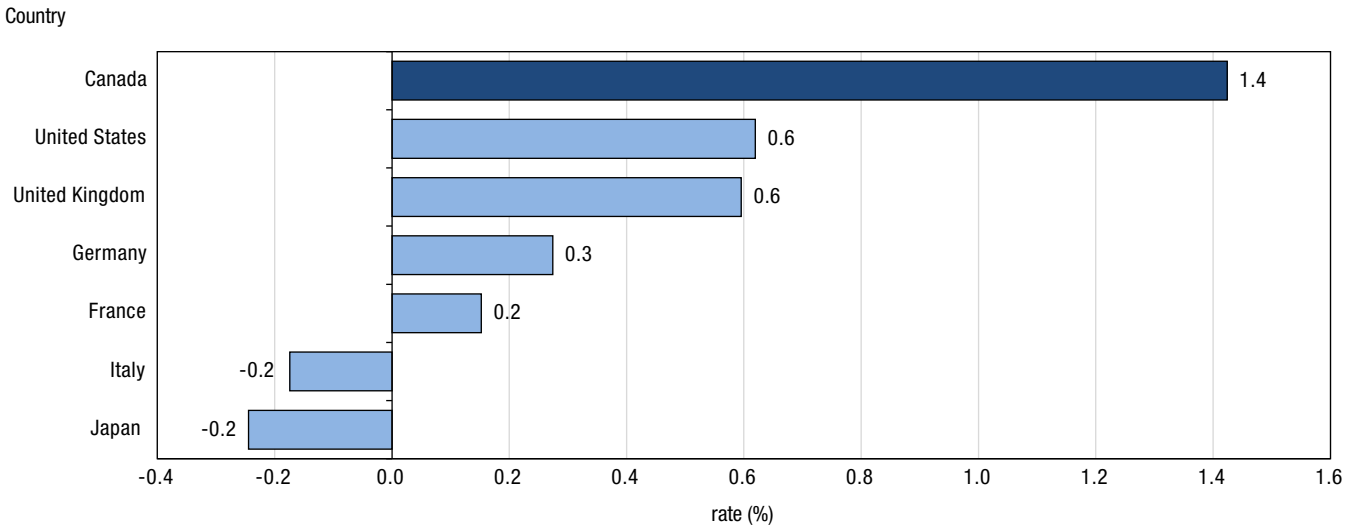
During the past year, population growth in Canada remained the highest among G7 countries. In fact, its population growth rate was more than twice that of the United States (+0.6%), tied for second with the United Kingdom (+0.6%). It was also much higher than that of all the other G7 countries that posted an increase: Germany

1. An atypical increase of 624,000 was recorded in 1948/1949 as a result of the annexation of Newfoundland and Labrador.
2. A revolution took place in Hungary in 1956, during which the country was invaded by the Soviet Union.
3. Population growth rates are calculated using the average of the population at the beginning and end of the period as a denominator.

(+0.3%) and France (+0.2%). Finally, it contrasts with the population decline observed in Italy and Japan (-0.2% each).

However, Canada's population growth was not the highest among the industrialized countries, coming in lower than the increases posted in Australia and New Zealand (+1.6% each).[4]

Chart 1.2
Population growth rate, most recent annual period available,[1] G7 countries



1. For Canada and Japan, the most recent annual period available extends from July 1, 2018 to July 1, 2019. For Italy and France, the most recent annual period available extends from January 1, 2018 to January 1, 2019. For the United States and the United Kingdom, the most recent period available extends from July 1, 2017 to July 1, 2018. For Germany, the most recent annual period available extends from December 31, 2017 to December 31, 2018.
Sources: Statistics Canada, Federal Statistical Office of Germany, Office for National Statistics (United Kingdom), U.S. Census Bureau, National Institute of Statistics and Economic Studies (France), Italian National Institute of Statistics, Statistics Bureau of Japan.

International migration is the main source of population growth

Population growth at the national level is based on two factors: natural increase[5] and international migratory increase,[6] while provincial and territorial population estimates also factor in interprovincial migration.

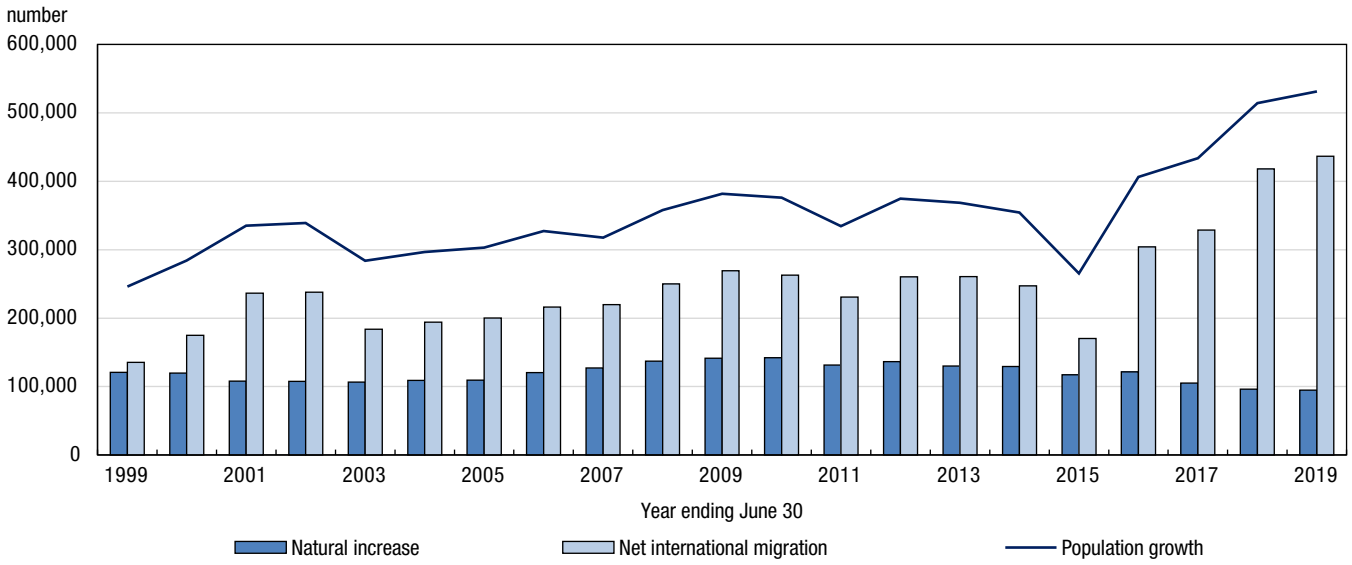
Between July 1, 2018, and July 1, 2019, international migratory increase was 436,689, the highest level ever estimated. This figure exceeds the last peak of 418,273 recorded last year by more than 18,000.

Since 1993/1994, international migration has consistently been the main driver of population growth in Canada. In the past year, over 80% of population growth stemmed from international migratory growth (82.2%), a level unmatched in history. By comparison, international migratory increase accounted for 40.4% of the population growth in 1990/1991.

In the past year, natural increase totalled 94,808, the lowest level recorded in Canada,[7] led by the growing number of deaths due to population aging. Natural increase in 2018/2019 stemmed from the gap between the estimated 382,533 births and the estimated 287,725 deaths.

4. Sources: Federal Statistical Office of Germany, Office for National Statistics (United Kingdom), Census Bureau (United States), National Institute of Statistics and Economic Studies (France), National Institute of Statistics (Italy), Statistics Bureau of Japan, Australian Bureau of Statistics, Statistics New Zealand, and calculations performed by the author. The reference periods vary by country: July 1, 2018, to July 1, 2019 (Canada, Japan), June 30, 2018, to June 30, 2019 (New Zealand), January 1, 2018, to January 1, 2019 (Italy, France), December 31, 2017, to December 31, 2018 (Australia, Germany), July 1, 2017, to July 1, 2018 (United States, United Kingdom).
5. Natural increase is the difference between the number of births and deaths.
6. International migratory increase basically refers to the total number of moves between Canada and abroad that result in a change in the usual place of residence. It is calculated by adding immigration, returning emigration and net non-permanent residents, then subtracting emigration and net temporary emigration.
7. Based on historical data from 1921/1922.

Chart 1.3
Factors of population growth, 1998/1999 to 2018/2019, 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.
Source: Statistics Canada, Centre for Demography.

International migratory growth peaks in several provinces

Since the beginning of the period covered by the current demographic accounting system (July 1971), record high international migratory increases have been observed in practically all provinces, particularly in Prince Edward Island (+3,235), Nova Scotia (+10,073), New Brunswick (+6,557), Quebec (+83,482), Ontario (+199,638), Saskatchewan (+15,387) and British Columbia (+58,993). International migration was also high in the other provinces.

Last year's unprecedented level of international migration was driven by strong immigration levels and the arrival of many non-permanent residents.[8] First, Canada granted immigrant status to 313,580 people between July 1, 2018, and July 1, 2019, one of the highest levels in Canadian history. These record levels were mostly seen between 1911 and 1913, a period marked by the mass arrival of non-British immigrants from Europe who settled in the Prairies. The recent peak recorded in 2015/2016 (323,192 immigrants) is partly on account of many Syrian refugees received as new immigrants.

Second, the number of non-permanent residents increased by 171,536 during the last year. This increase is the highest observed over the study period, i.e., from 1971 to 2019, topping the peak of 162,699 recorded last year, and the 140,748 non-permanent residents recorded in 1988/1989.[9] Although also fuelled by a rapid increase in asylum claimants, the increase in the number of non-permanent residents to the country in 2018/2019 was mostly driven by an increase in the number of work and study permit holders.[10]

Various factors can affect international migratory growth variations and trends. For example, Immigration, Refugees and Citizenship Canada (IRCC) is regularly called on to revise the brackets for immigration levels, in keeping with the framework set out in the *Immigration and Refugee Protection Act* (IRPA).[11] The recent rise in the number of immigrants is also consistent with the levels established by IRCC.[12] In addition, the number of non

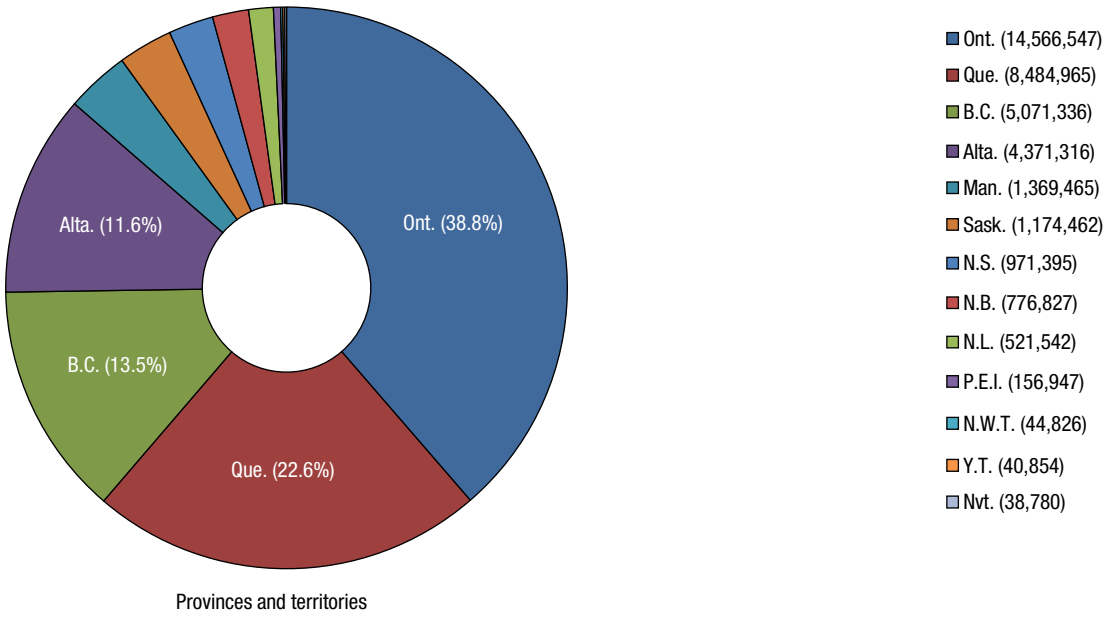
8. Net non-permanent residents is calculated by subtracting the number of non-permanent residents estimated at the beginning of the period from the number estimated at the end of the period. There are three main categories of non-permanent residents: work permit holders, study permit holders and asylum claimants.
9. This period was marked by the introduction of the Immigration and Refugee Board of Canada and a new refugee determination system.
10. In determining estimates, the IRCC data expressed as permits or applications are transformed into holders or applicants.
11. IRCC's *Immigration and Refugee Protection Act* defines three main categories of admission for immigrants to Canada: economic, family reunification and refugees. In addition to these three categories, there is another—other immigrants—which includes, for example, other humanitarian cases, although very few immigrants are admitted in this category.
12. IRCC uses the calendar year (January 1 to December 31) when setting immigration levels. However, annual population estimates are presented by census year (July 1 to June 30).

permanent residents can fluctuate depending on the economic and political climate in Canada and elsewhere in the world. There are three main categories of non-permanent residents: work permit holders, study permit holders, and asylum claimants. The number of work and study permit holders can rise or fall depending on the economic context of the country of origin and the host country, as well as the directions of certain programs in Canada and in the provinces and territories. The number of asylum claimants can vary, particularly depending on the political context in their country of origin, but also on certain decisions made in Canada. Lastly, emigration trends are more closely linked to both the internal and external economic situation.

More than four in five Canadians live in four provinces

On July 1, 2019, more than 32.5 million Canadians (86.4%) resided in one of the four most populous provinces: Ontario (38.8%), Quebec (22.6%), British Columbia (13.5%) and Alberta (11.6%). Ontario remained the country's most populated province, with 14,566,547 people, followed by Quebec (8,484,965), British Columbia (5,071,336) and Alberta (4,371,316).

Chart 1.4
Population distribution by province or territory, July 1, 2019



Source: Statistics Canada, Centre for Demography.

Population growth accelerates in Eastern and Central Canada

Except in Newfoundland and Labrador, the other Atlantic provinces experienced population growth in 2018/2019, which was among the highest since 1971,[13] at 2.2% in Prince Edward Island, 1.2% in Nova Scotia and 0.8% in New Brunswick. The highest population growth in the country was seen in Prince Edward Island, mainly due to a strong international migratory growth. Newfoundland and Labrador (-0.8%) was the only province that recorded a population decrease, for the third consecutive year.

In Quebec, the last time a population growth rate higher than that recorded last year (+1.2%) was observed was in 1988/1989 (+1.3%). Thus, international migration was higher in 2018/2019 than it was at that time.

Ontario maintained a population growth rate of 1.7% in 2018/2019, the second highest among the provinces, well over the provincial average of 1.0% between 2001/2002 and 2016/2017. In addition, for the first time since the late

13. Beginning of the observation period.

1980s, Ontario's population growth rate surpassed Alberta's for the third consecutive year. A stronger international migratory growth in Ontario than in Alberta was behind this gap.

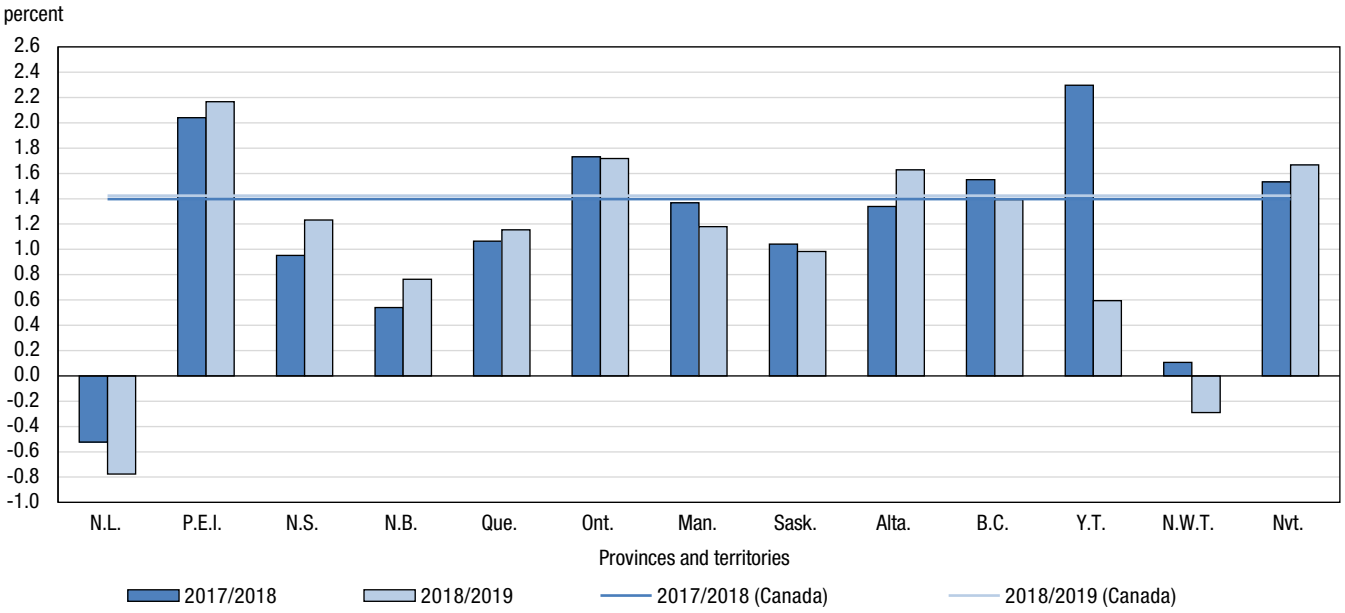
In Alberta, population growth increased in 2018/2019 for the second consecutive year, after four years of downturn. In fact, the province recorded a population growth of 1.6% in 2018/2019, compared with 1.3% the previous year.

In Saskatchewan (+1.0%), population growth in 2018/2019 was among the lowest in the past 13 years, where the province recorded a growth, mainly due to higher interprovincial migration losses. Population growth continued to slow down in Manitoba (+1.2%), and higher international migration further reduced interprovincial migratory losses compared with Saskatchewan.

Moreover, British Columbia's population growth (+1.4%) in 2018/2019 was among the lowest in the last five years, mainly due to lower interprovincial migratory gains.

Lastly, in the territories, Nunavut (+1.7%) posted the second-highest population growth in Canada, tied with Ontario, while Yukon was at 0.6%. High fertility explained the marked growth in Nunavut. In contrast, the Northwest Territories population declined by 0.3% in 2018/2019, mainly due to interprovincial migratory losses.

Chart 1.5
Population growth rate, 2017/2018 and 2018/2019, Canada, provinces and territories



Source: Statistics Canada, Centre for Demography.

International migratory growth is 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. In Ontario and British Columbia, population growth stemmed mainly from international migratory growth. In Alberta, natural increase and international migratory growth both contributed to the province's population growth.

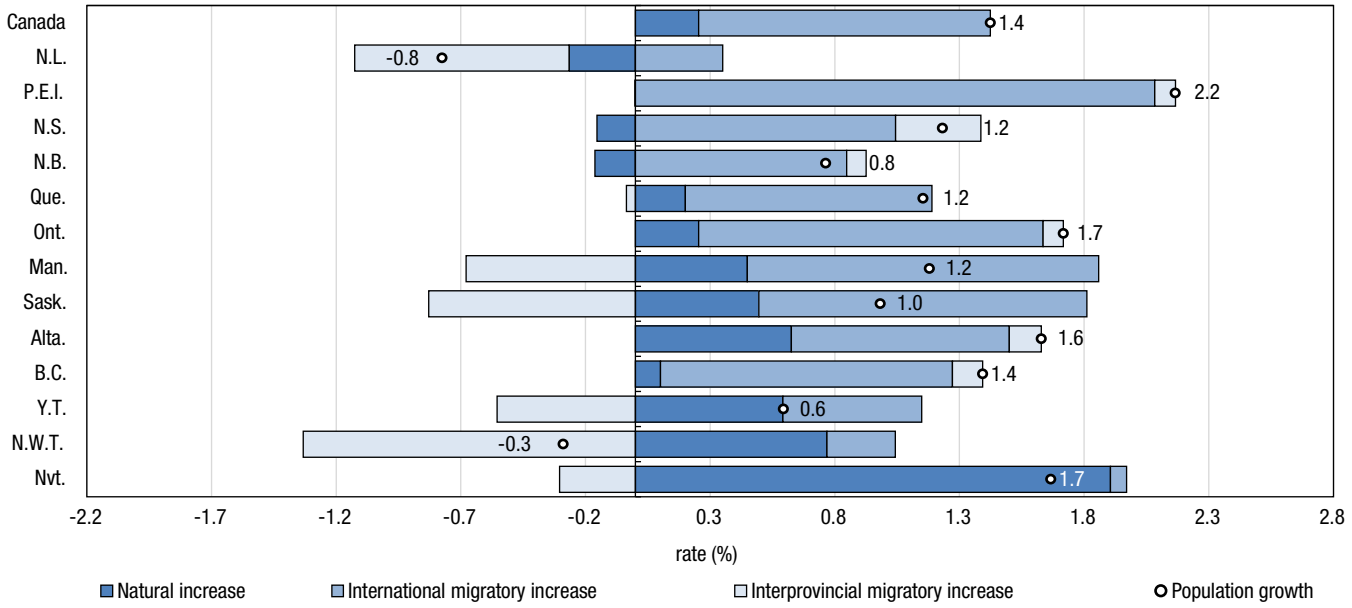
Quebec, Manitoba and Saskatchewan owed a large share of their population growth to international migration and, to a lesser extent, natural increase. However, these provinces recorded interprovincial migratory losses.

According to preliminary population estimates, there were more deaths than births in all the Atlantic provinces, including Prince Edward Island this year. Thus, the international migratory growth there was the main population growth factor, with some interprovincial migratory increase. The only exception remains Newfoundland and

Labrador, where international migratory growth (+0.4%) did not offset the decrease attributable to a negative natural increase (-0.3%) and to interprovincial migratory losses (-0.9%).

In the territories, natural increase was a more substantial source of population growth, primarily on account of higher fertility levels. Nunavut's natural increase (+1.9%)—by far the highest in Canada—was behind most of this territory's population growth. In the Northwest Territories, strong natural increase (+0.8%) and positive international migratory growth (+0.3%) were, however, offset by a considerably negative interprovincial migratory growth (-1.3%). Yukon was the only territory with an international migratory growth that matched natural increase (+0.6% each).

Chart 1.6
Factors of population growth, 2018/2019, Canada, provinces and territories



Source: Statistics Canada, Centre for Demography.

A growing share of immigrants settle in Ontario

Ontario attracted 44.3% of new immigrants in 2018/2019, up compared with 43.7% the previous year. Over the last year, 22.5% of immigrants settled in one of the three Prairie provinces. This proportion was almost two and a half times higher than that observed 20 years ago (9.4% in 1998/1999). The share of new immigrants settling in Quebec in 2018/2019 dropped slightly to 14.3%, compared with 15.8% in 2017/2018.

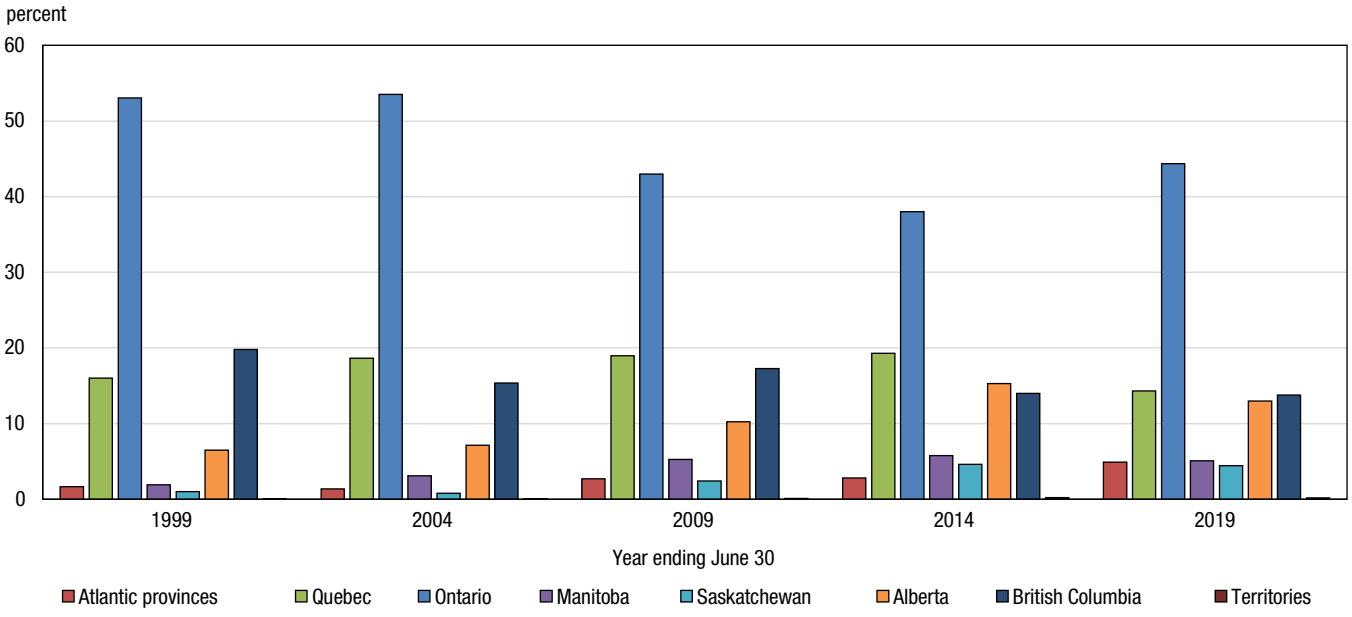
> The estimated number of immigrants by province and territory is based on their intended province or territory of residence, as collected by IRCC. This also applies to the calculation of international migratory growth and provincial and territorial population growth.

In the last year, the share of immigrants received by Ontario (44.3%) largely exceeded its demographic weight (38.8%). With a narrower gap, this was also the case for each Western Canada province, as well as Prince Edward Island. Moreover, there has been an increase in the proportion of immigrants received by the Atlantic provinces (4.9%), a level three times higher than 20 years ago (1.7% in 1998/1999).

Aside from the Prairies, all provinces posted an increase rarely or never observed in the number of non-permanent residents in 2018/2019. Among other things, Quebec posted a record gain of 46,930 non-permanent residents,

even surpassing the number of new immigrants for the first time since 1971/1972.[14] British Columbia also posted a record high in the number of non-permanent residents (+27,243), as did the Atlantic provinces (except Newfoundland and Labrador). The increase in the number of non-permanent residents was one of the highest in Ontario (+81,186).

Chart 1.7
New immigrants distribution by province or territory, 1998/1999 to 2018/2019



Source: Statistics Canada, Centre for Demography.

The Maritimes, Ontario, Alberta and British Columbia gain in their exchanges with the other provinces

At the provincial and territorial level, population growth is also the result of interprovincial migratory exchanges.

Aside from Newfoundland and Labrador, and contrary to the historical trend, more people are moving to the Maritimes to settle there, compared with the opposite in recent years. Three to four consecutive years of positive interprovincial migration had not been observed since the mid-1970s for New Brunswick, the early 1980s for Nova Scotia, and the turn of this century for Prince Edward Island. Thus, according to preliminary population estimates for 2018/2019, Nova Scotia gained 3,306 people through its migratory exchanges with the other provinces and territories, particularly with Ontario, British Columbia and Newfoundland and Labrador. Preliminary interprovincial gains stood at 606 individuals in New Brunswick, and 129 in Prince Edward Island.

Ontario (+11,731) and British Columbia (+6,111) had the highest interprovincial migratory gains in 2018/2019. Ontario's interprovincial migratory increase was positive over the past four years, following 12 years of decrease.

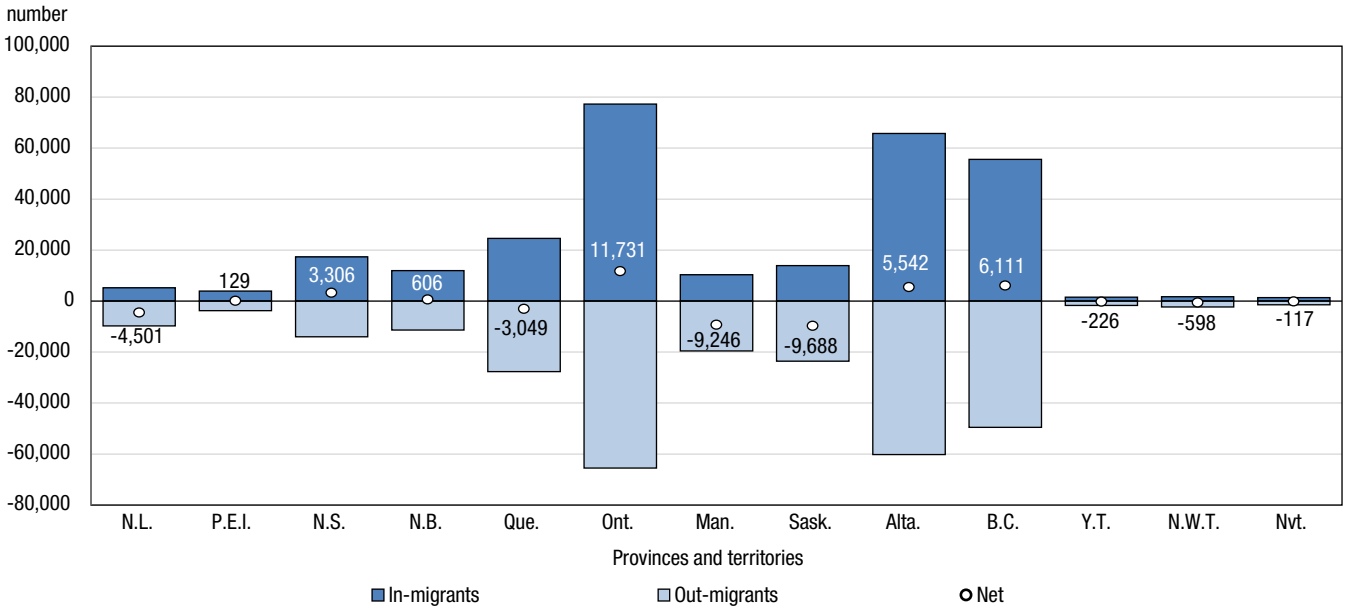
Alberta experienced interprovincial migratory gains of 5,542 people in 2018/2019, following a three-year decline. In fact, after posting the highest interprovincial migratory gains for five consecutive years, from 2010/2011 to 2014/2015, Alberta recorded the biggest losses in 2015/2016 (-15,108) and 2016/2017 (-15,559), then diminishing considerably in 2017/2018 (-3,247). Alberta's positive migratory growth was mainly due to the province's greater capacity to attract, despite the increase in the number of out migrants.

In the rest of Canada, Manitoba (-9,246) and Saskatchewan (-9,688) posted the highest interprovincial migratory losses since the early 1990s. Also rare are the years in which Quebec has seen such low interprovincial migratory losses (-3,049) since 1951.

14. Beginning of the observation period.

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, including variations in employment, unemployment or the price of certain raw materials. Therefore, the fact that Alberta drew more individuals from other provinces than Albertans who left the province could be related to once-again favourable economic conditions in the province. Similarly, Alberta's interprovincial migratory losses in 2015/2016 and 2016/2017 could be related to a decline in economic activities in that province at the time. In 2016, Alberta posted the highest unemployment rate in the last 20 years, as well as job and wage losses in most economic activity sectors.[15] In contrast, employment rose by 38,600 between July 2017 and July 2018, and by 19,200 the following year, while the unemployment rate dropped 1.0 percentage point to 6.7% in July 2018 and remained stable the following year.[16] However, the last two years were marked by substantial decrease in interprovincial losses.

Chart 1.8
Interprovincial migration by province or territory, 2018/2019



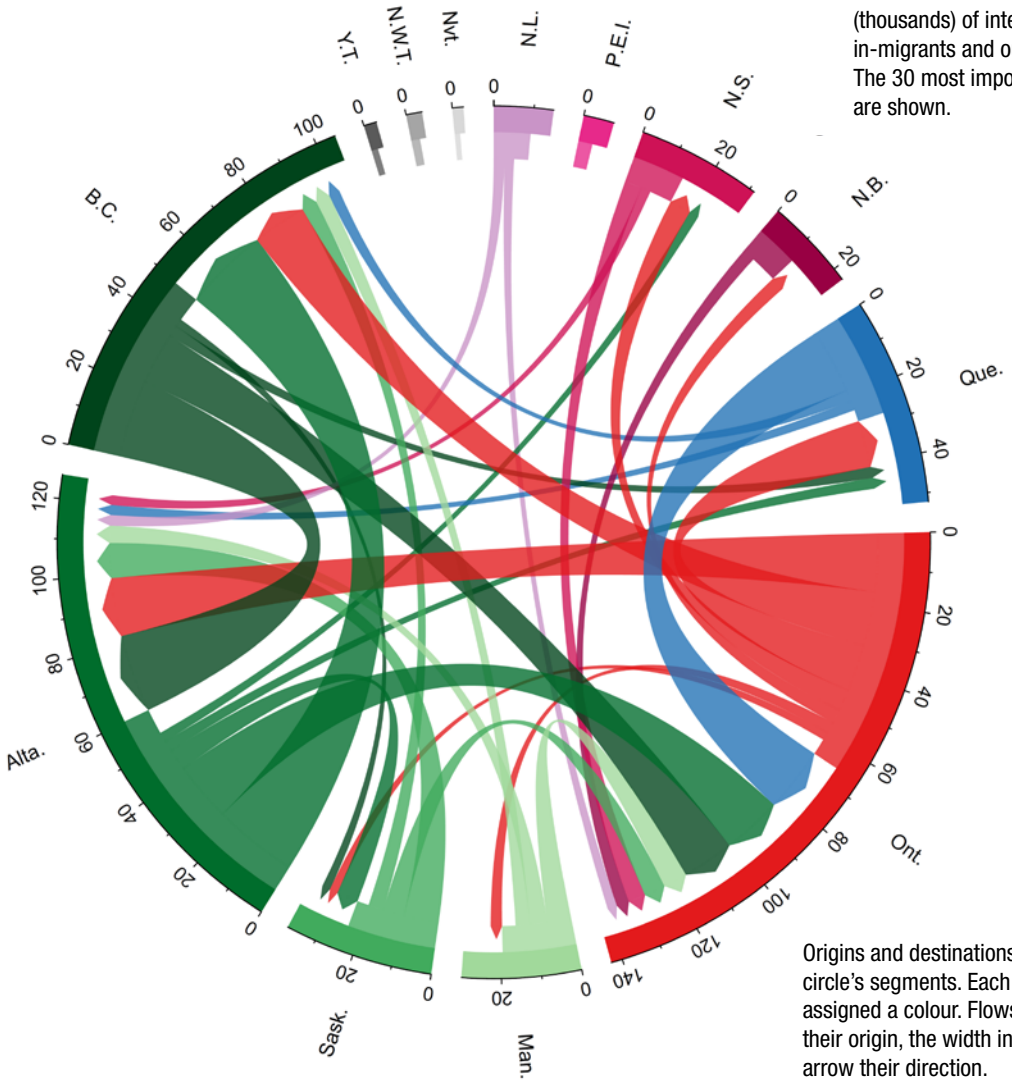
Source: Statistics Canada, Centre for Demography.

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

The 30 largest migration flows are shown in the pie chart[17] below, 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.

15. Bourbeau, Emmanuelle and Andrew Fields. 2017. "Annual review of the labour market, 2016." Labour Statistics: Research Papers, product No. 75-004-M in the Statistics Canada Catalogue.
16. Statistics Canada, Labour force characteristics, monthly, seasonally adjusted and trend-cycle, last 5 months Table 14-10-0287-01 (accessed September 3, 2019).
17. For more details and information about the sources used for this chart and its interpretation, readers are encouraged to read these articles published by the Vienna Institute of Demography: Sander et al. (2014), "Visualising Migration Flow Data" and Abel (2015), "Estimates of Global Bilateral Migration Flows by Gender Between 1960 and 2010".

Chart 1.9
Largest interprovincial migration flows, by province or territory of origin and destination, 2018/2019



Indicates the absolute number (thousands) of interprovincial in-migrants and out-migrants. The 30 most important flows are shown.

Origins and destinations are represented by the circle's segments. Each province or territory is assigned a colour. Flows have the same colour as their origin, the width indicates their size and the arrow their direction.

Source: Statistics Canada, Centre for Demography.

Over the past year, the largest interprovincial migration flow was from Alberta to British Columbia (24,061 migrants). The second largest interprovincial migration flow in Canada was in the opposite direction, i.e., from British Columbia to Alberta: 22,176 migrants. Taking into account these exchanges between the two provinces resulted in gains of 1,885 people for British Columbia. These gains in British Columbia at the expense of Alberta were also nearly four times lower than last year (+6,778). This decrease partly explains that the net in British Columbia, all provinces of origin combined, was two times less (+6,111) than in 2017/2018 (+13,989). Moreover, more people left Saskatchewan, Manitoba and Newfoundland and Labrador for Alberta in 2018/2019 (+17,862) compared with 2017/2018 (+15,215). Since Alberta has not incurred any migration losses with Ontario over the past year, the result of these migrations was a net interprovincial gain for Alberta.

The third largest interprovincial migration flow in Canada came from Quebec to Ontario (18,401). This often large-scale flow is mainly due to the proximity of the two provinces and their demographic weight.

In relative terms (expressed as rates[18]), the largest interprovincial migration flows among provinces were from Prince Edward Island to Ontario (+1.2%), from Saskatchewan to Alberta (+0.8%), from Newfoundland and Labrador to Alberta, and from Alberta to British Columbia (+0.6% each).

18. Not shown in Chart 1.9. These rates are based on the average 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	36,543,321	528,356	150,483	950,401	766,762	8,298,827	14,072,615	1,335,018	1,150,926	4,243,543	4,924,233	39,690	44,908	37,559
2018	37,057,765	525,604	153,584	959,500	770,921	8,387,632	14,318,545	1,353,403	1,162,978	4,300,721	5,001,170	40,612	44,956	38,139
2019	37,589,262	521,542	156,947	971,395	776,827	8,484,965	14,566,547	1,369,465	1,174,462	4,371,316	5,071,336	40,854	44,826	38,780

Note: Estimates are final postcensal for 2016, updated postcensal for 2017 and 2018 and preliminary postcensal for 2019.
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	11.94	-2.02	23.63	8.04	4.46	8.82	14.11	15.76	13.06	11.25	13.28	29.22	5.78	15.67
2017/2018	13.98	-5.22	20.40	9.53	5.41	10.64	17.32	13.68	10.42	13.38	15.50	22.96	1.07	15.32
2018/2019	14.24	-7.76	21.66	12.32	7.63	11.54	17.17	11.80	9.83	16.28	13.93	5.94	-2.90	16.67

Note: Total growth is updated for 2016/2017 and 2017/2018 and preliminary for 2018/2019.
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	433,834	-1,070	3,514	7,611	3,412	72,877	197,221	20,879	14,939	47,482	64,983	1,143	259	584
2017/2018	514,444	-2,752	3,101	9,099	4,159	88,805	245,930	18,385	12,052	57,178	76,937	922	48	580
2018/2019	531,497	-4,062	3,363	11,895	5,906	97,333	248,002	16,062	11,484	70,595	70,166	242	-130	641

Note: Total growth is updated for 2016/2017 and 2017/2018 and preliminary for 2018/2019.
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	105,218	0	328,616	328,616	433,834	11.94
2017/2018	36,543,321	96,171	0	418,273	418,273	514,444	13.98
2018/2019	37,057,765	94,808	0	436,689	436,689	531,497	14.24
2019/2020	37,589,262	…	…	…	…	…	…

… 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	379,675	274,457	260,393	260,393	272,707	60,237	40,020	26,968	103,094
2017/2018	378,848	282,677	260,751	260,751	303,325	60,950	40,489	27,290	162,699
2018/2019	382,533	287,725	290,487	290,487	313,580	61,815	41,065	27,677	171,536

… not applicable

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, 2018 to June 30, 2019

	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.	…	180	1,480	562	266	2,700	150	222	3,040	913	19	89	85
P.E.I.	112	…	563	264	160	1,817	48	44	486	292	0	0	7
N.S.	536	606	…	1,979	1,055	4,903	173	246	2,724	1,273	57	209	257
N.B.	299	288	2,163	…	1,725	3,602	188	164	1,962	897	20	18	13
Que.	178	98	658	1,381	…	18,401	341	289	2,818	3,143	97	162	87
Ont.	2,001	1,646	6,123	3,931	13,291	…	3,213	2,347	16,555	15,443	385	208	407
Man.	103	73	493	213	799	6,811	…	1,917	4,892	4,074	77	70	75
Sask.	93	47	347	241	712	6,027	1,583	…	9,930	4,390	40	130	67
Alta.	1,489	485	2,745	2,035	3,095	16,949	2,282	6,122	…	24,061	277	557	139
B.C.	232	451	2,263	1,211	3,145	14,804	2,264	2,325	22,176	…	385	172	73
Y.T.	30	16	129	48	92	246	9	111	345	612	…	57	49
N.W.T.	67	14	151	39	99	433	56	112	716	428	116	…	68
Nvt.	65	18	209	41	165	588	44	20	134	86	45	29	…
In-migrants	5,205	3,922	17,324	11,945	24,604	77,281	10,351	13,919	65,778	55,612	1,518	1,701	1,327
Out-migrants	9,706	3,793	14,018	11,339	27,653	65,550	19,597	23,607	60,236	49,501	1,744	2,299	1,444
Net	-4,501	129	3,306	606	-3,049	11,731	-9,246	-9,688	5,542	6,111	-226	-598	-117
Total number of migrants:	**290,487**												

... not applicable

Note: Preliminary estimates based on data from the Canada child benefit (CCB) program and $_{jk}F$ factors calculated using 2015/2016, 2016/2017 and 2017/2018 tax file data from Canada Revenue Agency.

Source: Statistics Canada, Centre for Demography.

Analysis: Population by age and sex

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 median age. The median age is age "x", as it divides a population into two groups of equal size, one with individuals older than "x" and the other with individuals younger than "x".

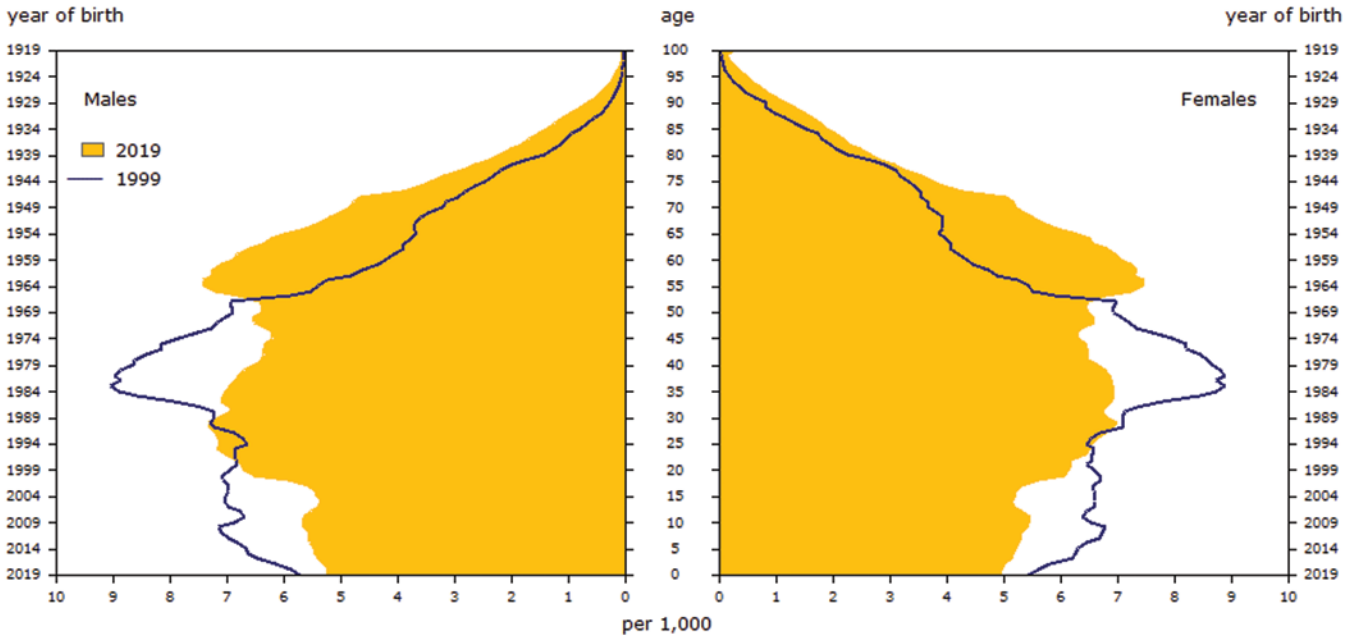
This section presents an analysis of the population estimates by age and sex for Canada, the provinces and territories on July 1, 2019, compared with July 1 estimates in previous years.

Canada's population aging is fuelled by the advancing age of baby boomers

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 (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[19] and a long-term increase in life expectancy for both men and women.[20]

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 the years 1999 and 2019. On July 1, 1999, baby boomers were in their 30s, 40s and early 50s, as can be seen in the bulge in the pyramid at these ages. On July 1, 2019, individuals in the baby boom generation were between 53 and 73 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 53 and over was proportionally higher in 2019 (34.3%) than in 1999 (23.7%). In contrast, the number of younger people, particularly people in their 30s and early 40s, as well as individuals aged 0 to 19, has proportionally decreased.

Figure 2.1
Population pyramid estimates as of July 1, 1999 and 2019, Canada



Source: Statistics Canada, Centre for Demography.

19. Fertility: Overview, 2012 to 2016, in *Report on the Demographic Situation in Canada*, Catalogue No. 91-209-X.
20. Between 1982 and 2017, life expectancy increased from 79.1 to 84.0 years for women and from 72.0 to 79.9 years for men, in spite of a recent stagnation during the most recent study period. (site visited on September 5, 2019).

More than 10,000 centenarians in Canada for the first time

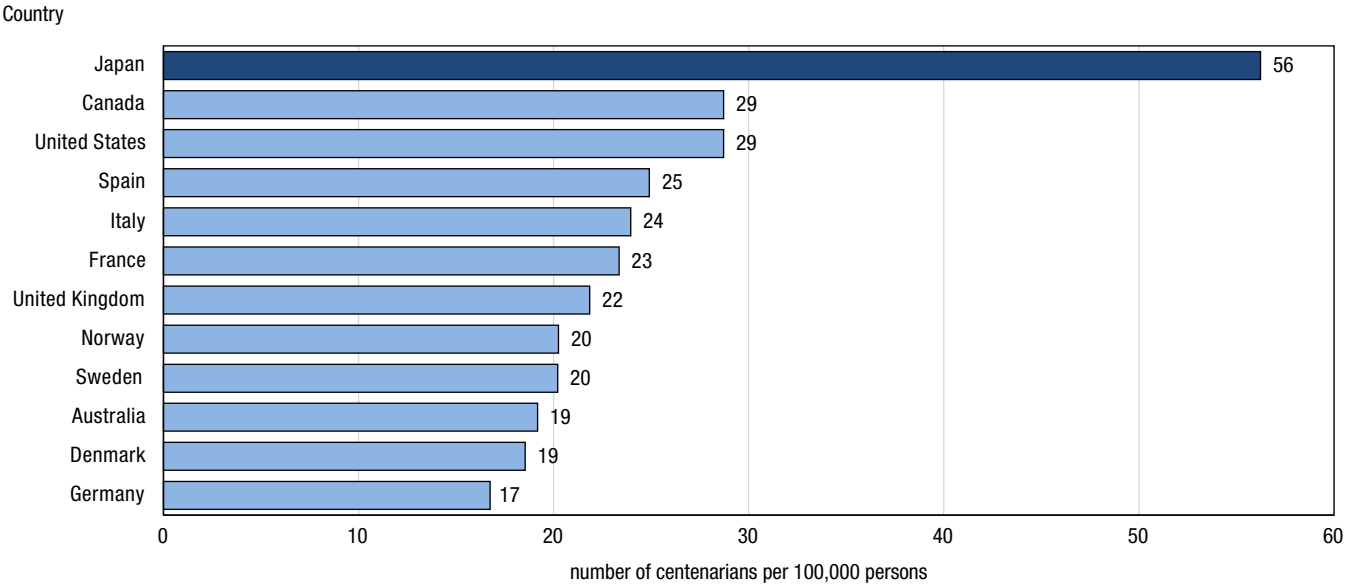
On July 1, 2019, preliminary estimates indicate that there were 10,795 centenarians in Canada. Topping 10,000 for the first time, the number of centenarians in Canada is constantly growing as a result of increased life expectancy.

Since 2001,[21] the number of centenarians has more than tripled. In the latest annual period, the growth rate of centenarians was 8.7%, or about six times the growth rate for the entire population (1.4%). Population growth of centenarians was greater than that of each five-year age group of the population.

In relative numbers, there were 29 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 (82.0%).

Like Canada, most industrialized countries are currently experiencing a rapid increase in the number of centenarians. Although Canada is among the countries with the highest proportion of centenarians, their population share is even greater in other parts of the world. For example, in Japan, which has one of the oldest populations in the world, there were about 56 centenarians per 100,000 population in March 2019.[22] The other G7 countries had a ratio equal to or less than Canada's, although it is on the rise.

Chart 2.1
Number of centenarians per 100,000 persons, most recent estimate available,[1] G7 countries and other selected countries



1. The numbers of centenarians per 100,000 persons shown in this chart are estimated as of the following dates: July 1, 2019, for Canada and Denmark; March 1, 2019, for Japan; January 1, 2019, for Spain, Italy and France; December 31, 2018, for Norway, Sweden and Australia; July 1, 2018, for United States; June 30, 2018, for Germany; July 1, 2017, for United Kingdom.
Source: Statistics Canada, Statistics Bureau of Japan, U.S. Census Bureau, National Statistics Institute (Spain), Italian National Institute of Statistics, National Institute of Statistics and Economic Studies (France), Office for National Statistics (United Kingdom), Statistics Norway, Statistics Sweden, Australian Bureau of Statistics, Statistics Denmark, Federal Statistical Office of Germany.

Canada remains younger than most G7 countries

Population aging is a widespread phenomenon in the whole world, and is currently more important in the industrialized countries. In recent years, the proportion of persons aged 65 and older has increased in every G7 country. Of these countries, Canada has the second-lowest proportion of persons aged 65 and older (17.5%), just behind the United States,[23] with 16%.[24] Conversely, Japan's population is among the oldest in the world, with the highest proportion of persons aged 65 and older among the G7 countries (28%), or almost 3 out of 10 people.

21. 2001 is the first year for which population estimates for centenarians are available.
22. Author's calculations using data from *Population Estimates by Age (Five-Year Groups) and Sex*, Statistics Bureau of Japan, (accessed on September 5, 2019).
23. Population Reference Bureau, 2019 World Population Data (accessed on September 16, 2019).
24. Data on the age distribution of the population for countries other than Canada are rounded to the nearest unit, as shown in the source used.

The proportion of children aged 0 to 14 is higher in Canada (16.0%) than in Japan (12%), Germany and Italy (13% each). A usually higher fertility rate in Canada than in these countries is the main reason why Canada has a higher proportion of children aged 0 to 14 years.[25] However, the proportion of children is lower in Canada than in the United States (19%), France and the United Kingdom (18% each), where the fertility rate is higher than in Canada, though below the replacement level in the last decade.

Moreover, Canada is the G7 country with the largest proportion of working-age people; two-thirds of its population (66.5%) is in the 15-to-64 age group. Japan has the lowest proportion in the G7 (60%). The fact that the baby boom was greater in Canada than in most other G7 countries explains why it has the highest proportion of people in this age group.[26] As all Canadian baby boomers turn 65, the proportion of the working-age population in Canada should move closer to the levels observed among other G7 countries.

Text Table 2.1
Age distribution of the population, Canada and other G7 countries, 2019

	0 to 14 years	15 to 64 years	65 years and over
		percentage	
Canada	**16.0**	**66.5**	**17.5**
France	18	62	20
Germany	13	66	21
Italy	13	64	23
Japan	12	60	28
United Kingdom	18	64	18
United States	19	65	16

Note: Figures in percent may not add up to 100% as a result of rounding. Data for countries other than Canada are rounded to the unit as shown in the source used.
Source: Statistics Canada, Centre for Demography; and data for other countries than Canada come from the *2019 World Population Data* website of the Population Reference Bureau, accessed on September 12, 2019.

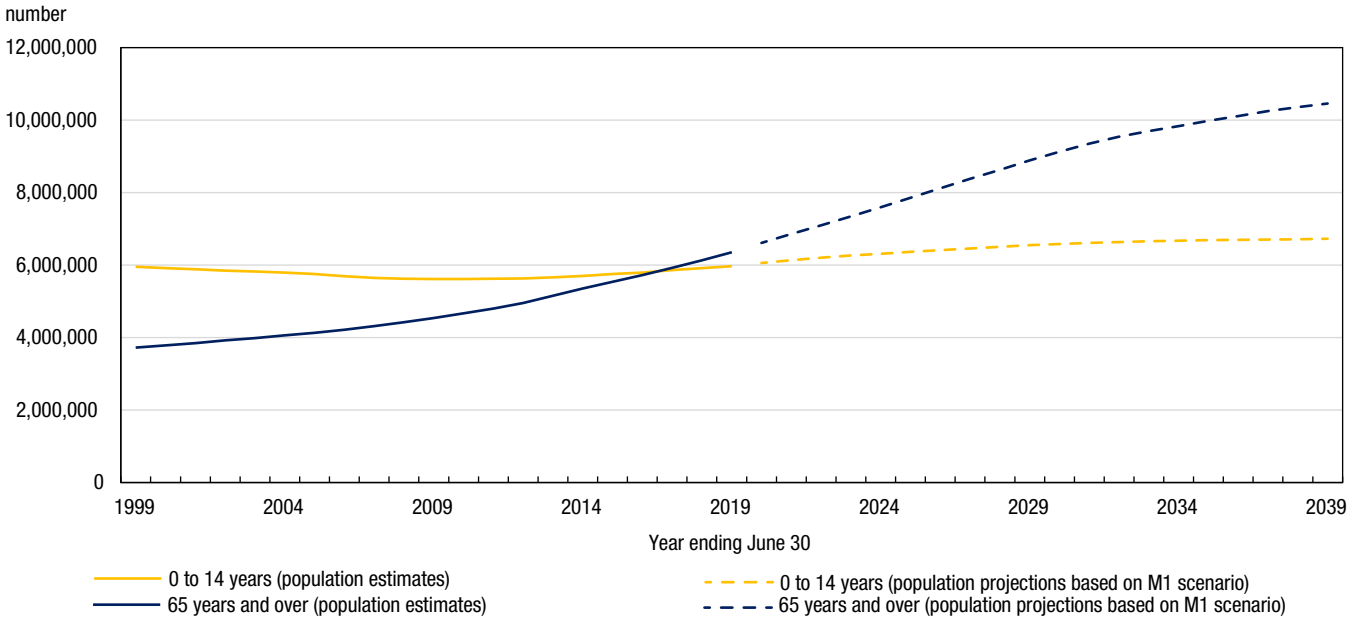
The gap widens between children and seniors

Since 2011, baby boomers have played a significant role in the increase in the number of people aged 65 and older. 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, 2019, a record number of Canadians—6,592,611, or more than 1 in 6 people (17.5%)—was at least 65 years of age.

By comparison, there were 6,014,289 children aged 0 to 14 (16.0%) 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,[27] the proportion of people aged 65 and older should reach 20% in 2025 and 25% in 2059, while the proportion of children aged 0 to 14 should remain relatively stable at around 15% to 16% over the same period.

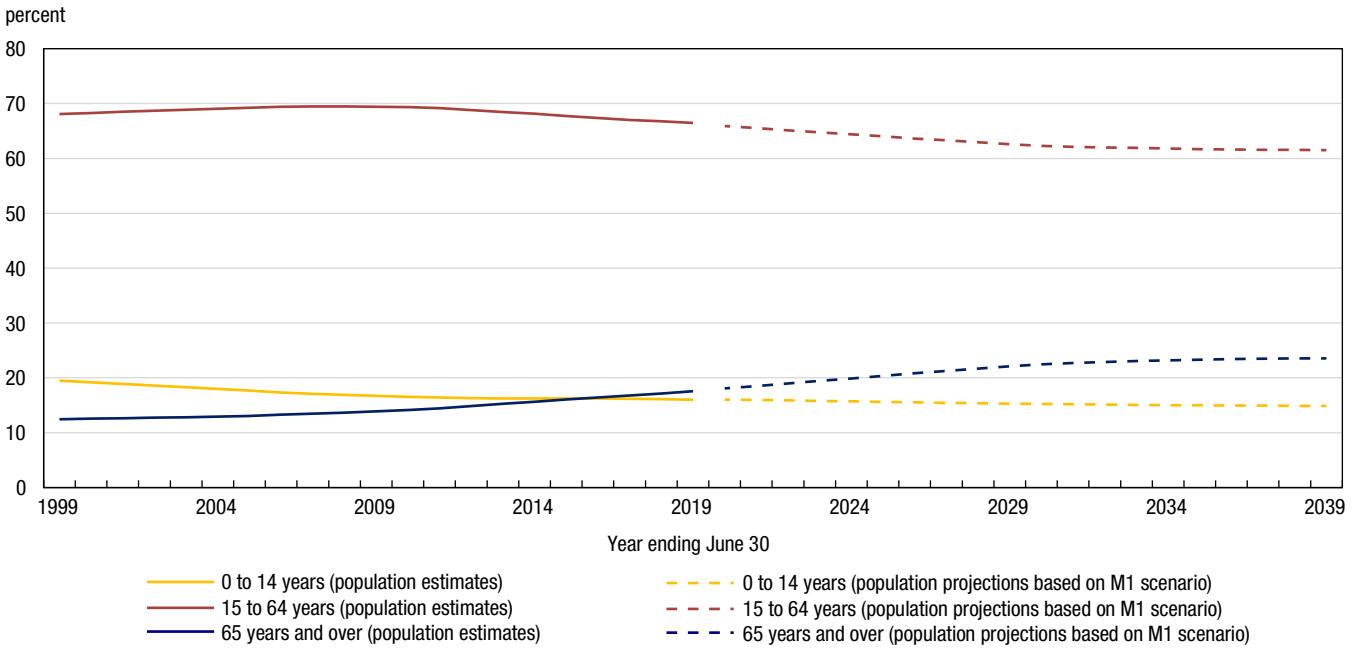
25. OECD (2019), Fertility rates (indicator). DOI: 10.1787/8272fb01-en (accessed on September 16, 2019).
26. United Nations, Department of Economic and Social Affairs, Population Division (2019), table Annual Population by Five-Year Age Groups - Both Sexes. De facto population as of 1 July of the year indicated classified by five-year age groups (0-4, 5-9, 10-14, ..., 95-99, 100+) (Data are presented in thousands) (accessed on September 16, 2019).
27. Statistics Canada, Projected population, by projection scenario, age and sex, as of July 1, (x 1,000), table 17-10-0057-01 (accessed on September 17, 2019). Calculations made by the author. The M1 medium growth scenario was considered.

Chart 2.2
Population aged 0 to 14 years and 65 years and over, 1999 to 2039, Canada



Note: From 1999 to 2019, population estimates. From 2020 to 2039, *Population Projections for Canada (2018 to 2068), Provinces and Territories, (2018 to 2043)*, Catalogue no. 91-520-X.
Source: Statistics Canada, Centre for Demography.

Chart 2.3
Proportion of the population aged 0 to 14 years, 15 to 64 years and 65 years and over, 1999 to 2039, Canada



Note: From 1999 to 2019, population estimates. From 2020 to 2039, *Population Projections for Canada (2018 to 2068), Provinces and Territories, (2018 to 2043)*, Catalogue no. 91-520-X.
Source: Statistics Canada, Centre for Demography.

Moreover, during the last annual period, the growth rate of the 65-and-over group was 3.7%, more than double the growth rate of the population as a whole (1.4%). Children aged 0 to 14 had a growth rate of 0.8% in the last 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.

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, 2019. However, the Prairie provinces and the territories had 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, 2019, Newfoundland and Labrador had the highest proportion of people aged 65 and older (21.5%). This is the first time that this province has topped this list; over the past decade, Nova Scotia and New Brunswick have successively held the top spot. Conversely, Alberta (13.3%) had the lowest proportion of people aged 65 years and older among the provinces. As for the proportion of children aged 0 to 14, the highest was observed in Saskatchewan (19.6%) and the lowest in Newfoundland and Labrador (13.7%). 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[28] and mortality[29] 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 31.8% of the population and a low proportion of people aged 65 and older (4.0%).

For the first time, baby-boomers make up the majority of seniors

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, as of July 1, 2019, baby boomers now make up the majority (51.1%) of seniors for the first time.

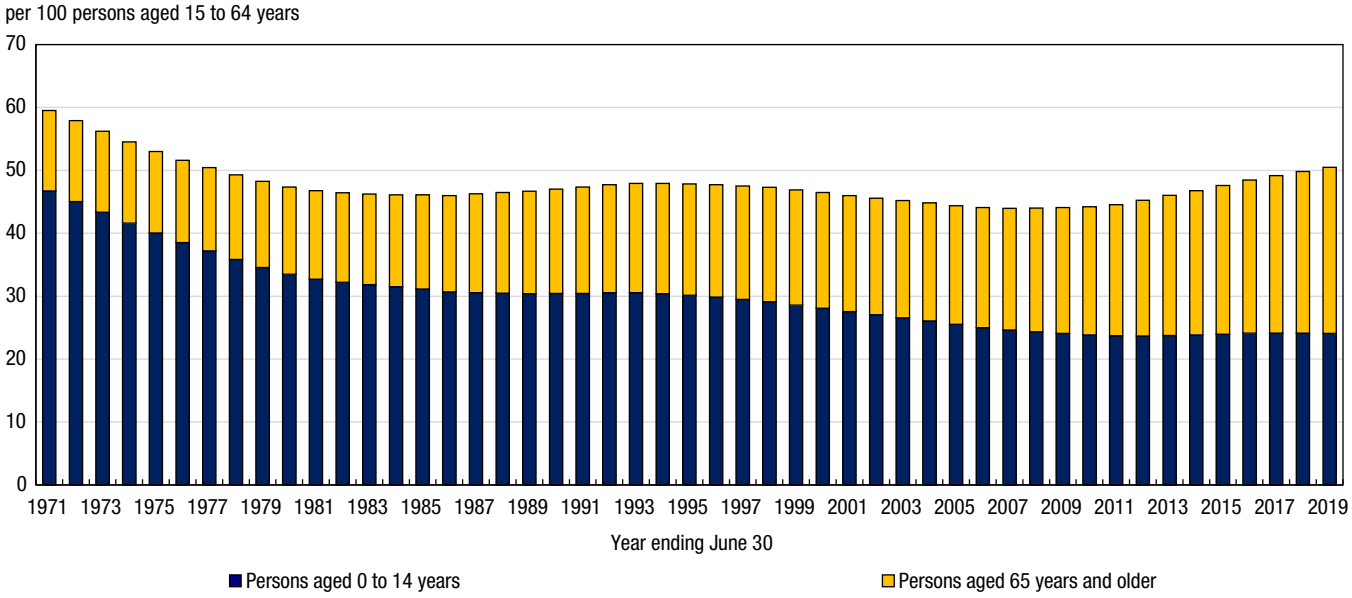
Inevitably, the baby boom cohorts are aging. Moreover, more than one third of baby boomers (35.7%) were 65 and older in 2019, compared with 31.0% in 2018. In 2031, the last of the baby boomers will have turned 65.

Canada has 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, 2019, the ratio was 50.5. This indicator has been rising steadily since reaching a record low in 2007 (44.0). This is the first time since 1977 that the demographic dependency ratio has passed the symbolic cap of 50, meaning that the ratio between the number of adults and the combined number of children and seniors is now less than 2 to 1. It will continue to rise until 2031 and even beyond. According to the medium growth (M1) scenario in the most recent population projections, the demographic dependency ratio should be 61.0 in 2031.

28. Fertility: Overview, 2012 to 2016, Catalogue No. 91-209-X.
29. Statistics Canada. Table 13-10-0114-01 Life expectancy and other elements of the life table, Canada, all provinces except Prince Edward Island (accessed on September 5, 2019).

Chart 2.4
Demographic dependency ratio, 1971 to 2019, 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.

In the 1970s, the demographic dependency ratio was mainly influenced by the high number of children. As the population aged, the contribution of seniors gradually increased over time. Thus, in 1971, children (aged 0 to 14) represented 78.5% of the non-working-age population, compared with 47.7% in 2019.

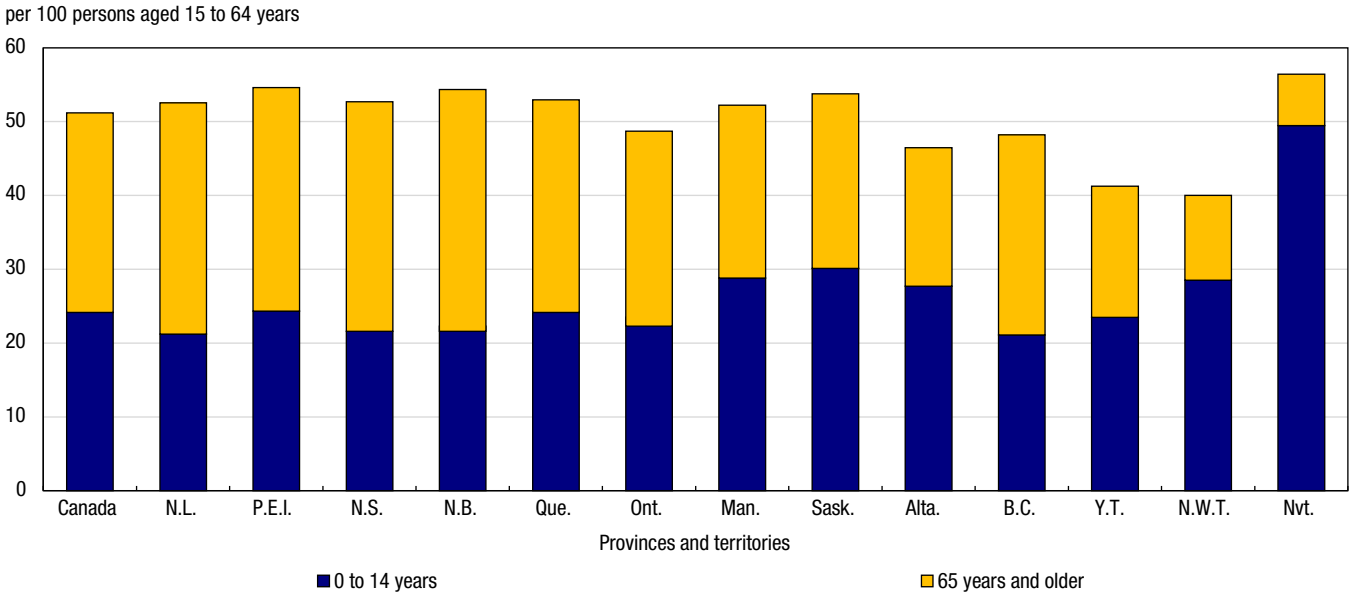
The number of people aged 55 to 64 exceeds those aged 15 to 24 years

Generally speaking, individuals aged 15 to 24 years have recently, or are about to enter the labour market for the first time. In contrast, people aged 55 to 64 are often on the cusp of, or in retirement. On July 1, 2019, there was less than one labour market potential entrant (0.9) for each person potentially leaving. 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 of the provinces and territories sometimes influenced by younger populations, sometimes by older populations

The demographic dependency ratio and its composition vary considerably from one province and territory to another. In 2019, the Atlantic provinces and Quebec had a higher dependency ratio than Canada (50.5) 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 (52.8) and in Saskatchewan (54.6). This situation was mainly due to the high proportion of children aged 0 to 14. Lastly, Nunavut (55.8) had the highest demographic dependency ratio among all provinces and territories, almost exclusively because of its high proportion of children aged 0 to 14.

Chart 2.5
Demographic dependency ratio, 2019, Canada, provinces and territories



Source: Statistics Canada, Centre for Demography.

Text Table 2.2
Population estimates[1], age distribution, median age and mean age as of July 1, 2019, Canada, provinces and territories

	Population	0 to 14 years	15 to 64 years	65 years and over	Median age	Mean age
	number		percent		years	
Canada	**37,589,262**	**16.0**	**66.5**	**17.5**	**40.8**	**41.2**
Newfoundland and Labrador	521,542	13.7	64.9	21.5	47.1	44.5
Prince Edward Island	156,947	15.6	64.6	19.7	43.2	42.4
Nova Scotia	971,395	14.1	65.2	20.8	44.9	43.6
New Brunswick	776,827	14.4	64.3	21.3	46.0	44.1
Quebec	8,484,965	15.8	65.0	19.3	42.6	42.4
Ontario	14,566,547	15.7	67.1	17.2	40.4	41.1
Manitoba	1,369,465	18.9	65.4	15.6	37.4	38.9
Saskatchewan	1,174,462	19.6	64.7	15.7	37.4	39.0
Alberta	4,371,316	18.8	68.0	13.3	37.1	38.3
British Columbia	5,071,336	14.1	67.2	18.7	42.2	42.4
Yukon	40,854	16.9	70.4	12.7	39.2	39.4
Northwest Territories	44,826	20.2	71.6	8.3	35.2	35.9
Nunavut	38,780	31.8	64.2	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.

Population aging among women higher because of low female mortality

The main population aging indicators are all higher for females. On July 1, 2019, the proportion of women 65 and older (18.8%) was higher than the corresponding proportion of men (16.2%). The median age was also higher for women (41.8 years) than for men (39.7 years). Furthermore, the centenarian group was comprised mostly of women (82.0%). 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 (2015 to 2017) show that the life expectancy at birth of females was 84.0 years, compared with

79.9 years for males, with females living an average of 4.1 years longer than males. Twenty years earlier, this same gap was 5.7 years.[30]

One in two Canadians is at least 40 years of age

In 2019, 1 in 2 Canadians was at least 40.8 years. The median age[31] has increased by 4.4 years since 1999, when it was 36.4 years.

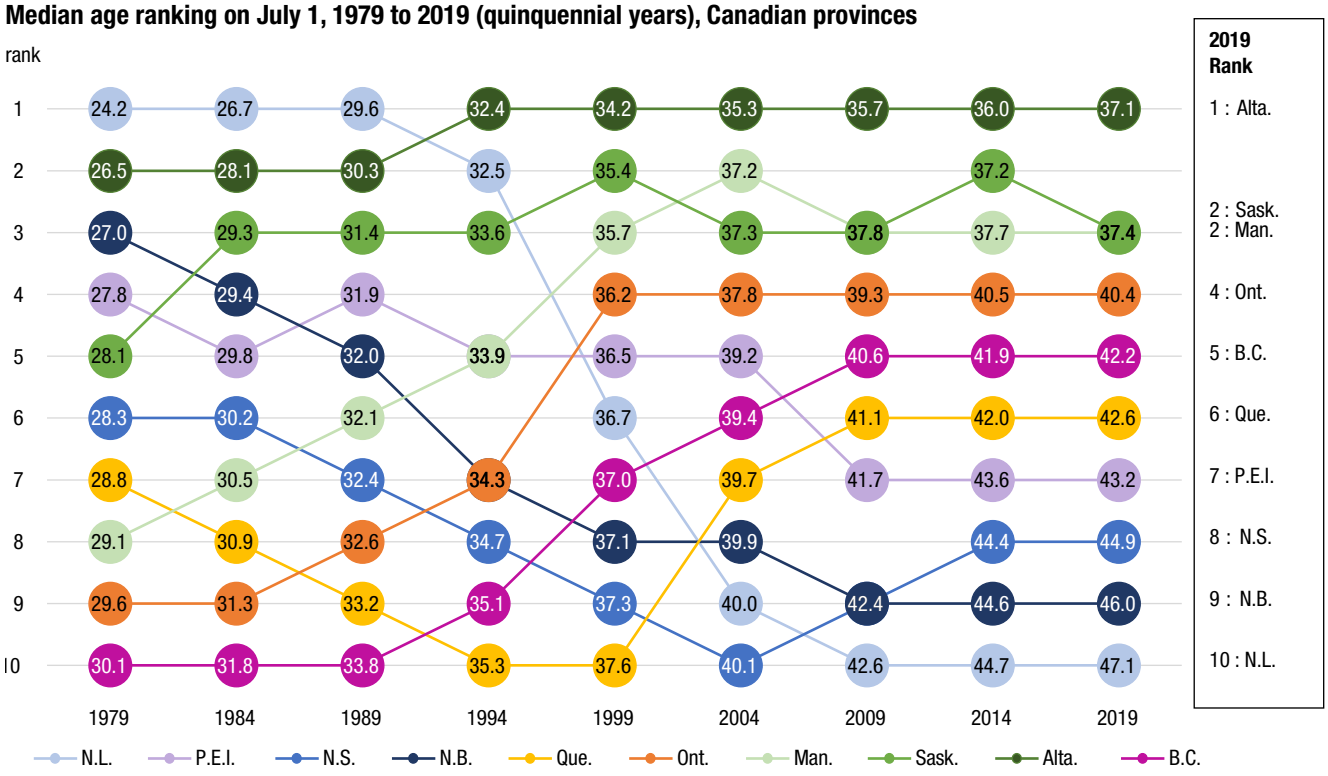
Median age varies considerably from province to province. On July 1, 2019, there was a difference of 10.0 years between the province with the highest median age (47.1 years in Newfoundland and Labrador) and the province with the lowest median age (37.1 years in Alberta). Taking the territories into consideration, Nunavut had the lowest median age at 26.2 years.

In 1999, the differences between the provinces were much smaller, with a gap of 3.4 years. The highest median age was in Quebec (37.6 years) and the lowest in Alberta (34.2 years).

The situation in Newfoundland and Labrador indicates an especially rapid aging of its population. In just a little over 10 years, the median age in the province went from the lowest (31.8 in 1993) to the highest (40.7 years in 2005) in the country. During this period, Newfoundland and Labrador experienced 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 now top the list of the youngest provinces. This is mainly due to a higher proportion of Aboriginal people (Manitoba, Saskatchewan),[32] a younger population with higher fertility rates, and to higher migration of young adults and families from other provinces and countries (Alberta).

Chart 2.6
Median age ranking on July 1, 1979 to 2019 (quinquennial years), Canadian provinces



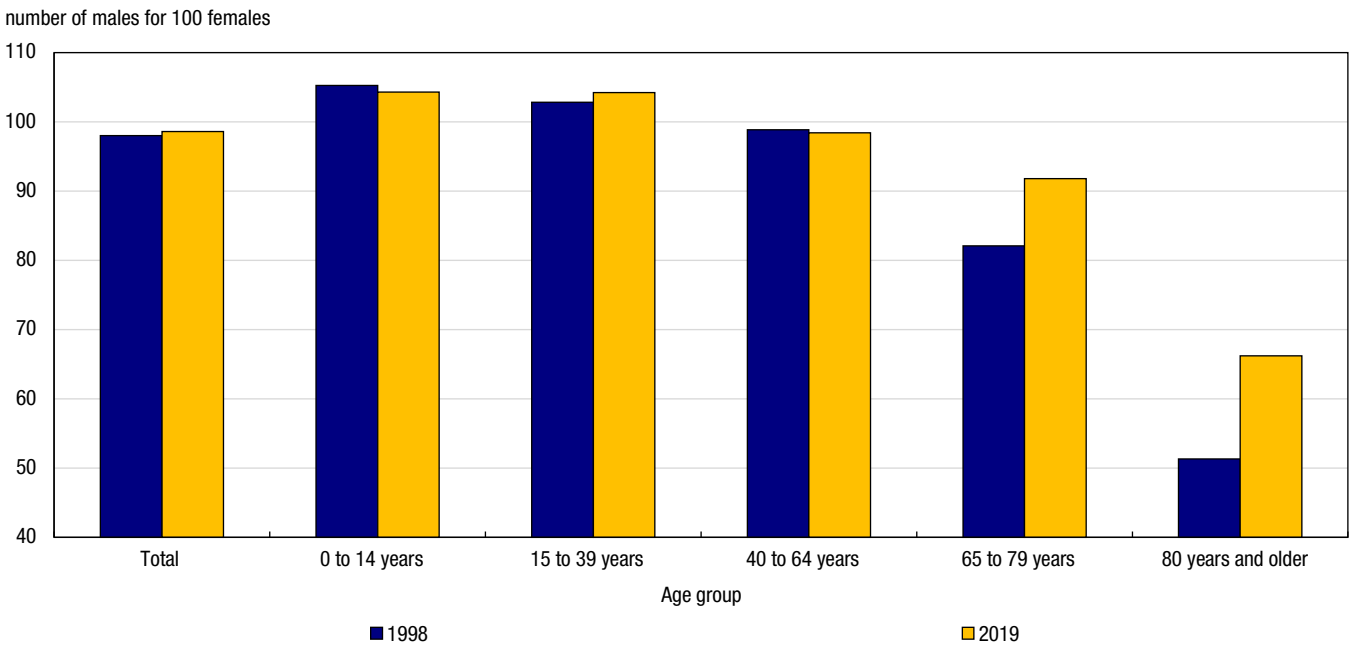
Source: Statistics Canada, Centre for Demography.

30. Statistics Canada. Table 13-10-0114-01 Life expectancy and other elements of the life table, Canada, all provinces except Prince Edward Island (accessed on September 5, 2019).
31. The median age is age "x", as it divides a population into two groups of equal size, one with individuals older than "x" and the other with individuals younger than "x".
32. Statistics Canada. Aboriginal identity population by both sexes, total - age, 2016 counts, Canada, provinces and territories, 2016 Census – 25% Sample data (accessed on September 5, 2019), author's calculations.

Women outnumber men slightly

On July 1, 2019, the sex ratio for the Canadian population as a whole was estimated at 98.8 males per 100 females. This ratio has changed very little over the last 20 years, with 98.0 males per 100 females observed in 1999. Males outnumber females in ages 0 to 36 years, 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 91.8 males per 100 females on July 1, 2019. However, the gap between the sexes seems to be narrowing. Twenty years ago, the sex ratio for people aged 65 to 79 was 82.8. In the population aged 80 and older, a sex ratio of 67.1 men per 100 females was estimated on July 1, 2019, compared with a sex ratio of 51.1 on July 1, 1999. Centenarians were predominantly female with a ratio of 21.9 males per 100 females.

Chart 2.7
Sex ratio by age group, 1999 and 2019, Canada



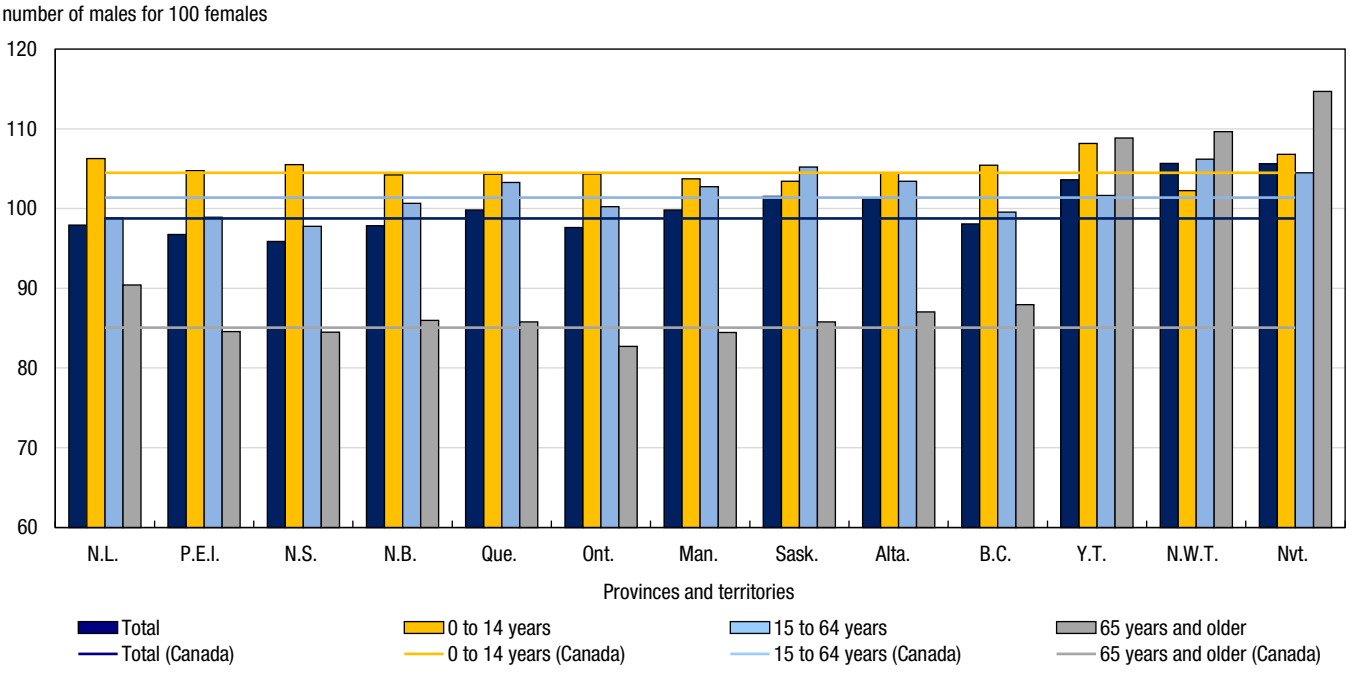
Source: Statistics Canada, Centre for Demography.

The sex ratio differs from one province and territory to another

There are some regional differences in the sex structure in Canada. On July 1, 2019, 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, 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 2019, 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 108.8 and 109.6 males per 100 females, respectively, compared with 85.0 males per 100 females nationally. In Nunavut, it was even higher, with 114.7 males per 100 females.

Chart 2.8
Sex ratio by age group, 2019, Canada, provinces and territories



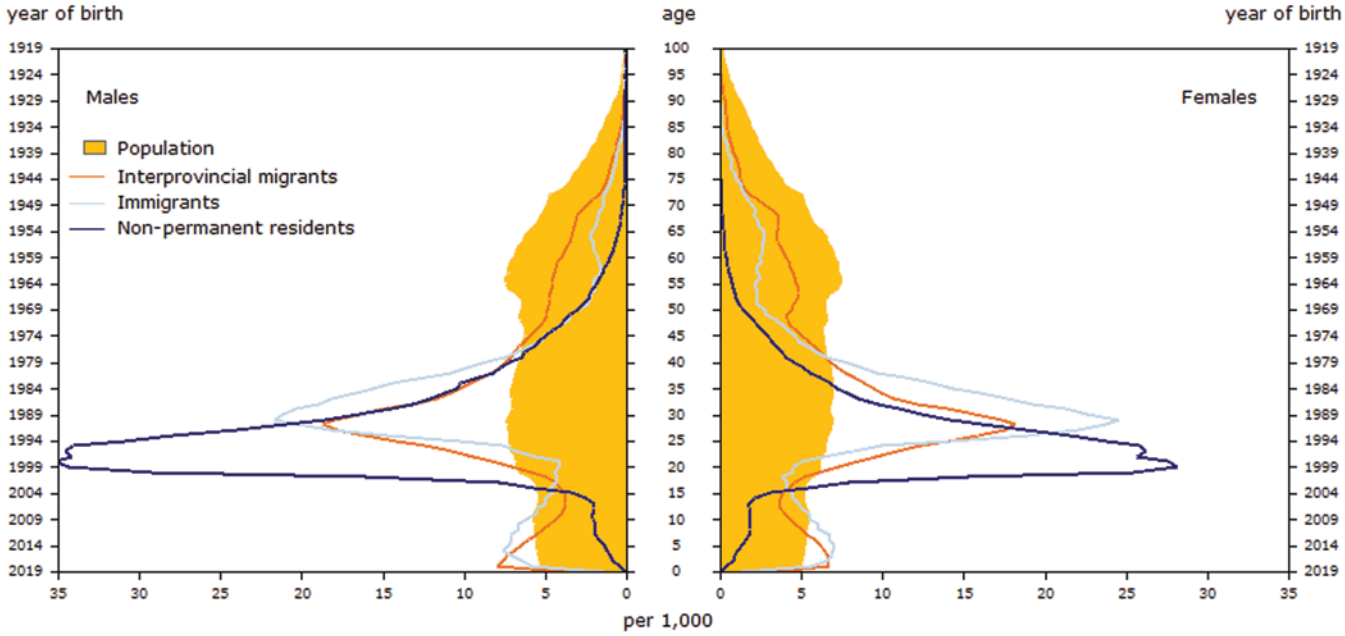
Source: Statistics Canada, Centre for Demography.

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.[33] On July 1, 2019, the proportion of the working-age population (aged 15 to 64) was considerably higher among immigrants (77.7%), interprovincial migrants (77.0%) and non-permanent residents (95.1%). These subgroups also had a high concentration of young adults. A majority of non-permanent residents (60.9%) were between 18 and 29 years of age. Immigrants were slightly older and less concentrated in some age groups, since 62.7% were in the 20-to-44 group. Lastly, 54.5% of interprovincial migrants were aged 20 to 44. Similarly, the median age of interprovincial migrants (31.0 years), non-permanent residents (25.6 years) and immigrants (30.7 years) was lower compared to the entire population (40.8 years) on July 1, 2019.

33. Interprovincial migrants and immigrants are those who migrated between July 1, 2018, and July 1, 2019, while non-permanent residents and the population are those accounted for on July 1, 2019.

Figure 2.2
Population pyramid of total population, interprovincial migrants, immigrants and non-permanent residents, 2019, Canada



Source: Statistics Canada, Centre for Demography.

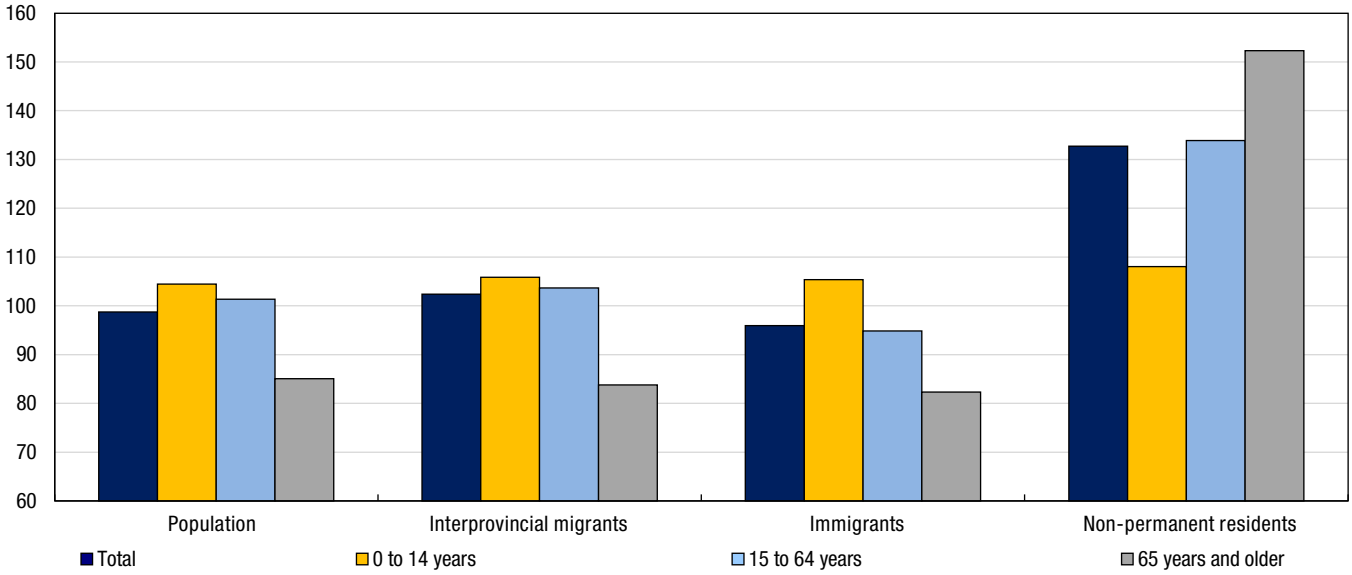
Immigrants stood out for having a population share of children aged 0 to 14 (17.6%) slightly higher than the total Canadian population (16.0%). By comparison, in 2019, 4.4% of non-permanent residents were in the 0-to-14 age group. The distinct age structure of non-permanent residents is mostly due to the fact that these people come to Canada mainly for the purpose of work or study, which mostly involves young adults and applies less to children.

Females slightly outnumber males among immigrants, contrary to non-permanent residents

The sex structure also differs between each of the three subgroups. Males were slightly underrepresented among immigrants (96.0 males per 100 females) but were overrepresented among non-permanent residents (132.7 males per 100 females), and to a lesser degree, among interprovincial migrants (102.4 males per 100 females). By comparison, the sex ratio for the entire Canadian population is almost equal, with 98.8 males per 100 females.

Chart 2.9
Sex ratio by age group of the population, interprovincial migrants, immigrants and non-permanent residents, 2019, 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

	2012	2013	2014	2015	2016	2017	2018	2019
	number							
Both sexes	**34,714,222**	**35,082,954**	**35,437,435**	**35,702,908**	**36,109,487**	**36,543,321**	**37,057,765**	**37,589,262**
0 to 4 years	1,917,338	1,924,654	1,927,705	1,928,878	1,942,791	1,941,518	1,941,813	1,943,175
5 to 9 years	1,847,505	1,892,730	1,931,039	1,969,492	2,003,223	2,021,395	2,032,463	2,039,352
10 to 14 years	1,895,451	1,886,668	1,893,264	1,895,463	1,919,810	1,948,508	1,991,776	2,031,762
15 to 19 years	2,197,641	2,154,873	2,118,889	2,092,961	2,083,843	2,090,618	2,106,443	2,114,635
20 to 24 years	2,389,961	2,416,433	2,423,034	2,395,623	2,387,191	2,401,492	2,436,616	2,476,698
25 to 29 years	2,383,927	2,393,577	2,413,496	2,429,557	2,466,106	2,513,571	2,574,356	2,625,474
30 to 34 years	2,368,073	2,411,649	2,447,837	2,460,501	2,488,660	2,515,083	2,552,543	2,603,938
35 to 39 years	2,291,997	2,317,467	2,349,272	2,371,229	2,410,025	2,455,893	2,516,539	2,580,021
40 to 44 years	2,381,473	2,374,735	2,362,412	2,349,922	2,342,178	2,353,646	2,380,960	2,421,009
45 to 49 years	2,657,781	2,577,529	2,503,611	2,445,816	2,431,118	2,417,948	2,406,648	2,396,406
50 to 54 years	2,726,209	2,760,814	2,786,582	2,783,350	2,734,564	2,664,650	2,579,089	2,502,667
55 to 59 years	2,431,791	2,508,170	2,566,359	2,614,668	2,665,850	2,696,178	2,726,799	2,749,626
60 to 64 years	2,070,138	2,110,672	2,171,609	2,243,211	2,313,160	2,387,575	2,456,319	2,511,888
65 to 69 years	1,644,577	1,741,051	1,822,528	1,903,004	1,969,181	1,995,780	2,035,621	2,096,607
70 to 74 years	1,194,047	1,248,201	1,304,022	1,357,712	1,423,187	1,533,181	1,625,081	1,706,760
75 to 79 years	925,148	939,265	961,547	983,024	1,014,301	1,057,533	1,109,520	1,164,277
80 to 84 years	714,387	723,748	730,784	735,007	742,579	751,132	765,344	786,704
85 to 89 years	437,115	448,403	457,587	467,165	480,677	493,634	503,414	510,828
90 to 94 years	188,036	198,537	208,837	214,926	223,290	229,995	236,991	242,554
95 to 99 years	44,963	46,722	49,296	53,488	59,110	64,816	69,535	74,086
100 years and over	6,664	7,056	7,725	7,911	8,643	9,175	9,895	10,795
Males	**17,209,900**	**17,401,165**	**17,581,697**	**17,712,801**	**17,916,496**	**18,135,268**	**18,402,681**	**18,678,085**
0 to 4 years	980,985	985,155	986,082	986,676	993,580	994,343	994,675	996,169
5 to 9 years	945,652	966,874	985,043	1,003,138	1,019,960	1,030,233	1,037,779	1,042,006
10 to 14 years	974,448	969,050	970,398	968,904	978,544	992,383	1,013,873	1,034,679
15 to 19 years	1,132,074	1,112,409	1,094,406	1,080,291	1,074,818	1,076,095	1,082,294	1,083,305
20 to 24 years	1,220,026	1,241,717	1,252,785	1,244,697	1,242,113	1,250,369	1,270,626	1,293,447
25 to 29 years	1,199,716	1,209,043	1,225,550	1,239,356	1,264,270	1,290,053	1,324,745	1,353,719
30 to 34 years	1,179,945	1,202,017	1,222,168	1,230,618	1,249,488	1,266,508	1,289,119	1,318,922
35 to 39 years	1,140,950	1,151,645	1,165,475	1,174,086	1,193,244	1,217,964	1,251,452	1,288,484
40 to 44 years	1,191,249	1,186,258	1,177,103	1,167,211	1,160,414	1,164,188	1,177,833	1,198,446
45 to 49 years	1,336,245	1,292,960	1,252,324	1,220,275	1,210,028	1,202,436	1,196,276	1,190,042
50 to 54 years	1,367,055	1,383,470	1,396,037	1,392,935	1,367,448	1,330,838	1,286,121	1,245,715
55 to 59 years	1,211,390	1,249,247	1,277,271	1,300,456	1,324,747	1,340,103	1,355,370	1,367,374
60 to 64 years	1,023,315	1,041,252	1,069,392	1,102,960	1,135,977	1,172,463	1,207,713	1,235,919
65 to 69 years	801,443	849,102	888,164	926,287	957,632	969,824	988,298	1,016,865
70 to 74 years	564,079	592,170	621,283	649,566	682,973	735,979	779,305	817,541
75 to 79 years	420,270	428,838	440,683	452,282	468,088	489,615	515,706	543,007
80 to 84 years	299,922	307,258	313,199	317,644	323,647	329,035	336,691	347,388
85 to 89 years	155,870	163,301	170,273	177,089	185,348	193,035	199,440	204,463
90 to 94 years	54,454	58,076	61,862	64,978	68,987	72,705	76,556	80,100
95 to 99 years	9,752	10,156	10,962	12,084	13,791	15,515	17,051	18,556
100 years and over	1,060	1,167	1,237	1,268	1,399	1,584	1,758	1,938

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

	2012	2013	2014	2015	2016	2017	2018	2019
	number							
Females	**17,504,322**	**17,681,789**	**17,855,738**	**17,990,107**	**18,192,991**	**18,408,053**	**18,655,084**	**18,911,177**
0 to 4 years	936,353	939,499	941,623	942,202	949,211	947,175	947,138	947,006
5 to 9 years	901,853	925,856	945,996	966,354	983,263	991,162	994,684	997,346
10 to 14 years	921,003	917,618	922,866	926,559	941,266	956,125	977,903	997,083
15 to 19 years	1,065,567	1,042,464	1,024,483	1,012,670	1,009,025	1,014,523	1,024,149	1,031,330
20 to 24 years	1,169,935	1,174,716	1,170,249	1,150,926	1,145,078	1,151,123	1,165,990	1,183,251
25 to 29 years	1,184,211	1,184,534	1,187,946	1,190,201	1,201,836	1,223,518	1,249,611	1,271,755
30 to 34 years	1,188,128	1,209,632	1,225,669	1,229,883	1,239,172	1,248,575	1,263,424	1,285,016
35 to 39 years	1,151,047	1,165,822	1,183,797	1,197,143	1,216,781	1,237,929	1,265,087	1,291,537
40 to 44 years	1,190,224	1,188,477	1,185,309	1,182,711	1,181,764	1,189,458	1,203,127	1,222,563
45 to 49 years	1,321,536	1,284,569	1,251,287	1,225,541	1,221,090	1,215,512	1,210,372	1,206,364
50 to 54 years	1,359,154	1,377,344	1,390,545	1,390,415	1,367,116	1,333,812	1,292,968	1,256,952
55 to 59 years	1,220,401	1,258,923	1,289,088	1,314,212	1,341,103	1,356,075	1,371,429	1,382,252
60 to 64 years	1,046,823	1,069,420	1,102,217	1,140,251	1,177,183	1,215,112	1,248,606	1,275,969
65 to 69 years	843,134	891,949	934,364	976,717	1,011,549	1,025,956	1,047,323	1,079,742
70 to 74 years	629,968	656,031	682,739	708,146	740,214	797,202	845,776	889,219
75 to 79 years	504,878	510,427	520,864	530,742	546,213	567,918	593,814	621,270
80 to 84 years	414,465	416,490	417,585	417,363	418,932	422,097	428,653	439,316
85 to 89 years	281,245	285,102	287,314	290,076	295,329	300,599	303,974	306,365
90 to 94 years	133,582	140,461	146,975	149,948	154,303	157,290	160,435	162,454
95 to 99 years	35,211	36,566	38,334	41,404	45,319	49,301	52,484	55,530
100 years and over	5,604	5,889	6,488	6,643	7,244	7,591	8,137	8,857

Note: Estimates are final intercensal up to 2015, final postcensal for 2016, updated postcensal for 2017 and 2018 and preliminary postcensal for 2019.
Source: Statistics Canada, Centre for Demography.

Table 2.2
Annual population estimates and factors of demographic growth by age group and sex, 2018/2019[1] - Canada

	Natural increase					
	Births	Deaths	Net interprovincial migration	Net international migration	Total net migration	Total growth
	number					
Both sexes	**382,533**	**287,725**	**0**	**436,689**	**436,689**	**531,497**
-1 year	382,533	1,519	0	702	702	381,716
0 to 4 years	...	450	0	21,857	21,857	21,407
5 to 9 years	...	183	0	22,700	22,700	22,517
10 to 14 years	...	267	0	21,718	21,718	21,451
15 to 19 years	...	747	0	92,607	92,607	91,860
20 to 24 years	...	1,262	0	72,046	72,046	70,784
25 to 29 years	...	1,569	0	62,936	62,936	61,367
30 to 34 years	...	1,720	0	53,657	53,657	51,937
35 to 39 years	...	2,084	0	35,180	35,180	33,096
40 to 44 years	...	2,860	0	19,081	19,081	16,221
45 to 49 years	...	4,474	0	9,111	9,111	4,637
50 to 54 years	...	7,826	0	3,951	3,951	-3,875
55 to 59 years	...	13,305	0	4,190	4,190	-9,115
60 to 64 years	...	18,588	0	5,831	5,831	-12,757
65 to 69 years	...	23,494	0	5,221	5,221	-18,273
70 to 74 years	...	30,083	0	3,661	3,661	-26,422
75 to 79 years	...	33,698	0	1,739	1,739	-31,959
80 to 84 years	...	40,532	0	575	575	-39,957
85 to 89 years	...	46,878	0	-1	-1	-46,879
90 to 94 years	...	36,871	0	-51	-51	-36,922
95 to 99 years	...	16,127	0	-25	-25	-16,152
100 years and over	...	3,188	0	3	3	-3,185

Table 2.2
Annual population estimates and factors of demographic growth by age group and sex, 2018/2019[1] - Canada

	Natural increase					
	Births	Deaths	Net interprovincial migration	Net international migration	Total net migration	Total growth
	number					
Males	**196,349**	**146,134**	**0**	**225,189**	**225,189**	**275,404**
-1 year	196,349	830	0	332	332	195,851
0 to 4 years	...	245	0	11,254	11,254	11,009
5 to 9 years	...	100	0	11,853	11,853	11,753
10 to 14 years	...	146	0	11,200	11,200	11,054
15 to 19 years	...	496	0	49,724	49,724	49,228
20 to 24 years	...	896	0	39,706	39,706	38,810
25 to 29 years	...	1,080	0	29,678	29,678	28,598
30 to 34 years	...	1,145	0	27,571	27,571	26,426
35 to 39 years	...	1,281	0	18,905	18,905	17,624
40 to 44 years	...	1,709	0	10,323	10,323	8,614
45 to 49 years	...	2,696	0	4,836	4,836	2,140
50 to 54 years	...	4,595	0	1,729	1,729	-2,866
55 to 59 years	...	7,973	0	1,242	1,242	-6,731
60 to 64 years	...	11,169	0	2,111	2,111	-9,058
65 to 69 years	...	13,794	0	2,020	2,020	-11,774
70 to 74 years	...	17,328	0	1,611	1,611	-15,717
75 to 79 years	...	18,697	0	808	808	-17,889
80 to 84 years	...	21,146	0	289	289	-20,857
85 to 89 years	...	21,944	0	28	28	-21,916
90 to 94 years	...	13,950	0	-20	-20	-13,970
95 to 99 years	...	4,300	0	-12	-12	-4,312
100 years and over	...	614	0	1	1	-613
Females	**186,184**	**141,591**	**0**	**211,500**	**211,500**	**256,093**
-1 year	186,184	689	0	370	370	185,865
0 to 4 years	...	205	0	10,603	10,603	10,398
5 to 9 years	...	83	0	10,847	10,847	10,764
10 to 14 years	...	121	0	10,518	10,518	10,397
15 to 19 years	...	251	0	42,883	42,883	42,632
20 to 24 years	...	366	0	32,340	32,340	31,974
25 to 29 years	...	489	0	33,258	33,258	32,769
30 to 34 years	...	575	0	26,086	26,086	25,511
35 to 39 years	...	803	0	16,275	16,275	15,472
40 to 44 years	...	1,151	0	8,758	8,758	7,607
45 to 49 years	...	1,778	0	4,275	4,275	2,497
50 to 54 years	...	3,231	0	2,222	2,222	-1,009
55 to 59 years	...	5,332	0	2,948	2,948	-2,384
60 to 64 years	...	7,419	0	3,720	3,720	-3,699
65 to 69 years	...	9,700	0	3,201	3,201	-6,499
70 to 74 years	...	12,755	0	2,050	2,050	-10,705
75 to 79 years	...	15,001	0	931	931	-14,070
80 to 84 years	...	19,386	0	286	286	-19,100
85 to 89 years	...	24,934	0	-29	-29	-24,963
90 to 94 years	...	22,921	0	-31	-31	-22,952
95 to 99 years	...	11,827	0	-13	-13	-11,840
100 years and over	...	2,574	0	2	2	-2,572

... 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, 2018/2019[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	**382,533**	**287,725**	**290,487**	**290,487**	**313,580**	**61,815**	**41,065**	**27,677**	**171,536**
-1 year	382,533	1,519	2,110	2,110	828	430	328	191	167
0 to 4 years	...	450	19,959	19,959	21,125	4,221	2,973	1,855	3,835
5 to 9 years	...	183	14,751	14,751	20,274	3,600	2,305	1,574	5,295
10 to 14 years	...	267	11,043	11,043	15,609	2,497	2,111	1,098	7,593
15 to 19 years	...	747	15,574	15,574	13,394	1,690	2,751	747	78,899
20 to 24 years	...	1,262	32,085	32,085	24,450	5,068	5,014	2,300	49,950
25 to 29 years	...	1,569	49,843	49,843	65,152	8,586	5,239	3,888	5,019
30 to 34 years	...	1,720	34,018	34,018	55,938	8,108	3,903	3,666	5,590
35 to 39 years	...	2,084	23,517	23,517	33,397	6,423	3,019	2,902	8,089
40 to 44 years	...	2,860	17,916	17,916	18,099	4,986	2,771	2,215	5,412
45 to 49 years	...	4,474	13,748	13,748	11,175	4,449	2,408	1,968	1,945
50 to 54 years	...	7,826	13,622	13,622	6,872	3,768	2,176	1,675	346
55 to 59 years	...	13,305	12,577	12,577	6,352	2,652	1,723	1,192	-41
60 to 64 years	...	18,588	10,388	10,388	7,436	1,808	1,413	819	-391
65 to 69 years	...	23,494	9,077	9,077	6,115	1,327	1,146	600	-113
70 to 74 years	...	30,083	4,685	4,685	4,039	807	815	364	-22
75 to 79 years	...	33,698	2,894	2,894	2,126	621	538	280	-24
80 to 84 years	...	40,532	1,491	1,491	890	413	285	187	0
85 to 89 years	...	46,878	821	821	248	243	106	109	-3
90 to 94 years	...	36,871	327	327	50	94	39	40	-6
95 to 99 years	...	16,127	41	41	9	24	1	7	-4
100 years and over	...	3,188	0	0	2	0	1	0	0
Males	**196,349**	**146,134**	**146,975**	**146,975**	**153,566**	**32,237**	**20,096**	**14,443**	**98,207**
-1 year	196,349	830	1,118	1,118	424	233	169	104	76
0 to 4 years	...	245	10,470	10,470	10,730	2,150	1,563	943	2,054
5 to 9 years	...	100	7,442	7,442	10,521	1,761	1,223	769	2,639
10 to 14 years	...	146	5,537	5,537	7,978	1,272	1,068	563	3,989
15 to 19 years	...	496	7,614	7,614	6,835	906	1,346	402	42,851
20 to 24 years	...	896	15,962	15,962	10,724	2,663	2,169	1,217	30,693
25 to 29 years	...	1,080	25,233	25,233	30,063	4,170	2,282	1,895	3,398
30 to 34 years	...	1,145	17,632	17,632	28,125	3,989	1,812	1,799	3,422
35 to 39 years	...	1,281	12,172	12,172	17,534	3,294	1,429	1,494	4,730
40 to 44 years	...	1,709	9,507	9,507	9,511	2,708	1,443	1,202	3,279
45 to 49 years	...	2,696	7,429	7,429	5,799	2,570	1,329	1,140	1,418
50 to 54 years	...	4,595	6,753	6,753	3,376	2,215	1,205	988	351
55 to 59 years	...	7,973	6,254	6,254	2,615	1,553	953	692	-81
60 to 64 years	...	11,169	5,078	5,078	3,216	1,005	733	454	-379
65 to 69 years	...	13,794	4,182	4,182	2,656	698	534	316	-156
70 to 74 years	...	17,328	2,250	2,250	1,873	426	385	194	-27
75 to 79 years	...	18,697	1,314	1,314	1,021	302	258	132	-37
80 to 84 years	...	21,146	662	662	426	187	134	83	-1
85 to 89 years	...	21,944	251	251	116	91	52	43	-6
90 to 94 years	...	13,950	106	106	20	33	9	11	-5
95 to 99 years	...	4,300	9	9	2	11	0	2	-1
100 years and over	...	614	0	0	1	0	0	0	0

Table 2.3
Annual estimates of demographic components by age group and sex, 2018/2019[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	**186,184**	**141,591**	**143,512**	**143,512**	**160,014**	**29,578**	**20,969**	**13,234**	**73,329**
-1 year	186,184	689	992	992	404	197	159	87	91
0 to 4 years	...	205	9,489	9,489	10,395	2,071	1,410	912	1,781
5 to 9 years	...	83	7,309	7,309	9,753	1,839	1,082	805	2,656
10 to 14 years	...	121	5,506	5,506	7,631	1,225	1,043	535	3,604
15 to 19 years	...	251	7,960	7,960	6,559	784	1,405	345	36,048
20 to 24 years	...	366	16,123	16,123	13,726	2,405	2,845	1,083	19,257
25 to 29 years	...	489	24,610	24,610	35,089	4,416	2,957	1,993	1,621
30 to 34 years	...	575	16,386	16,386	27,813	4,119	2,091	1,867	2,168
35 to 39 years	...	803	11,345	11,345	15,863	3,129	1,590	1,408	3,359
40 to 44 years	...	1,151	8,409	8,409	8,588	2,278	1,328	1,013	2,133
45 to 49 years	...	1,778	6,319	6,319	5,376	1,879	1,079	828	527
50 to 54 years	...	3,231	6,869	6,869	3,496	1,553	971	687	-5
55 to 59 years	...	5,332	6,323	6,323	3,737	1,099	770	500	40
60 to 64 years	...	7,419	5,310	5,310	4,220	803	680	365	-12
65 to 69 years	...	9,700	4,895	4,895	3,459	629	612	284	43
70 to 74 years	...	12,755	2,435	2,435	2,166	381	430	170	5
75 to 79 years	...	15,001	1,580	1,580	1,105	319	280	148	13
80 to 84 years	...	19,386	829	829	464	226	151	104	1
85 to 89 years	...	24,934	570	570	132	152	54	66	3
90 to 94 years	...	22,921	221	221	30	61	30	29	-1
95 to 99 years	...	11,827	32	32	7	13	1	5	-3
100 years and over	...	2,574	0	0	1	0	1	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 CNU[1] and the components of demographic growth. In terms of timeliness, postcensal estimates are more up-to-date than data from the most recent census adjusted for CNU,[1] but as they get farther from the date of that census, they become more variable.

Levels of estimates

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

Calculation of postcensal population estimates

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

A. Provincial / territorial estimates of total population

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

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:

$$P_{(t+i)} = P_{(t)} + B_{(t,t+i)} - D_{(t,t+i)} + I_{(t,t+i)} - \left[E_{(t,t+i)} + \Delta TE_{(t,t+i)} \right] + RE_{(t,t+i)} + \Delta NPR_{(t,t+i)} + \Delta \mathrm{Ninter}_{(t,t+i)} - \mathrm{Resid}_{(t,t+i)}$$

where, for each province and territory:

$(t, t+i)$	=	interval between times t and t+i;
$P_{(t+i)}$	=	estimate of the population at time t+i;
$P_{(t)}$	=	base population at time t (census adjusted for (CNU)[1] or most recent estimate);
B	=	number of births;
D	=	number of deaths;
I	=	number of immigrants;
E	=	number of emigrants;
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 (formerly Health Statistics Division). 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 (formerly Demography Division) 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 (formerly Income Statistics Division).

- 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

Geography	Census population	Census net undercoverage	Incompletely enumerated Indian reserves	Adjusted population	Rate
	A	B	C	D=A+B+C	(B+C)/D*100
	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 and 2011 Census Technical Report on Coverage. The 2016 Census report will be available in 2019.

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 0.07 per thousand and 0.73 per thousand during the period 2014/2015 to 2017/2018 (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														
2012/2013	0.06	-0.06	0.70	0.33	0.12	-0.02	0.14	-0.37	0.03	0.13	-0.01	1.00	0.21	-0.69
2013/2014	0.10	-0.26	0.18	0.20	-0.29	-0.04	0.17	-0.08	0.19	0.45	-0.03	0.74	0.91	-0.48
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
Deaths														
2012/2013	0.05	-0.06	0.33	0.15	0.14	0.02	0.05	0.30	0.16	0.02	-0.03	-0.30	-0.41	-0.23
2013/2014	0.10	0.10	0.25	0.36	0.29	-0.05	0.19	0.20	0.24	0.13	-0.04	0.63	-0.32	0.28
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
Immigration														
2014/2015	-0.03	0.00	-0.03	-0.01	-0.01	-0.02	-0.02	-0.07	-0.05	-0.04	-0.04	-0.05	-0.02	0.00
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
Emigration														
2012/2013	-0.14	-0.33	0.02	-0.03	0.06	0.01	-0.20	0.16	-0.09	-0.22	-0.33	-0.88	0.16	0.43
2013/2014	-0.05	-0.02	-0.30	0.22	0.06	-0.06	-0.12	-0.04	-0.07	0.06	-0.03	1.57	0.59	-0.08
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
Returning emigration														
2012/2013	-0.01	0.05	-0.43	0.01	0.06	-0.04	0.00	-0.14	0.14	0.07	-0.07	0.33	-0.34	0.00
2013/2014	0.00	0.00	-0.29	0.02	0.06	0.07	0.00	0.14	0.05	-0.10	-0.11	-0.55	-0.23	0.00
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
Net temporary emigration														
2012/2013	-0.24	-0.03	-0.03	-0.02	-0.03	-0.28	-0.47	0.06	-0.26	0.02	0.12	-0.28	-0.09	-0.35
2013/2014	-0.23	-0.03	-0.04	-0.02	-0.03	-0.28	-0.46	0.06	-0.25	0.02	0.11	-0.27	-0.16	-0.25
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
Net non-permanent residents														
2012/2013	-0.01	0.09	0.97	-0.29	0.03	0.24	-0.67	0.11	0.55	1.40	0.16	-0.11	0.55	0.00
2013/2014	0.00	0.30	0.45	0.23	0.06	-0.02	0.05	-0.20	0.14	-0.21	-0.04	0.41	-0.43	0.14
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
In-migrants														
2014/2015	0.07	0.38	-1.13	1.22	0.68	0.11	-0.08	0.03	1.22	1.04	-1.22	7.77	4.65	16.25
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	7.28	1.31	11.90
Out-migrants														
2014/2015	0.07	3.33	2.71	0.13	0.69	-0.07	-0.08	0.88	0.03	-0.74	0.50	7.69	9.88	7.79
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	2.66	6.15	1.57	1.61	0.34	0.15	1.90	2.20	0.63	1.17	7.99	12.05	4.85
Net interprovincial migration														
2014/2015	…	-2.95	-3.84	1.09	-0.01	0.18	0.00	-0.84	1.19	1.78	-1.72	0.08	-5.22	8.46
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	-10.73	7.06

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

Precocity errors for births were positive during the period under consideration, ranging from 0.06 per thousand in 2012/2013 to 0.26 per thousand in 2015/2016. Similar to births, precocity errors for deaths were also positive during the same time period with values ranging from 0.05 per thousand in 2012/2013 to 0.19 per thousand in 2015/2016.

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 2013/2014 at 0.05 per thousand and largest in 2014/2015 at 0.16 per thousand. For returning emigration, the absolute values ranged from close to zero per thousand in 2013/2014 to 0.06 per thousand in 2014/2015 and 2015/2016. During the period 2012/2013 to 2015/2016, the precocity errors for net temporary emigration were fairly consistent, ranging between -0.24 and -0.23 per thousand.

Precocity errors for net non-permanent residents were generally low during the period under consideration. Precocity error was negative in 2012/2013 at -0.01 per thousand then changed to positive thereafter. Precocity error was close to zero per thousand in 2013/2014, changed to 0.17 per thousand in 2014/2015 and 0.07 per thousand in 2015/2016.

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 0.01 per thousand (British Columbia in 2012/2013 and Quebec in 2015/2016)[9] to 1.00 per thousand (Yukon in 2012/2013). 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, with absolute error values no more than 0.13 per thousand over the current years.

Precocity errors in absolute numbers for the net change in the number of non-permanent residents were less than or equal to 1.40 per thousand across the provinces and territories, during the years 2012/2013 and 2015/2016.

Precocity errors in absolute numbers for emigration ranged from the lowest at close to zero per thousand (Northwest Territories in 2015/2016) to the largest at 1.57 per thousand (Yukon in 2013/2014). Absolute precocity errors for returning emigration ranged from close to zero per thousand for some years in Newfoundland and Labrador, Ontario, Yukon and Nunavut to 0.55 per thousand for Yukon in 2013/2014. Precocity errors for net temporary emigration were negative during the years under consideration, except for Manitoba, Alberta and British Columbia.

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 close to zero per thousand (Ontario in 2014/2015). 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 the 2011/2012 to 2015/2016 period, the latest 5-year period that annual precocity errors by all components are available.

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.

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 (55.16%), followed by deaths (17.81%) and births (17.23%), between 2011/2012 and 2015/2016. Immigration and net non-permanent residents each accounted for less than 8.00% to the sum of mean absolute precocity errors (refer to Text table 4).

Text table 4
Mean absolute percentage precocity error by components, 2011/2012 to 2015/2016, Canada, provinces and territories

	Births	Deaths	Immigration	Total emigration[1]	Net non-permanent residents	Net interprovincial migration	Total
				percent			
Canada	17.23	17.81	2.69	55.16	7.12	0.00	100.00
Newfoundland and Labrador	8.63	4.68	0.25	8.09	4.26	74.09	100.00
Prince Edward Island	7.89	11.12	0.63	11.99	9.60	58.77	100.00
Nova Scotia	9.13	10.83	0.84	15.81	7.85	55.55	100.00
New Brunswick	8.75	21.12	0.80	21.77	7.07	40.49	100.00
Quebec	3.50	3.54	1.90	55.44	10.30	25.31	100.00
Ontario	14.60	16.54	1.00	39.64	16.24	11.98	100.00
Manitoba	12.62	10.88	3.12	24.11	7.28	41.99	100.00
Saskatchewan	8.74	7.56	1.60	19.28	14.38	48.44	100.00
Alberta	8.52	4.32	0.96	12.89	17.42	55.89	100.00
British Columbia	1.27	2.00	1.40	23.87	18.74	52.72	100.00
Yukon	8.39	4.26	0.22	16.31	3.10	67.72	100.00
Northwest Territories	4.12	2.20	0.22	6.32	3.10	84.05	100.00
Nunavut	4.83	3.82	0.00	5.22	1.45	84.67	100.00

1. 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 40.49% in New Brunswick to 84.67% in Nunavut. In Quebec (55.44%) and Ontario (39.64%), it is total emigration that explains the largest share of the mean absolute precocity errors (refer to Text 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, with one exception. In British Columbia, births accounted for the smallest share of the sum of mean absolute precocity errors at 1.27%. For the rest of the provinces and territories, the contribution of immigration to the sum of mean absolute precocity errors was at 3.12% or below.

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 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.

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

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

	Postcensal estimate on Census Day	Census adjusted for CNU[1]	Error of closure		CNU standard error[2]	t value[3]
	A	B	C=A-B	D=C/B*100	E	F=C/E
Geography	number			percent	number	
2006						
Canada	**32,553,799**	**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	R	D	R	R	R
2017/2018	PR	R	D	R	R	R
2018/2019	PR	P	P	P	P	P
2019/2020	PP	…	…	…	…	…
Modified since[1]	2017/2018	2016/2017	2017/2018	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(s): D: Final estimates. ID: Final intercensal 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	R	R	D	D	D	R	R	R	R
2017/2018	R	R	D	D	P	P	P	P	P
2018/2019	P	P	P	P	P	P	P	P	P
Modified since[1]	2016/2017	2016/2017	2017/2018	2017/2018	2017/2018	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(s): D: Final estimates. R: Updated estimates. P: Preliminary estimates.

Source: Statistics Canada, Centre for Demography.

Appendix A – Glossary

Age
Age as of July 1.

Ageing (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 under the authority of a valid document (work permit, study permit, Minister's permit or refugee) issued for that person along with members of his 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 (IRCC) 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 (formerly Health Statistics Division).

Statistics Canada, the Centre for Demography (formerly Demography Division), Catalogue no. 91-215-X, annual.

Births
Fertility rates for 2017 based on preliminary number 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.

Deaths
Mortality rates for 2017 based on preliminary number 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.

Immigration

Estimates are based on the immigrant files provided by Immigration, Refugees and Citizenship Canada (IRCC) received on August 20, 2019.

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 2016/2017
- tax data calculated using T1FF file provided by Statistics Canada Centre for Income and Socioeconomic Well-being Statistics (formerly Income Statistics Division). The last year of data used was 2016/2017
- data provided by the U.S. Department of Homeland Security, Office of Immigration Statistics. The last year of data used was 2016/2017
- 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 2016/2017.

For estimates after 2016/2017, we:

- calculated the 2016/2017 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 2016/2017
- distributed these data by month according to the provincial or territorial emigration seasonality of 2016/2017.

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 2016/2017
- 2016 Census – 1 year mobility.

For estimates after 2016/2017, we:

- calculated the 2016/2017 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 2016/2017
- distributed these data by month according to the provincial or territorial returning emigration seasonality of 2016/2017.

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.

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 20, 2019, document the number of persons holding permits/ authorizations or claiming refugee status.

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 2017/2018 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 2015/2016, 2016/2017 and 2017/2018.

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

Related products

Publications

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

Tables

17-10-0005-01	Population estimates on July 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

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