Annual Demographic Estimates: Canada, Provinces and Territories

2017

Release date: September 27, 2017

Statistics Canada   Statistique Canada

Canada

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website, www.statcan.gc.ca.

You can also contact us by

email at STATCAN.infostats-infostats.STATCAN@canada.ca

telephone, from Monday to Friday, 8:30 a.m. to 4:30 p.m., at the following numbers:

- Statistical Information Service   1-800-263-1136
- National telecommunications device for the hearing impaired   1-800-363-7629
- Fax line   1-514-283-9350

Depository Services Program

- Inquiries line   1-800-635-7943
- Fax line   1-800-565-7757

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "Contact us" > "Standards of service to the public."

Note of appreciation

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

Standard table symbols

The following symbols are used in Statistics Canada publications:

- .   not available for any reference period
- ..   not available for a specific reference period
- ... not applicable
- 0   true zero or a value rounded to zero
- 0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- ^{p} preliminary
- ^{r} revised
- x   suppressed to meet the confidentiality requirements of the *Statistics Act*
- ^{E} use with caution
- F   too unreliable to be published
- *   significantly different from reference category ($p < 0.05$)

Notice to readers

Estimates released in this publication are based on the 2011 Census counts adjusted for census net undercoverage and incompletely enumerated Indian reserves to which is added the estimated demographic growth for the period going from May 10, 2011 to the date of the estimate.

These estimates are not to be mistaken with the census counts.

Total population estimates based on the 2016 Census counts, adjusted for census net undercoverage and incompletely enumerated Indian reserves, will be available in September 2018 while the age and sex estimates will be available later in the fall of 2018.

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

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

Acknowledgements

Table of contents

Charts and Figures

Statistical tables

Highlights

Total population

- On July 1, 2017, Canada's population was estimated at 36,708,083, up 443,479 (+1.2%) in the past year (2016/2017).
- In absolute numbers, Canada's population growth last year was the largest since 1988/1989 (+485,034).
- In 2016/2017, Canada's population growth remained the highest among all G7 countries.
- Last year, Canada's net international migration (+332,068) was the highest on record since the beginning of the period covered by the current demographic accounting system (July 1971).
- In 2016/2017, international migration accounted for the three-quarters (74.9%) of Canada's population growth.
- For the first time since 1988/1989, Ontario's population growth rate (+1.5%) surpassed Alberta's (+1.2%).
- In the past year, the population growth rate was highest in Nunavut (+2.2%) and lowest in Newfoundland and Labrador (-0.3%).
- Compared with 2015/2016, last year's population growth rate remained unchanged at the national level. However, it did grow in Ontario and Quebec, the country's two most populous provinces.
- In 2016/2017, Alberta recorded the largest interprovincial migration loss (-15,131) since 1987/1988. Conversely, Ontario posted its highest interprovincial migration gain (+25,689) since 1987/1988.

Population by age and sex

- On July 1, 2017, 6,195,544 Canadians, or one out of six people (16.9%), was at least 65 years of age. The gap is widening compared with the size of the population aged 0 to 14 years, which was 5,877,081 (16.0%).
- Two out of five people aged 65 and older (40.9%) were baby boomers, or those born between 1946 and 1965. Last year, this proportion was 35.7%. As of July 1, 2017, baby boomers were between the ages of 51 and 71 years.
- One in two Canadians was at last 40.6 years of age in 2017. The median age has increased by 10 years since 1984, when it was 30.6 years.
- The median age was higher for women (41.5 years) than for men (39.7 years), life expectancy being higher for women compared to men.
- On July 1, 2017, for 100 working-age individuals, Canada had 49.0 individuals aged 0 to 14 years or 65 years and older. The demographic dependency ratio has been rising steadily since 2007 (43.9).
- Among G7 countries, Canada has one of the lowest proportions of people aged 65 and older.
- On July 1, 2017, New Brunswick had the highest proportion of people aged 65 and older (20.1%), and Nunavut the lowest (4.0%).

Analysis: Total population

> The analysis in this publication is based mainly on preliminary data. Since these data will be revised next year, some trends illustrated in this publication may change slightly following this revision. Therefore, the data in this publication should be interpreted with caution.

This section presents the population estimates for Canada, the provinces and territories on July 1, 2017, along with a concise analysis of the various components of population growth.

The population of Canada continues to grow at a steady pace

On July 1, 2017, Canada's population was estimated at 36,708,083, up 443,479 in the past year (2016/2017). The country's population growth rate was 1.2%,[1] which remained unchanged from 2015/2016. In absolute numbers, Canada's population growth in the past year was the largest since 1988/1989 (+485,034).

Chart 1.1
Population growth rate, 1996/1997 to 2016/2017, Canada

percent

Year ending June 30
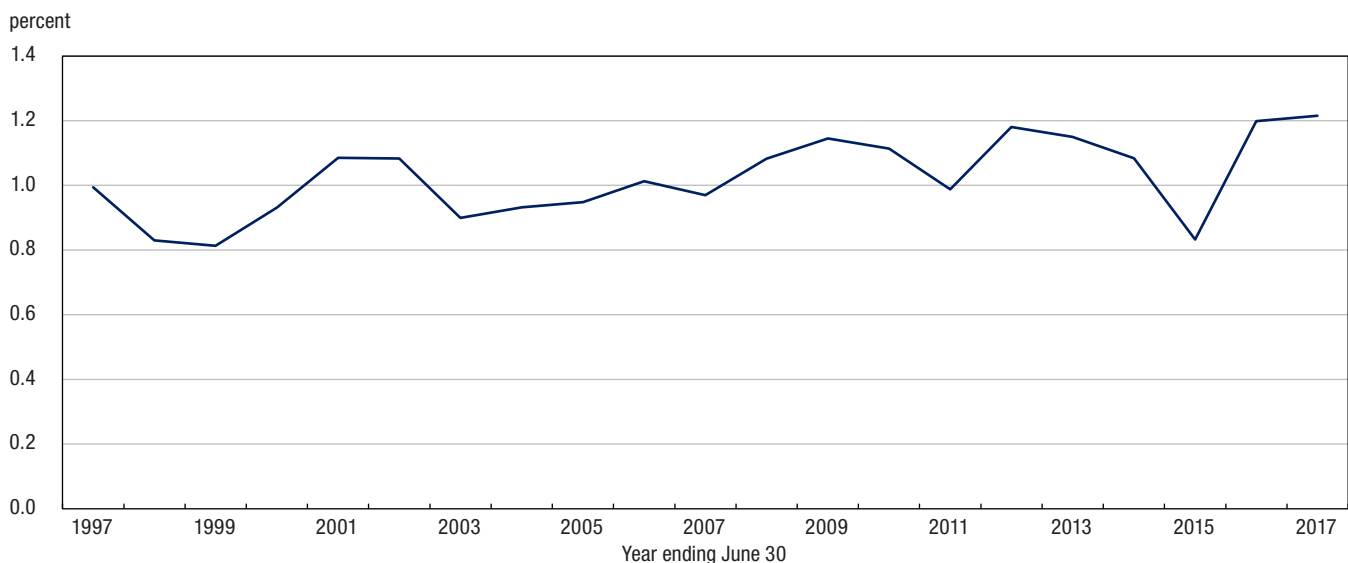
Source: Statistics Canada, Demography Division.

Canada posts the strongest population growth among G7 countries

During the past year, population growth in Canada remained the highest out of all G7[2] countries, matching Germany's growth (+1.2%). Canada's population growth rate was ahead of the United Kingdom (+0.8%), the United States (+0.7%) and France (+0.4%), and contrasts with the negative growth (-0.1%) recorded in Italy and Japan. However, Canada's population growth was not the highest among industrialized countries: it was lower than the increase posted in Australia (+1.5%) and New Zealand (+2.1%).[3]

---

1.   Population growth rates are calculated using the average of the populations at the beginning and end of the period as a denominator.
2.   The G7 is an informal discussion group and economic partnership consisting of seven of the world's most powerful economies: the United States, Japan, Germany, France, the United Kingdom, Italy and Canada.
3.   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, 2016 to June 30, 2017 (Canada, New Zealand); January 1, 2016 to December 31, 2016 (Italy, Australia); October 1, 2015 to September 30, 2016 (Japan); July 1, 2015 to June 30, 2016 (United States, United Kingdom); January 1, 2015 to December 31, 2015 (Germany, France).

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

Country
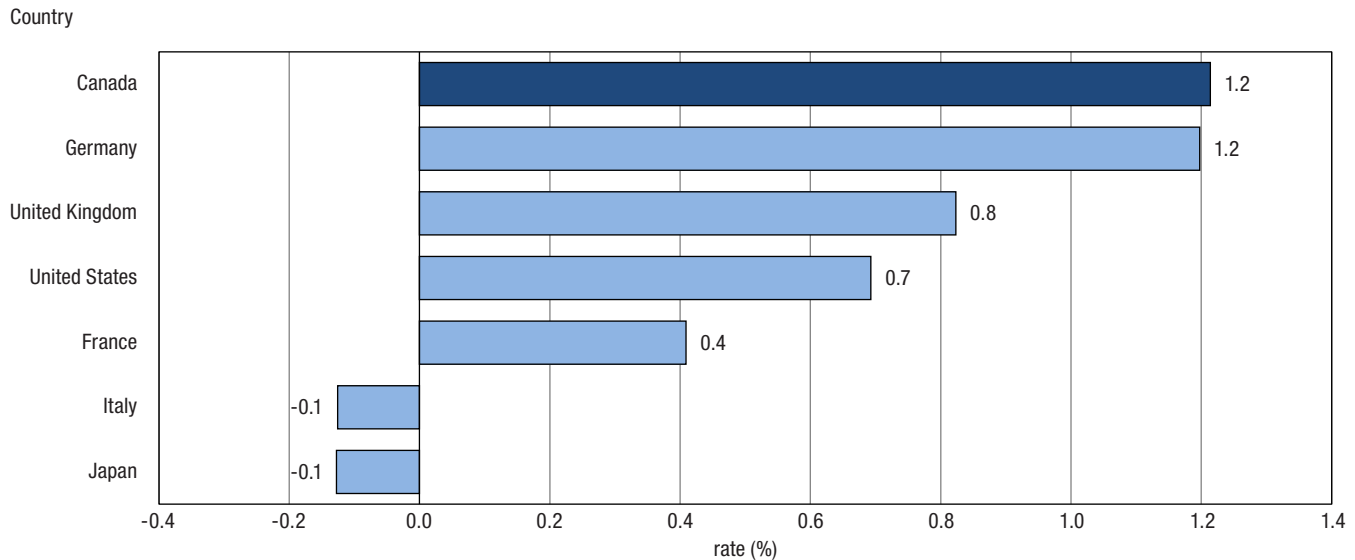
1. For Canada, the most recent annual period available extends from July 1, 2016 to June 30, 2017. For Italy, the most recent annual period available extends from January 1, 2016 to December 31, 2016. For Japan, the most recent period available extends from October1, 2015 to September 30, 2015. For the United Kingdom and the United States, the most recent period available extends from July 1, 2015 to June 30, 2016. For Germany and France, the most recent annual period available extends from January 1, 2015 to December 31, 2015.
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 accounts for most of the population growth

Population growth at the national level is based on two factors: natural increase[4] and international migratory increase,[5] while provincial and territorial population estimates also factor in interprovincial migration. In the past year, natural increase totalled 111,411, or the difference between 389,912 births and 278,501 deaths, according to preliminary estimates. During the same period, net international migration was 332,068, the highest level recorded in Canada since the beginning of the period covered by the current demographic accounting system (July 1971).

Since 1995/1996, international migration has consistently been the main driver of population growth in Canada. Over the past year, the three-quarters of population growth stemmed from international migratory increase (74.9%), a level unmatched in recent history. By comparison, international migratory increase accounted for, on average, 38.3% of the population growth in the 1980s.

4. Natural increase is the difference between the numbers of births and deaths.
5. 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, return emigration and net non-permanent residents, then subtracting emigration and net temporary emigration.

Chart 1.3
Factors of population growth, 1996/1997 to 2016/2017, Canada
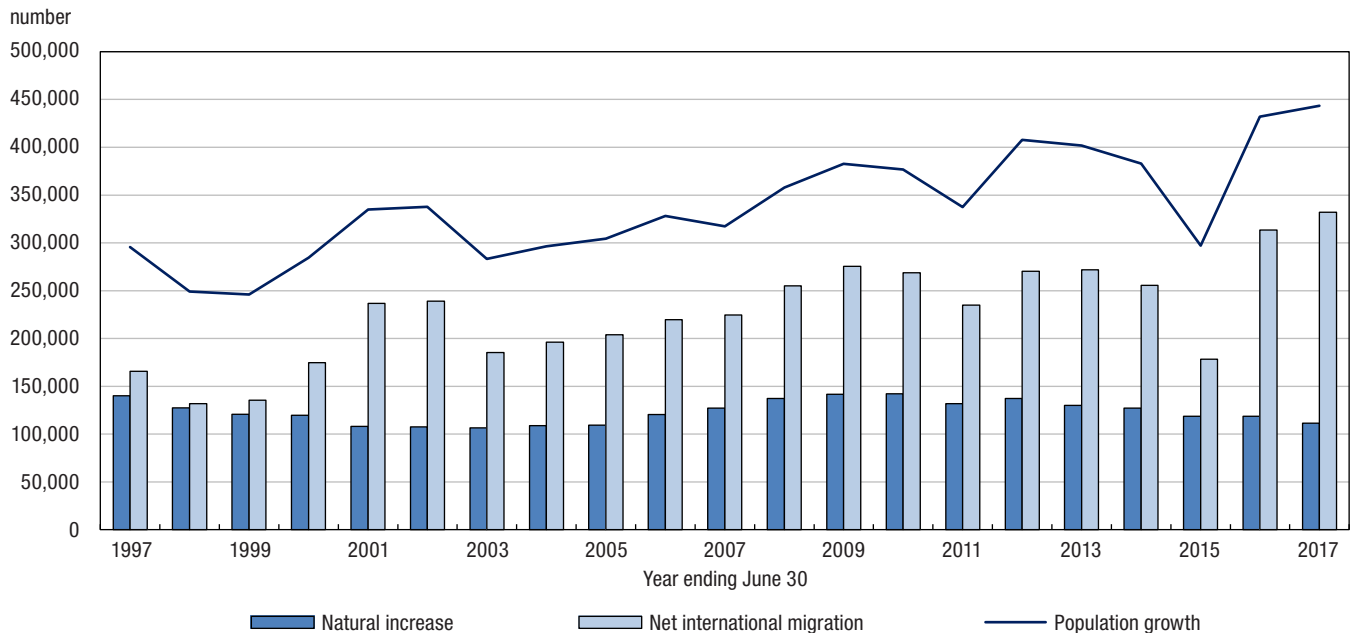
Note: Before 2012, population growth is not equal to the sum of natural increase and international migratory increase because residual deviation must also be considered in the calculation.
Source: Statistics Canada, Demography Division.

International migratory increase reaches a record high for the second consecutive year

In 2016/2017, Canada's international migratory increase (+332,068) topped last year's record (+313,507) by nearly 20,000 people. Record levels of international migratory increase were also observed in Prince Edward Island (+2,909), Quebec (+62,855) and the Northwest Territories (+293). The high levels of international migration observed in 2016/2017 have rarely been seen in the past across all provinces and territories, except in Alberta, British Columbia and Nunavut.

Last year's record level of international migration is the result of strong immigration levels and the arrival of a significant number of non-permanent residents. Canada welcomed 272,666 immigrants last year, the second-highest number posted since the beginning of the period covered by the current demographic accounting system (July 1971). The record high was recorded in 2015/2016 (323,173 immigrants). Meanwhile, the number of non-permanent residents increased by 105,988 during the past year, compared with a gain of 36,785 in 2015/2016. As with immigration, the increase in the number of non-permanent residents observed last year was the second highest recorded since the beginning of the period covered by the current demographic accounting system (July 1971). The only higher increase was seen in 1988/1989 (140,748 non-permanent residents). This coincided with the introduction of the Immigration and Refugee Board of Canada and a new refugee determination system on January 1, 1989.

Various factors can affect international migration 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).[6] The recent rise in the number of immigrants is consistent with the levels established by the IRCC.[7] In addition, the number of non-permanent residents can fluctuate based 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 refugee claimants. The number of work and study permit holders can rise or fall based on the economic context of the country of origin and the host country, as well as the directions of certain political programs in Canada.

6.   The 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.
7.   The IRCC uses the calendar year (January 1 to December 31) when setting immigration levels. However, annual population estimates are presented by censal year (July 1 to June 30).

Meanwhile, the number of refugee claimants can vary based on the political context in their country of origin and on decisions made in Canada. Emigration trends are more closely linked to both the internal and external economic situation.

More than four out of five of Canadians live in four provinces

On July 1, 2017, more than 31.7 million Canadians (86.3%) resided in one of four provinces: Ontario (38.7%), Quebec (22.9%), British Columbia (13.1%) or Alberta (11.7%). Ontario remained the country's most populated province, surpassing 14 million residents last year (14,193,384). The province with the smallest population was Prince Edward Island, with 152,021 residents. Quebec remained the second most populous province (8,394,034), followed by British Columbia (4,817,160) and Alberta (4,286,134).

Chart 1.4
Population distribution by province or territory, July 1, 2017

- Ont. (14,193,384)
- Que. (8,394,034)
- B.C. (4,817,160)
- Alta. (4,286,134)
- Man. (1,338,109)
- Sask. (1,163,925)
- N.S. (953,869)
- N.B. (759,655)
- N.L. (528,817)
- P.E.I. (152,021)
- N.W.T. (44,520)
- Y.T. (38,459)
- Nvt. (37,996)

Provinces and territories
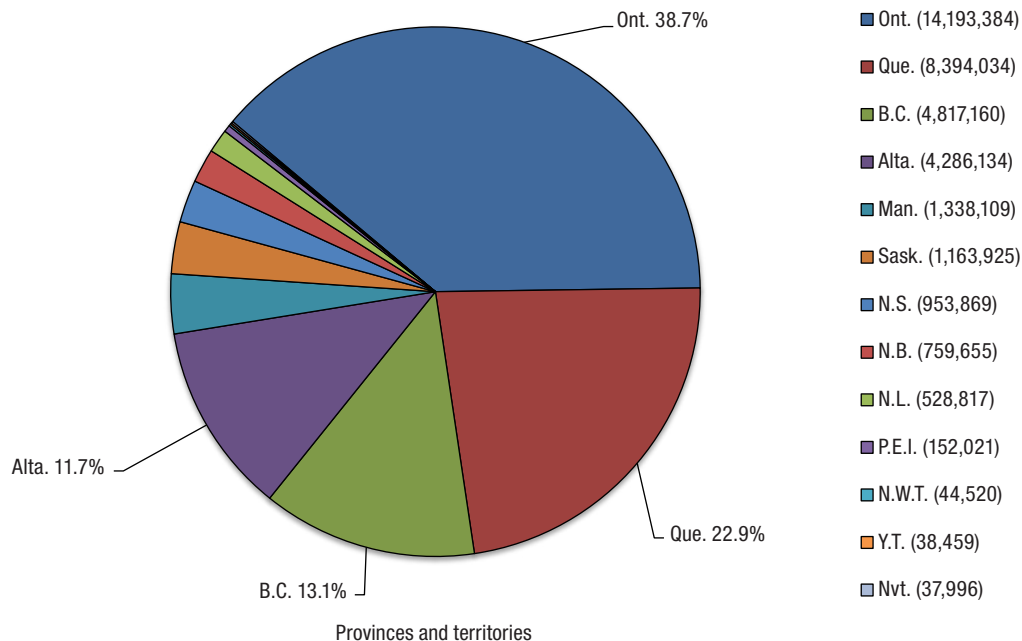
Source: Statistics Canada, Demography Division.

Population growth continues to slow in Alberta, but picks up in Ontario

Alberta's population growth rate has been declining since 2012/2013. That year, the rate observed was 3.0%; in contrast, 2016/2017 saw a rate of 1.2%. The last time the province experienced a slower growth rate was in 1987/1988 (+0.6%).

The opposite was true in Ontario, which recorded a population growth rate of 1.5% in 2016/2017, the highest it has seen in 15 years. And for the first time since 1988/1989, Ontario's population growth rate surpassed Alberta's. This reversed trend can be partly explained by Ontario's transition to positive interprovincial migration and Alberta's negative interprovincial migration for the past two years. In addition, international migration accelerated in Ontario last year, but slowed in Alberta.

Population growth in the two other Prairie provinces remained higher than the rate for Canada (+1.2%). The period 2016/2017 marked the second consecutive year that Alberta's population growth rate (+1.2%) was the lowest among the Prairie provinces, surpassed by Manitoba (+1.5%) and Saskatchewan (+1.3%).

British Columbia's population growth rate (+1.2%) was equal to Canada's, while Quebec's (+0.9%) remained below the national rate for a sixth consecutive year.

According to preliminary population estimates, Newfoundland and Labrador (-0.3%) was the only province to post a population decline last year. Population growth continued to be positive in the other Atlantic provinces, though it was lower than in 2015/2016. Despite this slight slowdown, the population growth rates in Prince Edward Island (+1.7%), Nova Scotia (+0.6%) and New Brunswick (+0.3%) were higher in 2016/2017 than the average for the past 10 years.

Finally, in the territories, Nunavut (+2.2%) had the highest population growth rate in Canada, while the Northwest Territories (-0.2%) saw its population decrease and Yukon (+1.0%) experienced slightly slower growth than the country as a whole.

Chart 1.5
Population growth rate, 2015/2016 and 2016/2017, Canada, provinces and territories

percent
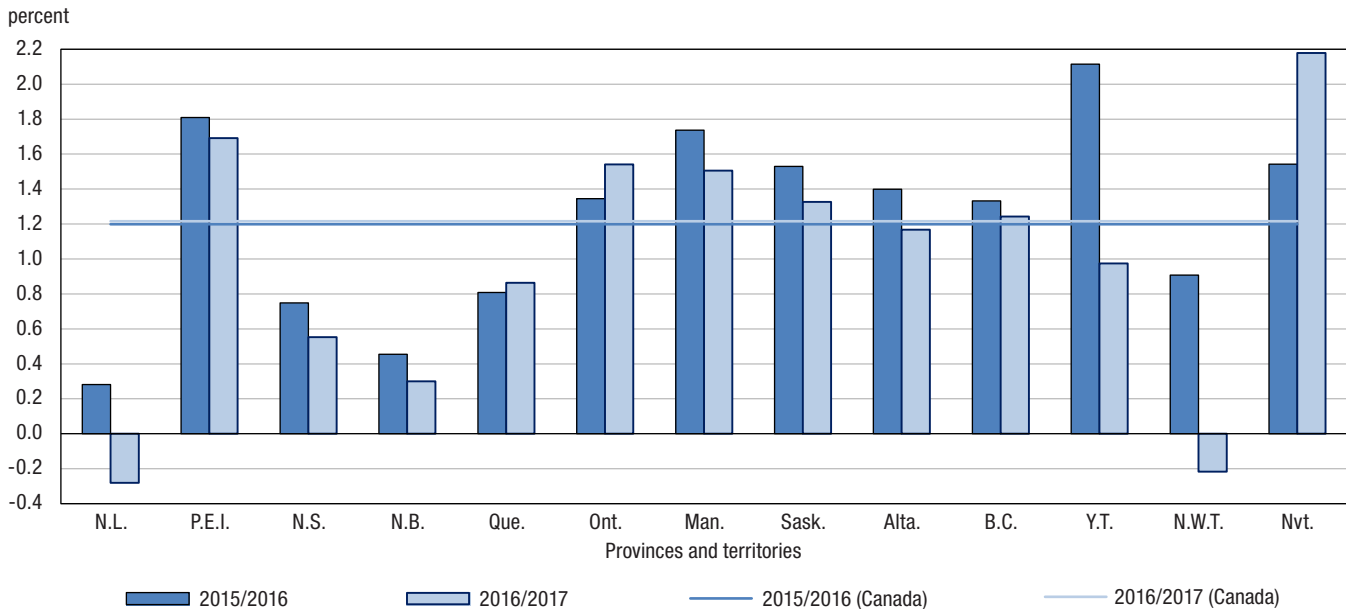
Source: Statistics Canada, Demography Division.

All provinces experienced slower population growth, except Quebec and Ontario

Canada's population growth rate[8] remained unchanged last year compared with 2015/2016, but variations were observed in all provinces and territories. In Ontario and Quebec, the two most populous provinces, the population grew faster last year than in 2015/2016. In Quebec, this gain was attributable to international migratory increase, whereas in Ontario, both international and interprovincial migratory increase were contributing factors.

In all other provinces and all territories except Nunavut, last year's population growth was lower than in the previous period.

International migratory increase is the main driver of population growth in all provinces

According to preliminary population estimates, there were more deaths than births in all the Atlantic provinces, except Prince Edward Island. International migratory increase was the sole source of population growth in New Brunswick and the main contributor in Nova Scotia, where there were also slight gains due to interprovincial migration. In Newfoundland and Labrador, international migratory increase (+0.3%) was not enough to offset the decline resulting from natural decrease (-0.2%) and interprovincial migration losses (-0.4%).

---

8. A growth rate higher than -0.1% and lower than 0.1% is considered not significant and relatively stable.

Statistics Canada – Catalogue no. 91-215-X

Ontario and British Columbia were the only two provinces where each of the three growth factors contributed positively to population growth. Moreover, international migration was the main driver of population growth in these two provinces.

In Quebec and each of the Prairie provinces, more than half of their population growth was attributable to international migration. Natural increase was also positive; however, there were losses in interprovincial migration.

In the territories, natural increase was a more substantial source of population growth, primarily on account of higher fertility levels. Natural increase in Nunavut (+1.9%)—the highest in Canada—was behind most of this territory's population growth. In the Northwest Territories, strong natural increase (+1.0%) and positive international migratory increase (+0.7%) were offset by considerably negative interprovincial migratory increase (-1.9%). Yukon was the only territory to post higher international migratory increase (+0.9%) than natural increase (+0.4%).

Chart 1.6
Factors of population growth, 2016/2017, Canada, provinces and territories
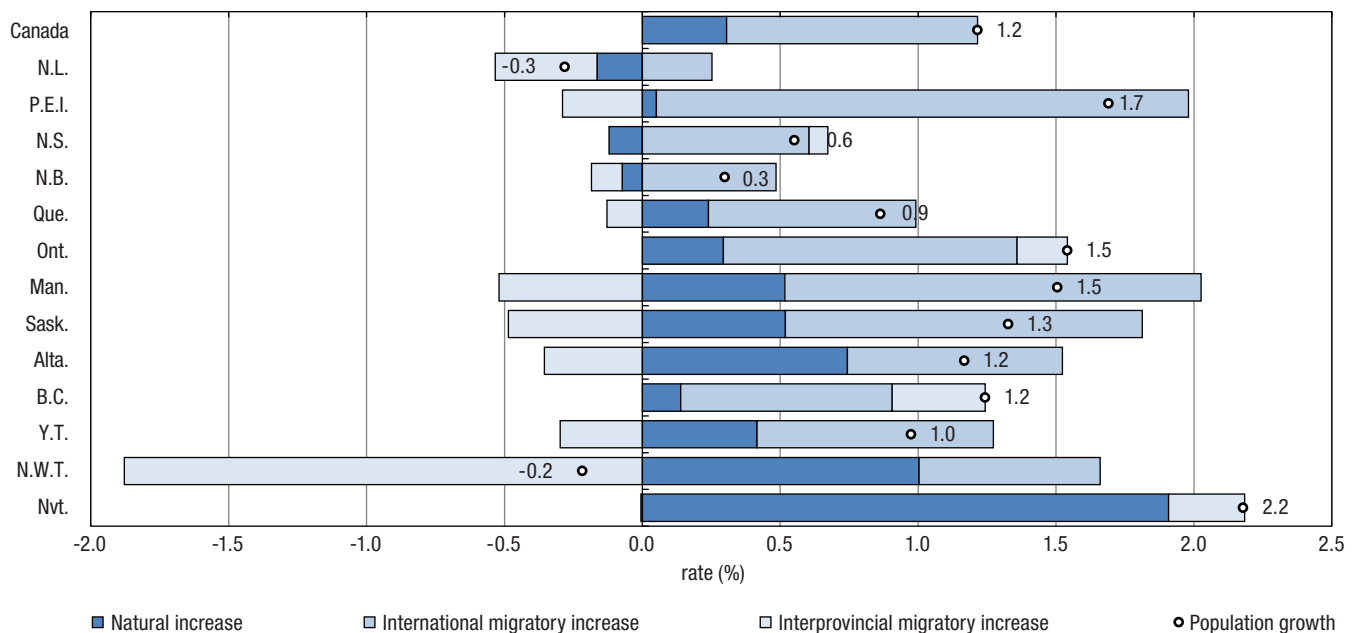
Source: Statistics Canada, Demography Division.

A growing share of immigrants settle in the Prairie provinces

The geographic distribution of new immigrants continued to shift in favour of the Prairie provinces. In the past year, 27.2% of immigrants settled in one of the three Prairie provinces. This proportion is similar to the one in the last period (28.0%). However, this proportion was three times lower 20 years ago (8.7% in 1996/1997). The share of immigrants who settled in Canada's central provinces (Quebec and Ontario) was 55.6% in 2016/2017, compared with 65.5% in 1996/1997.

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

In the last year, the proportion of immigrants received by each western Canadian province exceeded their demographic weight. Among Canada's other provinces, only Prince Edward Island was in the same situation. The proportion of immigrants who settled in the Atlantic provinces (4.1%) remained unchanged from the previous period. However, this level is twice as high as it was 20 years ago (2.0% in 1996/1997).

Chart 1.7
New immigrants distribution by province or territory, 1996/1997 to 2016/2017

percent

Year ending June 30

■ Atlantic provinces ■ Quebec ■ Ontario ■ Manitoba ■ Saskatchewan ■ Alberta ■ British Columbia ■ Territories
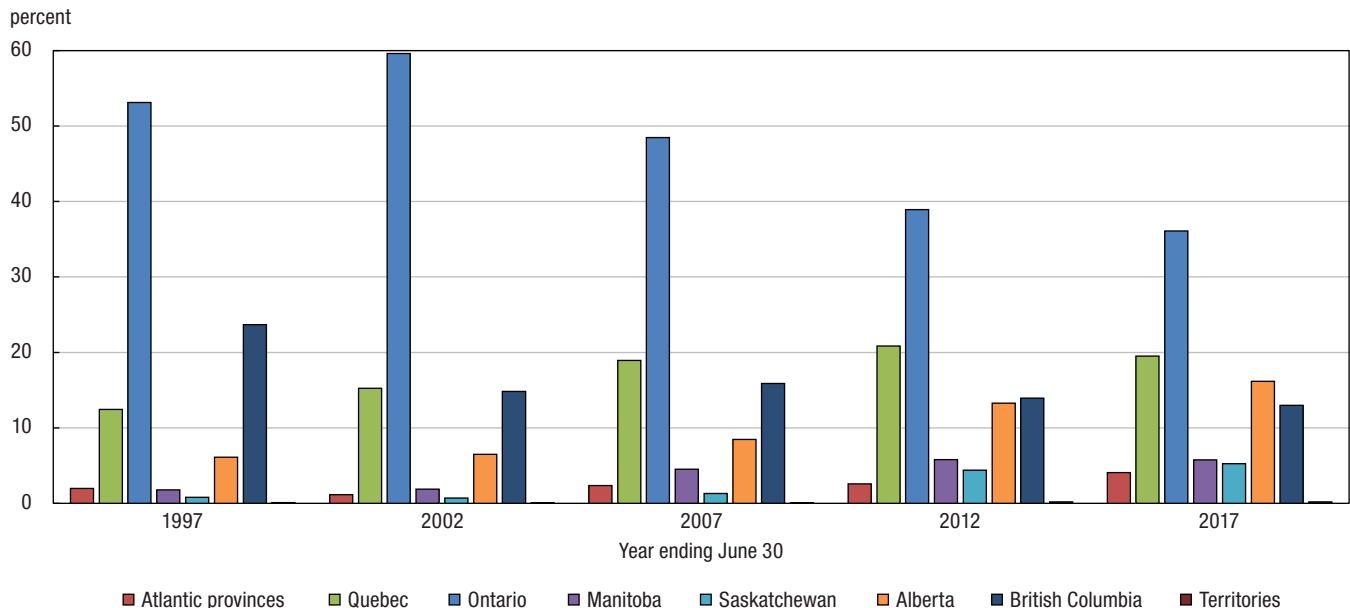
Source: Statistics Canada, Demography Division.

Alberta posts interprovincial migration losses for a second consecutive year

At the provincial and territorial level, population growth is also the result of internal migration exchanges. For the second consecutive year, each of the three Prairie provinces posted interprovincial migration losses. In Alberta, this confirms a continuation in the trend reversal first noted in 2015/2016. After posting the highest interprovincial migration gains for five consecutive years from 2010/2011 to 2014/2015, Alberta saw the biggest losses in 2015/2016 (-15,108) and 2016/2017 (-15,131). In contrast, Ontario (+25,689) and British Columbia (+16,163) had the strongest interprovincial migration gains in 2016/2017. Alberta's interprovincial migration losses were the highest observed in nearly 30 years (-23,223 in 1987/1988), while Ontario's interprovincial migratory increase in 2016/2017 reached its highest level in this same period (+35,215 in 1987/1988).

The negative migration growth in Alberta was mainly due to the province's reduced pull. Specifically, interprovincial migration losses in Alberta were primarily attributable to fewer in-migrants (down 25,879 compared with 2014/2015) rather to more out-migrants (up 10,846 compared with 2014/2015).

Elsewhere in Canada, Nova Scotia posted positive interprovincial migratory increase (+645) for a second straight year, while migration losses in New Brunswick (-849) were considerably lower than the recent levels from 2012/2013 to 2014/2015. Manitoba (-6,906) and Saskatchewan (-5,615) saw the biggest interprovincial migration losses since 2005/2006.

Population growth and economic growth are often related. For example, internal migratory flows can either be a cause or a consequence of the economic situation, including variations in employment, unemployment or the price of certain raw materials. Therefore, Alberta's interprovincial migration losses in 2015/2016 and 2016/2017 could be related to the less favourable economic conditions recently seen in the province. In 2016, Alberta posted the highest unemployment rate in 20 years, as well as job and wage losses in most sectors.[9] In contrast, interprovincial migration gains in Ontario and British Columbia occurred while both provinces were the only ones (along with Quebec) to post a higher number of people working full-time in 2016.[10]

---

9. Bourbeau, Emmanuelle and Andrew Fields. 2017. "Annual review of the labour market, 2016." *Labour Statistics: Research Papers.* Statistics Canada Catalogue no. 75-004-X (http://www.statcan.gc.ca/pub/75-004-m/75-004-m2017001-eng.htm).
10. Idem.

Chart 1.8
Interprovincial migration by province or territory, 2016/2017

number
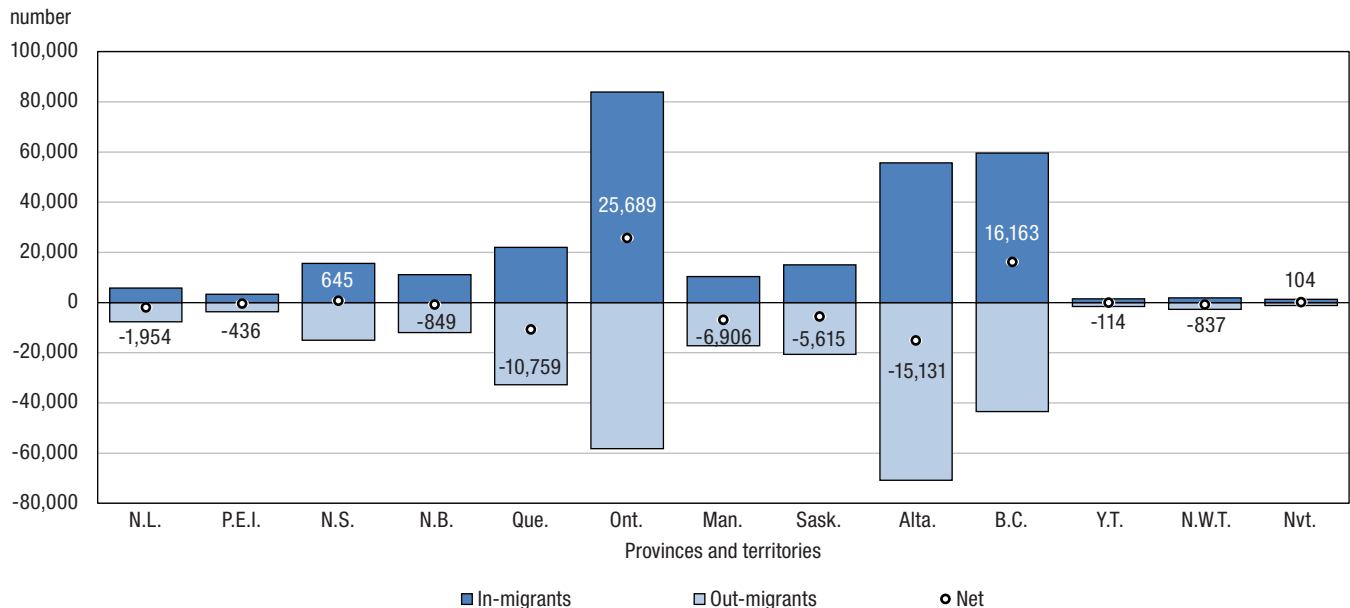
Source: Statistics Canada, Demography Division.

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

The 30 largest migration flows are shown in the circular chart[11] below, in which each province or territory is assigned a colour. Origins and destinations are represented by the circle's segments. Flows are the same colour as their origin, the width indicates their size and the arrow their direction.

---

11. For more 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" " (http://www.global-migration.info/VID WP Visualising Migration Flow Data with Circular Plots.pdf) and Abel (2015), "Estimates of Global Bilateral Migration Flows by Gender Between 1960 and 2010" (http://www.oeaw.ac.at/fileadmin/subsites/Institute/VID/PDF/Publications/Working_Papers/WP2015_05.pdf).

Annual Demographic Estimates: Canada, Provinces and Territories, 2017

Chart 1.9
Largest interprovincial migration flows, by province or territory of origin and destination, 2016/2017

Indicates the absolute number (thousands) of interprovincial in-migrants and out-migrants.

The 30 most important migration 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.
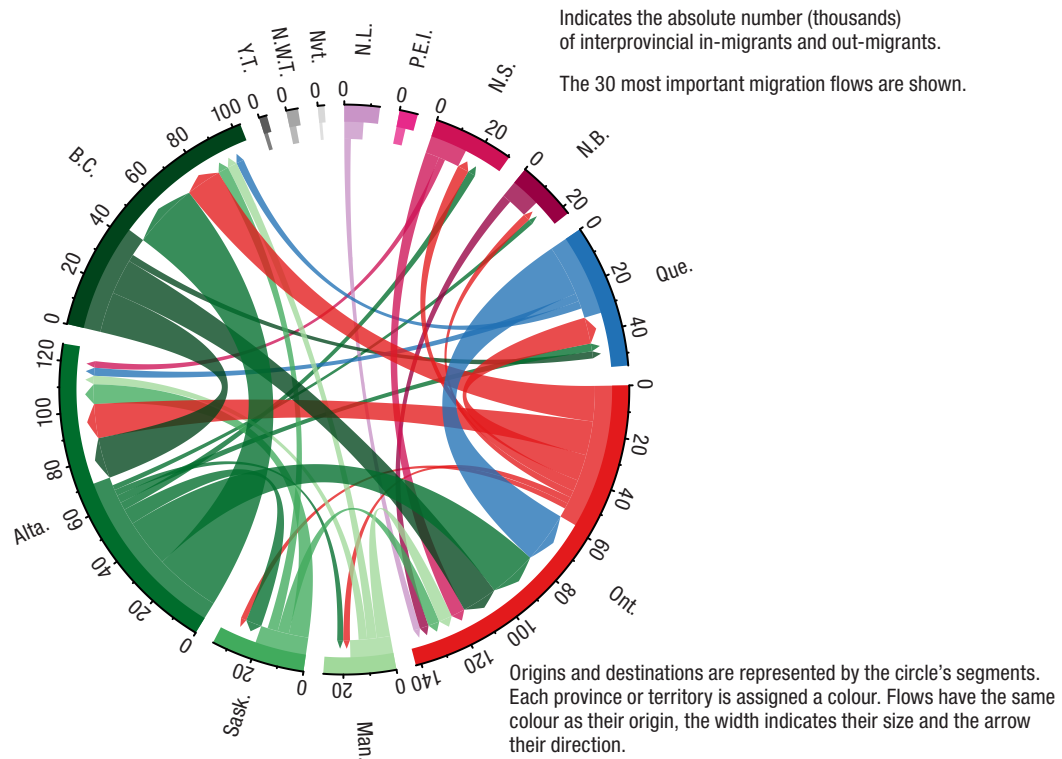
Source: Statistics Canada, Demography Division.

Over the past year, the largest interprovincial migration flow was from Alberta to British Columbia (28,197 migrants). The flow in the other direction (British Columbia to Alberta) totalled 17,481 migrants; as a result, exchanges between these two provinces resulted in a gain of 10,716 people for British Columbia. These migration flows were key to interpreting the interprovincial migratory increase of each of these two provinces. On one hand, two-thirds of British Columbia's interprovincial migration gains stemmed from its exchanges with Alberta. On the other, most of Alberta's losses in interprovincial migration were due to its exchanges with British Columbia. The remainder of Alberta's losses came primarily from migratory exchanges with Ontario. Over the last year, 20,715 migrants left Alberta for Ontario versus 14,645 migrants who moved from Ontario to Alberta, resulting in a loss of 6,070 people for Alberta. This was also the second consecutive year that Alberta posted migratory losses through exchanges with each of the Atlantic provinces. However, more people left Manitoba and Saskatchewan for Alberta than the opposite.

The second largest interprovincial migration flow in Canada was from Quebec to Ontario (21,825). The size of this flow is mostly due to the demographic weight of these two provinces, being the two most populous, and the fact that they share a border.

In relative terms expressed as rates,[12] the largest interprovincial migration flows were from Prince Edward Island to Ontario (+1.1%) and from Saskatchewan to Alberta and vice versa (+0.7% in both directions).

---

12. 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.

Statistics Canada – Catalogue no. 91-215-X

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								
2011	34,342,780	525,037	144,038	944,469	755,530	8,007,656	13,263,544	1,233,728	1,066,349	3,790,191	4,499,139	35,402	43,501	34,196
2012	34,750,545	526,450	145,080	944,943	756,777	8,085,906	13,413,702	1,250,265	1,086,018	3,880,755	4,546,290	36,058	43,594	34,707
2013	35,152,370	527,399	145,198	943,049	755,710	8,151,331	13,555,754	1,265,588	1,104,825	3,997,950	4,590,081	36,298	43,773	35,414
2014	35,535,348	528,386	145,915	942,209	754,700	8,210,533	13,680,425	1,280,912	1,120,639	4,108,416	4,646,462	36,817	43,867	36,067
2015	35,832,513	528,815	146,791	941,545	753,944	8,254,912	13,789,597	1,295,422	1,131,150	4,177,527	4,694,699	37,289	44,214	36,608
2016	36,264,604	530,305	149,472	948,618	757,384	8,321,888	13,976,320	1,318,115	1,148,588	4,236,376	4,757,658	38,086	44,617	37,177
2017	36,708,083	528,817	152,021	953,869	759,655	8,394,034	14,193,384	1,338,109	1,163,925	4,286,134	4,817,160	38,459	44,520	37,996

Note: Estimates are final postcensal from 2011 to 2013, updated postcensal from 2014 to 2016 and preliminary postcensal for 2017.

Source: Statistics Canada, Demography Division.

Table 1.1-2

Annual population estimates, July 1, Canada, provinces and territories - Total growth rates[1]

	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								
2011/2012	11.80	2.69	7.21	0.50	1.65	9.72	11.26	13.31	18.28	23.61	10.43	18.36	2.14	14.83
2012/2013	11.50	1.80	0.81	-2.01	-1.41	8.06	10.53	12.18	17.17	29.75	9.59	6.63	4.10	20.17
2013/2014	10.84	1.87	4.93	-0.89	-1.34	7.24	9.15	12.04	14.21	27.25	12.21	14.20	2.15	18.27
2014/2015	8.33	0.81	5.99	-0.70	-1.00	5.39	7.95	11.26	9.34	16.68	10.33	12.74	7.88	14.89
2015/2016	11.99	2.81	18.10	7.48	4.55	8.08	13.45	17.37	15.30	13.99	13.32	21.15	9.07	15.42
2016/2017	12.15	-2.81	16.91	5.52	2.99	8.63	15.41	15.05	13.26	11.68	12.43	9.75	-2.18	21.79

1. Total growth is final for 2011/2012 and 2012/2013, updated from 2013/2014 to 2015/2016 and preliminary for 2016/2017.

Source: Statistics Canada, Demography Division.

Table 1.1-3

Annual population estimates, July 1, Canada, provinces and territories - Total growth[1]

	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
						number								
2011/2012	407,765	1,413	1,042	474	1,247	78,250	150,158	16,537	19,669	90,564	47,151	656	93	511
2012/2013	401,825	949	118	-1,894	-1,067	65,425	142,052	15,323	18,807	117,195	43,791	240	179	707
2013/2014	382,978	987	717	-840	-1,010	59,202	124,671	15,324	15,814	110,466	56,381	519	94	653
2014/2015	297,165	429	876	-664	-756	44,379	109,172	14,510	10,511	69,111	48,237	472	347	541
2015/2016	432,091	1,490	2,681	7,073	3,440	66,976	186,723	22,693	17,438	58,849	62,959	797	403	569
2016/2017	443,479	-1,488	2,549	5,251	2,271	72,146	217,064	19,994	15,337	49,758	59,502	373	-97	819

1. Total growth is final for 2011/2012 and 2012/2013, updated from 2013/2014 to 2015/2016 and preliminary for 2016/2017.

Source: Statistics Canada, Demography Division.

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
2011/2012	34,342,780	137,340	0	270,425	270,425	407,765	11.80
2012/2013	34,750,545	129,951	0	271,874	271,874	401,825	11.50
2013/2014	35,152,370	127,312	0	255,666	255,666	382,978	10.84
2014/2015	35,535,348	118,694	0	178,471	178,471	297,165	8.33
2015/2016	35,832,513	118,584	0	313,507	313,507	432,091	11.99
2016/2017	36,264,604	111,411	0	332,068	332,068	443,479	12.15
2017/2018	36,708,083	..	..	..	..	..	..

.. not available for a specific reference period

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

Source: Statistics Canada, Demography Division.

Annual Demographic Estimates: Canada, Provinces and Territories, 2017

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				
2011/2012	378,840	241,500	280,347	280,347	260,115	61,904	36,890	18,414	53,738
2012/2013	381,607	251,656	261,295	261,295	263,156	60,094	37,018	18,409	50,203
2013/2014	381,888	254,576	275,059	275,059	267,906	64,144	37,176	18,415	33,143
2014/2015	384,376	265,682	283,809	283,809	240,841	66,904	39,107	18,413	-16,160
2015/2016	387,516	268,932	277,029	277,029	323,173	67,144	39,107	18,414	36,785
2016/2017	389,912	278,501	286,932	286,932	272,666	67,279	39,107	18,414	105,988

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

Table 1.4
Annual estimates of interprovincial migrants by province or territory of origin and destination, Canada, July 1, 2016 to June 30, 2017

	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.	...	196	1,084	442	455	2,834	114	137	1,733	566	8	49	91
P.E.I.	97	...	488	388	143	1,635	43	110	444	306	6	27	17
N.S.	575	513	...	1,928	819	5,984	465	303	2,814	1,308	32	106	124
N.B.	462	411	2,166	...	1,594	3,860	250	337	1,929	764	30	66	85
Que.	322	139	880	1,785	...	21,825	465	321	3,436	3,343	51	78	121
Ont.	1,569	1,080	4,904	3,003	11,305	...	2,857	2,432	14,645	15,219	359	335	516
Man.	152	49	493	258	554	5,803	...	2,018	3,612	4,137	47	89	30
Sask.	72	22	307	179	481	4,881	1,618	...	8,476	4,505	73	31	35
Alta.	1,952	513	3,374	2,233	3,339	20,715	2,604	6,846	...	28,197	263	649	107
B.C.	351	267	1,590	771	3,051	15,234	1,709	2,219	17,481	...	441	210	96
Y.T.	8	29	99	34	54	238	41	120	231	645	...	85	0
N.W.T.	120	31	139	39	95	464	57	165	788	538	136	...	98
Nvt.	75	18	92	45	117	440	113	57	72	55	24	108	...
In-migrants	5,755	3,268	15,616	11,105	22,007	83,913	10,336	15,065	55,661	59,583	1,470	1,833	1,320
Out-migrants	7,709	3,704	14,971	11,954	32,766	58,224	17,242	20,680	70,792	43,420	1,584	2,670	1,216
Net	-1,954	-436	645	-849	-10,759	25,689	-6,906	-5,615	-15,131	16,163	-114	-837	104
Total number of migrants:							286,932						

... not applicable

Note: Preliminary estimates based on data from the Canada child benefit (CCB) program (formerly Canada Child Tax Benefit (CCTB)) and $_{jk}F$ factors calculated using 2013/2014, 2014/2015 and 2015/2016 tax file data from Canada Revenue Agency.
Source: Statistics Canada, Demography Division.

Analysis: Population by age and sex

> For the purposes of this article, various indicators will be 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 dependency ratio, and the median age. The median age is age "x", as it divides a population into two groups of equal size, one consisting of individuals older than "x" and the other consisting of individuals younger than "x".

This section presents an analysis of population estimates by age and sex for Canada, the provinces and territories on July 1, 2017, compared with July 1 in previous years.

Baby boomers accelerate the aging of Canada's population

Population aging represents one of the major changes associated with Canada's age-sex structure, and it continues to shape the transformation of the country's population. This phenomenon 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[13] and an increase in life expectancy for both men and women.

The age pyramid opposite 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 1997 and 2017. On July 1, 1997, baby boomers were in their 30s to early 50s, as can be seen in the bulge in the pyramid at these ages. On July 1, 2017, individuals in the baby-boom generation were between 51 and 71 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 51 years and over was proportionally higher in 2017 than in 1997. However, the number of younger people, particularly people in their 30s and early 40s, as well as individuals aged 0 to 19 years, has proportionally decreased.

Figure 2.1
Age pyramid of population estimates as of July 1, 1997 and 2017, Canada
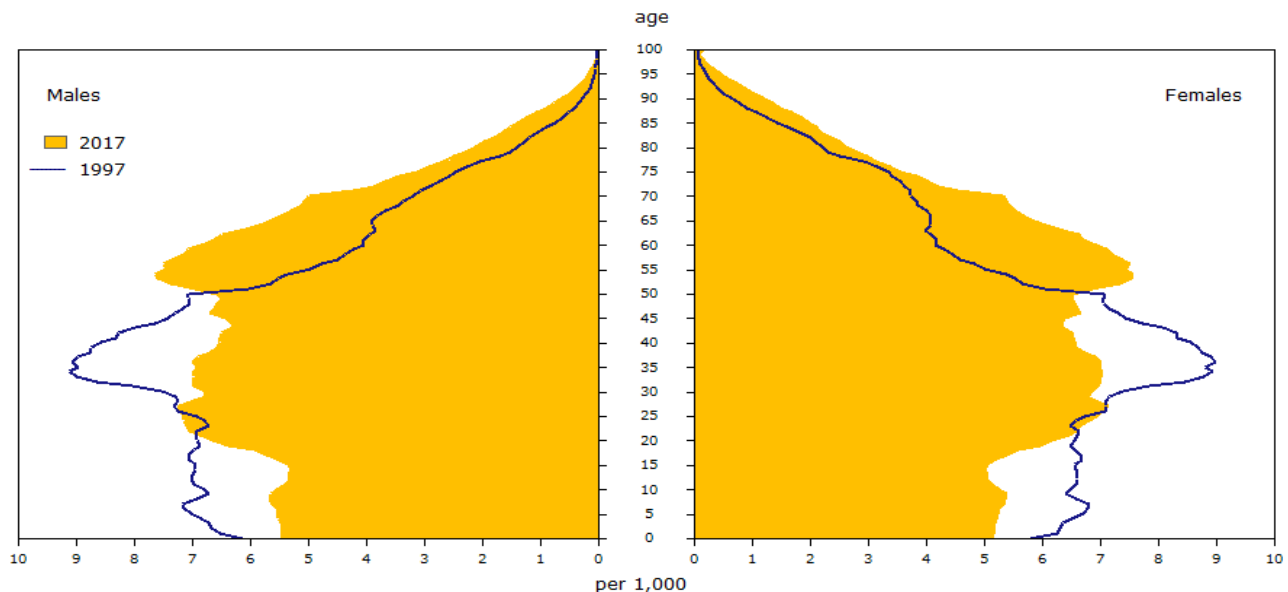
Source: Statistics Canada, Demography Division.

---

13. "Fertility: Overview, 2009 to 2011." *Report on the Demographic Situation in Canada*. Statistics Canada Catalogue no. 91-209-X (http://www.statcan.gc.ca/pub/91-209-x/2013001/article/11784-eng.htm).

Despite widespread aging, Canada remains younger than most G7 countries

Population aging is a widespread phenomenon in the industrialized world. 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 years and older (16.9%), just behind the United States, with 15%.[14] Conversely, Japan's population is among the oldest in the world, with the highest proportion of persons aged 65 years and older among the G7 countries (28%), or just over one in four people.

The proportion of children aged 0 to 14 years is higher in Canada (16.0%) than in Japan (12%), Germany (13%) and Italy (14%). A higher fertility rate in Canada than in these three countries is the main reason why Canada has proportionally more children aged 0 to 14.[15] However, the proportion of children is lower in Canada than in the United States (19%), France (18%) and the United Kingdom (18%), where the fertility rate is closer to the replacement level.

Moreover, among the G7 countries, Canada has the largest proportion of working-age people, with 67.1% of its population 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. As all Canadian baby boomers turn 65, the proportion of the working-age population in Canada will move closer to the levels observed in the other G7 countries.

Text table 2.1
Age distribution of the population, Canada and other G7 countries, 2017

	0 to 14 years	15 to 64 years	65 years and over
	percent		
Canada	**16.0**	**67.1**	**16.9**
France	18	63	19
Germany	13	66	21
Italy	14	64	22
Japan	12	60	28
United Kingdom	18	64	18
United States	19	66	15

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, Demography Division; and 2017 World Population Data Sheet, Population Reference Bureau (http://www.worldpopdata.org/table), visited on August 14th, 2017.

The gap widens between people aged 0 to 14 and those 65 years and older

Since 2011, baby boomers have played a significant role in the increase in the number of people aged 65 and older. In 2015, population estimates showed that Canada had more people aged 65 and older than children aged 0 to 14. During the last annual period, the gap between these two age groups widened. On July 1, 2017, a record number of Canadians— 6,195,544, or more than one out of six people (16.9%)—was at least 65 years of age, compared with 5,877,081 children aged 0 to 14 (16.0%). In other words, there were an additional 318,463 people in the 65-and-older age group than in the 0-to-14 group. 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, the proportion of people 65 and older should continue to grow, increasingly widening the gap with the proportion of children aged 0 to 14.[16] The proportion of people aged 65 years and older should reach 20% in 2023 and 25% in 2047, while the proportion of children aged 0 to 14 should remain stable at around 15% to 16% over the same period. Thus, the proportion of working-age people (aged 15 to 64) should decline. It is currently estimated at 67.1% and is expected to fall below 60% in 2056.

14. Data of age distribution of the population for countries other than Canada are rounded to the unit as shown in the source used.
15. OECD (2017), Fertility rates (indicator) (https://data.oecd.org/pop/fertility-rates.htm). DOI: 10.1787/8272fb01-en (page visited on August 15, 2017).
16. *Population Projections for Canada (2013 to 2063), Provinces and Territories (2013 to 2038)*, Statistics Canada Catalogue no. 91-520-X (http://www5.statcan.gc.ca/olc-cel/olc.action?ObjId=91-520-X&ObjType=2&lang=en&limit=0). The M1 scenario (medium growth, trends 1991/1992 to 2010/2011) was considered.

Chart 2.1
Population aged 0 to 14 years and 65 years and over, 1997 to 2037, Canada
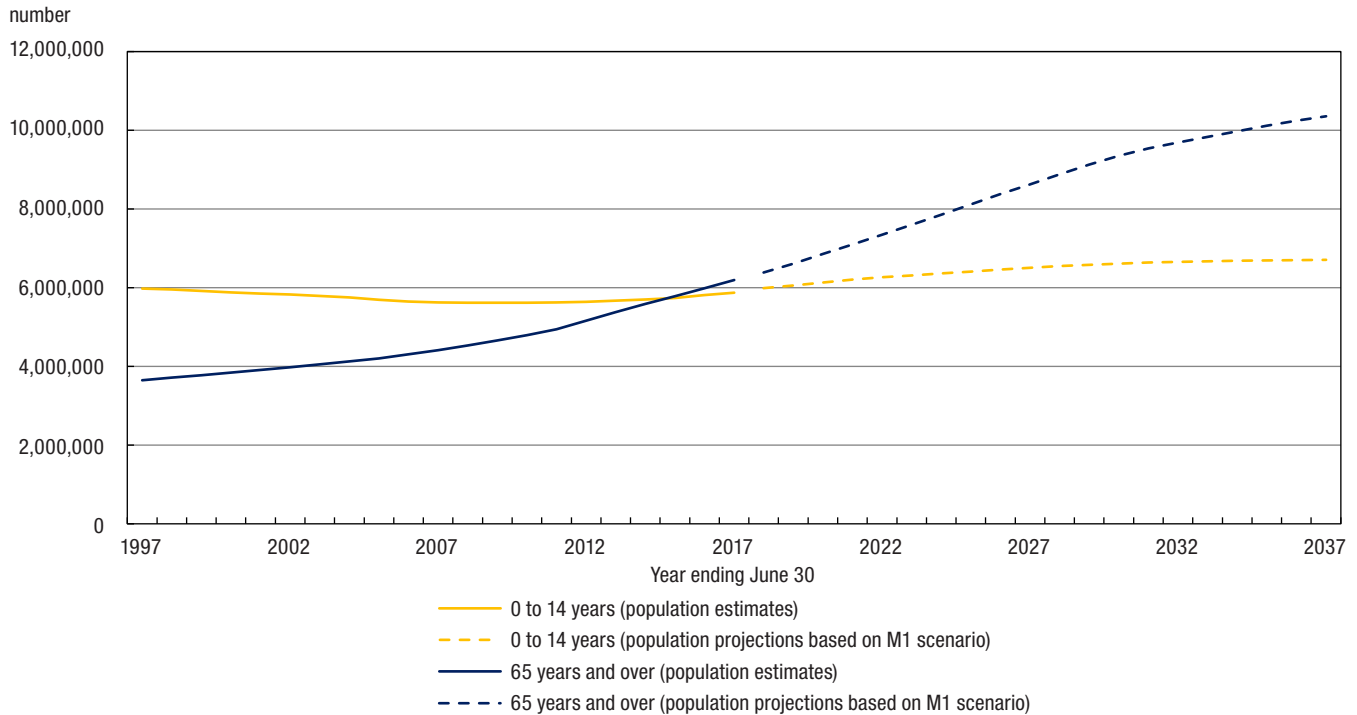
number

Note: From 1997 to 2017, population estimates. From 2018 to 2037, *Population Projections for Canada (2013 to 2063), Provinces and Territories, (2013 to 2038)*, Catalogue no. 91-520-X.
Source: Statistics Canada, Demography Division.

Chart 2.2
Proportion of the population aged 0 to 14 years, 15 to 64 years and 65 years and over, 1997 to 2037, Canada
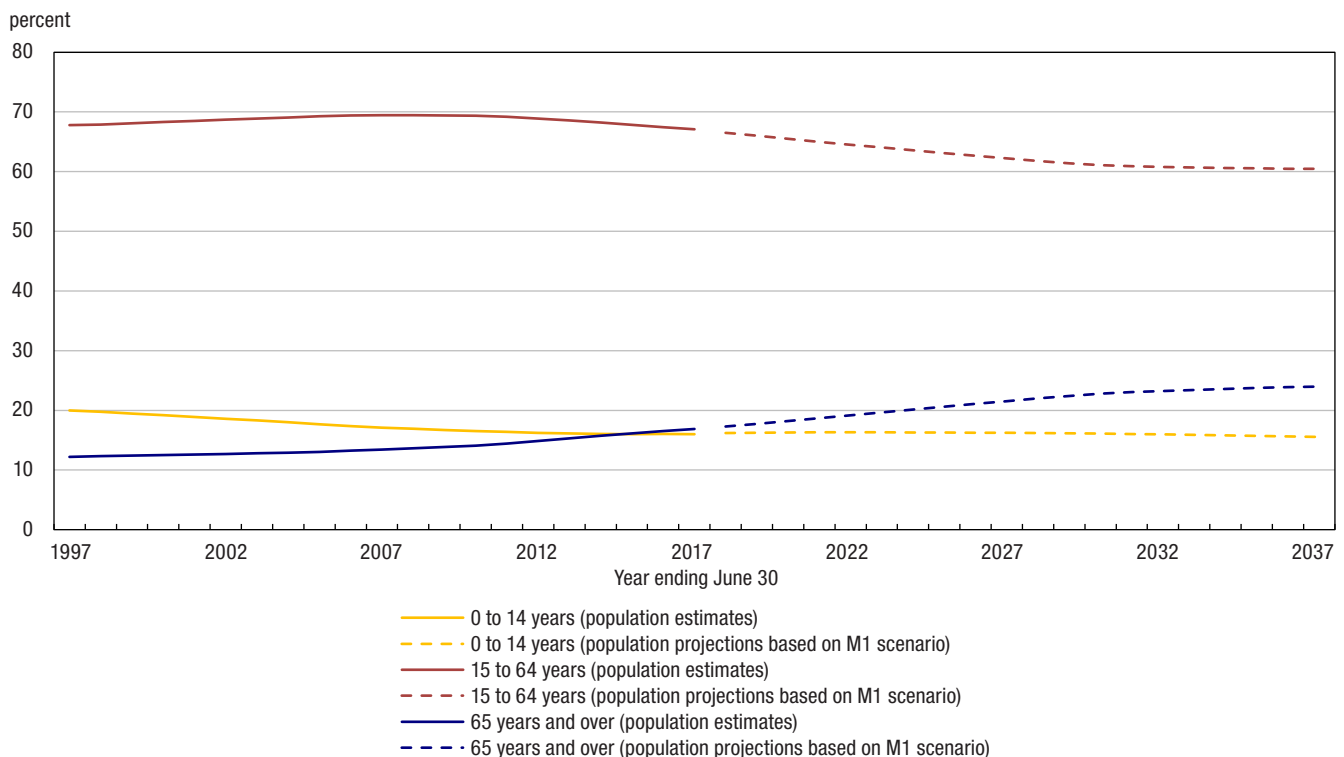
percent

Note: From 1997 to 2017, population estimates. From 2018 to 2037, *Population Projections for Canada (2013 to 2063), Provinces and Territories, (2013 to 2038)*, Catalogue no. 91-520-X.
Source: Statistics Canada, Demography Division.

In the latest annual period, the growth rate of the 65-and-older population was 3.4%, or about three times the growth rate for the entire population (1.2%). Children aged 0 to 14 had a growth rate of 1.1% in the last annual period. While this group grew by more than 1.0% in the last two annual periods, which has not been seen since the end of the echo boom generation (1989 to 1992),[17] its growth rate is still lower than that of the 65-and-older age group, thereby contributing to population aging.

Two out of five seniors are baby boomers

Both the proportion of people aged 65 and older and the annual growth of this age group have been increasing rapidly since the start of the decade, specifically since 2011 when the first baby-boom cohorts began turning 65. On July 1, 2017, two out of five people aged 65 or older (40.9%) were baby boomers, compared with 35.7% in 2016. It can be seen that this proportion is rising quickly.

Also, one-quarter of baby boomers (26.7%) were 65 and older in 2017, compared with 22.4% in 2016. In 2031, every baby boomer will have turned 65.

Canada has nearly one person aged 0 to 14 or 65 and older 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, 2017, the ratio was 49.0. This indicator has been rising steadily since 2007 (43.9), and more prominently since 2011 (44.5) when the first baby boomers started turning 65. It will continue to rise until 2031 and even beyond, since the last baby boomers will turn 65 in 2031. According to the medium growth (M1) scenario in the most recent population projections, the demographic dependency ratio should be 64.2 in 2031.

Chart 2.3
Demographic dependency ratio, 1972 to 2017, Canada

per 100 persons aged 15 to 64 years

Year ending June 30

■ Persons aged 0 to 14 years   ■ Persons aged 65 years and over
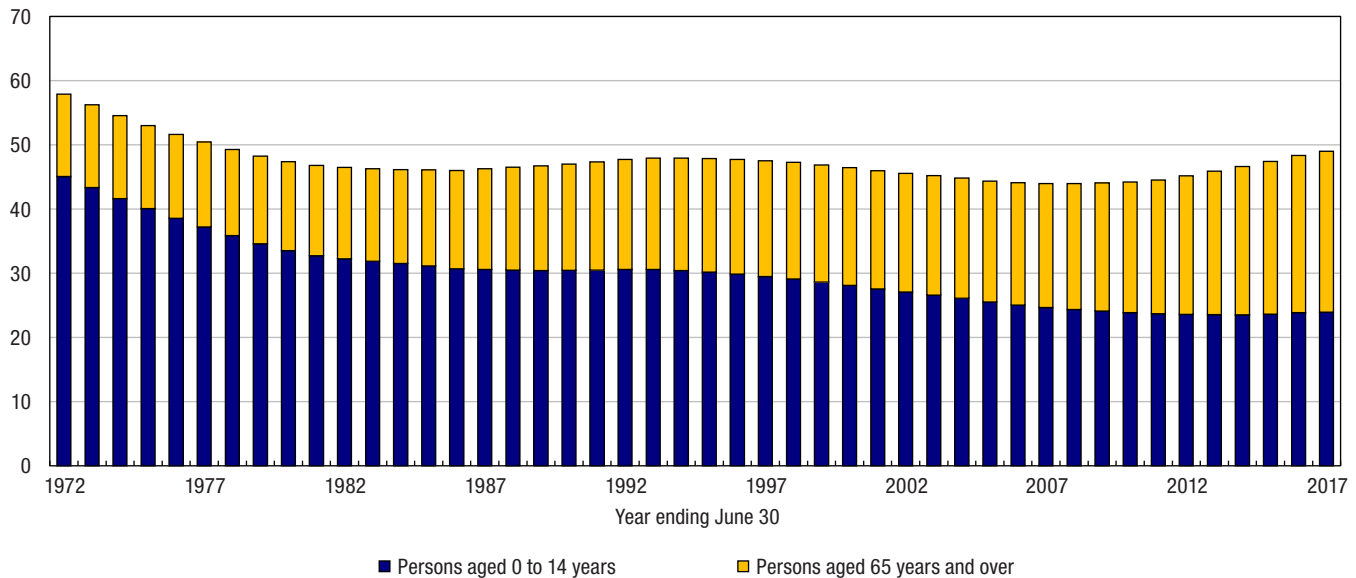
Source: Statistics Canada, Demography Division.

The current trend in the demographic dependency ratio is the opposite of what was observed in the 1970s. Between 1971 (the beginning of the period covered by the current demographic accounting system) and 1986, the

---

17. *Generations in Canada, Age and Sex, 2011 Census*, Statistics Canada Catalogue no. 98-311-X2011003 (http://www12.statcan.gc.ca/census-recensement/2011/as-sa/98-311-x/98-311-x2011003_2-eng.cfm).

demographic dependency ratio fell from 59.5 to 46.0. This phenomenon is also due to the baby-boom generation, whose members successively turned 15 years old from 1961 to 1980. Canada has therefore seen years when the demographic dependency ratio was much higher than in 2017. The main difference lies in the composition of the population by age group: in 1971, children (aged 0 to 14) represented 78.5% of the non-working-age population, compared with 48.7% in 2017.

The demographic dependency ratio recorded in 2017 (49.0) was the highest since 1978, when Canada had 49.3 children or seniors per 100 working-age people. Since 1978, the demographic dependency ratio has remained below 50, at a relatively stable level, because the majority of baby boomers have been of working age.

The number of centenarians continues to grow

Because of greater life expectancy and population aging, growing numbers of Canadians are reaching the age of 100. On July 1, 2017, preliminary estimates indicate that there were 6,620 centenarians in Canada, or roughly 18 per 100,000 population. In 2001,[18] the proportion was 11 centenarians per 100,000 population. By comparison, in Japan, which has one of the oldest populations in the world, there were about 53 centenarians per 100,000 population in February 2017.[19]

Low female mortality is a factor in population aging

The main population aging indicators are all higher for females. On July 1, 2017, the proportion of women 65 and older (18.2%) was higher than the corresponding proportion of men (15.5%). The median age was also higher for women (41.5 years) than for men (39.7 years). Furthermore, the centenarian group still comprised mostly women (88.8%). 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 show that female life expectancy was 83.8 years, compared with 79.6 years for males.[20]

One in two Canadians is at least 40 years of age

In 2017, one out of two Canadians was at least 40.6 years. The median age has increased by 10 years since 1984, when it was 30.6 years.

Median age varies considerably from province to province. On July 1, 2017, there was a difference of 9.0 years between the province with the highest median age (45.7 years in Newfoundland and Labrador) and the lowest median age (36.7 years in Alberta). Taken the territories into consideration, Nunavut had the lowest median age at 26.4 years.

In 1997, the differences between the provinces were much smaller, with a gap of 3.0 years. The highest median age was in Quebec (36.6 years) and the lowest in Alberta (33.6 years). The situation in Newfoundland and Labrador indicates an especially rapid aging of its population. Between 1993 and 2005, this province went from having the lowest median age (31.8 years) to the highest (40.7 years). Newfoundland and Labrador experienced almost no population growth, and even negative growth from the mid-1980s to 2009. The main contributing factor is the departure of high numbers of people of reproductive age to other provinces and territories. Consequently, there were fewer births. In addition, Newfoundland and Labrador receives fewer international migrants than most other provinces.

18. 2001 is the first year for which population estimates for centenarians are available.
19. Author's calculation using data from *Population Estimates by Age (5 Year Age Group) and Sex – February 1, 2017 (Final estimates).* Japan Statistics Bureau, Ministry of Internal Affairs and Communications. http://www.e-stat.go.jp/SG1/estat/ListE.do?lid=00001186463. (accessed on August 14, 2017).
20. Statistics Canada. Elements of the life table, Canada, provinces and territories, annual (number), 2006–2008 to 2011–2013, CANSIM table 053-0003 (http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=0530003&p2=33&retrLang=eng). Page visited on August 14, 2017.

Chart 2.4
Median age, 1977 to 2017, Canada, provinces with lowest and highest median age
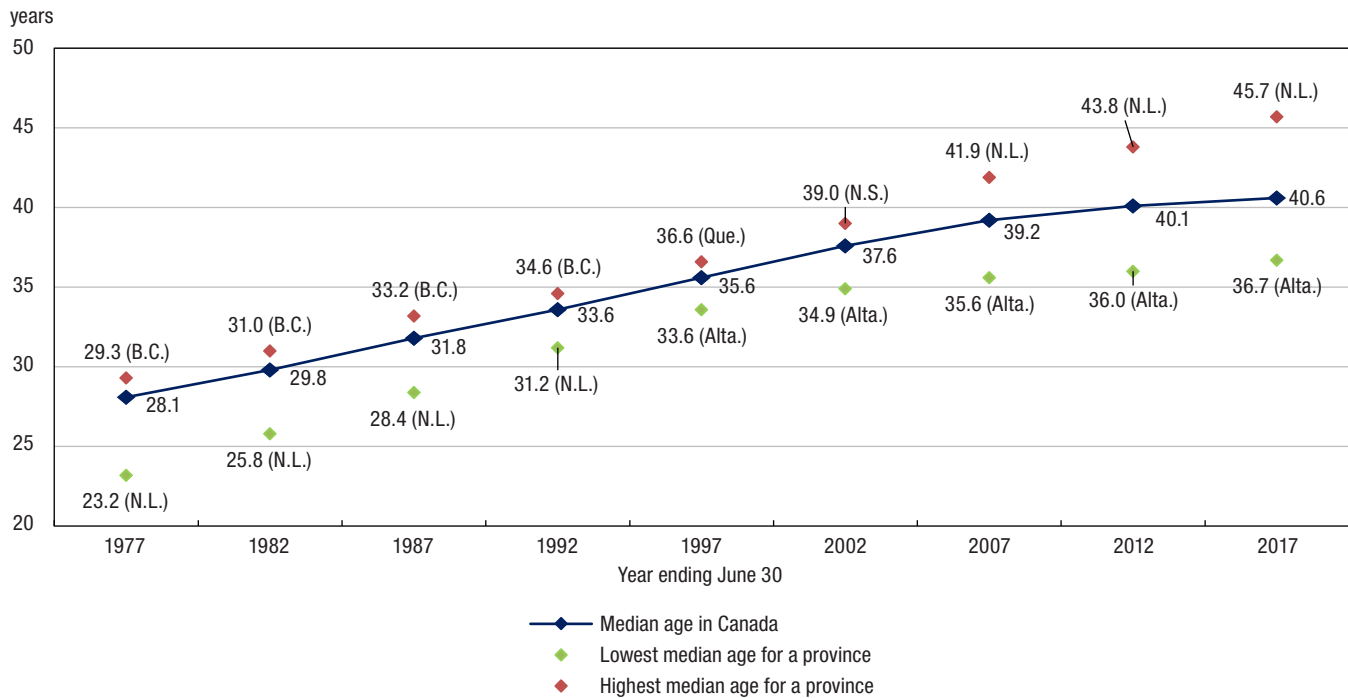
Source: Statistics Canada, Demography Division.

Children still outnumber seniors in the Prairies and the territories

At the provincial and territorial level, the proportions of people 65 years and older and children 0 to 14 years vary widely. In Canada's Eastern and Central provinces and in British Columbia, the number of people 65 years and older was higher than the number of children 0 to 14 years on July 1, 2017. However, the Prairie provinces and the territories had more 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 the proportion of children aged 0 to 14 years.

Chart 2.5
Demographic dependency ratio, 2017, Canada, provinces and territories

per 100 persons aged 15 to 64 years

Legend: ■ 0 to 14 years   ■ 65 years and over
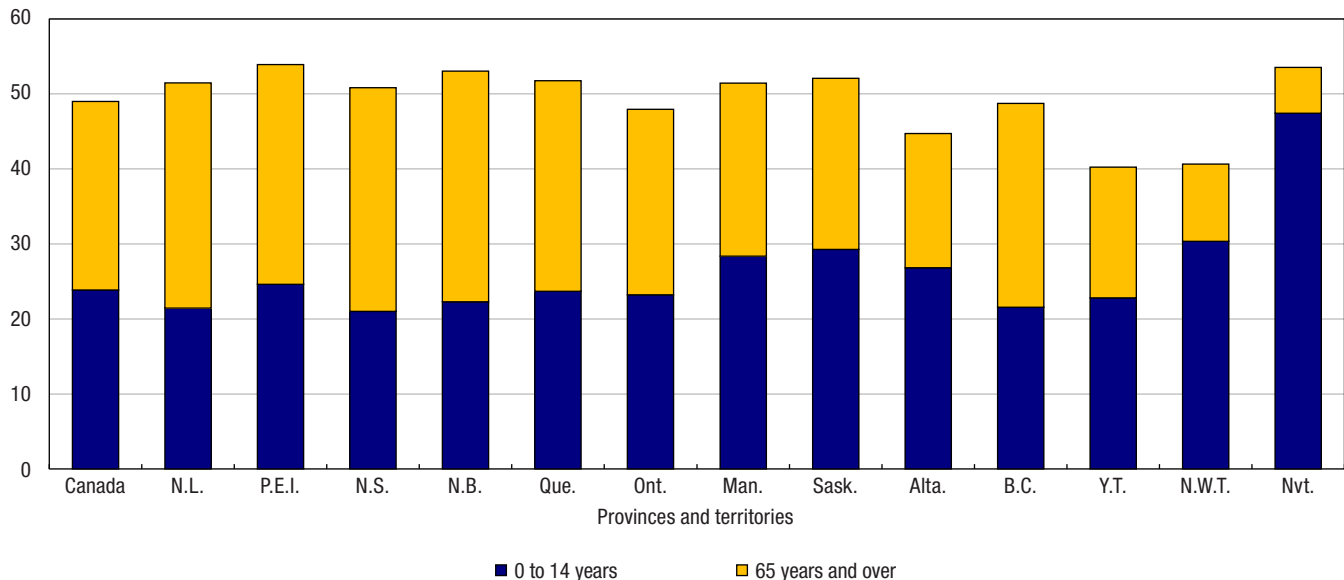
Source: Statistics Canada, Demography Division.

On July 1, 2017, New Brunswick had the highest proportion of people aged 65 and older (20.1%), and Alberta the lowest (12.4%). As for the proportion of children aged 0 to 14 years, the highest was observed in Saskatchewan (19.3%) and the lowest in Nova Scotia (13.9%). The situation in the territories is unique, in that the populations are younger than in the rest of Canada. Nunavut stood out on account of children aged 0 to 14 making up 30.9% of the population, while people aged 65 and older represented 4.0% of the population.

A generally younger population from Central to Western Canada and in the territories

The demographic dependency ratio, which shows the relationship between people aged 0 to 14 years and 65 years and older compared with working-age people (15 to 64 years), differs between each of the provinces and territories. In 2017, the Atlantic provinces and Quebec had a higher dependency ratio than the national average (49.0) due to high proportion of people aged 65 and older. Manitoba and Saskatchewan, which also exceeded the national dependency ratio with 51.4 and 52.1 respectively, both had a larger proportion of children aged 0 to 14 among persons considered "dependent". Among the provinces, the only exception was Alberta, which had a lower dependency ratio (44.7) than the Canadian average, but also a larger proportion of children aged 0 to 14, attesting to a younger population overall. A similar situation was noted in Yukon (40.2) and the Northwest Territories (40.7). At the opposite end of the spectrum, Nunavut posted 47.4 children aged 0 to 14 per 100 working-age people, and only 6.1 people aged 65 and older per 100 people aged 15 to 64.

Nationally, the ratio of people 65 years and older to children aged 0 to 14 years was 1.05, indicating that the first group had a slightly higher demographic weight than the second. Nova Scotia had the highest ratio, with 1.42 people 65 years and older for every child aged 0 to 14. In contrast, Nunavut had 0.13 people aged 65 and older for every child aged 0 to 14. Among the provinces, Alberta had the lowest ratio (0.67).

Annual Demographic Estimates: Canada, Provinces and Territories, 2017

Text table 2.2
Population estimates¹, age distribution and median age as of July 1, 2017, Canada, provinces and territories

	Population	0 to 14 years	15 to 64 years	65 years and over	Median age
	number		percent		years
Canada	**36,708,083**	**16.0**	**67.1**	**16.9**	**40.6**
Newfoundland and Labrador	528,817	14.2	66.0	19.8	45.7
Prince Edward Island	152,021	16.0	65.0	19.0	43.5
Nova Scotia	953,869	13.9	66.3	19.8	44.6
New Brunswick	759,655	14.6	65.3	20.1	45.3
Quebec	8,394,034	15.6	65.9	18.5	42.2
Ontario	14,193,384	15.7	67.6	16.7	40.6
Manitoba	1,338,109	18.7	66.0	15.2	37.4
Saskatchewan	1,163,925	19.3	65.8	15.0	37.0
Alberta	4,286,134	18.5	69.1	12.4	36.7
British Columbia	4,817,160	14.5	67.2	18.3	42.1
Yukon	38,459	16.3	71.3	12.4	39.6
Northwest Territories	44,520	21.6	71.1	7.3	33.7
Nunavut	37,996	30.9	65.1	4.0	26.4

1. Preliminary postcensal estimates.
Note: Figures in percent may not add up to 100% as a result of rounding.
Source: Statistics Canada, Demography Division.

Canada has slightly more women than men

On July 1, 2017, the sex ratio for the entire Canadian population was estimated at 98.4 males per 100 females (Chart 2.5). This ratio has changed very little over the last 20 years, with 98.1 males per 100 females observed in 1997. Males outnumber females in the 0-to-14 and 15-to-39 age groups, mainly because of the sex ratio at birth, which averages 105 males per 100 females. However, when people reach their mid-50s, the number of men starts to fall slightly 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 91.6 males per 100 females on July 1, 2017. However, the gap between the sexes seems to be narrowing. Twenty years ago, for every 100 females aged 65 to 79, there were 81.5 males. In the population aged 80 years and older, there were an estimated 64.4 males per 100 females on July 1, 2017, compared with 51.6 males per 100 females on July 1, 1997. The estimate for centenarians in 2017 was 12.6 males per 100 females.

Chart 2.6
Sex ratio by age group, 1997 and 2017, Canada

number of males for 100 females
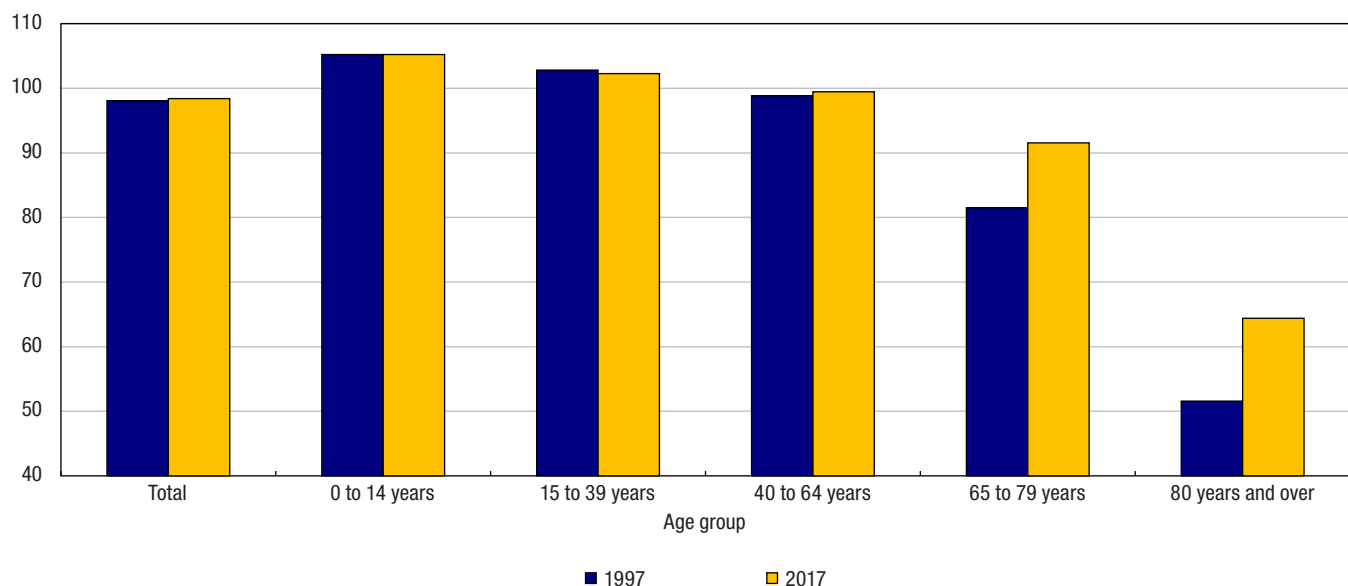
Source: Statistics Canada, Demography Division.

Slight differences in the sex ratios of the provinces and territories

There are some regional differences in the sex structure in Canada. On July 1, 2017, the lowest sex ratio in the country was in Prince Edward Island, with 95.7 males per 100 females, and the highest was in Alberta (102.5 males per 100 females). The sex ratios in the Atlantic provinces were below the national average (98.4 males per 100 females), while in the Prairie provinces, they were all higher. Among other factors, this situation can be attributed to a younger population.

In 2017, males outnumbered females in all the territories. The main differences between the sex structure in the territories and in Canada as a whole are at higher ages. At age 50 and older, Yukon and the Northwest Territories had 107.0 and 108.7 males, respectively, per 100 females and Nunavut had 116.4 males per 100 females.

Chart 2.7
Sex ratio by age group, 2017, Canada, provinces and territories

number of males for 100 females
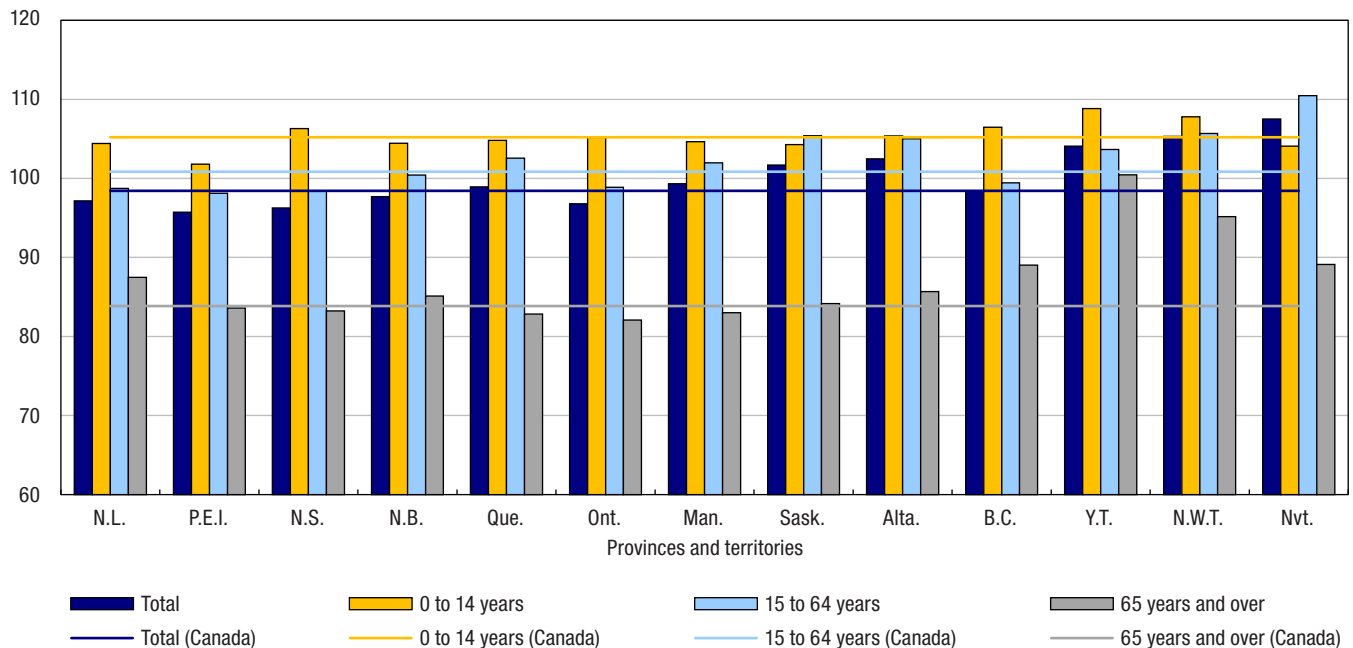
Source: Statistics Canada, Demography Division.

Mobile individuals are much younger than the entire population

The age pyramid opposite highlights the differences in the age-sex structure of interprovincial migrants, immigrants, non-permanent residents and the total population.[21] On July 1, 2017, the proportion of the working-age population (aged 15 to 64) was considerably higher among immigrants (75.4%), interprovincial migrants (77.7%) and non-permanent residents (96.2%). These subgroups also had a high concentration of young adults. A majority of non-permanent residents (60.4%) were between 18 and 29 years of age. Immigrants were slightly older and less concentrated in some age groups, since 51.9% of them were in the 25-to-44 group. Lastly, 55.0% of interprovincial migrants were aged 20 to 44. Similarly, the median age of interprovincial migrants (30.8 years), non-permanent residents (25.9 years) and immigrants (30.9 years) was below the national level (40.6 years) on July 1, 2017.

---

21.   Interprovincial migrants and immigrants are those who migrated between July 1, 2016, and June 30, 2017, while non-permanent residents and the population are those accounted for on July 1, 2017.

Annual Demographic Estimates: Canada, Provinces and Territories, 2017

Figure 2.2
Age pyramid of population, interprovincial migrants, immigrants and non-permanent residents, 2017, Canada
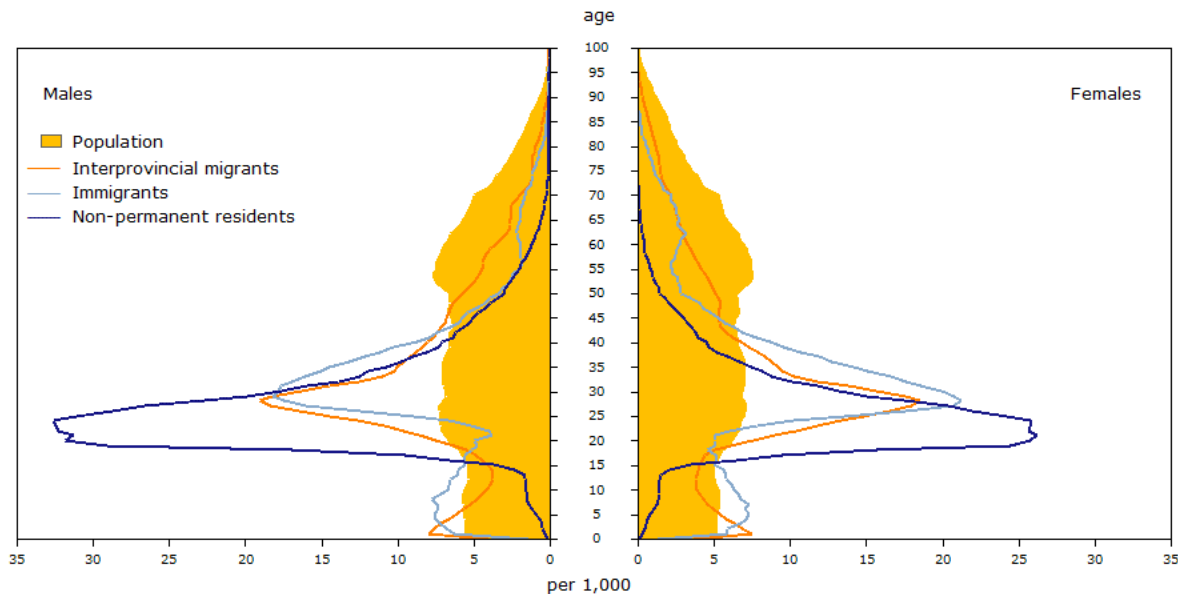
Source: Statistics Canada, Demography Division.

Immigrants stood out for having a high proportion of children under 15 years of age (20.0%). However, this proportion was down from the previous year (22.5%). By comparison, in 2017, 3.3% 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 permanent residents

The sex structure of the three subgroups also differs. Males were slightly underrepresented among immigrants (93.5 males per 100 females), but were significantly overrepresented among non-permanent residents (132.5 males per 100 females), and to a lesser degree, among interprovincial migrants (104.4 males per 100 females). By comparison, the sex ratio for the entire Canadian population is almost equal, with 98.4 males per 100 females. More careful analysis of the sex ratio in each subgroup by certain age groups reveals that men are overrepresented among interprovincial migrants under 65 years of age, among immigrants under 15 years, and among non-permanent residents of all ages.

Statistics Canada – Catalogue no. 91-215-X

Chart 2.8
Sex ratio by age group of the population, interprovincial migrants, immigrants and non permanent residents, 2017, Canada

number of males for 100 females

Source: Statistics Canada, Demography Division.

Annual Demographic Estimates: Canada, Provinces and Territories, 2017
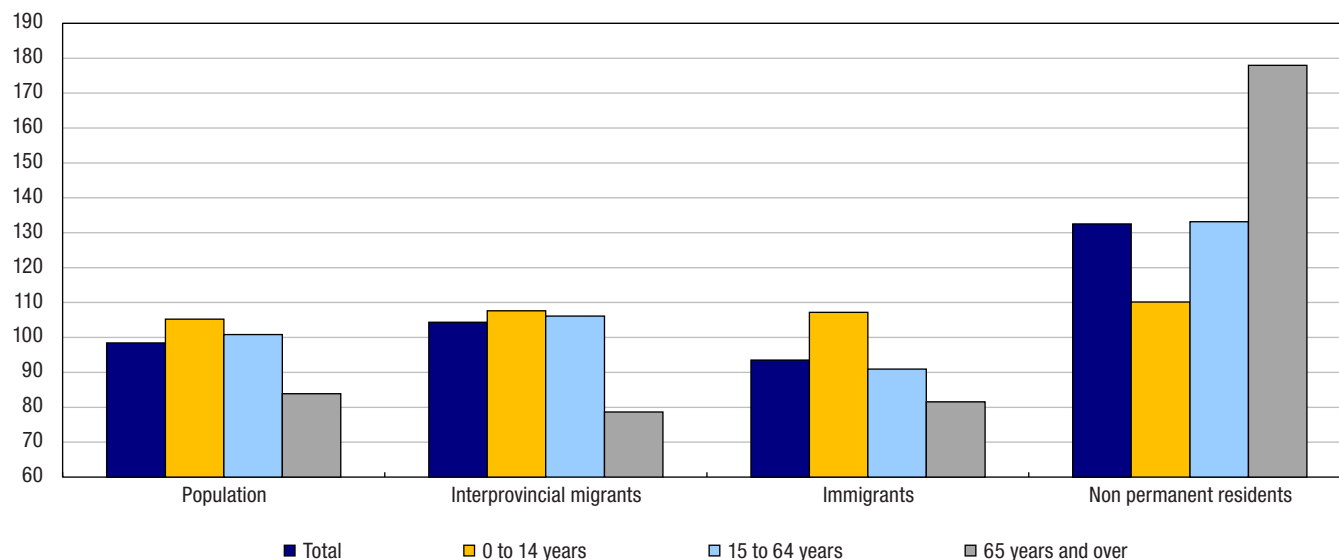
Table 2.1
Annual population estimates by age group and sex, July 1 - Canada

	2010	2011	2012	2013	2014	2015	2016	2017
				number				
Both sexes	**34,005,274**	**34,342,780**	**34,750,545**	**35,152,370**	**35,535,348**	**35,832,513**	**36,264,604**	**36,708,083**
0 to 4 years	1,873,393	1,899,064	1,913,342	1,918,924	1,921,123	1,924,604	1,942,022	1,953,040
5 to 9 years	1,791,353	1,810,433	1,841,124	1,882,687	1,918,323	1,952,041	1,985,144	2,003,143
10 to 14 years	1,959,726	1,918,164	1,886,966	1,868,495	1,865,818	1,864,760	1,886,340	1,920,898
15 to 19 years	2,249,523	2,238,952	2,212,927	2,178,288	2,137,784	2,097,043	2,066,404	2,056,445
20 to 24 years	2,322,472	2,354,354	2,403,803	2,445,559	2,470,054	2,460,317	2,467,287	2,476,338
25 to 29 years	2,357,952	2,369,841	2,393,273	2,408,813	2,437,377	2,464,184	2,515,993	2,574,384
30 to 34 years	2,283,852	2,327,955	2,380,190	2,434,220	2,479,427	2,499,523	2,529,348	2,553,635
35 to 39 years	2,282,931	2,273,087	2,295,782	2,326,722	2,367,428	2,401,531	2,455,403	2,506,165
40 to 44 years	2,403,740	2,385,918	2,379,288	2,371,026	2,358,616	2,349,528	2,345,732	2,364,959
45 to 49 years	2,780,899	2,719,909	2,652,654	2,568,593	2,492,188	2,432,391	2,415,365	2,405,165
50 to 54 years	2,634,997	2,691,260	2,723,971	2,754,559	2,774,291	2,763,386	2,711,448	2,640,429
55 to 59 years	2,286,601	2,353,090	2,429,015	2,501,797	2,557,158	2,602,741	2,653,893	2,683,302
60 to 64 years	1,981,692	2,050,443	2,071,097	2,110,161	2,167,664	2,234,388	2,300,327	2,374,636
65 to 69 years	1,464,642	1,532,940	1,648,244	1,747,711	1,831,749	1,911,216	1,976,211	1,997,090
70 to 74 years	1,114,899	1,153,822	1,199,378	1,256,700	1,315,039	1,371,962	1,438,585	1,547,668
75 to 79 years	913,373	919,338	928,930	947,393	973,989	1,000,838	1,035,621	1,077,431
80 to 84 years	685,040	701,140	717,616	729,397	738,240	745,302	753,852	763,413
85 to 89 years	417,631	426,739	439,275	452,747	464,667	477,845	492,434	504,232
90 to 94 years	158,295	171,916	186,676	199,304	211,417	220,767	228,925	236,012
95 to 99 years	36,822	39,147	41,514	43,763	47,330	52,381	58,120	63,078
100 years and over	5,441	5,268	5,480	5,511	5,666	5,765	6,150	6,620
Males	**16,847,961**	**17,015,959**	**17,227,368**	**17,430,375**	**17,623,557**	**17,767,811**	**17,984,435**	**18,207,841**
0 to 4 years	959,864	972,812	980,108	984,004	984,912	986,900	996,241	1,002,042
5 to 9 years	920,003	928,247	943,880	964,757	982,801	999,700	1,016,620	1,026,129
10 to 14 years	1,006,518	986,810	969,966	960,446	959,044	957,787	967,655	985,050
15 to 19 years	1,150,163	1,146,584	1,136,794	1,120,101	1,099,242	1,078,421	1,063,578	1,058,325
20 to 24 years	1,178,626	1,193,474	1,221,382	1,245,547	1,261,858	1,260,443	1,266,097	1,275,995
25 to 29 years	1,185,133	1,188,765	1,201,673	1,209,341	1,225,104	1,238,031	1,265,192	1,295,885
30 to 34 years	1,139,070	1,160,950	1,187,720	1,214,440	1,237,180	1,245,941	1,260,295	1,272,577
35 to 39 years	1,142,264	1,134,393	1,145,054	1,159,918	1,180,285	1,196,667	1,224,188	1,249,393
40 to 44 years	1,207,317	1,195,395	1,191,708	1,186,982	1,179,465	1,173,244	1,170,553	1,178,674
45 to 49 years	1,399,562	1,369,587	1,335,025	1,290,793	1,250,385	1,218,677	1,208,386	1,202,547
50 to 54 years	1,320,663	1,350,167	1,366,940	1,382,358	1,392,891	1,387,054	1,361,399	1,324,561
55 to 59 years	1,138,021	1,173,570	1,211,639	1,248,911	1,276,390	1,298,984	1,323,815	1,338,117
60 to 64 years	977,967	1,013,816	1,024,660	1,042,983	1,071,198	1,103,908	1,136,501	1,172,908
65 to 69 years	709,686	744,955	802,708	852,214	893,422	932,338	964,339	974,624
70 to 74 years	524,129	542,867	565,657	594,217	623,556	652,728	686,725	740,352
75 to 79 years	411,335	415,783	421,378	431,382	444,625	457,585	474,101	494,332
80 to 84 years	280,564	290,620	300,962	308,895	315,145	320,152	325,657	331,080
85 to 89 years	144,844	149,365	156,535	164,554	172,106	180,084	188,567	195,547
90 to 94 years	44,003	49,009	54,193	58,515	63,011	66,834	70,419	74,138
95 to 99 years	7,486	8,060	8,639	9,373	10,295	11,720	13,441	14,822
100 years and over	743	730	747	644	642	613	666	743
Females	**17,157,313**	**17,326,821**	**17,523,177**	**17,721,995**	**17,911,791**	**18,064,702**	**18,280,169**	**18,500,242**
0 to 4 years	913,529	926,252	933,234	934,920	936,211	937,704	945,781	950,998
5 to 9 years	871,350	882,186	897,244	917,930	935,522	952,341	968,524	977,014
10 to 14 years	953,208	931,354	917,000	908,049	906,774	906,973	918,685	935,848
15 to 19 years	1,099,360	1,092,368	1,076,133	1,058,187	1,038,542	1,018,622	1,002,826	998,120
20 to 24 years	1,143,846	1,160,880	1,182,421	1,200,012	1,208,196	1,199,874	1,201,190	1,200,343
25 to 29 years	1,172,819	1,181,076	1,191,600	1,199,472	1,212,273	1,226,153	1,250,801	1,278,499
30 to 34 years	1,144,782	1,167,005	1,192,470	1,219,780	1,242,247	1,253,582	1,269,053	1,281,058
35 to 39 years	1,140,667	1,138,694	1,150,728	1,166,804	1,187,143	1,204,864	1,231,215	1,256,772
40 to 44 years	1,196,423	1,190,523	1,187,580	1,184,044	1,179,151	1,176,284	1,175,179	1,186,285
45 to 49 years	1,381,337	1,350,322	1,317,629	1,277,800	1,241,803	1,213,714	1,206,979	1,202,618
50 to 54 years	1,314,334	1,341,093	1,357,031	1,372,201	1,381,400	1,376,332	1,350,049	1,315,868
55 to 59 years	1,148,580	1,179,520	1,217,376	1,252,886	1,280,768	1,303,757	1,330,078	1,345,185
60 to 64 years	1,003,725	1,036,627	1,046,437	1,067,178	1,096,466	1,130,480	1,163,826	1,201,728
65 to 69 years	754,956	787,985	845,536	895,497	938,327	978,878	1,011,872	1,022,466
70 to 74 years	590,770	610,955	633,721	662,483	691,483	719,234	751,860	807,316
75 to 79 years	502,038	503,555	507,552	516,011	529,364	543,253	561,520	583,099
80 to 84 years	404,476	410,520	416,654	420,502	423,095	425,150	428,195	432,333
85 to 89 years	272,787	277,374	282,740	288,193	292,561	297,761	303,867	308,685
90 to 94 years	114,292	122,907	132,483	140,789	148,406	153,933	158,506	161,874
95 to 99 years	29,336	31,087	32,875	34,390	37,035	40,661	44,679	48,256
100 years and over	4,698	4,538	4,733	4,867	5,024	5,152	5,484	5,877

Note: Estimates are final intercensal up to 2010, final postcensal from 2011 to 2013, updated postcensal from 2014 to 2016 and preliminary postcensal for 2017.
Source: Statistics Canada, Demography Division.

Table 2.2
Annual population estimates and factors of demographic growth by age group and sex, 2016/2017[1] - Canada

	Natural increase		Net interprovincial migration	Net international migration	Total net migration	Total growth
	Births	**Deaths**				
			number			
Both sexes	**389,912**	**278,501**	**0**	**332,068**	**332,068**	**443,479**
-1 year	389,912	1,664	0	552	552	388,800
0 to 4 years	...	481	0	17,939	17,939	17,458
5 to 9 years	...	198	0	19,080	19,080	18,882
10 to 14 years	...	252	0	19,950	19,950	19,698
15 to 19 years	...	790	0	79,304	79,304	78,514
20 to 24 years	...	1,287	0	57,905	57,905	56,618
25 to 29 years	...	1,405	0	43,632	43,632	42,227
30 to 34 years	...	1,635	0	35,626	35,626	33,991
35 to 39 years	...	1,968	0	22,344	22,344	20,376
40 to 44 years	...	2,926	0	11,677	11,677	8,751
45 to 49 years	...	4,765	0	5,424	5,424	659
50 to 54 years	...	8,530	0	2,073	2,073	-6,457
55 to 59 years	...	13,163	0	2,863	2,863	-10,300
60 to 64 years	...	17,239	0	4,802	4,802	-12,437
65 to 69 years	...	23,585	0	4,171	4,171	-19,414
70 to 74 years	...	26,974	0	2,882	2,882	-24,092
75 to 79 years	...	32,059	0	1,600	1,600	-30,459
80 to 84 years	...	40,542	0	379	379	-40,163
85 to 89 years	...	45,645	0	-65	-65	-45,710
90 to 94 years	...	35,724	0	-55	-55	-35,779
95 to 99 years	...	15,323	0	-16	-16	-15,339
100 years and over	...	2,346	0	1	1	-2,345
Males	**200,023**	**142,002**	**0**	**165,385**	**165,385**	**223,406**
-1 year	200,023	904	0	297	297	199,416
0 to 4 years	...	256	0	9,286	9,286	9,030
5 to 9 years	...	109	0	9,966	9,966	9,857
10 to 14 years	...	140	0	10,367	10,367	10,227
15 to 19 years	...	536	0	43,113	43,113	42,577
20 to 24 years	...	928	0	29,552	29,552	28,624
25 to 29 years	...	986	0	18,799	18,799	17,813
30 to 34 years	...	1,037	0	17,845	17,845	16,808
35 to 39 years	...	1,238	0	11,527	11,527	10,289
40 to 44 years	...	1,785	0	5,894	5,894	4,109
45 to 49 years	...	2,826	0	2,475	2,475	-351
50 to 54 years	...	5,191	0	517	517	-4,674
55 to 59 years	...	7,977	0	516	516	-7,461
60 to 64 years	...	10,503	0	1,511	1,511	-8,992
65 to 69 years	...	14,070	0	1,527	1,527	-12,543
70 to 74 years	...	15,828	0	1,277	1,277	-14,551
75 to 79 years	...	18,013	0	786	786	-17,227
80 to 84 years	...	21,326	0	180	180	-21,146
85 to 89 years	...	20,855	0	-29	-29	-20,884
90 to 94 years	...	12,981	0	-15	-15	-12,996
95 to 99 years	...	4,212	0	-7	-7	-4,219
100 years and over	...	301	0	1	1	-300

Annual Demographic Estimates: Canada, Provinces and Territories, 2017

Table 2.2

Annual population estimates and factors of demographic growth by age group and sex, 2016/2017[1] - Canada (continued)

	Natural increase		Net interprovincial migration	Net international migration	Total net migration	Total growth
	Births	Deaths				
			number			
Females	**189,889**	**136,499**	**0**	**166,683**	**166,683**	**220,073**
-1 year	189,889	760	0	255	255	189,384
0 to 4 years	...	225	0	8,653	8,653	8,428
5 to 9 years	...	89	0	9,114	9,114	9,025
10 to 14 years	...	112	0	9,583	9,583	9,471
15 to 19 years	...	254	0	36,191	36,191	35,937
20 to 24 years	...	359	0	28,353	28,353	27,994
25 to 29 years	...	419	0	24,833	24,833	24,414
30 to 34 years	...	598	0	17,781	17,781	17,183
35 to 39 years	...	730	0	10,817	10,817	10,087
40 to 44 years	...	1,141	0	5,783	5,783	4,642
45 to 49 years	...	1,939	0	2,949	2,949	1,010
50 to 54 years	...	3,339	0	1,556	1,556	-1,783
55 to 59 years	...	5,186	0	2,347	2,347	-2,839
60 to 64 years	...	6,736	0	3,291	3,291	-3,445
65 to 69 years	...	9,515	0	2,644	2,644	-6,871
70 to 74 years	...	11,146	0	1,605	1,605	-9,541
75 to 79 years	...	14,046	0	814	814	-13,232
80 to 84 years	...	19,216	0	199	199	-19,017
85 to 89 years	...	24,790	0	-36	-36	-24,826
90 to 94 years	...	22,743	0	-40	-40	-22,783
95 to 99 years	...	11,111	0	-9	-9	-11,120
100 years and over	...	2,045	0	0	0	-2,045

... not applicable

1. Period from July 1 to June 30.

Note: Preliminary estimates.

Source: Statistics Canada, Demography Division.

Statistics Canada – Catalogue no. 91-215-X

Table 2.3
Annual estimates of demographic components by age group and sex, 2016/2017[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	**389,912**	**278,501**	**286,932**	**286,932**	**272,666**	**67,279**	**39,107**	**18,414**	**105,988**
-1 year	389,912	1,664	2,179	2,179	705	486	285	127	175
0 to 4 years	...	481	19,298	19,298	18,600	4,879	2,614	1,268	2,872
5 to 9 years	...	198	13,207	13,207	19,184	4,152	2,109	1,081	3,020
10 to 14 years	...	252	11,185	11,185	16,153	2,737	1,964	732	5,302
15 to 19 years	...	790	16,002	16,002	13,909	1,755	2,488	485	65,147
20 to 24 years	...	1,287	33,041	33,041	19,330	5,306	5,238	1,454	40,097
25 to 29 years	...	1,405	50,139	50,139	49,687	9,293	5,468	2,541	311
30 to 34 years	...	1,635	32,423	32,423	44,267	8,923	4,247	2,417	-1,548
35 to 39 years	...	1,968	23,800	23,800	29,732	7,143	3,278	1,907	-1,616
40 to 44 years	...	2,926	18,374	18,374	17,908	5,804	2,710	1,584	-1,553
45 to 49 years	...	4,765	16,554	16,554	11,229	4,690	2,475	1,343	-2,247
50 to 54 years	...	8,530	13,497	13,497	6,920	3,926	1,913	1,153	-1,681
55 to 59 years	...	13,163	10,998	10,998	5,945	2,683	1,493	786	-1,106
60 to 64 years	...	17,239	8,114	8,114	6,706	1,833	1,093	528	-636
65 to 69 years	...	23,585	6,786	6,786	5,688	1,413	597	394	-307
70 to 74 years	...	26,974	4,242	4,242	3,603	884	510	237	-110
75 to 79 years	...	32,059	3,367	3,367	2,084	609	360	169	-66
80 to 84 years	...	40,542	2,225	2,225	775	436	177	119	-18
85 to 89 years	...	45,645	1,121	1,121	192	240	75	68	-24
90 to 94 years	...	35,724	314	314	46	73	8	19	-17
95 to 99 years	...	15,323	61	61	3	14	4	2	-7
100 years and over	...	2,346	5	5	0	0	1	0	0
Males	**200,023**	**142,002**	**146,531**	**146,531**	**131,753**	**34,661**	**19,186**	**9,530**	**58,637**
-1 year	200,023	904	1,130	1,130	368	244	145	64	92
0 to 4 years	...	256	10,143	10,143	9,615	2,467	1,313	645	1,470
5 to 9 years	...	109	6,952	6,952	9,875	2,128	1,049	551	1,721
10 to 14 years	...	140	5,555	5,555	8,411	1,415	980	380	2,771
15 to 19 years	...	536	8,177	8,177	7,079	909	1,189	251	36,005
20 to 24 years	...	928	16,039	16,039	7,707	2,611	2,294	713	22,875
25 to 29 years	...	986	25,356	25,356	22,306	4,336	2,458	1,192	-437
30 to 34 years	...	1,037	16,702	16,702	21,846	4,389	2,112	1,187	-537
35 to 39 years	...	1,238	12,583	12,583	15,092	3,649	1,616	979	-553
40 to 44 years	...	1,785	10,268	10,268	9,173	3,144	1,453	860	-728
45 to 49 years	...	2,826	8,929	8,929	5,923	2,727	1,366	780	-1,307
50 to 54 years	...	5,191	6,958	6,958	3,431	2,280	1,048	675	-1,007
55 to 59 years	...	7,977	5,784	5,784	2,560	1,556	780	458	-810
60 to 64 years	...	10,503	3,978	3,978	2,801	1,002	557	296	-549
65 to 69 years	...	14,070	3,373	3,373	2,445	743	317	211	-281
70 to 74 years	...	15,828	1,807	1,807	1,669	451	234	121	-54
75 to 79 years	...	18,013	1,440	1,440	974	285	187	78	-12
80 to 84 years	...	21,326	871	871	373	197	61	54	-3
85 to 89 years	...	20,855	388	388	85	98	24	28	-12
90 to 94 years	...	12,981	79	79	19	26	2	7	-3
95 to 99 years	...	4,212	14	14	1	4	0	0	-4
100 years and over	...	301	5	5	0	0	1	0	0

Annual Demographic Estimates: Canada, Provinces and Territories, 2017

Table 2.3

Annual estimates of demographic components by age group and sex, 2016/2017[1] — Canada (continued)

	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	**189,889**	**136,499**	**140,401**	**140,401**	**140,913**	**32,618**	**19,921**	**8,884**	**47,351**
-1 year	189,889	760	1,049	1,049	337	242	140	63	83
0 to 4 years	...	225	9,155	9,155	8,985	2,412	1,301	623	1,402
5 to 9 years	...	89	6,255	6,255	9,309	2,024	1,060	530	1,299
10 to 14 years	...	112	5,630	5,630	7,742	1,322	984	352	2,531
15 to 19 years	...	254	7,825	7,825	6,830	846	1,299	234	29,142
20 to 24 years	...	359	17,002	17,002	11,623	2,695	2,944	741	17,222
25 to 29 years	...	419	24,783	24,783	27,381	4,957	3,010	1,349	748
30 to 34 years	...	598	15,721	15,721	22,421	4,534	2,135	1,230	-1,011
35 to 39 years	...	730	11,217	11,217	14,640	3,494	1,662	928	-1,063
40 to 44 years	...	1,141	8,106	8,106	8,735	2,660	1,257	724	-825
45 to 49 years	...	1,939	7,625	7,625	5,306	1,963	1,109	563	-940
50 to 54 years	...	3,339	6,539	6,539	3,489	1,646	865	478	-674
55 to 59 years	...	5,186	5,214	5,214	3,385	1,127	713	328	-296
60 to 64 years	...	6,736	4,136	4,136	3,905	831	536	232	-87
65 to 69 years	...	9,515	3,413	3,413	3,243	670	280	183	-26
70 to 74 years	...	11,146	2,435	2,435	1,934	433	276	116	-56
75 to 79 years	...	14,046	1,927	1,927	1,110	324	173	91	-54
80 to 84 years	...	19,216	1,354	1,354	402	239	116	65	-15
85 to 89 years	...	24,790	733	733	107	142	51	40	-12
90 to 94 years	...	22,743	235	235	27	47	6	12	-14
95 to 99 years	...	11,111	47	47	2	10	4	2	-3
100 years and over	...	2,045	0	0	0	0	0	0	0

... not applicable

1. Period from July 1 to June 30.

Note: Preliminary estimates.

Source: Statistics Canada, Demography Division.

Statistics Canada – Catalogue no. 91-215-X

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 2011 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).

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

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

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;

$\Delta N\text{inter}$ =   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:

$$P_{(t+1)}^{0} = B_{(t,t+1)} - D_{(t,t+1)}^{-1} + I_{(t,t+1)}^{-1} - \left[E_{(t,t+1)}^{-1} + \Delta TE_{(t,t+1)}^{-1} \right] + RE_{(t,t+1)}^{-1} + \Delta NPR_{(t,t+1)}^{-1} + \Delta N\text{inter}_{(t,t+1)}^{-1} - Resid_{(t,t+1)}^{-1}$$

From 1 to 99 years:

$$P_{(t+1)}^{a+1} = P_{(t)}^{a} - D_{(t,t+1)}^{a} + I_{(t,t+1)}^{a} - \left[E_{(t,t+1)}^{a} + \Delta TE_{(t,t+1)}^{a} \right] + RE_{(t,t+1)}^{a} + \Delta NPR_{(t,t+1)}^{a} + \Delta N\text{inter}_{(t,t+1)}^{a} - Resid_{(t,t+1)}^{a}$$

For 100 years and over:

$$P_{(t+1)}^{100+} = P_{(t)}^{99+} - D_{(t,t+1)}^{99+} + I_{(t,t+1)}^{99+} - \left[E_{(t,t+1)}^{99+} + \Delta TE_{(t,t+1)}^{99+} \right] + RE_{(t,t+1)}^{99+} + \Delta NPR_{(t,t+1)}^{99+} + \Delta N\text{inter}_{(t,t+1)}^{99+} - Resid_{(t,t+1)}^{99+}$$

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 2011. The population universe of the 2011[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 and 2011;
- 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 and 2011 by sex for each province and territory. These adjustments were performed from age 85 in 2001, from age 90 in 2006 and from age 95 in 2011.

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 and 2011 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 five censuses (1991, 1996, 2001, 2006 and 2011). 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 and 2011. 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 for old age populations

Age structure analysis of recent censuses and population estimates showed that population at old ages, especially centenarians (population aged 100 years old and over), have been subject to overestimation issues. For older populations, the types of errors and the magnitude of their effect can vary from one census to another, from error of misreporting (voluntary and non voluntary) to errors emerging from data capture and processing errors.

When compared to 2011 Census figures, estimates of centenarians still based on 2006 Census were 29% higher for females and 88% higher for males. This indicated that the adjustments done to diminish the 2006 base population for ages 95+, which would make the 100+ population in 2011, were not sufficient. This led the Population Estimates Program (PEP) of Statistics Canada to review its method to adjust the base population's age structure. For example, with these new adjustments, the number of centenarians has been lowered in 2006 for both male and female, respectively from 830 to 595 (-39%) and from 3,891 to 3,784 (-3%).

Using death data and a combination of two methods, the extinct cohort method and the survival ratios method for non-extinct cohorts, the PEP has adjusted the age structure of the 2011 Census population in order to overcome the overestimation of population at old ages observed in the 2006 cycle.

Assuming that these populations are not affected by migration, the principle of the extinct cohort method (Vincent, 1951) is simple. When all members of a given cohort have died (up until age 110), the numbers alive in a given year can be calculated by summing the deaths, beginning with the oldest. For non-extinct cohorts, the survival ratio method (Thatcher 1992; Thatcher and al. 2002; Andreev 2004) was used to estimate population in a similar way but under the assumption that deaths of non-extinct cohorts are distributed by age mainly like those who are extinct.

In order to assure coherence of estimates by cohort, the adjustment, name demographic adjustment, was produced to adjust censal estimates for 2001, 2006 and 2011 by age and sex for each province and territory. These adjustments were performed from age 85 in 2001, from age 90 in 2006 and from age 95 in 2011. The surplus populations among the oldest-old population were redistributed in population aged 5 to 74 years according to their relative weights for each province/territory and sex.

The robustness of this newly implemented method will be monitored through the 2011 cycle and researches to improve its fitness and coherence will be continued. A more complete description of the method is incorporated in the first chapter (base population) of the methodological guide (catalogue no. 91-528-X).

B. Births and deaths

The numbers of births and deaths are derived directly from the vital statistics database of Statistics Canada's 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 closely parallels the census universe. Both universes include the births and deaths of all Canadians, immigrants and non-permanent residents (NPR) and exclude foreign residents.

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 Health Statistics Division 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 Health Statistics Division data.

---

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).

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

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 Health Statistics Division.

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 births derived from the birth probabilities. These proportions are calculated using 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 deaths derived from the death probabilities. These mortality rates are calculated using vital statistics from the past 2 years.

Levels of estimates

For information on the differences between preliminary[2] and final estimates, see sections **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. 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 Demography Division, 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 number of immigrants by age and sex is 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, updated the second year and final in the third 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 *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 the administrative files of immigrants and NPRs in Canada. It then provides Statistics Canada with information from Global Case

Management System (GCMS) files. 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 Demography Division, the terms non-permanent resident and temporary resident are equivalent.

NPR estimates are based on the number of NPRs, not on the net. 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 number of NPR.

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 net number of non-permanent residents by age and sex is 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 (formerly Canada child tax benefit (CCTB)), and data from the T1 Family File (T1FF[5]). 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;[5]

---

5.   The T1 family file (T1FF) is derived from the Canada Revenue Agency (CRA) T1 file by Income Statistics Division of Statistics Canada.

- 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[5] 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[5] file. We calculate a ratio of the number of emigrant adults to the number of emigrant children from the T1FF[5] 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 identical or very similar. In the absence of more up-to-date data sources, the assumption is made that levels remain similar.

> Estimates of the number of emigrants by age and sex are obtained by using the data by five-year age group, sex, province and territory from T1FF[5] files adjusted for the coverage. We distribute these estimates by single year of age using Sprague coefficients.

Levels of estimates

The difference between preliminary[2] and final estimates lies in the timeliness of the sources used to estimate this component. The same estimation method is used.

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 Demography Division's 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 Demography Division'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 Demography Division) yield an estimate of net temporary emigration.

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 is calculated first for 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.

Net temporary emigration can be estimated only for the intercensal period preceding the most recent census. Net temporary emigration in the current period is assumed to be the same as in the previous period for each province and territory.

> The emigration age and sex distribution is applied to obtain the age and sex structure of the net temporary emigration.

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 (formerly Canada child tax benefit (CCTB)) from Canada Revenue Agency (CRA) and T1FF[5] 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;[5]

- the adult / child ratio, which is based on the 2011 National Household Survey.

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 National Household Survey (NHS) data Characteristics of returning emigrants are derived from the question on the place of residence one year ago, after excluding non-permanent residents and immigrants.

Levels of estimates

The difference between preliminary[2] and final estimates lies in the timeliness of the sources used to estimate this component. The same estimation method is used.

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) (formerly Canada child tax benefit (CCTB)) of Canada Revenue Agency (CRA) and T1FF.[5]

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 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.[5] 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;[5]

- 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.[5]

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) are now distributed by quarter on the basis of preliminary 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[5] data and counts derived from the NHS question on the place of residence one year ago. From 2011/2012, the 2011 NHS age and sex distribution is used.

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.

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 and 2011 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. Demography Division adjusts the population enumerated in the census by province and territory using these estimates.

When creating base populations, the Estimates Program 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 Estimates Program 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 1991, the Estimates Program 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 Program had to revise the population estimates for the period from 1971 to 1986. 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.

Annual Demographic Estimates: Canada, Provinces and Territories, 2017

Text table 1
Estimated census net undercoverage, Canada, provinces and territories, 2001, 2006 and 2011 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
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, Demography Division.

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 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, 2006 and 2011 censuses, Canada

	2001	2006	2011
All ages	3.10	2.79	2.32
0 to 4 years	3.59	2.25	0.94
5 to 9 years	2.20	0.97	-0.23
10 to 14 years	1.09	0.96	0.11
15 to 19 years	2.95	3.15	2.93
20 to 24 years	7.11	7.57	6.79
25 to 29 years	8.28	8.89	8.28
30 to 34 years	6.40	6.84	6.72
35 to 39 years	4.64	4.96	4.15
40 to 44 years	2.72	4.15	2.54
45 to 49 years	1.52	1.74	1.93
50 to 54 years	1.35	0.67	1.01
55 to 59 years	1.17	0.01	0.05
60 to 64 years	0.71	-0.07	-0.25
65 to 69 years	0.78	-0.46	-0.38
70 to 74 years	0.86	-0.72	-0.49
75 to 79 years	0.48	-0.48	-0.51
80 to 84 years	0.54	-0.70	-0.51
85 to 89 years	-1.52	-0.33	-0.49
90 to 94 years	-5.45	-11.54	-0.47
95 to 99 years	-0.08	-6.64	-9.44
100 years and over	-9.58	-7.37	-11.85

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

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.

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 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 in the population estimates program, 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 (formerly Canada child tax benefit (CCTB)) 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, distributed equally among the five years, are maintained constant for the postcensal period. Moreover, assumptions were made to allow for the distribution of annual estimates to a quarterly level. 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 (formerly Canada child tax benefit (CCTB)). As this program covers only children, various adjustments must be done in order to derive the migration of adults. Consequently, preliminary 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:

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

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, with values close to zero per thousand throughout the years under consideration. On the other hand, interprovincial in-migrants and out-migrants[6] yielded the greatest precocity errors, ranging between 0.07 per thousand and 2.24 per thousand during the period 2012/2013 to 2015/2016 (see Text table 3).

---

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

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

Year/Component	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
						per thousand								
Births														
2009/2010	0.06	-0.91	-0.07	-0.30	-0.46	0.00	0.15	0.03	-0.11	0.38	-0.03	-0.12	0.05	-1.67
2010/2011	0.27	0.12	0.43	0.47	0.31	-0.03	0.38	0.52	0.22	0.73	-0.04	-0.35	1.23	0.39
2011/2012	0.08	0.86	0.11	-0.07	0.09	0.01	0.06	0.22	0.36	0.24	-0.02	-1.55	-0.05	0.29
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
Deaths														
2009/2010	0.31	0.65	0.28	0.57	0.58	-0.02	0.56	0.44	0.33	0.36	-0.05	-0.30	-0.14	-0.12
2010/2011	0.22	0.54	0.69	0.05	0.50	0.01	0.36	0.24	0.15	0.43	-0.04	0.84	1.03	0.12
2011/2012	0.31	0.08	0.67	0.38	0.54	0.07	0.58	0.30	0.13	0.32	-0.04	0.08	0.23	0.41
2012/2013	0.05	-0.06	0.33	0.15	0.14	0.02	0.05	0.30	0.16	0.02	-0.03	-0.31	-0.41	-0.23
Immigration														
2012/2013	-0.01	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00
2013/2014	-0.01	-0.01	-0.01	-0.01	0.00	0.00	-0.01	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00
2014/2015	-0.03	-0.01	-0.02	-0.01	-0.01	-0.02	-0.03	-0.07	-0.05	-0.04	-0.04	-0.08	-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
Emigration														
2009/2010	0.05	0.46	0.38	-0.12	-0.01	0.03	0.08	0.41	-0.20	0.78	-0.67	0.62	1.31	1.02
2010/2011	-0.13	0.08	-0.81	-0.28	-0.05	-0.08	-0.18	0.48	-0.05	0.51	-0.75	0.46	0.11	0.46
2011/2012	-0.31	-0.07	-0.23	-0.55	0.14	-0.03	-0.37	0.50	-0.16	-0.27	-0.94	-1.16	-0.14	0.35
2012/2013	-0.09	-0.32	0.02	-0.01	0.07	0.05	-0.13	0.18	-0.05	-0.16	-0.24	-0.89	0.14	0.43
Returning emigration														
2009/2010	-0.27	-0.04	0.34	-0.17	-0.19	-0.20	-0.30	-0.06	-0.17	-0.32	-0.41	-0.74	0.00	-0.09
2010/2011	-0.33	-0.16	-0.07	-0.17	-0.06	-0.22	-0.40	-0.21	-0.19	-0.64	-0.24	-0.43	0.00	0.00
2011/2012	-0.11	0.02	-0.27	-0.04	0.18	-0.10	-0.13	-0.19	-0.16	-0.25	0.04	0.20	0.00	0.09
2012/2013	-0.01	0.06	-0.44	0.01	0.07	-0.04	0.00	-0.14	0.15	0.07	-0.07	0.33	-0.34	0.00
Net temporary emigration														
2009/2010	0.05	0.26	0.25	0.26	0.26	0.08	0.19	0.13	0.05	0.01	-0.49	0.03	-0.02	0.06
2010/2011	0.05	0.26	0.22	0.26	0.26	0.08	0.18	0.13	0.06	0.01	-0.48	0.03	-0.02	0.09
2011/2012	0.31	0.48	0.46	0.48	0.48	0.24	0.50	0.34	0.16	0.28	-0.12	0.23	0.30	0.26
2012/2013	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	-0.09
Net non-permanent residents														
2009/2010	-0.04	0.02	-0.04	0.01	0.00	-0.06	-0.08	0.08	0.02	-0.02	0.00	0.41	0.00	0.09
2010/2011	-0.08	-0.03	0.02	-0.01	0.00	-0.09	-0.08	-0.05	-0.06	-0.20	-0.05	-0.14	-0.36	-0.03
2011/2012	0.02	0.46	1.08	0.32	0.56	-0.19	-0.20	0.46	1.37	1.54	-0.95	3.19	1.38	-0.12
2012/2013	-0.02	0.16	0.98	-0.22	0.08	0.76	-0.85	0.10	0.42	0.97	0.01	-0.28	-0.09	-0.12
In-migrants														
2012/2013	2.24	3.45	5.87	3.21	3.94	0.91	1.12	3.59	5.98	7.27	1.34	17.36	11.33	15.47
2013/2014	1.27	1.44	2.96	2.03	2.25	0.70	0.79	2.85	4.96	3.55	-0.10	2.87	4.23	13.61
2014/2015	0.07	0.38	-1.13	1.22	0.68	0.11	-0.08	0.03	1.22	1.04	-1.21	7.80	4.65	16.25
2015/2016	0.22	1.11	0.01	-0.49	0.53	0.04	-0.05	0.23	0.42	1.78	-0.21	-1.64	4.91	10.82
Out-migrants														
2012/2013	2.24	6.05	7.07	5.71	3.85	0.80	1.67	2.96	4.67	3.64	2.65	13.70	17.32	9.34
2013/2014	1.27	6.07	3.07	1.61	2.99	0.58	0.74	1.25	2.19	2.72	1.47	12.76	10.92	-0.48
2014/2015	0.07	3.33	2.71	0.13	0.69	-0.07	-0.08	0.88	0.03	-0.74	0.50	7.71	9.87	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	18.10	8.78	10.79
Net interprovincial migration														
2012/2013	...	-2.60	-1.19	-2.50	0.10	0.11	-0.55	0.63	1.31	3.63	-1.32	3.66	-5.99	6.14
2013/2014	...	-4.62	-0.11	0.42	-0.74	0.12	0.04	1.60	2.77	0.83	-1.57	-9.89	-6.69	14.09
2014/2015	...	-2.95	-3.84	1.09	-0.01	0.18	0.00	-0.84	1.19	1.78	-1.71	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	-19.74	-3.87	0.03

... not applicable
Source: Statistics Canada, Demography Division.

Precocity errors for births were mostly small when compared to other components, with the largest precocity error of 0.27 per thousand in 2010/2011. Similar to births, precocity errors for deaths were also low, with values lower or equal to 0.31 per thousand.

Precocity errors for emigration and returning emigration were mostly negative. During the years under consideration, precocity error for emigration was lowest in 2009/2010 at 0.05 per thousand and largest in 2011/2012 at -0.31 per thousand. For returning emigration, the values ranged from -0.01 per thousand in 2012/2013 to -0.33 per thousand in 2010/2011. During the period 2009/2010 to 2012/2013, the precocity errors for net temporary emigration were positive and low, at 0.05 per thousand in 2009/2010 and 2010/2011; it then increased slightly to 0.31 per thousand in 2011/2012 before dropping to close to zero per thousand in 2012/2013.

Precocity errors for net non-permanent residents were mostly negative and low during the period under consideration. Precocity error was at -0.04 per thousand in 2009/2010; it then increased slightly to -0.08 in 2010/2011. Precocity error for net non-permanent residents was positive in 2011/2012, at 0.02 per thousand yet it was negative again in 2012/2013, at -0.02 per thousand.

Precocity error by component for provinces and territories

In general, precocity error is typically larger 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 were small, ranging from close to zero per thousand (Quebec in 2009/2010)[7] to -1.67 per thousand (Nunavut in 2009/2010). Similar to births, precocity errors for deaths were also low; and they were predominantly positive. Over the years, the largest precocity error for deaths was 1.03 per thousand (Northwest Territories in 2010/2011).

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 for the net change in the number of non-permanent residents were also low during the years 2009/2010 and 2010/2011, with absolute error values less than or equal to 0.41 per thousand across the provinces and territories. Precocity errors were higher in 2011/2012 and 2012/2013, ranging from 0.01 per thousand for British Columbia (2012/2013) to 3.19 per thousand for Yukon (2011/2012).

Precocity errors for emigration ranged from the lowest at -0.01 per thousand (New Brunswick in 2009/2010 and Nova Scotia in 2012/2013) to the largest at 1.31 per thousand (Northwest Territories in 2009/2010). Precocity errors for returning emigration were mostly negative; the values ranged from close to zero per thousand for some years in Northwest Territories, Nunavut and Ontario to -0.74 per thousand for Yukon in 2009/2010. Precocity errors for net temporary emigration were positive during the years under consideration, except for British Columbia (2009/2010 to 2011/2012), Northwest Territories (2009/2010 and 2010/2011) and Nunavut (2012/2013).

Precocity errors for interprovincial in-migrants and out-migrants show that final estimates of these components were systematically lower than preliminary estimates in 2012/2013 and 2013/2014 (with one exception for in-migrants and also one exception for out-migrants). Compared to previous years, precocity errors for interprovincial in-migrants and out-migrants were considerably lower in 2014/2015 and 2015/2016 as a new method was implemented to estimate interprovincial migration which resulted in less overestimation of preliminary estimates[8] .

At the provincial level, the largest absolute precocity error value for net interprovincial migration was -5.17 per thousand (Prince Edward Island in 2015/2016), 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 precocity error was 0.03 per thousand (Nunavut in 2015/2016) and the largest was -19.74 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.

---

7.   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.
8.   For more detail regarding the methodology used to estimate interprovincial migration, please refer to chapter 7 of the publication catalogue no. 91-528-X.

In this case, the mean absolute precocity error by component is the mean of the absolute precocity errors for the 2008/2009 to 2012/2013 period.

At the national level, the mean absolute precocity error for the total emigration[9] component contributed the most to the sum of mean absolute precocity errors (56.41%), followed by deaths (25.35%) and births (12.54%), between 2008/2009 and 2012/2013. Immigration and net non-permanent residents each accounted for less than 6.0% to the sum of mean absolute precocity errors (refer to Text table 4).

Text table 4
Mean absolute percentage precocity error by components, 2008/2009 to 2012/2013, Canada, provinces and territories

	Births	Deaths	Immigration	Total emigration[1]	Net non-permanent residents	Net interprovincial migration	Total
				percent			
Canada	12.54	25.35	0.45	56.41	5.25	0.00	100.00
Newfoundland and Labrador	14.36	10.88	0.52	16.42	3.47	54.35	100.00
Prince Edward Island	7.04	8.42	2.59	16.03	8.32	57.60	100.00
Nova Scotia	9.50	12.90	0.64	22.19	4.35	50.42	100.00
New Brunswick	18.84	24.54	0.45	28.15	8.52	19.51	100.00
Quebec	1.76	4.92	4.31	35.14	27.21	26.67	100.00
Ontario	8.45	21.09	1.75	38.84	14.82	15.04	100.00
Manitoba	11.96	16.19	2.99	34.97	7.61	26.29	100.00
Saskatchewan	6.85	10.30	1.66	17.21	16.37	47.61	100.00
Alberta	8.65	6.87	2.58	20.35	15.99	45.56	100.00
British Columbia	1.15	1.85	1.29	54.60	8.59	32.52	100.00
Yukon	9.69	4.98	0.94	13.17	10.00	61.22	100.00
Northwest Territories	3.69	3.38	0.43	5.89	3.28	83.34	100.00
Nunavut	6.37	3.20	0.13	6.73	0.80	82.78	100.00

1. Total emigration includes emigration, returning emigration and net temporary emigration.
Source: Statistics Canada, Demography Division.

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 eight out of the thirteen provinces and territories, ranging from 45.56% in Alberta to 83.34% in Northwest Territories. In New Brunswick (28.15%), Quebec (35.14%), Ontario (38.84%), Manitoba (34.97%) and British Columbia (54.60%), it is the total emigration that explain the largest share of the mean absolute precocity errors (refer to Text table 4).

On the other hand, births accounted for the smallest share of the sum of mean absolute precocity errors in Quebec (1.76%) and British Columbia (1.15%). For the rest of the provinces and territories, immigration accounted for the smallest share of the sum of mean absolute precocity errors, at 2.99% or below. The lower precocity errors for births and deaths in Quebec and British Columbia compared to other provinces may be related to the special treatment of preliminary estimates for these two components[10].

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

---

9. Mean absolute percentage precocity error for total emigration includes the mean absolute percentages for emigration, returning emigration and net temporary emigration.
10. Births and deaths for Quebec and British Columbia are provided by their respective agencies. For more detail regarding the methodology used to estimate births and deaths, please refer to chapter 3 of the publication catalogue no. 91-528-X.

B. Error of closure

The error of closure measures the exactness 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 two sources: errors primarily due to sampling when measuring census 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.

Text table 5 shows postcensal population estimates on May 10, 2011 and census counts adjusted for CNU[1] and the errors of closure for Canada, provinces and territories for 2001, 2006 and 2011.

For Canada as a whole, the error of closure was estimated at 171,115 or 0.50% in 2011. This is an increase over the errors for 2001 (0.16%) and 2006 (0.14%).

The population estimates overestimated the population of six provinces, two territories and Canada as a whole. Four provinces and two territories posted errors of closure greater than 1% or less than -1%. Of these jurisdictions, only Newfoundland and Labrador's estimated population differed from the adjusted census population by more than 2% (-2.09%). In 2006, two provinces and three territories posted errors of closure greater than 1% or less than -1%, while this was the case for three provinces and two territories in 2001.

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

Annual Demographic Estimates: Canada, Provinces and Territories, 2017

Text table 5
Error of closure of the population estimates, Canada, provinces and territories, 2001, 2006 and 2011

Geography	Postcensal estimate on Census Day	Census adjusted for CNU[1]	Error of closure		CNU standard error[2]	t value[3]
	A	B	C=A-B	D=C/B*100	E	F=C/E
	number			percent	number	
2011						
Canada	**34,444,320**	**34,273,205**	**171,115**	**0.50**	**57,546**	**2.97**
Newfoundland and Labrador	513,745	524,728	-10,983	-2.09	2,912	-3.77
Prince Edward Island	145,745	143,590	2,155	1.50	923	2.33
Nova Scotia	948,697	943,638	5,059	0.54	5,346	0.95
New Brunswick	756,630	755,101	1,529	0.20	3,335	0.46
Quebec	7,972,672	7,993,123	-20,451	-0.26	23,660	-0.86
Ontario	13,360,099	13,236,621	123,478	0.93	44,121	2.80
Manitoba	1,252,662	1,230,574	22,088	1.79	6,104	3.62
Saskatchewan	1,055,988	1,063,729	-7,741	-0.73	6,306	-1.23
Alberta	3,776,676	3,777,935	-1,259	-0.03	18,046	-0.07
British Columbia	4,548,383	4,491,451	56,932	1.27	19,494	2.92
Yukon	35,364	35,253	111	0.31	303	0.37
Northwest Territories	44,113	43,439	674	1.55	323	2.09
Nunavut	33,546	34,023	-477	-1.40	608	-0.78
2006						
Canada	**32,565,797**	**32,521,670**	**44,127**	**0.14**	**53,926**	**0.82**
Newfoundland and Labrador	508,881	510,515	-1,634	-0.32	2,710	-0.60
Prince Edward Island	137,748	137,754	-6	0.00	701	-0.01
Nova Scotia	933,827	938,020	-4,193	-0.45	4,885	-0.86
New Brunswick	748,785	746,056	2,729	0.37	3,105	0.88
Quebec	7,646,288	7,623,482	22,806	0.30	24,077	0.95
Ontario	12,664,181	12,641,497	22,684	0.18	41,363	0.55
Manitoba	1,176,919	1,182,731	-5,812	-0.49	6,469	-0.90
Saskatchewan	987,735	991,490	-3,755	-0.38	4,805	-0.78
Alberta	3,358,568	3,408,975	-50,407	-1.48	16,091	-3.13
British Columbia	4,299,225	4,235,151	64,074	1.51	16,591	3.86
Yukon	31,151	32,177	-1,026	-3.19	194	-5.29
Northwest Territories	42,165	43,084	-919	-2.13	236	-3.89
Nunavut	30,324	30,738	-414	-1.35	176	-2.35
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, Demography Division.

> 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, 2011, Canada

	Both sexes		Male		Female	
	number	percent	number	percent	number	percent
All ages	**171,115**	**0.50**	**106,575**	**0.63**	**64,540**	**0.37**
0 to 4 years	-2,858	-0.15	-1,230	-0.13	-1,628	-0.18
5 to 9 years	7,103	0.39	7,335	0.79	-232	-0.03
10 to 14 years	-11,323	-0.59	-7,534	-0.76	-3,789	-0.41
15 to 19 years	-27,000	-1.20	-14,131	-1.23	-12,869	-1.17
20 to 24 years	57,072	2.43	45,444	3.82	11,628	1.00
25 to 29 years	37,002	1.56	30,391	2.56	6,611	0.56
30 to 34 years	15,628	0.67	9,178	0.79	6,450	0.55
35 to 39 years	30,962	1.37	22,281	1.97	8,681	0.76
40 to 44 years	24,969	1.05	19,074	1.60	5,895	0.50
45 to 49 years	36,839	1.35	18,069	1.32	18,770	1.39
50 to 54 years	-22,008	-0.82	-17,096	-1.27	-4,912	-0.37
55 to 59 years	2,186	0.09	-12,272	-1.05	14,458	1.23
60 to 64 years	-19,302	-0.94	-18,885	-1.87	-417	-0.04
65 to 69 years	13,622	0.90	5,555	0.75	8,067	1.03
70 to 74 years	-2,888	-0.25	494	0.09	-3,382	-0.56
75 to 79 years	3,779	0.41	2,819	0.68	960	0.19
80 to 84 years	4,182	0.60	4,454	1.54	-272	-0.07
85 to 89 years	14,958	3.52	9,380	6.32	5,578	2.02
90 to 94 years	9,758	5.76	4,787	9.95	4,971	4.10
95 to 99 years	-3,490	-9.01	-1,689	-21.24	-1,801	-5.85
100 years and over	1,924	36.95	151	20.91	1,773	39.53

Source: Statistics Canada, Demography Division.

Explanatory notes for the tables

Text table 7
Annual population estimates and factors of demographic growth

Year	Population at beginning period	Natural increase	Net interprovincial migration	Net international migration	Total net migration	Total growth
2011/2012	PD	D	D	D	D	D
2012/2013	PD	D	D	D	D	D
2013/2014	PD	R	D	R	R	R
2014/2015	PR	R	D	R	R	R
2015/2016	PR	R	D	R	R	R
2016/2017	PR	P	P	P	P	P
2017/2018	PP	..	..	..	..	..
Modified since[1]	2012/2013	2012/2013	2015/2016	2012/2013	2012/2013	2012/2013

.. not available for a specific reference period

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

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

Source: Statistics Canada, Demography Division.

Text table 8
Annual estimates of components of demographic growth

Year	Births	Deaths	In-migrants	Out-migrants	Immigrants	Emigrants	Returning emigrants	Net temporary emigrants	Net non-permanent residents
2011/2012	D	D	D	D	D	D	D	D	D
2012/2013	D	D	D	D	D	D	D	D	D
2013/2014	R	R	D	D	D	R	R	R	R
2014/2015	R	R	D	D	D	R	R	R	R
2015/2016	R	R	D	D	D	R	R	R	R
2016/2017	P	P	P	P	P	P	P	P	P
Modified since[1]	2012/2013	2012/2013	2015/2016	2015/2016	2014/2015	2012/2013	2012/2013	2012/2013	2012/2013

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

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

Source: Statistics Canada, Demography Division.

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, 2011 Census of Population adjusted for census net undercoverage and incompletely enumerated Indian reserves.

2011 Census: Statistics Canada, Census of Canada, 2011, Catalogue no. 98-310-X.

Census net undercoverage: See The Daily, September 26, 2013.

Incompletely enumerated Indian reserves: See The Daily, September 26, 2013.

Births and deaths

Statistics Canada, Health Statistics Division.

Statistics Canada, Demography Division, Catalogue no. 91-215-X, Quarterly.

Births
Fertility rates for 2013 based on births by age of mother provided by Health Statistics Division applied to the female population estimates at the beginning of the quarter. Births for Quebec and British Columbia were provided by their respective agencies.

Deaths
Mortality rates for 2013 based on deaths by age group and sex provided by Health Statistics Division 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) according to information made available on August 15, 2017.

Emigration

The estimates are produced by Demography Division using:

- data from Canada Revenue Agency (CRA) Canada child benefit files (CCB) program (formerly Canada child tax benefit (CCTB)). From 2015/2016, we used 2014/2015 data;
- tax data calculated using T1FF file provided by the Income Statistics Division of Statistics Canada. From 2015/2016, we used 2014/2015 data;
- data provided by the U.S. Department of Homeland Security, Office of Immigration Statistics. From 2016/2017, we used 2015/2016 data;
- data on the number of adult and children emigrants from T1FF file used for the provincial distribution of adults. From 2015/2016, we used 2014/2015 data.

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.

Returning emigration

The estimates are produced by Demography Division using:

- data from Canada Revenue Agency (CRA) Canada child benefit files (CCB) program (formerly Canada child tax benefit (CCTB)). From 2015/2016, we used 2014/2015 data;
- 2011 National Household Survey – question on the place of residence one year ago.

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.

Net temporary emigration

The estimates are produced by Demography Division using:

- data from the Reverse Record Check (RRC) of the 2011 Census;
- 2011 National Household Survey – question on the place of residence 5 years ago;
- estimates of returning emigrants for 2006 to 2011 intercensal period;
- distribution by age and sex of emigrants.

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

Non-permanent residents

The estimates are produced by Demography Division using the Global Case Management System (GCMS) files from IRCC. These files, received on August 15, 2017, document the number of persons holding permits/authorizations or claiming refugee status.

Interprovincial migration

The estimates are produced by Demography Division using:

- adjusted migration data for children from Canada child benefit (CCB) program (formerly Canada child tax benefit (CCTB)) 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 2015/2016 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 2013/2014, 2014/2015 and 2015/2016.

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 monthly data is not equal to the quarterly or annual data). This method has been applied starting with July 2011.

Related products

Selected publications from Statistics Canada

91-209-X	Report on the Demographic Situation in Canada
91-213-X	Annual Demographic Statistics
91-520-X	Population Projections for Canada, Provinces and Territories
91-002-X	Quarterly Demographic Estimates

Selected CANSIM tables from Statistics Canada

051-0001	Estimates of population, by age group and sex, Canada, provinces and territories
051-0002	Estimates of deaths, by sex and age group, Canada, provinces and territories, annual
051-0004	Components of population growth, Canada, provinces and territories, annual
051-0005	Estimates of population, Canada, provinces and territories, quarterly
051-0006	Immigrants to Canada, by country of last permanent residence, quarterly
051-0010	Estimates of population, by marital status, age group and sex, Canada, provinces and territories
051-0011	International migrants, by age group and sex, Canada, provinces, and territories
051-0012	Interprovincial migrants, by age group and sex, Canada, provinces and territories
051-0013	Estimates of births, by sex, Canada, provinces and territories, annual
051-0017	Interprovincial migrants, Canada, provinces and territories, quarterly
051-0018	Interprovincial in-, out- and net-migrants, Canada, provinces and territories, annual
051-0019	Interprovincial migrants, by province or territory of origin and destination, annual
051-0020	Number of non-permanent residents, Canada, provinces and territories, quarterly
051-0037	International migration components, Canada, provinces and territories, quarterly
051-0045	Interprovincial migrants, by province or territory of origin and destination, quarterly
053-0001	Vital statistics, births, deaths and marriages
102-0502	Deaths, by month, Canada, provinces and territories, annual
102-4502	Live births, by month, Canada, provinces and territories, annual

Selected surveys from Statistics Canada

3601	Estimates of Total Population, Canada, Provinces and Territories
3604	Estimates of Population by Age and Sex for Canada, the Provinces and the Territories
3605	Estimates of Population by Marital Status, Age and Sex for Canada, the Provinces and the Territories

Selected summary tables from Statistics Canada

• *Births, estimates, by province and territory*

• *Deaths, estimates, by province and territory*

• *Components of population growth, by province and territory*

• *Population by year, by province and territory*

• *Population by marital status and sex, by province and territory*