

# Provisional death counts and excess mortality, January 2020 to January 2021

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COVID-19 continues to affect communities and families in Canada and across the world. Beyond deaths attributed to the disease itself, the pandemic could also have indirect consequences that increase or decrease the number of deaths as a result of various factors, including delayed medical procedures or increased substance use.

To understand both the direct and indirect consequences of the pandemic, it is important to measure excess mortality, which occurs when there are more deaths during a period of time than what would be expected for that period. It should be noted that, even without a pandemic, there is always some year-to-year variation in the number of people who die in a given week. This means that the number of expected deaths should fall within a certain range of values. There is evidence of excess mortality when weekly deaths are consistently higher than the number expected, but especially when they exceed the range of what would be expected over consecutive weeks.

There were an estimated 309,912 deaths in Canada in 2020. This is 16,333 more deaths than what would have been expected if there were no pandemic, after accounting for changes in the population such as aging, and 20,619 more deaths than in 2019. Excess mortality continued through the end of December in Canada, with 995 deaths in the last two weeks of the year, about 8% more than expected if there were no pandemic. While the pandemic has been felt around the world, countries have been impacted in different ways. This release examines differences in excess mortality trends between Canada and its neighbour to the south, the United States. These comparisons focus on relative excess deaths, or the percentage more than expected if there were no pandemic. This controls for differences between the two countries in terms of population and pre-pandemic mortality trends.

Today, as part of its commitment to provide timely and relevant information on COVID-19 and its impact on Canadians, Statistics Canada published an updated provisional dataset from the Canadian Vital Statistics Death Database covering the period from January 2020 to January 2021. Updates were also made to the provisional death estimates, which have been adjusted, where possible, to account for the incomplete nature of the counts. The provisional estimates will continue to be revised in future releases as more information is reported by provincial and territorial vital statistics agencies and as methods continue to be enhanced.

## **Canada experienced less relative excess mortality in 2020 than the United States**

COVID-19 had a profound impact on deaths in both Canada and the United States in 2020. About 5% of the total number of deaths reported in Canada in 2020 were attributed to COVID-19, compared with 11% in the United States.

Both Canada and the United States began to observe excess mortality in March 2020, about when the World Health Organization declared COVID-19 a global pandemic.

By the end of the year, there were 5.6% more deaths in Canada than what would have been expected if there were no pandemic. By comparison, the United States experienced 17.4% more deaths than expected in 2020, or over half a million (506,906) excess deaths, according to the United States Centers for Disease Control and Prevention.

Excess mortality in both countries appeared to be largely attributable to deaths caused directly by COVID-19. However, the number of excess deaths was more in line with the number of deaths attributed to COVID-19 in Canada than in the United States. In Canada, 14,965 deaths were recorded as directly caused by COVID-19 in 2020. This is about 8% lower than the number of excess deaths over the course of the year. By comparison, 387,896 deaths that occurred in the United States in 2020 were attributed to COVID-19—23% lower than the number of excess deaths.



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## Although both Canada and the United States experienced a spike in deaths in spring 2020, their trends started to differ in the following months

In late March 2020, as COVID-19 deaths rose, both Canada and the United States began to experience what would become comparatively large increases in excess mortality. Between March and early June, there were 8,324 excess deaths in Canada. The number of excess deaths peaked during a week in early May when there were 24% more deaths than expected. By comparison, during the same period, the United States experienced 147,206 excess deaths, peaking during a week in early April when there were 40% more deaths than expected.

While this spring period accounted for over half of the excess deaths experienced nationally in Canada in 2020, the same time period reflected 29% of the excess deaths in the United States in 2020.

During the summer months, and in line with a drop in COVID-19 deaths, Canada's overall number of deaths fell within the range of what could have been expected if there were no pandemic. Meanwhile, in the United States, there were an additional 146,419 excess deaths in the summer. Excess deaths in the United States during the summer hit a peak at the end of July, with 26% more deaths than expected.

In September 2020, both Canada and the United States observed an increase in excess deaths that has continued into 2021. In Canada, 7,354 excess deaths occurred between September and the first week of January 2021, about 9% more deaths than expected. There were 224,197 excess deaths reported in the United States during this same period, accounting for 27% more deaths than what would have been expected if there were no pandemic. Both countries saw their national excess death figures continue to climb into early 2021.

## COVID-19 deaths affecting younger populations in the United States than in Canada

In both countries, COVID-19 has disproportionately affected older populations. However, in the United States, nearly 20% of COVID-19 deaths occurred among individuals younger than 65 in 2020. This is more than three times the figure for Canada, where less than 6% of deaths attributed directly to COVID-19 affected this population.

In fact, over half (55%) of COVID-19 deaths in Canada have occurred among people older than 85, while in the United States, those aged 65 to 84 years old were the most affected, accounting for nearly half (49%) of COVID-19 deaths in 2020.

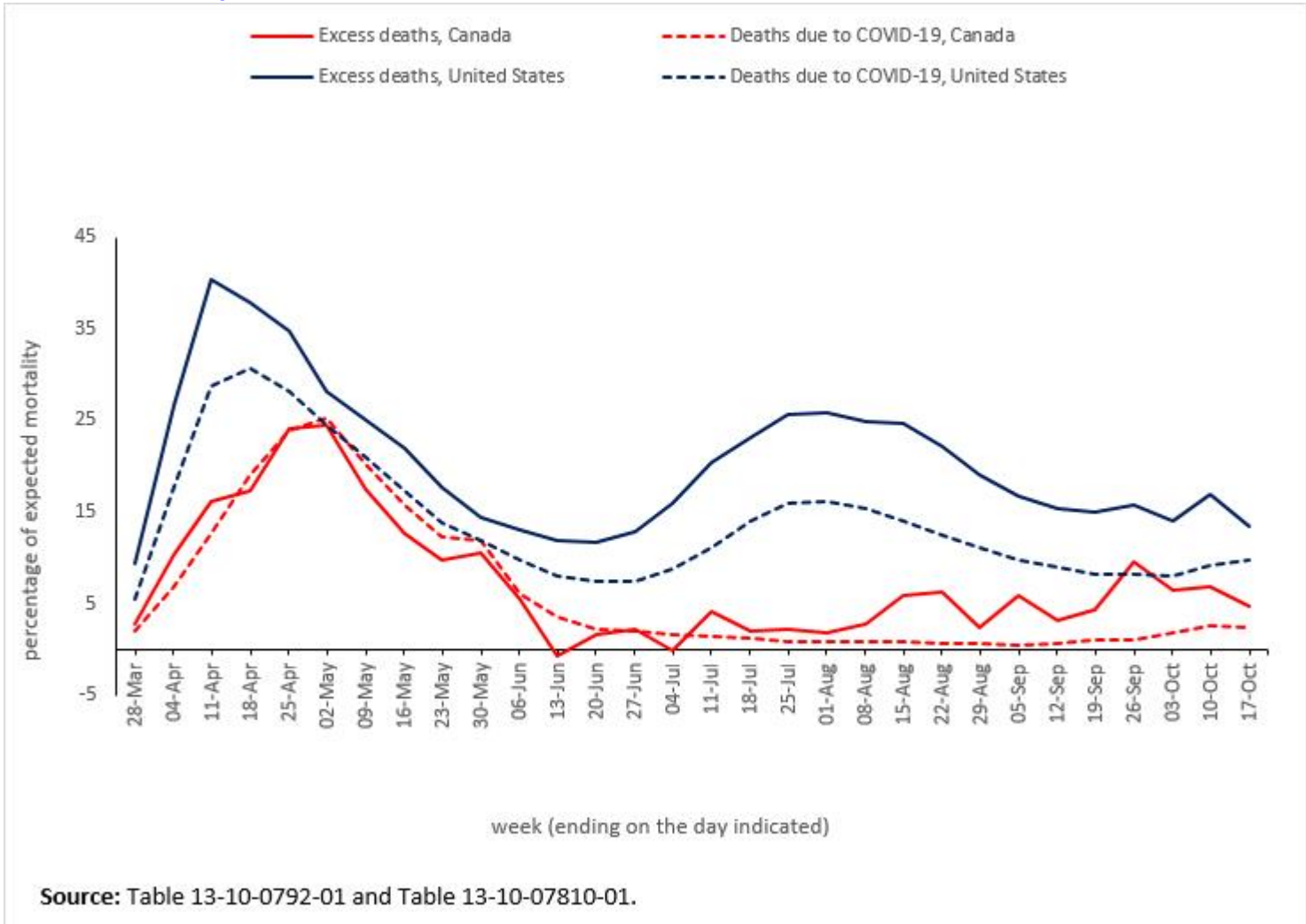
## Excess mortality in the younger-than-45 age group is increasing in Canada

As the pandemic continues, excess mortality in Canada has shifted to affect younger populations, but this shift cannot be explained by changes in the number of deaths attributed directly to COVID-19. During the spring of 2020 in Canada, the number of deaths reported among those younger than 45 was 12% higher than expected. During the fall, the number of deaths among this age group increased to 19% higher than expected.

As there was no increase in deaths caused by COVID-19 for this age group—less than 1% of COVID-19 deaths in Canada involved individuals younger than 45—these shifts imply an increase in deaths that may be indirectly associated with the pandemic or other factors. For example, in some provinces, there have been observed increases in overdose-related deaths in 2020 compared with previous years.

The COVID-19 pandemic has now lasted for over a year, with rises and falls in the number of deaths and, more recently, the development of vaccines and the emergence of variants. To better understand the evolving impacts of the pandemic on mortality in Canada, Statistics Canada will continue to provide timely information on a regular basis on excess deaths and causes of death as it becomes available.

**Infographic 1 – Excess deaths and deaths due to COVID-19, expressed as percentages of expected mortality, Canada and the United States**



## Note to readers

As noted in the article, the number of excess deaths is measured as the difference between the number of observed deaths and the number of expected deaths over a certain period of time. Measuring excess mortality requires some way to determine the number of deaths that would be expected were there no pandemic. There are a number of ways to estimate expected deaths, including comparing with previous yearly counts or using historical averages—for example, over the previous four years. In the Canadian context, with an aging and growing population, the number of deaths has been steadily increasing over recent years, and so a higher number of deaths would be expected in 2020 regardless of COVID-19. For these reasons, Statistics Canada is using an approach that has also been adopted by other countries to estimate expected deaths, using a statistical model to project forward recent trends in mortality.

As indicated since the first release of provisional mortality figures in May 2020, the provisional figures will continue to be updated as more information is reported to Statistics Canada by the provinces and territories and as further enhancements are made to the estimation models. With today's release, the models used to estimate the baseline number of deaths expected if there were no pandemic were improved to better reflect trends immediately preceding the pandemic and enhance the seasonal effect. The effect of these changes, compared with data released in March 2021, is greatest in the fall, between the week ending September 26 and the week ending November 7, resulting in a 1% decrease in expected deaths at the national level, and less than a 2% difference in any province or territory. As part of Statistics Canada's commitment to providing high-quality and timely mortality data, the models will continue to be updated on a regular basis, based on methodological enhancements and considerations, as the pandemic progresses and more information becomes available to Statistics Canada.

Canadian mortality estimates were compared with data from the United States, derived from the United States Centers for Disease Control and Prevention. Two datasets were used to produce the United States figures cited in this release:

- [Excess Deaths Associated with COVID-19](#)
- [Provisional COVID-19 Death Counts by Sex, Age and Week](#).

Similar to what is done for the Canadian figures, the United States figures were adjusted to account for potential underreporting because of the incomplete nature of the data, particularly in the most recent weeks for which data were reported.

Excess death figures for both Canada and the United States are computed using a similar model for weekly expected numbers of deaths. Differences between the number of deaths observed and the expected number of deaths were calculated to provide the number of excess deaths. Percentages of excess deaths were then produced by dividing the number of excess deaths by the number of expected deaths.

For both countries, figures related to deaths caused by COVID-19 refer to cases where COVID-19 was listed as the underlying cause of death, according to the decedents' medical certificates of death.

More information on excess mortality during the COVID-19 pandemic in Canada is available in the article "[Excess mortality in Canada during the COVID-19 pandemic](#)."

References to the period from March to early June 2020, or the spring, are to the period from the week ending March 28 to the week ending June 6. Excess deaths in Canada peaked in the spring during the week ending May 2, 2020. In the United States, excess deaths in the spring peaked during the week ending April 11, 2020.

References to the summer are to the period from the week ending June 13 to the week ending September 19.

References to the period from mid-September to the first week of January 2021, or the fall, are to the period from the week ending September 26 to the week ending January 2, 2021. The peak observed in the United States in the fall occurred during the week from December 27, 2020, to January 2, 2021.

References to the last two weeks of December are to the period from December 20, 2020, to January 2, 2021.

With the exception of the age-specific COVID-19 statistics, references to deaths occurring in 2020 are to the period extending from December 29, 2019, to January 2, 2021. All reference periods are identical within the Canadian and American analyses.

About 12% of provisional information on causes of death for the reference period from January 2020 to January 2021 is unknown or pending investigation. For this reason, among others, the number of COVID-19 deaths published today may differ from the surveillance figures compiled by the Public Health Agency of Canada. More information on the two sources is provided in [the article announcing the October 28 release of provisional data on deaths in Canada](#). Information on the certification and classification of COVID-19 deaths can be found in the study "[COVID-19 death comorbidities in Canada](#)."

**Available tables:** [13-10-0768-01](#), [13-10-0783-01](#), [13-10-0784-01](#), [13-10-0792-01](#) and [13-10-0810-01](#).

**Definitions, data sources and methods:** survey number [3233](#).

To facilitate the identification of trends in excess deaths by province and territory, the interactive visualization tool "[Provisional weekly estimates of the number of deaths, expected number of deaths and excess mortality: Interactive Tool](#)" has been updated.

To facilitate the identification of trends in the number of weekly deaths by age group and sex, and by province and territory, the interactive visualization tool "[Provisional weekly death counts: Interactive tool](#)" has also been updated.

For more information, or to enquire about the concepts, methods or data quality of this release, contact us (toll-free 1-800-263-1136; 514-283-8300; [STATCAN.infostats-infostats.STATCAN@canada.ca](mailto:STATCAN.infostats-infostats.STATCAN@canada.ca)) or Media Relations (613-951-4636; [STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca](mailto:STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca)).