

Provisional death counts and excess mortality, January 2020 to October 2022

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The emergence of COVID-19 variants of concern and community response to shifting public health measures continue to influence the course of the COVID-19 pandemic in Canada and worldwide.

To understand the direct and indirect consequences of the pandemic, it is important to measure excess mortality, which occurs when there are more deaths than expected in a given period. It should be noted that, even without a pandemic, there is always some year-to-year variation in the number of deaths in a given week. As such, 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 expected number, but especially when they exceed the range of what is expected over several consecutive weeks.

Provisional data show there were an estimated 53,741 excess deaths in Canada from the end of March 2020 to the end of August 2022, 7.6% more deaths than expected had there not been a pandemic. During this period, at least 42,215 deaths were directly attributed to COVID-19.

The third week of January 2022 was the deadliest week in Canada since the pandemic began, with 27% more deaths than what would have been expected

Since the emergence of the Omicron variant in late November 2021, there have been two periods of significant excess mortality observed so far. Nationally, there were 8,286 more deaths than expected from the beginning of January 2022 to the end of February 2022, or 16.8% more deaths than expected over that period. During this period of excess mortality, the highest number of deaths and the highest weekly rate of excess mortality of the pandemic were recorded in the third week of January 2022, with 26.8% more deaths than expected. Put differently, over one in five deaths during this week would not have been expected. In the spring, there were 2,357 excess deaths observed from the middle of April 2022 to the middle of May 2022, or 8.4% more deaths than expected. While the first period of excess mortality in 2022 was driven by excess mortality in Quebec and Ontario, the most recent period of excess mortality was driven by excess mortality in the three westernmost provinces. In fact, Alberta and British Columbia had higher than expected weekly deaths through much of 2022.

Deaths related to alcohol and drug use increase to new highs during the pandemic

While COVID-19 has been a main driver of excess deaths overall, other factors are driving excess mortality as well, particularly among younger Canadians.

Deaths attributed to unintentional (accidental) poisonings and exposure to noxious substances, including overdoses from prescription, over-the-counter and illicit substances, have risen since the beginning of the pandemic. Provisional data at the national level show that the number of deaths attributed to accidental poisoning and exposure to noxious substances were 4,605 in 2020 and 6,310 in 2021, and these numbers are expected to increase with future revisions to the data. In comparison, at the previous height of the overdose crisis in 2017, 4,830 deaths were attributed to unintentional poisonings.

Younger age groups made up a disproportionate number of deaths from overdoses. Among individuals aged younger than 45 years, there were 2,640 accidental poisoning deaths in 2020 and 3,600 in 2021, while among those aged 45 to 64 years, there were 1,735 deaths in 2020 and 2,355 in 2021. By comparison, among individuals aged 65 years and older, accidental poisoning attributed to 230 deaths in 2020 and 350 in 2021.

Alcohol-induced mortality also increased significantly throughout the pandemic. There were 3,790 alcohol-induced deaths in Canada in 2020 and 3,875 in 2021, compared with 3,200 in 2019. The 18% increase from 2019 to 2020 was the largest year-over-year change in alcohol-induced deaths seen in at least the last 20 years. The effects of this increase were felt most among those aged younger than 65 years. The number of alcohol-induced deaths from 2019 to 2020 in this age group increased by 27% (from 1,955 to 2,490), compared



with a 4% increase (from 1,245 to 1,300) among those aged 65 years and older. In 2021, the number of alcohol-induced deaths among those aged younger than 65 years (2,525) and among those aged 65 years and older (1,345) were similar to those observed in 2020.

In its commitment to keep Canadians informed of the effects of the pandemic, today's release includes a new and updated provisional dataset from the Canadian Vital Statistics - Death Database, covering the period from January 1, 2020, to November 5, 2022. These data are updated with the most recent information available monthly.

Note to readers

The data released today are provisional, as they are not based on all the deaths that occurred during the reference period because of reporting delays and because they do not include those of Yukon. Provisional death counts are based on what is reported to Statistics Canada by provincial and territorial vital statistics registries. Provisional death estimates have been adjusted to account for incomplete data where possible. The numbers of excess deaths discussed in this analysis refer to provisional estimates. Information on the methods used can be found in the "Definitions, data sources and methods" section of the [Canadian Vital Statistics Death Database](#).

The provisional death counts and estimates released today may not match figures from other sources, such as media reports, or counts and estimates from provincial and territorial health authorities and other agencies.

There are several ways to measure excess mortality, and each has its strengths and weaknesses. There are also several challenges that come with measuring excess mortality, most importantly properly estimating the number of expected deaths that would occur in a non-COVID-19 context as a basis for comparison with current death counts. Significant variations may be observed from year to year in the annual death counts, especially in the least-populated provinces and the territories. Moreover, yearly death counts may be affected by changes in the composition of the population, particularly regarding age and changes in mortality rates (e.g., reduced mortality). In the Canadian context, with an aging and growing population, the number of deaths has been increasing steadily in recent years, so a higher number of deaths in 2021 and 2022 would be expected, regardless of COVID-19.

A second challenge is the difficulty of collecting timely death counts. Taking these considerations into account, the method chosen by Statistics Canada to estimate expected deaths—which has also been adopted by organizations in several other countries, including the US Centers for Disease Control and Prevention—is adapted from an infectious disease detection algorithm that has been largely used in the context of mortality surveillance in recent years.

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](#)."

Starting in September 2022, Quebec implemented electronic death registration, leading to timelier reporting of deaths in the province. While Statistics Canada has been adjusting the number of weekly deaths for reporting delays, the magnitude of these adjustments may no longer be applicable in Quebec.

The previous monthly release included adjusted estimates for Quebec ending the week of October 1, 2022. In response to the timelier data, estimates for the weeks ending September 24 and October 1, 2022, have been replaced with the counts of deaths reported to Statistics Canada, without any adjustment, in Tables 13-10-0762-10, 13-10-0784-10, 13-10-0792-10 and 13-10-0810-10. Figures for more recent weeks will be updated when more data have been received to better understand the new flow of information.

The tabulation of causes of death is based on the underlying cause of death, which is defined by the World Health Organization as the disease or injury that initiated the train of events leading directly to death, or as the circumstances of the accident or violence that produced the fatal injury. The underlying cause of death is selected from the causes and conditions listed on the medical certificate of cause of death completed by a medical professional, medical examiner or coroner. More information on causes of death, including the certification and classification of COVID-19 deaths, can be found in the study "[COVID-19 death comorbidities in Canada](#)."

The category of accidental poisoning includes poisoning from various illicit drugs, prescription and over-the-counter medications, alcohol, as well as solvents and pesticides.

Alcohol-induced mortality includes death attributed to the following causes of death:

- alcohol-induced pseudo-Cushing's Syndrome
- mental and behavioural disorders attributed to the use of alcohol
- degeneration of nervous system attributed to alcohol
- alcoholic polyneuropathy
- alcoholic myopathy
- alcoholic cardiomyopathy
- alcoholic gastritis
- alcoholic liver disease
- alcohol-induced acute pancreatitis
- alcohol-induced chronic pancreatitis
- finding of alcohol in blood
- accidental poisoning by and exposure to alcohol

- *intentional self-poisoning by and exposure to alcohol*
- *poisoning by and exposure to alcohol, undetermined intent.*

References to the period from the end of March 2020 to the end of August 2022 refer to the period from the week ending March 28, 2020, to the week ending August 27, 2022.

References to the period from the beginning of January 2022 to the end of February 2022 refer to the period from the week ending January 8, 2022, to the week ending February 26, 2022.

References to the period from the middle of April 2022 to the middle of May 2022 refer to the period from the week ending April 23, 2022, to the week ending May 21, 2022.

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](#).

The [Life expectancy and deaths statistics](#) portal, presenting information related to death in Canada, was updated today. It features the [Provisional deaths and excess mortality in Canada dashboard](#), which brings recent insights into the trends in excess mortality together with interactive data visualization tools.

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; infostats@statcan.gc.ca) or Media Relations (statcan.mediahotline-ligneinfomedias.statcan@statcan.gc.ca).