Provisional death counts and excess mortality, January to December 2020

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COVID-19 continues to affect communities and families across the country and many have lost family members and friends. 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. Excess mortality occurs when the number of deaths exceeds that range.

From January to mid-December 2020, there were an estimated 296,373 deaths in Canada, representing an excess of 13,798 deaths above and beyond what would have been expected had there been no pandemic. This is about 5% more deaths than expected in that period, after accounting for changes in the population, such as aging, and about 7% more deaths than the 277,276 observed within the same time frame in 2019.

Today, as part of Statistics Canada's commitment to provide timely and relevant information on COVID-19 and its impact on Canadians, an updated provisional dataset from the Canadian Vital Statistics Death Database covering the period from January to mid-December is now available.

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.

The direct impacts of COVID-19 cannot fully account for the excess deaths observed in Canada in 2020, particularly in the fall

In the early months of the pandemic, the weekly number of excess deaths and deaths caused by COVID-19 were closely aligned and mostly affected older populations, suggesting that COVID-19 itself was driving excess mortality in Canada. However, more recently, the number of excess deaths has been higher than the number of deaths due to COVID-19, and these deaths are affecting younger populations, suggesting that other factors, including possible indirect impacts of the pandemic, are now at play.

From the beginning of the COVID-19 pandemic in March to early June, there were 8,530 deaths where COVID-19 was the underlying cause, based on the medical certificate of cause of death. This exceeded the number of excess deaths (8,496) by under 1% over that period. The alignment at the start of the pandemic may not be surprising as it may have been too early for some of the possible indirect consequences of the pandemic to have an effect. At this time, excess mortality would have largely been driven by COVID-19 itself.

Overall, during those first months of the pandemic, 86% of excess deaths occurred among individuals aged 65 and older. Similarly, COVID-19 deaths also disproportionately occurred in older populations during the March-to-early-June period. Approximately 94% of the deaths caused by COVID-19 involved individuals aged 65 and older.

After several months during which deaths fell within the expected range, Canada once again experienced excess mortality at a national level beginning in September. From September to November, 3,626 excess deaths were reported nationally. Within this same period, there were 1,835 deaths reported to have been caused directly by COVID-19, although this number is expected to rise as more deaths are reported by the provinces and territories.

In addition to the difference in the number of excess deaths and the number of deaths caused by COVID-19, the age groups affected by both were no longer as closely aligned in the fall as they were in the spring. Similar to what was observed in the spring, about 95% of the deaths directly caused by COVID-19 during the fall involved people aged 65 and older.

However, during the fall of 2020, younger people became more heavily affected by excess deaths, as 35% of these deaths involved individuals under the age of 65, up from 14% in the spring.

The number of deaths was 24% higher than expected for men aged under 45, followed by women aged 45 to 64, who recorded 14% more deaths than expected. By comparison, there were 6% more deaths than expected among those aged 85 and older during the fall period.

As these shifts imply an increase in deaths not directly caused by COVID-19, it is important to note that some deaths may be due to the indirect consequences of the pandemic, which could include increases in mortality due to overdoses. For example, in British Columbia, the Chief Coroner's Office has reported increases in deaths due to overdoses since the start of the pandemic. Similarly, Alberta Health Services reported decreases in both the provision and use of substance use treatment programs as well as increases in opioid-related emergency responses and deaths since the onset of the pandemic. Overdose deaths disproportionately affect younger men. For example, according to a report by Alberta Health, between January 1 and June 30, 2020, 79% of apparent unintentional fentanyl overdoses were among men, with those aged 25 to 39 recording the highest proportions of such deaths.

The number of provinces with excess deaths is increasing as the pandemic progresses

The number of deaths reported during the fall also reflected a change in the distribution of excess mortality among the provinces. In the spring, more than half of excess deaths occurred in Quebec (52%). However, from September to November, about 15% of excess deaths occurred in that province. In fact, Quebec has not reported any significant excess mortality since June.

Increased excess mortality in Alberta and British Columbia partly accounted for the shift. In the fall, there were 12% more deaths than expected in Alberta, up from 5% more deaths than expected in the spring. Similarly, for British Columbia, there were 9% more deaths than expected in the fall, compared with 6% in the spring.

Excess mortality was also observed in the fall, for the first time, in Saskatchewan, New Brunswick and Nova Scotia. Saskatchewan and New Brunswick had 9% more deaths than expected over those months, while Nova Scotia reported 6% more deaths than expected.

The share of excess deaths for Ontario was relatively similar in the spring (39%) and fall (40%).

Deaths from other causes also up in some provinces in 2020

Statistics Canada also released today provisional data on the causes of death covering the period from January to mid-December 2020. The provisional results on causes of death, while not complete, do allow for some insight into changes in mortality during the pandemic. The cause of death has been reported for 94% of the deaths that occurred during the first period of excess mortality in Canada—from March to June.

Based on data received to date, from March to June, the number of deaths from certain causes rose in several provinces compared with the same period in previous years. For example, the number of deaths caused by heart disease in Ontario rose from 4,125 in the spring of 2019 to 4,345 in the spring of 2020, which was higher than in the spring of any of the previous five years. While overdose deaths across Canada appeared to decline in 2019 from highs in 2017 and 2018, there are early signs of an increase in 2020. For example, Alberta reported 220 deaths caused by overdoses from March to June 2020, compared with 170 overdose deaths during same time period in 2019. This could be an early indication of the indirect impacts of the pandemic, in advance of the period when excess mortality started to trend among younger age groups.

Note to readers

The data released today are provisional as they are not based on all deaths that occurred during the reference period due to reporting delays, and do not include Yukon. Provisional death counts are based on what is reported to Statistics Canada by the 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 for Survey 3233 — Vital Statistics - Death Database.

The provisional death counts and estimates released today for 2020 may not match figures from other sources, such as media reports, or counts and estimates from provincial or territorial health authorities and other agencies.

Deaths due to COVID-19, are those for which COVID-19 was found to be the underlying cause of death, defined by the World Health Organization as the disease or injury which initiated the train of events leading directly to death; or, as the circumstances of the accident or violence which 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. These figures exclude cases where a cause might be listed on the medical certificate of cause of death but where it is not considered the underlying cause of death. While any rises in causes of death other than COVID-19 may be indirectly related to the pandemic, it is important to note that there is always some variation in the number of people who die from year to year. Unlike the analysis on excess deaths, comparing against previous figures for causes of death does not account for this variability nor does it account for other changes unrelated to COVID-19 such as population aging. 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."

References to the period from the end of March to early June refer to the period from the week ending March 28 to the week ending June 6. References to the period from mid-September to November refer to the period from the week ending September 26 to the week ending November 21.

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."

Information regarding drug-related deaths in Alberta and in British Columbia is taken from the following publications:

- *Alberta Health. (2020). Alberta COVID-19 Opioid Surveillance Report, Q2 2020. Edmonton, AB: Government of Alberta.*
- *British Columbia Coroners Service. (2020). Illicit Drug Toxicity Deaths in BC, January 1, 2010 - November 30, 2020. Victoria, BC: Government of British Columbia.*

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 visual 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 visual 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**) or Media Relations (613-951-4636; **STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca**).