

StatCan COVID-19:

Data to Insights for a Better Canada



People living in apartments and larger households were at higher risk of dying from COVID-19 during the first wave of the pandemic

by Fei-Ju Yang and Nicole Aitken

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People living in apartments and larger households were at higher risk of dying from COVID-19 during the first wave of the pandemic

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In Canada, social distancing measures were implemented in public spaces starting mid-March 2020 because COVID-19 is spread when an infected person comes in close contact with others (World Health Organization, 2020). However, social distancing can be a challenge for individuals sharing a home, especially if the space is small or there are many people living in the same space (Moos, McCulley, and Vinodrai, 2020). According to Schellenberg and Fonberg (2020), smaller residential units tend to have fewer bedrooms and living space, which can hinder the ability to practice social distancing when a family member has had contact with someone with COVID-19 or tested positive for the virus. Additionally, having many people living in a small residential unit will increase the number of potential opportunities for COVID-19 transmission.

Vulnerable populations, such as Indigenous populations or new immigrants, can be disproportionately affected by COVID-19 transmission as they are more likely to live in crowded housing (Statistics Canada, 2017a; Haan, 2012). Taken together, international studies have shown that both household size and housing characteristics matter for COVID-19 transmission and COVID-19 mortality, and it can have greater impact on vulnerable populations (Borjas, 2020; Joy et al., 2020; Moos et al., 2000).

This study uses the provisional data from the Vital Statistics—Death Database linked to the 2016 short-form Census to explore differences in the rate of mortality attributed to COVID-19 by the type of private dwelling where a person lived and the size of their household at the time of the 2016 Census. Although many of the deaths attributed to COVID-19 in the first wave of the pandemic – from March to July – occurred in long-term care homes, this article is focused on deaths associated with people living in private homes, which represents approximately 98% of the general population.¹

The results of this article are based on deaths attributable to COVID-19 occurring between January 1st and July 4th.² Details regarding the limitations of this data can be found in the data source section at the end of the article, including the lack of information on other potentially influential socio-economic factors relevant to COVID-19.

People living in houses had the lowest rates of COVID-19 mortality

The amount of living area available will impact opportunities to isolate and distance in the home. In Canada, the total living area varies by dwelling type. In Ontario,³ single detached houses have, on average, the largest living space (1,840 square feet), followed by semi-detached houses (1,610 square feet), row houses (1,470 square feet), and apartments (862 square feet) (Statistics Canada, No Date a).

In Canada, the lowest COVID-19 mortality rates were associated with those living in single detached houses (Chart 1). There were 9 deaths associated with COVID-19 per 100,000⁴ in this group.

1. See 2016 Census Population, Dwellings and Households of Canada, Provinces and Territories, 1981 to 2016 Censuses. Statistics Canada Catalogue no. 98-400-X2016013.

2. Statistics Canada (2020). [Provisional death counts and excess mortality](#), January to July 2020. The Daily, Sept 24, 2020. Ottawa.

3. Data for Quebec is not available.

4. Other causes of death age-specific mortality rate per 100,000 in 2019 can be found in Table 13-10-0392-01 released by Statistics Canada (2021).

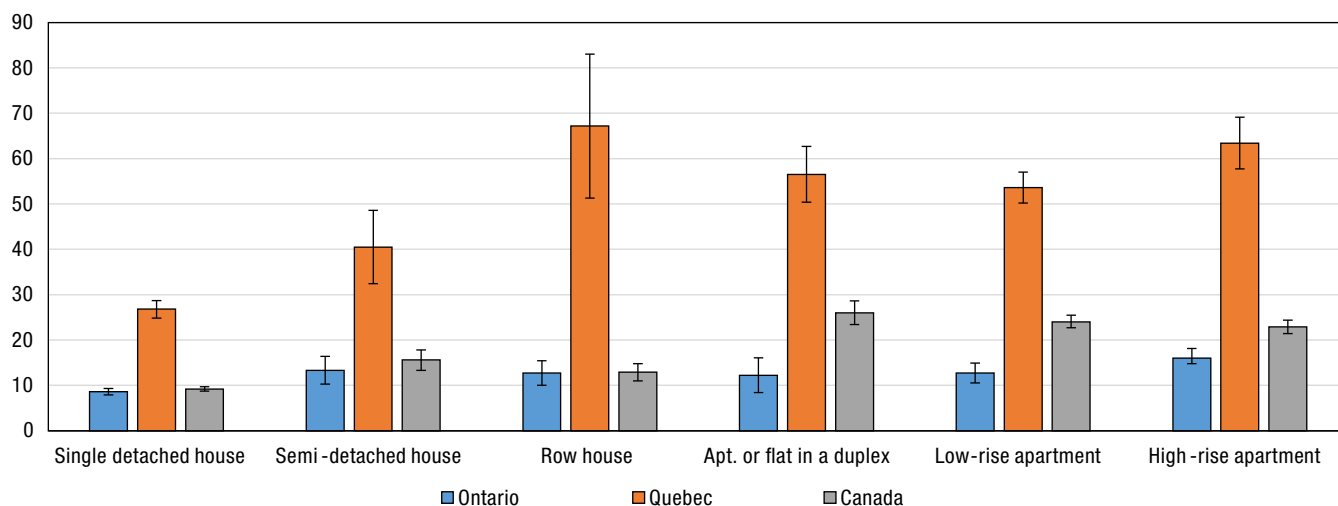


In Quebec, those living in high-rise apartments⁵ had almost 2.5 times higher COVID-19 mortality rates than those living in single detached houses (63 per 100,000 versus 27 per 100,000).

Similarly, in Ontario the COVID-19 mortality rates were almost twice as high for those living in high-rise apartments (16 per 100,000 versus 9 per 100,000). According to other studies, living in multi-residential buildings like apartments could increase the risk of COVID-19 due to the need for more frequent close contact with others and common surfaces in high trafficked shared areas like lobbies and elevators (Dietz et al., 2020; Eykelbosh, 2020).

Chart 1
Age-standardized COVID-19 mortality rates in Canada, Ontario and Quebec between Jan 1 and July 4, 2020, by private dwelling types

age-standardized mortality rate (per 100,000)



Source: Integrated Provisional Vital Statistics—Death Database linked to the 2016 Census.

Apartments in Canada, especially high-rise apartments, are concentrated in larger urban areas with a population of at least 100,000 (i.e., census metropolitan area (CMA)⁶), which could be influencing the higher mortality associated with these dwelling types. High-rise and low-rise apartments accounted for 34.5% of dwellings within larger urban areas, whereas outside of these areas they accounted for 12.7% of dwellings (Statistics Canada, 2017b). During the first wave of the pandemic the national number of deaths attributed to COVID-19 was over 4 times higher in larger urban areas compared to all other areas combined.

Our results show that differences in COVID-19 mortality still exist between different dwelling types when we restrict our analysis to only large urban areas. Across CMAs in Quebec, the mortality rate was significantly lower for single detached homes compared to high-rise apartments (39 per 100,000 versus 65 per 100,000). Similarly, across CMAs in Ontario, the mortality rate for single detached homes was 10 per 100,000, while it was 17 per 100,000 in high-rise apartments. The pattern of results are therefore not only a reflection of the geographical distribution of deaths in the first wave but also a difference between types of dwellings.

5. According to the [2016 Census](#), high-rise apartments are defined as those with five or more storeys.

6. [Census metropolitan area \(CMA\)](#) is an area consisting of one or more neighbouring municipalities situated around a core. A census metropolitan area must have a total population of at least 100,000 of which 50,000 or more live in the core.



Differences in mortality between people living in single homes and those in apartments could also be related to other socio-economic factors beyond the type of dwelling not covered in this study (e.g., income). The median after-tax household income varies by the type of dwelling. For single-detached houses it was \$76,782 compared to high-rise apartments at \$42,323 (Al-Tawil, 2019, Statistics Canada, No Date b).

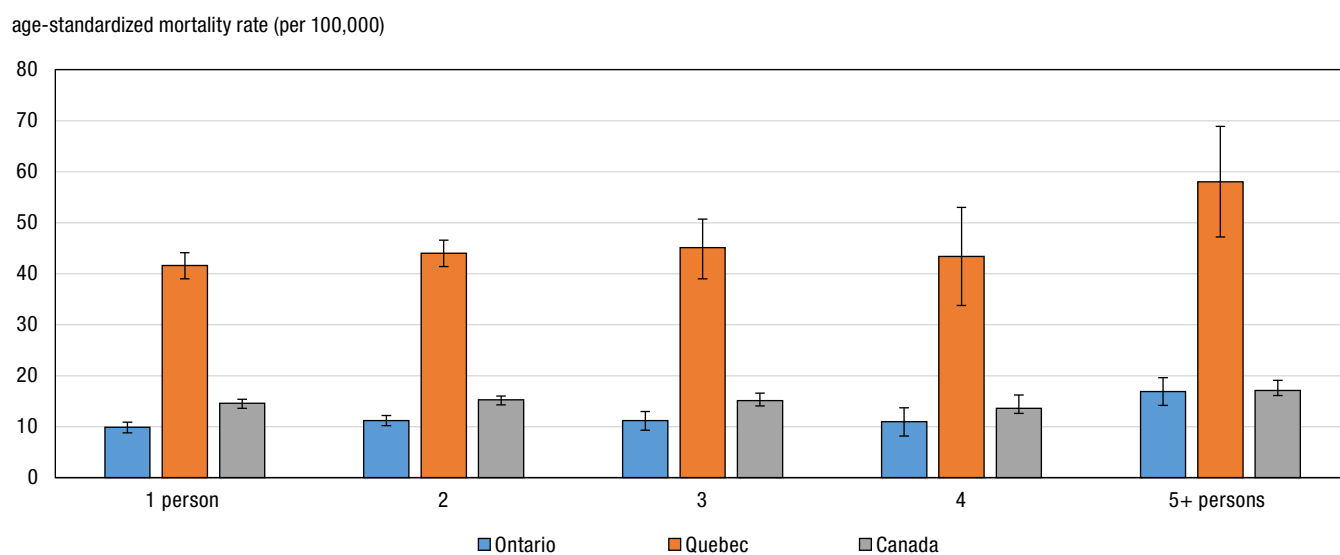
COVID-19 mortality patterns by dwelling types in Ontario and Quebec did not mirror one another, as dwelling characteristics varied in these two provinces (Statistics Canada, 2017b). For example, in Quebec there are more apartments in general (45.5% in Quebec versus 30.7% in Ontario) but more high-rise apartments exist in Ontario (17.2% versus 5.3%).

Larger households were associated with higher COVID-19 mortality rates in the provinces

People living in larger households were generally found to be more at risk of dying from COVID-19 (Chart 2). This may be due to the fact that larger households have more potential points of contact with the virus or there are reduced options for self-isolating within the home if someone becomes sick. Nationally, the COVID-19 mortality rate for people living alone was 15 per 100,000 and the rate for those living in a household with five or more people was 17 per 100,000.

In Quebec, the mortality rate was 1.4 times higher for those living with five or more people compared to those living in a one person household (58 per 100,000 versus 42 per 100,000). In Ontario, a household of five people or more had 1.7 times higher COVID-19 mortality rates (17 per 100,000) than single person households (10 per 100,000). There were no significant differences between 1, 2, 3, or 4 person households.

Chart 2
Age-standardized COVID-19 mortality rates in Canada, Ontario and Quebec between Jan 1 and July 4, 2020, by household size



Source: Integrated Provisional Vital Statistics—Death Database linked to the 2016 Census.



Data Source

This article used linked data that integrated the provisional COVID-19 death information of the Canadian Vital Statistics Death Database and the 2016 Census of Population (short-form). More information on the linkage process and on the resulting death-linked analytic file is available upon request.⁷ The linked database included deaths attributed to COVID-19 occurring between January 1st and July 4th⁸ and cause of death information.⁹ The COVID-19 data in this study are provisional as they are not based on all deaths that occurred during the reference period because of reporting delays, and do not include the Yukon. A small portion of the deaths attributable to COVID-19 were not linked to the 2016 short-form census and were excluded from this study. Thus, data may not match figures from other sources (e.g., media reports) or counts and estimates from provincial or territorial health authorities and other agencies.

Although the short-form Census had a response rate of 97.4% (Statistics Canada, 2017c), it contains only a limited variety of information on the population. For example, it does not contain information on visible minority status, a factor that is associated with COVID-19 mortality (Subedi, Greenberg and Turcotte, 2020). It also does not have information on housing suitability, number of rooms per private dwelling, or home ownership status,¹⁰ factors which could better measure the crowding in a household as a risk factor for COVID-19. Collective dwellings are not included in this data, which would include Canadians living in long-term care homes. These are important factors for understanding COVID-19 transmission rates.

Other provinces and territories are not included in this analysis due to the small number of COVID-19 deaths between the onset of the pandemic and July 4th. Further caution should be used when interpreting the results because socio-demographic and socio-economic information reported on the census day of 2016 might have changed over time.

7. Statistics Canada. Linkage of the provisional COVID-19 death information of the Canadian Vital Statistics Death Database and the 2016 Census of Population (short-form). Available upon request at STATCAN.infostats-infostats.STATCAN@canada.ca.

8. Statistics Canada (2020). [Provisional death counts and excess mortality](#), January to July 2020. The Daily, Sept 24, 2020. Ottawa.

9. Statistics Canada (2020). [Provisional death counts and excess mortality](#), January to September 2020. The Daily, Nov 26, 2020. Ottawa.

10. Renter versus owner status is an important factor associated with health, as the study of Schellenberg and Fonberg (2020) revealed that a higher percentage of renters rated their health as poor or fair than owners.





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