

WEEKLY EPIDEMIOLOGICAL SUMMARY

COVID-19 in Ontario: Focus on December 18, 2022 to December 24, 2022 (Week 51)

Published: December 30, 2022

Figures and tables in this report present the most recent 52 weeks of data for Ontario, ranging from **December 26, 2021 to December 24, 2022**. This report includes the most current information available from the Public Health Case and Contact Management Solution (CCM), unless otherwise specified.

Interpretation notes:

- Testing and case, contact, and outbreak management in Ontario is currently restricted to high-risk populations and settings in January 2022. Counts in this report are an underestimate of the extent of COVID-19 activity in Ontario.
- Observed trends over time should be interpreted with caution for the most recent period due to reporting and/or data entry lags.
- Severe outcomes are a lagging indicator, meaning that severe outcomes often occur after (e.g. days or weeks) cases are initially reported to public health. As such, counts for severe outcomes in more recent reporting periods may increase as more outcomes are reported.

Please visit the interactive [Ontario COVID-19 Data Tool](#) to explore data from the entire COVID-19 pandemic (i.e. February 2020 onward) by public health unit, age group, sex, and trends over time

Highlights

Case Trends and Percent Positivity

- **Weekly case numbers similar (+/- 10%) compared to last week among those eligible for testing:** The number of reported cases in Ontario was 6,449 this week, compared to 6,024 last week. A gradual increase has been observed over the past four weeks. Current projections suggest weekly case numbers may continue to rise over the next two weeks.
- Among Ontario's seven regions, case rates were similar in five regions and higher in two this week. Among the 34 public health units, case rates were similar in 18, higher in 12, and lower in four compared to last week.
- Case rates were similar in five age groups, higher in one and lower in one compared to last week.
- **Percent positivity up 14.4% and testing volumes similar (+/- 10%) compared to last week:** Percent positivity was 14.9% this week, up from 13.0% observed last week. Testing volume this week was 47,956 compared to 50,527 tests last week.

Severity

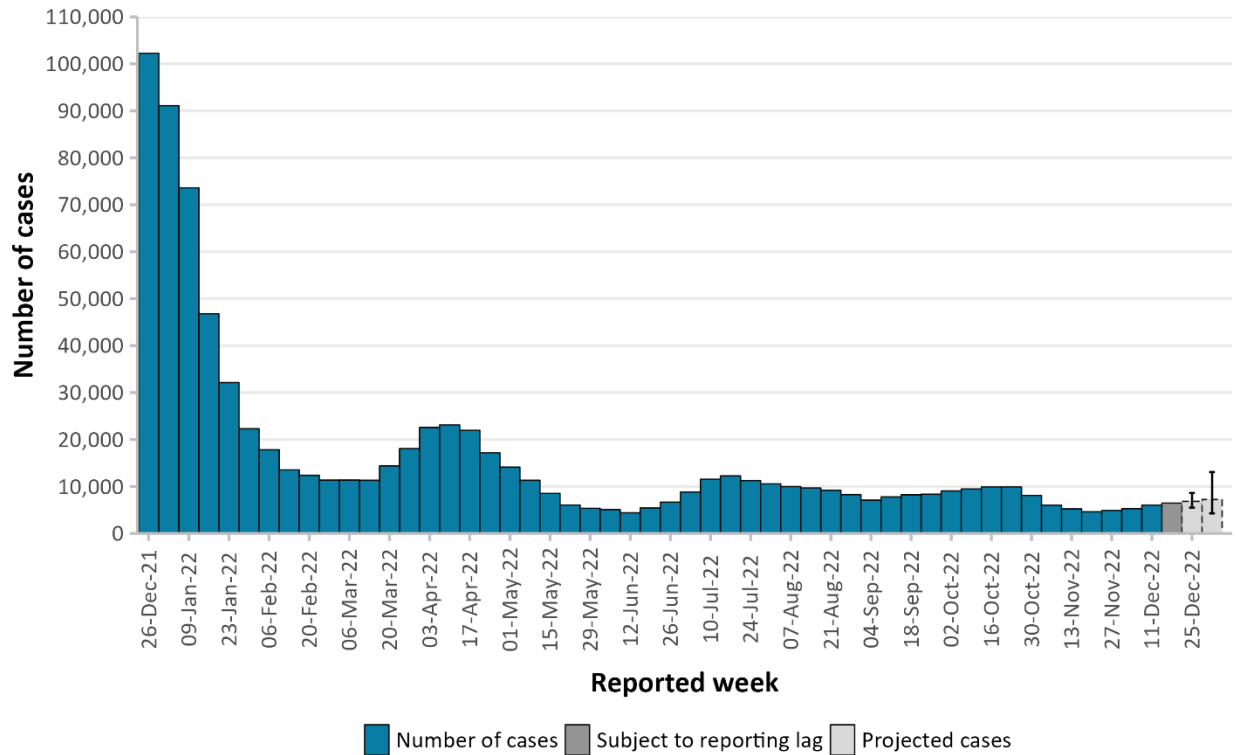
- **Hospital admissions down 18.2% and deaths similar (+/- 10%) compared to last week:** Hospital admissions decreased compared to last week. There were 293 hospital admissions reported this week, compared to 358 last week. Deaths have declined since peaking in mid- to late-October. There were 50 deaths reported this week, compared to 51 last week. Hospital admission and death counts, particularly for more recent weeks, may increase as these outcomes are lagging indicators. As well, delays in reporting resulting from the holidays may impact hospital admission and death counts.

Outbreaks

- **Outbreaks in high-risk settings up 17.6% compared to last week:** The total number of outbreaks in high-risk settings was 154 this week, compared to 131 last week. Compared to last week, there were more outbreaks reported in long-term care homes and hospitals this week.
- **Outbreak-associated cases in high-risk settings similar (+/- 10%) compared to last week:** There were 1,657 outbreak-associated cases reported this week in high-risk settings, compared to 1,529 last week. Compared to last week, this week there were more outbreak-associated cases reported in long-term care homes, but fewer outbreak-associated cases reported in correctional facilities, group homes/supportive housing and hospitals.

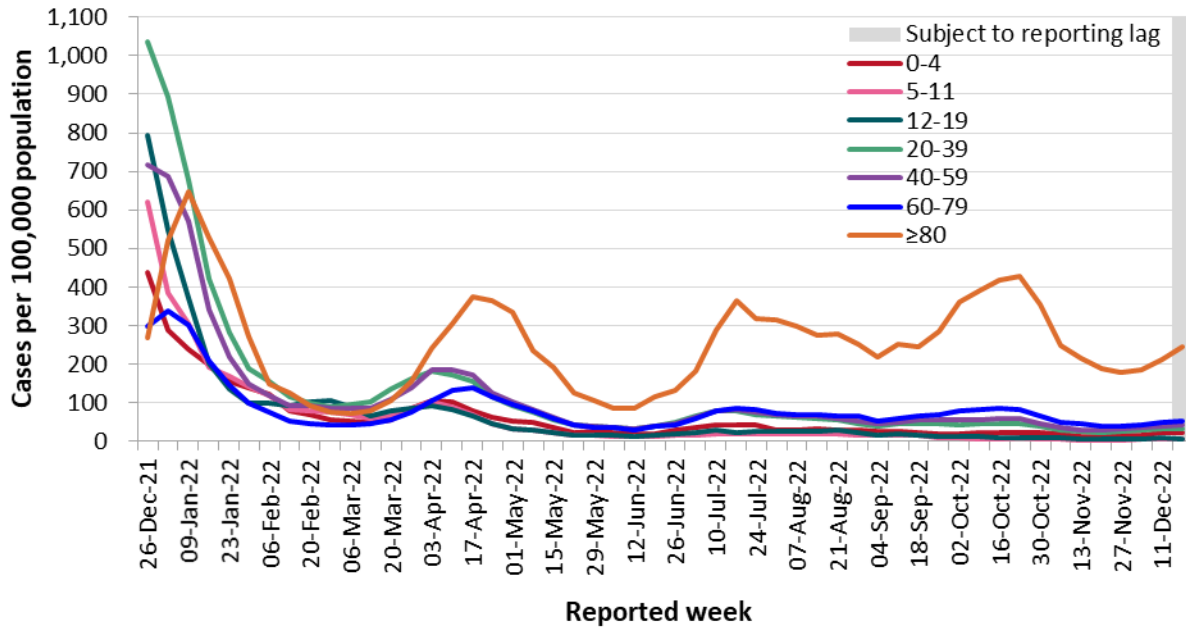
Cases

Figure 1a. Confirmed and projected cases of COVID-19 by reported week



Note: Projections were estimated using the daily distribution of SARS-CoV-2 lineages and COVID-19 cases over time to forecast COVID-19 cases into the future by 14 days. The error bars on the projected cases represent the 75% credible interval. For more information refer to [Appendix E](#). Projections are made based on our current knowledge of COVID-19, and thus cannot predict introductions of new lineages, which may impact model accuracy.

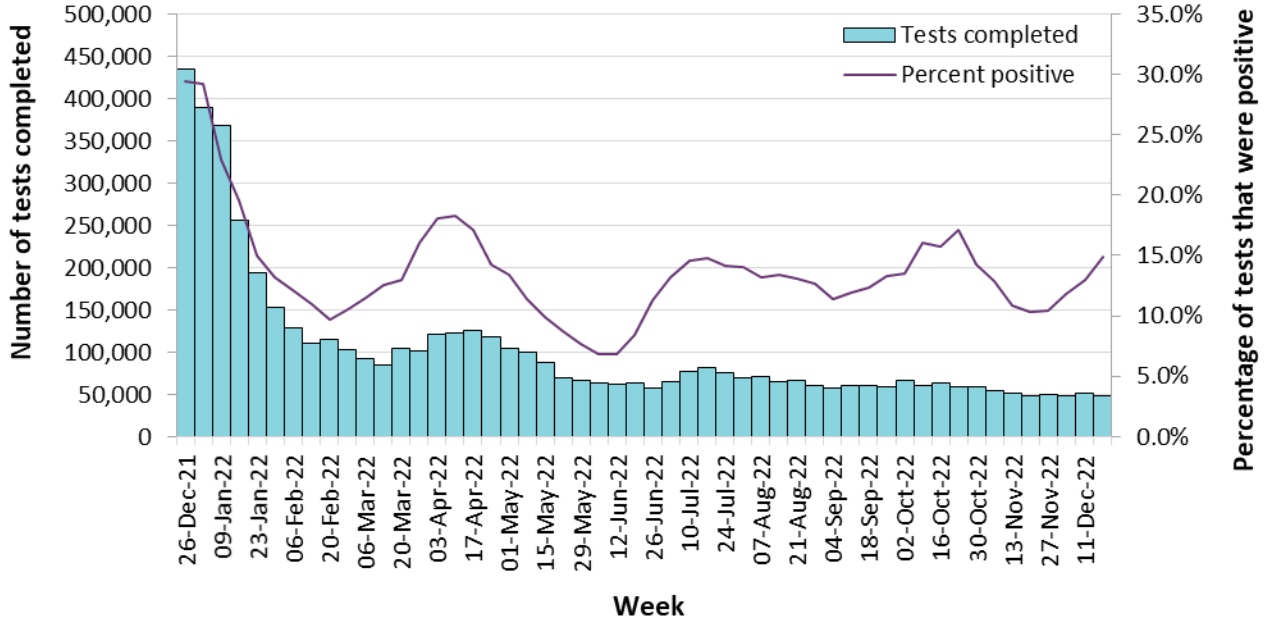
Figure 1b. Confirmed cases of COVID-19 (per 100,000 population), by age group and report week



Note: Not all cases have an age reported.

Testing

Figure 2. Weekly COVID-19 tests completed and percent positivity



Data Source: The Provincial COVID-19 Diagnostics Network, data reported by member microbiology laboratories.

Hospital Admissions

Figure 3a. Confirmed COVID-19 cases that were admitted to hospital, by hospital admission week

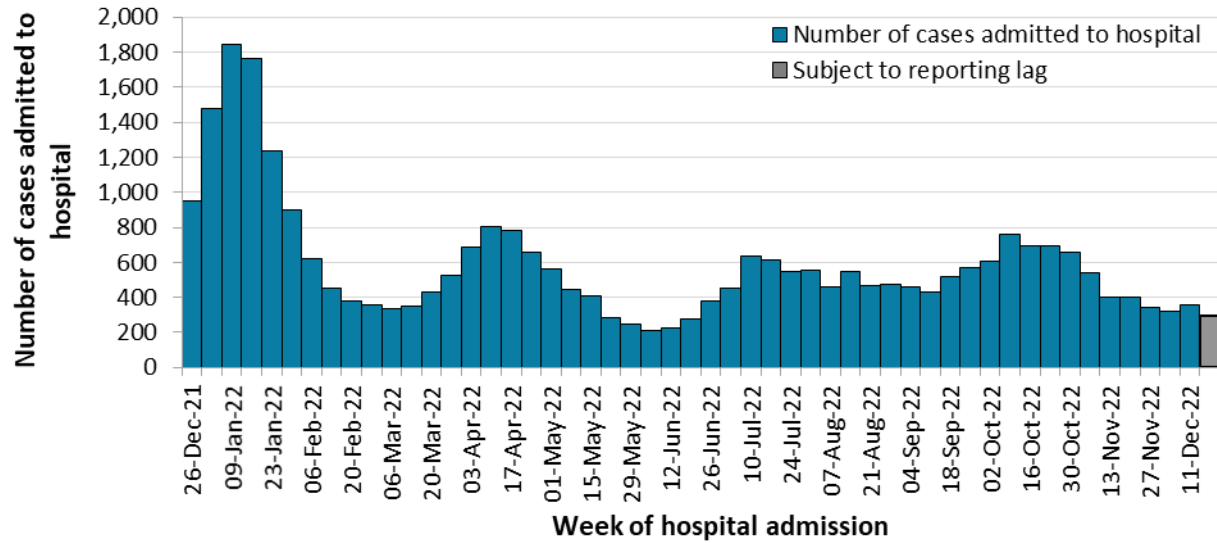
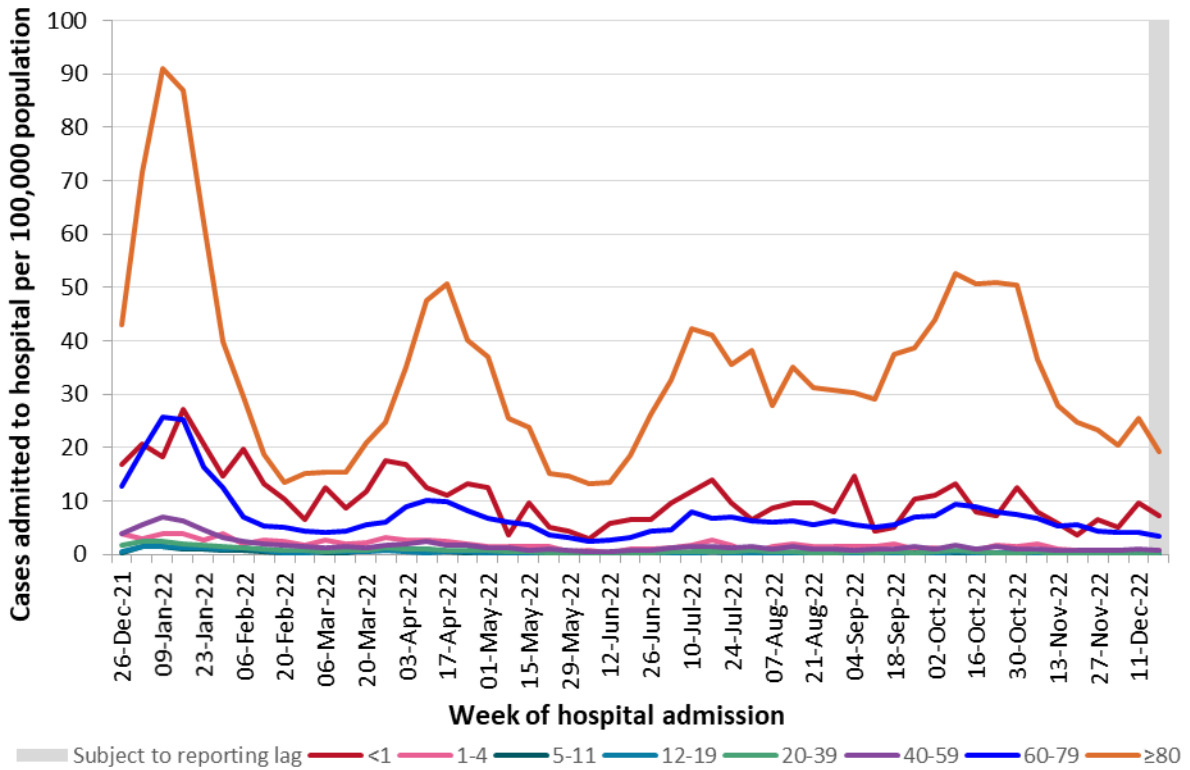


Figure 3b. Confirmed COVID-19 cases that were admitted to hospital (per 100,000 population), by age group and hospital admission date



Note: Not all cases have an age reported.

Deaths

Figure 4a. Confirmed COVID-19 deaths, by cause and week of death

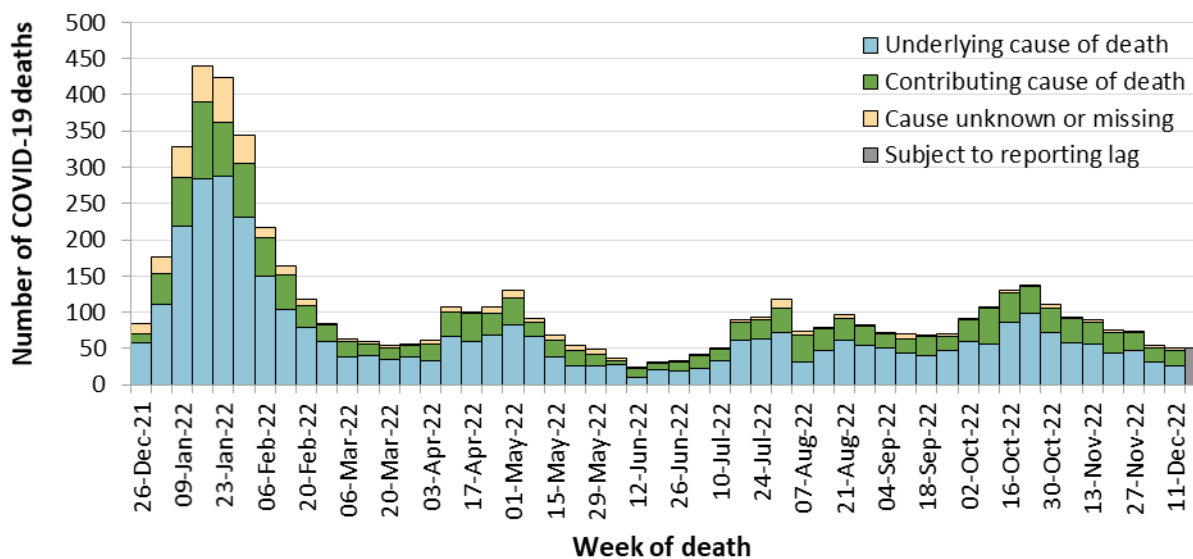
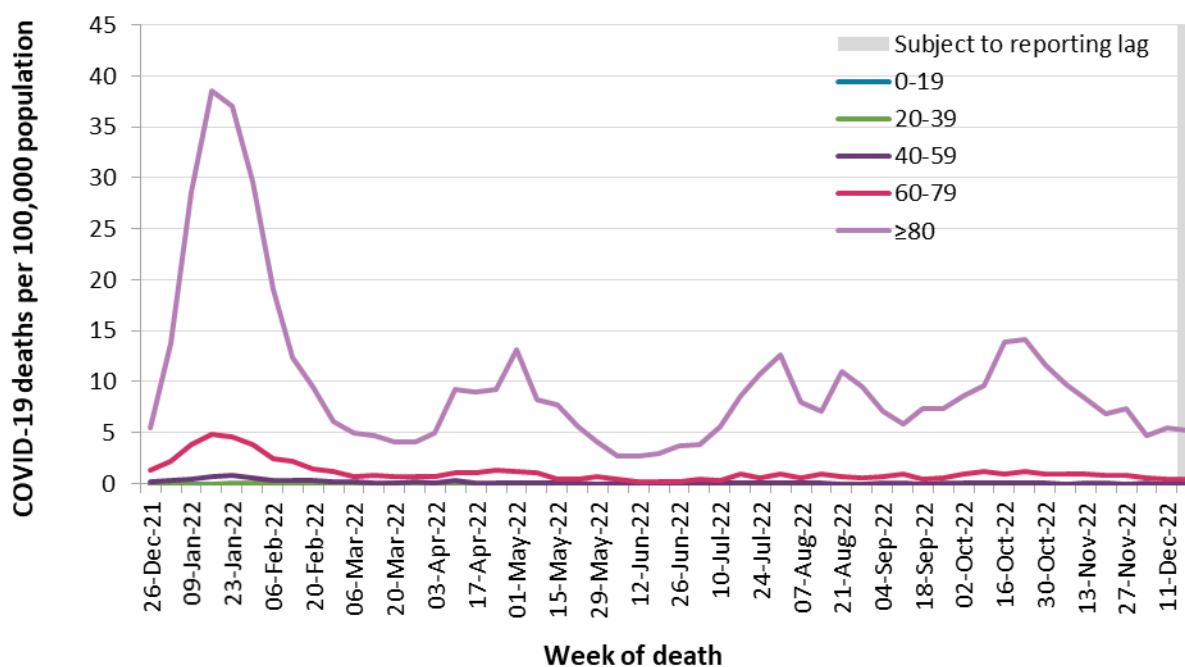
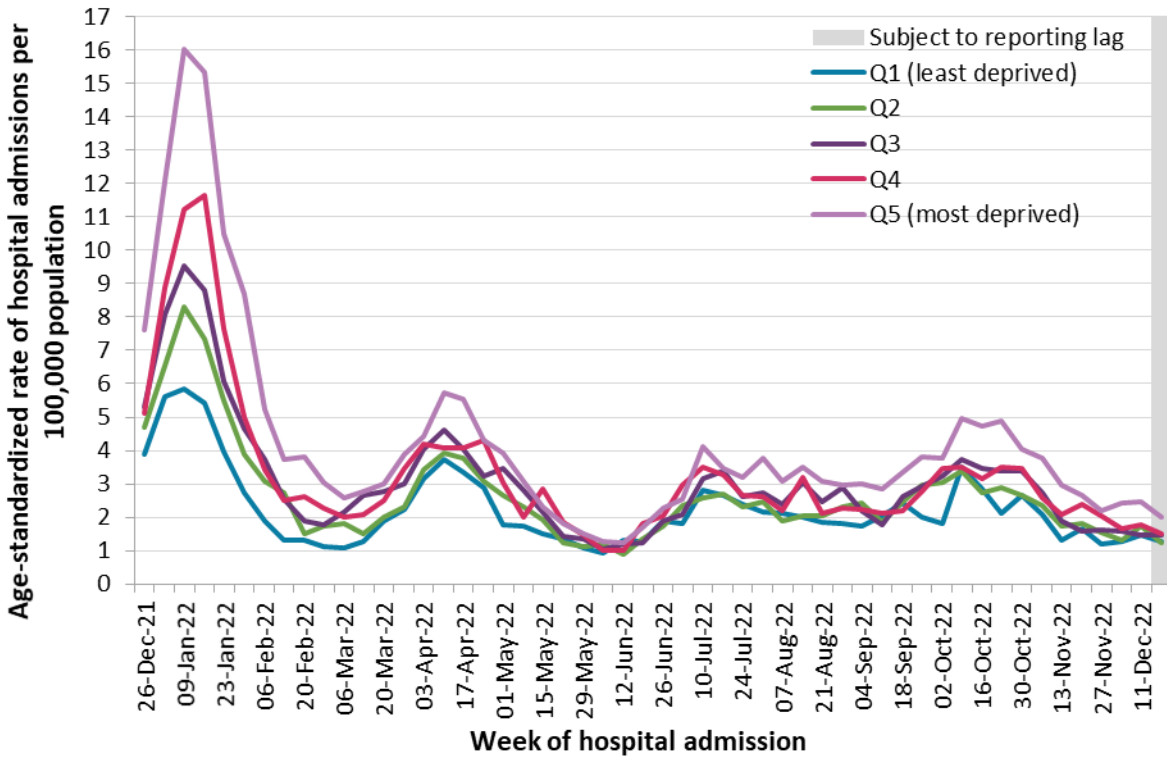


Figure 4b. Confirmed COVID-19 deaths (per 100,000 population), by age group and week of death



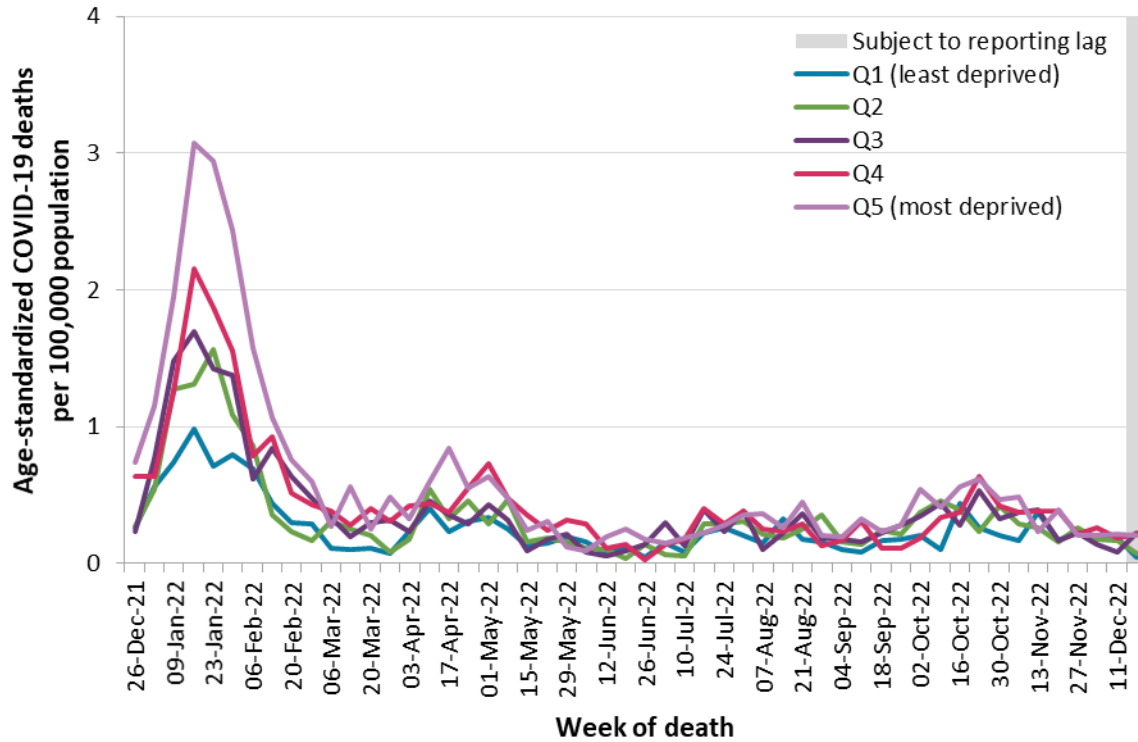
Severity by Neighbourhood Material Deprivation

Figure 5a. Confirmed COVID-19 cases that were admitted to hospital (per 100,000 population), by quintile of neighbourhood material deprivation and hospital admission week



Data Source: CCM, ON-Marg 2016

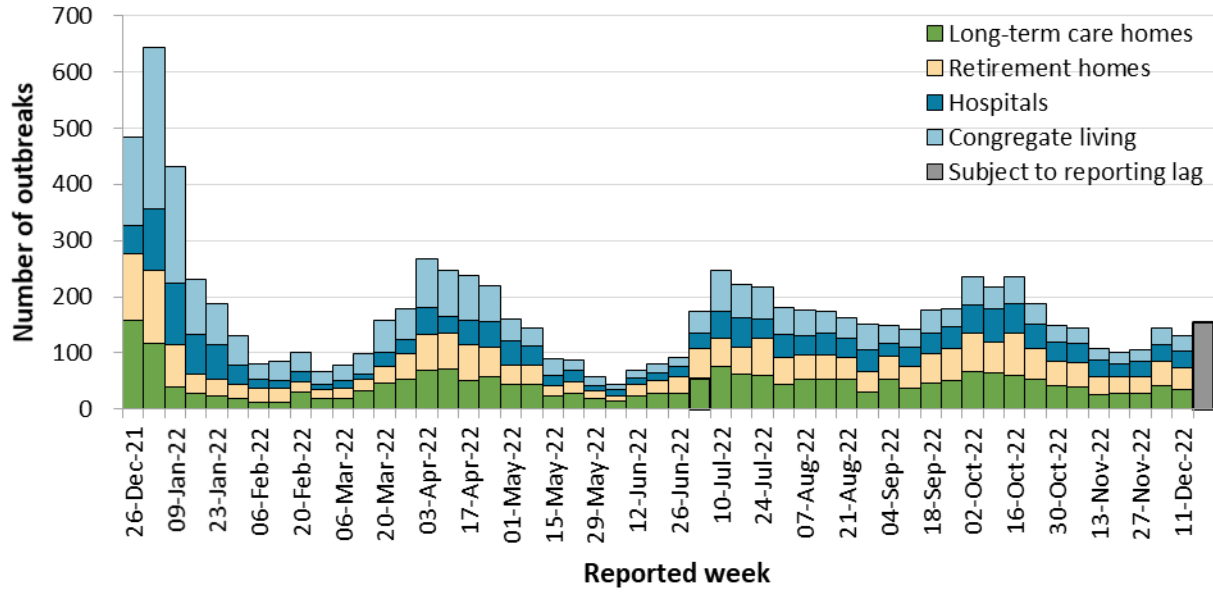
Figure 5b. Confirmed COVID-19 deaths (per 100,000 population), by quintile of neighbourhood material deprivation and week of death



Data Source: CCM, ON-Marg 2016

Outbreaks

Figure 6. Confirmed COVID-19 outbreaks, by setting type and reported week



Note: Congregate living includes group homes, shelters, and correctional facilities.

Table 1. Confirmed COVID-19 outbreaks, by setting type

| Setting Type | Reported December 11 to December 17, 2022 | Reported December 18 to December 24, 2022 | Ongoing Outbreaks | Reported Past 52 Weeks (December 26, 2021 to December 24, 2022) |
|-----------------------------------|---|---|-------------------|---|
| Congregate Care Total | 103 | 121 | 293 | 6,377 |
| Long-term care homes | 35 | 51 | 136 | 2,319 |
| Retirement homes | 38 | 32 | 96 | 2,216 |
| Hospitals | 30 | 38 | 61 | 1,842 |
| Congregate Living Total | 28 | 33 | 65 | 2,632 |
| Correctional facility | 1 | 4 | 5 | 148 |
| Shelter | 3 | 5 | 10 | 461 |
| Group homes/supportive housing | 24 | 24 | 50 | 2,023 |
| Total number of outbreaks* | 131 | 154 | 358 | 9,009 |

*Only includes outbreaks in the setting types above

Table 2. Confirmed outbreak-associated COVID-19 cases, by setting type and reported week

| Cases associated with the outbreak setting type | Reported December 11 to December 17, 2022 | Reported December 18 to December 24, 2022 | Reported Past 52 Weeks (December 26, 2021 to December 24, 2022) |
|---|---|---|---|
| Congregate Care Total | 1,440 | 1,601 | 110,630 |
| Long-term care homes | 763 | 956 | 65,535 |
| Retirement homes | 448 | 442 | 28,923 |
| Hospitals | 229 | 203 | 16,172 |
| Congregate Living Total | 89 | 56 | 14,156 |
| Correctional facility | 23 | 6 | 4,105 |
| Shelter | 7 | 5 | 2,414 |
| Group homes/supportive housing | 59 | 45 | 7,637 |
| Total number of cases* | 1,529 | 1,657 | 124,786 |

*Only includes cases associated to outbreaks in the setting types above

Technical Notes

Details on data caveats and methods are documented in [Technical Notes](#) of the [Ontario COVID-19 Data Tool](#). For information on data caveats and methods related to Ontario Marginalization Index (ON-Marg), please visit [PHO's ON-Marg webpage](#).

Data Sources

- The data for this report were based on information successfully extracted from the CCM for all PHUS by PHO as of:
 - **December 28, 2022 at 1 p.m.** for cases reported March 1, 2022 onwards
 - **December 19, 2022 at 9 a.m.** for cases reported August 1, 2021 to February 28, 2022
 - **December 12, 2022 at 9 a.m.** for cases reported up to July 31, 2021
- Hospital and ICU bed occupancy data were obtained from the Ministry of Health on **December 29, 2022**. The same data is available weekly from Ontario's Data Catalogue ([dataset: COVID-19 cases in hospital and ICU, by Ontario Health \(OH\) region](#)). The 'date' field was adjusted to account for reporting lags. Specifically, hospital occupancy counts ('hospitalizations') correspond to the 'date' field minus two days, and ICU occupancy counts ('icu_crci_total') correspond to the 'date' field minus one day.
- Ontario population estimate data were sourced from Statistics Canada. Population estimates 2001-2021: Table 1 annual population estimates by age and sex for July 1, 2001 to 2021, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2022 [received April 12, 2022].
- Statistics Canada Postal Code Conversion File Plus (PCCF+), version 7E.
- The health equity (material deprivation) analyses use data from the 2016 Ontario Marginalization Index (ON-Marg), and population counts from the Ontario Health Insurance Plan (OHIP) Registered Person Database (RPDB) as of May 1, 2021 (provided by the Institute for Clinical Evaluative Sciences [ICES]). For more information, please visit [PHO's ON-Marg webpage](#).
- Whole genome sequencing data used in the short-term projection model were based on information extracted on **December 21, 2022** from PHO and **December 20, 2022** from partner laboratories in the Ontario COVID-19 Genomics Network. For more information on SARS-CoV-2 whole genome sequencing surveillance please see the report [SARS-CoV-2 Genomic Surveillance in Ontario report](#).

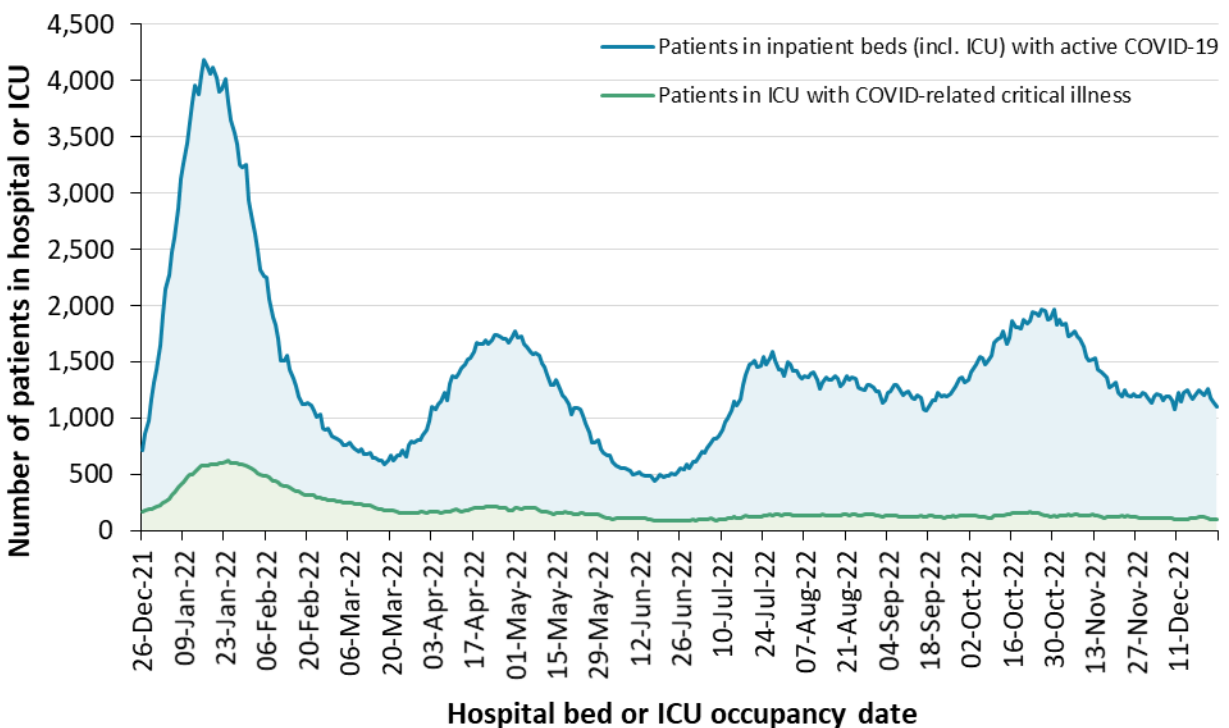
Appendix A: Hospital Bed Occupancy

This graph shows a daily count of:

1. the number of people in hospital (including intensive care unit (ICU)) with active COVID-19 (i.e. testing positive); and
2. the number of people in ICU because of COVID-19.

These counts differ from hospital admissions data in this report (Figures 3a, 3b, and Table 4), which count the number of people admitted to hospital each week due to COVID-19.

Figure 7. Hospital and ICU bed occupancy, by day



Data Source: Ontario Ministry of Health

Note: Hospital bed occupancy data comes from the Hospital Daily Bed Census and ICU bed occupancy data comes from the Critical Care Information System.

Appendix B: Cases by Public Health Unit

Figure 8. Confirmed cases of COVID-19 (per 100,000 population), by region and reported week

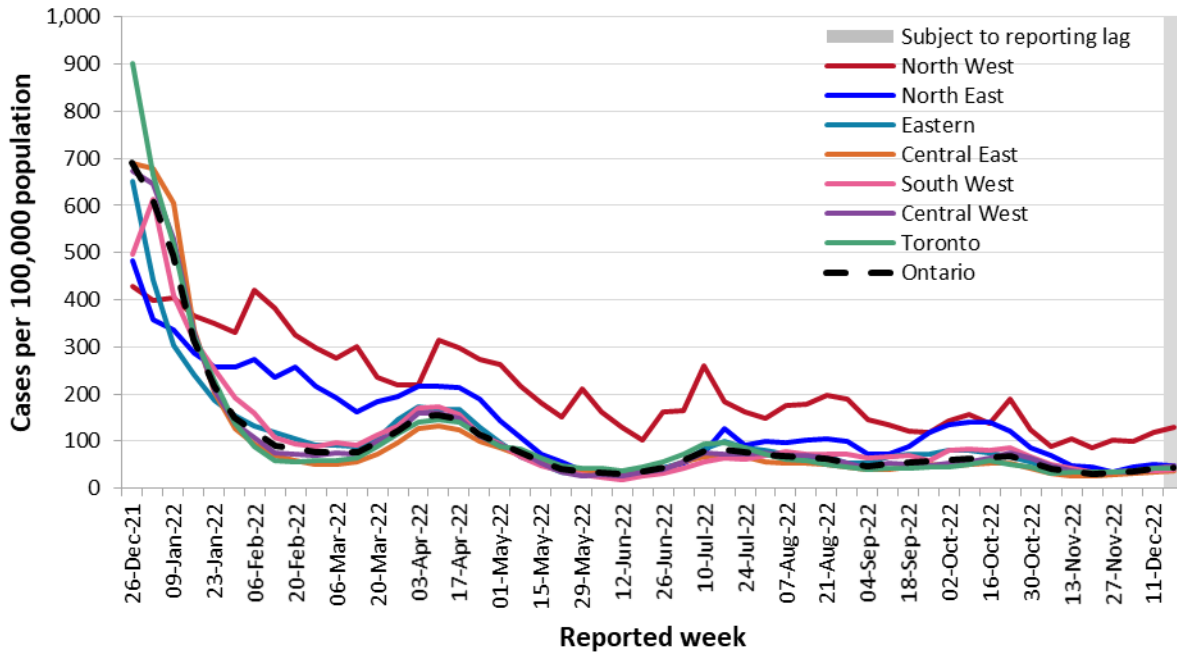


Table 3. Confirmed cases of COVID-19, by public health unit and region

| Public Health Unit Name | Cases December 11 to December 17, 2022 | Cases per 100,000 population December 11 to December 17, 2022 | Cases December 18 to December 24, 2022 | Cases per 100,000 population December 18 to December 24, 2022 | Cases per 100,000 population Past 52 weeks (December 26, 2021 to December 24, 2022) |
|--|--|---|--|---|---|
| Northwestern Health Unit | 136 | 166.6 | 123 | 150.7 | 15,278.6 |
| Thunder Bay District Health Unit | 148 | 94.9 | 182 | 116.7 | 8,881.4 |
| TOTAL NORTH WEST | 284 | 119.5 | 305 | 128.3 | 11,078.4 |
| Algoma Public Health | 50 | 42.7 | 52 | 44.4 | 8,160.2 |
| North Bay Parry Sound District Health Unit | 37 | 28.3 | 47 | 35.9 | 5,790.3 |
| Porcupine Health Unit | 31 | 36.8 | 47 | 55.8 | 7,448.8 |
| Public Health Sudbury & Districts | 161 | 78.4 | 116 | 56.5 | 7,732.6 |
| Timiskaming Health Unit | 13 | 38 | 9 | 26.3 | 6,404.3 |
| TOTAL NORTH EAST | 292 | 51.1 | 271 | 47.4 | 7,254.8 |
| Ottawa Public Health | 338 | 32 | 337 | 31.9 | 4,647.4 |
| Eastern Ontario Health Unit | 86 | 39.5 | 123 | 56.4 | 5,714.7 |
| Hastings Prince Edward Public Health | 43 | 24.7 | 45 | 25.9 | 6,243.9 |

| Public Health Unit Name | Cases December 11 to December 17, 2022 | Cases per 100,000 population December 11 to December 17, 2022 | Cases December 18 to December 24, 2022 | Cases per 100,000 population December 18 to December 24, 2022 | Cases per 100,000 population Past 52 weeks (December 26, 2021 to December 24, 2022) |
|--|--|---|--|---|---|
| Kingston, Frontenac and Lennox & Addington Public Health | 120 | 57.2 | 116 | 55.3 | 8,222.8 |
| Leeds, Grenville & Lanark District Health Unit | 121 | 66.6 | 119 | 65.5 | 5,714.7 |
| Renfrew County and District Health Unit | 52 | 47.6 | 49 | 44.8 | 5,647.5 |
| TOTAL EASTERN | 760 | 39 | 789 | 40.5 | 5,450.2 |
| Durham Region Health Department | 209 | 28.7 | 238 | 32.7 | 5,401.0 |
| Haliburton, Kawartha, Pine Ridge District Health Unit | 84 | 43.5 | 84 | 43.5 | 4,712.4 |
| Peel Public Health | 492 | 31.3 | 556 | 35.4 | 5,037.6 |
| Peterborough Public Health | 77 | 52.1 | 55 | 37.2 | 5,346.9 |
| Simcoe Muskoka District Health Unit | 238 | 38.6 | 224 | 36.3 | 5,828.6 |
| York Region Public Health | 459 | 37.9 | 555 | 45.9 | 5,180.2 |
| TOTAL CENTRAL EAST | 1,559 | 34.9 | 1,712 | 38.3 | 5,240.8 |
| Toronto Public Health | 1,238 | 41.6 | 1,285 | 43.2 | 5,711.2 |
| TOTAL TORONTO | 1,238 | 41.6 | 1,285 | 43.2 | 5,711.2 |

| Public Health Unit Name | Cases December 11 to December 17, 2022 | Cases per 100,000 population December 11 to December 17, 2022 | Cases December 18 to December 24, 2022 | Cases per 100,000 population December 18 to December 24, 2022 | Cases per 100,000 population Past 52 weeks (December 26, 2021 to December 24, 2022) |
|---|--|---|--|---|---|
| Chatham-Kent Public Health | 30 | 27.8 | 36 | 33.4 | 6,624.2 |
| Grey Bruce Health Unit | 33 | 18.5 | 71 | 39.7 | 4,505.7 |
| Huron Perth Public Health | 43 | 29.1 | 47 | 31.8 | 4,284.5 |
| Lambton Public Health | 54 | 40.7 | 56 | 42.2 | 6,957.2 |
| Middlesex-London Health Unit | 181 | 35.1 | 197 | 38.2 | 5,612.9 |
| Southwestern Public Health | 113 | 50.7 | 112 | 50.2 | 5,004.8 |
| Windsor-Essex County Health Unit | 175 | 41.1 | 179 | 42 | 6,398.4 |
| TOTAL SOUTH WEST | 629 | 36.3 | 698 | 40.3 | 5,666.3 |
| Brant County Health Unit | 39 | 24.9 | 92 | 58.8 | 5,351.2 |
| City of Hamilton Public Health Services | 299 | 50.9 | 319 | 54.3 | 7,018.0 |
| Haldimand-Norfolk Health Unit | 48 | 39.3 | 97 | 79.4 | 5,444.8 |
| Halton Region Public Health | 234 | 37.8 | 221 | 35.7 | 5,140.8 |
| Niagara Region Public Health | 295 | 60.8 | 320 | 66 | 5,902.4 |

| Public Health Unit Name | Cases December 11 to December 17, 2022 | Cases per 100,000 population December 11 to December 17, 2022 | Cases December 18 to December 24, 2022 | Cases per 100,000 population December 18 to December 24, 2022 | Cases per 100,000 population Past 52 weeks (December 26, 2021 to December 24, 2022) |
|---|--|---|--|---|---|
| Region of Waterloo Public Health and Emergency Services | 247 | 40.4 | 217 | 35.5 | 5,004.8 |
| Wellington-Dufferin-Guelph Public Health | 100 | 31.6 | 123 | 38.8 | 4,643.9 |
| TOTAL CENTRAL WEST | 1,262 | 43.5 | 1,389 | 47.9 | 5,589.8 |
| TOTAL ONTARIO | 6,024 | 40.6 | 6,449 | 43.5 | 5,651.8 |

Note: Access to testing can vary across the province and as a result may impact the reported confirmed case rates by public health unit.

Appendix C: Severity Measures by Age and Sex

Table 4. Confirmed COVID-19 cases that were admitted to hospital, by sex and age group

| Sex and age group | Hospital admissions December 11 to December 17, 2022 | Hospital admissions per 100,000 population December 11 to December 17, 2022 | Hospital admissions December 18 to December 24, 2022 | Hospital admissions per 100,000 population December 18 to December 24, 2022 | Hospital admissions Past 52 weeks (December 26, 2021 to December 24, 2022) | Hospital admissions per 100,000 population Past 52 weeks (December 26, 2021 to December 24, 2022) |
|--|--|---|--|---|--|---|
| Total Cases | 358 | 2.4 | 293 | 2.0 | 30,384 | 204.9 |
| Sex: Female | 143 | 1.9 | 144 | 1.9 | 14,006 | 186.8 |
| Sex: Male | 215 | 2.9 | 149 | 2.0 | 16,320 | 222.7 |
| Sex: Did not specify female or male | 0 | N/A | 0 | N/A | 58 | N/A |
| Ages: <1 | 13 | 9.6 | 10 | 7.3 | 749 | 550.4 |
| Ages: 1 – 4 | 2 | 0.3 | 4 | 0.7 | 521 | 90.3 |
| Ages: 5 – 11 | 1 | 0.1 | 2 | 0.2 | 240 | 22.3 |
| Ages: 12 – 19 | 2 | 0.2 | 1 | 0.1 | 272 | 20.8 |
| Ages: 20 – 39 | 6 | 0.1 | 14 | 0.3 | 1,585 | 37.9 |
| Ages: 40 – 59 | 37 | 1.0 | 26 | 0.7 | 3,402 | 87.8 |
| Ages: 60 – 79 | 125 | 4.2 | 106 | 3.5 | 11,551 | 385.7 |
| Ages: 80 and over | 172 | 25.5 | 130 | 19.3 | 12,062 | 1,787.0 |
| Ages: Unknown | 0 | N/A | 0 | N/A | 2 | N/A |

Table 5. Confirmed COVID-19 deaths, by sex and age group

| Sex and age group | Deaths December 11 to December 17, 2022 | Deaths per 100,000 population December 11 to December 17, 2022 | Deaths December 18 to December 24, 2022 | Deaths per 100,000 population December 18 to December 24, 2022 | Deaths Past 52 weeks (December 26, 2021 to December 24, 2022) | Deaths per 100,000 population Past 52 weeks (December 26, 2021 to December 24, 2022) |
|--|--|---|--|---|--|--|
| Total Cases | 51 | 0.3 | 50 | 0.3 | 5,577 | 37.6 |
| Sex: Female | 27 | 0.4 | 30 | 0.4 | 2,521 | 33.6 |
| Sex: Male | 24 | 0.3 | 20 | 0.3 | 3,044 | 41.5 |
| Sex: Did not specify female or male | 0 | N/A | 0 | N/A | 12 | N/A |
| Ages: 0 – 19 | 1 | <0.1 | 0 | 0.0 | 13 | 0.4 |
| Ages: 20 – 39 | 1 | <0.1 | 0 | 0.0 | 49 | 1.2 |
| Ages: 40 – 59 | 1 | <0.1 | 2 | 0.1 | 294 | 7.6 |
| Ages: 60 – 79 | 11 | 0.4 | 13 | 0.4 | 1,766 | 59.0 |
| Ages: 80 and over | 37 | 5.5 | 35 | 5.2 | 3,455 | 511.9 |
| Ages: Unknown | 0 | N/A | 0 | N/A | 0 | N/A |

Appendix D: All Time Severe Outcomes

Table 6. Confirmed COVID-19 cases and deaths among LTCH residents, by wave¹

| Wave | Number of LTCH Resident Cases | Number of LTCH Resident COVID-19 deaths | Case Fatality Rate (CFR) |
|---|-------------------------------|---|--------------------------|
| Wave 1 (February 26, 2020 to August 31, 2020) | 6,012 | 1,906 | 31.7% |
| Wave 2 (September 1, 2020 to February 28, 2021) | 9,085 | 1,949 | 21.5% |
| Wave 3 (March 1, 2021 to July 31, 2021) | 414 | 60 | 14.5% |
| Wave 4 (August 1, 2021 to December 14, 2021) | 247 | 45 | 18.2% |
| Wave 5 (December 15, 2021 to February 28, 2022) | 10,172 | 483 | 4.7% |
| Wave 6 (March 1, 2022 to June 18, 2022) | 7,708 | 203 | 2.6% |
| Wave 7 (June 19, 2022 to December 24, 2022) ² | 23,914 | 677 | 2.8% |
| Total | 57,552 | 5,323 | 9.2% |

Notes:

1. As of August 31, 2022, only LTCH resident cases linked to an outbreak are required to be identified as LTCH residents in CCM. As a result, fewer LTCH resident cases will be identified. The number of LTCH resident cases, deaths, and CFR should be interpreted with this reporting change in mind. 2. The case fatality rate for this time period may change as new cases are reported.

Appendix E: Short-term Projections of COVID-19 in Ontario

- A multinomial logistic regression model (from the R package, *nnet*¹) of whole genome sequencing (WGS) data, was used to estimate the proportion of each SARS-CoV-2 lineage over the last three months. Lineages with at least fourteen days of non-zero case counts were included in the model. Proportions of the top five lineages with at least one day of an estimated prevalence of 5% or greater during the 18 week period (12 observed and 6 projected) were then applied to the reported daily COVID-19 cases to determine the daily estimated number of cases for each lineage.
- The R package, *EpiNow2*², was used to project the daily number of cases forward 14 days. The model was run by lineage to ensure potential differences in lineage-specific transmission were accounted for. *EpiNow2*² calculates these projections using Bayesian latent variable modelling³. Model inputs included an incubation period of 4 days^{4,5} and a generation time of 2.5 days⁶. The reporting delay was estimated to be about 3 days using the symptom onset date. The results by lineage were then summed to generate the projected total number of cases and 75% credible interval. Modelling results of past weeks were compared with reported cases to confirm model accuracy.

References

1. Venables WN, Ripley BD. Modern applied statistics with S. 4th ed. New York, NY: Springer; 2002.
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6. Abbot S, Sherratt K, Gerstung M, Funk S. Estimation of the test to test distribution as a proxy for generation interval distribution for the Omicron variant in England. medRxiv 22268920 [Preprint]. 2022 Jan 10 [cited 2022 Sep 08]. Available from: <https://doi.org/10.1101/2022.01.08.22268920>

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