

## DAILY EPIDEMIOLOGICAL SUMMARY

# COVID-19 in Ontario: January 15, 2020 to June 3, 2021

This report includes the most current information available from CCM as of **June 3, 2021**.

Please visit the interactive [Ontario COVID-19 Data Tool](#) to explore recent COVID-19 data by public health unit, age group, sex, and trends over time.

A [weekly summary report](#) is available with additional information to complement the daily report.

This **daily** report provides an epidemiologic summary of recent COVID-19 activity in Ontario. The change in cases is determined by taking the cumulative difference between the current day and the previous day.

## Highlights

- There are a total of 534,675 confirmed cases of COVID-19 in Ontario reported to date.
- Compared to the previous day, this represents:
  - An increase of 914 confirmed cases (percent change of +5.1%)
  - An increase of 19 deaths (percent change of +90.0%)
  - An increase of 1,397 resolved cases (percent change of -10.6%)

In this document, the term 'change in cases' refers to cases publicly reported by the province for a given day. Data corrections or updates can result in case records being removed and or updated from past reports and may result in subset totals for updated case counts (i.e., age group, gender) differing from the overall updated case counts.

The term public health unit reported date in this document refers to the date local public health units were first notified of the case.

## Case Characteristics

**Table 1a. Summary of recent confirmed cases of COVID-19: Ontario**

	Change in cases June 2, 2021	Change in cases June 3, 2021	Percentage change June 3, 2021 compared to June 2, 2021	Cumulative case count as of June 3, 2021
Total number of cases	870	914	+5.1%	534,675
Number of deaths	10	19	+90.0%	8,820
Number resolved	1,563	1,397	-10.6%	516,396

**Note:** The number of cases publicly reported by the province each day may not align with case counts reported to public health on a given day; public health unit reported date refers to the date local public health was first notified of the case. Data corrections or updates can result in case records being removed and or updated from past reports.

**Data Source:** CCM

**Table 1b. Summary of recent confirmed cases of COVID-19 by age group and gender: Ontario**

	Change in cases June 2, 2021	Change in cases June 3, 2021	Cumulative case count as of June 3, 2021
Gender: Male	424	518	266,131
Gender: Female	426	533	264,366
Ages: 19 and under	203	231	85,216
Ages: 20-39	314	370	200,245
Ages: 40-59	235	201	153,036
Ages: 60-79	92	92	71,261
Ages: 80 and over	23	22	24,818

**Note:** Not all cases have a reported age or gender reported. Data corrections or updates can result in case records being removed and or updated from past reports and may result in subset totals (i.e., age group, gender) differing from past publicly reported case counts.

**Data Source:** CCM

**Table 2. Summary of recent confirmed cases of COVID-19 in school aged children by age group, August 30, 2020 to June 3, 2021: Ontario**

	Change in cases June 2, 2021	Change in cases June 3, 2021	Cumulative case count from August 30, 2020 to June 3, 2021
Ages: 4 to 8	41	51	15,660
Ages: 9 to 13	43	53	19,738
Ages: 14 to 17	44	59	20,107

**Note:** Includes all confirmed cases of COVID-19 for specified ages, regardless of school attendance. Data corrections or updates can result in case records being removed and or updated from past reports and may result in subset totals (i.e., age group) differing from past publicly reported case counts.

**Data Source:** CCM

**Table 3. Summary of recent confirmed cases of COVID-19 in long-term care homes: Ontario**

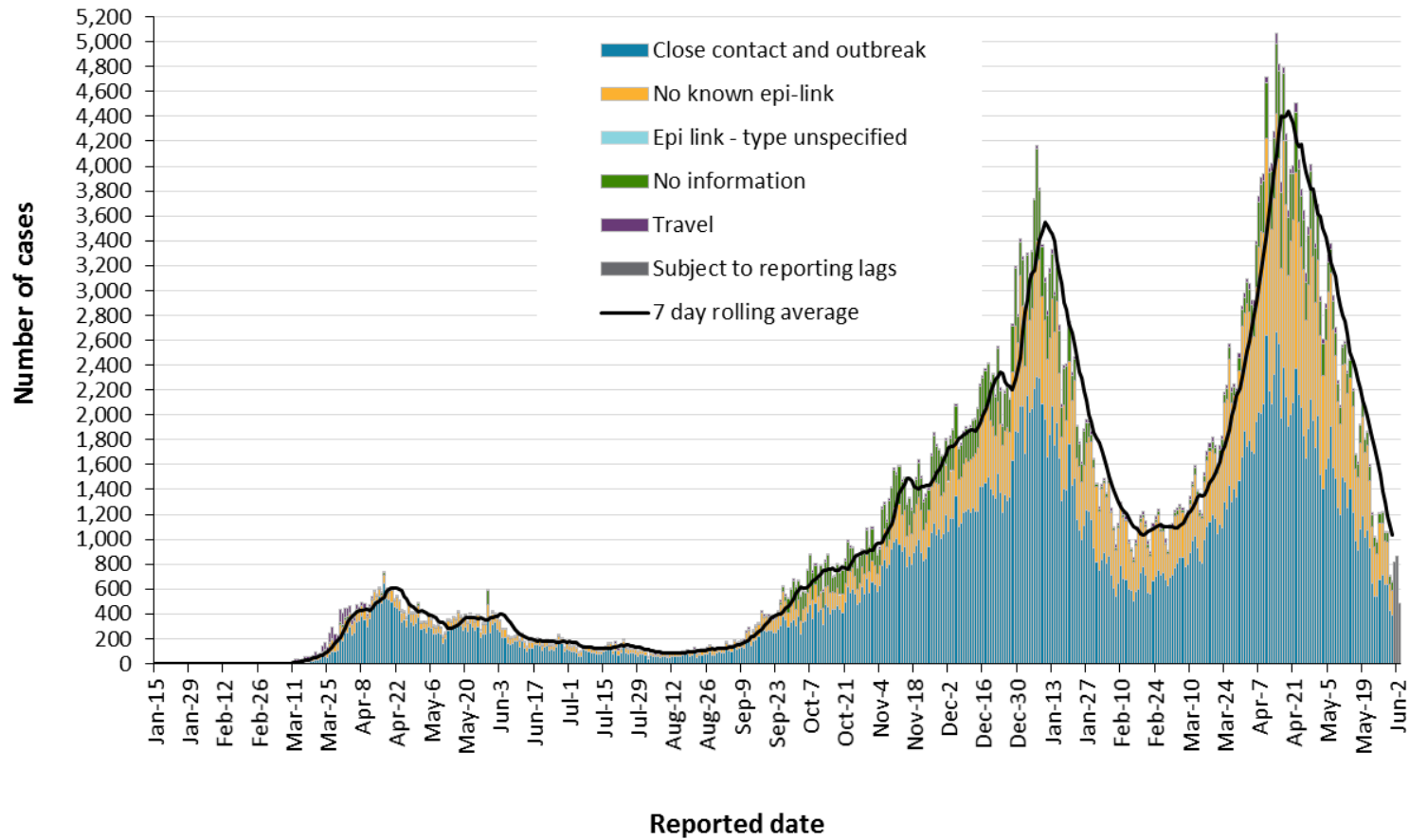
Long-term care home cases	Change in cases June 2, 2021	Change in cases June 3, 2021	Cumulative case count as of June 3, 2021
Residents	1	3	15,310
Health care workers	0	2	7,107
Deaths among residents	0	2	3,953
Deaths among health care workers	0	0	10

**Note:** Information on how long-term care home residents and health care workers are identified is available in the [technical notes](#). Also, the change in cases in these categories may represent existing case records that have been updated.

**Data Source:** CCM

# Time

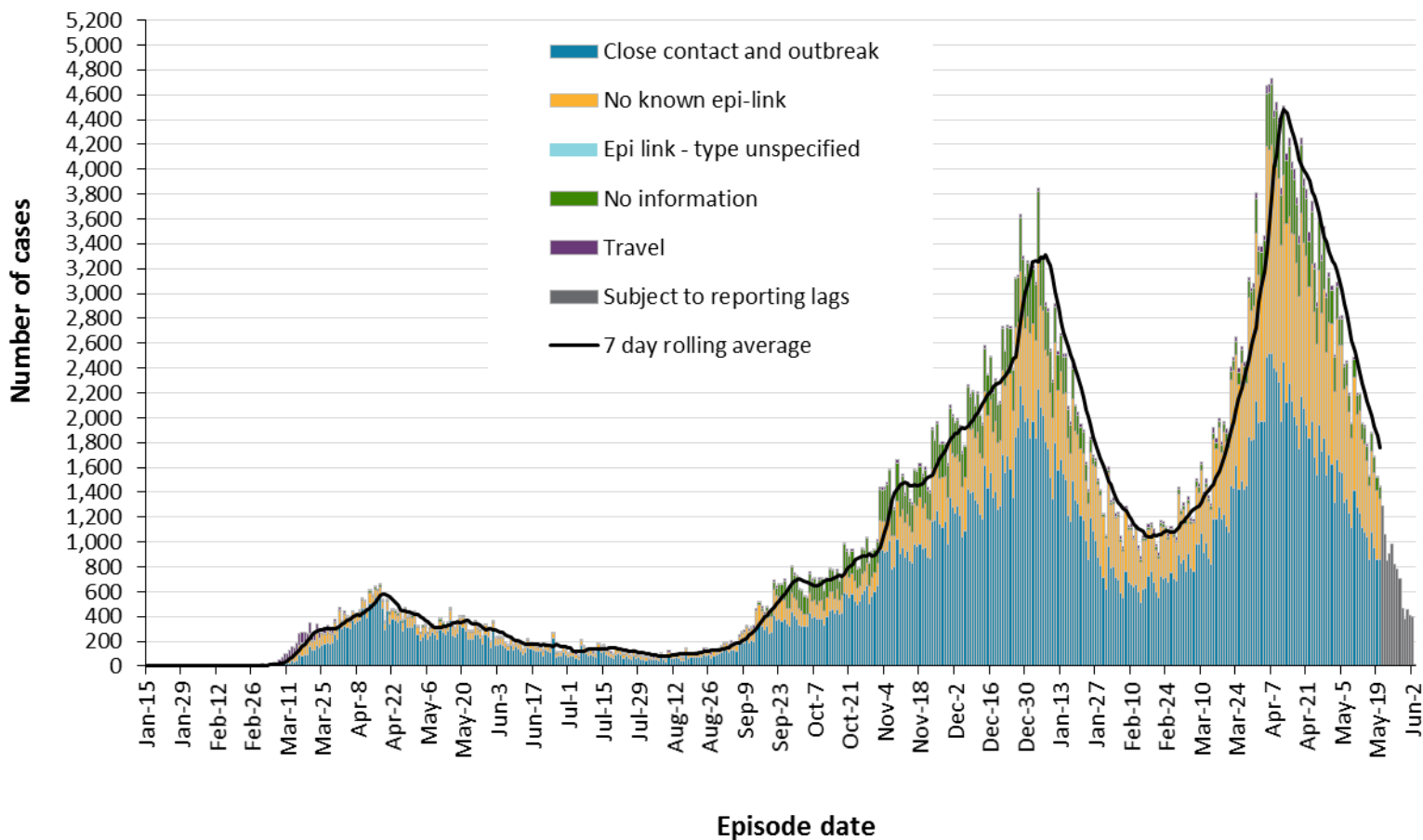
Figure 1. Confirmed cases of COVID-19 by likely acquisition and public health unit reported date: Ontario, January 15, 2020 to June 3, 2021



Data Source: CCM

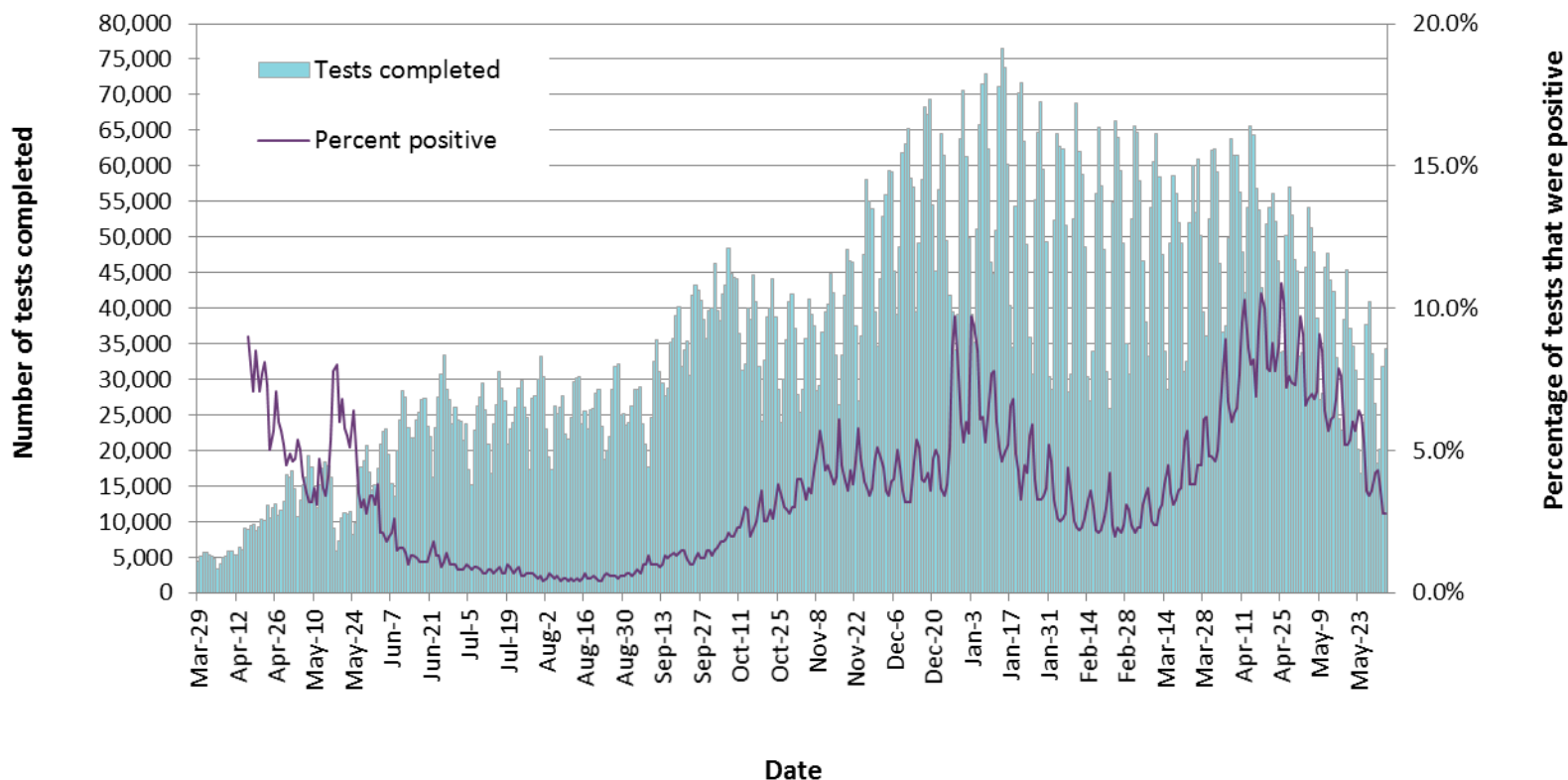
COVID-19 in Ontario: January 15, 2020 to June 3, 2021

**Figure 2. Confirmed cases of COVID-19 by likely acquisition and approximation of symptom onset date: Ontario, January 15, 2020 to June 3, 2021**



**Note:** Not all cases may have an episode date and those without one are not included in the figure. Episode date is defined and available in the [technical notes](#).  
**Data Source:** CCM

**Figure 3. Number of COVID-19 tests completed and percent positivity: Ontario, March 29, 2020 to June 2, 2021**

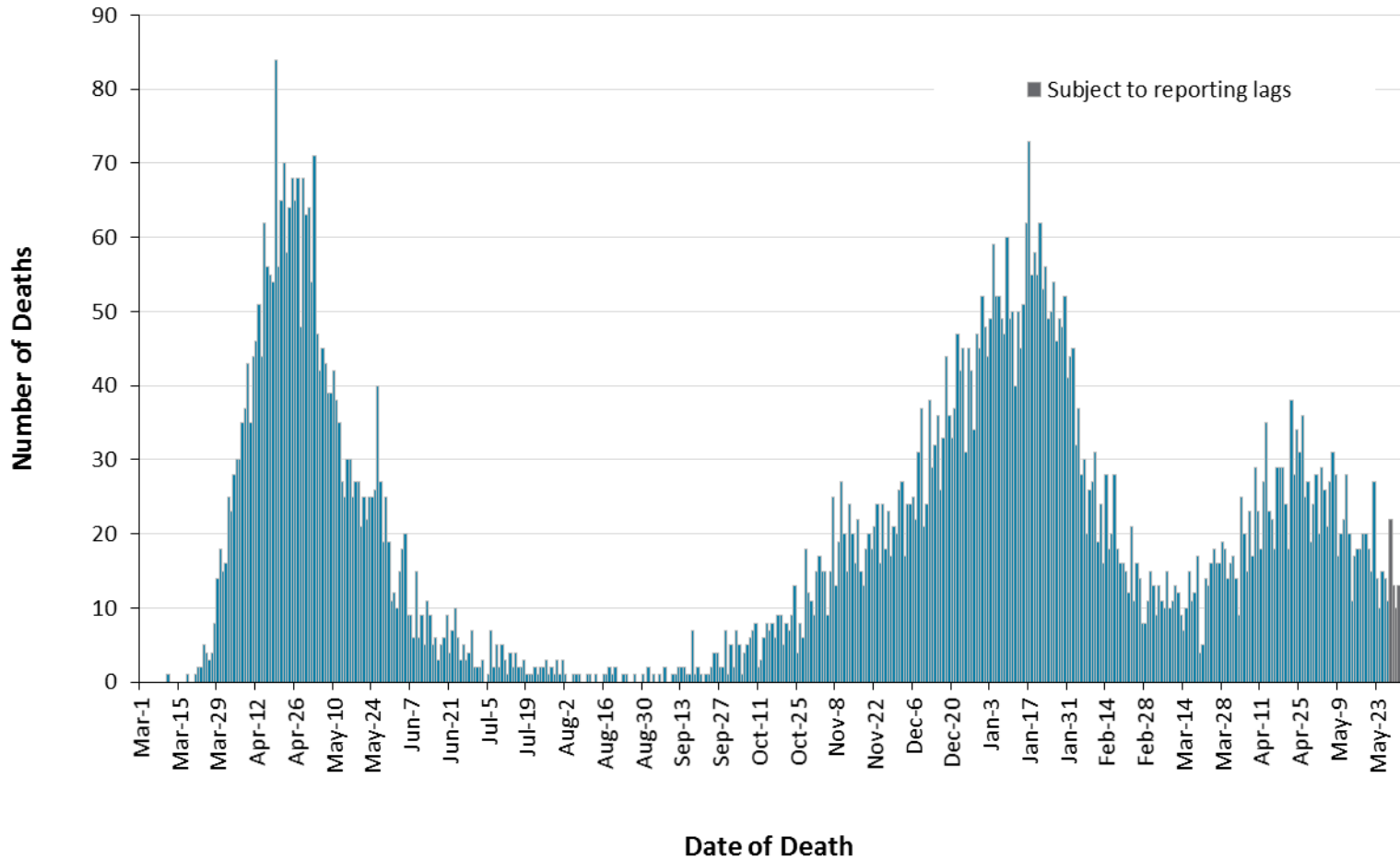


**Note:** The number of tests performed does not reflect the number of specimens or persons tested. More than one test may be performed per specimen or per person. As such, the percentage of tests that were positive does not necessarily translate to the number of specimens or persons testing positive.

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

# Severity

Figure 4. Confirmed deaths among COVID-19 cases by date of death: Ontario, March 1, 2020 to June 3, 2021



**Note:** Cases without a death date are not included in the figure.

**Data Source:** CCM



**Table 4. Confirmed cases of COVID-19 by severity: Ontario**

	Cumulative case count as of June 3, 2021	Percentage of all cases
Cumulative deaths reported (please note there may be a reporting delay for deaths)	8,820	1.6%
Deaths reported in ages: 19 and under	4	< 0.1%
Deaths reported in ages: 20-39	71	< 0.1%
Deaths reported in ages: 40-59	519	0.3%
Deaths reported in ages: 60-79	2,737	3.8%
Deaths reported in ages: 80 and over	5,488	22.1%
Ever in ICU	5,091	1.0%
Ever hospitalized	26,814	5.0%

**Note:** Not all cases have an age reported. Data corrections or updates can result in case records being removed and/or updated and may result in totals differing from past publicly reported case counts.

**Data Source:** CCM

## Geography

**Table 5. Summary of recent confirmed cases of COVID-19 by public health unit and region: Ontario**

Public Health Unit Name	Change in cases June 2, 2021	Change in cases June 3, 2021	Cumulative case count	Cumulative rate per 100,000 population
Northwestern Health Unit	0	1	1,065	1,214.7
Thunder Bay District Health Unit	-2	16	3,266	2,177.9
<b>TOTAL NORTH WEST</b>	-2	17	4,331	1,822.5
Algoma Public Health	1	2	396	346.1
North Bay Parry Sound District Health Unit	4	0	454	349.9
Porcupine Health Unit	49	57	1,504	1,802.5
Public Health Sudbury & Districts	4	3	2,080	1,045.1
Timiskaming Health Unit	0	0	205	627.1
<b>TOTAL NORTH EAST</b>	58	62	4,639	829.4
Ottawa Public Health	43	52	27,215	2,580.5
Eastern Ontario Health Unit	3	0	4,613	2,210.2
Hastings Prince Edward Public Health	0	0	1,122	665.9
Kingston, Frontenac and Lennox & Addington Public Health	1	4	1,529	718.8
Leeds, Grenville & Lanark District Health Unit	0	-1	1,733	1,000.8
Renfrew County and District Health Unit	2	1	720	662.8
<b>TOTAL EASTERN</b>	49	56	36,932	1,917.2

Public Health Unit Name	Change in cases June 2, 2021	Change in cases June 3, 2021	Cumulative case count	Cumulative rate per 100,000 population
Durham Region Health Department	44	69	24,766	3,476.4
Haliburton, Kawartha, Pine Ridge District Health Unit	8	9	2,076	1,098.8
Peel Public Health	167	169	107,979	6,723.7
Peterborough Public Health	7	4	1,512	1,021.8
Simcoe Muskoka District Health Unit	33	23	12,123	2,021.9
York Region Public Health	28	31	52,088	4,249.3
<b>TOTAL CENTRAL EAST</b>	287	305	200,544	4,475.8
Toronto Public Health	225	214	162,839	5,218.6
<b>TOTAL TORONTO</b>	225	214	162,839	5,218.6
Chatham-Kent Public Health	2	4	1,865	1,754.2
Grey Bruce Health Unit	3	1	1,303	767.0
Huron Perth Public Health	3	3	1,858	1,329.5
Lambton Public Health	2	9	3,506	2,677.1
Middlesex-London Health Unit	22	24	12,328	2,429.0
Southwestern Public Health	3	5	3,804	1,798.6
Windsor-Essex County Health Unit	17	17	16,619	3,911.9
<b>TOTAL SOUTH WEST</b>	52	63	41,283	2,441.7
Brant County Health Unit	14	7	3,744	2,412.3
City of Hamilton Public Health Services	45	59	20,730	3,500.7
Haldimand-Norfolk Health Unit	3	3	2,624	2,300.1

Public Health Unit Name	Change in cases June 2, 2021	Change in cases June 3, 2021	Cumulative case count	Cumulative rate per 100,000 population
Halton Region Public Health	18	33	17,050	2,754.1
Niagara Region Public Health	55	22	15,851	3,354.8
Region of Waterloo Public Health and Emergency Services	37	56	16,093	2,753.9
Wellington-Dufferin-Guelph Public Health	29	17	8,015	2,569.7
<b>TOTAL CENTRAL WEST</b>	<b>201</b>	<b>197</b>	<b>84,107</b>	<b>2,951.9</b>
<b>TOTAL ONTARIO</b>	<b>870</b>	<b>914</b>	<b>534,675</b>	<b>3,597.0</b>

**Notes:** Health units with data corrections or updates could result in records being removed from totals resulting in negative counts.

**Data Source:** CCM

## Outbreaks

**Table 6. Summary of recent confirmed COVID-19 outbreaks reported in long-term care homes, retirement homes and hospitals by status: Ontario**

Institution type	Change in outbreaks June 2, 2021	Change in outbreaks June 3, 2021	Number of ongoing outbreaks	Cumulative number of outbreaks reported
Long-term care homes	2	1	25	1,478
Retirement homes	0	0	11	871
Hospitals	0	0	8	564

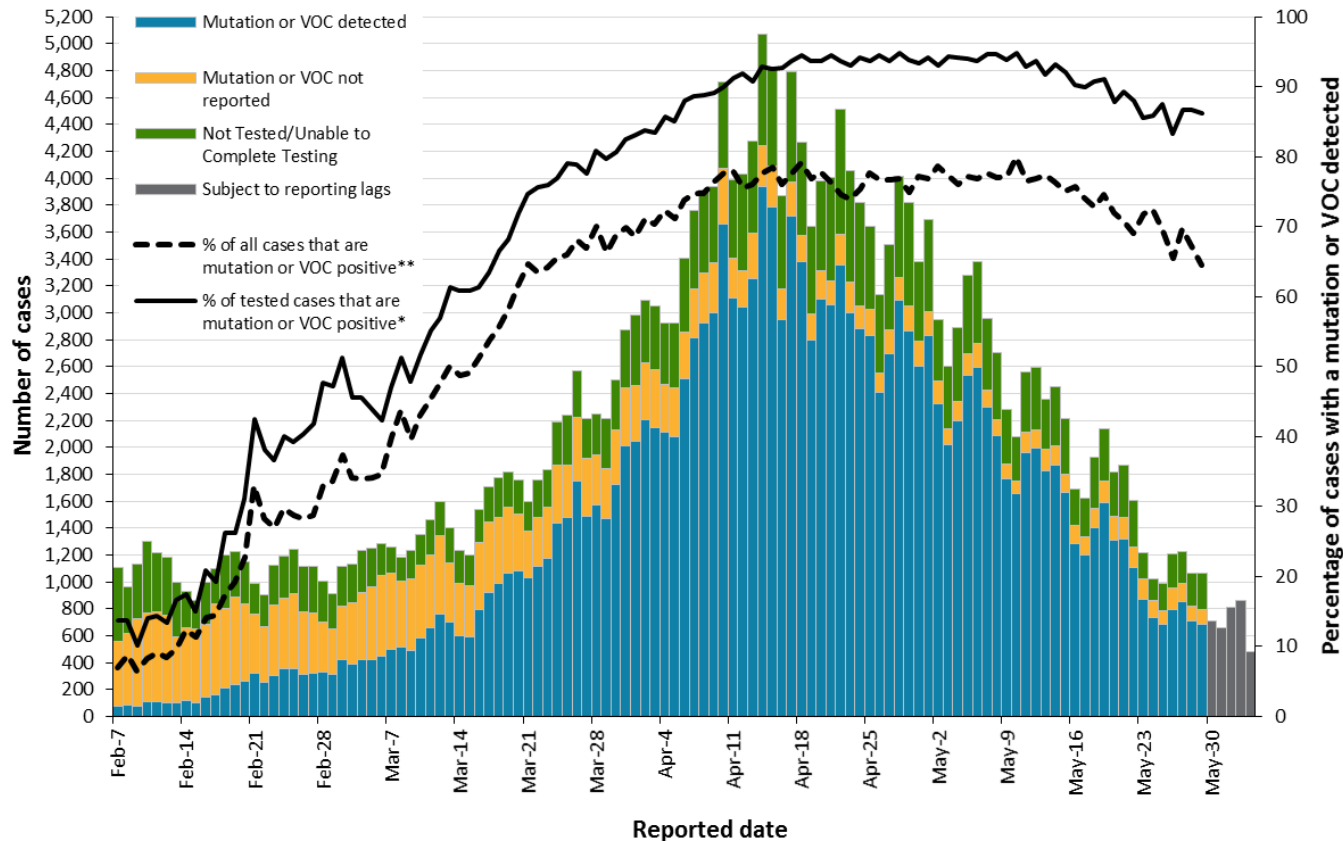
**Note:** Ongoing outbreaks include all outbreaks that are 'Open' in CCM without a 'Declared Over Date' recorded, or where the outbreak started more than five months ago, even for outbreaks where the Outbreak Status value selected in CCM is 'OPEN'. The start of the outbreak is determined by the onset date of first case, or if missing the outbreak reported date, or else if that is also missing, then the outbreak created date.

**Data Source:** CCM

## Variant COVID-19 Cases

The laboratory detection of a variant of concern (VOC) is a multi-step process. Samples that test positive for SARS-CoV-2 and have a cycle threshold (Ct) value  $\leq 35$  can be tested for mutations common to variants of concern. If positive for the mutation of interest with a Ct value of  $\leq 30$ , these samples may then undergo genomic analyses to identify the VOC lineage. VOC lineages may still be confirmed using genomic analysis despite specific S gene mutation(s) being documented as 'unable to complete' due to poor sequence quality at the genome position.

**Figure 5. Number of confirmed COVID-19 cases and percent positive for mutations or VOCs: Ontario, February 7, 2021 to June 3, 2021**



**Note:** Data used to calculate the number of cases tested for mutations common to VOCs or lineages using genomic analyses are obtained using information from the Laboratory object in CCM in addition to the data from the Investigation Subtype field. Therefore, comparisons to counts using only information from the Investigation Subtype field may not align. The percent of cases due to a VOC may be higher than described in this report.

\*The denominator includes only confirmed COVID-19 cases that were able to be tested for VOCs (e.g. those identified as 'Detected' or 'Not Detected').

\*\*The denominator includes all confirmed COVID-19 cases, including those that were unable to be tested for VOCs (e.g. those identified as 'Detected', 'Not Detected' and 'Not Tested/Unable to Complete Testing').

**Data Source:** CCM

**Table 7. Summary of confirmed COVID-19 cases with a mutation or VOC detected: Ontario**

	Change in cases June 2, 2021	Change in cases June 3, 2021	Cumulative case count up to June 3, 2021
Variant of Concern			
Lineage B.1.1.7*	914	1,248	129,807
Lineage B.1.351	2	18	972
Lineage P.1	10	46	2,967
Mutations			
N501Y and E484K	21	-11	6,389
N501Y (E484K unknown)**	-411	-445	19,702
E484K (N501Y negative)	73	40	5,505
E484K (N501Y unknown)	-43	-18	481

**Note:** Interpret the VOC and mutation trends with caution due to the varying time required to complete VOC testing and/or genomic analysis following the initial positive test for SARS-CoV-2. Due to the nature of the genomic analysis, test results may be completed in batches. Data corrections or updates can result in case records being removed and/or updated and may result in totals differing from past publicly reported case counts. Data for calculating the change in cases and the cumulative case counts uses data from the Investigation Subtype field only. Changes to the VOC testing algorithm may impact counts and trends. Further details can be found in the [data caveats](#) section.

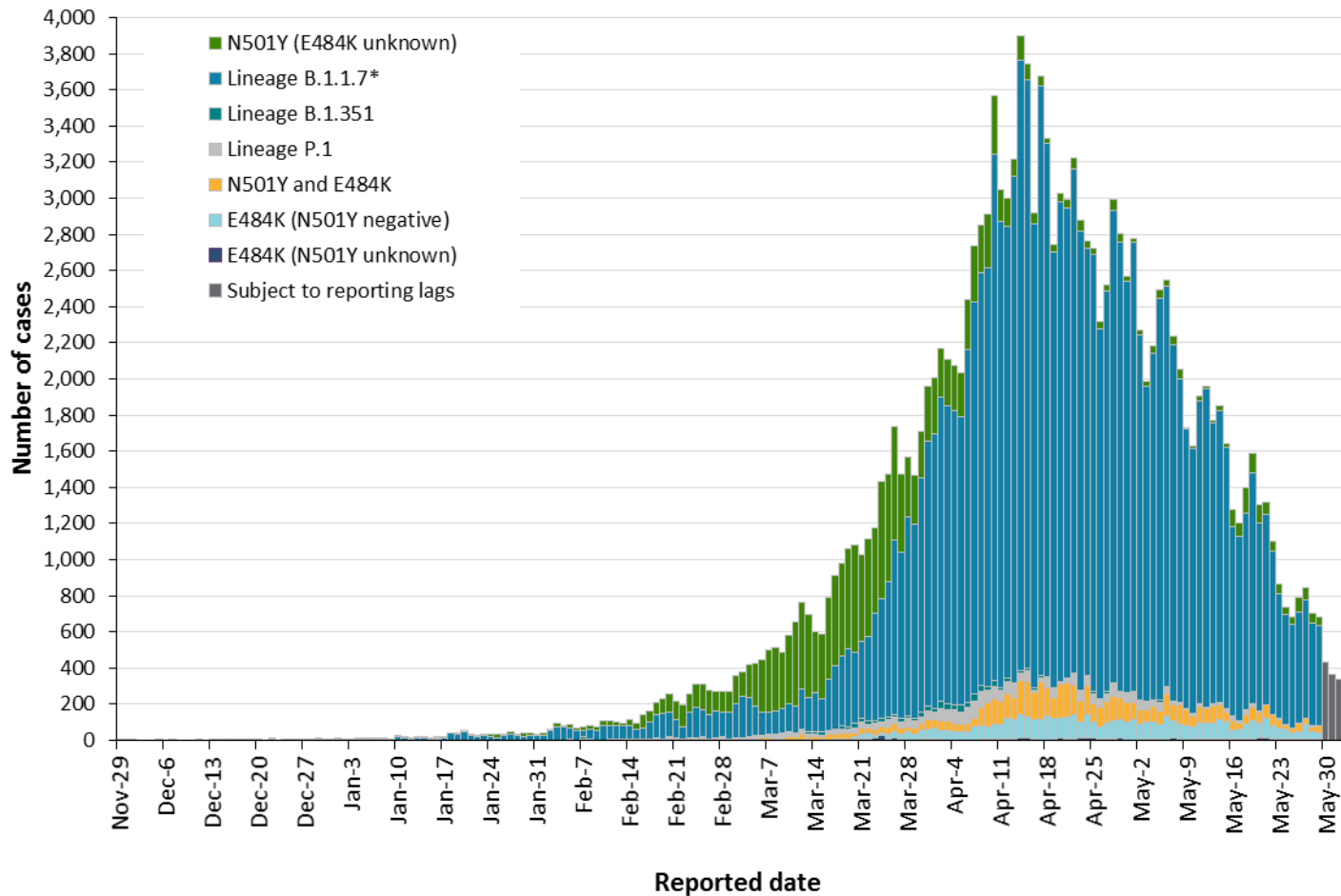
\*Includes all confirmed COVID-19 cases where lineage B.1.1.7 was identified by genomic analysis and those presumed to be B.1.1.7 based on positive N501Y and negative E484K mutation in the Investigation Subtype field

\*\*The category 'N501Y (E484K unknown)' mainly consists of results from before the introduction of the E484K test. Counts will shift from this category into a VOC lineage category as E484K tests or genomic analysis are completed.

**Data Source:** CCM



**Figure 6. Confirmed COVID-19 cases with a mutation or VOC detected by public health unit reported date: Ontario, November 29, 2020 to June 3, 2021**



**Note:** Reported date is based on the date the case was reported, not the date that the VOC or mutation was identified. Further details on testing for variants of concern can be found in the [technical notes](#). Interpret the VOC and mutation trends with caution due to the varying time required to complete testing and/or genomic analysis following the initial positive test for SARS-CoV-2. Data for calculating the change in cases and the cumulative case count uses data from the Investigation

Subtype field only. Data for cases with a B.1.1.7, B.1.351, and P.1 lineage detected or any of the mutations listed above are determined using the Investigation Subtype field only. Changes to the VOC testing algorithm may impact counts and trends. Further details can be found in the [data caveats](#) section.

\*Includes all confirmed COVID-19 cases where lineage B.1.1.7 was identified by genomic analysis and those presumed to be B.1.1.7 based on positive N501Y and negative E484K mutation. As of March 22, 2021, positive specimens with a Ct  $\leq$  35 are tested for both the N501Y and E484K mutation, with all E484K positive specimens with a Ct  $\leq$  30 forwarded for further genomic analysis. If found to be positive for the N501Y mutation only, no further genomic analysis are performed as these are presumed to be B.1.1.7. As of May 26, 2021, cases where an E484K mutation is detected will no longer be reflexed for sequencing as VOC testing labs switched to a representative sampling method where only a proportion of all positives with a Ct  $\leq$  30 are forwarded for further genomic analysis. This proportion was initially set at 10% and will be adjusted periodically based on case volumes.

**Data Source:** CCM

# Technical Notes

## Data Sources

- The data for this report were based on information successfully extracted from the Public Health Case and Contact Management Solution (CCM) for all PHUs by PHO as of **June 3, 2021 at 1 p.m.** for cases reported from February 1, 2021 onwards and as of **May 31, 2021 at 9 a.m.** for cases reported up to January 31, 2021.
- CCM is a dynamic disease reporting system, which allows ongoing updates to data previously entered. As a result, data extracted from CCM represent a snapshot at the time of extraction and may differ from previous or subsequent reports.
- Ontario population projection data for 2020 were sourced from Ministry, IntelliHEALTH Ontario. Data were extracted on November 26, 2019.
- COVID-19 test data were based on information from The Provincial COVID-19 Diagnostics Network, reported by member microbiology laboratories.

## Data Caveats

- The data only represent cases reported to public health units and recorded in CCM. As a result, all counts will be subject to varying degrees of underreporting due to a variety of factors, such as disease awareness and medical care seeking behaviours, which may depend on severity of illness, clinical practice, changes in laboratory testing, and reporting behaviours.
- Lags in CCM data entry due to weekend staffing may result in lower case counts than would otherwise be recorded.
- Only cases meeting the confirmed case classification as listed in the [MOH Case Definition – Coronavirus Disease \(COVID-19\) document](#) are included in the report counts from CCM
- Cases of confirmed reinfection, as defined in the provincial case definitions, are counted as unique investigations.
- Case classification information may be updated for individuals with a positive result issued from a point-of-care assays.
- The number of tests performed does not reflect the number of specimens or persons tested. More than one test may be performed per specimen or per person. As such, the percentage of tests that were positive does not necessarily translate to the number of specimens or persons testing positive.
- Reported date is the date the case was reported to the public health unit.
- Case episode date represents an estimate of disease onset. This date is calculated based on the earliest date of symptom onset, specimen collection/test date, or the date reported to the public health unit.
- Resolved cases are determined only for COVID-19 cases that have not died. Cases that have died are considered fatal and not resolved. The following cases are classified as resolved:

- Cases that are reported as ‘recovered’ in CCM
- Cases that are not hospitalized and are 14 days past their episode date
- Cases that are currently hospitalized (no hospital end date entered) and have a status of ‘closed’ in CCM (indicating public health unit follow-up is complete) and are 14 days past their symptom onset date or specimen collection date
- Hospitalization includes all cases for which a hospital admission date was reported or hospitalization/ICU was reported as ‘Yes’ at the time of data extraction. It includes cases that have been discharged from hospital as well as cases that are currently hospitalized. Emergency room visits are not included in the number of reported hospitalizations.
- ICU admission includes all cases for which an ICU admission date was reported at the time of data extraction. It is a subset of the count of hospitalized cases. It includes cases that have been treated or that are currently being treated in an ICU.
- Orientation of case counts by geography is based on the diagnosing health unit (DHU). DHU refers to the case's public health unit of residence at the time of illness onset and not necessarily the location of exposure. Cases for which the DHU was reported as MOH-PHO (to signify a case that is not a resident of Ontario) have been excluded from the analyses.
- Likely source of acquisition is determined by examining the epidemiologic link and epidemiologic link status fields in CCM. If no epidemiologic link is identified in those fields the risk factor fields are examined to determine whether a case travelled, was associated with a confirmed outbreak, was a contact of a case, had no known epidemiological link (sporadic community transmission) or was reported to have an unknown source/no information was reported. Some cases may have no information reported if the case is untraceable, was lost to follow-up or referred to FNIHB. Cases with multiple risk factors were assigned to a single likely acquisition source group which was determined hierarchically in the following order:
  - For cases with an episode date *on or after* April 1, 2020: Outbreak-associated > close contact of a confirmed case > travel > no known epidemiological link > information missing or unknown
  - For cases with an episode date *before* April 1, 2020: Travel > outbreak-associated > close contact of a confirmed case > no known epidemiological link > information missing or unknown
- Deaths are determined by using the outcome field in CCM. Any case marked ‘Fatal’ is included in the deaths data. The CCM field Type of Death is not used to further categorize the data.
  - The date of death is determined using the outcome date field for cases marked as ‘Fatal’ in the outcome field.
- COVID-19 cases from CCM for which the Classification and/or Disposition was reported as ENTERED IN ERROR, DOES NOT MEET DEFINITION, IGNORE, DUPLICATE or any variation on these values have been excluded. The provincial case count for COVID-19 may include some duplicate records, if these records were not identified and resolved.
- Ongoing outbreaks include all outbreaks that are ‘Open’ in CCM without a ‘Declared Over Date’ recorded, or where the outbreak started more than five months ago, even for outbreaks where

the Outbreak Status value selected in CCM is 'OPEN'. The start of the outbreak is determined by the onset date of first case, or if missing the outbreak reported date, or else if that is also missing, then the outbreak created date.

- 'Long-term care home residents' includes cases that reported 'Yes' to the risk factor 'Resident of a long-term care home'; or 'Yes' to the risk factor 'Resident of nursing home or other chronic care facility' and reported to be part of an outbreak assigned as a long-term care home (via the Outbreak number or case comments field); or were reported to be part of an outbreak assigned as a long-term care home (via the outbreak number or case comments field) with an age over 70 years and did not report 'No' to the risk factors 'Resident of long-term care home' or 'Resident of nursing home or other chronic care facility'. 'Long-term care home residents' excludes cases that reported 'Yes' to any of the health care worker occupational risk factors.
- The 'health care workers' variable includes cases that reported 'Yes' to any of the occupation of health care worker, doctor, nurse, dentist, dental hygienist, midwife, other medical technicians, personal support worker, respiratory therapist, first responder.
- 'Health care workers associated with long-term care outbreaks' includes 'health care workers' reported to be part of an outbreak assigned as a long-term care home (via the outbreak number or case comments field). Excludes cases that reported 'Yes' to risk factors 'Resident of long-term care home' or 'Resident of nursing home or other chronic care facility' and 'Yes' to the calculated 'health care workers' variable.
- Percent change is calculated by taking the difference between the current period (i.e., daily count or sum of the daily count over a 7-day period) and previous period (i.e., daily count or sum of the daily count over a 7-day period), divided by the previous period.
- PANGO lineage B.1.1.7: This lineage was first detected in England in September, 2020. Early evidence suggests that the N501Y mutation may increase SARS-CoV-2 transmissibility. The PANGO lineage B.1.1.7 is assigned to genome sequences with at least 5 of the 17 defining B.1.1.7 SNPs.
- PANGO lineage B.1.351 (also known as 501Y.V2): This lineage was first detected October, 2020 in South Africa and has several mutations of concern, including spike (S) gene: N501Y, K417N, and E484K. Early evidence suggests that these mutations may increase SARS-CoV-2 transmissibility and decrease vaccine efficacy. The PANGO lineage B.1.351 will be assigned to genome sequences at least 5 of the 9 defining B.1.351 SNPs.
- PANGO lineage P.1 (also known as 501Y.V3): This lineage was first detected January, 2021 in Brazil and has several mutations of concern, including spike (S) gene N501Y, K417T, and E484K. Early evidence suggests that these mutations may increase SARS-CoV-2 transmissibility and decrease vaccine efficacy. The PANGO lineage P.1 is assigned to genome sequences with more than 10 of the 17 defining P.1 SNPs.
- Public Health Ontario conducts testing and genomic analyses for SARS-CoV-2 positive specimens using the criteria outlined here: <https://www.publichealthontario.ca/en/laboratory-services/test-information-index/covid-19-voc>
- Changes to the VOC testing algorithm may occur over time and trends should be interpreted with caution. Since February 3, 2021 all PCR positive SARS-CoV-2 specimens with Ct values  $\leq 35$  are tested for a N501Y mutation. As of March 22, 2021, positive specimens with a Ct  $\leq 35$  are tested for both the N501Y and E484K mutation, with all E484K positive specimens with a Ct  $\leq 30$

forwarded for further genomic analysis. If found to be positive for the N501Y mutation only, no further genomic analysis are performed as these are presumed to be B.1.1.7. As of May 26, 2021, cases where a E484K mutation is detected will no longer be reflexed for sequencing as VOC testing labs switched to a representative sampling method where only a proportion of all positives with a Ct  $\leq$  30 are forwarded for further genomic analysis. This proportion was initially set at 10% and will be adjusted periodically based on case volumes.

- The laboratory detection of a variant of concern is a multi-step process. Samples that test positive for SARS-CoV-2 and have a cycle threshold (Ct) value  $\leq$  35 can be tested for mutations common to variants of concern. If positive for the mutation of interest with a Ct value of  $\leq$ 30, these samples may then undergo genomic analyses to identify the VOC lineage. VOC lineages may still be confirmed using genomic analysis despite specific S gene mutation(s) being documented as 'unable to complete' due to poor sequence quality at the genome position.
- VOC testing data are analyzed for cases with a reported date on or after February 07, 2021. VOC testing data are based on CCM information reported within the laboratory object for select Logical Observation Identifiers Names and Codes (LOINC) and supplemented with information from the Investigation Subtype field. A confirmed Case Investigation is assigned a VOC test value (e.g., VOC test detected, VOC test not detected) based on the following hierarchy:
  - If multiple laboratory results are identified, a VOC test value is assigned based on the following hierarchy: Detected > Not Detected > Unable to complete
  - If a laboratory result is 'Not Detected' or 'Unable to complete', but data on the Investigation Subtype field is listed as a lineage or mutation common to a VOC, then the VOC test value is set to 'Detected'
- If a VOC is identified through genomic analysis cases initially classified as a mutation may be updated and moved to the appropriate lineage (B.1.1.7, B.1.351 and P.1)
- LOINCs are a set of internationally used result description codes. In the absence of a standard LOINC, Ontario Health can create local result codes, which are identified with an 'XON' prefix. LOINCs incorporate details of the result value (e.g. test method, target detected - such as IgG, DNA, isolate etc.) and are unique to each result.
- VOC testing data in this report are assigned on a per case basis. Multiple laboratory results may be associated to a single case investigation, but for analysis purposes are only counted once.
  - The percent of cases that test VOC positive is calculated by taking the number of VOC test positive, divided by the total number of confirmed COVID-19 cases for a given reported date.
- The VOC percent positive may be higher than described in this report. While all confirmed COVID-19 cases are included in the denominator, not all cases were able to be tested for VOCs. As testing algorithms change, the VOC percent positivity may not be reflective of the exact number of COVID-19 cases due to VOCs
- Only CCM case investigations with a CONFIRMED classification have their laboratory records with VOC testing information included in the percent positivity calculations

## Appendix A

**Table A1. Weekly rates of confirmed COVID-19 cases per 100,000 population over recent rolling 7-day periods, by reported date and public health unit: Ontario, May 19 to May 31, 2021**

Public Health Unit Name	May 19 to May 25	May 20 to May 26	May 21 to May 27	May 22 to May 28	May 23 to May 29	May 24 to May 30	May 25 to May 31	% change from May 19 - May 25 to May 25 - May 31
<b>NORTH WEST</b>								
Northwestern Health Unit	20.5	11.4	11.4	11.4	12.5	12.5	9.1	-55.6%
Thunder Bay District Health Unit	12.0	9.3	19.3	25.3	35.3	35.3	43.3	+260.8%
<b>NORTH EAST</b>								
Algoma Public Health	15.7	9.6	8.7	7.9	7.0	5.2	3.5	-77.7%
North Bay Parry Sound District Health Unit	13.1	9.2	9.2	9.2	8.5	6.9	7.7	-41.2%
Porcupine Health Unit	351.1	312.8	287.6	279.2	272.0	257.7	248.1	-29.3%
Public Health Sudbury & Districts	11.1	9.5	9.5	9.5	9.0	9.5	11.1	0.0
Timiskaming Health Unit	12.2	9.2	3.1	0.0	0.0	0.0	0.0	-100.0%
<b>EASTERN</b>								
Ottawa Public Health	45.5	44.5	43.3	42.4	39.3	40.0	37.8	-16.9%
Eastern Ontario Health Unit	18.7	18.7	16.3	18.2	18.2	17.2	18.2	-2.7%
Hastings Prince Edward Public Health	18.4	17.2	17.8	14.8	15.4	14.2	12.5	-32.1%
Kingston, Frontenac and Lennox & Addington Public Health	10.8	7.1	6.1	3.3	3.3	2.4	3.3	-69.4%

Public Health Unit Name	May 19 to May 25	May 20 to May 26	May 21 to May 27	May 22 to May 28	May 23 to May 29	May 24 to May 30	May 25 to May 31	% change from May 19 - May 25 to May 25 - May 31
Leeds, Grenville & Lanark District Health Unit	14.4	16.2	15.0	13.3	12.1	4.6	4.0	-72.2%
Renfrew County and District Health Unit	15.6	12.9	16.6	20.3	20.3	21.2	21.2	+35.9%
<b>CENTRAL EAST</b>								
Durham Region Health Department	94.7	85.5	84.8	67.0	63.7	60.2	52.9	-44.1%
Haliburton, Kawartha, Pine Ridge District Health Unit	81.0	72.0	68.3	66.2	50.8	37.0	33.3	-58.9%
Peel Public Health	143.9	134.7	123.1	108.8	98.6	91.2	86.1	-40.2%
Peterborough Public Health	48.0	40.5	40.5	33.8	30.4	27.7	27.7	-42.3%
Simcoe Muskoka District Health Unit	42.4	39.7	39.7	36.2	34.0	34.7	33.0	-22.2%
York Region Public Health	69.3	59.7	58.7	54.7	49.8	46.4	44.1	-36.4%
<b>TORONTO</b>								
Toronto Public Health	89.6	80.0	74.0	67.0	62.3	56.6	52.7	-41.2%
<b>SOUTH WEST</b>								
Chatham-Kent Public Health	4.7	1.9	2.8	2.8	4.7	9.4	9.4	+100.0%
Grey Bruce Health Unit	15.9	8.8	7.1	7.1	4.1	4.7	5.3	-66.7%
Huron Perth Public Health	25.8	26.5	28.6	32.9	30.8	31.5	31.5	+22.1%
Lambton Public Health	27.5	29.8	24.4	22.9	24.4	23.7	25.2	-8.4%
Middlesex-London Health Unit	68.2	60.1	50.0	45.3	44.3	41.4	42.8	-37.2%



Public Health Unit Name	May 19 to May 25	May 20 to May 26	May 21 to May 27	May 22 to May 28	May 23 to May 29	May 24 to May 30	May 25 to May 31	% change from May 19 - May 25 to May 25 - May 31
Southwestern Public Health	32.2	24.1	24.1	25.5	24.6	25.1	20.8	-35.4%
Windsor-Essex County Health Unit	51.1	47.1	45.7	37.0	36.2	34.1	36.5	-28.6%
<b>CENTRAL WEST</b>								
Brant County Health Unit	54.1	57.3	49.6	58.0	56.7	56.1	54.8	+1.3%
City of Hamilton Public Health Services	91.5	83.8	78.0	71.3	71.8	69.2	68.2	-25.5%
Haldimand-Norfolk Health Unit	44.7	38.6	42.1	44.7	41.2	35.9	24.5	-45.2%
Halton Region Public Health	57.8	55.1	52.5	47.7	43.1	39.3	36.0	-37.7%
Niagara Region Public Health	56.3	55.7	53.1	47.8	48.5	45.3	42.5	-24.5%
Region of Waterloo Public Health and Emergency Services	57.8	56.8	50.7	52.0	48.9	47.6	48.1	-16.8%
Wellington-Dufferin-Guelph Public Health	50.0	46.8	46.2	43.6	39.8	37.8	38.5	-23.0%
<b>TOTAL ONTARIO</b>	<b>71.6</b>	<b>65.4</b>	<b>61.4</b>	<b>55.9</b>	<b>52.3</b>	<b>48.9</b>	<b>46.5</b>	<b>-35.1%</b>

**Note:** Rates are based on the sum of the daily case counts during the date ranges specified in each column.

**Data Source:** CCM

**Table A2. Summary of confirmed COVID-19 cases with a mutation or VOC by public health unit: Ontario as of June 3, 2021**

Public Health Unit Name	Cumulative count for Lineage B.1.1.7*	Cumulative count for Lineage B.1.351	Cumulative count for Lineage P.1	Cumulative count for mutations**
Algoma Public Health	64	0	5	33
Brant County Health Unit	623	2	70	486
Chatham-Kent Public Health	104	5	7	117
City of Hamilton Public Health Services	4,898	26	49	1,942
Durham Region Health Department	9,186	38	129	1,331
Eastern Ontario Health Unit	635	40	10	288
Grey Bruce Health Unit	299	0	4	56
Haldimand-Norfolk Health Unit	347	1	10	391
Haliburton, Kawartha, Pine Ridge District Health Unit	410	0	13	309
Halton Region Public Health	4,978	22	126	623
Hastings Prince Edward Public Health	68	0	3	417
Huron Perth Public Health	153	0	3	134
Kingston, Frontenac and Lennox & Addington Public Health	425	1	28	134
Lambton Public Health	400	0	14	120
Leeds, Grenville & Lanark District Health Unit	280	16	0	45
Middlesex-London Health Unit	3,040	1	51	375
Niagara Region Public Health	3,972	0	9	1,063

Public Health Unit Name	Cumulative count for Lineage B.1.1.7*	Cumulative count for Lineage B.1.351	Cumulative count for Lineage P.1	Cumulative count for mutations**
North Bay Parry Sound District Health Unit	112	28	0	16
Northwestern Health Unit	48	0	1	18
Ottawa Public Health	5,497	287	26	634
Peel Public Health	28,052	113	832	4,604
Peterborough Public Health	515	3	6	164
Porcupine Health Unit	700	2	0	8
Public Health Sudbury & Districts	564	3	0	361
Region of Waterloo Public Health and Emergency Services	2,904	6	29	336
Renfrew County and District Health Unit	200	5	2	21
Simcoe Muskoka District Health Unit	3,463	22	117	891
Southwestern Public Health	628	1	5	167
Thunder Bay District Health Unit	72	0	1	56
Timiskaming Health Unit	81	1	0	0
Toronto Public Health	38,678	290	1,081	13,764
Wellington-Dufferin-Guelph Public Health	2,018	1	38	208
Windsor-Essex County Health Unit	1,698	5	8	134
York Region Public Health	14,695	53	290	2,831
<b>TOTAL ONTARIO</b>	<b>129,807</b>	<b>972</b>	<b>2,967</b>	<b>32,077</b>

**Note:** Interpret the VOC and mutation trends with caution due to the varying time required to complete VOC testing and/or genomic analysis following the initial positive test for SARS-CoV-2. Due to the nature of the genomic analysis, test results may be completed in batches. Data corrections or updates can result in case records being removed and/or updated and may result in totals differing from past publicly reported case counts. Data for calculating the change in cases and the cumulative case count uses data from the Investigation Subtype field only. Changes to the VOC testing algorithm may impact counts and trends. Further details can be found in the [data caveats](#) section.

\*Includes all confirmed COVID-19 cases where lineage B.1.1.7 was identified by genomic analysis and those presumed to be B.1.1.7 based on positive N501Y and negative E484K mutation.

\*\*Mutations includes all confirmed COVID-19 cases with the following mutations detected, reported from the Investigation Subtype field: N501Y and E484K, N501Y (E484K unknown), E484K (N501Y negative), E484K (N501Y unknown).

If a VOC is identified through genomic analysis, the change in cases and/or cumulative case counts for mutations will fluctuate as the case is moved to one of the listed lineages.

**Data Source:** CCM

**Table A3. Weekly percent positivity for cases positive for mutations or VOCs over recent rolling 7-day periods using all confirmed cases as the denominator, by reported date and public health unit: Ontario, May 17 to May 29, 2021**

Public Health Unit Name	May 17 to May 23	May 18 to May 24	May 19 to May 25	May 20 to May 26	May 21 to May 27	May 22 to May 28	May 23 to May 29
Algoma Public Health	65.2	61.9	55.6	72.7	70.0	66.7	75.0
Brant County Health Unit	73.2	71.6	69.0	71.9	71.4	78.9	83.0
Chatham-Kent Public Health	71.4	85.7	80.0	50.0	66.7	66.7	40.0
City of Hamilton Public Health Services	74.1	74.3	73.8	74.2	74.5	73.5	72.7
Durham Region Health Department	82.1	82.2	82.4	81.0	81.1	82.6	85.0
Eastern Ontario Health Unit	32.8	29.1	33.3	43.6	44.1	65.8	65.8
Grey Bruce Health Unit	74.3	71.0	66.7	60.0	75.0	75.0	57.1
Haldimand-Norfolk Health Unit	72.0	65.0	62.7	61.4	58.3	56.9	55.3
Haliburton, Kawartha, Pine Ridge District Health Unit	85.9	84.0	83.7	82.4	80.6	80.8	77.1
Halton Region Public Health	74.8	77.0	76.3	73.6	73.5	72.9	74.2
Hastings Prince Edward Public Health	74.3	75.9	80.6	75.9	76.7	84.0	84.6
Huron Perth Public Health	65.1	63.4	69.4	64.9	60.0	58.7	67.4
Kingston, Frontenac and Lennox & Addington Public Health	91.4	88.5	87.0	86.7	92.3	85.7	71.4
Lambton Public Health	72.0	74.5	69.4	71.8	65.6	76.7	75.0

Public Health Unit Name	May 17 to May 23	May 18 to May 24	May 19 to May 25	May 20 to May 26	May 21 to May 27	May 22 to May 28	May 23 to May 29
Leeds, Grenville & Lanark District Health Unit	61.3	61.3	68.0	64.3	69.2	69.6	66.7
Middlesex-London Health Unit	84.1	83.0	82.7	81.0	79.5	81.3	81.3
Niagara Region Public Health	68.2	65.6	62.0	63.5	66.9	68.6	65.9
North Bay Parry Sound District Health Unit	20.0	13.6	11.8	16.7	16.7	25.0	27.3
Northwestern Health Unit	22.2	23.5	16.7	10.0	0.0	0.0	0.0
Ottawa Public Health	41.5	39.7	39.2	39.2	41.8	43.0	46.3
Peel Public Health	63.0	63.0	61.8	60.7	60.0	58.9	58.3
Peterborough Public Health	79.1	79.4	85.9	86.7	83.3	86.0	84.4
Porcupine Health Unit	72.1	69.7	67.6	66.3	62.5	60.9	56.8
Public Health Sudbury & Districts	78.9	77.8	81.8	78.9	84.2	89.5	94.4
Region of Waterloo Public Health and Emergency Services	68.9	69.4	68.6	68.7	67.6	66.1	62.6
Renfrew County and District Health Unit	66.7	73.3	64.7	64.3	66.7	59.1	59.1
Simcoe Muskoka District Health Unit	79.9	77.5	77.2	71.8	71.4	67.3	65.2
Southwestern Public Health	86.1	87.0	86.8	82.4	84.3	90.7	90.4
Thunder Bay District Health Unit	66.7	66.7	66.7	71.4	75.9	71.1	69.8
Timiskaming Health Unit	62.5	80.0	100.0	100.0	100.0	0.0	0.0

Public Health Unit Name	May 17 to May 23	May 18 to May 24	May 19 to May 25	May 20 to May 26	May 21 to May 27	May 22 to May 28	May 23 to May 29
Toronto Public Health	78.7	78.5	78.3	76.8	75.8	74.4	72.8
Wellington-Dufferin-Guelph Public Health	70.2	71.4	73.7	70.5	71.5	73.5	75.8
Windsor-Essex County Health Unit	67.9	67.6	69.6	73.0	73.7	73.2	74.0
York Region Public Health	82.0	82.0	81.9	79.2	78.4	78.5	77.3
<b>TOTAL ONTARIO</b>	<b>72.2</b>	<b>71.9</b>	<b>71.6</b>	<b>70.2</b>	<b>69.8</b>	<b>69.2</b>	<b>68.6</b>

**Note:** Data for calculating the number of cases tested for mutations common to VOCs or lineages using genomic analyses are obtained using information from the Laboratory object in CCM in addition to the data from the Investigation subtype field. Therefore, comparisons to counts using only information from the Investigation Subtype field may not align. The percent of cases due to a VOC may be higher than described in this report. While all confirmed COVID-19 cases are included in the denominator, not all cases were able to be tested for VOCs. Percent positivity is based on the sum of the daily cases that test positive divided by the number of cases reported during the date ranges specified in each column.

**Data Source:** CCM

**Table A4. Weekly percent positivity for cases positive for mutations or VOCs over recent rolling 7-day periods using cases tested for mutations or VOCs as the denominator, by reported date and public health unit: Ontario, May 17 to May 29, 2021**

Public Health Unit Name	May 17 to May 23	May 18 to May 24	May 19 to May 25	May 20 to May 26	May 21 to May 27	May 22 to May 28	May 23 to May 29
Algoma Public Health	100.0	100.0	100.0	88.9	87.5	85.7	85.7
Brant County Health Unit	92.2	91.9	90.6	94.1	94.8	95.9	97.3
Chatham-Kent Public Health	100.0	100.0	100.0	100.0	100.0	100.0	100.0
City of Hamilton Public Health Services	86.2	86.6	87.1	88.0	89.8	88.1	88.3
Durham Region Health Department	92.8	92.4	91.9	90.8	90.7	93.4	94.6
Eastern Ontario Health Unit	95.0	94.1	100.0	94.4	93.8	92.6	92.6
Grey Bruce Health Unit	96.3	95.7	94.7	90.0	90.0	90.0	80.0
Haldimand-Norfolk Health Unit	92.3	81.3	80.0	77.1	73.7	74.4	74.3
Haliburton, Kawartha, Pine Ridge District Health Unit	97.9	96.5	96.2	95.7	95.4	95.3	94.9
Halton Region Public Health	90.8	91.3	91.0	89.0	89.2	88.5	90.0
Hastings Prince Edward Public Health	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Huron Perth Public Health	93.3	92.9	100.0	88.9	77.4	79.4	80.6
Kingston, Frontenac and Lennox & Addington Public Health	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Lambton Public Health	81.8	81.4	80.6	82.4	84.0	100.0	100.0



Public Health Unit Name	May 17 to May 23	May 18 to May 24	May 19 to May 25	May 20 to May 26	May 21 to May 27	May 22 to May 28	May 23 to May 29
Leeds, Grenville & Lanark District Health Unit	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Middlesex-London Health Unit	95.1	94.8	94.7	95.4	96.7	95.9	95.8
Niagara Region Public Health	99.5	96.3	95.4	95.4	94.9	94.5	94.4
North Bay Parry Sound District Health Unit	41.7	37.5	40.0	40.0	40.0	50.0	50.0
Northwestern Health Unit	50.0	57.1	50.0	33.3	0.0	0.0	0.0
Ottawa Public Health	95.0	95.4	94.9	94.8	96.5	96.0	96.5
Peel Public Health	80.8	80.3	78.6	77.1	76.6	74.8	74.8
Peterborough Public Health	98.1	98.0	98.4	100.0	100.0	100.0	100.0
Porcupine Health Unit	89.3	88.9	87.6	88.3	83.8	83.0	79.1
Public Health Sudbury & Districts	88.2	87.5	90.0	83.3	88.9	89.5	94.4
Region of Waterloo Public Health and Emergency Services	86.7	85.3	84.7	82.0	82.3	79.1	76.5
Renfrew County and District Health Unit	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Simcoe Muskoka District Health Unit	95.4	93.9	93.3	89.1	87.6	86.4	84.7
Southwestern Public Health	96.9	97.1	96.7	95.5	95.6	98.0	97.9
Thunder Bay District Health Unit	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Timiskaming Health Unit	100.0	100.0	100.0	100.0	100.0	0.0	0.0

Public Health Unit Name	May 17 to May 23	May 18 to May 24	May 19 to May 25	May 20 to May 26	May 21 to May 27	May 22 to May 28	May 23 to May 29
Toronto Public Health	90.4	90.0	89.7	88.3	87.7	87.3	86.2
Wellington-Dufferin-Guelph Public Health	82.8	85.0	87.1	84.4	83.1	83.3	81.7
Windsor-Essex County Health Unit	86.6	86.9	87.3	92.4	93.5	95.0	93.4
York Region Public Health	94.8	94.5	93.8	92.4	91.9	90.8	89.7
<b>TOTAL ONTARIO</b>	<b>89.1</b>	<b>88.7</b>	<b>88.2</b>	<b>87.0</b>	<b>86.8</b>	<b>86.2</b>	<b>85.9</b>

**Note:** Data for calculating the number of cases tested for mutations common to VOCs or lineages using genomic analyses are obtained using information from the Laboratory object in CCM in addition to the data from the Investigation subtype field. Therefore, comparisons to counts using only information from the Investigation Subtype field may not align. The percent of cases due to a VOC may be higher than described in this report. Percent positivity is based on the sum of the daily cases that test positive divided by the number of cases that were tested for mutations common to VOCs or lineages (e.g. those identified as 'Detected' or 'Not Detected') during the date ranges specified in each column.

**Data Source:** CCM

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