

DAILY EPIDEMIOLOGICAL SUMMARY

COVID-19 in Ontario: January 15, 2020 to June 28, 2021

This report includes the most current information available from CCM as of **June 28, 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 544,713* confirmed cases of COVID-19 in Ontario reported to date.
- Compared to the previous day, this represents:
 - An increase of 299* confirmed cases (percent change of +42.4%)
 - An increase of 25 deaths (percent change of +733.3%)
 - An increase of 371 resolved cases (percent change of +13.8%)

*About 90 cases from 2020 have been included in Toronto Public Health's case count today due to a data review and data cleaning initiative.

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 27, 2021	Change in cases June 28, 2021	Percentage change June 28, 2021 compared to June 27, 2021	Cumulative case count as of June 28, 2021
Total number of cases	210	299*	+42.4%	544,713*
Number of deaths	3	25	+733.3%	9,154
Number resolved	326	371	+13.8%	533,150

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.

*About 90 cases from 2020 have been included in Toronto Public Health's case count today due to a data review and data cleaning initiative.

Data Source: CCM

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

	Change in cases June 27, 2021	Change in cases June 28, 2021	Cumulative case count as of June 28, 2021
Gender: Male	106	133	271,388
Gender: Female	97	168	269,540
Ages: 19 and under	57	62	87,653
Ages: 20-39	69	83	204,034
Ages: 40-59	48	96	155,490
Ages: 60-79	27	34	72,379
Ages: 80 and over	9	26	25,057

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 28, 2021: Ontario

	Change in cases June 27, 2021	Change in cases June 28, 2021	Cumulative case count from August 30, 2020 to June 28, 2021
Ages: 4 to 8	13	16	16,190
Ages: 9 to 13	16	12	20,298
Ages: 14 to 17	10	15	20,664

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

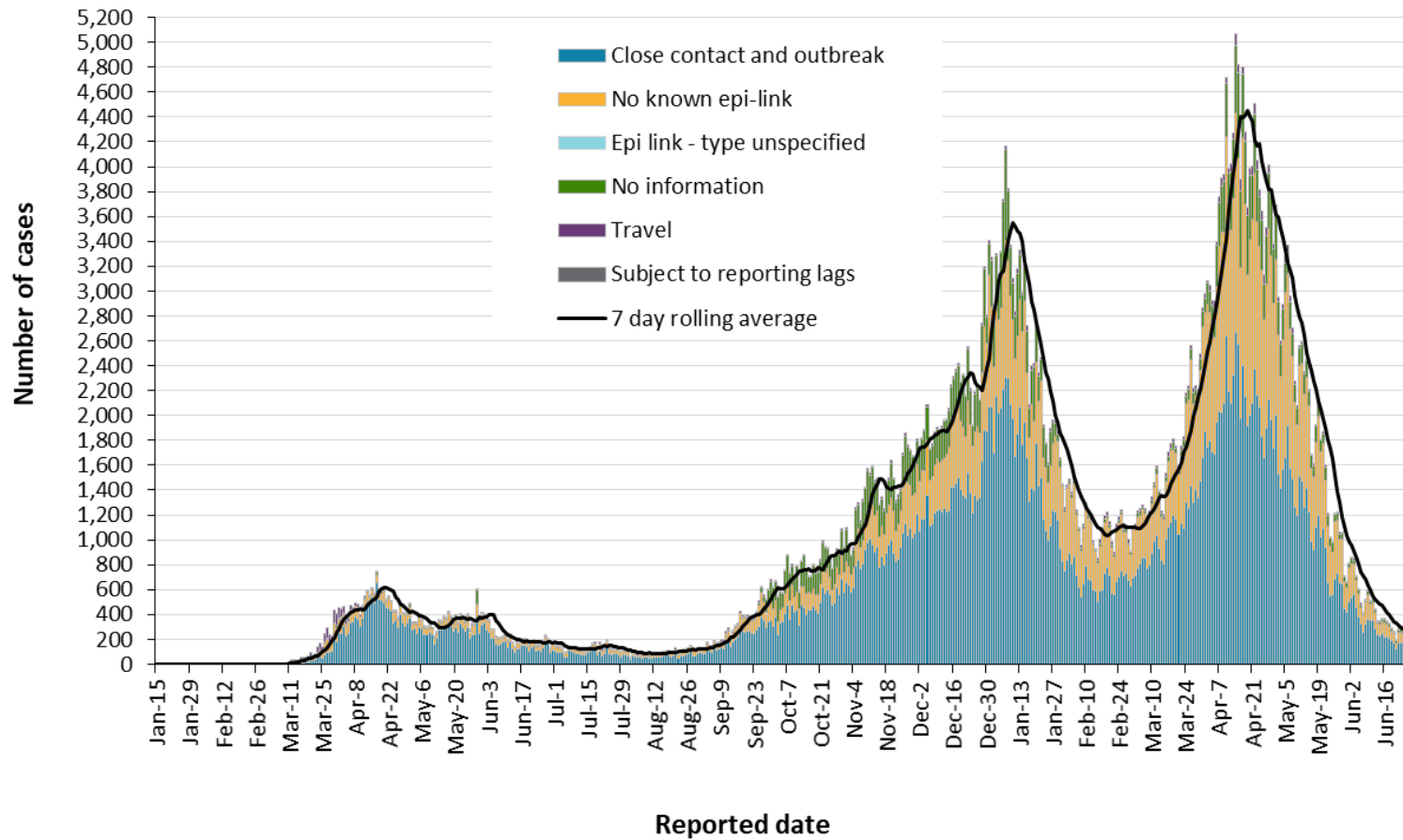
Long-term care home cases	Change in cases June 27, 2021	Change in cases June 28, 2021	Cumulative case count as of June 28, 2021
Residents	1	24	15,386
Health care workers	0	19	7,193
Deaths among residents	0	3	3,970
Deaths among health care workers	0	0	10

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

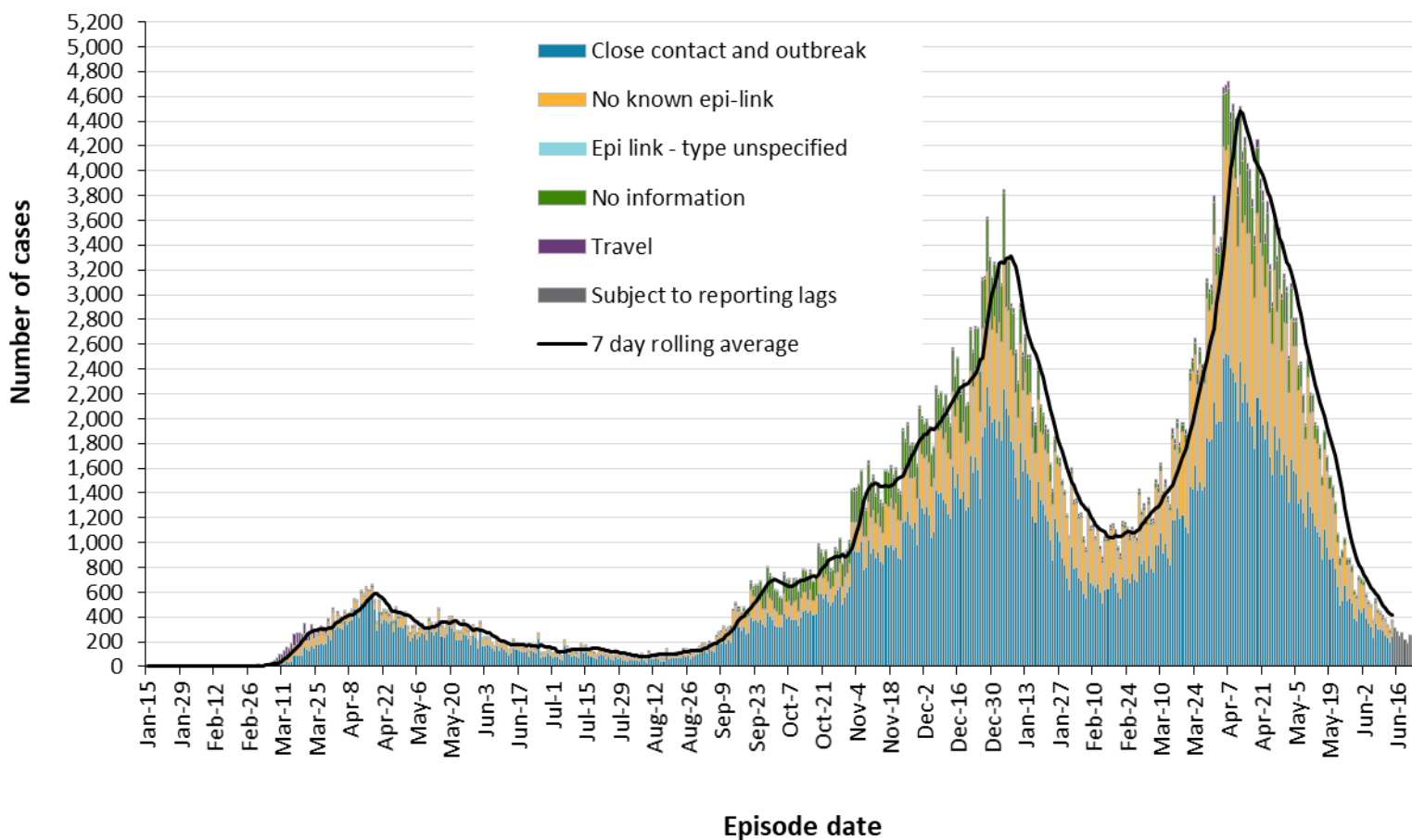
Figure 1. Confirmed cases of COVID-19 by likely acquisition and public health unit reported date: Ontario, January 15, 2020 to June 28, 2021



Data Source: CCM

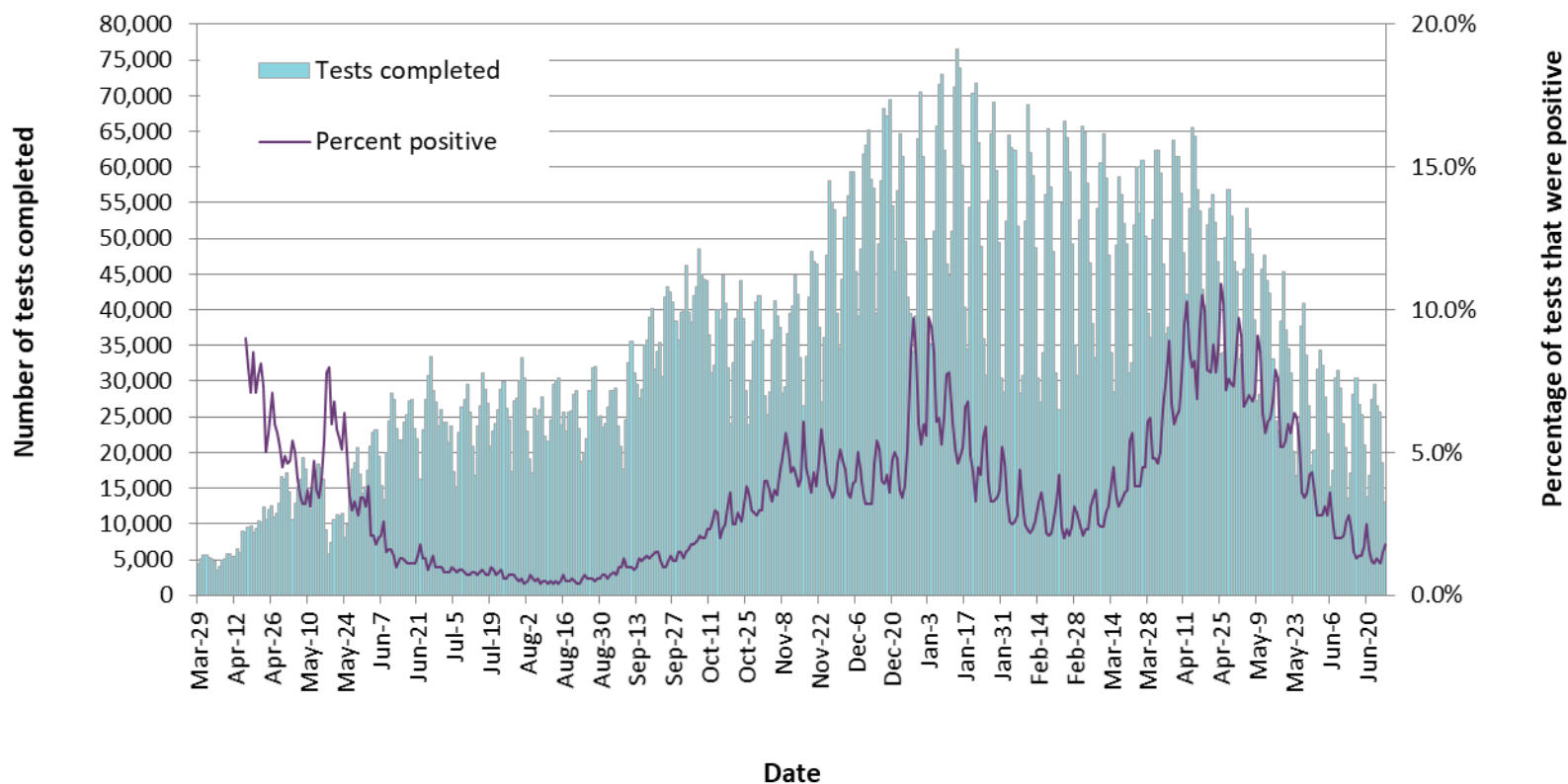
COVID-19 in Ontario: January 15, 2020 to June 28, 2021

Figure 2. Confirmed cases of COVID-19 by likely acquisition and approximation of symptom onset date: Ontario, January 15, 2020 to June 28, 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 27, 2021

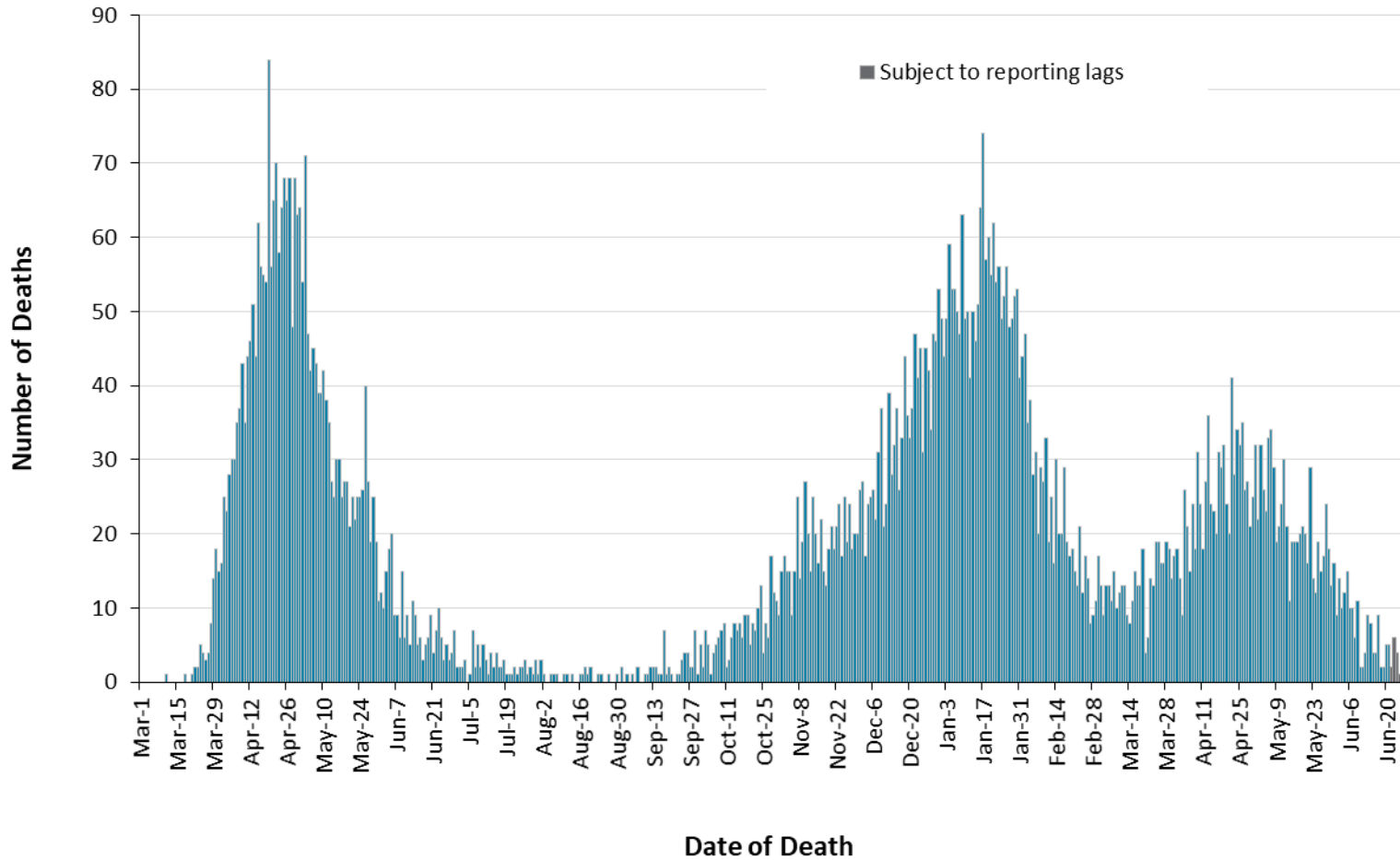


Note: The number of tests performed does not reflect the number of specimens or persons tested. More than one test may be performed per specimen or per person. As such, the percentage of tests that were positive does not necessarily translate to the number of specimens or persons testing positive.

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 28, 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 28, 2021	Percentage of all cases
Cumulative deaths reported (please note there may be a reporting delay for deaths)	9,154	1.7%
Deaths reported in ages: 19 and under	4	< 0.1%
Deaths reported in ages: 20-39	82	< 0.1%
Deaths reported in ages: 40-59	569	0.4%
Deaths reported in ages: 60-79	2,908	4.0%
Deaths reported in ages: 80 and over	5,590	22.3%
Ever in ICU	5,340	1.0%
Ever hospitalized	27,855	5.1%

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 27, 2021	Change in cases June 28, 2021	Cumulative case count	Cumulative rate per 100,000 population
Northwestern Health Unit	2	0	1,088	1,240.9
Thunder Bay District Health Unit	1	0	3,337	2,225.3
TOTAL NORTH WEST	3	0	4,425	1,862.1
Algoma Public Health	0	0	400	349.5
North Bay Parry Sound District Health Unit	5	4	592	456.3
Porcupine Health Unit	5	8	2,051	2,458.0
Public Health Sudbury & Districts	-1	0	2,144	1,077.3
Timiskaming Health Unit	0	0	208	636.3
TOTAL NORTH EAST	9	12	5,395	964.5
Ottawa Public Health	10	3	27,643	2,621.0
Eastern Ontario Health Unit	1	-3	4,615	2,211.2
Hastings Prince Edward Public Health	0	2	1,131	671.2
Kingston, Frontenac and Lennox & Addington Public Health	-1	2	1,548	727.7
Leeds, Grenville & Lanark District Health Unit	1	1	1,750	1,010.6
Renfrew County and District Health Unit	0	0	743	684.0
TOTAL EASTERN	11	5	37,430	1,943.0

Public Health Unit Name	Change in cases June 27, 2021	Change in cases June 28, 2021	Cumulative case count	Cumulative rate per 100,000 population
Durham Region Health Department	10	10	25,210	3,538.7
Haliburton, Kawartha, Pine Ridge District Health Unit	3	0	2,160	1,143.2
Peel Public Health	15	20	109,437	6,814.5
Peterborough Public Health	1	1	1,578	1,066.4
Simcoe Muskoka District Health Unit	7	-1	12,361	2,061.6
York Region Public Health	8	4	52,593	4,290.5
TOTAL CENTRAL EAST	44	34	203,339	4,538.2
Toronto Public Health	37	130*	164,957*	5,286.5
TOTAL TORONTO	37	130	164,957	5,286.5
Chatham-Kent Public Health	0	3	1,880	1,768.3
Grey Bruce Health Unit	25	11	1,525	897.7
Huron Perth Public Health	1	0	1,921	1,374.5
Lambton Public Health	3	1	3,597	2,746.6
Middlesex-London Health Unit	9	-4	12,540	2,470.8
Southwestern Public Health	1	-3	3,877	1,833.1
Windsor-Essex County Health Unit	4	8	16,846	3,965.4
TOTAL SOUTH WEST	43	16	42,186	2,495.1
Brant County Health Unit	4	1	3,852	2,481.9
City of Hamilton Public Health Services	12	9	21,231	3,585.3

Public Health Unit Name	Change in cases June 27, 2021	Change in cases June 28, 2021	Cumulative case count	Cumulative rate per 100,000 population
Haldimand-Norfolk Health Unit	1	0	2,675	2,344.8
Halton Region Public Health	5	7	17,357	2,803.6
Niagara Region Public Health	12	10	16,204	3,429.5
Region of Waterloo Public Health and Emergency Services	26	69	17,487	2,992.5
Wellington-Dufferin-Guelph Public Health	3	6	8,175	2,621.0
TOTAL CENTRAL WEST	63	102	86,981	3,052.7
TOTAL ONTARIO	210	299	544,713	3,664.5

Notes: Health units with data corrections or updates could result in records being removed from totals, leading to negative or zero counts.

*About 90 cases from 2020 have been included in Toronto Public Health's case count today due to a data review and data cleaning initiative.

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 27, 2021	Change in outbreaks June 28, 2021	Number of ongoing outbreaks	Cumulative number of outbreaks reported
Long-term care homes	2	0	5	1,484
Retirement homes	0	1	1	873
Hospitals	0	1	5	572

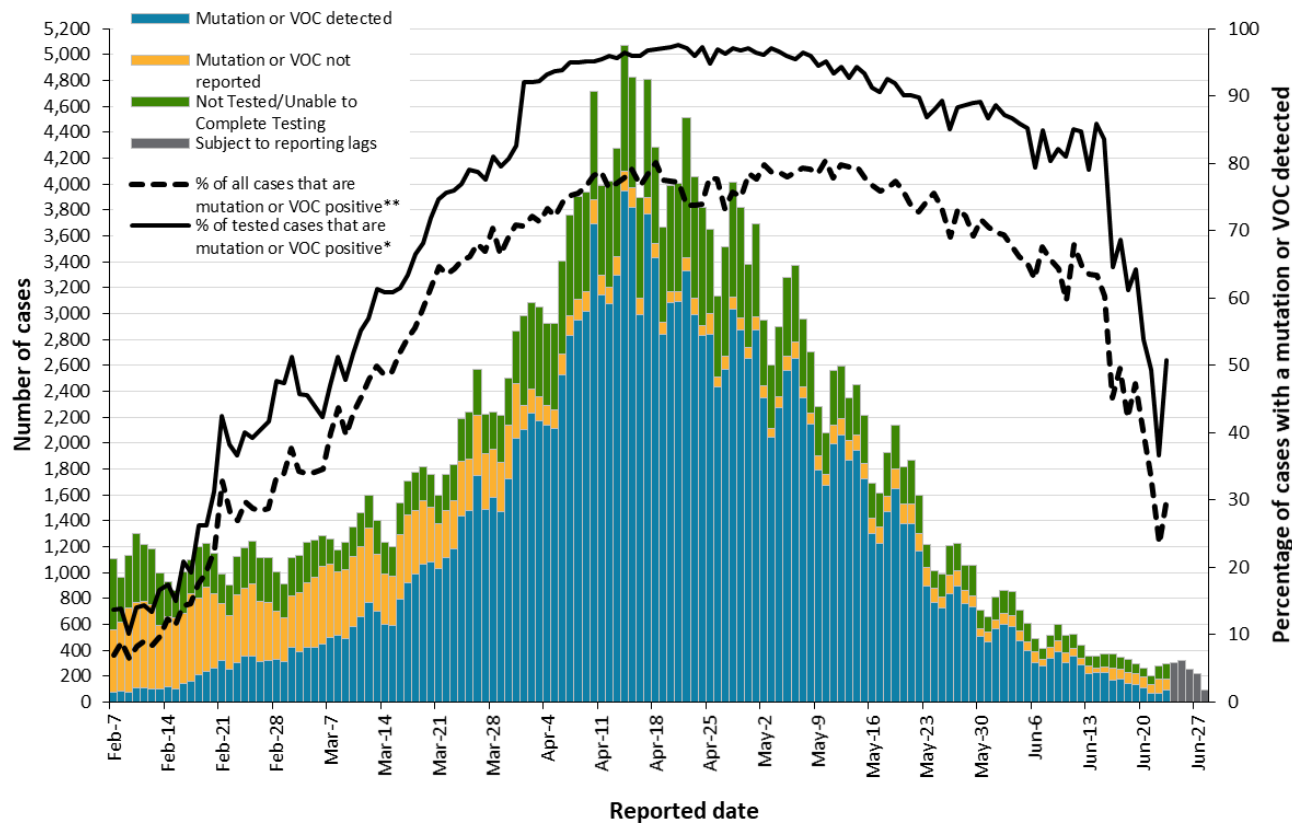
Note: Ongoing outbreaks include all outbreaks that are 'Open' in CCM without a 'Declared Over Date' recorded, or where the outbreak started more than five months ago, even for outbreaks where the Outbreak Status value selected in CCM is 'OPEN'. The start of the outbreak is determined by the onset date 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 ≤ 35 can be tested for mutations common to variants of concern. If positive for the mutation of interest with a Ct value of ≤ 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. For more information about whole genome sequencing, please see the [SARS CoV-2 Whole Genome Sequencing in Ontario report](#).

Figure 5. Number of confirmed COVID-19 cases and percent positive for mutations or VOCs: Ontario, February 7, 2021 to June 28, 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'). Mutations tested for routinely are the N501Y and E484K mutations. Mutations common to the B.1.617.2 lineage are not included in the current VOC mutation test. However, cases identified as B.1.617.2 after whole genome sequencing is completed are included in the VOC detected category.

**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 27, 2021	Change in cases June 28, 2021	Cumulative case count up to June 28, 2021
Variant of Concern			
Lineage B.1.1.7 (Alpha)*	83	31	143,381
Lineage B.1.351 (Beta)**	68	42	1,315
Lineage P.1 (Gamma) ***	35	11	4,439
Lineage B.1.617.2 (Delta)†	286	75	1,704
Mutations			
N501Y and E484K	-66	-7	4,902
N501Y (E484K unknown)‡	1	1	14,230
E484K (N501Y negative)	1	1	5,797
E484K (N501Y unknown)	1	2	459
Mutation not detected§	-36	66	10,942

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

**Includes B.1.351 cases identified by genomic analysis and those presumed to be B.1.351 based on 'Mutation K417N+ and N501Y+ and E484K+' in the Investigation Subtype field

***Includes P.1 cases identified by genomic analysis and those presumed to be P.1 based on 'Mutation K417T+ and N501Y+ and E484K+' in the Investigation Subtype field

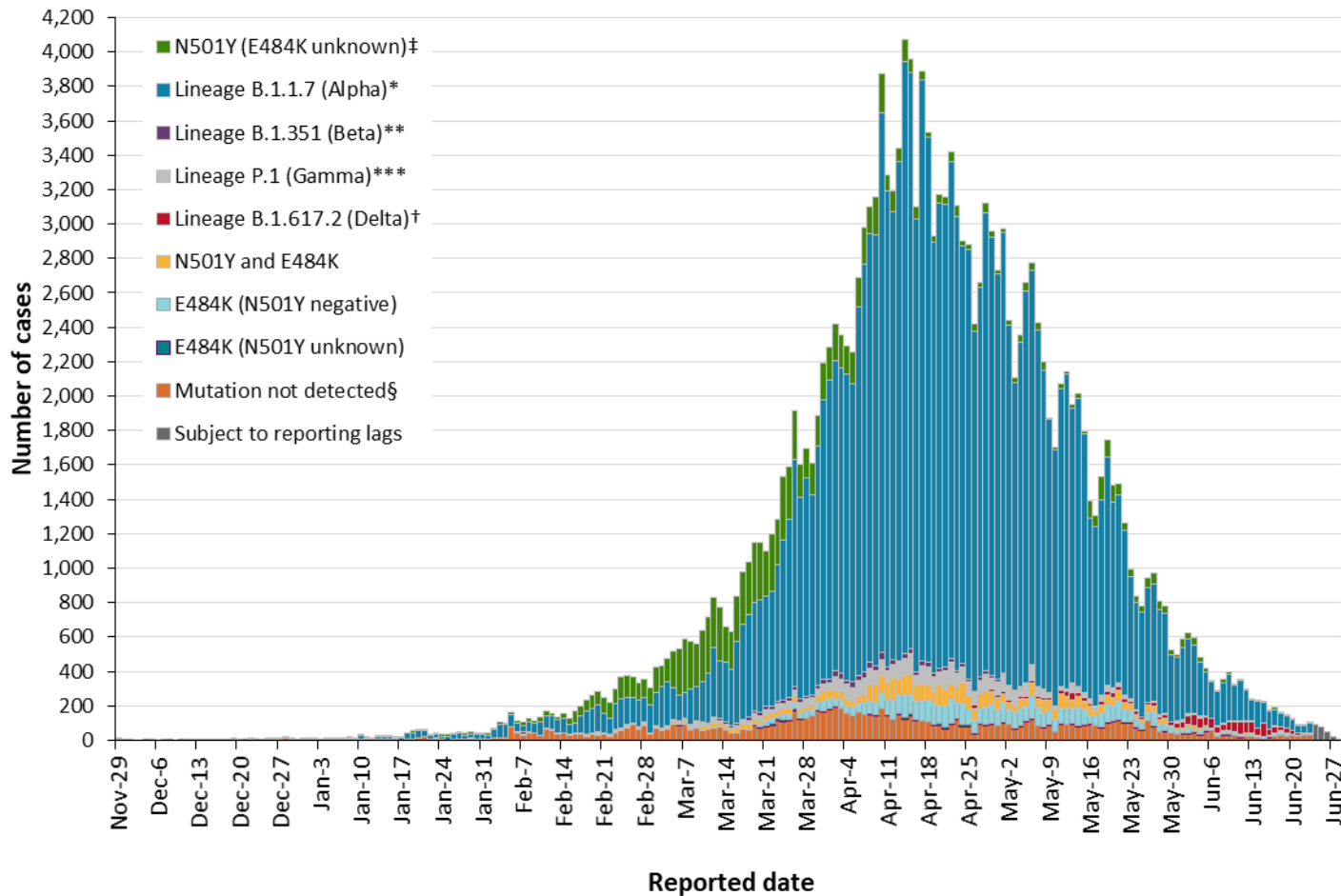
†Includes B.1.617.2 cases identified by genomic analysis. Mutations common to B.1.617.2 are not included in the current VOC mutation test.

‡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.

§Includes cases identified as 'Mutation not detected' or 'Mutation N501Y- and E484K-' in the Investigation Subtype field only.

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 28, 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, P.1 and B.1.617.2 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. As of March 22, 2021, positive specimens with a Ct ≤ 35 are tested for both the N501Y and E484K mutation, with all E484K positive specimens with a Ct ≤ 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 ≤ 30 are forwarded for further genomic analysis.

*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

**Includes B.1.351 cases identified by genomic analysis and those presumed to be B.1.351 based on 'Mutation K417N+ and N501Y+ and E484K+' in the Investigation Subtype field

***Includes P.1 cases identified by genomic analysis and those presumed to be P.1 based on 'Mutation K417T+ and N501Y+ and E484K+' in the Investigation Subtype field

†Includes B.1.617.2 cases identified by genomic analysis. Mutations common to B.1.617.2 are not included in the current VOC mutation test.

‡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.

§Includes cases identified as 'Mutation not detected' or 'Mutation N501Y- and E484K-' in the Investigation Subtype field only.

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 28, 2021 at 1 p.m.** for cases reported from February 1, 2021 onwards and as of **June 28, 2021 at 9 a.m.** for cases reported up to January 31, 2021.
- VOC data for this report were based on information successfully extracted from CCM for all PHUs by PHO as of **June 28, 2021 at 1 p.m.** for cases reported from April 1, 2021 onwards and as of **June 28, 2021 at 9 a.m.** for cases reported up to March 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.
- Data cleaning for older cases is incorporated on Mondays and may impact the case count published on Tuesdays
- 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.
- 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>
- Lineage nomenclature is dynamic. PANGO lineage naming and assignment may change as more samples are sequenced and analyzed.
- Variant status may be updated based on scientific evidence. Variants designated as a VOC in Canada is available on the [Public Health Agency of Canada's SARS-CoV-2 Variants webpage](#).
- 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 ≤ 35 are tested for a N501Y mutation. As of March 22, 2021, positive specimens with a Ct ≤ 35 are tested for both the N501Y and E484K mutation, with all E484K positive specimens with a Ct ≤ 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.

- 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, P.1 and B.1.617.2)
- 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. 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, June 13 to June 25, 2021

Public Health Unit Name	June 13 to June 19	June 14 to June 20	June 15 to June 21	June 16 to June 22	June 17 to June 23	June 18 to June 24	June 19 to June 25	% change from June 13 – June 19 to June 19 – June 25
NORTH WEST								
Northwestern Health Unit	9.1	9.1	8.0	6.8	8.0	8.0	6.8	-25.3%
Thunder Bay District Health Unit	8.7	7.3	4.7	3.3	4.7	4.7	4.7	-46.0%
NORTH EAST								
Algoma Public Health	0.9	0.9	1.7	1.7	1.7	1.7	0.9	0.0%
North Bay Parry Sound District Health Unit	33.1	37.8	41.6	43.9	46.2	43.9	43.9	+32.6%
Porcupine Health Unit	122.2	117.4	101.9	87.5	88.7	91.1	99.5	-18.6%
Public Health Sudbury & Districts	10.6	12.1	11.6	11.1	15.1	15.6	17.1	+61.3%
Timiskaming Health Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
EASTERN								
Ottawa Public Health	13.5	12.4	11.6	10.7	10.2	9.9	8.2	-39.3%
Eastern Ontario Health Unit	4.8	4.8	4.3	3.8	2.4	2.4	1.4	-70.8%
Hastings Prince Edward Public Health	0.6	0.6	0.6	0.0	0.6	0.6	0.6	0.0%
Kingston, Frontenac and Lennox & Addington Public Health	3.8	4.2	4.7	4.7	5.2	4.7	3.8	0.0%

Public Health Unit Name	June 13 to June 19	June 14 to June 20	June 15 to June 21	June 16 to June 22	June 17 to June 23	June 18 to June 24	June 19 to June 25	% change from June 13 – June 19 to June 19 - June 25
Leeds, Grenville & Lanark District Health Unit	2.9	2.3	1.2	1.2	1.2	1.2	1.7	-41.4%
Renfrew County and District Health Unit	5.5	5.5	4.6	2.8	2.8	2.8	3.7	-32.7%
CENTRAL EAST								
Durham Region Health Department	15.4	13.5	11.9	10.1	10.4	10.1	8.8	-42.9%
Haliburton, Kawartha, Pine Ridge District Health Unit	11.1	11.1	10.6	7.9	7.4	7.4	6.4	-42.3%
Peel Public Health	20.5	19.9	17.4	15.9	14.7	13.7	12.8	-37.6%
Peterborough Public Health	14.9	14.2	12.2	10.8	9.5	8.1	7.4	-50.3%
Simcoe Muskoka District Health Unit	8.8	7.0	6.8	6.7	5.7	6.8	6.2	-29.5%
York Region Public Health	8.3	8.5	8.0	7.8	7.4	6.9	6.3	-24.1%
TORONTO								
Toronto Public Health	14.3	13.2	12.2	12.0	10.9	10.3	10.4	-27.3%
SOUTH WEST								
Chatham-Kent Public Health	2.8	2.8	2.8	1.9	1.9	1.9	1.9	-32.1%
Grey Bruce Health Unit	21.8	21.8	23.0	26.5	34.1	46.5	70.6	+223.9%
Huron Perth Public Health	14.3	12.2	12.9	10.0	6.4	7.9	7.2	-49.7%
Lambton Public Health	11.5	16.0	13.0	14.5	22.9	29.0	32.1	+179.1%
Middlesex-London Health Unit	14.4	12.6	9.9	8.1	6.3	6.5	5.9	-59.0%

Public Health Unit Name	June 13 to June 19	June 14 to June 20	June 15 to June 21	June 16 to June 22	June 17 to June 23	June 18 to June 24	June 19 to June 25	% change from June 13 – June 19 to June 19 - June 25
Southwestern Public Health	15.1	12.3	10.9	10.4	8.5	8.0	8.5	-43.7%
Windsor-Essex County Health Unit	13.2	12.2	11.1	11.3	10.8	9.9	9.7	-26.5%
CENTRAL WEST								
Brant County Health Unit	14.2	13.5	12.2	7.7	9.0	7.1	7.7	-45.8%
City of Hamilton Public Health Services	18.9	18.7	18.7	19.8	19.1	18.6	16.2	-14.3%
Haldimand-Norfolk Health Unit	10.5	10.5	7.9	6.1	7.0	7.0	7.0	-33.3%
Halton Region Public Health	12.0	10.8	9.5	8.7	8.7	7.4	7.9	-34.2%
Niagara Region Public Health	16.3	16.5	15.2	15.2	13.8	14.4	15.0	-8.0%
Region of Waterloo Public Health and Emergency Services	69.3	71.5	72.2	71.0	69.5	66.1	64.2	-7.4%
Wellington-Dufferin-Guelph Public Health	11.9	11.5	12.2	12.5	11.5	13.1	15.4	+29.4%
TOTAL ONTARIO	16.3	15.7	14.6	14.0	13.5	13.2	13.1	-19.6%

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 28, 2021

Public Health Unit Name	Cumulative count for Lineage B.1.1.7 (Alpha)*	Cumulative count for Lineage B.1.351 (Beta)**	Cumulative count for Lineage P.1 (Gamma)***	Cumulative count for Lineage B.1.617.2 (Delta)†	Cumulative count for mutations‡
Algoma Public Health	68	0	12	2	28
Brant County Health Unit	664	2	88	23	496
Chatham-Kent Public Health	112	5	14	0	111
City of Hamilton Public Health Services	4,950	65	101	59	2,102
Durham Region Health Department	9,492	65	261	41	1,205
Eastern Ontario Health Unit	649	41	17	2	276
Grey Bruce Health Unit	304	0	5	45	56
Haldimand-Norfolk Health Unit	367	3	22	6	403
Haliburton, Kawartha, Pine Ridge District Health Unit	442	0	17	28	314
Halton Region Public Health	5,070	29	159	64	607
Hastings Prince Edward Public Health	76	0	8	0	407
Huron Perth Public Health	233	0	9	11	68
Kingston, Frontenac and Lennox & Addington Public Health	439	2	35	3	129
Lambton Public Health	431	0	17	10	129
Leeds, Grenville & Lanark District Health Unit	292	18	0	0	42
Middlesex-London Health Unit	3,352	2	93	17	187

Public Health Unit Name	Cumulative count for Lineage B.1.1.7 (Alpha)*	Cumulative count for Lineage B.1.351 (Beta)**	Cumulative count for Lineage P.1 (Gamma)***	Cumulative count for Lineage B.1.617.2 (Delta)†	Cumulative count for mutations‡
Niagara Region Public Health	4,227	4	16	13	1,082
North Bay Parry Sound District Health Unit	209	28	2	7	13
Northwestern Health Unit	56	0	1	0	16
Ottawa Public Health	6,631	450	35	15	480
Peel Public Health	30,540	132	1,392	442	3,581
Peterborough Public Health	571	4	7	8	162
Porcupine Health Unit	1,052	2	0	33	8
Public Health Sudbury & Districts	614	9	5	1	343
Region of Waterloo Public Health and Emergency Services	3,076	11	71	312	300
Renfrew County and District Health Unit	223	8	4	1	12
Simcoe Muskoka District Health Unit	3,841	27	158	55	833
Southwestern Public Health	654	2	14	12	169
Thunder Bay District Health Unit	104	0	2	4	74
Timiskaming Health Unit	83	1	0	0	0
Toronto Public Health	44,820	321	1,340	384	8,727
Wellington-Dufferin-Guelph Public Health	2,067	1	61	44	193
Windsor-Essex County Health Unit	1,818	5	17	3	130

Public Health Unit Name	Cumulative count for Lineage B.1.1.7 (Alpha)*	Cumulative count for Lineage B.1.351 (Beta)**	Cumulative count for Lineage P.1 (Gamma)***	Cumulative count for Lineage B.1.617.2 (Delta)†	Cumulative count for mutations‡
York Region Public Health	15,854	78	456	59	2,705
TOTAL ONTARIO	143,381	1,315	4,439	1,704	25,388

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.

**Includes B.1.351 cases identified by genomic analysis and those presumed to be B.1.351 based on 'Mutation K417N+ and N501Y+ and E484K+' in the Investigation Subtype field

***Includes P.1 cases identified by genomic analysis and those presumed to be P.1 based on 'Mutation K417T+ and N501Y+ and E484K+' in the Investigation Subtype field

†Includes B.1.617.2 cases identified by genomic analysis. Mutations common to B.1.617.2 are not included in the current VOC mutation test.

‡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, June 11 to June 23, 2021

Public Health Unit Name	June 11 to June 17	June 12 to June 18	June 13 to June 19	June 14 to June 20	June 15 to June 21	June 16 to June 22	June 17 to June 23
Algoma Public Health	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Brant County Health Unit	69.2	73.9	77.3	71.4	73.7	83.3	78.6
Chatham-Kent Public Health	75.0	75.0	66.7	66.7	66.7	0.0	0.0
City of Hamilton Public Health Services	40.5	34.8	36.6	38.7	36.9	36.8	36.3
Durham Region Health Department	72.5	66.4	63.6	60.4	61.2	51.4	48.6
Eastern Ontario Health Unit	76.9	63.6	60.0	60.0	55.6	50.0	60.0
Grey Bruce Health Unit	41.9	37.9	24.3	13.5	12.8	11.1	8.6
Haldimand-Norfolk Health Unit	50.0	35.7	41.7	33.3	44.4	42.9	62.5
Haliburton, Kawartha, Pine Ridge District Health Unit	45.5	47.6	47.6	33.3	35.0	33.3	35.7
Halton Region Public Health	53.7	50.0	56.8	53.7	54.2	51.9	48.1
Hastings Prince Edward Public Health	50.0	66.7	0.0	0.0	0.0	0.0	0.0
Huron Perth Public Health	30.4	27.3	25.0	23.5	22.2	14.3	33.3
Kingston, Frontenac and Lennox & Addington Public Health	0.0	33.3	62.5	66.7	70.0	70.0	63.6
Lambton Public Health	86.7	76.9	60.0	61.9	47.1	31.6	26.7

Public Health Unit Name	June 11 to June 17	June 12 to June 18	June 13 to June 19	June 14 to June 20	June 15 to June 21	June 16 to June 22	June 17 to June 23
Leeds, Grenville & Lanark District Health Unit	85.7	85.7	100.0	100.0	100.0	100.0	100.0
Middlesex-London Health Unit	78.8	80.2	80.8	76.6	68.0	63.4	59.4
Niagara Region Public Health	57.3	44.4	36.4	30.8	23.6	15.3	9.2
North Bay Parry Sound District Health Unit	76.9	76.7	74.4	73.5	72.2	73.7	73.3
Northwestern Health Unit	42.9	50.0	50.0	50.0	28.6	16.7	14.3
Ottawa Public Health	67.7	66.9	68.3	67.2	60.7	52.2	40.7
Peel Public Health	56.6	55.8	54.5	55.6	54.8	55.5	53.4
Peterborough Public Health	84.0	82.6	81.8	81.0	83.3	75.0	71.4
Porcupine Health Unit	60.3	53.5	52.9	53.1	52.9	63.0	60.8
Public Health Sudbury & Districts	58.8	72.7	85.7	87.5	87.0	81.8	90.0
Region of Waterloo Public Health and Emergency Services	41.7	35.0	25.9	19.4	14.2	4.1	3.2
Renfrew County and District Health Unit	100.0	100.0	100.0	100.0	100.0	66.7	33.3
Simcoe Muskoka District Health Unit	71.2	66.0	64.2	71.4	65.9	55.0	50.0
Southwestern Public Health	57.1	53.6	53.1	53.8	47.8	45.5	55.6
Thunder Bay District Health Unit	31.3	29.4	23.1	18.2	28.6	20.0	28.6
Timiskaming Health Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Public Health Unit Name	June 11 to June 17	June 12 to June 18	June 13 to June 19	June 14 to June 20	June 15 to June 21	June 16 to June 22	June 17 to June 23
Toronto Public Health	74.1	72.5	70.5	67.7	65.3	59.7	57.5
Wellington-Dufferin-Guelph Public Health	42.1	27.9	18.9	13.9	13.2	7.7	11.1
Windsor-Essex County Health Unit	53.1	49.1	46.4	44.2	44.7	39.6	37.0
York Region Public Health	69.2	63.5	58.8	57.7	54.1	49.0	47.3
TOTAL ONTARIO	59.8	55.9	53.3	50.3	46.7	41.2	38.9

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, June 11 to June 23, 2021

Public Health Unit Name	June 11 to June 17	June 12 to June 18	June 13 to June 19	June 14 to June 20	June 15 to June 21	June 16 to June 22	June 17 to June 23
Algoma Public Health	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Brant County Health Unit	90.0	89.5	89.5	88.2	87.5	100.0	91.7
Chatham-Kent Public Health	100.0	100.0	100.0	100.0	100.0	0.0	0.0
City of Hamilton Public Health Services	56.6	52.0	53.9	57.3	56.2	61.4	62.1
Durham Region Health Department	88.8	81.9	79.5	78.4	78.8	71.2	69.2
Eastern Ontario Health Unit	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Grey Bruce Health Unit	50.0	45.8	27.3	15.2	14.3	11.4	9.3
Haldimand-Norfolk Health Unit	80.0	71.4	71.4	57.1	66.7	75.0	83.3
Haliburton, Kawartha, Pine Ridge District Health Unit	50.0	52.6	52.6	36.8	38.9	38.5	38.5
Halton Region Public Health	68.8	65.0	71.2	66.7	66.7	62.2	60.5
Hastings Prince Edward Public Health	66.7	66.7	0.0	0.0	0.0	0.0	0.0
Huron Perth Public Health	35.0	33.3	33.3	36.4	33.3	20.0	50.0
Kingston, Frontenac and Lennox & Addington Public Health	0.0	50.0	83.3	85.7	87.5	87.5	77.8
Lambton Public Health	100.0	100.0	100.0	100.0	100.0	100.0	80.0

Public Health Unit Name	June 11 to June 17	June 12 to June 18	June 13 to June 19	June 14 to June 20	June 15 to June 21	June 16 to June 22	June 17 to June 23
Leeds, Grenville & Lanark District Health Unit	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Middlesex-London Health Unit	95.5	94.2	95.2	94.2	85.0	81.3	70.4
Niagara Region Public Health	93.2	87.8	80.0	82.8	73.9	61.1	46.2
North Bay Parry Sound District Health Unit	93.8	94.3	91.4	90.0	90.7	91.3	91.7
Northwestern Health Unit	75.0	80.0	80.0	80.0	66.7	50.0	50.0
Ottawa Public Health	93.3	92.8	93.3	94.6	90.2	86.8	84.6
Peel Public Health	80.0	79.6	77.3	76.4	75.4	74.7	71.2
Peterborough Public Health	91.3	90.5	94.7	89.5	93.8	85.7	83.3
Porcupine Health Unit	99.1	98.6	98.2	96.3	97.8	97.9	97.8
Public Health Sudbury & Districts	83.3	100.0	100.0	100.0	100.0	94.7	96.4
Region of Waterloo Public Health and Emergency Services	53.0	45.5	34.4	26.0	19.1	5.5	4.4
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	87.5	84.6	81.0	83.3	75.0	64.7	58.6
Southwestern Public Health	72.7	71.4	70.8	70.0	64.7	58.8	71.4
Thunder Bay District Health Unit	83.3	83.3	75.0	100.0	100.0	100.0	100.0
Timiskaming Health Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Public Health Unit Name	June 11 to June 17	June 12 to June 18	June 13 to June 19	June 14 to June 20	June 15 to June 21	June 16 to June 22	June 17 to June 23
Toronto Public Health	93.3	91.8	91.6	90.6	87.0	80.3	77.5
Wellington-Dufferin-Guelph Public Health	59.3	42.9	29.2	20.8	19.2	11.5	16.0
Windsor-Essex County Health Unit	86.7	86.7	83.9	82.1	87.5	86.4	89.5
York Region Public Health	82.8	81.3	80.0	77.9	75.7	68.1	68.3
TOTAL ONTARIO	79.6	76.1	73.0	69.7	65.3	58.4	56.3

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

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Epidemiologic summary: COVID-19 in Ontario – January 15, 2020 to June 28, 2021. Toronto, ON: Queen’s Printer for Ontario; 2021.

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