Public Health Ontario | Santé publique Ontario

WEEKLY EPIDEMIOLOGICAL SUMMARY

COVID-19 in Ontario: Focus on April 25, 2021 to May 1, 2021

This report includes the most current information available from CCM as of **May 4, 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 daily summary is available and provides an epidemiologic summary of recent COVID-19 activity in Ontario. This weekly report provides an epidemiologic summary of COVID-19 activity in Ontario over time.

Highlights

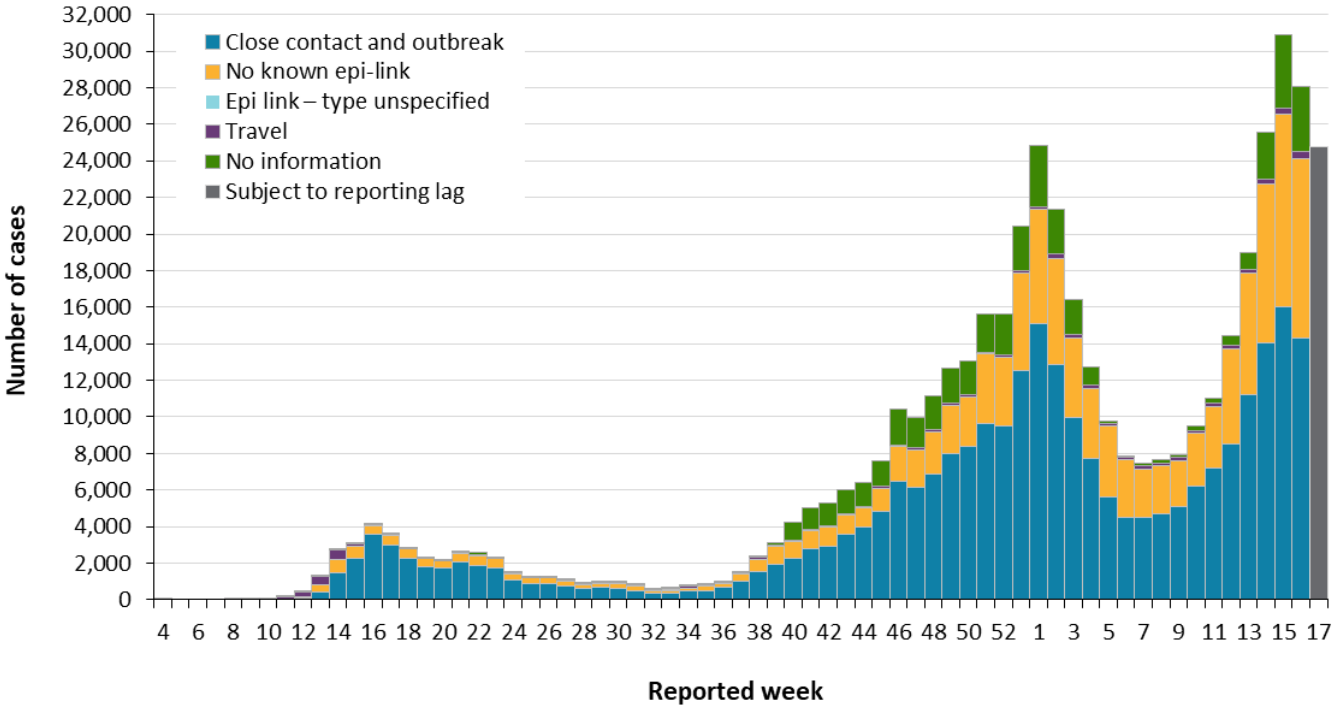
- There are a total of 472,848 confirmed cases of COVID-19 in Ontario with a public health unit reported date up to May 1, 2021.
- For the period with a public health unit reported date between April 25 to May 1, 2021 (week 17):
    - A total of 24,769 cases were reported to public health compared to 28,098 cases the previous week (April 18 to 24, 2021).
    - Public health units within the GTA continue to report the highest rates of cases per 100,000 population: Peel (356.0), Toronto (240.7), Durham (211.3), and York (190.5). Overall, in week 17, 24 of the 34 health units reported rates ≥ 40.0 cases per 100,000.
    - Over 90% of COVID-19 cases among vaccinated residents and healthcare workers in long-term care homes, have occurred in individuals only partially vaccinated (22.2%) or not yet protected (70.8%).

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

Data corrections or updates can result in case records being removed and or updated from past reports. Thus comparisons of case counts by public health unit reported date may not align with daily change in cases publicly reported by the province for the same time period, which reflects the difference in cumulative counts between one day and the next.

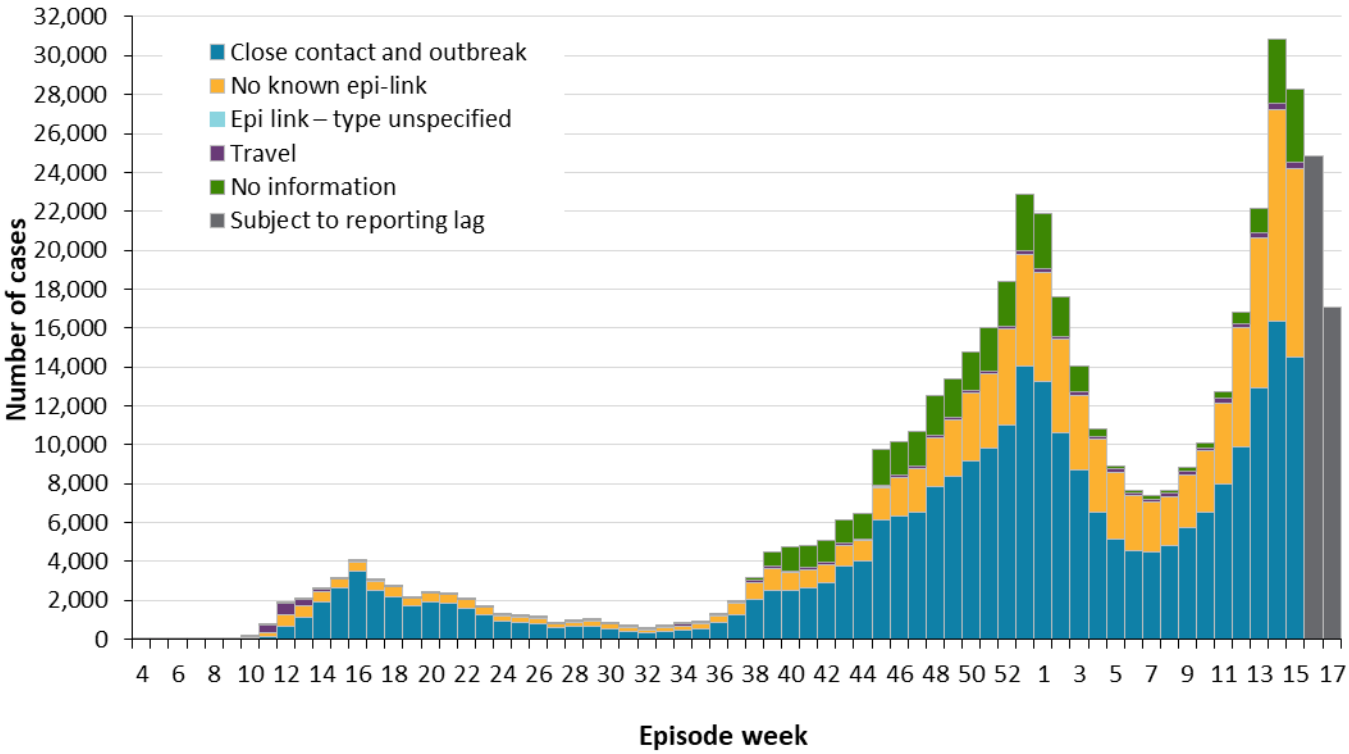
Cases Over Time

Figure 1. Confirmed cases of COVID-19 by likely source of acquisition and public health unit reported week: Ontario



Note: Include cases with reported dates ranging from week-4 (January 19 and 25, 2020) to week 17 (April 25 and May 1, 2021). See Table 1A in Appendix A for a list of the weeks and corresponding start and end dates.
Data Source: CCM

Figure 2. Confirmed cases of COVID-19 by likely source of acquisition and approximation of symptom onset week: Ontario



Note: Not all cases have an episode date. Cases without an episode date are not included in the figure. The definition for how episode date is defined is available in the technical notes. Include cases with episode dates ranging from week-4 (January 19 and 25, 2020) to week 17 (April 25 and May 1, 2021). See Table 1A in Appendix A for a list of the weeks and corresponding start and end dates.
Data Source: CCM

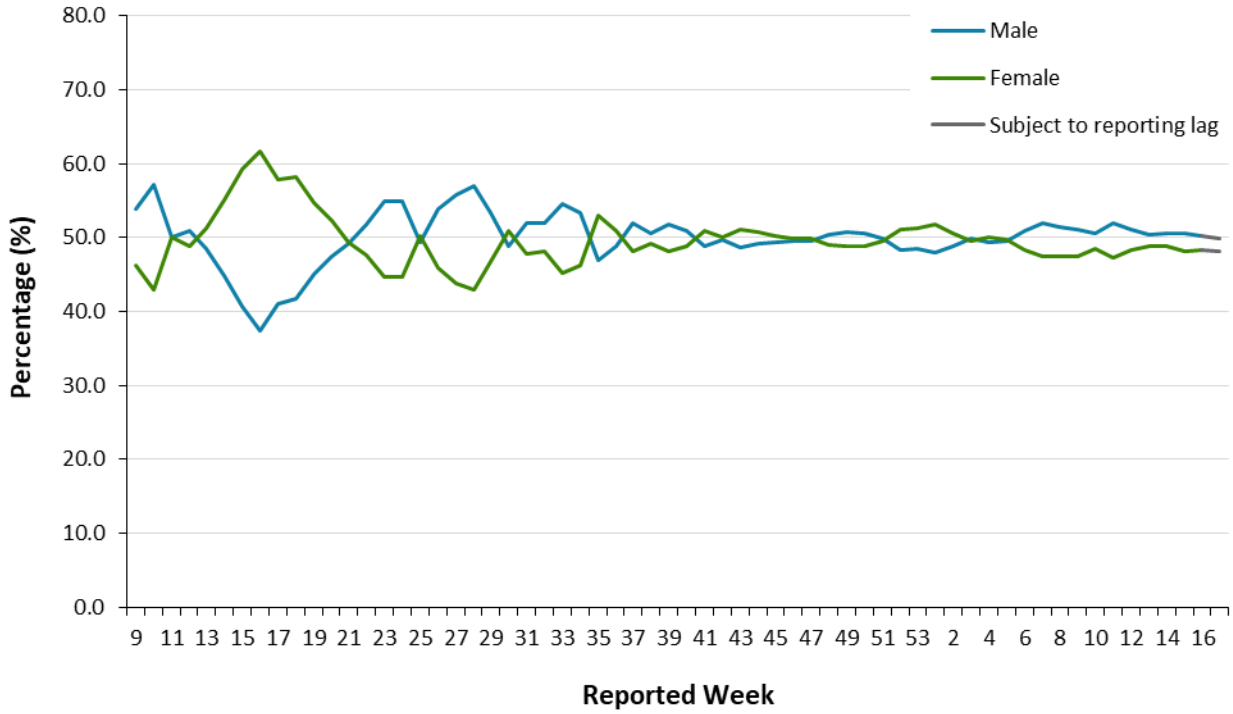
Case Characteristics

Table 1. Summary of confirmed cases of COVID-19 by public health unit reported date: Ontario

	Reported week 16 (April 18 to 24)	Reported week 17 (April 25 to May 1)	Cumulative case count up to May 1	Cumulative rate per 100,000 population
Total number of cases	28,098	24,769	472,848	3,181.1
Gender: Male	14,126	12,337	234,932	3,209.8
Gender: Female	13,567	11,917	234,410	3,106.7
Ages: 19 and under	5,130	4,576	73,072	2,329.8
Ages: 20-39	10,572	9,727	174,751	4,204.6
Ages: 40-59	8,391	7,182	136,413	3,464.4
Ages: 60-79	3,502	2,871	64,852	2,194.7
Ages: 80 and over	491	403	23,653	3,482.1
Number resolved	N/A	N/A	436,279	N/A

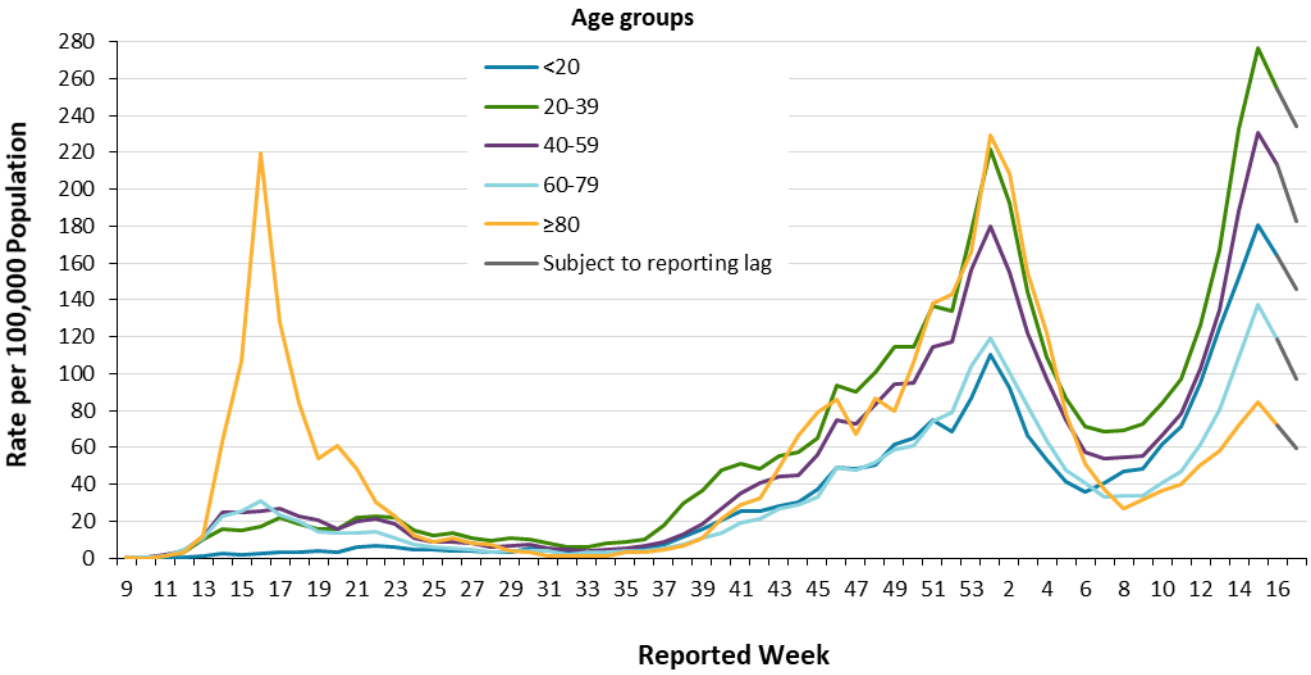
Note: Not all cases have an age or gender reported.
Interpret information for the most recent week with caution due to reporting lags.
Data Source: CCM

Figure 3. Percentage of confirmed cases of COVID-19 by gender and public health unit reported week: Ontario



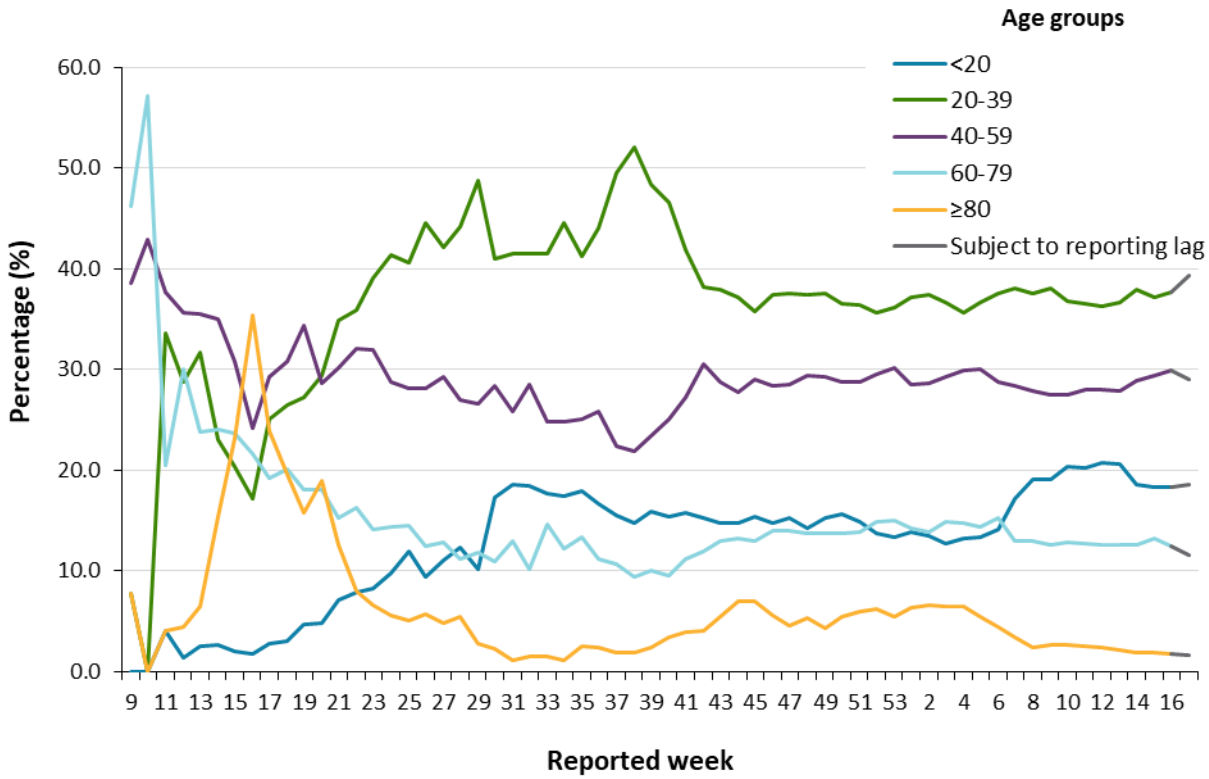
Note: Not all cases have a gender reported. The denominator for calculating weekly percentages includes all cases. Only weeks with more than 10 cases by public health unit reporting date are included (starting in week-9). Include cases with reported dates ranging from week-9 (February 23 and 29, 2020) to week 17 (April 25 and May 1, 2021). See Table 1A in Appendix A for a list of the weeks and corresponding start and end dates.
Data Source: CCM

Figure 4a. Rate of confirmed cases of COVID-19 per 100,000 population by age group and public health unit reported week: Ontario



Note: Not all cases have an age reported. Only weeks with more than 10 cases by public health unit reporting date are included (starting in week 9). Include cases with reported dates ranging from week 9 (February 23 and 29, 2020) to week 17 (April 25 and May 1, 2021). See Table 1A in Appendix A for a list of the weeks and corresponding start and end dates.
Data Source: CCM

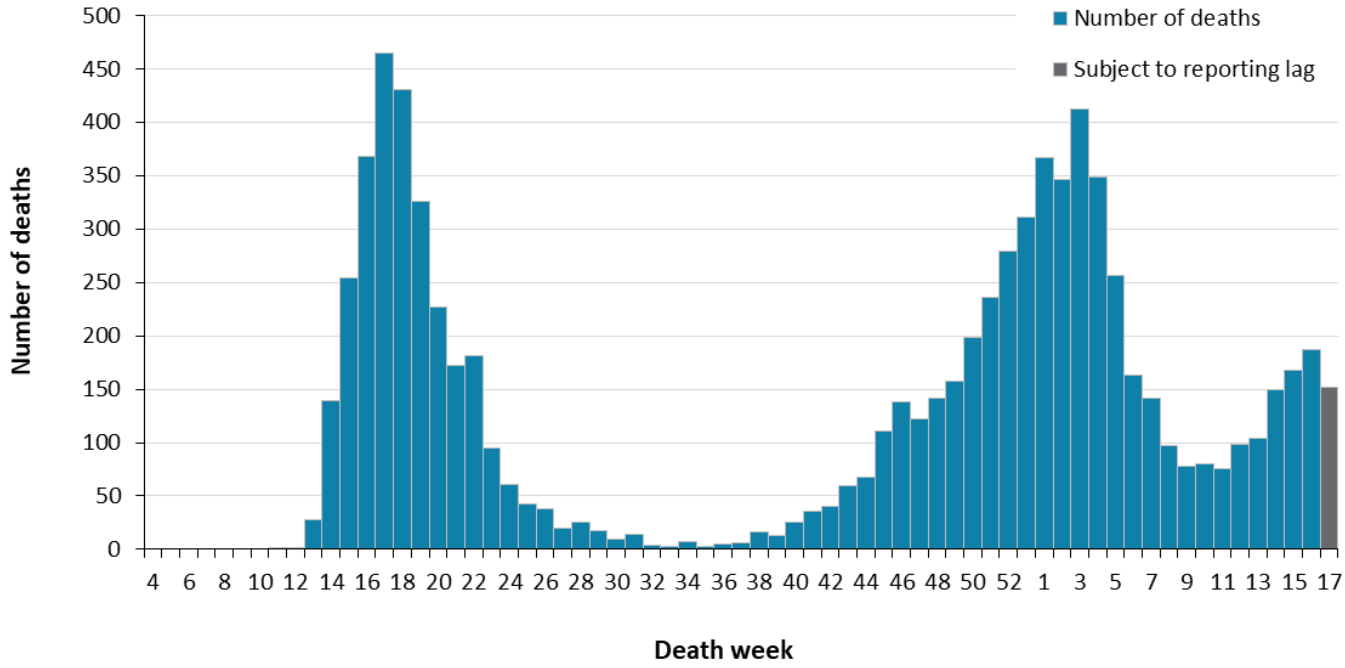
Figure 4b. Percentage of confirmed cases of COVID-19 by age group and public health unit reported week: Ontario



Note: Only weeks with more than 10 cases by public health unit reporting date are included (starting in week 9). Include cases with reported dates ranging from week 9 (February 23 and 29, 2020) to week 17 (April 25 and May 1, 2021). See Table 1A in Appendix A for a list of the weeks and corresponding start and end dates.
Data Source: CCM

Deaths

Figure 5. Deaths among confirmed cases of COVID-19 by week of death: Ontario



Note: Cases without a death date are not included in the figure. Include cases with date of death ranging from week-4 (January 19 and 25, 2020) to week 17 (April 25 and May 1, 2021). See Table 1A in Appendix A for a list of the weeks and corresponding start and end dates.
Data Source: CCM

Table 2. Summary of deaths among confirmed cases of COVID-19 by public health unit reported week: Ontario

Deaths	Reported week 16 (April 18 to 24)	Reported week 17 (April 25 to May 1)	Cumulative case count up to May 1	Cumulative rate per 100,000 population
Number of deaths	69	32	8,185	55.1
Gender: Male	37	19	4,032	55.1
Gender: Female	29	12	4,096	54.3
Ages: 19 and under	1	0	3	0.1
Ages: 20-39	3	2	55	1.3
Ages: 40-59	9	3	399	10.1
Ages: 60-79	26	13	2,442	82.6
Ages: 80 and over	30	14	5,285	778.0

Note: Age and gender may not be reported for all cases. Reported week is the week the case was reported to the public health unit. This is different than the "week of death" presented in Figure 5 which reflects the week the case was reported to have a 'Fatal' outcome.
Interpret information for the most recent week with caution due to reporting lags.
Data Source: CCM

Exposure

Table 3. Confirmed cases of COVID-19 by likely source of acquisition and public health unit reported week: Ontario

	Reported week 16 (April 18 to 24)	Percentage	Reported week 17 (April 25 to May 1)	Percentage	Cumulative case count up to May 1	Cumulative percentage
Travel	389	1.4%	277	1.1%	7,673	1.6%
Outbreak-associated or close contact of a confirmed case	14,304	50.9%	11,735	47.4%	282,659	59.8%
Epidemiological link – type unspecified	0	0.0%	0	0.0%	163	0.0%
No known epidemiological link	9,820	34.9%	8,125	32.8%	131,706	27.9%
Information missing or unknown	3,585	12.8%	4,632	18.7%	50,647	10.7%
Total	**28,098**		**24,769**		**472,848**	

Note: Information for how cases are grouped within each category is available in the technical notes.
Interpret information for the most recent week with caution due to reporting lags.
Data Source: CCM

Sub-populations of interest

Table 4. Summary of cases of COVID-19 among health care workers: Ontario

Health care workers	Reported week 16 (April 18 to 24)	Reported week 17 (April 25 to May 1)	Cumulative case count up to May 1
Number of cases	363	341	22,286
Ever hospitalized	4	2	418
Ever in ICU	1	1	92

Note: Interpret information for the most recent week with caution due to reporting lags.
Data Source: CCM

Table 5. Summary of cases of COVID-19 associated with long-term care home outbreaks: Ontario

Long-term care home associated cases	Reported week 16 (April 18 to 24)	Reported week 17 (April 25 to May 1)	Cumulative case count up to May 1
Residents	30	35	15,175
Deaths among residents	2	0	3,929
Health care workers	25	20	6,980
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. Interpret information for the most recent week with caution due to reporting lags.
Data Source: CCM

Table 6: Summary of cases of COVID-19 among long-term care home (LTCH) residents and health care workers by vaccine category: Ontario

Vaccine category	Number of resident cases	Percent of resident cases	Number of health care worker cases	Percent of health care worker cases	Total LTCH cases	Percent of LTCH cases
Breakthrough	48	8.1%	15	4.9%	63	7.0%
Partially vaccinated	138	23.3%	61	20.1%	199	22.2%
Not yet protected	407	68.6%	228	75.0%	635	70.8%
Total post-vaccination cases	**593**		**304**		**897**	

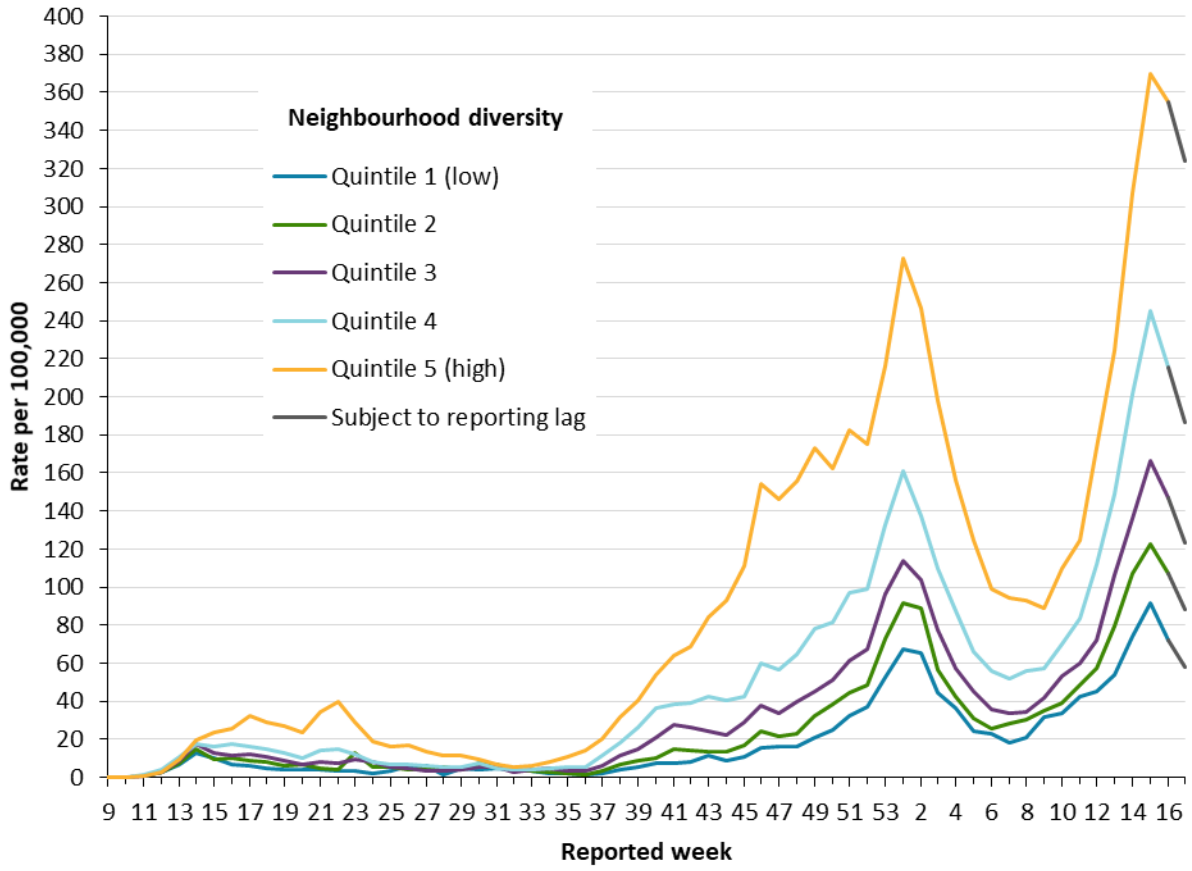
Note: Include cases reported from December 14, 2020 to May 3, 2021. The number of LTCH residents and health-care workers that have received at least one dose of vaccine can be found in the latest version of the COVID-19 Vaccine Uptake in Ontario report.
Data Source: CCM/COVaxON

Table 7: Summary of cases of COVID-19 among school aged children by age group: Ontario

	Reported week 16 (April 18 to 24)	Reported week 17 (April 25 to May 1)	Cumulative case count from August 30 up to May 1
Ages: 4-8	956	871	13,279
Ages: 9-13	1,151	1,040	17,145
Ages: 14-17	1,296	1,077	17,153

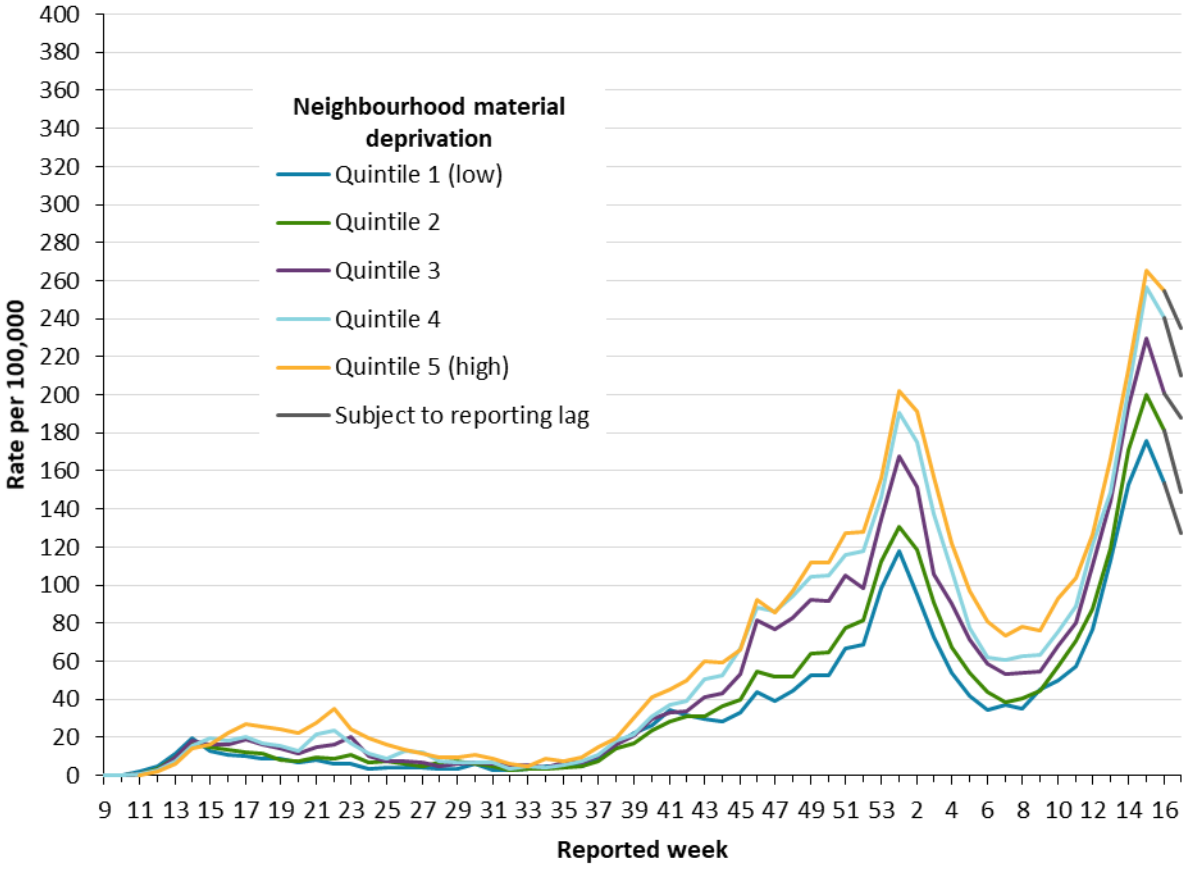
Note: Interpret information for the most recent week with caution due to reporting lags. Includes all confirmed cases of COVID-19 for specified ages, regardless of school attendance. Cumulative counts include cases of COVID-19 reported starting week-36 (August 30 to September 5, 2020).
Data Source: CCM

Figure 6. Rate of confirmed cases of COVID-19 per 100,000 population by quintile of neighbourhood diversity and public health unit reported week: Ontario



Note: Neighbourhood diversity is measured using the ethnic concentration dimension of the Ontario Marginalization Index. The ethnic concentration dimension is based on the proportion of non-white and non-Indigenous residents and/or the proportion of immigrants that arrived in Canada within the past five years. Only weeks with more than 10 cases by public health unit reporting date are included (starting in week 9). Include cases with reported dates ranging from weeks 9 (February 23 to 29, 2020) to week 17 (April 25 to May 1, 2021). See Table 1A in Appendix A for a list of the weeks and corresponding start and end dates.
Data Source: CCM, Ontario Marginalization Index

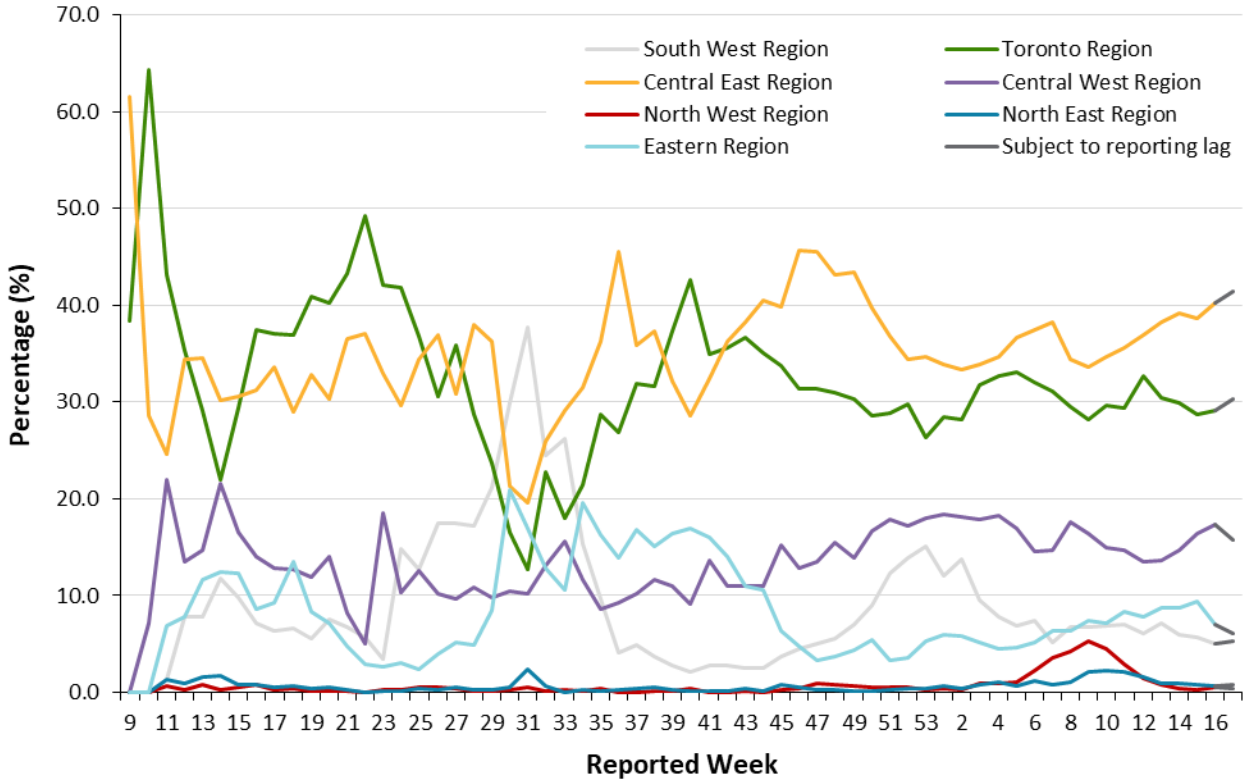
Figure 7. Rate of confirmed cases of COVID-19 per 100,000 population by quintile of neighbourhood material deprivation and public health unit reported week: Ontario



Note: Neighbourhood material deprivation is measured using the material deprivation dimension of the Ontario Marginalization Index. The material deprivation dimension uses Canadian census data on income, quality of housing, educational attainment and family structure characteristics to assess the ability of individuals and communities to access and attain basic material needs. Only weeks with more than 10 cases by public health unit reporting date are included (starting in week 9). Include cases with reported dates ranging from weeks 9 (February 23 10 29, 2020) to week 17 (April 25 to May 1, 2021). See Table 1A in Appendix A for a list of the weeks and corresponding start and end dates.
Data Source: CCM, Ontario Marginalization Index

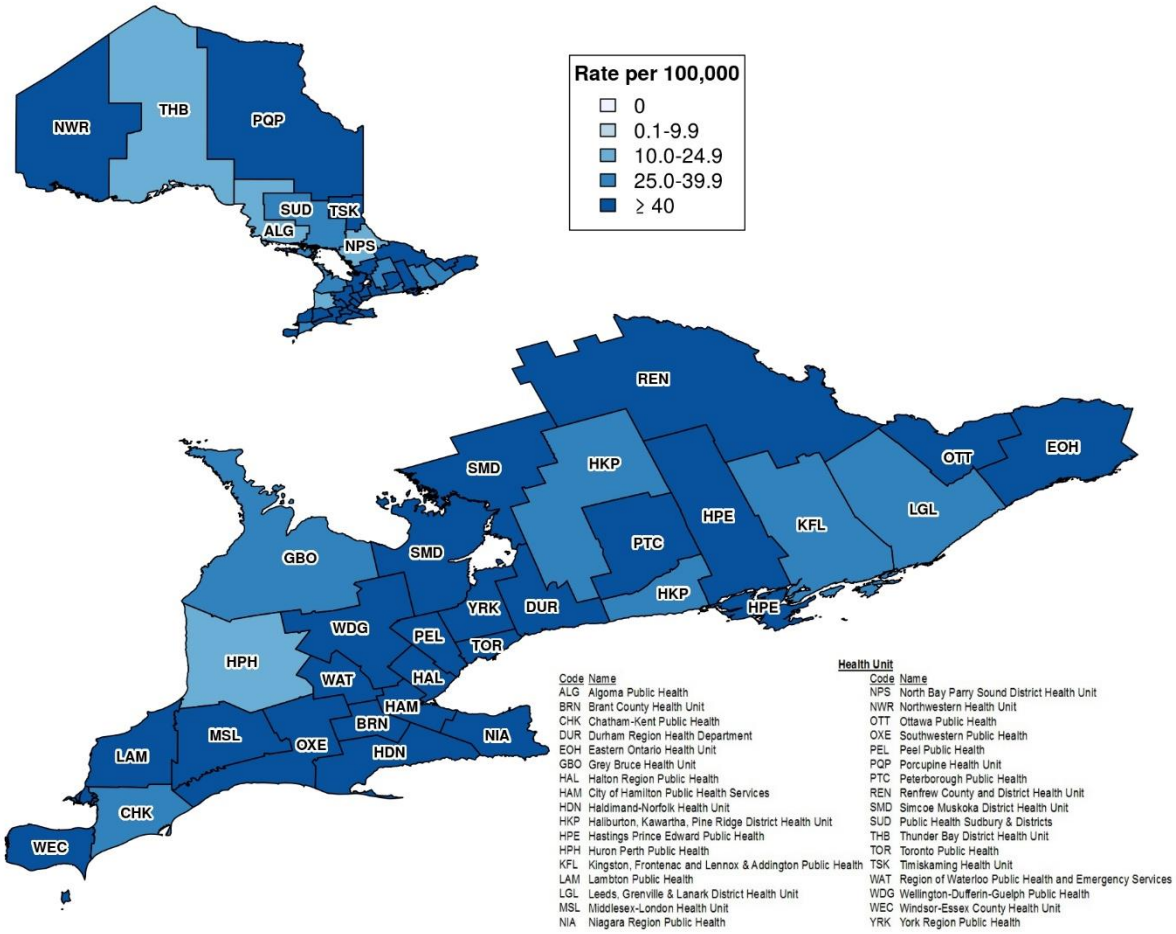
Geography

Figure 8. Percentage of COVID-19 cases by geographic region and public health unit reported week: Ontario



Note: Only weeks with more than 10 cases by public health unit reporting date are included (starting in week-9). Include cases with reported dates ranging from week-9 (February 23 and 29, 2020) to week 17 (April 25 and May 1, 2021). Table 2A in Appendix A has a listing of public health units by region.
Data Source: CCM

Figure 9. Rate of confirmed cases of COVID-19 in public health reported week 17 (April 25 to May 1, 2021) by public health unit: Ontario



Note: The provincial rate of confirmed cases of COVID-19 reported in week 17 was 166.6 cases per 100,000 population.
Data Source: CCM

Outbreaks

Table 8. Number of public health unit declared COVID-19 outbreaks by setting type: Ontario

Setting Type	Reported week 17 (April 25 to May 1)	Number of ongoing outbreaks	Cumulative number of outbreaks reported to May 1
Congregate Care	**28**	**108**	**2,822**
Long-term care homes	7	51	1,442
Retirement homes	3	15	847
Hospitals	18	42	533
Congregate Living	**34**	**99**	**1,157**
Correctional facility	1	6	49
Shelter	7	26	235
Group Home/supportive housing	19	54	692
Short-term accommodations	5	6	32
Congregate other	2	7	149
Education	**63**	**161**	**2,179**
Child care	57	142	772
School – Elementary*	4	11	1,055
School – Elementary/secondary*	0	1	63
School – Secondary*	2	5	252
School – Post-secondary*	0	2	37
Other settings	**148**	**360**	**3,381**
Bar/restaurant/nightclub	18	26	261
Medical/health services	0	3	129
Personal service settings	0	0	27
Recreational fitness	0	1	86

Setting Type	Reported week 17 (April 25 to May 1)	Number of ongoing outbreaks	Cumulative number of outbreaks reported to May 1
Retail	13	35	359
Other recreation/community	9	23	191
Workplace – Farm	10	20	183
Workplace - Food processing	2	15	209
Other types of workplaces	88	220	1,899
Other	5	11	13
Unknown	3	6	24
Total number of outbreaks	**273**	**728**	**9,539**

Note: Reported week is based on the outbreak reported date, and if unavailable, the date the public health unit created the outbreak. Ongoing outbreaks includes all outbreaks that are 'Open' in CCM without a 'Declared Over Date' recorded or where the outbreak start date (determined by the onset date of first case, or if missing the reported date, or if missing the created date) is more than 5 months from the current date, even for outbreaks where the outbreak status value selected in CCM is 'OPEN'. Interpret information for the most recent week with caution due to reporting lags. Outbreak categories are mutually exclusive. Retail includes settings such as grocery stores, pharmacies, malls, etc. Other types of workplaces include settings such as offices as well as warehousing, shipping and distribution, construction, etc. Other recreation/community includes settings such as entertainment and event venues, gatherings (e.g., weddings), religious facilities, etc. Medical/health services refer to settings such as doctor's office or clinic, wellness clinics, etc., and excludes categories listed in the congregate care setting group.
*Cumulative counts include COVID-19 school outbreaks reported starting week-36 (August 30 to September 5, 2020).
Ongoing re-classification of settings for reported outbreaks can result in outbreak counts that may differ from previously reported counts.
Data Source: CCM

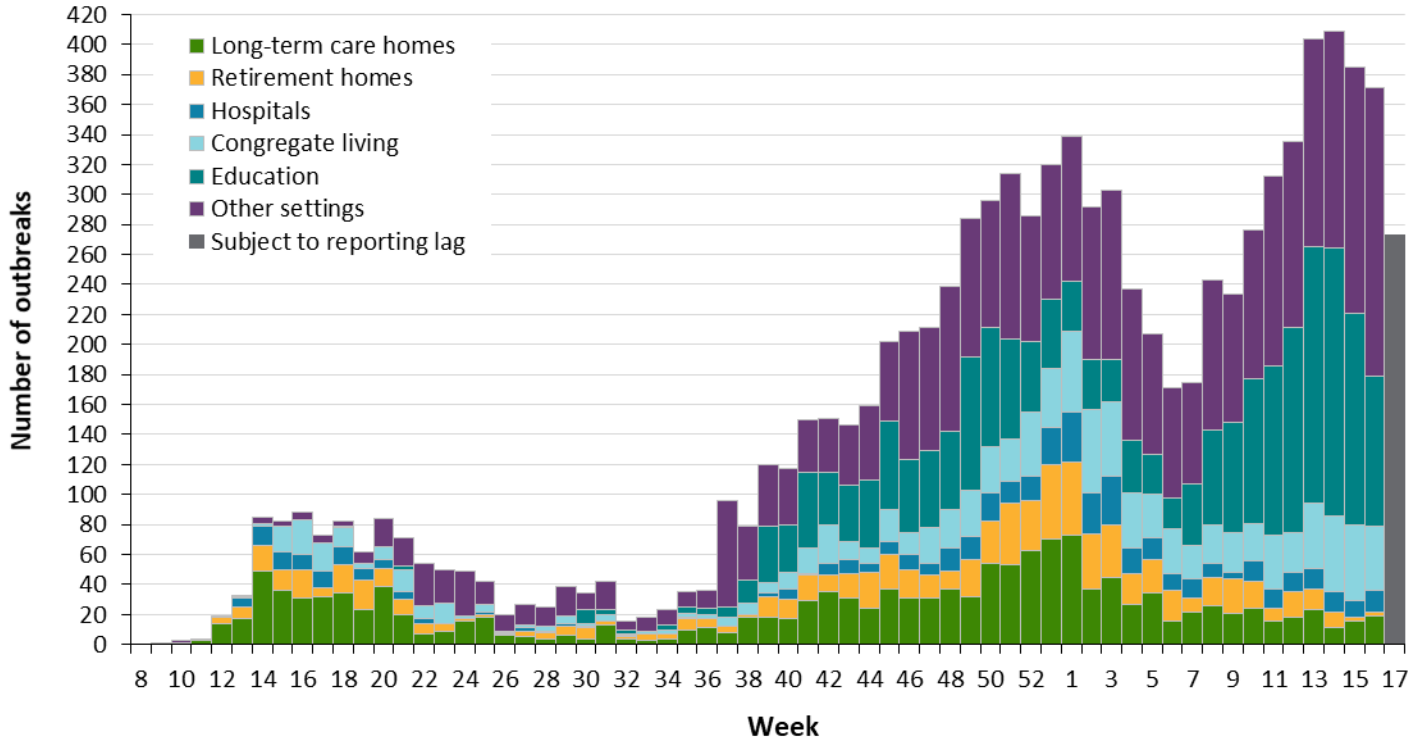
Table 9. Confirmed cases of COVID-19 associated with COVID-19 outbreaks by setting type and public health unit reported week: Ontario

Cases associated with the outbreak setting type	Reported week 16 (April 18 to 24)	Reported week 17 (April 25 to May 1)	Cumulative number of cases
Congregate Care	**241**	**217**	**38,806**
Long-term care homes	95	97	25,664
Retirement homes	37	18	7,171
Hospitals	109	102	5,971
Congregate Living	**228**	**118**	**8,590**
Correctional facility	15	20	1,356
Shelter	53	38	2,443
Group Home/supportive housing	113	40	3,278
Short-term accommodations	12	13	161
Congregate other	35	7	1,352
Education	**399**	**366**	**9,216**
Child care	314	345	3,002
School – Elementary*	61	11	4,424
School – Elementary/secondary*	6	0	328
School – Secondary*	17	8	1,082
School – Post-secondary*	1	2	380
Other settings	**1,340**	**887**	**26,216**
Bar/restaurant/nightclub	56	40	1,147
Medical/health services	10	3	584
Personal service settings	0	0	104
Recreational fitness	6	3	682
Retail	103	62	1,760

Cases associated with the outbreak setting type	Reported week 16 (April 18 to 24)	Reported week 17 (April 25 to May 1)	Cumulative number of cases
Other recreation/community	87	55	2,309
Workplace - Farm	23	43	2,756
Workplace - Food processing	94	86	2,807
Other types of workplaces	917	535	13,833
Other	21	42	69
Unknown	23	18	165
Total number of cases	**2,208**	**1,588**	**82,828**

Note: Interpret case counts for the most recent week with caution due to reporting lags. Outbreak categories are mutually exclusive. Retail includes settings such as grocery stores, pharmacies, malls, etc. Other types of workplaces include settings such as offices as well as warehousing, shipping and distribution, construction, etc. Other recreation/community includes settings such as entertainment and event venues, gatherings (e.g., weddings), religious facilities, etc. Medical/health services refer to settings such as doctor's office or clinic, wellness clinics, etc., and excludes categories listed in the congregate care setting group.
*Cumulative counts include cases of COVID-19 associated with school outbreaks reported starting week-36 (August 30 to September 5, 2020).
Ongoing re-classification of settings for reported outbreaks can result in case counts that may differ from previously reported counts.
Data Source: CCM

Figure 10. Public health unit declared COVID-19 outbreaks by outbreak setting type and public health unit reported week: Ontario



Note: If public health unit outbreak reported date is unavailable, the date the public health unit created the outbreak is used. Week 8 refers to February 16 and 22, 2020 and week 17 refers to April 25 and May 1, 2021. Congregate living include group homes, shelters, correctional facilities, etc. Other settings include outbreaks within workplaces, childcare, schools, restaurants, recreation etc.
Data Source: CCM

Variant COVID-19 Cases

Table 10. Summary of confirmed COVID-19 cases with a mutation or VOC detected by age group and gender: Ontario

	Lineage B.1.1.7*	Lineage B.1.351	Lineage P.1	Mutations**	Cumulative case count as of May 1, 2021
Gender: Male	39,977	167	530	16,249	56,923
Gender: Female	38,190	148	460	15,348	54,146
Ages: 19 and under	14,093	41	180	6,174	20,488
Ages: 20-39	29,103	115	344	11,917	41,479
Ages: 40-59	24,133	103	307	9,166	33,709
Ages: 60-79	9,976	46	142	3,936	14,100
Ages: 80 and over	1,455	12	27	688	2,182

Note: Not all cases have an 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 for cases with a B.1.1.7, B.1.351, and P.1 lineage detected 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 a 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)

Data Source: CCM

Table 11. Summary of confirmed COVID-19 cases with a mutation or VOC detected by likely source of acquisition: Ontario

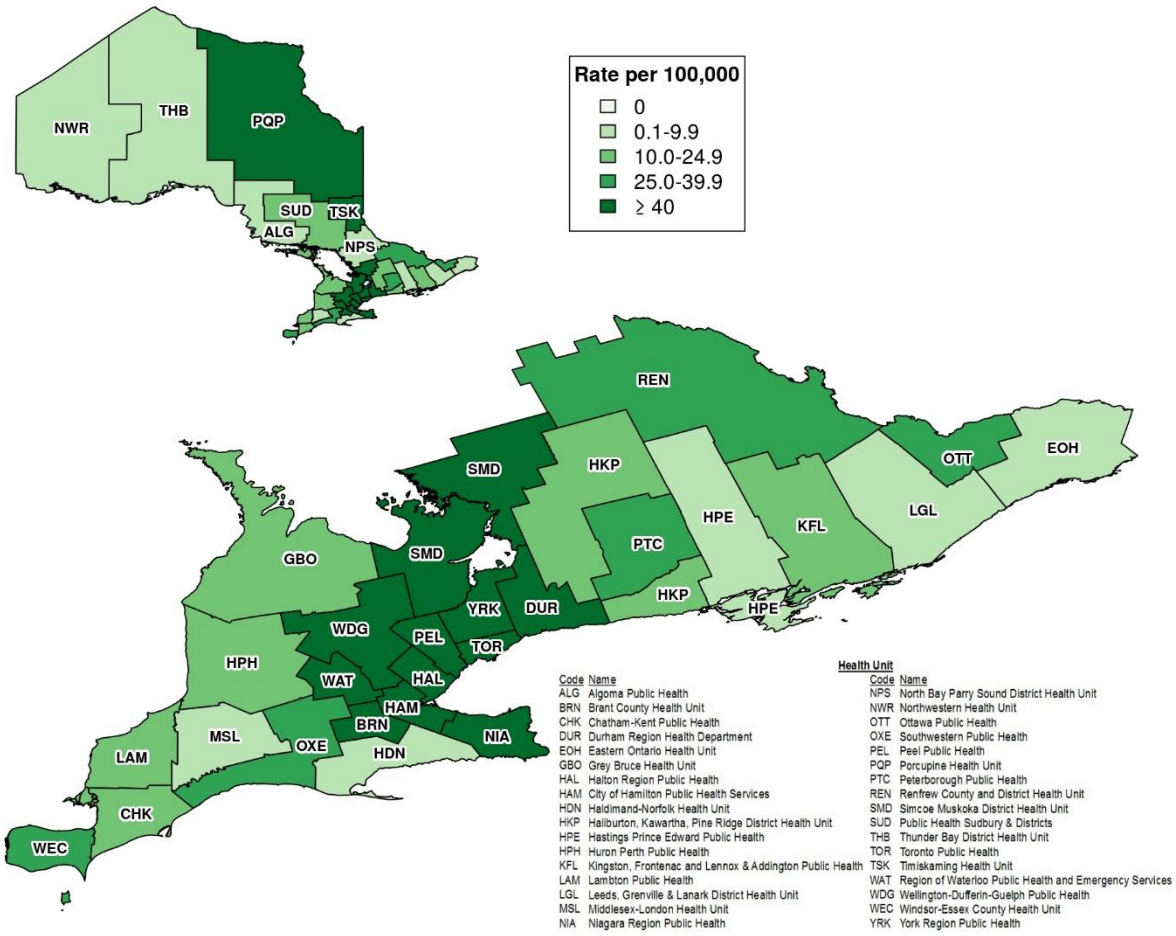
	Lineage B.1.1.7*	%	Lineage B.1.351	%	Lineage P.1	%	Mutations**	%	Cumulative case count up to May 1, 2021	Cumulative percentage
Travel	459	0.6%	11	3.5%	8	0.8%	360	1.1%	838	0.7%
Outbreak-associated or close contact of a confirmed case	43,744	55.5%	207	65.3%	655	65.5%	19,120	60.0%	63,726	56.9%
Epidemiological link – type unspecified	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
No known epidemiological link	27,388	34.8%	84	26.5%	288	28.8%	10,129	31.8%	37,889	33.8%
Information missing or unknown	7,176	9.1%	15	4.7%	49	4.9%	2,274	7.1%	9,514	8.5%
Total	**78,767**		**317**		**1,000**		**31,883**		**111,967**	

Note: Information for how cases are grouped within each category is available in the technical notes. Data for cases with a B.1.1.7, B.1.351, and P.1 lineage detected are determined using the Investigation Subtype field only.* 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 a 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)

Data Source: CCM

Figure 11. Rates of confirmed cases of COVID-19 with lineage B.1.1.7* detected in public health reported week 17 (April 25 to May 1, 2021) by public health unit: Ontario

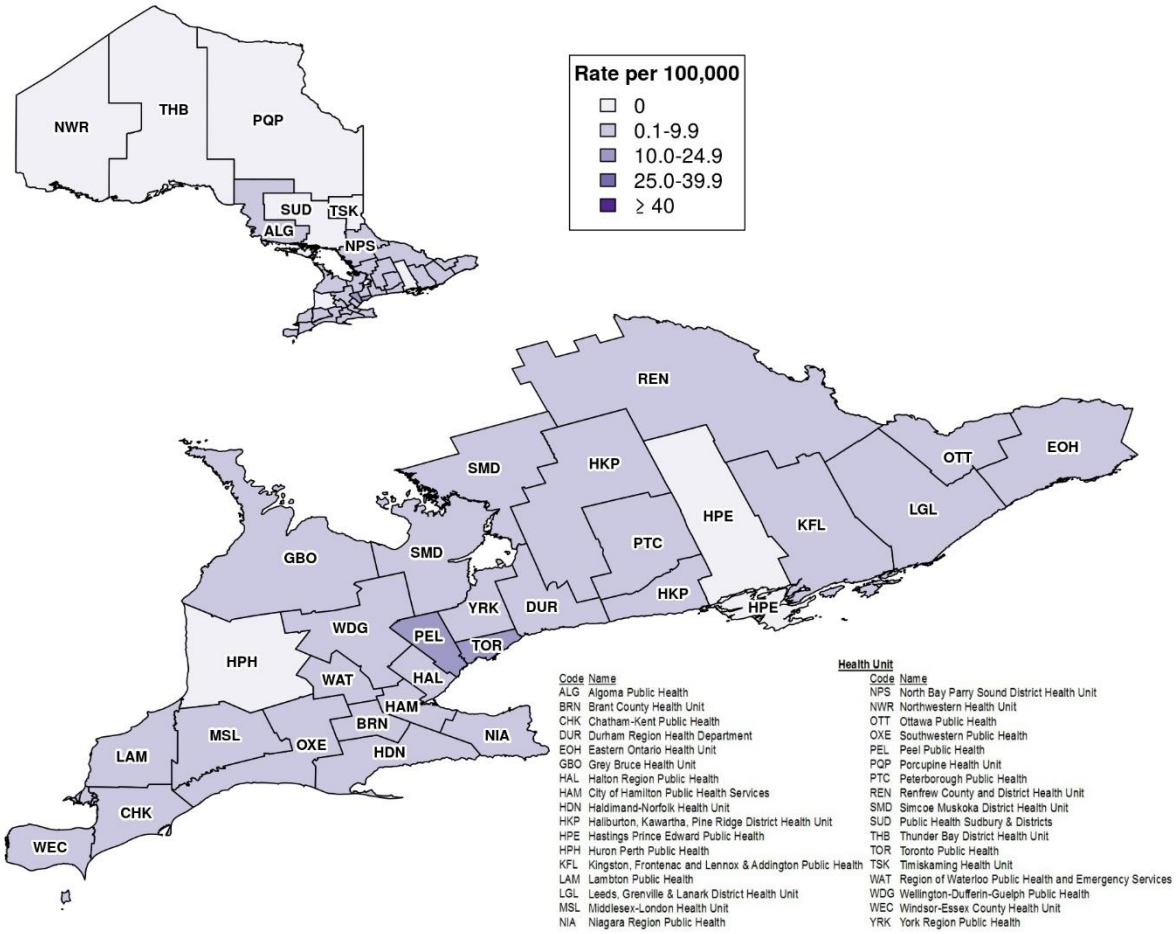


Note: The provincial rate of confirmed cases of COVID-19 with lineage B.1.1.7* reported in week 17 was 90.6 cases per 100,000 population. Changes to the VOC testing algorithm may impact counts and trends. Further details can be found in the data caveats section.

*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 a positive N501Y and negative E484K mutation, using the Investigation Subtype field only.

Data Source: CCM

Figure 12. Rates of confirmed cases of COVID-19 with lineage B.1.351, P.1 or mutation 'N501Y+ and E484K+' detected in public health reported week 17 (April 25 to May 1, 2021) by public health unit: Ontario



Note: The provincial rate of confirmed cases of COVID-19 with lineage B.1.351, P.1 or mutation N501Y+ and E484K+ reported in week 17 was 7.2 cases per 100,000 population. Data for cases with a B.1.351, P.1 lineage or an 'N501Y and E484K' mutation detected 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.
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 **May 4, 2021 at 1 p.m.** for cases reported in 2021 and as of May 3, 2021 at 9 a.m. for cases reported in 2020
    - COVID-19 vaccination data were based on information successfully extracted from the Ontario Ministry of Health's COVaxON application as of **May 3, 2021 at approximately 7 a.m.** COVaxON data was subsequently linked to COVID-19 case data based on information successfully extracted from the Public Health Case and Contact Management Solution (CCM) for all PHUs by PHO as of **May 3, 2021 at 1 p.m.**
- CCM and COVaxON are dynamic disease reporting systems, which allow ongoing updates to data previously entered. As a result, data extracted from CCM and COVaxON 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.
- Statistics Canada Postal Code Conversion File (PCCF), reference date of February 2021.
- The health equity (neighbourhood-level diversity and material deprivation) analyses use data from the 2016 Ontario Marginalization Index and population counts from the 2016 Canada Census:
    - Matheson FI; van Ingen T. 2016 Ontario marginalization index. Toronto, ON: Providence St. Joseph's and St. Michael's Healthcare; 2018. Joint publication with Public Health Ontario.
    - Statistics Canada. Census of Population, 2016: Profile for Canada, Provinces, Territories, Census Divisions, Census Subdivisions and Dissemination Areas. Retrieved from: https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/download-telecharger/comp/GetFile.cfm?Lang=E&FILETYPE=CSV&GEONO=044_ONTARIO.

Data Caveats and Methods: Case Data

- The data represent case and vaccination information reported to public health units and recorded in CCM or COVaxON. As a result, all counts are 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.
- Observed trends over time should be interpreted with caution for the most recent period due to reporting and/or data entry lags.
- 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. This includes persons with:

    - laboratory confirmation by a validated NAAT assay
    - a validated point-of-care (POC) assay deemed acceptable to provide a final result
    - a validated laboratory-based serological assay SARS-CoV-2
- 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.
- 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.
- Reported date is the date the case was reported to the public health unit. This is different than the daily change in cases released by the Province for the same time period, which reflects the difference in cumulative counts reported to the Province between one day and the next.
- Reported weeks were created to align with the Public Health Agency of Canada (PHAC) influenza surveillance weeks.
- Case episode date is based on an estimate of the best date of disease onset. This date is calculated based on either the date of symptom onset, specimen collection/test date, or the date reported to the public health unit.
- Cases with unknown or missing ages were excluded from age-specific analyses.
- Health care worker includes cases that reported 'Yes' to any of the following occupations: health care worker, doctor, nurse, dentist, dental hygienist, midwife, other medical technicians, personal support worker, respiratory therapist, first responder.
- 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 considered resolved:
    - Cases that are reported as 'recovered' in CCM based on local public health unit assessment
    - Cases that are not hospitalized and are 14 days past their symptom onset date or specimen collection date (where symptom onset date is not known)
    - Cases that are currently hospitalized (no hospitalization end date entered) and have a case status of 'closed' indicating that public health follow up is complete and are 14 days past their symptom onset date or specimen collection date
- Data on hospital admissions, ICU admissions and deaths are likely under-reported as these events may occur after the completion of public health follow up of cases. Cases that were admitted to hospital or died after follow-up was completed may not be captured in CCM.
- 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.

- Hospitalization includes all cases for which a hospital admission date was reported 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.

- Likely source of acquisition is determined by examining the epidemiologic link and epidemiologic link status fields in CCM and local systems. 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 an Epidemiological link with type unspecified, 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

- '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.

- '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.

- 'Cases associated with school outbreaks' includes cases that are linked to an outbreak, by school classification type (Elementary, Elementary/Secondary, Secondary, Post-Secondary), that met the definition of a school outbreak.

- School classification types are defined by the Ministry of Education.

    - Elementary/Secondary schools include public or private schools educating children in a combination of elementary and secondary grades (e.g., Kindergarten to Grade 8, Grades 9 to 12, and Kindergarten to Grade 12).

- 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 (to signify a case that is not a resident of Ontario) have been excluded from the analyses.

    - GTA health units include: Durham Region Health Department, Peel Public Health, Toronto Public Health and York Region Public Health

- Ongoing outbreaks are those that are reported in CCM as 'Open' and without a 'Declared Over Date' recorded. Closed outbreaks are 'Closed' or have a 'Declared Over Date' recorded in CCM or where the outbreak start date (determined by the onset date of first case, or if missing the reported date, or if missing the created date) is more than 5 months from the current date, even for outbreaks where the outbreak status value selected in CCM is 'OPEN'.

- Outbreaks are declared by the local medical officer of health or their designate in accordance to the Health Protection and Promotion Act and criteria outlined in Ministry guidance documents.

- School outbreaks include outbreaks declared on or after week-36 (August 30 to September 5, 2020).

- 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-Co-V-2 specimens with CT values ≤ 35 are tested for a N501Y mutation. Starting March 22, 2021, these specimens are tested for the E484K mutation as well. Specimens that are positive for the N501Y mutation only are not being forwarded for further genomic analysis. Specimens that are E484K positive (with or without N501Y) are forwarded for 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 ≤ 35 can be tested for mutations common to variants of concern. If positive for the mutation of interest these samples may then undergo genomic analyses to identify the VOC. 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.

- 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).

Data Caveats and Methods: COVaxON

- Linking COVaxON and CCM data is dependent on availability of personal identifiers reported in both databases. For example, if a client was reported in both COVaxON and CCM, but personal identifiers (e.g. such as health card number, date of birth) were not available, then sufficient information would not have been available to identify the client and the client would not have been included in the linkage.

- The following COVID-19 cases were excluded from the primary analysis as the timing of infection (i.e. date of symptom onset) relative to vaccination (i.e. date of dose administration) could not be determined.

    - Cases reported as asymptomatic and where no symptom information was reported.

    - Cases were no symptoms onset date was reported.

    - Cases reported as re-positive or remote positive.

        - Re-positive cases are defined as cases that test positive again after a negative test result based on an approved method or after being cleared/resolved (based on either time from symptom onset or having two negative tests). This may include cases that were asymptomatic at the time of the initial positive result and later developed symptoms which lead to subsequent testing. As a result, the timing of infection may be unclear.

        - Remote positive cases are defined as asymptomatic positive cases with a low pre-test probability (e.g., no epidemiologic link to a confirmed case or an outbreak) and a repeat test that is negative. For these cases, the timing of infection may be unclear.

- The definitions for partially vaccinated and breakthrough cases used in this report were modelled after proposed national definitions, and do not necessarily align with those used in other jurisdictions. Further, the definitions may be revised over time.

    - **Cases not yet protected by vaccination:** Individuals with a symptom onset date that was 0 to <14 days following the first dose of a COVID-19 vaccine. This time period from vaccination is not sufficient to develop immunity, therefore these individuals are not considered protected from vaccination.

    - **Partially vaccinated case:** Individuals with a symptom onset date that was 14 or more days following the first dose of a COVID-19 vaccine or 0 to <7 days after receiving the second dose. This time period from vaccination may be sufficient to develop some degree of

immunity, but these individuals are not considered fully protected as they have not yet received the second dose or have only recently received the second dose.

- **Breakthrough (i.e., fully vaccinated) case**: Individuals with a symptom onset date that was 7 or more days following receipt of the second dose of a COVID-19 vaccine. These individuals are considered fully protected from vaccination, however, as VE is not 100%, it is expected that a small number of individuals become infected following complete vaccination.

- For breakthrough cases, the time interval between doses was not assessed to determine if the second dose was administered as per the product-specific recommended minimum interval.

Data Caveats and Methods: ON-Marg

- ON-Marg is a data tool that combines a wide range of demographic indicators into multiple distinct dimensions of marginalization. It is an area-based index which assigns a measure of marginalization based on neighbourhood versus individual characteristics. As such, the broader demographic trends of an area may not reflect all residents of a neighbourhood owing to the inherent heterogeneity of demographic characteristics which can vary substantially especially across large rural geographies. For more information, please visit PHO's ON-Marg website.

- Neighbourhood diversity is defined using the ethnic concentration dimension of ON-Marg, which measures populations who may experience marginalization related to racism and discrimination. It is based on the proportion of non-white and non-Indigenous residents (visible minority) and/or the proportion of immigrants that arrived in Canada within the past five years. 'Visible minority' is a term used by Statistics Canada that, although is considered to be outdated, is used here to be consistent with the Canadian census.

- Neighbourhood material deprivation is defined using the material deprivation dimension of ON-Marg, which is closely connected to poverty. It refers to the inability of individuals and communities to access and attain basic material needs. The indicators included in this dimension measure income, quality of housing, educational attainment and family structure characteristics.

- "Neighbourhoods" are considered to be Statistic Canada dissemination areas (DA). The Single Link Indicator Postal Code Conversion File (PCCF) was used to match individuals to a DA based on their postal code, which were subsequently assigned to a quintile of marginalization that contained 20% of Ontario neighbourhoods. The quintiles for the ethnic concentration and the material deprivation dimensions are ordered from quintiles 1 to 5, with quintile 1 having the lowest level of marginalization (i.e., least diverse or least deprived) and quintile 5 having the highest level of marginalization (i.e., most diverse or most deprived).

- The following were not included in analyses that summarize the impact of COVID-19 among Ontarians who may experience marginalization:

    - People who have tested positive for COVID-19 that reside in institutional and congregate settings are not included in the census data from which the marginalization indicators (ethnic concentration and material deprivation) are derived. Although these cases represent a large number of cases overall and deaths, their exclusion ensures appropriate comparisons since institutional and congregate setting residents are excluded from ON-Marg.

- People who have tested positive for COVID-19 that reside in census dissemination areas where data has been suppressed, and cases that have missing or invalid postal codes could not be assigned to a quintile of marginalization.

- Due to data suppression for some census indicators on Indian Reserves in Ontario, residents of Indian Reserves could not be included in ON-Marg and therefore people who have tested positive for COVID-19 and are living on Indian Reserves could not be assigned to a quintile of marginalization. While Indigenous individuals living off reserves are included in this analysis, Indigeneity data is not currently collected or captured in dimensions of ON-Marg.

Appendix A

Table 1A. Confirmed cases of COVID-19 by public health unit reported week: Ontario

Reported Week	Start date	End date	Number of cases	Cumulative count
2	January 5, 2020	January 11, 2020	0	0
3	January 12, 2020	January 18, 2020	0	0
4	January 19, 2020	January 25, 2020	3	3
5	January 26, 2020	February 1, 2020	0	3
6	February 2, 2020	February 8, 2020	0	3
7	February 9, 2020	February 15, 2020	0	3
8	February 16, 2020	February 22, 2020	1	4
9	February 23, 2020	February 29, 2020	13	17
10	March 1, 2020	March 7, 2020	14	31
11	March 8, 2020	March 14, 2020	146	177
12	March 15, 2020	March 21, 2020	436	613
13	March 22, 2020	March 28, 2020	1,307	1,920
14	March 29, 2020	April 4, 2020	2,778	4,698
15	April 5, 2020	April 11, 2020	3,135	7,833
16	April 12, 2020	April 18, 2020	4,205	12,038
17	April 19, 2020	April 25, 2020	3,631	15,669
18	April 26, 2020	May 2, 2020	2,889	18,558
19	May 3, 2020	May 9, 2020	2,343	20,901
20	May 10, 2020	May 16, 2020	2,191	23,092
21	May 17, 2020	May 23, 2020	2,614	25,706
22	May 24, 2020	May 30, 2020	2,599	28,305
23	May 31, 2020	June 6, 2020	2,304	30,609

Reported Week	Start date	End date	Number of cases	Cumulative count
24	June 7, 2020	June 13, 2020	1,473	32,082
25	June 14, 2020	June 20, 2020	1,229	33,311
26	June 21, 2020	June 27, 2020	1,250	34,561
27	June 28, 2020	July 4, 2020	1,084	35,645
28	July 5, 2020	July 11, 2020	869	36,514
29	July 12, 2020	July 18, 2020	930	37,444
30	July 19, 2020	July 25, 2020	992	38,436
31	July 26, 2020	August 1, 2020	805	39,241
32	August 2, 2020	August 8, 2020	593	39,834
33	August 9, 2020	August 15, 2020	610	40,444
34	August 16, 2020	August 22, 2020	730	41,174
35	August 23, 2020	August 29, 2020	851	42,025
36	August 30, 2020	September 5, 2020	978	43,003
37	September 6, 2020	September 12, 2020	1,502	44,505
38	September 13, 2020	September 19, 2020	2,373	46,878
39	September 20, 2020	September 26, 2020	3,120	49,998
40	September 27, 2020	October 3, 2020	4,222	54,220
41	October 4, 2020	October 10, 2020	5,040	59,260
42	October 11, 2020	October 17, 2020	5,273	64,533
43	October 18, 2020	October 24, 2020	6,036	70,569
44	October 25, 2020	October 31, 2020	6,386	76,955
45	November 1, 2020	November 7, 2020	7,608	84,563
46	November 8, 2020	November 14, 2020	10,429	94,992
47	November 15, 2020	November 21, 2020	9,986	104,978
48	November 22, 2020	November 28, 2020	11,124	116,102

Reported Week	Start date	End date	Number of cases	Cumulative count
49	November 29, 2020	December 5, 2020	12,685	128,787
50	December 6, 2020	December 12, 2020	13,054	141,841
51	December 13, 2020	December 19, 2020	15,659	157,500
52	December 20, 2020	December 26, 2020	15,627	173,127
53	December 27, 2020	January 2, 2021	20,445	193,572
1	January 3, 2021	January 9, 2021	24,862	218,434
2	January 10, 2021	January 16, 2021	21,364	239,798
3	January 17, 2021	January 23, 2021	16,393	256,191
4	January 24, 2021	January 30, 2021	12,731	268,922
5	January 31, 2021	February 6, 2021	9,773	278,695
6	February 7, 2021	February 13, 2021	7,892	286,587
7	February 14, 2021	February 20, 2021	7,455	294,042
8	February 21, 2021	February 27, 2021	7,673	301,715
9	February 28, 2021	March 6, 2021	7,930	309,645
10	March 7, 2021	March 13, 2021	9,476	319,121
11	March 14, 2021	March 20, 2021	11,023	330,144
12	March 21, 2021	March 27, 2021	14,426	344,570
13	March 28, 2021	April 3, 2021	18,960	363,530
14	April 4, 2021	April 10, 2021	25,570	389,100
15	April 11, 2021	April 17, 2021	30,881	419,981
16	April 18, 2021	April 24, 2021	28,098	448,079
17	April 25, 2021	May 1, 2021	24,769	472,848

Table 2A. Confirmed cases of COVID-19 by public health unit and region: Ontario

Public Health Unit Name	Cases reported week 16	Rate per 100,000 population Reported week 16	Cases reported week 17	Rate per 100,000 population Reported week 17
Northwestern Health Unit	69	78.7	64	73.0
Thunder Bay District Health Unit	66	44.0	34	22.7
TOTAL NORTH WEST	**135**	**56.8**	**98**	**41.2**
Algoma Public Health	24	21.0	19	16.6
North Bay Parry Sound District Health Unit	10	7.7	15	11.6
Porcupine Health Unit	82	98.3	79	94.7
Public Health Sudbury & Districts	55	27.6	63	31.7
Timiskaming Health Unit	27	82.6	20	61.2
TOTAL NORTH EAST	**198**	**35.4**	**196**	**35.0**
Ottawa Public Health	1,528	144.9	1,164	110.4
Eastern Ontario Health Unit	205	98.2	124	59.4
Hastings Prince Edward Public Health	67	39.8	68	40.4
Kingston, Frontenac and Lennox & Addington Public Health	79	37.1	67	31.5
Leeds, Grenville & Lanark District Health Unit	69	39.8	52	30.0
Renfrew County and District Health Unit	32	29.5	44	40.5
TOTAL EASTERN	**1,980**	**102.8**	**1,519**	**78.9**
Durham Region Health Department	1,597	224.2	1,505	211.3

Public Health Unit Name	Cases reported week 16	Rate per 100,000 population Reported week 16	Cases reported week 17	Rate per 100,000 population Reported week 17
Haliburton, Kawartha, Pine Ridge District Health Unit	92	48.7	69	36.5
Peel Public Health	6,005	373.9	5,717	356.0
Peterborough Public Health	68	46.0	61	41.2
Simcoe Muskoka District Health Unit	652	108.7	567	94.6
York Region Public Health	2,888	235.6	2,335	190.5
TOTAL CENTRAL EAST	**11,302**	**252.2**	**10,254**	**228.9**
Toronto Public Health	8,196	262.7	7,511	240.7
TOTAL TORONTO	**8,196**	**262.7**	**7,511**	**240.7**
Chatham-Kent Public Health	33	31.0	29	27.3
Grey Bruce Health Unit	70	41.2	48	28.3
Huron Perth Public Health	31	22.2	30	21.5
Lambton Public Health	74	56.5	70	53.4
Middlesex-London Health Unit	667	131.4	681	134.2
Southwestern Public Health	136	64.3	110	52.0
Windsor-Essex County Health Unit	392	92.3	330	77.7
TOTAL SOUTH WEST	**1,403**	**83.0**	**1,298**	**76.8**
Brant County Health Unit	283	182.3	176	113.4
City of Hamilton Public Health Services	1,153	194.7	1,069	180.5
Haldimand-Norfolk Health Unit	176	154.3	137	120.1
Halton Region Public Health	967	156.2	902	145.7

Public Health Unit Name	Cases reported week 16	Rate per 100,000 population Reported week 16	Cases reported week 17	Rate per 100,000 population Reported week 17
Niagara Region Public Health	1,188	251.4	863	182.7
Region of Waterloo Public Health and Emergency Services	672	115.0	447	76.5
Wellington-Dufferin-Guelph Public Health	445	142.7	299	95.9
TOTAL CENTRAL WEST	**4,884**	**171.4**	**3,893**	**136.6**
TOTAL ONTARIO	**28,098**	**189.0**	**24,769**	**166.6**

Note: Interpret information for the most recent week with caution due to reporting lags.

Table 3A. Confirmed COVID-19 variants of concern by public health unit and region: Ontario

Public Health Unit Name	Cumulative case count up to May 1 for Lineage B.1.1.7*	Cumulative case count up to May 1 for Lineage B.1.351	Cumulative case count up to May 1 for Lineage P.1	Cumulative count up to May 1 for Mutations**
Northwestern Health Unit	28	0	1	24
Thunder Bay District Health Unit	1	0	0	40
TOTAL NORTH WEST	**29**	**0**	**1**	**64**
Algoma Public Health	44	0	0	14
North Bay Parry Sound District Health Unit	58	27	0	13
Porcupine Health Unit	95	2	0	9
Public Health Sudbury & Districts	385	0	0	433
Timiskaming Health Unit	60	1	0	2
TOTAL NORTH EAST	**642**	**30**	**0**	**471**
Ottawa Public Health	3,865	21	0	1,143
Eastern Ontario Health Unit	541	6	0	308
Hastings Prince Edward Public Health	14	0	1	320
Kingston, Frontenac and Lennox & Addington Public Health	233	0	14	134
Leeds, Grenville & Lanark District Health Unit	228	3	0	45
Renfrew County and District Health Unit	120	1	0	23
TOTAL EASTERN	**5,001**	**31**	**15**	**1,973**
Durham Region Health Department	6,551	8	49	988
Haliburton, Kawartha, Pine Ridge District Health Unit	196	0	4	200

Public Health Unit Name	Cumulative case count up to May 1 for Lineage B.1.1.7*	Cumulative case count up to May 1 for Lineage B.1.351	Cumulative case count up to May 1 for Lineage P.1	Cumulative count up to May 1 for Mutations**
Peel Public Health	18,411	42	246	5,019
Peterborough Public Health	301	0	0	160
Simcoe Muskoka District Health Unit	2,499	13	48	841
York Region Public Health	10,720	17	114	2,603
TOTAL CENTRAL EAST	**38,678**	**80**	**461**	**9,811**
Toronto Public Health	18,024	159	445	15,297
TOTAL TORONTO	**18,024**	**159**	**445**	**15,297**
Chatham-Kent Public Health	55	4	1	114
Grey Bruce Health Unit	220	0	2	42
Huron Perth Public Health	57	0	0	57
Lambton Public Health	277	0	1	81
Middlesex-London Health Unit	1,612	0	8	274
Southwestern Public Health	429	0	2	66
Windsor-Essex County Health Unit	909	2	3	88
TOTAL SOUTH WEST	**3,559**	**6**	**17**	**722**
Brant County Health Unit	371	1	9	377
City of Hamilton Public Health Services	3,211	2	3	1,032
Haldimand-Norfolk Health Unit	215	0	3	296
Halton Region Public Health	3,461	6	30	520
Niagara Region Public Health	2,310	0	1	861
Region of Waterloo Public Health and Emergency Services	1,823	2	7	284

Public Health Unit Name	Cumulative case count up to May 1 for Lineage B.1.1.7*	Cumulative case count up to May 1 for Lineage B.1.351	Cumulative case count up to May 1 for Lineage P.1	Cumulative count up to May 1 for Mutations**
Wellington-Dufferin-Guelph Public Health	1,443	0	8	175
TOTAL CENTRAL WEST	**12,834**	**11**	**61**	**3,545**
TOTAL ONTARIO	**78,767**	**317**	**1,000**	**31,883**

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. Data for calculating 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 are determined using the Investigation Subtype field only.
*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 a 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)

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Weekly epidemiologic summary: COVID-19 in Ontario – focus on April 25, 2021 to May 1, 2021. Toronto, ON: Queen's Printer for Ontario; 2021.

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For Further Information

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Public Health Ontario

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