

WEEKLY EPIDEMIOLOGICAL SUMMARY

COVID-19 in Ontario: Focus on May 2, 2021 to May 8, 2021

This report includes the most current information available from CCM as of **May 11, 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

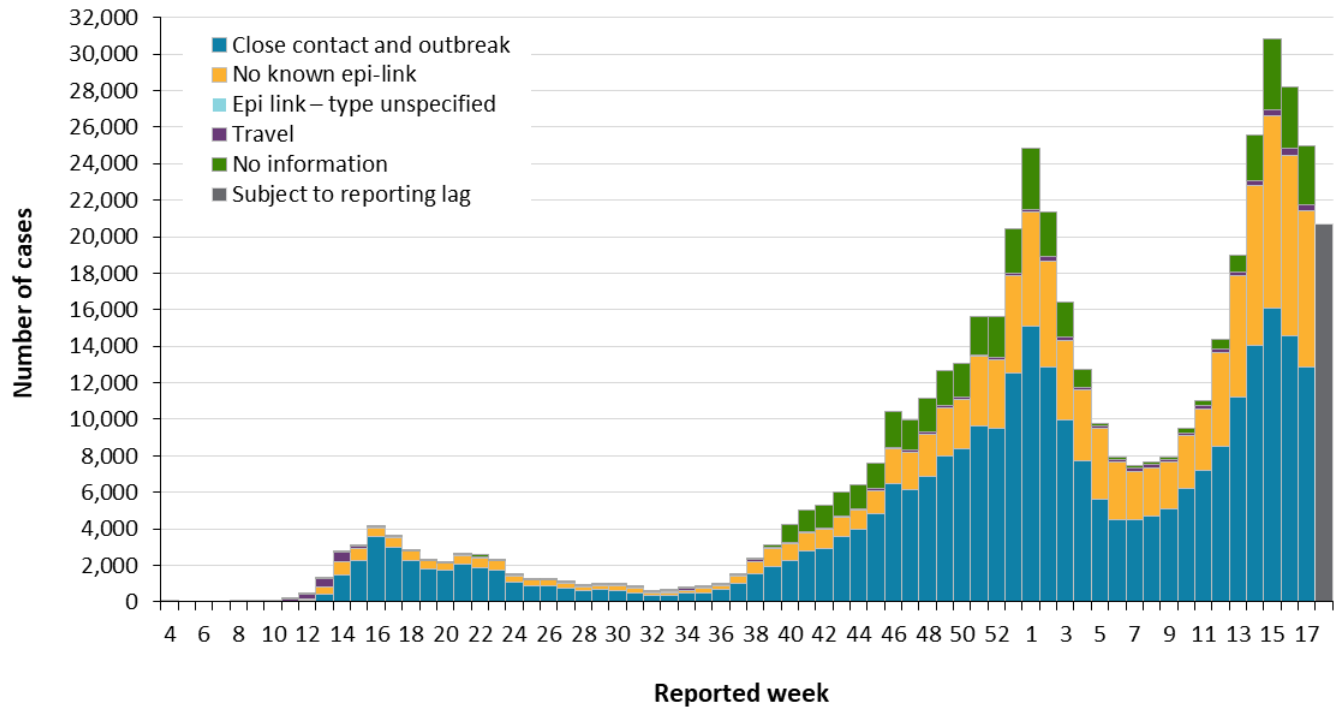
- There are a total of 493,851 confirmed cases of COVID-19 in Ontario with a public health unit reported date up to May 8, 2021.
- For the period with a public health unit reported date between May 2 to 8, 2021 (week 18):
 - A total of 20,717 cases were reported to public health compared to 25,001 cases the previous week (April 25 to May 1, 2021).
 - The weekly incidence of COVID-19 continues to decrease for the third straight week with a 17.1% decrease in cases reported this week compared to the previous week.
 - The rate of cases continues to decrease across all age groups. In particular, there was a sharp decrease in the rate of cases per 100,000 population reported among cases aged 40-59 from 183.4 in week 17 to 148.3 in week 18.

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

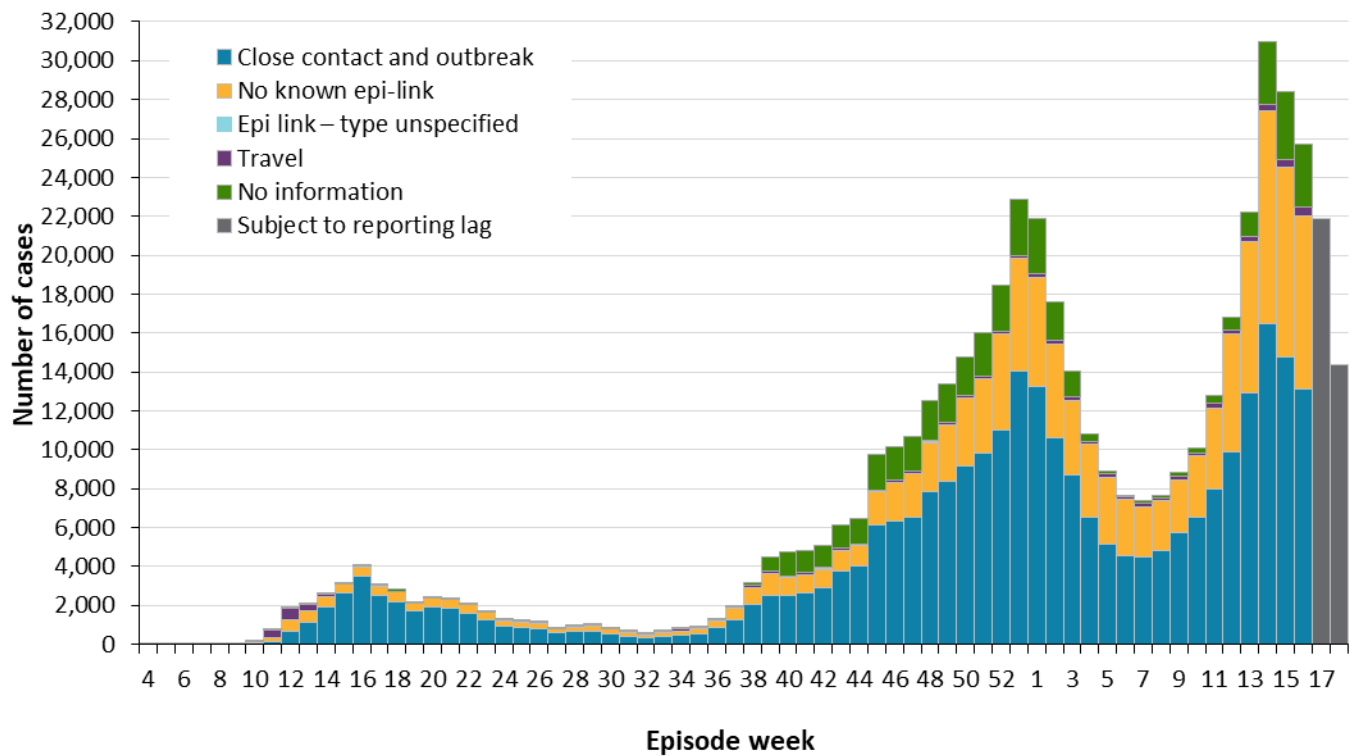
Figure 1. Confirmed cases of COVID-19 by likely source of acquisition and public health unit reported week: Ontario



Note: Include cases with reported dates ranging from week-4 (January 19 and 25, 2020) to week 18 (May 2 and 8, 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 18 (May 2 and 8, 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

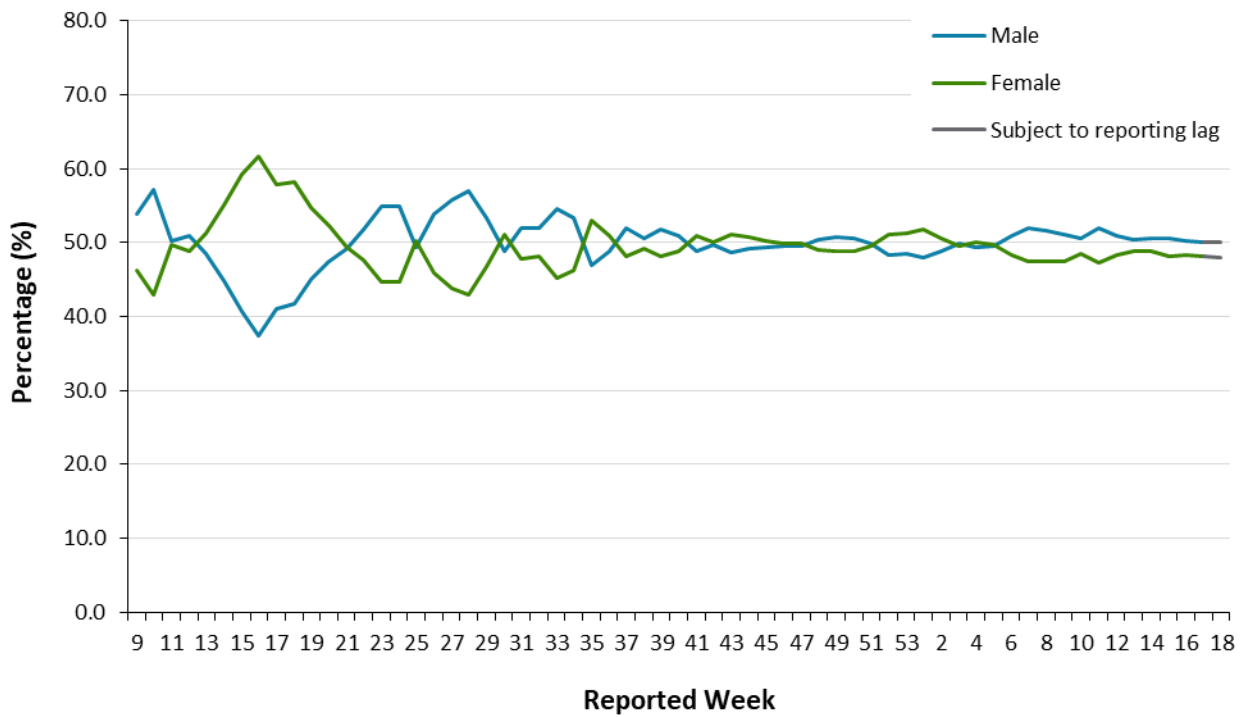
	Reported week 17 (April 25 to May 1)	Reported week 18 (May 2 to 8)	Cumulative case count up to May 8	Cumulative rate per 100,000 population
Total number of cases	25,001	20,717	493,851	3,322.4
Gender: Male	12,493	10,381	245,508	3,354.3
Gender: Female	12,060	9,941	244,530	3,240.9
Ages: 19 and under	4,610	3,795	76,911	2,452.2
Ages: 20-39	9,865	8,471	183,385	4,412.3
Ages: 40-59	7,223	5,839	142,310	3,614.2
Ages: 60-79	2,890	2,236	67,109	2,271.1
Ages: 80 and over	407	370	24,031	3,537.8
Number resolved	N/A	N/A	460,954	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

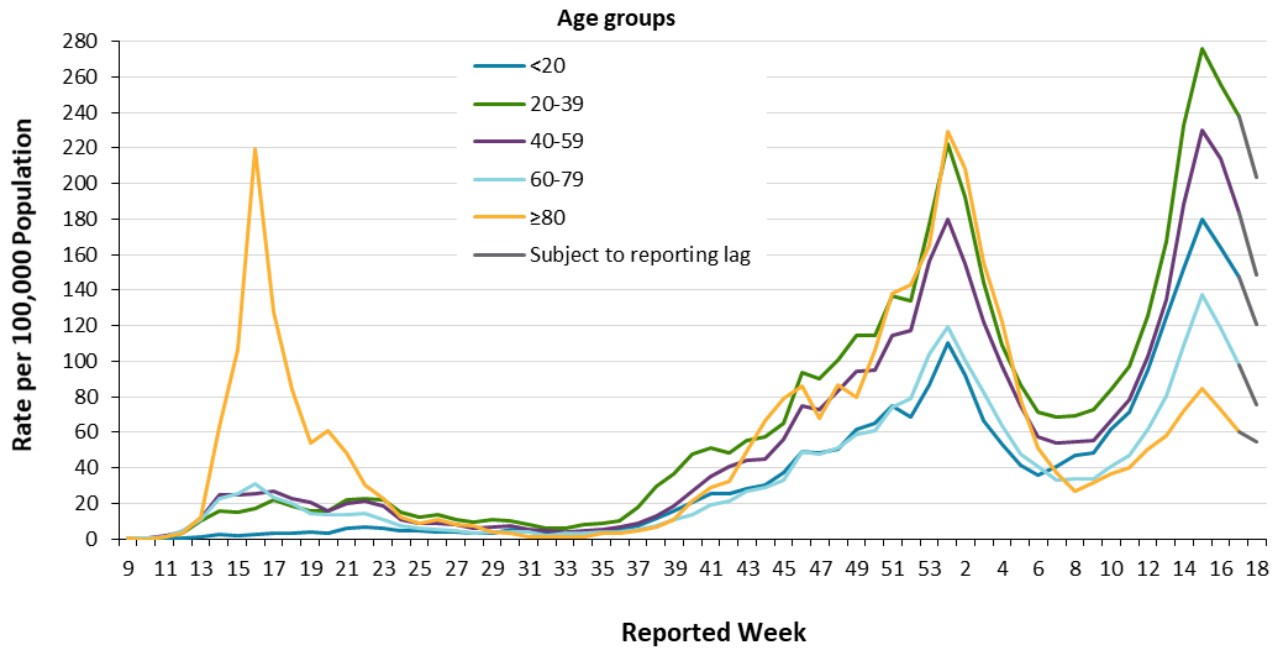
Figure 3. Percentage of confirmed cases of COVID-19 by gender and public health unit reported week: Ontario



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 18 (May 2 and 8, 2021). See [Table 1A](#) in Appendix A for a list of the weeks and corresponding start and end dates.

Data Source: CCM

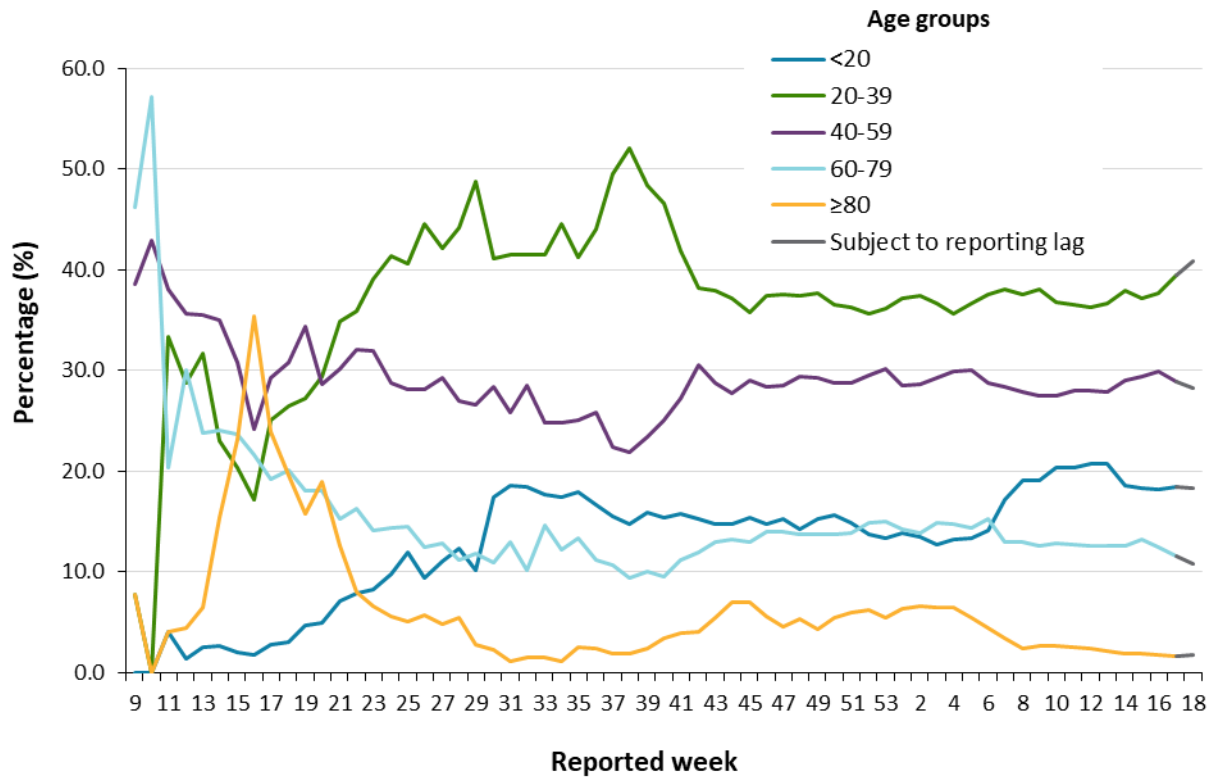
Figure 4a. Rate of confirmed cases of COVID-19 per 100,000 population by age group and public health unit reported week: Ontario



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 18 (May 2 and 8, 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

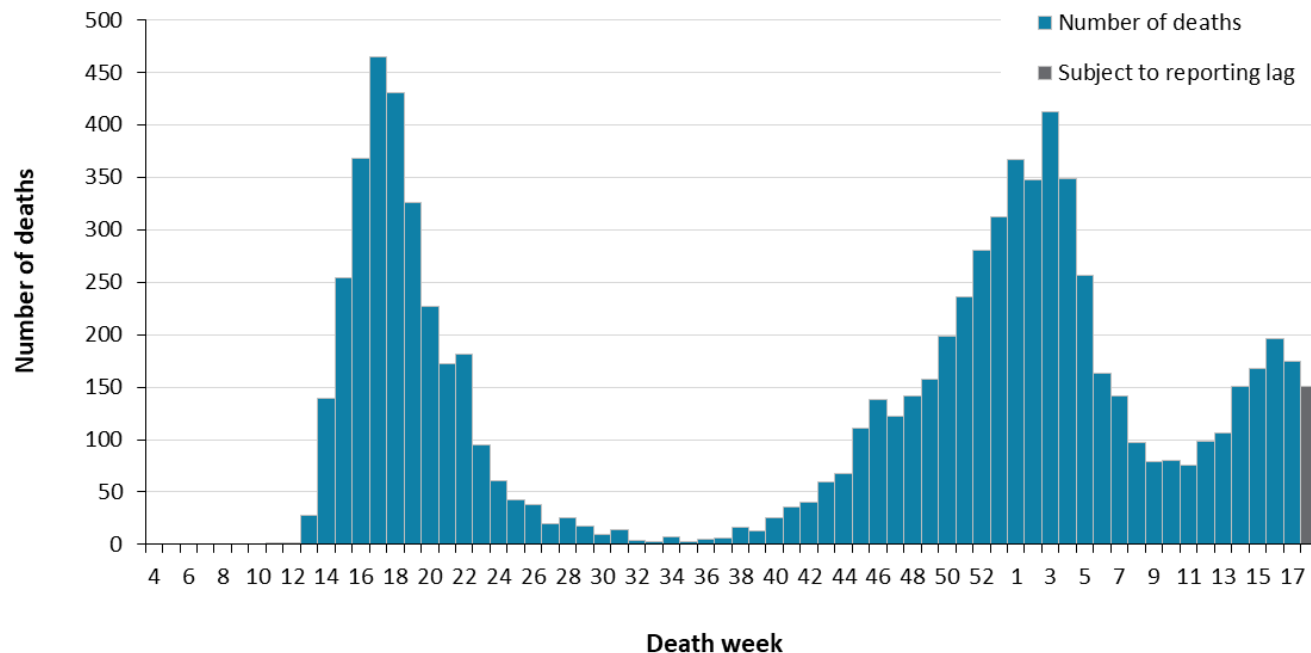


Note: Only weeks with more than 10 cases by public health unit reporting date are included (starting in week 9). Include cases with reported dates ranging from week 9 (February 23 and 29, 2020) to week 18 (May 2 and 8, 2021). See [Table 1A](#) in Appendix A for a list of the weeks and corresponding start 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 18 (May 2 and 8, 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 17 (April 25 to May 1)	Reported week 18 (May 2 to 8)	Cumulative case count up to May 8	Cumulative rate per 100,000 population
Number of deaths	70	29	8,371	56.3
Gender: Male	40	15	4,144	56.6
Gender: Female	29	11	4,164	55.2
Ages: 19 and under	0	1	4	0.1
Ages: 20-39	4	0	59	1.4
Ages: 40-59	6	5	431	10.9
Ages: 60-79	34	11	2,531	85.7
Ages: 80 and over	26	12	5,345	786.9

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 17 (April 25 to May 1)	Percentage	Reported week 18 (May 2 to 8)	Percentage	Cumulative case count up to May 8	Cumulative percentage
Travel	318	1.3%	228	1.1%	7,959	1.6%
Outbreak-associated or close contact of a confirmed case	12,867	51.5%	10,366	50.0%	294,595	59.7%
Epidemiological link – type unspecified	0	0.0%	0	0.0%	163	<0.1%
No known epidemiological link	8,569	34.3%	7,711	37.2%	139,910	28.3%
Information missing or unknown	3,247	13.0%	2,412	11.6%	51,224	10.4%
Total	25,001		20,717		493,851	

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 17 (April 25 to May 1)	Reported week 18 (May 2 to 8)	Cumulative case count up to May 8
Number of cases	368	304	22,624
Ever hospitalized	4	2	423
Ever in ICU	1	0	93

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 17 (April 25 to May 1)	Reported week 18 (May 2 to 8)	Cumulative case count up to May 8
Residents	37	33	15,212
Deaths among residents	3	0	3,936
Health care workers	33	27	7,025
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	56	9.3%	22	6.9%	78	8.5%
Partially vaccinated	138	23.0%	66	20.7%	204	22.2%
Not yet protected	407	67.7%	231	72.4%	638	69.3%
Total post-vaccination cases	601		319		920	

Note: Include cases reported from December 14, 2020 to May 10, 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

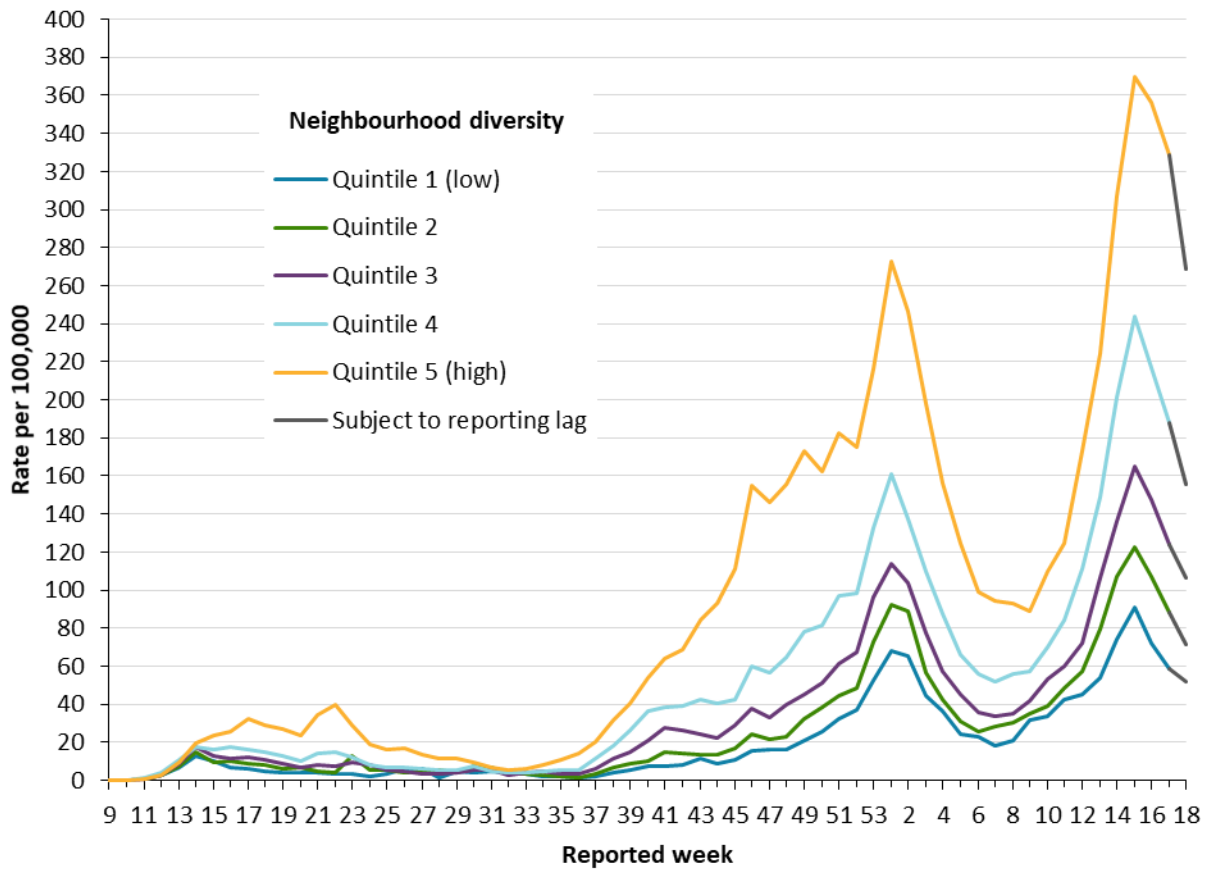
Table 7: Summary of cases of COVID-19 among school aged children by age group: Ontario

	Reported week 17 (April 25 to May 1)	Reported week 18 (May 2 to 8)	Cumulative case count from August 30 up to May 8
Ages: 4-8	879	715	14,000
Ages: 9-13	1,043	800	17,953
Ages: 14-17	1,080	938	18,097

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

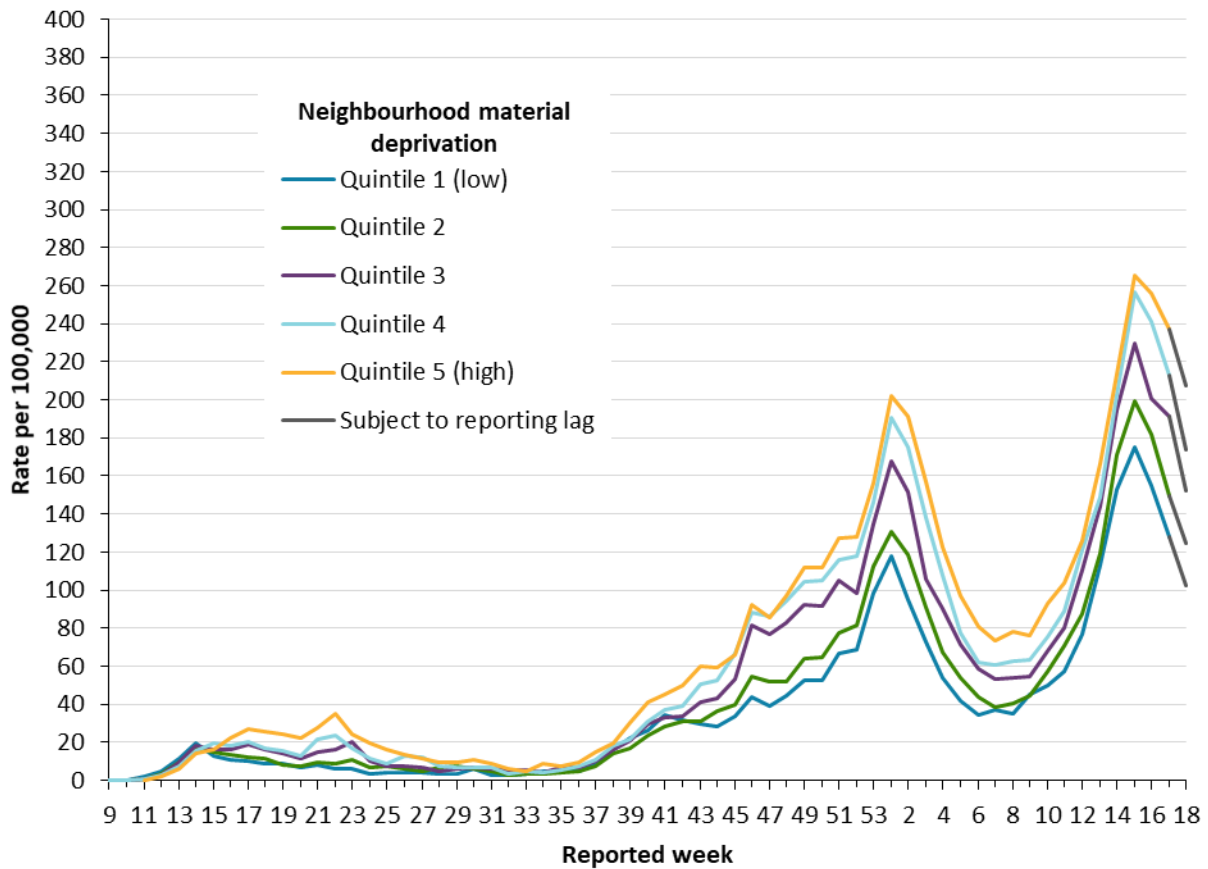
Figure 6. Rate of confirmed cases of COVID-19 per 100,000 population by quintile of neighbourhood diversity and public health unit reported week: Ontario



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 18 (May 2 to 8, 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

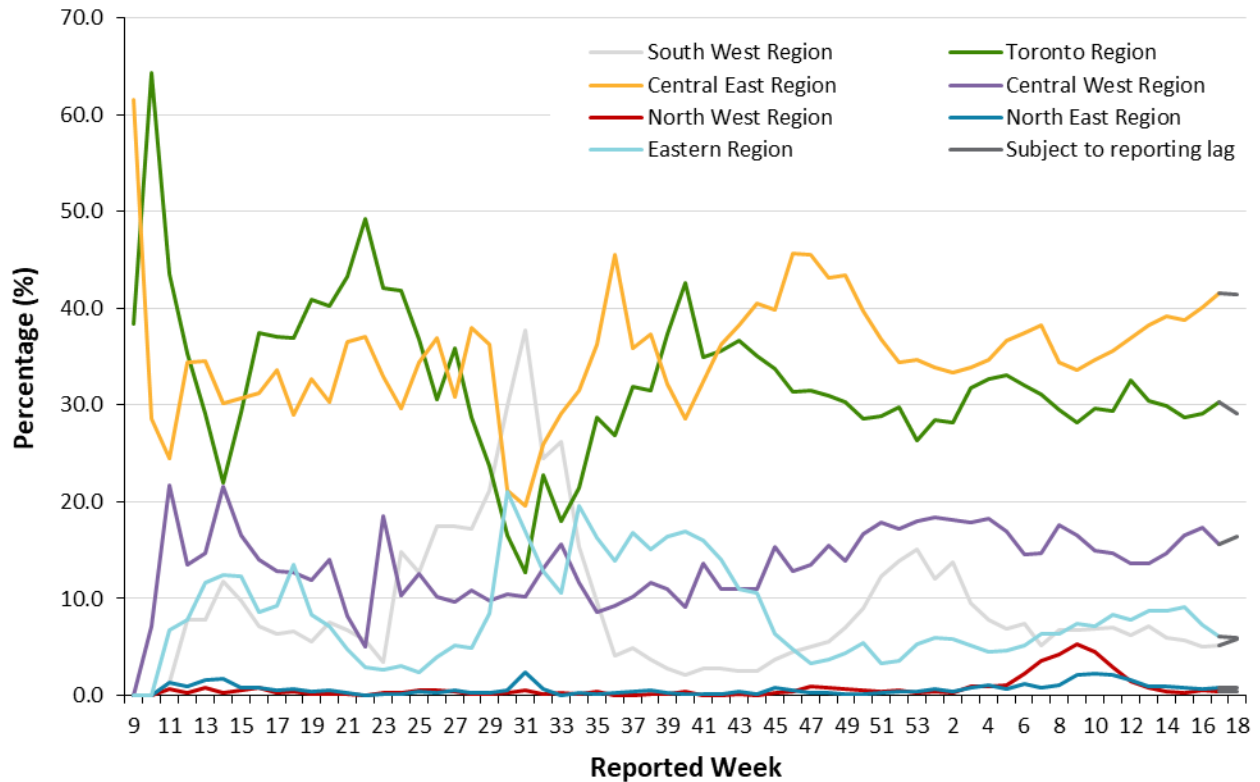


Note: Neighbourhood material deprivation is measured using the material deprivation dimension of the Ontario Marginalization Index. The material deprivation dimension uses Canadian census data on income, quality of housing, educational attainment and family structure characteristics to assess the ability 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 18 (May 2 to 8, 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

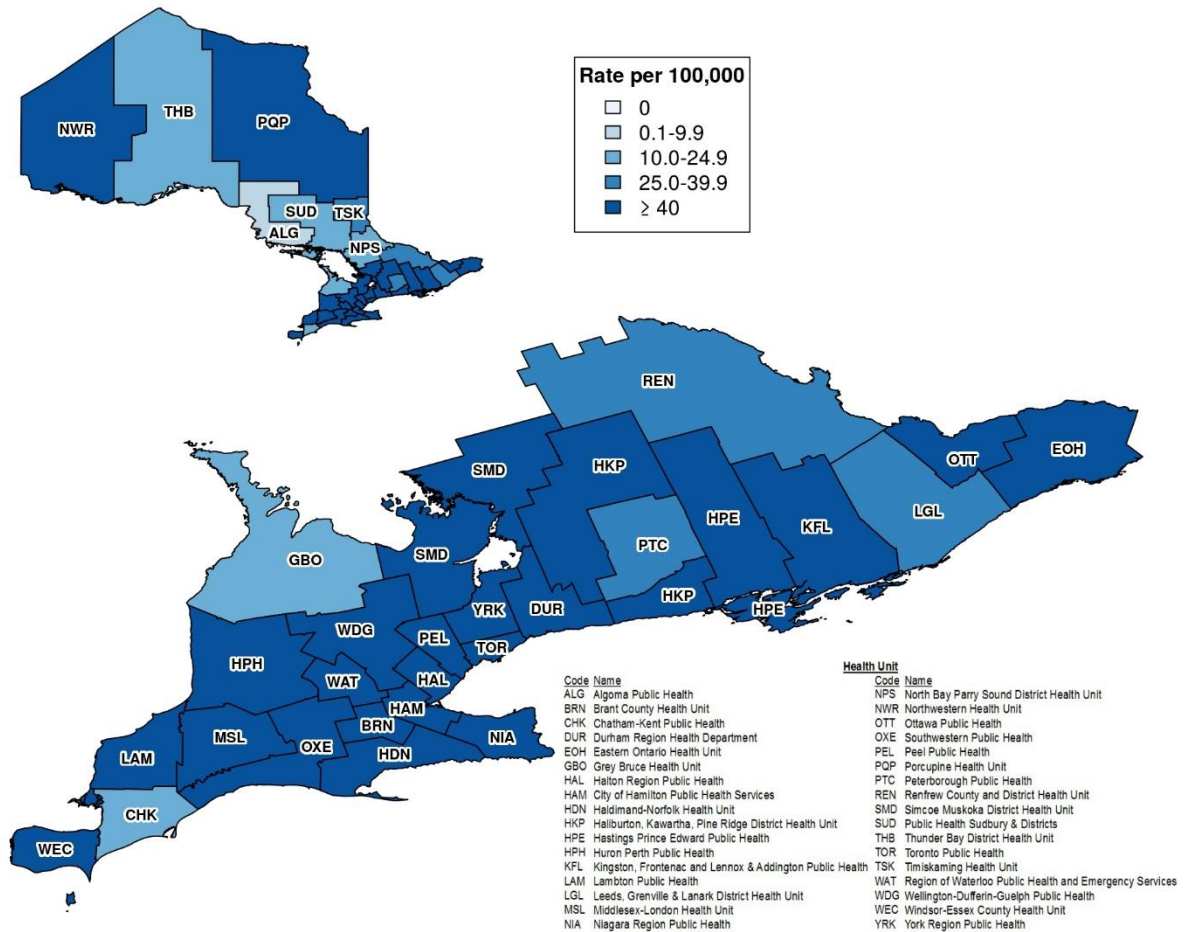
Figure 8. Percentage of COVID-19 cases by geographic region and public health unit reported week: Ontario



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 18 (May 2 and 8, 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 18 (May 2 to 8, 2021) by public health unit: Ontario



Note: The provincial rate of confirmed cases of COVID-19 reported in week 18 was 139.4 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 18 (May 2 to 8)	Number of ongoing outbreaks	Cumulative number of outbreaks reported to May 8
Congregate Care	24	94	2,853
Long-term care homes	4	38	1,450
Retirement homes	3	17	853
Hospitals	17	39	550
Congregate Living	23	74	1,185
Correctional facility	0	5	49
Shelter	6	23	242
Group Home/supportive housing	14	36	708
Short-term accommodations	1	4	33
Congregate other	2	6	153
Education	65	134	2,258
Child care	56	123	840
School – Elementary*	5	5	1,061
School – Elementary/secondary*	0	0	63
School – Secondary*	0	1	252
School – Post-secondary*	4	5	42
Other settings	145	376	3,561
Bar/restaurant/nightclub	16	28	277
Medical/health services	4	3	135
Personal service settings	0	1	27
Recreational fitness	1	1	86

Setting Type	Reported week 18 (May 2 to 8)	Number of ongoing outbreaks	Cumulative number of outbreaks reported to May 8
Retail	15	35	375
Other recreation/community	7	19	197
Workplace – Farm	8	16	192
Workplace - Food processing	4	20	222
Other types of workplaces	83	241	2,018
Other	3	8	9
Unknown	4	4	23
Total number of outbreaks	257	678	9,857

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 17 (April 25 to May 1)	Reported week 18 (May 2 to 8)	Cumulative number of cases
Congregate Care	246	226	39,060
Long-term care homes	109	83	25,756
Retirement homes	23	40	7,210
Hospitals	114	103	6,094
Congregate Living	129	94	8,721
Correctional facility	17	5	1,359
Shelter	38	35	2,485
Group Home/supportive housing	49	38	3,334
Short-term accommodations	13	4	165
Congregate other	12	12	1,378
Education	412	285	9,584
Child care	385	265	3,330
School – Elementary*	14	4	4,437
School – Elementary/secondary*	1	0	331
School – Secondary*	8	1	1,087
School – Post-secondary*	4	15	399
Other settings	1,346	1,003	27,945
Bar/restaurant/nightclub	53	51	1,209
Medical/health services	10	6	599
Personal service settings	2	0	106
Recreational fitness	3	3	695
Retail	97	50	1,874

Cases associated with the outbreak setting type	Reported week 17 (April 25 to May 1)	Reported week 18 (May 2 to 8)	Cumulative number of cases
Other recreation/community	76	126	2,467
Workplace - Farm	48	32	2,800
Workplace - Food processing	135	58	2,968
Other types of workplaces	881	617	14,999
Other	33	51	95
Unknown	8	9	133
Total number of cases	2,133	1,608	85,310

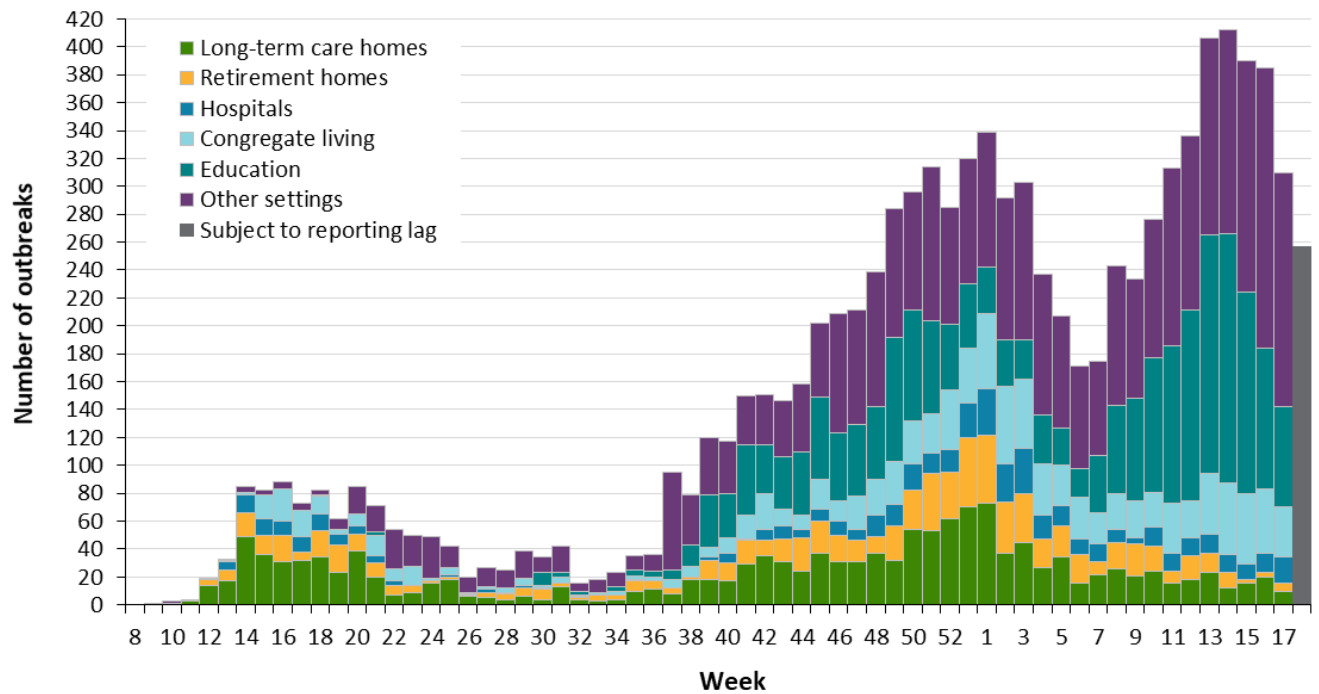
Note: Interpret case counts for the most recent week with caution due to reporting lags. Outbreak categories are mutually exclusive. Retail includes settings such as grocery stores, pharmacies, malls, etc. Other types of workplaces include settings such as offices as well as warehousing, shipping and 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 18 refers to May 2 and 8, 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 8, 2021
Gender: Male	48,981	284	885	16,564	66,714
Gender: Female	47,200	282	783	15,610	63,875
Ages: 19 and under	17,520	94	300	6,266	24,180
Ages: 20-39	36,022	193	580	12,199	48,994
Ages: 40-59	29,497	182	533	9,319	39,531
Ages: 60-79	12,129	84	223	3,985	16,421
Ages: 80 and over	1,793	15	45	704	2,557

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

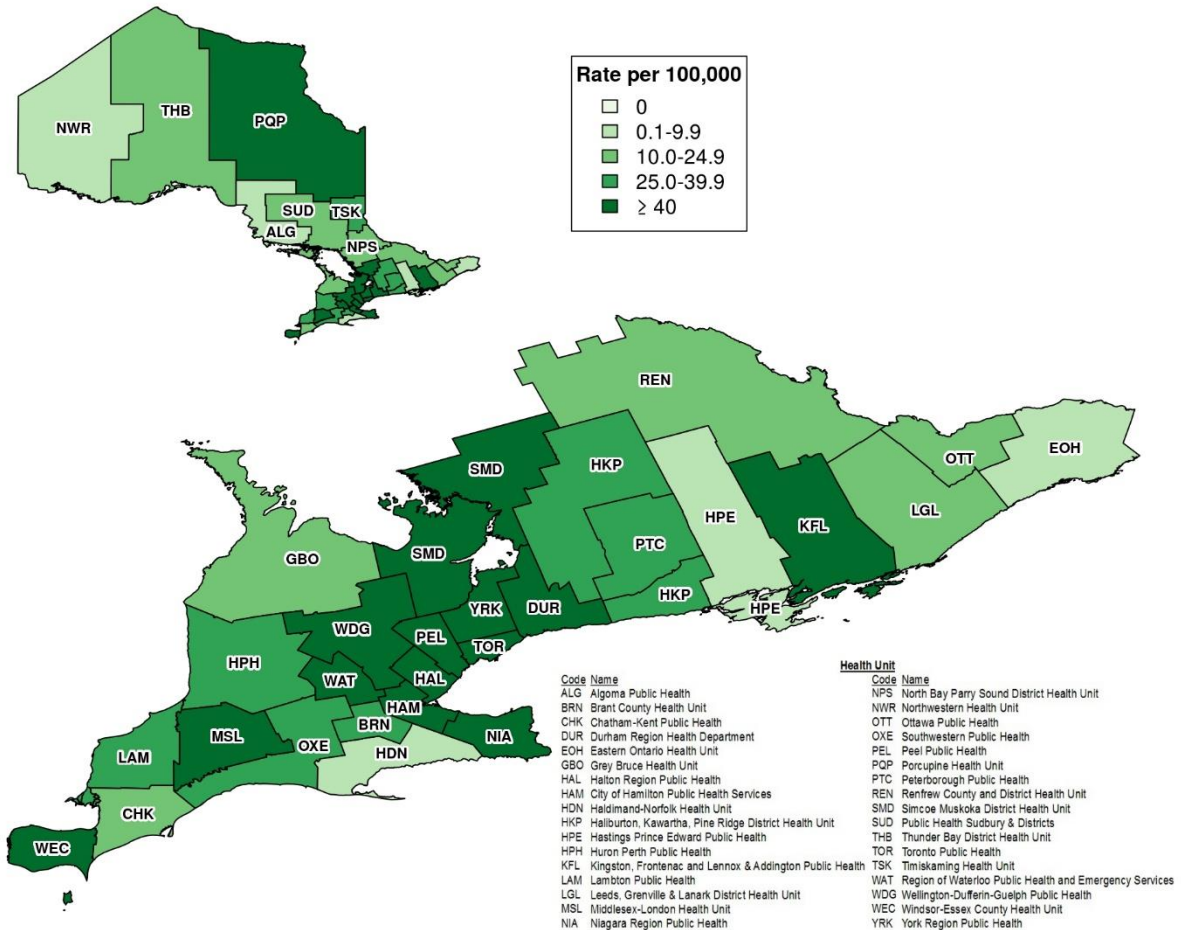
	Lineage B.1.1.7*	%	Lineage B.1.351	%	Lineage P.1	%	Mutations**	%	Cumulative case count up to May 8, 2021	Cumulative percentage
Travel	526	0.5%	16	2.8%	16	1.0%	356	1.1%	914	0.7%
Outbreak-associated or close contact of a confirmed case	53,100	54.8%	370	65.1%	1,083	64.4%	19,515	60.1%	74,068	56.2%
Epidemiological link – type unspecified	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
No known epidemiological link	34,457	35.5%	146	25.7%	493	29.3%	10,431	32.1%	45,527	34.6%
Information missing or unknown	8,885	9.2%	36	6.3%	89	5.3%	2,174	6.7%	11,184	8.5%
Total	96,968		568		1,681		32,476		131,693	

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 18 (May 2 to 8, 2021) by public health unit: Ontario

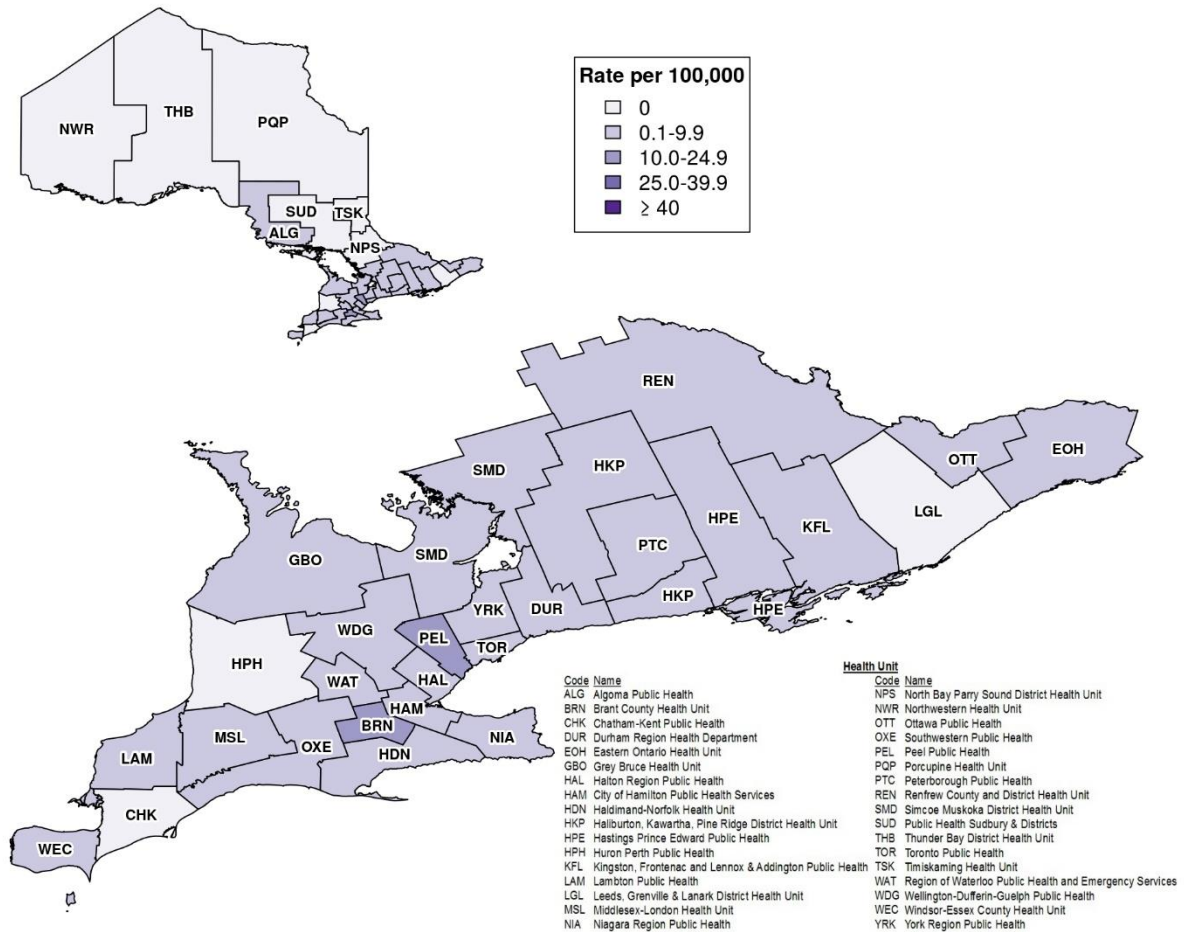


Note: The provincial rate of confirmed cases of COVID-19 with lineage B.1.1.7* reported in week 18 was 81.9 cases per 100,000 population. Changes to the VOC testing algorithm may impact counts and trends. Further details can be found in the data caveats section.

*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 18 (May 2 to 8, 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 18 was 5.7 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 11, 2021 at 1 p.m.** for cases reported in 2021 and as of **May 10, 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 10, 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 10, 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-CoV-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 where 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	147	178
12	March 15, 2020	March 21, 2020	436	614
13	March 22, 2020	March 28, 2020	1,307	1,921
14	March 29, 2020	April 4, 2020	2,778	4,699
15	April 5, 2020	April 11, 2020	3,133	7,832
16	April 12, 2020	April 18, 2020	4,205	12,037
17	April 19, 2020	April 25, 2020	3,631	15,668
18	April 26, 2020	May 2, 2020	2,889	18,557
19	May 3, 2020	May 9, 2020	2,344	20,901
20	May 10, 2020	May 16, 2020	2,192	23,093
21	May 17, 2020	May 23, 2020	2,614	25,707
22	May 24, 2020	May 30, 2020	2,599	28,306
23	May 31, 2020	June 6, 2020	2,304	30,610

Reported Week	Start date	End date	Number of cases	Cumulative count
24	June 7, 2020	June 13, 2020	1,473	32,083
25	June 14, 2020	June 20, 2020	1,229	33,312
26	June 21, 2020	June 27, 2020	1,250	34,562
27	June 28, 2020	July 4, 2020	1,084	35,646
28	July 5, 2020	July 11, 2020	869	36,515
29	July 12, 2020	July 18, 2020	930	37,445
30	July 19, 2020	July 25, 2020	991	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	7,610	84,565
46	November 8, 2020	November 14, 2020	10,429	94,994
47	November 15, 2020	November 21, 2020	9,990	104,984
48	November 22, 2020	November 28, 2020	11,124	116,108

Reported Week	Start date	End date	Number of cases	Cumulative count
49	November 29, 2020	December 5, 2020	12,686	128,794
50	December 6, 2020	December 12, 2020	13,056	141,850
51	December 13, 2020	December 19, 2020	15,656	157,506
52	December 20, 2020	December 26, 2020	15,626	173,132
53	December 27, 2020	January 2, 2021	20,444	193,576
1	January 3, 2021	January 9, 2021	24,864	218,440
2	January 10, 2021	January 16, 2021	21,370	239,810
3	January 17, 2021	January 23, 2021	16,394	256,204
4	January 24, 2021	January 30, 2021	12,733	268,937
5	January 31, 2021	February 6, 2021	9,774	278,711
6	February 7, 2021	February 13, 2021	7,893	286,604
7	February 14, 2021	February 20, 2021	7,456	294,060
8	February 21, 2021	February 27, 2021	7,677	301,737
9	February 28, 2021	March 6, 2021	7,933	309,670
10	March 7, 2021	March 13, 2021	9,477	319,147
11	March 14, 2021	March 20, 2021	11,027	330,174
12	March 21, 2021	March 27, 2021	14,403	344,577
13	March 28, 2021	April 3, 2021	18,959	363,536
14	April 4, 2021	April 10, 2021	25,577	389,113
15	April 11, 2021	April 17, 2021	30,812	419,925
16	April 18, 2021	April 24, 2021	28,208	448,133
17	April 25, 2021	May 1, 2021	25,001	473,134
18	May 2, 2021	May 8, 2021	20,717	493,851

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

Public Health Unit Name	Cases reported week 17	Rate per 100,000 population Reported week 17	Cases reported week 18	Rate per 100,000 population Reported week 18
Northwestern Health Unit	70	79.8	51	58.2
Thunder Bay District Health Unit	34	22.7	34	22.7
TOTAL NORTH WEST	104	43.8	85	35.8
Algoma Public Health	19	16.6	10	8.7
North Bay Parry Sound District Health Unit	16	12.3	30	23.1
Porcupine Health Unit	78	93.5	73	87.5
Public Health Sudbury & Districts	64	32.2	45	22.6
Timiskaming Health Unit	20	61.2	12	36.7
TOTAL NORTH EAST	197	35.2	170	30.4
Ottawa Public Health	1,160	110.0	853	80.9
Eastern Ontario Health Unit	128	61.3	103	49.4
Hastings Prince Edward Public Health	68	40.4	71	42.1
Kingston, Frontenac and Lennox & Addington Public Health	67	31.5	121	56.9
Leeds, Grenville & Lanark District Health Unit	52	30.0	44	25.4
Renfrew County and District Health Unit	43	39.6	34	31.3
TOTAL EASTERN	1,518	78.8	1,226	63.6
Durham Region Health Department	1,508	211.7	1,198	168.2

Public Health Unit Name	Cases reported week 17	Rate per 100,000 population Reported week 17	Cases reported week 18	Rate per 100,000 population Reported week 18
Haliburton, Kawartha, Pine Ridge District Health Unit	69	36.5	92	48.7
Peel Public Health	5,841	363.7	4,758	296.3
Peterborough Public Health	62	41.9	58	39.2
Simcoe Muskoka District Health Unit	570	95.1	457	76.2
York Region Public Health	2,343	191.1	2,028	165.4
TOTAL CENTRAL EAST	10,393	232.0	8,591	191.7
Toronto Public Health	7,585	243.1	6,030	193.2
TOTAL TORONTO	7,585	243.1	6,030	193.2
Chatham-Kent Public Health	29	27.3	26	24.5
Grey Bruce Health Unit	48	28.3	34	20.0
Huron Perth Public Health	30	21.5	72	51.5
Lambton Public Health	70	53.4	70	53.4
Middlesex-London Health Unit	681	134.2	602	118.6
Southwestern Public Health	113	53.4	117	55.3
Windsor-Essex County Health Unit	329	77.4	293	69.0
TOTAL SOUTH WEST	1,300	76.9	1,214	71.8
Brant County Health Unit	174	112.1	161	103.7
City of Hamilton Public Health Services	1,069	180.5	969	163.6
Haldimand-Norfolk Health Unit	136	119.2	116	101.7
Halton Region Public Health	908	146.7	802	129.5

Public Health Unit Name	Cases reported week 17	Rate per 100,000 population Reported week 17	Cases reported week 18	Rate per 100,000 population Reported week 18
Niagara Region Public Health	867	183.5	691	146.2
Region of Waterloo Public Health and Emergency Services	451	77.2	394	67.4
Wellington-Dufferin-Guelph Public Health	299	95.9	268	85.9
TOTAL CENTRAL WEST	3,904	137.0	3,401	119.4
TOTAL ONTARIO	25,001	168.2	20,717	139.4

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 8 for Lineage B.1.1.7*	Cumulative case count up to May 8 for Lineage B.1.351	Cumulative case count up to May 8 for Lineage P.1	Cumulative count up to May 8 for Mutations**
Northwestern Health Unit	32	0	1	26
Thunder Bay District Health Unit	20	0	0	41
TOTAL NORTH WEST	52	0	1	67
Algoma Public Health	45	0	0	23
North Bay Parry Sound District Health Unit	89	27	0	15
Porcupine Health Unit	165	2	0	9
Public Health Sudbury & Districts	440	3	0	413
Timiskaming Health Unit	75	1	0	0
TOTAL NORTH EAST	814	33	0	460
Ottawa Public Health	4,578	134	9	722
Eastern Ontario Health Unit	562	23	3	295
Hastings Prince Edward Public Health	19	0	1	374
Kingston, Frontenac and Lennox & Addington Public Health	327	0	21	137
Leeds, Grenville & Lanark District Health Unit	257	9	0	38
Renfrew County and District Health Unit	144	2	0	23
TOTAL EASTERN	5,887	168	34	1,589
Durham Region Health Department	7,504	19	82	1,056
Haliburton, Kawartha, Pine Ridge District Health Unit	263	0	7	202

Public Health Unit Name	Cumulative case count up to May 8 for Lineage B.1.1.7*	Cumulative case count up to May 8 for Lineage B.1.351	Cumulative case count up to May 8 for Lineage P.1	Cumulative count up to May 8 for Mutations**
Peel Public Health	21,036	66	493	5,209
Peterborough Public Health	340	0	1	165
Simcoe Muskoka District Health Unit	2,780	17	78	857
York Region Public Health	12,181	21	176	2,698
TOTAL CENTRAL EAST	44,104	123	837	10,187
Toronto Public Health	25,944	206	639	15,607
TOTAL TORONTO	25,944	206	639	15,607
Chatham-Kent Public Health	74	4	3	111
Grey Bruce Health Unit	240	0	3	42
Huron Perth Public Health	93	0	0	70
Lambton Public Health	320	0	4	84
Middlesex-London Health Unit	2,151	0	20	285
Southwestern Public Health	506	0	2	78
Windsor-Essex County Health Unit	1,137	4	5	92
TOTAL SOUTH WEST	4,521	8	37	762
Brant County Health Unit	437	0	18	422
City of Hamilton Public Health Services	4,160	11	18	1,056
Haldimand-Norfolk Health Unit	289	0	5	325
Halton Region Public Health	4,036	16	55	566
Niagara Region Public Health	2,943	0	3	974
Region of Waterloo Public Health and Emergency Services	2,129	3	17	274

Public Health Unit Name	Cumulative case count up to May 8 for Lineage B.1.1.7*	Cumulative case count up to May 8 for Lineage B.1.351	Cumulative case count up to May 8 for Lineage P.1	Cumulative count up to May 8 for Mutations**
Wellington-Dufferin-Guelph Public Health	1,652	0	17	187
TOTAL CENTRAL WEST	15,646	30	133	3,804
TOTAL ONTARIO	96,968	568	1,681	32,476

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)

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