Public Health Ontario | Santé publique Ontario

TECHNICAL NOTES

Ontario Respiratory Virus Tool

Updated: October 3, 2025

Introduction

The Ontario Respiratory Virus Tool allows users to select, overlap and analyze multiple respiratory pathogen data sets from Ontario, as well as view highlights and reported COVID-19, influenza and respiratory syncytial virus (RSV) activity for the current week.

Data Sources Overview

- **Laboratory testing (number of tests, percent positivity):** Data for all respiratory viruses are based on information received from the Ontario Laboratories Information System (OLIS). These data are included for testing from December 29, 2019 onwards and processed weekly at Public Health Ontario (PHO). Data prior to June 1, 2025 are fixed. Data from June 1, 2025 onwards are reprocessed weekly to capture updates to previous weeks. For more information, refer to the Laboratory Testing section.
- **Cases:** The methodology and data sources for counting cases has changed over time.
  - **OLIS-Derived:** Data for COVID-19 and influenza cases are derived from the same OLIS dataset used for laboratory testing (above). OLIS-Derived case data are available from September 21, 2025 onwards for influenza and from June 2, 2024 onwards for COVID-19. For more information, refer to the Cases: OLIS-Derived section.
  - **Public health unit (PHU) Reported (from the integrated Public Health Information System (iPHIS)/CCM):** Data for confirmed influenza cases were previously obtained from iPHIS or via direct aggregate reporting to PHO; these data are available up to September 20, 2025. Data for COVID-19 cases were obtained from CCM up to June 1, 2024. For more information, refer to the Cases: PHU Reported section.
- **Outbreaks:** Data for respiratory infection outbreaks for the current surveillance period are based on information extracted weekly from iPHIS by PHO. Data for previous surveillance periods (2016–17 to 2024–25) were extracted on September 24, 2025. COVID-19 outbreaks created up to June 1, 2024 were extracted from the Public Health Case and Contact Management Solution (CCM) on June 27, 2024. For more information, refer to the Outbreaks section.
- **COVID-19 Deaths:** Data for COVID-19 cases with fatal outcomes are based on data extracted from iPHIS by PHO for records created after June 1, 2024. Data on fatal cases created up to June 1, 2024 were extracted from CCM on June 27, 2024. For more information, refer to the COVID-19 Deaths section.

- **Projections for SARS-CoV-2, influenza and RSV**: Projections of respiratory virus activity and hospitalization risk for SARS-CoV-2, influenza and RSV are obtained from the PHO weekly surveillance report Integrated Respiratory Virus Risk Indicators for Ontario.[1] Refer to this report for more details on these projections, including information on data sources and methods, and refer to the Projections section in this document for other relevant caveats.
- **Influenza strain characterization and antiviral susceptibility:** These data are received weekly from the Public Health Agency of Canada's (PHAC) National Microbiology Laboratory Branch (NMLB). For more information, refer to the Influenza Strain Characterization section.
- **Hospital admissions:** These hospital admissions (I9) data are obtained from the Ministry of Health each week for COVID-19, influenza and RSV. For more information, refer to the Hospital Admissions section.
- **Hospital bed occupancy**: These bed census (I9) data are obtained from the Ministry of Health each week for COVID-19, influenza and RSV. For more information including details on when data components became available, refer to the Hospital bed occupancy section.
- **ICU bed occupancy**: These data are from the Critical Care Information System (CCIS), provided by CritiCall Ontario. For more information, refer to the Hospital ICU Bed Occupancy section.
- **Ontario population data**: Population estimates were received from Statistics Canada for the years 2016–2024,[2] and population projections were received from the Ontario Ministry of Finance for the years 2025–2026.[3]

Table 1: Data Source and Available Dates for Case Indicators

Indicator	Data Source	Dates
COVID-19 Cases	CCM	Reported up to June 1, 2024 Last extracted June 27, 2024
COVID-19 Cases	OLIS	Reported from June 2, 2024 onwards
COVID-19 Deaths	CCM	Reported up to June 1, 2024
COVID-19 Deaths	iPHIS	Reported from June 2, 2024 onwards
Influenza Cases	iPHIS/Aggregate reporting*	Reported up to September 20, 2025 Last extracted September 24, 2025
Influenza Cases	OLIS	Reported from September 21, 2025 onwards

*Influenza cases were formerly reported exclusively via iPHIS with exception for two PHUs that reported counts in aggregate, starting in March 2020 and December 2023. From October 13, 2024 to September 20, 2025, additional PHUs reported influenza counts in aggregate directly to PHO.

Data Notes and Caveats

- Observed trends over time should be interpreted with caution for the most recent period due to reporting and/or data entry lags.
- All counts for influenza and COVID-19 are subject to varying degrees of underreporting and may be an underestimate of the true number of individuals with the disease 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, access to testing and reporting behaviours. As such, data should be interpreted with caution.
- iPHIS and OLIS are dynamic reporting systems which allow ongoing updates to data previously entered. As a result, data extracted from these information systems represent a snapshot at the time of extraction and may differ from previous or subsequent reports. In particular, data from the most recent weeks may be incomplete due to reporting lags.
- OLIS is a comprehensive data source which includes all testing conducted by laboratories in Ontario. Test methods and report formats are inconsistent across labs and change over time. To address this, the OLIS data are cleaned and processed using a modified version of the method developed by IC/ES (COVID19_processing.ipynb).[4] This method derives the viruses being tested for and the associated results from highly variable result text. It is possible that a small proportion of results may be incorrectly assigned to viruses during PHO's weekly data processing.
- Data extracted from iPHIS including COVID-19 deaths as well as outbreaks of COVID-19 and respiratory infection outbreaks in institutions or public hospitals are updated weekly for the current surveillance period. Data for earlier surveillance periods are updated annually.
- PHU reported case data represents cases that got tested and/or were reported to PHUs and recorded in a provincial reporting system. The provincial reporting system(s) used as the data source for indicators have changed over time. Refer to Table 1 for the data source and dates relevant to case indicators.
- Due to differences in reporting timeframes, indicator presented here may not align with similarly defined indicators presented on PHU websites. Where discrepancies exist, data presented on the PHU's website should be considered the most accurate.
- Effective January 1, 2025, the Ontario Ministry of Health approved the voluntary merger of nine local PHUs into four entities. We have incorporated the new names of these health entities in the ORVT as of October 3, 2025. Retroactive updates for PHU mergers are only made within the tool's graphs and associated data extracts. Activity level data for public health units that have merged over time will not be available in the map view. Refer to Table 2 for a summary of the changes.
- Surveillance periods start from approximately September 1 of one year and end August 31 of the following year. In online tools and graphs depicting respiratory virus data by surveillance week, the surveillance week typically containing September 1 (week 35) is used as the first week of the surveillance period.
    - Surveillance weeks correspond to the FluWatch Public Health Agency of Canada (PHAC) influenza surveillance weeks.[5]
    - The 2020–21 and 2025–26 surveillance periods include a week 53, which occurs once every five to six years. In 2025–26, week 53 corresponds to the period from December 28, 2025 to January 3, 2026. In 2020–21, week 53 corresponded to the period from December 27, 2020 to January 2, 2021.

- For indicators where cumulative rates were calculated, the start year for the surveillance period was used to determine the year for the population count used as the denominator. For example, for the 2025–26 surveillance period, the cumulative case rate is calculated using the 2025 population projections as the denominator.
- Records with unknown or missing ages were excluded from age-specific analyses.

Activity: COVID-19, Influenza and RSV

Percent Positivity Level and Weekly Indicator Change Data Sources

- COVID-19 and influenza are diseases of public health significance in Ontario and are therefore reportable to the province per Ontario Regulation (O. Reg.) 135/18 (Designation of Diseases) and amendments under the Health Protection and Promotion Act (HPPA). [6,7] As of July 1, 2024, PHUs are only required to report COVID-19 cases with fatal outcomes in iPHIS. Other respiratory viruses, including RSV, are only reportable in summary outbreak counts if they are the aetiologic agent responsible for respiratory infection outbreaks in institutions and public hospitals.
- Respiratory virus percent positivity level (e.g. low, high) is based on laboratory data.
- Weekly indicator change assessment was determined by considering a combination of indicators as detailed in Appendix A for COVID-19, Appendix B for influenza and Appendix C for RSV.
- Indicators and data sources for respiratory virus percent positivity level thresholds and weekly indicator changes have changed over time. For more information about OLIS data in this tool, refer to the Laboratory Testing section, as well as Appendix E.

Percent Positivity Levels

- Respiratory percent positivity levels for COVID-19, influenza and RSV are developed by PHO and are used to monitor respiratory virus activity. For simplicity, percent positivity, as a single measure, was selected instead of a composite indicator using multiple measures, as this metric generally trends closely with case counts and outbreaks. These levels are reviewed every two years to adjust for changes in testing eligibility and algorithm that can affect testing volumes and thus percent positivity.
- For surveillance purposes, COVID-19, influenza and RSV are assigned to a percent positivity level of low, moderate, high, and very high to provide a snapshot of the extent to which these respiratory viruses are circulating. These may differ from levels that PHAC uses at the national level.
- Percent positivity is calculated from the number of positive tests divided by the total number of tests performed in a given time period. Testing eligibility for COVID-19, influenza and RSV differ along with the number of tests performed.
- For the most up to date information on testing eligibility in Ontario, refer to the provincial testing guidance for COVID-19 and the PHO Laboratory's guidance for influenza and RSV.[8,9] For the most up to date information on seasonal respiratory viruses tested at PHO, refer to PHO's laboratory respiratory testing algorithm.[9]
- Provincial COVID-19 percent positivity levels were last reviewed September 2024 and are defined as follows:
  - Low: <10.0% positivity
  - Moderate: 10.0%–16.9% positivity
  - High: 17.0%–24.9% positivity
  - Very high: ≥25.0% positivity

- Provincial influenza (i.e., influenza A & B combined) percent positivity levels were last reviewed September 2024 and are defined as follows:
  - Low: <10.0% positivity
  - Moderate: 10.0%–16.9% positivity
  - High: 17.0%–24.9% positivity
  - Very high: ≥25.0% positivity
- Provincial RSV percent positivity levels were developed September 2024 and are defined as follows:
  - Low: <5.0% positivity
  - Moderate: 5.0%–9.9% positivity
  - High: 10.0%–14.9% positivity
  - Very high: ≥15.0% positivity
- The threshold for the start of seasonal influenza activity is a provincial percent positivity level ≥5%. The threshold for inter-seasonal activity is when the provincial percent positivity level is <5%. This aligns with national seasonal thresholds.[10]
- Percent positivity levels for influenza were updated for the 2024–25 surveillance period because the review of the 2023–24 levels identified strong rationale for aligning with levels for COVID-19 for 2024–25 (e.g., changes in testing).
- RSV percent positivity levels were developed for the first time for the 2024–25 surveillance period using RSV percent positivity values reported in the previous five seasons (2019–20 to 2023–24). RSV-specific percent positivity levels were deemed necessary as weekly percent positivity for RSV is generally lower than those for COVID-19 and influenza, particularly in post-pandemic seasons. Percent positivity levels for RSV will be reviewed annually and updated as needed.
- COVID-19 percent positivity levels were developed using the following approach:
  - COVID-19 percent positivity levels were developed initially for the 2022–23 surveillance period. COVID-19 percent positivity values reported in 2022 were evaluated against the PHO-developed percent positivity levels for pre-pandemic influenza and other respiratory viruses. It was determined that COVID-19-specific percent positivity levels should be developed because percent positivity for COVID-19 was lower than the percent positivity values that had been used for setting the levels for influenza.
  - The percent positivity levels have been adjusted and narrowed based on observed COVID-19 percent positivity levels throughout the pandemic. For example, during the Omicron surge (wave 5), the Ontario health system experienced an overwhelming number of cases and higher than usual hospital occupancy; the weekly percent positivity at this time reached an all-time high of over 29.4%, which provided the additional context for setting the very high range as ≥25%. After reviewing the minimum, maximum and median percent positivity values, percent positivity levels were selected and these were reviewed by the Ministry of Health and local public health unit partners prior to being finalized.
  - Levels were reviewed ahead of the 2024–25 surveillance period and no updates were required.
- Percent positivity levels were developed for surveillance and situational awareness purposes. Decisions regarding public health action and/or infection prevention and control should not solely rely on percent positivity level thresholds as context specific indicators should be considered (e.g., the group at risk, current trajectory of trends, immunization coverage, transmissibility, severity, risk tolerance, as well as local factors such as health care capacity and access to care, current measures in place, etc.).
- Provincial percent positivity may not reflect the higher levels of activity that may be occurring disproportionately in select sub-populations at a given time.

PHU Activity Levels: Influenza

- PHO calculates influenza activity levels weekly for each PHU using case data, and laboratory-confirmed influenza outbreaks in institutions and public hospitals. Influenza PHU activity levels are not updated once they have been assigned. Currently, COVID-19 and RSV activity levels are not calculated at the health unit level.
    - Due to data entry lags in iPHIS, the influenza PHU activity level reported may, in some instances, not align with a PHU's true activity level.
- Influenza public health unit activity levels calculated for a particular surveillance week may not necessarily correspond to the number of new outbreaks reported in the same week because ongoing outbreaks from previous weeks are also counted.
- Activity level data for public health units that have merged over time will not be available in the map view because their formerly separate health units are not available for map display. Refer to Table 2 below for a timeline of data availability for impacted health units.

Table 2: Merged Public Health Units and Data Availability in Maps

Current Health Unit	Former Health Units	Surveillance Period Data is Available From
Southwestern Health Unit	Elgin-St. Thomas Health Unit Oxford County Health Unit	2018–19
Huron Perth Public Health	Huron Public Health Perth Public Health	2020–21
Grand Erie Public Health	Brant County Health Unit Haldimand-Norfolk Health Unit	2025–26
Lakelands Public Health	Haliburton, Kawartha, Pine Ridge District Health Unit Peterborough Public Health	2025–26
Northeastern Public Health	Porcupine Health Unit Timiskaming Health Unit	2025–26
South East Health Unit	Hastings Prince Edward Public Health Kingston, Frontenac and Lennox & Addington Public Health Leeds, Grenville & Lanark District Health Unit	2025–26

- The Public Health Agency of Canada (PHAC) FluWatch activity level definitions[11] form the basis of the PHO weekly activity level assessment. There are four levels of activity that PHO may assign to a PHU each surveillance week, which is defined as the preceding week from Sunday to Saturday, inclusive:
  - **No activity:** No influenza cases reported* and no ongoing laboratory-confirmed influenza outbreaks in an institution (e.g., LTCHs, retirements homes, etc.) or public hospital.
  - **Sporadic**: At least one influenza case* with no ongoing laboratory-confirmed influenza outbreaks in an institution or public hospital.
  - **Localized**: At least one ongoing laboratory-confirmed influenza outbreak in an institution or public hospital during the surveillance week even if the outbreak was declared over on the first day of the surveillance week.
  - **Widespread:** Multiple ongoing laboratory-confirmed influenza outbreaks in institutions or public hospitals separated by some geographic distance, in other words, non-adjacent areas. For a PHU to be assessed as having "widespread" activity:
    - At least 10% of the total number of institutions or public hospitals in PHUs with 30 or more of these facilities must be experiencing an ongoing influenza outbreak.
    - At least 15% of the total number of institutions or public hospitals in PHUs with fewer than 30 of these facilities must be in an active influenza outbreak.

  *Confirmation of influenza within the surveillance area at any time within the surveillance week, which is based on the sample collection date.

Influenza Strain Characterization and Antiviral Susceptibility

- Influenza strain characterization is completed for influenza positive isolates received by the National Microbiology Laboratory (NML) from laboratories across Canada, with data available in the tool for Ontario and nationally. The data are cumulative and includes isolates from September 1 of the current season to date.
- Changes in circulating influenza viruses are monitored by antigenic characterization. Antigenic characterization results show how similar the circulating viruses are to reference viruses. Reference viruses represent strains included in the current seasonal influenza vaccine.
- Antiviral susceptibility testing is also completed for isolates received by the NML, with data available in the tool for Ontario and nationally. Oseltamivir and Zanamavir are the two antiviral drugs monitored, with susceptibility categorized as either resistant or susceptible.

Projections: COVID-19, Influenza and RSV

- Projections of activity and risk of hospitalization pertaining to SARS-CoV-2, influenza and RSV are highlighted in the ORVT. The short-term projections use laboratory testing and hospitalization data to show how pathogen-specific activity and combined hospitalization risk occurring in the overall, pediatric (< 18 years), adult (18–64 years), and senior (65+ years) populations might change over the next two weeks.
- Projections shown in the ORVT are intended to provide situational awareness of potential near-term changes in respiratory virus activity in the province. These projections should be used in combination with context-specific indicators (e.g., the group at risk, current trajectory of trends, immunization coverage), consideration of local factors (e.g., health care capacity and access to care), and other measures for assessing respiratory virus activity (e.g., wastewater concentration for SARS-CoV-2, hospital admissions).
- For further details on the projections of respiratory virus activity and hospitalization risk, the methodology used to create these indicators, and how changes are assessed, refer to the Integrated Respiratory Virus Risk Indicators report.[1]

Laboratory Testing Data: All Respiratory Viruses

- Due to phased onboarding of laboratories reporting SARS-CoV-2 tests into OLIS, data may be incomplete for the early months of the COVID-19 pandemic.
- Testing eligibility and laboratory testing algorithms may vary over time, which may affect trends in testing volumes, and the ability to compare trends over surveillance periods.
    - For the most up to date information on testing eligibility, refer to the provincial testing guidance for SARS-CoV-2 and Public Health Ontario's laboratory's guidance for influenza and RSV.[8,9]
- Surveillance week is assigned based on the sample collection date, if available; otherwise, it is based on the sample received or test date.
- A person may have tests on different days. As a result, the number of tests performed may not reflect the number of persons tested and the percentage of tests that were positive may not translate to the number of specimens or persons testing positive.
- Only one test result per person per day is retained based on a hierarchy developed by PHO.
- Each test is assigned to a PHU based on postal code using the following hierarchy: postal code of the tested individual > practitioner postal code > reporting lab postal code. This approach could lead to test results being assigned to a different PHU from where an individual resides.

Cases: COVID-19 and Influenza

OLIS-Derived

- Data for COVID-19 and influenza cases are currently derived from the same OLIS dataset used for laboratory testing (above). For more information about OLIS and laboratory testing, refer to the Laboratory Testing section.
- For COVID-19, a positive PCR/NAAT result is counted as a case if separated in time by at least 90 days from a previous positive result. These data are available from August 27, 2023 (2023–week 35) onwards.
- For influenza A and influenza B, a positive PCR/NAAT result is counted as a case if separated in time by at least 30 days from a previous result. Positive influenza A results within 30 days of each other are considered separate cases only if the influenza subtype is available from both tests and is different. These data are available from August 25, 2024 (2024–week 35) onwards.
    - Influenza A cases are categorized by subtype (H1N1 and H3N2). Not all laboratory-confirmed influenza A cases are subtyped. Influenza A case subtype details are available in the Summary > Influenza Strain Details tab of the tool.
- The PHU assigned to each case is based on the earliest positive test result for the case.
- OLIS-derived COVID-19 and influenza cases are not the same as PHU reported cases and are calculated using laboratory testing data obtained from OLIS, as opposed to PHU reported cases which align with the provincial case definitions and are captured by the PHU in a disease reporting system.

PHU Reported

- COVID-19 case data from CCM are no longer being updated. However, data up to June 1, 2024 are available in the tool and the data considerations below apply.
  - Only cases meeting the confirmed case classification as listed in the MOH Case Definition – Coronavirus Disease 2019 (COVID-19) document at the time of report are included.[12]
  - Cases of confirmed reinfection, as defined in the provincial case definitions, are counted as unique cases.
  - Reported Date is the date the COVID-19 case was reported to public health.
  - 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.
  - Male/Female information are sourced from the Sex field in CCM and are intended to represent sex assigned at birth. On October 14, 2021, changes were made in CCM to enable reporting on the Sex field where this data field is supplemented by archived Male/Female information previously entered in the Gender field.
  - Orientation of case counts by geography is based on the Permanent Health Unit (also referred to as Diagnosing Health Unit or DHU). DHU refers to the case's public health unit of residence at the time of illness onset and not necessarily the location of exposure. Cases for which the DHU was reported as MOH-PHO (to signify a case is not a resident of Ontario) have been excluded from the analysis.
- Influenza case data from iPHIS are no longer being updated. However, data up to September 20, 2025 will remain available in the tool and the data considerations below apply.
  - Dates used for laboratory-confirmed influenza cases are based on the date the case was reported to the PHU as recorded in iPHIS or directly to PHO in aggregate format by some public health units.
  - Cases of influenza A&B are included in the influenza A counts. In the surveillance periods before the COVID-19 pandemic, cases of influenza A&B made up less than 0.4% of all influenza cases.
  - Influenza A cases may be further categorized into a subtype (H3 and H1). Not all laboratory-confirmed influenza A cases are subtyped.
  - Age group is set to unknown for all influenza cases reported in aggregate by PHUs to PHO.

Severity Indicators: COVID-19, Influenza, RSV

Hospital Admissions

- Hospital admissions data present the total number of new confirmed test positive patients admitted in the facility in the 24 hours preceding 12 midnight. This indicator is available by age group for COVID-19 but is not currently available by age group for influenza or RSV.
- Hospital admissions data by public health unit is determined based on the location of the hospital, not the patient's home address or health unit of residence. Hospital admissions data are available by age group for COVID-19, however the age groups presented for these indicators differ from those elsewhere in the tool such as cases by age group.

Hospital Bed Occupancy

- Hospital bed occupancy data presents the average daily occupancy count per week of people in hospital (including intensive care unit (ICU)) with active COVID-19/influenza/RSV (i.e., tested positive), respectively. People may be counted in bed occupancy data for multiple days.
    - The 'Hospital Bed Occupancy (total)' indicator accounts for hospital bed occupancy among people in hospital with active COVID-19/influenza (regardless of whether the reason for admission was COVID-19/influenza or a non-COVID-19/non-influenza related illness with a subsequent positive test for COVID-19), respectively.
    - The 'Hospital Bed Occupancy (due to infection)' indicator accounts for hospital bed occupancy among people in hospital for active COVID-19/influenza (i.e., admitted, COVID-19/influenza positive and primarily being treated for COVID-19/influenza), respectively.
- The 'Combined hospital bed occupancy' indicator is a PHO-calculated indicator that presents the combined average daily occupancy count per week of people in hospital (including ICU) with COVID-19/influenza/RSV (i.e., tested positive for at least one). People may be counted in bed occupancy data for multiple days.
- Hospital bed occupancy data by public health unit is determined based on the location of the hospital, not the patient's home address or health unit of residence.
- Hospital bed occupancy data are available by age group, however the age groups presented for these indicators differ from those elsewhere in the tool such as cases by age group. The age groups presented have changed as of September 2025 to better reflect high-risk groups.
- Start dates for bed occupancy indicators vary. Refer to Appendix D: Table D1 for details.

Hospital ICU Bed Occupancy

- COVID-19 hospital ICU bed occupancy (total) represents the average total daily occupancy count per week of people in ICU with laboratory confirmation of SARS-CoV-2 (i.e., tested positive).
    - The data source for this indicator was updated as of October 25, 2024 and includes 'total' people in ICU testing positive for COVID-19. Previously, this indicator accounted for people in ICU 'because' of COVID-19 which included people who are currently negative for COVID-19, but admitted or re-admitted to the ICU as a result of their prior COVID-19 illness.
- Influenza hospital ICU bed occupancy represents the total number of patients with lab-confirmed influenza A or B admitted to ICU.
- RSV hospital ICU bed occupancy represents the total number of patients in ICU testing positive for RSV.
- Laboratory confirmation of COVID-19, influenza or RSV may be from any date during the patient's current ICU admission until ICU discharge or death occurs.
- Start dates for bed occupancy indicators vary. Refer to Appendix D: Table D1 for details.

Deaths: COVID-19

- Data on deaths from CCM (up to June 1, 2024) and iPHIS (after June 1, 2024) are likely under-reported as this event may occur after the completion of public health follow up of cases. Cases that died after follow-up was completed may not be captured in CCM or iPHIS.
- For surveillance purposes, a COVID-19 death is defined as a death resulting from a clinically compatible illness in a confirmed COVID-19 case, unless there is a clear alternative cause of death that cannot be related to COVID-19 (e.g., trauma). There should be no period of complete recovery between the illness and the reported death.
- Deaths are determined by using the Outcome and Type of Death fields in CCM or iPHIS. COVID-19 deaths are counted where the Outcome value is 'Fatal' and the Type of Death value is not 'DOPHS was unrelated to cause of death', 'Reportable disease was unrelated to cause of death' or 'Under PHU Review'.
- COVID-19 deaths are placed in time using the 'Date of Death' field in CCM or the 'Outcome Date' field in iPHIS.
    - If the date of death is missing in CCM, the outcome date field in CCM is used as a proxy. When there is no outcome date in either CCM or iPHIS, then the case reported date is used.
- COVID-19 deaths in cases 0 to 19 years of age are not stratified by public health unit due to concerns regarding small counts of this sub-population, particularly in smaller health units.
- Historical COVID-19 outcome data between January 15, 2020 to March 31, 2023 were updated as part of a provincial data quality initiative. As a result, changes to historical COVID-19 cases and deaths were included in this tool as of December 1, 2023.

Outbreaks: COVID-19 and Respiratory Infection Outbreaks

- Outbreak reported week is based on the outbreak reported date (e.g., the date the outbreak was reported to the PHU), and if unavailable, the date the public health unit created the outbreak in the provincial reporting system.
- Outbreaks are declared by the local Medical Officer of Health or their designate in accordance with the Health Protection and Promotion Act and criteria outlined in Ministry guidance documents.[7]
- Public health units indicate the outbreak setting using the exposure setting field in iPHIS and the location fields in CCM for COVID-19 outbreaks reported up to June 1, 2024. When there is no setting information, the outbreak is reported as having an unknown/missing setting regardless of the information captured in the text field for the outbreak name.
- Further data caveats and methods relating to outbreak-associated cases and outbreak severity are outlined in the Outbreak Severity Measures section.

COVID-19

- Confirmed outbreaks of COVID-19 are defined in Ministry of Health's Appendix 1: Case Definitions and Disease Specific Information for COVID-19.[12] Guidance for specific settings includes: Recommendations for Outbreak Prevention and Control in Institutions and Congregate Living Settings.[13]
    - Note: Prior to May 5, 2021, a confirmed COVID-19 outbreak in a long-term care home or retirement home setting was defined as a single, laboratory-confirmed case of COVID-19 in a resident or staff member.
    - Outbreak definitions changed over the course of the pandemic and outbreaks were declared based on the definitions in place at the time of their occurrence.

- Data on outbreak settings are based on information entered in CCM up to June 1, 2024 and in iPHIS from June 2, 2024 onwards. Outbreaks with missing setting information and in settings other than long-term care homes (LTCH), retirement homes (RH), and hospitals are excluded from the outbreak severity analyses.
- All data relating to COVID-19 outbreak-associated cases, hospitalizations and deaths in LTCH, RH or public hospitals are based on summary counts reported in CCM up to June 1, 2024 and in iPHIS from June 2, 2024 onwards. The summary counts include cases that are symptomatic or test positive by rapid antigen test (RAT) or by PCR/nucleic acid amplification test. Previously reported counts of COVID-19 cases, hospitalizations and deaths in LTCHs and RHs were based on individual reports of PCR-confirmed cases, which were identified in CCM through linkage to a risk factor and/or outbreak associated with a LTCH, RH or hospital. Due to this difference in ascertainment of outbreak status, summary outbreak counts in this tool should not be compared directly to outbreak indicators in other reports that are based on individually reported laboratory confirmed cases.
- Summary case counts for COVID-19 outbreaks for the 2022-23 surveillance period may be less complete compared to subsequent time periods. Even though PHUs were required to enter summary outbreak case counts, more emphasis was placed on individual case data entry until April 1, 2023 when the reporting requirement was changed to allow PHUs to focus on entry of summary case counts for outbreaks in LTCH, RH, and hospital instead of individual linking of cases to outbreaks in these facilities.
- COVID-19 outbreaks are reported separately and outbreak summary count of cases are all attributed to SARS-CoV-2 when multiple viruses are listed in the outbreak record in iPHIS.
- All outbreaks reported as confirmed are counted even if no summary case counts have been entered in the summary section in iPHIS, with the exception of the Outbreaks > Severity tab where only outbreaks with summary case counts entered are included in the analyses.

Influenza, RSV and Other Respiratory Viruses

- Outbreaks that do not meet the provincial outbreak definition are excluded from analyses. Refer to Appendix 1: Respiratory Infection Outbreaks in Institutions and Public Hospitals document for current outbreak definitions. [14]
- Outbreaks where influenza is identified are counted under the appropriate influenza category ("Influenza A" or "Influenza B") even if other viruses (other than SARS-CoV-2) are also identified in the outbreak. Outbreaks of "influenza A&B" are included in the counts for outbreaks of influenza A.
- For outbreak severity analyses, all influenza types are grouped under the single category "Influenza (all types)".
- Outbreaks with co-circulation of respiratory viruses other than SARS-CoV-2 and influenza are reported as having been caused by 'more than one pathogen'.
- Confirmed outbreaks in institutions (as defined in the HPPA) and public hospitals are reported in four groupings in this tool: Long-Term Care Homes (LTCH), Retirement Homes (RH), Hospitals and Other.[7]
- Outbreaks with no exposure setting information and in settings other than LTCHs, RHs and hospitals (e.g., community settings, daycares, schools and childcare facilities) are excluded from the outbreak severity analyses.

Outbreak Severity Measures: All Respiratory Viruses

- All data relating to outbreak-associated cases, hospitalizations and deaths are based on summary case counts reported in the outbreak summary section of iPHIS or CCM (for COVID-19 up to June 1, 2024).
- Outbreak-associated cases are individuals that were line listed for the outbreak (i.e., related to the outbreak) and may include cases that are symptomatic with or without an epidemiologic link, and/or test positive by rapid antigen test (COVID-19 only) or an approved laboratory method (e.g., PCR/nucleic acid amplification test). As summary counts are ascertained differently from individually reported laboratory confirmed cases, direct comparisons are more likely to be inaccurate.
- Hospitalized outbreak-associated cases are individuals who were line listed and met the outbreak case definition and subsequently admitted to hospital because of their infection.
- Deaths are counted as outbreak-related deaths (i.e. excluding deaths where the disease was unrelated to the cause of death) that occurred in individuals who were line listed and met the outbreak case definition.
- Attack rates are calculated as:

$$\frac{\text{(Cases in residents/staff)}}{\text{(Number of residents/staff in the affected area)}}$$

  - If the number of cases or the number of residents/staff in the affected area was not available, then the attack rate for that outbreak was not calculated and not included in the summary of attack rates.
  - Attack rates calculated to be over 100% were set to 100% for the purposes of this tool.
- Case hospitalization rates are calculated as:

$$\frac{\text{Hospitalizations among resident/staff cases occurring as a result of their infection}}{\text{Number of Cases in residents/staff}}$$

  - If the number of hospitalizations is missing, then the hospitalization rate was not calculated and not included in the summary of hospitalization rates.
  - Hospitalization rates calculated to be over 100% were set to 100% for the purposes of this tool.
- Case fatality rates are calculated as:

$$\frac{\text{Deaths among resident/staff cases occurring as a result of their infection}}{\text{Number of Cases in residents/staff}}$$

  - If the number of deaths was missing, then the case fatality rate was not calculated and not included in the summary of case fatality rates.
  - Case fatality rates calculated to be over 100% were set to 100% for the purposes of this tool.
- Duration is measured in days and is calculated as '*Date of onset of illness in last case - Date onset of illness in first case*'. It is not calculated for outbreaks missing either of these dates. If an outbreak had a calculated duration less than 0 days, then the outbreak was excluded from calculations of summary duration measures. Duration is not calculated for ongoing outbreaks.
- The interquartile range (IQR) used for attack, hospitalization and fatality rates as well as outbreak duration is between the 25th and 75th percentiles of the data.

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Appendix A: COVID-19 Indicators

Indicator: Cases

- Any move from 0 → **Higher**
- Any move to 0 → **Lower**
- If cases in the previous week were under 50:
  - an increase of 5 or more cases → **Higher**
  - a change less than 5 cases → **Similar**
  - a decrease of 5 or more cases → **Lower**
- If cases in the previous week were over 50:
  - an increase of 10% or more cases → **Higher**
  - a change less than 10% of cases → **Similar**
  - a decrease of 10% or more cases → **Lower**

Indicator: Percent Positivity

- Any move from 0 → **Higher**
- Any move to 0 → **Lower**
- If percent positivity in the previous week was under 10%:
  - an increase of 0.5 percentage point or more → **Higher**
  - a change less than 0.5 percentage point → **Similar**
  - a decrease of 0.5 percentage point or more → **Lower**
- If percent positivity in the previous week was 10% or over:
  - an increase of 5% or more → **Higher**
  - a change less than 5% → **Similar**
  - a decrease of 5% or more → **Lower**

Indicator: Outbreaks

- Any move from 0 → **Higher**
- Any move to 0 → **Lower**
- If the number of new outbreaks in the previous week was under 50:
  - an increase of 5 or more outbreaks → **Higher**
  - a change less than 5 outbreaks → **Similar**
  - a decrease of 5 or more outbreaks → **Lower**
- If the number of new outbreaks in the previous week was over 50:
  - an increase of 10% or more → **Higher**
  - a change less than 10% → **Similar**
  - a decrease of 10% or more → **Lower**

Indicator: Overall Weekly Indicator Change

The interpretation of the weekly indicator change is compared against the current epidemiologic context. When a percent positivity level is crossed (e.g., from low to moderate) this may be considered as well. If there is discordance between the indicator assessments, the magnitude of the change in each indicator is considered.

Appendix B: Influenza Indicators

Indicator: Cases

- Any move from 0 → **Higher**
- Any move to 0 → **Lower**
- If cases in the previous week were under 50:
  - an increase of 5 or more cases → **Higher**
  - a change less than 5 cases → **Similar**
  - a decrease of 5 or more cases → **Lower**
- If cases in the previous week were over 50:
  - an increase of 10% or more cases → **Higher**
  - a change less than 10% of cases → **Similar**
  - a decrease of 10% or more cases → **Lower**

Indicator: Percent Positivity

- Any move from 0 → **Higher**
- Any move to 0 → **Lower**
- If percent positivity in the previous week was under 10%:
  - an increase of 0.5 percentage point or more → **Higher**
  - a change less than 0.5 percentage point → **Similar**
  - a decrease of 0.5 percentage point or more → **Lower**
- If percent positivity in the previous week was 10% or over:
  - an increase of 5% or more → **Higher**
  - a change less than 5% → **Similar**
  - a decrease of 5% or more → **Lower**

Indicator: Influenza Outbreaks

- Any move from 0 → **Higher**
- Any move to 0 → **Lower**
- If the number of new outbreaks in the previous week was under 50:
  - an increase of 5 or more outbreaks → **Higher**
  - a change less than 5 outbreaks → **Similar**
  - a decrease of 5 or more outbreaks → **Lower**
- If the number of new outbreaks in the previous week was over 50:
  - an increase of 10% or more → **Higher**
  - a change less than 10% → **Similar**
  - a decrease of 10% or more → **Lower**

Indicator: Public Health Unit Activity Levels

- If average of activity levels is > than in previous week → **Higher**
- If average of activity levels is equal to that of the previous week → **Similar**
- If average of activity levels is < than in previous week → **Lower**

Indicator: Overall Weekly Indicator Change

The interpretation of the weekly indicator change is compared against the current epidemiologic context. When a percent positivity level is crossed (e.g., from low to moderate) this may be considered as well. If there is discordance between the indicator assessments, the magnitude of the change in each indicator is considered and cases and percent positivity are given greater consideration.

Appendix C: RSV Indicators

Indicator: Percent Positivity

- Any move from 0 → **Higher**
- Any move to 0 → **Lower**
- If percent positivity in the previous week was under 10%:
  - an increase of 0.5 percentage point or more → **Higher**
  - a change less than 0.5 percentage point → **Similar**
  - a decrease of 0.5 percentage point or more → **Lower**
- If percent positivity in the previous week was 10% or over:
  - an increase of 5% or more → **Higher**
  - a change less than 5% → **Similar**
  - a decrease of 5% or more → **Lower**

Indicator: Outbreaks

- Any move from 0 → **Higher**
- Any move to 0 → **Lower**
- If the number of new outbreaks in the previous week was under 50:
  - an increase of 5 or more outbreaks → **Higher**
  - a change less than 5 outbreaks → **Similar**
  - a decrease of 5 or more outbreaks → **Lower**
- If the number of new outbreaks in the previous week was over 50:
  - an increase of 10% or more → **Higher**
  - a change less than 10% → **Similar**
  - a decrease of 10% or more → **Lower**

Indicator: Overall Weekly Indicator Change

The interpretation of the weekly indicator change is compared against the current epidemiologic context. When a percent positivity level is crossed (e.g., from low to moderate) this may be considered as well. If there is discordance between the indicator assessments, the magnitude of the change in each indicator is considered.

Appendix D: Hospital and ICU Outcome Data and Start Dates

Table D1: Start Dates for Bed Occupancy Indicators

Disease	Indicator	Population	Start date
COVID-19	Hospital bed occupancy (total)	Overall	April 1, 2020
COVID-19	Hospital bed occupancy (total)	By age group*	October 11, 2021
COVID-19	Hospital bed occupancy (due to infection)	Overall	January 9, 2022
COVID-19	Hospital ICU bed occupancy	Overall	April 1, 2020
COVID-19	Hospital Admissions	Overall	April 1, 2020
COVID-19	Hospital Admissions	By age group*	October 11, 2021
Influenza	Hospital bed occupancy (total)	Overall and by age group**	November 27, 2022
Influenza	Hospital bed occupancy (due to infection)	Overall	November 27, 2022
Influenza	Hospital ICU bed occupancy	Overall	August 8, 2023
Influenza	Hospital Admissions	Overall	November 27, 2022
RSV	Hospital bed occupancy	Overall and by age group†	November 27, 2022
RSV	Hospital ICU bed occupancy	Overall	October 15, 2024 (pediatric) October 20, 2024 (all)
RSV	Hospital admissions	Overall	November 27, 2022

*As of September 2, 2025, COVID-19 bed occupancy and hospital admissions age groups have changed and are presented as 0 to 4, 5 to 17, 18 to 49, 50 to 64, 65 to 74, 75+. Data by age group will not be updated retroactively to reflect the new categories.

** Influenza bed occupancy for people aged 0 to 17 years are presented from November 27, 2022 to October 31, 2023 as a single stratum and as of November 1, 2023 as three mutually exclusive age groups (0 to 4, 5 to 11, 12 to 17). As of September 2, 2025, influenza bed occupancy age groups have changed and are presented as 0 to 4, 5 to 17, 18 to 49, 50 to 64, 65 to 74, 75+. Data by age group will not be updated retroactively to reflect the new categories.

†As of September 2, 2025, RSV bed occupancy age groups have changed and are presented as < 1, 1, 2 to 4, 5 to 17, 18 to 49, 50 to 64, 65 to 74, 75+. Data by age group will not be updated retroactively to reflect the new categories.

Appendix E: Percent Positivity Levels and Weekly Indicator Change Assessment Data Sources

Table E1: Data Source and Dates for Indicators Used in Weekly Indicator Change Assessments by Disease

Disease	Indicator	Data Source and Dates
COVID-19	Cases*	CCM (up to June 1, 2024) OLIS-derived (as of June 2, 2024)
COVID-19	Percent Positivity	PD-NOC (up to June 1, 2024)** OLIS (after June 1, 2024)
COVID-19	Outbreaks	CCM (up to June 1, 2024) iPHIS (after June 1, 2024)
Influenza	Cases	iPHIS for all PHUs except Toronto Public Health and Ottawa Public Health (up to October 12, 2024) iPHIS or reported in aggregate directly to PHO (October 12, 2024 to September 20, 2025) OLIS-derived (as of September 21, 2025)
Influenza	Percent Positivity	PHAC CERIPP respiratory virus detection tables (up to October 12, 2024)** OLIS (after October 12, 2024)
Influenza	Outbreaks	iPHIS
RSV†	Percent Positivity	OLIS
RSV†	Outbreaks	iPHIS

*COVID-19 case indicator was not used in the weekly indicator change assessment from June 1, 2024 to September 21, 2025.
**PD-NOC and PHAC data sources have been removed from the tool and replaced with OLIS.
† RSV percent positivity levels and weekly indicator change assessments began the week of October 13, 2024.

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Generic Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Ontario respiratory virus tool >> [indicator title in sentence case] [Internet]. Toronto, ON: King's Printer for Ontario; cYYYY [modified YYYY Mon DD; cited YYYY Mon DD]. Available from: URL

Example Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Ontario respiratory virus tool >> exact title of chart in sentence case [Internet]. Toronto, ON: King's Printer for Ontario; c2024 [modified 2024 Oct 25; cited 2024 Oct 31]. Available from: URL

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