CITY OF TORONTO COVID-19 MONITORING DASHBOARD TECHNICAL NOTES

Last updated September 30, 2020

Data are downloaded at 2:00 PM and posted the next day by 3:00 PM (see Refresh Cycle for detailed information)

This document provides an overview of COVID-19 monitoring indicators relevant to the City of Toronto's response and recovery efforts, and refers to data and information presented in the 'Toronto COVID-19 Monitoring Dashboard'.

The indicators and goals included in the COVID-19 Monitoring Dashboard align with the provincial document *A Framework for Reopening our Province* as well as with the *Ontario Public Health Unit Core Indicators for COVID-19 Monitoring*. The primary objectives of this dashboard are to support the active monitoring of local COVID-19 activity, and to support local decisions related to reopening. Please note that the data shown here may differ from other reporting products, as data are extracted at different times. The data in the charts are subject to change, as the public health investigation into reported cases is currently ongoing. Additionally, data definitions are subject to change as the pandemic continues to evolve. Data may be missing if it is not available in the initial report to Toronto Public Health, or could not be obtained through the public health investigation. Records with missing data are not included if all data required to calculate the indicator are not available. Please see the Summary of COVID-19 Monitoring Dashboard Missing Data for further details.

Indicator	Description	Data Source	Refresh Cycle
Virus Spread and Containment			
New COVID-19 cases, 7 day moving average	The number of new COVID-19 cases by day, using a 7-day advancing window for the average, with a lag of 3 days to account for delays in reporting to public health and allowing for minor fluctuations within acceptable variability. This indicator uses laboratory specimen collection date to assign a 7-day period, and if laboratory specimen collection date is not available, the reported date is used.	iPHIS and CORES[1]	Mon/ Wed/Fri
New hospitalizations, 7 day moving average	The number of new hospitalizations among COVID-19 cases, by date of admission, using a 7-day advancing window average to help us see trends and allowing for minor fluctuations within acceptable variability.	iPHIS and CORES[1]	Mon/ Wed/Fri
Active daily COVID-19 outbreaks in institutions	The number of ongoing COVID-19 outbreaks in healthcare institutions and congregate settings (i.e. long-term care homes, retirement homes, hospitals, and shelters), allowing for minor fluctuations within acceptable variability, by day.	iPHIS[1]	Mon/ Wed/Fri
Effective reproductive number (R_t)	The average number of secondary cases per infectious case in a population made up of both susceptible and non-susceptible (i.e., those who have already been infected) individuals at a given time, by date of infection. The R_t is calculated using confirmed case data only (methods developed by Abbott et al). Note: R_t differs from the basic reproductive number (R_0), which assumes a population where all individuals are susceptible.	iPHIS and CORES[1]	Wed
Laboratory Testing			
Percent of new COVID-19 tests with a turnaround time of 24 hours / 48 hours	The percentage of cases where the lab turnaround time is within 24 hours or within 48 hours. Turnaround time is defined as from the time period between when a person provides a laboratory specimen for COVID-19 testing to when a positive result is reported to Toronto Public Health. A 7-day advancing window average with a one-day lag to account for reporting delays, allowing for minor fluctuations within acceptable variability, is used to help identify trends, Turnaround time for negative laboratory results are not included.	iPHIS and CORES[1]	Mon/ Wed/Fri

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Indicator	Description	Data Source	Refresh Cycle
COVID-19 laboratory tests percent positivity, previous week average	The percentage of all COVID-19 tests processed which have a positive result, by laboratory specimen collection date, using an average for the previous week. Individuals tested more than once are only counted once per day, for each day on which they are tested. Weeks in which there were less than six people tested/positive were suppressed in the data set provided to Toronto Public Health. For these weeks, a value of 3 was imputed. Prior to June 17, 2020, percent positivity was calculated daily.	OLIS (via ICES)[2]	Wed
Health System Capacity			
ICU bed occupancy rate	The percentage of beds in intensive care units in Toronto that are in use. Includes only Adult ICU beds, excluding Incremental, Pediatric or Neonatal beds to match provincial reporting.	CRITICALL Ontario via Critical Care Information System (CCIS) and Bed Census Summary tool, accessed via Ministry of Health SAS Visual Analytics Tool.	Wed
ICU-ventilator bed occupancy rate	The percentage of beds in intensive care units in Toronto with ventilators that are in use. Includes only Adult ICU beds, excluding Incremental, Pediatric or Neonatal beds to match provincial reporting.		
Acute bed occupancy rate	The percentage of beds in acute care hospitals in Toronto that are in use.		
Public Health System Capacity			
Percent of newly reported confirmed COVID-19 cases reached within 24 hours of reported date	The percentage, over a three-day reporting period, of new lab-confirmed COVID-19 cases reached by a case investigator to initiate a public health investigation, within 24 hours of being reported to Toronto Public Health.	iPHIS and CORES[1]	Mon/ Wed/Fri
Percent of newly reported COVID-19 contacts successfully reached within 24 hours	The percentage, over a three-day reporting period, of new COVID-19 contacts (or proxy, e.g., guardian of a minor child, or next of kin) successfully reached by a public health investigator within 24 hours of being identified by Toronto Public Health. Contacts who are outbreak- associated, lost to follow-up (unable to reach client despite numerous attempts), untraceable (phone number is not in service), those classified as low priority (contacts with only transient exposure that do not require extensive public health follow-up), and those missing an investigation start date are excluded from the analysis. Contacts that test positive for COVID-19 are counted as cases, and are excluded from this analysis. Prior to June 17, 2020, this indicator captured the proportion of contacts attempted to be reached. The change to successfully reached aligns with the provincial metric, changed as of June 10, 2020.	CORES[1]	Wed

[1]iPHIS: Integrated Public Health Information System. CORES: COVID-19 Rapid Entry System.

[2]Data from the Ontario Laboratory Information System (OLIS) are compiled by the institute for Clinical Evaluative Sciences: Chung H, Fung K, Ishiguro L, Paterson M, et al. Characteristics of COVID-19 diagnostic test recipients, Applied Health Research Questions (AHRQ) # 2021 0950 080 000. Toronto: Institute for Clinical Evaluative Sciences; 202

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Assessment Considerations for Toronto COVID-19 Monitoring Dashboard Progress

Category-level scores are reviewed as the data are updated to provide an overall assessment of the information summarized in Toronto's COVID-19 Monitoring Dashboard. The table below summarizes how indicator specific information is used to generate a category-level score.

COVID-19 Monitoring Indicator Categories	Indicator(s)	Goal Description	RED	YELLOW	GREEN
Virus Spread & Containment	**Number of New COVID-19 Cases**	A 14-day decline* **OR** a stable trend with less than an average of 1 case per 100,000 per day (30 cases).	• Increasing trend in the number of new COVID-19 cases **AND** ≥ 30 cases **OR** > 293 cases per day (>10 cases per 100,000)	• Decreasing trend in the number of new COVID-19 cases for less than 14 days **OR** Increasing trend **AND** <30 cases **OR** Between 30-293 cases per day (between 1-10 cases per 100,000)	• 14 day decrease in the number of new COVID-19 cases **OR** Stable or decreasing trend **AND** <30 cases per day
	Number of New COVID-19 Hospitalizations	A 14-day decline* **OR** a stable trend with less than an average of 2 hospitalizations per million population per day (6 hospitalizations).	• Increasing trend in the number of new COVID-19 hospitalizations **AND** ≥ 6 new hospitalizations	• Decreasing trend for less than 14 days **OR** Increasing trend **AND** <6 new hospitalizations **OR** A stable trend **AND** ≥ 6 new hospitalizations	• 14 day decrease in the number of new COVID-19 hospitalizations **OR** Stable trend **AND** < 6 hospitalizations per day
	Number of Active Institutional Outbreaks	A 14-day decline* **OR** a stable trend **AND** below 10% of healthcare institutions with an active outbreak (18 facilities).	• Increasing trend in the number of active institutional outbreaks **AND** ≥ 18 active outbreaks	• Decreasing trend in the number of active institutional outbreaks for less than 14 days **OR** Increasing trend **AND** <18 active outbreaks **OR** A stable trend **AND** ≥ 18 active outbreaks	• 14 day decrease in the number of active institutional outbreaks **OR** Stable trend **AND** <18 active outbreaks
	Effective Reproductive Number (R_t)	R_t sustained under 1.0	• $R_t \geq 1.2$	• $1.0 \leq R_t < 1.2$ for 3 or more consecutive days	• $R_t < 1.0$

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Incidence Tracking Capacity	**Percent positivity****	< 3%	• >5% positivity rate	• 3-5% positivity rate	• <3% positivity rate
	Percent of new COVID-19 tests with a turnaround time of 24hrs	≥ 60%	• <50% of new tests are completed within 24 hours	• 50-59% of new tests are completed within 24 hours •	• ≥60% of new tests are completed within 24 hours • ≥80% of new tests are completed within 48 hours
	Percent of new COVID-19 tests with a turnaround time of 48hrs	≥ 80%	• <70% of new tests are completed within 48 hours	• 70-79% of new tests are completed within 48 hours	• ≥80% of new tests are completed within 48 hours
Health System Capacity	**ICU Bed Occupancy Rate**	<90%	• Limited health system capacity	• Improved health system capacity	• Health system capacity is sufficient to meet current & future needs
	ICU-ventilator bed occupancy rate	<60% occupancy			
	Acute Bed Occupancy Rate	<90% occupancy			
	Estimated number of days of PPE available	Adequate PPE available			
Public Health System Capacity	**Newly reported confirmed COVID-19 cases reached within 24 hours**	> 90% contacted	• Limited/no ability to follow up cases & contacts in a timely manner	• Improved ability to follow up cases & contacts in a timely manner	• Case & contact follow up goals are met consistently
	Newly reported contacts successfully reached within 24 hours	>90% successfully reached			
Overall Assessment			Indicators trending away from respective goals	Indicators need attention	Indicators have reached respective goals

*The 14-day decline allows for acceptable variability of 2-3 days of consecutive increase.

**Percent positivity is only a valid indicator if lab testing volume is maintained at a high level within the population (defined by WHO as 1/1,000 population per week – equivalent to 3,000 tests per week in Toronto). If testing drops below this rate, then further investigation is warranted to determine if the indicator remains valid for the purposes of recovery assessment.

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Glossary of Terms

Term	Definitions
Active Outbreaks	Ongoing COVID-19 outbreaks that have not been declared over. This includes: long-term care homes, retirement homes, hospitals (acute, chronic, and psychiatric), as well as other congregate settings (shelters, child care centres).
Acute care, ICU, and ICU-ventilator beds	Acute care beds are those in hospitals that are intended for short-term intensive inpatient (admitted) medical care. Intensive care units (ICU) beds are those that are used for patients in severe life-threatening conditions. ICU-ventilator beds are hospital beds that are able to provide care on a ventilator (a machine that helps the patient breathe). Monitoring how many of each type of bed is available is a way to monitor our capacity to care for those who may become ill due to COVID-19 or other causes.
Cases	Includes both confirmed and probable COVID-19 cases reported to Toronto Public Health. Please refer to the Ontario Ministry of Health website for Ontario's current provincial case definitions: http://www.health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/2019_case_definition.pdf
Community Cases	Community cases refer to all cases that are not known to be outbreak associated, and represent cases among general members of Toronto's population.
Contacts	A contact is defined as a person who had a significant exposure to a confirmed or probable case during the case's contagious (infectious) period. This includes household, workplace, institutional, health care, and community exposures.
Effective Reproductive Number (R_t)	The average number of secondary cases per infectious case in a population made up of both susceptible and non-susceptible individuals. If R_t is greater than 1, the number of cases will increase. If it's less than 1, the number of cases will decrease. It is important to also look at the 50% and 90% credible intervals around the value, which reflect uncertainty around the estimate. If they are very wide, we cannot conclude that the R_t is trending in either direction, which typically happens when the number of cases is small. Additionally, it is important to note the gradual decline when R_t is less than 1 depends on the number of current cases in the population. With a large number of initial cases, infections can continue to occur for a long time. The R_t is calculated using confirmed case data only, by date of infection (methods developed by Abbott et al).
Laboratory Specimen Collection Date	The date on which the earliest positive specimen (e.g. nasopharyngeal swab) for COVID-19 was collected.
Moving Average	A moving (or rolling) average is the average of the value on a given date, and the values on the previous 2 days (for 3-day average) or 6 days (for 7-day average). This approach smooths daily spikes in data that may be spurious or related to weekends, and helps us to accurately describe trends.
Outbreak Associated Cases	Outbreak associated cases are cases in healthcare institutions (e.g. long-term care homes, hospitals, etc.) and other congregate settings (e.g., homeless shelter).
Percent positivity	The percentage of total laboratory tests submitted that have a positive result for COVID-19. Percent positivity can be helpful to estimate the amount of testing being conducted in an area because as the total number of tests performed increases, the percentage of total tests typically decreases if testing guidelines do not change. Increases in percent positivity can also be an early indicator of increased COVID-19 activity in the community and institutions.
Reported Date	The date on which the case was reported to Toronto Public Health. When the case is reported by a laboratory, this is the date on which the result was received, and may be later than the test reported date if the test result was reported outside of business hours.
Reporting Delay	There are inherent delays between when a case develops symptoms to when they are reported to public health. These delays may include the time from initial symptom onset to seeking a test, time to perform the test, and time from when a positive result is observed to when it is reported to Toronto Public Health.
Turnaround time	Turnaround time refers to how long it takes for a specimen (for example a nasopharyngeal swab) to be tested at a laboratory and for positive results to be reported to Toronto Public Health. A longer turnaround time may contribute to delays in case isolation and contact tracing.

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