

# Some COVID-19 Data from Toronto

Zachary Levine & Lee van Brussel

McMaster University

November 26, 2020

# Toronto Data

- The University of Toronto's online *Map and Data Library* has a lot of great links to COVID-19 related data  
<https://mdl.library.utoronto.ca/covid-19/data#Toronto>
- We found a nice .csv file for COVID-19 cases in Toronto and thought it would be nice to share.



## What's in the File? I

Each row of the data represents an individual who is at the very least suspected of having COVID-19. For each individual, the following is noted (definitions given in website above):

- 1 Outbreak Associated - Outbreaks of COVID-19 in Toronto healthcare institutions and healthcare settings (e.g. long-term care homes, retirement homes, hospitals, etc.) and other Toronto congregate settings (such as homeless shelters).
- 2 Age Group - Age at time of illness. Age groups (in ):  $\leq 19$ , 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80-89, 90+, unknown (blank)
- 3 Neighbourhood Name - Toronto is divided into 140 geographically distinct neighborhoods that were established to help government and community agencies with local planning by providing socio-economic data for a meaningful geographic area.

## What's in the File? II

- 4 Source of Infection - The most likely way that sporadic cases acquired their COVID-19 infection. Only the most likely exposure for each case is reported. Exposures that occurred up to 14 days before symptoms start are potential acquisition sources, and can include:
  - Travel: Travel outside of Ontario
  - Close contact with a case: Was in close contact with a confirmed or probable COVID-19 case (e.g., reside in the same household).
  - Institutional setting: Institutional settings includes, but not limited to: long-term care homes, acute care hospitals, complex case hospitals, special care facilities, retirement homes, rehabilitation hospitals.
  - Healthcare setting: Healthcare settings includes, but not limited to: family physician, dentist, ophthalmologist, sports doctor.

## What's in the File? III

- Community: Cases with no reported travel outside of Ontario, no known close contact with a COVID-19 case, and no reported infection acquired in an institutional or healthcare setting.
- 5 Classification - The application of the provincial case definition to categorize the cases as confirmed or probable, according to standard criteria.
- 6 Episode Date - The episode date is a derived variable that best estimates when the disease was acquired, and refers to the earliest available date from: symptom onset (the first day that COVID-19 symptoms occurred), laboratory specimen collection date, or reported date.
- 7 Reported Date - The date on which the case was reported to Toronto Public Health.
- 8 Outcome - Fatal, Resolved or Active

## What's in the File? IV

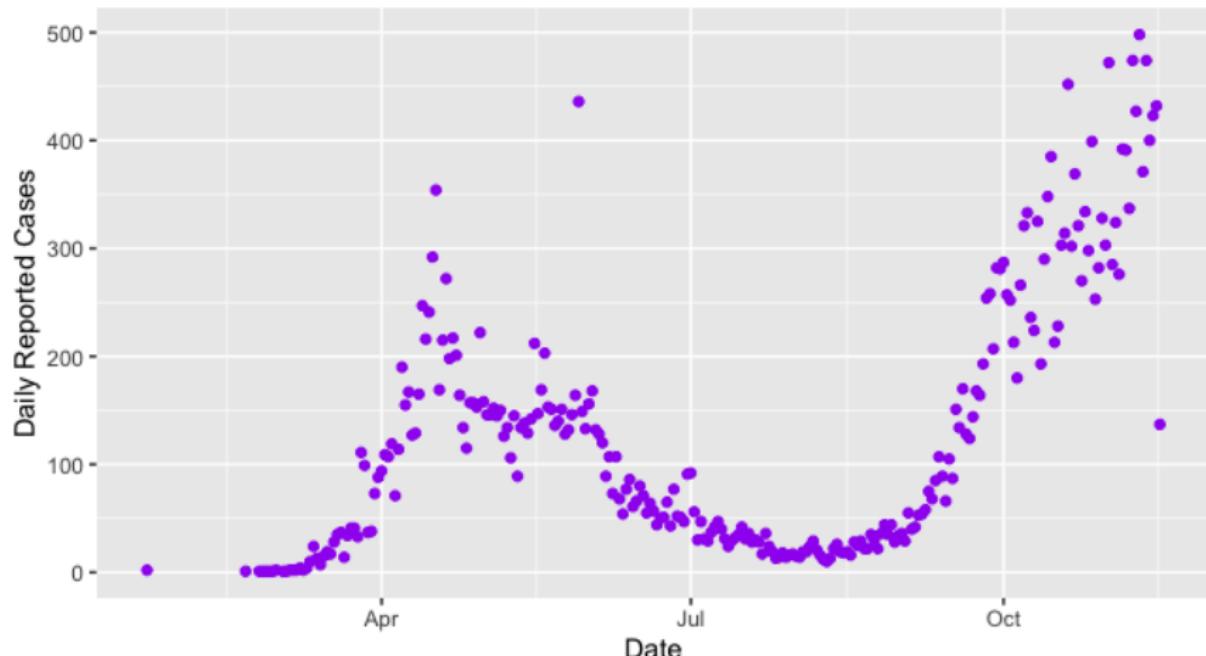
- 9 Currently Hospitalized - Cases that are currently admitted to hospital (i.e., no discharge date reported).
- 10 Currently in ICU - Cases that are currently admitted to the intensive care unit (ICU) (i.e. no discharge date reported).

Many other variables are included such as forward sortation area, intubation status, self-reported gender,...

# First Impressions

- Interval Incidence is easily derived from observing 'Reported Date' frequency after filtering for confirmed cases

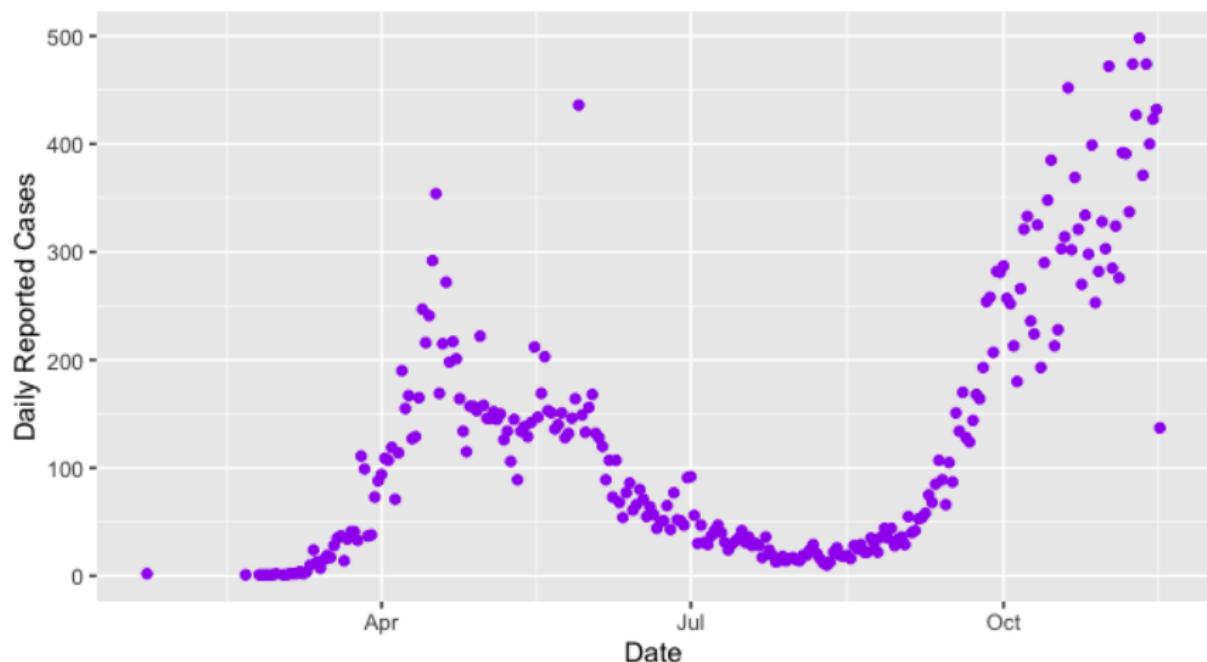
Toronto COVID-19 CASES



# First Impressions

- Is the shape looking familiar?

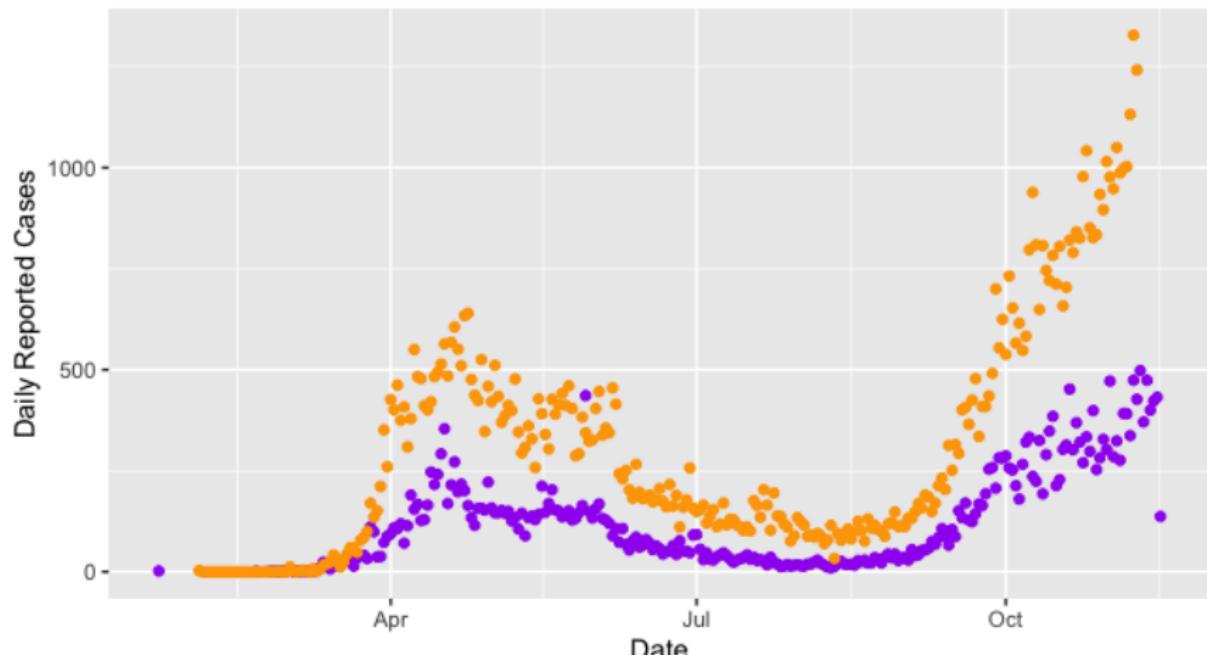
Toronto COVID-19 CASES



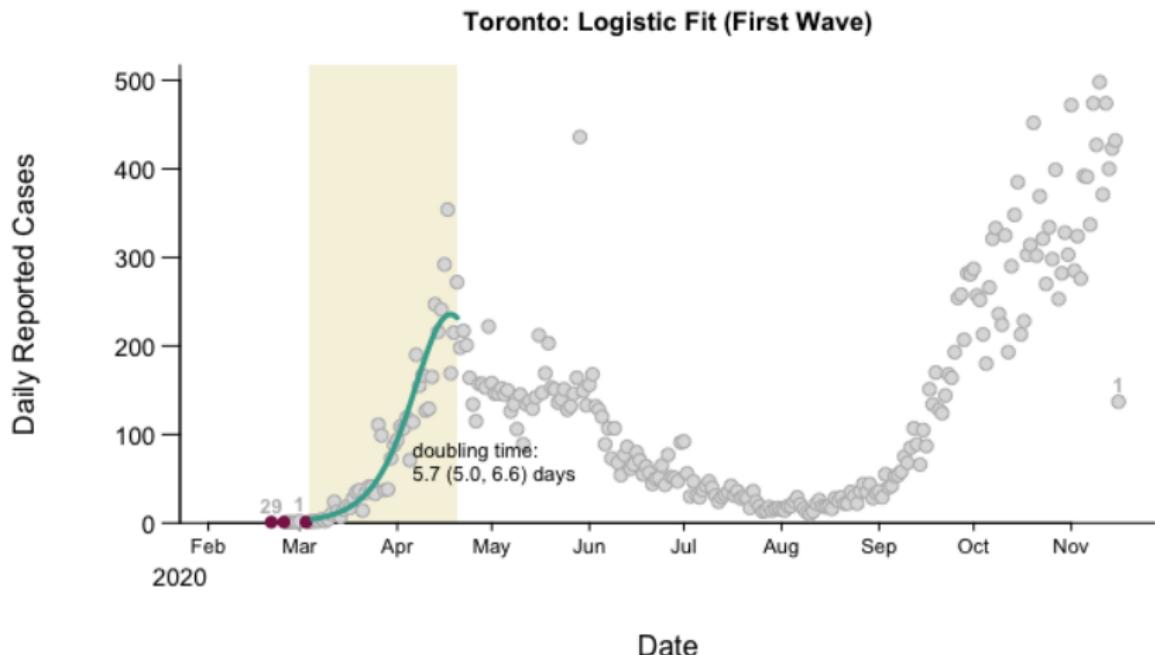
# First Impressions

- Is the shape looking familiar?

Toronto & Ontario COVID-19 CASES

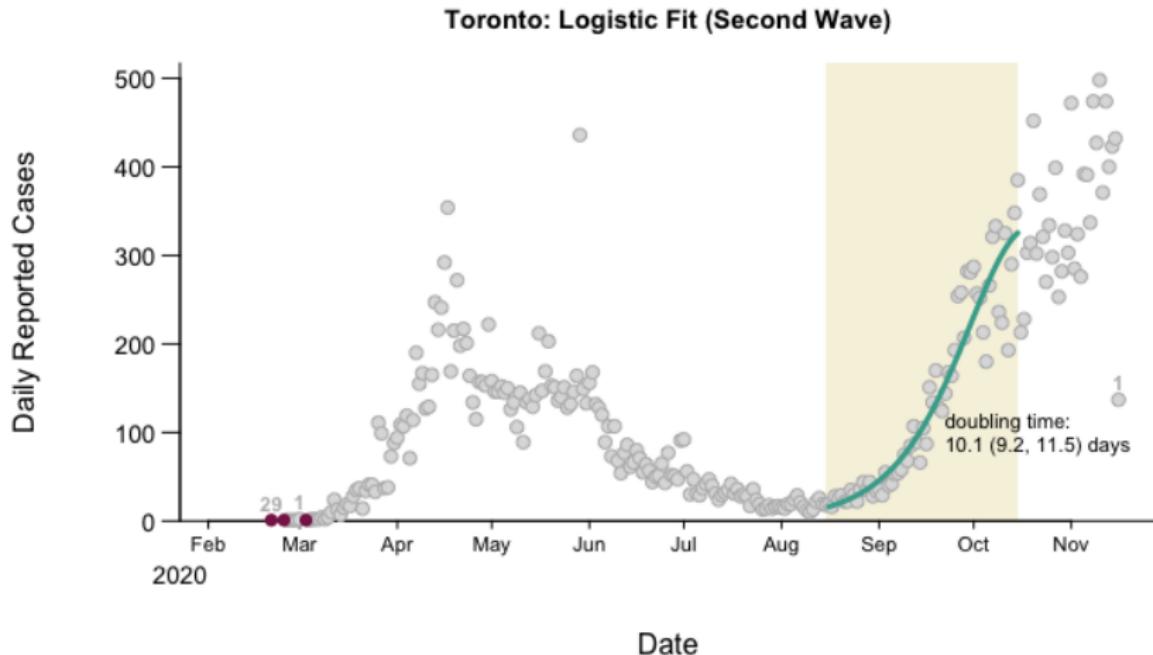


# Estimated Parameters (First Wave)



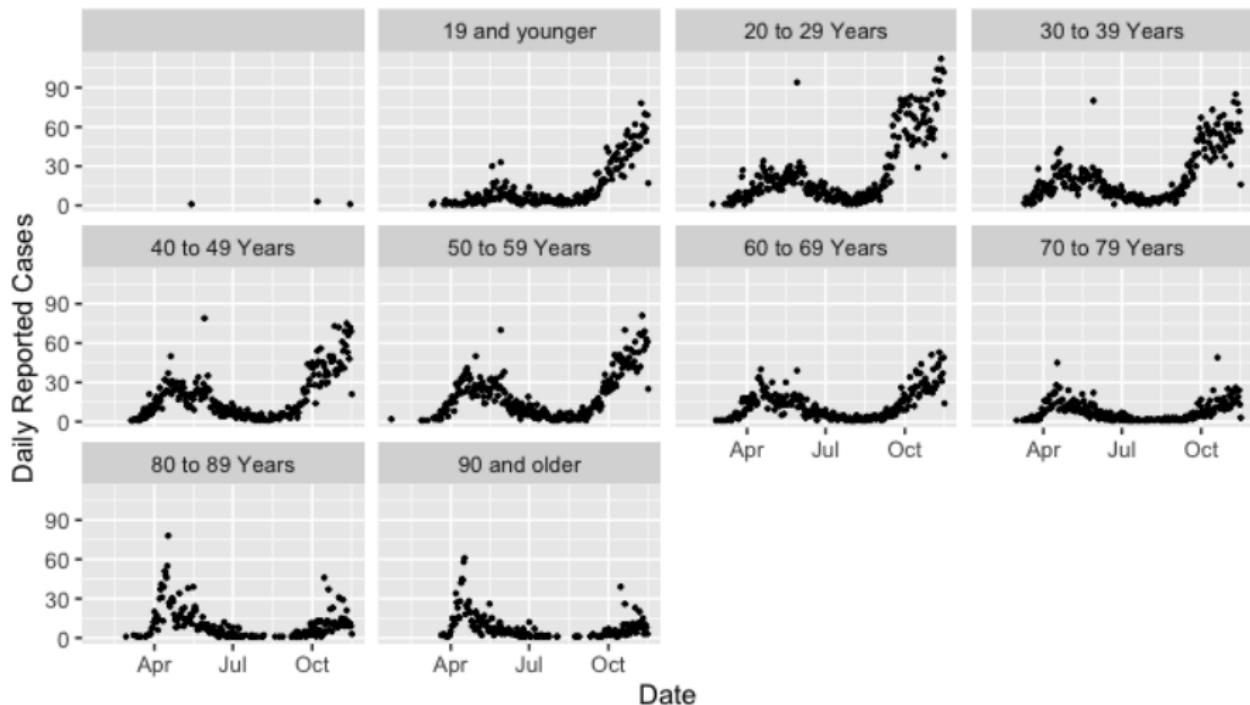
- Doubling Time  $\approx 5.7$  days
- $\mathcal{R}_0 \approx 1.32$  (generation interval from epigrowthfit)

## Estimated Parameters (Second Wave)



- Doubling Time  $\approx 10.1$  days
- $\mathcal{R}_0 \approx 1.18$  (generation interval from epigrowthfit)

# Plot By Age Group in Toronto



## Doubling times by age

Age group	wave (first or second).	Doubling time
Unknown	first	16.27 days
Unknown	second	16.2 days
19 and younger	first	0.59 days
19 and younger	second	14.56 days
20 to 29	first	11.65 days
20 to 29	second	12.33 days
30 to 39	first	9.38 days
30 to 39	second	13.38 days
40 to 49	first	7.83 days
40 to 49	second	11.73 days

## Doubling times by age II

Age group	wave (first or second).	Doubling time
50 to 59	first	6.42 days
50 to 59	second	11.62 days
60 to 69	first	6.38 days
60 to 69	second	12.42 days
70 to 79	first	6.21 days
70 to 79	second	12.05 days
80 to 89	first	3.30 days
80 to 89	second	12.20 days
90 and older	first	3.36 days
90 and older	second	14.98 days

# Does Age Structure Matter?

- Every age group saw faster growth in the first wave than the second
- By the plots, it appears that younger population experienced slower growth in first wave when compared to older population. The roles generally reverse for the second wave
- Second wave is mostly people < 70
- For the first wave, age groups contributed more equally