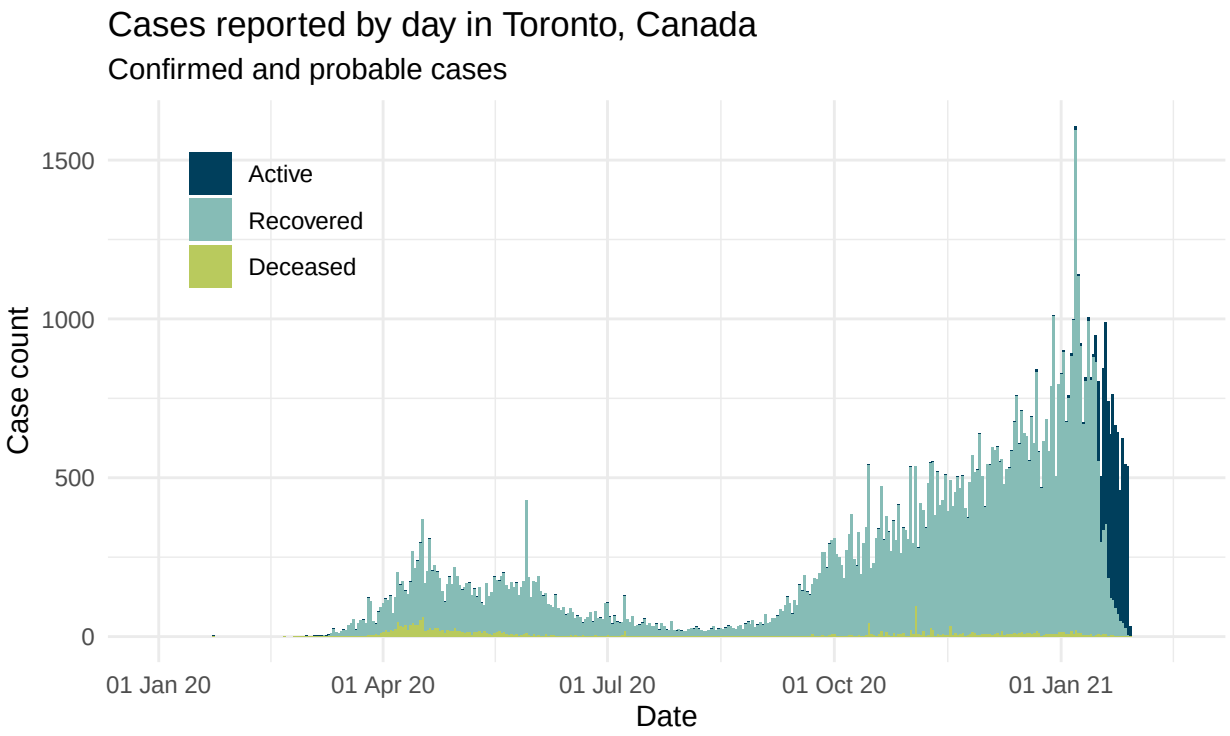
Code last run 2021-02-16.
Daily: Data as of January 29, 2021.
Neighbourhood: Data as of February 9, 2021.

Task 1: Daily cases

Data wrangling

```
reported = reported_raw %>%
  mutate_if(is.numeric, replace_na, replace = 0) %>%
  mutate(reported_date = date(reported_date)) %>%
  rename(Reported_date = reported_date)

colnames(reported) = c("Reported_date", "Recovered", "Active", "Deceased")

reported = reported[c("Reported_date","Active","Recovered", "Deceased")]

reported = reported %>% pivot_longer(-c(Reported_date), names_to = "Case_type", values_to = "Count")
```

Data visualization

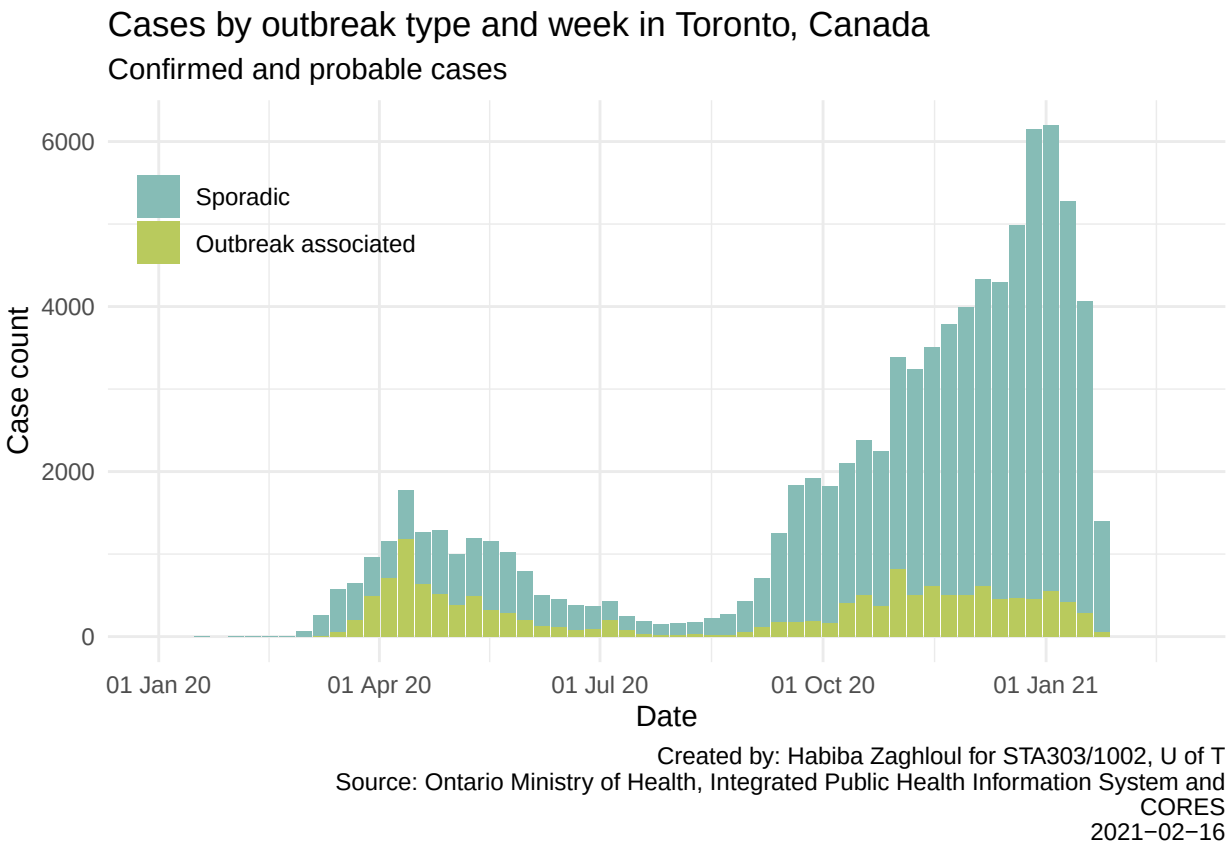


Task 2: Outbreak type

Data wrangling

```
outbreak = outbreak_raw %>%
  mutate(episode_week = date(episode_week)) %>%
  mutate(outbreak_or_sporadic = str_replace(outbreak_or_sporadic, "OB A", "Outbreak a"))

outbreak = outbreak %>% group_by(episode_week) %>% mutate(total_cases = sum(cases))

outbreak = outbreak %>% mutate(outbreak_or_sporadic = fct_rev(outbreak_or_sporadic))
```

Data visualization



Task 3: Neighbourhoods

Data wrangling: part 1

```
income = nbhood_profile %>% filter(nbhood_profile$`_id` == "1143")

income = income %>%
  select(-c(Category,Topic, `Data Source`,Characteristic,"City of Toronto")) %>%
  mutate_if(is.character, as.numeric)

income = income %>%
  pivot_longer(-c("_id"), names_to = "neighbourhood_name", values_to = "low_income_percentage")

income = income %>% select(-c("_id"))
```

Data wrangling: part 2

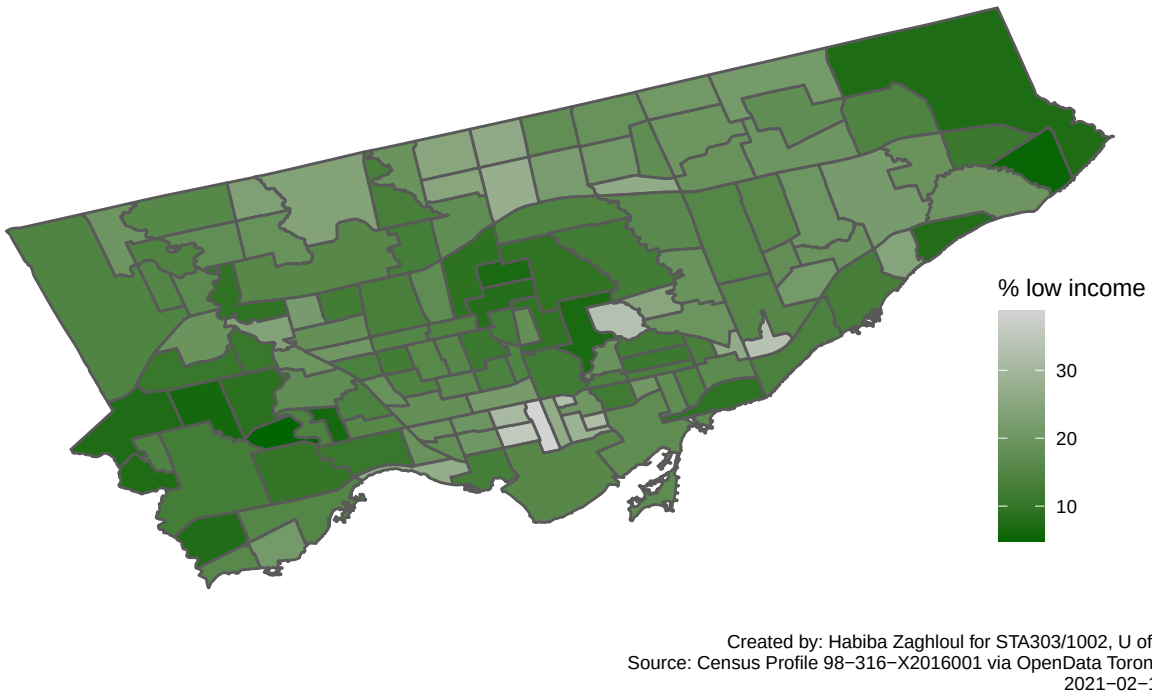
```
nbhoods = nbhoods_shape_raw %>%
  mutate(neighbourhood_name = str_remove(AREA_NAME, "\\s\\(\\d+\\)$")) %>%
  mutate_if(is.character, replace_na, replace = 0)

nbhoods_a = full_join(income,nbhood_raw, by = "neighbourhood_name")
nbhoods_a = nbhoods_a %>% filter(row_number() <= n()-1)

nbhoods = nbhoods %>%
  mutate(neighbourhood_name = str_replace(neighbourhood_name,
          "Cabbagetown-South St.James Town",
          replace = "Cabbagetown-South St. James Town")) %>%
  mutate(neighbourhood_name = str_replace(neighbourhood_name,
          "Weston-Pellam Park",
          replace = "Weston-Pelham Park")) %>%
  mutate(neighbourhood_name =
  str_replace(neighbourhood_name, "North St.James Town", replace = "North St. James Town"))

nbhoods_all = full_join(nbhoods_a, nbhoods, by = "neighbourhood_name")

nbhoods_all = nbhoods_all %>%
  rename(rate_per_100000 = rate_per_100_000_people) %>%
  select(-c(X, Y, LONGITUDE, LATITUDE, PARENT_AREA_ID, AREA_NAME))
```

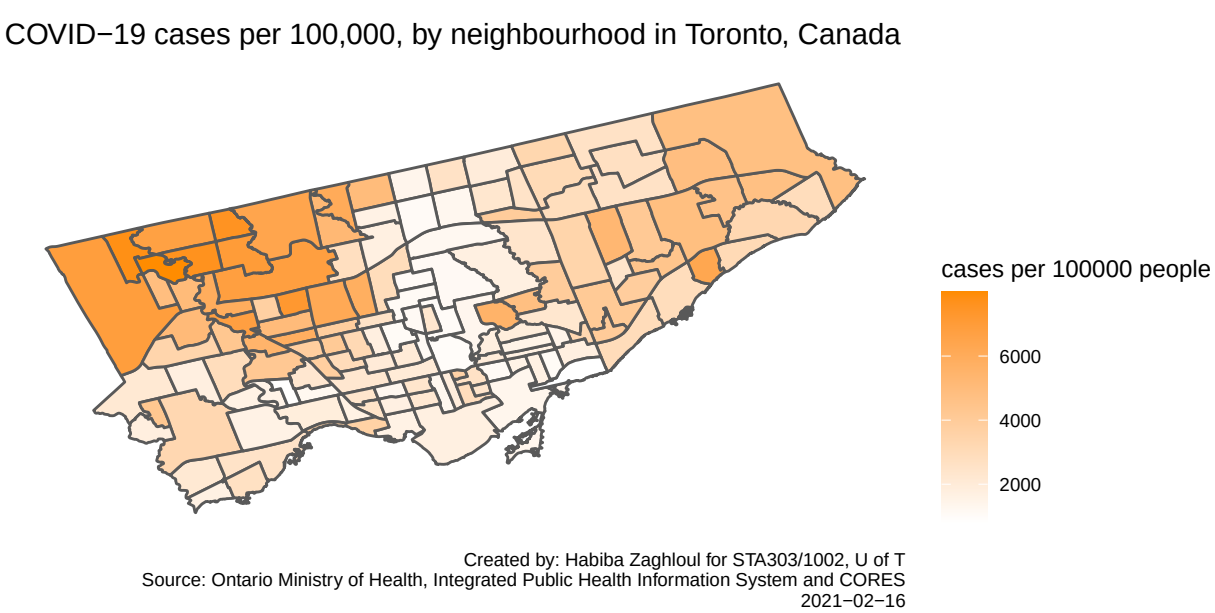
Data wrangling: part 3

```
nbhoods_final = nbhoods_all %>%
  mutate(med_inc = median(low_income_percentage)) %>%
  mutate(med_rate = median(rate_per_100000)) %>%
  mutate(nbhood_type = case_when(
    low_income_percentage >= med_inc & rate_per_100000 >= med_rate
    ~ 'Higher low income rate, higher case rate',
    low_income_percentage >= med_inc & rate_per_100000 < med_rate
    ~ 'Higher low income rate, lower case rate',
    low_income_percentage < med_inc & rate_per_100000 >= med_rate
    ~ 'Lower low income rate, higher case rate',
    low_income_percentage < med_inc & rate_per_100000 < med_rate
```

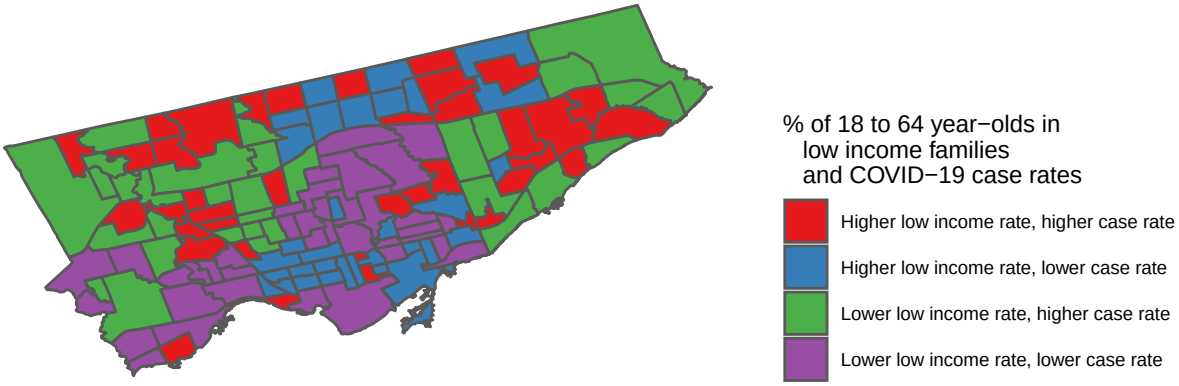
```
    ~ 'Lower low income rate, lower case rate'))
```

Data visualization




COVID−19 cases per 100,000, by neighbourhood in Toronto, Canada
cases per 100000 people
6000
4000
2000
Created by: Habiba Zaghloul for STA303/1002, U of T
Source: Ontario Ministry of Health, Integrated Public Health Information System and CORES
2021−02−16

COVID−19 cases per 100,000, by neighbourhood in Toronto, Canada



Created by: Habiba Zaghloul for STA303/1002, U of T
Income data source: Census Profile 98−316−X2016001 via OpenData Toronto
COVID data source: Ontario Ministry of Health, Integrated Public
Health Information System and CORES
2021−02−16