# Finding Common Places in Toronto for Covid-19

DATA SCIENCE CAPSTONE PROJECT

DATE:25/05/2020

# Problem to Solve

▶ The major purpose of this project, is to suggest or identify common places which has more people movement in and around the neighborhood city prone to Covid-19 infection spread.

▶ Social distancing and avoiding the common places such as metros, airport, bus stand, beaches, markets and other more people movement areas.

▶ Identify and sort top 10 places prone to Covid-19 infection spread.

# Data Acquisation and Cleaning

▶ We will need data about different venues in and around the neighborhoods for identifying the common places. In order to gain that information we will use "Foursquare" locational information.

▶ The data retrieved from Foursquare contained information of venues within a specified distance of the longitude and latitude of the postcodes. The information obtained per venue as follows:

▶ 1. Neighborhood

▶ 2. Neighborhood Latitude

▶ 3. Neighborhood Longitude

▶ 4. Venue

▶ 5. Venue name such as rail station,parks,bus stand, cinema hall etc

▶ 6. Venue Latitude

▶ 7. Venue Longitude

▶ 8. Venue Category

# Most Common Places in Toronto

▶ Venues list

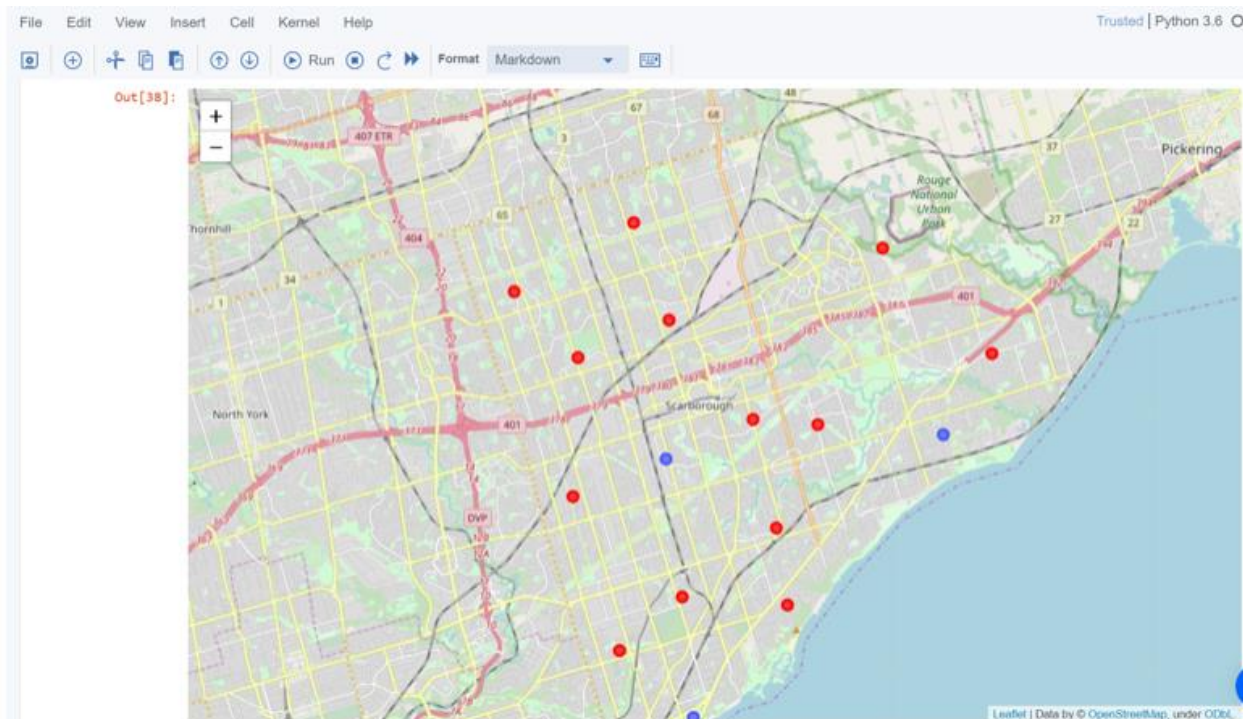| | Neighborhood | 1st Most Common Venue | 2nd Most Common Venue | 3rd Most Common Venue | 4th Most Common Venue | 5th Most Common Venue | 6th Most Common Venue | 7th Most Common Venue | 8th Most Common Venue | 9th Most Common Venue | 10th Most Common Venue |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Berczy Park | Coffee Shop | Cocktail Bar | Café | Beer Bar | Bakery | Seafood Restaurant | Cheese Shop | Restaurant | Pub | Farmers Market |
| 1 | Brockton, Parkdale Village, Exhibition Place | Café | Breakfast Spot | Nightclub | Coffee Shop | Climbing Gym | Burrito Place | Italian Restaurant | Intersection | Stadium | Restaurant |
| 2 | Business reply mail Processing Centre, South C... | Yoga Studio | Pizza Place | Smoke Shop | Brewery | Spa | Burrito Place | Farmers Market | Fast Food Restaurant | Restaurant | Light Rail Station |
| 3 | CN Tower, King and Spadina, Railway Lands, Har... | Airport Lounge | Airport Service | Airport Terminal | Harbor / Marina | Sculpture Garden | Coffee Shop | Boat or Ferry | Boutique | Bar | Airport Gate |
| 4 | Central Bay Street | Coffee Shop | Italian Restaurant | Sandwich Place | Café | Burger Joint | Ice Cream Shop | Japanese Restaurant | Thai Restaurant | Bar | Bubble Tea Shop |

# K mean Clustering

▶ Clusters

| | Postalcode | Borough | Neighborhood | Latitude | Longitude | Cluster Labels | 1st Most Common Venue | 2nd Most Common Venue | 3rd Most Common Venue | 4th Most Common Venue | 5th Most Common Venue | 6th Most Common Venue | 7th Most Common Venue | 8t Co |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 37 | M4E | East Toronto | The Beaches | 43.676357 | -79.293031 | 0 | Trail | Pub | Health Food Store | Distribution Center | Department Store | Dessert Shop | Dim Sum Restaurant | |
| 41 | M4K | East Toronto | The Danforth West, Riverdale | 43.679557 | -79.352188 | 0 | Greek Restaurant | Coffee Shop | Italian Restaurant | Ice Cream Shop | Furniture / Home Store | Restaurant | Bubble Tea Shop | |
| 42 | M4L | East Toronto | India Bazaar, The Beaches West | 43.668999 | -79.315572 | 0 | Fast Food Restaurant | Steakhouse | Burrito Place | Pub | Restaurant | Intersection | Fish & Chips Shop | Res |
| 43 | M4M | East Toronto | Studio District | 43.659526 | -79.340923 | 0 | Café | Coffee Shop | Gastropub | Bakery | Brewery | American Restaurant | Yoga Studio | Res |
| 44 | M4N | Central Toronto | Lawrence Park | 43.728020 | -79.388790 | 3 | Park | Dim Sum Restaurant | Bus Line | Swim School | Event Space | Electronics Store | Eastern European Restaurant | |

# Results

- Map Clusters in Toronto

# Conclusion and Future works

▶ In this project, using k-means cluster algorithm I separated the neighborhood into 10(Ten) different clusters and for 103 different latitude and logitude from dataset, which have very-similar neighborhoods around them. Using the above results presented to a particular neighborhood based on common places which can be avoided by the public during the Covid-19 crisis.

▶ This project can be continued for making it more precise in terms categories which will be easy to find alternatives in Toronto. This will fulfill their daily needs or things we need to live a better life during the Pandemic crisis.