

The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic visual effect.

# Coursera Capstone

## Battle of Neighborhoods

By Jerry Lin

20, April 2020

# Idea

- ▶ Deal with Toronto Data
- ▶ Toronto is business competitive.
- ▶ Apply machine learning concepts
- ▶ Display tables and visualizations

# Problem

- ▶ High business priced in Toronto
- ▶ Biggest city in Canada
- ▶ Business need to choose location carefully
- ▶ Better financed

# Target Audience

- ▶ Produced by myself and National Finance company.
- ▶ Locate and recommend to businesses
- ▶ Pick regions of neighborhoods fit best

# Data Description

- ▶ Site: [https://en.wikipedia.org/wiki/List\\_of\\_postal\\_codes\\_of\\_Canada:\\_M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M)
- ▶ Explore, segment, and cluster neighborhood of Toronto.
- ▶ No other sources to find Toronto
- ▶ Clean and organize data first
- ▶ Variables: Neighborhood, Neighborhood latitude, Neighborhood longitude, Venue, name, Venue Category, Venue Latitude, Venue Longitude.

# Methodology

- ▶ Data scrapping Wikipedia page for neighborhoods
- ▶ Foursquare.com
- ▶ K-means Machine Learning
- ▶ Latitude and longitude coordinates: Geocoder
- ▶ Find population count
- ▶ Mapping

# Data

| : | Postalcode | Borough     | Neighbourhood                            | Latitude  | Longitude  |
|---|------------|-------------|--|-----------|------------|
| 0 | M1B        | Scarborough | Malvern / Rouge                          | 43.806686 | -79.194353 |
| 1 | M1C        | Scarborough | Rouge Hill / Port Union / Highland Creek | 43.784535 | -79.160497 |
| 2 | M1E        | Scarborough | Guildwood / Morningside / West Hill      | 43.763573 | -79.188711 |
| 3 | M1G        | Scarborough | Woburn                                   | 43.770992 | -79.216917 |
| 4 | M1H        | Scarborough | Cedarbrae                                | 43.773136 | -79.239476 |

# Results

- ▶ Segmented and clustered similar neighborhoods
- ▶ Ranking high populations in neighborhoods
- ▶ Find top venue



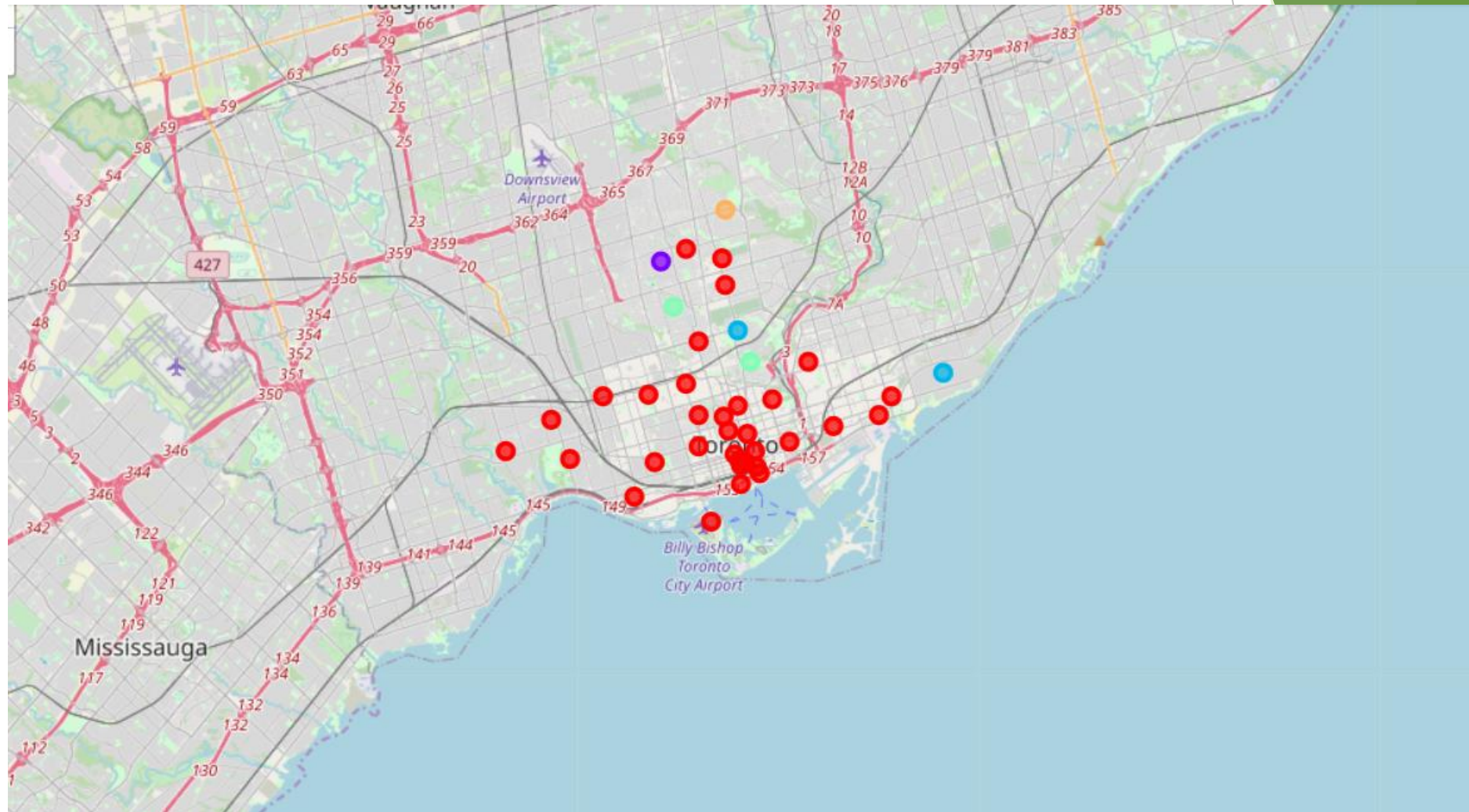
# Top Venues

|   | Cluster Labels | 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 | 0              | Berczy Park                                       | Coffee Shop           | Beer Bar              | Restaurant            | Cheese Shop           | Cocktail Bar          | Bakery                | Italian Restaurant    | Seafood Restaurant    | Farmers Market        | Café                   |
| 1 | 0              | Brockton / Parkdale Village / Exhibition Place    | Café                  | Nightclub             | Coffee Shop           | Breakfast Spot        | Gym                   | Bakery                | Performing Arts Venue | Pet Store             | Climbing Gym          | Restaurant             |
| 2 | 0              | Business reply mail Processing Centre             | Yoga Studio           | Smoke Shop            | Garden Center         | Garden                | Fast Food Restaurant  | Farmers Market        | Light Rail Station    | Comic Shop            | Park                  | Recording Studio       |
| 3 | 0              | CN Tower / King and Spadina / Railway Lands / ... | Airport Service       | Airport               | Harbor / Marina       | Bar                   | Coffee Shop           | Sculpture Garden      | Boat or Ferry         | Boutique              | Rental Car Location   | Airport Terminal       |
| 4 | 0              | Central Bay Street                                | Coffee Shop           | Italian Restaurant    | Sandwich Place        | Café                  | Spa                   | Burger Joint          | Japanese Restaurant   | Sushi Restaurant      | Bubble Tea Shop       | Salad Place            |

# More

| 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 | 8th Most Common Venue | 9th Most Common Venue       | Most Common Venue           |
|-----------------|---------------------------------|-----------|------------|----------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------------|-----------------------------|
| East Toronto    | The Beaches                     | 43.676357 | -79.293031 | 2              | Health Food Store     | Pub                   | Trail                 | Yoga Studio           | Dessert Shop           | Event Space           | Ethiopian Restaurant  | Electronics Store     | Eastern European Restaurant | Dumpling Restaurant         |
| East Toronto    | The Danforth West / Riverdale   | 43.679557 | -79.352188 | 0              | Greek Restaurant      | Italian Restaurant    | Coffee Shop           | Bookstore             | Furniture / Home Store | Restaurant            | Ice Cream Shop        | Spa                   | Juice Bar                   | Brewery                     |
| East Toronto    | India Bazaar / The Beaches West | 43.668999 | -79.315572 | 0              | Sandwich Place        | Fast Food Restaurant  | Gym                   | Food & Drink Shop     | Burrito Place          | Board Shop            | Italian Restaurant    | Steakhouse            | Fish & Chips Shop           | Sushi Restaurant            |
| East Toronto    | Studio District                 | 43.659526 | -79.340923 | 0              | Café                  | Coffee Shop           | Bakery                | Gastropub             | American Restaurant    | Brewery               | Yoga Studio           | Fish Market           | Italian Restaurant          | Bookstore                   |
| Central Toronto | Lawrence Park                   | 43.728020 | -79.388790 | 4              | Park                  | Swim School           | Bus Line              | Yoga Studio           | Discount Store         | Falafel Restaurant    | Event Space           | Ethiopian Restaurant  | Electronics Store           | Eastern European Restaurant |

# Map



# Discussion

- ▶ A cluster looks to find best expansion opportunity
- ▶ Finding neighborhood will offer low competition
- ▶ Best region in Toronto to do business

# Conclusion

- ▶ From the tables coffee shops and on the beaches is better
- ▶ Thank my team and IMB