– Introduction – The Battle of Neighborhoods

Created by Sittisak Tantiprasongchai

Business Problem

This project is to help people who interest in moving their home to a Toronto in Canada.

Some people might like to travel. Some people might like to eat food. Or resting in the park. What they do is Search in internet or just ask the people around.
And use those suggestions To decide.

To solving problem, I get a data from Wikipedia
https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
And clustering all data together.

Goal Objective

- Find a neighborhoods of the select area in Toronto that satisfied who move on.

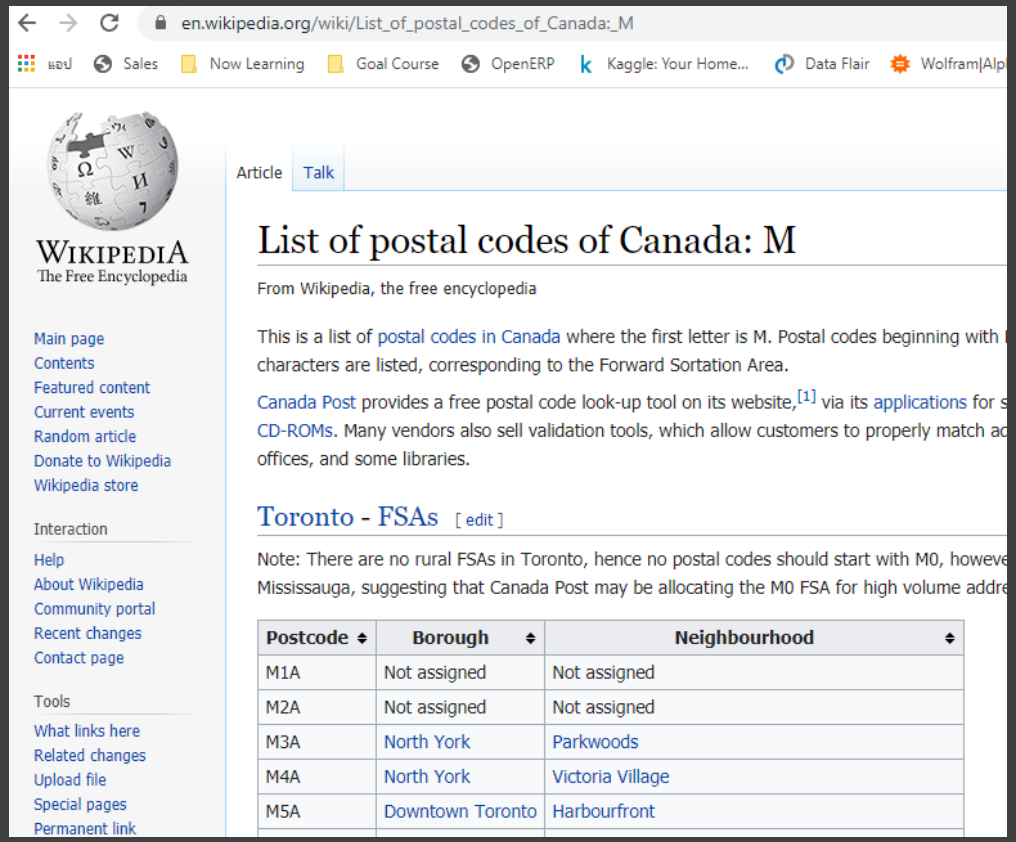
Target Group

1. Stakeholders
   - People who traded houses.
   - Tour guide.

2. User
   - People who traded houses.
   - People who travel.
   - People who looking for a new home.

Data acquisition and cleaning

1. Get and scraping the data from Wikipedia “https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M



Data acquisition and cleaning

2. Cleaning and convert it to Dataframe

	PostalCode	Borough	Neighborhood
0	M1B	Scarborough	Rouge, Malvern
1	M1C	Scarborough	Highland Creek, Rouge Hill, Port Union
2	M1E	Scarborough	Guildwood, Morningside, West Hill
3	M1G	Scarborough	Woburn
4	M1H	Scarborough	Cedarbrae

Data acquisition and cleaning

3. Combine geo latitude, longtitude data to canada postal dataframe from 'http://cocl.us/Geospatial_data'

	PostalCode	Borough	Neighborhood	Latitude	Longitude
0	M1B	Scarborough	Rouge, Malvern	43.806686	-79.194353
1	M1C	Scarborough	Highland Creek, Rouge Hill, Port Union	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
5	M1J	Scarborough	Scarborough Village	43.744734	-79.239476

Explore data with Folium

Map of toronto

Clustering Data with K-means and Foursquare

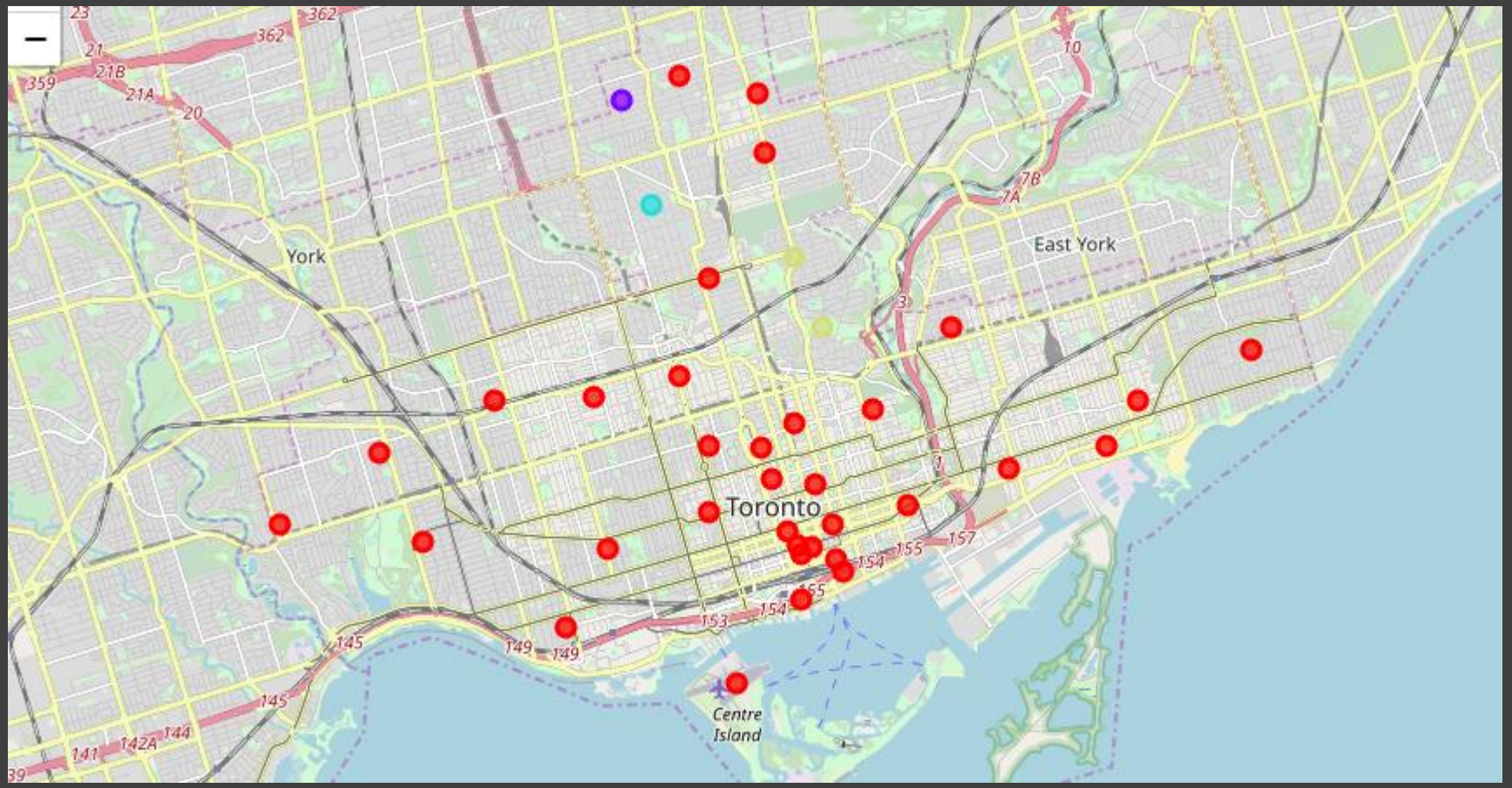
- **This project use K-means Machine Learning Technic to divide all data to 4 cluster**
- **Get venues data with Foursquare API**


```
{'meta': {'code': 200, 'requestId': '5e6271c5f7706a001b9dba32'},
 'response': {'headerLocation': 'The Beaches',
  'headerFullLocation': 'The Beaches, Toronto',
  'headerLocationGranularity': 'neighborhood',
  'totalResults': 5,
  'suggestedBounds': {'ne': {'lat': 43.680857404499996,
    'lng': -79.28682091449052},
   'sw': {'lat': 43.67185739549999, 'lng': -79.29924148550948}},
  'groups': [{'type': 'Recommended Places',
    'name': 'recommended',
    'items': [{'reasons': {'count': 0,
       'items': [{'summary': 'This spot is popular',
         'type': 'general',
         'reasonName': 'globalInteractionReason'}]},
      'venue': {'id': '4bd461bc77b29c74a07d9282',
       'name': 'Glen Manor Ravine',
       'location': {'address': 'Glen Manor',
        'crossStreet': 'Queen St.',
```

K-means Cluster Neighborhoods

- **The Clustering Data divide into 4 groups (K = 4)**
- **1. Restaurant (Red)**
- **2. Garden (Purple)**
- **3. Jewelry Store (Light Blue)**
- **4. Park (Green)**

K-means Cluster Neighborhoods



Restaurant (Cluster 1)

	Borough	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	10th Most Common Venue
0	East Toronto	0	Health Food Store	Asian Restaurant	Pub	Trail	Discount Store	Department Store	Dessert Shop	Dim Sum Restaurant	Diner	Women's Store
1	East Toronto	0	Greek Restaurant	Coffee Shop	Italian Restaurant	Furniture / Home Store	Ice Cream Shop	Cosmetics Shop	Brewery	Bubble Tea Shop	Restaurant	Café
2	East Toronto	0	Park	Sushi Restaurant	Sandwich Place	Liquor Store	Burrito Place	Italian Restaurant	Fast Food Restaurant	Ice Cream Shop	Steakhouse	Fish & Chips Shop
3	East Toronto	0	Café	Coffee Shop	Gastropub	Bakery	Brewery	Italian Restaurant	American Restaurant	Bookstore	Sandwich Place	Cheese Shop
5	Central Toronto	0	Convenience Store	Gym	Department Store	Hotel	Sandwich Place	Food & Drink Shop	Breakfast Spot	Pizza Place	Park	Doner Restaurant
6	Central Toronto	0	Clothing Store	Coffee Shop	Yoga Studio	Sporting Goods Shop	Salon / Barbershop	Restaurant	Rental Car Location	Café	Chinese Restaurant	Mexican Restaurant
7	Central Toronto	0	Sandwich Place	Dessert Shop	Sushi Restaurant	Gym	Italian Restaurant	Café	Pizza Place	Coffee Shop	Pharmacy	Salon / Barbershop

Garden (Cluster 2)

	Borough	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	10th Most Common Venue
22	Central Toronto	1	Garden	Women's Store	Deli / Bodega	Electronics Store	Eastern European Restaurant	Dumpling Restaurant	Donut Shop	Doner Restaurant	Dog Run	Distribution Center

Jewelry Store (Cluster 3)

	Borough	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	10th Most Common Venue
23	Central Toronto	2	Jewelry Store	Trail	Bus Line	Sushi Restaurant	Women's Store	Department Store	Eastern European Restaurant	Dumpling Restaurant	Donut Shop	Doner Restaurant

Park (Cluster 4)

	Borough	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	10th Most Common Venue
4	Central Toronto	3	Park	Lake	Bus Line	Swim School	Department Store	Eastern European Restaurant	Dumpling Restaurant	Donut Shop	Doner Restaurant	Dog Run
8	Central Toronto	3	Trail	Park	Playground	Summer Camp	Discount Store	Department Store	Dessert Shop	Dim Sum Restaurant	Diner	Women's Store
10	Downtown Toronto	3	Park	Playground	Trail	Cupcake Shop	Dumpling Restaurant	Donut Shop	Doner Restaurant	Dog Run	Distribution Center	Discount Store