"Candidate" Neighborhoods of Toronto for opening a new coffee shop
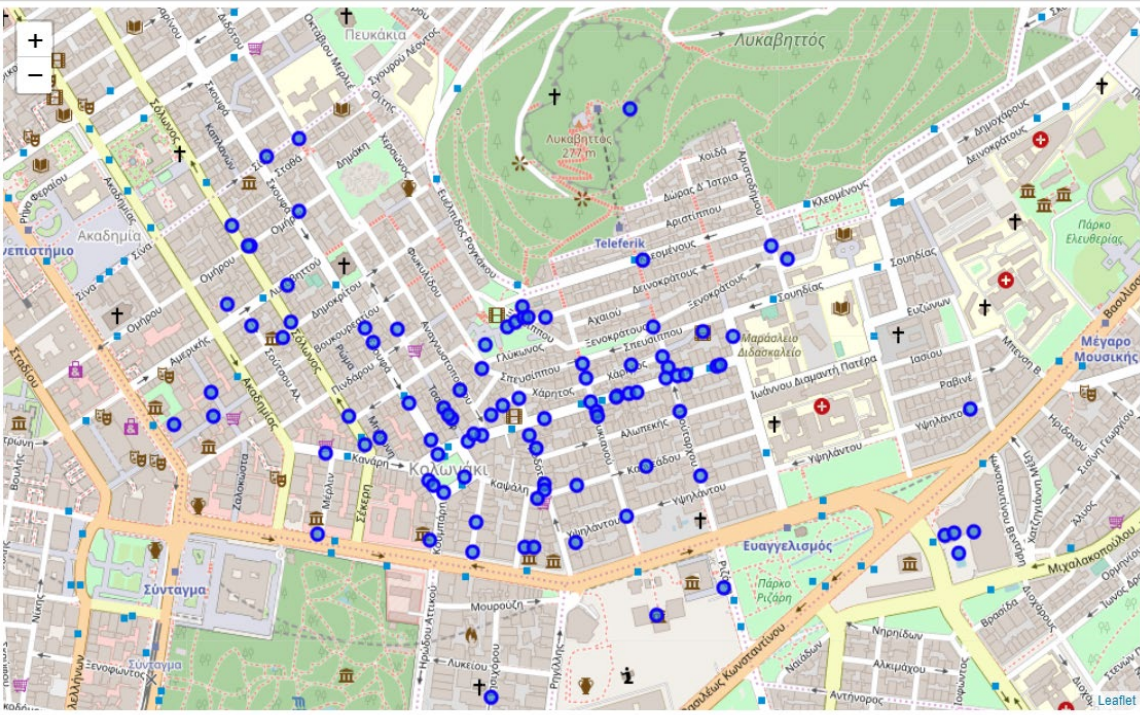
Introduction

- A Coffee shop company currently operates successfully more than 100 coffee shops in Greece.

- Most profitable coffee shop is operating in the Neighbourhood of Kolonaki in the centre of Athens.

- Company's management is considering expanding its businesses in USA and Canada.

- Before starting to commit any funds for expanding its businesses abroad, the management of the Group has decided to start with a "pilot project" (opening only one shop in one country) in Canada

- Company assigns the following task to a data scientist:

  Identifying potential candidate Neighbourhood's / Boroughs in Toronto centre, which appear to have similar venue categories/characteristics with its most successful existing coffee shop in Kolonaki Athens

Data sources

- Coordinates of the existing location in Kolonaki Athens and Coordinates of Toronto Centre (use :"geopy.geocoders" , "Nominatim)

- Venues for Athens and Toronto city near our targeted Borough/neighbourhood.(use: "Foursquare")

- Postal code, Neighbourhood and Borough of Toronto obtained from Wikipedia (use: BeautifulSoup)

- Coordinates of Toronto and the relevant postal codes from cocl.us /Geospatial_data

- List of Boroughs & neighbourhoods with the most common venues in Toronto Centre (Use: Foursquare)

Methodology - Kolonaki Athens Venues

- As a first step we identify venue categories near company's most successful coffee shop in Kolonaki Athens.

- From the current table and map we can easily conclude that our existing most successful coffee shop in Athens is located in an area, where there are many coffee shops/ cafeterias and restaurants. It seems that the specific Neighbourhood is a "busy" area of the centre of Athens. We can also assume that the area where the shop of our client is located, has many visitors per day (due to high number of cafeterias and restaurants) , so it is important that the "new" shop in Toronto, will be located in an area which shares similar characteristics to Athens-kolonaki.

- Our task as a Data scientist is to find Boroughs/Neighbourhoods in Toronto centre, where they appear to have similarities to Athens-Kolonaki.

categories	name
American Restaurant	1
Art Museum	1
Bar	4
Bistro	1
Bookstore	2
Boutique	4
Café	12
Cheese Shop	1
Chocolate Shop	1
Clothing Store	1
Cocktail Bar	3
Coffee Shop	3
Cosmetics Shop	2
Cupcake Shop	2
Deli / Bodega	1
Dessert Shop	5
Electronics Store	1
French Restaurant	2
Furniture / Home Store	1
Gastropub	1
Gourmet Shop	3
Greek Restaurant	3
Grilled Meat Restaurant	1
Gym / Fitness Center	1
Hill	1
History Museum	2
Hotel	4
Hotel Bar	1
Italian Restaurant	4
Kafenio	1
Mediterranean Restaurant	2
Modern European Restaurant	1
Movie Theater	1
Museum	2
Nightclub	1
Pastry Shop	1
Peruvian Restaurant	1
Playground	1
Plaza	2
Restaurant	2
Sandwich Place	1

Methodology - Toronto Venues

- Using the methodology presented in the following links
  https://github.com/stelios72/week-5-battle-of-Neighbourhood/blob/7adf780de19a54ae3c647713e034d22b678d3673/capstone%20week%205.pdf or
  https://github.com/stelios72/week-5-battle-of-Neighbourhood/blob/7adf780de19a54ae3c647713e034d22b678d3673/capstone%20week%205%20final%20.ipynb

we obtain a table with the 5 most common venue-categories per Borough and Neighbourhood (a sample of which is presented below) in Toronto centre.

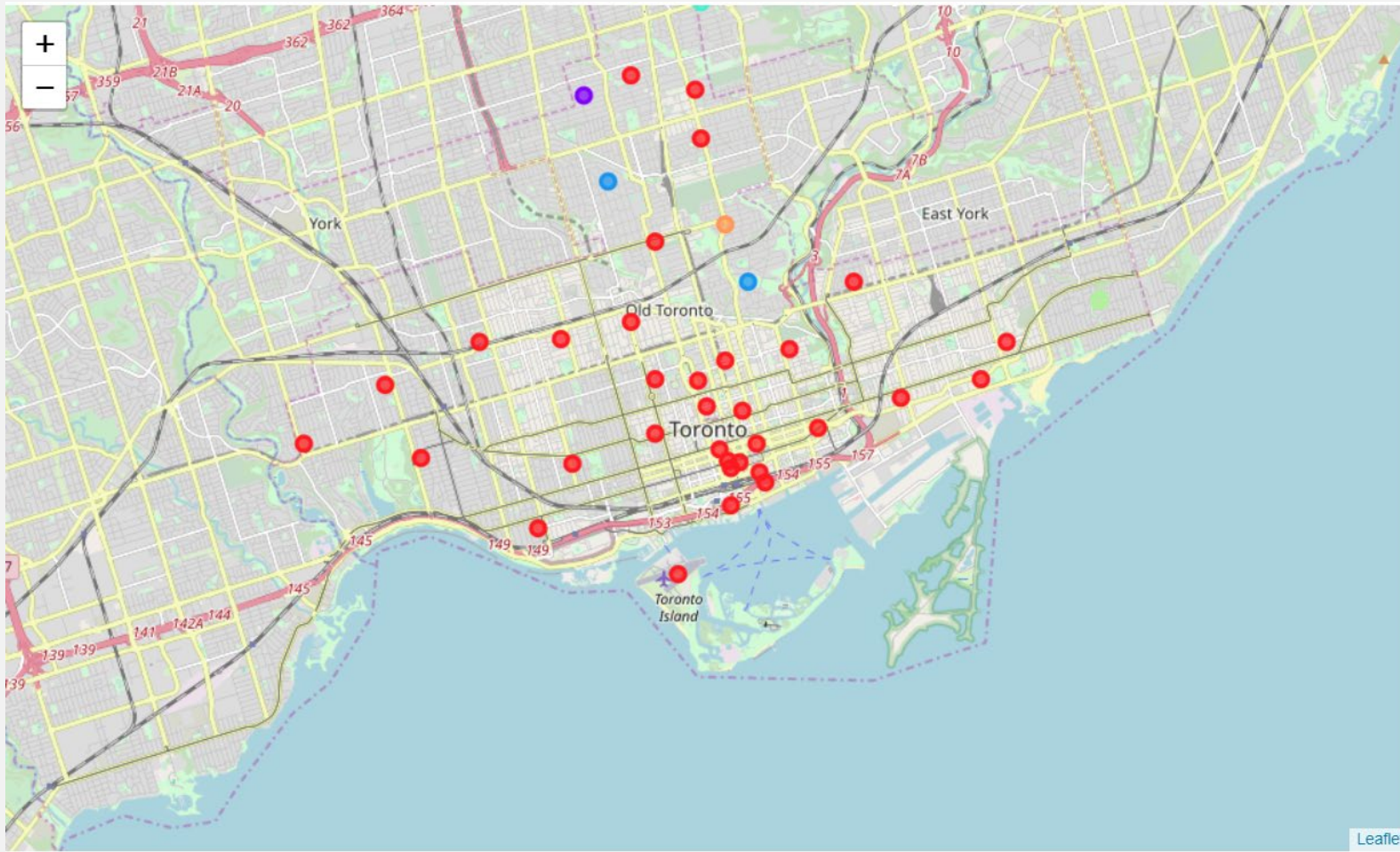|	PostalCode	Borough	Neighborhoods	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
27	M5V	DowntownToronto	CN Tower,Bathurst Quay,Island airport,Harbourf...	Airport Lounge	Airport Service	Airport Terminal	Plane	Harbor / Marina
32	M6J	WestToronto	Little Portugal,Trinity	Bar	Restaurant	Coffee Shop	Asian Restaurant	Vietnamese Restaurant
3	M4M	EastToronto	Studio District	Café	Coffee Shop	Gastropub	Brewery	Bakery
25	M5S	DowntownToronto	Harbord,University of Toronto	Café	Sandwich Place	Restaurant	Bookstore	Japanese Restaurant
26	M5T	DowntownToronto	Chinatown,Grange Park,Kensington Market	Café	Vietnamese Restaurant	Bar	Chinese Restaurant	Dumpling Restaurant

Methodology - Toronto Venues

- Since our target in to find a neighbourhood/borough of Toronto centre, which has similar characteristics to Athens-Kolonaki we will utilize from "sklearn.cluster" "KMeans". K-means clustering is a type of unsupervised learning, which is used when you have unlabeled data (i.e., data without defined categories or groups). The goal of this algorithm is to find groups in the data, with the number of groups represented by the variable K. The algorithm works iteratively to assign each data point to one of K groups based on the features that are provided. Data points are clustered based on feature similarity.

- In our case we will use 6 clusters, a table and a map of which are presented in the next two slide :

Methodology - Toronto Venues

	PostalCode	Borough	Neighbourhood	Latitude	Longitude	Cluster	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
27	M5V	DowntownToronto	CN Tower,Bathurst Quay,Island airport,Harbourf...	43.628947	-79.394420	0	Airport Lounge	Airport Service	Airport Terminal	Plane	Harbor / Marina
32	M6J	WestToronto	Little Portugal,Trinity	43.647927	-79.419750	0	Bar	Restaurant	Coffee Shop	Asian Restaurant	Vietnamese Restaurant
3	M4M	EastToronto	Studio District	43.659526	-79.340923	0	Café	Coffee Shop	Gastropub	Brewery	Bakery
25	M5S	DowntownToronto	Harbord,University of Toronto	43.662696	-79.400049	0	Café	Sandwich Place	Restaurant	Bookstore	Japanese Restaurant
26	M5T	DowntownToronto	Chinatown,Grange Park,Kensington Market	43.653206	-79.400049	0	Café	Vietnamese Restaurant	Bar	Chinese Restaurant	Dumpling Restaurant
19	M5J	DowntownToronto	Harbourfront East,Toronto Islands,Union Station	43.640816	-79.381752	0	Coffee Shop	Aquarium	Hotel	Café	Italian Restaurant
33	M6K	WestToronto	Brockton,Exhibition Place,Parkdale Village	43.636847	-79.428191	0	Coffee Shop	Café	Breakfast Spot	Grocery Store	Bakery
28	M5W	DowntownToronto	Stn A PO Boxes 25 The Esplanade	43.646435	-79.374846	0	Coffee Shop	Café	Hotel	Restaurant	Italian Restaurant
21	M5L	DowntownToronto	Commerce Court,Victoria Hotel	43.648198	-79.379817	0	Coffee Shop	Café	Hotel	Restaurant	Seafood Restaurant
13	M5A	DowntownToronto	Harbourfront	43.654260	-79.360636	0	Coffee Shop	Café	Park	Bakery	Pub
15	M5C	DowntownToronto	St. James Town	43.651494	-79.375418	0	Coffee Shop	Café	Restaurant	Bakery	Italian Restaurant
29	M5X	DowntownToronto	First Canadian Place,Underground city	43.648429	-79.382280	0	Coffee Shop	Café	Restaurant	Steakhouse	Hotel
14	M5B	DowntownToronto	Ryerson,Garden District	43.657162	-79.378937	0	Coffee Shop	Clothing Store	Cosmetics Shop	Café	Japanese Restaurant
16	M5E	DowntownToronto	Berczy Park	43.644771	-79.373306	0	Coffee Shop	Cocktail Bar	Steakhouse	Cheese Shop	Café
20	M5K	DowntownToronto	Design Exchange,Toronto Dominion Centre	43.647177	-79.381576	0	Coffee Shop	Hotel	Café	Restaurant	Steakhouse
11	M4X	DowntownToronto	Cabbagetown,St. James Town	43.667967	-79.367675	0	Coffee Shop	Italian Restaurant	Restaurant	Café	Pub
17	M5G	DowntownToronto	Central Bay Street	43.657952	-79.387383	0	Coffee Shop	Italian Restaurant	Sandwich Place	Burger Joint	Juice Bar
12	M4Y	DowntownToronto	Church and Wellesley	43.665860	-79.383160	0	Coffee Shop	Japanese Restaurant	Restaurant	Sushi Restaurant	Gay Bar
37	M7A	DowntownToronto	Queen's Park	43.662301	-79.389494	0	Coffee Shop	Park	Gym	Yoga Studio	Burrito Place
9	M4V	CentralToronto	Deer Park,Forest Hill SE,Rathnelly,South Hill,...	43.686412	-79.400049	0	Coffee Shop	Pub	Supermarket	Fried Chicken Joint	Light Rail Station
6	M4R	CentralToronto	North Toronto West	43.715383	-79.405678	0	Coffee Shop	Sporting Goods Shop	Yoga Studio	Italian Restaurant	Salon / Barbershop
18	M5H	DowntownToronto	Adelaide,King,Richmond	43.650571	-79.384568	0	Coffee Shop	Steakhouse	Café	Bar	Bakery
5	M4P	CentralToronto	Davisville North	43.712751	-79.390197	0	Department Store	Gym	Park	Breakfast Spot	Hotel
35	M6R	WestToronto	Parkdale,Roncesvalles	43.648960	-79.456325	0	Gift Shop	Restaurant	Dessert Shop	Breakfast Spot	Eastern European Restaurant
1	M4K	EastToronto	The Danforth West,Riverdale	43.679557	-79.352188	0	Greek Restaurant	Coffee Shop	Italian Restaurant	Restaurant	Ice Cream Shop
30	M6G	DowntownToronto	Christie	43.669542	-79.422564	0	Grocery Store	Café	Park	Candy Store	Athletics & Sports
34	M6P	WestToronto	High Park,The Junction South	43.661608	-79.464763	0	Mexican Restaurant	Café	Thai Restaurant	Bar	Grocery Store
2	M4L	EastToronto	The Beaches West,India Bazaar	43.668999	-79.315572	0	Park	Sandwich Place	Liquor Store	Fast Food Restaurant	Fish & Chips Shop
31	M6H	WestToronto	Dovercourt Village,Dufferin	43.669005	-79.442259	0	Pharmacy	Bakery	Grocery Store	Art Gallery	Park
38	M7Y	EastToronto	Business Reply Mail Processing Centre 969 Eastern	43.662744	-79.321558	0	Pizza Place	Auto Workshop	Brewery	Light Rail Station	Farmers Market
36	M6S	WestToronto	Runnymede,Swansea	43.651571	-79.484450	0	Pizza Place	Coffee Shop	Café	Italian Restaurant	Sushi Restaurant
7	M4S	CentralToronto	Davisville	43.704324	-79.388790	0	Pizza Place	Dessert Shop	Sandwich Place	Café	Italian Restaurant
24	M5R	CentralToronto	The Annex,North Midtown,Yorkville	43.672710	-79.405678	0	Sandwich Place	Café	Coffee Shop	Pharmacy	Liquor Store
22	M5N	CentralToronto	Roselawn	43.711695	-79.416936	1	Garden	Yoga Studio	Dessert Shop	Falafel Restaurant	Event Space
23	M5P	CentralToronto	Forest Hill North,Forest Hill West	43.696948	-79.411307	2	Park	Jewelry Store	Trail	Sushi Restaurant	Yoga Studio
10	M4W	DowntownToronto	Rosedale	43.679563	-79.377529	2	Park	Playground	Trail	Yoga Studio	Dessert Shop
4	M4N	CentralToronto	Lawrence Park	43.728020	-79.388790	3	Dim Sum Restaurant	Park	Bus Line	Swim School	Yoga Studio
0	M4E	EastToronto	The Beaches	43.676357	-79.293031	4	Neighborhood	Health Food Store	Trail	Pub	Department Store
8	M4T	CentralToronto	Moore Park,Summerhill East	43.689574	-79.383160	5	Playground	Summer Camp	Yoga Studio	Dessert Shop	Event Space

**Red: 0,
Purple: 1,
Blue: 2,
Green: 3,
Yellow
green: 4,
Orange: 5.**

Results

- From the last table, last map and the table that we have previously presented and refers to Athens Kolonaki venues we can conclude that neighbourhoods of cluster 0 (red) are potential "candidates" for opening the "pilot" coffee shop in Toronto since they appear to have "similarities" to Kolonaki Athens.

- In specific the red cluster, appears to have many coffee shops and restaurants similarly to Kolonaki Athens. In addition, similarly to Kolonaki Neighbourhood, it is in Toronto Centre.

- Considering the above we will suggest as potential candidate Neighbourhoods cluster 0

Considerations

- As already mentioned Neighbourhoods of cluster 0 are potential candidates for opening a "pilot" coffee shop in the centre of Toronto Canada.

- We strongly believe that before deciding, which neighbourhood is the best candidate for opening a pilot store, further investigation & information is necessary in order to come to a final conclusion.

- Indicatively the following criteria should be considered:
  - Real estate prices of each neighbourhood i.e cost of renting a store
  - Availability of commercial stores for rent
  - Pedestrian zones which usually increase the number of potential clients
  - Licensing procedure restrictions if any
  - Company internal factors (which as discussed are not currently disclosed to us)
  - Further investigate Neighbourhoods within zero cluster for other characteristics other than venue categories.

Conclusion

We suggest Borough's/Neighbourhood's cluster 0(red) as potential candidates for opening a "pilot" coffee shop in the centre of Toronto Canada but we also strongly suggest that further investigation(as per previous section) takes place before the company takes its final decision

Thank you for your attention