BATTLE OF NEIGHBOURHOODS – CAPSTONE PROJECT

EXPLORING FOR POTENTIAL NEW HOTEL VENUES IN TORONTO

Agenda

- Introduction & Business Problem Background

- Data Acquisition

- Mapping Toronto

- Clusters

  - Map of Clusters

  - Summary of Clusters

- Conclusions and Recommendations

INTRODUCTION & BUSINESS PROBLEM BACKGROUND

The City of Toronto, is the most populous city in Canada. It is diverse and is the financial capital of Canada. The city is a major center for banking and finance, retailing, tourism, real estate, advertising, legal services, insurance, theater, and the arts in the Canada. Hence, the market is highly competitive. Toronto has 140 neighbourhoods and a population of 2.9 million. It also receives about 43 million visitors every year.

Problem Description:

▪ Company ABC is planning to open a brand new hotel in Toronto and needs to select the best area to open its first location. If successful, the hotel will be able to open subsequent locations in other areas. Therefore, the selection of the first location is very important.

▪ Various factors need to be studied in order to decide in which location to open a new hotel, including :

  ▪ What is the population?

  ▪ What is the demographic?

  ▪ What are the most well-visited areas in the city?

 ▪ What is the segmentation of the borough?

Target Audience: To recommend the correct location, Company ABC has hired my Data Science team to complete a thorough analysis. The objective of this analysis is to provide a recommendation to Company ABC on which neighborhood of Toronto will be best area to open a new hotel. The analysis should include a detailed description of the rationale of the recommendations made.

Success Criteria: The success criteria of the project will be a good recommendation of borough/neighborhood choice to Company ABC based on population density in the area, number of hotels in that location and nearest venues like restaurants and cafes.

DATA ACQUISITION

- One city will be analyzed in this project: Toronto, Canada

- We will be using the following datasets:

  - Data 1 : Dataset containing the list of all neighbourhoods in Toronto, as well as the latitude and longitude of each neighbourhood:
    https://en.wikipedia.org/wiki/Demographics_of_Toronto_neighbourhoods

  - Data 2: Dataset containing Postal Codes for different Neighbourhoods in Toronto. Link to dataset:
    https://en.wikipedia.org/w/index.php?title=List_of_postal_codes_of_Canada:_M&oldid=942851379

  - Data 3 : The following data will be retrieved from Wikipedia - https://en.wikipedia.org/wiki/Toronto
    https://en.wikipedia.org/wiki/Economy_of_toronto

    - Toronto Population

    - Toronto Demographics

  - Data 4 : Toronto's geographical coordinates will be utilized as input for the Foursquare API, that will be leveraged to provision venue information for each neighbourhood. We will use the Foursquare API to explore neighbourhoods in Toronto. Link to the dataset is:
    https://developer.foursquare.com/docs/data

MAPPING TORONTO
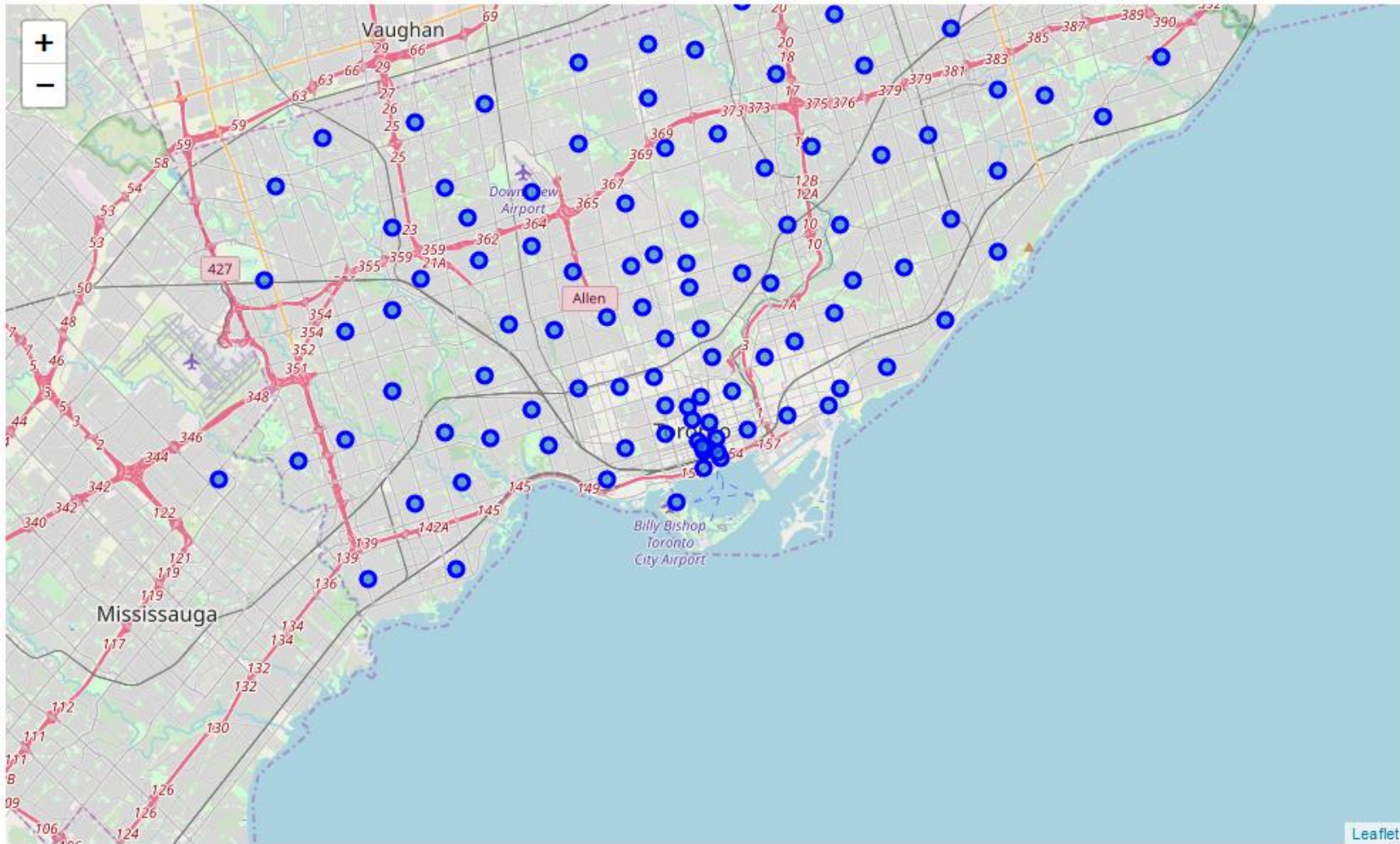
CLUSTERS - MAP
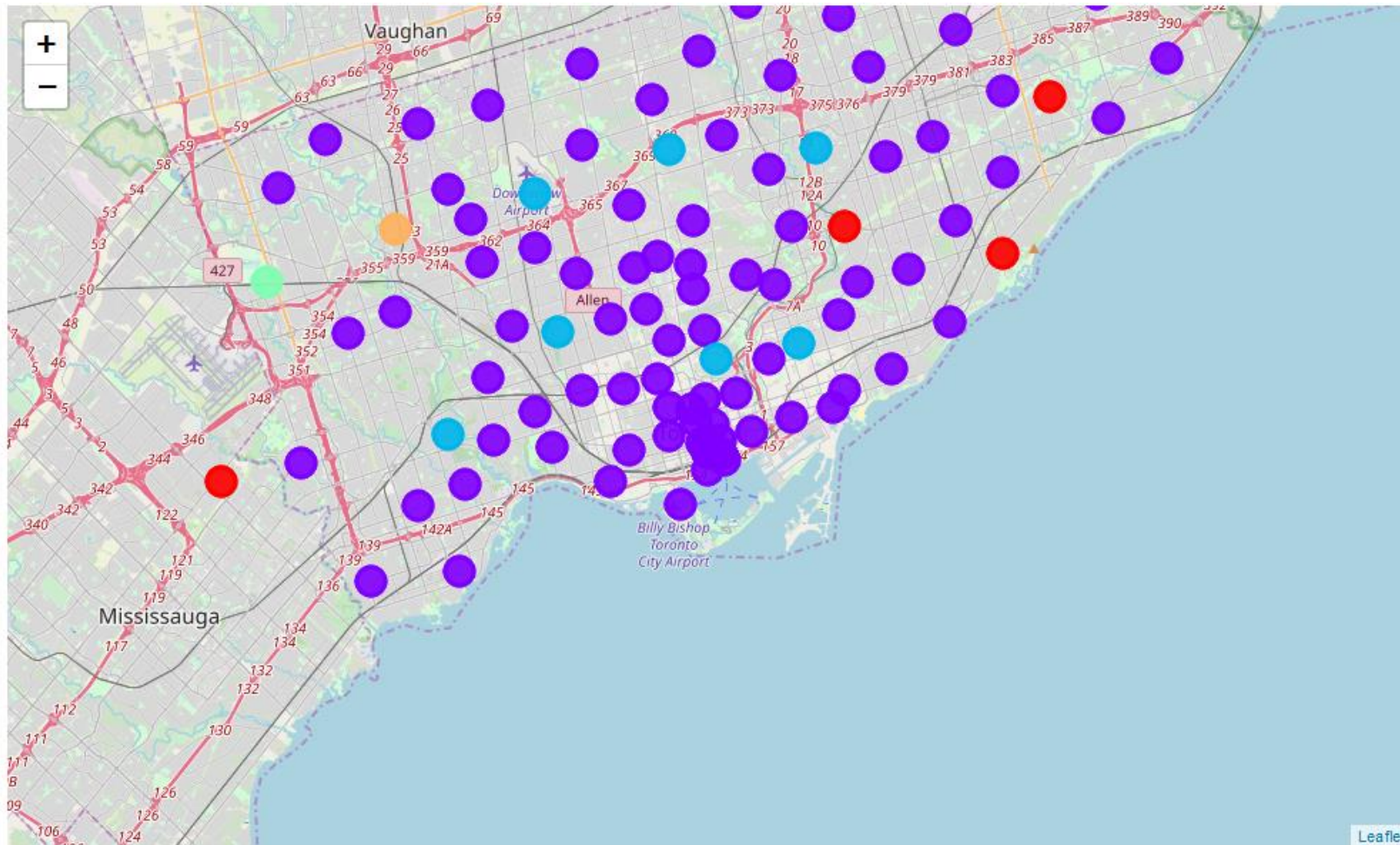
CLUSTER 0 - MOST COMMON VENUES: RESTAURANTS, DOG RUN, AND YOGA STUDIO (NO HOTELS IN TOP 10 VENUES)

	Neighbourhood	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Cluster Labels	Land Area	Population	Postcode	
17	Canada Post Gateway Processing Centre	Fried Chicken Joint	Mediterranean Restaurant	Burrito Place	American Restaurant	Sandwich Place	Dog Run	0	NaN	NaN	M7R	Mi
25	Cliffcrest,Cliffside,Scarborough Village West	Dog Run	Doner Restaurant	Donut Shop	Drugstore	Yoga Studio	Diner	0	NaN	NaN	M1M	Sc
90	Victoria Village	Yoga Studio	Diner	Discount Store	Distribution Center	Dog Run	Doner Restaurant	0	4.72	17,047	M4A	Nc
94	Woburn	Dog Run	Doner Restaurant	Donut Shop	Drugstore	Dumpling Restaurant	Eastern European Restaurant	0	13.34	48,507	M1G	Sc

	Neighbourhood	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Cluster Labels	Land Area	Population	Post
0	Adelaide,King,Richmond	Bakery	Clothing Store	Office	Pizza Place	Lounge	Gym	1	NaN	NaN	M5H
1	Agincourt	Latin American Restaurant	Eastern European Restaurant	Dog Run	Doner Restaurant	Donut Shop	Drugstore	1	12.45	44,577	M1S
3	Albion Gardens,Beaumont Heights,Humbergate,Jam…	Sandwich Place	Liquor Store	Beer Store	Fast Food Restaurant	German Restaurant	Department Store	1	NaN	NaN	M9V
4	Alderwood,Long Branch	Coffee Shop	Pub	Sandwich Place	Dog Run	Diner	Discount Store	1	NaN	NaN	M8W
5	Bathurst Manor,Downsview North,Wilson Heights	Chinese Restaurant	Shopping Mall	Deli / Bodega	Pizza Place	Gas Station	Supermarket	1	NaN	NaN	M3H
6	Bayview Village	Yoga Studio	Discount Store	Dog Run	Doner Restaurant	Donut Shop	Drugstore	1	4.14	12,280	M2K
7	Bedford Park,Lawrence Manor East	Pizza Place	Indian Restaurant	Sushi Restaurant	Café	Juice Bar	Thai Restaurant	1	NaN	NaN	M5M
8	Berczy Park	Café	Seafood Restaurant	Cheese Shop	Farmers Market	Beer Bar	Shopping Mall	1	NaN	NaN	M5E
9	Birch Cliff,Cliffside West	Donut Shop	Discount Store	Distribution Center	Dog Run	Doner Restaurant	Drugstore	1	NaN	NaN	M1N
10	Bloordale Gardens,Eringate,Markland Wood,Old B…	Café	Pizza Place	Liquor Store	Event Space	Ethiopian Restaurant	Falafel Restaurant	1	NaN	NaN	M9C
11	Brockton,Exhibition Place,Parkdale Village	Stadium	Burrito Place	Restaurant	Climbing Gym	Grocery Store	Bakery	1	NaN	NaN	M6K
12	Business Reply Mail Processing Centre 969 Eastern	Auto Workshop	Fast Food Restaurant	Garden	Garden Center	Light Rail Station	Spa	1	NaN	NaN	M7Y
	CN Tower,Bathurst										

	Neighbourhood	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Cluster Labels	Land Area	Population	Postcode	Borough
2	Agincourt North,L'Amoreaux East,Milliken,Steel...	Discount Store	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Drugstore	2	NaN	NaN	M1V	Scarborough
13	CFB Toronto,Downsview East	Discount Store	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Drugstore	2	NaN	NaN	M3K	North York
16	Caledonia-Fairbanks	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Drugstore	Electronics Store	2	NaN	NaN	M6E	York
40	East Toronto	Discount Store	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Drugstore	2	NaN	NaN	M4J	East York
71	Parkwoods	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Drugstore	Dumpling Restaurant	2	4.96	26,533	M3A	North York
73	Rosedale	Donut Shop	Diner	Discount Store	Distribution Center	Dog Run	Doner Restaurant	2	2.72	7,672	M4W	Downtown Toronto
88	The Kingsway,Montgomery Road,Old Mill North	Donut Shop	Diner	Discount Store	Distribution Center	Dog Run	Doner Restaurant	2	NaN	NaN	M8X	Etobicoke
97	York Mills West	Dumpling Restaurant	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Drugstore	2	NaN	NaN	M2P	North York

CLUSTER 3 - MOST COMMON VENUES: RESTAURANTS, DISTRIBUTION CENTERS, AND DOG RUN (NO HOTELS IN TOP 10 VENUES)

	Neighbourhood	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Cluster Labels	Land Area	Population	Postcode	Borough	Latitu
68	Northwest	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Dumpling Restaurant	Dim Sum Restaurant	3	NaN	NaN	M9W	Etobicoke	43.7067

CLUSTER 4 - MOST COMMON VENUES: RESTAURANTS, DRUGSTORE, DOG RUN (NO HOTELS IN TOP 10 VENUES)

	Neighbourhood	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	Cluster Labels	Land Area	Population	Postcode	Borough	Latitude
41	Emery,Humberlea	Dog Run	Doner Restaurant	Donut Shop	Drugstore	Eastern European Restaurant	Field	4	NaN	NaN	M9M	North York	43.724766

CONCLUSIONS AND RECOMMENDATIONS

- Used clustering to identify optimal Neighbourhoods in Toronto to establish a new Hotel

- Identified one Cluster containing different potential Neighbourhoods in Toronto to open a new Hotel

- Hotels are clearly located only in Cluster 1, which makes the selection of the final location for a new hotel easily identifiable in order for company ABC to reduce risks

  - Restaurants, nightlife, and coffee shops are very popular in Cluster 1 as well

- It is noticeable that Cluster 1 is the most viable cluster to build a new hotel. The proximity to a big number of Restaurants (lunch and dinner venues for guests), Coffee shops and other amenities are also very important points to take into account when making the right choice. This cluster contains hotels in the top venues in Central Toronto, Downtown Toronto and North York, within neighbourhoods like St. James Town, Harbourfront East, and Downsview West.

- In conclusion, this project would have had better results if there were more data available in terms of actual land pricing data within the area, public transportation access and allowance of more venues exploration with the Foursquare. However, based on the available data, the analysis shows that the best option for Company ABC would be to focus on only three Toronto Neighbourhoods (Central Toronto, Downtown Toronto and North York) when establishing a new hotel.