BEST LOCATION FOR INDIAN RESTAURANTS IN TORONTO

COURSERA-CAPSTONE PROJECT

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INTRODUCTION

- While opening a restaurant can be a very lucrative business, a lack of demand or over saturation causes many restaurants to close within the first year of opening.
- There are many different factors that can account for a restaurant's success such as location, competition and quality of the food.
- This is an important question that every business owner must face while choosing whether to open a restaurant or not? or which location is suitable for the business?

BUSINESS PROBLEM

- The objective of this project is to analyze and select the best locations in Toronto to open a new Indian restaurant.
- Using data science methodology and machine learning techniques like clustering, this project aims to provide solutions to answer the business question: In the city of Toronto, if someone is looking to open a new Indian restaurant, where would you recommend that they open it?

DATA ACQUISITION AND CLEANING

Based on definition of our problem, factors that will influence our decision are:

- Number of existing restaurants in the neighborhood (any type of restaurant)
- Number of and distance to Indian restaurants in the neighborhood.
- Distance of neighborhood from popular neighborhoods.

In our project we will:

- Acquire the names and boroughs of the neighborhoods by scrapping a Wikipedia page.
- Next, we use the foursquare API to find all types of restaurants within a 1000 meter radius for every neighborhood.

THE LATITUDE AND THE LONGITUDE COORDINATES OF EACH NEIGHBORHOOD

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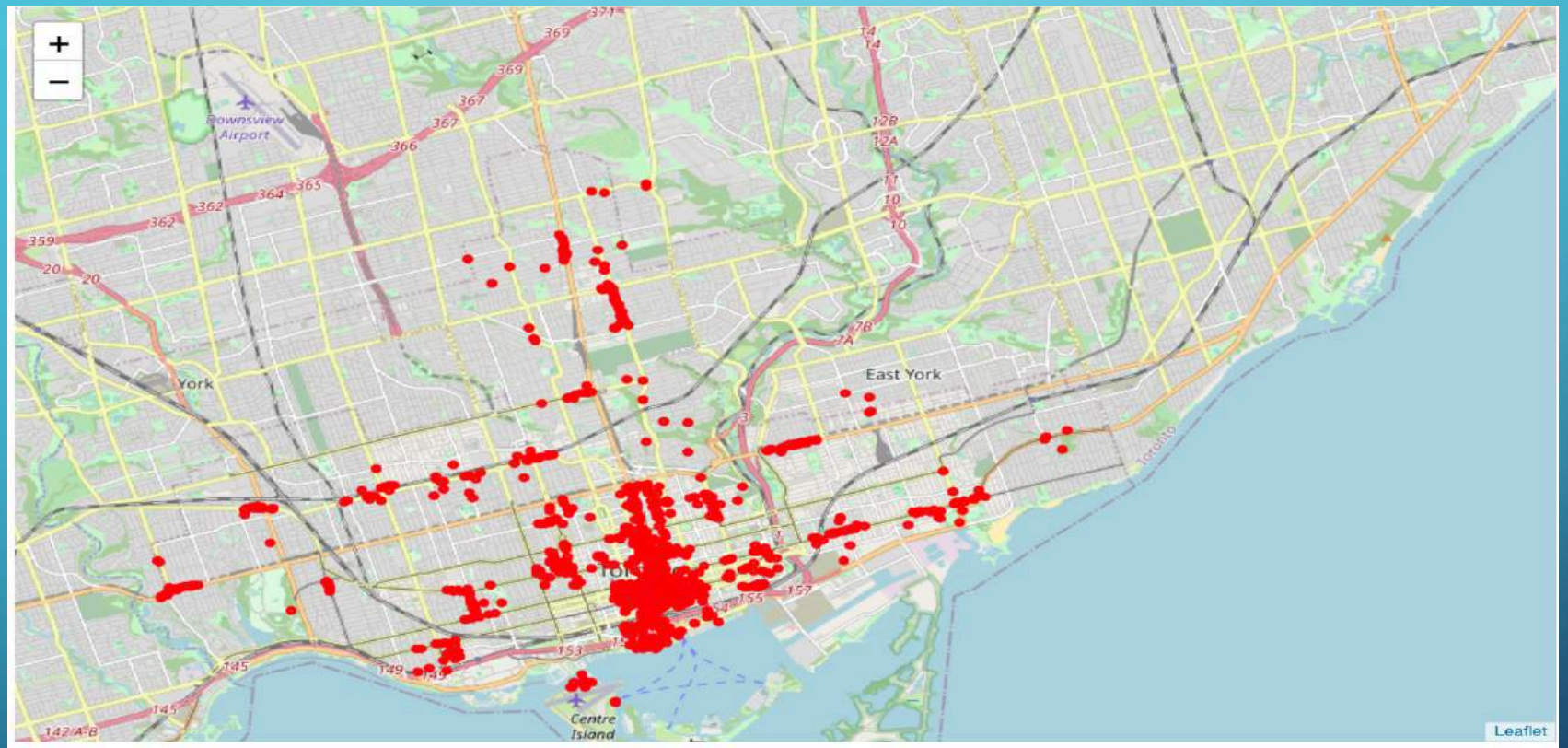
	PostalCode	Borough	Neighborhood	Latitude	Longitude
0	M4E	East Toronto	The Beaches	43.676357	-79.293031
1	M4J	East York/East Toronto	The Danforth East	43.685347	-79.338106
2	M4K	East Toronto	The Danforth West, Riverdale	43.679557	-79.352188
3	M4L	East Toronto	India Bazaar, The Beaches West	43.668999	-79.315572
4	M4M	East Toronto	Studio District	43.659526	-79.340923

EXPLORE API CALL AND FILTERING THE SEARCH ONLY TO FIND VENUES THAT ARE IDENTIFIED AS RESTAURANTS.



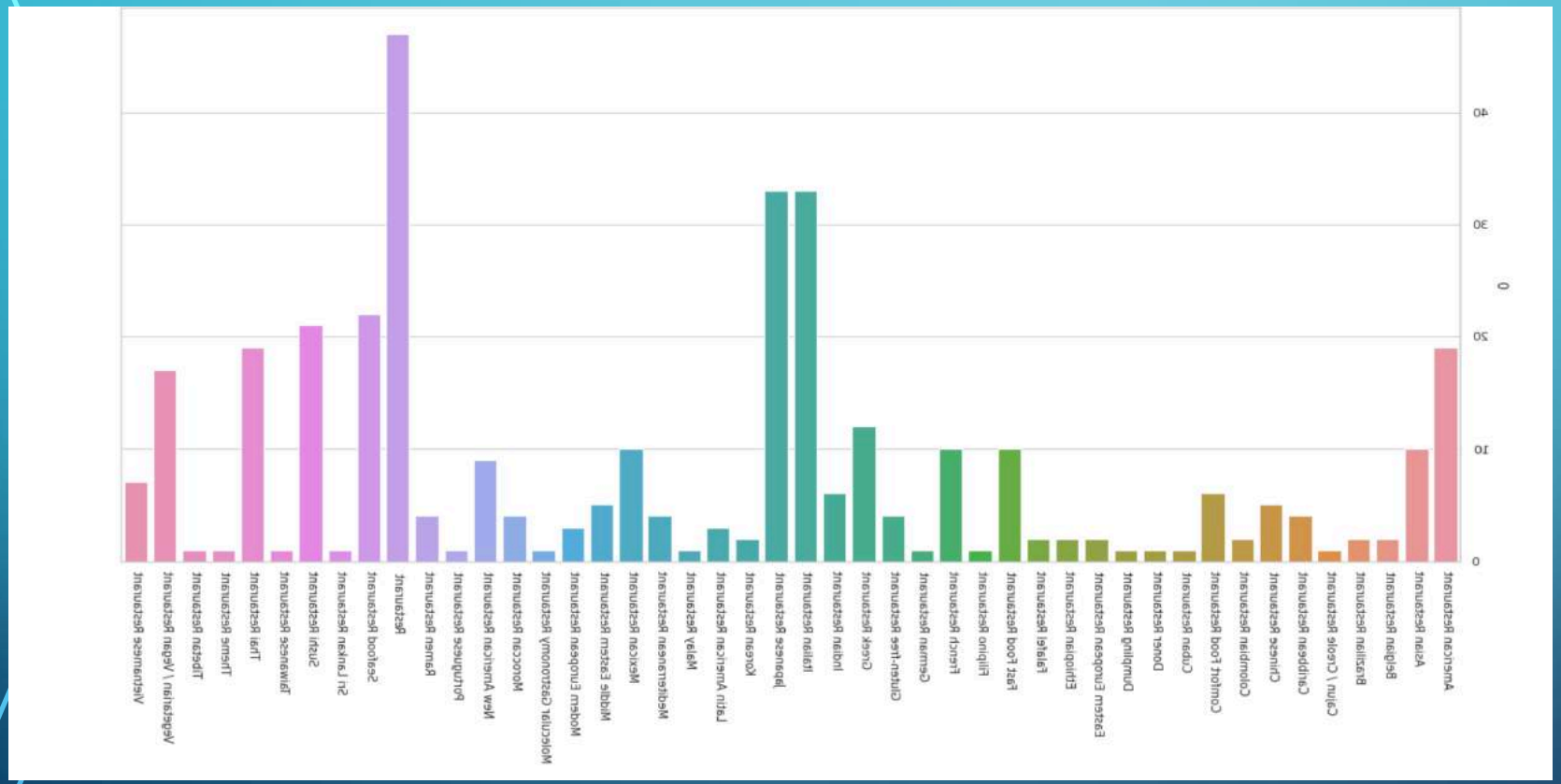
	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	The Danforth West, Riverdale	43.679557	-79.352188	Pantheon	43.677621	-79.351434	Greek Restaurant
1	The Danforth West, Riverdale	43.679557	-79.352188	Cafe Fiorentina	43.677743	-79.350115	Italian Restaurant
2	The Danforth West, Riverdale	43.679557	-79.352188	Mezes	43.677962	-79.350196	Greek Restaurant
3	The Danforth West, Riverdale	43.679557	-79.352188	7 Numbers	43.677062	-79.353934	Italian Restaurant
4	The Danforth West, Riverdale	43.679557	-79.352188	Messini Authentic Gyros	43.677704	-79.350480	Greek Restaurant

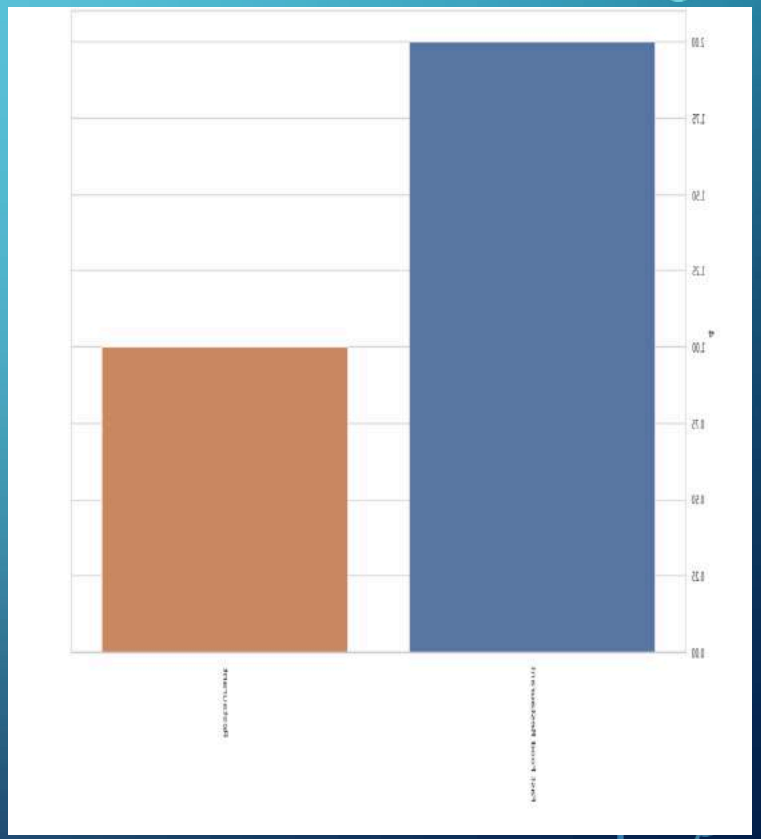
VISUALIZE THE RESULTING CLUSTERS

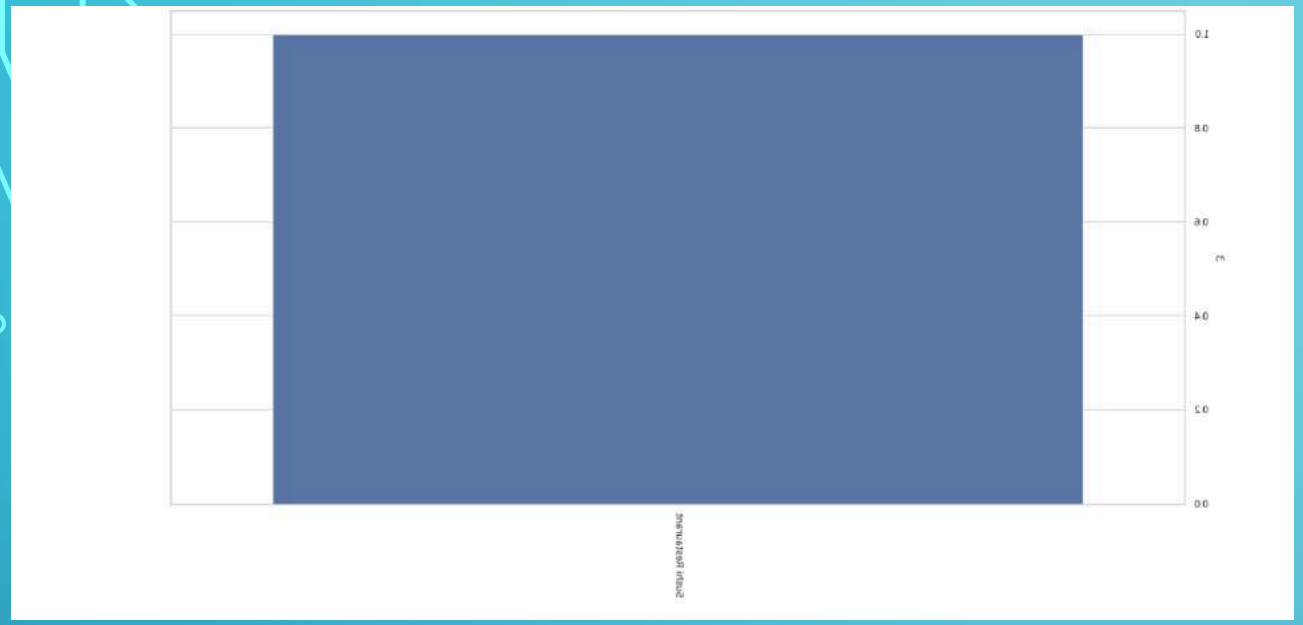
WE WILL PERFORM CLUSTERING ON THE DATA BY USING K-MEANS CLUSTERING

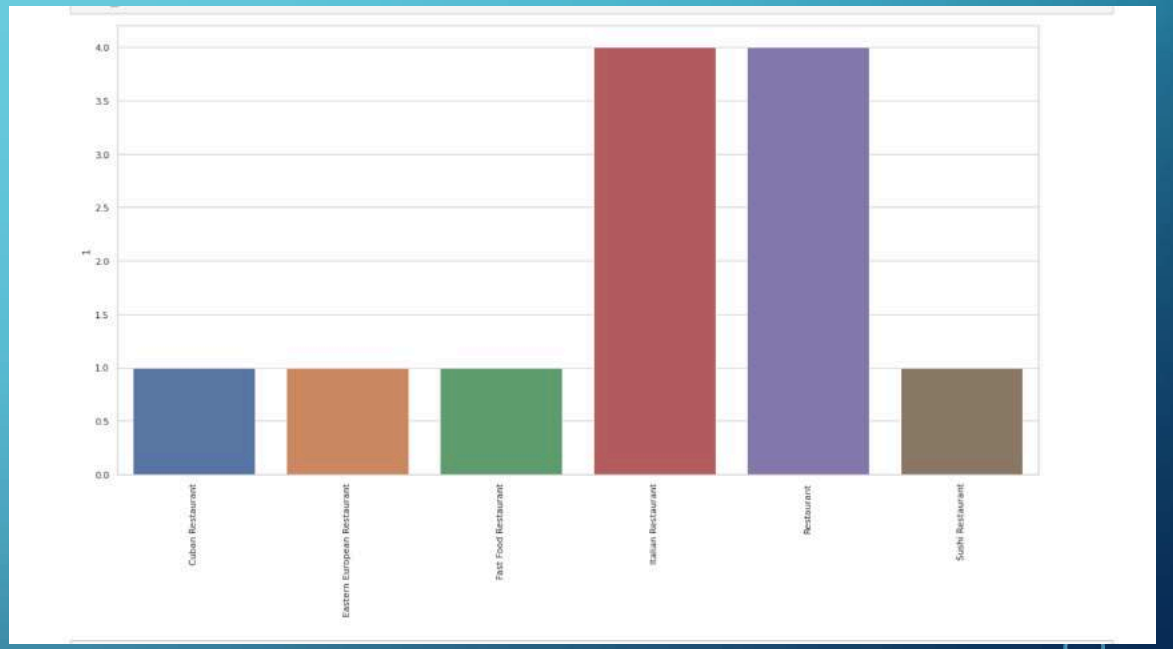
CLUSTER 0 - RED
CLUSTER 1 - PURPLE
CLUSTER 2 - BLUE
CLUSTER 3 - TURQUOISE
CLUSTER 4 - ORANGE

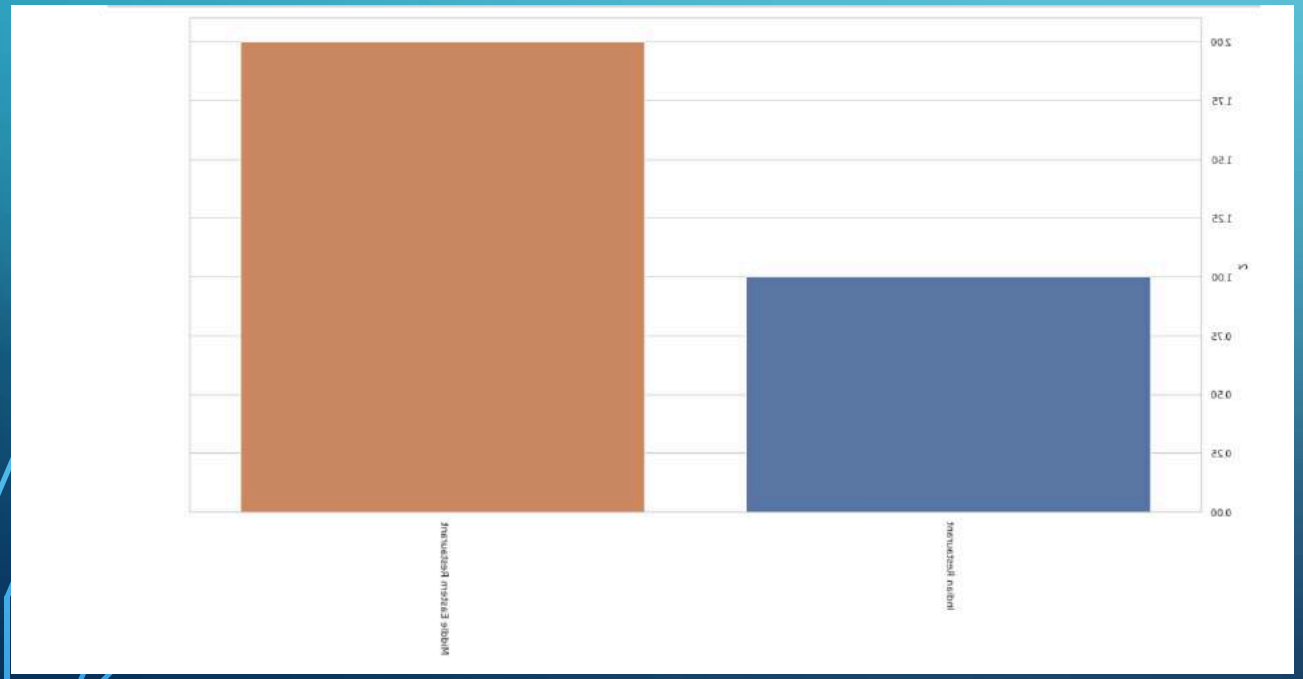
ANALYSING CLUSTERS



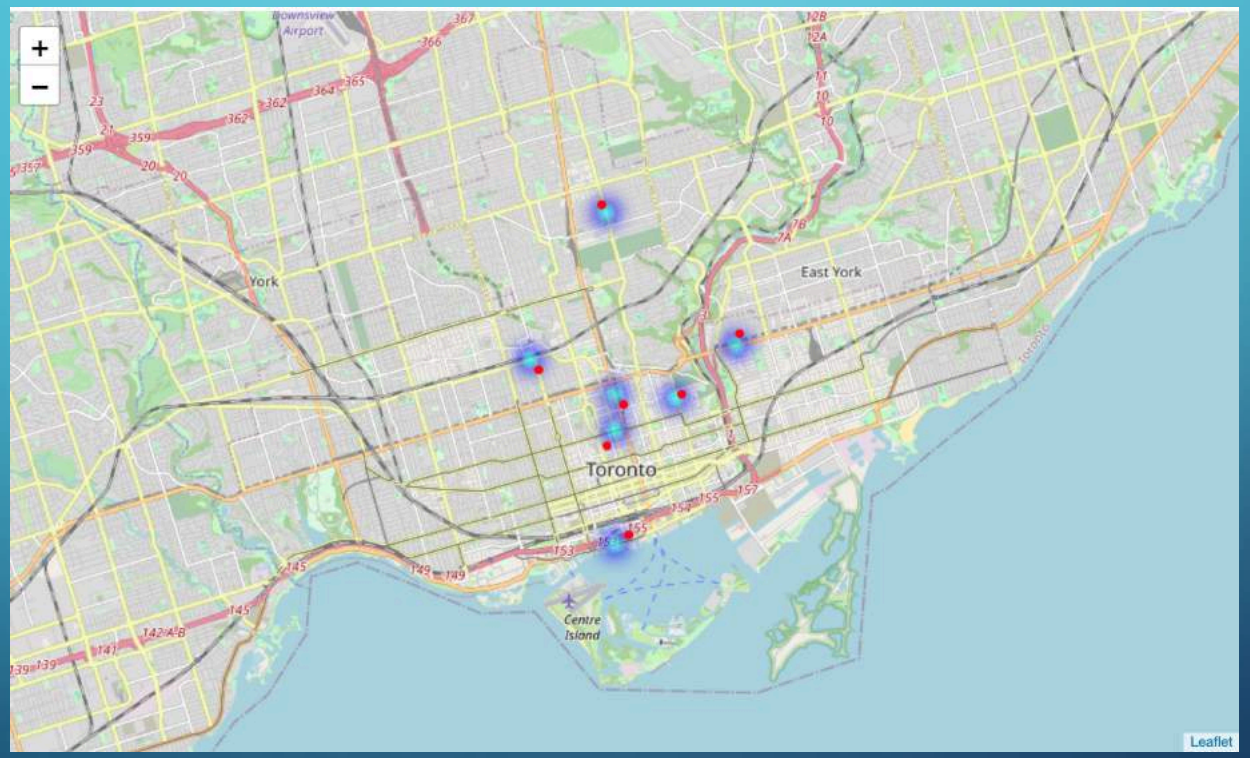



1.0
0.8
0.6
0.4
0.2
0.0


4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Cuban Restaurant
Eastern European Restaurant
Fast Food Restaurant
Italian Restaurant
Restaurant
Sushi Restaurant


2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00

ANALYSING THE BAR GRAPHS WE CAN CLEARLY SEE THAT CLUSTERS 0 AND 2 HAVE A HIGH DEMAND FOR INDIAN RESTAURANTS



REMOVING ALL NEIGHBORHOODS WITH THE FOLLOWING CONDITIONS:
NUMBER OF INDIAN RESTAURANTS >30%
NUMBER OF ALL RESTAURANTS >60%

Neighborhood	all count
Dufferin, Dovercourt Village	1
The Annex, North Midtown, Yorkville	2
Regent Park, Harbourfront	3
Summerhill West, Rathnelly, South Hill, Forest Hill SE, Deer Park	4
North Toronto West	4

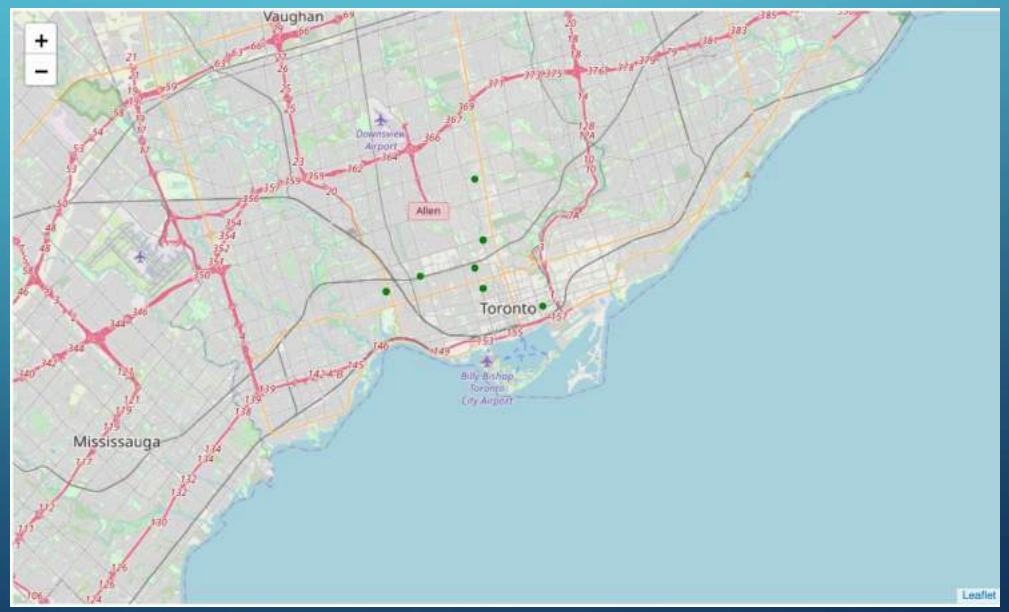
Neighborhood	ind count
Central Bay Street	1
Church and Wellesley	1
Davisville	1
Harbourfront East, Union Station, Toronto Islands	1
St. James Town, Cabbagetown	1

TAKING THE UNION OF THE RESULTING THREE DATASET WE GET 6 NEIGHBORHOODS THAT SATISFY ALL THREE CONDITIONS LAID OUT IN THE BUSINESS PROBLEM BY THE CUSTOMER.

	Neighborhood	PostalCode	Latitude	Longitude
0	The Annex, North Midtown, Yorkville	M5R	43.672710	-79.405678
1	Summerhill West, Rathnelly, South Hill, Forest...	M4V	43.686412	-79.400049
2	Dufferin, Dovercourt Village	M6H	43.669005	-79.442259
3	High Park, The Junction South	M6P	43.661608	-79.464763
4	North Toronto West	M4R	43.715383	-79.405678
5	Regent Park, Harbourfront	M5A	43.654260	-79.360636
6	University of Toronto, Harbord	M5S	43.662696	-79.400049

CONCLUSION

- The neighborhoods recommendation obtained here are not completely accurate. This is due to the limitations in the dataset used in the project. Due to lack of cross referencing sources, we may have missed a few neighborhoods from our consideration.



THANK YOU!!