BATTLE OF NEIGHBOURHOODS

INTRODUCTION

- A chain of restaurant owners in Ontario want to expand their business. Currently they have their restaurants open in cities like Vancouver, Stratford and Hamilton.

- They figured out that they would make more profit by opening up a restaurant in Toronto as Toronto is the largest city of Canada.

- They are having trouble figuring out which place to chose within Toronto to open their new restaurant.

- This project aims to figure out few places where there business will be good and have a competitive advantage.

DATA ACQUISITION

❑ **First Dataset : List of neighbourhoods in Toronto**

- Data source: https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada: M

    Geospatial_Coordinates.csv file

- The final Data Set contains 5 columns: Post Code, Borough, Neighbourhood, Latitude, Longitude and 103 rows having 103 unique neighbourhoods of Toronto and 5 unique Boroughs.

❑ **Second Dataset : List of different venues in the neighbourhoods of Toronto**

- Used Foursquare location data to explore different venues in each neighbourhood of Toronto

- Use the geographical coordinates from above dataset to generate this location dataset.

	Postcode	Borough	Neighbourhood	latitude	longitude
0	M3A	North York	Parkwoods	43.753259	-79.329656
1	M4A	North York	Victoria Village	43.725882	-79.315572
2	M5A	Downtown Toronto	Harbourfront, Regent Park	43.654260	-79.360636
3	M6A	North York	Lawrence Heights, Lawrence Manor	43.718518	-79.464763
4	M7A	Queen's Park	Queen's Park	43.662301	-79.389494

First Dataset with Postcode , Neighborhood and its Latitude and Longitude values

	Neighbourhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Adelaide, King, Richmond	Coffee Shop	Café	Bar	Steakhouse	Thai Restaurant
1	Agincourt	Skating Rink	Breakfast Spot	Lounge	Clothing Store	Eastern European Restaurant
2	Agincourt North, L'Amoreaux East, Milliken, St...	Playground	Park	Yoga Studio	Dumpling Restaurant	Discount Store
3	Albion Gardens, Beaumond Heights, Humbergate, ...	Grocery Store	Pizza Place	Fried Chicken Joint	Coffee Shop	Sandwich Place
4	Alderwood, Long Branch	Pizza Place	Pharmacy	Pub	Gym	Sandwich Place

Second Dataset with Neighborhoods and its top 5 Common venues obtained using Foursquare data

METHODOLOGY AND ANALYSIS

- Used K-means clustering algorithm to make clusters of the Neighbourhood dataset so that the analysis of all the neighbourhoods is easy,

- 5 clusters were created out of which only one was to be selected for further analysis.

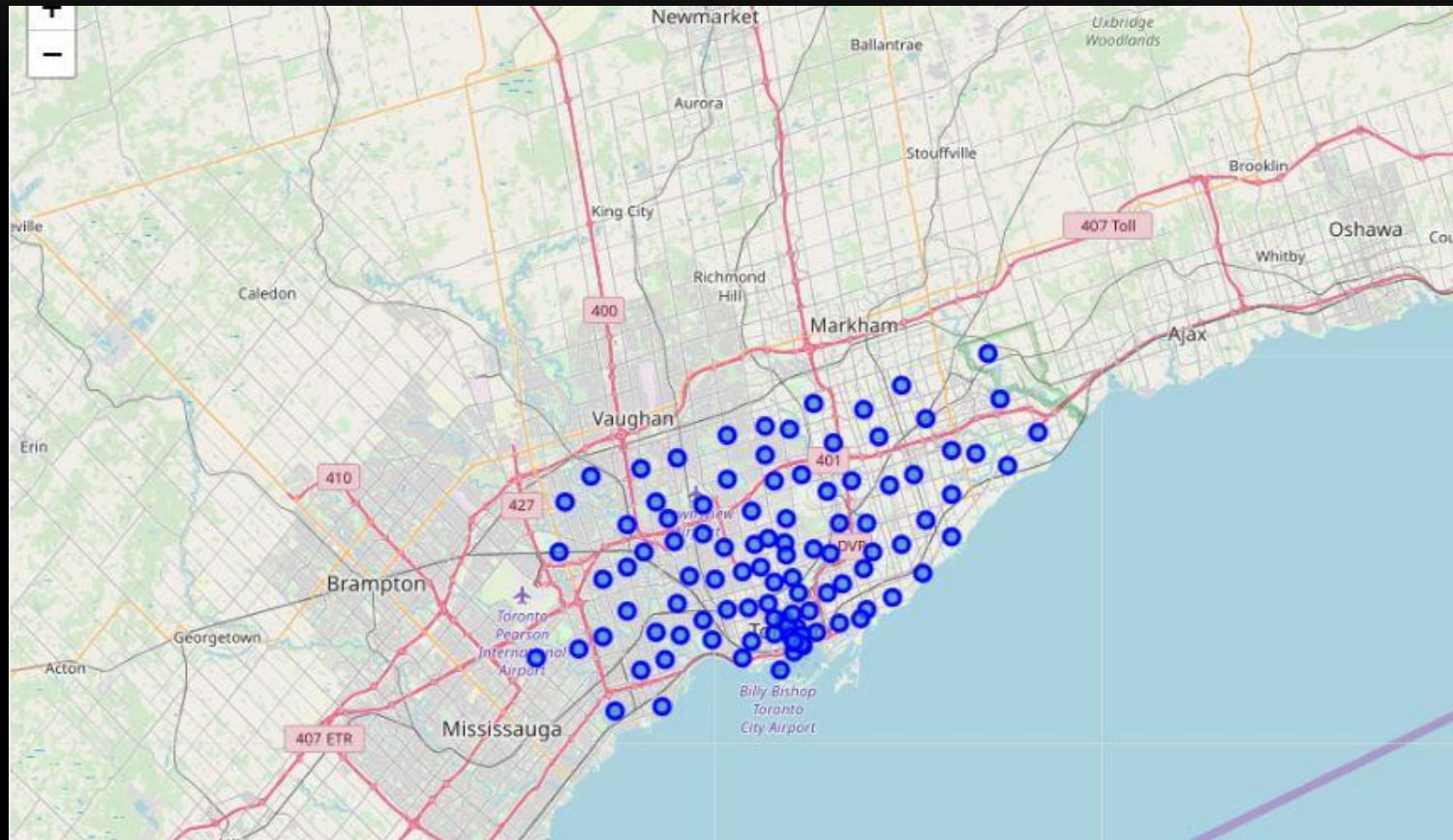- Cluster with label 0 was selected as it had lowest Neighbourhood/Restaurant ratio.

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Total number of neighbourhoods in cluster 0 is 10
Total number of restaurants in this cluster is 29
Ratio of Restaurant/Neighbourhood in this cluster is 2.9
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- After further analysis, only 2 neighbourhood remained which were perfect for opening a new restaurant- **Central Bay Street, Downtown Toronto & Adelaide, King, Richmond, Downtown Toronto**

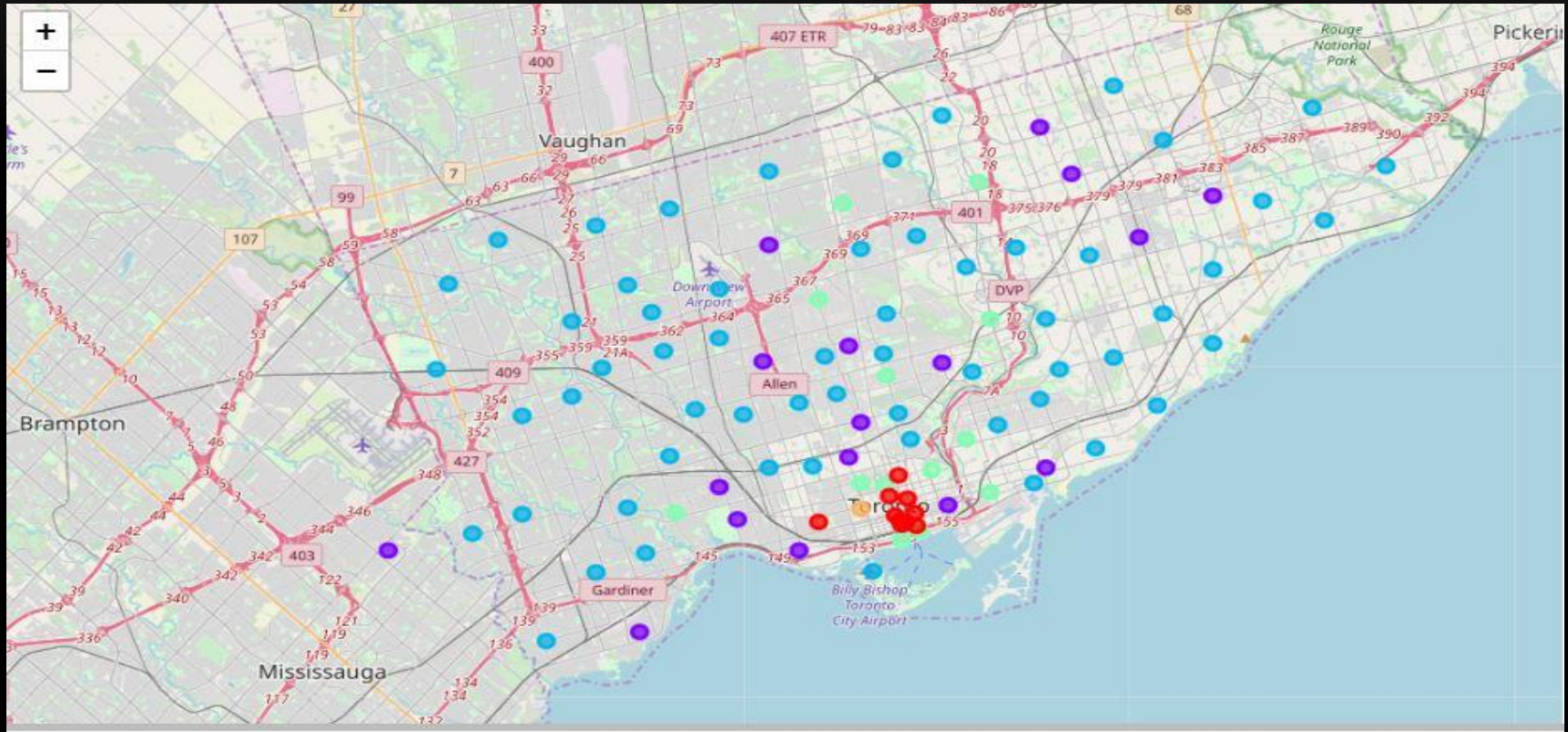|	Postcode	Borough	Neighbourhood	latitude	longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
23	M5G	Downtown Toronto	Central Bay Street	43.657952	-79.387383	0	Coffee Shop	Italian Restaurant	Sandwich Place	Café	Ice Cream Shop
29	M5H	Downtown Toronto	Adelaide, King, Richmond	43.650571	-79.384568	0	Coffee Shop	Café	Bar	Steakhouse	Thai Restaurant

VISUALIZATION –
Map Of Toronto City With All Its Neighbourhood Marked in Blue

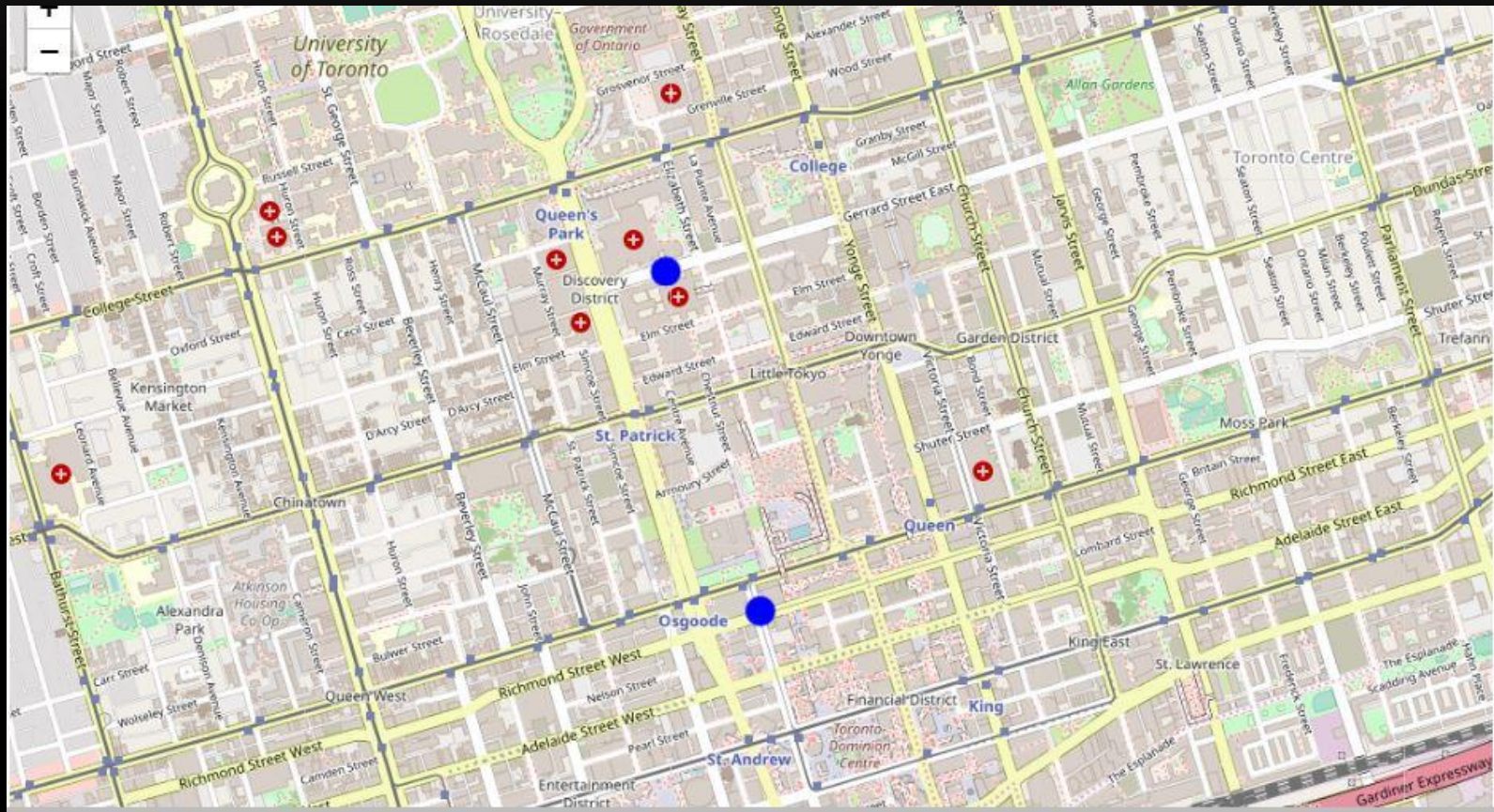# Map After Assigning 5 Cluster To Each Neighbourhood in Toronto

* Different colours represent neighbourhoods belonging to different cluster *

Maps Representing 2 Neighbourhoods Suitable For Opening
Restaurant marked with blue dots -**Central Bay Street**
                                    - **Adelaide, King, Richmond**

CONCLUSION

- Purpose of this project was to identify neighbourhoods in Toronto which have low number of restaurants in order to aid stakeholders in narrowing down the search for optimal location for a new restaurant.

- By calculating restaurant density distribution from Foursquare data we have first identified the most common nearby venues of each neighbourhood.

- Then with the help of clustering techniques and further analysis we were able to narrow down our analysis to 2 neighbourhoods - **Central Bay Street,Downtown Toronto and Adelaide, King, Richmond, Downtown Toronto** which were good for opening up a new restaurant.

- This concludes this project of Battle of Neighbourhoods.

THANK YOU