Battle of Neighbourhoods

Introduction

- A chain of restaurant owners in Ontario, Canada want to expand their business in other cities. Currently they have their restaurants open in cities like Ottawa, Brampton and Hamilton.
- They figured out that they would make much more profit by opening up a restaurant in Toronto city.
- They are having trouble figuring out which place to choose within Toronto for their new restaurant.
- We have to help them figure out which place to choose where their business will be good and they have a competitive advantage.

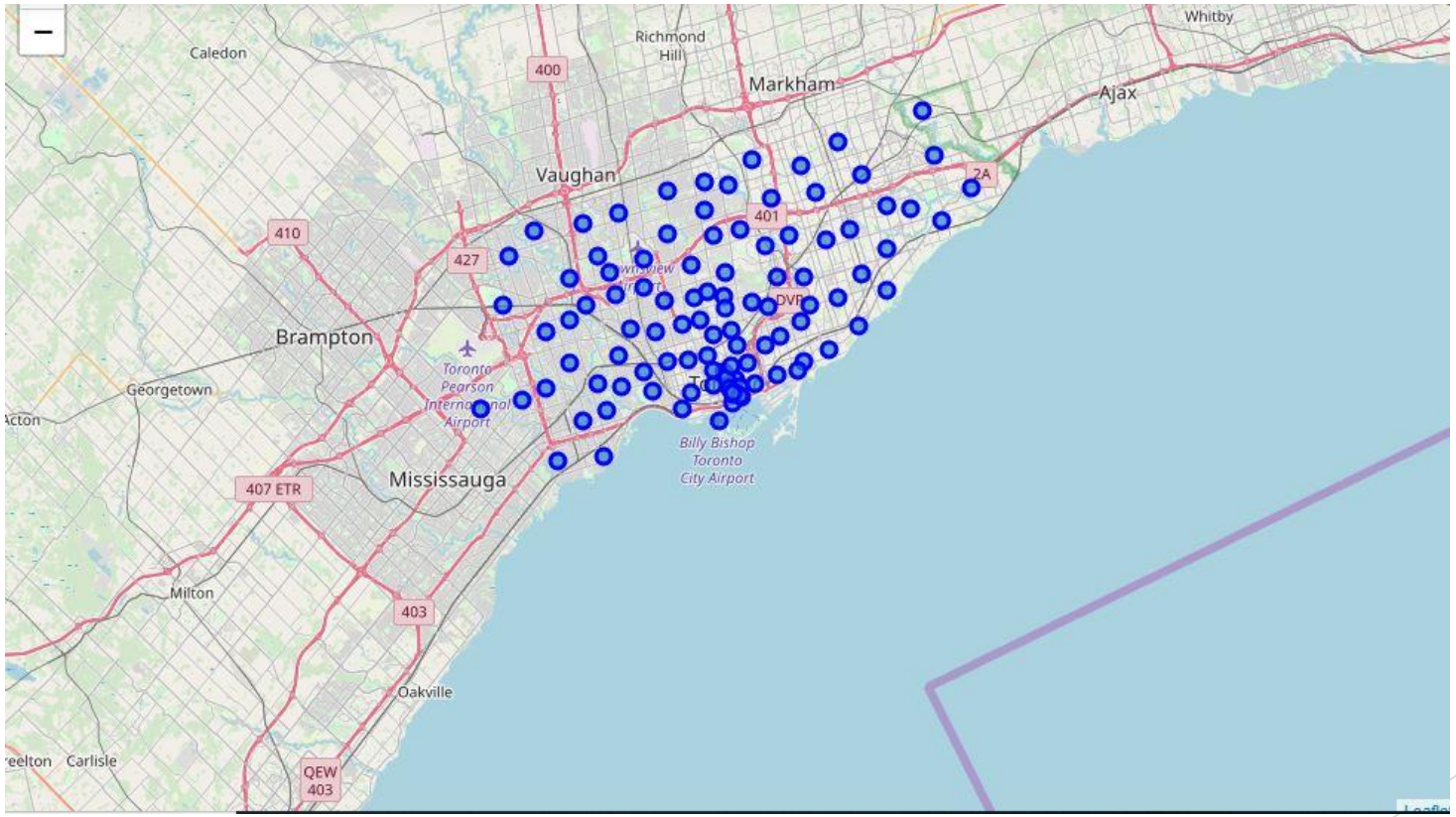
Data acquisition

- First Dataset: List of all the neighbourhoods in Toronto:
  - Data source: https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
  - The dataset consists of 5 columns: : Postal Code, Borough, Neighbourhood, Latitude and Longitude and 103 rows having 103 unique neighbourhoods of Toronto and 11 unique Boroughs.
- Second Dataset: List of different venues in the neighbourhoods of Toronto:
  - Used the Foursquare location data to explore different venues in each neighbourhood of Toronto.
  - Used the geographical coordinates from the above dataset to generate this location dataset.

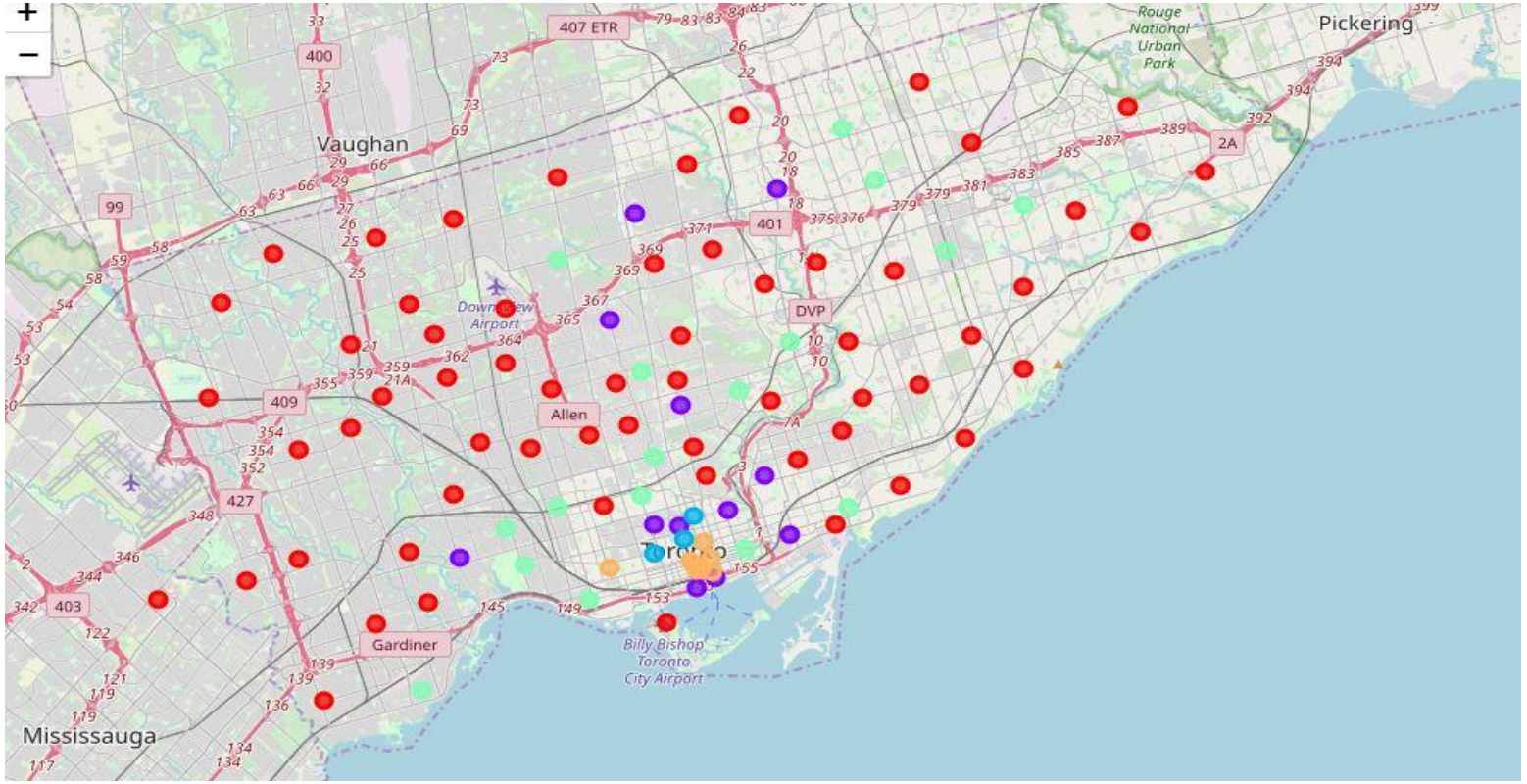
Methodology and Analysis

- Used K-Means clustering algorithm to make clusters of the Neighbourhood dataset so that the analysis of all the neighbourhoods is easy.
- Created 5 clusters out of which only one was to be selected for further analysis.
- Cluster with label 4 was selected as it had lowest Restaurant/Neighbourhood ratio for that cluster.
- Then after further analysis, only 4 neighbourhoods remained which were perfect for opening up a new restaurant.

Map of Toronto city with all its neighbourhoods marked on the map:

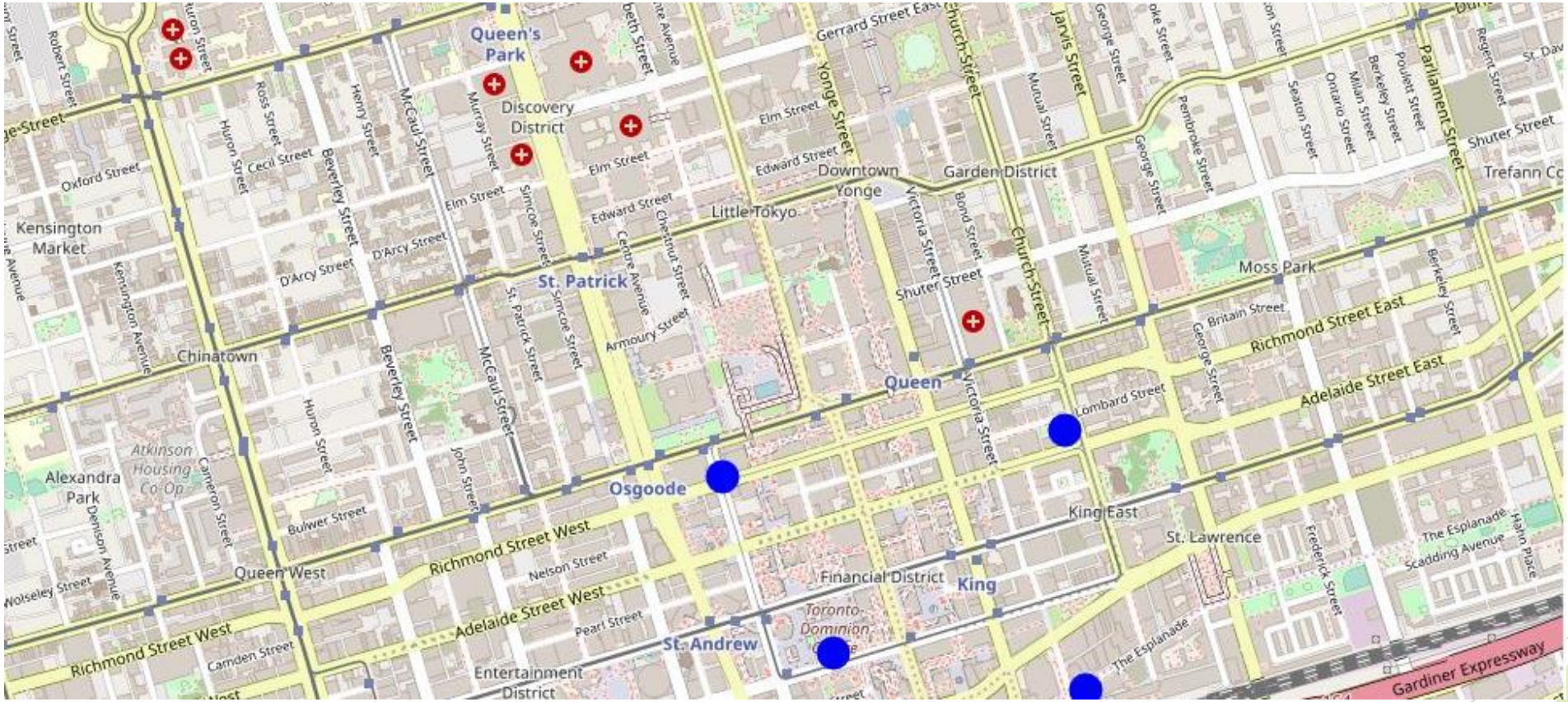


Map after assigning clusters to each neighbourhood:



Different colour of neighbourhoods represent belonging to a different cluster.

Map representing final 4 neighbourhoods suitable for restaurant opening:



The 4 neighbourhoods are depicted by 4 blue dots in the above map.

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 4 neighbourhoods which were good for opening up a new restaurant.
- This concludes this project of **Battle of Neighbourhoods.**