

# The Battle of Neighborhoods

– IBM Data Science Capstone Project

BY,

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# PROBLEM STATEMENT

Understanding the differences between the neighborhoods Scarborough Borough of Toronto and Queens Borough of New York and deciding which one would be suggestable for opening up a new business for a Company 'A' based on their respective venues.

# OBJECTIVE

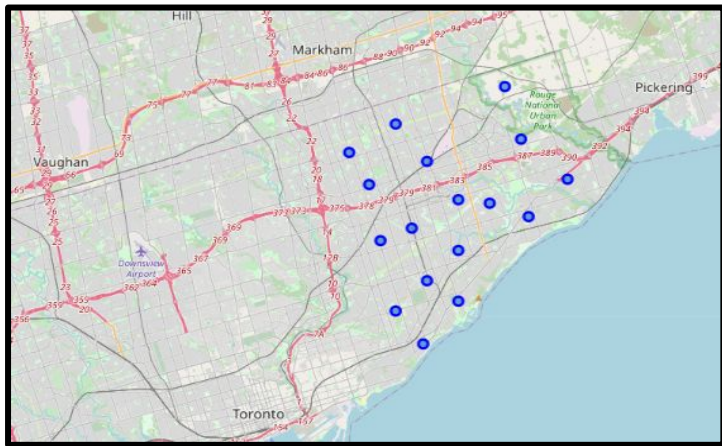
- Collecting the neighborhoods top venues using Foursquare API.
- Clustering the neighborhood based on their similarities and understanding their different venues.
- Applied k-mean clustering algorithm to segment the neighborhoods of Scarborough, Toronto and Queens, New York.

# WorkFlow

1. The data is collected or extracted from Online using the BeautifulSoup Package.
2. Finding the geographical coordinates i.e. the latitude and longitude values and the zip codes of the respective locations and merging it with the location's data.
3. Using the Foursquare API to get the venues of each location using the lat and lon values and the zip codes.
4. Find all the unique venues and perform necessary transformation techniques such as one - hot encoding.
5. Find the highest frequency occurrence of all the venues and sort them from highest to lowest.
6. Use k-means clustering - an algorithm used for unlabelled data - and choose an optimal k value to cluster the neighborhoods based on the most common venues.
7. Visualize the clustered neighborhoods using Folium Package.

# Map of Scarborough in Toronto

Before Clustering:

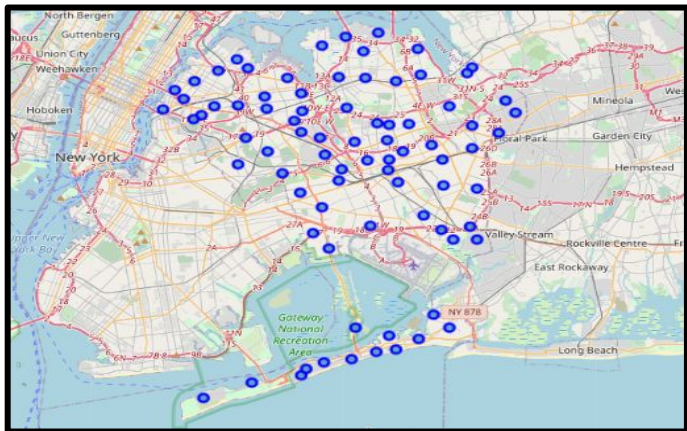


After Clustering



# Map of Queens Borough in New York

Before Clustering:



After Clustering:



# Comparison between the Neighborhoods

## Scarborough, Toronto

- Toronto has 11 boroughs and 103 neighborhoods.
- Scarborough Borough of Toronto has been observed to have 90 venues in 17 neighborhoods.
- The most common venues of Scarborough are Coffee Shops, Restaurants and skating rinks.

## Queens Borough, New York

- New York City on the other hand had 9 boroughs and 306 neighborhoods.
- Queens Borough of New York is found to have 2091 venues in 81 neighborhoods.
- The most common venues are Coffee shops, Gyms, Grocery Stores, Parks and Spas.

# Conclusion

Overall, based on the quality of venues, it is preferred for Company A to start up its new business at Queens Borough, NY, USA. It offers more choices in terms of restaurants, gyms, indoor and outdoor activities and so on leading to better opportunities for the employees and their families as well.



THANK YOU!