FINAL REPORT

Capstone Project - The Battle of Neighbourhoods

Introduction:

New York City's demographics show that it is a large and ethnically diverse metropolis. It is the largest city in the United States with a long history of international immigration. New York City was home to nearly 8.5 million people in 2014, accounting for over 40% of the population of New York State and a slightly lower percentage of the New York metropolitan area, home to approximately 23.6 million. Over the last decade the city has been growing faster than the region. The New York region continues to be by far the leading metropolitan gateway for legal immigrants admitted into the United States.

With its diverse culture, comes diverse food items. There are many restaurants in New York City, each belonging to different categories like Japanese, Indian, and French, etc.

Project goals:

1. Determine the best location in New York City for japanese cuisine

2. Determine which all areas lack japanese restaurants

3. Determine which areas have market potential for japanese restaurants

4. Determine which is the best place to go if you prefer japanese cuisine
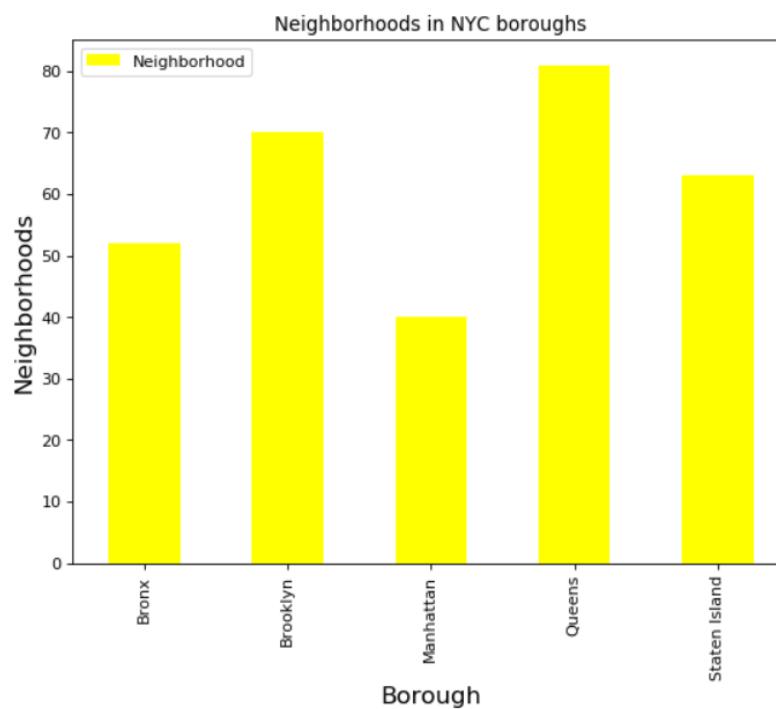
Data Section:

For this project we need the following data:

- New York City data that contains list Boroughs, Neighbourhoods along with their latitude and longitude.
    - Data source : https://cocl.us/new_york_dataset
    - Description: This data set contains the required information. And we will use this data set to explore various neighbourhoods of New York City

- Japanese restaurants in each neighbourhood of New York City.
    - Data source : Foursquare API
    - Description: By using this API we will get all the venues in each neighbourhood. We can filter these venues to get only Japanese restaurants.

- GeoSpace data
    - Data source : https://data.cityofnewyork.us/City-Government/Borough-Boundaries/tqmj-j8zm
    - Description: By using this geo space data we will get the New York Borough boundaries that will help us visualize choropleth map.

Methodology:

1. Collect NYC data from https://cocl.us/new_york_dataset
2. Find every neighborhood venues using Foursquare API

	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643
4	Bronx	Riverdale	40.890834	-73.912585

Neighborhoods in NYC boroughs

3. Filter all japanese restaurants

	Borough	Neighborhood	ID	Name
0	Bronx	Riverdale	503cfaffe4b066d39de5005a	Aoyu Japanese Restaurant
1	Bronx	Riverdale	4b0b311af964a520642e23e3	Palace of Japan
2	Bronx	Kingsbridge	503cfaffe4b066d39de5005a	Aoyu Japanese Restaurant
3	Bronx	Kingsbridge	4b0b311af964a520642e23e3	Palace of Japan
4	Bronx	City Island	4dbdf3d790a02849cbd675be	Ohana Japanese Habachi Seafood & Steakhouse

4. Find ratings, tips, and likes for all japanese restaurants

	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
0	Bronx	Riverdale	503cfaffe4b066d39de5005a	Aoyu Japanese Restaurant	32.0	9.0	19.0
1	Bronx	Riverdale	4b0b311af964a520642e23e3	Palace of Japan	38.0	8.2	26.0
2	Bronx	Kingsbridge	503cfaffe4b066d39de5005a	Aoyu Japanese Restaurant	32.0	9.0	19.0
3	Bronx	Kingsbridge	4b0b311af964a520642e23e3	Palace of Japan	38.0	8.2	26.0
4	Bronx	City Island	4dbdf3d790a02849cbd675be	Ohana Japanese Habachi Seafood & Steakhouse	34.0	7.6	18.0

5. We will then sort Neighbourhoods and Borough the data keeping Ratings as the constraint.

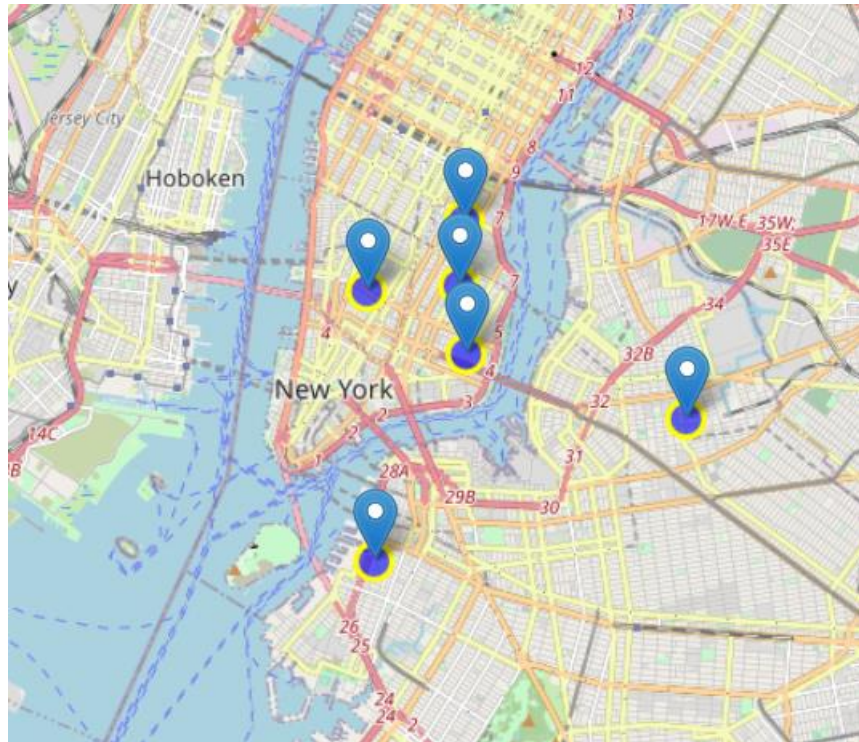|	Neighborhood	Average Rating
17	East Village	9.20
11	Cobble Hill	9.10
18	East Williamsburg	9.05
29	Greenwich Village	9.00
39	Lower East Side	9.00
27	Gramercy	9.00
61	West Village	8.90
49	North Side	8.90
50	Park Slope	8.85
22	Fort Greene	8.80

	Borough	Average Rating
2	Manhattan	8.454167
0	Bronx	8.266667
1	Brooklyn	7.716364
3	Queens	7.438889

6. Next we will consider all the neighbourhoods with average rating greater or equal 9.0 to visualize on map.
7. We will join this dataset to original New York data to get longitude and latitude.

	Borough	Neighborhood	Latitude	Longitude	Average Rating
0	Brooklyn	Cobble Hill	40.687920	-73.998561	9.10
1	Manhattan	East Village	40.727847	-73.982226	9.20
2	Brooklyn	East Williamsburg	40.708492	-73.938858	9.05
3	Manhattan	Gramercy	40.737210	-73.981376	9.00
4	Manhattan	Greenwich Village	40.726933	-73.999914	9.00
5	Manhattan	Lower East Side	40.717807	-73.980890	9.00

8. Finally, we will visualize the Neighbourhoods and Borough based on average Rating using python's Folium library.

Neighbourhoods based on average rating:

Borough based on average rating:

Result:

From the analysis:

1. East Village is the best location for japanese cuisine

2. Queens lacks japanese restaurants

3. Manhattan has market potential for japanese cuisine

4. Manhattan is the best to live if you prefer Japanese cuisine