Capstone Project - The Battle of Neighborhoods

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1. Introduction

1.1 Background

In Manhattan city, a business owner is looking for good location to run restaurant and contractor business. This project will analyze the neighborhoods and the number of restaurant and contractor firm to decide which area is the best.

1.2 Problem

In Manhattan city, we have no clue how many restaurants available in which neighborhoods. Similar to contractor firms.

1.3 Interest

We will need to find out the number of restaurants and their location. Then find out the same for contractor firms. It will be good if both can set up nearby.

2.   Data Acquisition and Cleaning

2.1 Data source

The data is obtained from Coursera sample data, it is a json file.

2.2 Data Cleaning & Feature Selection

From the json file, we obtained coordinates for the borough in New York city. The data is moved into a dataframe that includes borough, neighborhood and their coordinate. There are 5 boroughs and 306 neighborhoods in total, and we only use the coordinate for Manhattan city.
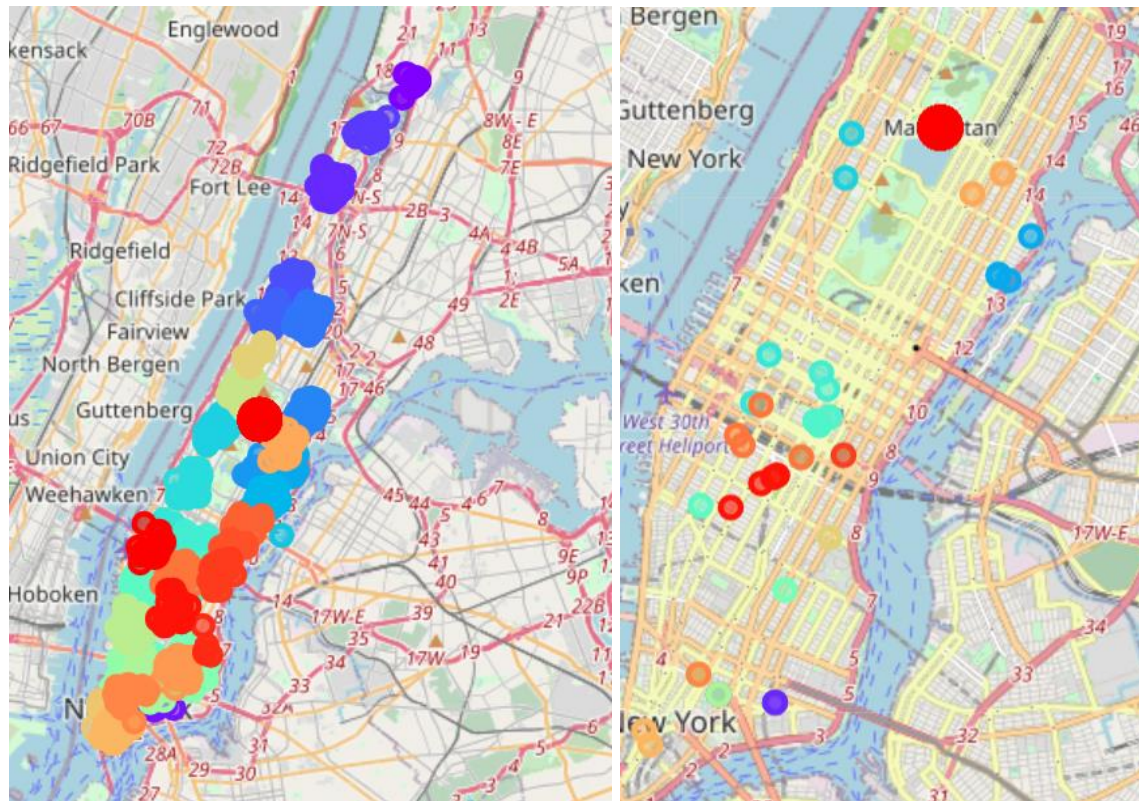
```
1 neighborhoods.head()
```

	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

```
1 print('The dataframe has {} boroughs and {} neighborhoods.'.format(
2        len(neighborhoods['Borough'].unique()),
3        neighborhoods.shape[0]
4    )
5 )
```

The dataframe has 5 boroughs and 306 neighborhoods.

3.   Exploratory Data Analysis

3.1   Exploration of neighborhoods

By using Foursquare API, map is created, and neighborhoods are labeled.

And the list of restaurant as well as contractor firms and their location are found, in total there

are 1066 restaurants and 20 firms located and labeled in the map.

Neighborhood	Restaurant number	Firm Number
Marble Hill	14	0
Chinatown	30	2
Washington Heights	30	2
Inwood	23	0
Hamilton Heights	30	0
Manhattanville	19	0
Central Harlem	23	0
East Harlem	30	0
Upper East Side	30	0
Yorkville	30	4
Lenox Hill	30	0
Roosevelt Island	1	0
Upper West Side	30	2
Lincoln Square	21	0
Clinton	30	2
Midtown	30	5
Murray Hill	30	5
Chelsea	30	1
Greenwich Village	30	0
East Village	30	1

Lower East Side	18	0
Tribeca	29	0
Little Italy	30	2
Soho	30	2
West Village	30	0
Manhattan Valley	30	1
Morningside Heights	12	0
Gramercy	12	1
Battery Park City	23	0
Financial District	30	2
Carnegie Hill	30	2
Noho	30	0
Civic Center	30	1
Midtown South	30	6
Sutton Place	30	0
Turtle Bay	30	0
Tudor City	30	1
Stuyvesant Town	5	0
Flatiron	30	4
Hudson Yards	26	0

4.   Result

Based on the analysis, Roosevelt Island is the best location for restaurant business and contractor's firm. Because there is only 1 restaurant and no contractor firm in the neighbourhood.

5. Discussion

Based on the analysis, there are few neighborhoods are good for restaurant and firm. For example, Stuyvesant Town has only 5 restaurants and 0 firm; Morningside Heights has 12 restaurants and 0 firm

6. Conclusion

Even though Manhattan city is well developed but there are still some areas are good for development and businesses. The areas mentioned above, Roosevelt, Stuyvesant Town and Morningside Heights are good location for new restaurant and firms.