

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 2018, 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.

This final project explores the best locations for Thai restaurants throughout the city of New York. As New York is the most diverse city in the world (800 languages are spoken in New York), it has a long tradition of different ethnical restaurants. Now when the idea of a healthy lifestyle conquered the minds of people all over the country, Thai restaurants became extremely popular, as they offer a healthy alternative to regular American eating habits. That's why Potentially the owner of the new East European restaurant can have great success and consistent profit. However, as with any business, opening a new restaurant requires serious considerations and is more complicated than it seems from the first glance. In particular, the location of the restaurant is one of the most important factors that will affect whether it will have success or a failure. So our project will attempt to answer the questions "Where should the investor open a Thai Restaurant?" and "Where should I go If I want great Thai food?"

Data

In order to answer the above questions, data on New York City neighborhoods, boroughs to include boundaries, latitude, longitude, restaurants, and restaurant ratings and tips are required.

New York City data containing the neighborhoods and boroughs, latitudes, and longitudes will be obtained from the data source: https://cocl.us/new_york_dataset

All data related to locations and quality of Italian restaurants will be obtained via the FourSquare API utilized via the Request library in Python.

Methodology

- Data will be collected from https://cocl.us/new_york_dataset and cleaned and processed into a dataframe.
- FourSquare be used to locate all venues and then filtered by Thai restaurants. Ratings, tips, and likes by users will be counted and added to the dataframe.
- Data will be sorted based on rankings.
- Finally, the data be will be visually assessed using graphing from Python libraries.

Problem Statement

- What is / are the best location(s) for Thai cuisine in New York City?
- In what Neighborhood and/or borough should the investor open a Thai restaurant to have the best chance of being successful?
- Where would I go in New York City to have the best Thai food?

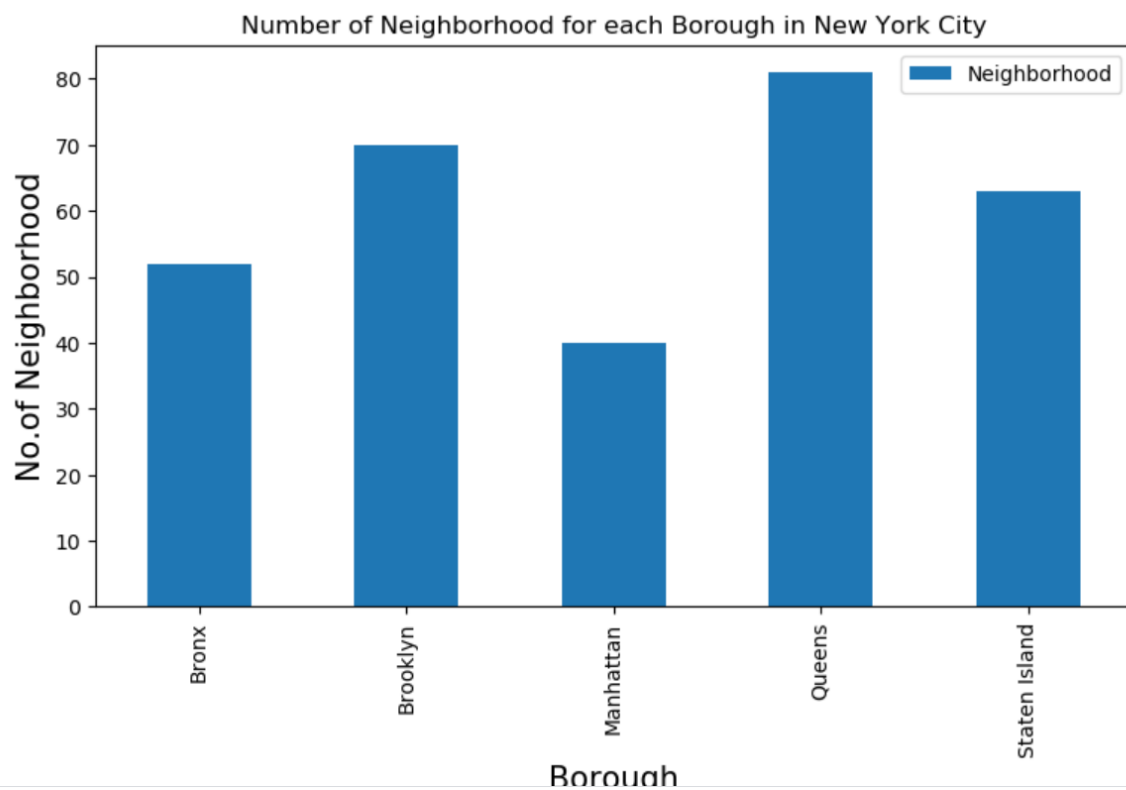
Before we get the data and start exploring it:

- import all required libraries
- Define the functions we are going to use later in this project

Data Analysis

Number of neighbourhood by borough

```
plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('Number of Neighborhood for each Borough in New York City')
#On x-axis
plt.xlabel('Borough', fontsize = 15)
#On y-axis
plt.ylabel('No.of Neighborhood', fontsize=15)
#giving a bar plot
new_york_data.groupby('Borough')['Neighborhood'].count().plot(kind='bar')
#legend
plt.legend()
#displays the plot
plt.show()
```



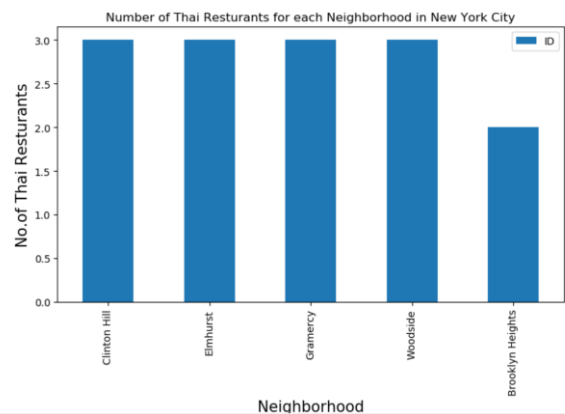
Let's analyze further and see how many Thai restaurants there are in each neighborhood and borough. After it, graph the results.

```
# prepare neighborhood list that contains Thai restaurants
column_names=['Borough', 'Neighborhood', 'ID','Name']
Thai_rest_ny=pd.DataFrame(columns=column_names)
count=1
for row in new_york_data.values.tolist():
    Borough, Neighborhood, Latitude, Longitude=row
    venues = get_venues(Latitude,Longitude)
    Thai_restaurants=venues[venues['Category']=='Thai Restaurant']
    print('(',count,',',len(new_york_data),')','Thai Restaurants in '+Neighborhood+', '+Borough+' :'+str
    (len(Thai_restaurants)))
    for restaurant_detail in Thai_restaurants.values.tolist():
        id, name , category=restaurant_detail
        Thai_rest_ny = Thai_rest_ny.append({'Borough': Borough,
                                            'Neighborhood': Neighborhood,
                                            'ID': id,
                                            'Name' : name
                                            }, ignore_index=True)

    count+=1
```

We got 39 Thai Restaurants across the New York City.

Analysis by borough and by neighbourhood



As we continue our analysis, we see below that although Queens had the least number of neighborhoods, it does have the highest number of Thai restaurants. The borough of Brooklyn has the highest number of Thai restaurants in all of NYC.

So in the top 4 neighbourhoods with Thai restaurants, 2 are in Queens, although Brooklyn has the highest number of Thai restaurant

Let's find out the Top ratings Thai cuisine.

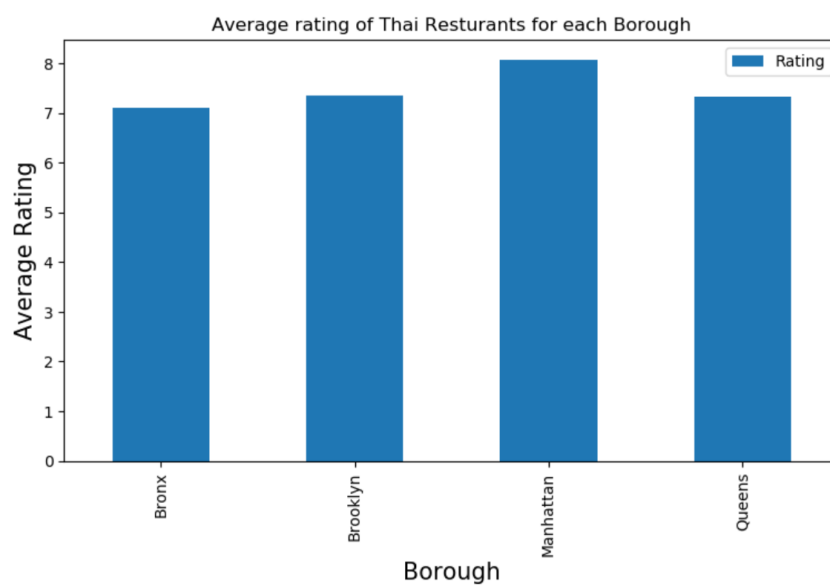
	Neighborhood	Average Rating
14	Lenox Hill	9.200000
9	Flatiron	8.900000
18	Red Hook	8.600000
11	Hunters Point	8.600000
15	Little Italy	8.550000
20	South Side	8.500000
12	Jackson Heights	8.400000
3	Clinton Hill	8.266667
8	Elmhurst	8.266667
5	Downtown	8.250000

Above are the top neighborhoods with top average rating of Thai restaurants

	Borough	Average Rating
2	Manhattan	8.066667
1	Brooklyn	7.340000
3	Queens	7.327273
0	Bronx	7.100000

Similarly these are the average rating of Thai Restaurants for each Borough

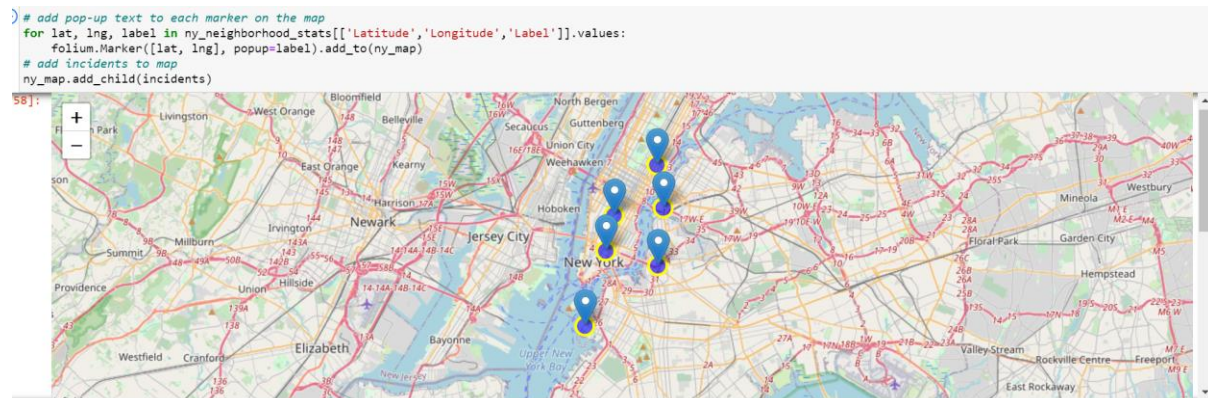
Now we will get the ranking of each restaurant for further analysis.



So the average highest rating is in Manhattan.

We will consider all the neighbourhoods with average rating greater or equal 8.5 to visualize on map

	Borough	Neighborhood	Latitude	Longitude	Average Rating
0	Manhattan	Flatiron	40.739673	-73.990947	8.90
1	Queens	Hunters Point	40.743414	-73.953868	8.60
2	Manhattan	Lenox Hill	40.768113	-73.958860	9.20
3	Manhattan	Little Italy	40.719324	-73.997305	8.55
4	Brooklyn	Red Hook	40.676253	-74.012759	8.60
5	Brooklyn	South Side	40.710861	-73.958001	8.50



Conclusion

Brooklyn has the highest number of Thai restaurant, and the average rating is above medium, which is more for casual meals. Thus potentially the best location if want to open a casual restaurant.

Manhattan has the top average rating of Thai cuisine, and is highly recommended if you prefer Thai Cuisine. Lenox Hill ranks top1 in rating of Thai Restaurants in NYC.

https://dataplatform.cloud.ibm.com/analytics/notebooks/v2/f6e69d02-0865-46f8-8540-0e85b8d694f2/view?access_token=79e9f0844e6b39a05993948c011f532c49ecacab16b0237570228871693fba88