Thai Restaurants in New York City Report

Introduction & Business Problem

Introduction

New York City is the most diverse and populated city in the United States (the city has a population density of over 27,000 people per square mile). In New York, you'll find almost every race and language you can think of under the sun, hence the common moniker, "the melting pot of the world." The city is made up of 5 boroughs: Manhattan, Brooklyn, Queens, the Bronx and Staten Island, all of which were "grouped" together into a single city in 1898.

Due to the prosperity and grandeur of New York City resulting in people from many countries want to come to New York City whether coming to work or coming to study. Many Thai people also have come to New York for traveling, working, and studying that make Thai food is one of the popular foods in New York City.

Business Problem

Because many Thai people come to live in New York City. These people usually eat Thai food in their everyday life so they need to live in the area that has many Thai restaurants so that they can easily find a good Thai food.

In addition, there are also many group of tourists whether Thai tourists who miss their home country food, people from other countries who like Thai food or even people who want to try Thai food would like to know information about which area in New York has many Thai restaurants so that there are many options for them.

Therefore, I will solve this problem by answer the questions as following:

1. Which neighborhood in New York City have the most Thai restaurants?
2. Which neighborhood in New York City have the best average rating for Thai restaurants?

Target Audience

Main target audience is Thai people who living in New York City want to live in an area with a variety of Thai restaurants.

Secondary target audience is tourists who interested in Thai food.

Data Section

New York City Neighborhoods Data

I will use New York City neighborhoods dataset that published from New York (City). Department of City Planning on the following url: https://geo.nyu.edu/catalog/nyu_2451_34572

This dataset contains 5 boroughs and 306 neighborhoods that exist in each borough as well as the latitude and the longitude coordinates of each neighborhood.

In this dataset, I will extract borough, neighborhood, latitude and longitude to visualize the data New York City map.

Thai Restaurants Data

I will use Foursquare API which is well-known location data provider to extract venue data for Thai restaurant in New York City using Thai Restaurant (4bf58dd8d48988d149941735) venue category.

Methodology

Extract borough, neighborhood, latitude and longitude of New York City from https://geo.nyu.edu/catalog/nyu_2451_34572

```
{'type': 'Feature',
 'id': 'nyu_2451_34572.1',
 'geometry': {'type': 'Point',
  'coordinates': [-73.84720052054902, 40.89470517661]},
 'geometry_name': 'geom',
 'properties': {'name': 'Wakefield',
  'stacked': 1,
  'annoline1': 'Wakefield',
  'annoline2': None,
  'annoline3': None,
  'annoangle': 0.0,
  'borough': 'Bronx',
  'bbox': [-73.84720052054902,
   40.89470517661,
   -73.84720052054902,
   40.89470517661]}}
```

Convert data into pandas dataframe format for easy to analyze.

	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

Extract Thai restuarants data in each neighborhood from Foursqare API.

```
( 1 / 306 ) Thai Resturants in Wakefield, Bronx:0
( 2 / 306 ) Thai Resturants in Co-op City, Bronx:0
( 3 / 306 ) Thai Resturants in Eastchester, Bronx:0
( 4 / 306 ) Thai Resturants in Fieldston, Bronx:0
( 5 / 306 ) Thai Resturants in Riverdale, Bronx:0
( 6 / 306 ) Thai Resturants in Kingsbridge, Bronx:0
( 7 / 306 ) Thai Resturants in Marble Hill, Manhattan:0
( 8 / 306 ) Thai Resturants in Woodlawn, Bronx:1
( 9 / 306 ) Thai Resturants in Norwood, Bronx:0
( 10 / 306 ) Thai Resturants in Williamsbridge, Bronx:0
( 11 / 306 ) Thai Resturants in Baychester, Bronx:0
( 12 / 306 ) Thai Resturants in Pelham Parkway, Bronx:0
```

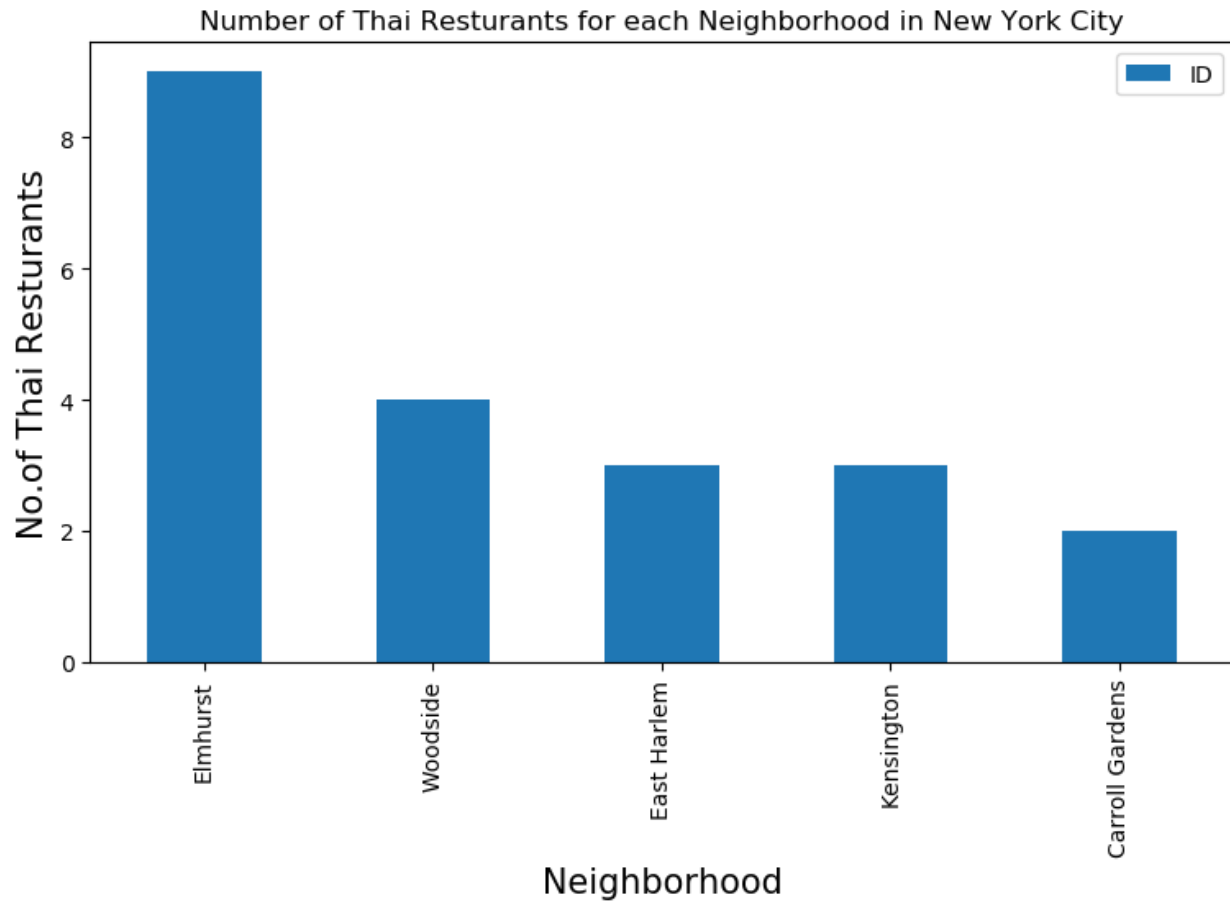Convert data into pandas dataframe and csv.

	Borough	Neighborhood	ID	Name
0	Bronx	Woodlawn	4dc5d0b47d8b14fb463525e9	Accent Thai
1	Bronx	Parkchester	5585c948498e0bd8a8a706f1	Thai Cuisine
2	Bronx	Van Nest	5585c948498e0bd8a8a706f1	Thai Cuisine
3	Bronx	North Riverdale	4dc5d0b47d8b14fb463525e9	Accent Thai
4	Bronx	Pelham Bay	4b4c90d3f964a52046b626e3	Honey's Thai Pavilion

We found 66 Thai restaurants in New York City.

Then, let's see which borough has the most Thai restaurants.

Number of Thai Resturants for each Borough in New York City

We found that Queens has the most Thai restaurants in New York City. Then let's see which neighborhood has the most Thai restaurants.

Number of Thai Resturants for each Neighborhood in New York City

So, we found that Elmhurst has 9 Thai restaurants which is the most in New York City.

Then, let's get more insight on each restaurant (Rating, Tips, Like) from Foursquare API.

```
0   4dc5d0b47d8b14fb463525e9   Accent Thai        14     8.4     4
( 1 / 66 ) processed
                         ID            Name  Likes  Rating  Tips
0   5585c948498e0bd8a8a706f1   Thai Cuisine       17     7.5     1
( 2 / 66 ) processed
                         ID            Name  Likes  Rating  Tips
0   5585c948498e0bd8a8a706f1   Thai Cuisine       17     7.5     1
( 3 / 66 ) processed
                         ID            Name  Likes  Rating  Tips
0   4dc5d0b47d8b14fb463525e9   Accent Thai        14     8.4     4
( 4 / 66 ) processed
                         ID                    Name  Likes  Rating  Tips
0   4b4c90d3f964a52046b626e3   Honey's Thai Pavilion     19     7.2    28
( 5 / 66 ) processed
```

Let's see the example of the data.

	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
0	Bronx	Woodlawn	4dc5d0b47d8b14fb463525e9	Accent Thai	14	8.4	4
1	Bronx	Parkchester	5585c948498e0bd8a8a706f1	Thai Cuisine	17	7.5	1
2	Bronx	Van Nest	5585c948498e0bd8a8a706f1	Thai Cuisine	17	7.5	1
3	Bronx	North Riverdale	4dc5d0b47d8b14fb463525e9	Accent Thai	14	8.4	4
4	Bronx	Pelham Bay	4b4c90d3f964a52046b626e3	Honey's Thai Pavilion	19	7.2	28

Restaurant with maximum Likes.

```
Borough                     Manhattan
Neighborhood              Little Italy
ID              516863b1011ca6684e37a88f
Name                      Uncle Boons
Likes                            1016
Rating                            9.1
Tips                              330
```

Restaurant with maximum Rating.

```
Borough                     Manhattan
Neighborhood                 Chinatown
ID              5cc4e9d0c876c8002c3010cb
Name                            Wayla
Likes                             126
Rating                            9.2
Tips                               26
Name: 20, dtype: object
```

Restaurant with maximum Tips.

```
Borough                           Queens
Neighborhood                    Woodside
ID                 3fd66200f964a5204ef11ee3
Name                          SriPraPhai
Likes                                766
Rating                               8.9
Tips                                 357
Name: 31, dtype: object
```
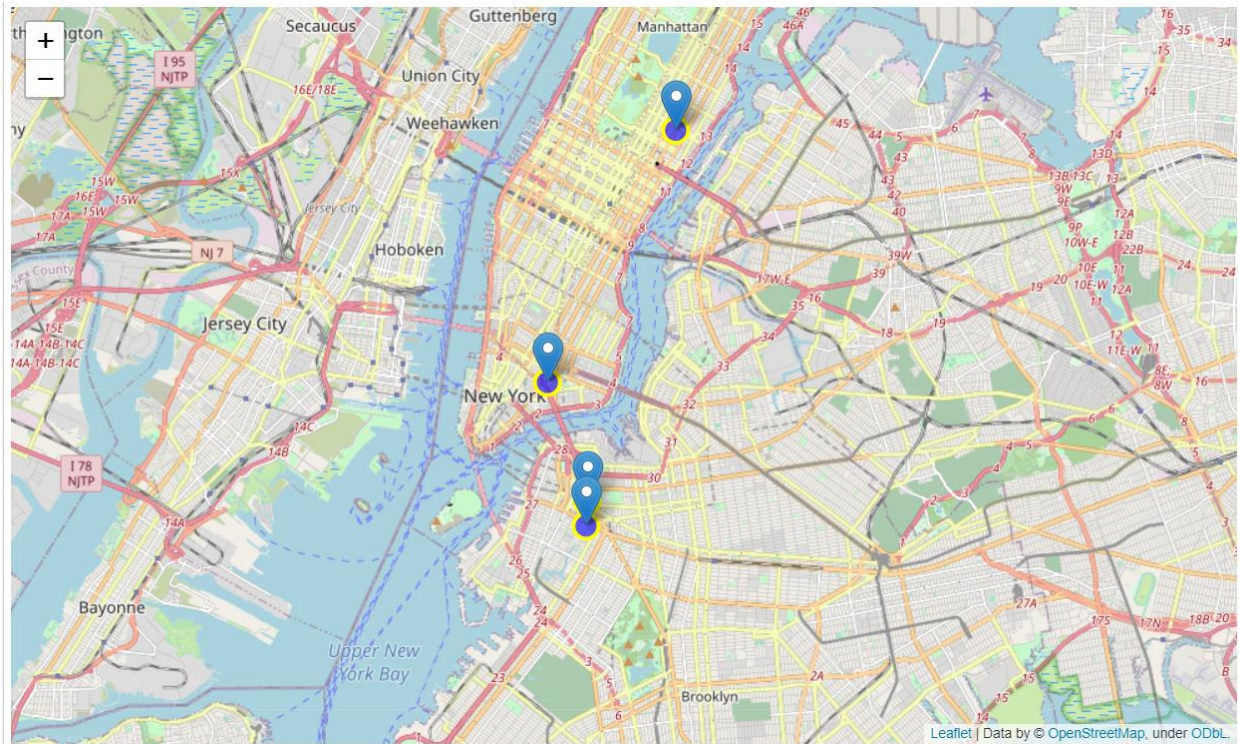
Then, let's summarize average rating of Thai restaurants in each neighborhood.

	Neighborhood	Average Rating
6	Chinatown	9.20
23	Lenox Hill	9.05
2	Boerum Hill	9.00
9	Downtown	9.00
44	Yorkville	8.90
35	South Ozone Park	8.90
34	Rochdale	8.90
25	Little Neck	8.90
24	Little Italy	8.85
33	Prospect Lefferts Gardens	8.80

Select only neighborhoods which average rating more than 9.0

	Neighborhood	Average Rating
2	Boerum Hill	9.00
6	Chinatown	9.20
9	Downtown	9.00
23	Lenox Hill	9.05

Finally, Let's visualize the location of each neighborhood which highest average rating in the map.

Results

So now we can answer the questions of the research as following.

1. Which neighborhood in New York City have the most Thai restaurants?
   We found that Elmhurst neighborhood in Queens borough has the most Thai restaurants (9 Thai restaurants here) followed by Woodside, East Harlem, Kensington and Carroll Gardens.
2. Which neighborhood in New York City have the best average rating for Thai restaurants?
   We found that Chinatown neighborhood in Manhattan borough has the best average rating for Thai restaurant followed by Lenox Hill, Downtown and Boerum Hill.

Discussion

Regarding the results, I will be recommended if you are Thai people who usually eat Thai foods in your everyday life and want variety of Thai foods you should live in Elmhurst neighborhood which has the most Thai restaurants in New York City.

But if you really care about taste of foods, you should live in Chinatown because this neighborhood has the best average rating for Thai restaurant in New York City.

Conclusion

There are limitations of this research as following.

1. All results refer to this dataset and Foursquare API. Which may not be representative of all Thai restaurants in New York City.
2. This data analysis does not include advance statistical analysis.
3. The result is base on average rating but in the future research you can use multi-feature to represent the better recommendation.