

**Introduction:**

The city of New York, is the most populous city in the United States. With an estimated 2018 population of 8,398,748 distributed over about 302.6 square miles (784 km<sup>2</sup>), New York city, is also the most densely populated major city in the United States.

It is the largest metropolitan area in the world by urban landmass. With almost 20 million people in its metropolitan statistical area and approximately 23 million in its combined statistical area, it is one of the world's most populous megacities.

Situated on one of the world's largest natural harbors, New York City is divided into five administrative boroughs, each of which is a separate county of the State of New York. The five boroughs – Brooklyn, Queens, Manhattan, The Bronx, and Staten Island – were consolidated into a single city in 1898.

As many as 800 languages are spoken in New York city, making it the most linguistically diverse city in the world.

The cuisine of New York City comprises many cuisines belonging to various ethnic groups that have entered the United States through the city, Italian, French, Chinese, etc.

What about Portuguese food? As part of this project, i will list and visualize all major parts of New York city, that has great Portuguese restaurant's.

Note: For more about Portugal go to : <https://www.visitportugal.com/pt-pt>

**Data:**

New York City data that contains list Boroughs, Neighborhoods along with their latitude and longitude. Data source: [https://cocl.us/new\\_york\\_dataset](https://cocl.us/new_york_dataset)

Description: This data set contains the required information. And we will use this data set to explore various neighborhoods of New York city. Portuguese restaurants in each neighborhood of New York city.

Data source: Foursquare API Description: By using this api we will get all the venues in each neighborhood. We can filter these venues to get only Portuguese restaurants.

GeoSpace data Data source: <https://data.cityofnewyork.us/CityGovernment/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.

### Approach:

1. Collect the new York city data from [https://cocl.us/new\\_york\\_dataset](https://cocl.us/new_york_dataset)
2. Using Foursquare API, we will find all venues for each neighborhood.
3. Filter out all venues that are Portuguese Restaurants.
4. . Find rating, tips and like count for each Portuguese Restaurants using Foursquare API.
5. Using rating for each restaurant, we will sort that data. 6. Visualize the Ranking of neighborhoods using folium library(python) Queries that can be answered using above dataset:

- *What is best location in New York City for Portuguese cuisine?*
- *Which areas have potential for opening a restaurant?*
- *Which all areas lack a Portuguese restaurant?*
- *Which is the best place to stay if i want to try Portuguese cuisine?*

### Analysis:

Required Libraries:

Pandas and numpy for handling data.

Request module for using Foursquare API.

Geopy to get co-ordinates of City of New York.

Folium to visualize the results on a map.

### Functions needed:

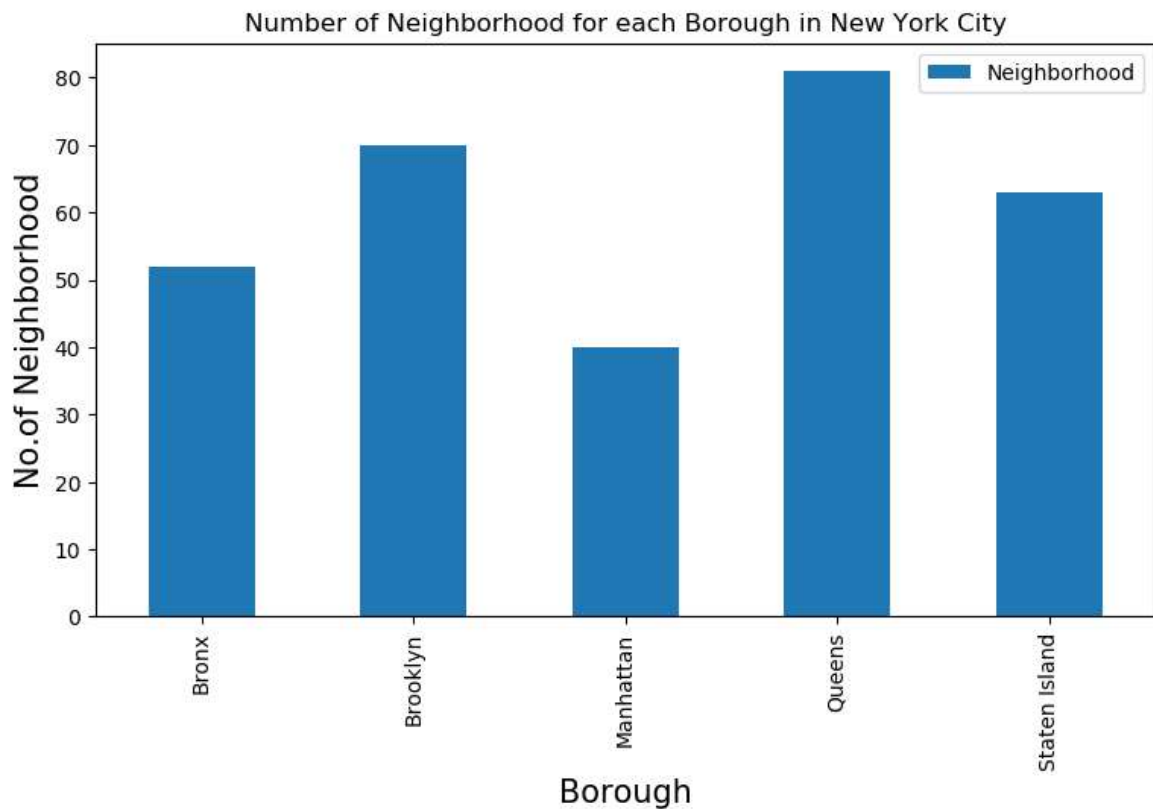
1. Function to get the geocodes i.e. latitude and longitude of a given location using geopy;
2. Function to interact with Foursquare API and get top 50 venues within a radius of 10000 meters for a given latitude and longitude;
3. Function to return us the venue id, venue name and category;
4. Function to get the New York city data such as Boroughs, Neighborhoods along with their latitude and longitude:

	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

```
new_york_data.shape
```

```
(306, 4)
```

There are 306 neighborhoods in New York city!



### Restaurant insights:

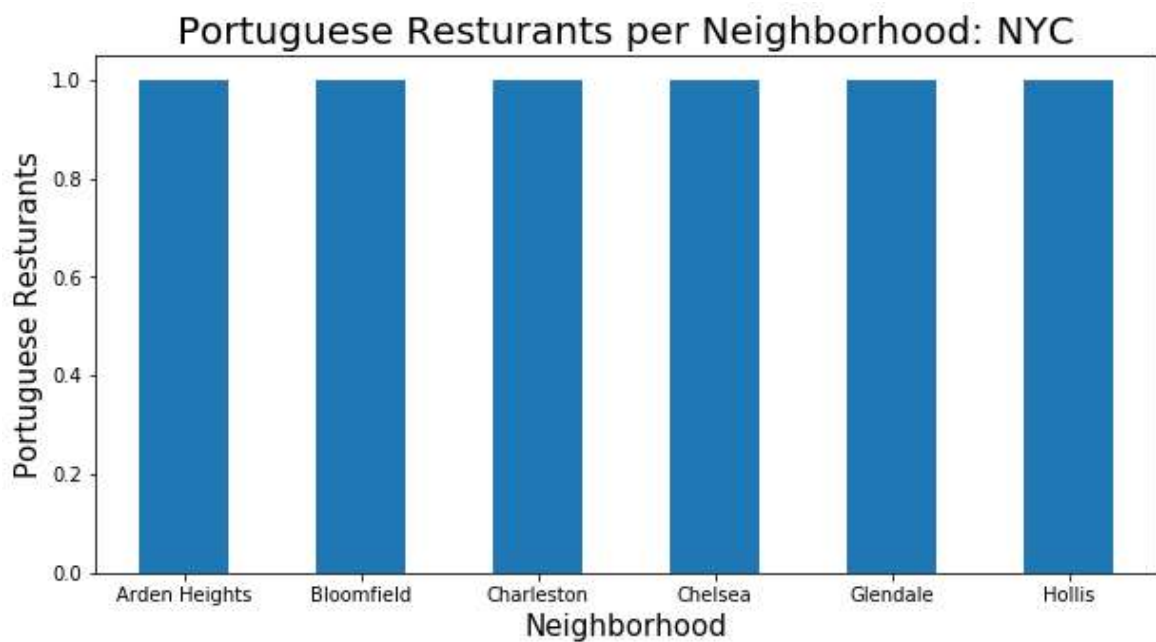
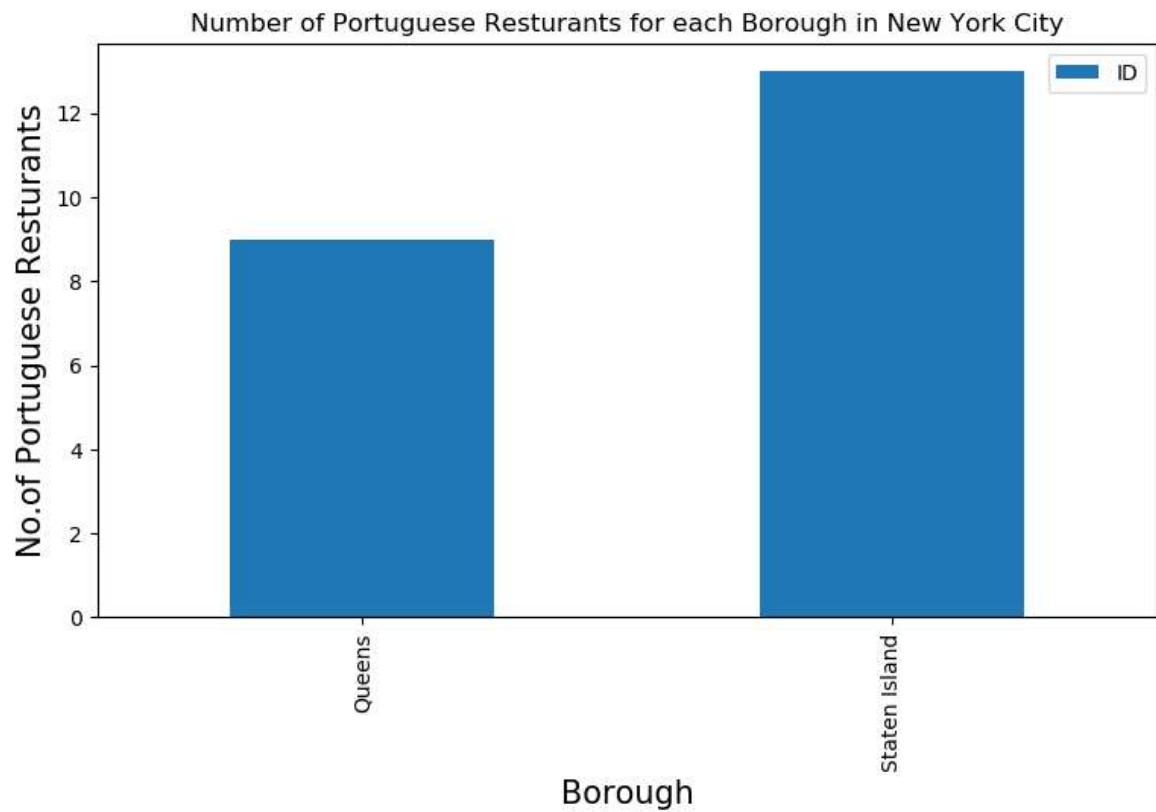
We see that Queens has highest number of neighborhoods. Now we will collect Portuguese restaurants for each Neighborhood

	Borough	Neighborhood	ID	Name
0	Queens	Glendale	4c0abd813c70b7132e0d285b	O Lavrador
1	Queens	South Ozone Park	4c0abd813c70b7132e0d285b	O Lavrador
2	Queens	Jamaica Center	4c0abd813c70b7132e0d285b	O Lavrador
3	Queens	Hollis	4c0abd813c70b7132e0d285b	O Lavrador
4	Queens	South Jamaica	4c0abd813c70b7132e0d285b	O Lavrador

```
Portuguese_rest_ny.shape
```

```
(22, 4)
```

We got 22 Portuguese restaurants in New York. Nice!



	Borough	Neighborhood	ID	Name	Likes	Rating	Tips
17	Staten Island	Bloomfield	4cd6f3a1122ba143eac635a1	Chateau Madrid	27	8.4	12
18	Staten Island	Howland Hook	4ba14cc2f964a5206faa37e3	Valenca Restaurant	178	8.7	71
19	Staten Island	Sandy Ground	4cd6f3a1122ba143eac635a1	Chateau Madrid	27	8.4	12
20	Staten Island	Prince's Bay	4cd6f3a1122ba143eac635a1	Chateau Madrid	27	8.4	12
21	Staten Island	Richmond Valley	4cd6f3a1122ba143eac635a1	Chateau Madrid	27	8.4	12

```
Portuguese_rest_stats_ny.describe()
```

	Likes	Rating	Tips
count	22.000000	22.000000	22.00000
mean	50.954545	8.427273	19.00000
std	42.874654	0.088273	16.94248
min	27.000000	8.400000	12.00000
25%	27.000000	8.400000	12.00000
50%	39.500000	8.400000	14.00000
75%	52.000000	8.400000	16.00000
max	178.000000	8.700000	71.00000

**Restaurant with maximum likes: Valenca Restaurant**

```
# Restaurant with maximum Likes
Portuguese_rest_stats_ny.iloc[Portuguese_rest_stats_ny['Likes'].idxmax()]
```

```
Borough          Staten Island
Neighborhood      Port Ivory
ID                4ba14cc2f964a5206faa37e3
Name              Valenca Restaurant
Likes            178
Rating           8.7
Tips             71
Name: 9, dtype: object
```

**Restaurant with maximum Rating: Valenca Restaurant**

```
# Restaurant with maximum Rating
Portuguese_rest_stats_ny.iloc[Portuguese_rest_stats_ny['Rating'].idxmax()]
```

```
Borough          Staten Island
Neighborhood      Port Ivory
ID                4ba14cc2f964a5206faa37e3
Name              Valenca Restaurant
Likes            178
Rating           8.7
Tips             71
Name: 9, dtype: object
```

**Restaurant with maximum Tips: Valenca Restaurant**

```
# Resturant with maximum Tips
Portuguese_rest_stats_ny.iloc[Portuguese_rest_stats_ny['Tips'].idxmax()]
```

Borough Staten Island  
Neighborhood Port Ivory  
ID 4ba14cc2f964a5206faa37e3  
Name Valenca Restaurant  
Likes 178  
Rating 8.7  
Tips 71  
Name: 9, dtype: object

**Neighborhood insights:**

	Neighborhood	Average Rating
6	Howland Hook	8.7
10	Port Ivory	8.7
0	Arden Heights	8.4
12	Richmond Valley	8.4
20	Travis	8.4
19	St. Albans	8.4
18	Springfield Gardens	8.4
17	South Ozone Park	8.4
16	South Jamaica	8.4
15	Sandy Ground	8.4

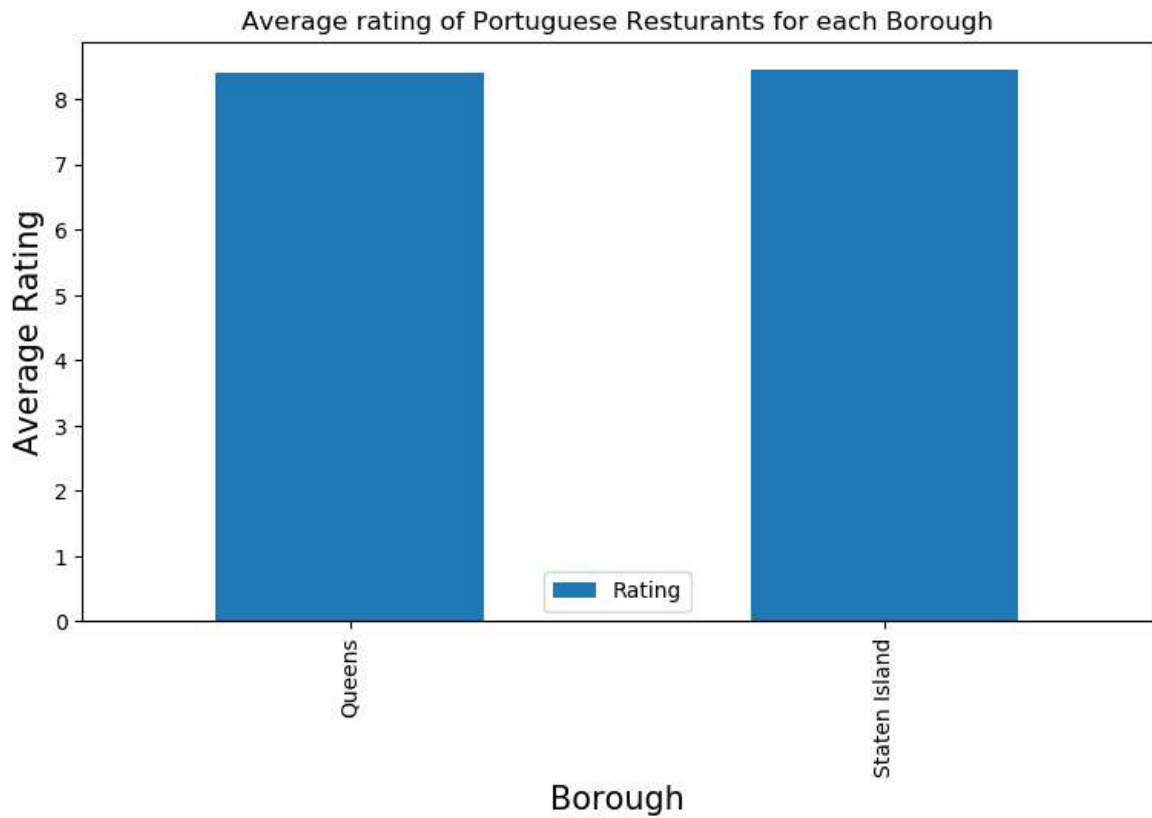
Above are the top neighborhoods with top average rating of Portuguese Restaurant

	Borough	Average Rating
1	Staten Island	8.446154
0	Queens	8.400000

Similarly these are the average rating of Portuguese Resturants for each Borough



Let's visualize it:

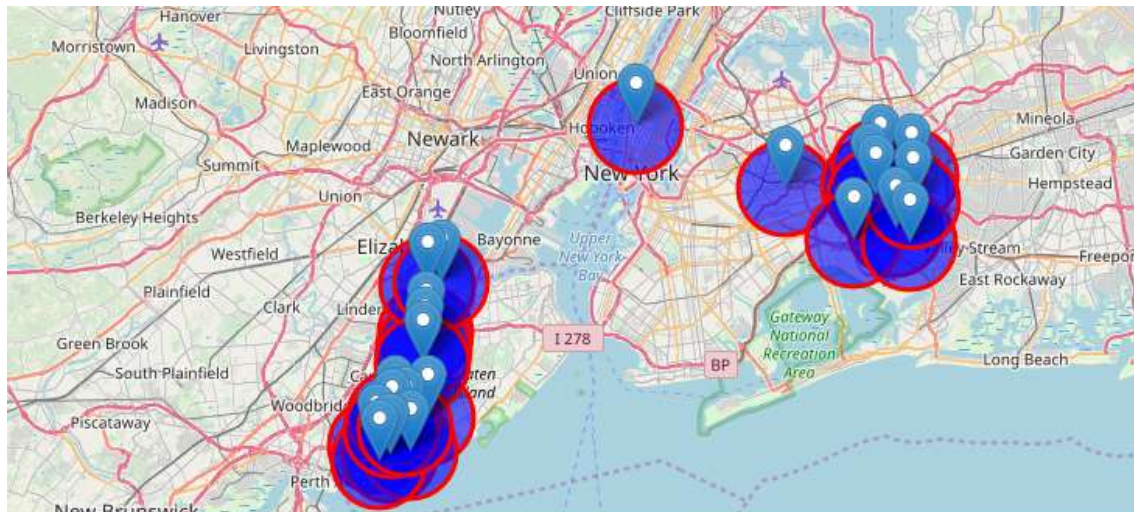


We will consider all the neighborhoods with average rating greater or equal to 8 to visualize on map, and then we will join this dataset to original New York data to get longitude and latitude:

	Borough	Neighborhood	Latitude	Longitude	Average Rating
0	Staten Island	Arden Heights	40.549286	-74.185887	8.4
1	Staten Island	Bloomfield	40.605779	-74.187256	8.4
2	Staten Island	Charleston	40.530531	-74.232158	8.4
3	Manhattan	Chelsea	40.744035	-74.003116	8.4
4	Staten Island	Chelsea	40.594726	-74.189560	8.4
5	Queens	Glendale	40.702762	-73.870742	8.4
6	Queens	Hollis	40.711243	-73.759250	8.4
7	Staten Island	Howland Hook	40.638433	-74.186223	8.7
8	Queens	Jamaica Center	40.704657	-73.796902	8.4
9	Queens	Jamaica Estates	40.716805	-73.787227	8.4
10	Staten Island	Pleasant Plains	40.524699	-74.219831	8.4
11	Staten Island	Port Ivory	40.639683	-74.174645	8.7

12	Staten Island	Prince's Bay	40.526264	-74.201526	8.4
13	Staten Island	Richmond Valley	40.519541	-74.229571	8.4
14	Queens	Rochdale	40.675211	-73.772588	8.4
15	Staten Island	Rossville	40.549404	-74.215729	8.4
16	Staten Island	Sandy Ground	40.541140	-74.217766	8.4
17	Queens	South Jamaica	40.696911	-73.790426	8.4
18	Queens	South Ozone Park	40.668550	-73.809865	8.4
19	Queens	Springfield Gardens	40.666230	-73.760421	8.4
20	Queens	St. Albans	40.694445	-73.758676	8.4
21	Staten Island	Travis	40.586314	-74.190737	8.4
22	Staten Island	Woodrow	40.541968	-74.205246	8.4

Now we will show this data on a map:



## Conclusion

Arden (Staten Island), Bloomfield (Staten Island), are some of the best neighborhoods for Portuguese cuisine. Manhattan have potential for Portuguese Restaurant Market Queens is the best place to stay if you prefer Portuguese Cuisine.

## Limitations:

The ranking is purely on basis of rating of restaurants The accuracy of data depends purely depends on the data provided by Foursquare