

CAPSTONE PROJECT

The Battle of Neighborhood

Introduction

This project explores the best place for Italian restaurants throughout the New York City. According to Wikipedia, New York City has the largest population of Italian Americans in the United States of America as well as North America, many of whom inhabit ethnic enclaves in Brooklyn, the Bronx, Manhattan, Queens, and Staten Island. New York City is home to the third largest Italian population outside of Italy. Over 1.3 million Italians and Italian-Americans live in the greater New York City metro area, with about 800,000 living within one of the five New York City boroughs. So to find and enjoy Italian cuisine possibility is more here. This project will show which are the best restaurants in neighborhoods and boroughs of New York City and if I want to open a Italian restaurant which place would be best?

Data

In order to answer the above questions, data on New York City neighborhoods, boroughs, 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

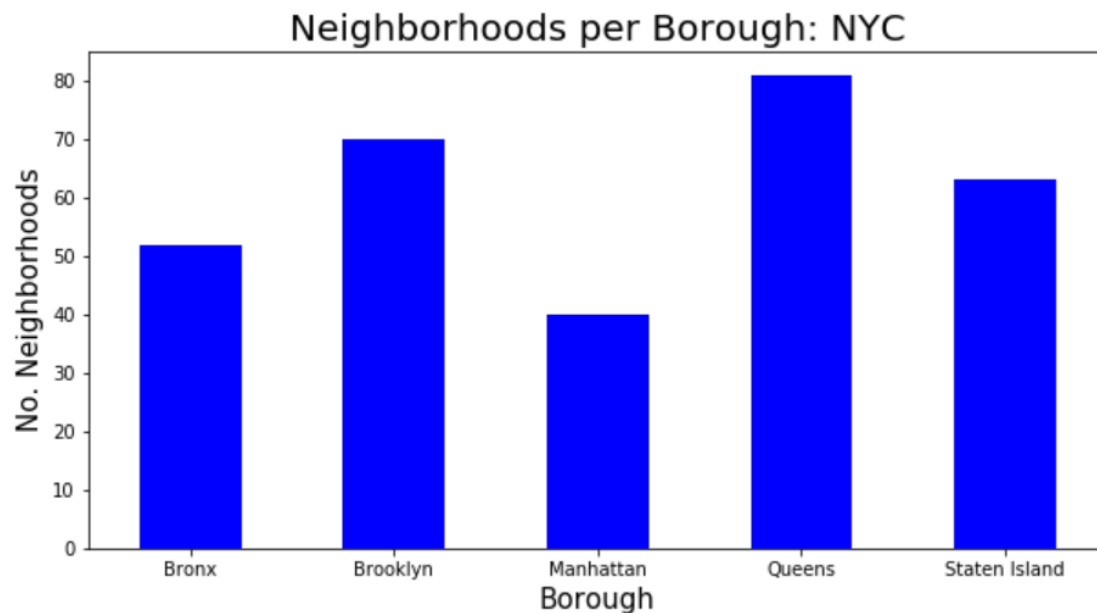
- Data will be collected from https://cocl.us/new_york_dataset and cleaned and processed into a data frame.
- Foursquare be used to locate all venues and then filtered by Italian restaurants. Ratings, tips, and likes by users will be counted and added to the data frame.
- Data will be sorted based on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

Data Acquisition and Cleaning

Date downloaded from above mentioned source and I have loaded the json data into a variable to check how data looks. We fetch 'features' from json file as it contains the actual data which is required for the analysis. We then create a table with all the columns which is required and put the data into it for further use. We have got the data(306 rows) in tabular format as below –

	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

Now we need to see how many neighborhoods we have for each borough –

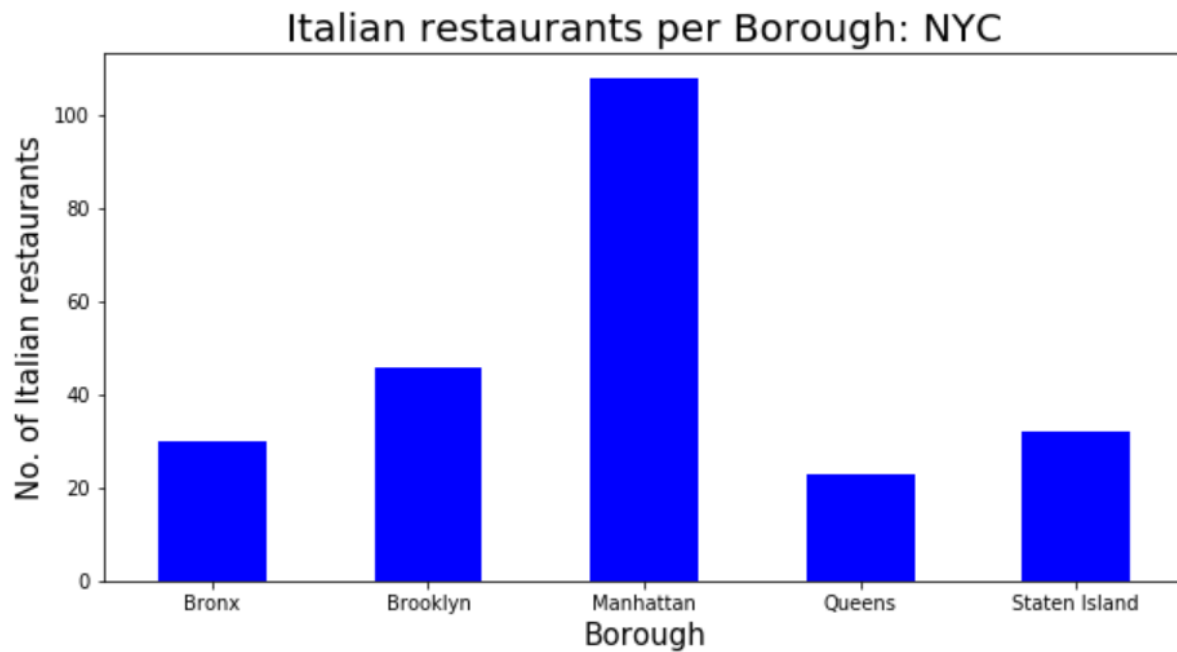


After creating the bar graph, we can see that Manhattan has least number of neighbors compare to other boroughs.

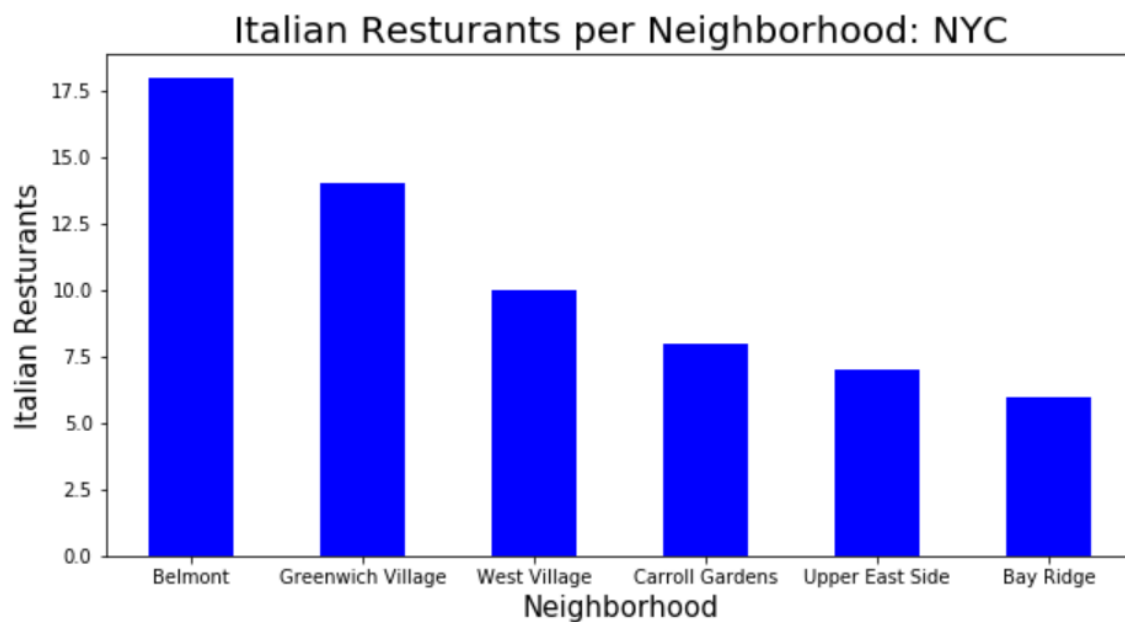
Now we will utilize the Foursquare API to get all the Italian restaurants for each neighborhood and the data we got is below –

	Borough	Neighborhood	ID	Name
234	Queens	Sunnyside Gardens	5699aa86498ef437b2fd7102	Zio Luigi
235	Brooklyn	Fulton Ferry	593c0d2262420b7feccc3048	Cecconi's
236	Brooklyn	Dumbo	593c0d2262420b7feccc3048	Cecconi's
237	Staten Island	Prince's Bay	4c091311a1b32d7f5efb96f0	Certo's Gourmet Foods & Caterers
238	Staten Island	Lighthouse Hill	5079ccdce4b065f1dd8155ad	Casa verde

After looking at the below bar graph, it's clear that though Manhattan has least no. of neighborhoods but it has highest no. of Italian restaurants compare to other boroughs –



After seeing below analysis, we can see that Belmont neighborhood has the highest number of Italian restaurants in all NYC –



We can see that Belmont is under Bronx borough not the Manhattan -

	Borough	Neighborhood	ID	Name
5	Bronx	Belmont	4acf80aef964a52025d420e3	Tino's Delicatessen
6	Bronx	Belmont	4af71916f964a520cf0522e3	Michaelangelo's Coal Fired Brick Oven Pizza Re...
7	Bronx	Belmont	59050f51b23dfa5f6649e678	Arthur Avenue Fiasco
8	Bronx	Belmont	4bb6470cef159c7465b275f7	Calabria Pork Store
9	Bronx	Belmont	4bc22a22920eb713bcc51b2c	Tra Di Noi
10	Bronx	Belmont	4aa425bef964a5208e4520e3	Dominick's Restaurant
11	Bronx	Belmont	4af0fa29f964a52060e021e3	Antonio's Trattoria

Again, using Foursquare API, we will fetch the venue details like ratings, likes and tips. Below is the restaurant which has max. likes –

```

Borough           Manhattan
Neighborhood      Gramercy
ID                4afb2990f964a520a91b22e3
Name              Maialino
Likes             1440
Rating            9
Tips              465

```

Restaurant which has max rating –

```

Borough           Brooklyn
Neighborhood      Fort Greene
ID                5a00f3538496ca58fd9e2856
Name              Evelina Restaurant
Likes             177
Rating            9.4
Tips              34

```

Restaurant which has max. tips –

```

Borough           Staten Island
Neighborhood      West Brighton
ID                4b5b58dbf964a52088f628e3
Name              Panini Grill
Likes             20
Rating            8.2
Tips              1136

```

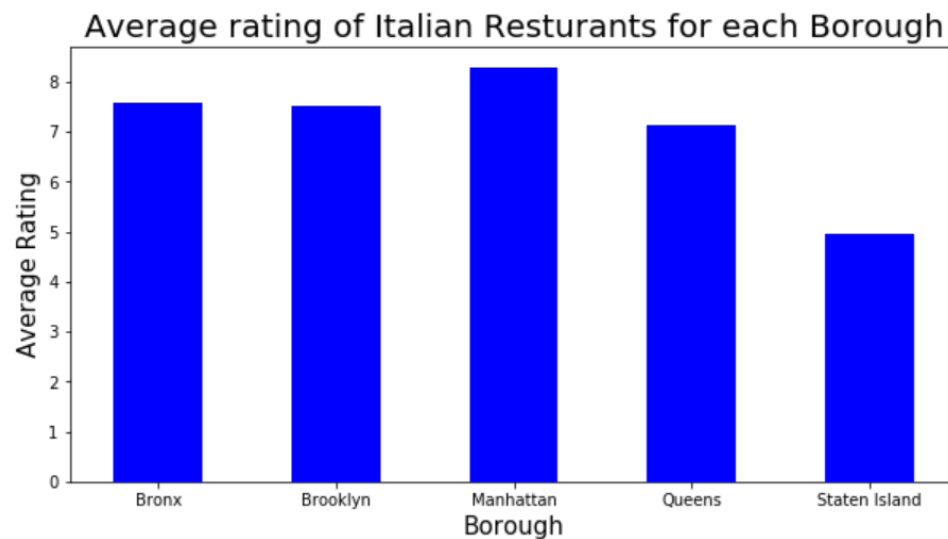
Neighborhoods with their average ratings –

	Neighborhood	Average Rating
13	Bushwick	9.300000
89	Tribeca	9.200000
11	Boerum Hill	9.200000
56	Lower East Side	8.900000
45	Hamilton Heights	8.900000
25	Corona	8.800000
61	Midtown South	8.800000
67	Noho	8.716667
38	Fulton Ferry	8.700000

Borough with average ratings –

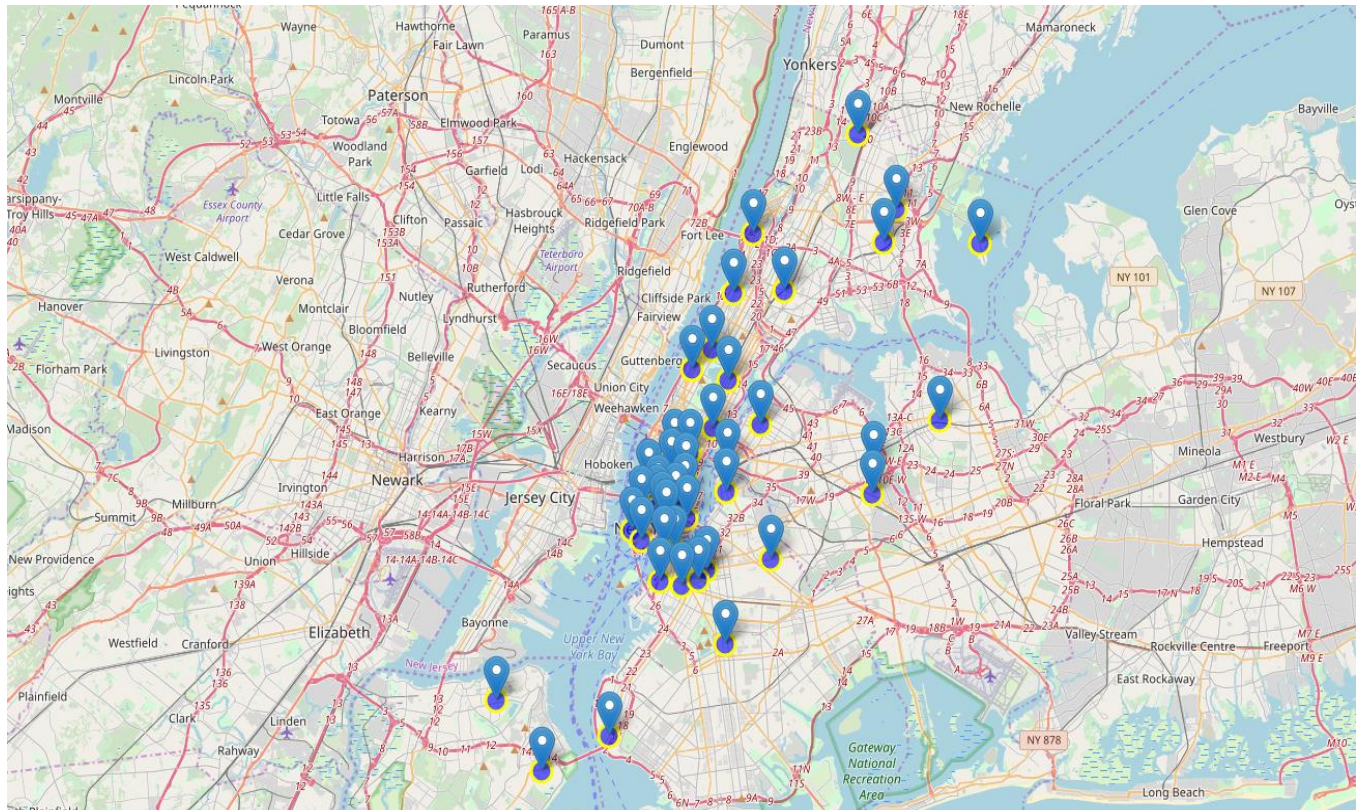
	Borough	Average Rating
2	Manhattan	8.288889
0	Bronx	7.583333
1	Brooklyn	7.504348
3	Queens	7.134783
4	Staten Island	4.962500

Below is the bar graph with average rating of Italian restaurants for each borough –



We will visually map the neighborhoods with an average rating greater than or equal to 8 after joining the appropriate data frames to include latitudes and longitudes.

	Borough	Neighborhood	Latitude	Longitude	Average Rating
0	Manhattan	Battery Park City	40.711932	-74.016869	8.050000
1	Brooklyn	Boerum Hill	40.685683	-73.983748	9.200000
2	Brooklyn	Bushwick	40.698116	-73.925258	9.300000
3	Manhattan	Carnegie Hill	40.782683	-73.953256	8.150000
4	Manhattan	Chinatown	40.715618	-73.994279	8.100000
5	Bronx	City Island	40.847247	-73.786488	8.300000
6	Brooklyn	Clinton Hill	40.693229	-73.967843	8.450000
7	Brooklyn	Cobble Hill	40.687920	-73.998561	8.300000
8	Bronx	Concourse Village	40.824780	-73.915847	8.200000
9	Queens	Corona	40.742382	-73.856825	8.800000



Result/Conclusion

Manhattan and Queens have the best rated Italian restaurants on average. Queens and The Bronx have the least number of Italian restaurants per borough. However, of note, Belmont of The Bronx is the neighborhood in all of NYC with the most Italian Restaurants. Despite Manhattan having the least number of neighborhoods in all five boroughs, it has the most Italian restaurants. Based on this information, I would state that Manhattan and Queens are the best locations for Italian cuisine in NYC. To have the best shot of success, I would open an Italian restaurant in Queens. Queens has multiple neighborhoods with average ratings exceeding 8.0 of a scale of 1.0 to 10.0 and has the least number of Italian restaurants making competition easier than in other boroughs.