

Capstone Project - The battle of Neighborhood

Introduction

New York'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 2014, 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.

Throughout its history, New York City has been a major point of entry for immigrants; the term "melting pot" was coined to describe densely populated immigrant neighborhoods on the Lower East Side. As many as 800 languages are spoken in New York, making it the most linguistically diverse city in the world. English remains the most widely spoken language, although there are areas in the outer boroughs in which up to 25% of people speak English as an alternate language, and/or have limited or no English language fluency. English is least spoken in neighborhoods such as Flushing, Sunset Park, and Corona.

With the diversity in their culture, New York have diverse cuisines. There are many restaurants in New York City belonging to different cuisines like Chinese, Vietnamese, French etc.

In the project, I will list and visualize info about great Vietnamese restaurants in New York.

Data

For this project we need the following data :

- New York City data that contains list Boroughs, Neighborhoods along with their latitude and longitude.
 - Data source: https://cocl.us/new_york_dataset
 - Description: This data set contains the required information. The data is used to explore various neighborhoods of NYC.
- Vietnamese restaurants in each neighborhood in NYC.
 - Data source: Foursquare API
 - Description: All the venues are archived in each neighborhood by using the API. Venues are selected to obtain only Vietnamese restaurants info.

Approach

- Collect the NYC data from https://cocl.us/new_york_dataset
- Using Foursquare API we will find all venues for each neighborhood.
- Filter out all venues which are Vietnamese Restaurants.
- Find rating, tips and likes for each Vietnamese Restaurant using Foursquare API.
- Using rating for each restaurant, we will sort that data.

- Visualize the Ranking of neighborhoods using folium library(python)

Questions that can be asked using the mentioned datasets

- What is best location in New York City for Vietnamese Cuisine?
- Which areas have potential good Vietnamese Restaurants?
- Which is the best Vietnamese Restaurant in NYC?
- Which is the best place to stay if you prefer Vietnamese Cuisine?

Analysis

We will import the required libraries for python.

- 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

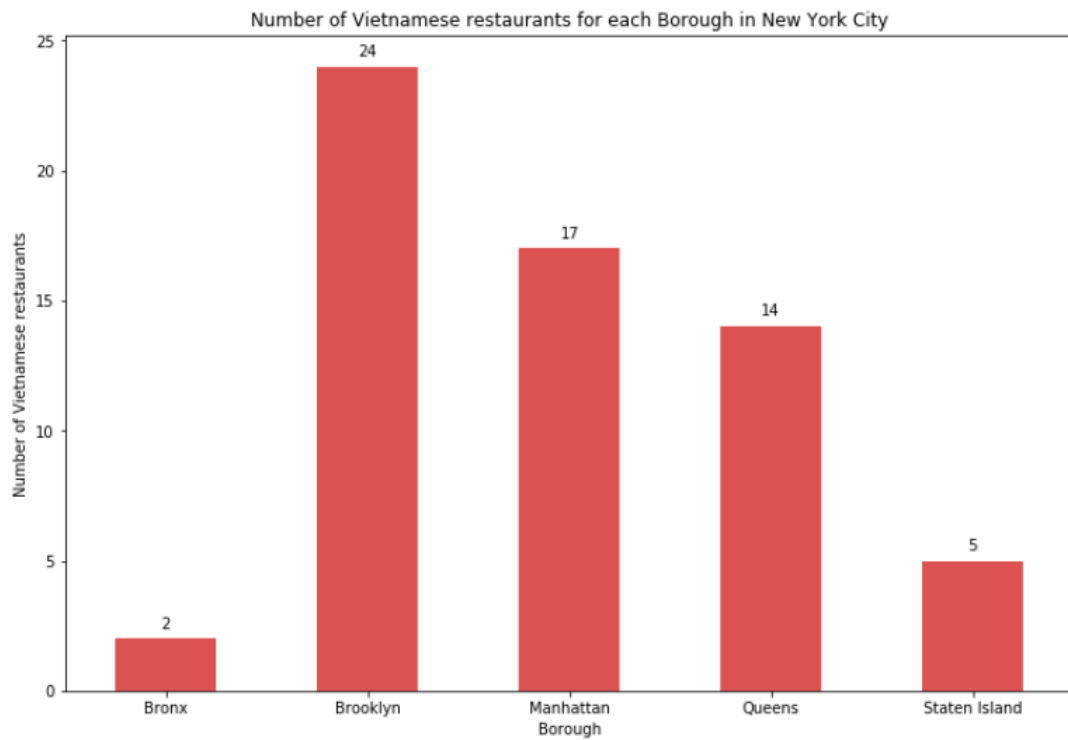
Data of NYC is loaded from data source: https://cocl.us/new_york_dataset

	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

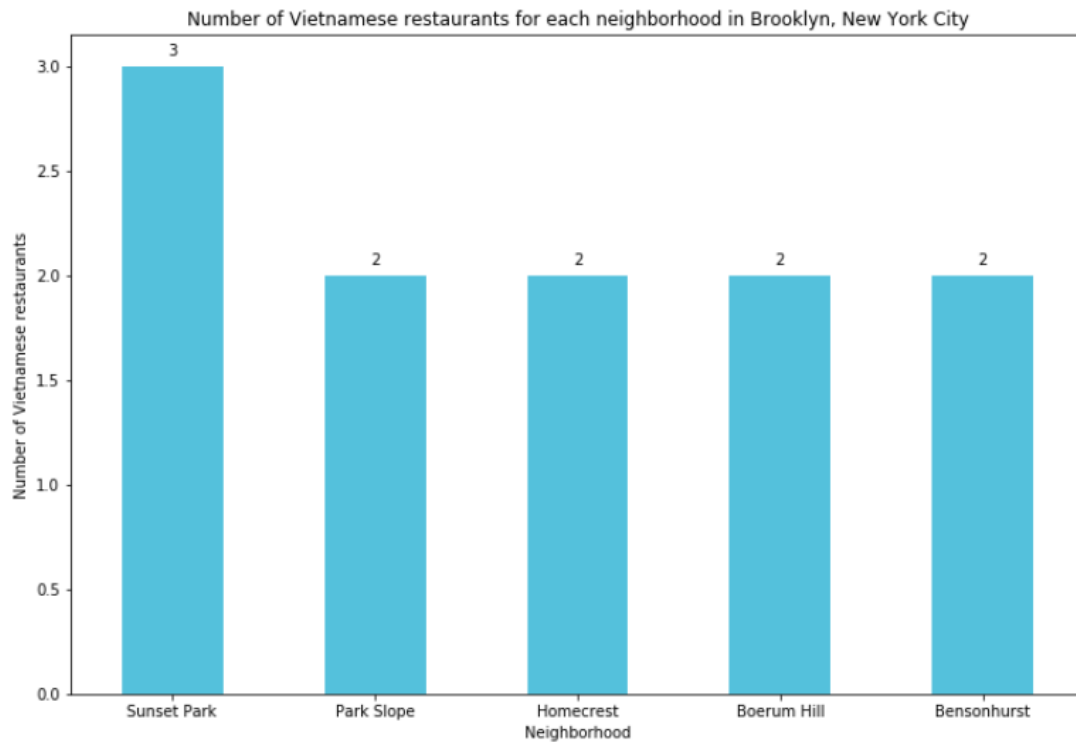
Data of Vietnamese restaurants in NYC is loaded from FourSquare API.

	Borough	Neighborhood	ID	Name
0	Bronx	Fordham	4aee2a4bf964a520a2d221e3	Cơm Tấm Ninh Kiều
1	Brooklyn	Bay Ridge	4af861e3f964a520bc0c22e3	Pho Hoai Bay Ridge
2	Brooklyn	Bensonhurst	5a5aaf7cc8b2fb7e920360f0	Em Vietnamese Restaurant
3	Brooklyn	Bensonhurst	55b7b8ba498e29e52cfc5658	Pho 18 Ave
4	Brooklyn	Sunset Park	49e4cedbf964a5204f631fe3	Ba Xuyên

The number of Vietnamese restaurants in each borough of NYC



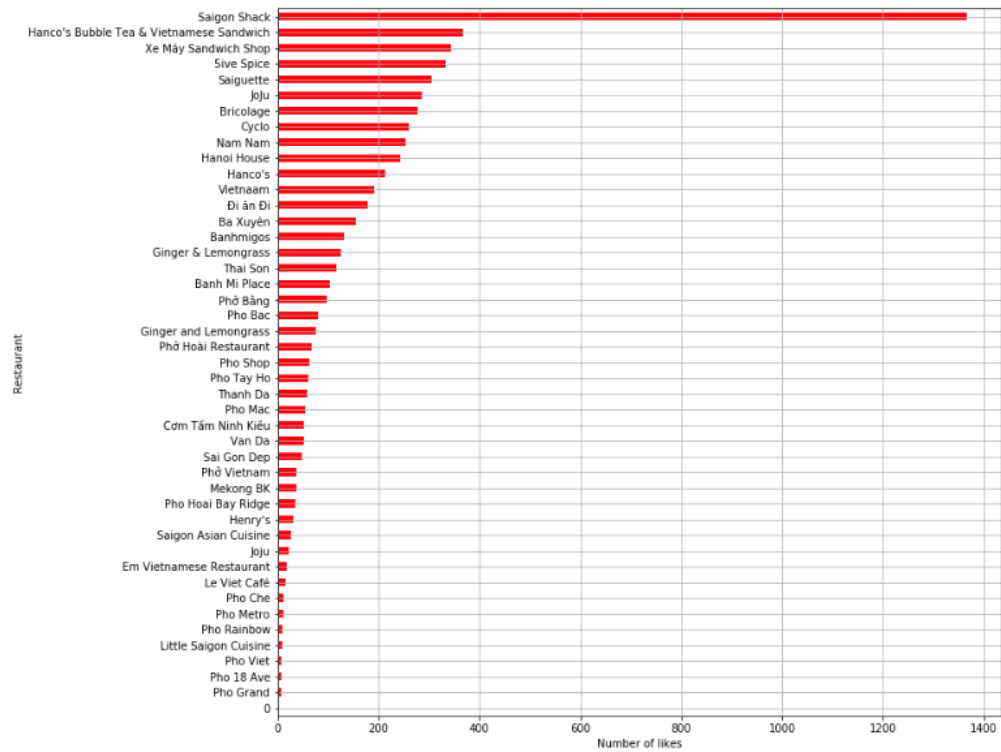
The number of Vietnamese restaurants in each neighborhood of Brooklyn, NYC.



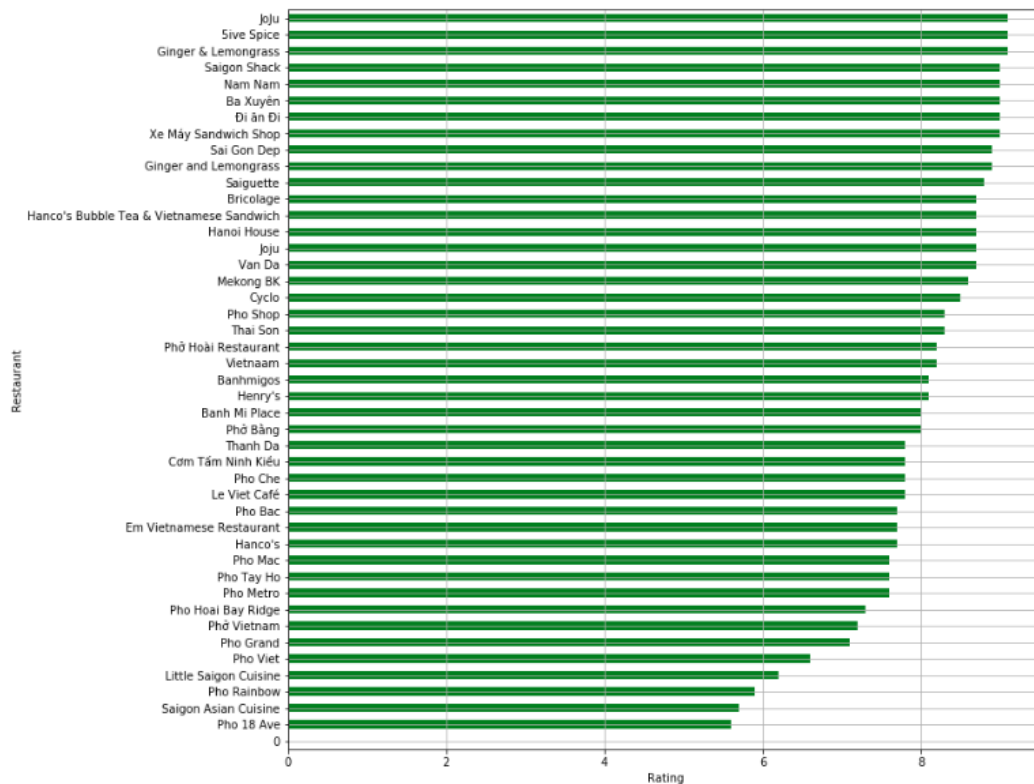
Next, the likes, rating and tip info of each Vietnamese restaurants in NY area is loaded from FourSquare API. The data is then preprocessed before analyzing.

Borough	Neighborhood	ID	Name	Likes	Rating	Tip
Bronx	Fordham	4aee2a4bf964a520a2d221e3	Cơm Tấm Ninh Kiều	52	7.8	3
Brooklyn	Bay Ridge	4af861e3f964a520bc0c22e3	Pho Hoai Bay Ridge	36	7.3	2
Brooklyn	Bensonhurst	5a5aaf7cc8b2fb7e920360f0	Em Vietnamese Restaurant	18	7.7	1
Brooklyn	Bensonhurst	55b7b8ba498e29e52cfc5658	Pho 18 Ave	8	5.6	
Brooklyn	Sunset Park	49e4cedbf964a5204f631fe3	Ba Xuyên	155	9.0	7
Brooklyn	Sunset Park	4aaea05bf964a520aa6220e3	Thanh Da	58	7.8	2
Brooklyn	Sunset Park	50dbb09be4b0e320417d97cf	Pho Viet	8	6.6	
Brooklyn	Greenpoint	5aa427100a464d2cf717b688	Đi ăn Đi	178	9.0	3
Brooklyn	Windsor Terrace	4a8f3caaf964a5207c1420e3	Henry's	30	8.1	2
Brooklyn	Prospect Heights	559e9f0c498e113f384a2cc1	Banh Mi Place	103	8.0	3
Brooklyn	Brooklyn Heights	4e43d56baeb7d02fd0e2fa63	Hanco's	213	7.7	6
Brooklyn	Fort Greene	592f635bb399f77e5738c416	Mekong BK	37	8.6	
Brooklyn	Park Slope	50b14913e4b0892bb8f71cfa	Banhmigos	131	8.1	4
Brooklyn	Park Slope	54d566e6498e6e0a0a9d3998	Bricolage	277	8.7	5
Brooklyn	Bath Beach	4b33c003f964a520751e25e3	Pho Tay Ho	61	7.6	3
Brooklyn	Downtown	49e63b96f964a52028641fe3	Hanco's Bubble Tea & Vietnamese Sandwich	368	8.7	14
Brooklyn	Boerum Hill	56282a49498ec66ece7ae441	5ive Spice	334	9.1	8
Brooklyn	East Williamsburg	4d6d18cea6ff721ece29bf20	Nam Nam	253	9.0	8
Manhattan	Yorkville	57cde924498e8a03be8925a9	Pho Shop	63	8.3	1
Manhattan	Yorkville	52e54ed3498ed43181ee85b0	Vietnaam	191	8.2	5
Manhattan	Midtown	5d9629652e04ea000834556a	Joju	23	8.7	
Manhattan	Murray Hill	5c1a6dd6121384002ce93aff	Sai Gon Dep	47	8.9	1
Manhattan	Greenwich Village	4ce08a08ffcf370469b12082	Saigon Shack	1367	9.0	38
Manhattan	East Village	4eee5e0693add02fcd39aa10	Xe Máy Sandwich Shop	343	9.0	12
Manhattan	East Village	58498a94f68d8d67be8e893c	Hanoi House	242	8.7	5
Manhattan	East Village	5c91430281635b002cd6b0e9	Van Da	52	8.7	1

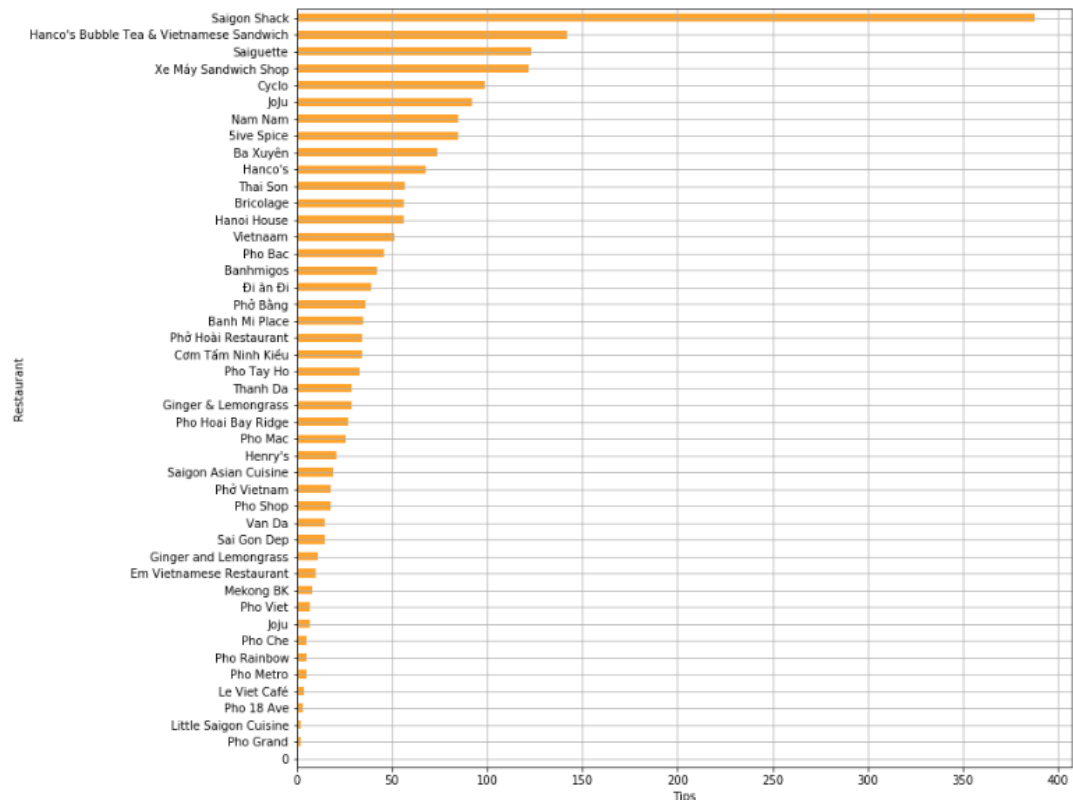
The graph shows the number of likes in each Vietnamese restaurants.



The graph below compares the rating of the restaurants.



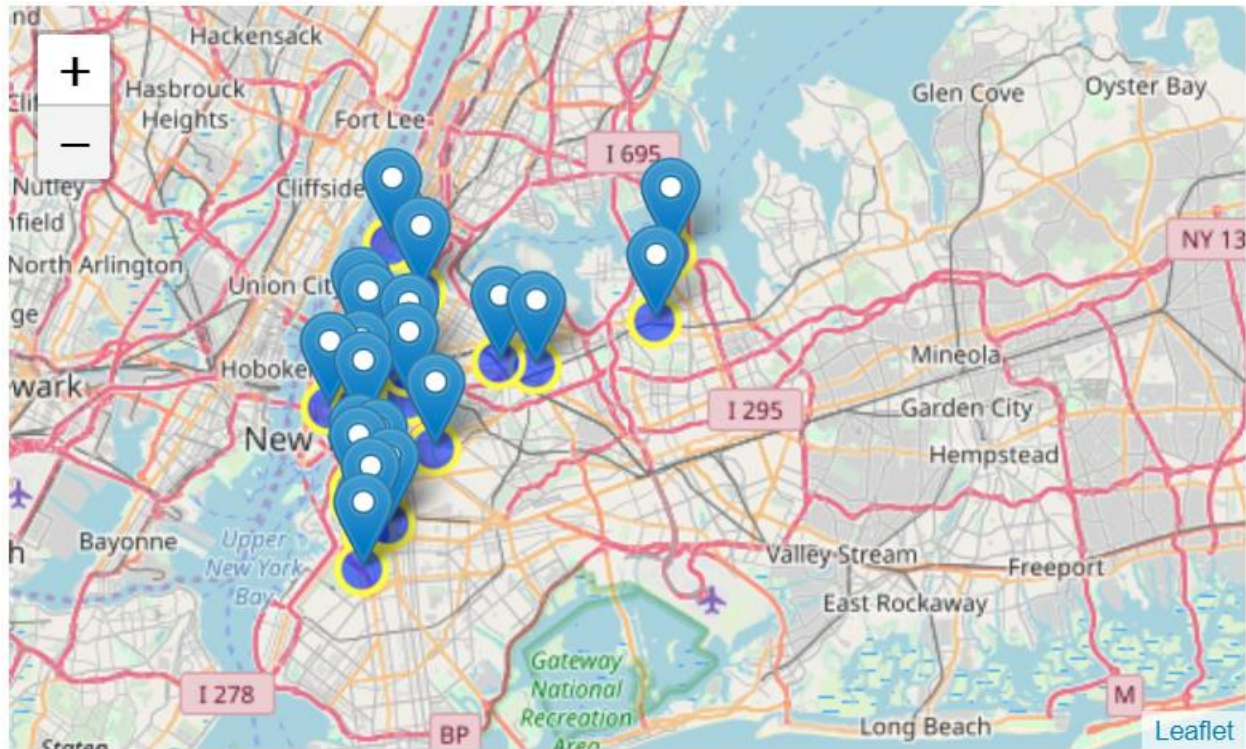
Tips in the restaurants are also compared in the figure below.



The list of neighborhoods which have average rating above 8.0

	Neighborhood	Average Rating
23	Lower East Side	9.10
6	Boerum Hill	9.10
19	Greenwich Village	9.00
11	East Williamsburg	9.00
18	Greenpoint	9.00
4	Beechhurst	8.90
26	Murray Hill	8.90
24	Manhattan Valley	8.80
10	East Village	8.80
9	Downtown	8.70
25	Midtown	8.70
15	Fort Greene	8.60
21	Hunters Point	8.50
12	Elmhurst	8.40
29	Park Slope	8.40
33	Woodside	8.30
34	Yorkville	8.25
32	Windsor Terrace	8.10
30	Prospect Heights	8.00

Folium library is used to visualize the list on a map of NYC



Conclusion

- Noho (Manhattan), Greenpoint (Brooklyn), Greenwich Village (Manhattan) are some of the best neighborhoods for Vietnamese cuisine.
- Brooklyn have good potential Vietnamese restaurants.
- Manhattan is the best place to stay if you prefer Vietnamese Cuisine.
- 5iveSpice ranks first in rating of Vietnamese Restaurants in NYC.

Limitations

- The ranking is purely on basis of rating of restaurants.
- The accuracy of data depends purely depends on the data provided by FourSquare.