The battle of the Neighborhoods – Report

1. Introduction

New York city (NYC), often called the City of New York or simply New York (NY), is the most populous city in the United States. With an estimated population of 8,400,000 distributed over about 302.6 square miles, New York is also the most densely populated major city in the United States. Situated on one of the world's largest natural harbors, New York City is composed of five boroughs, each of which is a county of the State of New York. The five boroughs, namely Brooklyn, Queens, Manhattan, the Bronx and Staten Island were consolidated into a single city in 1898. The city and its metropolitan area constitute the premier gateway for legal immigration to the United States. New York City is a major center for banking and finance, retailing, world trade, real estate, new media, traditional media, advertising, legal services, accountancy insurance, fashion and the arts in the United States.

Which means the market in New York City is highly competitive, based on the ability to attract investments, worker and tourists among other attributes. Although New York City is one of the world's most diverse cities and that diversity new ideas and new innovations, the costs of living and doing business in New York City are high. Therefore, any new business venture or expansion needs to be considered and analyzed carefully.

2. Description of the problem

A restaurant, or an eatery, is a business that prepares and serves food and drinks to customers. Meals are generally served and eaten on the premises, many restaurants also offer take-out and food delivery services. Restaurants vary greatly in appearance and offerings, including a wide variety of cuisines and service models ranging from inexpensive fast food restaurants and cafeterias, to mid-priced family restaurants, to high-priced luxury establishments.

If someone is looking to open a restaurant, there are so many things to consider – from choosing the right location to finding financing to selecting the right name, also buying equipment and hiring staff. The New York City is famous for its excellent cuisine, and its food culture includes various of international cuisines influenced by the city's immigrant history.

Therefore, to survive in such competitive market, it is very important to strategically plan before going into action. Many factors need to be analyzed in order to decide the best location.

- Segmentation of the Borough
- Population density
- Average income
- Accessibility, whether locate in a remote area

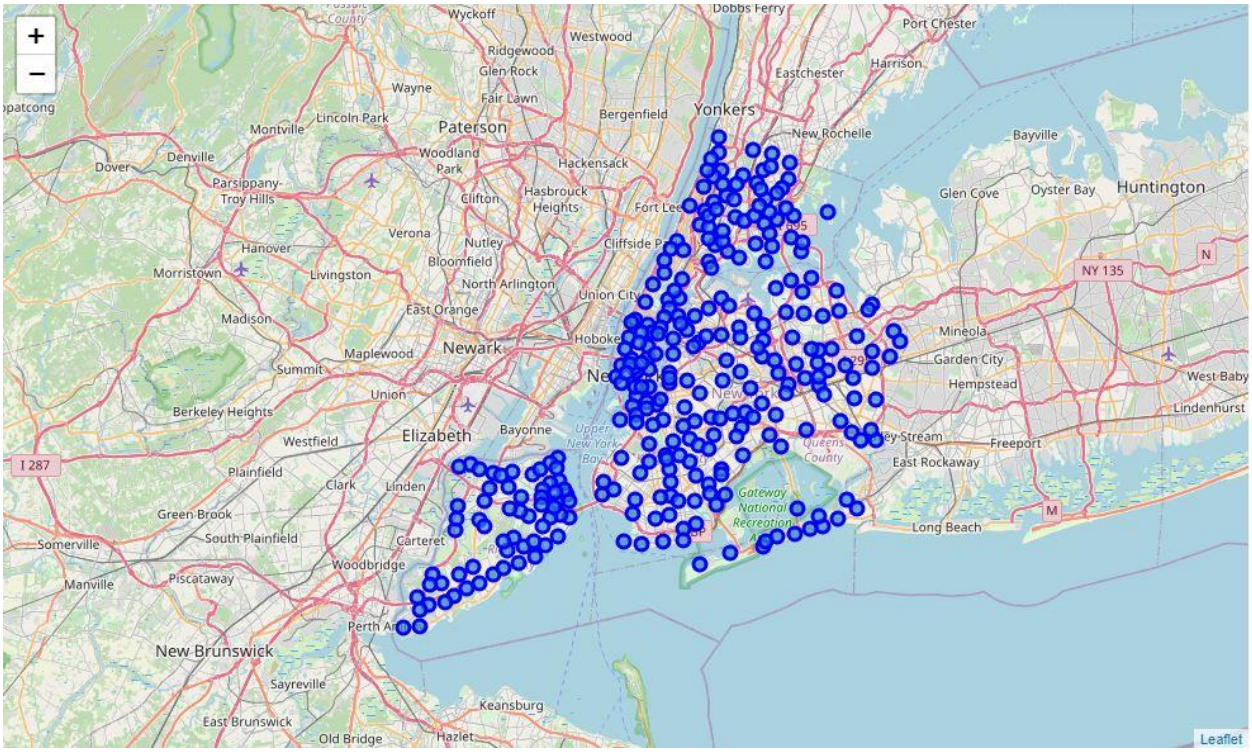
- Visibility
- Traffic
- Environment
- Neighbors, who else is doing business in the neighborhood
- etc

3. Description of the data

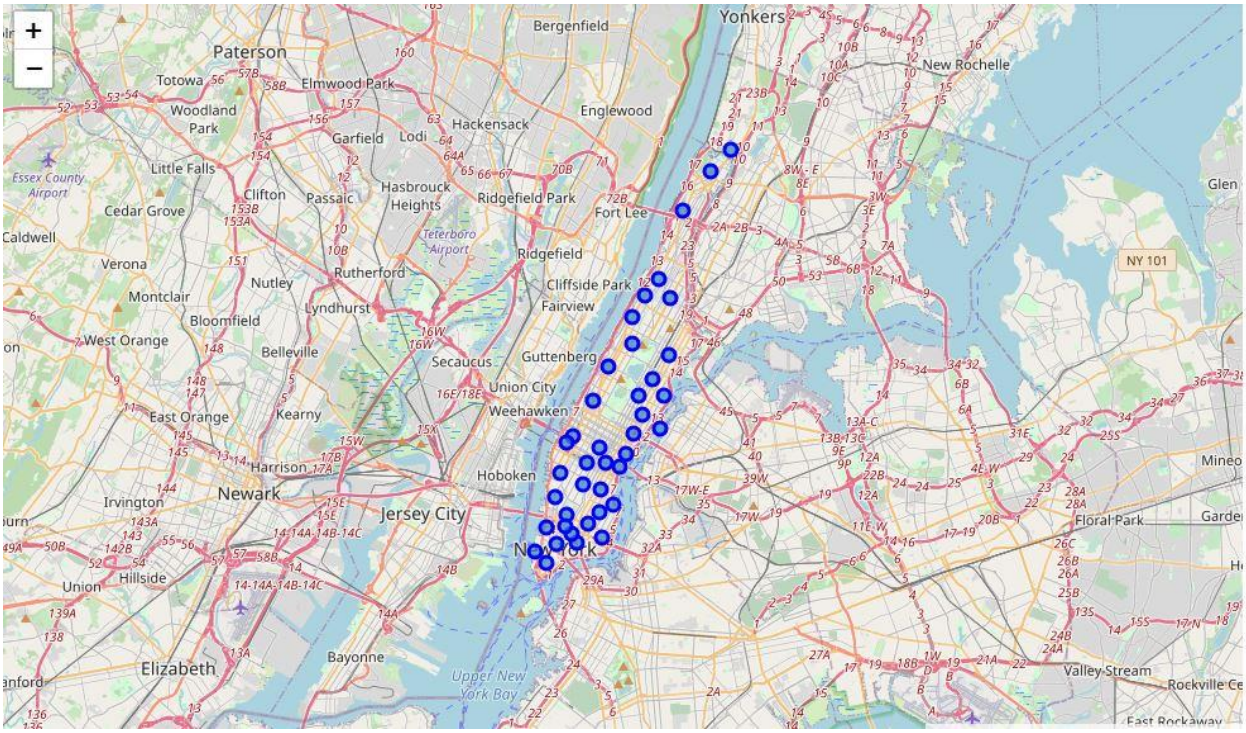
The city be analyzed in the project: New York City. Therefore we will be using the datasets about New York City.

- The New York City Neighborhood Names point file was created as a guide to New York City's neighborhoods that appear on the web resource. https://geo.nyu.edu/catalog/nyu_2451_34572

  Generate map of all 306 neighborhoods in 5 Boroughs of New York City superimposed on top.



We can move further, visualize Manhattan and the neighborhoods in it.

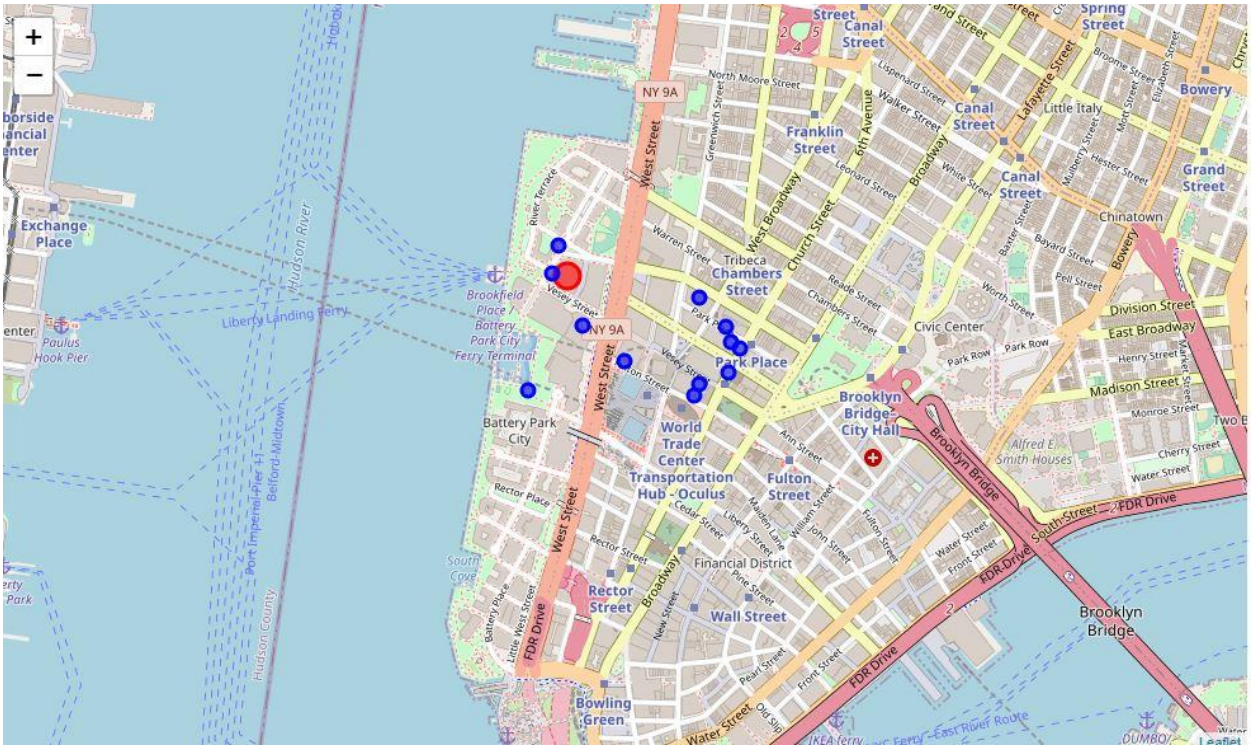


- Utilize the Foursquare API to explore the neighborhoods and segment them. https://developer.foursquare.com/

  Generate dataframe of Italian food that si within 500 metres from the Conrad Hotel

	name	categories	address	cc	city	country	crossStreet	distance	formattedAddress	labeledLatLngs	lat	lng
0	New York Public Library - Battery Park City	Library	175 N End Ave	US	New York	United States	at Murray St	92	[175 N End Ave (at Murray St), New York, NY 10...	[{'label': 'display', 'lat': 40.71575841316654...	40.715758	-74.015603
1	New York City Law Department	Government Building	100 Church St	US	New York	United States	Barclay Street	504	[100 Church St (Barclay Street), New York, NY ...	[{'label': 'display', 'lat': 40.71326439458053...	40.713264	-74.009791
2	New York City Police Memorial	Monument / Landmark	NaN	US	New York	United States	NaN	343	[New York, NY, United States]	[{'label': 'display', 'lat': 40.71203445312302...	40.712034	-74.016659
3	New York City Housing Authority	Government Building	90 Church Street	US	New York	United States	NaN	498	[90 Church Street, New York, NY NY, United Sta...	[{'label': 'display', 'lat': 40.71189329396107...	40.711893	-74.011019

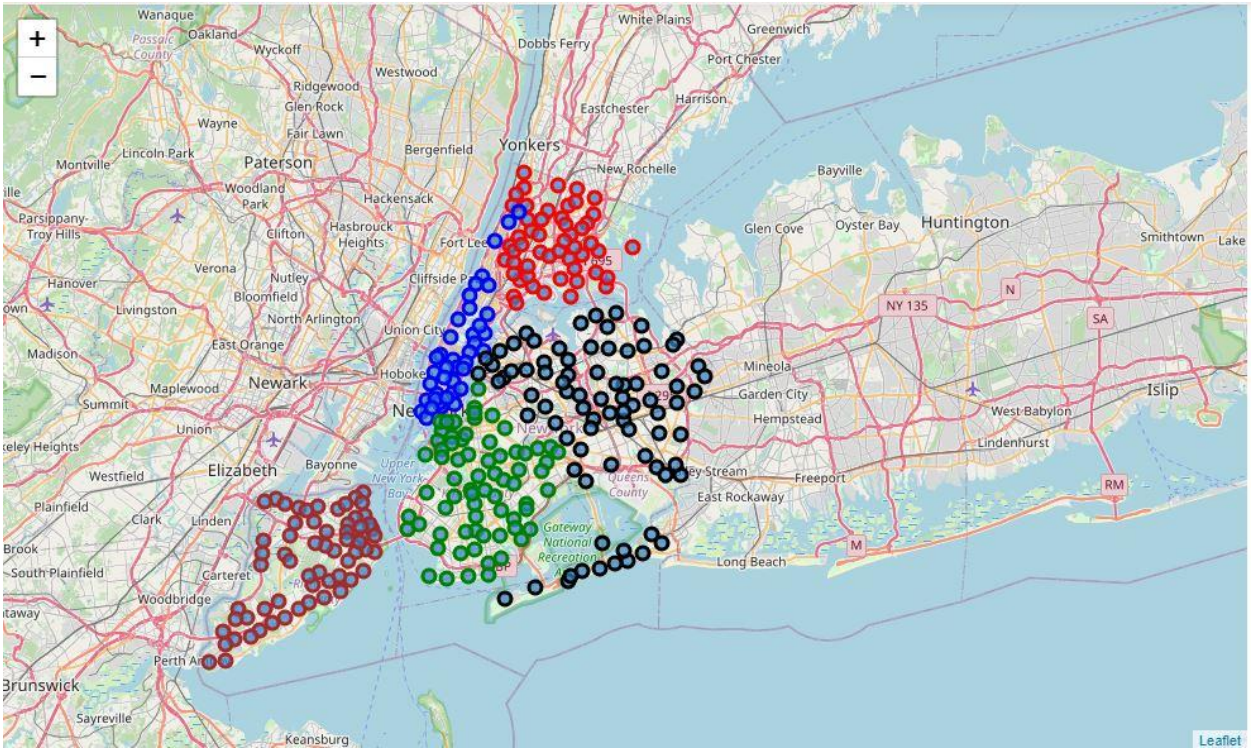
Visualize the Italian restaurants nearby



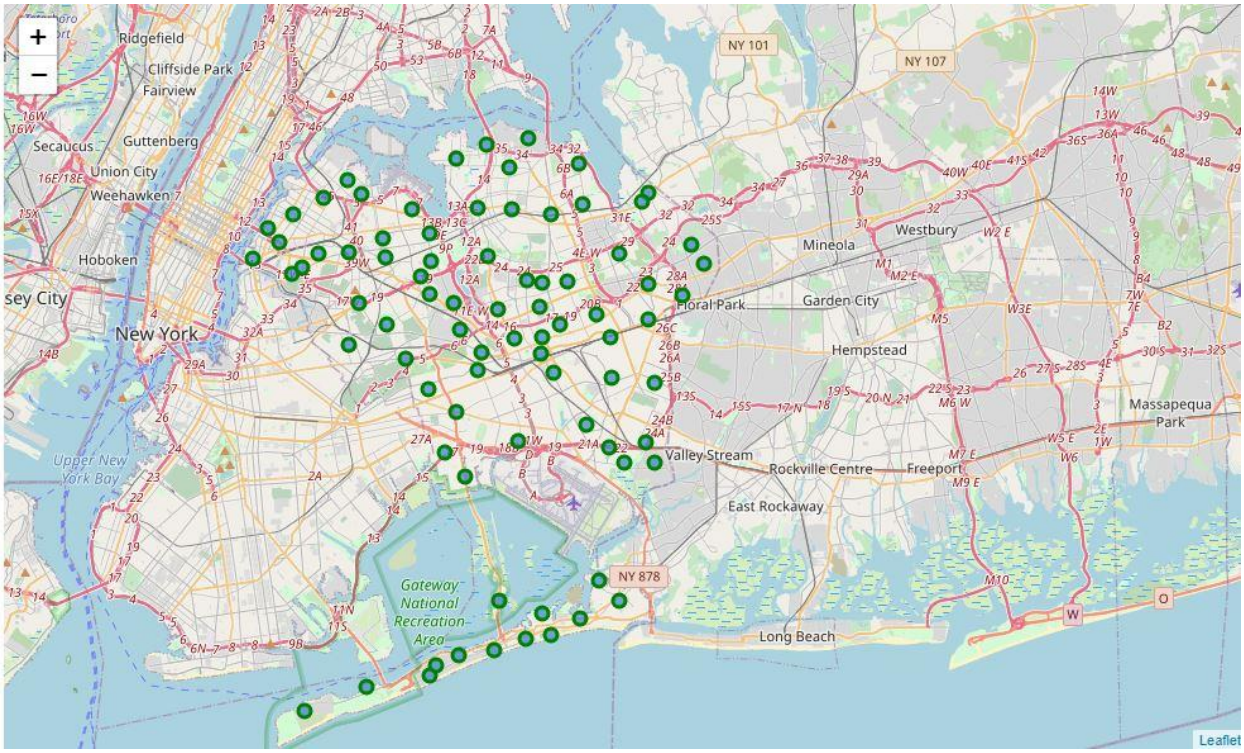
4. Methodology section

Explore all neighborhoods in Queens.

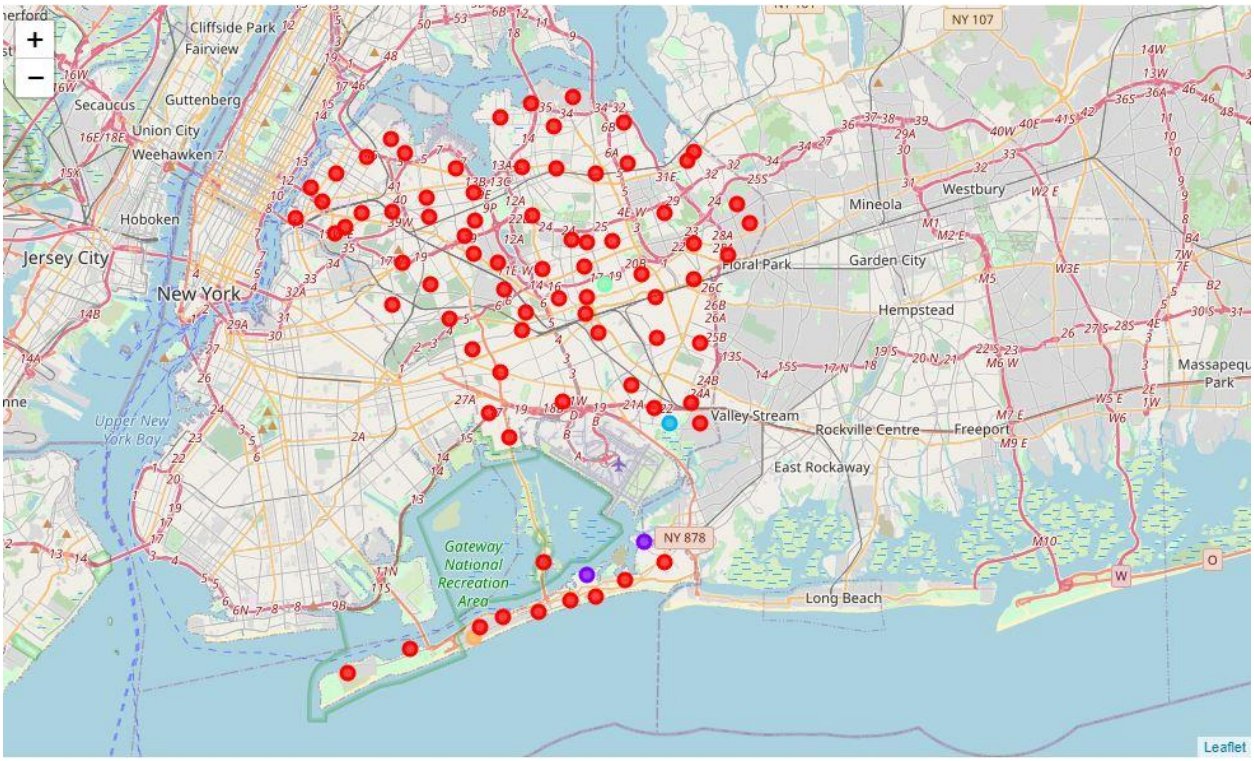
Use different colors to label all neighborhoods in New York City depends on Boroughs.


Wanaque
Oakland
Passaic County
Wyckoff
Ridgewood
Glen Rock
Wayne
Fair Lawn
Lincoln Park
Montville
Paterson
Woodland Park
Parsippany-Troy Hills
Hasbrouck Heights
Clifton
Hackensack
Bergenfield
Westwood
Dobbs Ferry
White Plains
Greenwich
Port Chester
Harrison
Eastchester
Yonkers
New Rochelle
Bayville
Glen Cove
Oyster Bay
Huntington
Smithtown
Lake
Verona
Nutley
Bloomfield
Cliffside P
Fort Lee
Hanover
Livingston
North Arlington
Union City
NY 135
N
SA
Madison
East Orange
Hoboke
Mineola
Garden City
Hempstead
Islip
West Babylon
Maplewood
Newark
Summit
Union
Lindenhurst
Elizabeth
Bayonne
Upper New York Bay
Queens County
Freeport
East Rockaway
RM
Westfield
Plainfield
Clark
Linden
Gateway National Recreation
Long Beach
M
South Plainfield
Carteret
Woodbridge
Perth Am
Brunswick
Sayreville
Keansburg
Leaflet

The green labels are all neighborhoods in Queens.



Cluster neighborhoods



5. Conclusion

All neighborhoods in Queens are explored and analyzed, we create a dataframe to collect information of 2969 neighborhoods which split into 320 unique categories. We then analyze each neighborhood, group by neighborhoods and take the mean of the frequency of occurrence of each category. k-means clustering method is used to cluster the neighborhood into 5 clusters.

We also visualize the resulting and examine clusters, and determine the discriminating venue categories that distinguished each cluster.

In order to chose the proper place for restaurant, we should check the table from the project for location information and the top most common venue.