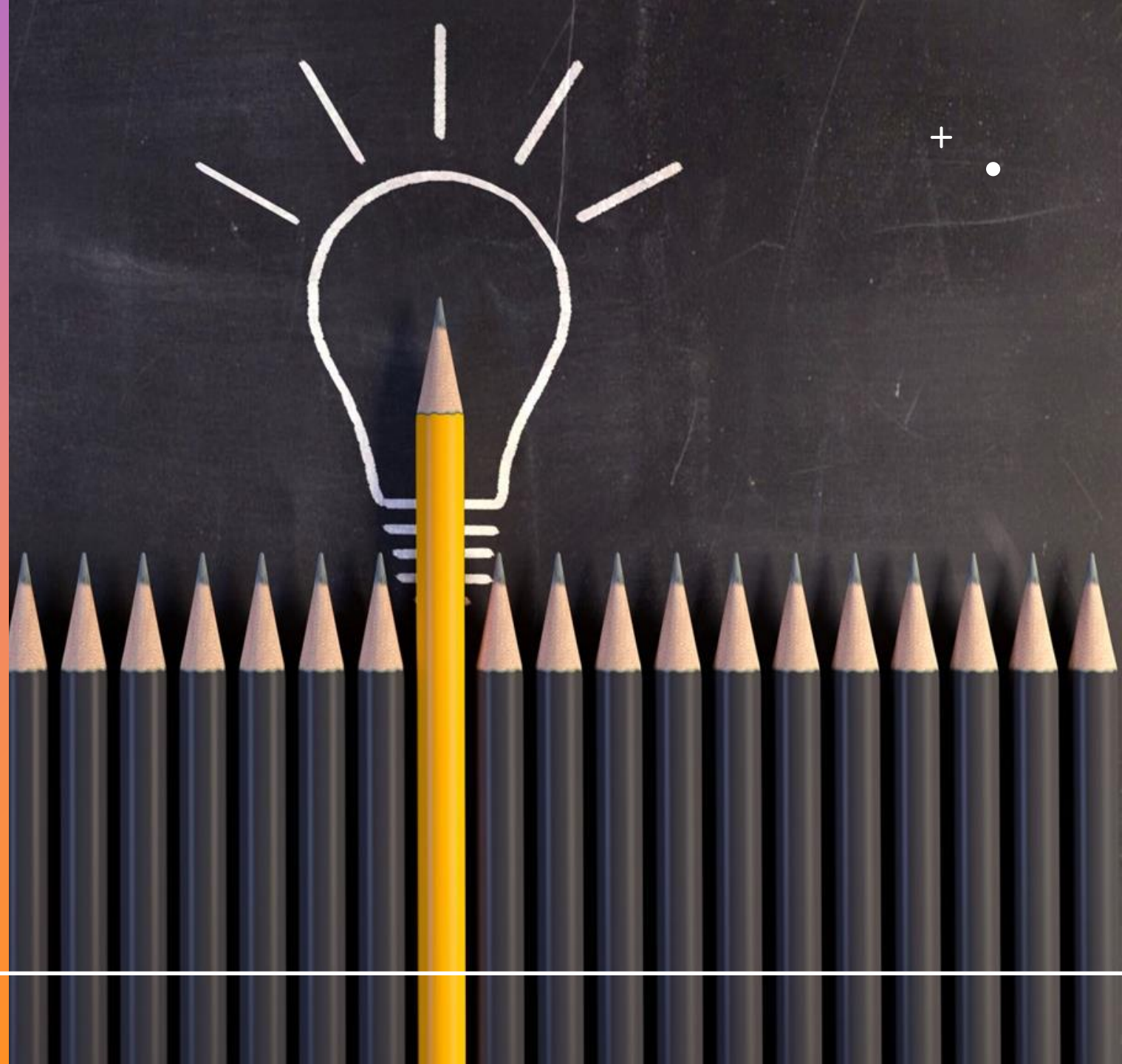# THE BATTLE OF NEIGHBORHOODS

- What type of restaurant to open and where -

By Hupfstrudel

Assignment:

- *Now that you have been equipped with the skills and the tools to use location data to explore a geographical location, over the course of two weeks, you will have the opportunity to be as creative as you want and come up with an idea to leverage the Foursquare location data to explore or compare neighborhoods or cities of your choice or to come up with a problem that you can use the Foursquare location data to solve.*
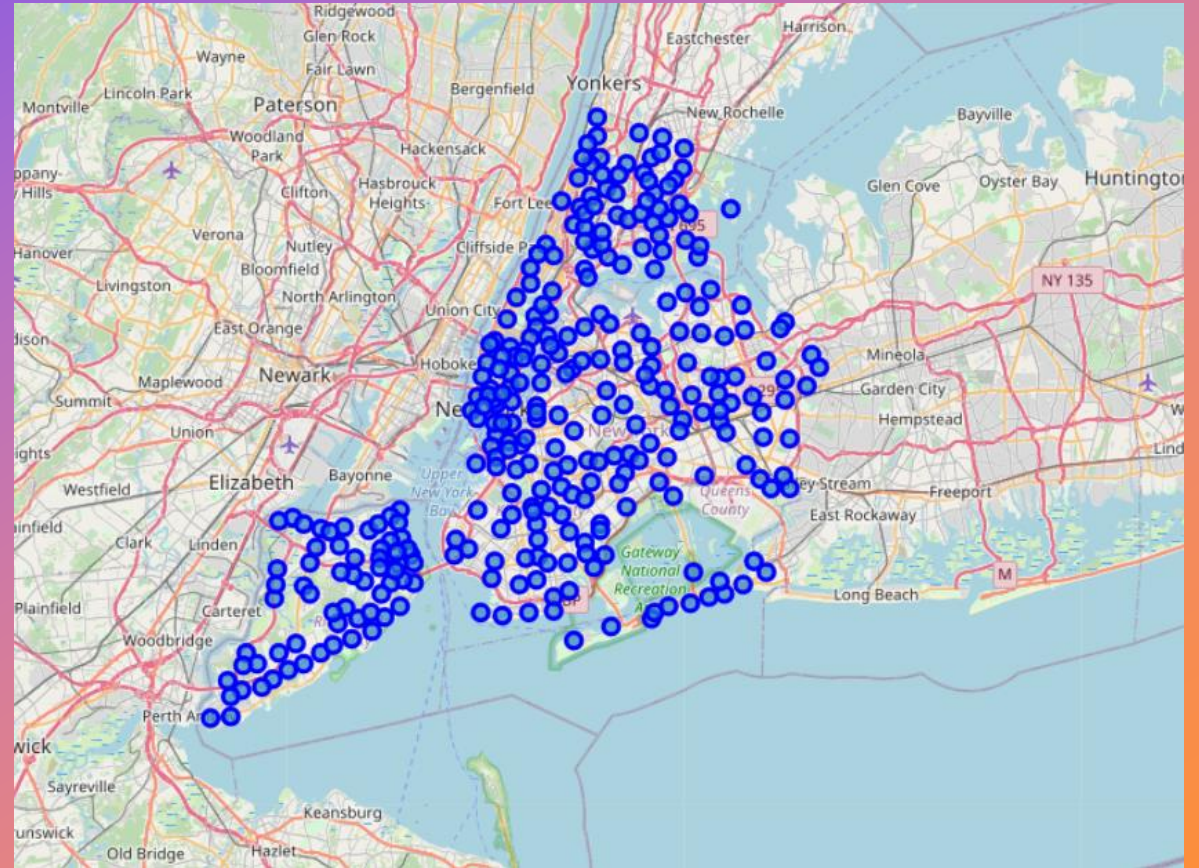
Introduction / Problem:

- **Let's assume a large corporation wants to open a new restaurant in New York City.**

- **What types of restaurants are not already oversaturated (e.g. Chinese vs. Indian vs. Italian)?**

- **What would be the optimal location for a specific type of restaurant given the demographic of each borough?**

Data:

- **Datasource:** https://opendata.cityofnewyork.us/
- From „NYC OpenData" we are able to obtain various data regarding, population, crime rates, health inspections and zip code boundaries

- **Datasource:** https://geo.nyu.edu/catalog/nyu_2451_34572
- Locational data about the individual boroughs and neighborhoods in New York City.

- **Datasource:** Geopy
- Just as in the previous assignments we can utilize the geopy package to obtain the latitude and longitude values of New York City and the 5 boroughs.

- **Datasource:** Foursquare API
- The Foursquare API is utilized to obtain the locations and types of all restaurants in New York City
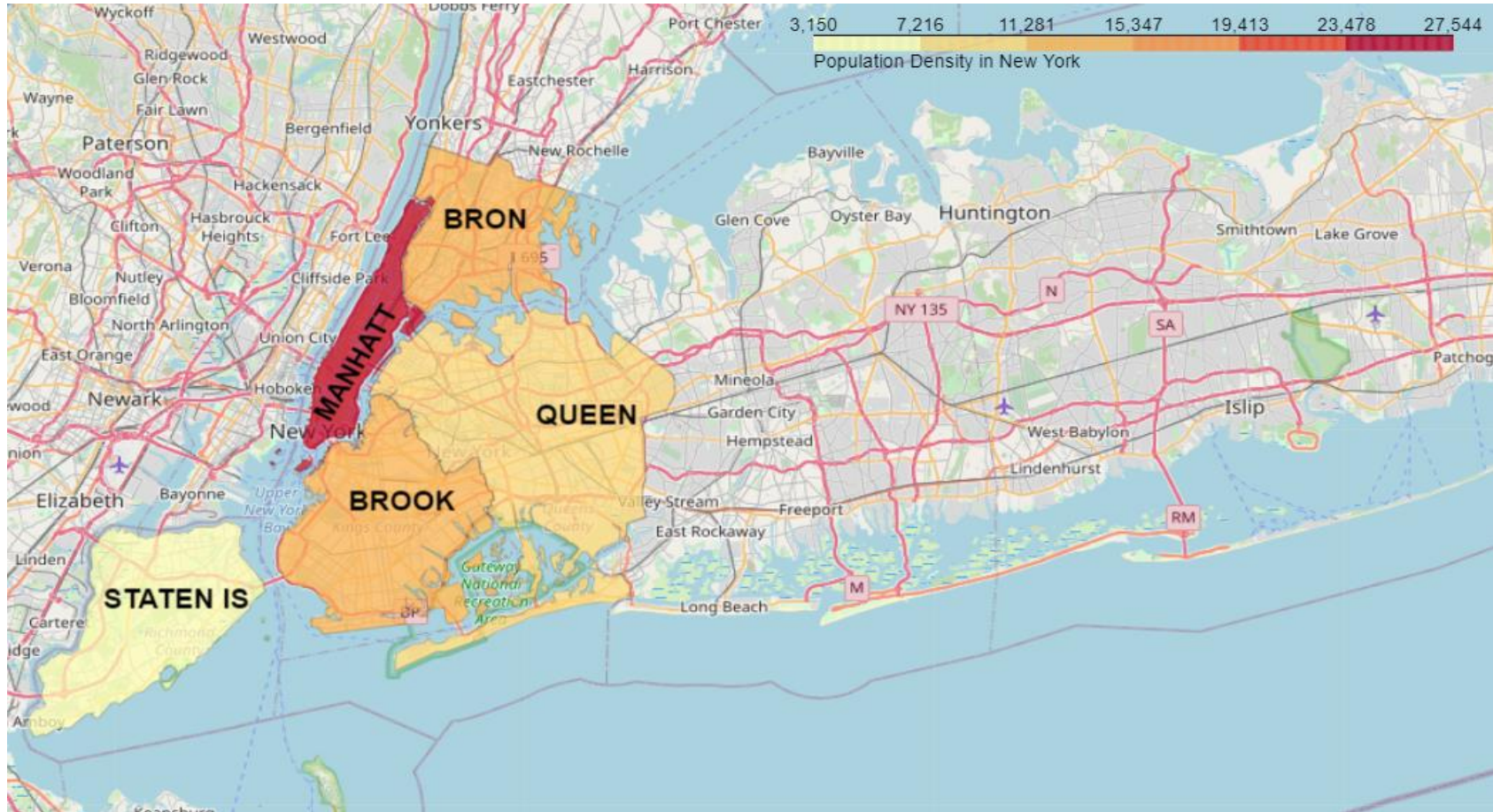
METHODOLOGY:

Borough Data and Neighborhood Data

Income and Population Data

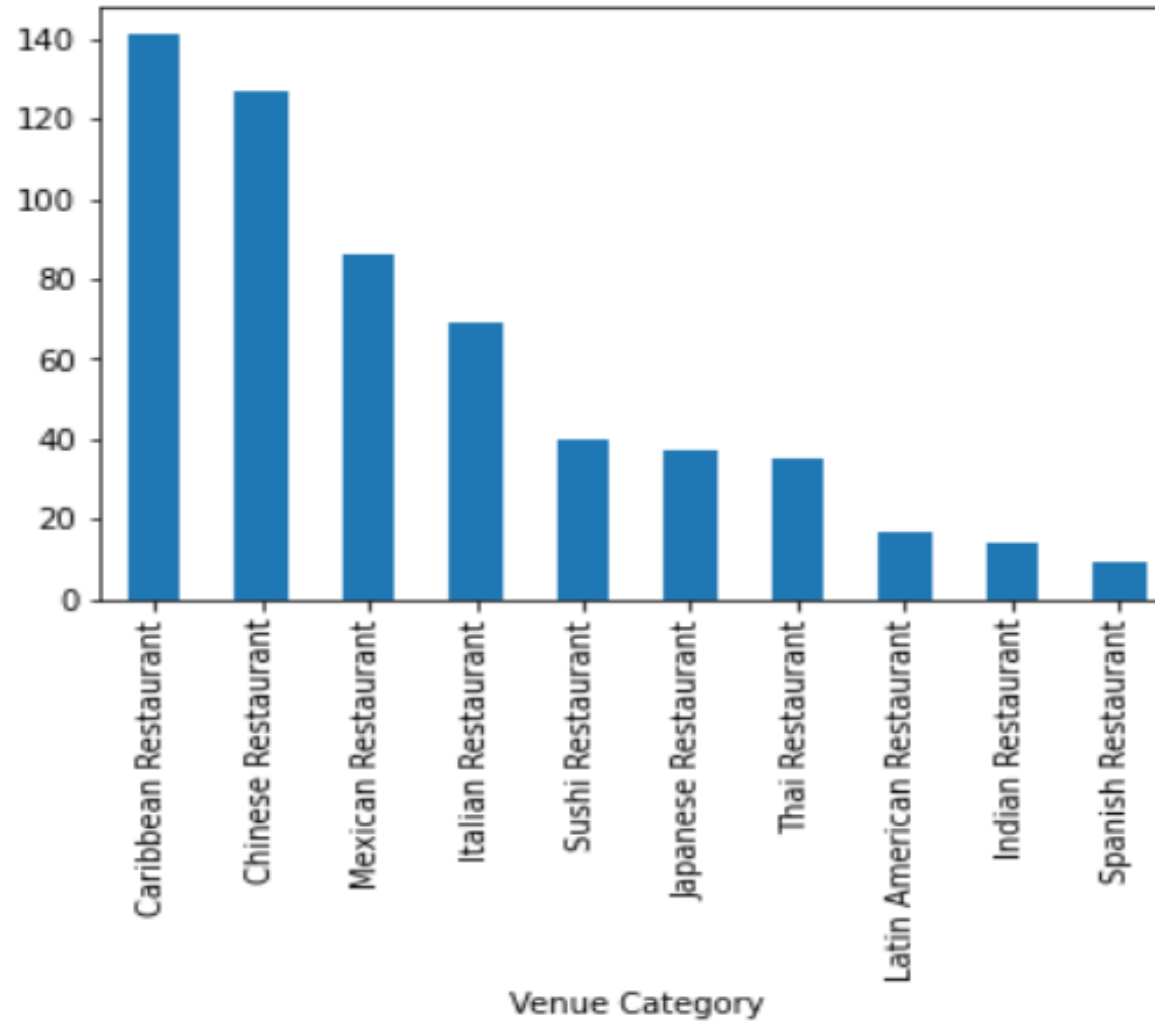|	Jurisdiction		Population	Gross Domestic Product		Land area		Density	
	Borough	County	Estimate (2019)[12]	billions(US$)[13]	per capita(US$)	square miles	squarekm	persons / sq. mi	persons /km2
0	The Bronx	Bronx	1418207	42.695	30100	42.10	109.04	33867	13006
1	Brooklyn	Kings	2559903	91.559	35800	70.82	183.42	36147	13957
2	Manhattan	New York	1628706	600.244	368500	22.83	59.13	71341	27544
3	Queens	Queens	2253858	93.310	41400	108.53	281.09	20767	8018
4	Staten Island	Richmond	476143	14.514	30500	58.37	151.18	8157	3150

Population Density

Location:

- The city of New York is split into 5 boroughs: Bronx, Brooklyn, Manhatten, Queens and Staten Island. Overall Manhatten has the highest population density and the highest per capita income.

- Since Manhatten is already oversaturated with people and the markets are very competitive, we will focus our attention on the borough BROOKLYN which has the second highest population density and the third highest per capita income. Since the market for reastaurants is very likely not over saturated and rent fees will be lower compared to Manhatten.

- Brooklyn offers a suitable location to open a new restaurant.

Foursquare Data about Restaurants

```
Venue Category
Chinese Restaurant              638
Italian Restaurant              473
Mexican Restaurant              374
Caribbean Restaurant            351
Sushi Restaurant                163
Latin American Restaurant       144
Japanese Restaurant             143
Spanish Restaurant              130
Thai Restaurant                 106
Indian Restaurant               104
Name: Venue Category, dtype: int64
```
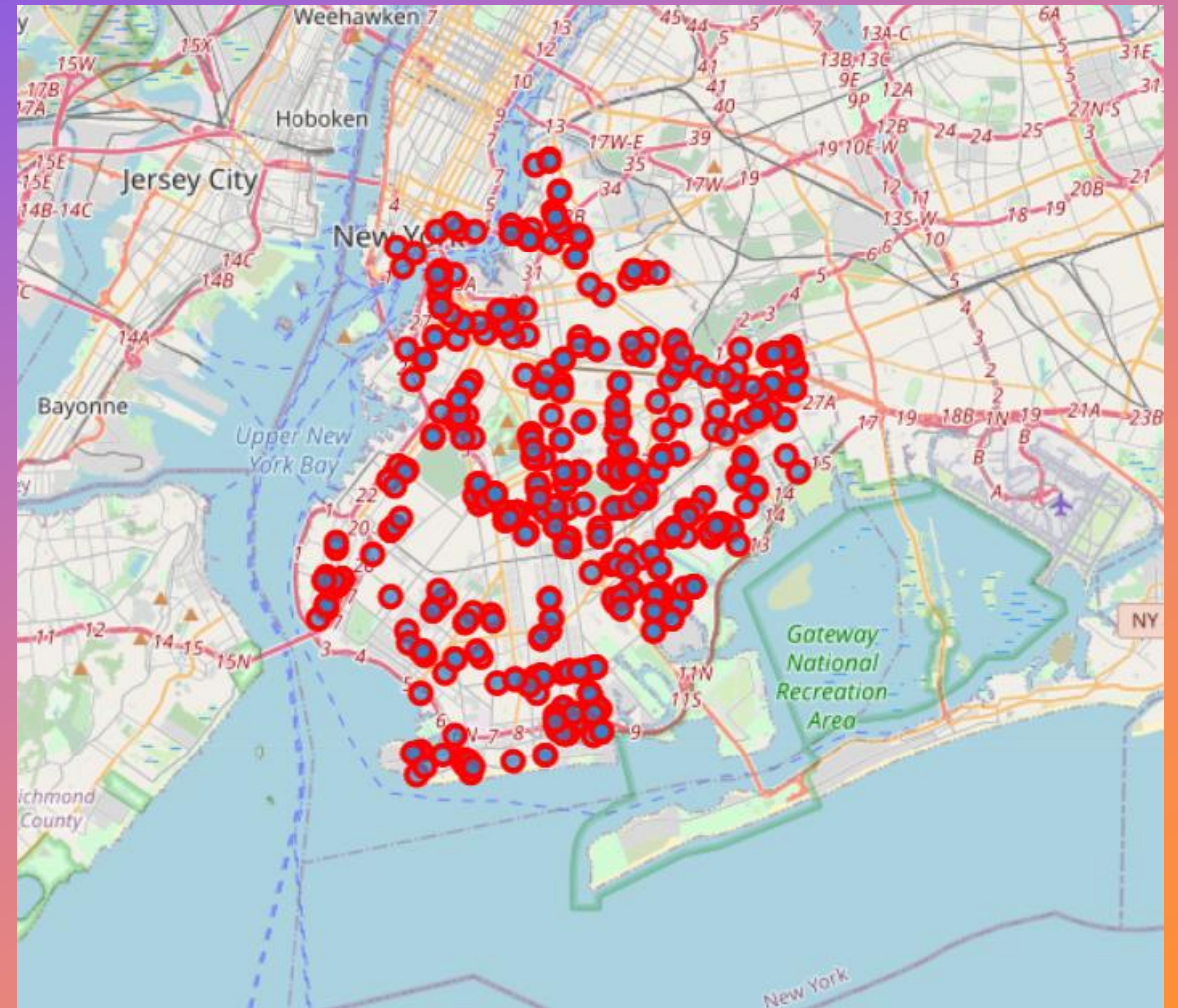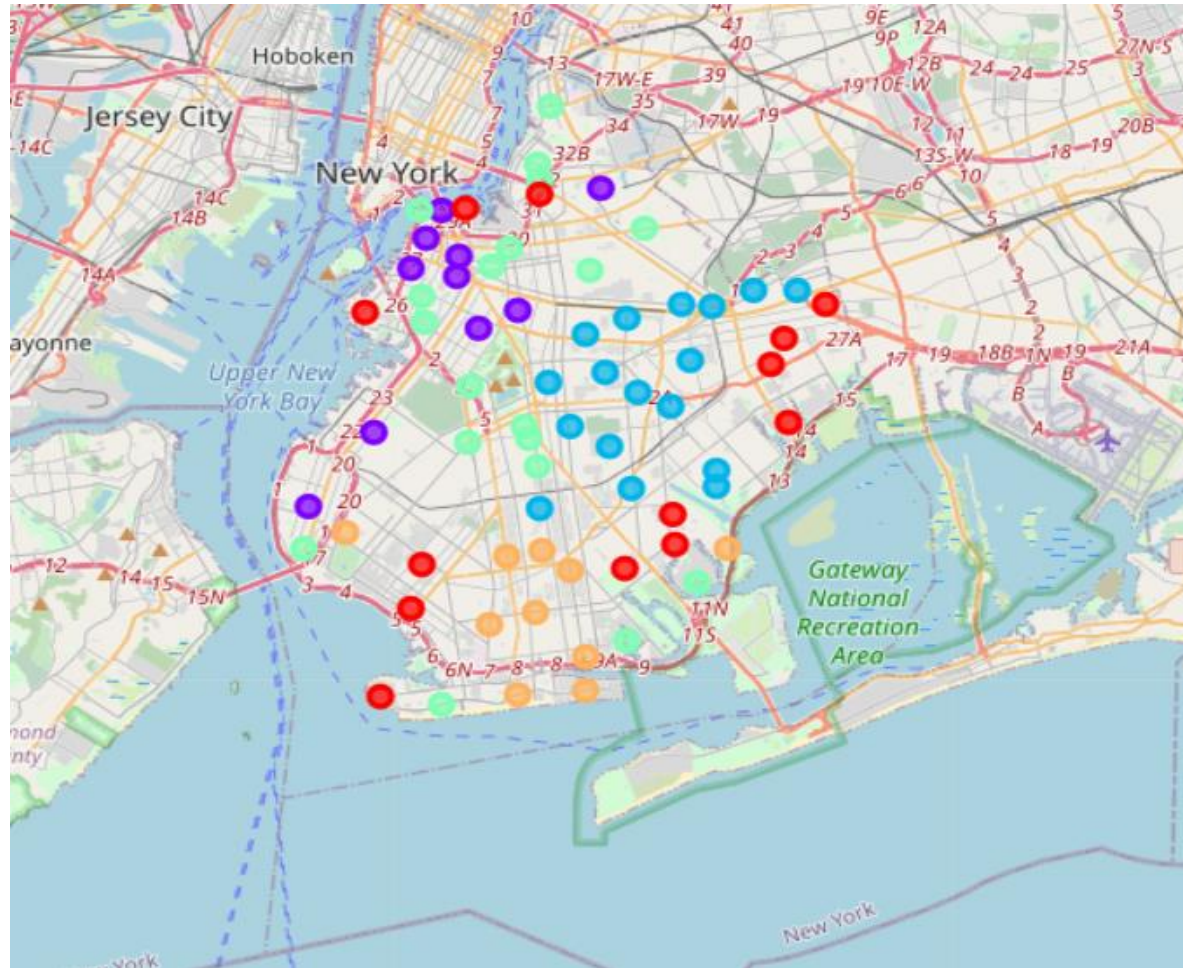
Analyzing venues in Brooklyn

Analyzing venues in Brooklyn

- Surprisingly Caribbean restaurants are more popular in Brooklyn compared to the entire New York City averages.

- we see that Mexican restaurants are third famous.

- thus the market will potentially not be as competitive.

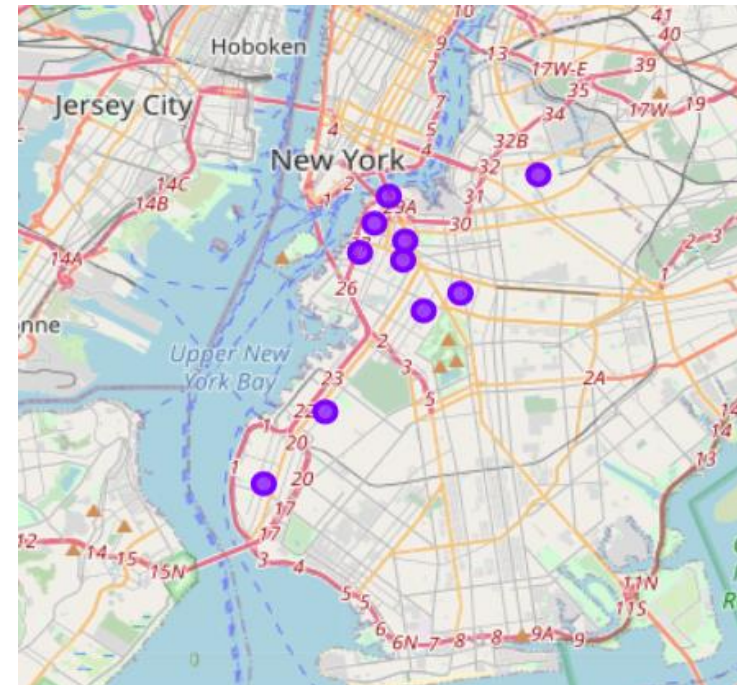# RESTAURANTS IN BROOKLYN

Cluster Analysis

Final Cluster

	Cluster Labels	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	Borough	Latitude	Longitude
1	1	Bay Ridge	Mexican Restaurant	Japanese Restaurant	Thai Restaurant	Sushi Restaurant	Spanish Restaurant	Brooklyn	40.625801	-74.030621
5	1	Boerum Hill	Mexican Restaurant	Thai Restaurant	Sushi Restaurant	Spanish Restaurant	Latin American Restaurant	Brooklyn	40.685683	-73.983748
8	1	Brooklyn Heights	Mexican Restaurant	Thai Restaurant	Sushi Restaurant	Spanish Restaurant	Latin American Restaurant	Brooklyn	40.695864	-73.993782
15	1	Cobble Hill	Mexican Restaurant	Italian Restaurant	Thai Restaurant	Sushi Restaurant	Spanish Restaurant	Brooklyn	40.687920	-73.998561
20	1	Downtown	Mexican Restaurant	Thai Restaurant	Sushi Restaurant	Spanish Restaurant	Latin American Restaurant	Brooklyn	40.690844	-73.983463
21	1	Dumbo	Mexican Restaurant	Italian Restaurant	Japanese Restaurant	Thai Restaurant	Sushi Restaurant	Brooklyn	40.703176	-73.988753
25	1	East Williamsburg	Mexican Restaurant	Thai Restaurant	Sushi Restaurant	Japanese Restaurant	Spanish Restaurant	Brooklyn	40.708492	-73.938858
52	1	Park Slope	Mexican Restaurant	Thai Restaurant	Sushi Restaurant	Spanish Restaurant	Latin American Restaurant	Brooklyn	40.672321	-73.977050
53	1	Prospect Heights	Mexican Restaurant	Thai Restaurant	Japanese Restaurant	Sushi Restaurant	Spanish Restaurant	Brooklyn	40.676822	-73.964859
63	1	Sunset Park	Mexican Restaurant	Chinese Restaurant	Thai Restaurant	Sushi Restaurant	Spanish Restaurant	Brooklyn	40.645103	-74.010316

Perfect Location:

- Since in the neighborhoods in this cluster the type Mexican restaurant is the number one most popular venue. Thus the ideal spot for our restaurant is one of the following locations in New York City:

Conclusion:

- All in all, we find that our best option is to open a Mexican restaurant in the borough Brooklyn in the first cluster, so in the area between the neighborhoods from Bay Ridge to Sunset Park.

- Thanks for your attention ;=)