



Applied Data Science Capstone Project

# The Battle of neighborhoods

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# Problem Overview

- ▶ New York is one of the most popular cities in the United States having in total more than 300 neighborhoods and hundreds of restaurants.
- ▶ it's quite difficult to get people's attention and satisfaction when it comes to food, especially when there's competition with other restaurants
- ▶ Choosing an opening location can determine the success or failure of a restaurant.

# Objectives

- ▶ Find some promising areas to open a restaurant where competition is low or zero for any gastronomic topics.
- ▶ Create a map with all the identified locations

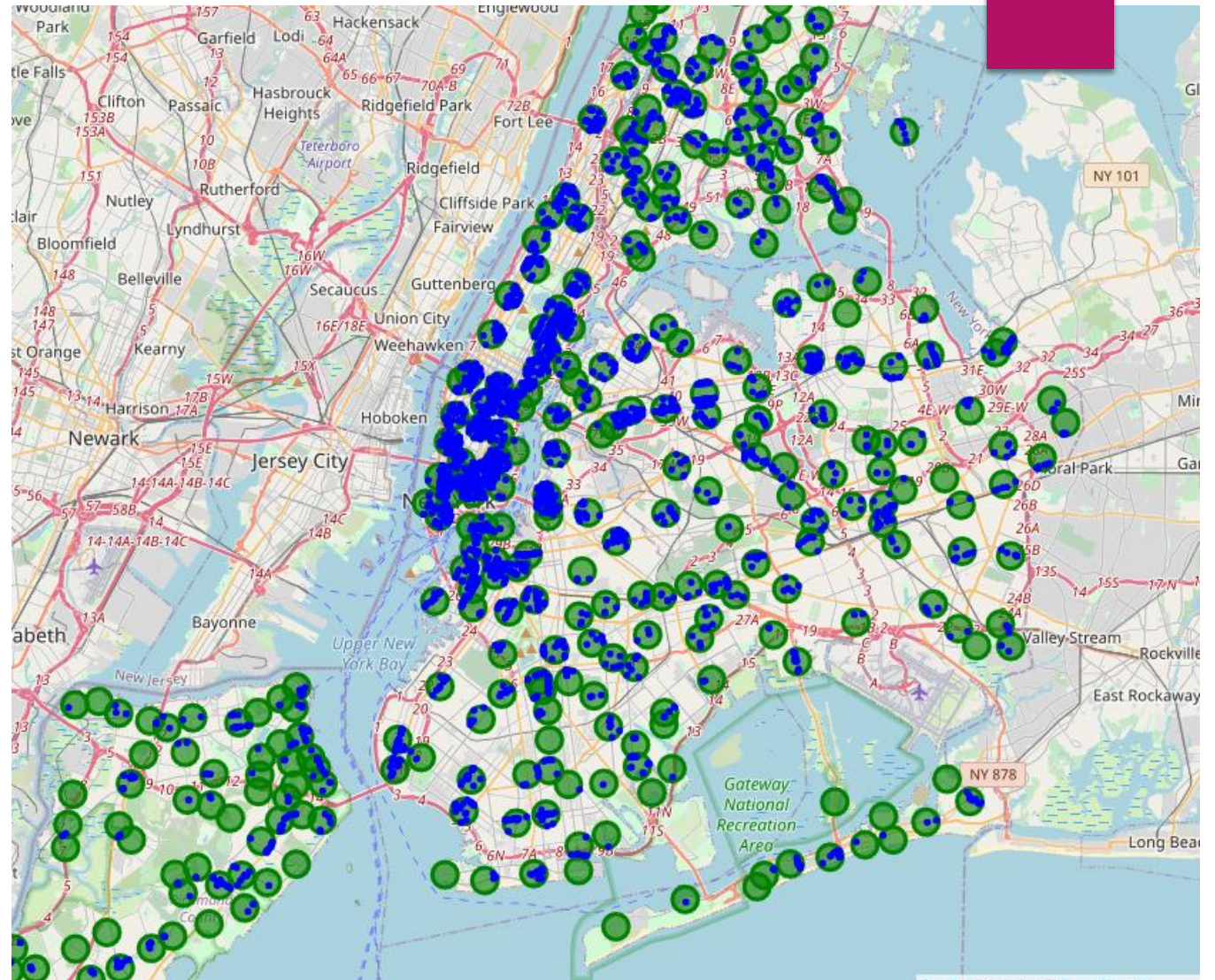
# Data Requirements

- ▶ The following necessary data sets are required:
  - ▶ Coordinates of the different neighborhoods of New York
  - ▶ Restaurants near or within the city's neighborhoods.
- ▶ New York City's neighborhoods in 2014 [https://geo.nyu.edu/catalog/nyu\\_2451\\_34572](https://geo.nyu.edu/catalog/nyu_2451_34572)
- ▶ Restaurants geodata using Foursquare API
- ▶ Both datasets are in JSON format.

# Data collection and preparation

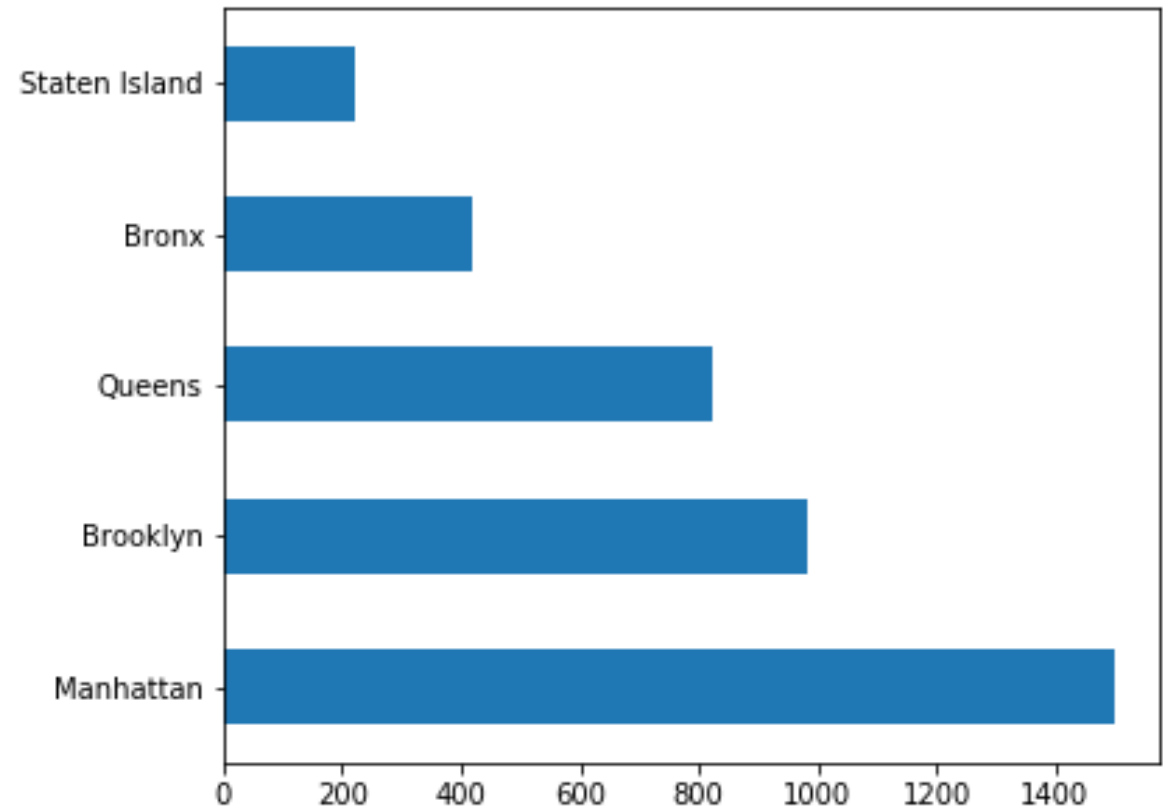
- ▶ The first dataset provides Borough Name, Neighborhood Name, Neighborhood's Latitude and Longitude.
  - ▶ 306 objects and 4 features.
- ▶ Foursquare API provides Venue Name, Latitude, Longitude and Category.
  - ▶ 8032 objects and 4 features
- ▶ Those containing the word "Restaurant" in their category are needed
- ▶ After joining the datasets and cleaning
  - ▶ 3949 objects and 8 features

► New York  
Neighborhoods  
(green) and  
Restaurants (blue) Map



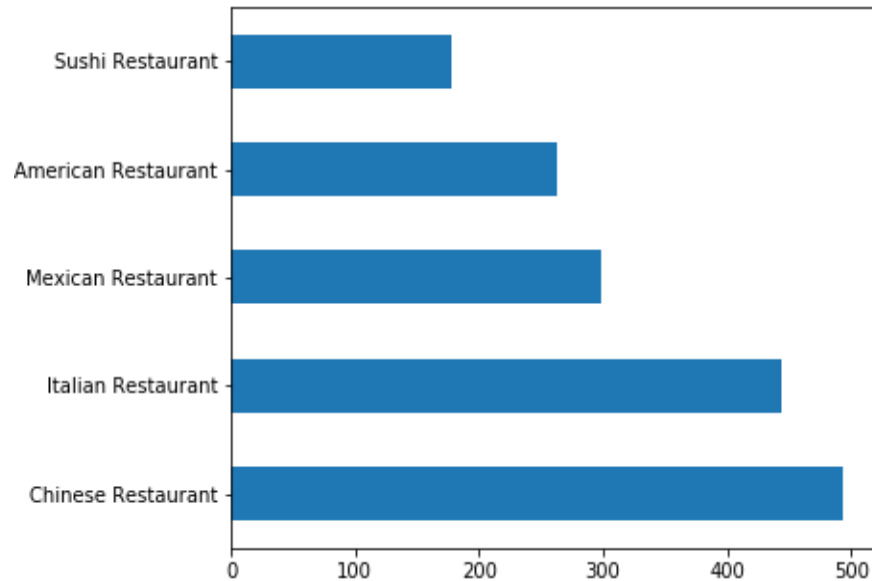
# Number of restaurants per Borough

- ▶ Manhattan has approximately 1500 restaurants. Most populous and the smallest borough.
- ▶ Staten Island has the fewest restaurants (less than 250). Least populous and the third largest borough.

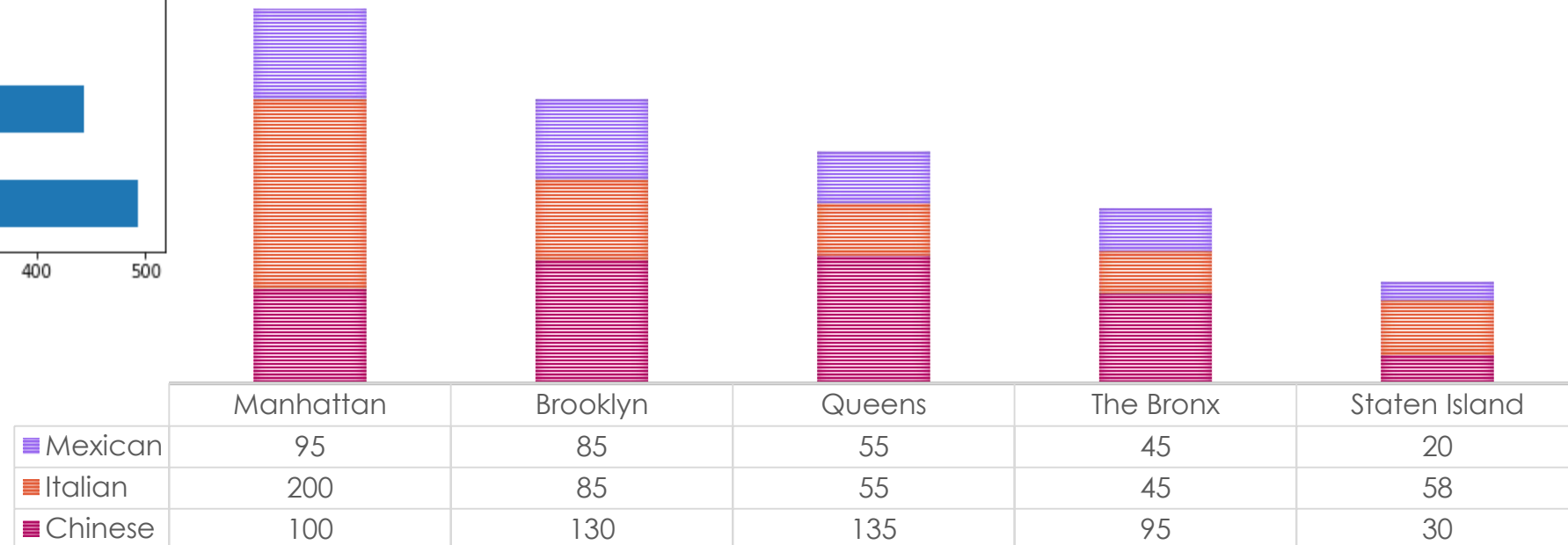




# Common restaurants categories per Borough



Chinese, Italian and Mexican Restaurants are the top 3 most common category in New York





# Neighborhoods' clusters

- ▶ K-means cluster all neighborhoods in 10 clusters
- ▶ Only neighborhoods with at least 1 restaurant are shown

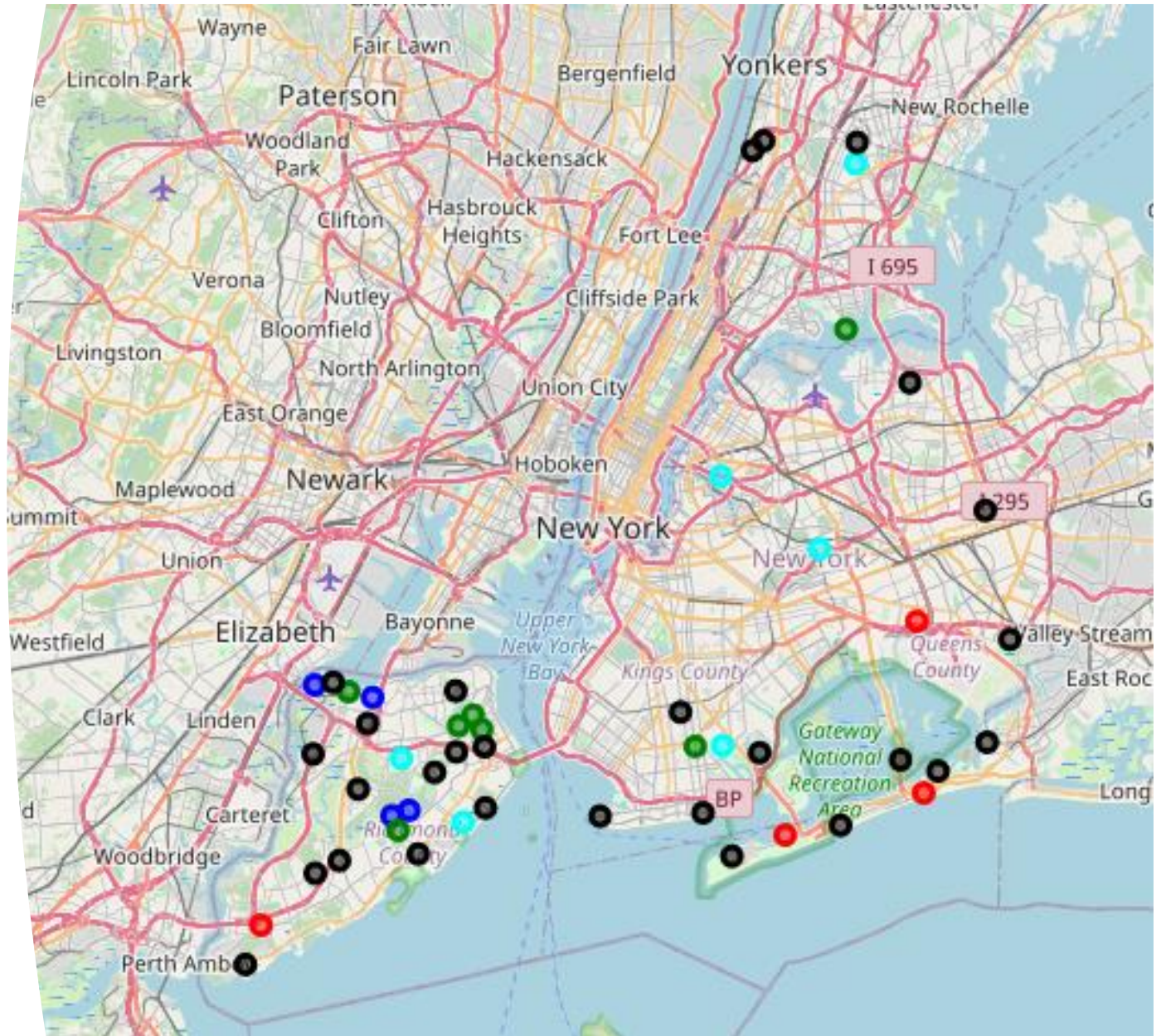
Cluster Labels	N° Restaurants
3	8
0	13
2	41
1	32
5	99
7	341
4	255
9	357
6	775
8	2139





# Map of New York with promising neighborhoods

- ▶ Only neighborhood with less than 3 restaurants are shown
- ▶ Blue: Italian restaurants
- ▶ Green: American restaurants
- ▶ Red: Fast Food restaurants
- ▶ Cyan: Chinese restaurants
- ▶ Black: No restaurants



# Results and Conclusion

- ▶ 49 Neighborhoods were identified.
- ▶ Manhattan has no markers and is saturated with restaurants.
- ▶ Brooklyn is probably the second most popular borough and the second most populated. Marine Park seems to be a good area as it only has one Chinese Restaurant.
- ▶ Queens is home of two airports, so a lot of tourists pass through there. Blissville is a good neighborhood and only one Chinese restaurant.
- ▶ The Bronx has Wakefield, Fieldstone and Riverdale neighborhoods. These are good areas to open a restaurant since there are no restaurants nearby.
- ▶ Staten Island shows a lot of locations, but almost all of them are residential. Although, South Beach may be a good spot for some Sea food restaurants.