

An abstract graphic on the left side of the slide, consisting of a network of white lines and small circles on a blue gradient background, resembling a circuit board or a stylized tree structure.

CAPSTONE PROJECT - THE BATTLE OF NEIGHBORHOODS (WEEK 2)

ITALIAN CUISINE IN MANHATTAN



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1. INTRODUCTION

1.1. Background:

A friend of mine is specialized in Italian cuisine and he is looking to open a restaurant in New York. He is not sure yet about the exact location and for this he asked me to help him.

1.2. Problem description

In order to find the most suitable location for the restaurant, we need to have a clear picture of all restaurants in Manhattan.

1.3 Interested Audience

This project may be relevant for other people who consider opening a restaurant or coffee shop in New York or other areas.

2. DATA DESCRIPTION

2.1 Data description

First, we need to retrieve the data for all neighborhoods located in our target area, Manhattan.

2.2 Required Data to resolve the problem

I will use the New York data in a json format in order to retrieve the coordinated of all neighborhoods in Manhattan.

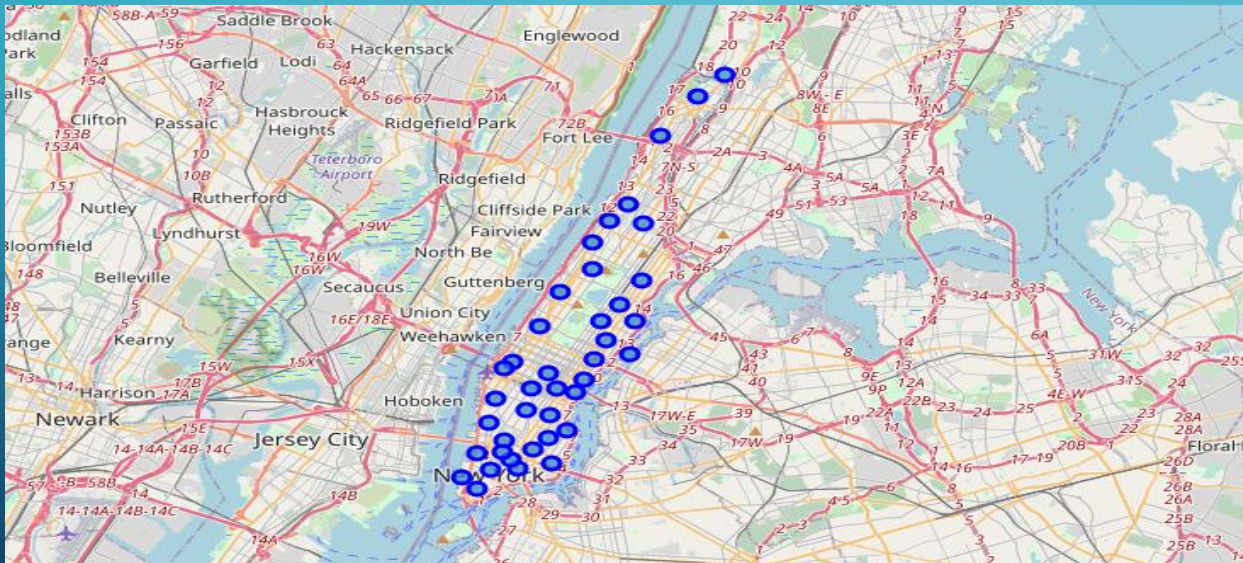
3. METHODOLOGY

- The objective of this project is to identify Neighborhoods where Italian Restaurants are 1st most common venues.
- In the first step, we have collected the New York data that includes Borough, Neighborhood, Latitude and Longitude.

	Borough	Neighborhood	Latitude	Longitude
6	Manhattan	Marble Hill	40.876551	-73.910660
100	Manhattan	Chinatown	40.715618	-73.994279
101	Manhattan	Washington Heights	40.851903	-73.936900
102	Manhattan	Inwood	40.867684	-73.921210
103	Manhattan	Hamilton Heights	40.823604	-73.949688

3. METHODOLOGY

- In the second step, we used the Foursquare API to identify the venues in Manhattan.
- I used the coordinated from the above date to generate the map below:



4. ANALYSIS

- We analyzed each Neighborhood by converting categorical variables into dummy/indicator variables:

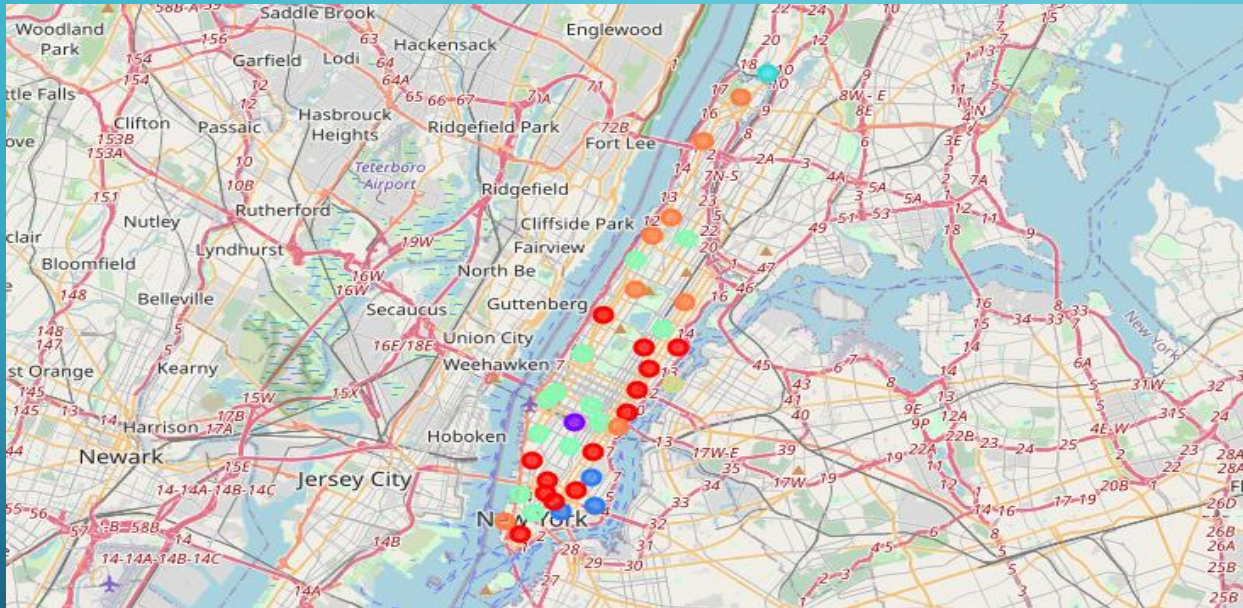
	Neighborhood	Afghan Restaurant	African Restaurant	American Restaurant	Arepa Restaurant	Argentinian Restaurant	Asian Restaurant	Australian Restaurant	Austrian Restaurant	Braz
8	Marble Hill	0	0	0	0	0	0	0	0	Restau
17	Marble Hill	0	0	1	0	0	0	0	0	
28	Chinatown	0	0	0	0	0	0	0	0	
30	Chinatown	0	0	0	0	0	0	0	0	
32	Chinatown	0	0	0	0	0	0	0	0	

- We also grouped rows by neighborhood and by taking the mean of the frequency of occurrence of each category:

	Neighborhood	Afghan Restaurant	African Restaurant	American Restaurant	Arepa Restaurant	Argentinian Restaurant	Asian Restaurant	Australian Restaurant	Austrian Restaurant	Brazilian Restaurant	Cajun / Creole Restaurant
0	Battery Park City	0.0	0.000000	0.000000	0.000000	0.0000	0.000000	0.0	0.000000	0.0	0.0
1	Carnegie Hill	0.0	0.000000	0.062500	0.000000	0.0625	0.000000	0.0	0.000000	0.0	0.0
2	Central Harlem	0.0	0.142857	0.142857	0.000000	0.0000	0.000000	0.0	0.000000	0.0	0.0
3	Chelsea	0.0	0.000000	0.157895	0.052632	0.0000	0.052632	0.0	0.000000	0.0	0.0
4	Chinatown	0.0	0.000000	0.076923	0.000000	0.0000	0.051282	0.0	0.025641	0.0	0.0

4. ANALYSIS

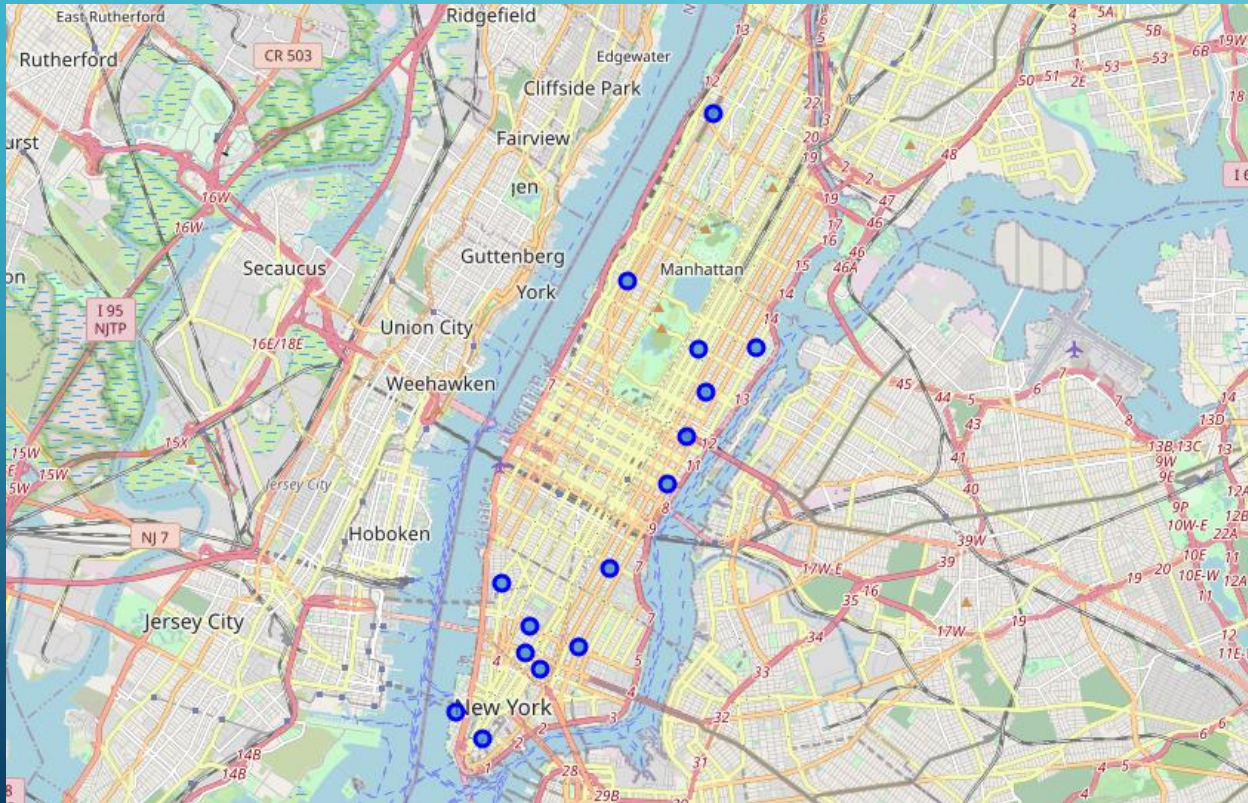
- We clustered the Neighborhoods using k-means clustering and we plotted the coordinated to the map:



- After Examination, we concluded that cluster # 0 (red dot on the map) should be the recommended area as in this cluster Italian Restaurants are mostly first most common venues.

4. ANALYSIS

- We focus only on the area where Italian Restaurants are first most common venue and using the coordinates, we generate a new map with the recommended Neighborhoods:



5. RESULTS AND DISCUSSION

- We were able to identify and cluster in seven groups the location of Restaurants in Manhattan.
- The results from our analysis shows that Italian Restaurants are first most common venues in many Neighborhoods in Manhattan.
- After the clustering, we focused only on Italian Restaurants that are first most common venues and we noticed that they are located in “Lower Manhattan” and near to the “East River” area.

6. CONCLUSION

- The purpose of this project was to help e friend to find Neighborhoods in Manhattan where Italian Restaurants are very popular and people living and working there like Italian cuisine.
- We clustered the locations in seven groups in order to identify the areas where Italian Restaurants are first most common venues.
- My friend will make the final decision after he further analyses other characteristics of the above Neighborhoods.