


Coursera Capstone : IBM Applied data Science capstone
Opening Thai Restaurant in New York City USA.

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Introduction

- New York City, often called simply New York, is the most populous city in the United States. With an estimated 2019 population of 8,336,817 distributed over about 302.6 square miles, New York City is also the most densely populated major city in the United States. Located at the southern tip of the State of New York, the city is the center of the New York metropolitan area, the largest metropolitan area in the world by urban landmass. With almost 20 million people in its metropolitan statistical area and approximately 23 million in its combined statistical area, it is one of the world's most populous megacities. New York City has been described as the cultural, financial, and media capital of the world, significantly influencing commerce, entertainment, research, technology, education, politics, tourism, art, fashion, and sports. Home to the headquarters of the United Nations, New York is an important center for international diplomacy.
- In this project to find the best location to open the Thai restaurant in the New York City and bring the most way to get successful by competitive the best area and the target. In this project also may determine how population in the area who may like Thai food Such as Asia area by compare the most Thai restaurant in the area. For example in china town may have more Thai restaurant more than the other area because more popular for Asians. Therefor It the key to help find the spot to open Thai restaurant.

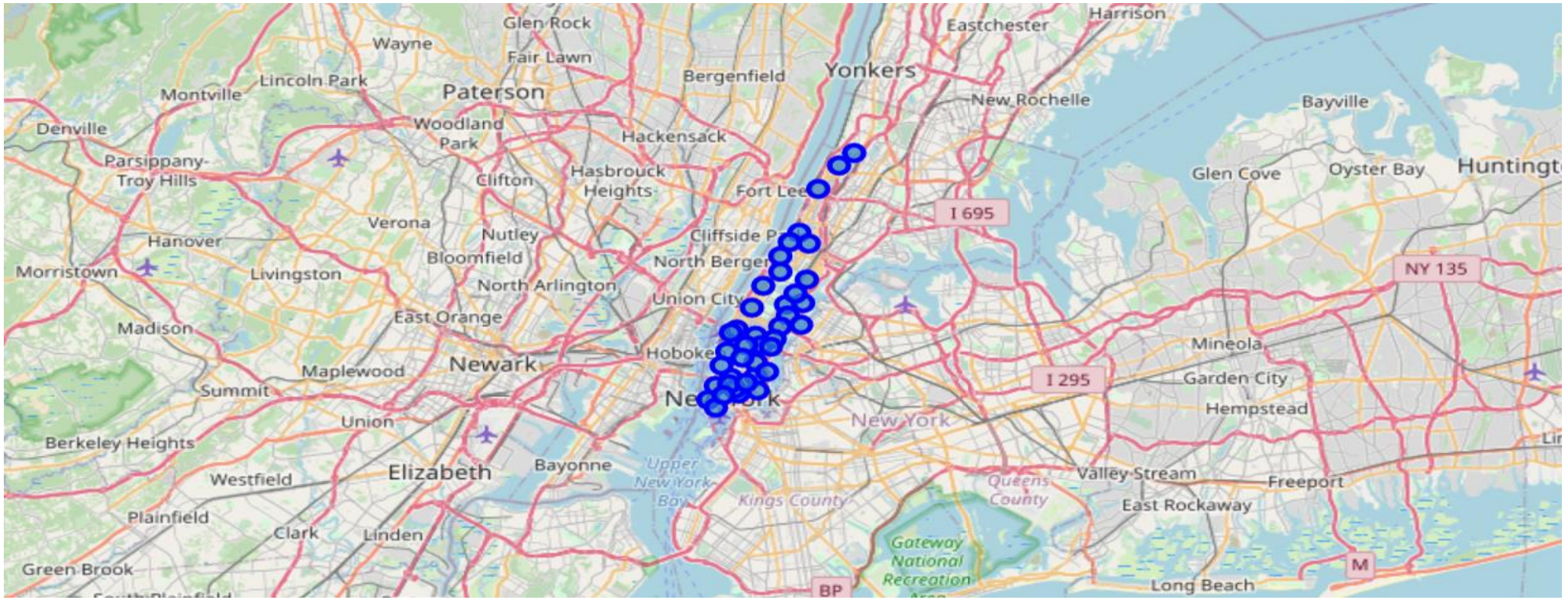
Data To solve the problem, we will need the flowing data:

- New York data Containing the neighborhoods and boroughs
- Latitude and Longitude coordinates of those neighborhoods. This is required to plot the map and get the venue data.
- Venue data, particularly data relate to restaurants. We are going to use this data to perform future analysis of the neighborhoods.
- Foursquare API

Data and Source and method

We will explore the demographics of the neighborhoods in the New York City. Conducting descriptive analysis using Panda. Additional data will be gleaned by web scraping and API will be used to generate data

1. Load data from https://cocl.us/new_york_dataset for New York City Neighborhood Borough designation is scraped using beautiful soup. Scraped data is transformed to data frame
2. Create map of New York using latitude and longitude values.



3. Create The API Request URL

- ''https://api.foursquare.com/v2/venues/search?&client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}'.format(CLIENT_ID, CLIENT_SECRET, VERSION, lat, lng, radius, LIMIT)"

Out[14]:

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Marble Hill	40.876551	-73.910660	Siam Square	40.878796	-73.916701	Thai Restaurant
1	Marble Hill	40.876551	-73.910660	Nam Thai	40.886388	-73.910025	Thai Restaurant
2	Marble Hill	40.876551	-73.910660	Moon Thai Kitchen	40.886963	-73.904870	Thai Restaurant
3	Chinatown	40.715618	-73.994279	Noree Thai Bazaar	40.717900	-73.992966	Thai Restaurant
4	Chinatown	40.715618	-73.994279	Wayla	40.718291	-73.992584	Thai Restaurant

[15]:
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newyork_venues_ThaiRestaurant.shape
```

Out[15]: (951, 7)

4. Foursquare is called on showing the list to the neighborhoods within the top ten and this data is mapped

Out[23]:

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Battery Park City	Thai Restaurant	Food Truck	Wine Bar	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Ramen Restaurant	Malay Restaurant	Japanese Restaurant	Indian Restaurant
1	Carnegie Hill	Thai Restaurant	Asian Restaurant	Wine Bar	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Ramen Restaurant	Malay Restaurant	Japanese Restaurant	Indian Restaurant
2	Central Harlem	Thai Restaurant	Wine Bar	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Ramen Restaurant	Malay Restaurant	Japanese Restaurant	Indian Restaurant	Food Truck
3	Chelsea	Thai Restaurant	Malay Restaurant	Japanese Restaurant	Food Truck	Chinese Restaurant	Wine Bar	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Ramen Restaurant
4	Chinatown	Thai Restaurant	Asian Restaurant	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Malay Restaurant	Filipino Restaurant	Wine Bar	Ramen Restaurant	Japanese Restaurant

5. Data analyze the top 10 neighborhoods of New York City by setting set number of clusters =5 and run k-means clustering.

array([3, 1, 1, 3, 2, 3, 3, 1, 2, 3], dtype=int32)

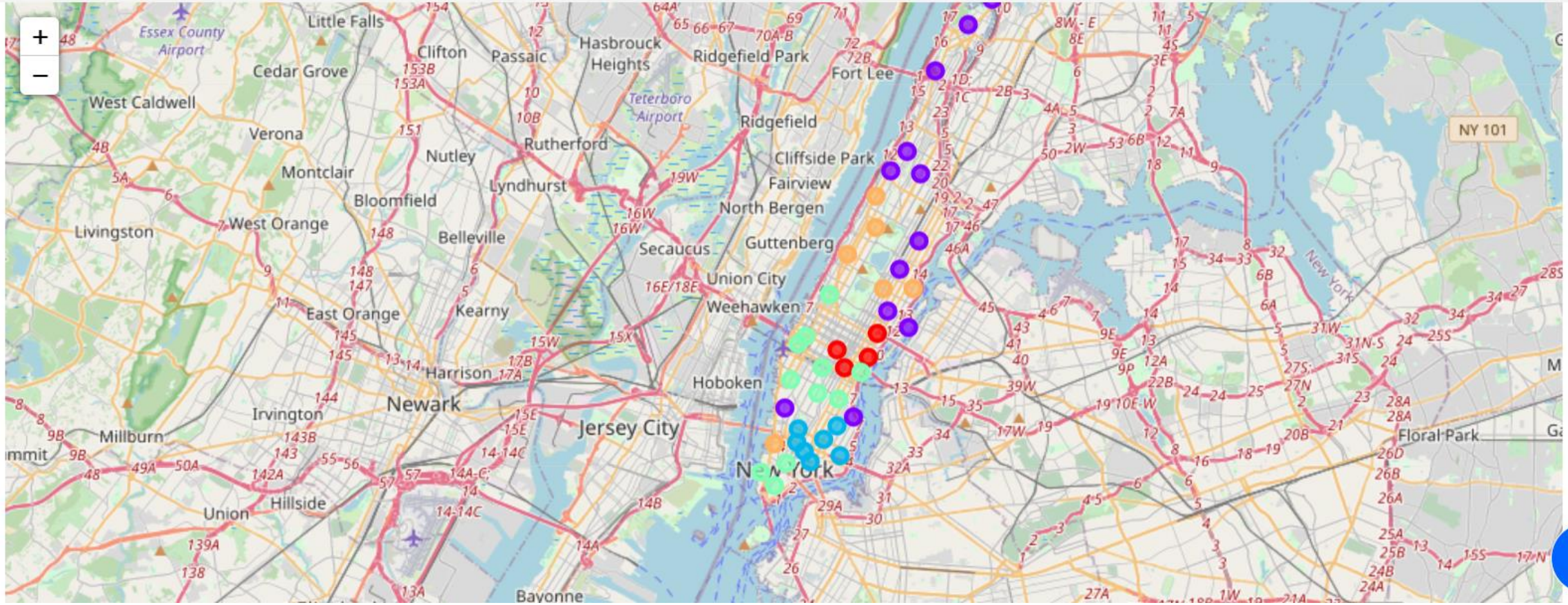
Result

for this project after run k-means to clusters the neighborhoods into five (5) clusters, with our clusters established, this data frame is merged with total scores data to provide us with final pieces of criteria in selecting the appropriate neighborhood(s).

[31]:

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
8	Upper East Side	Thai Restaurant	Asian Restaurant	Wine Bar	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Ramen Restaurant	Malay Restaurant	Japanese Restaurant	Indian Restaurant
9	Yorkville	Thai Restaurant	Asian Restaurant	Wine Bar	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Ramen Restaurant	Malay Restaurant	Japanese Restaurant	Indian Restaurant
12	Upper West Side	Thai Restaurant	Asian Restaurant	Wine Bar	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Ramen Restaurant	Malay Restaurant	Japanese Restaurant	Indian Restaurant
21	Tribeca	Thai Restaurant	Vietnamese Restaurant	Asian Restaurant	Wine Bar	Vegetarian / Vegan Restaurant	Sushi Restaurant	Ramen Restaurant	Malay Restaurant	Japanese Restaurant	Indian Restaurant
25	Manhattan Valley	Thai Restaurant	Indian Restaurant	Asian Restaurant	Wine Bar	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Ramen Restaurant	Malay Restaurant	Japanese Restaurant
26	Morningside Heights	Thai Restaurant	Indian Restaurant	Wine Bar	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Sushi Restaurant	Ramen Restaurant	Malay Restaurant	Japanese Restaurant	Food Truck

map


Essex County Airport
Little Falls
Cedar Grove
Clifton
Passaic
Hasbrouck Heights
Ridgefield Park
Fort Lee
Teterboro Airport
Ridgefield
West Caldwell
Verona
Nutley
Rutherford
Cliffside Park
Montclair
Lyndhurst
Fairview
Bloomfield
North Bergen
Livingston
West Orange
Belleville
Secaucus
Guttenberg
Union City
Weehawken
East Orange
Kearny
Harrison
Hoboken
Newark
Irvington
Jersey City
Millburn
Union
Hillside
Bayonne
NY 101
New York
Floral Park

Conclusion

- **after the pandemic hit in 2020 the restaurant have more effect some business are closing permeant. API is may be the information that changing very quickly however this project will give you the idea and location which the best to investing and open the Thai restaurant.**
- More information https://dataplatform.cloud.ibm.com/analytics/notebooks/v2/23bf7ef9-95c7-46fd-aa2c-7f725a28a899/view?access_token=aff1321f829a8c5bfb6aa6721822aa9dbd780c9c188b0e8563f0a7b81b504b4