

COURSERA CAPSTONE PROJECT

THE BATTLE OF NEIGHBORHOODS

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INTRODUCTION

With an estimated population of 8,622,698 , NEW YORK is the most densely populated city in the United States.

New York city consists of 5 Boroughs and each borough has many Neighborhoods. New York City are well known, with the city having

three of the world's 10 most visited tourist attractions in 2013 and receiving a record 62.8 million tourists in 2017.

The 5 Boroughs are shown below: 1. Manhattan, 2. Brooklyn , 3. Queens , 4. The Bronx ,5. Staten Island



New York City's food culture includes an array of international cuisines influenced by the city's immigrant history.

Italian immigrants brought New York- style pizza and Italian cuisine into the city, while Jewish immigrants and Irish immigrants

brought pastrami and corned beef, respectively. Chinese and other Asian restaurants, sandwich joints, trattorias, diners , and coffeehouses

are ubiquitous throughout the city. Some 4,000 mobile food vendors licensed by the city, many immigrant-owned, have made Middle

Eastern foods such as falafel and kebabs examples of modern New York street food. The city is home to "nearly one thousand of the finest

and most diverse haute cuisine restaurants in the world", according to Michelin. The New York City Department of Health and Mental Hygiene

assigns letter grades to the city's 24,000 restaurants based upon their inspection results.

The mission of this project is to use Foursquare location data and regional clustering of venue information to determine which Neighborhoods are good for specific type of restaurants for some specific cuisines and has many restaurants of that particular cuisines in that neighborhood. Because New York is a great attraction for tourists, different tourists like different cuisines. This data will help the Govt and people in this business , to determine the cuisines in demand in different neighborhoods ,which in turn helps them to shape and grow their business.

DATA SOURCE AND EXPLORATION

The data that will be used in this analysis is combination of a json file (newyork_data.json) which is downloaded from the link- https://cocl.us/new_york_dataset and the information of venues in Foursquare. The required data from newyork_data.json , converted into a pandas dataframe as needed. This dataframe will contains Boroughs , neighborhoods in Boroughs and their latitudes and longitudes.

Borough	Neighborhood	Latitude	Longitude
Bronx	Wakefield	40.894705	-73.847201
Bronx	Co-op City	40.874294	-73.829939
Bronx	Eastchester	40.887556	-73.827806
Bronx	Fieldston	40.895437	-73.905643
Bronx	Riverdale	40.890834	-73.912585

Then comes the Foursquare data about neighborhood and venues(restaurants). The venues of different neighborhoods needs to be retrieved and should be stored in a pandas dataframe. Then the total number of restaurants are considered along with the type of restaurants(cuisine type) in different neighborhoods.

This can be achieved by grouping the data according to neighborhoods.

The next step is to categorize the restaurants according to their types(cuisine) and find their frequency in each neighborhood. This will help to determine the most in-demand cuisine in different neighborhoods.

After that, using the clustering techniques, it can be easily determined that which type of restaurant(cuisine) is in demand in which neighborhoods and Borough, as it has greater number of restaurants of that specific category.

In this case ,it will be better find out which type of restaurant is most common, hence ,in demand in specific Boroughs, and then it can be easily pointed out the list of most common restaurant in the City. Grouping data by Boroughs, will make it simple to analyze and reach conclusion.

Here is the List of most common restaurants along with its count in different Boroughs

Borough	1st Most Common Restaurant	
Bronx	Fast Food Restaurant	15
	Italian Restaurant	12
	Caribbean Restaurant	4
	Chinese Restaurant	4
	Mexican Restaurant	4
	Japanese Restaurant	3
	Seafood Restaurant	3
	Spanish Restaurant	3
	Restaurant	2
	Latin American Restaurant	1
	South American Restaurant	1
Brooklyn	Caribbean Restaurant	16
	Italian Restaurant	12
	American Restaurant	10
	Chinese Restaurant	6
	Japanese Restaurant	5
	Fast Food Restaurant	4
	Mexican Restaurant	3
	Restaurant	3
	Seafood Restaurant	3
	Sushi Restaurant	3
	Russian Restaurant	2
	Latin American Restaurant	1
	Thai Restaurant	1
	Vietnamese Restaurant	1
Manhattan	Italian Restaurant	18
	American Restaurant	5
	Mexican Restaurant	4
	Korean Restaurant	2
	Latin American Restaurant	2

	Indian Restaurant	1
	Japanese Restaurant	1
	Southern / Soul Food Restaurant	1

Queens	Chinese Restaurant	19
	Italian Restaurant	13
	Fast Food Restaurant	10
	Latin American Restaurant	7
	Caribbean Restaurant	6
	Indian Restaurant	5
	Mexican Restaurant	5
	Japanese Restaurant	4
	Korean Restaurant	3
	American Restaurant	2
	Greek Restaurant	2
	Seafood Restaurant	2
	Asian Restaurant	1
	Middle Eastern Restaurant	1
	Thai Restaurant	1
Staten Island	Italian Restaurant	29
	Chinese Restaurant	9
	Restaurant	7
	Fast Food Restaurant	6
	American Restaurant	4
	Vietnamese Restaurant	3
	Asian Restaurant	1
	Mediterranean Restaurant	1
	Mexican Restaurant	1
	Peruvian Restaurant	1
	Sushi Restaurant	1

In above list of data, we can see that :

- In Bronx, Fast Food Restaurants are the most common one, but Italians are 2nd in the list.

- In Brooklyn, Caribbean Restaurants are most common , but again there is a catch, Italians restaurant are the 2nd most common.
 - In Manhattan, Italian Restaurants are the most common restaurants, but here, the 2nd one is American restaurants.
 - In Queens, Chinese restaurants are the most common ones, and again, Italians are in 2nd position.
 - Finally, Staten Island has Italian Restaurants at the top in the most common list, and Chinese restaurants at the 2nd position.
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DISCUSSION

As per the analysis, it is observed that not only one , but there are many type of restaurants(cuisines) found in huge number all over the city.

This is because throughout its history New York City has been a principal entry point for immigration to the United States. In New York no single country or region of origin dominates. The eleven largest countries of origin are the Dominican Republic, China, Jamaica , Guyana, Mexico, Ecuador,Haiti, Trinidad and Tobago, Colombia, Russia and El Salvador. Immigrant Africans, Caribbeans, and African Americans make up 25.1% of New York City's population.

Also, from above data exploration , it is found that mostly Italian, Chinese , Caribbean restaurants available easily around different neighborhoods in the city. Fast Food Restaurants are also one of the most common ones found in the city. So , it can be suggested that, Bronx is good if anyone want to have Fast foods because they are greater by count. At the same time it may not be good for a person looking to open a fast food restaurant in Bronx as the competition is high. A person can start a Latin American , South American or Spanish , Seafood, Japanese restaurants, as these are less in number and so the competition is low.

Similarly , Brooklyn can be suggested for having Caribbean foods, Manhattan for Italian, Queens for Chinese and again Staten Island for Italian. It doesn't end here, Italians are the 2nd most common by count in Bronx, Brooklyn and Queens. This proves that Italian restaurant are the most common ones spread around the city.

CONCLUSION

At the end, it can be concluded that New York city has a wide variety of restaurants and there are plenty of options available all over the city due to immigrants from all over the world. Among all these options, Italian is the most easily available, common and hence most in demand cuisine in the city. But , still there are other varieties like Chinese, Caribbean, Fast Food , which are near to Italian in count.

Bronx has huge number of Fast Food and Italian restaurants. Brooklyn has Caribbean at first position, Italian at second and American at third. Manhattan has Italian at first and American at second. Queens has Chinese at first, Italian at second. And lastly, Staten Island has Italian at first and Chinese at second. After comparing all the restaurants data in all neighborhoods and boroughs, the highest number of Italian restaurant is found in Staten Island.