Finding Optimal Location for a New Mexican Restaurant in New York City

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12-4-2020

Introduction

This project is to find an optimal location to open a Mexican restaurant in New York City.

Several factors should be considered in this project:

1) **the number of the same type restaurants nearby;**
2) **the population density near the new restaurant.**

Introduction

New York City is composed of five boroughs: **The Bronx, Brooklyn, Manhattan, Queens, and Staten Island**.

Manhattan is the most densely populated of them. So, this project will focus on Manhattan and find optimal restaurant location in this area.

Manhattan contains more than **40 neighborhoods**, the population is **1.628 million**. There are over 25,000 restaurants and bars, of which **over 500** are Mexican restaurants.

Data Acquisition & Cleaning

- New York City population density by borough here.
- Manhattan neighborhoods here.
- Mexican restaurants data can be downloaded through Foursquare API.
- Manhattan population by neighborhood data here.
- New York City geojson file used to generate map can be downloaded here.
- The cleaned dataframe contains 5 columns and 43 rows.

Methodology

After merging all the datasets together, I get the following dataframe.

	Neighborhood	Number of Restaurants	Neighborhood Latitude	Neighborhood Longitude	Population
0	noho	34.0	40.723259	-73.988434	24846.000000
1	midtown	26.0	40.754691	-73.981669	391371.000000
2	flatiron	25.0	40.739673	-73.990947	NaN
3	financial district	24.0	40.707107	-74.010665	60976.000000
4	east harlem	20.0	40.792249	-73.944182	115921.000000

Methodology

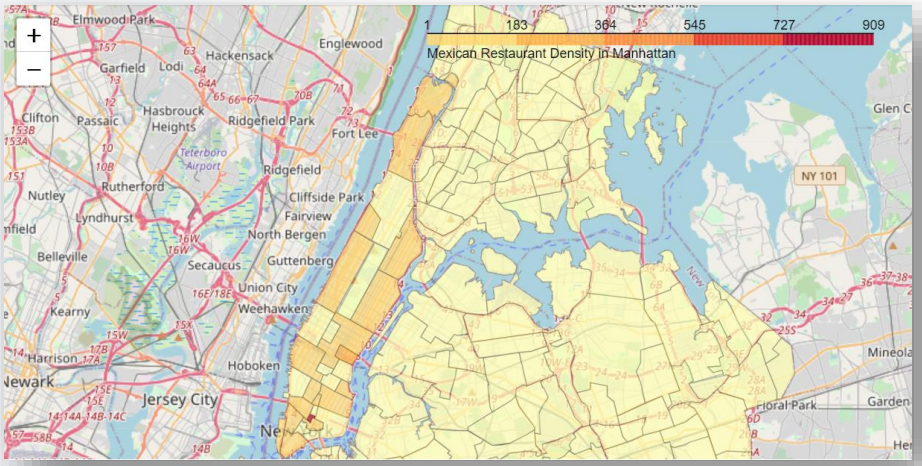
To better analyze the potential capacity for consumption in each neighborhood, I added a column name **“Restaurant Density”**, which is calculate by “Number of Restaurants”/“Population”.

	Neighborhood	Number of Restaurants	Neighborhood Latitude	Neighborhood Longitude	Population	Restaurant Density
0	upper east side	4.0	40.775639	-73.960508	229688.000000	0.000017
1	upper west side	5.0	40.787658	-73.977059	209084.000000	0.000024
2	stuyvesant town	1.0	40.731000	-73.974052	21049.000000	0.000048
3	midtown	26.0	40.754691	-73.981669	391371.000000	0.000066
4	washington heights	11.0	40.851903	-73.936900	158318.000000	0.000069

***Lower “Restaurant Density” neighborhood means it has more potential to open a new restaurant.**

Methodology

Use python folium **Choropleth map** to show the restaurant density of each neighborhood.



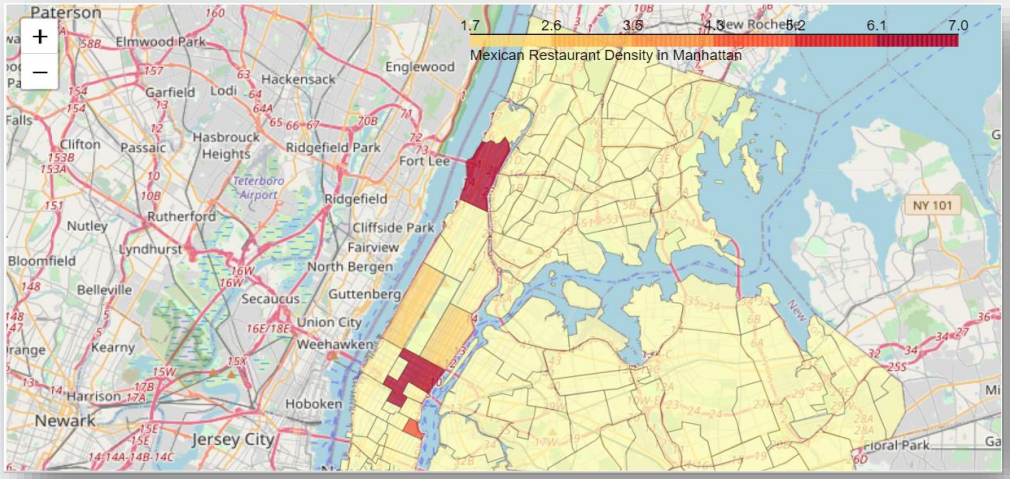
- Yellow: Higher potential
- Red: Lower potential

Result

The goal of this project is to provide **5 best locations** to the restaurant owner and stakeholders to make the final decision. The result is shown below.

	Neighborhood	Number of Restaurants	Neighborhood Latitude	Neighborhood Longitude	Population	Restaurant Density
0	Upper East Side	4.0	40.775639	-73.960508	229688.0	1.741493
1	Upper West Side	5.0	40.787658	-73.977059	209084.0	2.391383
2	Stuyvesant Town	1.0	40.731000	-73.974052	21049.0	4.750820
3	Midtown	26.0	40.754691	-73.981669	391371.0	6.643313
4	Washington Heights	11.0	40.851903	-73.936900	158318.0	6.948041

Result



Four of the five neighborhoods are large, which have more Mexican restaurants and higher population. Only Stuyvesant Town is a small area and also has less population.

Conclusion & Future Directions

- Built a method to evaluate the potential capacity for consumption in each neighborhood.

- Created Choropleth map to visualize the restaurant density of each neighborhood.

- Provided 5 optimal locations as candidates for restaurant owner and stakeholders to make the final decision.

- Future directions: gather comprehensive data and include more conditions in the project.

Thank you!