

Bronx Middle Eastern Restaurants

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1. Introduction

1.1 Background

In this project, I am interested in The **Bronx** neighborhood. The Bronx has a rich history and has passed through many stages in its history. Its history during the 20th century may be divided into four periods: a boom period during 1900–29, with a population growth by a factor of six from 200,000 in 1900 to 1.3 million in 1930. The Great Depression and post-World War II years saw a slowing of growth leading into an eventual decline. The mid to late century were hard times, the Bronx declined 1950–85 from a predominantly moderate-income to a predominantly lower-income area with high rates of violent crime and poverty. The Bronx has experienced an economic and developmental resurgence starting in the late 1980s that continues into today.

As a Middle Eastern, I always had a passion to open a Middle Eastern restaurant. As we all aware location is the primary success factor in restaurant business. The Bronx is ideal for opening a Middle Eastern restaurant due to its diversity.

1.2 Problem

My problem is to find the **proper location** that will give me a competitive edge but yet an attraction zone. The competition is going to be high so in my study, I will look for neighborhoods with many restaurants but with few Middle Eastern options.

The target audience of this report is any one that is interested in opening a Middle Eastern restaurant in the Bronx. Since my dream is to open a Middle Eastern restaurant that then the main targeted audience is my family and myself

2. Data Acquisition and cleaning

2.1 Data Source

The data comes from New York Geo Data Center from the following link https://geo.nyu.edu/catalog/nyu_2451_34572. The data contains neighborhood information the larger city of New York. The data is formatted in JSON objects

2.2 Data Cleaning

The data from new seems to be in a good shape and no cleaning is needed.

2.3 Feature selection

The JSON object include many elements that will be relevant to our study. From the JSON object we are interested in the following attributes:

- `properties.name` : Which is the neighborhood
- `properties.borough` : Which is the city, in which we are looking for the Bronx
- `geometry.coordinates` : That contains two values, latitude and longitude

Neighborhood has a total of 5 boroughs and 306 neighborhoods. In order to segment the neighborhoods and explore them, we will essentially need a dataset that contains the 5 boroughs and the neighborhoods that exist in each borough as well as the latitude and longitude coordinates of each neighborhood.

Luckily, this dataset exists for free on the web. Feel free to try to find this dataset on your own, but here is the link to the dataset: https://geo.nyu.edu/catalog/nyu_2451_34572

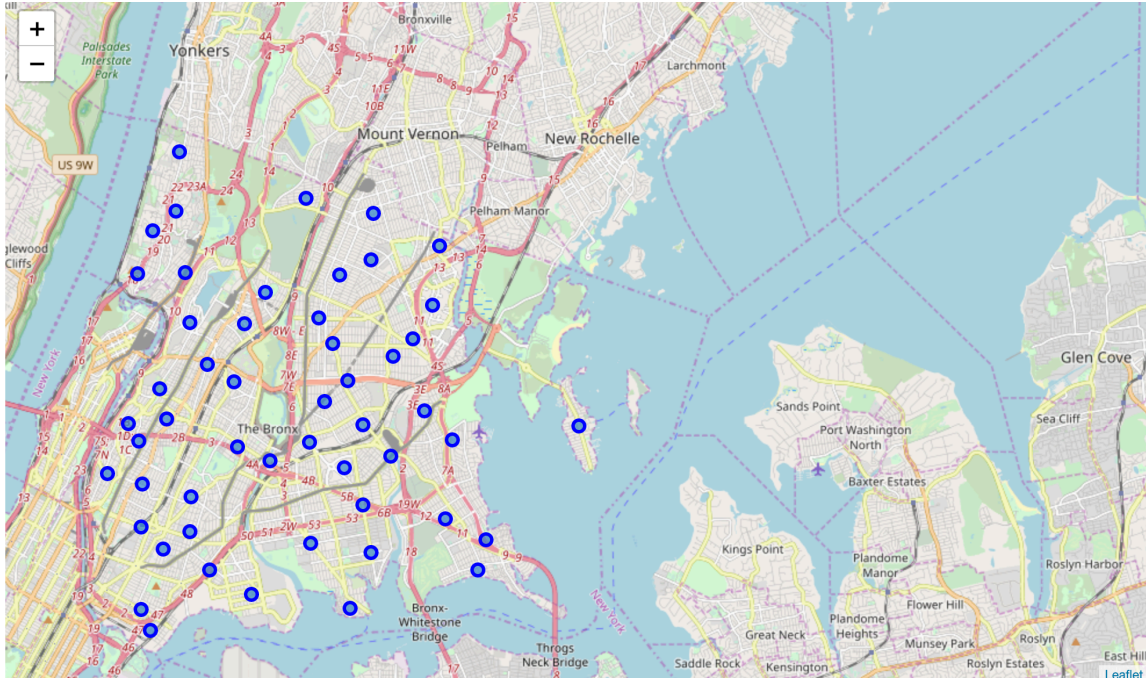
	Borough	Neighborhood	Latitude	Longitude
0	Bronx	Wakefield	40.894705	-73.847201
1	Bronx	Co-op City	40.874294	-73.829939
2	Bronx	Eastchester	40.887556	-73.827806
3	Bronx	Fieldston	40.895437	-73.905643
4	Bronx	Riverdale	40.890834	-73.912585

3. Exploratory Data Analysis

3.1 Neighborhood Of interests

Let's create latitude & longitude coordinates for centroids of our candidate neighborhoods. We will create a grid of cells covering our area of interest that is approximately 500 m radius around the center of the Bronx city center.

Let's first find the latitude & longitude of Bronx city center, using specific, well-known address and Google Maps geocoding API.



3.2 Use Foursquare to get Restaurants

The next step is to take at all the neighborhoods in the Bronx using the latitude and longitude and get the 100 restaurant venues within a radius of 1000 meters. The source of the data related to the venues come from the Foursquare. The request to Foursquare is formatted in the following manner

	name	categories	lat	lng
0	Lollipops Gelato	Dessert Shop	40.894123	-73.845892
1	Ripe Kitchen & Bar	Caribbean Restaurant	40.898152	-73.838875
2	Ali's Roti Shop	Caribbean Restaurant	40.894036	-73.856935
3	Jackie's West Indian Bakery	Caribbean Restaurant	40.889283	-73.843310
4	Rite Aid	Pharmacy	40.896649	-73.844846

3.2 Methodology

In this project we will direct our efforts on detecting areas of Bronx that have limited number of Middle Eastern restaurants. We will limit our analysis to area ~1km around the Bronx city center.

In first step we have collected the required data: location and type (category) of every restaurant within 1km from Bronx center. We will identify restaurants (according to Foursquare categorization).

In second and final step we will focus on most promising areas and within those create clusters of locations that meet some basic requirements established in discussion with stakeholders: we will take into consideration locations with no more than two restaurants in radius of 250 meters, and we want locations without Middle Eastern restaurants in radius of 1000 meters. We will present map of all such locations but also create clusters (using k-means clustering) of those locations to identify general zones / neighborhoods / addresses which should be a starting point for final 'street level' exploration and search for optimal venue location by stakeholders.

3.3 Analysis

Next, let's group rows by neighborhood and by taking the count of the frequency of occurrence of each area. We can use the grouped data to see where are the Middle Eastern restaurants. We can use two approaches, we can select the areas with high concentrations of Middle Eastern restaurants, and this insures that there is a market for this type of food. The other approach we select areas with no Middle Eastern restaurant frequency the competition is less but the risk may be high.

	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Neighborhood						
Bedford Park	1	1	1	1	1	1
Bronxdale	3	3	3	3	3	3
Concourse	1	1	1	1	1	1
Concourse Village	1	1	1	1	1	1
Hunts Point	1	1	1	1	1	1
Kingsbridge Heights	1	1	1	1	1	1
Morris Heights	1	1	1	1	1	1
Morrisania	1	1	1	1	1	1
Mount Eden	1	1	1	1	1	1
Norwood	1	1	1	1	1	1
Van Nest	3	3	3	3	3	3

3.4 Results and Discussion

Looking at the result above, we notice the maximum number of Middle Eastern restaurants is in two areas with each 3 restaurants. According to the methodology I choose, these two areas will be my top picks. Before making the final decision, we will examine the demographics of each area. The areas with higher population and with high concentrations of Middle Eastern population will be my choice.

Bronxdale

Bronxdale population is 79, 188. The demographics of Bronxdale is made of the following

- Citizen US Born 44,972
- Citizen Not US Born 21,611
- Not Citizens 12,605

Van Nest

Van Nest population is 20,069. The demographics of Bronxdale is made of the following

- Citizen US Born 11,370
- Citizen Not US Born 5,378
- Not Citizens 3,321

From the above data, I would choose Bronx dale since it has higher population and large number of immigrants. This will increase the success of the restaurant

4. Conclusion

Purpose of this project was to identify a location in the Bronx where I can open a Middle Eastern restaurant. Since I don't have lots of funds, I wanted to minimize the risk of failure and increase the chances of success. Bronxdale, has high number of Middle Eastern restaurants. This means that Middle Eastern restaurants are popular. The other factor demographics. It looks like Bronxdale has much higher population then Van Nest, this can be translated into higher revenue if we brand ourselves on pricing and quality food. My plan, is to makes all meals affordable that way we can transform existing competition into business opportunities.