IBM Applied Data Science Capstone
Opening a Turkish Restaurant in New York – A Report
by: Rafael Xidane
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Introduction

New York City is the most populous city in the United States. With an estimated 2019 population of 8.5 million distributed over about 302.6 square miles, New York City is also the most densely populated major city in the United States. It is a city that is second to none in terms of immigration, racial diversity and cultural diversity among other things.

Of the many cuisines of New York City, Turkish cuisine has gained popularity over the past few years. The history of Turkish restaurants in Manhattan goes back to the years when Turkish immigrants started working at Armenian restaurants.

With its immense Mediterranean population, it was only natural that Turkish cuisine would gain popularity, and New York City, which has the most restaurants in the world, has ONLY 11 Turkish restaurants in New York's all 5 boroughs put together, thus making it one of the most lucrative cuisines for a restaurateur to invest in.

My project will explore the best locations for Turkish restaurants throughout the city of New York. New York is the most diverse city in the world (800 languages are spoken in New York) and has a long tradition of different ethnical restaurants. However, as with any business, opening a new restaurant requires serious considerations and is more complicated than it seems. In particular, the location of the restaurant is one of the most important factors that will determine its fate.

So this is an attempt to answer business problems such as "Where in New York should a restaurateur/entrepreneur open a Turkish Restaurant?"

Business Problem

The objective of this Capstone project is to analyze and select the best locations in the city of New York to open a new Turkish restaurant. Using Data Science methodology and instruments such as Data Analysis and Visualization, this project aims to provide solutions to answer the business question: Where in the city of New York, should the investor open a Turkish Restaurant?

Target Audience

This analysis is particularly useful for restaurateurs and investors looking to either open a Turkish restaurant, or invest in a Turkish restaurant in the city of New York. As New York is the most diverse city in the world (800 languages are spoken in New York), with its diverse culture, comes diversity in the food items. There are many restaurants in New York City, each belonging to different cuisine types such as Chinese, Indian, Mexican, etc., but there are very few "Turkish" restaurants. This is why I decided to focus on Turkish cuisine for my assignment. With an ever growing Mediterranean population in New York, Turkish food that combines the flavor or middle eastern and the Mediterranean cuisine will cater to a multitude of New York diaspora.

Data

To answer the above question, I have made use of the following dataset:
- New York City data including neighborhoods and boroughs was collected from https://cocl.us/new_york_dataset
- Latitude and longitude coordinates of those neighborhoods were also obtained in order to plot the map and load venue data.
- I have used venue data, particularly data related to restaurants, to perform further analysis of New York borough's neighborhoods.

Methodology

My assignment encompasses the core of data science concepts such as web scrapping (open source dataset), working with API (Foursquare), data cleaning, data wrangling, and data visualization (Folium).

- Data was collected from https://cocl.us/new_york_dataset and scrubbed and loaded into a dataframe.
- All data related to locations/venues were obtained via FourSquare API and then filtered by Turkish restaurants. "def get_venues(lat,lng):" "geolocator = Nominatim(user_agent="foursquare_agent")"
- Ratings, tips, and likes by users were counted and added to Pandas dataframe and sorted based on rankings.
- I have used Folium as our data visualization tool along with Python's built-in libraries to plot the "restaurant locations with highest ratings" map

Results

Results of our analysis showed below:

1. New York has 306 boroughs in all

Number of boroughs in New York				
	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

 # Number of neighborhoods in New York

ny_data.shape

(306, 4)

2. The total number of Turkish Restaurants in all of New York (including all boroughs) is just 11, this is based on data received by FourSquare and may not be accurate as I used the free Sandbox Tier Account of Foursquare API that has a limitation on the number of API calls and results returned

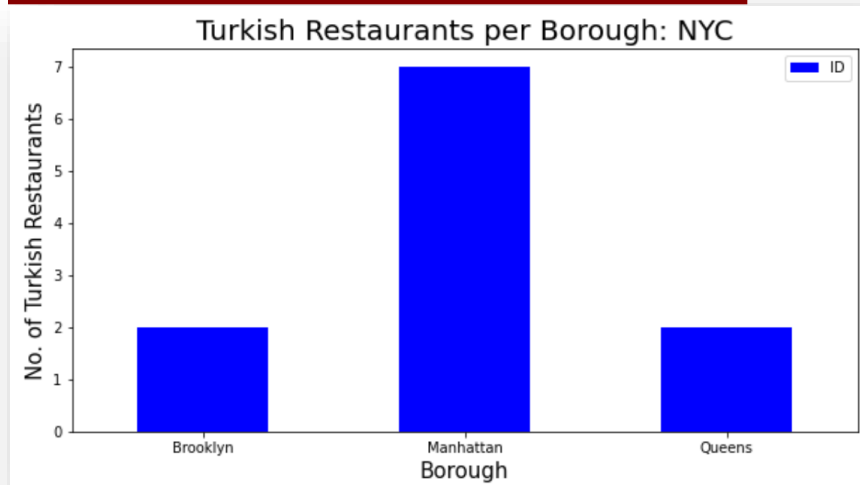| Number of Turkish restaurants in New York				
2	Manhattan	Yorkville	598085d9ee628b12e387482a	Sumela Mediterranean Cafe & Grill
3	Manhattan	Lenox Hill	4ba41023f964a520807d38e3	A La Turka
4	Manhattan	Upper West Side	479309d9f964a520564d1fe3	Bodrum Mediterranean Restaurant

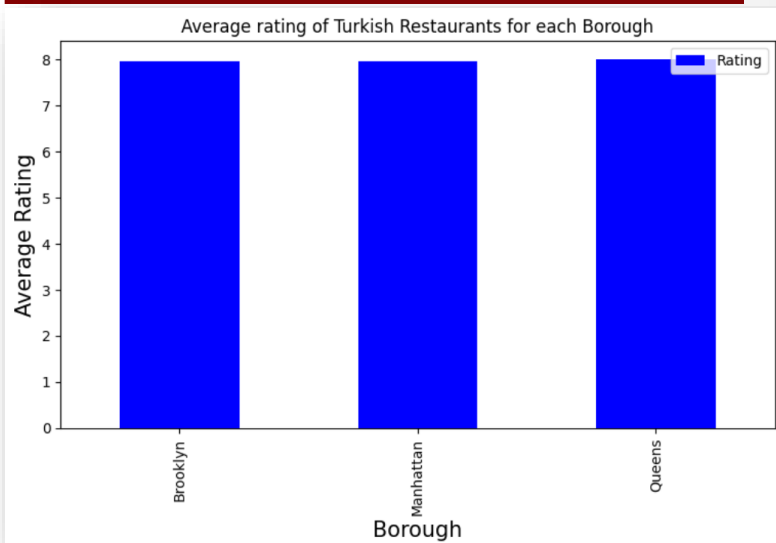turkish_rest_ny.shape

(11, 4)

3. Manhattan has the highest number Turkish Restaurants, followed by Brooklyn and Queens. Bronx has no Turkish restaurants

Manhattan has the highest Number of Turkish restaurants

4. Turkish Restaurants have the same average rating in all boroughs on New York

Average rating of Turkish restaurants

Discussion Section

Based on the results of my analysis, I would state that any borough in New York is a good location for Turkish cuisine.

There are a lot of Turkish population in Brooklyn especially near Bay Ridge and Coney Island, and in Sunnyside and Maspeth neighborhoods of queens.

To be successful as a restaurateur, I would open a Turkish restaurant in Queens or Brooklyn, with a large amount of population working from home and this becoming the new norm going forward, Queens and Brooklyn will definitely see an uptick for a demand in Turkish food.

I would recommend opening a Turkish Restaurant either in Coney Island or in Maspeth, because both of these neighborhoods have the highest population of Turkish immigrants.

In Conclusion

In this Capstone assignment, I have gone through the process of identifying the business problem, specifying the data required, extracting and preparing the data, performing data analysis, and lastly providing recommendations to the investors/developers.

During the course on my exploration, I applied different data science methods and tools to answer the question: "Where in the City of New York, should the investor open a Turkish Restaurant?" Hopefully, the conclusion of my analysis will help the restaurateurs and/or investors better understand the advantages and disadvantages of different New York neighborhoods/boroughs when it comes to opening a Turkish restaurant.