

Coursera

IBM Applied Data Science Capstone

Opening an Italian Restaurant in New York

Introduction

New York City's demographics show that it is a large and ethnically diverse metropolis. It is the largest city in the United States with a long history of international immigration. New York City was home to nearly 8.5 million people in 2018, accounting for over 40% of the population of New York State and a slightly lower percentage of the New York metropolitan area, home to approximately 23.6 million. Over the last decade, the city has been growing faster than the region. The New York region continues to be by far the leading metropolitan gateway for legal immigrants admitted into the United States.

This final project explores the best locations for Italian restaurants throughout the city of New York. Potentially the owner of the new Italian restaurant can have great success and consistent profit. However, as with any business, opening a new restaurant requires serious considerations and is more complicated than it seems from the first glance. In particular, the location of the restaurant is one of the most important factors that will affect whether it will have success or a failure. So our project will attempt to answer the questions “Where should the investor open an Italian 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 Italian 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 an Italian Restaurant?

Target Audience of this project and some demographic facts

This project is particularly useful to developers and investors looking to open or invest in an Italian restaurant in the city of New York. Overall, New York is a great place to open a restaurant with an ethnical cuisine. 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 categories like Chinese, Indian, French, etc.

Data

To solve the problem, we will need the following data:

- New York City 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 related to restaurants. We are going to use this data to perform further analysis of the neighborhoods.

This project will require using of many data science skills, from web scrapping (open source dataset), working with API (Foursquare), data cleaning, data wrangling, to map visualization (Folium). In the next Methodology section, we

will discuss and describe any exploratory data analysis that we did, any inferential statistical testing that we performed, and what machine learning techniques were used.

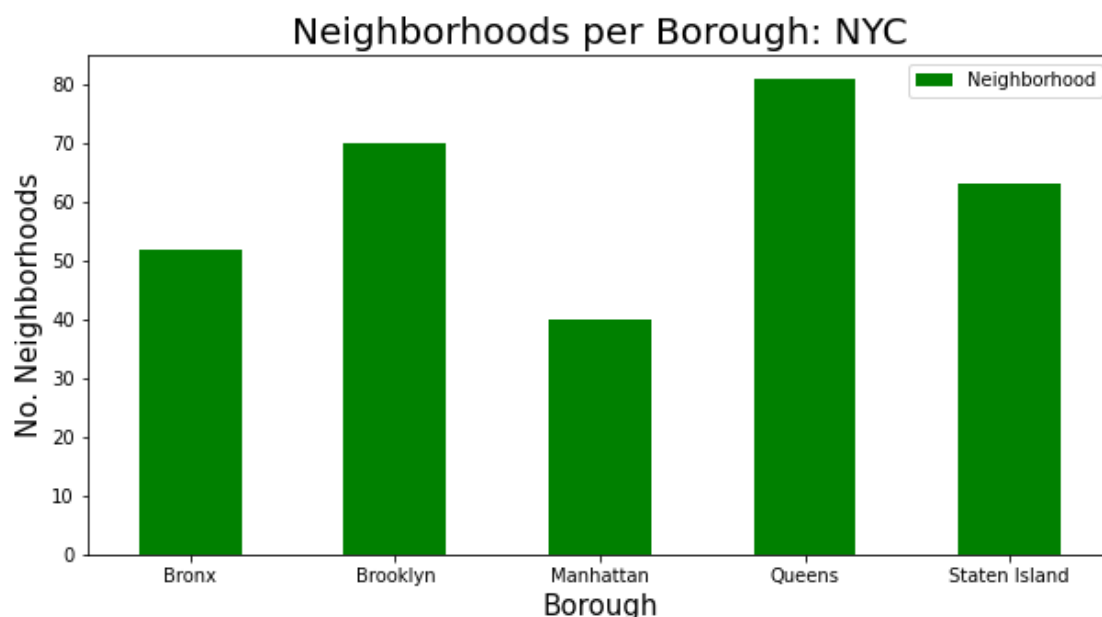
Methodology

- Data will be collected from https://cocl.us/new_york_datasetand cleaned and processed into a dataframe.
- FourSquare is used to locate all venues and then filtered by Italian restaurants. Ratings, tips, and likes by users will be counted and added to the dataframe. Data will be sorted based on rankings.
- Finally, the data be will be visually assessed using graphing from Python libraries.

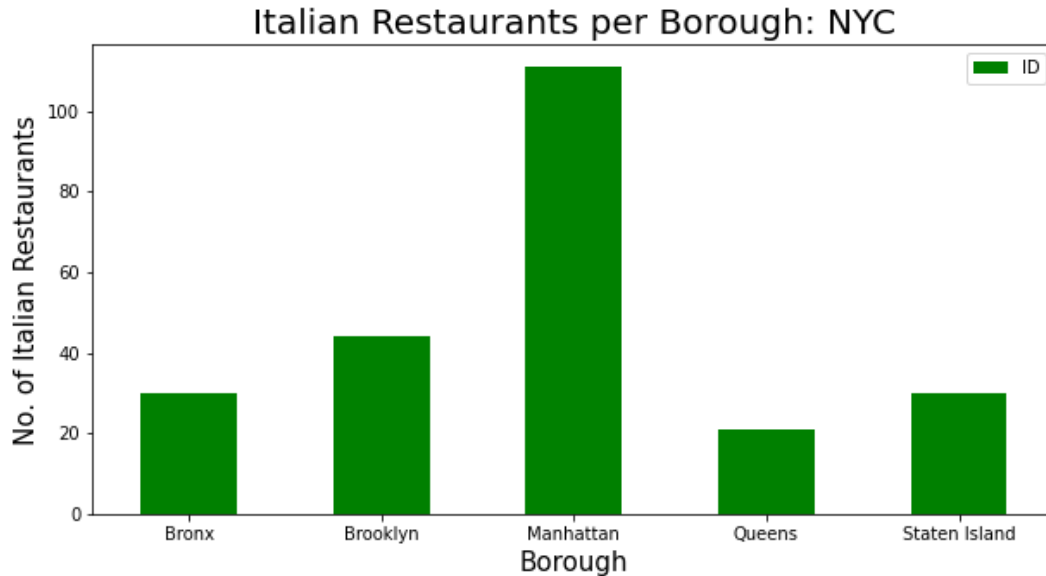
Results

The results of our analysis showed below:

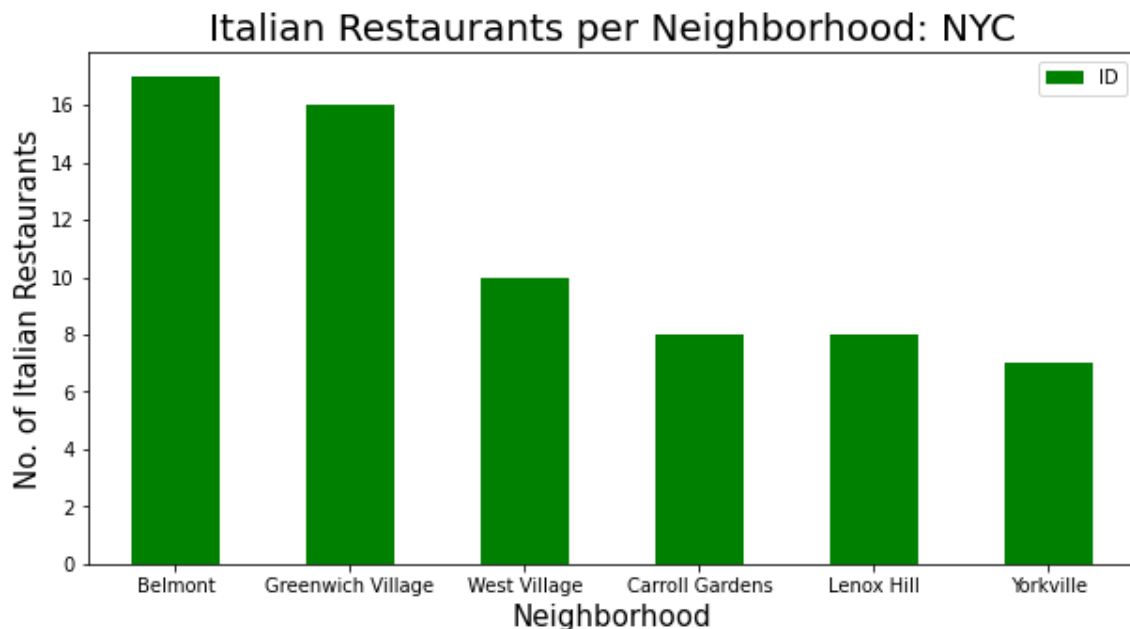
1. We see that Queens has the highest number of Neighborhoods.



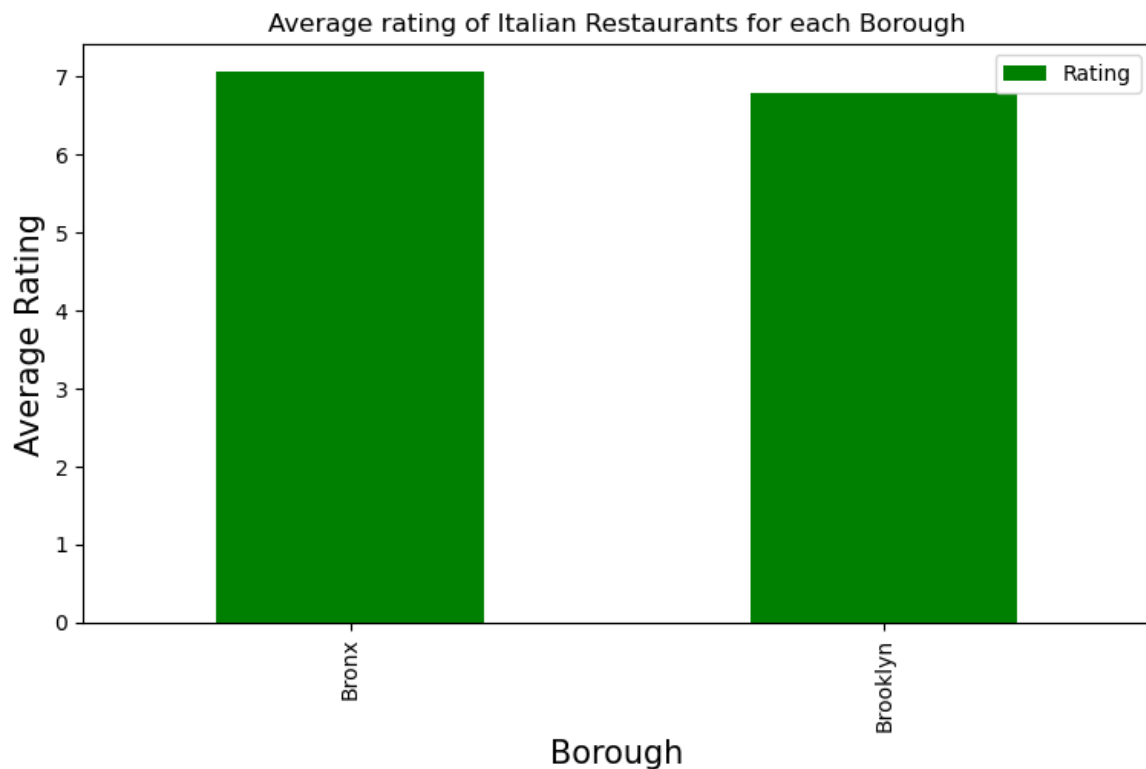
2. Although Manhattan had the least number of neighborhoods, it does have the highest number of Italian restaurants.



3. The Belmont in Bronx has the highest number of Italian Restaurants with a total count of 17.



4. Bronx has the highest average rating for Italian Restaurants.



5. Top Ten neighborhoods with Italian Restaurants with the best average rating

Out[48]:

	Borough	Neighborhood	Latitude	Longitude	Average Rating
0	Brooklyn	Bedford Stuyvesant	40.687232	-73.941785	9.200000
1	Brooklyn	Bushwick	40.698116	-73.925258	9.200000
2	Bronx	City Island	40.847247	-73.786488	8.300000
3	Brooklyn	Cobble Hill	40.687920	-73.998561	8.066667
4	Bronx	Morris Park	40.847549	-73.850402	8.500000
5	Bronx	Pelham Gardens	40.862966	-73.841612	8.400000
6	Bronx	Woodlawn	40.898273	-73.867315	8.600000

Discussion Section

Based on the results of our analysis, I would state that Bronx and Brooklyn are the best locations for Italian cuisine in NYC. To have the best shot of success, I would open an Italian restaurant in Brooklyn. Brooklyn has multiple neighborhoods with average ratings exceeding

8.0 on a scale of 1.0 to 10. Particularly, I would recommend considering opening an Italian Restaurant either in Bedford Stuyvesant or in Bushwick, because both of these neighborhoods have the highest rating for Italian restaurants.