

# **Coursera Capstone Project – The Battle of Neighbourhoods**

## **IBM Applied Data Science Capstone**

### **Opening an Ethical Lebanese Restaurant in New York**

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## **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 immigrants.

New York city was home to nearly 8.399 million people in 2018, accounting for over 40% of 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 other region. The New York 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 Lebanese restaurants throughout the city of New York. Potentially the owner of new Lebanese 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 failure. So, our project will attempt to answer the questions "Where should the investor open a Lebanese Restaurant?" and "Where should I go if I want great Lebanese food?"

## **Business Problem**

The objective of this Capstone project is to analyse and select the best locations in the city of New York to open a new Lebanese 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 Lebanese 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 a Lebanese restaurant in the city of New York. Overall, New York is a great place to open a restaurant with an ethical 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 cuisines like Chinese, Italian, Vietnamese, Indian, French etc. Why did we decide to focus on Lebanese cuisine in our project? Now when idea of a healthy lifestyle conquered the minds of people all over the country, Lebanese restaurants became extremely popular, as they offer a healthy alternative to regular American eating habits. Well-known savoury dishes include baba ghanouj, a dip made of char-grilled eggplant; falafel, small deep-fried patties made of highly spiced ground chickpeas, fava beans, or a combination of the two; and shawarma, a sandwich with marinated meat skewered and cooked on large rods. An important component of many Lebanese meals is hummus, a

dip or spread made of blended chickpeas, sesame tahini, lemon juice, and garlic, typically eaten with flatbread. A well-known dessert is baklava, which is made of layered filo (thinly rolled pastry) filled with nuts and steeped in date syrup or honey. Some desserts are specifically prepared on special occasions; for example, the meghli (rice pudding dessert, spiced with anise, caraway, and cinnamon), is served to celebrate a newborn baby in the family.

It includes an abundance of whole grains, fruits, vegetables, fresh fish and seafood. Poultry is eaten more often than red meat, and when red meat is eaten, it is usually lamb and goat meat. It also includes copious amounts of garlic and olive oil, often seasoned with lemon juice. Chickpeas and parsley are also staples of the Lebanese diet. Lebanese dishes are heavily influenced by the multiple civilisations that have existed within the region, especially the Arab-Muslim contribution, which has accumulated together to form the modern Lebanese cuisine we know today. Using fresh, flavourful ingredients and spices, Lebanese cuisine combines Turkish, Arab, and French cooking styles. Characteristics include the use of lamb (introduced by the Ottomans); the abundant use of nuts, especially almonds and pine nuts; and dressings made from lemon juice.

## **Data**

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

- New York city data containing the neighbourhoods and boroughs.
- Latitude and Longitude coordinates of those neighbourhoods. 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 neighbourhoods

### **Data Source and Methods to Extract them**

New York city data containing the neighbourhoods and boroughs will be obtained from the open data source: [https://cocl.us/new\\_york\\_dataset](https://cocl.us/new_york_dataset) . After it, we will get the geo spatial coordinates of the neighbourhoods (latitude, longitude) using Python Geocoder Package.

Finally, we will use Foursquare API to get the venue data for the neighbourhoods defined at the previous step. Foursquare has one of the largest databases of 105+ million places and over 125,000 developers use this application. Foursquare API provides many categories of the venue data; we are particularly interested in the restaurant data to solve the business problem defined above.

This project will require using many data science skills, from web scrapping (open-source data set), 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