

# Restaurant Recommendation In Mumbai

IBM Applied Data Science Capstone

## Introduction

Mumbai is the capital city of the Indian state of Maharashtra. According to the United Nations, as of 2018, Mumbai is the second-most populous city in the country after Delhi and the seventh-most populous city in the world with a population of roughly 20 million. Mumbai is the financial, commercial, and the entertainment capital of India. It lies on the west coast of India and attracts heavy tourism from all over the globe every year. People from various different culture reside here. In short, Mumbai is a place of extreme diversity. Due to the multi-cultured nature of the place, many different cuisines and variety of flavors are found here. So, targeting the right place, one can open a profitable restaurant in Mumbai.

## Problem

So, the main motive of this project is to analyze the neighborhood in Mumbai and answer the question ***What is the best place to start a restaurant in Mumbai?***

This project aims to help any person wanting to open a restaurant or invest in a restaurant in Mumbai.

## Data

A brief description of the data used in this project:

1. Neighborhood data: This data is collected from the wikipedia page [https://en.wikipedia.org/wiki/List\\_of\\_neighbourhoods\\_in\\_Mumbai](https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Mumbai). This page contains a very well tabulated data that includes all the neighborhoods, their location and their geographical coordinates.
2. Geographical Coordinates: This data is obtained using the geocoder library in Python. Although, our original dataset does have geographical coordinates, we will replace it with the coordinates obtained by the geopy library.
3. Foursquare API: We use foursquare API to obtain the data regarding all the venues around the neighborhoods we wish to explore. Using this data, we analyze which type of venues are in abundance in which neighborhoods and make our recommendations based on that analysis.

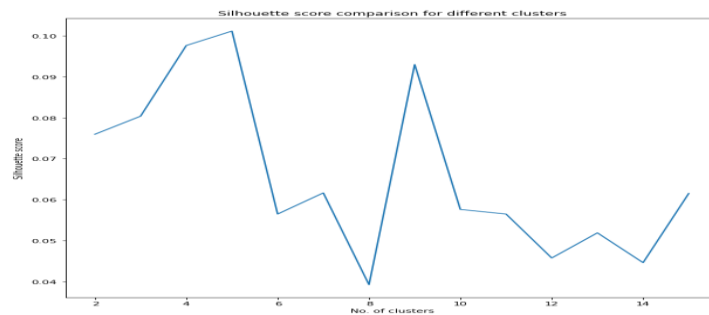
## Methodology

This project involved following steps:

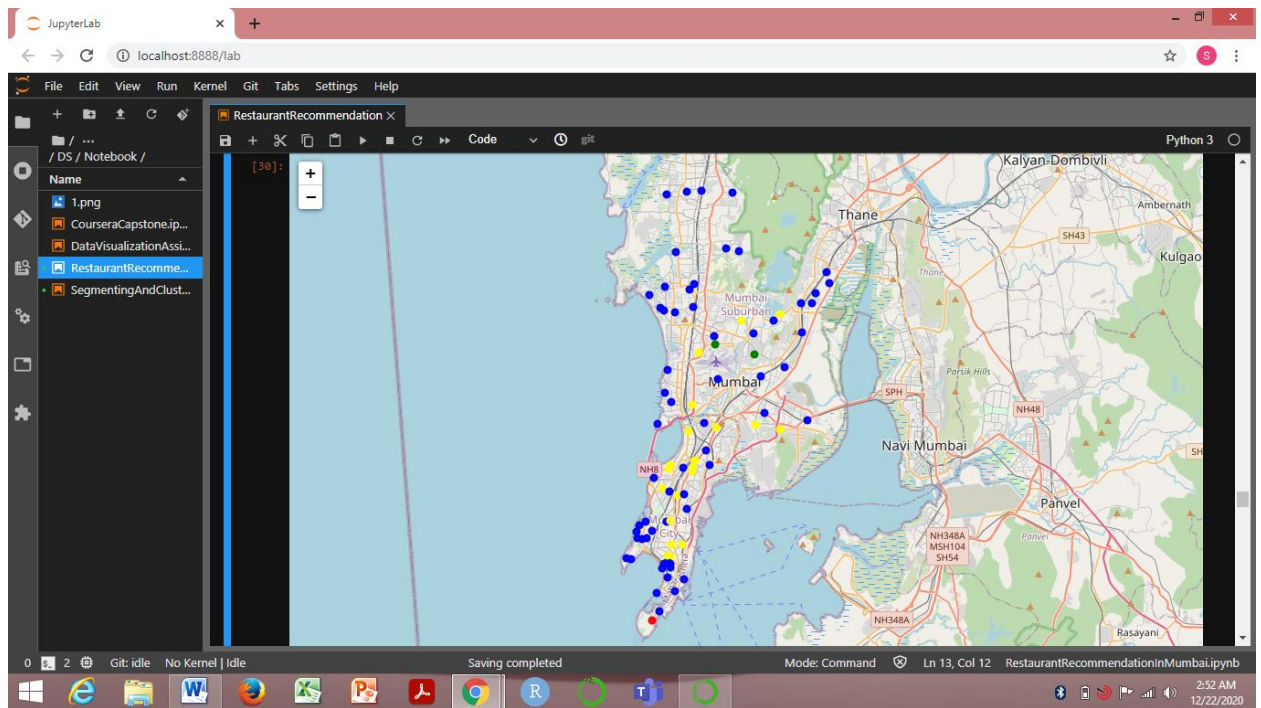
1. Importing libraries
2. Scraping Data From Wikipedia

3. Data Cleaning
4. Visualizing Data Using Folium
5. Getting Data From Foursquare API
6. Clustering Using KMeans Algorithm:

To find the best number of clusters, various values of  $k$  was tested and evaluated using silhouette score and  $k = 4$  was found to be the best value.



## 7. Visualizing The Clustered Data



## 8. Analysis Of Individual Clusters

## Discussion

For cluster 0: These places are filled with restaurants with most neighborhoods having 3-4 restaurants in their top 10 venues. So, this cluster seems like a good one for restaurants. But opening a restaurant

anywhere in this cluster would not be a good idea. Since, there are already many restaurants in the region, there will be a lot of competition and not much profit. So, we will target the neighborhoods that doesn't seem to have a lot of restaurants. Some such places are D.N.Nagar, Four Bungalows, Dava Bazaar.

For cluster 1: There are only 2 Neighborhoods in this cluster so it's easier to analyze this cluster. There is one Restaurant as the most common venue. Also, we can see a beach in the most common venue. Having a restaurant around beach is always profitable. But, we can see that there is a lack of restaurants in this region. So, opening a restaurant in this region would be a profitable business.

For cluster 2: These regions have no restaurants in their top 10 venues. There are small food courts and eating places but no proper restaurant. So, this doesn't seem like a good place for restaurants as there are no good factors to open one here. So, opening a restaurant here would not be recommended.

For cluster 3: This cluster is also full of restaurants especially Indian restaurants. So, Indian restaurants are profitable in this cluster. But since all the neighborhoods have Indian restaurants in abundance, it wouldn't be recommended to open another one as there will be no real profits. But places like Dagdi Chawl, Mahim, Dongri seem to lack other type of restaurants. So, opening a non-Indian restaurant in this place is an idea worth considering.

## **Conclusion**

There are many good places to open a restaurant in Mumbai. But based on the analysis made, we recommend following places to open a restaurant.

1. Uttan, Navy Nagar, D.N.Nagar, Four Bungalows, Dava Bazaar
2. Non-Indian Restaurants: Dagdi Chawl, Mahim, Dongri