Capstone Project

The Battle of Neighborhoods

IBM Applied Data Science Capstone

Project Title:

Predicting Location to Open an Indian Restaurant in Memphis, Tennessee

Submitted by:

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Description of the Problem:

Memphis is the 26th largest city in United States, and the second-most populous city in Tennessee State. As of 2020, it has population of 647,374 [1]. Greater Memphis is the 42nd largest metropolitan area in the United States. This city has a number of renowned industries such as headquarters of FedEx, AutoZone, and so on. The University of Memphis is also a high-ranked university in United States. For these reasons, Memphis becomes a popular choice for all demographic people to live in. A number of Asian people live here, and that's why Indian cuisine are quite popular.

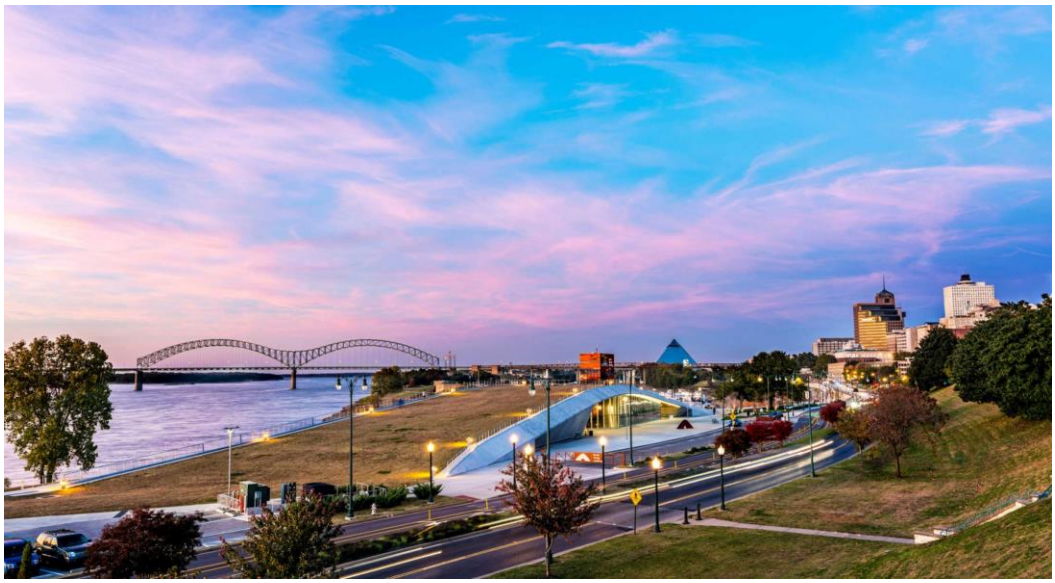


Figure 1: Memphis City

This capstone project focuses on finding the best location to open a new Indian restaurant at the city of Memphis. For a successful business, the first step is to find out a proper location that is suitable to attract the customers. So, the goal of this project is to analyze and select the best locations to open an Indian restaurant at the city I live in, Memphis.

Description of the Dataset:

This project will require the basic data collections skills, namely, working with Foursquare API, web scrapping, data pre-processing, and data visualization using Folium.

To start with, we need to collect the location data for the neighborhoods by using Foursquare API. Location data describes places, and venues, such as location by latitude and longitude, working hours etc. So, it is possible to find the nearby restaurants for any particular location using this service. To access this data, we need to create a developer account and then, submit queries to have the dataset. Foursquare API is one of the largest open-access databases of 105+ Million data. Foursquare API is used to search for specific type of venues or stores around a given location. In this case, we need the venue data, based on which we will choose the desirable location and therefore, Foursquare API is the perfect choice to gather the dataset.

Methodology:

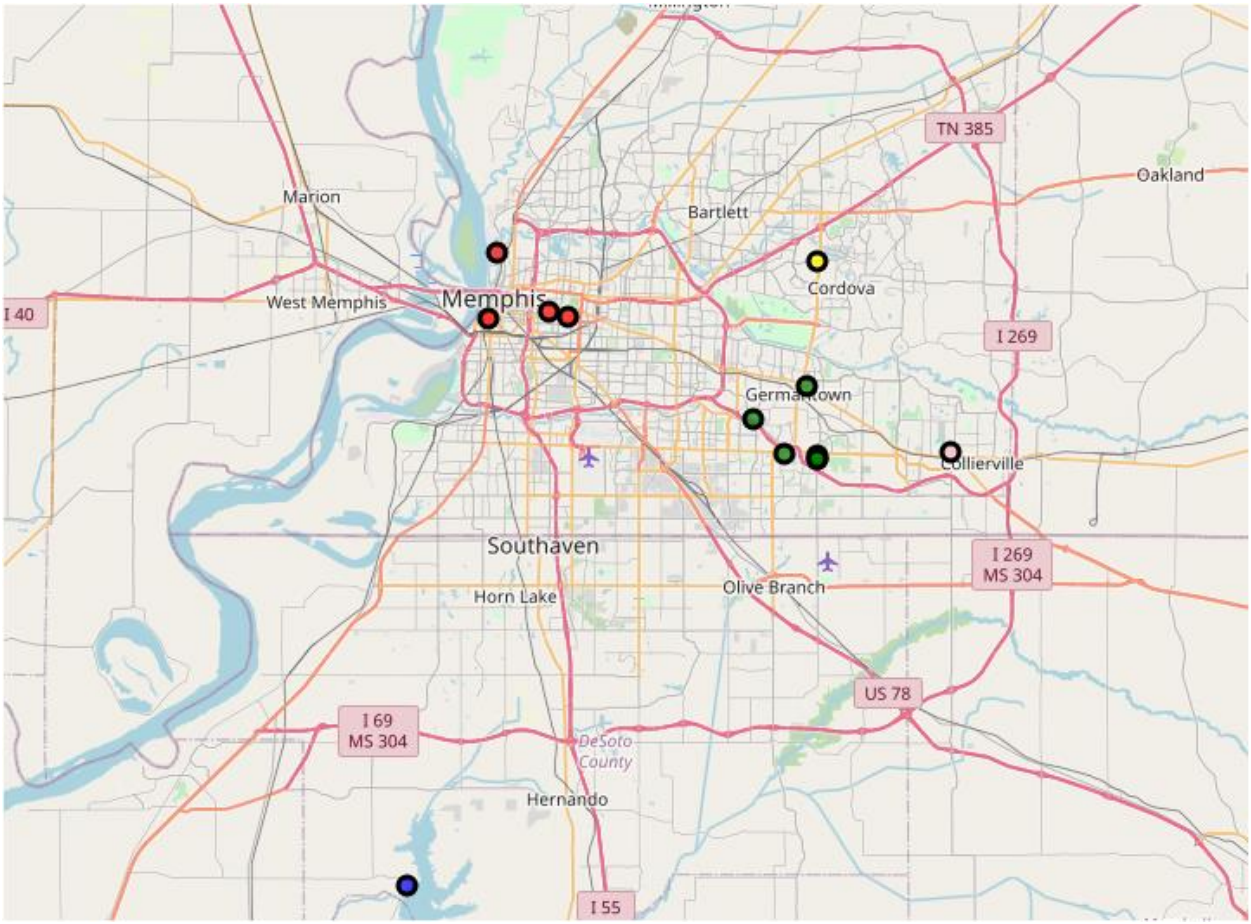
The workflow of this project starts with collecting the data. I have used Foursquare API to find the coordinate information of the city Memphis. Also, using queries, I have gathered the dataset of existing Indian restaurants of Memphis. Next, I have converted this information to a data frame using python library Pandas.

The next step is to Data wrangling or data pre-processing. I have selected the columns that will be useful to fulfill the target and made a new, shorted data frame consisting of the necessary

information. The next step is use KMeans Clustering technique to cluster the dataset. Last but not the least, the clustered dataset is visualized using folium. Here, I have put markers to show the existing restaurants in the map of Memphis.

Results:

With the help of above-mentioned methodologies, I have shown the neighborhoods of Memphis city and the location of Indian restaurants. The result is as follows:



Discussion:

To open a new business, it is very important to find a suitable location and have a good grasp of the neighborhood details. This project gives an example to find the location dataset, and cluster them to see the suitable place. For example, if a number of same types of restaurants are already existing in a locality, it will not be wise to open another restaurant on that location due to competition. There are other factors such as the location of office/industries/ housing areas to determine the suitable place. Therefore, location data is important to start a new business. And, this project deals with an example case of opening an Indian restaurant in a particular city (Memphis, Tennessee).

References:

1. Memphis, Tennessee Population 2020. (n.d.). Retrieved August 27, 2020, from https://worldpopulationreview.com/us-cities/memphis-tn-population

2. Foursquare Developer. (n.d.). Retrieved August 27, 2020, from https://developer.foursquare.com/