

# Predicting suitable Location for Restaurants

Shashi Kumar Sharma

April 05, 2020

## 1. Introduction

### 1.1 Background

Despite the substantial risks and the tough hours, owning a restaurant business is one of the most rewarding experiences of one's life for anyone that have nurtured a lifelong ambition of starting up a restaurant. Though the future looks bright for the food-service industry overall, there are no guarantees in this business. A hard reality is that many restaurants fail during their first year, frequently due to a lack of planning. But that doesn't mean your food-service business has to be an extremely complex operation. In fact, the more streamlined you can make it, the better your chances for success.

Some of the factors that affects the success of any restaurants are:

- concept of restaurant
- location of restaurant
- licenses required to start the restaurant business
- availability of workforce for restaurant business
- Arranging vendors and suppliers for restaurant and more.

### 1.2 Problem

The location is an essential factor to consider while discussing how to start a restaurant business, as it can determine the success of any restaurant. While choosing restaurant's location, it is a good idea to identify ones competitor in that area and gauge their progress and understand their business model. Evaluating the competition would help restaurant understand the customer base that hovers in that area, their pocket size, and their preferences. That's why this Project aims to predict a proper location for success of any restaurant (For this project specifically in Chennai, India).

### 1.3 Interest

Anyone who interests in starting up a restaurant, and don't know how to go about it, or are currently in the middle of setting up your first restaurant. This may help them with one of the most crucial factor for their Business Success.

## 2. Data Acquisition and Cleaning

### 2.1 Data Source

Most of the Location data is acquired from online scraping of sites. I got required data from finkado [here](#). The site contains Pin Codes (Specific code to a Location) of many regions of Chennai.

## 2.2 Data Cleaning

The webpage data was downloaded using inbuilt request package of Python. After which the required table of pin-codes of regions was excluded from the webpage data. This was the first step on data cleaning.

Secondly, table had just pin-codes and location name in it. I needed location's Latitude and Longitude as well so that this can be used in Folium package for plotting the locations on map. So I used geopy package to extract the latitude and longitude data of the given location in the dataset.

While extracting the geo-coordinate data form the dataset, many of the location didn't return any coordinate (None). The reason may be due to closeness of the location to each other or lack of data in Geopy database. So these data rows had to be removed for further processing.

Lastly, I used the dataset in foursquare API for getting popular venue list on each and every location.

## 2.3 Feature Selection

While getting the location data from the site, the total number of observation was 67 i.e. 67 Location was left after generating the location coordinate with 5 Features (Area, Pin-code, Location, Latitude, and Longitude). Since 'Location and Pin-code' feature was redundant for further processing, these feature was dropped at this stage.

When this dataset w further forwarded to Foursquare API, the final dataset had 1839 observatioasn i.e. Venue objects with 6 Features (Latitude, Longitude, Venue, Venue Latitude, Venue Longitude, and Venue Category). Thus the final Feature had these below mentioned categories.

	Area	Latitude	Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Aminjikarai S.O, Chennai	13.07214	80.220545	McDonald's	13.073759	80.221388	Fast Food Restaurant
1	Aminjikarai S.O, Chennai	13.07214	80.220545	PVR	13.073799	80.221392	Multiplex
2	Aminjikarai S.O, Chennai	13.07214	80.220545	Westside	13.073687	80.221380	Clothing Store
3	Aminjikarai S.O, Chennai	13.07214	80.220545	@home	13.071499	80.222309	Furniture / Home Store
4	Aminjikarai S.O, Chennai	13.07214	80.220545	Landmark	13.073781	80.221393	Bookstore

Table 1. Selected Features during Data cleaning