Introduction:

Starting a new business venture of any kind can be immensely challenging owing to the huge number of factors which has to be taken under consideration. The decisions made at the initial stages proves to be crucial in determining the success of the venture. That is why the foundations must be laid out very carefully to ensure success in the long run. A problem of similar manner will be explored in this project.

We have a client who is the owner of a popular Indian restaurant chain and has branches over various parts of India. The client wishes to open another branch in Mumbai, arguably among the busiest and liveliest cities of India. Selection of the venue will go a long way in helping the business to prosper in the future. So, in this project, we explore the location data for the city to find out the best possible location for establishing the restaurant.

The target audience (so to speak) of this project are those people who wish to determine the optimum location for establishing a business venture in any region, provided that some data regarding the surrounding areas are available for analysis and determination of suitable location. Anybody looking forward to start a store-based business (where the venue is of utmost importance) may refer this project and borrow ideas as to what factors should be taken into account in determination of optimum location and how those factors influence the process of decision making.
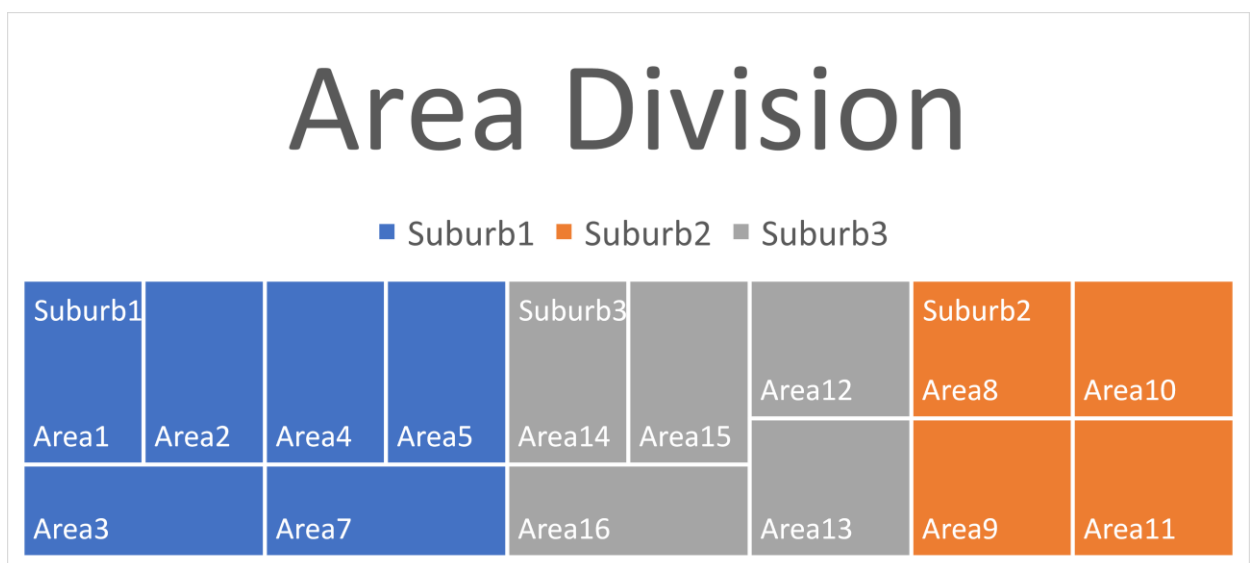
Data:

Data has been collected for the Mumbai City district and Mumbai Suburban district, which form two separate regions of the state of Maharashtra. Together, they come under the administration of BMC. The total area can be divided into four primary divisions viz. Western Suburbs, Eastern Suburbs, Harbour Suburbs and South Mumbai. The data consists of areas under each of these four divisions along with their latitude and longitude values. A glimpse of the collected data is given below

Area	Location	Suburbs	Latitude	Longitude
Amboli	Andheri	Western Suburbs	19.1293	72.8434
Asalfa	Ghatkopar	Eastern Suburbs	19.091	72.901
Deonar	Govandi	Harbour Suburbs	19.05	72.89
Navy Nagar	Colaba	South Mumbai	18.9012	72.8101

(source: https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Mumbai)

Clearly, the data s tabular in nature and the areas can be seen to be divided in form of a branch which is illustrated below

We make queries using Foursquare API to find out surrounding venues within a 500-meter range for the above locations. The results are stored in a data frame for the purpose of further analysis. The data consists of the location variables from the previous table along with venues in and around the areas along with their respective geo-locations. An example of the venue data is given below

Area	Location	Suburbs	Area Latitude	Area Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Amboli	Andheri	Western Suburb	19.1293	72.8434	Cafe Coffee Day	19.12775	72.84466	Coffee Shop
Hiranandani Gardens	Powai	Eastern Suburb	19.118986	72.911767	Meluha, The Fern	19.11773	72.91111	Hotel
Mankhurd	Harbour Suburb	Harbour Suburb	19.05	72.93	Cafe X0	19.04797	72.93131	Coffee Shop
Carmichael Road	South Mumbai	South Mumbai	18.9722	72.8113	Maji Sagar	18.97268	72.81468	Fast Food Restaurant

We considered Movie Theatre, Playground, Park, Garden, Coffee shop, General Entertainment, Stadium, Petrol pump, Aquarium, Hotel, Beach, Recreation Centre, etc. venues. These venues are places that many people usually visit them for entertainment and hence we will have good demand for restaurants around them.

We can perform clustering on this data based on areas and obtain groups of areas which are similar in some respects. We can also study the density of different categories if venues across the locations to look for regions with less competitors. This study can also reveal areas with more frequently distributed venues which implies that demand for a restaurant will be more in those regions.