PROJECT REPORT ON THE PROBLEM OF FINDING THE MOST FRIENDLY INDIAN CITY FOR VEGAN LOVING PEOPLE

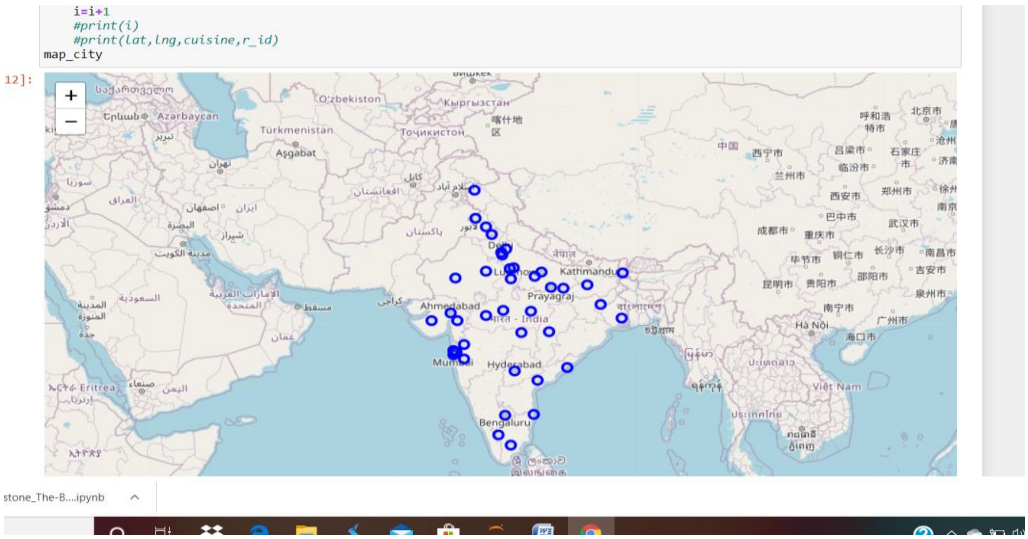
AND

FINDING A LOCATION FOR A PROSPECTIVE INVESTOR FOR OPENING UP OF A VEGAN RESTAURANT

1. **Introduction:-**
    a. Background-
    India is the second most populous country of the world. As per the last census conducted in the year 2011 ,it's population was . Due to it's long history of civilization and size, it has a lot of diversity. With the advent of modern era and industrialization, the country is getting urbanized very fast. As per 2011 census, it had 42 Million-plus cities. Diversity of the country can be judged from the fact that 22 languages and 9 religions are recognized officially. Languages are generally indicative of distinct regions. They also signify the unique culture of the respective regions. Food is an integral part of any culture. Traditionally, India had been a Non-meat eating civilization but more and more people have now started consuming meat. Still ,it has the most number of vegan people in the world and it is estimated that the number is around 500 Million. In the purest sense, the 'Vegetarian food' does not contain any animal product except milk and honey
    b. Problem-
        i. Over the last few years, restaurant industry in India has grown manifold. In all the major cities, restaurants of different types, offering different cuisines from around the world, are available. These restaurants call themselves as either 'Non-vegetarian' or 'Vegetarian'. 'Non-vegetarian' restaurants also serve 'Vegetarian' cuisines but they are not 'vegetarian' in the purest Indian sense.
        ii. The aim of the project is to find-
            1. The city with most number of Food Venues
            2. The city with most number of food venues per Million population.
            3. To find out the place for opening up of a Vegan restaurant in any of the city
    c. Interest-
    There is a very high number of vegetarian Indians who , given an option, would not like to visit any restaurant which also offers Non-vegetarian food . They, in fact, treat it as Taboo. There is a great vaccum ,especially in the high-end Vegan Restaurant segment. It is a great business opportunity also if this market can be addressed.
2. **Data Acquisition and Cleaning:-**
    a. The basic data requirement for the project is the name of Indian cities. This data was fetched from Open Source. (https://www.downloadexcelfiles.com/wo_en/download-excel-file-list-cities-towns-india#.XstsSGgzZPY).
    b. The data is available in CSV format and contains the details of Indian cities with population as per 2011 census.
    c. It is clean and has the column 'Name of City' which will be used for fetching the latitude/Longitude .
3. **Methodology:-**
    a. The table contained a list of 1215 Indian cities with their population. The data was filtered and only Million-plus cities were considered for the analysis. The total number of such cities came out to be 42.

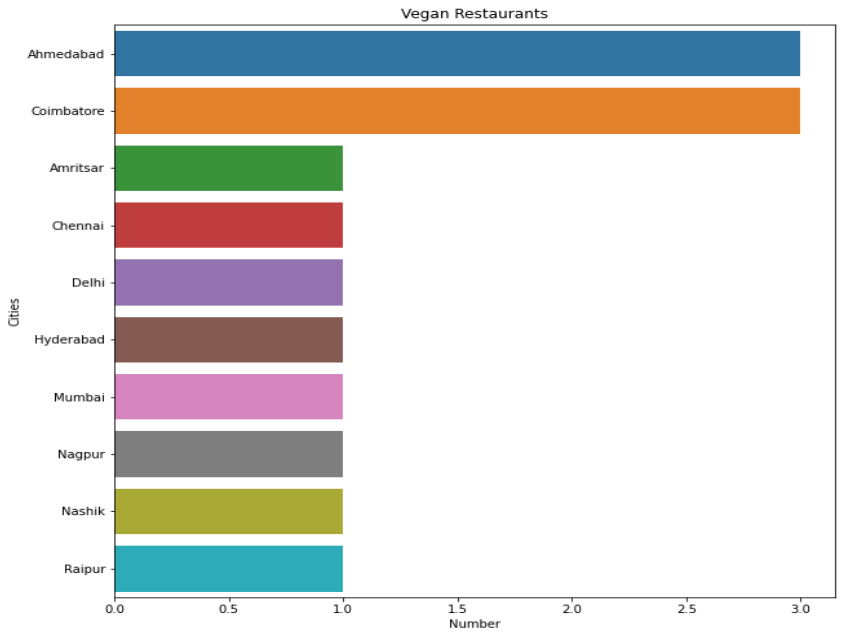
b. Fetching of Latitude/Longitude of the cities:- Using Nominatim library , the latitude and longitude were fetched.

c. Using Folium library , the cities were plotted and visualized

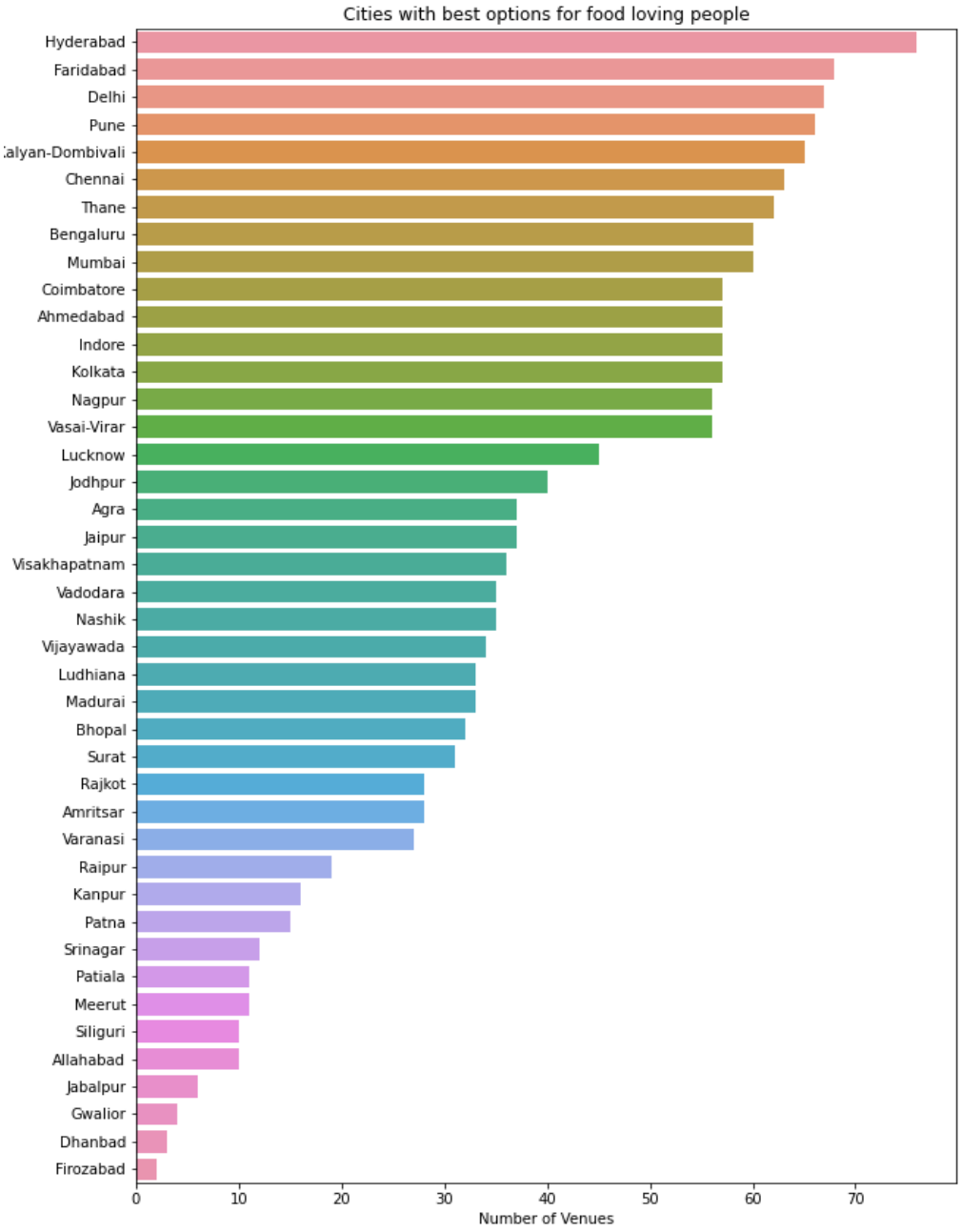


d. Thereafter, venues around the city centroids (as fetched above) , in a radius of 25 km were found out using Foursquare API.The API provided a list of 2319 venues.

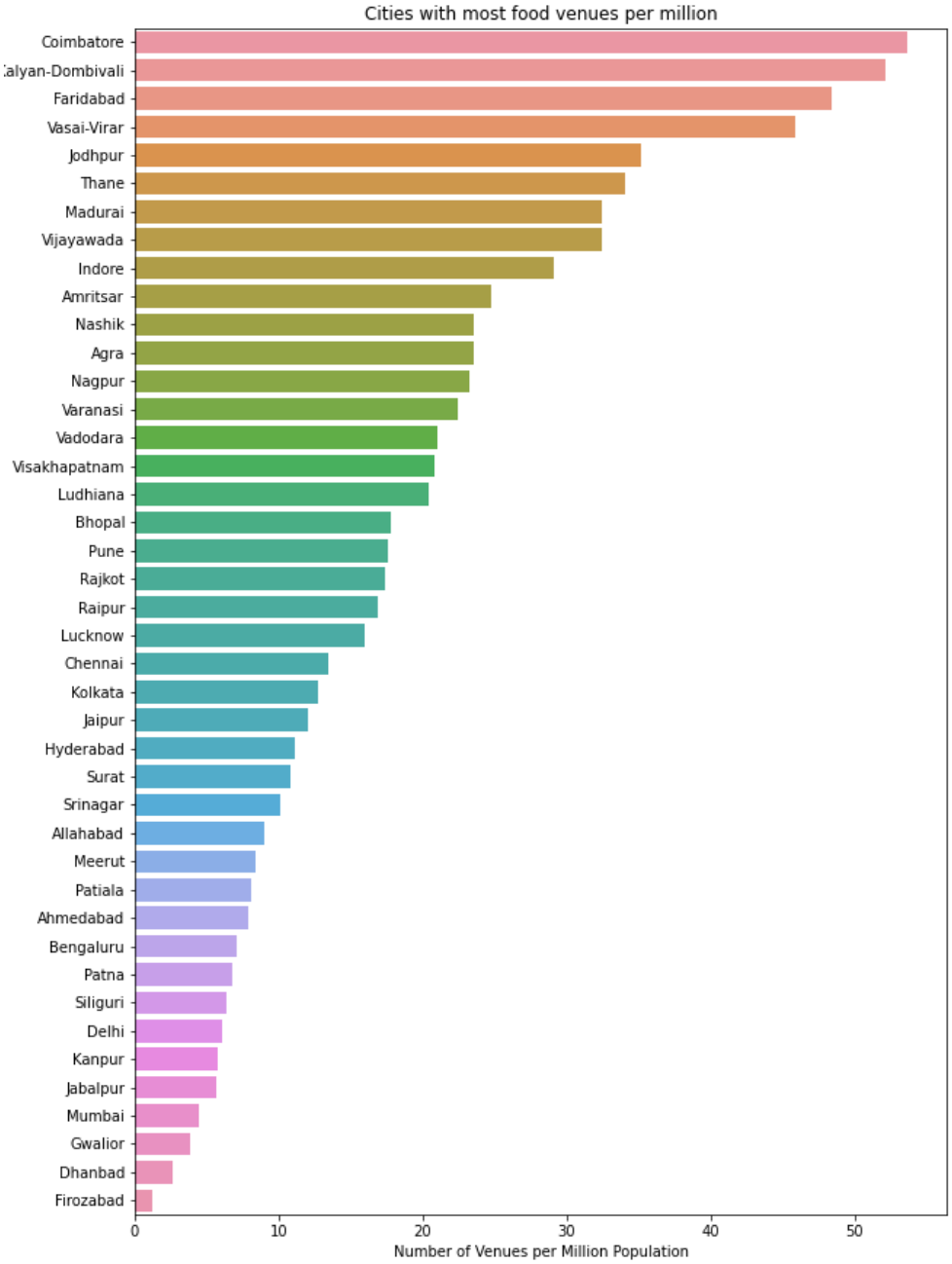
e. The Vegan/Vegeatrian Restaurants were plotted citywise to find the present availability of such venues.



f. The data was grouped in a city wise manner.



g. The data was also plotted to visualize the availability of Food venues per Million Population.

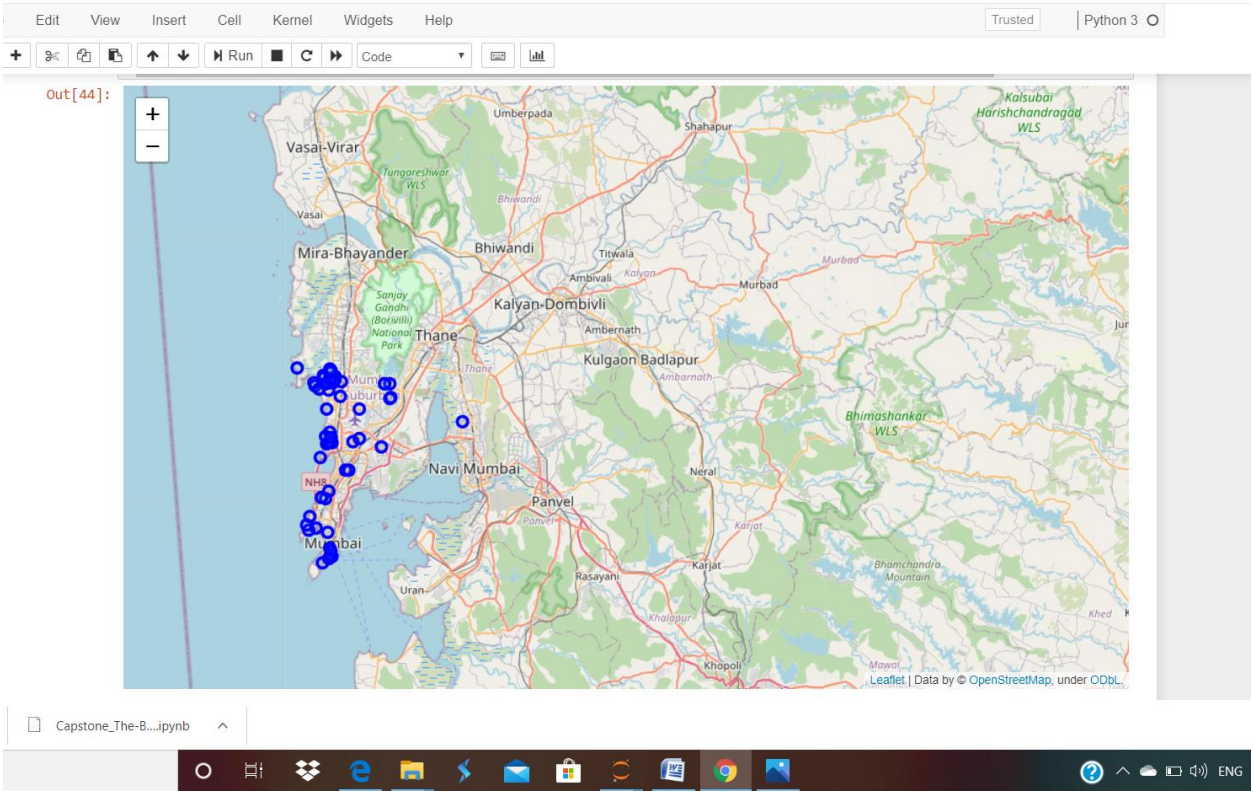


h. It was found from above that Mumbai has very low availability of Restaurants per Million population .And further more, it has minimal Vegan Restaurants. Hence from business perspective , it throws a veru good opportunity to those who wish to open Vegan Resataurants in Mumbai.

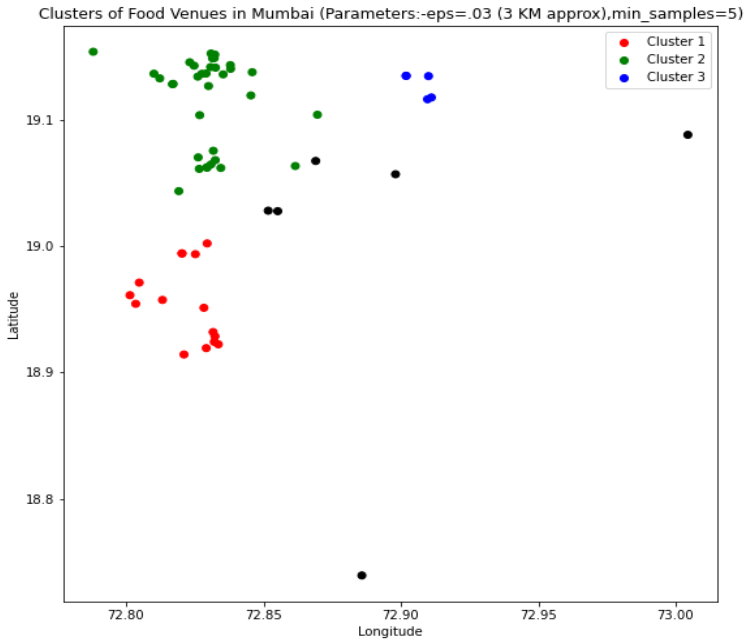
i. For, identifying the place where Vegan restaurants can be opened is a tricky question. For the project purpose, I assumed that the clusters with most number of Multi-cuisine Restaurants (Food Joints) have been formed due to locational advantages such as-

   i. Office spaces nearby, or
   ii. Tourist places nearby ,or
   iii. Good connectivity etc.

j. Since Vegan-loving customers are compelled to visit a Multi cuisine restauarant because they do not find any Vegan restaurants nearby, it would be better if such clusters are identified for opening a new Vegan restaurant.



k. Density Based Spatial Clustering of Application with Noise (DBSCAN) algorithm is used for identifying the clusters of Food venues.



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l. .The parameted were chosen as ‘eps=.003’ and ’ min_samples=5’.

m. The cluster are located at:-

i. Bandra area (Orange cluster)
ii. Lokhandwala_Oshiwara area (Green Cluster)
iii. Powai area (Blue Cluster)

4. **Results:-**

a. It was found during the analysis that despite of the presence of huge number of Vegan loving people there is a huge scarcity of pure Vegan restaurants in the country.
b. Most number of Vegan Restaurants are found in Ahmedabad.
c. The most number of Food venues are found in the City of Hyderabad.
d. The most number of Food Venues per Million Population are found in the City of Coimbatore.
e. Mumbai has the highest population but has very low number of Vegan Restaurants.

f. This throws a business opportunity to those who wish to open a Vegan restaurant.
g. Three clusters of Food venues have been identified in Mumbai.
h. The clusters are located in-
    i. Bandra area
    ii. Lokhandwala_Oshiwara area
    iii. Powai area

i. It is presumed that these three clusters are existing because of locational advantages in terms of large footfall due to Residential area nearby, Tourist destinations and better connectivity.
j. If one of these three clusters is identified for opening up of a new Vegan Restaurants, it will be commercially beneficial.

5. Discussion:-

a. It is evident from the data fetched from the Foursquare database that the data does not encompass every venue present on the ground and hence the analysis may not be correct .
b. Before taking any decision on investment physical survey of the project site is also required.
c. For the purpose of this project, every food venue has been treated at par, which is not correct in the sense that a Coffee joint is different from a restaurant.

6. Conclusions-

a. Data analysis and visualization is a very powerful tool to solve very complicated problems.
b. The correctness of data plays a very important role in the overall process of decision making.