Planning For Restaurant in Kolkata

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Business Problem:

Here Problem is to set up a Restaurant in Kolkata , because Kolkata is a city which have high density of population , Restaurant is perfect business to set up in Kolkata but we have to implement this business in right way.

There are some questions which need to Answer for setting up Restaurant in right way i.e., beneficial for profit.

Questions:

- Which Type of Food is most loved by People it help in increasing number of customer?
- What is the price range that customer prefer to pay in Restaurant?
- What type of restaurant is more in City such that we know our Competitor and Compare with them?

Data Acquiring:

For Solving Business Problem there is need to do analysis for analysis data is required.

For data I used Zomato API that provide information of restaurant like Restaurant Name , Rating , Average Cost for two person , Cuisines,Latitude , Longitude and Votes that Restaurant get.

Foursquare API website is not working properly that's why I used Zomato API instead of Foursquare API.

Data Analysis With Python

There is one limitation of ZOMATO API is that in one API call we can access data of only 20 Restaurant at maximum we can get 100 restaurant . So we Collected top 100 best rating Restaurant data.

We fetch following data of Restaurant from API:

- Restaurant Name
- Restaurant Location
- Cuisines
- Rating
- Votes
- Latitude and Longitude

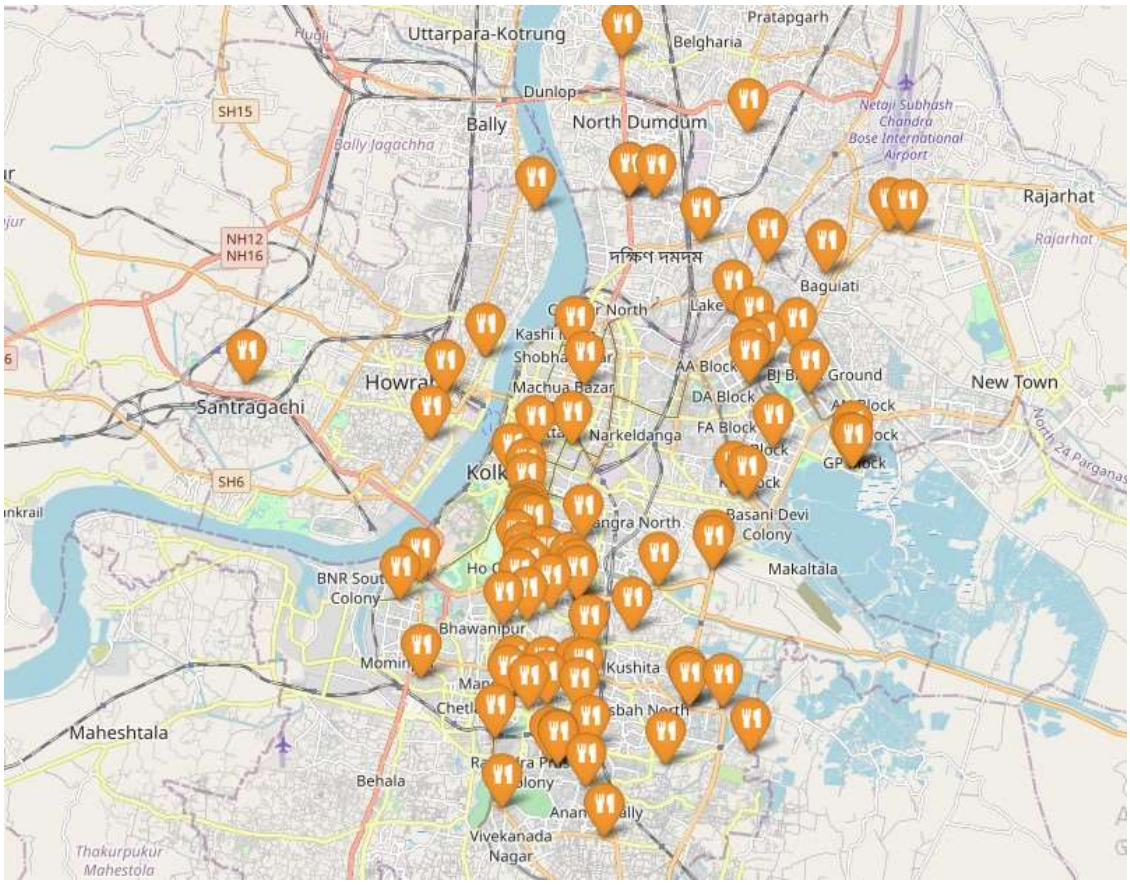
For Analysis we need Library of Python

- **numpy** : It is mainly used for Large mathematical calculation efficiently.
- **pandas** : it is required to store the data in DataFrame.
- **json** : Converting Json file that is received by API to dictionary of python.
- **Seaborn :** For Visualizating the data Point by Plotting.
- **folium :** For Visualizing the Restaurant in Map.
- **sklearn.cluster.KMeans :** It is used to apply KMeans cluster algorithm to the dataset.
- **sklearn.cluster.DBSCAN :** It is used to apply DBSCAN cluster algorithm to the dataset.

Steps Of Analysis:

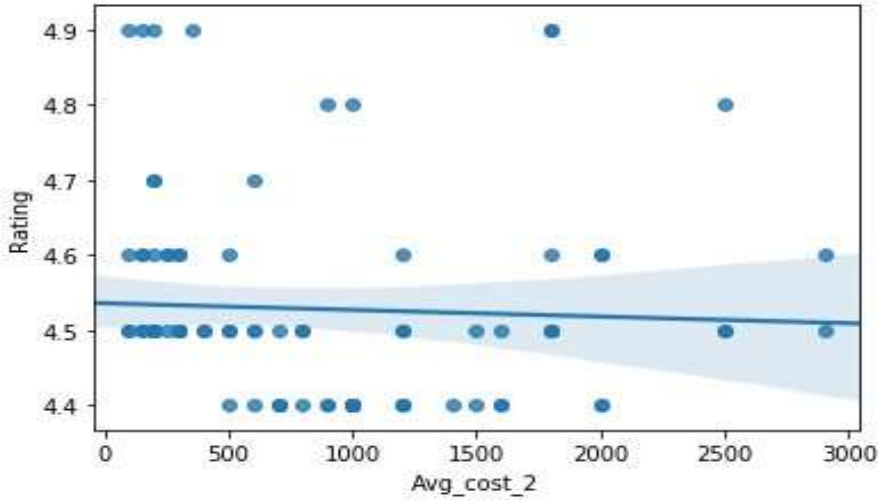
- After using json and pandas library and performing some rearrangement our data come into required data frame which is required for analysis.

- Let's start Visualizing Restaurant of Kolkata in map using folium Library of Python . Link of notebook Provide in last part of this report.

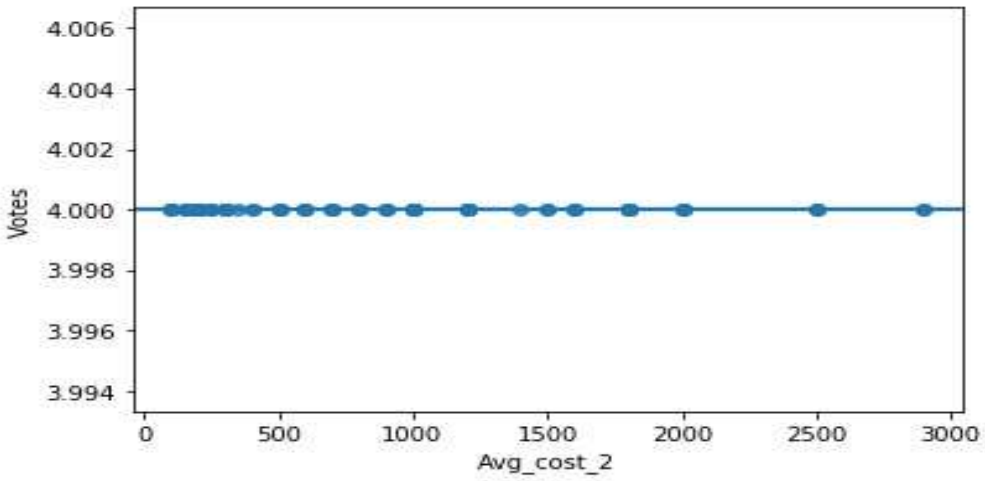


- After Visualizing Restaurant there is need to see the realation between different attribute of dataset by plotting.

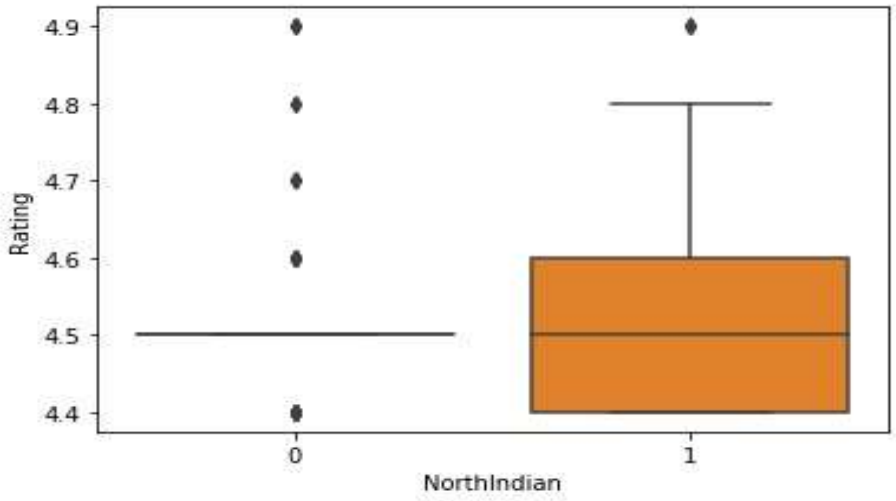
- Plot 1: Regression plot between Average cost of two person with the rating of Restaurant we see that by increasing the cost rating slightly decrease so there is slight negative impact on rating.



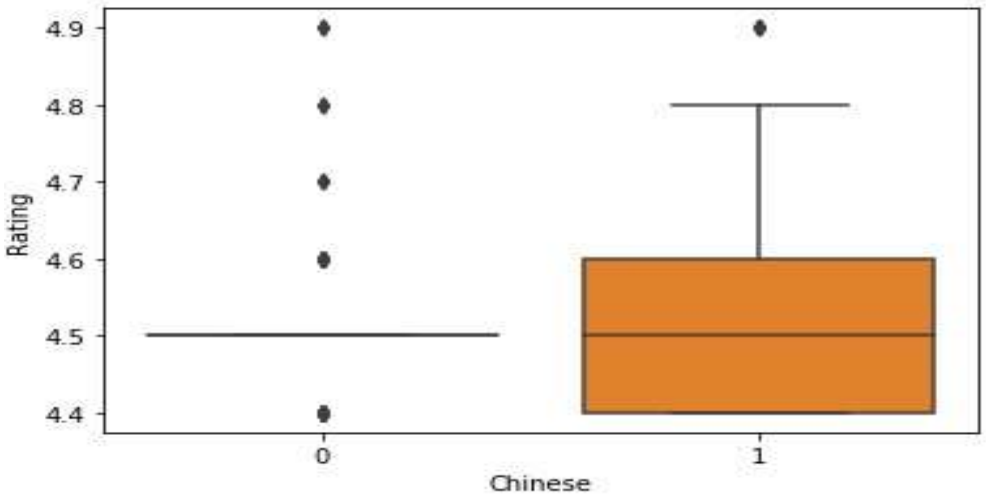
- Plot 2: Regression Plot between Average cost for two and Votes of Restaurant. We see that Votes almost remains Constant by increasing Price.



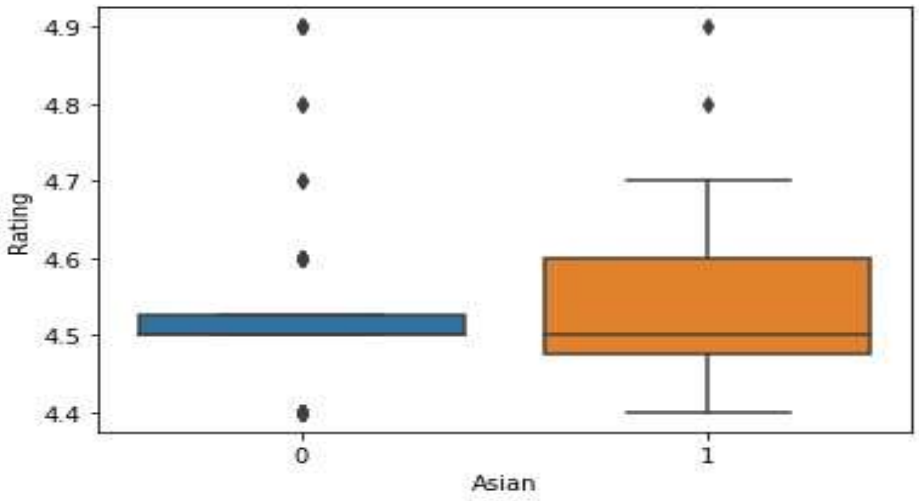
- Now Visualize BoxPlot of all Attribute with respect to Rating.'



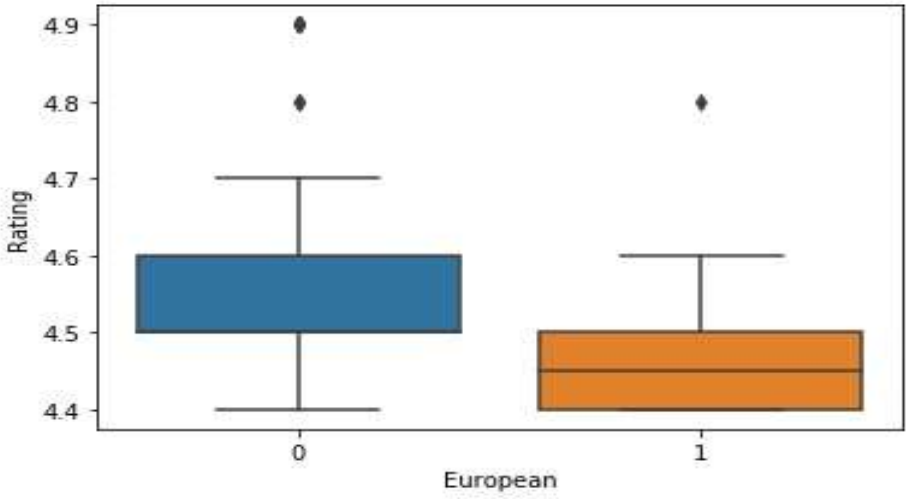
Having North Indian Food is good for rating as shown by above boxplot.



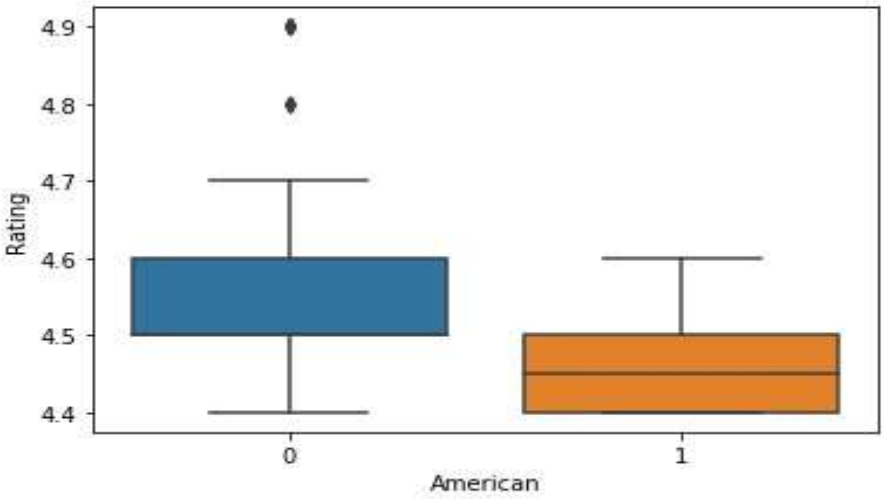
Chinese Food also Work Positively in Market.



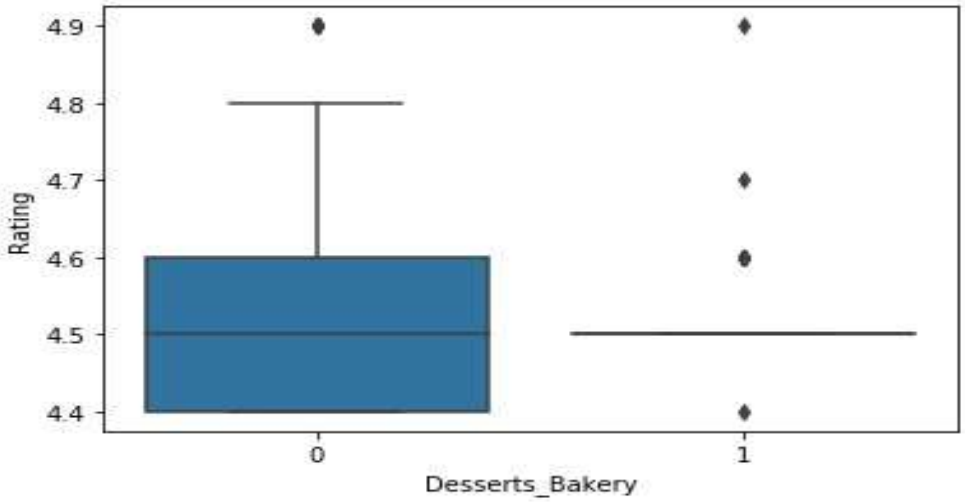
Asian Food also work Positively in the Market.



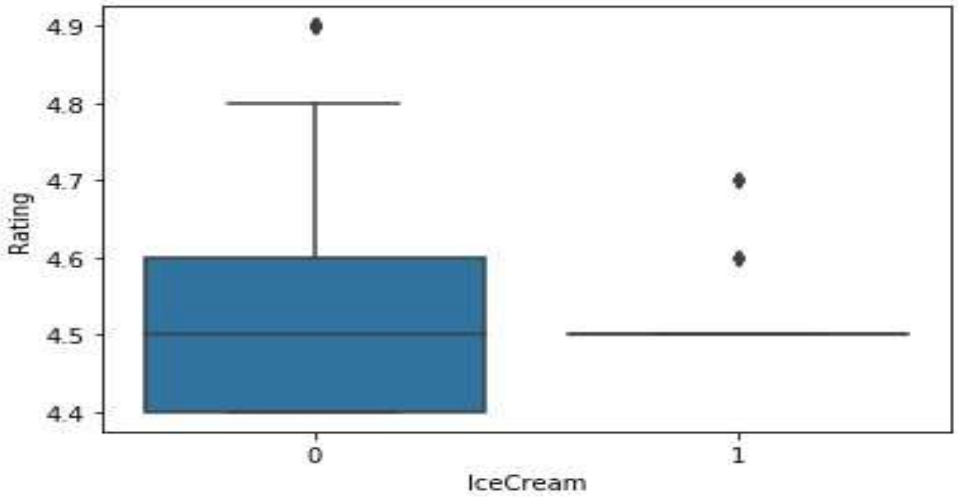
Not having European Food work well than Having Europen Food in Market.



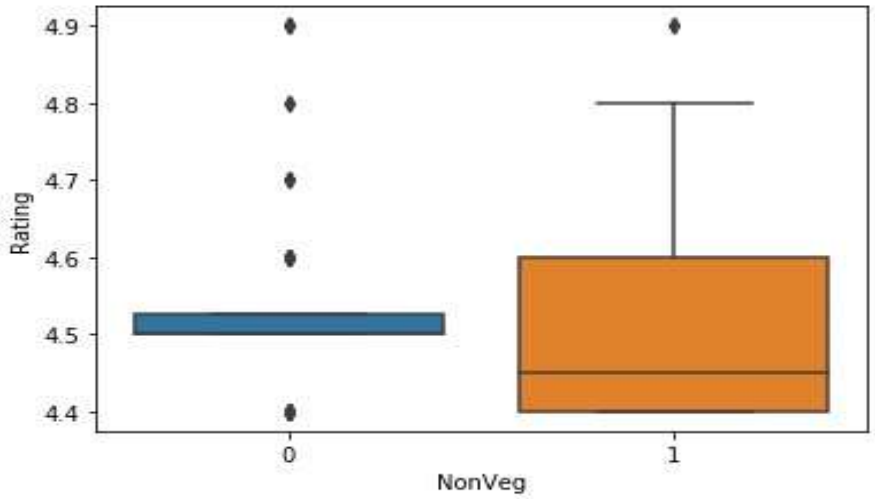
Condition of American Food is same as European Food in Indian Market.



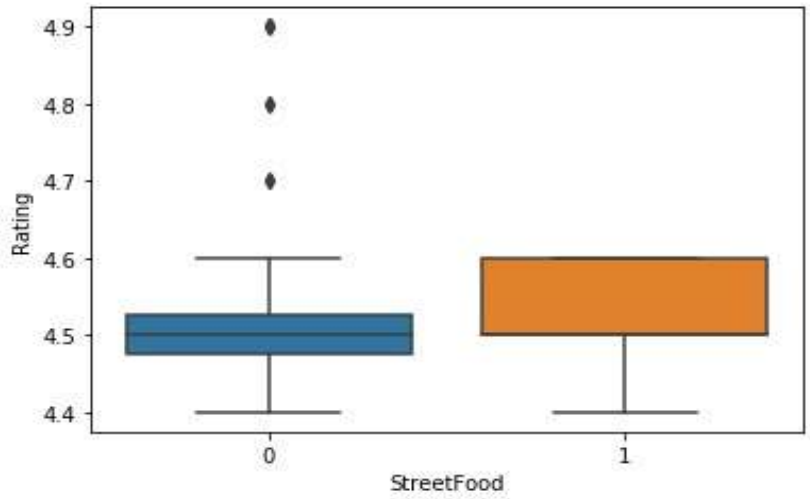
Condition of Desserts Bakery depend on Restaurant Quality as we see having Desserts have 4.9 rating but majority not work as well as Chinese and North Indian Food Restaurant.



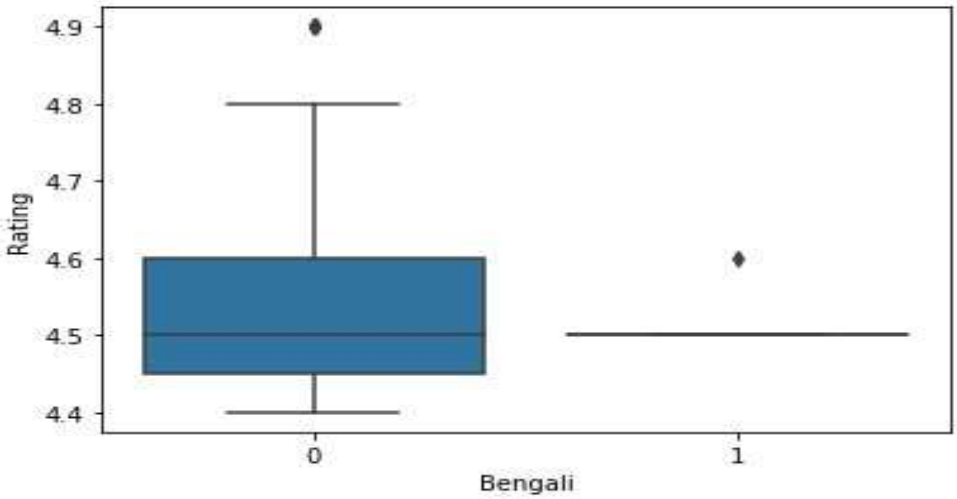
Highest Rating of Ice Cream is 4.7 but only few Restaurant acquire this Rating so improvement required in this field.



Having Nonveg have good impact on Rating.



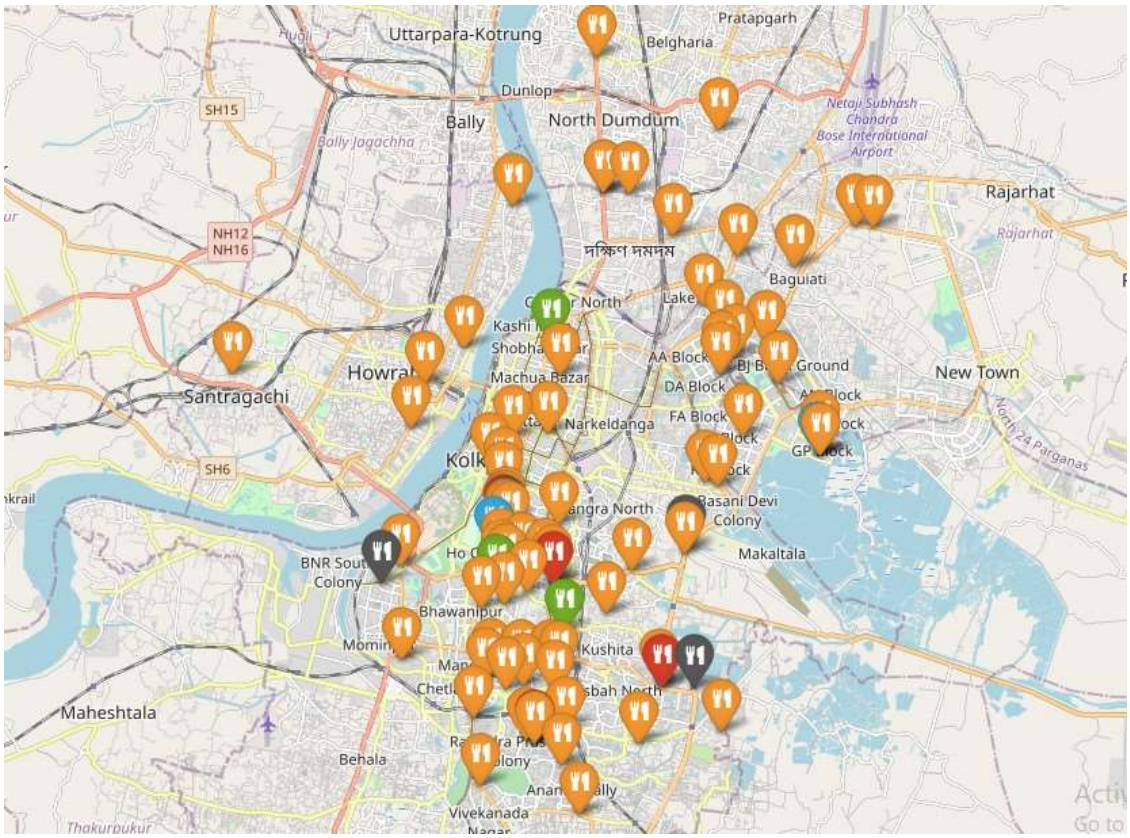
There is not much more difference in having or not having Street Food but one thing keep Street Food is that it's price , because as we see low cost have good impact on Rating.



Having Good Bengali Food is right chance for Restaurant because highest Rating restaurant is 4.6 that means Customer not enough Satisfied , so Having Good quality Bengali Food boost your Business but it is risky because of rating of Bengali Food Restaurant.

- After Visualizing the data relation let apply cluster algorithm on Cuisines of Restaurant so that we can understand in which Cluster our we should make our Restaurant.
- We Apply two cluster Algorithm one is DBSCAN and other one is KMeans

  Cluster after applying DBSCAN:



There are basically 5 different cluster because only 5 different color marker is shown in map and cluster is also not uniformly distributed one type of cluster is ruling that's why I use another Cluster algorithm to visualize cluster in efficient Way.

Cluster after Applying KMeans Algorithm:

Above Visualization specify that cluster is almost uniformly divisible there are 10 different cluster.

Conclusion:

- **After Visualizing the box plot I came into Conclusion that North Indian Food , Chinese Food , Street Food , NonVeg Food**
- **After visualizing the cluster there is lot of restaurant which serve Ice Cream , Desserts it also have good impact on rating and boosting business.**
- **Bengali Food is risky but if your Restaurant bring up good quality of Bengali dish then there is opportunity to grow but if you not bring good quality Bengali dish this might have negative impact on your business.**
- **At last but most important cost effectiveness because there is slight negative co-relation between cost and Rating so cost effectiveness is must.**