

HOUSING RECOMMENDATIONS IN BANGALORE BASED ON FOOD CATEGORY

INTRODUCTION

Bangalore is the capital city of south Indian state of Karnataka. It has a population of over ten million, making it as an megacity and the third most populous city in India. Also known as **the Silicon Valley of India**, Bangalore has an estimated population of 12.34 million in the metro area. It is now the 24th most populous city in the world and the fastest-growing Indian metropolis.

Since, Bangalore is developing at good rate, the employment opportunities are also developing and this resulted in more inflow of people into city, which also led to increase in traffic and also the pollution.

So people usually prefer housing near to their worklocation, but the problem with this is the availability of the food of their choice. In our project we will be focusing on recommending the housing areas based on the choice of their food.

DATA

In this project we will use the Bangalore Neighborhood data to get the locations of Neighborhoods and also Foursquare location data to get the data related to food

Bangalore Neighborhood data -> The data is subset of All India Pincode directory data[Available in <https://data.gov.in>],which has the pincode of every location in India along with the latitude and longitude values. Here in this project it is preprocessed to have only Borougs[Bangalore South, Bangalore West and Bangalore East] and corresponding Neighborhoods along with Latitude-Longitudes

The CSV file can be separately downloaded from here:

https://github.com/anirudhupadya/Housing-Recommendation-in-Bangalore-based-on-Food-Choice/blob/master/Bangalore_Neighbourhoods.csv

METHODOLOGY

In this Project we are focusing only on clustering Bangalore Neighborhoods having Indian Restaurants, and based on the cluster size we will recommend the ideal places for housing.

First we will get the neighborhoods of Bangalore from Indian pincode directory dataset, and map all of them onto a map. Next we will be using Foursquare api to get all the venues near to these Neighborhoods. The range set for getting venues is 500m in radius from each neighborhoods. once we get all the Venues, we'll filter it on 'Indian Restaurants'. We got around 157 Venues of Indian Restaurant category.

We use K-Means clustering algorithm (Unsupervised ML) for clustering the venues based on the frequency of Restaurants in the Neighborhoods. Next based on the cluster size and the number of restaurants in them we are selecting top three clusters and the Neighborhoods belonging to these clusters. Basically the Neighborhoods in the clusters will be the ideal location for housing.

RESULTS

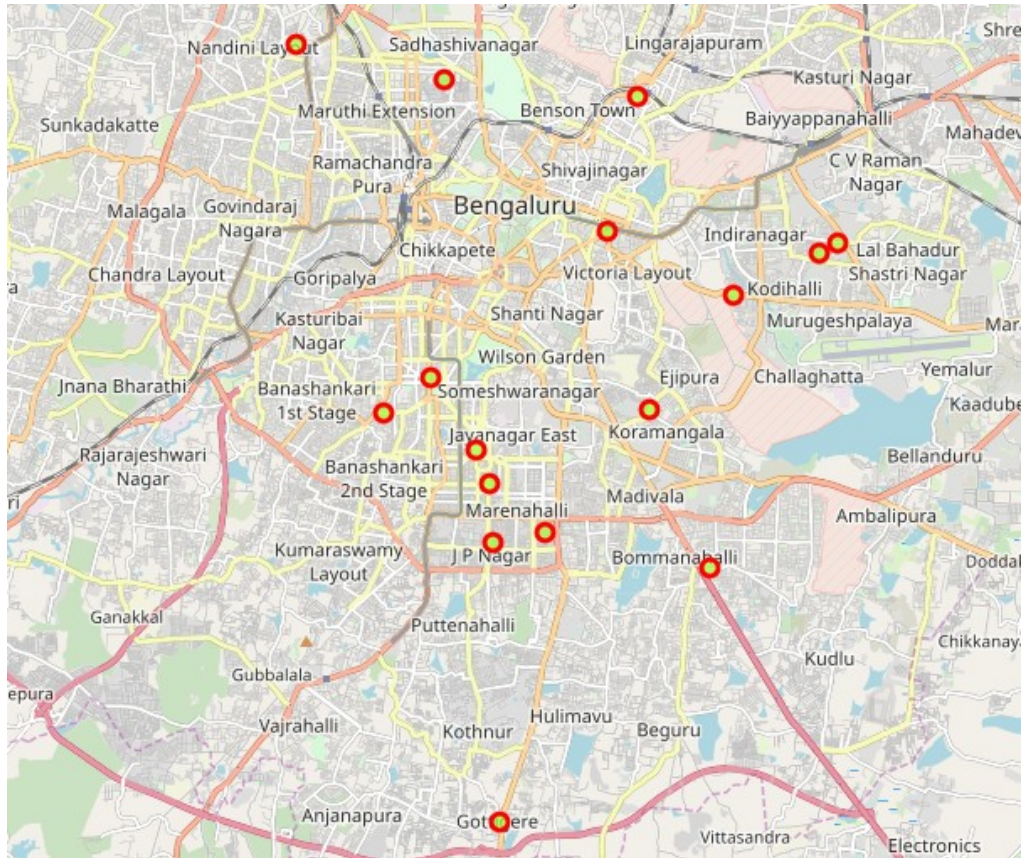
With K=5 for K-mean clustering algorithm we got the following results for each cluster,

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Cluster 0: 12 Restaurants  
Cluster 1: 7 Restaurants  
Cluster 2: 2 Restaurants  
Cluster 3: 7 Restaurants  
Cluster 4: 10 Restaurants
```

Indian Restaurant	
Cluster ID	
0	12
1	56
2	35
3	30
4	24

	Neighborhood	I
0	Ashoknagar	
1	Basavanagudi	
2	Bommanahalli	
3	Domlur	
4	Fraser Town	
5	Gottigere	
6	J P Nagar	
7	JP Nagar III Phase	
8	Jayanagar	
9	Jayangar III Block	
10	Jeevanbhimanagar	
11	Koramangala VI Bk	
12	Mahalakshmipuram Layout	
13	Mahatma Gandhi Road	
14	Msrit	
15	New Thippasandra	
16	Sahakaranagar	
17	Vidyaranyapura	
18	Vyalikaval Extn	

Finally the map below shows the recommended locations for Housing,



DISCUSSION

From the above results we can see that Clusters 1,2 and 3 are the top three clusters with respect to number of Indian Restaurants, clearly Cluster 1 with 56 Indian restaurants is the best. But cluster 2 and cluster 3 are nearly having same number of restaurants, so for recommending the housing location we are considering both the clusters. And the final map shows the recommended locations. The clustering we did is for only 'Indian restaurants' which could be done for others as well, so this could be generalized for not only restaurants but for other categories as well like Gym, shopping malls etc.

CONCLUSION

The Result looks promising for finding locations based on the food category, and can be generalized for other categories as well. The recommendations can be further improved with combining this data with other datasets like house prices etc. to draw further insights in the location and recommend optimized location for housing.