Capstone Project

The Battle of Neighborhoods

Opening a Restaurant in karnataka, India

1. Introduction

1.1 Background/Business Problem

Karnataka is a state in India. It is mainly centered in South India. It is known for its cultural, industrial, and financial centre. Bangalore is the capital of Karnataka and is a IT hub. Karnataka is located in the south of the country, at coordinates 15.3173° N, 75.7139° E.

Karnataka is the is the center of economy and industry.Karnataka has **6 crore** populations and consists of **32 neighborhoods(districts)**. 5 of them are shown below:[1]

	Neighborhood	Latitude	Longitude
0	► Karnataka district templates (29 P)	16.00000	75.00000
1	► Categories of Karnataka by district (9 C)	16.00000	75.00000
2	► Bagalkot district (6 C, 6 P)	16.15394	75.73525
3	► Bangalore Rural district (8 C, 5 P)	12.54620	77.42284
4	► Bangalore Urban district (7 C, 13 P)	13.00000	77.58333

1.2. Problem

The main aim of this project is to open a restaurant in a suitable and populated neighborhood in karnataka which offers various various cusines especially karnatic cusine. The districts are ranked based on their population and variety of cultures.

1.3. Interest

The interests of this project is:

- Distribution of neighbourhoods in Karnataka.
- Finding the similarities of neighborhoods which will help me to choose location for opening a new restaurant
- Ratings which may help in opening a good restaurant
- Exploring the most popular venues around the areas of interest

2. Data

2.1 Data sources

To consider the problem we can list the data as below:

- I get the neighborhood data of Karnataka from Wikipedia
- I use python geocoder library to get geographical coordinates of neighborhoods(districts)
- I use **Foursquare API venues explore** method to get the venues of given neighborhoods of Karnataka
- I use **Foursquare API venues method** to get ranks and likes of restaurantsby given venue id

A. References:

- https://en.wikipedia.org/wiki/Category:Districts_of_Karnataka
- https://en.wikipedia.org/wiki/List_of_cities_in_Karnataka_by_population
- Python Geocoder Library
- Foursquare API

2.2 Feature Selection and Data Usage

I will use neighborhood location values to analyze Karnataka's geographical structure. I will use folium library of python to draw maps by using given latitude and longitudes of neighborhoods. Selected features will be as below

	Neighborhood	Latitude	Longitude
0	► Karnataka district templates (29 P)	16.00000	75.00000
1	► Categories of Karnataka by district (9 C)	16.00000	75.00000
2	► Bagalkot district (6 C, 6 P)	16.15394	75.73525
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I will use populations of neighborhoods who has big population may need a new restaurant.

	Rank(2011)	City	District	Population2011	Neighborhood	Latitude	Longitude
0	1.0	Bengaluru	Bengaluru Urban	8495492.0	► Karnataka district templates (29 P)	16.00000	75.00000
1	2.0	Hubli-Dharwad	Dharwad	943788.0	► Categories of Karnataka by district (9 C)	16.00000	75.00000
2	3.0	Mysuru	Mysuru	920550.0	► Bagalkot district (6 C, 6 P)	16.15394	75.73525
3	4.0	Mangaluru	Dakshina Kannada	623841.0	► Bangalore Rural district (8 C, 5 P)	12.54620	77.42284
4	5.0	Belagavi	Belagavi	610350.0	► Bangalore Urban district (7 C, 13 P)	13.00000	77.58333

I will also classify neighborhoods by using venues distribution and counts. In this way, I will find similarities of neighborhoods which will help me to choose location for opening a new restaurant. Similar structured neighborhoods may handle same type of venue.

	Neighborhood	Indian Restaurant	Vegetarian / Vegan Restaurant	Fast Food Restaurant	Hotel	Nightclub	Café	Ice Cream Shop	Pub	Restaurant	D
0	► Bangalore Rural district (8 C, 5 P)	3	1	1	0	0	0	0	0	0	
1	► Bangalore Urban district (7 C, 13 P)	6	0	1	2	1	3	1	1	1	
2	► Chikkaballapur district (5 C, 3 P)	0	0	0	0	0	0	0	0	0	
3	► Dakshina Kannada district (8 C, 16 P)	0	0	0	0	0	0	0	0	0	
4	► Dharwad district (6 C, 6 P)	0	0	0	0	0	1	0	0	0	

ratings and likes of restaurants in the areas. It may help me to find location with bad rating restaurants which may need a new restaurant.

	VenueId	VenueRating	VenueLikes
0	4d98162bc19fb60c1c4ca765	6.2	3.0
1	4dea20ecb0fb8293f7cb60f0	5.8	3.0

Clustering

	Neighborhood	Total Number of Venues	1st Most Common Restaurant	2nd Most Common Restaurant	3rd Most Common Restaurant	4th Most Common Restaurant	5th Most Common Restaurant
0	▶ Bangalore Rural district (8 C, 5 P)	5	Indian Restaurant	Vegetarian / Vegan Restaurant	Fast Food Restaurant	Seafood Restaurant	Gym
1	▶ Bangalore Urban district (7 C, 13 P)	32	Indian Restaurant	Café	Hotel	Department Store	Nightclub
2	▶ Chikkaballapur district (5 C, 3 P)	3	Market	Burger Joint	Pharmacy	Indie Movie Theater	Gym
3	▶ Dakshina Kannada district (8 C, 16 P)	1	Cricket Ground	Indie Movie Theater	Monument / Landmark	Women's Store	Coffee Shop
4	▶ Dharwad district (6 C, 6 P)	2	Asian Restaurant	Café	Department Store	Gym	Monument / Landmark