The Battle of Neighborhoods

Final Report

Introduction:

Bangalore is one of the largest and beautiful cities in India. It is one of the rapidly growing cities, in terms of population. The malls in Bangalore are great hangout spots for people. These malls have a variety of stores for people to shop, a number of restaurants to eat food, playzones, movie theatres, etc. They are go-to places for people who want to shop, eat and watch movies at a single place, without having to go to different places for each of these things. There are a number of malls in Bangalore, each with its own attractions. Many places with higher population have comparitively lower number of malls. Therefore these malls might get crowded easily. Business organisations can profit by establishing malls at the places where there is a large population but lesser number of malls.
In this project we will try to find out the places with the best rated malls and most liked malls and also find the neighborhoods with more malls. We also find the same for zones. Thereby, helping people choose the mall of their choice. It also helps the stakeholders in finding ideal spot for the mall that they want to build, as we find out the zones with lesser number of malls and also the zones with higher number of neighborhoods.

Data Section:

For this project, the data required is as follows:

- Data of Bangalore city that lists the zone of a neighborhood along with its latitude and longitude.
  - This is extracted from the following sources:
    - https://en.wikipedia.org/wiki/Category:Neighbourhoods_in_Bangalore
    - https://www.quora.com/How-is-Bangalore-divided
  - This dataset is used to explore various neighborhoods and the zone to which these neighborhoods belong.

- The malls at each neighborhoods of the city with its id.
  - This data is obtained using the Foursquare API.
  - Using this API a list of all the malls present in each neighborhood can be obtained.
- Ratings and likes given by actual users to these malls.
  - This can be obtained using the Fousquare API.
  - This data can be used to find out the malls with highest likes, least rating etc.

Methodology:

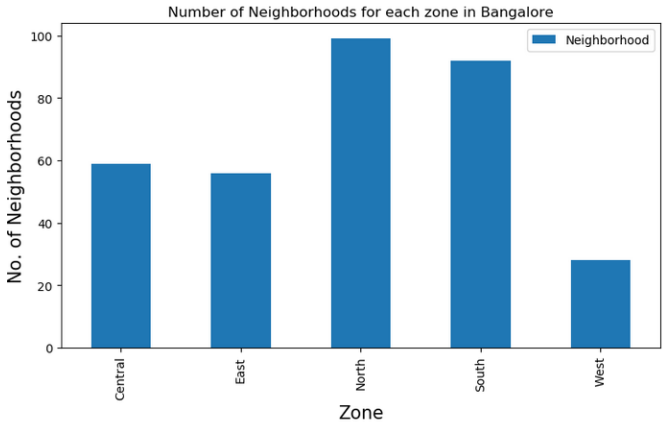
1. We start by importing the data from a csv file which contains the details of different neighborhoods in Bangalore.

```
In [3]: df = pd.read_csv('TLoc_Data.csv')
        df.head()
```

Out[3]:

	Zone	Neighborhood	Latitude	Longitude
0	Central	Ashoknagar	13.053080	77.497860
1	Central	Austin Town	12.963480	77.612970
2	Central	Avenue Road	12.968451	77.578960
3	Central	Balepet	12.971215	77.573977
4	Central	Benson Town	13.001420	77.601930

2. We visualize the number of neighborhoods in each zone.



3. We find out all the shopping malls in and around the given neighborhoods by using the Foursquare API.

```
In [19]: bvenues1.shape
         bvenues1.head()
```

Out[19]:

	Zone	Neighborhood	Latitude	Longitude	Venue ID	Venue
0	Central	Austin Town	12.96348	77.61297	4b9799c1f964a520f40a35e3	Lifestyle
1	Central	Austin Town	12.96348	77.61297	4b4ac168f964a520f58d26e3	Shoppers Stop
2	Central	Austin Town	12.96348	77.61297	4ba1f6c1f964a520e4d337e3	Garuda Mall
3	Central	Austin Town	12.96348	77.61297	4c36c03218e72d7f686d15f5	Westside
4	Central	Austin Town	12.96348	77.61297	4bd199889854d13a57c7f94d	Food Court

4. We then find the number of likes, rating and number of tips given to these malls using the Foursquare API.

```
: d_f.head()
```

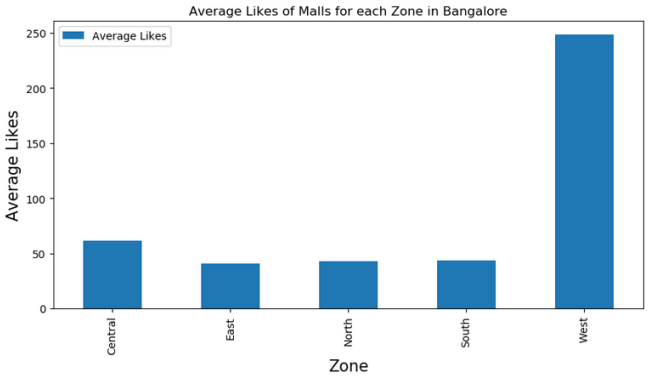
:

	Zone	Neighborhood	Venue ID	Venue	Likes	Rating	Tips
0	Central	Austin Town	4b9799c1f964a520f40a35e3	Lifestyle	76	7.4	10
1	Central	Austin Town	4b4ac168f964a520f58d26e3	Shoppers Stop	31	6.2	8
2	Central	Austin Town	4ba1f6c1f964a520e4d337e3	Garuda Mall	296	5.4	108
3	Central	Austin Town	4c36c03218e72d7f686d15f5	Westside	18	6.5	8
4	Central	Austin Town	4bd199889854d13a57c7f94d	Food Court	8	5.5	2

5. We find out the top neighborhoods and zones in each of the following categories:
    a. Average number of likes:

```
n_l_sort.head()
```

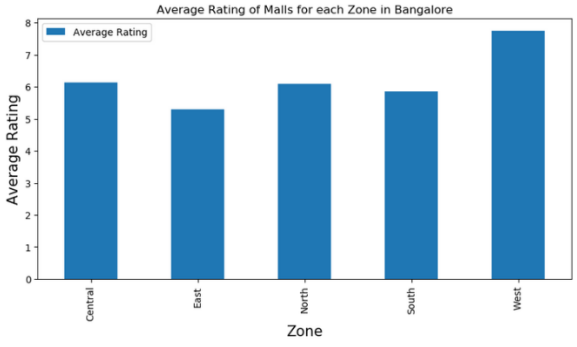
	Neighborhood	Average Likes
75	Rajaji Nagar	725.0
78	Sampangiram Nagar	657.0
79	Seshadripuram	445.0
41	J. P. Nagar	247.0
39	Hulimavu	183.0



    b. Average rating:

```
n_r_sort.head()
```

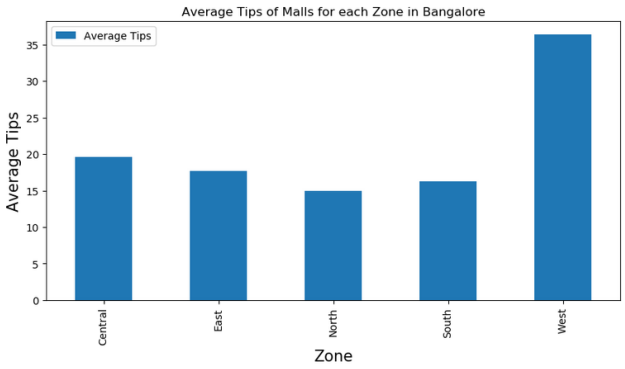
	Neighborhood	Average Rating
78	Sampangiram Nagar	8.6
75	Rajaji Nagar	8.6
55	Lingarajapuram	7.9
43	Jeevanahalli	7.9
23	Cox Town	7.9



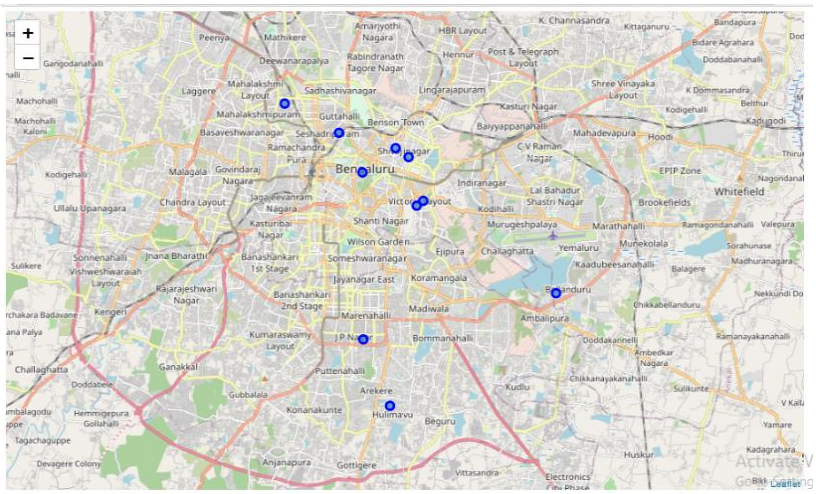
c. Average number of tips:

```
n_t_sort.head()
```

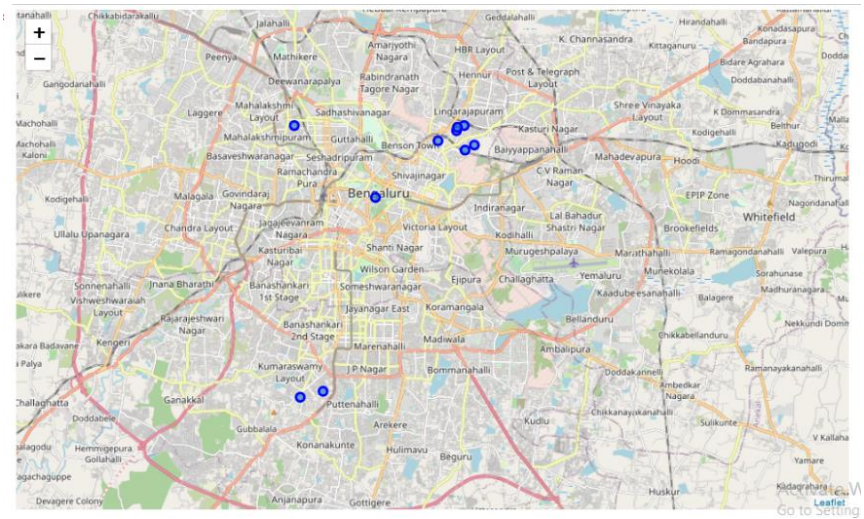
	Neighborhood	Average Tips
79	Seshadripuram	140.0
78	Sampangiram Nagar	104.0
75	Rajaji Nagar	103.0
41	J. P. Nagar	68.0
39	Hulimavu	63.0



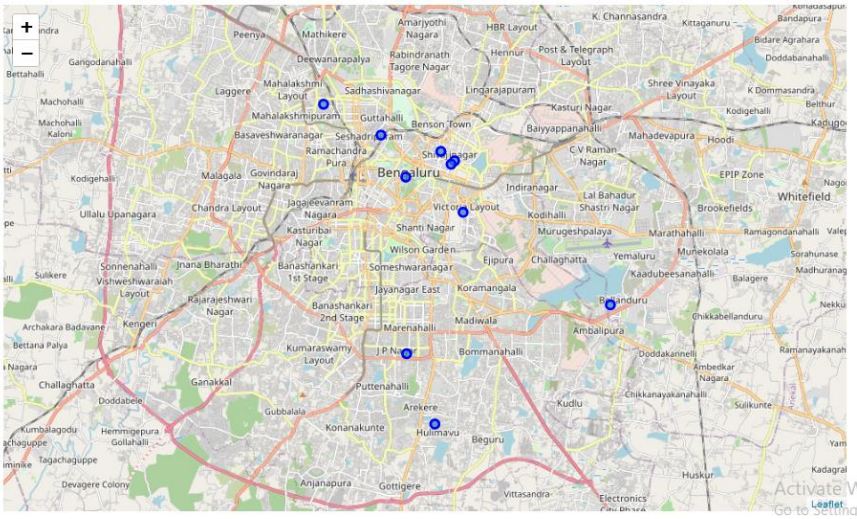
6. We finally visualise these tops neighborhoods on a map of Bangalore city using folium library.
   a. Average number of likes:



   b. Average rating:



c. Average number of tips:



Results and Discussion:

The results obtained were quite astonishing. Even though there were more number of malls in Central zone and least number of malls in West zone, the average number of likes were highest in West zone, followed by Central zone. This trend also appears in the average rating and average number of tips.

The outliers present in data could be affecting the average number of likes. Since West zone has less number of malls the presence of outliers could very much affect the result. From the above results we can see that Rajaji Nagar from West zone has 725 average likes which way higher when compared to other neighborhoods. So, this neighborhood adds much weight to the average number of likes for the malls in West zone.

Conclusion:

The main purpose of this project was to identify the neighborhoods with most number of malls, the neighborhoods with highest rated malls and the neighborhood with most liked malls. This helps people in identifying a neighborhood that they can go to hangout. For example, if somebody wants

multiple options in shopping, he/she can go to Central zone as it has the highest number of malls.

It also helps investors to find potential places in which they can build a mall. For instance, the number of neighborhoods in North zone are very high which implies a huge population, but the number of malls are comparitively low.