Battle of Neighbourhoods -PUNE & MUMBAI in India

Capstone Project by

Tejal Mehetre

Contents

1.Introduction

2.Data

3.Methodology

4.Results

5.Discussion

6.Conclusion

<u>Introduction</u>

▸ There are many challenges when any person is relocating from one country /city to another for work purpose or for holiday destination.

▸ These challenges includes population rate, average house price, school ratings, crime rates, weather conditions, recreational facilities, holiday destinations-tourism, Carnivals and Sports events/activity, Etc.

▸ Internet search helps to get the information to explore any place. Hence by using internet data and applying proper algorithm on it we can recommend best place to live .

▸ This could be done as the aim of this Project using an algorithm (Using segmentation and clustering) that will perform an extensive analysis on:

  1. The similarities and dissimilarities between the two cities of the user's search criteria,

  2. Determine which city is bested suited for lifestyle.

▸ This project is based on a recommendation system using the Pune and Mumbai cities in India as my search criteria
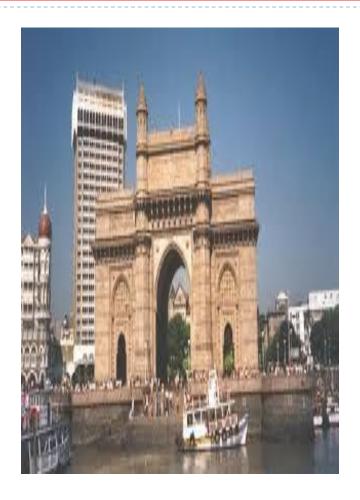
Introduction of the cities-Pune

- Second largest city in the Indian state of Maharashtra, after Mumbai.
- ninth most populous city in the country
- known as the "Oxford of the East" due to the presence of several well-known educational institutions.
- Research institutes of information technology, education, management and training attract students and professionals from India and overseas

Introduction of the cities-Mumbai

- capital city of the Indian state of Maharashtra
- financial, commercial and entertainment capital of India.
- financial institutions such as the Reserve Bank of India, the Bombay Stock Exchange, the National Stock Exchange of India
- The city also houses India's Hindi (Bollywood) and Marathi cinema industries. Mumbai's business opportunities, as well as its potential to offer a higher standard of living

Data Requirments

▸ Required data can be gathered from: - Pune and Mumbai City information, including districts and neighbourhoods, can be obtained from Wikipedia:

1. (Source - https://en.wikipedia.org/wiki/Mumbai)
2. (Source - https://en.wikipedia.org/wiki/Pune)

Packages Used

- Pandas - Library for Data Analysis
- NumPy – Library to handle data in a vectorized manner
- JSON – Library to handle JSON files
- Geopy – To retrieve Location Data
- Geocorder - For geolocation of neighborhoods
- Requests – Library to handle http requests
- Matplotlib – Python Plotting Module
- Sklearn – Python machine learning Library
- Folium – Map rendering Library

<u>Methodology</u>

1.Import Libraries

2. Build neighbourhoods

3. Neighbourhoods geo graphical location

4. Find Geographical Coordinates and No of Locations

5. Venues compilation

6. Neighbourhoods Segmentation

7. Segments analysis

<u>Results</u>

Pune

By using K-means method :

- *Cluster 1:* It contains 395 locations.

  In this cluster coffee shops, pizza place, farm, Wine shop ,Departmental shops, Donut Shop, Electronica stores are present.

- *Cluster 2:* It contains 143 locations.

  In this cluster veg restaurants, Dance studios, coffee shops, Dessert Shop, Lake, Fast food, Tea room are available.

- *Cluster 3:* It contains 13 locations.

  In this very less options are available such as Departmental store,snack shop

- *Cluster 4:* It contains 91 locations.

  This Cluster includes Movie Theatres, Ice Cream Shops, Multiplex, Coffee Shops, Dance studio, Clothing Studio

- *Cluster 5:* It contains 156 locations.

  This cluster includes maximum things like Movie Theatres, Ice Cream Shops, Multiplex, Coffee Shops, Dance studio, Clothing shop, Departmental store,snack shop, pizza place, farm, Wine shop

Mumbai

By using K-means method :

- *Cluster 1:* It contains 10 locations.

  In this cluster coffee shops, pizza place, farm, Wine shop ,Departmental shops, Fish shop ,Café, Asian restaurants, Chinese Restaurants, farmer Market, Smoke Shop Donut Shop, Electronica stores are present.

- *Cluster 2:* It contains 20 locations.

  In this cluster veg restaurants, Dance studios, coffee shops, Dessert Shop, Lake, Fast food, Tea room, Gym, Cocktail bar, Resort are available.

- *Cluster 3:* It contains 10 locations.

  In this very less options are available such as Airport, Smoke Shop, Italian Restaurant, Departmental store,snack shop

- *Cluster 4:* It contains 9 locations.

  This Cluster includes Movie Theatres, Ice Cream Shops, Multiplex, Coffee Shops, Dance studio, Clothing Store, Pizza Shop, Bakery, Music Venue,Indian Restaurants, Juice Bar, Irani café,

Discussions

Pune

- The best Location to stay in is ANDGAON

Neighborhood	Andgaon
1st Most Common Venue	Asian Restaurant
2nd Most Common Venue	Fast Food Restaurant
3rd Most Common Venue	Bank
4th Most Common Venue	Shoe Store
5th Most Common Venue	Donut Shop
6th Most Common Venue	Wine Shop
7th Most Common Venue	Electronics Store
8th Most Common Venue	Concert Hall
9th Most Common Venue	Dance Studio
10th Most Common Venue	Deli / Bodega

Mumbai

- the best Location to stay in is LAL BANGH

Neighborhood	Lal Bangh
1st Most Common Venue	Indian Restaurant
2nd Most Common Venue	Gym / Fitness Center
3rd Most Common Venue	Chinese Restaurant
4th Most Common Venue	Stadium
5th Most Common Venue	Recording Studio
6th Most Common Venue	Bus Station
7th Most Common Venue	Bar
8th Most Common Venue	Playground
9th Most Common Venue	Sporting Goods Shop
10th Most Common Venue	Restaurant

Conclusion

Mumbai has a significant more number of Locations and venues than Pune therefore it would be the better option to relocate to Mumbai, specifically LAL BANGH as the most efficient choice.

Mumbai offers a variety in choices for restaurants, gyms, grocery stores, and Water Park, golf , Sporting shops, playground, Bus Station , Stadium, course extracurricular activities for individuals and families.