Battle of Neighborhoods- Capstone Project

Title- "Determining Appropriate Location for Warehouse of Restaurant Raw Materials Supplies Business"

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1. Introduction to Problem Statement

1.1 Background

Restaurants, places where we enjoy tasty food treats and spend leisure time with friends, family, etc. The food we eat is prepared in restaurants with great care and using special quality raw materials that makes it taste good and different from food prepared at home. These special ingredients and other raw materials are supplied to restaurants by various vendors. In recent times, business related to single vendor supplying all required raw material have started where raw material is supplied to all client restaurants generally on daily basis or sometimes more than once a day.

Such vendors are called "Restaurant Suppliers" in north India, especially New Delhi, the capital city of India. When raw materials are supplied by restaurant suppliers, it incurs transportation cost to them when more restaurants are far away from their warehouse. Therefore, suppliers look to build warehouse in close vicinity to majority of restaurants, that means in area where high density restaurant neighborhoods are close enough to reduce supply transportation cost.

1.2 Problem Definition

Fooracles Pvt Ltd Company is planning to start restaurant supplier business in New Delhi, India (capital city of India) and thus, wish to build a warehouse for restaurant supplies in an area where they can be assured to incur as less as possible cost of transportation of supplies on daily basis. Fooracles CEO has decided three location

where they can avail space to build warehouse viz. New Delhi Central, East Delhi, South West Delhi.

They approached us to help them decide appropriate place to build their warehouse so that transportation cost can be reduced and they can approach maximum restaurants in less time. Therefore, our location analysis can be used to determine best place to approach to supplies from Fooracles.

1.3 Proposed Solution

The knowledge of data science and geo location analysis using neighborhood data can be used to determine solution to the above stated problem. We can compare different neighborhoods for coverage of maximum restaurants in close vicinity to reduce time and cost of transportation. We will have comparative analysis of neighborhood of central, east and south New Delhi respectively and generate conclusion to select one hot destination to start and build warehouse of Fooracles for restaurant supplies.

2. Introduction to Data and its Source

2.1 Data Source and Acquisition

Data required for the proposed solution is geo location data that can be acquired through Foursquare API using account created on foursquare portal. This data can only be fetched using request URL and as a result a JSON file is received. The sample JSON is as follows:


```
{'meta': {'code': 200, 'requestId': '5d01bbefdbde110025c97ab6'},
 'response': {'groups': [{'items': [{'reasons': {'count': 0,
       'items': [{'reasonName': 'globalInteractionReason',
         'summary': 'This spot is popular',
         'type': 'general'}]},
     'referralId': 'e-0-4bc8f2c7762beee1a8bb3d38-0',
     'venue': {'categories': [{'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/travel/hotel_',
         'suffix': '.png'},
        'id': '4bf58dd8d48988d1fa931735',
        'name': 'Hotel',
        'pluralName': 'Hotels',
        'primary': True,
        'shortName': 'Hotel'}],
      'id': '4bc8f2c7762beee1a8bb3d38',
```


Data from JSON file can be read through python API calls that fetches data and converts it into Pandas Data Frame. This data frame data can be cleaned and pre-processed to form required data set that helps in geo location plotting of

neighborhoods. Data includes Neighborhood Name, Neighborhood Latitude and Longitude, Neighborhood Boroughs.

2.2 Data Description

This data having latitude and longitude values of neighborhoods in New Delhi can be used to fetch deeper level of information from similar API calls and get data frame with addition information like Venues Name, Venues Category and Latitude & Longitude of Venues in various Neighborhoods.

Following is sample data:

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	The Imperial	28.625548	77.218664	The Imperial	28.625548	77.218664	Hotel
1	The Imperial	28.625548	77.218664	HOTEL SARAVANA BHAVAN	28.627041	77.219514	South Indian Restaurant
2	The Imperial	28.625548	77.218664	The Square, Cafe Coffee Day	28.626640	77.219288	Café
3	The Imperial	28.625548	77.218664	The Spice Route	28.625577	77.218065	Asian Restaurant
4	The Imperial	28.625548	77.218664	1911	28.625531	77.218715	Mediterranean Restaurant