The Battle of Neighborhood - Delhi Chapter

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Introduction

Delhi, the iconic post-colonial capital of India, is one of the most visited places in the country. People from all over the world visit Delhi to experience the surging blend of crumbling history and gleaming modernity. This city offers a perfect mix of different culture, historical artifacts, glamorous night-life and last but not the least mouth-watering food.

Talking about food to be specific, nowadays in Delhi, there are multiple cuisines available scattered in different areas of Delhi. Starting from famous Lucknowi biriyani and kebabs to tibetian thukpa, hot and spicy chole batore to cold and tasty kulfi faluda, theres a lot of diversity.

Amidst such huge diversified availability of multiple cuisines, I feel there are still some cuisines missing in some areas of the city which is resisting Delhi to become the undisputed food capital of the country.

Business purpose

Although different cuisines are available in different areas of Delhi, some of the cuisines are not well-distributed. For example, if Mr. Prakash who is staying in Anand Vihar (East Delhi), wants to have good bengali cuisine then he has to go to C.R. Park which is in South Delhi which is more or less 20KM.

My objective is to try to analyze each and every neighborhood of delhi, to see what are the available cuisines in each neighborhood, the list of food joints available in that area serving those cuisines, what kind of service is provided based on the user ratings . Then on the basis of this I will try to group or cluster the neighborhoods highlighting top cuisines. Also from there I might be able to identify the need of missing cuisines that can be introduced in the corresponding cluster so as to facilitate Mr. Prakash

Let me dot down the business purpose of this report explicitly:

- Foodies can find their corresponding food heaven cluster with the result of this report
- Since we are going to find the missing cuisines, entrepreneurs can avail their business scope in and around the area

Just a note, I might be a little biased to see the scope of bengali cuisine here and there, but just to share that is only for the interest of Mr. Prakash.

About the data

For the data to perform the necessary analysis, multiple sources needs to be used. For this we need to understand the sources per stages of data collection. Below is an explanation of the different data collection method used and description of the data sources and data model.

1. Locational data

Delhi has a total of 560 neighborhood distributed among districts. For the data collection pupose, I have downloaded data from data.gov.in, a digital India initiative. Url for the datasource https://data.gov.in/catalog/all-india-pincode-directory?filters%5Bfield_catalog_reference%5D=85840&format=json&offset=0&limit=6&sort%5Bcreated%5D=desc (https://data.gov.in/catalog/all-india-pincode-directory?filters%5Bfield_catalog_reference%5D=85840&format=json&offset=0&limit=6&sort%5Bcreated%5D=desc)

Below are the available data

- **CircleName** --> defines the circle name. In this case "Delhi Circle"
- **RegionName** --> defines the region name
- **DivisionName** --> defines the division name
- **OfficeName** --> defines the area name
- **Pincode** --> defines the postal code of the area
- **OfficeType** --> defines type of office
- **Delivery** --> defines whether postal delivery is available or not
- **District** --> defines the district
- **StateName** --> defines the state, in this case "Delhi"

Here is a snapshot of the raw data collected

CircleName *Type: String*	RegionName *Type: String*	DivisionName *Type: String*	OfficeName *Type: String*	Pincode *Type: String*	OfficeType *Type: String*	Delivery *Type: String*	District *Type: String*	StateName *Type: String*
Delhi Circle	NA	Delhi East Division	Anand Vihar SO	110092	SO	Non Delivery	EAST DELHI	Delhi
Delhi Circle	NA	Delhi East Division	Azad Nagar SO East	110051	SO	Non Delivery	SHAHDARA	Delhi
Delhi Circle	NA	Delhi East Division	Babarpur SO North E	110032	SO	Non Delivery	SHAHDARA	Delhi
Delhi Circle	NA	Delhi East Division	Badarpur Khadar BC	110090	BO	Non Delivery	NORTH EAST DELHI	Delhi
Delhi Circle	NA	Delhi East Division	Balbir Nagar SO	110032	SO	Non Delivery	SHAHDARA	Delhi

Once the data is collected and loaded in DataFrame, we have to do some cleaning and wranggling to get the necessary dataset. The required features we may identify from this is as below:

- **Pincode** --> Same as the original field
- **District** --> Same as the origial field
- **Neighborhood** --> Transformed from *OfficeName* after trimming the OfficeType, i.e., SO/BO/HO etc

The dataset should look something like below:

Pincode	District	Neighborhood
110092	EAST DELHI	Anand Vihar
110051	SHAHDARA	Azad Nagar East Delhi
110032	SHAHDARA	Babarpur North East Delhi
110090	NORTH EAST DELHI	Badarpur Khadar
110032	SHAHDARA	Balbir Nagar
110053	SHAHDARA	Bhajan Pura
110032	SHAHDARA	Bhola Nath Nagar
110053	NORTH EAST DELHI	Brahampuri
110091	EAST DELHI	Chilla
110094	NORTH EAST DELHI	Dayalpur
110095	SHAHDARA	Dilshad Garden
110032	SHAHDARA	Distt Court KKD

2. Collect the latitude and longitude

Once the data is sorted we need to fetch latitude and longitude of each area using the *geopy* python library. Then our dataset should have the below columns:

- **Pincode**
- **District**
- **Neighborhood**
- **Latitude**
- **Longitude**

A sample of the updated feature dataset will be as below:

Pincode	District	Neighborhood	Latitude	Longitude
110092	EAST DELHI	Anand Vihar	28.65186	77.31659
110051	SHAHDARA	Azad Nagar East Delhi	28.64682	77.28819
110032	SHAHDARA	Babarpur North East Delhi	28.6849	77.2824

3. Traversing neighborhood

We will then on the basis of each neighborhood try to navigate using the data from different *FourSquare* API call, and find what are the good eateries around, which category of cuisine does it offer, how the users rated have rated the food joint.

From the output of the API call we will fetch the features

- venueName
- venueCategory
- venueLatitude
- venueLongitude
- venueDistance


```
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  'headerFullLocation': 'East Delhi, Delhi',
  'headerLocationGranularity': 'neighborhood',
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```
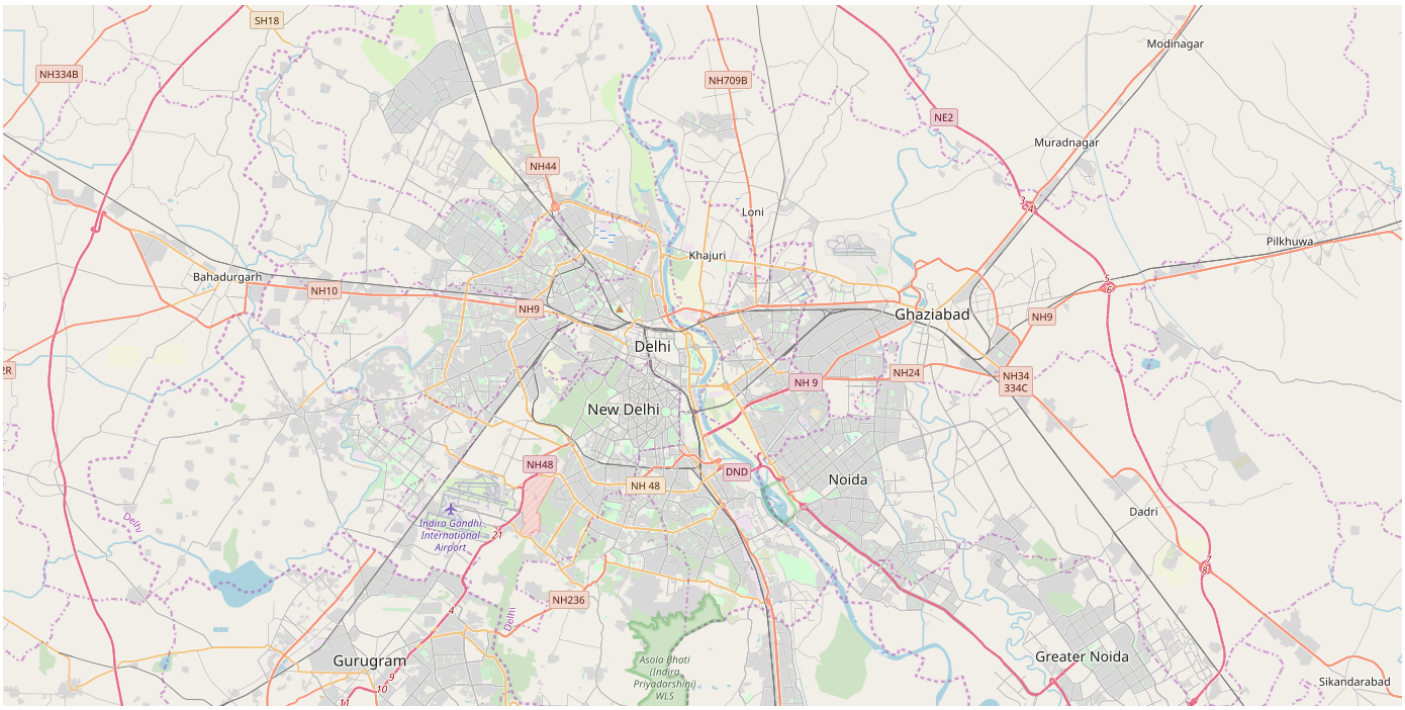


4. Visualizing the locations

We will use the folium package to visualize the locations on the map of Delhi and try to find clusters among the neighborhoods


SH18
NH334B
NH709B
NE2
Modinagar
Muradnagar
NH44
Loni
Khajuri
Pilkhuwa
Bahadurgarh
NH10
NH9
Ghaziabad
NH9
Delhi
NH 9
NH24
NH34
334C
New Delhi
NH48
DND
NH 48
Noida
Dadri
Indira Gandhi International Airport
NH236
Gurugram
Asola Bhati (Indira Priyodarshini) WLS
Greater Noida
Sikandarabad