Explore Zomato restaurants in the city of New Delhi

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1. Introduction

1.1 Background

New Delhi is the capital city of India. It is a part of the city of Delhi's 11 districts. The city itself has a population of 257,803. However, the much larger metro area has a population that exceeds 26 million. New Delhi are used interchangeably to refer to the National Capital Territory of Delhi (NCT), these are two distinct entities, with New Delhi forming a small part of Delhi. The National Capital Region is a much larger entity comprising the entire NCT along with adjoining districts in neighboring states. The official language of New Delhi and the one that is most widely spoken is Hindi. However, over last decades it is continuously grow because of the city important role in government and with its diverse culture, comes diverse food items. There are many restaurants in New Delhi City, each belonging to different categories like Chinese, Italian, and French etc. So as part of this project, we will list and visualize all major parts of New Delhi City.

1.2 Problem

Questions that can be asked using the above mentioned datasets
- What is best location in New Delhi City for Chinese Cuisine?
- Which areas have large number of Chinese Restaurant Market?
- Which all areas have less number of restaurants?
- Which is the best place to stay if I prefer Chinese Cuisine?
- What places are having best restaurant in New Delhi?

1.3 Data

For this project we need the following data:
- New Delhi Restaurants data that contains list Locality, Restaurant name, rating along with their latitude and longitude.
- Data source : Zomato kaggel dataset
- Description: This data set contains the required information. And we will use this data set to explore various locality of New Delhi city.
- Nearby places in each locality of New Delhi city.
- Data source: Foursquare API
- Description: By using this API we will get all the venues in each neighborhood.

1.4 Approach
- Collect the New Delhi city data from Zomato kaggel dataset
- Using Foursquare API we will find all venues for each neighborhood.
- Filter out all venues that are nearby by locality.
- Using aggregative rating for each restaurant to find the best places.
- Visualize the Ranking of neighborhoods using folium library(python).

2. Code

```python
import pandas as pd
import numpy as np
import requests
from pandas.io.json import json_normalize
import matplotlib.cm as cm
import matplotlib.colors as colors
from sklearn.cluster import KMeans

!pip install folium
import folium
! pip install geocoder
import geocoder

print('Libraries imported successfully')
```

```
Requirement already satisfied: folium in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (0.5.0)
Requirement already satisfied: requests in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from folium) (2.23.0)
Requirement already satisfied: six in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from folium) (1.15.0)
Requirement already satisfied: branca in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from folium) (0.4.1)
Requirement already satisfied: jinja2 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from folium) (2.11.2)
Requirement already satisfied: chardet<4,>=3.0.2 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from requests->folium) (3.0.4)
Requirement already satisfied: urllib3!=1.25.0,!=1.25.1,<1.26,>=1.21.1 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from requests->folium) (1.25.9)
Requirement already satisfied: certifi>=2017.4.17 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from requests->folium) (2020.4.5.2)
Requirement already satisfied: idna<3,>=2.5 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from requests->folium) (2.9)
Requirement already satisfied: MarkupSafe>=0.23 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from jinja2->folium) (1.1.1)
Requirement already satisfied: geocoder in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (1.38.1)
Requirement already satisfied: click in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from geocoder) (7.1.2)
Requirement already satisfied: requests in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from geocoder) (2.23.0)
Requirement already satisfied: ratelim in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from geocoder) (0.1.6)
Requirement already satisfied: future in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from geocoder) (0.18.2)
Requirement already satisfied: six in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from geocoder) (1.15.0)
Requirement already satisfied: chardet<4,>=3.0.2 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from requests->geocoder) (3.0.4)
Requirement already satisfied: certifi>=2017.4.17 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from requests->geocoder) (2020.4.5.2)
Requirement already satisfied: urllib3!=1.25.0,!=1.25.1,<1.26,>=1.21.1 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from requests->geocoder) (1.25.9)
Requirement already satisfied: idna<3,>=2.5 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from requests->geocoder) (2.9)
Requirement already satisfied: decorator in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from ratelim->geocoder) (4.4.2)
Libraries imported successfully
```

```python
df = pd.read_csv('https://raw.githubusercontent.com/abhanshu97/Battle-of-Capstone/master/zomato.csv',encoding='ISO-8859-1')
df.head()
```

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude	Latitude	Cuisines	...	Currency	Has Table booking	Has Online delivery	Is delivering now	Switch to order menu	Price range	Aggregate rating	Rating color	Rating text	V
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenu...	Century City Mall, Poblacion, Makati City	Century City Mall, Poblacion, Makati City, Mak...	121.027535	14.565443	French, Japanese, Desserts	...	Botswana Pula(P)	Yes	No	No	No	3	4.8	Dark Green	Excellent	
1	6304287	Izakaya Kikufuji	162	Makati City	Little Tokyo, 2277 Chino Roces Avenue, Legaspi...	Little Tokyo, Legaspi Village, Makati City	Little Tokyo, Legaspi Village, Makati City, Ma...	121.014101	14.553708	Japanese	...	Botswana Pula(P)	Yes	No	No	No	3	4.5	Dark Green	Excellent	
2	6300002	Heat - Edsa Shangri-La	162	Mandaluyong City	Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...	Edsa Shangri-La, Ortigas, Mandaluyong City	Edsa Shangri-La, Ortigas, Mandaluyong City, Ma...	121.056831	14.581404	Seafood, Asian, Filipino, Indian	...	Botswana Pula(P)	Yes	No	No	No	4	4.4	Green	Very Good	
3	6318506	Ooma	162	Mandaluyong City	Third Floor, Mega Fashion Hall, SM Megamall, O...	SM Megamall, Ortigas, Mandaluyong City	SM Megamall, Ortigas, Mandaluyong City, Mandal...	121.056475	14.585318	Japanese, Sushi	...	Botswana Pula(P)	No	No	No	No	4	4.9	Dark Green	Excellent	
4	6314302	Sambo Kojin	162	Mandaluyong City	Third Floor, Mega Atrium, SM	SM Megamall, Ortigas, Mandaluyong	SM Megamall, Ortigas, Mandaluyong Cit...	121.057508	14.584450	Japanese, Korean	...	Botswana Pula(P)	Yes	No	No	No	4	4.8	Dark Green	Excellent	

```python
df_india = df[df['Country Code'] == 1]
df_NDLS = df_india[df_india['City'] == 'New Delhi']
df_NDLS.reset_index(drop=True, inplace=True)
df_NDLS.head()
```

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude	Latitude	Cuisines	...	Currency	Has Table booking	Has Online delivery	Is delivering now	Switch to order menu	Price range	Aggregate rating	Rating color	Rating text	Votes
0	18287358	Food Cloud	1	New Delhi	Aaya Nagar, New Delhi	Aaya Nagar	Aaya Nagar, New Delhi	0.000000	0.000000	Cuisine Varies	...	Indian Rupees(Rs.)	No	No	No	No	2	0.0	White	Not rated	2
1	18216944	Burger.in	1	New Delhi	84, Near Honda Showroom, Adchini, New Delhi	Adchini	Adchini, New Delhi	77.196923	28.535382	Fast Food	...	Indian Rupees(Rs.)	No	Yes	No	No	1	3.2	Orange	Average	46
2	313333	Days of the Raj	1	New Delhi	81/3, 1st Floor, Qutub Residency, Adchini, New...	Adchini	Adchini, New Delhi	77.197475	28.535493	North Indian, Seafood, Continental	...	Indian Rupees(Rs.)	Yes	Yes	No	No	3	3.4	Orange	Average	45
3	18384127	Dilli Ka Dhaba	1	New Delhi	66 A, Ground Floor, Sri Aurobindo Marg, Adchin...	Adchini	Adchini, New Delhi	77.198033	28.537547	South Indian, North Indian	...	Indian Rupees(Rs.)	No	No	No	No	2	2.6	Orange	Average	11
4	582	Govardhan	1	New Delhi	84, Adjacent Hero Motor Bike Showroom, Main Me...	Adchini	Adchini, New Delhi	77.196924	28.535523	South Indian, North Indian, Chinese	...	Indian Rupees(Rs.)	No	Yes	No	No	2	3.4	Orange	Average	238

5 rows × 21 columns

2.1 Data Cleaning

```
[8]: Res= df_NDLS[df_NDLS.Longitude !=0.000000][['Restaurant Name','Locality','Longitude','Latitude','Cuisines','Aggregate rating','Rating text','Votes']]

[9]: Res = Res[Res['Aggregate rating'] !=0.0]

[10]: Res.head()
```

	Restaurant Name	Locality	Longitude	Latitude	Cuisines	Aggregate rating	Rating text	Votes
1	Burger.in	Adchini	77.196923	28.535382	Fast Food	3.2	Average	46
2	Days of the Raj	Adchini	77.197475	28.535493	North Indian, Seafood, Continental	3.4	Average	45
3	Dilli Ka Dhaba	Adchini	77.198033	28.537547	South Indian, North Indian	2.6	Average	11
4	Govardhan	Adchini	77.196924	28.535523	South Indian, North Indian, Chinese	3.4	Average	238
5	Mezbaan Grills	Adchini	77.198122	28.538134	Mughlai	3.1	Average	8

2.2 Creating Map

```python
New_Delhi_Rest = folium.Map(location=[28.52, 77.25], zoom_start=12)

X = Res['Latitude']
Y = Res['Longitude']
Z = np.stack((X, Y), axis=1)

kmeans = KMeans(n_clusters=5, random_state=0).fit(Z)

clusters = kmeans.labels_
colors = ['red', 'green', 'blue', 'yellow','orange']
Res ['Cluster'] = clusters

for latitude, longitude, Locality, cluster in zip(Res['Latitude'], Res['Longitude'], Res['Locality'], Res['Cluster']):
    label = folium.Popup(Locality, parse_html=True)
    folium.CircleMarker(
        [latitude, longitude],
        radius=5,
        popup=label,
        color='black',
        fill=True,
        fill_color=colors[cluster],
        fill_opacity=0.7).add_to(New_Delhi_Rest)

New_Delhi_Rest
```
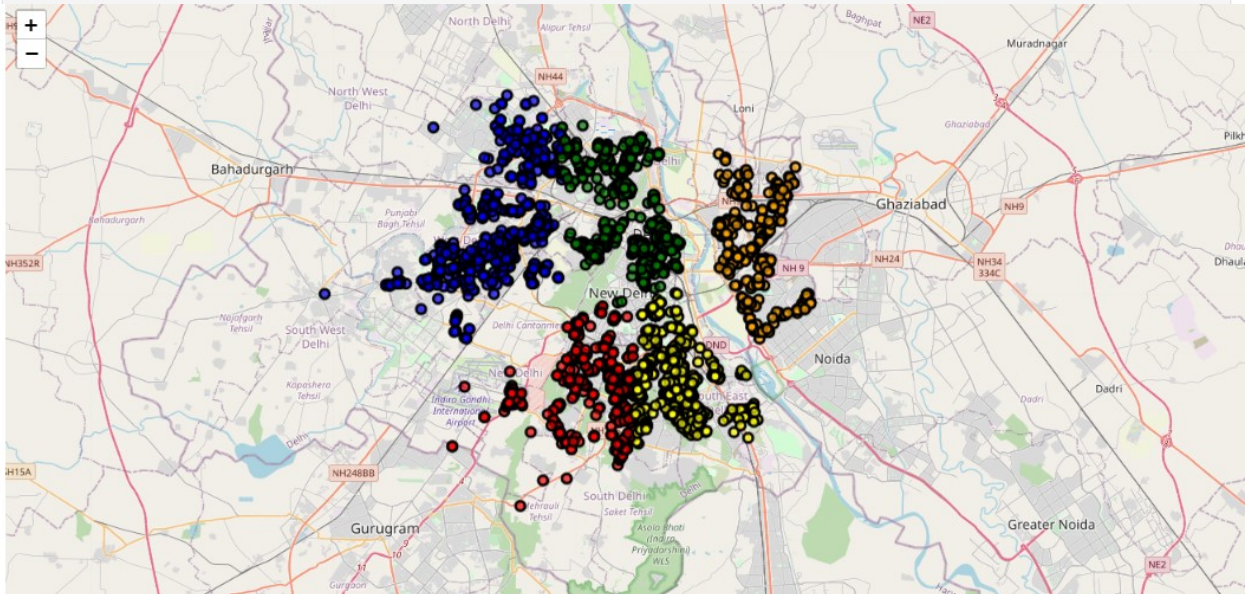


```
Res.head()
```

	Restaurant Name	Locality	Longitude	Latitude	Cuisines	Aggregate rating	Rating text	Votes	Cluster
1	Burger.in	Adchini	77.196923	28.535382	Fast Food	3.2	Average	46	0
2	Days of the Raj	Adchini	77.197475	28.535493	North Indian, Seafood, Continental	3.4	Average	45	0
3	Dilli Ka Dhaba	Adchini	77.198033	28.537547	South Indian, North Indian	2.6	Average	11	0
4	Govardhan	Adchini	77.196924	28.535523	South Indian, North Indian, Chinese	3.4	Average	238	0
5	Mezbaan Grills	Adchini	77.198122	28.538134	Mughlai	3.1	Average	8	0

2.3 What places have the best restaurants in New Delhi?

```
[13]: import matplotlib.pyplot as plt
      plt.figure(figsize=(9,5), dpi = 100)
      # title
      plt.title('The highest rated resturant in top 10 locality of New Delhi')
      #On x-axis

      #giving a bar plot
      Res.groupby('Locality')['Aggregate rating'].mean().nlargest(10).plot(kind='bar')

      plt.xlabel('Resturant Locality in New Delhi')
      #On y-axis
      plt.ylabel('Aggregate Rating')
      #displays the plot
      plt.show()
```

The highest rated resturant in top 10 locality of New Delhi
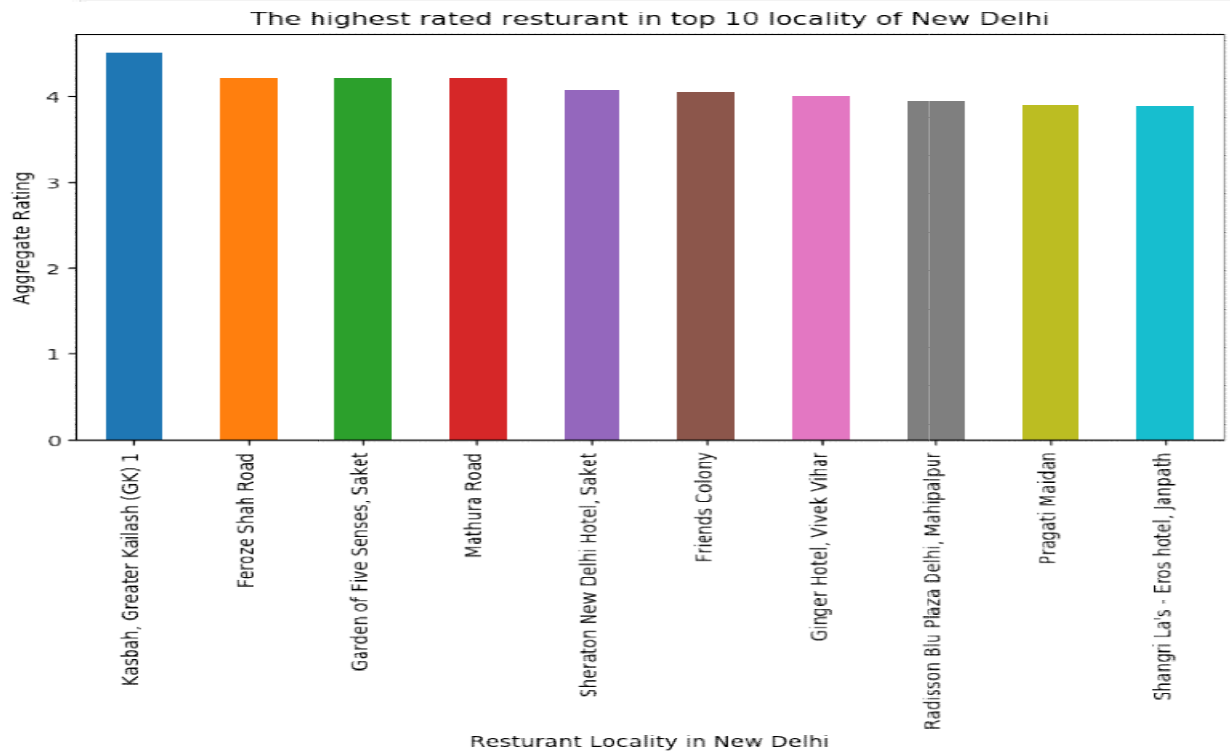
2.4 What places have worst restaurant in New Delhi?

```python
import matplotlib.pyplot as plt
plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('The Worst rated resturant in top 10 locality of New Delhi')
#On x-axis

#giving a bar plot

Res.groupby('Locality')['Aggregate rating'].mean().nsmallest(10).plot(kind='bar')

plt.xlabel('Resturant Locality in New Delhi')
#On y-axis
plt.ylabel('Aggregate Rating')

#displays the plot
plt.show()
```
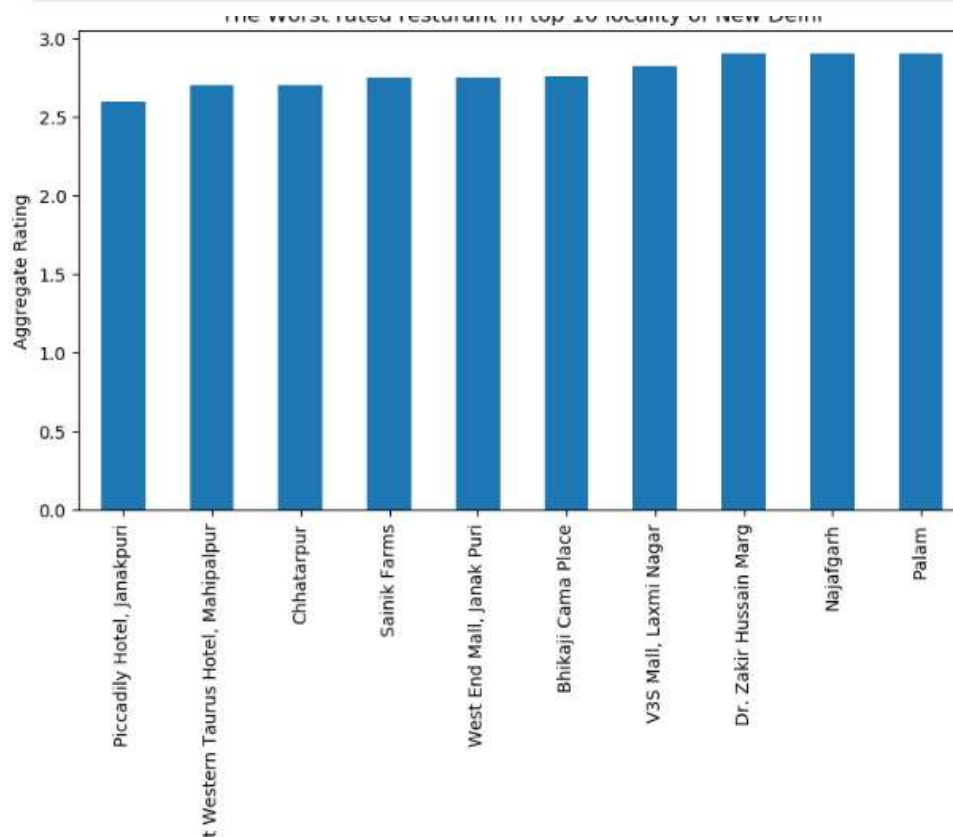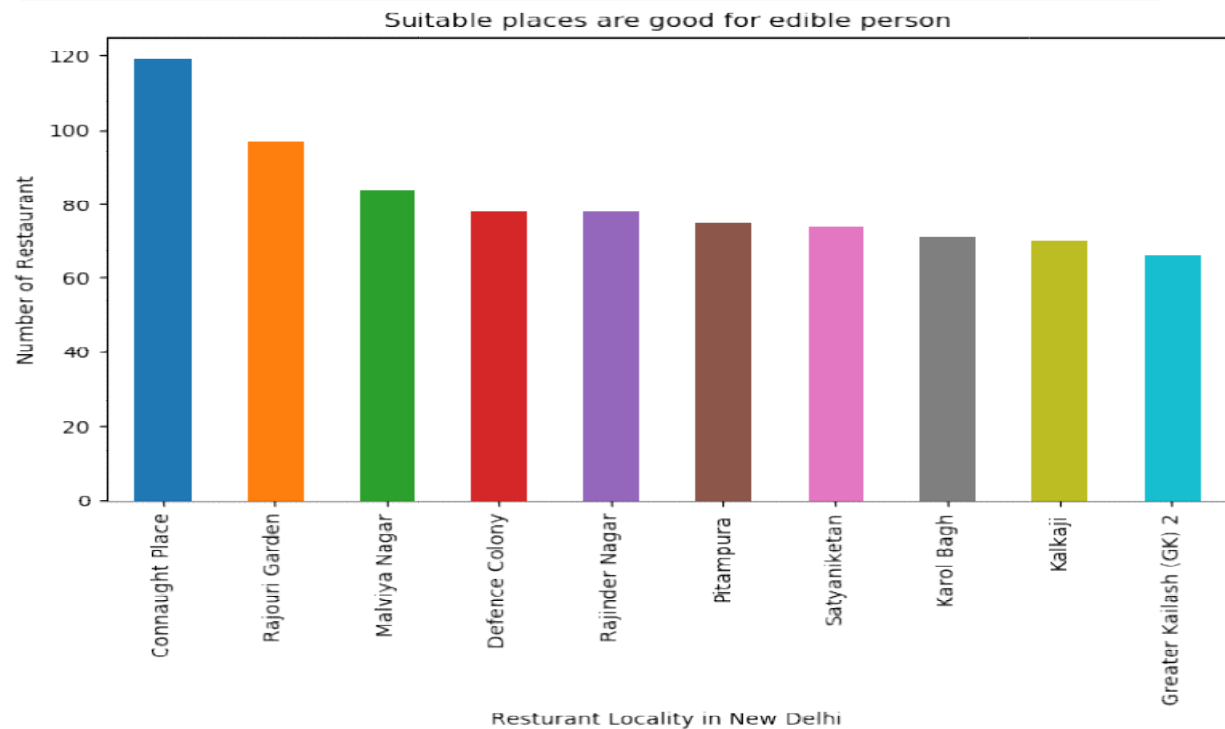
2.5 Which place is suitable for edible person in New Delhi?

```python
import matplotlib.pyplot as plt
plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('The highest number of Restaurant available in Locality of New Delhi')
#On x-axis

#giving a bar plot
Res.groupby('Locality')['Restaurant Name'].count().nlargest(10).plot(kind='bar')

plt.xlabel('Resturant Locality in New Delhi')
#On y-axis
plt.ylabel('Number of Restaurant')

#displays the plot
plt.show()
```


Suitable places are good for edible person

2.6 Which place is not suitable for edible person in New Delhi?

```python
import matplotlib.pyplot as plt
plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('The lowest number of Restaurant available in Locality of New Delhi')
#On x-axis

#giving a bar plot
Res.groupby('Locality')['Restaurant Name'].count().nsmallest(10).plot(kind='bar')

plt.xlabel('Resturant Locality in New Delhi')
#On y-axis
plt.ylabel('Number of Restaurant')

#displays the plot
plt.show()
```
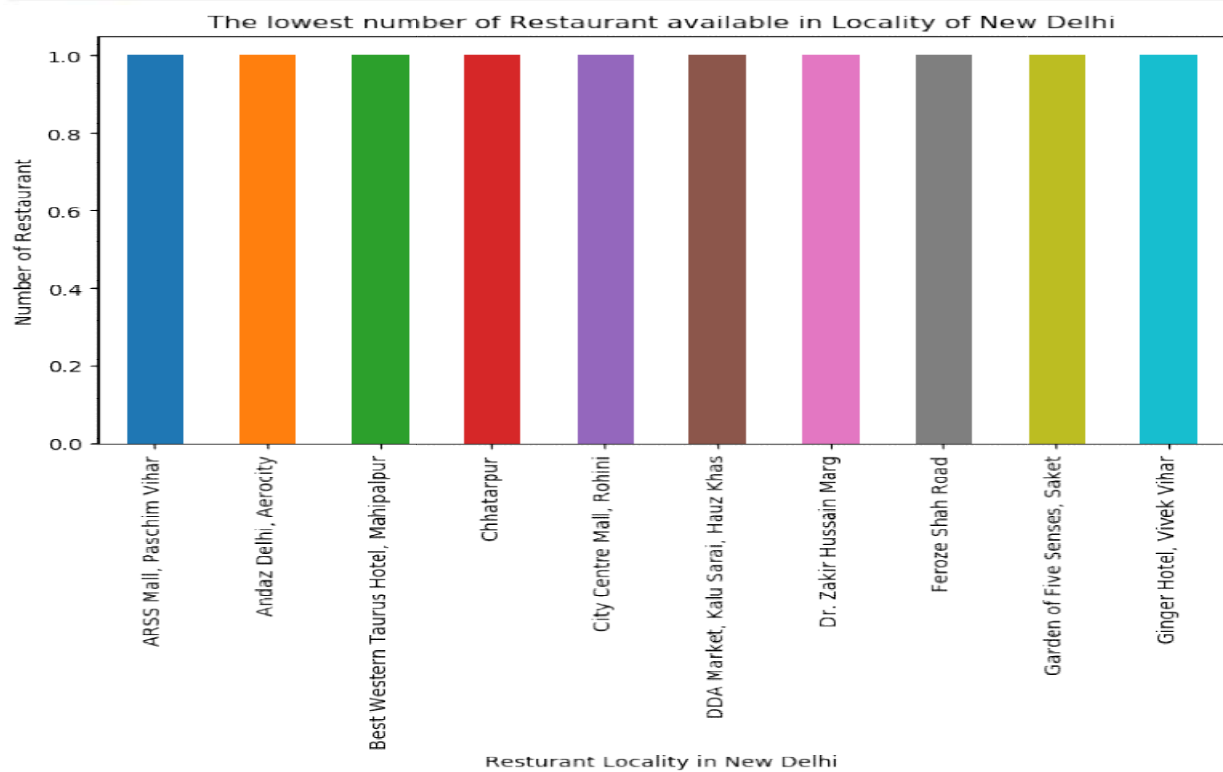

The lowest number of Restaurant available in Locality of New Delhi

2.7 What are the best places for Chinese Restaurants in New Delhi?

```python
import matplotlib.pyplot as plt
plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('The best Locality for chinese restaurant in New Delhi city')
#On x-axis

#giving a bar plot
Res[Res['Cuisines'].str.startswith('Chinese')].groupby('Locality')['Restaurant Name'].count().nlargest(5).plot(kind='bar')

plt.xlabel('Resturant Locality in New Delhi')
#On y-axis
plt.ylabel('Number of Chinese Restaurant')

#displays the plot
plt.show()
```


The best Locality for chinese restaurant in New Delhi city

2.8 Data Transformation

```
[21]: Res_Loc =  Res.groupby('Locality').count()['Restaurant Name'].to_frame()
      Res_rating= Res.groupby('Locality')['Aggregate rating'].mean().to_frame()
      d_Cuisines = Res.groupby(['Locality'])['Cuisines'].agg(', '.join).reset_index()
      d_R = Res.groupby(['Locality'])['Rating text'].unique().agg(', '.join).reset_index()
      d_V = Res.groupby(['Locality'])['Votes'].sum().to_frame()
      d_Lat = Res.groupby('Locality').mean()['Latitude'].to_frame()
      d_Lng = Res.groupby('Locality').mean()['Longitude'].to_frame()
      df_final = pd.merge(d_Lat,d_Lng,on='Locality').merge(Res_Loc, on='Locality').merge(d_Cuisines, on='Locality').merge(Res_rating,on ='Locality').
                                                                      merge(d_R, on ='Locality').merge(d_V, on ='Locality')
```

```
[22]: df_final = df_final[df_final['Aggregate rating'] != 0.000000]
      df_final.columns =['Locality','Lat','Lng', 'No_of_Restaurant','Cusines', 'Agg_Rating','Comments' ,'No_of_Votes']
      df_final.head()
```

[22]:

	Locality	Lat	Lng	No_of_Restaurant	Cusines	Agg_Rating	Comments	No_of_Votes
0	ARSS Mall, Paschim Vihar	28.668945	77.101544	1	North Indian, South Indian, Chinese, Mithai, F...	3.100000	Average	117
1	Adchini	28.537063	77.197808	13	Fast Food, North Indian, Seafood, Continental,...	3.292308	Average, Good, Poor, Very Good	1560
2	Aditya Mega Mall, Karkardooma	28.656131	77.301266	4	Finger Food, North Indian, Mughlai, Pizza, Fas...	3.275000	Average, Good	434
3	Aerocity	28.553077	77.104270	2	Fast Food, Italian, Pizza, North Indian, Conti...	3.200000	Average	59
4	Aggarwal City Mall, Pitampura	28.690020	77.134650	3	North Indian, Chinese, Street Food, Mithai, No...	3.033333	Average	126

```
[23]: df_final.shape
```

```
[23]: (240, 8)
```

2.9 Foursquare Credential and Version

```
CLIENT_ID = 'IV1SGC3E3FNLS51P2EOFFHDTRQCPY22ADT4NXFRFI2ABMG4T' # Foursquare ID
CLIENT_SECRET = 'R3BM52ZYKIHLAYY344JLAYN5RKRHARNUEG301IBGDG2RGV22' # Foursquare Secret
VERSION = '20180605' # Foursquare API version

print('Your credentails:')
print('CLIENT_ID: ' + CLIENT_ID)
print('CLIENT_SECRET:' + CLIENT_SECRET)
```

```
Your credentails:
CLIENT_ID: IV1SGC3E3FNLS51P2EOFFHDTRQCPY22ADT4NXFRFI2ABMG4T
CLIENT_SECRET:R3BM52ZYKIHLAYY344JLAYN5RKRHARNUEG301IBGDG2RGV22
```

```python
def getNearbyVenues(names, latitudes, longitudes, radius=500,LIMIT = 100):

    venues_list=[]
    for name, lat, lng in zip(names, latitudes, longitudes):
        print(name)

        # create the API request URL
        url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&ll={},{}&radius={}&limit={}'.format(
            CLIENT_ID,
            CLIENT_SECRET,
            VERSION,
            lat,
            lng,
            radius,
            LIMIT)

        # make the GET request
        results = requests.get(url).json()["response"]['groups'][0]['items']

        # return only relevant information for each nearby venue
        venues_list.append([(
            name,
            lat,
            lng,
            v['venue']['name'],
            v['venue']['location']['lat'],
            v['venue']['location']['lng'],
            v['venue']['categories'][0]['name']) for v in results])

    nearby_venues = pd.DataFrame([item for venue_list in venues_list for item in venue_list])
    nearby_venues.columns = ['Locality',
                  'Locality Latitude',
                  'Locality Longitude',
                  'Venue',
                  'Venue Latitude',
                  'Venue Longitude',
                  'Venue Category']

    return(nearby_venues)
```

```python
# find the venues in all New Delhi Locality
new_Delhi_venues = getNearbyVenues(names=df_final['Locality'],
                                   latitudes=df_final['Lat'],
                                   longitudes=df_final['Lng']
                                  )
```

ARSS Mall, Paschim Vihar
Adchini
Aditya Mega Mall, Karkardooma
Aerocity
Aggarwal City Mall, Pitampura
Aggarwal City Plaza, Rohini
Alaknanda
Ambience Mall, Vasant Kunj
Anand Lok
Anand Vihar
Andaz Delhi, Aerocity
Ansal Plaza Mall, Khel Gaon Marg
Asaf Ali Road
Ashok Vihar Phase 1
Ashok Vihar Phase 2
Ashok Vihar Phase 3
Barakhamba Road
Basant Lok Market, Vasant Vihar
Bellagio, Ashok Vihar Phase 2
Best Western Taurus Hotel, Mahipalpur
Bhikaji Cama Place
Chanakyapuri
Chander Nagar
Chandni Chowk
Chawri Bazar
Chhatarpur

Chittaranjan Park
City Centre Mall, Rohini
City Square Mall, Rajouri Garden
Civil Lines
Community Centre, New Friends Colony
Connaught Place
Crescent Square Mall, Rohini
Cross River Mall, Karkardooma
Crowne Plaza Hotel, Rohini
Crowne Plaza, Mayur Vihar Phase 1
D Mall, Netaji Subhash Place
DDA Market, Kalu Sarai, Hauz Khas
DLF City Centre Mall, Shalimar Bagh
DLF Emporio Mall, Vasant Kunj
DLF Place Mall, Saket
DLF Promenade Mall, Vasant Kunj
DLF South Square, Sarojini Nagar
Daryaganj
Defence Colony
Delhi University-GTB Nagar
Dilli Haat, INA
Dilshad Garden
District Centre, Janakpuri
Dr. Zakir Hussain Marg
East Patel Nagar
East of Kailash
Epicuria Food Mall, Nehru Place
Eros Hotel, Nehru Place
Essex Farms
Feroze Shah Road
Friends Colony
GTB Nagar
Garden of Five Senses, Saket
Geeta Colony
Ginger Hotel, Vivek Vihar
Gourmet Hub, Pashim Vihar
Greater Kailash (GK) 1
Greater Kailash (GK) 2
Greater Kailash (GK) 3
Green Park
Gujranwala Town
Hauz Khas
Hauz Khas Village
Holiday Inn, Aerocity
Holiday Inn, Mayur Vihar
Hotel Broadway, Daryaganj
Hotel City Park, Pitampura
Hotel Regent Grand, Karol Bagh
Hotel The Royal Plaza, Janpath
Hyatt Regency, Bhikaji Cama Place
INA
IP Extension
ITC Maurya, Chanakyapuri
ITO
India Gate
JMD Kohinoor Mall, Greater Kailash

JNU
JW Marriott New Delhi
Jail Road
Jama Masjid
Janakpuri
Jangpura
Janpath
Jasola
Jaypee Siddharth, Rajendra Place
Jaypee Vasant Continental, Vasant Vihar
Jor Bagh
Kailash Colony
Kalkaji
Kamla Nagar
Kapashera
Karampura
Karkardooma
Karol Bagh
Kasbah, Greater Kailash (GK) 1
Kashmiri Gate
Khan Market
Kirti Nagar
Krishna Nagar
Lado Sarai
Lajpat Nagar 1
Lajpat Nagar 2
Lajpat Nagar 4
Lawrence Road
Laxmi Nagar
Le Meridien, Janpath
Lemon Tree Premier, Aerocity
Living Style Mall, Jasola
Lodhi Colony
Lodhi Road
MG Road
MGF Metropolitan Mall, Saket
MGM Club, Daryaganj
Mahipalpur
Maidens Hotel, Civil Lines
Majnu ka Tila
Malviya Nagar
Mandi House
Mathura Road
Mayapuri Phase 2
Mayur Vihar Phase 1
Mayur Vihar Phase 2
Mayur Vihar Phase 3
Mehrauli
Metro Walk Mall, Rohini
Model Town 1
Model Town 2
Model Town 3
Moments Mall, Kirti Nagar
Moti Bagh
Moti Nagar
Mukherjee Nagar

Munirka
Najafgarh
Naraina
Nehru Place
Netaji Subhash Place
New Friends Colony
Nizamuddin
Okhla Phase 1
Okhla Phase 2
PVR Anupam Complex
Pacific Mall, Tagore Garden
Paharganj
Palam
Palate of Delhi, Chanakyapuri
Panchsheel Park
Pandara Road Market
Pandav Nagar
Paschim Vihar
Patparganj
Piccadily Hotel, Janakpuri
Pitampura
Pragati Maidan
Prashant Vihar
Preet Vihar
Premier Inn, Shalimar Bagh
Pride Plaza Hotel, Aerocity
Punjabi Bagh
Qutab Institutional Area
R K Puram
Race Course
Radisson Blu Plaza Delhi, Mahipalpur
Radisson Blu, Paschim Vihar
Rajendra Place
Rajinder Nagar
Rajouri Garden
Rohini
Roseate House, Aerocity
SDA
Safdarjung
Sainik Farms
Saket
Sangam Courtyard, RK Puram
Sarita Vihar
Sarojini Nagar
Satyaniketan
Sector 15, Dwarka
Select Citywalk Mall, Saket
Shahdara
Shahpur Jat
Shakarpur
Shalimar Bagh
Shangri La's - Eros hotel, Janpath
Shanti Niketan Marg
Sheikh Sarai
Sheraton New Delhi Hotel, Saket
South Extension 1

South Extension 2
Southern Park Mall, Saket
Spark Mall, Kamla Nagar
Star City Mall, Mayur Vihar Phase 1
Subhash Nagar
Sunder Nagar
T3 Domestic Arrival, Aerocity
TDI Mall, Rajouri Garden
Tagore Garden
Taj Vivanta, Khan Market
The Ashok, Chanakyapuri
The Claridges, Aurangzeb Road
The Grand New Delhi, Vasant Kunj
The Imperial, Janpath
The India Mall, New Friends Colony
The Lalit New Delhi, Barakhamba Road
The Leela Ambience Convention Hotel
The Leela Palace, Chanakyapuri
The Lodhi, Lodhi Road
The Park, Connaught Place
The Suryaa New Delhi, New Friends Colony
The Taj Mahal Hotel, Mansingh Road
The Taj Palace Hotel, Chanakyapuri
The Uppal, Aerocity
The Village Restaurant Complex, Khel Gaon Marg
Tilak Nagar
Tughlakabad Institutional Area
Uday Park
Unity One Mall, Janakpuri
Uttam Nagar
V3S Mall, Laxmi Nagar
Vasant Kunj
Vasant Square Mall, Vasant Kunj
Vasant Vihar
Vasundhara Enclave
Vijay Nagar
Vikas Marg
Vikaspuri
Vivek Vihar
Wazirpur
West End Mall, Janak Puri
West Gate Mall, Rajouri Garden
West Patel Nagar
Worldmark 1, Aerocity
Yusuf Sarai
ibis New Delhi, Aerocity

```
[27]: new_Delhi_venues.head()
```

[27]:

	Locality	Locality Latitude	Locality Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	ARSS Mall, Paschim Vihar	28.668945	77.101544	Subway	28.669999	77.102546	Sandwich Place
1	ARSS Mall, Paschim Vihar	28.668945	77.101544	Baljeet's Amritsari Koolcha	28.665768	77.100481	Indian Restaurant
2	ARSS Mall, Paschim Vihar	28.668945	77.101544	Pizza Hut	28.670321	77.103853	Pizza Place
3	ARSS Mall, Paschim Vihar	28.668945	77.101544	Café Coffee Day	28.670009	77.102480	Coffee Shop
4	ARSS Mall, Paschim Vihar	28.668945	77.101544	Little Chef	28.670000	77.101459	Chinese Restaurant

```
[28]: new_Delhi_venues.groupby('Locality').count()
```

[28]:

Locality	Locality Latitude	Locality Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
ARSS Mall, Paschim Vihar	10	10	10	10	10	10
Adchini	6	6	6	6	6	6
Aditya Mega Mall, Karkardooma	10	10	10	10	10	10
Aerocity	7	7	7	7	7	7
Aggarwal City Mall, Pitampura	5	5	5	5	5	5
...	...	...	...	...	...	...
West Gate Mall, Rajouri Garden	17	17	17	17	17	17
West Patel Nagar	4	4	4	4	4	4
Worldmark 1, Aerocity	30	30	30	30	30	30
Yusuf Sarai	11	11	11	11	11	11
ibis New Delhi, Aerocity	28	28	28	28	28	28

240 rows × 6 columns

```
[29]: print('There are {} uniques categories.'.format(len(new_Delhi_venues['Venue Category'].unique())))

There are 214 uniques categories.
```

```
[30]: # one hot encoding
new_Delhi_onehot = pd.get_dummies(new_Delhi_venues[['Venue Category']], prefix="", prefix_sep="")

# add Locality column back to dataframe
new_Delhi_onehot['Locality'] = new_Delhi_venues['Locality']

# move Locality column to the first column
column_list = new_Delhi_onehot.columns.tolist()
column_number = int(column_list.index('Locality'))
column_list = [column_list[column_number]] + column_list[:column_number] + column_list[column_number+1:]
new_Delhi_onehot = new_Delhi_onehot[column_list]

new_Delhi_onehot.head()
```

[30]:

	Locality	ATM	Accessories Store	Afghan Restaurant	African Restaurant	Airport	Airport Food Court	Airport Lounge	Airport Service	Airport Terminal	...	Trail	Train Station	Turkish Restaurant	Udupi Restaurant	Vegetarian / Vegan Restaurant	Vietnamese Restaurant	Whisky Bar	Wine Bar	Wings Joint	Women's Store
0	ARSS Mall, Paschim Vihar	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0	0
1	ARSS Mall, Paschim Vihar	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0	0
2	ARSS Mall, Paschim Vihar	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0	0
3	ARSS Mall, Paschim Vihar	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0	0
4	ARSS Mall, Paschim Vihar	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0	0	0

5 rows × 215 columns

```
[31]: New_Delhi_grouped = new_Delhi_onehot.groupby('Locality').mean().reset_index()
      New_Delhi_grouped
```

[31]:

	Locality	ATM	Accessories Store	Afghan Restaurant	African Restaurant	Airport	Airport Food Court	Airport Lounge	Airport Service	Airport Terminal	...	Trail	Train Station	Turkish Restaurant	Udupi Restaurant	Vegetarian / Vegan Restaurant	Vietnamese Restaurant	Whisky Bar	Wine Bar	Wings Joint	Women's Store
0	ARSS Mall, Paschim Vihar	0.1	0.100000	0.0	0.0	0.0	0.0	0.000000	0.0	0.000000	...	0.0	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	Adchini	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.000000	...	0.0	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Aditya Mega Mall, Karkardooma	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.000000	...	0.0	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Aerocity	0.0	0.000000	0.0	0.0	0.0	0.0	0.142857	0.0	0.142857	...	0.0	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Aggarwal City Mall, Pitampura	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.000000	...	0.0	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
235	West Gate Mall, Rajouri Garden	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.000000	...	0.0	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
236	West Patel Nagar	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.000000	...	0.0	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
237	Worldmark 1, Aerocity	0.0	0.033333	0.0	0.0	0.0	0.0	0.000000	0.0	0.000000	...	0.0	0.033333	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
238	Yusuf Sarai	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.000000	...	0.0	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
239	ibis New Delhi, Aerocity	0.0	0.000000	0.0	0.0	0.0	0.0	0.000000	0.0	0.000000	...	0.0	0.035714	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

240 rows × 215 columns

```
[32]: New_Delhi_grouped.shape
```

[32]: (240, 215)

```
[33]: ## print each Locality along with the top 5 most common venues

      num_top_venues = 5

      for hood in New_Delhi_grouped['Locality']:
          print("----"+hood+"----")
          temp = New_Delhi_grouped[New_Delhi_grouped['Locality'] == hood].T.reset_index()
          temp.columns = ['venue','freq']
          temp = temp.iloc[1:]
          temp['freq'] = temp['freq'].astype(float)
          temp = temp.round({'freq': 2})
          print(temp.sort_values('freq', ascending=False).reset_index(drop=True).head(num_top_venues))
          print('\n')
```

----ARSS Mall, Paschim Vihar----
```
              venue  freq
0  Indian Restaurant   0.2
1               ATM   0.1
2 Chinese Restaurant   0.1
3        Coffee Shop   0.1
4             Market   0.1
```

----Adchini----
```
              venue  freq
0  Indian Restaurant  0.33
1              Café  0.33
2               Pub  0.17
3   Parsi Restaurant  0.17
4               ATM  0.00
```

----Aditya Mega Mall, Karkardooma----
```
              venue  freq
0         Multiplex   0.2
1  Indian Restaurant   0.2
2      Shopping Mall   0.2
3        Pizza Place   0.2
```

```
4            Café  0.1


----Aerocity----
              venue  freq
0             Hotel  0.29
1    Airport Terminal  0.14
2        Coffee Shop  0.14
3      Airport Lounge  0.14
4  Rental Car Location  0.14


----Aggarwal City Mall, Pitampura----
              venue  freq
0        Donut Shop   0.2
1   Department Store   0.2
2        Pizza Place   0.2
3  Indian Restaurant   0.2
4             Food   0.2


----Aggarwal City Plaza, Rohini----
              venue  freq
0          Multiplex  0.12
1  Gym / Fitness Center  0.12
2    Electronics Store  0.12
3  Fast Food Restaurant  0.12
4         Restaurant  0.12


----Alaknanda----
              venue  freq
0         Steakhouse  0.25
1  New American Restaurant  0.25
2        Coffee Shop  0.25
3            Market  0.25
4              ATM  0.00


----Ambience Mall, Vasant Kunj----
              venue  freq
0        Coffee Shop  0.09
1     Clothing Store  0.07
2  Italian Restaurant  0.07
3      Shopping Mall  0.07
4             Café  0.07


----Anand Lok----
              venue  freq
0           Stadium  0.18
1             Café  0.18
2       Dessert Shop  0.09
3      Metro Station  0.09
4  Other Great Outdoors  0.09
```

----Anand Vihar----
```
              venue  freq
0              Café   0.4
1      Dessert Shop   0.2
2      Burger Joint   0.2
3     Burrito Place   0.2
4 Portuguese Restaurant   0.0
```


----Andaz Delhi, Aerocity----
```
              venue  freq
0             Hotel  0.39
1       Coffee Shop  0.09
2 Indian Restaurant  0.04
3     Shopping Mall  0.04
4            Buffet  0.04
```


----Ansal Plaza Mall, Khel Gaon Marg----
```
              venue  freq
0        Snack Place   0.2
1 Sporting Goods Shop   0.2
2 Performing Arts Venue   0.2
3  Gym / Fitness Center   0.2
4  Fast Food Restaurant   0.2
```


----Asaf Ali Road----
```
              venue  freq
0             Hotel  0.33
1     Movie Theater  0.17
2 Indian Restaurant  0.17
3        Campground  0.17
4            Hostel  0.17
```


----Ashok Vihar Phase 1----
```
              venue  freq
0      Dessert Shop  0.14
1       Snack Place  0.14
2       Pizza Place  0.14
3        Smoke Shop  0.14
4 Indian Restaurant  0.14
```


----Ashok Vihar Phase 2----
```
              venue  freq
0 South Indian Restaurant  0.17
1     Indian Restaurant  0.17
2       Sandwich Place  0.17
3         Coffee Shop  0.17
4     Asian Restaurant  0.17
```


----Ashok Vihar Phase 3----

```
            venue  freq
0            Pizza Place  0.25
1          Shopping Mall  0.25
2             BBQ Joint  0.25
3  South Indian Restaurant  0.25
4                 ATM  0.00
```

----Barakhamba Road----
```
            venue  freq
0            Theater  0.14
1             Bakery  0.14
2  Indian Restaurant  0.14
3               Café  0.14
4           Nightclub  0.07
```

----Basant Lok Market, Vasant Vihar----
```
            venue  freq
0               Café  0.12
1          Restaurant  0.08
2   Chinese Restaurant  0.08
3  Fast Food Restaurant  0.08
4          Pizza Place  0.08
```

----Bellagio, Ashok Vihar Phase 2----
```
            venue  freq
0  South Indian Restaurant  0.17
1     Indian Restaurant  0.17
2       Sandwich Place  0.17
3         Coffee Shop  0.17
4       Asian Restaurant  0.17
```

----Best Western Taurus Hotel, Mahipalpur----
```
            venue  freq
0               Hotel  0.42
1            Hotel Bar  0.08
2  Indian Restaurant  0.08
3  Accessories Store  0.08
4              Buffet  0.08
```

----Bhikaji Cama Place----
```
            venue  freq
0             Lounge  0.18
1               Hotel  0.09
2   Chinese Restaurant  0.09
3      Breakfast Spot  0.09
4  Gym / Fitness Center  0.09
```

----Chanakyapuri----
```
            venue  freq
0               Park  0.2
```

```
1   African Restaurant   0.2
2        Concert Hall   0.2
3             Trail   0.2
4             Café   0.2


----Chander Nagar----
             venue  freq
0        Pizza Place   0.5
1 Fast Food Restaurant   0.5
2              ATM   0.0
3 Other Great Outdoors   0.0
4        Music Store   0.0


----Chandni Chowk----
              venue  freq
0 Indian Restaurant  0.33
1        Snack Place  0.22
2       Dessert Shop  0.11
3            Market  0.11
4        Train Station  0.06


----Chawri Bazar----
               venue  freq
0         Snack Place  0.17
1    Light Rail Station  0.17
2       Hardware Store  0.17
3     Indian Restaurant  0.17
4 Fast Food Restaurant  0.17


----Chhatarpur----
               venue  freq
0         Donut Shop  0.17
1    Indian Restaurant  0.17
2              Hotel  0.17
3 Japanese Restaurant  0.17
4   Light Rail Station  0.17


----Chittaranjan Park----
         venue  freq
0        Market  0.50
1  Beer Garden  0.25
2  Hookah Bar  0.25
3           ATM  0.00
4        Office  0.00


----City Centre Mall, Rohini----
            venue  freq
0   Department Store  0.25
1      Shopping Mall  0.25
2          Multiplex  0.12
```

```
3    Fast Food Restaurant  0.12
4     Indian Restaurant  0.12


----City Square Mall, Rajouri Garden----
            venue   freq
0  Fast Food Restaurant  0.17
1                Café  0.13
2          Pizza Place  0.09
3     Indian Restaurant  0.09
4           Restaurant  0.09


----Civil Lines----
            venue  freq
0        Smoke Shop   0.2
1       Burger Joint   0.2
2  Light Rail Station   0.2
3        Coffee Shop   0.2
4  Chinese Restaurant   0.2


----Community Centre, New Friends Colony----
            venue  freq
0                Café  0.14
1     Indian Restaurant  0.10
2  Fast Food Restaurant  0.10
3                Diner  0.05
4            Nightclub  0.05


----Connaught Place----
            venue   freq
0   Indian Restaurant  0.15
1                Café  0.09
2                 Bar  0.09
3  Chinese Restaurant  0.08
4        Coffee Shop  0.05


----Crescent Square Mall, Rohini----
            venue   freq
0                ATM   0.2
1            Pharmacy   0.2
2  American Restaurant   0.2
3       Clothing Store   0.2
4    Athletics & Sports   0.2


----Cross River Mall, Karkardooma----
            venue   freq
0   Indian Restaurant  0.50
1               Hotel  0.25
2           Pizza Place  0.25
3  Other Great Outdoors  0.00
4               Museum  0.00
```

```
----Crowne Plaza Hotel, Rohini----
              venue  freq
0            Theme Park  0.14
1    Light Rail Station  0.14
2      Asian Restaurant  0.14
3                 Hotel  0.14
4  Fast Food Restaurant  0.14


----Crowne Plaza, Mayur Vihar Phase 1----
              venue  freq
0              Hotel  0.38
1   Department Store  0.08
2   Asian Restaurant  0.08
3  Indian Restaurant  0.08
4         Restaurant  0.08


----D Mall, Netaji Subhash Place----
              venue  freq
0  Fast Food Restaurant  0.16
1     Indian Restaurant  0.16
2           Coffee Shop  0.11
3         Shopping Mall  0.11
4                 Diner  0.05


----DDA Market, Kalu Sarai, Hauz Khas----
              venue  freq
0           Nightclub   0.2
1         Event Space   0.2
2         Coffee Shop   0.2
3       Metro Station   0.2
4  Chinese Restaurant   0.2


----DLF City Centre Mall, Shalimar Bagh----
                    venue  freq
0              Shopping Mall  0.33
1          Gym / Fitness Center  0.17
2  Vegetarian / Vegan Restaurant  0.17
3            Convenience Store  0.17
4                  Multiplex  0.17


----DLF Emporio Mall, Vasant Kunj----
              venue  freq
0         Coffee Shop  0.09
1      Clothing Store  0.07
2   Italian Restaurant  0.07
3        Shopping Mall  0.07
4                 Café  0.07
```

----DLF Place Mall, Saket----
```
              venue  freq
0  Indian Restaurant  0.12
1     Clothing Store  0.07
2             Lounge  0.07
3                Bar  0.07
4               Café  0.07
```


----DLF Promenade Mall, Vasant Kunj----
```
              venue  freq
0        Coffee Shop  0.09
1     Clothing Store  0.07
2  Italian Restaurant  0.07
3      Shopping Mall  0.07
4               Café  0.07
```


----DLF South Square, Sarojini Nagar----
```
               venue  freq
0    Indian Restaurant  0.31
1  Fast Food Restaurant  0.15
2       Women's Store  0.08
3       Shopping Mall  0.08
4              Market  0.08
```


----Daryaganj----
```
              venue  freq
0  Indian Restaurant  0.33
1              Hotel  0.17
2             Hostel  0.17
3         Restaurant  0.17
4       Movie Theater  0.08
```


----Defence Colony----
```
               venue  freq
0    Indian Restaurant  0.21
1  Italian Restaurant  0.16
2             Bakery  0.11
3        Burger Joint  0.05
4                Bar  0.05
```


----Delhi University-GTB Nagar----
```
                   venue  freq
0                    Café  0.18
1             Coffee Shop  0.09
2      Chinese Restaurant  0.09
3             Snack Place  0.09
4  North Indian Restaurant  0.09
```


----Dilli Haat, INA----
```
              venue  freq
```

```
0    Indian Restaurant  0.25
1       Train Station  0.25
2         Restaurant  0.25
3            Market  0.25
4              ATM  0.00
```

----Dilshad Garden----

```
                venue  freq
0  Health & Beauty Service  0.25
1        Indian Restaurant  0.25
2                Market  0.25
3         Clothing Store  0.25
4                  ATM  0.00
```

----District Centre, Janakpuri----

```
             venue  freq
0    Sandwich Place  0.14
1  Indian Restaurant  0.14
2        Restaurant  0.07
3         BBQ Joint  0.07
4            Hotel  0.07
```

----Dr. Zakir Hussain Marg----

```
              venue  freq
0   Indian Restaurant  0.25
1        Golf Course  0.17
2   Italian Restaurant  0.17
3         Snack Place  0.08
4   Convenience Store  0.08
```

----East Patel Nagar----

```
              venue  freq
0         Pizza Place  0.20
1         Donut Shop  0.07
2    Convenience Store  0.07
3               Café  0.07
4   Chinese Restaurant  0.07
```

----East of Kailash----

```
                    venue  freq
0          Indie Movie Theater  0.14
1  Vegetarian / Vegan Restaurant  0.14
2                      Hotel  0.14
3               Coffee Shop  0.14
4                    Temple  0.14
```

----Epicuria Food Mall, Nehru Place----

```
              venue  freq
0              Lounge  0.07
1  Fast Food Restaurant  0.07
```

```
2          Coffee Shop  0.07
3                 Bar  0.04
4    Bengali Restaurant  0.04
```

----Eros Hotel, Nehru Place----
```
              venue  freq
0  Fast Food Restaurant  0.11
1              Lounge  0.07
2          Coffee Shop  0.07
3                 Bar  0.04
4    Bengali Restaurant  0.04
```

----Essex Farms----
```
           venue  freq
0    Event Space  0.25
1      Nightclub  0.25
2    Coffee Shop  0.25
3  Metro Station  0.25
4           ATM  0.00
```

----Feroze Shah Road----
```
               venue  freq
0    Indian Restaurant  1.0
1               ATM   0.0
2  Other Great Outdoors  0.0
3             Museum   0.0
4          Music Store  0.0
```

----Friends Colony----
```
            venue  freq
0           Hotel  0.33
1            Gym  0.17
2    Neighborhood  0.17
3            Café  0.17
4  Sculpture Garden  0.17
```

----GTB Nagar----
```
         venue  freq
0   Pizza Place  0.5
1    Food Truck  0.5
2          ATM  0.0
3        Office  0.0
4   Music Store  0.0
```

----Garden of Five Senses, Saket----
```
              venue  freq
0                Pub  0.14
1  Mediterranean Restaurant  0.14
2             Garden  0.14
3               Café  0.14
```

	venue	freq
4	Coffee Shop	0.14

----Geeta Colony----

	venue	freq
0	Burger Joint	0.5
1	Indian Restaurant	0.5
2	ATM	0.0
3	Other Great Outdoors	0.0
4	Music Store	0.0

----Ginger Hotel, Vivek Vihar----

	venue	freq
0	Hotel	0.33
1	Café	0.17
2	Indian Restaurant	0.17
3	Asian Restaurant	0.17
4	BBQ Joint	0.17

----Gourmet Hub, Pashim Vihar----

	venue	freq
0	Food & Drink Shop	0.2
1	Pizza Place	0.2
2	Indian Restaurant	0.2
3	Ice Cream Shop	0.2
4	Bakery	0.2

----Greater Kailash (GK) 1----

	venue	freq
0	Café	0.11
1	Market	0.11
2	Indian Restaurant	0.11
3	Donut Shop	0.05
4	Salad Place	0.05

----Greater Kailash (GK) 2----

	venue	freq
0	Indian Restaurant	0.11
1	Restaurant	0.08
2	Italian Restaurant	0.08
3	Asian Restaurant	0.08
4	Pizza Place	0.05

----Greater Kailash (GK) 3----

	venue	freq
0	Café	0.14
1	Restaurant	0.14
2	Ice Cream Shop	0.07
3	Bakery	0.07
4	BBQ Joint	0.07

----Green Park----

	venue	freq
0	Indian Restaurant	0.21
1	Coffee Shop	0.14
2	Chinese Restaurant	0.10
3	Fast Food Restaurant	0.07
4	Pizza Place	0.07

----Gujranwala Town----

	venue	freq
0	Indian Restaurant	0.4
1	Snack Place	0.2
2	Gym	0.2
3	Food & Drink Shop	0.2
4	ATM	0.0

----Hauz Khas----

	venue	freq
0	Coffee Shop	0.11
1	Chinese Restaurant	0.11
2	Fast Food Restaurant	0.07
3	Indian Restaurant	0.07
4	Dessert Shop	0.07

----Hauz Khas Village----

	venue	freq
0	Café	0.12
1	Restaurant	0.10
2	Indian Restaurant	0.10
3	Bar	0.08
4	Lounge	0.06

----Holiday Inn, Aerocity----

	venue	freq
0	Hotel	0.32
1	Buffet	0.06
2	Coffee Shop	0.06
3	Bed & Breakfast	0.06
4	Light Rail Station	0.03

----Holiday Inn, Mayur Vihar----

	venue	freq
0	Hotel	0.29
1	Restaurant	0.12
2	Department Store	0.06
3	Light Rail Station	0.06
4	Liquor Store	0.06

----Hotel Broadway, Daryaganj----

```
        venue  freq
0          Hotel  0.25
1  Indian Restaurant  0.25
2         Hostel  0.12
3   Soccer Stadium  0.12
4    Movie Theater  0.12
```

----Hotel City Park, Pitampura----
```
       venue  freq
0   Multiplex   0.2
1      Garden   0.2
2  Coffee Shop   0.2
3       Park   0.2
4       Hotel   0.2
```

----Hotel Regent Grand, Karol Bagh----
```
          venue  freq
0      Pizza Place  0.21
1       Donut Shop  0.07
2  Convenience Store  0.07
3           Café  0.07
4    Bed & Breakfast  0.07
```

----Hotel The Royal Plaza, Janpath----
```
          venue  freq
0          Hotel  0.19
1  Indian Restaurant  0.11
2            Spa  0.11
3  Chinese Restaurant  0.07
4       Restaurant  0.07
```

----Hyatt Regency, Bhikaji Cama Place----
```
          venue  freq
0         Lounge  0.18
1          Hotel  0.09
2  Chinese Restaurant  0.09
3     Breakfast Spot  0.09
4  Gym / Fitness Center  0.09
```

----INA----
```
          venue  freq
0  Light Rail Station  0.25
1  Indian Restaurant  0.25
2     Train Station  0.25
3         Market  0.25
4            ATM  0.00
```

----IP Extension----
```
          venue  freq
0  Indian Restaurant   0.2
```

```
1      Dessert Shop   0.1
2        Gift Shop   0.1
3       Pizza Place   0.1
4      Shopping Mall   0.1
```

----ITC Maurya, Chanakyapuri----
```
              venue  freq
0              Hotel  0.12
1  Indian Restaurant  0.12
2              Café  0.09
3  Chinese Restaurant  0.06
4            Lounge  0.03
```

----ITO----
```
              venue  freq
0              Plaza  0.12
1  Udupi Restaurant  0.12
2   Clothing Store  0.12
3              Café  0.12
4       Art Museum  0.12
```

----India Gate----
```
               venue  freq
0                ATM  0.25
1        Music Venue  0.25
2      National Park  0.25
3  Government Building  0.25
4   Korean Restaurant  0.00
```

----JMD Kohinoor Mall, Greater Kailash----
```
            venue  freq
0       Restaurant  0.15
1  Ice Cream Shop  0.10
2      Pizza Place  0.10
3            Café  0.10
4           Bakery  0.05
```

----JNU----
```
             venue  freq
0  Airport Food Court   0.2
1     Shopping Mall   0.2
2             Café   0.2
3  Indian Restaurant   0.2
4    Clothing Store   0.2
```

----JW Marriott New Delhi----
```
            venue  freq
0              Hotel  0.33
1             Buffet  0.07
2        Coffee Shop  0.07
```

```
3  Light Rail Station  0.04
4   Indian Restaurant  0.04


----Jail Road----
           venue  freq
0  Indian Restaurant  0.29
1         Food Court  0.14
2         Pizza Place  0.14
3  Indian Sweet Shop  0.14
4     Ice Cream Shop  0.14


----Jama Masjid----
           venue  freq
0  Indian Restaurant  0.43
1        Snack Place  0.14
2            Mosque  0.14
3       Flea Market  0.14
4      Metro Station  0.14


----Janakpuri----
   venue  freq
0   Café  0.4
1    Gym  0.2
2  Bakery  0.2
3   Park  0.2
4    ATM  0.0


----Jangpura----
              venue  freq
0       Sandwich Place  0.2
1    Chinese Restaurant  0.2
2  Fast Food Restaurant  0.2
3        Flea Market  0.2
4          BBQ Joint  0.2


----Janpath----
              venue  freq
0    Indian Restaurant  0.15
1              Café  0.08
2         Coffee Shop  0.08
3    Italian Restaurant  0.08
4  Fast Food Restaurant  0.05


----Jasola----
            venue  freq
0  Soccer Stadium  0.2
1            Café  0.2
2  Breakfast Spot  0.2
3    Soccer Field  0.2
4     Pizza Place  0.2
```

----Jaypee Siddharth, Rajendra Place----
```
              venue  freq
0        Pizza Place  0.17
1  Fast Food Restaurant  0.11
2         Donut Shop  0.06
3   Convenience Store  0.06
4     Bed & Breakfast  0.06
```

----Jaypee Vasant Continental, Vasant Vihar----
```
              venue  freq
0              Café  0.12
1         Restaurant  0.08
2   Chinese Restaurant  0.08
3  Fast Food Restaurant  0.08
4        Pizza Place  0.08
```

----Jor Bagh----
```
              venue  freq
0        Record Shop  0.25
1  Indian Restaurant  0.25
2            Bakery  0.25
3      Metro Station  0.25
4               ATM  0.00
```

----Kailash Colony----
```
              venue  freq
0               Bar  0.13
1  Indian Restaurant  0.13
2  Italian Restaurant  0.07
3            Bakery  0.07
4             Hotel  0.07
```

----Kalkaji----
```
              venue  freq
0  Fast Food Restaurant  0.18
1            Market  0.18
2       Dessert Shop  0.09
3              Bank  0.09
4     Sandwich Place  0.09
```

----Kamla Nagar----
```
              venue  freq
0       Breakfast Spot  0.16
1  Fast Food Restaurant  0.16
2    Indian Restaurant  0.11
3   Chinese Restaurant  0.11
4        Coffee Shop  0.11
```

----Kapashera----
```
              venue  freq
0       Food Court   0.33
1  Convenience Store  0.33
2       Food Truck   0.33
3              ATM   0.00
4       Music Venue  0.00
```

----Karampura----
```
                        venue  freq
0              Moving Target   0.25
1  Vegetarian / Vegan Restaurant  0.25
2            Indian Restaurant  0.25
3          Fried Chicken Joint  0.25
4                        ATM   0.00
```

----Karkardooma----
```
              venue  freq
0       Food Truck   0.25
1       Pizza Place  0.25
2      Train Station  0.25
3  Indian Restaurant  0.25
4              ATM   0.00
```

----Karol Bagh----
```
              venue  freq
0   Indian Restaurant  0.29
1  Fast Food Restaurant  0.18
2        Snack Place   0.06
3         Restaurant   0.06
4             Hotel   0.06
```

----Kasbah, Greater Kailash (GK) 1----
```
              venue  freq
0             Café   0.18
1    Indian Restaurant  0.18
2      Women's Store   0.06
3  Mediterranean Restaurant  0.06
4       Clothing Store  0.06
```

----Kashmiri Gate----
```
              venue  freq
0        Pizza Place  0.17
1  Fast Food Restaurant  0.17
2        Bus Station  0.17
3  American Restaurant  0.17
4       Historic Site  0.17
```

----Khan Market----
```
              venue  freq
```

```
0              Café  0.18
1        Coffee Shop  0.09
2  Chinese Restaurant  0.07
3                Bar  0.07
4   Asian Restaurant  0.07


----Kirti Nagar----
              venue  freq
0        Pizza Place   0.4
1  Convenience Store   0.2
2  Fish & Chips Shop   0.2
3             Bakery   0.2
4                ATM   0.0


----Krishna Nagar----
                 venue  freq
0           Pizza Place  0.50
1  Fast Food Restaurant  0.25
2                  Park  0.25
3                   ATM  0.00
4                Office  0.00


----Lado Sarai----
                  venue  freq
0          Shopping Mall  0.33
1            Golf Course  0.17
2              Nightclub  0.17
3  Furniture / Home Store  0.17
4              BBQ Joint  0.17


----Lajpat Nagar 1----
              venue  freq
0        Music Store   0.1
1     Cosmetics Shop   0.1
2       Cocktail Bar   0.1
3        Coffee Shop   0.1
4   Asian Restaurant   0.1


----Lajpat Nagar 2----
                 venue  freq
0           Pizza Place  0.14
1  Fast Food Restaurant  0.09
2            Donut Shop  0.09
3                Market  0.09
4                  Café  0.09


----Lajpat Nagar 4----
         venue  freq
0         Café  0.22
1       Market  0.22
```

```
2  Indie Movie Theater  0.11
3    Indian Restaurant  0.11
4       Movie Theater  0.11


----Lawrence Road----
            venue  freq
0        Gastropub  0.14
1   Department Store  0.14
2  Light Rail Station  0.14
3      Shopping Mall  0.14
4      Moving Target  0.14


----Laxmi Nagar----
         venue  freq
0  Pizza Place  0.25
1  Snack Place  0.25
2       Arcade  0.25
3     Multiplex  0.25
4         ATM  0.00


----Le Meridien, Janpath----
            venue  freq
0           Hotel  0.26
1  Indian Restaurant  0.16
2  Chinese Restaurant  0.11
3       Restaurant  0.11
4        Nightclub  0.05


----Lemon Tree Premier, Aerocity----
            venue  freq
0           Hotel  0.33
1          Buffet  0.07
2       Coffee Shop  0.07
3  Light Rail Station  0.04
4  Indian Restaurant  0.04


----Living Style Mall, Jasola----
            venue  freq
0   Indian Restaurant  0.33
1        Pizza Place  0.17
2  Fast Food Restaurant  0.17
3           Bakery  0.17
4      Soccer Stadium  0.17


----Lodhi Colony----
            venue  freq
0  Indian Restaurant  0.21
1  English Restaurant  0.07
2       Flea Market  0.07
3     Sandwich Place  0.07
```

4   Asian Restaurant 0.07

----Lodhi Road----
              venue freq
0   Shopping Mall 0.06
1   Pedestrian Plaza 0.06
2   History Museum 0.06
3   Temple 0.06
4   Café 0.06

----MG Road----
                venue freq
0   Electronics Store 0.25
1   Furniture / Home Store 0.25
2   Indian Restaurant 0.25
3   Art Museum 0.25
4   ATM 0.00

----MGF Metropolitan Mall, Saket----
              venue freq
0   Indian Restaurant 0.11
1   Clothing Store 0.07
2   Lounge 0.07
3   Bar 0.07
4   Café 0.05

----MGM Club, Daryaganj----
                venue freq
0   Indian Restaurant 0.33
1   Restaurant 0.33
2   Hotel 0.17
3   Road 0.17
4   Other Great Outdoors 0.00

----Mahipalpur----
              venue freq
0   Hotel 0.31
1   Plaza 0.08
2   American Restaurant 0.08
3   Shoe Store 0.08
4   Spa 0.08

----Maidens Hotel, Civil Lines----
              venue freq
0   Smoke Shop 0.14
1   Italian Restaurant 0.14
2   Chinese Restaurant 0.14
3   Indian Restaurant 0.14
4   Café 0.14

----Majnu ka Tila----
```
              venue  freq
0   Asian Restaurant  0.33
1 Tibetan Restaurant  0.11
2        Bus Station  0.11
3        Coffee Shop  0.11
4         Restaurant  0.11
```

----Malviya Nagar----
```
              venue  freq
0        Coffee Shop  0.22
1         Donut Shop  0.11
2 Indian Restaurant  0.11
3               Café  0.11
4     Sandwich Place  0.11
```

----Mandi House----
```
              venue  freq
0            Theater  0.20
1             Bakery  0.13
2        Art Gallery  0.13
3 Indian Restaurant  0.13
4               Café  0.13
```

----Mathura Road----
```
                venue  freq
0        Breakfast Spot  0.25
1    Light Rail Station  0.25
2     Indian Sweet Shop  0.25
3     Indian Restaurant  0.25
4 Other Great Outdoors  0.00
```

----Mayapuri Phase 2----
```
        venue  freq
0       Garden  0.33
1   Restaurant  0.33
2   Food Truck  0.33
3          ATM  0.00
4       Office  0.00
```

----Mayur Vihar Phase 1----
```
                venue  freq
0          Pizza Place  0.33
1 Gym / Fitness Center  0.33
2    Indian Restaurant  0.33
3                  ATM  0.00
4               Office  0.00
```

----Mayur Vihar Phase 2----

```
           venue  freq
0    Wings Joint   0.2
1      Juice Bar   0.2
2           Café   0.2
3  Ice Cream Shop   0.2
4  Sandwich Place   0.2
```

----Mayur Vihar Phase 3----
```
                venue  freq
0               Hotel   1.0
1  Other Great Outdoors   0.0
2              Museum   0.0
3         Music Store   0.0
4         Music Venue   0.0
```

----Mehrauli----
```
                venue  freq
0    Thai Restaurant  0.33
1                Bar  0.22
2  Italian Restaurant  0.11
3             Lounge  0.11
4       Historic Site  0.11
```

----Metro Walk Mall, Rohini----
```
                venue  freq
0    Asian Restaurant   0.2
1          Theme Park   0.2
2          Pizza Place   0.2
3        Shopping Mall   0.2
4  Fast Food Restaurant   0.2
```

----Model Town 1----
```
                venue  freq
0          Pool Hall  0.25
1         Food Truck  0.25
2         Playground  0.25
3  Convenience Store  0.25
4        Music Store  0.00
```

----Model Town 2----
```
                venue  freq
0          Donut Shop  0.12
1   Chinese Restaurant  0.12
2          Pizza Place  0.12
3  Fast Food Restaurant  0.12
4        Track Stadium  0.12
```

----Model Town 3----
```
                venue  freq
0    Indian Restaurant  0.33
```

```
1              Park  0.33
2  Chinese Restaurant  0.33
3              ATM  0.00
4  Other Great Outdoors  0.00
```

----Moments Mall, Kirti Nagar----
```
              venue  freq
0          Donut Shop   0.1
1  Fast Food Restaurant   0.1
2              Café   0.1
3       Metro Station   0.1
4       Moving Target   0.1
```

----Moti Bagh----
```
               venue  freq
0  South Indian Restaurant   0.2
1       Department Store   0.2
2          Pizza Place   0.2
3             Arcade   0.2
4             Café   0.2
```

----Moti Nagar----
```
               venue  freq
0  Fast Food Restaurant  0.25
1    Fish & Chips Shop  0.25
2          BBQ Joint  0.25
3  Fried Chicken Joint  0.25
4             ATM  0.00
```

----Mukherjee Nagar----
```
               venue  freq
0        Music Venue  0.5
1           Bakery  0.5
2             ATM  0.0
3  Other Great Outdoors  0.0
4        Music Store  0.0
```

----Munirka----
```
              venue  freq
0      Grocery Store  0.11
1  Indian Restaurant  0.11
2        Pizza Place  0.11
3  Department Store  0.11
4     Sandwich Place  0.11
```

----Najafgarh----
```
              venue  freq
0  Food & Drink Shop  0.33
1  Electronics Store  0.33
2     Clothing Store  0.33
```

```
3    Other Nightlife  0.00
4      Music Venue  0.00
```

----Naraina----
```
           venue  freq
0  Indian Restaurant  0.4
1            Café  0.4
2      Snack Place  0.2
3           ATM  0.0
4          Office  0.0
```

----Nehru Place----
```
           venue  freq
0           Lounge  0.07
1       Coffee Shop  0.07
2            Food  0.07
3  Fast Food Restaurant  0.07
4   Bengali Restaurant  0.04
```

----Netaji Subhash Place----
```
            venue  freq
0  Fast Food Restaurant  0.16
1   Indian Restaurant  0.16
2       Coffee Shop  0.11
3      Shopping Mall  0.11
4           Diner  0.05
```

----New Friends Colony----
```
            venue  freq
0            Café  0.19
1  Fast Food Restaurant  0.12
2           Diner  0.06
3   Indian Restaurant  0.06
4       Pizza Place  0.06
```

----Nizamuddin----
```
           venue  freq
0  Indian Restaurant  0.22
1  Mughlai Restaurant  0.11
2       Pizza Place  0.11
3          Garden  0.11
4      Historic Site  0.11
```

----Okhla Phase 1----
```
           venue  freq
0  Electronics Store  0.33
1    Cosmetics Shop  0.33
2  Business Service  0.33
3           ATM  0.00
4    Other Nightlife  0.00
```

```
----Okhla Phase 2----
                venue  freq
0               Hotel   1.0
1  Other Great Outdoors   0.0
2              Museum   0.0
3          Music Store   0.0
4          Music Venue   0.0


----PVR Anupam Complex----
                venue  freq
0  Convenience Store  0.12
1  Electronics Store  0.12
2           Multiplex  0.12
3          Pizza Place  0.12
4            Tea Room  0.12


----Pacific Mall, Tagore Garden----
                venue  freq
0           Donut Shop  0.11
1            Multiplex  0.11
2           Coffee Shop  0.11
3            Restaurant  0.11
4  Fast Food Restaurant  0.11


----Paharganj----
                venue  freq
0               Hotel  0.38
1  Indian Restaurant  0.10
2           Restaurant  0.08
3                Café  0.05
4              Hostel  0.05


----Palam----
                venue  freq
0                 Bar   1.0
1                 ATM   0.0
2  Other Great Outdoors   0.0
3          Music Store   0.0
4          Music Venue   0.0


----Palate of Delhi, Chanakyapuri----
              venue  freq
0  Golf Course  0.25
1       Bakery  0.25
2     Sake Bar  0.25
3  Campground  0.25
4          ATM  0.00
```

----Panchsheel Park----

	venue	freq
0	Pizza Place	0.25
1	Event Space	0.25
2	American Restaurant	0.25
3	Business Service	0.25
4	ATM	0.00

----Pandara Road Market----

	venue	freq
0	Indian Restaurant	0.32
1	Smoke Shop	0.11
2	Ice Cream Shop	0.11
3	Snack Place	0.05
4	Cafeteria	0.05

----Pandav Nagar----

	venue	freq
0	Dessert Shop	0.22
1	Convenience Store	0.11
2	Moving Target	0.11
3	Bus Station	0.11
4	Park	0.11

----Paschim Vihar----

	venue	freq
0	Sandwich Place	0.11
1	Accessories Store	0.11
2	Pizza Place	0.11
3	Coffee Shop	0.11
4	Multicuisine Indian Restaurant	0.11

----Patparganj----

	venue	freq
0	Indian Restaurant	0.25
1	Dessert Shop	0.12
2	Gift Shop	0.12
3	Pizza Place	0.12
4	Shopping Mall	0.12

----Piccadily Hotel, Janakpuri----

	venue	freq
0	Chinese Restaurant	0.14
1	Sandwich Place	0.14
2	Indian Restaurant	0.14
3	Fast Food Restaurant	0.14
4	BBQ Joint	0.07

----Pitampura----

	venue	freq

```
0           Snack Place  0.25
1     Light Rail Station  0.25
2      Indian Restaurant  0.25
3              Market  0.25
4  Other Great Outdoors  0.00


----Pragati Maidan----
         venue  freq
0           Pool  0.25
1     Historic Site  0.12
2   History Museum  0.12
3    Hockey Arena  0.12
4      Art Museum  0.12


----Prashant Vihar----
          venue  freq
0  Indian Restaurant  0.43
1       Pizza Place  0.29
2        Multiplex  0.14
3         Airport  0.14
4          Office  0.00


----Preet Vihar----
            venue  freq
0           Arcade  0.14
1   Chinese Restaurant  0.14
2     Ice Cream Shop  0.14
3        Pizza Place  0.14
4  Fast Food Restaurant  0.14


----Premier Inn, Shalimar Bagh----
          venue  freq
0          Hotel  0.33
1   Shipping Store  0.33
2           Café  0.33
3        Multiplex  0.00
4     Music Store  0.00


----Pride Plaza Hotel, Aerocity----
          venue  freq
0          Hotel  0.36
1          Buffet  0.08
2      Coffee Shop  0.08
3        Hotel Bar  0.04
4  Indian Restaurant  0.04


----Punjabi Bagh----
           venue  freq
0        Donut Shop  0.17
1      Garden Center  0.17
```

```
2  Fast Food Restaurant  0.17
3           Coffee Shop  0.17
4     Indian Restaurant  0.17
```

----Qutab Institutional Area----
```
              venue  freq
0           Restaurant  0.25
1    Indian Restaurant  0.25
2                Hotel  0.12
3    Moroccan Restaurant  0.12
4 Modern European Restaurant  0.12
```

----R K Puram----
```
              venue  freq
0 Electronics Store  0.12
1        Restaurant  0.12
2     Shopping Mall  0.12
3   Thai Restaurant  0.12
4              Park  0.12
```

----Race Course----
```
               venue  freq
0           Racetrack  0.25
1  Gym / Fitness Center  0.25
2     Business Service  0.25
3       History Museum  0.25
4                 ATM  0.00
```

----Radisson Blu Plaza Delhi, Mahipalpur----
```
              venue  freq
0               Hotel  0.43
1                 Spa  0.14
2 American Restaurant  0.14
3   Indian Restaurant  0.14
4     Thai Restaurant  0.14
```

----Radisson Blu, Paschim Vihar----
```
              venue  freq
0               Hotel  0.33
1 Fast Food Restaurant  0.17
2   Indian Restaurant  0.17
3         Coffee Shop  0.17
4          Food Truck  0.17
```

----Rajendra Place----
```
              venue  freq
0 Fast Food Restaurant  0.2
1         Pizza Place   0.2
2              Bakery  0.1
3                 Bar  0.1
```

4   Coffee Shop   0.1

----Rajinder Nagar----
                    venue freq
0   Sandwich Place 0.11
1   Market 0.11
2   Sporting Goods Shop 0.11
3   Gym / Fitness Center 0.11
4   Café 0.11

----Rajouri Garden----
                    venue freq
0   Diner   0.1
1   Indian Restaurant   0.1
2   Dessert Shop   0.1
3   Fast Food Restaurant   0.1
4   Café   0.1

----Rohini----
                    venue freq
0   Department Store   0.2
1   Light Rail Station   0.2
2   Shopping Mall   0.2
3   Indian Restaurant   0.2
4   Fast Food Restaurant   0.2

----Roseate House, Aerocity----
                    venue freq
0   Hotel 0.33
1   Buffet 0.07
2   Coffee Shop 0.07
3   Light Rail Station 0.04
4   Indian Restaurant 0.04

----SDA----
                    venue freq
0   Café 0.27
1   Beer Garden 0.09
2   Market 0.09
3   Coffee Shop 0.09
4   Chinese Restaurant 0.09

----Safdarjung----
                    venue freq
0   Coffee Shop 0.15
1   Greek Restaurant 0.08
2   Sandwich Place 0.08
3   Park 0.08
4   Mexican Restaurant 0.08

----Sainik Farms----

	venue	freq
0	Asian Restaurant	0.25
1	Pub	0.25
2	Mediterranean Restaurant	0.25
3	Bakery	0.25
4	Other Great Outdoors	0.00

----Saket----

	venue	freq
0	Pizza Place	0.14
1	Indian Restaurant	0.14
2	Electronics Store	0.07
3	Fast Food Restaurant	0.07
4	Café	0.07

----Sangam Courtyard, RK Puram----

	venue	freq
0	Coffee Shop	0.15
1	Multiplex	0.15
2	Restaurant	0.08
3	Park	0.08
4	Asian Restaurant	0.08

----Sarita Vihar----

	venue	freq
0	Café	0.50
1	Deli / Bodega	0.25
2	Park	0.25
3	ATM	0.00
4	Other Great Outdoors	0.00

----Sarojini Nagar----

	venue	freq
0	Fast Food Restaurant	0.4
1	Pizza Place	0.2
2	Snack Place	0.2
3	Indian Restaurant	0.2
4	ATM	0.0

----Satyaniketan----

	venue	freq
0	Café	0.43
1	Bistro	0.14
2	Plaza	0.14
3	Snack Place	0.14
4	Deli / Bodega	0.14

----Sector 15, Dwarka----

```
                 venue  freq
0   Light Rail Station   0.5
1        Train Station   0.5
2                  ATM   0.0
3  Other Great Outdoors   0.0
4               Museum   0.0
```

----Select Citywalk Mall, Saket----
```
                venue  freq
0  Indian Restaurant  0.12
1     Clothing Store  0.07
2             Lounge  0.07
3                Bar  0.07
4               Café  0.07
```

----Shahdara----
```
                venue  freq
0                Park  0.33
1      Chocolate Shop  0.33
2   Mobile Phone Shop  0.33
3                 ATM  0.00
4  Other Great Outdoors  0.00
```

----Shahpur Jat----
```
                   venue  freq
0                    Bar  0.22
1   Australian Restaurant  0.11
2   Furniture / Home Store  0.11
3     Chinese Restaurant  0.11
4                Stadium  0.11
```

----Shakarpur----
```
            venue  freq
0           Diner   0.2
1     Coffee Shop   0.2
2             Gym   0.2
3   Shopping Mall   0.2
4     Snack Place   0.2
```

----Shalimar Bagh----
```
                  venue  freq
0            Pizza Place  0.17
1   Gym / Fitness Center  0.17
2      Convenience Store  0.17
3            Coffee Shop  0.17
4                 Bakery  0.17
```

----Shangri La's - Eros hotel, Janpath----
```
           venue  freq
0          Hotel  0.21
```

```
1            Spa  0.12
2  Indian Restaurant  0.12
3        Restaurant  0.08
4  Chinese Restaurant  0.08
```

----Shanti Niketan Marg----
```
         venue  freq
0      Pizza Place  0.25
1  Convenience Store  0.25
2            Café  0.25
3     Gourmet Shop  0.25
4            ATM  0.00
```

----Sheikh Sarai----
```
           venue  freq
0    Thai Restaurant  0.38
1      Historic Site  0.12
2       Whisky Bar  0.12
3  Italian Restaurant  0.12
4            Café  0.12
```

----Sheraton New Delhi Hotel, Saket----
```
           venue  freq
0   Indian Restaurant  0.13
1     Clothing Store  0.08
2             Bar  0.06
3  American Restaurant  0.05
4       Donut Shop  0.05
```

----South Extension 1----
```
         venue  freq
0      Coffee Shop  0.25
1  Indian Restaurant  0.25
2       Pizza Place  0.17
3  Chinese Restaurant  0.08
4     Clothing Store  0.08
```

----South Extension 2----
```
         venue  freq
0      Coffee Shop  0.24
1  Indian Restaurant  0.18
2          Market  0.12
3       Pizza Place  0.12
4     Jewelry Store  0.06
```

----Southern Park Mall, Saket----
```
         venue  freq
0  Indian Restaurant  0.11
1         Lounge  0.07
2           Café  0.07
```

```
3            Bar  0.07
4    Clothing Store  0.07


----Spark Mall, Kamla Nagar----
              venue  freq
0  Fast Food Restaurant  0.12
1        Breakfast Spot  0.12
2          Donut Shop  0.08
3    Indian Restaurant  0.08
4          Pizza Place  0.08


----Star City Mall, Mayur Vihar Phase 1----
            venue  freq
0              Hotel  0.29
1    Department Store  0.12
2          Restaurant  0.12
3    Asian Restaurant  0.06
4  Light Rail Station  0.06


----Subhash Nagar----
                 venue  freq
0              Multiplex  0.25
1          Skating Rink  0.25
2                 Park  0.25
3      Sculpture Garden  0.25
4  Northeast Indian Restaurant  0.00


----Sunder Nagar----
            venue  freq
0    Indian Restaurant  0.23
1              Hotel  0.15
2  Italian Restaurant  0.15
3        Gaming Cafe  0.08
4        Snack Place  0.08


----T3 Domestic Arrival, Aerocity----
            venue  freq
0        Coffee Shop  0.33
1        Pizza Place  0.11
2              Café  0.11
3    Airport Terminal  0.11
4    Airport Service  0.11


----TDI Mall, Rajouri Garden----
            venue  freq
0  Fast Food Restaurant  0.17
1              Café  0.13
2        Dessert Shop  0.09
3        Shopping Mall  0.09
4    Indian Restaurant  0.09
```

----Tagore Garden----
```
            venue  freq
0   Train Station   0.1
1          Market   0.1
2       BBQ Joint   0.1
3  Ice Cream Shop   0.1
4            Park   0.1
```

----Taj Vivanta, Khan Market----
```
               venue  freq
0               Café  0.17
1         Coffee Shop  0.09
2  Chinese Restaurant  0.06
3                 Bar  0.06
4    Asian Restaurant  0.06
```

----The Ashok, Chanakyapuri----
```
                venue  freq
0           Nightclub  0.20
1   Indian Restaurant  0.20
2          Smoke Shop  0.07
3  Italian Restaurant  0.07
4  Chinese Restaurant  0.07
```

----The Claridges, Aurangzeb Road----
```
                     venue  freq
0                    Hotel   0.2
1                Hotel Bar   0.1
2  Mediterranean Restaurant   0.1
3               Smoke Shop   0.1
4  North Indian Restaurant   0.1
```

----The Grand New Delhi, Vasant Kunj----
```
                 venue  freq
0          Coffee Shop  0.12
1  Fast Food Restaurant  0.08
2        Clothing Store  0.08
3      Asian Restaurant  0.04
4    Chinese Restaurant  0.04
```

----The Imperial, Janpath----
```
               venue  freq
0              Hotel  0.12
1  Indian Restaurant  0.12
2               Café  0.09
3  Italian Restaurant  0.09
4         Coffee Shop  0.06
```

----The India Mall, New Friends Colony----
```
                   venue  freq
0                   Café  0.16
1    Fast Food Restaurant  0.11
2       Indian Restaurant  0.11
3                  Diner  0.05
4  Middle Eastern Restaurant  0.05
```


----The Lalit New Delhi, Barakhamba Road----
```
             venue  freq
0  Indian Restaurant  0.33
1            Bakery  0.33
2   Asian Restaurant  0.17
3         Hotel Bar  0.17
4        Music Store  0.00
```


----The Leela Ambience Convention Hotel----
```
               venue  freq
0               Hotel  0.25
1   Indian Restaurant  0.25
2                Park  0.25
3                Café  0.25
4  Other Great Outdoors  0.00
```


----The Leela Palace, Chanakyapuri----
```
                    venue  freq
0          Indian Restaurant  0.18
1                     Pool  0.09
2                      Spa  0.09
3        Seafood Restaurant  0.09
4  Northeast Indian Restaurant  0.09
```


----The Lodhi, Lodhi Road----
```
              venue  freq
0              Hotel  0.12
1  Chinese Restaurant  0.12
2   Indian Restaurant  0.12
3          Hotel Bar  0.06
4                Spa  0.06
```


----The Park, Connaught Place----
```
                 venue  freq
0                 Hotel  0.20
1                  Spa  0.08
2  Mediterranean Restaurant  0.08
3     Italian Restaurant  0.08
4     Chinese Restaurant  0.04
```


----The Suryaa New Delhi, New Friends Colony----
```
               venue  freq
```

```
0              Café  0.14
1   Indian Restaurant  0.10
2  Fast Food Restaurant  0.10
3             Diner  0.05
4          Nightclub  0.05
```

----The Taj Mahal Hotel, Mansingh Road----
```
           venue  freq
0     Jewelry Store  0.14
1           Lounge  0.14
2  Chinese Restaurant  0.14
3         Restaurant  0.14
4  Indian Restaurant  0.14
```

----The Taj Palace Hotel, Chanakyapuri----
```
           venue  freq
0            Hotel  0.12
1   Indian Restaurant  0.12
2             Café  0.09
3  Chinese Restaurant  0.06
4           Lounge  0.03
```

----The Uppal, Aerocity----
```
            venue  freq
0            Hotel  0.75
1   Indian Restaurant  0.25
2  Other Great Outdoors  0.00
3           Museum  0.00
4        Music Store  0.00
```

----The Village Restaurant Complex, Khel Gaon Marg----
```
            venue  freq
0              Bar  0.14
1  Australian Restaurant  0.07
2            Hotel  0.07
3         Coffee Shop  0.07
4          Theater  0.07
```

----Tilak Nagar----
```
            venue  freq
0  Fast Food Restaurant   0.6
1          Restaurant   0.2
2             Café   0.2
3              ATM   0.0
4  Other Great Outdoors   0.0
```

----Tughlakabad Institutional Area----
```
           venue  freq
0            Hotel   0.2
1  Chinese Restaurant   0.2
```

```
2       Steakhouse   0.2
3       Restaurant   0.2
4          Market    0.2
```

----Uday Park----

```
           venue  freq
0   Music Venue  0.17
1   Pizza Place  0.17
2        Market  0.17
3 Metro Station  0.17
4          Park  0.17
```

----Unity One Mall, Janakpuri----

```
              venue  freq
0    Sandwich Place  0.22
1       Coffee Shop  0.11
2 Light Rail Station  0.11
3     Metro Station  0.11
4  Indian Restaurant  0.11
```

----Uttam Nagar----

```
               venue  freq
0   Indian Restaurant   1.0
1                 ATM   0.0
2 Other Great Outdoors   0.0
3              Museum   0.0
4         Music Store   0.0
```

----V3S Mall, Laxmi Nagar----

```
              venue  freq
0 Food & Drink Shop  0.08
1       Pizza Place  0.08
2         Gift Shop  0.08
3      Liquor Store  0.08
4               Gym  0.08
```

----Vasant Kunj----

```
              venue  freq
0 Chinese Restaurant  0.14
1                Bar  0.14
2        Pizza Place  0.14
3                Spa  0.14
4     Sandwich Place  0.14
```

----Vasant Square Mall, Vasant Kunj----

```
                        venue  freq
0             Sandwich Place  0.11
1 Vegetarian / Vegan Restaurant  0.11
2                       Bank  0.11
3                        Bar  0.11
```

```
4              Café  0.11


----Vasant Vihar----
             venue  freq
0             Café  0.15
1       Restaurant  0.07
2  Fast Food Restaurant  0.07
3  Chinese Restaurant  0.07
4      Coffee Shop  0.07


----Vasundhara Enclave----
             venue  freq
0           Bakery   1.0
1             ATM   0.0
2  Other Great Outdoors   0.0
3      Music Store   0.0
4      Music Venue   0.0


----Vijay Nagar----
        venue  freq
0        Café  0.17
1      Bakery  0.08
2  Cheese Shop  0.08
3  Snack Place  0.08
4  Coffee Shop  0.08


----Vikas Marg----
              venue  freq
0      Dessert Shop  0.25
1      Burger Joint  0.25
2      Burrito Place  0.25
3             Café  0.25
4  Portuguese Restaurant  0.00


----Vikaspuri----
           venue  freq
0      Pizza Place  0.25
1      Beer Garden  0.25
2  Fast Food Restaurant  0.25
3    Ice Cream Shop  0.25
4            ATM  0.00


----Vivek Vihar----
           venue  freq
0        Juice Bar   0.4
1  Athletics & Sports   0.2
2      Smoke Shop   0.2
3   Bed & Breakfast   0.2
4            ATM   0.0
```

----Wazirpur----
```
              venue  freq
0  Mobile Phone Shop   1.0
1                ATM   0.0
2             Office   0.0
3            Museum   0.0
4        Music Store   0.0
```

----West End Mall, Janak Puri----
```
               venue  freq
0       Sandwich Place  0.13
1  Fast Food Restaurant  0.13
2   Chinese Restaurant  0.13
3    Indian Restaurant  0.13
4          Coffee Shop  0.07
```

----West Gate Mall, Rajouri Garden----
```
                venue  freq
0  Fast Food Restaurant  0.18
1                 Café  0.12
2        Shopping Mall  0.12
3  American Restaurant  0.06
4          Pizza Place  0.06
```

----West Patel Nagar----
```
                 venue  freq
0           Pizza Place  0.25
1   Sporting Goods Shop  0.25
2  Fast Food Restaurant  0.25
3    Indian Restaurant  0.25
4                 ATM  0.00
```

----Worldmark 1, Aerocity----
```
               venue  freq
0               Hotel  0.30
1              Buffet  0.07
2         Coffee Shop  0.07
3      Bed & Breakfast  0.07
4   Light Rail Station  0.03
```

----Yusuf Sarai----
```
               venue  freq
0          Coffee Shop  0.18
1    Indian Restaurant  0.18
2                 Bar  0.09
3   Chinese Restaurant  0.09
4               Hotel  0.09
```

----ibis New Delhi, Aerocity----

```
        venue  freq
0               Hotel  0.36
1              Buffet  0.07
2         Coffee Shop  0.07
3  Light Rail Station  0.04
4   Indian Restaurant  0.04
```

```
##Cluster Locality

## Run k-means to cluster the Locality into 5 clusters.

# set number of clusters
kclusters = 5

New_Delhi_clustering = New_Delhi_grouped.drop('Locality', 1)

# run k-means clustering
kmeans = KMeans(n_clusters=kclusters, random_state=0).fit(New_Delhi_clustering)

# check cluster labels generated for each row in the dataframe
kmeans.labels_[0:10]
kmeans.labels_.shape
```

[34]: (240,)

[36]:
```
# add clustering labels
New_Delhi_merged = df_final.head(240)
New_Delhi_merged['Cluster Labels'] = kmeans.labels_

# merge New_Delhi_grouped with df_Chinese to add latitude/longitude for each Locality
New_Delhi_merged = New_Delhi_merged.join(Locality_venues_sorted.set_index('Locality'), on='Locality')

New_Delhi_merged.head()
```

[36]:

	Locality	Lat	Lng	No_of_Restaurant	Cusines	Agg_Rating	Comments	No_of_Votes	Cluster Labels
0	ARSS Mall, Paschim Vihar	28.668945	77.101544	1	North Indian, South Indian, Chinese, Mithai, F...	3.100000	Average	117	4
1	Adchini	28.537063	77.197808	13	Fast Food, North Indian, Seafood, Continental,...	3.292308	Average, Good, Poor, Very Good	1560	4
2	Aditya Mega Mall, Karkardooma	28.656131	77.301266	4	Finger Food, North Indian, Mughlai, Pizza, Fas...	3.275000	Average, Good	434	4
3	Aerocity	28.553077	77.104270	2	Fast Food, Italian, Pizza, North Indian, Conti...	3.200000	Average	59	2
4	Aggarwal City Mall, Pitampura	28.690020	77.134650	3	North Indian, Chinese, Street Food, Mithai, No...	3.033333	Average	126	4

```
# create final map
map_clusters = folium.Map(location=[latitude, longitude], zoom_start=10)

# set color scheme for the clusters
x = np.arange(kclusters)
ys = [i+x+(i*x)**2 for i in range(kclusters)]
#colors_array = cm.rainbow(np.linspace(0, 1, len(ys)))
#rainbow = [colors.rgb2hex(i) for i in colors_array]
colors = ['red', 'green', 'blue', 'yellow','orange']

# add markers to the map
markers_colors = []
for lat, lon, poi, cluster in zip(New_Delhi_merged['Lat'], New_Delhi_merged['Lng'], New_Delhi_merged['Locality'], New_Delhi_merged['Cluster Labels']):
    label = folium.Popup(str(poi) + ' Cluster ' + str(cluster), parse_html=True)
    folium.CircleMarker(
        [lat, lon],
        radius=5,
        popup=label,
        color='black',
        fill=True,
        fill_color=colors[cluster],
        fill_opacity=0.7).add_to(map_clusters)

map_clusters
```
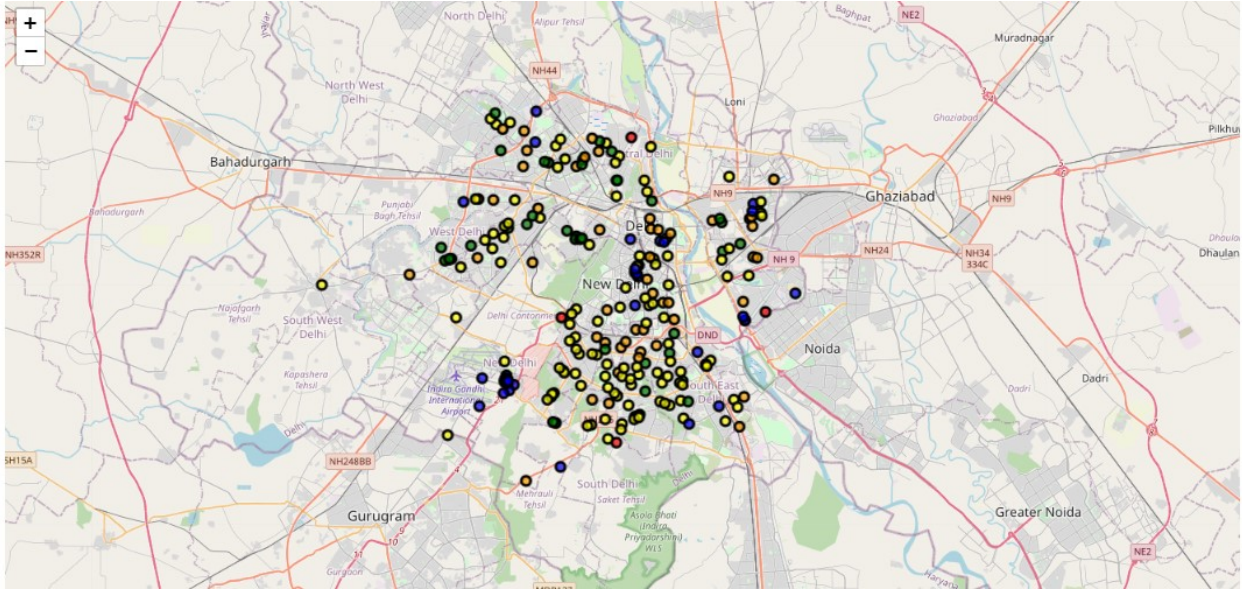
```
# Examine Clusters

## Cluster 1
New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] == 0, New_Delhi_merged.columns[[1] + list(range(5, New_Delhi_merged.shape[1]))]]
```

	Lat	Agg_Rating	Comments	No_of_Votes	Cluster Labels
137	28.708865	3.008696	Average, Good	187	0
151	28.592153	3.200000	Average	14	0
177	28.511482	2.750000	Average, Poor	107	0
228	28.596073	3.052941	Average, Good	305	0

```
[39]: ## Examine Clusters

      ## Cluster 2
      New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] == 1, New_Delhi_merged.columns[[1] + list(range(5, New_Delhi_merged.shape[1]))]]
```

[39]:

	Lat	Agg_Rating	Comments	No_of_Votes	Cluster Labels
5	28.700516	3.040000	Average, Good, Poor	594	1
11	28.562580	3.750000	Average, Good, Very Good	875	1
15	28.691136	3.390909	Average, Good, Very Good	485	1
22	28.654105	3.085714	Average	80	1
28	28.650254	3.166667	Average, Good	1217	1
36	28.692546	3.480000	Average, Good	948	1
48	28.630149	2.950000	Average, Good, Poor	471	1
50	28.645084	3.235000	Average, Good, Poor, Very Good	2578	1
57	28.699837	3.376471	Average, Good, Very Good	2460	1
73	28.643036	3.000000	Average	7	1
87	28.582031	3.117143	Average, Good, Poor, Very Good	2140	1
90	28.642755	3.450000	Average, Good	322	1
94	28.538153	3.117143	Average, Good, Poor	3642	1
95	28.681154	3.453448	Average, Good, Very Good	5267	1
101	28.667644	3.300000	Average	132	1
103	28.652501	3.080000	Average, Good, Poor	2196	1
104	28.656263	3.097619	Average, Good	965	1
107	28.569394	3.252381	Average, Good	1525	1
110	28.635391	3.040385	Average, Good, Poor, Very Good	2442	1
130	28.724100	3.133333	Average	325	1

```
## Cluster 3
New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] == 2, New_Delhi_merged.columns[[1] + list(range(5, New_Delhi_merged.shape[1]))]]
```

[40]:

	Lat	Agg_Rating	Comments	No_of_Votes	Cluster Labels
3	28.553077	3.200000	Average	59	2
10	28.554807	3.000000	Average	4	2
12	28.641698	3.050000	Average	17	2
19	28.548827	2.700000	Average	9	2
25	28.495624	2.700000	Average	23	2
35	28.590297	3.350000	Average, Good	127	2
56	28.570246	4.050000	Average, Excellent	1949	2
60	28.665829	4.000000	Very Good	756	2
69	28.550327	3.300000	Average	30	2
70	28.590654	3.550000	Average, Good	302	2
71	28.641003	3.650000	Average, Good	367	2
72	28.705700	3.350000	Average, Good	278	2
74	28.621267	3.416667	Average, Good	475	2
83	28.552895	3.300000	Average	15	2
111	28.618772	3.666667	Average, Good, Very Good	725	2
112	28.552036	3.500000	Good	26	2
119	28.545033	2.960000	Average, Good	259	2
128	28.608252	2.945000	Average, Good	406	2
146	28.535040	3.175000	Average, Good	60	2
149	28.642910	2.996552	Average, Good, Poor, Very Good	2850	2
162	28.725814	3.050000	Average	50	2
163	28.552711	3.100000	Average	7	2
168	28.543814	3.950000	Average, Excellent, Good, Very Good	1225	2

```
## Cluster 4
New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] ==3 , New_Delhi_merged.columns[[1] + list(range(5, New_Delhi_merged.shape[1]))]]
```

	Lat	Agg_Rating	Comments	No_of_Votes	Cluster Labels
6	28.527088	3.117391	Average, Good, Poor	1012	3
7	28.541298	3.425000	Average, Good, Very Good	2460	3
8	28.555599	3.800000	Average, Very Good	2411	3
9	28.659870	3.281481	Average, Good	1309	3
16	28.630440	3.208333	Average, Good, Poor	1779	3
...	...	...	...	...	...
230	28.658041	3.400000	Average	19	3
232	28.667344	3.077273	Average, Good, Poor	939	3
233	28.695096	3.050000	Average	86	3
235	28.652978	3.500000	Good	178	3
238	28.559928	3.075000	Average, Good	923	3

115 rows × 5 columns

```
## Cluster 5
New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] == 4, New_Delhi_merged.columns[[1] + list(range(5, New_Delhi_merged.shape[1]))]]
```

	Lat	Agg_Rating	Comments	No_of_Votes	Cluster Labels
0	28.668945	3.100000	Average	117	4
1	28.537063	3.292308	Average, Good, Poor, Very Good	1560	4
2	28.656131	3.275000	Average, Good	434	4
4	28.690020	3.033333	Average	126	4
13	28.690182	3.090000	Average, Good, Poor	971	4
14	28.693969	3.378571	Average, Good	2343	4
18	28.696302	3.300000	Average, Good	415	4
23	28.656414	3.358182	Average, Good, Very Good	6668	4
24	28.649658	3.800000	Average, Excellent, Good, Very Good	1410	4
33	28.657388	3.320000	Average, Good	636	4
42	28.576161	2.983333	Average, Good, Poor	542	4
43	28.643320	3.287500	Average, Good, Poor, Very Good	2570	4
44	28.574288	3.496154	Average, Good, Poor, Very Good	15579	4
46	28.573241	3.225000	Average, Good, Poor	1106	4
47	28.681582	3.046875	Average, Good, Poor	1224	4
49	28.602169	2.900000	Average	7	4
55	28.617102	4.200000	Very Good	3010	4
59	28.654883	3.053846	Average, Good	262	4
61	28.668181	3.400000	Average	33	4
65	28.556980	3.272414	Average, Good, Poor	5243	4
66	28.699373	3.252174	Average, Good	973	4
76	28.576785	3.200000	Average, Good	143	4
77	28.631728	3.060714	Average, Good, Poor, Very Good	1650	4

3. Conclusion

- *Chanakyapuri, Pitampura, Safdarjung are some of the best neighborhoods for Chinese cuisine.*

- *Pancsheel park, Nehru place have the best Chinese Resturant.*

- *Cannaught place, Rajouri garden, Malviya nagar are the best places for edible person.*

- *Greater kailash, Feroze shah road, Saket have best resturants in New Delhi.*

- *Cluster 1: It is most recommended for Indian Restaurants.*
  Cluster 2: It is most recommended for Hotels and nightclub.
  Cluster 3 and Cluster 5: It is most recommended for Fast food.
  Cluster 4: It is most recommended for the cafe and pizza.