

Capstone Project — The Battle of Neighbourhoods

1. Introduction

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, English is also spoken as a formal language within businesses and government agencies. Over last decades it is continuously grow because of the city's important role in government and commercial business.

With it's diverse culture , comes diverse food items. We all know that Indians love spicy foods but how do they accept the western food? How much they like the most common drink in western countries, like coffee? So as part of this project , we will list and visualise all major parts of New Delhi City.

1.1 Questions that can be asked using the above mentioned datasets

- What is best location in New Delhi City for a Cafe ?
- Which areas have large number of Cafe Market ?
- Which areas have less number of restaurants ?
- Which is the best place to stay if I prefer to drink a good cup of Cofee ?
- What places are have the best restaurants in New Delhi?

1.2 Data

For this project we need the following data :

1. New Delhi Restaurants data that contains list Locality, Restaurant name, Rating along with their latitude and longitude.
 - Data source : [Zomato kaggel dataset \(<https://www.kaggle.com/shrutimehta/zomato-restaurants-data>\)](https://www.kaggle.com/shrutimehta/zomato-restaurants-data)
 - Description : This data set contains the required information. And we will use this data set to explore various locality of new delhi city.
2. Nearby places in each locality of new delhi city.
 - Data source : Fousquare API
 - Description : By using this api we will get all the venues in each neighborhood.

1.3 Approach

- Collect the new delhi city data from [Zomato kaggel dataset \(<https://www.kaggle.com/shrutimehta/zomato-restaurants-data>\)](https://www.kaggle.com/shrutimehta/zomato-restaurants-data)
- Use aggregative rating for each resturant to find the best places.
- Visualize the Ranking of neighborhoods using folium library(python)
- Use FourSquare API to find all venues for each neighborhood.
- Filter out the top 5 most common venues nearby.

In [306]:

```
import pandas as pd
import numpy as np
import requests # library to handle requests
from pandas.io.json import json_normalize # transform JSON file into a pandas dataframe
# Matplotlib and associated plotting modules
import matplotlib.cm as cm
import matplotlib.colors as colors
# import k-means from clustering stage
from sklearn.cluster import KMeans

!conda install -c conda-forge folium=0.5.0 --yes # uncomment this line if you haven't completed the Foursquare API lab
import folium # map rendering library
! pip install geocoder
import geocoder
```

Collecting package metadata (current_repodata.json): done
Solving environment: done

All requested packages already installed.

```
Requirement already satisfied: geocoder in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (1.38.1)
Requirement already satisfied: ratelim in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from geocoder) (0.1.6)
Requirement already satisfied: six in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from geocoder) (1.15.0)
Requirement already satisfied: future in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from geocoder) (0.18.2)
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) (2.24.0)
Requirement already satisfied: decorator in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from ratelim->geocoder) (4.4.2)
Requirement already satisfied: idna<3,>=2.5 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from requests->geocoder) (2.10)
Requirement already satisfied: certifi>=2017.4.17 in /home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from requests->geocoder) (2020.6.20)
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) (1.25.11)
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)
```

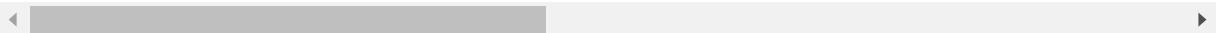
In [307]:

```
df = pd.read_csv('https://raw.githubusercontent.com/zoulifan87/Capstone-Project---The-Battle-of-Neighborhoods/main/zomato.csv',encoding='ISO-8859-1')
df.head()
```

Out[307]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenue...	Century City Mall, Poblacion, Makati City	Century City Mall, Poblacion, Makati City, Mak...	121.0275
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...	121.0141
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...	121.0568
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...	121.0564
4	6314302	Sambo Kojin	162	Mandaluyong City	Third Floor, Mega Atrium, SM Megamall, Ortigas...	SM Megamall, Ortigas, Mandaluyong City	SM Megamall, Ortigas, Mandaluyong City, Mandal...	121.0575

5 rows × 21 columns



In [308]:

```
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()
```

Out[308]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude	Latitude
0	18287358	Food Cloud	1	New Delhi	Aaya Nagar, New Delhi	Aaya Nagar	Aaya Nagar, New Delhi	0.000000	0.000000
1	18216944	Burger.in	1	New Delhi	84, Near Honda Showroom, Adchini, New Delhi	Adchini	Adchini, New Delhi	77.196923	28.535382
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
3	18384127	Dilli Ka Dhaba	1	New Delhi	66 A, Ground Floor, Sri Aurobindo Marg, Adchini...	Adchini	Adchini, New Delhi	77.198033	28.537547
4	582	Govardhan	1	New Delhi	84, Adjacent Hero Motor Bike Showroom, Main Me...	Adchini	Adchini, New Delhi	77.196924	28.535523

5 rows × 21 columns

2. Data Cleaning and Data Visualization

2.1 Data Cleaning¶

remove the unwanted columns and rows from dataset

In [309]:

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

In [310]:

```
df_Res = df_Res[df_Res['Aggregate rating'] !=0.0]
```

In [311]:

```
df_Res.head()
```

Out[311]:

	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 What places have the best restaurants in New Delhi?

In [312]:

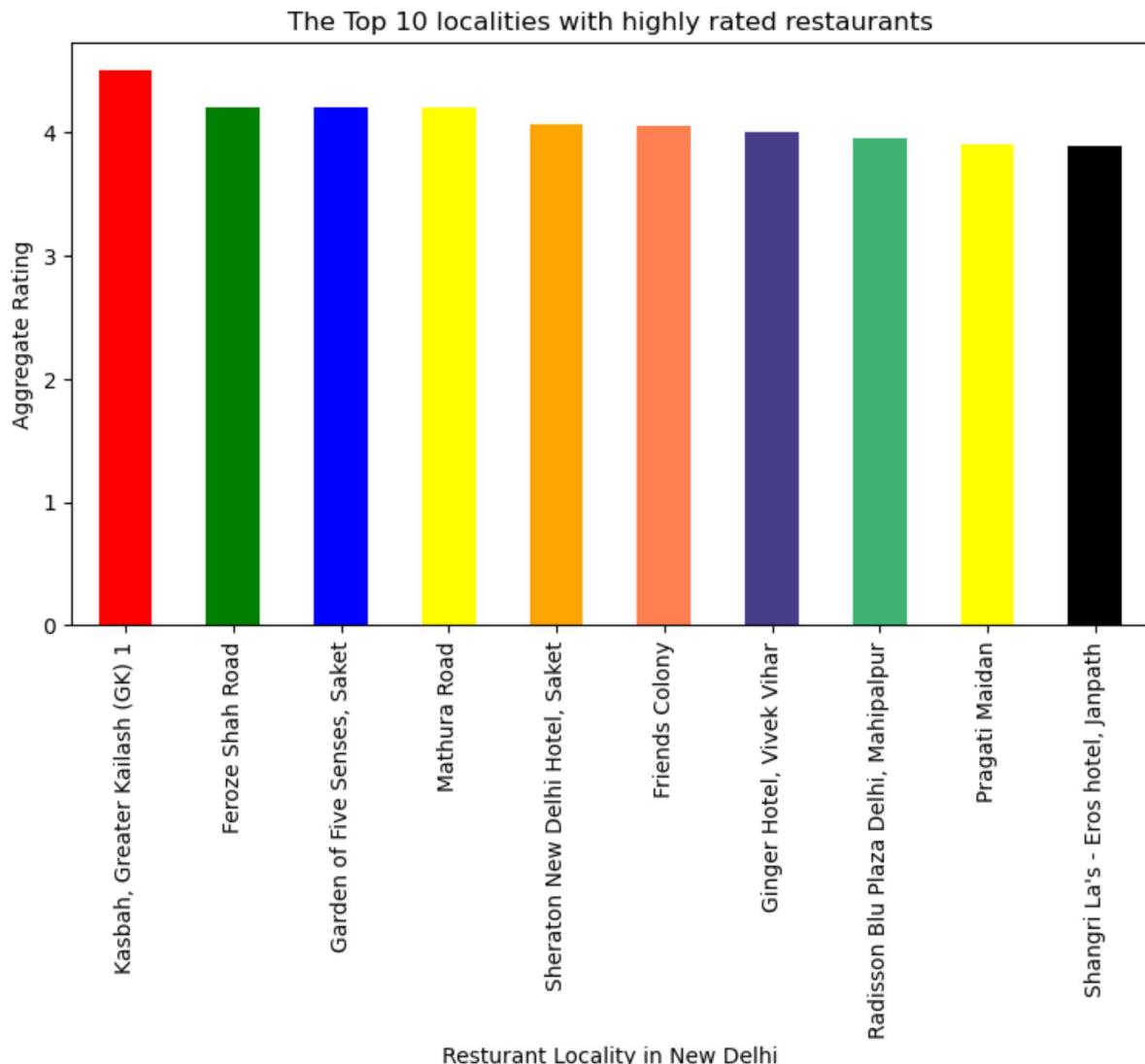
```
import matplotlib.pyplot as plt

plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('The Top 10 localities with highly rated restaurants')
#On x-axis

color_1 = ['red', 'green', 'blue', 'yellow','orange', 'coral', 'darkslateblue', 'mediumseagreen', 'yellow','black']

#giving a bar plot
df_Res.groupby('Locality')['Aggregate rating'].mean().nlargest(10).plot(kind='bar', color = color_1)

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



The best restaurants are available in Kasbah and Greater Kailash area.

2.3 what places are have worst restaurants in New Dehli?

In [313]:

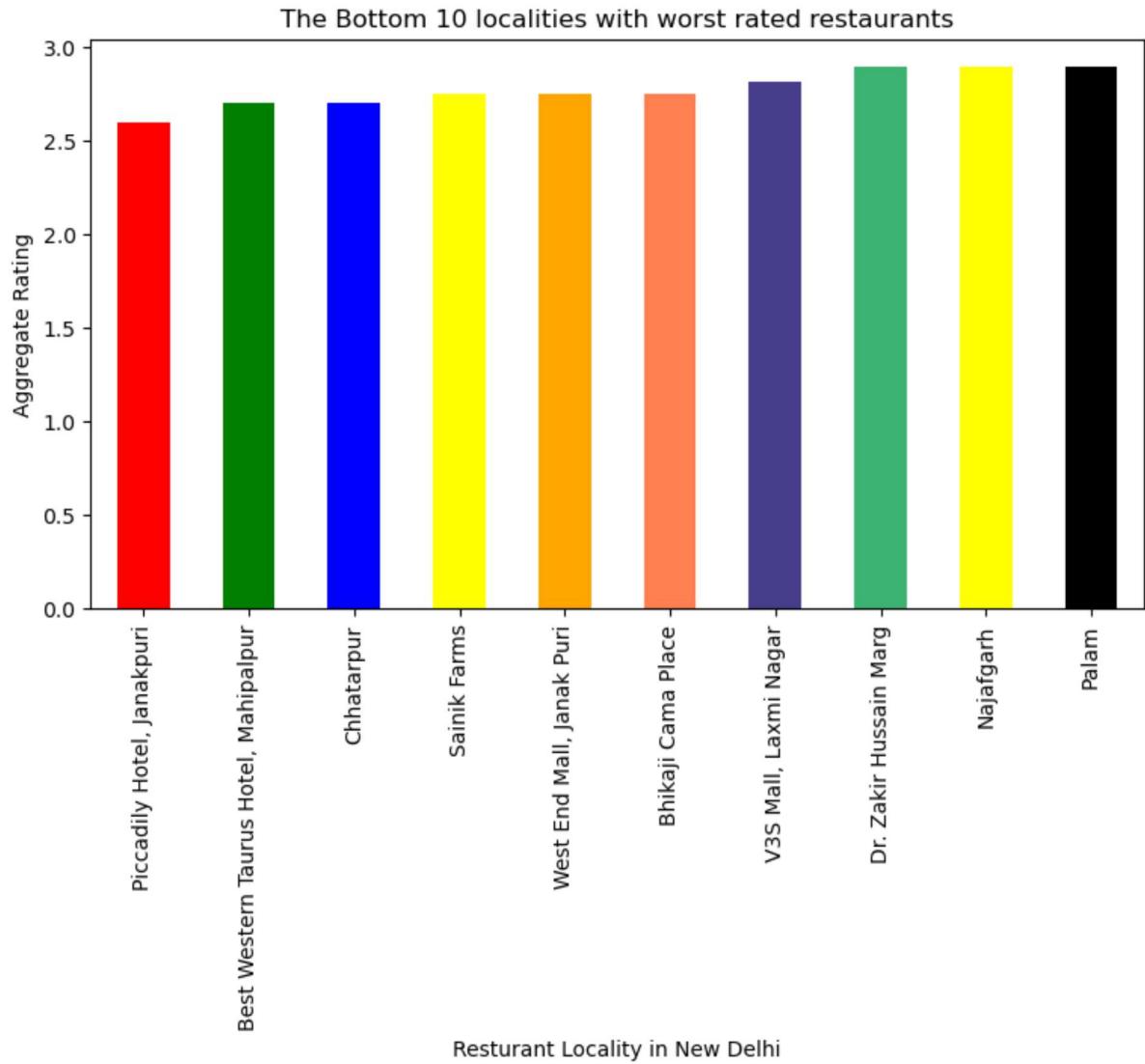
```
import matplotlib.pyplot as plt
plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('The Bottom 10 localities with worst rated restaurants')
#On x-axis

#giving a bar plot

df_Res.groupby('Locality')['Aggregate rating'].mean().nsmallest(10).plot(kind='bar', color
= color_1)

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

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



The worst restaurants are in Piccadilly Hotel and Janakpuri area.

2.4 Which place do people tend the most to go to restaurant in New Dehli?

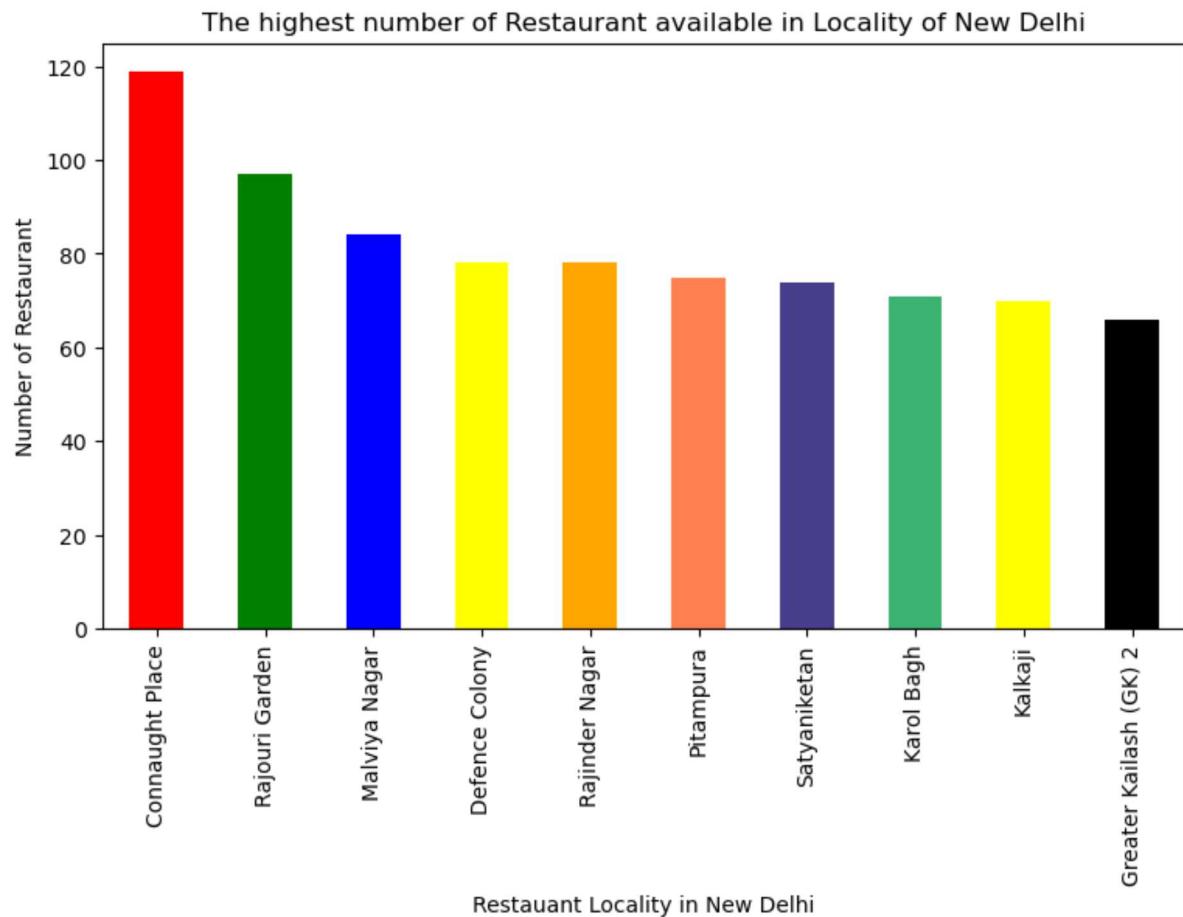
In [314]:

```
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
df_Res.groupby('Locality')['Restaurant Name'].count().nlargest(10).plot(kind='bar', color = color_1)

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

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



Connaught Place is the best area to attract people to stay and eat in restaurants.

2.5 Which place do people tend the least to go to restaurant in New Dehli ?

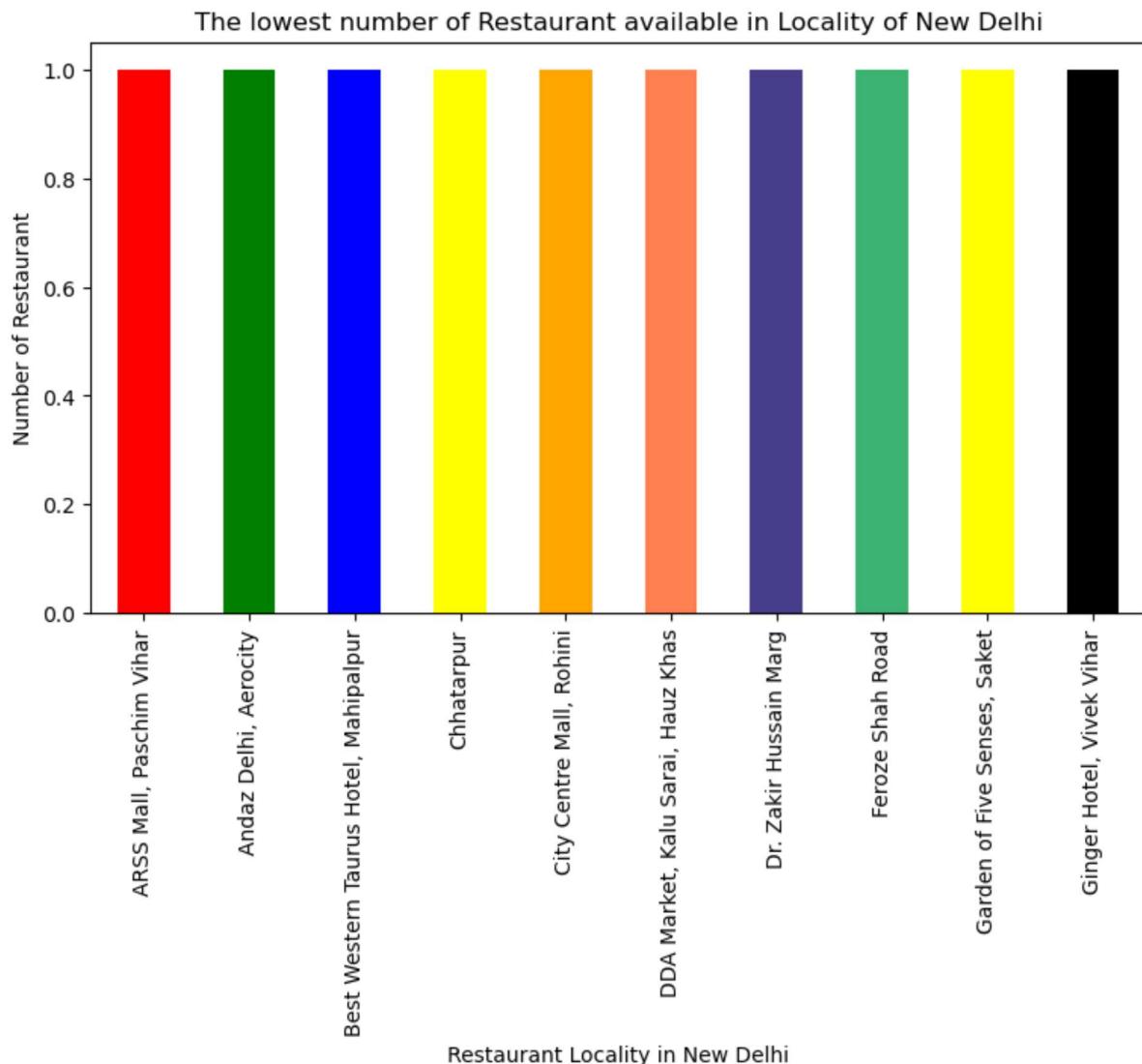
In [315]:

```
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
df_Res.groupby('Locality')['Restaurant Name'].count().nsmallest(10).plot(kind='bar', color
= color_1)

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

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



2.5 What are the best places for Café in New Delhi city?

In [316]:

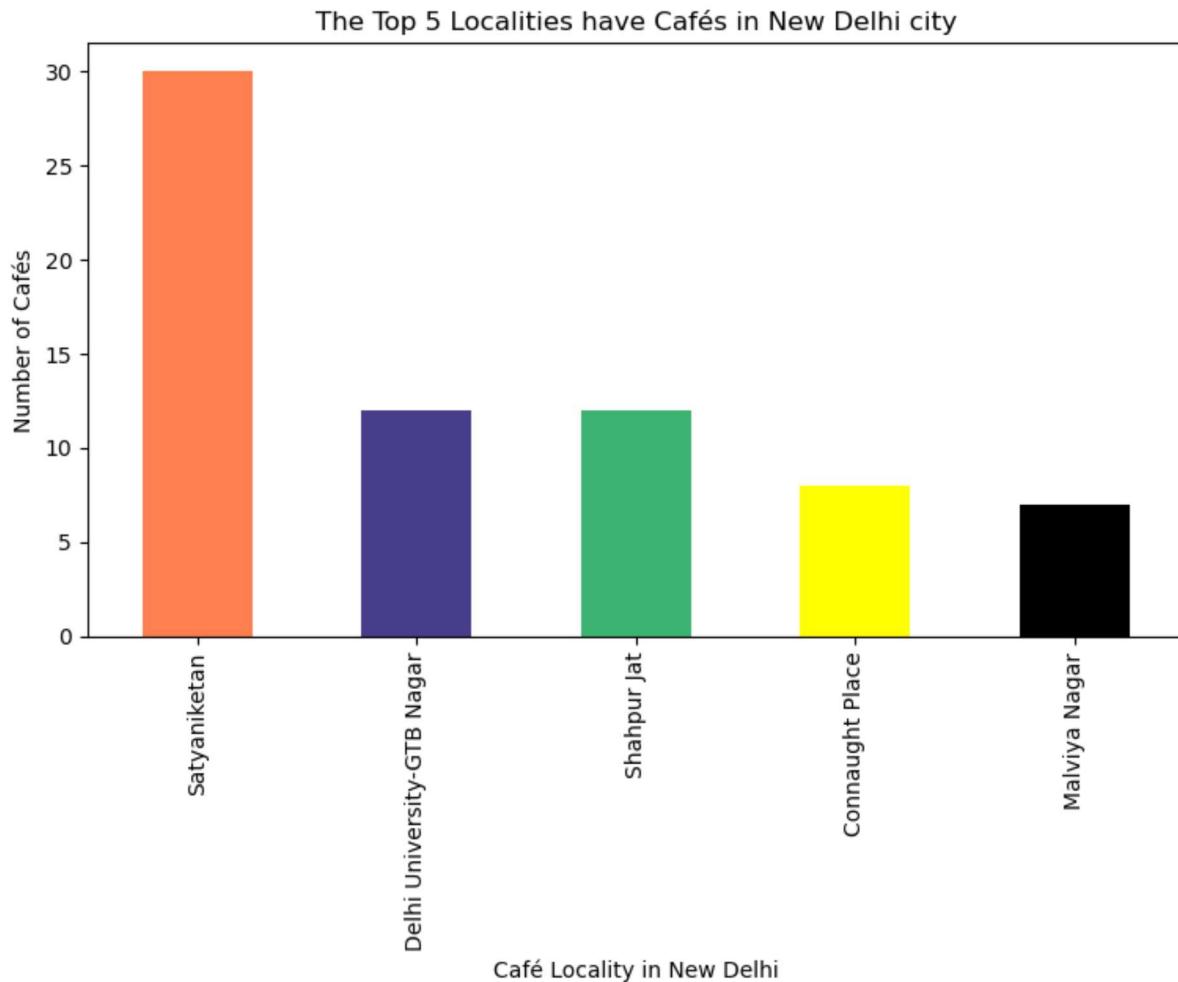
```
import matplotlib.pyplot as plt
plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('The Top 5 Localities have Cafés in New Delhi city')
#On x-axis

color_2 =[ 'coral', 'darkslateblue', 'mediumseagreen', 'yellow','black']

#giving a bar plot
df_Res[df_Res['Cuisines'].str.startswith('Cafe')].groupby('Locality')['Restaurant Name'].count().nlargest(5).plot(kind='bar', color = color_2)

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

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



Satyaniketan is the best place for Cafe.

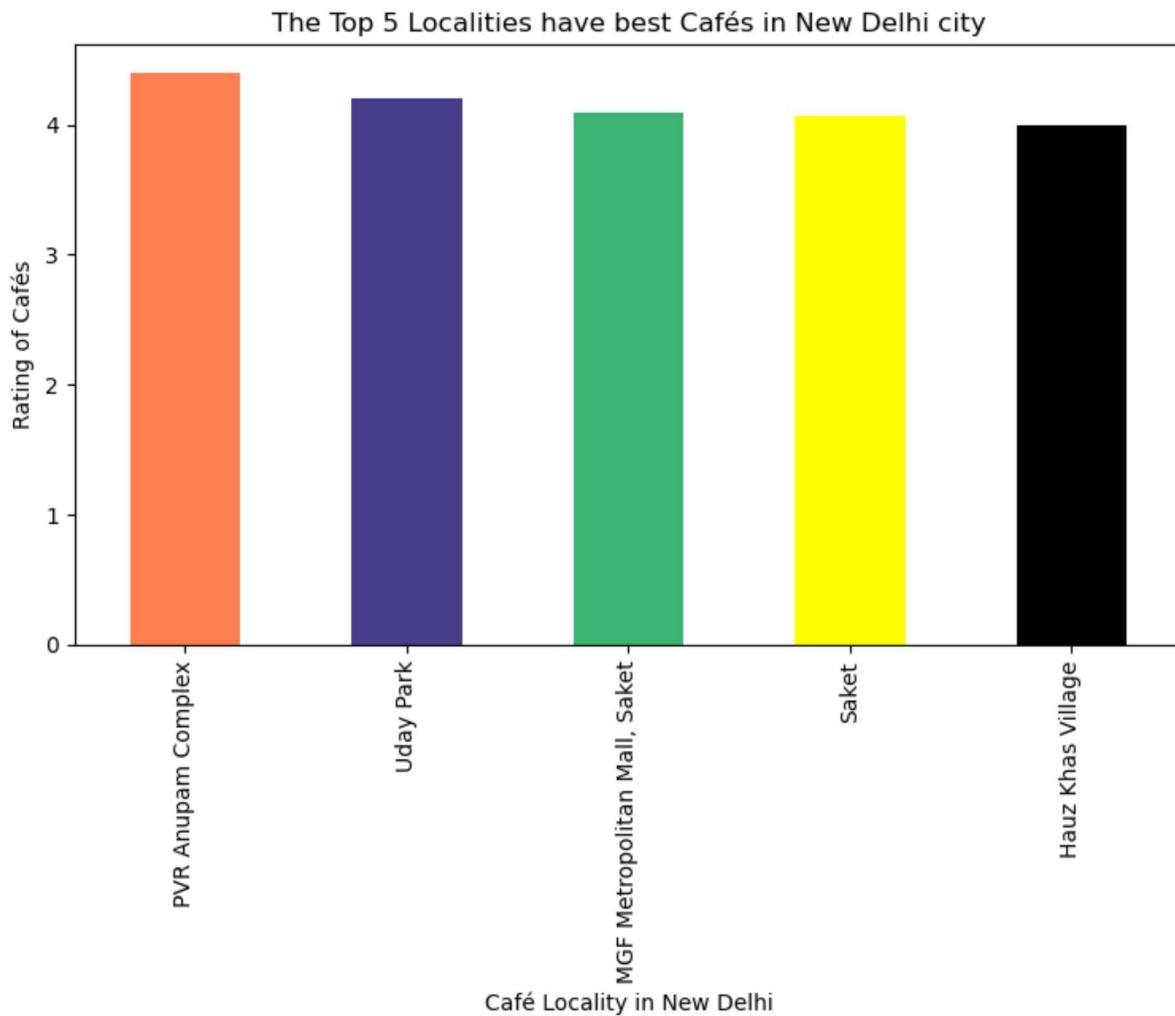
2.6 Which places have the best Cafés in New Delhi?

In [317]:

```
import matplotlib.pyplot as plt
plt.figure(figsize=(9,5), dpi = 100)
# title
plt.title('The Top 5 Localities have best Cafés in New Delhi city')
#On x-axis
color_2 =[ 'coral', 'darkslateblue', 'mediumseagreen', 'yellow','black']
#giving a bar plot
df_Res[df_Res['Cuisines'].str.startswith('Cafe')].groupby('Locality')['Aggregate rating'].mean().nlargest(5).plot(kind='bar', color = color_2)

plt.xlabel('Café Locality in New Delhi')
#On y-axis
plt.ylabel('Rating of Cafés')

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



3. Use Foursquare to visualize and explore venues in New Delhi City

PVR Anupam Complex is the area has the best Cafes in New Delhi.

3.1 Data transformation

Based on Locality grouping the data.

In [318]:

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

In [319]:

```
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()
```

Out[319]:

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

In [320]:

```
df_final.shape
```

Out[320]:

```
(240, 8)
```

3.2 Define Foursquare Credentials and Version.

In [321]:

```
## Define Foursquare Credentials and Version
CLIENT_ID = 'ZJSMHFRB2IYW5TDXCPTABKCKWJDR0N4M1I4I3NOVUNTWZFXK' # Foursquare ID
CLIENT_SECRET = 'KGKG1NBIKSEKF3PUBIIBKO1VJWDMUMB5TNQCR50XZ34R00' # Foursquare Secret
VERSION = '20180605' # Foursquare API version

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

Your credentails:

```
CLIENT_ID: ZJSMHFRB2IYW5TDXCPTABKCKWJDR0N4M1I4I3NOVUNTWZFXK
CLIENT_SECRET:KGKG1NBIKSEKF3PUBIIBKO1VJWDMUMB5TNQCR50XZ34R00
```

3.3 Create a function to repeat the same process to all the Localities in New Delhi.

In [322]:

```
## create a function to repeat the same process to all the Locality in New Delhi

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)
```

3.4 Find the all the venues' locality in New Delhi.

In [323]:

```
# 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
Piccadilly 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

In [324]:

```
new_Delhi_venues.groupby('Locality').count()
```

Out[324]:

Locality	Locality Latitude	Locality Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
ARSS Mall, Paschim Vihar	9	9	9	9	9	9
Adchini	5	5	5	5	5	5
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	15	15	15	15	15	15
West Patel Nagar	5	5	5	5	5	5
Worldmark 1, Aerocity	28	28	28	28	28	28
Yusuf Sarai	13	13	13	13	13	13
ibis New Delhi, Aerocity	26	26	26	26	26	26

238 rows × 6 columns

In [325]:

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

There are 215 uniques categories.

In [326]:

```
## Analyze Each Locality

# 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']

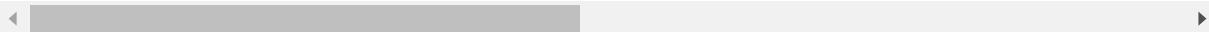
# move Locality column to the first column
column_list = new_Delhi_onehot.columns.tolist()
column_number = int(column_list.index('Locality'))
column_list = [column_list[column_number]] + column_list[:column_number] + column_list[column_number+1:]
new_Delhi_onehot = new_Delhi_onehot[column_list]

new_Delhi_onehot.head()
```

Out[326]:

	Locality	ATM	Accessories Store	Afghan Restaurant	African Restaurant	Airport	Airport Lounge	Airport Service	Airport Terminal	Arr Rest
0	ARSS Mall, Paschim Vihar	0	0	0	0	0	0	0	0	0
1	ARSS Mall, Paschim Vihar	0	0	0	0	0	0	0	0	0
2	ARSS Mall, Paschim Vihar	0	0	0	0	0	0	0	0	0
3	ARSS Mall, Paschim Vihar	0	0	0	0	0	0	0	0	0
4	ARSS Mall, Paschim Vihar	0	0	0	0	0	0	0	0	0

5 rows × 216 columns



In [327]:

```
New_Delhi_grouped = new_Delhi_onehot.groupby('Locality').mean().reset_index()
New_Delhi_grouped
```

Out[327]:

	Locality	ATM	Accessories Store	Afghan Restaurant	African Restaurant	Airport	Airport Lounge	Airport Service	Te
0	ARSS Mall, Paschim Vihar	0.111111	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0
1	Adchini	0.000000	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0
2	Aditya Mega Mall, Karkardooma	0.000000	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0
3	Aerocity	0.000000	0.000000	0.0	0.0	0.0	0.142857	0.0	0.1
4	Aggarwal City Mall, Pitampura	0.000000	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0
...
233	West Gate Mall, Rajouri Garden	0.000000	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0
234	West Patel Nagar	0.000000	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0
235	Worldmark 1, Aerocity	0.000000	0.035714	0.0	0.0	0.0	0.000000	0.0	0.0
236	Yusuf Sarai	0.000000	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0
237	ibis New Delhi, Aerocity	0.000000	0.000000	0.0	0.0	0.0	0.000000	0.0	0.0

238 rows × 216 columns

In [328]:

```
New_Delhi_grouped.shape
```

Out[328]:

(238, 216)

In [329]:

```
## 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	0.22
1	ATM	0.11
2	Market	0.11
3	Coffee Shop	0.11
4	Chinese Restaurant	0.11

----Adchini----

	venue	freq
0	Café	0.4
1	Indian Restaurant	0.2
2	Pub	0.2
3	Parsi Restaurant	0.2
4	ATM	0.0

----Aditya Mega Mall, Karkardooma----

	venue	freq
0	Pizza Place	0.2
1	Multiplex	0.2
2	Shopping Mall	0.2
3	Indian Restaurant	0.2
4	Hotel	0.1

----Aerocity----

	venue	freq
0	Hotel	0.29
1	Fast Food Restaurant	0.14
2	Airport Lounge	0.14
3	Coffee Shop	0.14
4	Airport Terminal	0.14

----Aggarwal City Mall, Pitampura----

	venue	freq
0	Department Store	0.2
1	Pizza Place	0.2
2	Indian Restaurant	0.2
3	Chinese Restaurant	0.2
4	Business Service	0.2

----Aggarwal City Plaza, Rohini----

	venue	freq
0	Pizza Place	0.17
1	Multiplex	0.17
2	Gym / Fitness Center	0.17
3	Fast Food Restaurant	0.17
4	Bus Station	0.17

----Alaknanda----

	venue	freq
0	Steakhouse	0.2

1	Coffee Shop	0.2
2	New American Restaurant	0.2
3	Market	0.2
4	Food & Drink Shop	0.2

----Ambience Mall, Vasant Kunj----

	venue	freq
0	Coffee Shop	0.09
1	Italian Restaurant	0.06
2	Fast Food Restaurant	0.06
3	Asian Restaurant	0.06
4	Clothing Store	0.06

----Anand Lok----

	venue	freq
0	Stadium	0.18
1	Café	0.18
2	Dessert Shop	0.09
3	Coffee Shop	0.09
4	Music Venue	0.09

----Anand Vihar----

	venue	freq
0	Café	0.33
1	ATM	0.17
2	Pharmacy	0.17
3	Burger Joint	0.17
4	Burrito Place	0.17

----Andaz Delhi, Aerocity----

	venue	freq
0	Hotel	0.38
1	Coffee Shop	0.08
2	Indian Restaurant	0.08
3	Punjabi Restaurant	0.04
4	Gastropub	0.04

----Ansals Plaza Mall, Khel Gaon Marg----

	venue	freq
0	Department Store	0.25
1	Snack Place	0.25
2	Performing Arts Venue	0.25
3	Fast Food Restaurant	0.25
4	North Indian Restaurant	0.00

----Asaf Ali Road----

	venue	freq
0	Hostel	0.33
1	Indian Restaurant	0.17
2	Theme Park	0.17
3	Hotel	0.17

4 Movie Theater 0.17

----Ashok Vihar Phase 1----

	venue	freq
0	Pizza Place	0.12
1	Indian Restaurant	0.12
2	Bank	0.12
3	BBQ Joint	0.12
4	Snack Place	0.12

----Ashok Vihar Phase 2----

	venue	freq
0	Snack Place	0.14
1	Pizza Place	0.14
2	South Indian Restaurant	0.14
3	Sandwich Place	0.14
4	Indian Restaurant	0.14

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

	venue	freq
0	Pizza Place	0.25
1	South Indian Restaurant	0.25
2	Garden	0.25
3	Indian Restaurant	0.25
4	Nightlife Spot	0.00

----Barakhamba Road----

	venue	freq
0	Indian Restaurant	0.25
1	Theater	0.12
2	Café	0.12
3	Bakery	0.12
4	Hotel	0.12

----Basant Lok Market, Vasant Vihar----

	venue	freq
0	Café	0.15
1	Pizza Place	0.07
2	Fast Food Restaurant	0.07
3	Chinese Restaurant	0.07
4	Restaurant	0.07

----Bellagio, Ashok Vihar Phase 2----

	venue	freq
0	Snack Place	0.14
1	Pizza Place	0.14
2	South Indian Restaurant	0.14
3	Sandwich Place	0.14
4	Indian Restaurant	0.14

----Best Western Taurus Hotel, Mahipalpur----

	venue	freq
0	Hotel	0.33
1	Bed & Breakfast	0.11
2	Italian Restaurant	0.11
3	Accessories Store	0.11
4	Shoe Store	0.11

----Bhikaji Cama Place----

	venue	freq
0	Lounge	0.18
1	Breakfast Spot	0.09
2	Café	0.09
3	Chinese Restaurant	0.09
4	Italian Restaurant	0.09

----Chanakyapuri----

	venue	freq
0	African Restaurant	0.25
1	Park	0.25
2	Trail	0.25
3	Café	0.25
4	ATM	0.00

----Chander Nagar----

	venue	freq
0	Pizza Place	1.0
1	Moving Target	0.0
2	Multicuisine Indian Restaurant	0.0
3	Multiplex	0.0
4	Museum	0.0

----Chandni Chowk----

	venue	freq
0	Indian Restaurant	0.28
1	Snack Place	0.17
2	Market	0.11
3	Dessert Shop	0.11
4	Historic Site	0.06

----Chawri Bazar----

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

----Chhatarpur----

	venue	freq
0	Japanese Restaurant	0.17

1	Donut Shop	0.17
2	Luggage Store	0.17
3	Indian Restaurant	0.17
4	Hotel	0.17

----Chittaranjan Park----

	venue	freq
0	Fast Food Restaurant	0.33
1	Market	0.33
2	Bowling Alley	0.17
3	Café	0.17
4	ATM	0.00

----City Centre Mall, Rohini----

	venue	freq
0	Department Store	0.25
1	Shopping Mall	0.12
2	Indian Restaurant	0.12
3	Light Rail Station	0.12
4	Gym	0.12

----City Square Mall, Rajouri Garden----

	venue	freq
0	Fast Food Restaurant	0.18
1	Café	0.18
2	Indian Restaurant	0.14
3	Multiplex	0.05
4	Hotel	0.05

----Civil Lines----

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

----Community Centre, New Friends Colony----

	venue	freq
0	Café	0.16
1	Pizza Place	0.05
2	Lounge	0.05
3	Coffee Shop	0.05
4	Middle Eastern Restaurant	0.05

----Connaught Place----

	venue	freq
0	Indian Restaurant	0.17
1	Café	0.11
2	Bar	0.08
3	Chinese Restaurant	0.08

4 Coffee Shop 0.05

----Crescent Square Mall, Rohini----

	venue	freq
0	Pharmacy	0.33
1	Clothing Store	0.33
2	Food Court	0.33
3	ATM	0.00
4	North Indian Restaurant	0.00

----Cross River Mall, Karkardooma----

	venue	freq
0	Pizza Place	0.4
1	Indian Restaurant	0.4
2	Hotel	0.2
3	Northeast Indian Restaurant	0.0
4	Multicuisine Indian Restaurant	0.0

----Crowne Plaza Hotel, Rohini----

	venue	freq
0	Clothing Store	0.14
1	Shopping Mall	0.14
2	Theme Park	0.14
3	Asian Restaurant	0.14
4	Hotel	0.14

----Crowne Plaza, Mayur Vihar Phase 1----

	venue	freq
0	Hotel	0.38
1	Pizza Place	0.08
2	Indian Restaurant	0.08
3	Restaurant	0.08
4	Asian Restaurant	0.08

----D Mall, Netaji Subhash Place----

	venue	freq
0	Coffee Shop	0.16
1	Indian Restaurant	0.16
2	Fast Food Restaurant	0.11
3	Shopping Mall	0.11
4	Snack Place	0.05

----DDA Market, Kalu Sarai, Hauz Khas----

	venue	freq
0	Metro Station	0.2
1	Event Space	0.2
2	Coffee Shop	0.2
3	Nightclub	0.2
4	Chinese Restaurant	0.2

----DLF City Centre Mall, Shalimar Bagh----

	venue	freq
0	Multiplex	0.2
1	Shopping Mall	0.2
2	Convenience Store	0.2
3	Vegetarian / Vegan Restaurant	0.2
4	Gym / Fitness Center	0.2

----DLF Emporio Mall, Vasant Kunj----

	venue	freq
0	Coffee Shop	0.09
1	Italian Restaurant	0.06
2	Fast Food Restaurant	0.06
3	Asian Restaurant	0.06
4	Clothing Store	0.06

----DLF Place Mall, Saket----

	venue	freq
0	Indian Restaurant	0.11
1	Lounge	0.07
2	Bar	0.07
3	Clothing Store	0.07
4	Café	0.07

----DLF Promenade Mall, Vasant Kunj----

	venue	freq
0	Coffee Shop	0.09
1	Italian Restaurant	0.06
2	Fast Food Restaurant	0.06
3	Asian Restaurant	0.06
4	Clothing Store	0.06

----DLF South Square, Sarojini Nagar----

	venue	freq
0	Indian Restaurant	0.23
1	Women's Store	0.15
2	Fast Food Restaurant	0.15
3	Shopping Mall	0.08
4	Market	0.08

----Daryaganj----

	venue	freq
0	Indian Restaurant	0.29
1	Hostel	0.14
2	Hotel	0.14
3	Restaurant	0.14
4	Pizza Place	0.07

----Defence Colony----

	venue	freq
0	Indian Restaurant	0.17

1	Italian Restaurant	0.17
2	Bakery	0.11
3	Bar	0.06
4	Food Truck	0.06

----Delhi University-GTB Nagar----

	venue	freq
0	Café	0.25
1	Restaurant	0.17
2	Pizza Place	0.08
3	Light Rail Station	0.08
4	Coffee Shop	0.08

----Dilli Haat, INA----

	venue	freq
0	Restaurant	0.2
1	Northeast Indian Restaurant	0.2
2	Indian Restaurant	0.2
3	Train Station	0.2
4	Market	0.2

----Dilshad Garden----

	venue	freq
0	Flower Shop	0.25
1	Indian Restaurant	0.25
2	Health & Beauty Service	0.25
3	Market	0.25
4	ATM	0.00

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

	venue	freq
0	Chinese Restaurant	0.20
1	Sandwich Place	0.13
2	Indian Restaurant	0.13
3	Restaurant	0.07
4	Fast Food Restaurant	0.07

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

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

----East Patel Nagar----

	venue	freq
0	Pizza Place	0.20
1	Donut Shop	0.07
2	Convenience Store	0.07
3	Bar	0.07

4 Bed & Breakfast 0.07

----East of Kailash----

	venue	freq
0	Hot Dog Joint	0.12
1	Fast Food Restaurant	0.12
2	Temple	0.12
3	Department Store	0.12
4	Indie Movie Theater	0.12

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

	venue	freq
0	Fast Food Restaurant	0.07
1	Lounge	0.07
2	Electronics Store	0.07
3	Coffee Shop	0.07
4	Indian Restaurant	0.07

----Eros Hotel, Nehru Place----

	venue	freq
0	Fast Food Restaurant	0.11
1	Electronics Store	0.07
2	Lounge	0.07
3	Coffee Shop	0.07
4	Nightclub	0.04

----Essex Farms----

	venue	freq
0	Coffee Shop	0.25
1	Event Space	0.25
2	Nightclub	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	Northeast Indian Restaurant	0.0
3	Multicuisine Indian Restaurant	0.0
4	Multiplex	0.0

----Friends Colony----

	venue	freq
0	Hotel	0.33
1	Gym	0.17
2	Sculpture Garden	0.17
3	Neighborhood	0.17
4	Café	0.17

----GTB Nagar----

	venue	freq
0	Pizza Place	0.33
1	Food Truck	0.33
2	Bike Rental / Bike Share	0.33
3	Pet Store	0.00
4	Performing Arts Venue	0.00

----Garden of Five Senses, Saket----

	venue	freq
0	Italian Restaurant	0.17
1	Garden	0.17
2	Pub	0.17
3	Coffee Shop	0.17
4	Asian Restaurant	0.17

----Geeta Colony----

	venue	freq
0	Burger Joint	1.0
1	ATM	0.0
2	North Indian Restaurant	0.0
3	Multicuisine Indian Restaurant	0.0
4	Multiplex	0.0

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

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

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

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

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

	venue	freq
0	Market	0.10
1	Café	0.10
2	Indian Restaurant	0.10
3	Plaza	0.05
4	Ice Cream Shop	0.05

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

	venue	freq
0	Restaurant	0.09

```

1 Indian Restaurant 0.09
2 Pizza Place 0.06
3 Café 0.06
4 Asian Restaurant 0.06

```

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

	venue	freq
0	Restaurant	0.13
1	Café	0.13
2	Bakery	0.13
3	Ice Cream Shop	0.07
4	Asian Restaurant	0.07

----Green Park----

	venue	freq
0	Coffee Shop	0.15
1	Indian Restaurant	0.15
2	Donut Shop	0.08
3	Pizza Place	0.08
4	Korean Restaurant	0.04

----Gujranwala Town----

	venue	freq
0	Snack Place	0.25
1	Shopping Mall	0.25
2	Indian Restaurant	0.25
3	Bakery	0.25
4	Nightlife Spot	0.00

----Hauz Khas----

	venue	freq
0	Dessert Shop	0.12
1	Coffee Shop	0.12
2	Bistro	0.08
3	Tea Room	0.08
4	Karaoke Bar	0.04

----Hauz Khas Village----

	venue	freq
0	Indian Restaurant	0.12
1	Café	0.12
2	Bar	0.08
3	Restaurant	0.08
4	Italian Restaurant	0.08

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

	venue	freq
0	Hotel	0.32
1	Indian Restaurant	0.07
2	Bed & Breakfast	0.07
3	Coffee Shop	0.07

4 Hotel Bar 0.07

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

	venue	freq
0	Hotel	0.29
1	Restaurant	0.12
2	Pizza Place	0.06
3	Bakery	0.06
4	Department Store	0.06

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

	venue	freq
0	Indian Restaurant	0.22
1	Hostel	0.22
2	Pizza Place	0.11
3	Soccer Stadium	0.11
4	Road	0.11

----Hotel City Park, Pitampura----

	venue	freq
0	Garden	0.2
1	Coffee Shop	0.2
2	Park	0.2
3	Bakery	0.2
4	Hotel	0.2

----Hotel Regent Grand, Karol Bagh----

	venue	freq
0	Pizza Place	0.21
1	Donut Shop	0.07
2	Gym / Fitness Center	0.07
3	Bed & Breakfast	0.07
4	Hotel	0.07

----Hotel The Royal Plaza, Janpath----

	venue	freq
0	Hotel	0.19
1	Indian Restaurant	0.16
2	Spa	0.09
3	Italian Restaurant	0.06
4	Restaurant	0.06

----Hyatt Regency, Bhikaji Cama Place----

	venue	freq
0	Lounge	0.18
1	Breakfast Spot	0.09
2	Café	0.09
3	Chinese Restaurant	0.09
4	Italian Restaurant	0.09

----INA----

		venue	freq
0	Northeast Indian Restaurant	0.25	
1	Market	0.25	
2	Indian Restaurant	0.25	
3	Train Station	0.25	
4	Multicuisine Indian Restaurant	0.00	

----IP Extension----

		venue	freq
0	Indian Restaurant	0.2	
1	Dessert Shop	0.1	
2	Market	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		Diner	0.03

----ITO----

		venue	freq
0		Plaza	0.12
1	Udupi Restaurant	0.12	
2	Clothing Store	0.12	
3	Historic Site	0.12	
4	Art Museum	0.12	

----India Gate----

		venue	freq
0	Government Building	0.2	
1	Indian Restaurant	0.2	
2	Music Venue	0.2	
3	National Park	0.2	
4	Rest Area	0.2	

----JMD Kohinoor Mall, Greater Kailash----

		venue	freq
0		Restaurant	0.16
1	Ice Cream Shop	0.11	
2	Pizza Place	0.11	
3	Café	0.11	
4	Karnataka Restaurant	0.05	

----JNU----

		venue	freq
0	Shopping Mall	0.25	

```

1 Indian Restaurant 0.25
2 Clothing Store 0.25
3 Café 0.25
4 ATM 0.00

```

----JW Marriott New Delhi----

	venue	freq
0	Hotel	0.35
1	Indian Restaurant	0.08
2	Coffee Shop	0.08
3	Hotel Bar	0.08
4	Dumpling Restaurant	0.04

----Jail Road----

	venue	freq
0	Indian Restaurant	0.33
1	Pizza Place	0.17
2	Indian Sweet Shop	0.17
3	Ice Cream Shop	0.17
4	Fried Chicken Joint	0.17

----Jama Masjid----

	venue	freq
0	Indian Restaurant	0.38
1	Mosque	0.12
2	Frozen Yogurt Shop	0.12
3	Flea Market	0.12
4	Snack Place	0.12

----Janakpuri----

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

----Jangpura----

	venue	freq
0	Sandwich Place	0.22
1	Fast Food Restaurant	0.22
2	Chinese Restaurant	0.11
3	Snack Place	0.11
4	Indie Movie Theater	0.11

----Janpath----

	venue	freq
0	Indian Restaurant	0.18
1	Coffee Shop	0.08
2	Italian Restaurant	0.08
3	Fast Food Restaurant	0.05

```
4           Lounge  0.05
```

----Jasola----

	venue	freq
0	Soccer Field	0.17
1	Café	0.17
2	Soccer Stadium	0.17
3	Breakfast Spot	0.17
4	Sandwich Place	0.17

----Jaypee Siddharth, Rajendra Place----

	venue	freq
0	Pizza Place	0.19
1	Fast Food Restaurant	0.12
2	Donut Shop	0.06
3	Convenience Store	0.06
4	Gym / Fitness Center	0.06

----Jaypee Vasant Continental, Vasant Vihar----

	venue	freq
0	Café	0.15
1	Pizza Place	0.07
2	Fast Food Restaurant	0.07
3	Chinese Restaurant	0.07
4	Restaurant	0.07

----Jor Bagh----

	venue	freq
0	Metro Station	0.25
1	Indian Restaurant	0.25
2	Ice Cream Shop	0.25
3	Bakery	0.25
4	ATM	0.00

----Kailash Colony----

	venue	freq
0	Bar	0.12
1	Dessert Shop	0.12
2	Department Store	0.12
3	Bakery	0.06
4	Restaurant	0.06

----Kalkaji----

	venue	freq
0	Fast Food Restaurant	0.22
1	Market	0.22
2	Dessert Shop	0.11
3	Pizza Place	0.11
4	Indian Restaurant	0.11

----Kamla Nagar----

		venue	freq
0	Breakfast Spot	0.15	
1	Fast Food Restaurant	0.15	
2	Chinese Restaurant	0.10	
3	Coffee Shop	0.10	
4	Indian Restaurant	0.10	

----Kapashera----

		venue	freq
0		ATM	0.25
1	Convenience Store	0.25	
2	Food Truck	0.25	
3	Food Court	0.25	
4	Northeast Indian Restaurant	0.00	

----Karampura----

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

----Karkardooma----

		venue	freq
0	Indian Restaurant	0.33	
1	Plaza	0.17	
2	Pizza Place	0.17	
3	Train Station	0.17	
4	Food Truck	0.17	

----Karol Bagh----

		venue	freq
0	Indian Restaurant	0.25	
1	Fast Food Restaurant	0.19	
2	Dessert Shop	0.06	
3	Hotel	0.06	
4	Coffee Shop	0.06	

----Kasbah, Greater Kailash (GK) 1----

		venue	freq
0		Café	0.19
1	Indian Restaurant	0.14	
2	Nightclub	0.10	
3	Market	0.10	
4	Pool	0.05	

----Kashmiri Gate----

		venue	freq
0		Pizza Place	0.17

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1 American Restaurant 0.17
2 Bus Station 0.17
3 Historic Site 0.17
4 Fast Food Restaurant 0.17

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----Khan Market----

	venue	freq
0	Café	0.18
1	Coffee Shop	0.09
2	Chinese Restaurant	0.07
3	Bar	0.07
4	Bookstore	0.04

----Kirti Nagar----

	venue	freq
0	ATM	0.25
1	Fish & Chips Shop	0.25
2	Convenience Store	0.25
3	Pizza Place	0.25
4	Karaoke Bar	0.00

----Krishna Nagar----

	venue	freq
0	Pizza Place	0.50
1	Park	0.25
2	Accessories Store	0.25
3	Jazz Club	0.00
4	Northeast Indian Restaurant	0.00

----Lado Sarai----

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

----Lajpat Nagar 1----

	venue	freq
0	Coffee Shop	0.12
1	Music Store	0.12
2	Neighborhood	0.12
3	Market	0.12
4	Indian Restaurant	0.12

----Lajpat Nagar 2----

	venue	freq
0	Pizza Place	0.12
1	Donut Shop	0.08
2	Fast Food Restaurant	0.08
3	Café	0.08

4 Indian Restaurant 0.08

----Lajpat Nagar 4----

	venue	freq
0	Indian Restaurant	0.25
1	Café	0.17
2	Market	0.17
3	Fast Food Restaurant	0.08
4	Restaurant	0.08

----Lawrence Road----

	venue	freq
0	Department Store	0.2
1	Pharmacy	0.2
2	Basketball Court	0.2
3	Light Rail Station	0.2
4	Café	0.2

----Laxmi Nagar----

	venue	freq
0	Dessert Shop	0.25
1	Pizza Place	0.25
2	Arcade	0.25
3	Bakery	0.25
4	Northeast Indian Restaurant	0.00

----Le Meridien, Janpath----

	venue	freq
0	Hotel	0.30
1	Indian Restaurant	0.13
2	Restaurant	0.09
3	Cocktail Bar	0.09
4	Italian Restaurant	0.04

----Lemon Tree Premier, Aerocity----

	venue	freq
0	Hotel	0.35
1	Indian Restaurant	0.08
2	Coffee Shop	0.08
3	Hotel Bar	0.08
4	Dumpling Restaurant	0.04

----Living Style Mall, Jasola----

	venue	freq
0	Indian Restaurant	0.33
1	Soccer Stadium	0.17
2	Pizza Place	0.17
3	Fast Food Restaurant	0.17
4	Bakery	0.17

----Lodhi Colony----

	venue	freq
0	Indian Restaurant	0.14
1	Shopping Mall	0.07
2	Japanese Restaurant	0.07
3	Italian Restaurant	0.07
4	Tea Room	0.07

----Lodhi Road----

	venue	freq
0	Middle Eastern Restaurant	0.07
1	Indian Restaurant	0.07
2	Food Court	0.07
3	Restaurant	0.07
4	Temple	0.07

----MG Road----

	venue	freq
0	Furniture / Home Store	0.33
1	Indian Restaurant	0.33
2	Art Museum	0.33
3	ATM	0.00
4	Northeast Indian Restaurant	0.00

----MGF Metropolitan Mall, Saket----

	venue	freq
0	Indian Restaurant	0.10
1	Lounge	0.07
2	Bar	0.07
3	Clothing Store	0.07
4	Chinese Restaurant	0.06

----MGM Club, Daryaganj----

	venue	freq
0	Restaurant	0.33
1	Indian Restaurant	0.33
2	Road	0.17
3	Hotel	0.17
4	Multiplex	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	Light Rail Station	0.29

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1 Italian Restaurant 0.14
2           Café 0.14
3           Hotel 0.14
4 Indian Restaurant 0.14

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----Majnu ka Tila----

	venue	freq
0	Asian Restaurant	0.33
1	Hotel	0.11
2	Café	0.11
3	Restaurant	0.11
4	Tibetan Restaurant	0.11

----Malviya Nagar----

	venue	freq
0	Coffee Shop	0.17
1	Hotel	0.08
2	Pizza Place	0.08
3	Donut Shop	0.08
4	Miscellaneous Shop	0.08

----Mandi House----

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

----Mathura Road----

	venue	freq
0	Indian Sweet Shop	0.33
1	Breakfast Spot	0.33
2	Light Rail Station	0.33
3	ATM	0.00
4	Northeast Indian Restaurant	0.00

----Mayapuri Phase 2----

	venue	freq
0	Garden	0.2
1	Food Truck	0.2
2	Restaurant	0.2
3	Hotel	0.2
4	Auto Garage	0.2

----Mayur Vihar Phase 1----

	venue	freq
0	Pizza Place	0.25
1	Garden	0.25
2	Indian Restaurant	0.25
3	Gym / Fitness Center	0.25

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4      Nightlife Spot  0.00
```

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

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

----Mayur Vihar Phase 3----

	venue	freq
0	Hotel	1.0
1	ATM	0.0
2	Northeast Indian Restaurant	0.0
3	Multicuisine Indian Restaurant	0.0
4	Multiplex	0.0

----Mehrauli----

	venue	freq
0	Thai Restaurant	0.23
1	Bar	0.15
2	Monument / Landmark	0.08
3	Italian Restaurant	0.08
4	Whisky Bar	0.08

----Metro Walk Mall, Rohini----

	venue	freq
0	Theme Park	0.2
1	Pizza Place	0.2
2	Shopping Mall	0.2
3	Fast Food Restaurant	0.2
4	Asian Restaurant	0.2

----Model Town 1----

	venue	freq
0	Playground	0.2
1	Pool Hall	0.2
2	Convenience Store	0.2
3	Lake	0.2
4	Food Truck	0.2

----Model Town 2----

	venue	freq
0	Pizza Place	0.17
1	Donut Shop	0.17
2	Frozen Yogurt Shop	0.17
3	Coffee Shop	0.17
4	Fast Food Restaurant	0.17

----Model Town 3----

		venue	freq
0	Indian Restaurant	0.33	
1	Park	0.33	
2	Chinese Restaurant	0.33	
3	ATM	0.00	
4	Northeast Indian Restaurant	0.00	

----Moments Mall, Kirti Nagar----

		venue	freq
0	Metro Station	0.14	
1	Donut Shop	0.07	
2	Flea Market	0.07	
3	Moving Target	0.07	
4	Sports Bar	0.07	

----Moti Bagh----

		venue	freq
0	South Indian Restaurant	0.25	
1	Arcade	0.25	
2	Café	0.25	
3	Pizza Place	0.25	
4	Karaoke Bar	0.00	

----Moti Nagar----

		venue	freq
0	Metro Station	0.25	
1	Fried Chicken Joint	0.25	
2	Ice Cream Shop	0.25	
3	Flea Market	0.25	
4	ATM	0.00	

----Mukherjee Nagar----

		venue	freq
0	Music Venue	0.25	
1	Ice Cream Shop	0.25	
2	Mobile Phone Shop	0.25	
3	Bakery	0.25	
4	ATM	0.00	

----Munirka----

		venue	freq
0	Indian Restaurant	0.2	
1	Sandwich Place	0.1	
2	Flea Market	0.1	
3	Bakery	0.1	
4	Department Store	0.1	

----Najafgarh----

		venue	freq
0	Electronics Store	0.5	

1	Food & Drink Shop	0.5
2	ATM	0.0
3	Northeast Indian Restaurant	0.0
4	Multiplex	0.0

----Naraina----

	venue	freq
0	Pizza Place	0.25
1	Indian Restaurant	0.25
2	Café	0.25
3	Snack Place	0.25
4	Performing Arts Venue	0.00

----Nehru Place----

	venue	freq
0	Food	0.07
1	Fast Food Restaurant	0.07
2	Lounge	0.07
3	Electronics Store	0.07
4	Coffee Shop	0.07

----Netaji Subhash Place----

	venue	freq
0	Coffee Shop	0.16
1	Indian Restaurant	0.16
2	Fast Food Restaurant	0.11
3	Shopping Mall	0.11
4	Snack Place	0.05

----New Friends Colony----

	venue	freq
0	Café	0.19
1	Dessert Shop	0.06
2	Hotel	0.06
3	Plaza	0.06
4	Pizza Place	0.06

----Nizamuddin----

	venue	freq
0	Indian Restaurant	0.22
1	Pizza Place	0.11
2	Park	0.11
3	Garden	0.11
4	Monument / Landmark	0.11

----Okhla Phase 1----

	venue	freq
0	Cosmetics Shop	0.5
1	Print Shop	0.5
2	ATM	0.0
3	Northeast Indian Restaurant	0.0

4	Multiplex	0.0
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----PVR Anupam Complex----

	venue	freq
0	Multiplex	0.33
1	Café	0.17
2	Pizza Place	0.17
3	Coffee Shop	0.17
4	Lounge	0.17

----Pacific Mall, Tagore Garden----

	venue	freq
0	Coffee Shop	0.15
1	Restaurant	0.10
2	Donut Shop	0.10
3	Shopping Mall	0.10
4	Multiplex	0.10

----Paharganj----

	venue	freq
0	Hotel	0.39
1	Indian Restaurant	0.10
2	Restaurant	0.07
3	Café	0.05
4	Korean Restaurant	0.02

----Palam----

	venue	freq
0	Bar	0.5
1	Mobile Phone Shop	0.5
2	ATM	0.0
3	Moving Target	0.0
4	Multicuisine Indian Restaurant	0.0

----Palate of Delhi, Chanakyapuri----

	venue	freq
0	Golf Course	0.25
1	Campground	0.25
2	Bakery	0.25
3	Sake Bar	0.25
4	Multiplex	0.00

----Panchsheel Park----

	venue	freq
0	Pizza Place	0.2
1	Gaming Cafe	0.2
2	Event Space	0.2
3	American Restaurant	0.2
4	Bar	0.2

----Pandara Road Market----

	venue	freq
0	Indian Restaurant	0.27
1	Smoke Shop	0.13
2	Snack Place	0.07
3	Chinese Restaurant	0.07
4	Restaurant	0.07

----Pandav Nagar----

	venue	freq
0	Dessert Shop	0.22
1	Food & Drink Shop	0.11
2	Moving Target	0.11
3	Convenience Store	0.11
4	Park	0.11

----Paschim Vihar----

	venue	freq
0	Multicuisine Indian Restaurant	0.12
1	Market	0.12
2	Coffee Shop	0.12
3	Chinese Restaurant	0.12
4	Sandwich Place	0.12

----Patparganj----

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

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

	venue	freq
0	Fast Food Restaurant	0.15
1	Sandwich Place	0.15
2	Indian Restaurant	0.15
3	Pizza Place	0.08
4	Chinese Restaurant	0.08

----Pitampura----

	venue	freq
0	Gym	0.25
1	Snack Place	0.12
2	Indian Restaurant	0.12
3	Mobile Phone Shop	0.12
4	Market	0.12

----Pragati Maidan---

	venue	freq
0	Pool	0.25

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1      Museum  0.12
2      Art Museum 0.12
3  Historic Site 0.12
4 History Museum 0.12

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----Prashant Vihar----

	venue	freq
0	Indian Restaurant	0.50
1	Pizza Place	0.33
2	Multiplex	0.17
3	Northeast Indian Restaurant	0.00
4	Multicuisine Indian Restaurant	0.00

----Preet Vihar----

	venue	freq
0	Pizza Place	0.17
1	BBQ Joint	0.17
2	Fast Food Restaurant	0.17
3	Arcade	0.17
4	Ice Cream Shop	0.17

----Premier Inn, Shalimar Bagh----

	venue	freq
0	Hotel	0.5
1	Café	0.5
2	ATM	0.0
3	Northeast Indian Restaurant	0.0
4	Multiplex	0.0

----Pride Plaza Hotel, Aerocity----

	venue	freq
0	Hotel	0.36
1	Indian Restaurant	0.08
2	Coffee Shop	0.08
3	Hotel Bar	0.08
4	Shopping Mall	0.04

----Punjabi Bagh----

	venue	freq
0	Donut Shop	0.12
1	Hookah Bar	0.12
2	Garden Center	0.12
3	Convenience Store	0.12
4	Indian Restaurant	0.12

----Qutab Institutional Area----

	venue	freq
0	Restaurant	0.25
1	Indian Restaurant	0.25
2	Moroccan Restaurant	0.12
3	Modern European Restaurant	0.12

4 Food Truck 0.12

----R K Puram----

	venue	freq
0	Comfort Food Restaurant	0.14
1	Coffee Shop	0.14
2	Asian Restaurant	0.14
3	Park	0.14
4	Thai Restaurant	0.14

----Race Course----

	venue	freq
0	Women's Store	0.2
1	Food	0.2
2	Gym / Fitness Center	0.2
3	Racetrack	0.2
4	History Museum	0.2

----Radisson Blu Plaza Delhi, Mahipalpur----

	venue	freq
0	Hotel	0.29
1	Plaza	0.14
2	Spa	0.14
3	Indian Restaurant	0.14
4	American Restaurant	0.14

----Radisson Blu, Paschim Vihar----

	venue	freq
0	Hotel	0.33
1	Indian Restaurant	0.17
2	Coffee Shop	0.17
3	Fast Food Restaurant	0.17
4	Food Truck	0.17

----Rajendra Place----

	venue	freq
0	Pizza Place	0.2
1	Hotel	0.2
2	Fast Food Restaurant	0.2
3	Coffee Shop	0.1
4	Convenience Store	0.1

----Rajinder Nagar----

	venue	freq
0	Food & Drink Shop	0.17
1	Pizza Place	0.17
2	Gym / Fitness Center	0.17
3	Sandwich Place	0.17
4	Market	0.17

----Rajouri Garden----

	venue	freq
0	Bakery	0.18
1	Café	0.18
2	Diner	0.09
3	Pub	0.09
4	Market	0.09

----Rohini----

	venue	freq
0	Department Store	0.25
1	Indian Restaurant	0.25
2	Light Rail Station	0.25
3	Fast Food Restaurant	0.25
4	Northeast Indian Restaurant	0.00

----Roseate House, Aerocity----

	venue	freq
0	Hotel	0.35
1	Indian Restaurant	0.08
2	Coffee Shop	0.08
3	Hotel Bar	0.08
4	Dumpling Restaurant	0.04

----SDA----

	venue	freq
0	Café	0.33
1	Beer Garden	0.08
2	Chinese Restaurant	0.08
3	Coffee Shop	0.08
4	Asian Restaurant	0.08

----Safdarjung----

	venue	freq
0	Indian Restaurant	0.13
1	Coffee Shop	0.13
2	Dessert Shop	0.07
3	Sandwich Place	0.07
4	Mexican Restaurant	0.07

----Sainik Farms----

	venue	freq
0	Asian Restaurant	0.4
1	Indian Restaurant	0.2
2	Pub	0.2
3	Bakery	0.2
4	ATM	0.0

----Saket----

	venue	freq
0	Pizza Place	0.14

1	Café	0.14
2	Indian Restaurant	0.14
3	Lounge	0.07
4	Multiplex	0.07

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

	venue	freq
0	Multiplex	0.15
1	Coffee Shop	0.15
2	Comfort Food Restaurant	0.08
3	Shopping Mall	0.08
4	Café	0.08

----Sarita Vihar----

	venue	freq
0	Café	0.50
1	Arcade	0.25
2	Park	0.25
3	ATM	0.00
4	Northeast Indian Restaurant	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	North Indian Restaurant	0.0

----Satyaniketan----

	venue	freq
0	Bistro	0.17
1	Snack Place	0.17
2	Deli / Bodega	0.17
3	Salad Place	0.17
4	Café	0.17

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

	venue	freq
0	IT Services	0.33
1	Train Station	0.33
2	Light Rail Station	0.33
3	ATM	0.00
4	North Indian Restaurant	0.00

----Select Citywalk Mall, Saket----

	venue	freq
0	Indian Restaurant	0.11
1	Lounge	0.07
2	Bar	0.07
3	Clothing Store	0.07

4 Café 0.07

----Shahdara----

	venue	freq
0	Park	0.33
1	Mobile Phone Shop	0.33
2	Chocolate Shop	0.33
3	ATM	0.00
4	North Indian Restaurant	0.00

----Shahpur Jat----

	venue	freq
0	Bar	0.29
1	Australian Restaurant	0.14
2	Chinese Restaurant	0.14
3	Stadium	0.14
4	Indian Restaurant	0.14

----Shakarpur----

	venue	freq
0	Snack Place	0.14
1	Diner	0.14
2	Shopping Mall	0.14
3	Gym	0.14
4	Light Rail Station	0.14

----Shalimar Bagh----

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

----Shangri La's - Eros hotel, Janpath----

	venue	freq
0	Hotel	0.21
1	Indian Restaurant	0.14
2	Spa	0.10
3	Restaurant	0.07
4	Italian Restaurant	0.07

----Shanti Niketan Marg----

	venue	freq
0	Café	0.2
1	Pizza Place	0.2
2	Gourmet Shop	0.2
3	Convenience Store	0.2
4	Bakery	0.2

----Sheikh Sarai----

	venue	freq
0	Thai Restaurant	0.38
1	Market	0.12
2	Historic Site	0.12
3	Café	0.12
4	Italian Restaurant	0.12

----Sheraton New Delhi Hotel, Saket----

	venue	freq
0	Indian Restaurant	0.13
1	Clothing Store	0.08
2	Hotel	0.07
3	Bar	0.07
4	Donut Shop	0.05

----South Extension 1----

	venue	freq
0	Indian Restaurant	0.25
1	Coffee Shop	0.25
2	Pizza Place	0.17
3	Fast Food Restaurant	0.08
4	Chinese Restaurant	0.08

----South Extension 2----

	venue	freq
0	Indian Restaurant	0.20
1	Coffee Shop	0.15
2	Pizza Place	0.10
3	Market	0.10
4	Sporting Goods Shop	0.05

----Southern Park Mall, Saket----

	venue	freq
0	Indian Restaurant	0.12
1	Bar	0.07
2	Lounge	0.07
3	Clothing Store	0.07
4	Café	0.06

----Spark Mall, Kamla Nagar----

	venue	freq
0	Fast Food Restaurant	0.12
1	Breakfast Spot	0.12
2	Pizza Place	0.08
3	Donut Shop	0.08
4	Coffee Shop	0.08

----Star City Mall, Mayur Vihar Phase 1----

	venue	freq
0	Hotel	0.29

1	Restaurant	0.12
2	Department Store	0.12
3	Bakery	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	ATM	0.00

----Sunder Nagar----

	venue	freq
0	Indian Restaurant	0.23
1	Italian Restaurant	0.15
2	Hotel	0.15
3	Golf Course	0.08
4	Convenience Store	0.08

----T3 Domestic Arrival, Aerocity----

	venue	freq
0	Coffee Shop	0.18
1	Dessert Shop	0.09
2	Electronics Store	0.09
3	Pizza Place	0.09
4	Airport	0.09

----TDI Mall, Rajouri Garden----

	venue	freq
0	Indian Restaurant	0.16
1	Fast Food Restaurant	0.16
2	Café	0.12
3	Restaurant	0.08
4	Dessert Shop	0.08

----Tagore Garden----

	venue	freq
0	Park	0.08
1	Indian Restaurant	0.08
2	Food Truck	0.08
3	BBQ Joint	0.08
4	Market	0.08

----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 Bookstore 0.04

----The Ashok, Chanakyapuri----

	venue	freq
0	Nightclub	0.20
1	Indian Restaurant	0.20
2	Chinese Restaurant	0.07
3	Café	0.07
4	Italian Restaurant	0.07

----The Claridges, Aurangzeb Road----

	venue	freq
0	Hotel	0.22
1	North Indian Restaurant	0.11
2	Breakfast Spot	0.11
3	Chinese Restaurant	0.11
4	Smoke Shop	0.11

----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	Indian Restaurant	0.04
4	Beer Garden	0.04

----The Imperial, Janpath----

	venue	freq
0	Indian Restaurant	0.18
1	Hotel	0.15
2	Italian Restaurant	0.09
3	Coffee Shop	0.06
4	Café	0.06

----The India Mall, New Friends Colony----

	venue	freq
0	Café	0.18
1	Plaza	0.06
2	Hotel	0.06
3	Pharmacy	0.06
4	Fast Food Restaurant	0.06

----The Lalit New Delhi, Barakhamba Road----

	venue	freq
0	Indian Restaurant	0.33
1	Bakery	0.33
2	Hotel Bar	0.17
3	Asian Restaurant	0.17
4	ATM	0.00

----The Leela Ambience Convention Hotel----

	venue	freq
0	Pizza Place	0.25
1	Indian Restaurant	0.25
2	Hotel	0.25
3	Café	0.25
4	Northeast Indian Restaurant	0.00

----The Leela Palace, Chanakyapuri----

	venue	freq
0	Indian Restaurant	0.17
1	Cocktail Bar	0.08
2	Northeast Indian Restaurant	0.08
3	Breakfast Spot	0.08
4	Hotel	0.08

----The Lodhi, Lodhi Road----

	venue	freq
0	Chinese Restaurant	0.12
1	Indian Restaurant	0.12
2	Hotel	0.12
3	Cocktail Bar	0.06
4	Restaurant	0.06

----The Park, Connaught Place----

	venue	freq
0	Hotel	0.20
1	Indian Restaurant	0.10
2	Italian Restaurant	0.07
3	Coffee Shop	0.07
4	Spa	0.07

----The Suryaa New Delhi, New Friends Colony----

	venue	freq
0	Café	0.16
1	Pizza Place	0.05
2	Lounge	0.05
3	Coffee Shop	0.05
4	Middle Eastern Restaurant	0.05

----The Taj Mahal Hotel, Mansingh Road----

	venue	freq
0	Chinese Restaurant	0.17
1	Jewelry Store	0.17
2	Japanese Restaurant	0.17
3	Restaurant	0.17
4	Indian Restaurant	0.17

----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 Diner 0.03

```

----The Uppal, Aerocity----

	venue	freq
0	Hotel	0.75
1	Indian Restaurant	0.25
2	ATM	0.00
3	Northeast Indian Restaurant	0.00
4	Multicuisine Indian Restaurant	0.00

----The Village Restaurant Complex, Khel Gaon Marg----

	venue	freq
0	Bar	0.18
1	Hotel	0.09
2	Indian Restaurant	0.09
3	Australian Restaurant	0.09
4	Theater	0.09

----Tilak Nagar----

	venue	freq
0	Fast Food Restaurant	0.50
1	Women's Store	0.25
2	Indian Restaurant	0.25
3	Northeast Indian Restaurant	0.00
4	Multiplex	0.00

----Tughlakabad Institutional Area----

	venue	freq
0	Steakhouse	0.2
1	Bar	0.2
2	Hotel	0.2
3	Restaurant	0.2
4	Market	0.2

----Uday Park----

	venue	freq
0	Pizza Place	0.14
1	Park	0.14
2	Music Venue	0.14
3	Café	0.14
4	Market	0.14

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

	venue	freq
0	Indian Restaurant	0.25
1	Pizza Place	0.12
2	Sandwich Place	0.12
3	Chinese Restaurant	0.12

4 Fast Food Restaurant 0.12

----Uttam Nagar----

	venue	freq
0	ATM	0.5
1	Indian Restaurant	0.5
2	Northeast Indian Restaurant	0.0
3	Multicuisine Indian Restaurant	0.0
4	Multiplex	0.0

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

	venue	freq
0	Fast Food Restaurant	0.12
1	Food Court	0.06
2	Food & Drink Shop	0.06
3	Multiplex	0.06
4	Pizza Place	0.06

----Vasant Kunj----

	venue	freq
0	Chinese Restaurant	0.17
1	Vegetarian / Vegan Restaurant	0.17
2	Bar	0.17
3	Sandwich Place	0.17
4	Fast Food Restaurant	0.17

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

	venue	freq
0	Pizza Place	0.12
1	Chinese Restaurant	0.12
2	Vegetarian / Vegan Restaurant	0.12
3	Fast Food Restaurant	0.12
4	Bar	0.12

----Vasant Vihar----

	venue	freq
0	Café	0.10
1	Fast Food Restaurant	0.07
2	Coffee Shop	0.07
3	Restaurant	0.07
4	Chinese Restaurant	0.07

----Vasundhara Enclave----

	venue	freq
0	ATM	1.0
1	Moving Target	0.0
2	Multicuisine Indian Restaurant	0.0
3	Multiplex	0.0
4	Museum	0.0

----Vijay Nagar----

	venue	freq
0	Café	0.21
1	Bakery	0.07
2	Chinese Restaurant	0.07
3	Pet Store	0.07
4	Italian Restaurant	0.07

----Vikas Marg----

	venue	freq
0	ATM	0.2
1	Pharmacy	0.2
2	Burger Joint	0.2
3	Burrito Place	0.2
4	Café	0.2

----Vikaspuri----

	venue	freq
0	Pizza Place	0.33
1	Ice Cream Shop	0.33
2	Fast Food Restaurant	0.33
3	Northeast Indian Restaurant	0.00
4	Multiplex	0.00

----Vivek Vihar----

	venue	freq
0	Juice Bar	0.4
1	Department Store	0.2
2	Bed & Breakfast	0.2
3	Athletics & Sports	0.2
4	Pharmacy	0.0

----West End Mall, Janak Puri----

	venue	freq
0	Fast Food Restaurant	0.14
1	Sandwich Place	0.14
2	Indian Restaurant	0.14
3	Restaurant	0.07
4	Pizza Place	0.07

----West Gate Mall, Rajouri Garden----

	venue	freq
0	Fast Food Restaurant	0.20
1	Café	0.13
2	Restaurant	0.13
3	Dessert Shop	0.07
4	Indian Restaurant	0.07

----West Patel Nagar----

	venue	freq
0	Pizza Place	0.2

```
1     Electronics Store    0.2
2 Gym / Fitness Center    0.2
3             Hotel    0.2
4     Metro Station    0.2
```

----Worldmark 1, Aerocity----

	venue	freq
0	Hotel	0.32
1	Indian Restaurant	0.07
2	Bed & Breakfast	0.07
3	Coffee Shop	0.07
4	Hotel Bar	0.07

----Yusuf Sarai----

	venue	freq
0	Indian Restaurant	0.15
1	Chinese Restaurant	0.15
2	Coffee Shop	0.15
3	Dessert Shop	0.08
4	Bar	0.08

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

	venue	freq
0	Hotel	0.35
1	Indian Restaurant	0.08
2	Coffee Shop	0.08
3	Hotel Bar	0.08
4	Dumpling Restaurant	0.04

In [330]:

```
## put that into a pandas dataframe
## First, write a function to sort the venues in descending order.

def return_most_common_venues(row, num_top_venues):
    row_categories = row.iloc[1:]
    row_categories_sorted = row_categories.sort_values(ascending=False)

    return row_categories_sorted.index.values[0:num_top_venues]
```

In [331]:

```
## create the new dataframe and display the top 10 venues for each Locality.

num_top_venues = 5

indicators = ['st', 'nd', 'rd']

# create columns according to number of top venues
columns = ['Locality']
for ind in np.arange(num_top_venues):
    try:
        columns.append('{}{} Most Common Venue'.format(ind+1, indicators[ind]))
    except:
        columns.append('{}th Most Common Venue'.format(ind+1))

# create a new dataframe
Locality_venues_sorted = pd.DataFrame(columns=columns)
Locality_venues_sorted['Locality'] = New_Delhi_grouped['Locality']

for ind in np.arange(New_Delhi_grouped.shape[0]):
    Locality_venues_sorted.iloc[ind, 1:] = return_most_common_venues(New_Delhi_grouped.iloc[ind, :], num_top_venues)

Locality_venues_sorted
```

Out[331]:

	Locality	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	ARSS Mall, Paschim Vihar	Indian Restaurant	Sandwich Place	Market	Multicuisine Indian Restaurant	Coffee Shop
1	Adchini	Café	Indian Restaurant	Parsi Restaurant	Pub	Women's Store
2	Aditya Mega Mall, Karkardooma	Pizza Place	Indian Restaurant	Shopping Mall	Multiplex	Café
3	Aerocity	Hotel	Airport Terminal	Airport Lounge	Rental Car Location	Coffee Shop
4	Aggarwal City Mall, Pitampura	Pizza Place	Business Service	Chinese Restaurant	Department Store	Indian Restaurant
...
233	West Gate Mall, Rajouri Garden	Fast Food Restaurant	Café	Restaurant	Pizza Place	Shopping Mall
234	West Patel Nagar	Pizza Place	Hotel	Electronics Store	Gym / Fitness Center	Metro Station
235	Worldmark 1, Aerocity	Hotel	Indian Restaurant	Hotel Bar	Bed & Breakfast	Coffee Shop
236	Yusuf Sarai	Chinese Restaurant	Indian Restaurant	Coffee Shop	Park	Bar
237	ibis New Delhi, Aerocity	Hotel	Indian Restaurant	Hotel Bar	Coffee Shop	Lounge

238 rows × 6 columns

In [332]:

```
## Cluster Locality
## Run k-means to cluster the Localities 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
```

Out[332]:

(238,)

In [333]:

```
# add clustering Labels
New_Delhi_merged = df_final.head(238)
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()
```

/home/jupyterlab/conda/envs/python/lib/python3.6/site-packages/ipykernel_launcher.py:3: SettingWithCopyWarning:

A value is trying to be set on a copy of a slice from a DataFrame.

Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy

This is separate from the ipykernel package so we can avoid doing imports until

Out[333]:

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

In [334]:

```

for x in range(9,14):
    y = New_Delhi_merged[New_Delhi_merged.columns[x]].str.startswith('Café').value_counts()
    ()[1]
    z = (y / 238)*100
    percentage = format(round(z,2))

    print('Locality number regards Cafe as the ' + New_Delhi_merged.columns[x],':', y, '/'
, 'Percentage in total:',percentage,'%')

```

Locality number regards Cafe as the 1st Most Common Venue : 21 / Percentage in total: 8.82 %
Locality number regards Cafe as the 2nd Most Common Venue : 13 / Percentage in total: 5.46 %
Locality number regards Cafe as the 3rd Most Common Venue : 15 / Percentage in total: 6.3 %
Locality number regards Cafe as the 4th Most Common Venue : 9 / Percentage in total: 3.78 %
Locality number regards Cafe as the 5th Most Common Venue : 10 / Percentage in total: 4.2 %

Although Indian people prefer spicy food, their interest in western food is noticeable. Among the 283 localities, Café is listed in the Top 5 most common venues in 68 localities. The percentage is 28.56%.

In [335]:

```

New_Delhi_Clustered = New_Delhi_merged[New_Delhi_merged['1st Most Common Venue'] == 'Café'].groupby('Cluster Labels').count()
New_Delhi_Clustered[['1st Most Common Venue']]

```

Out[335]:

1st Most Common Venue

Cluster Labels

Cluster Labels	1st Most Common Venue
0	4
1	3
3	1
4	13

In [336]:

```
# create final map

map_clusters = folium.Map(location=[28.52, 77.25], zoom_start=10)

# set color scheme for the clusters
x_m = 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 = ['purple', '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
```

Out[336]:

Make this Notebook Trusted to load map: File -> Trust Notebook

3.5 Cluster Examines

In [337]:

```
## Examine Clusters

## Cluster 1: South-west of New Delhi:
Cluster_1 = New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] == 0, New_Delhi_merged
.columns[[0] + list(range(5, New_Delhi_merged.shape[1]))]]
print('Number of rows:', Cluster_1.shape)
Cluster_1 = New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] == 0, New_Delhi_merged
.columns[[0] + list(range(5, New_Delhi_merged.shape[1]))]]
Cluster_1['1st Most Common Venue'].str.startswith('Café').value_counts()
```

Number of rows: (109, 10)

Out[337]:

```
False    104
True      4
Name: 1st Most Common Venue, dtype: int64
```

In [338]:

Cluster_1

Out[338]:

	Locality	Agg_Rating	Comments	No_of_Votes	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venu
5	Aggarwal City Plaza, Rohini	3.040000	Average, Good, Poor	594	0	Pizza Place	Bus Station	Multiple
6	Alaknanda	3.117391	Average, Good, Poor	1012	0	New American Restaurant	Coffee Shop	Steakhous
7	Ambience Mall, Vasant Kunj	3.425000	Average, Good, Very Good	2460	0	Coffee Shop	Shopping Mall	Fast Foo Restaurar
11	Ansal Plaza Mall, Khel Gaon Marg	3.750000	Average, Good, Very Good	875	0	Department Store	Performing Arts Venue	Fast Foo Restaurar
13	Ashok Vihar Phase 1	3.090000	Average, Good, Poor	971	0	Pizza Place	BBQ Joint	Mark
...
230	Vikas Marg	3.400000	Average	19	0	ATM	Burger Joint	Caf
231	Vikaspuri	3.062264	Average, Good, Poor	1253	0	Pizza Place	Fast Food Restaurant	Ice Crear Sho
232	Vivek Vihar	3.077273	Average, Good, Poor	939	0	Juice Bar	Athletics & Sports	Departmer Stor
233	Wazirpur	3.050000	Average	86	0	Nan	Nan	Nal
236	West Patel Nagar	3.675000	Average, Good, Very Good	876	0	Pizza Place	Hotel	Electronic Stor

109 rows × 10 columns



In [339]:

```
## Examine Clusters
## Cluster 2
Cluster_2 = New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] == 1, New_Delhi_merged
.columns[[0] + list(range(5, New_Delhi_merged.shape[1]))]]
print('Number of rows:', Cluster_2.shape)
Cluster_2['1st Most Common Venue'].str.startswith('Café').value_counts()
```

Number of rows: (49, 10)

Out[339]:

```
False    46
True     3
Name: 1st Most Common Venue, dtype: int64
```

In [340]:

```
## Examine Clusters

## Cluster 3
Cluster_3 = New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] == 2, New_Delhi_merged
.columns[[0] + list(range(5, New_Delhi_merged.shape[1]))]]
print('Number of rows:', Cluster_3.shape)
Cluster_3['1st Most Common Venue'].str.startswith('Café').value_counts()
```

Number of rows: (2, 10)

Out[340]:

```
False    2
Name: 1st Most Common Venue, dtype: int64
```

In [341]:

```
## Examine Clusters
## Cluster 4
Cluster_4 = New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] == 3, New_Delhi_merged
.columns[[0] + list(range(5, New_Delhi_merged.shape[1]))]]
print('Number of Rows:', Cluster_4.shape)
Cluster_4['1st Most Common Venue'].str.startswith('Café').value_counts()
```

Number of Rows: (33, 10)

Out[341]:

```
False    32
True     1
Name: 1st Most Common Venue, dtype: int64
```

In [342]:

```
## Examine Clusters

## Cluster 5
Cluster_5 = New_Delhi_merged.loc[New_Delhi_merged['Cluster Labels'] == 4, New_Delhi_merged.columns[[0] + list(range(5, New_Delhi_merged.shape[1]))]]

print('Number of rows:', Cluster_5.shape)
Cluster_5['1st Most Common Venue'].str.startswith('Café').value_counts()
```

Number of rows: (45, 10)

Out[342]:

```
False    31
True     13
Name: 1st Most Common Venue, dtype: int64
```

In [343]:

```
for x in range(5,10):
    y = Cluster_1[Cluster_5.columns[x]].str.startswith('Café').value_counts()[1]
    z =(y / 45)*100
    percentage = format(round(z,2))
    print('Locality number regards Cafe as the ' + Cluster_5.columns[x],':', y, '/', 'Percentage in total:',percentage, '%')
```

Locality number regards Cafe as the 1st Most Common Venue : 4 / Percentage in total: 8.89 %
 Locality number regards Cafe as the 2nd Most Common Venue : 5 / Percentage in total: 11.11 %
 Locality number regards Cafe as the 3rd Most Common Venue : 7 / Percentage in total: 15.56 %
 Locality number regards Cafe as the 4th Most Common Venue : 5 / Percentage in total: 11.11 %
 Locality number regards Cafe as the 5th Most Common Venue : 4 / Percentage in total: 8.89 %

In the Cluster 5 area, Café is very popular : 55.56% localities have Cafés as the Top 5 most common venues.

4. Conclusion:

According to the observation generated by the data, we can conclude points as follows:

1. According to the Clusters examines, we can say that the popularity of Café is noticeable and it has a very good market in the particular area: Cluster 5.
2. The Cafe can open at areas that have the best restaurants, such as Kasbah and Greater Kailash.
3. Or at the best area to attract people to stay and eat, such as Connaught.
4. Or at PVR Anupam Complex where has the best Cafe of New Delhi.
5. Or at Satyaniketan where has the most Cafes in New Delhi.
6. However, there are some areas that we shall avoid too, such as Piccadily Hotel and Janakpuri, because of the bad score of local restaurants.