"Exploring Zomato: A Data Analysis of Restaurant Trends and Consumer Preferences"

In [ ]:

```python
# import necessary libraries like numpy,pandas ,seaborn and matplotlib
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
```

In [ ]:

```python
# read the data from the csv file
df = pd.read_csv(r"C:\Users\Ashim\OneDrive\Desktop\zomato.csv",encoding="ISO-8859-1")
```

In [ ]:

```python
# read the data from the excel file
country_code = pd.read_excel(r"C:\Users\Ashim\OneDrive\Desktop\Country-Code.xlsx")
```

In [ ]:

```python
# display the first 5 rows of the data
df.head(3)
```

Out[ ]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude	Latitude	Cuisines	...	Currency	Has Table booking
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
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
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

3 rows × 21 columns

In [ ]:

```python
# merge the two dataframes
merged_df = pd.merge(df,country_code,how="left",on="Country Code")
merged_df.head(3)
```

Out[ ]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude	Latitude	Cuisines	...	Has Table booking	Has Online delivery
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	...	Yes	No
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	...	Yes	No
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	...	Yes	No

3 rows × 22 columns

In [ ]:

```
# checking the missing values
merged_df.isnull().sum()
```

Out[ ]:

```
Restaurant ID           0
Restaurant Name         0
Country Code            0
City                    0
Address                 0
Locality                0
Locality Verbose        0
Longitude               0
Latitude                0
Cuisines                9
Average Cost for two    0
Currency                0
Has Table booking       0
Has Online delivery     0
Is delivering now       0
Switch to order menu    0
Price range             0
Aggregate rating        0
Rating color            0
Rating text             0
Votes                   0
Country                 0
dtype: int64
```

Analysis and Visualization of Exploratory Data Understanding the surrounding geographical spread, understanding the rating, understanding the currency, online delivery, city coverage, etc. will be beneficial before we ask questions about the dataset.

In [ ]:

```
#let us check how many unique countries are there in the dataset
print("let us  seee how many country include in this survay")
for i in pd.unique(merged_df.Country): print(i)
print()
print("Total  nuber of country in this survey ", merged_df["Country"].nunique())
```

```
let us  seee how many country include in this survay
Phillipines
Brazil
United States
Australia
Canada
Singapore
UAE
India
Indonesia
New Zealand
United Kingdom
Qatar
South Africa
Sri Lanka
Turkey

Total  nuber of country in this survey  15
```

- Zomato is a transnational corporation with operations in these nations, as evidenced by the survey's finding that it is dispersed throughout 15 counties.

1. Presently, let's discuss ratings.

In [ ]:

```
merged_df1=merged_df.groupby(['Aggregate rating','Rating color','Rating text']).size().reset_index().rename(colu
merged_df1.head(10)
```

Out[ ]:

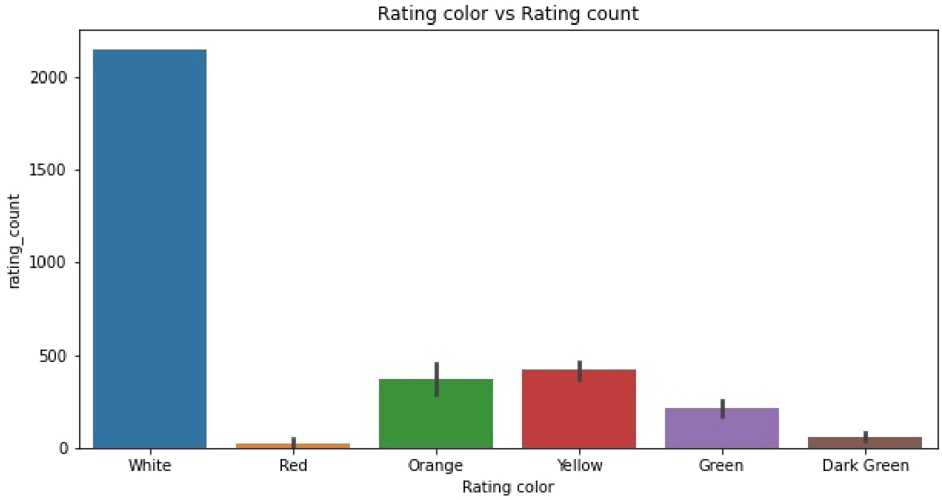
	Aggregate rating	Rating color	Rating text	rating_count
0	0.0	White	Not rated	2148
1	1.8	Red	Poor	1
2	1.9	Red	Poor	2
3	2.0	Red	Poor	7

4	2.1	Red	Poor	15
5	2.2	Red	Poor	27
6	2.3	Red	Poor	47
7	2.4	Red	Poor	87
8	2.5	Orange	Average	110
9	2.6	Orange	Average	191

- As seen above, we comprehend the connection between the aggregate rating, rating color, and rating text.
- 0.0 = white
- 1.8 - 2.4 = Red
- 2.5 - 3.4 = Orange
- 3.5 - 3.9 = Yellow
- 4.0 - 4.4 = Green
- 4.5 - 4.9 = Dark Green

In [ ]:

```
# plot the bar graph between rating color and rating count
plt.figure(figsize=(10,5))
sns.barplot(x="Rating color",y="rating_count",data=merged_df1)
plt.title("Rating color vs Rating count")
plt.show()
```



- It appears that the majority of restaurants have not received any ratings, so let's check to see if they are located in a particular nation or not.

In [ ]:

```
no_rating=merged_df[merged_df['Rating color']=='White'].groupby(merged_df.Country).size().reset_index().rename(co
no_rating
```

Out[ ]:

	Country	rating_count
0	Brazil	5
1	India	2139
2	United Kingdom	1
3	United States	3

- India appears to have the most unrated restaurants, which suggests that, in Indian society, most people might prefer to eat at a restaurant.

2. countries and their currencies

In [ ]:

```
country_with_currency=merged_df.groupby(['Country','Currency']).size().reset_index(name='count')
country_with_currency.drop(columns=['count'],axis=1,inplace=True)
country_with_currency
```

Out[ ]:

	Country	Currency
0	Australia	Dollar($)
1	Brazil	Brazilian Real(R$)
2	Canada	Dollar($)
3	India	Indian Rupees(Rs.)
4	Indonesia	Indonesian Rupiah(IDR)
5	New Zealand	NewZealand($)
6	Phillipines	Botswana Pula(P)
7	Qatar	Qatari Rial(QR)
8	Singapore	Dollar($)
9	South Africa	Rand(R)
10	Sri Lanka	Sri Lankan Rupee(LKR)
11	Turkey	Turkish Lira(TL)
12	UAE	Emirati Diram(AED)
13	United Kingdom	Pounds(£)
14	United States	Dollar($)

- As can be seen, the majority of dollors used for internet food orders are from 4 countries.

3. Here, we attempt to use data frame operations and visualizations to respond to some specific queries.

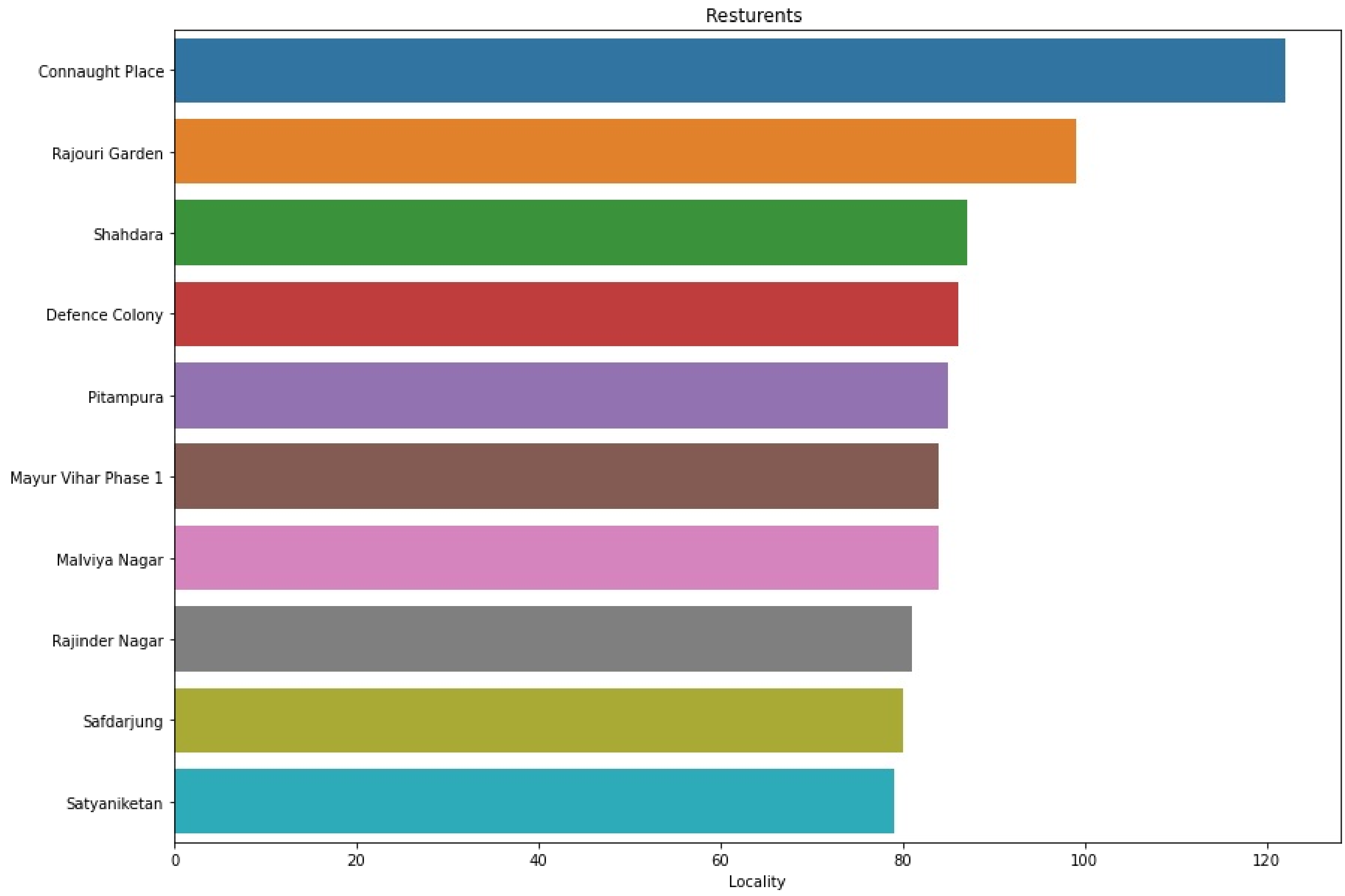
Q1: Which locality has the most hotels mentioned on Zomato?

In [ ]:

```
Delhi=merged_df[(merged_df.City=='New Delhi')]
plt.figure(figsize=(14,10))
sns.barplot(x=Delhi.Locality.value_counts().head(10),y=Delhi.Locality.value_counts().head(10).index)
plt.title('Resturents ')
```

Out[ ]:

```
Text(0.5, 1.0, 'Resturents ')
```



- Here, it appears that Connaught Place has the greatest number of restaurants.

Q2: What types of cuisine are served at these highly regarded establishments?

In [ ]:

```
merged_df.Cuisines.value_counts()
```

Out[ ]:

```
North Indian                                 936
North Indian, Chinese                        511
Chinese                                      354
Fast Food                                    354
North Indian, Mughlai                        334
                                            ... 
American, Caribbean, Seafood                   1
Parsi, North Indian                            1
Beverages, Ice Cream                           1
Indian, Asian                                  1
Chinese, North Indian, Fast Food, Street Food      1
Name: Cuisines, Length: 1825, dtype: int64
```

In [ ]:

```
from pandas.core.arrays.datetimelike import isin
good_resturent=Delhi[(Delhi.Locality.isin(['Connaught Place'])) & (Delhi['Rating text'].isin(['Excellent','Very G
good_resturent=good_resturent.Cuisines.value_counts().reset_index()

cuisines=[]
for x in good_resturent['index']:
  cuisines.append(x)

cuisines
```

Out[ ]:

```
['North Indian, Chinese, Italian, Continental',
 'North Indian, Chinese',
 'North Indian, Afghani, Mughlai',
 'South Indian',
 'Ice Cream',
 'Modern Indian',
 'Healthy Food, Continental, Italian',
 'Italian, Mexican, Continental, North Indian, Finger Food',
 'Continental, Mexican, Burger, American, Pizza, Tex-Mex',
 'Continental, Italian, Asian, Indian',
 'Japanese',
 'Continental, Mediterranean, Italian, North Indian',
 'Asian, North Indian',
 'Fast Food, American, Burger',
 'North Indian, Chinese, Italian, American, Middle Eastern',
 'Continental, American, Asian, North Indian',
 'Continental, North Indian, Chinese, Mediterranean',
 'Bakery, Fast Food, Desserts',
 'Chinese',
 'North Indian, European',
 'Cafe',
 'Bakery, Desserts, Fast Food',
 'North Indian, Continental',
 'North Indian, Italian, Asian, American',
 'Biryani, Hyderabadi',
 'North Indian, Chinese, Continental, Italian',
 'North Indian, Mediterranean, Asian, Fast Food',
 'Biryani, North Indian, Hyderabadi',
 'North Indian, European, Asian, Mediterranean',
 'North Indian',
 'Continental, North Indian, Italian, Asian']
```

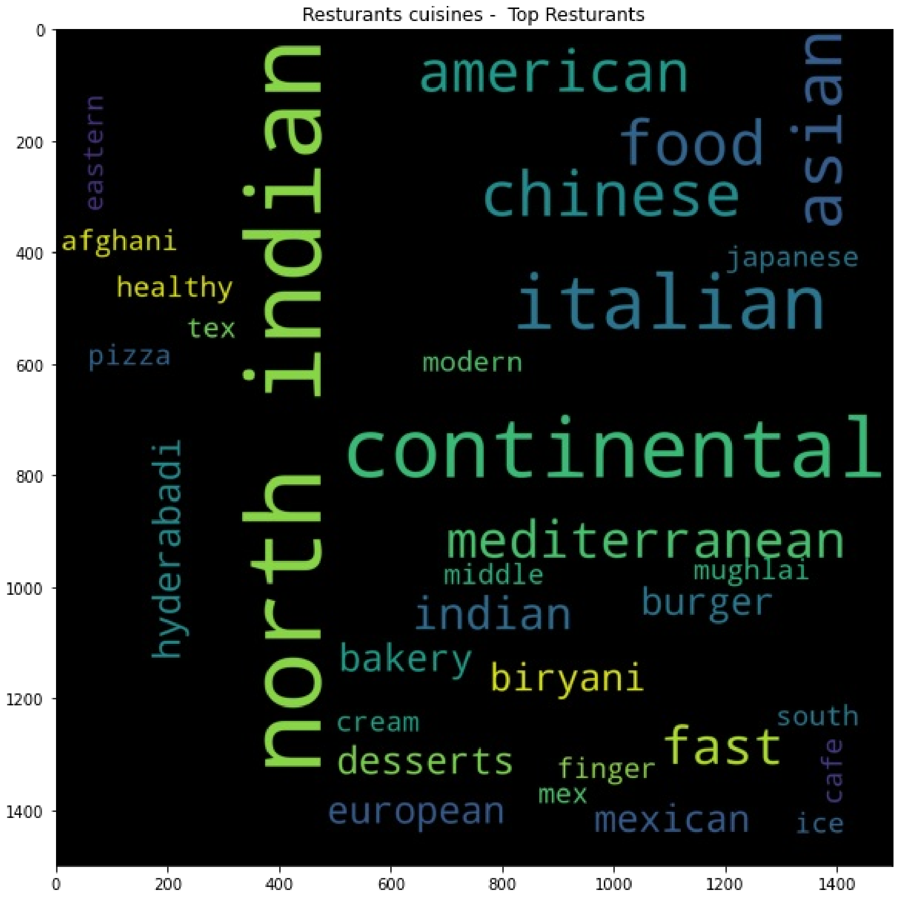
In [ ]:

```
# As we here we use text classiffications technique
# import the necessary libraries

! pip install wordcloud spacy
import nltk
import wordcloud
nltk.download('stopwords')
from wordcloud import WordCloud
from spacy.lang.en.stop_words import STOP_WORDS
from nltk.corpus import stopwords


en_stop_words = list(set(stopwords.words('english')).union(set(STOP_WORDS)))

comment_word=' '
```

```
stopword=set(en_stop_words)


for val in cuisines:
  val=str(val)
  token=val.split()

  for i in range (len(token)):
    token[i]=token[i].lower()

  comment_word += " ".join(token)+" "
```

In [ ]:

```
#create word cloud and print it
wordcloud = WordCloud(width = 1500, height = 1500,background_color ='black',stopwords = stopword,min_font_size =
plt.figure(figsize=(10,10))
plt.title('Resturants cuisines -  Top Resturants')
plt.imshow(wordcloud)
plt.show()
```



- Top rated resurents are doing well in cuisines of
- North Indian
- Chinese
- Italian
- American

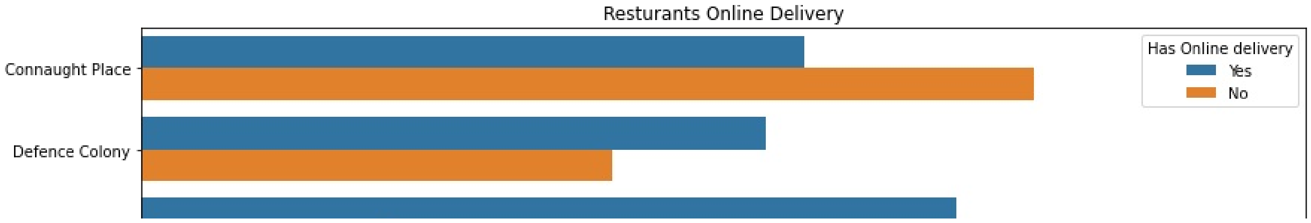
3. How many of these eateries offer internet delivery?

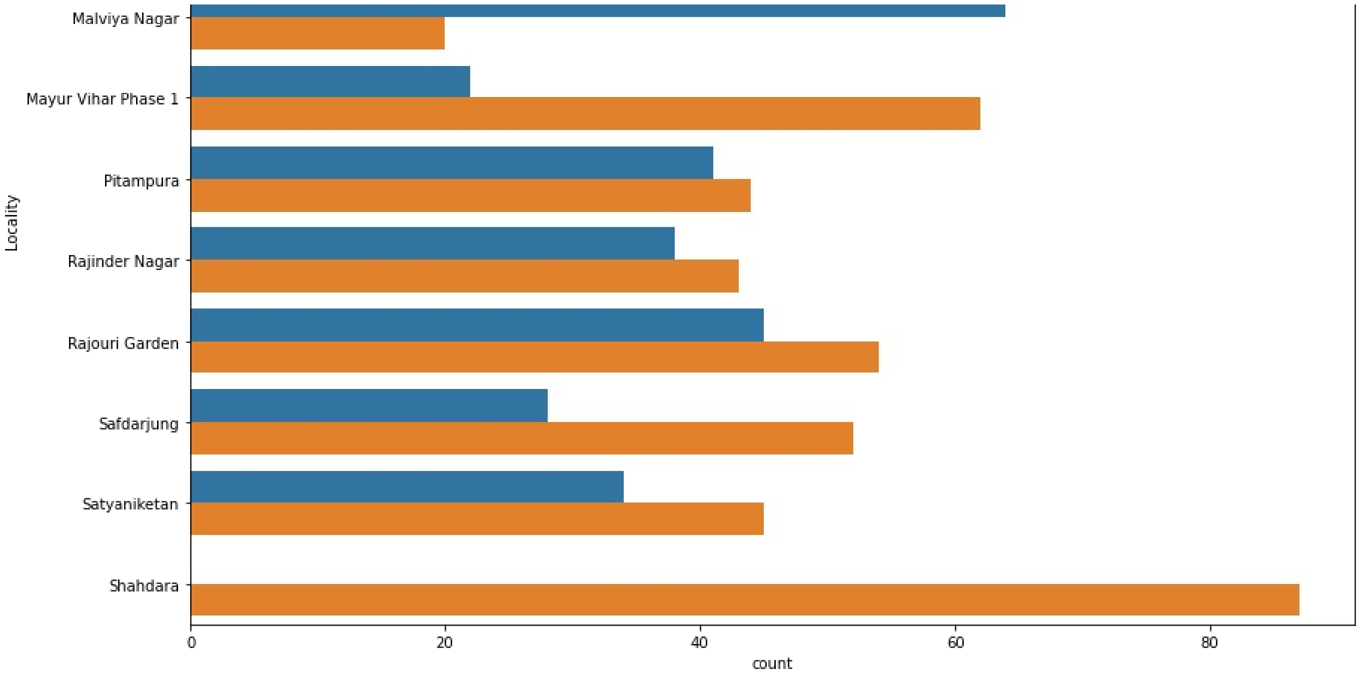
In [ ]:

```
top_locality=Delhi.Locality.value_counts().head(10)
plt.figure(figsize=(14,10))
plt.title('Resturants Online Delivery')
sns.countplot(y="Locality", data=Delhi[Delhi.Locality.isin(top_locality.index)],hue='Has Online delivery')
```

Out[ ]:

```
<AxesSubplot:title={'center':'Resturants Online Delivery'}, xlabel='count', ylabel='Locality'>
```



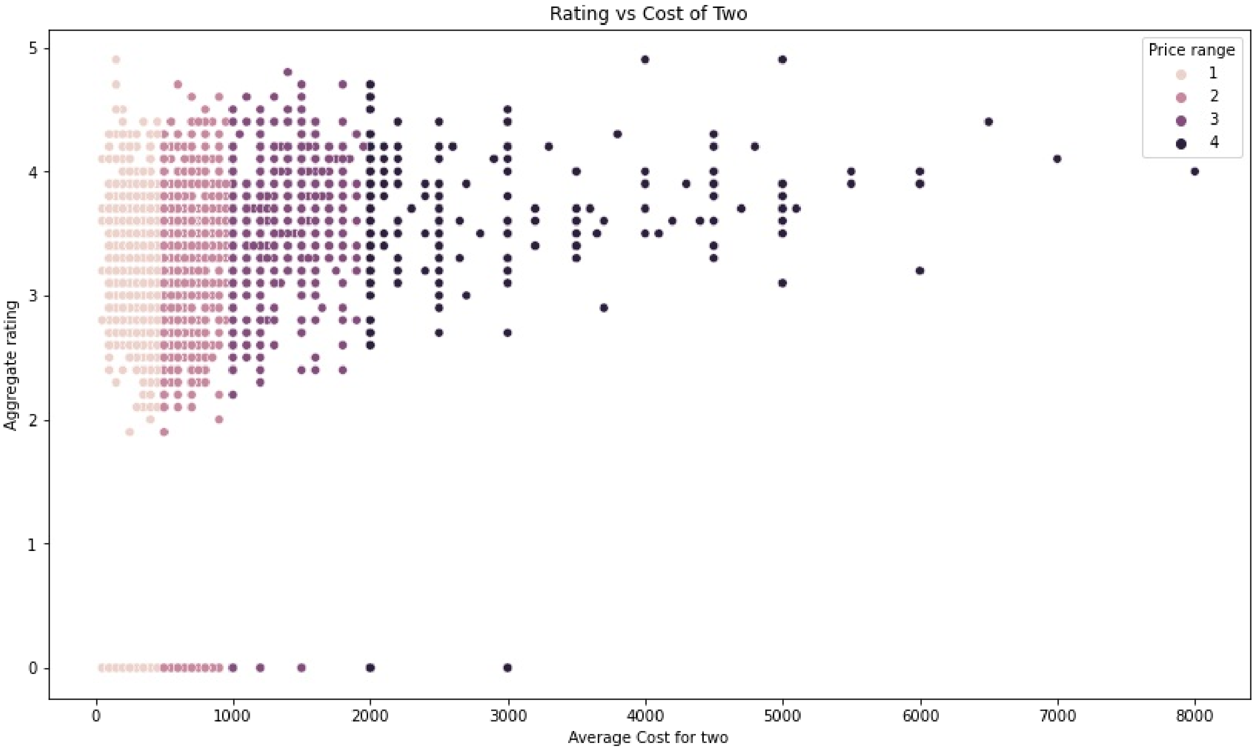


- We depict from the graph that except Shahdara every place offer the online delivery

Q4: Rating VS Cost of dinning

```
In [ ]:
plt.figure(figsize=(14,8))
plt.xlabel("Average Cost for two")
plt.ylabel("Aggregate rating")
plt.title('Rating vs Cost of Two');
sns.scatterplot(x='Average Cost for two' , y='Aggregate rating',hue='Price range',data=Delhi)
```

```
Out[ ]: <AxesSubplot:title={'center':'Rating vs Cost of Two'}, xlabel='Average Cost for two', ylabel='Aggregate rating'>
```



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