

Zomato-Resaurant-Data Analysis

Zomato restaurant data analysis using Python. Data is downloaded from kaggle. Zomato restaurant data analysis is for those who want to find the value for money restaurants in various parts of the country for the cuisines., I will be doing various analysis of data using techniques and libraries (Pandas, seaborn, matplotlib etc.) which i learned in this course [FSDS Bootcamp Data Science 2.0 from ineuron] highly recommended course for even non-technical persons like me. Thanks to Krish Naik Sir and Sudhanshu Kumar Sir for motivating person like us to even think about the difficult task of learning Data Sciencs.

Importing the required libraries

In [1]:

```
1 import pandas as pd  
2 import numpy as np  
3 import seaborn as sns
```

```
C:\Users\abhishek\AppData\Roaming\Python\Python39\site-packages\statsmodels\taste_testing.py:19: FutureWarning: pandas.util.testing is deprecated. Use the functions in the public API at pandas.testing instead.  
import pandas.util.testing as tm
```

Let's begin by downloading the dataset, understanding and analyzing the dataset

In [2]:

```
1 df_zomato = pd.read_csv(r"C:\Users\abhishek\zomato.csv", encoding='latin-1')
```

In [3]: 1 df_zomato.head()

Out[3]:

		Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	LocalityVerbose	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...	121.027535
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
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
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
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...	121.057508

5 rows × 21 columns



In [4]: 1 df_zomato.shape

Out[4]: (9551, 21)

In [5]: 1 df_zomato.info()

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9551 entries, 0 to 9550
Data columns (total 21 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   Restaurant ID    9551 non-null   int64  
 1   Restaurant Name  9551 non-null   object  
 2   Country Code     9551 non-null   int64  
 3   City              9551 non-null   object  
 4   Address           9551 non-null   object  
 5   Locality          9551 non-null   object  
 6   LocalityVerbose   9551 non-null   object  
 7   Longitude         9551 non-null   float64 
 8   Latitude          9551 non-null   float64 
 9   Cuisines          9542 non-null   object  
 10  Average Cost for two 9551 non-null   int64  
 11  Currency          9551 non-null   object  
 12  Has Table booking 9551 non-null   object  
 13  Has Online delivery 9551 non-null   object  
 14  Is delivering now  9551 non-null   object  
 15  Switch to order menu 9551 non-null   object  
 16  Price range        9551 non-null   int64  
 17  Aggregate rating   9551 non-null   float64 
 18  Rating color       9551 non-null   object  
 19  Rating text        9551 non-null   object  
 20  Votes              9551 non-null   int64  
dtypes: float64(3), int64(5), object(13)
memory usage: 1.5+ MB
```

In [6]: 1 df_zomato.describe()

Out[6]:

	Restaurant ID	Country Code	Longitude	Latitude	Average Cost for two	Price range	Aggregate rating
count	9.551000e+03	9551.000000	9551.000000	9551.000000	9551.000000	9551.000000	9551.000000
mean	9.051128e+06	18.365616	64.126574	25.854381	1199.210763	1.804837	2.666
std	8.791521e+06	56.750546	41.467058	11.007935	16121.183073	0.905609	1.516
min	5.300000e+01	1.000000	-157.948486	-41.330428	0.000000	1.000000	0.000
25%	3.019625e+05	1.000000	77.081343	28.478713	250.000000	1.000000	2.500
50%	6.004089e+06	1.000000	77.191964	28.570469	400.000000	2.000000	3.200
75%	1.835229e+07	1.000000	77.282006	28.642758	700.000000	2.000000	3.700
max	1.850065e+07	216.000000	174.832089	55.976980	800000.000000	4.000000	4.900

```
In [7]: 1 df_zomato.columns
```

```
Out[7]: Index(['Restaurant ID', 'Restaurant Name', 'Country Code', 'City', 'Address',  
   'Locality', 'Locality Verbose', 'Longitude', 'Latitude', 'Cuisines',  
   'Average Cost for two', 'Currency', 'Has Table booking',  
   'Has Online delivery', 'Is delivering now', 'Switch to order menu',  
   'Price range', 'Aggregate rating', 'Rating color', 'Rating text',  
   'Votes'],  
  dtype='object')
```

Checking whether it has missing values or not.

```
In [8]: 1 df_zomato.isnull().sum()
```

```
Out[8]: 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  
dtype: int64
```

Handling missing values

```
In [9]: 1 #To find only features with missing values  
2 [feature for feature in df_zomato.columns if df_zomato[feature].isnull().sum
```

```
Out[9]: ['Cuisines']
```

```
In [10]: 1 !pip install openpyxl
```

```
WARNING: Ignoring invalid distribution -mpy (c:\programdata\anaconda3\lib\site-packages)
WARNING: Ignoring invalid distribution -umpy (c:\programdata\anaconda3\lib\site-packages)
WARNING: Ignoring invalid distribution -pendatasets (c:\programdata\anaconda3\lib\site-packages)
WARNING: Ignoring invalid distribution -mpy (c:\programdata\anaconda3\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\programdata\anaconda3\lib\site-packages)
```

In [11]:

```
1 df_country = pd.read_excel("Country-Code.xlsx")
2 df_country.head()
```

Out[11]:

	Country Code	Country
0	1	India
1	14	Australia
2	30	Brazil
3	37	Canada
4	94	Indonesia

In [12]:

```

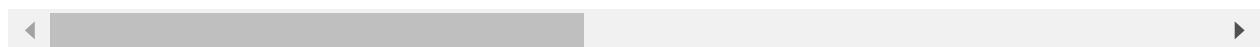
1 #Merging both the dataframes
2 final_df = pd.merge(df_zomato,df_country,on="Country Code",how='left')
3 final_df.head()

```

Out[12]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	LocalityVerbose	Longitude
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenue, Legaspi...	Century City Mall, Poblacion, Makati City	Century City Mall, Poblacion, Makati City, Mak...	121.027535
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
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
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
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...	121.057508

5 rows × 22 columns



In [13]: 1 final_df.dtypes

```
Out[13]: Restaurant ID          int64
Restaurant Name        object
Country Code           int64
City                  object
Address                object
Locality              object
LocalityVerbose       object
Longitude             float64
Latitude              float64
Cuisines               object
Average Cost for two   int64
Currency              object
Has Table booking     object
Has Online delivery    object
Is delivering now      object
Switch to order menu   object
Price range            int64
Aggregate rating      float64
Rating color           object
Rating text            object
Votes                 int64
Country                object
dtype: object
```

In [14]: 1 final_df.columns

```
Out[14]: Index(['Restaurant ID', 'Restaurant Name', 'Country Code', 'City', 'Address',
   'Locality', 'LocalityVerbose', 'Longitude', 'Latitude', 'Cuisines',
   'Average Cost for two', 'Currency', 'Has Table booking',
   'Has Online delivery', 'Is delivering now', 'Switch to order menu',
   'Price range', 'Aggregate rating', 'Rating color', 'Rating text',
   'Votes', 'Country'],
  dtype='object')
```

In [15]: 1 #To find records with each country
2 final_df.Country.value_counts()

```
Out[15]: India          8652
United States      434
United Kingdom     80
Brazil             60
UAE                60
South Africa       60
New Zealand        40
Turkey             34
Australia          24
Phillipines         22
Indonesia          21
Singapore          20
Qatar               20
Sri Lanka           20
Canada              4
Name: Country, dtype: int64
```

```
In [16]: 1 final_df.nunique()
```

```
Out[16]: Restaurant ID      9551
Restaurant Name     7446
Country Code        15
City                141
Address              8918
Locality            1208
LocalityVerbose    1265
Longitude           8120
Latitude             8677
Cuisines             1825
Average Cost for two 140
Currency             12
Has Table booking    2
Has Online delivery   2
Is delivering now     2
Switch to order menu  1
Price range          4
Aggregate rating     33
Rating color          6
Rating text           6
Votes                 1012
Country               15
dtype: int64
```

Exploratory Data Analysis and Visualization

Now we will try to plot some charts and find some stats from the data.

In [17]:

```

1 #finding which currency is used in which country
2
3 final_df[['Country','Currency']].groupby(['Country','Currency']).size().re

```

Out[17]:

	Country	Currency	0
0	Australia	Dollar(\$)	24
1	Brazil	Brazilian Real(R\$)	60
2	Canada	Dollar(\$)	4
3	India	Indian Rupees(Rs.)	8652
4	Indonesia	Indonesian Rupiah(IDR)	21
5	New Zealand	New Zealand(\$)	40
6	Phillipines	Botswana Pula(P)	22
7	Qatar	Qatari Rial(QR)	20
8	Singapore	Dollar(\$)	20
9	South Africa	Rand(R)	60
10	Sri Lanka	Sri Lankan Rupee(LKR)	20
11	Turkey	Turkish Lira(TL)	34
12	UAE	Emirati Diram(AED)	60
13	United Kingdom	Pounds(£)	80
14	United States	Dollar(\$)	434

In [18]:

```

1 #Finding mean for aggregate rating
2 final_df['Aggregate rating'].mean()

```

Out[18]: 2.6663700136111426

In [19]:

```
1 ## Finding rating count by doing mutivariate analysis
2
3 ratings = final_df.groupby(['Aggregate rating','Rating color','Rating text'])
4 ratings
```

Out[19]:

	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
10	2.7	Orange	Average	250
11	2.8	Orange	Average	315
12	2.9	Orange	Average	381
13	3.0	Orange	Average	468
14	3.1	Orange	Average	519
15	3.2	Orange	Average	522
16	3.3	Orange	Average	483
17	3.4	Orange	Average	498
18	3.5	Yellow	Good	480
19	3.6	Yellow	Good	458
20	3.7	Yellow	Good	427
21	3.8	Yellow	Good	400
22	3.9	Yellow	Good	335
23	4.0	Green	Very Good	266
24	4.1	Green	Very Good	274
25	4.2	Green	Very Good	221
26	4.3	Green	Very Good	174
27	4.4	Green	Very Good	144
28	4.5	Dark Green	Excellent	95
29	4.6	Dark Green	Excellent	78
30	4.7	Dark Green	Excellent	42

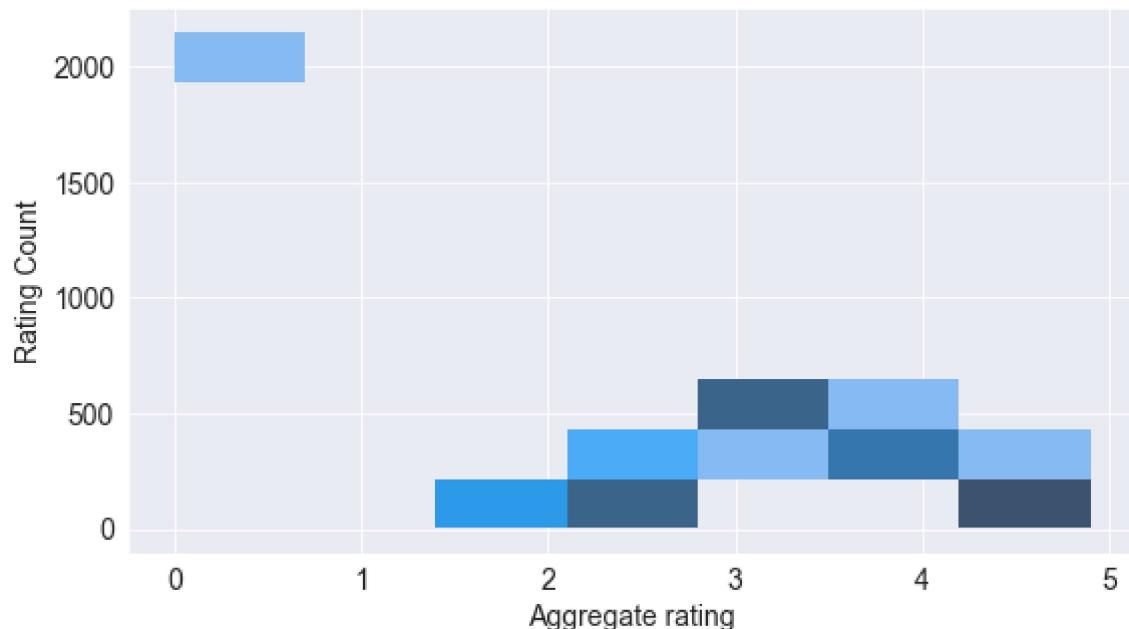
	Aggregate rating	Rating color	Rating text	Rating Count
31	4.8	Dark Green	Excellent	25
32	4.9	Dark Green	Excellent	61

In [20]:

```
1 import seaborn as sns
2 import matplotlib
3 import matplotlib.pyplot as plt
4 %matplotlib inline
5
6
7 sns.set_style('darkgrid')
8 matplotlib.rcParams['font.size'] = 14
9 matplotlib.rcParams['figure.figsize'] = (9, 5)
10 matplotlib.rcParams['figure.facecolor'] = '#00000000'
```

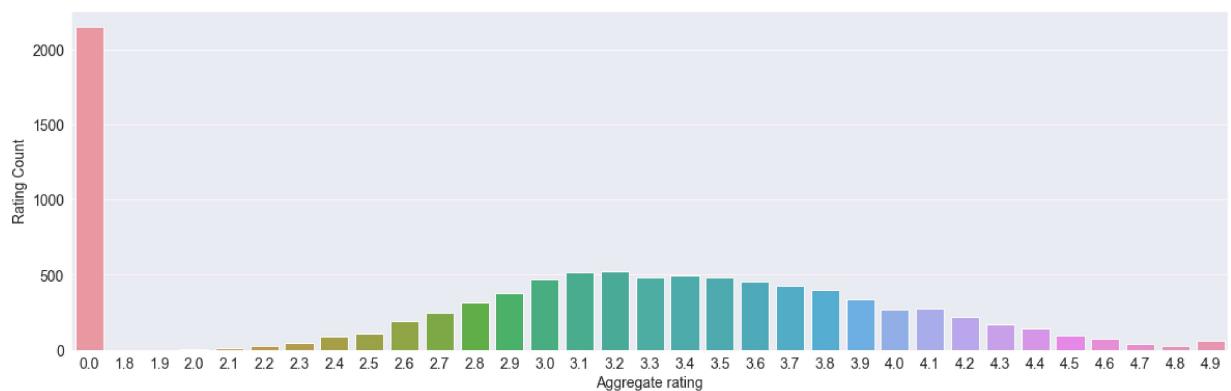
In [21]:

```
1 ## Finding aggregate ratingcount with the help of bivariate analysis and plo
2
3 sns.histplot(figsize=(12,6))
4 sns.histplot(x='Aggregate rating', y='Rating Count', data=ratings)
5 plt.show()
```



In [22]:

```
1 plt.figure(figsize=(20,6))
2 sns.barplot(x='Aggregate rating', y='Rating Count', data=ratings)
3 plt.show()
```

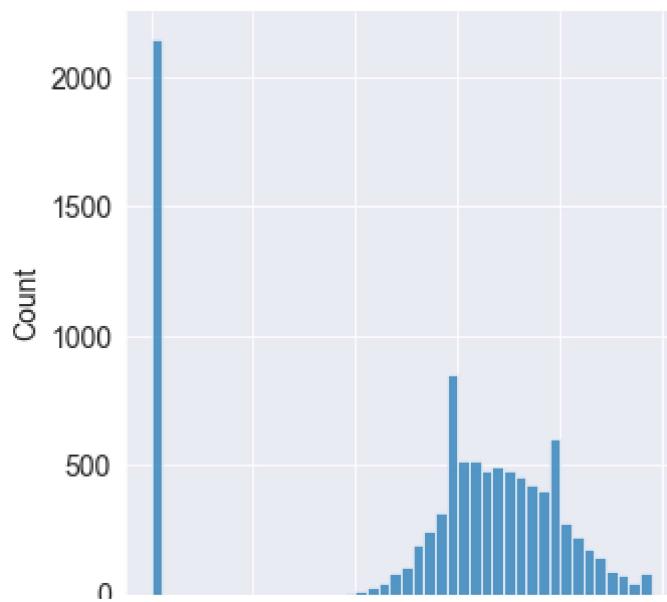


As we can see from above bar plot maximum number of aggregate rating ranges between 2.9 to 3.8

In [23]:

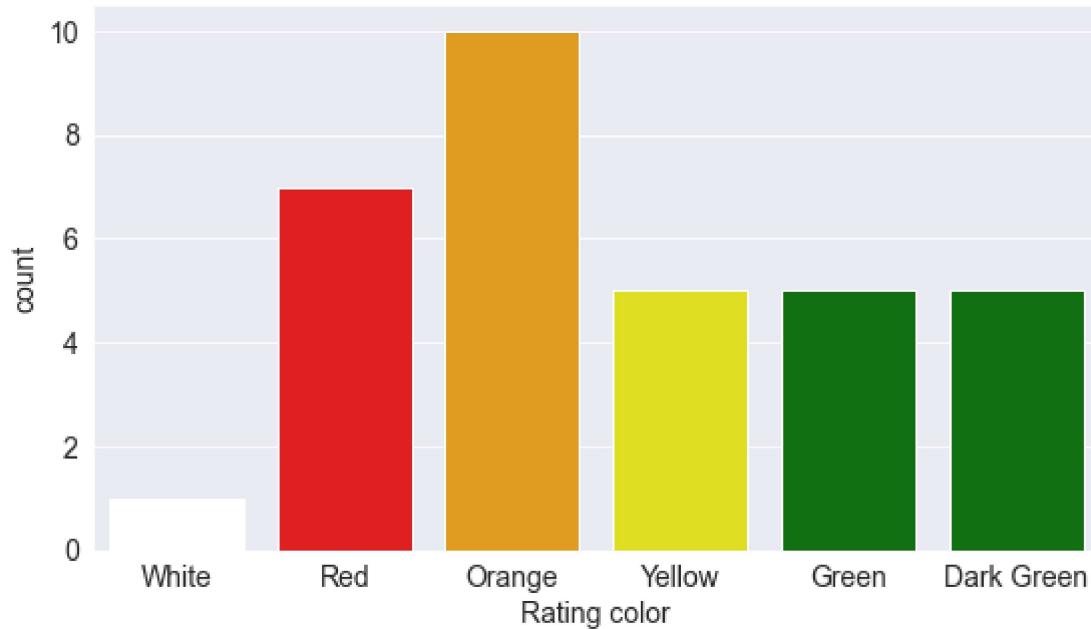
```
1 sns.displot(final_df['Aggregate rating'])
```

Out[23]: <seaborn.axisgrid.FacetGrid at 0x1e26672dd60>



```
In [24]: 1 #Count plot - useful for plotting categorical features
          2 sns.countplot(x="Rating color",data=ratings,palette=['white','red','orange','
```

```
Out[24]: <AxesSubplot:xlabel='Rating color', ylabel='count'>
```



As here we can see Orange is highest in number it also shows customers gives average rating mostly.

Q1: Which country uses what currency ?

In [25]:

```
1 ## Here i am using groupby function to make group of countries and currency
2 ## This function group the data on given condition.
3
4 final_df[['Country','Currency']].groupby(['Country','Currency']).size().rese
```

Out[25]:

	Country	Currency	0
0	Australia	Dollar(\$)	24
1	Brazil	Brazilian Real(R\$)	60
2	Canada	Dollar(\$)	4
3	India	Indian Rupees(Rs.)	8652
4	Indonesia	Indonesian Rupiah(IDR)	21
5	New Zealand	NewZealand(\$)	40
6	Phillipines	Botswana Pula(P)	22
7	Qatar	Qatari Rial(QR)	20
8	Singapore	Dollar(\$)	20
9	South Africa	Rand(R)	60
10	Sri Lanka	Sri Lankan Rupee(LKR)	20
11	Turkey	Turkish Lira(TL)	34
12	UAE	Emirati Diram(AED)	60
13	United Kingdom	Pounds(£)	80
14	United States	Dollar(\$)	434

In [26]:

```

1 ## Finding 10 best restaurants on the basis of average rating.
2
3 aggregate_rating_df = final_df.sort_values(by="Aggregate rating", ascending=
4 aggregate_rating_df.head(10)

```

Out[26]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude
1381	18384115	Caterspoint	1	Gurgaon	S-27/11, DLF Phase 3, Gurgaon	DLF Phase 3	DLF Phase 3, Gurgaon	77.10397
589	18269368	AB's Absolute Barbecues	214	Dubai	Mezzanine Floor, Centurion Star Tower, Deira ...	Deira City Centre Area	Deira City Centre Area, Dubai	55.32874
374	17580142	McGuire's Irish Pub & Brewery	216	Pensacola	600 E Gregory Street, Pensacola, FL 32502	Pensacola	Pensacola, Pensacola	-87.20270
9303	18217279	Miann	148	Auckland	57 Fort Street, Auckland CBD	Fort Street	Fort Street, Auckland	174.76898
9299	7001086	Milse	148	Auckland	The Pavilions, 27 Tyler Street, Britomart, Auc...	Britomart	Britomart, Auckland	174.76869
9296	7417450	Talaga Sampireun	94	Tangerang	Jl. Boulevard Bintaro Jaya Blok B7/N1, Bintaro...	Pondok Aren	Pondok Aren, Tangerang	106.72611
50	7300515	Garota de Ipanema	30	Rio de Janeiro	Rua Vinicius de Moraes, 49, Ipanema, Rio de Ja...	Ipanema	Ipanema, Rio de Janeiro	-43.20300
9291	7417455	Talaga Sampireun	94	Jakarta	Taman Impian Jaya Ancol, Jl. Lapangan Golf 7, ...	Taman Impian Jaya Ancol, Ancol	Taman Impian Jaya Ancol, Ancol, Jakarta	106.83355
48	7300955	Braseiro da Gíçvea	30	Rio de Janeiro	Praí_a Santos Dumont, 116, Gíçvea, Rio de Janeiro	Gíçvea	Gíçvea, Rio de Janeiro	-43.22704

Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude
428	17142792	Mama's Fish House	216	Rest of Hawaii	799 Poho PI, Paia, HI 96779	Paia	Paia, Rest of Hawaii -156.36644

10 rows × 22 columns



In [27]:

```

1 ## Finding which restaurants are better for two persons on the basis of ave
2 average_cost = final_df[['Country','Average Cost for two']].groupby(['Country'])
3 average_cost_new = final_df.sort_values(by="Average Cost for two", ascending=True)
4 average_cost_new.head(10)
    
```

Out[27]:

		Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Locality
346	17606621	HII Lite Bar & Lounge		216	Miller	109 N Broadway Ave, Miller, SD 57362	Miller	Miller, Miller	-98
2368	18312106	UrbanCrave		1	Kanpur	14/125, The Mall, Mall Road, Colonelganj, Para...	Parade	Parade, Kanpur	80
87	17284211	Pearly's Famous Country Cookng		216	Albany	814 N Slaphey Blvd, Albany, GA 31701	Albany	Albany, Albany	-84
85	17284302	El Vaquero Mexican Restaurant		216	Albany	2700 Dawson Rd, Albany, GA 31707	Albany	Albany, Albany	-84
240	17334679	Azteca		216	Davenport	4811 N Brady St Ste 3, Davenport, IA 52806	Davenport	Davenport, Davenport	-90
84	17284105	Cookie Shoppe		216	Albany	115 N Jackson St, Albany, GA 31701	Albany	Albany, Albany	-84
397	17582499	Royal Hotel		216	Pocatello	11 E Main St, Lava Hot Springs, ID 83246	Lava Hot Springs	Lava Hot Springs, Pocatello	-112
9242	3900245	Deena Chat Bhandar		1	Varanasi	D-47/184, Luxa Road, Dashaswmedh Road, Varanasi	Dashaswmedh Road	Dashaswmedh Road, Varanasi	0
9254	18246202	VNS Live Studio		1	Varanasi	Hotel Varuna Ground Floor, 22 Gulab Bagh, Sigr...	Sigra	Sigra, Varanasi	82
2364	2300497	Atmosphere Grill Cafe Sheesha		1	Kanpur	8th Floor, J.S. Tower, 16/106 - Mall Road, Kan...	Mall Road	Mall Road, Kanpur	80

10 rows × 22 columns

```
In [28]: 1 ## Finding how many restaurants have online delivery, table booking?  
2  
3 final_df[['Country','Has Table booking', 'Has Online delivery']].groupby(['C'])
```

Out[28]:

	Country	Has Table booking	Has Online delivery	0
0	Australia	No	No	24
1	Brazil	No	No	60
2	Canada	No	No	4
3	India	No	No	5545
4	India	No	Yes	1996
5	India	Yes	No	684
6	India	Yes	Yes	427
7	Indonesia	No	No	21
8	New Zealand	No	No	40
9	Phillipines	No	No	8
10	Phillipines	Yes	No	14
11	Qatar	No	No	19
12	Qatar	Yes	No	1
13	Singapore	No	No	20
14	South Africa	No	No	58
15	South Africa	Yes	No	2
16	Sri Lanka	No	No	20
17	Turkey	No	No	34
18	UAE	No	No	22
19	UAE	No	Yes	20
20	UAE	Yes	No	10
21	UAE	Yes	Yes	8
22	United Kingdom	No	No	68
23	United Kingdom	Yes	No	12
24	United States	No	No	434

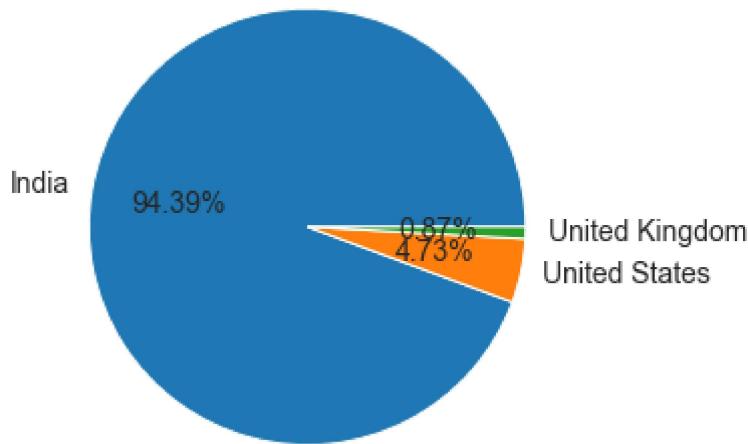
Finding top 3 countries having maximum number of order

In [29]:

```

1 country_names = final_df.Country.value_counts().index
2 country_counts = final_df.Country.value_counts().values
3 plt.pie(country_counts[:3], labels=country_names[:3], autopct='%.2f%%')
4 plt.show()

```



In [31]:

```
1 final_df.corr()
```

Out[31]:

	Restaurant ID	Country Code	Longitude	Latitude	Average Cost for two	Price range	Aggregate rating	Votes
Restaurant ID	1.000000	0.148471	-0.226081	-0.052081	-0.001693	-0.134540	-0.326212	-0.147023
Country Code	0.148471	1.000000	-0.698299	0.019792	0.043225	0.243327	0.282189	0.154530
Longitude	-0.226081	-0.698299	1.000000	0.043207	0.045891	-0.078939	-0.116818	-0.085101
Latitude	-0.052081	0.019792	0.043207	1.000000	-0.111088	-0.166688	0.000516	-0.022962
Average Cost for two	-0.001693	0.043225	0.045891	-0.111088	1.000000	0.075083	0.051792	0.067783
Price range	-0.134540	0.243327	-0.078939	-0.166688	0.075083	1.000000	0.437944	0.309444
Aggregate rating	-0.326212	0.282189	-0.116818	0.000516	0.051792	0.437944	1.000000	0.313691
Votes	-0.147023	0.154530	-0.085101	-0.022962	0.067783	0.309444	0.313691	1.000000



```
In [32]: 1 sns.pairplot(final_df)
```

```
Out[32]: <seaborn.axisgrid.PairGrid at 0x1e266acd0>
```

