In [1]:
```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

Zomato dataset

In [6]:
```python
data=pd.read_csv('zomato.csv',encoding='latin-1')
```

In [7]:
```python
data.head()
```

Out[7]:

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

5 rows × 21 columns

In [149...
```python
data.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   Locality Verbose      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 [76]:
```python
data.columns
```

Out[76]:
```
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')
```

In [151...
```python
data.describe()
```

Out[151...

	Restaurant ID	Country Code	Longitude	Latitude	Average Cost for two	Price range	Aggregate rating	Votes
count	9.551000e+03	9551.000000	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	2.666370	156.909748
std	8.791521e+06	56.750546	41.467058	11.007935	16121.183073	0.905609	1.516378	430.169145
min	5.300000e+01	1.000000	-157.948486	-41.330428	0.000000	1.000000	0.000000	0.000000
25%	3.019625e+05	1.000000	77.081343	28.478713	250.000000	1.000000	2.500000	5.000000
50%	6.004089e+06	1.000000	77.191964	28.570469	400.000000	2.000000	3.200000	31.000000
75%	1.835229e+07	1.000000	77.282006	28.642758	700.000000	2.000000	3.700000	131.000000
max	1.850065e+07	216.000000	174.832089	55.976980	800000.000000	4.000000	4.900000	10934.000000

In [77]:
```python
data.isnull().sum()
```

Out[77]:
```
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
```

Use loop to find accurate missing value

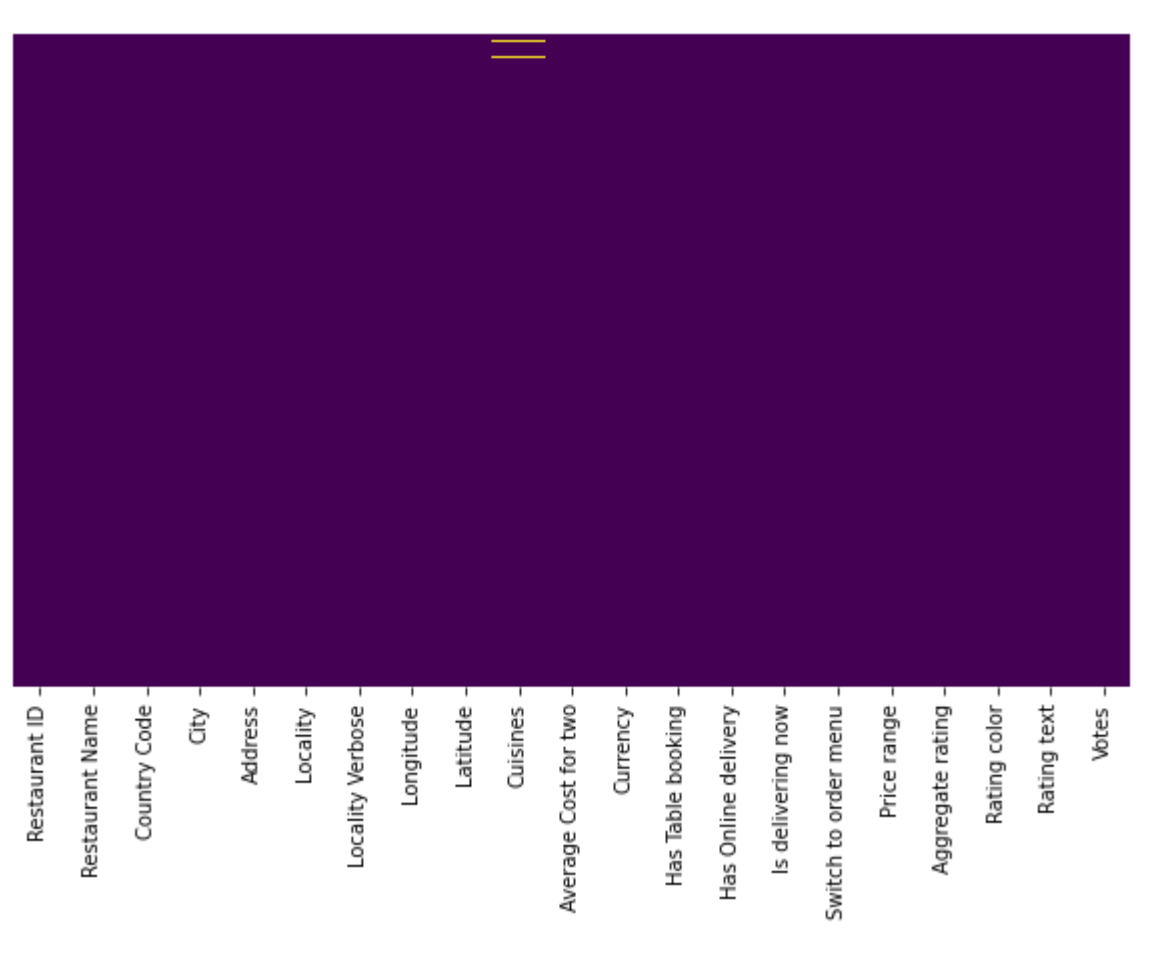
In [81]:
```python
[item for item in data.columns if data[item].isnull().sum()>0]
```

Out[81]:
```
['Cuisines']
```

In [82]:
```python
#Cuisines have missing values
```

In [93]:
```python
#find missing value by heatmap
plt.rcParams["figure.figsize"]=(10,6)
sns.heatmap(data.isnull(),yticklabels=False,cbar=False,cmap='viridis')
```

Out[93]:
```
<AxesSubplot:>
```



Country-code dataset

In [96]:
```python
country_data=pd.read_excel("Country-Code.xlsx")
country_data.head()
```

Out[96]:

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

In [111...
```python
main_data=pd.merge(data,country_data,on='Country Code',how="left")
```

In [113...
```python
#Country column added
main_data.columns
```

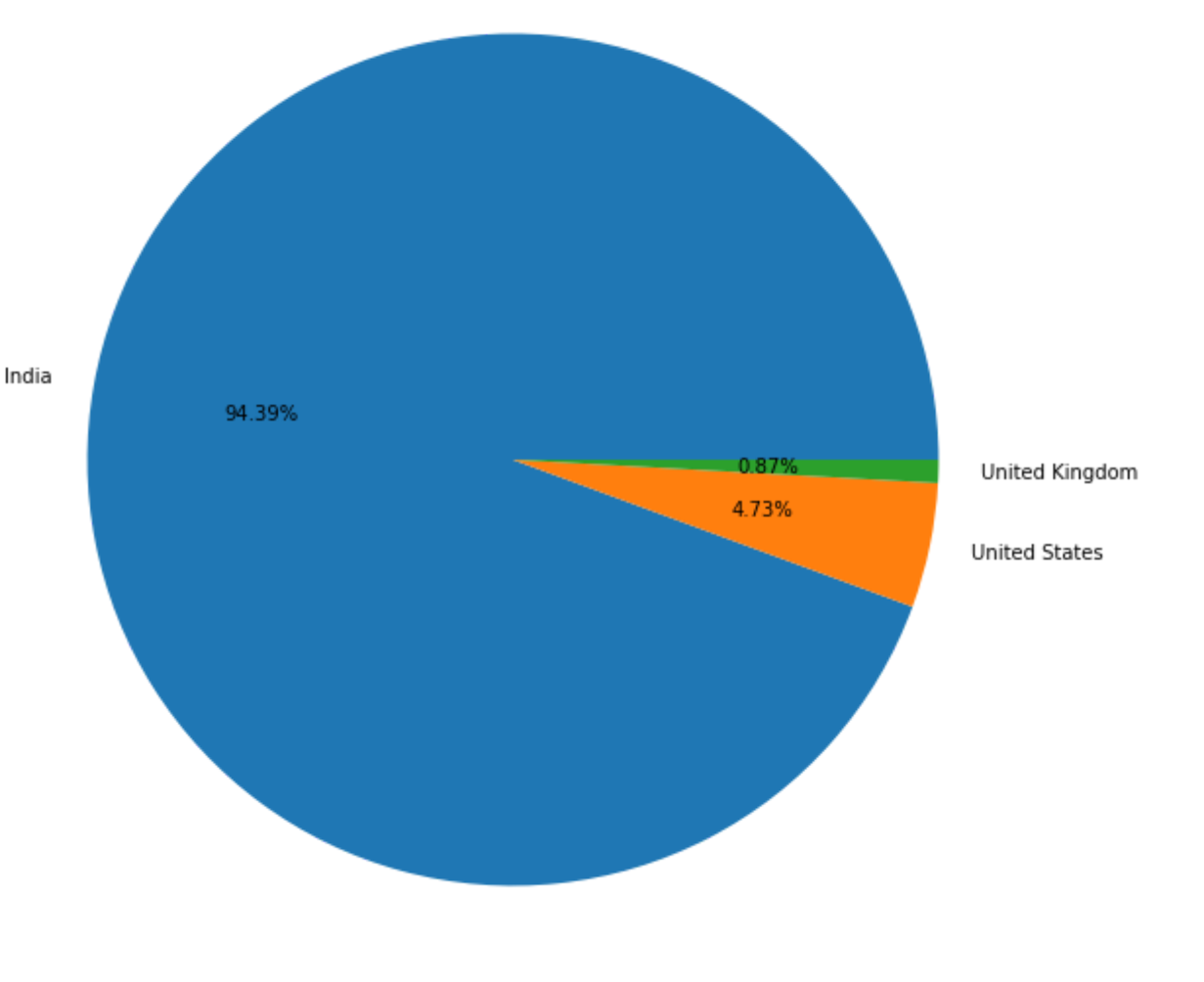
Out[113...
```
Index(['Restaurant ID', 'Restaurant Name', 'Country Code', 'City', 'Address',
       'Locality', 'Locality Verbose', 'Longitude', 'Latitude', 'Cuisines',
       'Average Cost for two', 'Currency', 'Has Table booking',
       'Has Online delivery', 'Is delivering now', 'Switch to order menu',
       'Price range', 'Aggregate rating', 'Rating color', 'Rating text',
       'Votes', 'Country'],
      dtype='object')
```

we want find which countries use Zomato

In [148...
```python
#by using pie_chart

Country_name=main_data.Country.value_counts().index
Country_valu=main_data.Country.value_counts().values
plt.pie(Country_valu[:3],labels=Country_name[:3],autopct='%1.2f%%')
```

Out[148...
```
([<matplotlib.patches.Wedge at 0x129b5f5d940>,
  <matplotlib.patches.Wedge at 0x129b5f69130>,
  <matplotlib.patches.Wedge at 0x129b5f69850>],
 [Text(-1.0829742700952103, 0.19278674827836725, 'India'),
  Text(1.077281715838356, -0.22240527134123297, 'United States'),
  Text(1.0995865153823035, -0.03015783794312073, 'United Kingdom')],
 [Text(-0.590713238233751, 0.10515640815183668, '94.39%'),
  Text(0.5876082086391032, -0.12131196618612707, '4.73%'),
  Text(0.5997744629358018, -0.01644972978715676, '0.87%')])
```



Observation: India usses Zomato more than other counries

FInding Ratings of Zomato

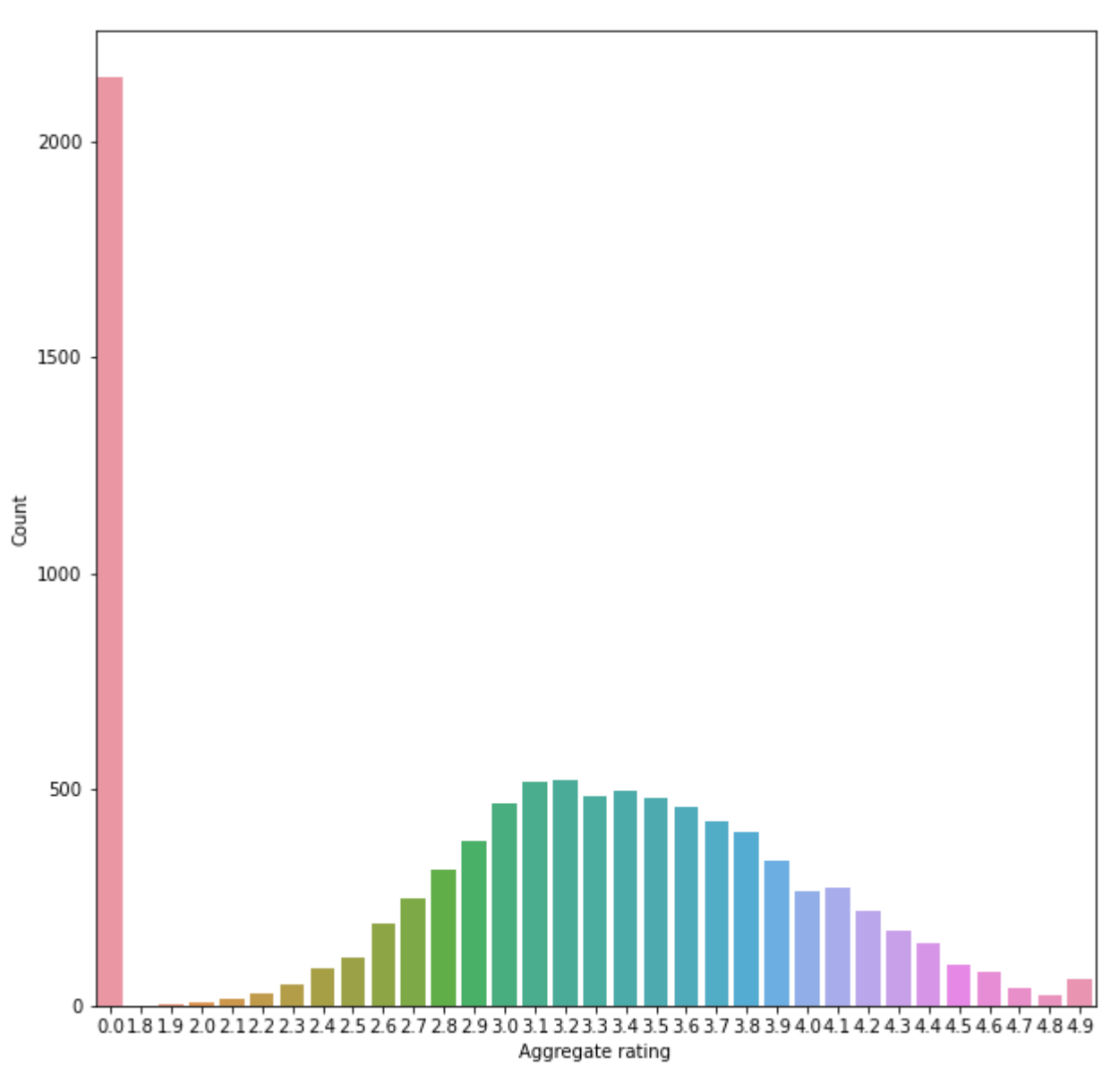
In [201...
```python
compare_data=main_data.groupby(['Aggregate rating','Rating color','Rating text']).size().reset_index().rename(columns={0:"Count"})
compare_data
```

Out[201...

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

In [202...
```python
sns.barplot(x=compare_data['Aggregate rating'],y=compare_data['Count'])
```

Out[202...
```
<AxesSubplot:xlabel='Aggregate rating', ylabel='Count'>
```



1)maximum ratings are 0

Which Country Do More Ratings

In [211...
```python
ratings_data=main_data.groupby(['Aggregate rating','Country']).size().reset_index().rename(columns={0:"count"})
```

In [206...
```python
ratings_data
```

Out[206...

	Aggregate rating	Country	count
0	0.0	Brazil	5
1	0.0	India	2139
2	0.0	United Kingdom	1
3	0.0	United States	3
4	1.8	India	1
...	...	...	...
217	4.9	Sri Lanka	1
218	4.9	Turkey	3
219	4.9	UAE	4
220	4.9	United Kingdom	4
221	4.9	United States	14

222 rows × 3 columns

In [221...
```python
ratings_data['count'].max()
```

Out[221...
```
2139
```

2)india gives Maximum Ratings

Which Country use Online Delevary

In [225...
```python
main_data.groupby(['Country','Has Online delivery']).size().reset_index()
```

Out[225...

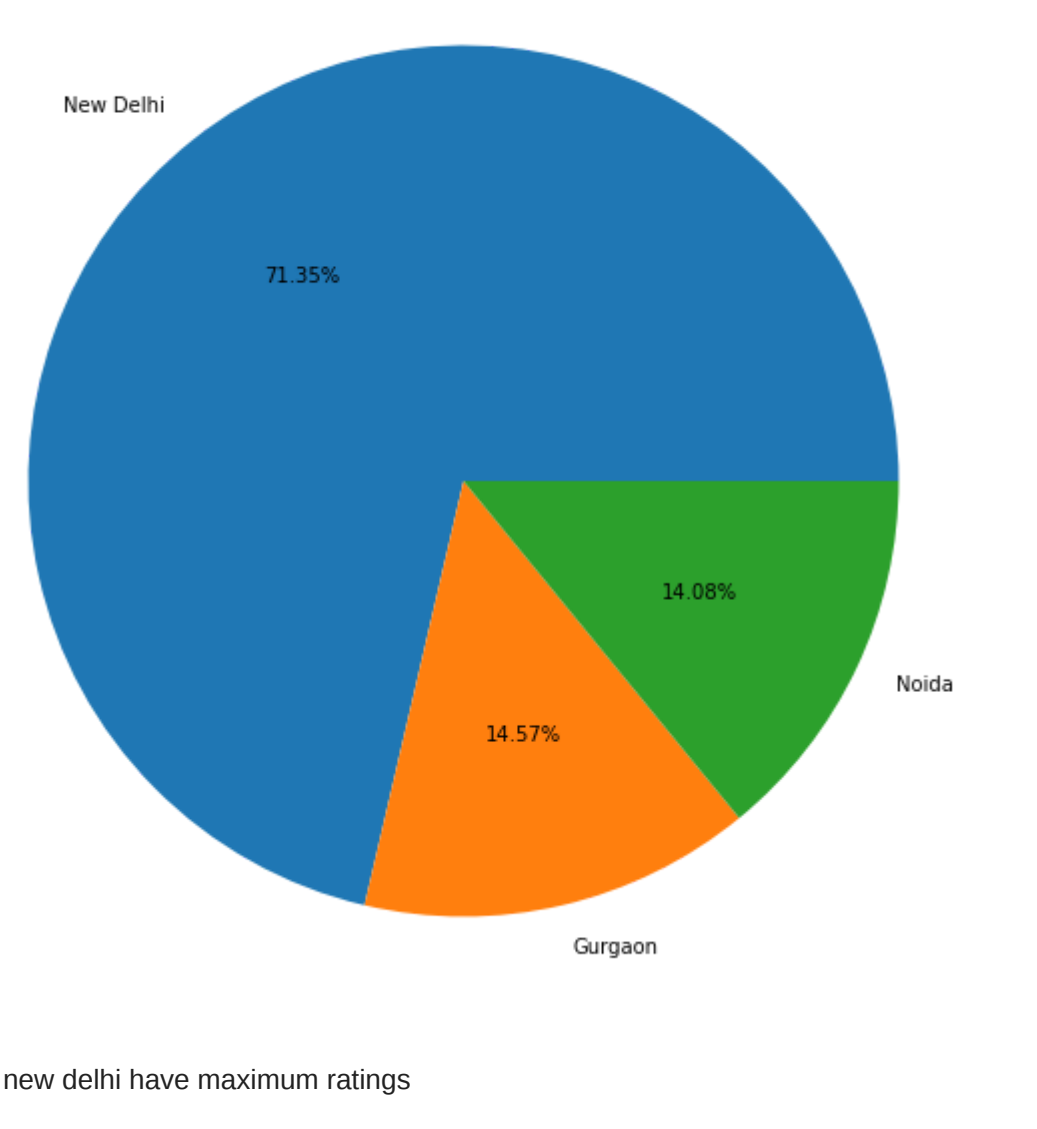
	Country	Has Online delivery	0
0	Australia	No	24
1	Brazil	No	60
2	Canada	No	4
3	India	No	6229
4	India	Yes	2423
5	Indonesia	No	21
6	New Zealand	No	40
7	Phillipines	No	22
8	Qatar	No	20
9	Singapore	No	20
10	South Africa	No	60
11	Sri Lanka	No	20
12	Turkey	No	34
13	UAE	No	32
14	UAE	Yes	28
15	United Kingdom	No	80
16	United States	No	434

4)only india and UAE use online delevary

From India Which Cities Gives Maximum Ratings

In [222...
```python
Country_name=main_data.City.value_counts().index
Country_valu=main_data.City.value_counts().values
plt.pie(Country_valu[:3],labels=Country_name[:3],autopct='%1.2f%%')
```

Out[222...
```
([<matplotlib.patches.Wedge at 0x129b824f7f0>,
  <matplotlib.patches.Wedge at 0x129b824ff70>,
  <matplotlib.patches.Wedge at 0x129b825e6d0>],
 [Text(-0.6836225695617262, 0.8617773392157762, 'New Delhi'),
  Text(0.24897482286810813, -1.0714530029720364, 'Gurgaon'),
  Text(0.9941442744692855, -0.47082604169686504, 'Noida')],
 [Text(-0.37288503794275973, 0.47006036684496877, '71.35%'),
  Text(0.13580444883714987, -0.5844289107120197, '14.57%'),
  Text(0.542260513346883, -0.25681420456192633, '14.08%')])
```



4)From new delhi have maximum ratings