In [23]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

In [2]:
```
import seaborn as sns
```

In [14]:
```
import pandas as pd

df = pd.read_csv (r'C:\pandas\data fsds_\zomato.csv',encoding='latin-1')
print (df)
df.head()
```

```
      Restaurant ID           Restaurant Name  Country Code              City  \
0           6317637          Le Petit Souffle           162       Makati City
1           6304287          Izakaya Kikufuji           162       Makati City
2           6300002    Heat - Edsa Shangri-La           162  Mandaluyong City
3           6318506                     Ooma           162  Mandaluyong City
4           6314302              Sambo Kojin           162  Mandaluyong City
...             ...                       ...           ...               ...
9546        5915730              NamlÛ± Gurme           208         ÛÁstanbul
9547        5908749             Ceviz AÛôacÛ±           208         ÛÁstanbul
9548        5915807                    Huqqa           208         ÛÁstanbul
9549        5916112              A ô ôk Kahve           208         ÛÁstanbul
9550        5927402  Walter's Coffee Roastery           208         ÛÁstanbul

                                              Address  \
0     Third Floor, Century City Mall, Kalayaan Avenu...
1     Little Tokyo, 2277 Chino Roces Avenue, Legaspi...
2     Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...
3     Third Floor, Mega Fashion Hall, SM Megamall, O...
4     Third Floor, Mega Atrium, SM Megamall, Ortigas...
...                                                 ...
9546  Kemanke ô Karamustafa Pa ôa Mahallesi, RÛ±htÛ±...
9547  Ko ôuyolu Mahallesi, Muhittin íìstí_ndaÛô Cadd...
9548  Kuruí_e ôme Mahallesi, Muallim Naci Caddesi, N...
9549  Kuruí_e ôme Mahallesi, Muallim Naci Caddesi, N...
9550  CafeaÛôa Mahallesi, BademaltÛ± Sokak, No 21/B,...

                                      Locality  \
0      Century City Mall, Poblacion, Makati City
1     Little Tokyo, Legaspi Village, Makati City
2     Edsa Shangri-La, Ortigas, Mandaluyong City
3         SM Megamall, Ortigas, Mandaluyong City
4         SM Megamall, Ortigas, Mandaluyong City
...                                          ...
9546                                  Karakí_y
9547                                Ko ôuyolu
9548                               Kuruí_e ôme
9549                               Kuruí_e ôme
9550                                     Moda

                                   Locality Verbose   Longitude  \
0     Century City Mall, Poblacion, Makati City, Mak...  121.027535
```

```
1     Little Tokyo, Legaspi Village, Makati City, Ma...  121.014101
2     Edsa Shangri-La, Ortigas, Mandaluyong City, Ma...  121.056831
3     SM Megamall, Ortigas, Mandaluyong City, Mandal...  121.056475
4     SM Megamall, Ortigas, Mandaluyong City, Mandal...  121.057508
...                                                 ...         ...
9546                              Karakí_y, ÛÁstanbul   28.977392
9547                            Ko ôuyolu, ÛÁstanbul   29.041297
9548                          Kuruí_e ôme, ÛÁstanbul   29.034640
9549                          Kuruí_e ôme, ÛÁstanbul   29.036019
9550                                Moda, ÛÁstanbul   29.026016

       Latitude                          Cuisines  ...          Currency  \
0     14.565443       French, Japanese, Desserts  ...  Botswana Pula(P)
1     14.553708                         Japanese  ...  Botswana Pula(P)
2     14.581404  Seafood, Asian, Filipino, Indian  ...  Botswana Pula(P)
3     14.585318                  Japanese, Sushi  ...  Botswana Pula(P)
4     14.584450                 Japanese, Korean  ...  Botswana Pula(P)
...         ...                              ...  ...              ...
9546  41.022793                          Turkish  ...  Turkish Lira(TL)
9547  41.009847   World Cuisine, Patisserie, Cafe  ...  Turkish Lira(TL)
9548  41.055817           Italian, World Cuisine  ...  Turkish Lira(TL)
9549  41.057979                  Restaurant Cafe  ...  Turkish Lira(TL)
9550  40.984776                             Cafe  ...  Turkish Lira(TL)

     Has Table booking Has Online delivery Is delivering now  \
0                  Yes                  No                No
1                  Yes                  No                No
2                  Yes                  No                No
3                   No                  No                No
4                  Yes                  No                No
...                ...                 ...               ...
9546                No                  No                No
9547                No                  No                No
9548                No                  No                No
9549                No                  No                No
9550                No                  No                No

     Switch to order menu Price range  Aggregate rating  Rating color  \
0                      No           3               4.8    Dark Green
1                      No           3               4.5    Dark Green
2                      No           4               4.4         Green
3                      No           4               4.9    Dark Green
4                      No           4               4.8    Dark Green
...                   ...         ...               ...           ...
9546                   No           3               4.1         Green
9547                   No           3               4.2         Green
9548                   No           4               3.7        Yellow
9549                   No           4               4.0         Green
9550                   No           2               4.0         Green

     Rating text Votes
0      Excellent   314
1      Excellent   591
2      Very Good   270
3      Excellent   365
4      Excellent   229
...          ...   ...
9546   Very Good   788
9547   Very Good  1034
9548        Good   661
```

```
9549   Very Good   901
9550   Very Good   591

[9551 rows x 21 columns]
```

Out[14]:

	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 Avenu...	Century City Mall, Poblacion, Makati City	Century City Mall, Poblacion, Makati City, Mak...	121.027535	1
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	1
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	1
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	1
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	1

5 rows × 21 columns

In [15]:
```
df.columns
```

Out[15]:
```
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 [10]:
```
!pip install pandas-profiling
```

```
Requirement already satisfied: pandas-profiling in c:\users\samsaha\anaconda3\lib\site-p
ackages (3.3.0)
Requirement already satisfied: requests<2.29,>=2.24.0 in c:\users\samsaha\anaconda3\lib
\site-packages (from pandas-profiling) (2.26.0)
Requirement already satisfied: jinja2<3.2,>=2.11.1 in c:\users\samsaha\anaconda3\lib\sit
e-packages (from pandas-profiling) (2.11.3)
Requirement already satisfied: missingno<0.6,>=0.4.2 in c:\users\samsaha\anaconda3\lib\s
ite-packages (from pandas-profiling) (0.4.2)
Requirement already satisfied: matplotlib<3.6,>=3.2 in c:\users\samsaha\anaconda3\lib\si
te-packages (from pandas-profiling) (3.4.3)
Requirement already satisfied: PyYAML<6.1,>=5.0.0 in c:\users\samsaha\anaconda3\lib\site
-packages (from pandas-profiling) (6.0)
Requirement already satisfied: tqdm<4.65,>=4.48.2 in c:\users\samsaha\anaconda3\lib\site
-packages (from pandas-profiling) (4.62.3)
Requirement already satisfied: htmlmin==0.1.12 in c:\users\samsaha\anaconda3\lib\site-pa
ckages (from pandas-profiling) (0.1.12)
Requirement already satisfied: pydantic<1.10,>=1.8.1 in c:\users\samsaha\anaconda3\lib\s
ite-packages (from pandas-profiling) (1.9.2)
Requirement already satisfied: tangled-up-in-unicode==0.2.0 in c:\users\samsaha\anaconda
3\lib\site-packages (from pandas-profiling) (0.2.0)
Requirement already satisfied: seaborn<0.12,>=0.10.1 in c:\users\samsaha\anaconda3\lib\s
ite-packages (from pandas-profiling) (0.11.2)
Requirement already satisfied: joblib~=1.1.0 in c:\users\samsaha\anaconda3\lib\site-pack
ages (from pandas-profiling) (1.1.0)
Requirement already satisfied: multimethod<1.9,>=1.4 in c:\users\samsaha\anaconda3\lib\s
ite-packages (from pandas-profiling) (1.8)
Requirement already satisfied: statsmodels<0.14,>=0.13.2 in c:\users\samsaha\anaconda3\l
ib\site-packages (from pandas-profiling) (0.13.2)
Requirement already satisfied: numpy<1.24,>=1.16.0 in c:\users\samsaha\anaconda3\lib\sit
e-packages (from pandas-profiling) (1.20.3)
Requirement already satisfied: visions[type_image_path]==0.7.5 in c:\users\samsaha\anaco
nda3\lib\site-packages (from pandas-profiling) (0.7.5)
Requirement already satisfied: pandas!=1.4.0,<1.5,>1.1 in c:\users\samsaha\anaconda3\lib
\site-packages (from pandas-profiling) (1.3.4)
Requirement already satisfied: phik<0.13,>=0.11.1 in c:\users\samsaha\anaconda3\lib\site
-packages (from pandas-profiling) (0.12.2)
Requirement already satisfied: scipy<1.10,>=1.4.1 in c:\users\samsaha\anaconda3\lib\site
-packages (from pandas-profiling) (1.7.1)
Requirement already satisfied: networkx>=2.4 in c:\users\samsaha\anaconda3\lib\site-pack
ages (from visions[type_image_path]==0.7.5->pandas-profiling) (2.6.3)
Requirement already satisfied: attrs>=19.3.0 in c:\users\samsaha\anaconda3\lib\site-pack
ages (from visions[type_image_path]==0.7.5->pandas-profiling) (21.2.0)
Requirement already satisfied: Pillow in c:\users\samsaha\anaconda3\lib\site-packages (f
rom visions[type_image_path]==0.7.5->pandas-profiling) (8.4.0)
Requirement already satisfied: imagehash in c:\users\samsaha\anaconda3\lib\site-packages
(from visions[type_image_path]==0.7.5->pandas-profiling) (4.3.1)
Requirement already satisfied: MarkupSafe>=0.23 in c:\users\samsaha\anaconda3\lib\site-p
ackages (from jinja2<3.2,>=2.11.1->pandas-profiling) (1.1.1)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\samsaha\anaconda3\lib\si
te-packages (from matplotlib<3.6,>=3.2->pandas-profiling) (2.8.2)
Requirement already satisfied: cycler>=0.10 in c:\users\samsaha\anaconda3\lib\site-packa
ges (from matplotlib<3.6,>=3.2->pandas-profiling) (0.10.0)
Requirement already satisfied: kiwisolver>=1.0.1 in c:\users\samsaha\anaconda3\lib\site-
packages (from matplotlib<3.6,>=3.2->pandas-profiling) (1.3.1)
```

```
Requirement already satisfied: pyparsing>=2.2.1 in c:\users\samsaha\anaconda3\lib\site-p
ackages (from matplotlib<3.6,>=3.2->pandas-profiling) (3.0.4)
Requirement already satisfied: six in c:\users\samsaha\anaconda3\lib\site-packages (from
cycler>=0.10->matplotlib<3.6,>=3.2->pandas-profiling) (1.16.0)
Requirement already satisfied: pytz>=2017.3 in c:\users\samsaha\anaconda3\lib\site-packa
ges (from pandas!=1.4.0,<1.5,>1.1->pandas-profiling) (2021.3)
Requirement already satisfied: typing-extensions>=3.7.4.3 in c:\users\samsaha\anaconda3
\lib\site-packages (from pydantic<1.10,>=1.8.1->pandas-profiling) (3.10.0.2)
Requirement already satisfied: idna<4,>=2.5 in c:\users\samsaha\anaconda3\lib\site-packa
ges (from requests<2.29,>=2.24.0->pandas-profiling) (3.2)
Requirement already satisfied: charset-normalizer~=2.0.0 in c:\users\samsaha\anaconda3\l
ib\site-packages (from requests<2.29,>=2.24.0->pandas-profiling) (2.0.4)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\samsaha\anaconda3\lib\s
ite-packages (from requests<2.29,>=2.24.0->pandas-profiling) (1.26.7)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\samsaha\anaconda3\lib\site
-packages (from requests<2.29,>=2.24.0->pandas-profiling) (2021.10.8)
Requirement already satisfied: packaging>=21.3 in c:\users\samsaha\anaconda3\lib\site-pa
ckages (from statsmodels<0.14,>=0.13.2->pandas-profiling) (21.3)
Requirement already satisfied: patsy>=0.5.2 in c:\users\samsaha\anaconda3\lib\site-packa
ges (from statsmodels<0.14,>=0.13.2->pandas-profiling) (0.5.2)
Requirement already satisfied: colorama in c:\users\samsaha\anaconda3\lib\site-packages
(from tqdm<4.65,>=4.48.2->pandas-profiling) (0.4.4)
Requirement already satisfied: PyWavelets in c:\users\samsaha\anaconda3\lib\site-package
s (from imagehash->visions[type_image_path]==0.7.5->pandas-profiling) (1.1.1)
```

In [11]:

```
from pandas_profiling import ProfileReport
profile=ProfileReport(df1,explorative=True)
profile.to_file("Output.html")
```

```
---------------------------------------------------------------------------
ImportError                               Traceback (most recent call last)
~\AppData\Local\Temp/ipykernel_9792/766080692.py in <module>
----> 1 from pandas_profiling import ProfileReport
      2 profile=ProfileReport(df1,explorative=True)
      3 profile.to_file("Output.html")

~\Anaconda3\lib\site-packages\pandas_profiling\__init__.py in <module>
      4 """
      5
----> 6 from pandas_profiling.controller import pandas_decorator
      7 from pandas_profiling.profile_report import ProfileReport
      8 from pandas_profiling.version import __version__

~\Anaconda3\lib\site-packages\pandas_profiling\controller\pandas_decorator.py in <module
>
      2 from pandas import DataFrame
      3
----> 4 from pandas_profiling.profile_report import ProfileReport
      5
      6

~\Anaconda3\lib\site-packages\pandas_profiling\profile_report.py in <module>
     14 from pandas_profiling.expectations_report import ExpectationsReport
     15 from pandas_profiling.model.alerts import AlertType
---> 16 from pandas_profiling.model.describe import describe as describe_df
     17 from pandas_profiling.model.sample import Sample
     18 from pandas_profiling.model.summarizer import (

~\Anaconda3\lib\site-packages\pandas_profiling\model\describe.py in <module>
```

```
     16 from pandas_profiling.model.duplicates import get_duplicates
     17 from pandas_profiling.model.missing import get_missing_active, get_missing_diag
ram
---> 18 from pandas_profiling.model.pairwise import get_scatter_plot, get_scatter_tasks
     19 from pandas_profiling.model.sample import get_custom_sample, get_sample
     20 from pandas_profiling.model.summarizer import BaseSummarizer

~\Anaconda3\lib\site-packages\pandas_profiling\model\pairwise.py in <module>
      4
      5 from pandas_profiling.config import Settings
----> 6 from pandas_profiling.visualisation.plot import scatter_pairwise
      7
      8

~\Anaconda3\lib\site-packages\pandas_profiling\visualisation\plot.py in <module>
     11 from matplotlib.patches import Patch
     12 from matplotlib.ticker import FuncFormatter
---> 13 from statsmodels.graphics.tsaplots import plot_acf, plot_pacf
     14
     15 from pandas_profiling.config import Settings

~\Anaconda3\lib\site-packages\statsmodels\graphics\tsaplots.py in <module>
      9
     10 from statsmodels.graphics import utils
---> 11 from statsmodels.tsa.stattools import acf, pacf
     12
     13

~\Anaconda3\lib\site-packages\statsmodels\tsa\stattools.py in <module>
      6 from statsmodels.compat.numpy import lstsq
      7 from statsmodels.compat.pandas import deprecate_kwarg
----> 8 from statsmodels.compat.python import lzip, Literal
      9 from statsmodels.compat.scipy import _next_regular
     10

ImportError: cannot import name 'Literal' from 'statsmodels.compat.python' (C:\Users\sam
saha\Anaconda3\lib\site-packages\statsmodels\compat\python.py)
```

In [16]:
```
df_country=pd.read_excel('Country-Code.xlsx')
df_country.head()
```

Out[16]:

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

In [17]:
```
final_df=pd.merge(df,df_country,on='Country Code', how='left')
```

In [18]:
```
final_df.head(2)
```

Out[18]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longitude	Latitude	Cui
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	Fr Japa Des
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	Japa

2 rows × 22 columns

In [19]:
```
final_df.Country.value_counts()
```

Out[19]:
```
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
```

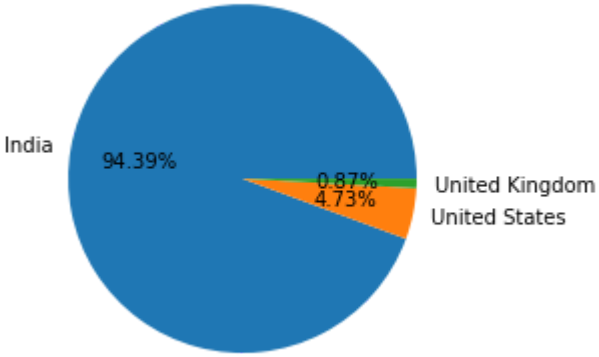
In [25]:
```
country_names=final_df.Country.value_counts().index
```

In [26]:
```
country_val=final_df.Country.value_counts().values
```

In [33]:
```
## Pie Chart- Top 3 countries that uses zomato
plt.pie(country_val[:3],labels=country_names[:3],autopct='%1.2f%%')
```

Out[33]:
```
([<matplotlib.patches.Wedge at 0x16e389381f0>,
  <matplotlib.patches.Wedge at 0x16e38938970>,
  <matplotlib.patches.Wedge at 0x16e389450d0>],
 [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:Maximium sales from top three countries: India,US and UK

In [36]:
```
ratings=final_df.groupby(['Aggregate rating','Rating color','Rating text']).size().rese
```

In [37]:
```
ratings
```

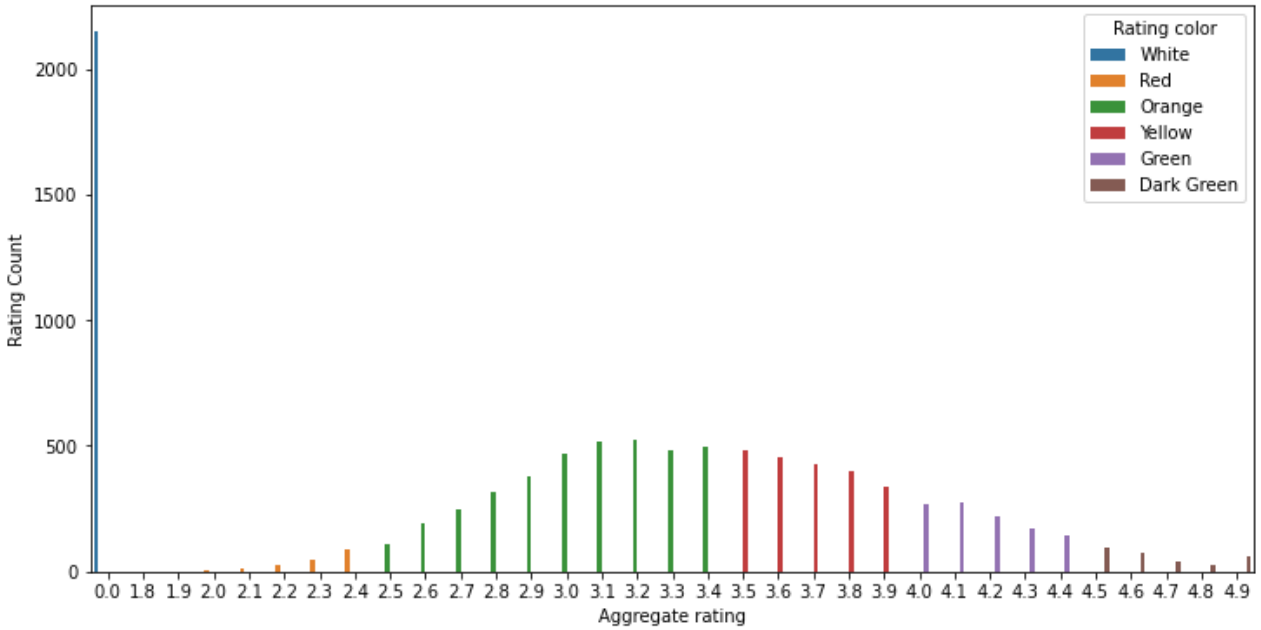
Out[37]:

	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

	Aggregate rating	Rating color	Rating text	Rating Count
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

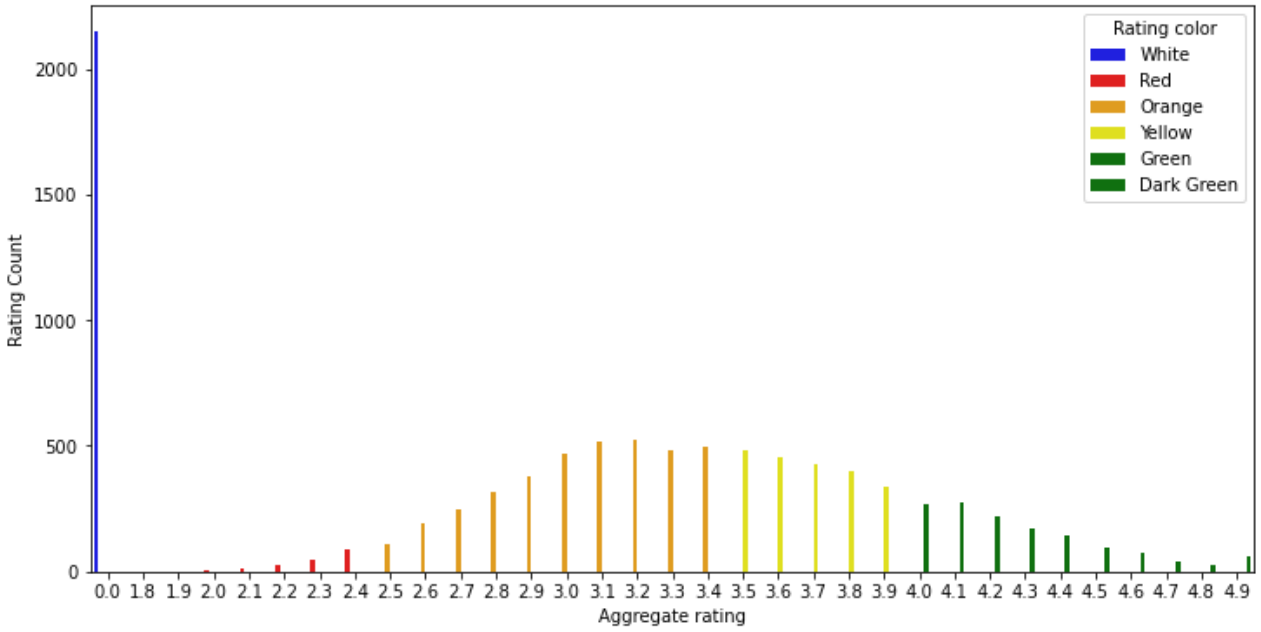
In [43]:
```
import matplotlib

matplotlib.rcParams['figure.figsize'] = (12, 6)


sns.barplot(x='Aggregate rating',y='Rating Count',hue='Rating color',data=ratings)
```

Out[43]:
```
<AxesSubplot:xlabel='Aggregate rating', ylabel='Rating Count'>
```



In [46]:
```
sns.barplot(x="Aggregate rating",y="Rating Count",hue='Rating color',data=ratings,palet
#since white cannot be seen
```

Out[46]:
```
<AxesSubplot:xlabel='Aggregate rating', ylabel='Rating Count'>
```



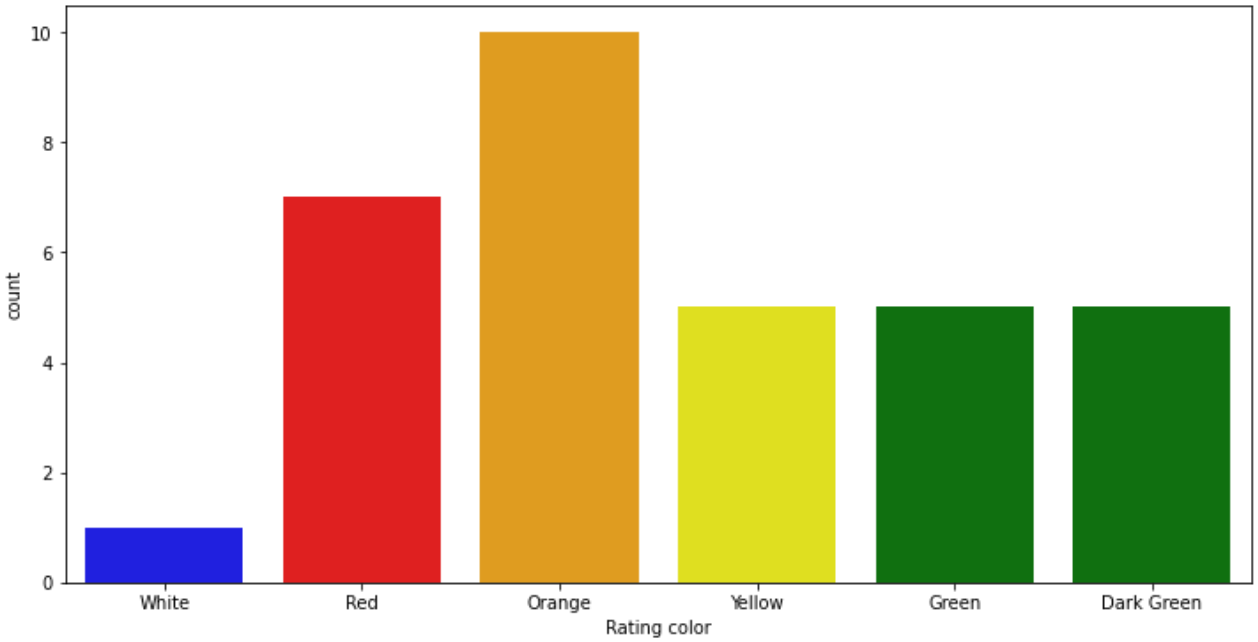
In [61]:
```
final_df.groupby(['Aggregate rating','Country']).size().reset_index().head(4)
```

Out[61]:

	Aggregate rating	Country	0
0	0.0	Brazil	5
1	0.0	India	2139
2	0.0	United Kingdom	1
3	0.0	United States	3

In [62]:
```
## Count plot
sns.countplot(x="Rating color",data=ratings,palette=['blue','red','orange','yellow','gr
```

Out[62]:
```
<AxesSubplot:xlabel='Rating color', ylabel='count'>
```



In [63]:
```
final_df[['Has Online delivery','Country']].groupby(['Has Online delivery','Country']).
```

Out[63]:

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

	Has Online delivery	Country	0
16	Yes	UAE	28

Observations:

Online Deliveries are available in India and UAE

In [65]:
```
final_df.columns
```

Out[65]:
```
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')
```

In [68]:
```
#Find the top 10 cuisines

final_df.groupby(['Cuisines']).size().reset_index().head(10)
```

Out[68]:

	Cuisines	0
0	Afghani	4
1	Afghani, Mughlai, Chinese	1
2	Afghani, North Indian	1
3	Afghani, North Indian, Pakistani, Arabian	1
4	African	1
5	African, Portuguese	1
6	American	31
7	American, Asian, Burger	1
8	American, Asian, European, Seafood	1
9	American, Asian, Italian, Seafood	1

In [ ]:
```
```