```
import pandas as pd
import numpy as np
import seaborn as sns

import plotly.express as px
import plotly.graph_objects as go
import matplotlib.pyplot as plt

data = pd.read_excel("New data.xlsx")

data.head()
```

```
   Restaurant ID              Restaurant Name  Country Code
City  \
0        7402935                         Skye            94  Jakarta

1        7410290     Satoo - Hotel Shangri-La            94  Jakarta

2        7420899                   Sushi Masa            94  Jakarta

3        7421967                3 Wise Monkeys           94  Jakarta

4        7422489  Avec Moi Restaurant and Bar            94  Jakarta


                                          Address  \
0  Menara BCA, Lantai 56, Jl. MH. Thamrin, Thamri...
1               Hotel Shangri-La, Jl. Jend. Sudirman
2                   Jl. Tuna Raya No. 5, Penjaringan
3                Jl. Suryo No. 26, Senopati, Jakarta
4  Gedung PIC, Jl. Teluk Betung 43, Thamrin, Jakarta

                       Locality                        Locality
Verbose  \
0  Grand Indonesia Mall, Thamrin  Grand Indonesia Mall, Thamrin,
Jakarta
1     Hotel Shangri-La, Sudirman     Hotel Shangri-La, Sudirman,
Jakarta
2                    Penjaringan                    Penjaringan,
Jakarta
3                       Senopati                       Senopati,
Jakarta
4                        Thamrin                        Thamrin,
Jakarta

    Longitude  Latitude                    Cuisines  Average Cost for
two  \
0  106.821999 -6.196778        Italian, Continental
800000
1  106.818961 -6.203292  Asian, Indonesian, Western
```

```
800000
2  106.800144 -6.101298             Sushi, Japanese
500000
3  106.813400 -6.235241                      Japanese
450000
4  106.821023 -6.196270             French, Western
350000

   Avg Cost for two in USD                Currency Has Table
booking  \
0                    55.89  Indonesian Rupiah(IDR)                No

1                    55.89  Indonesian Rupiah(IDR)                No

2                    34.93  Indonesian Rupiah(IDR)                No

3                    31.44  Indonesian Rupiah(IDR)                No

4                    24.45  Indonesian Rupiah(IDR)                No


  Has Online delivery  Price range  Aggregate rating Rating color
Rating text  \
0                  No            3               4.1        Green
Very Good
1                  No            3               4.6   Dark Green
Excellent
2                  No            3               4.9   Dark Green
Excellent
3                  No            3               4.2        Green
Very Good
4                  No            3               4.3        Green
Very Good

   Votes
0   1498
1    873
2    605
3    395
4    243

data.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9533 entries, 0 to 9532
Data columns (total 20 columns):
 #   Column                    Non-Null Count  Dtype
---  ------                    --------------  -----
 0   Restaurant ID             9533 non-null   int64
 1   Restaurant Name           9532 non-null   object
```

```
 2   Country Code             9533 non-null   int64
 3   City                     9533 non-null   object
 4   Address                  9533 non-null   object
 5   Locality                 9533 non-null   object
 6   Locality Verbose         9533 non-null   object
 7   Longitude                9533 non-null   float64
 8   Latitude                 9533 non-null   float64
 9   Cuisines                 9527 non-null   object
 10  Average Cost for two     9533 non-null   int64
 11  Avg Cost for two in USD  9533 non-null   float64
 12  Currency                 9533 non-null   object
 13  Has Table booking        9533 non-null   object
 14  Has Online delivery      9533 non-null   object
 15  Price range              9533 non-null   int64
 16  Aggregate rating         9533 non-null   float64
 17  Rating color             9533 non-null   object
 18  Rating text              9533 non-null   object
 19  Votes                    9533 non-null   int64
dtypes: float64(4), int64(5), object(11)
memory usage: 1.5+ MB
```

Removing missing Values

```
data.isna().sum()
```

```
Restaurant ID             0
Restaurant Name           1
Country Code              0
City                      0
Address                   0
Locality                  0
Locality Verbose          0
Longitude                 0
Latitude                  0
Cuisines                  6
Average Cost for two      0
Avg Cost for two in USD   0
Currency                  0
Has Table booking         0
Has Online delivery       0
Price range               0
Aggregate rating          0
Rating color              0
Rating text               0
Votes                     0
dtype: int64
```

```
data.dropna(inplace = True)
```

Finding Duplicate Values

```
print(data.duplicated())
```

```
0       False
1       False
2       False
3       False
4       False
        ...
9528    False
9529    False
9530    False
9531    False
9532    False
Length: 9526, dtype: bool
```

There is no duplicates found in the data

```
df = pd.read_excel("Country-Code.xlsx")

data1=pd.merge(data,df,on='Country Code',how='left')

data1.head(2)
```

```
   Restaurant ID           Restaurant Name  Country Code     City  \
0        7402935                      Skye            94  Jakarta
1        7410290  Satoo - Hotel Shangri-La            94  Jakarta

                                          Address  \
0  Menara BCA, Lantai 56, Jl. MH. Thamrin, Thamri...
1               Hotel Shangri-La, Jl. Jend. Sudirman

                       Locality                        Locality
Verbose  \
0  Grand Indonesia Mall, Thamrin  Grand Indonesia Mall, Thamrin,
Jakarta
1     Hotel Shangri-La, Sudirman     Hotel Shangri-La, Sudirman,
Jakarta

    Longitude  Latitude                    Cuisines  ...  \
0  106.821999 -6.196778        Italian, Continental  ...
1  106.818961 -6.203292  Asian, Indonesian, Western  ...

   Avg Cost for two in USD               Currency Has Table
booking  \
0                    55.89  Indonesian Rupiah(IDR)               No

1                    55.89  Indonesian Rupiah(IDR)               No
```

```
  Has Online delivery Price range  Aggregate rating  Rating color
Rating text  \
0                  No           3               4.1         Green
Very Good
1                  No           3               4.6    Dark Green
Excellent

  Votes    Country
0  1498  Indonesia
1   873  Indonesia

[2 rows x 21 columns]
```

```
data1.isnull().sum()
```

```
Restaurant ID              0
Restaurant Name            0
Country Code               0
City                       0
Address                    0
Locality                   0
Locality Verbose           0
Longitude                  0
Latitude                   0
Cuisines                   0
Average Cost for two       0
Avg Cost for two in USD    0
Currency                   0
Has Table booking          0
Has Online delivery        0
Price range                0
Aggregate rating           0
Rating color               0
Rating text                0
Votes                      0
Country                    0
dtype: int64
```

a. Explore the geographical distribution of the restaurants, finding out the cities with maximum / minimum number of restaurants.

```
geo_dist= data1.groupby(['Country
Code','Country']).agg(Count=('Restaurant ID','count'))
geo_dist.sort_values(by='Count',ascending=False)
```

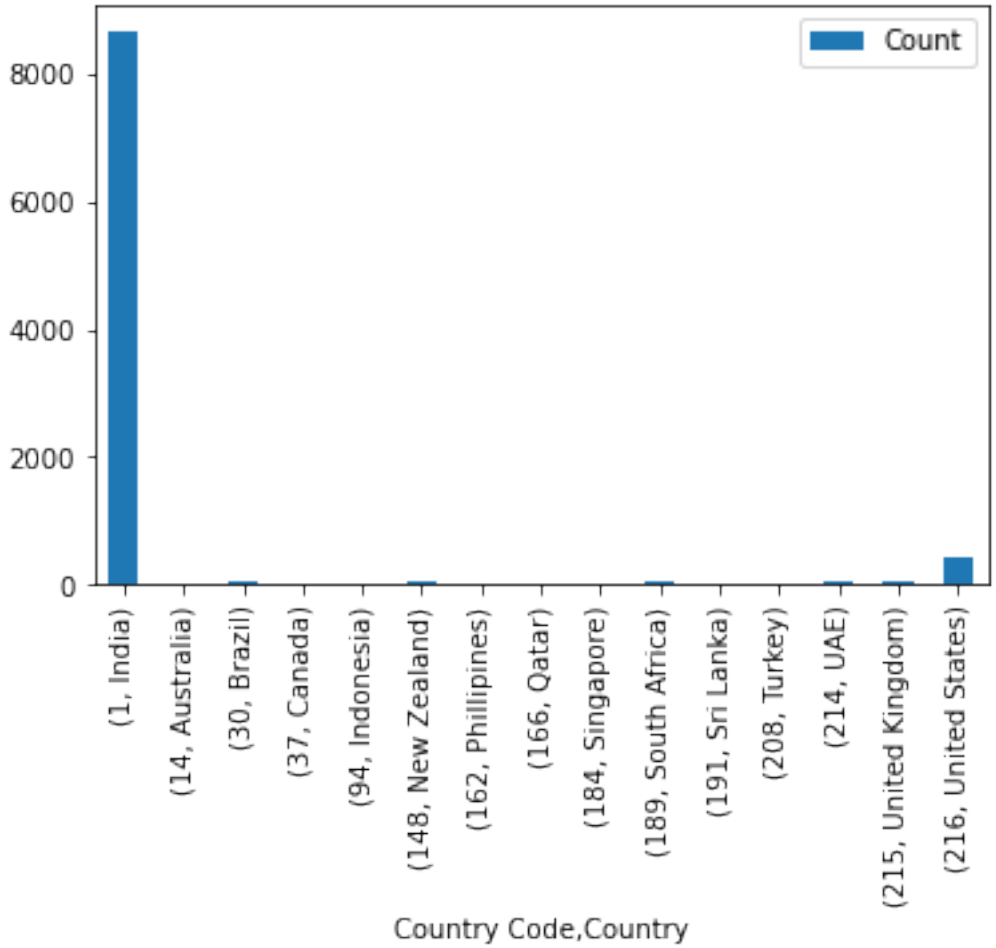
```
                           Count
Country Code Country
1            India          8642
216          United States   419
```

```
215          United Kingdom     80
30           Brazil             60
189          South Africa       60
214          UAE                60
148          New Zealand        40
208          Turkey             34
14           Australia          24
162          Phillipines        22
94           Indonesia          21
166          Qatar              20
184          Singapore          20
191          Sri Lanka          20
37           Canada              4
```

India has the highest number of Restaurants

```
geo_dist.plot(kind='bar')
```

```
<AxesSubplot:xlabel='Country Code,Country'>
```



```
city_dist=data1.groupby(['Country','City']).agg(Count=('Restaurant ID','count'))
```

```
city_dist.describe()
```

```
             Count
count   140.000000
mean     68.042857
std     478.418992
min       1.000000
25%       1.000000
50%      19.000000
75%      20.000000
max    5473.000000
```

```
city_dist.max()
```

```
Count    5473
dtype: int64
```

```
city_dist.min()
```

```
Count    1
dtype: int64
```

```
city_dist.sort_values(by='Count',ascending=False)
```

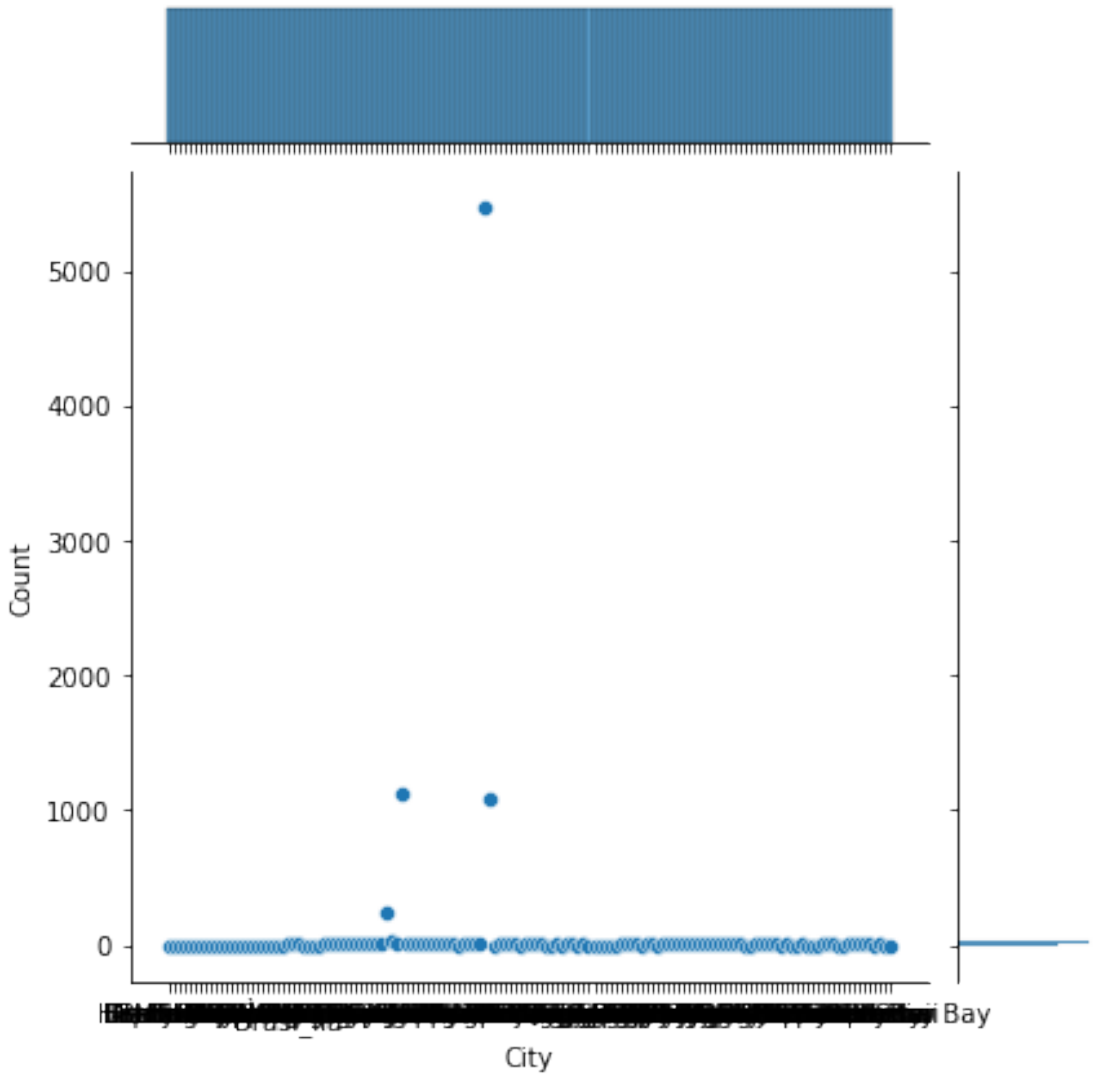
```
                              Count
Country       City
India         New Delhi        5473
              Gurgaon          1118
              Noida            1080
              Faridabad         251
              Ghaziabad          25
...                             ...
              Panchkula           1
Australia     Balingup            1
Indonesia     Bandung             1
Phillipines   Quezon City         1
United States Winchester Bay      1

[140 rows x 1 columns]
```

#Maximum number of restaurants in a city is found in New Delhi 5473

#Minimum number of restaurants in a city is found in multiple cities which has only one restaurant

```
sns.jointplot(x='City', y='Count', data= city_dist)
```

```
<seaborn.axisgrid.JointGrid at 0x1f35b3e8bb0>
```

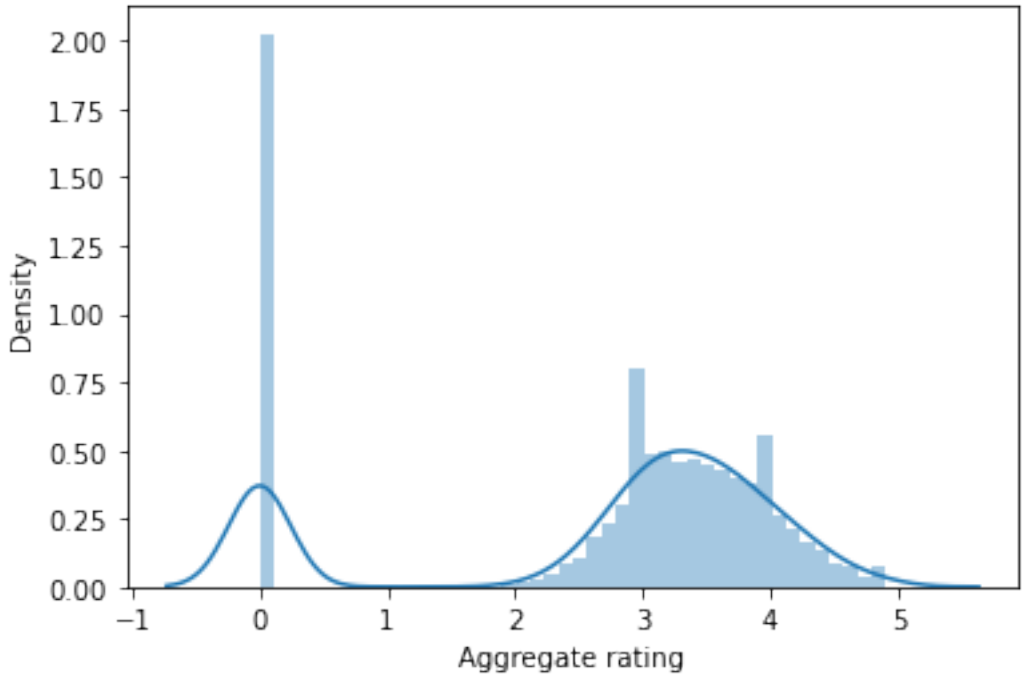


b. Explore how ratings are distributed overall.

for Maximum ratings

```
sns.distplot(data1['Aggregate rating'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\
distributions.py:2557: FutureWarning: `distplot` is a deprecated
function and will be removed in a future version. Please adapt your
code to use either `displot` (a figure-level function with similar
flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)

<AxesSubplot:xlabel='Aggregate rating', ylabel='Density'>
```



Overall ratings shows maximum number of ratings is shown between 2.8 to 4

```
max_ratings= data1.sort_values(by="Aggregate rating",
ascending=False).groupby(['Country','City'], as_index=False).first()

min_ratings=data1.sort_values(by="Aggregate rating",
ascending=False).groupby(['Country','City'], as_index=False).last()

df_max_ratings= max_ratings[['Country','City', 'Restaurant Name',
'Aggregate rating']]
df_min_ratings=min_ratings[['Country','City', 'Restaurant Name',
'Aggregate rating']]

Ratings=df_max_ratings.merge(df_min_ratings, left_on='City',
right_on='City', how='inner')

Ratings
```

```
         Country_x            City                          Restaurant
Name_x  \
0        Australia        Armidale                            Whitebull
Hotel
1        Australia        Balingup                            Taste of
Balingup
2        Australia      Beechworth                          Bridge Road
Brewers
3        Australia     Dicky Beach                            The
Giggling Goat
```

```
4        Australia    East Ballina                          The Belle
General
..             ...             ...
...
135  United States        Valdosta                          Smok'n Pig
B-B-Q
136  United States        Vernonia                           Blue
House Cafe
137  United States        Waterloo                Tokyo Japanese Steak
House
138  United States         Weirton  Theo Yianni's Authentic Greek
Restaurant
139  United States  Winchester Bay                 Fishpatrick's
Crabby Cafe

     Aggregate rating_x      Country_y  \
0                   3.5      Australia
1                   3.2      Australia
2                   4.6      Australia
3                   3.6      Australia
4                   4.1      Australia
..                  ...            ...
135                 4.1  United States
136                 4.3  United States
137                 3.9  United States
138                 3.9  United States
139                 3.2  United States

                           Restaurant Name_y  Aggregate rating_y
0                            Whitebull Hotel                 3.5
1                          Taste of Balingup                 3.2
2                       Bridge Road Brewers                  4.6
3                         The Giggling Goat                 3.6
4                         The Belle General                 4.1
..                                      ...                 ...
135              El Toreo Mexican Restaurant                 3.1
136                        Blue House Cafe                   4.3
137               Masala Grill & Coffee House                 3.2
138  Theo Yianni's Authentic Greek Restaurant                 3.9
139                Fishpatrick's Crabby Cafe                 3.2

[140 rows x 7 columns]
```

```
Ratings.drop(columns='Country_y', axis=1, inplace=True)
Ratings.columns=['Country','City', 'Highest Rated Restaurant', 'Rating
Max', 'Lowest Rated Restaurant','Rating Min']
Ratings
```

```
           Country            City                   Highest Rated
Restaurant  \
```

0	Australia	Armidale	Whitebull Hotel	
1	Australia	Balingup	Taste of Balingup	
2	Australia	Beechworth	Bridge Road Brewers	
3	Australia	Dicky Beach	The Giggling Goat	
4	Australia	East Ballina	The Belle General	
..	...	...	...	
135	United States	Valdosta	Smok'n Pig B-B-Q	
136	United States	Vernonia	Blue House Cafe	
137	United States	Waterloo	Tokyo Japanese Steak House	
138	United States	Weirton	Theo Yianni's Authentic Greek Restaurant	
139	United States	Winchester Bay	Fishpatrick's Crabby Cafe	

	Rating Max	Lowest Rated Restaurant	Rating Min
0	3.5	Whitebull Hotel	3.5
1	3.2	Taste of Balingup	3.2
2	4.6	Bridge Road Brewers	4.6
3	3.6	The Giggling Goat	3.6
4	4.1	The Belle General	4.1
..	...	...	...
135	4.1	El Toreo Mexican Restaurant	3.1
136	4.3	Blue House Cafe	4.3
137	3.9	Masala Grill & Coffee House	3.2
138	3.9	Theo Yianni's Authentic Greek Restaurant	3.9
139	3.2	Fishpatrick's Crabby Cafe	3.2

[140 rows x 6 columns]

```
Ratings_India= Ratings[ Ratings['Country']=='India']
Ratings_India
```

	Country	City	Highest Rated Restaurant	Rating Max
30	India	Agra	Pizza Hut	4.4
31	India	Ahmedabad	Cryo Lab	4.6
32	India	Allahabad	Eat On	3.7
33	India	Amritsar	Kanha Sweets	4.1
34	India	Aurangabad	Bhoj Restaurant	3.7
35	India	Bangalore	Toit	4.8
36	India	Bhopal	Sagar Gaire Fast Food	4.9
37	India	Bhubaneshwar	Barbeque Nation	4.6
38	India	Chandigarh	Barbeque Nation	4.5
39	India	Chennai	AB's - Absolute Barbecues	4.9
40	India	Coimbatore	CakeBee	4.9
41	India	Dehradun	The Great Indian Pub	4.9
42	India	Faridabad	Cafe Parmesan	4.5
43	India	Ghaziabad	Mr. Brown	3.9
44	India	Goa	Burger Factory	4.8
45	India	Gurgaon	Caterspoint	4.9
46	India	Guwahati	Barbeque Nation	4.9
47	India	Hyderabad	AB's - Absolute Barbecues	4.9
48	India	Indore	Cakesmith's Alley	4.3
49	India	Jaipur	Zolocrust - Hotel Clarks Amer	4.9
50	India	Kanpur	Dhuaan	4.3
51	India	Kochi	Nawras Seafood Restaurant	4.6
52	India	Kolkata	Barbeque Nation	

4.9
53 India Lucknow Grandson of Tunday Kababi
4.9
54 India Ludhiana Aman Chicken
4.6
55 India Mangalore Giri Manja's
4.2
56 India Mohali The Shooters Cafe
4.3
57 India Mumbai Mirchi And Mime
4.9
58 India Mysore Vinayaka Mylari
4.2
59 India Nagpur Barbeque Nation
4.9
60 India Nashik Sadhana Restaurant
3.9
61 India New Delhi Masala Library
4.9
62 India Noida Oh So Stoned!
4.5
63 India Panchkula Hops n Grains
4.2
64 India Patna Spice Court - Hotel Maurya
3.7
65 India Puducherry Zuka Choco-la
4.2
66 India Pune Le Plaisir
4.8
67 India Ranchi Kaveri Restaurant And Caterers
4.0
68 India Secunderabad Coffee Cup
4.6
69 India Surat Falafel Lovers
4.3
70 India Vadodara La Quello - Mediterranean Kitchen
4.6
71 India Varanasi Kashi Chat Bhandar
4.1
72 India Vizag Barbeque Nation
4.9

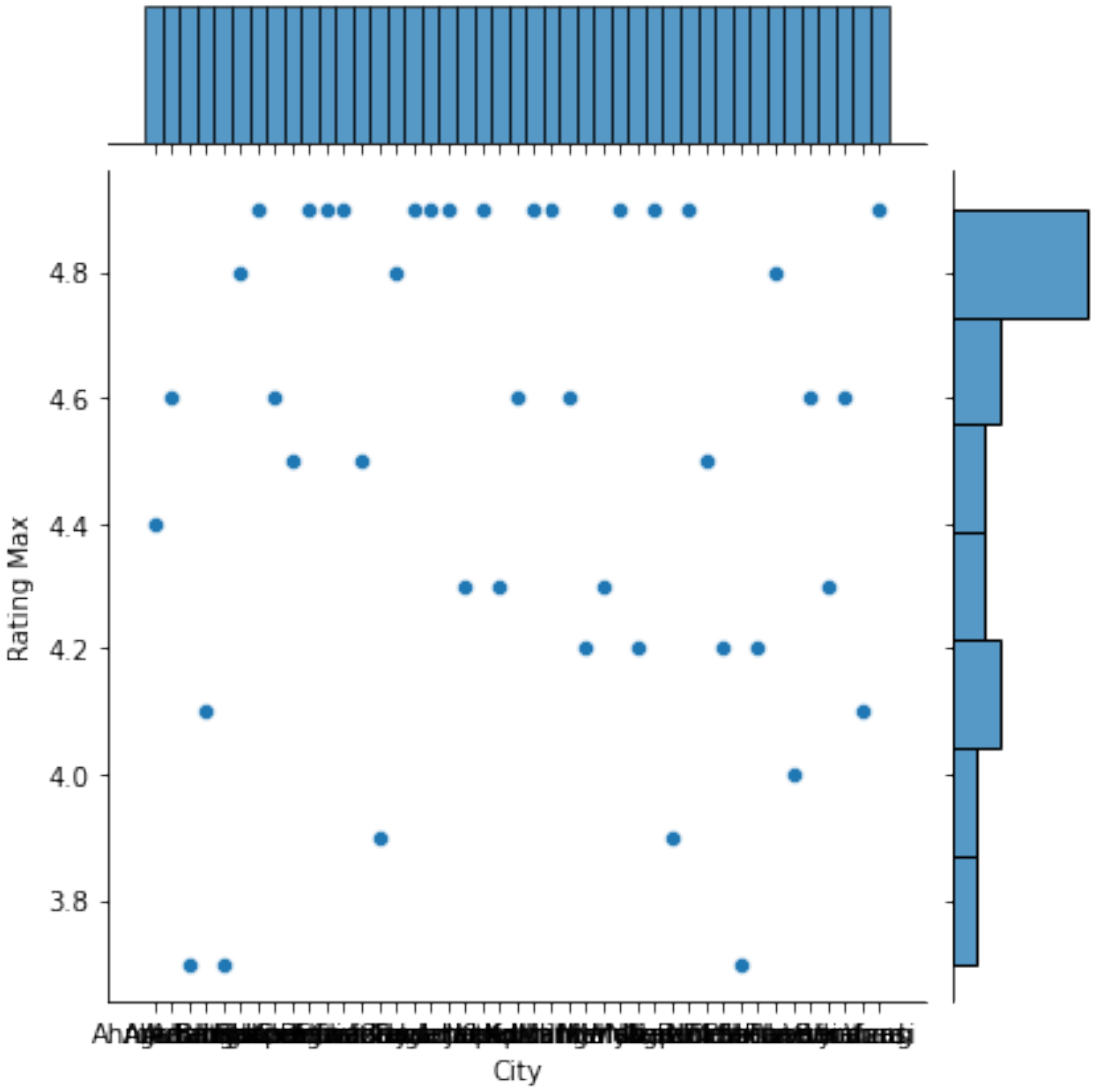
	Lowest Rated Restaurant	Rating Min
30	The Charcoal Chimney	3.4
31	MoMo CafÌ© - Courtyard By Marriott	3.6
32	Pind Balluchi	3.2
33	Makhan Fish and Chicken Corner	3.4
34	Domino's Pizza	3.1
35	Hoot	3.9
36	Black N White Cafe	3.3

```
37                        Eram Rooftop         3.5
38                             Karim's         3.3
39                             Haunted         3.8
40                       Zucca Pizzeria        3.5
41      The Punjabi Essence Restaurant         3.6
42                         Aravalli Owls        0.0
43                         The Big Scoop        0.0
44                               Curlies        3.5
45                         Dosa Republic        0.0
46                             4 Seasons        3.6
47                 The Fisherman's Wharf        3.8
48                                Freito        3.1
49                             Sky Beach        2.6
50                                 Hucka        3.3
51                  Ali Baba & 41 Dishes        3.5
52                               Mocambo        3.5
53                     Chemistry CafÌ©         3.5
54                          Hawai Adda         3.5
55                            Hao Ming         3.5
56                    The Shooters Cafe        4.3
57                   The American Joint        3.4
58                  The Barge Restaurant        3.3
59                                   KFC        2.2
60                         Little Italy        3.0
61      Natural Pizza Hub & Food Court         0.0
62                       Chaska Food Hut        0.0
63                         Hops n Grains        4.2
64                       Roti Restaurant        3.1
65                                Le Cafe        3.1
66                              Teddy Boy        3.6
67        Jungli Moon Dance Restaurant         3.1
68                        Saffron Mantra        4.4
69                          Global Local        3.4
70                     El Amigos Kitchen        3.5
71          3Cherryz Sky Lounge & Cafe         3.2
72                         My Restaurant        3.5
```

```
City_India= Ratings_India['City'].tolist()
rate_max_India= Ratings_India['Rating Max'].tolist()
rate_min_India= Ratings_India['Rating Min'].tolist()
rate_name_high_India=Ratings_India['Highest Rated
Restaurant'].tolist()
rate_name_low_India=Ratings_India['Lowest Rated Restaurant'].tolist()

plt.figure(figsize=(500,100))
sns.jointplot("City","Rating Max", data= Ratings_India)
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\_decorators.py:36:
FutureWarning: Pass the following variables as keyword args: x, y.
From version 0.12, the only valid positional argument will be `data`,
and passing other arguments without an explicit keyword will result in
```

```
an error or misinterpretation.
  warnings.warn(

<seaborn.axisgrid.JointGrid at 0x1f35b7f86d0>

<Figure size 36000x7200 with 0 Axes>
```




```
Ratings_USA= Ratings[ Ratings['Country']=='United States']
Ratings_USA
```

```
           Country                    City  \
106  United States                  Albany
107  United States                  Athens
108  United States                 Augusta
109  United States                   Boise
110  United States  Cedar Rapids/Iowa City
111  United States               Clatskanie
```

112	United States	Cochrane	
113	United States	Columbus	
114	United States	Dalton	
115	United States	Davenport	
116	United States	Des Moines	
117	United States	Dubuque	
118	United States	Fernley	
119	United States	Gainesville	
120	United States	Lakeview	
121	United States	Lincoln	
122	United States	Macon	
123	United States	Mc Millan	
124	United States	Monroe	
125	United States	Ojo Caliente	
126	United States	Orlando	
127	United States	Pensacola	
128	United States	Pocatello	
129	United States	Potrero	
130	United States	Princeton	
131	United States	Rest of Hawaii	
132	United States	Savannah	
133	United States	Sioux City	
134	United States	Tampa Bay	
135	United States	Valdosta	
136	United States	Vernonia	
137	United States	Waterloo	
138	United States	Weirton	
139	United States	Winchester Bay	

	Highest Rated Restaurant	Rating Max	\
106	Guang Zhou Chinese Restaurant	3.9	
107	Sr. Sol 1	4.6	
108	Rae's Coastal Cafe	4.9	
109	Flatbread Neapolitan Pizzeria	4.6	
110	Shorts Burger and Shine	4.9	
111	Berry Patch Restaurant	4.3	
112	Sakura Sushi & Grill	3.1	
113	Cafe Le Rue @ The Landings	4.6	
114	Oakwood Cafe	4.9	
115	Tantra Asian Bistro	4.9	
116	The Cafe	4.9	
117	L. May Eatery	3.8	
118	Jehova es Mi Pastor Tacos y Burritos	3.7	
119	Atlanta Highway Seafood Market	4.9	
120	Burger Queen Drive In	3.6	
121	Blue Orchid Thai Restaurant	4.5	
122	Ingleside Village Pizza	4.9	
123	Triangle Restaurant	2.4	
124	Vince's Restaurant & Pizzeria	3.6	
125	The Artesian Restaurant	3.6	

126	Yellow Dog Eats	4.9
127	McGuire's Irish Pub & Brewery	4.9
128	El Herradero	4.1
129	Barrett Junction Cafe	3.3
130	Blue Point Grill	4.0
131	Mama's Fish House	4.9
132	Green Truck Pub	4.7
133	Diamond Thai Cuisine	4.0
134	Mr. Dunderbak's Biergarten and Marketplatz	4.9
135	Smok'n Pig B-B-Q	4.1
136	Blue House Cafe	4.3
137	Tokyo Japanese Steak House	3.9
138	Theo Yianni's Authentic Greek Restaurant	3.9
139	Fishpatrick's Crabby Cafe	3.2

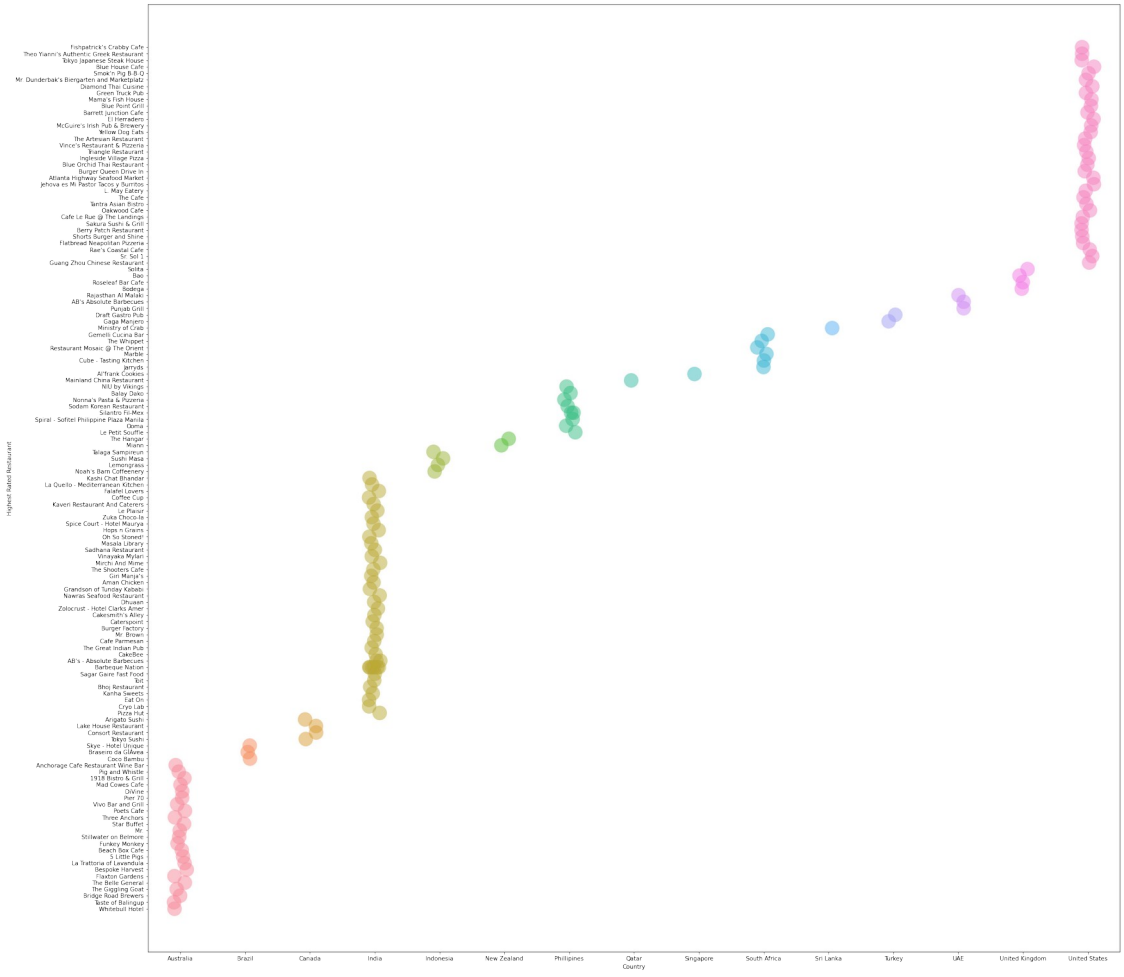
	Lowest Rated Restaurant	Rating Min
106	BJ's Country Buffet	3.3
107	The Grill	3.7
108	Sconyers Bar B Que	3.5
109	Chandlers Steakhouse	3.9
110	Bluebird Diner	3.6
111	Berry Patch Restaurant	4.3
112	Sakura Sushi & Grill	3.1
113	Uptown Vietnam cuisine	3.3
114	Thatcher's Barbeque and Grill	3.7
115	Los Agaves	0.0
116	Malo	3.2
117	Tony Roma's	3.3
118	Jehova es Mi Pastor Tacos y Burritos	3.7
119	Troll Tavern	2.2
120	Burger Queen Drive In	3.6
121	Blue Orchid Thai Restaurant	4.5
122	Sushi Thai Restaurant	3.7
123	Triangle Restaurant	2.4
124	Vince's Restaurant & Pizzeria	3.6
125	The Artesian Restaurant	3.6
126	The Coop	3.6
127	Hemingway's Island Grill	3.5
128	Nosh Mahal	0.0
129	Barrett Junction Cafe	3.3
130	Blue Point Grill	4.0
131	Lulu's Waikiki	3.9
132	The Lady & Sons	3.3
133	Kahill's Steak-Fish Chophouse	3.5
134	Edison: Food+Drink Lab	3.9
135	El Toreo Mexican Restaurant	3.1
136	Blue House Cafe	4.3
137	Masala Grill & Coffee House	3.2
138	Theo Yianni's Authentic Greek Restaurant	3.9
139	Fishpatrick's Crabby Cafe	3.2

```
City_USA= Ratings_USA['City'].tolist()
rate_max_USA= Ratings_USA['Rating Max'].tolist()
rate_min_USA= Ratings_USA['Rating Min'].tolist()
rate_name_high_USA=Ratings_USA['Highest Rated Restaurant'].tolist()
rate_name_low_USA=Ratings_USA['Lowest Rated Restaurant'].tolist()
```

C. Country-wise Highest Rated Restaurants and Restaurant franchise is a thriving venture. So, it becomes very important to explore the franchise with most national presence.

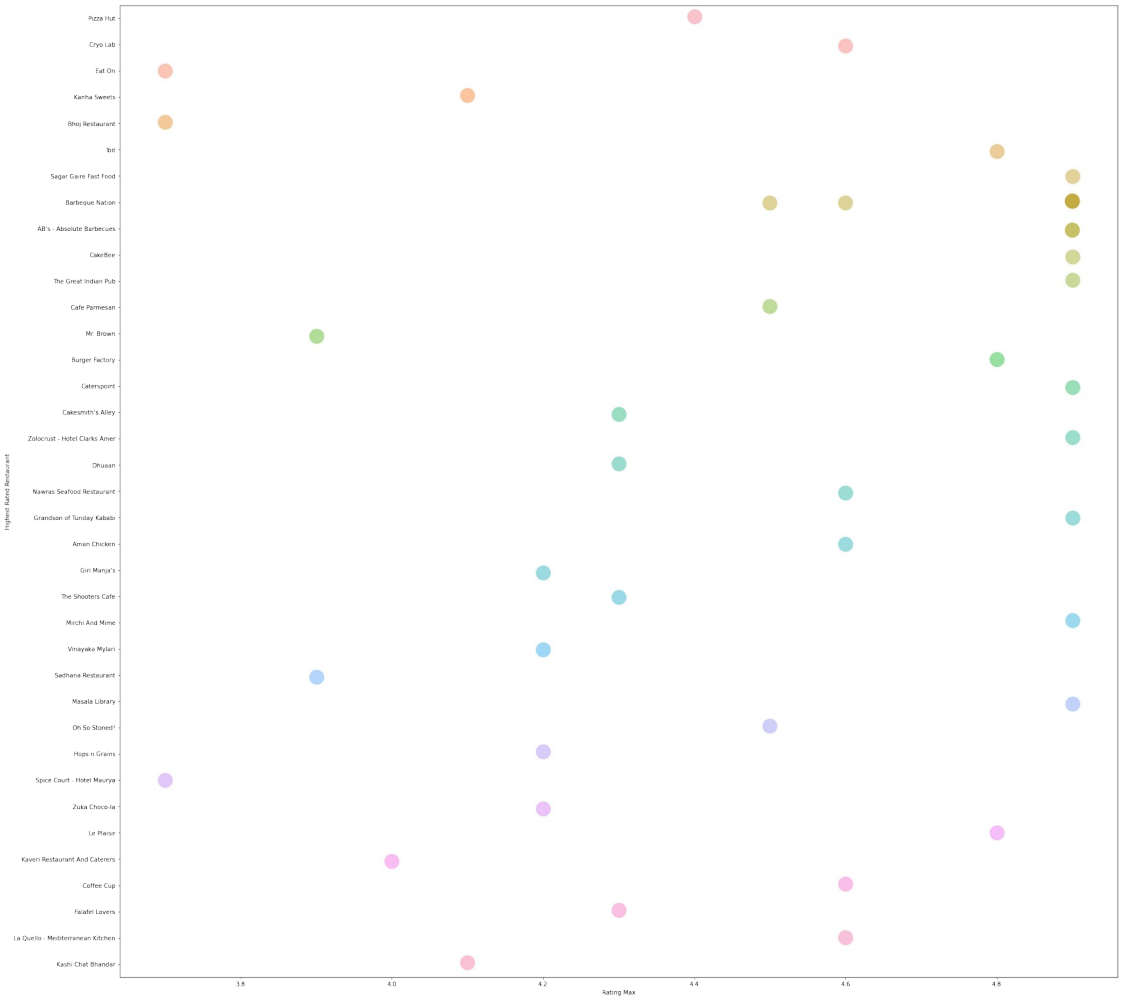
```
plt.rcParams['figure.figsize']=(30,30)
sns.stripplot('Country', 'Highest Rated Restaurant',data= Ratings,
alpha=0.5, size=25, edgecolor='black');
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\_decorators.py:36:
FutureWarning: Pass the following variables as keyword args: x, y.
From version 0.12, the only valid positional argument will be `data`,
and passing other arguments without an explicit keyword will result in
an error or misinterpretation.
  warnings.warn(
```



```
plt.rcParams['figure.figsize']=(30,30)
sns.stripplot('Rating Max','Highest Rated Restaurant', data=
Ratings_India, alpha=0.5, size=25, edgecolor='black');
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\_decorators.py:36:
FutureWarning: Pass the following variables as keyword args: x, y.
From version 0.12, the only valid positional argument will be `data`,
and passing other arguments without an explicit keyword will result in
an error or misinterpretation.
  warnings.warn(
```

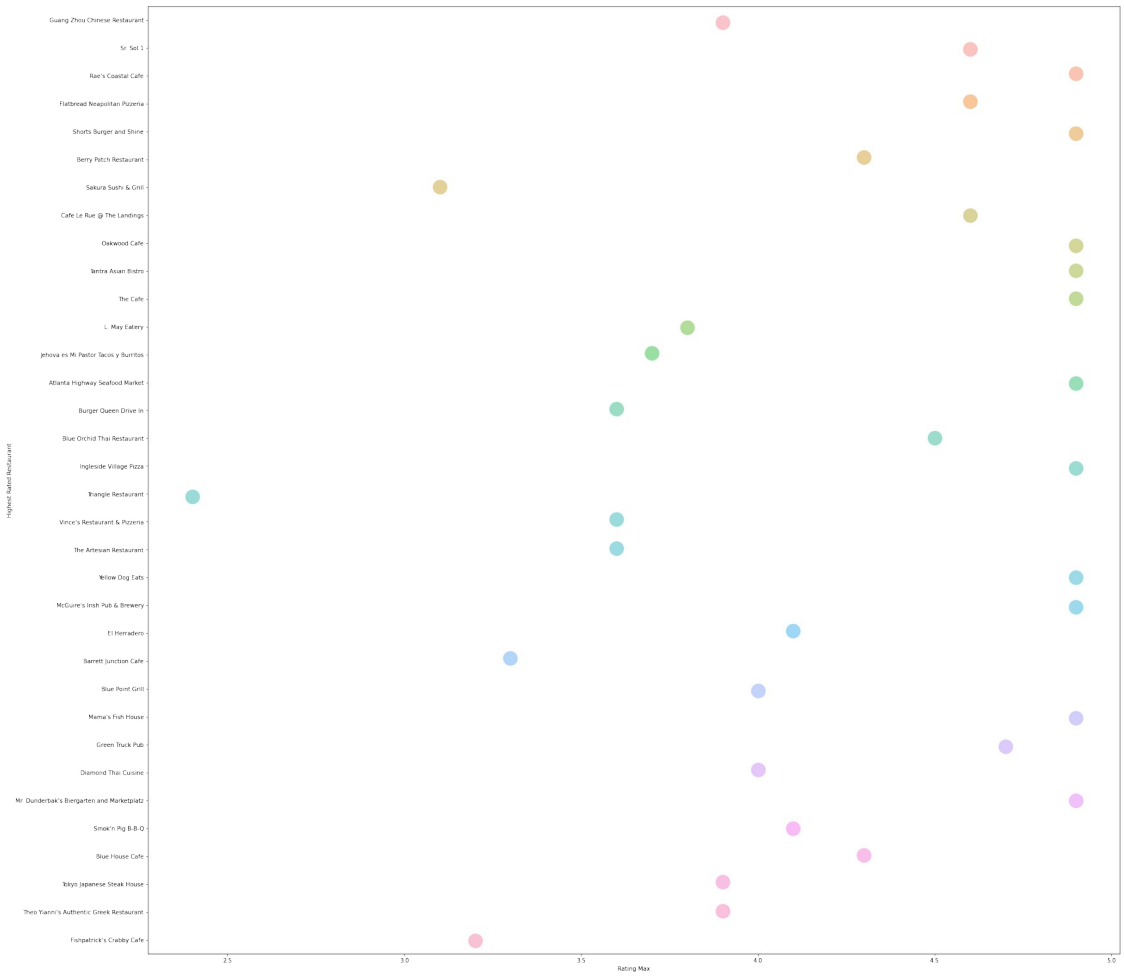


Most of the Highest Rated Restaurants in India are between 4.4 to 5

```
plt.rcParams['figure.figsize']=(30,30)
sns.stripplot('Rating Max','Highest Rated Restaurant', data=
Ratings_USA, alpha=0.5, size=25, edgecolor='black');
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\_decorators.py:36:
FutureWarning: Pass the following variables as keyword args: x, y.
From version 0.12, the only valid positional argument will be `data`,
```

```
and passing other arguments without an explicit keyword will result in
an error or misinterpretation.
  warnings.warn(
```



Most of the Highest Rated Restaurant in USA is between 4.5 to 5 Ratings

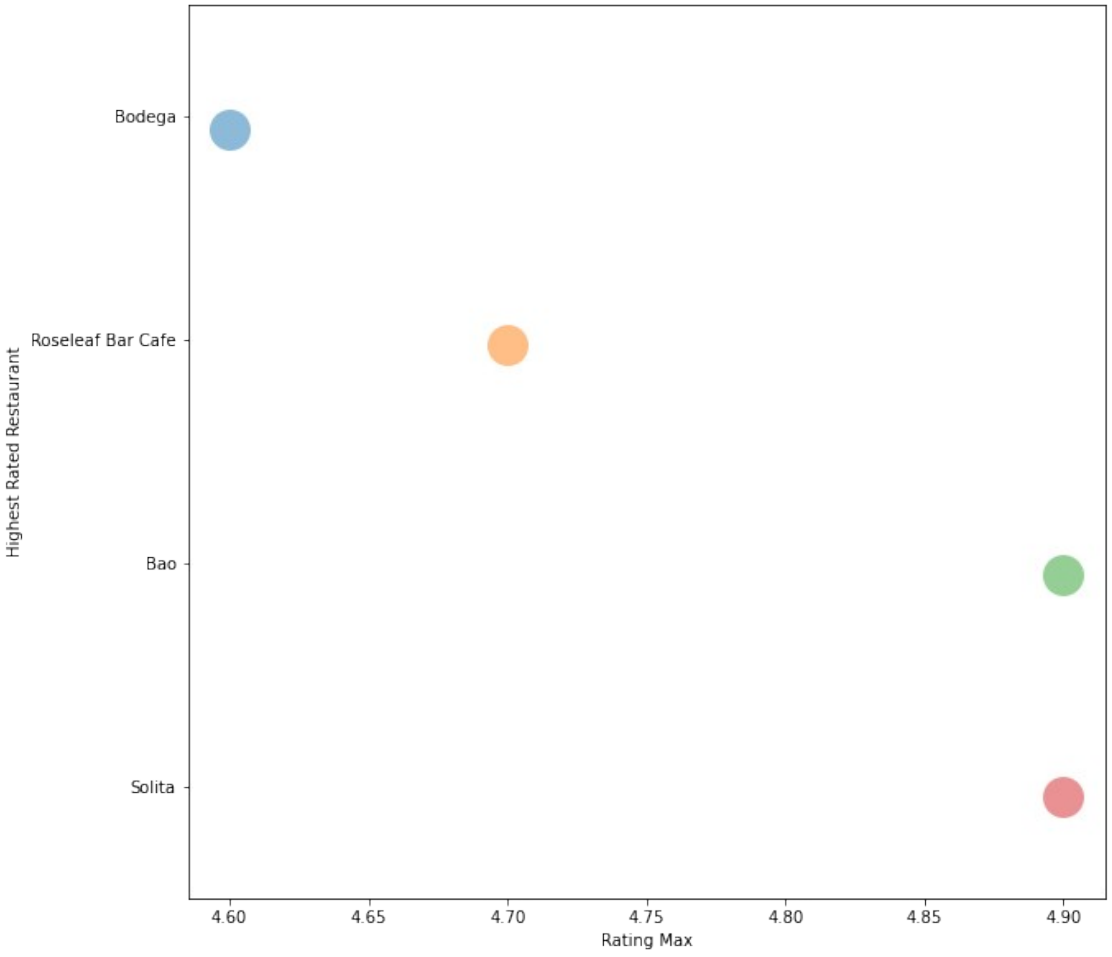
```
Ratings_UK= Ratings[Ratings['Country']=='United Kingdom']
Ratings_UK
```

```
             Country        City Highest Rated Restaurant  Rating
Max  \
102  United Kingdom  Birmingham                   Bodega         4.6

103  United Kingdom   Edinburgh        Roseleaf Bar Cafe         4.7

104  United Kingdom      London                      Bao         4.9

105  United Kingdom  Manchester                   Solita         4.9
```

```
    Lowest Rated Restaurant  Rating Min
102  Damascena Coffee House         0.0
103         The Hanging Bat         3.5
104               Five Guys         3.8
105                  Santos         3.3
```

```
plt.rcParams['figure.figsize']=(10,10)
sns.stripplot('Rating Max', 'Highest Rated Restaurant',
data=Ratings_UK,alpha=0.5,size=25,edgecolor='black');
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\_decorators.py:36:
FutureWarning: Pass the following variables as keyword args: x, y.
From version 0.12, the only valid positional argument will be `data`,
and passing other arguments without an explicit keyword will result in
an error or misinterpretation.
  warnings.warn(
```

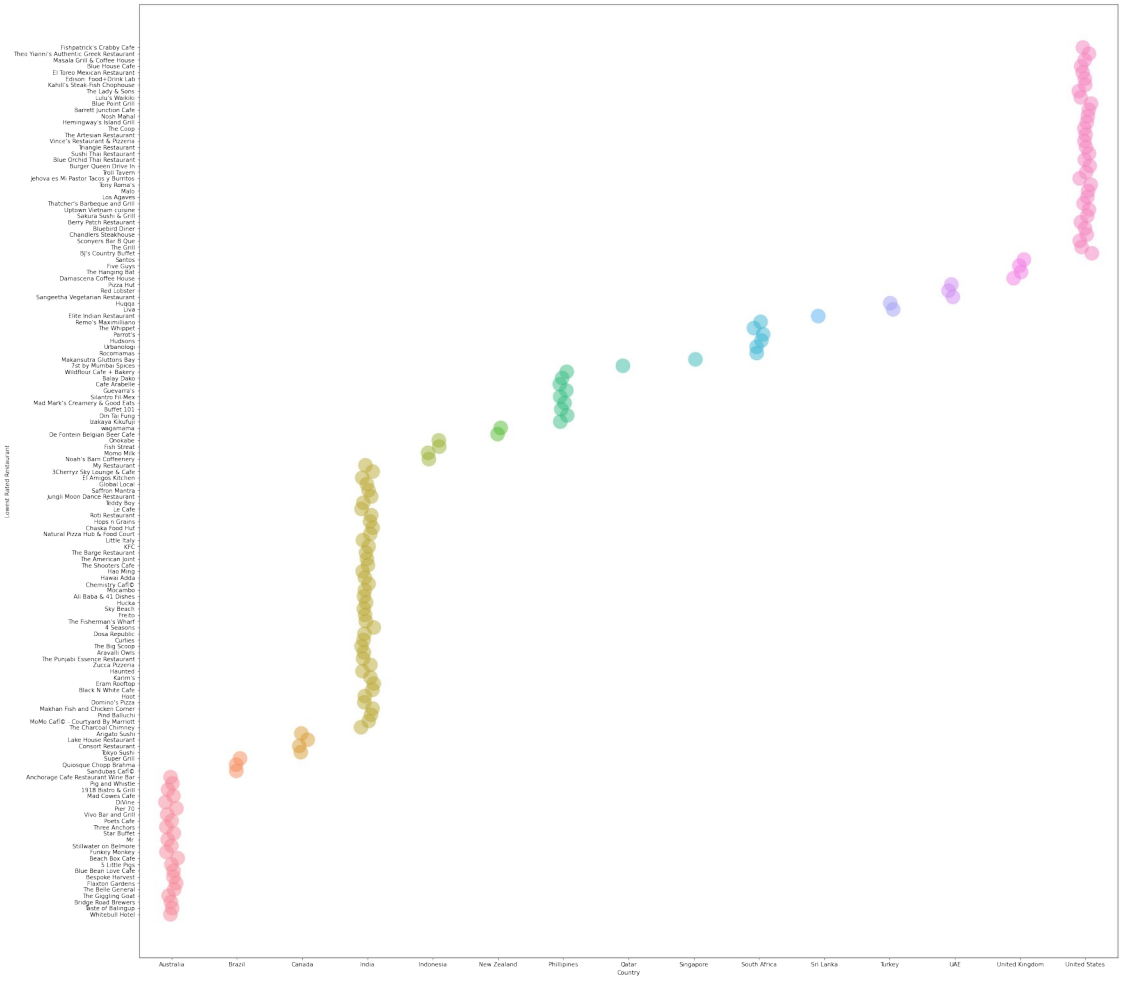


Duck & Waffle, Solita is the highest rating Restaurant in UK with 4.9

We can see highest Rating Restaurants are mostly found in USA and India

```
plt.rcParams['figure.figsize']=(30,30)
sns.stripplot('Country', 'Lowest Rated Restaurant',data= Ratings,
alpha=0.5, size=25, edgecolor='black');
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\_decorators.py:36:
FutureWarning: Pass the following variables as keyword args: x, y.
From version 0.12, the only valid positional argument will be `data`,
and passing other arguments without an explicit keyword will result in
an error or misinterpretation.
  warnings.warn(
```



Lowest Rated Restaurants are mostly seen in India, USA and Australia respectively.

D. What is the ratio between restaurants that allow table booking vs that do not allow table booking?

```
data2= data1.copy()
```

```
data2.head()
```

```
   Restaurant ID              Restaurant Name  Country Code
City  \
0        7402935                         Skye            94  Jakarta

1        7410290     Satoo - Hotel Shangri-La            94  Jakarta

2        7420899                  Sushi Masa            94  Jakarta

3        7421967               3 Wise Monkeys            94  Jakarta

4        7422489  Avec Moi Restaurant and Bar            94  Jakarta


                                          Address  \
0  Menara BCA, Lantai 56, Jl. MH. Thamrin, Thamri...
1               Hotel Shangri-La, Jl. Jend. Sudirman
2                   Jl. Tuna Raya No. 5, Penjaringan
3                Jl. Suryo No. 26, Senopati, Jakarta
4  Gedung PIC, Jl. Teluk Betung 43, Thamrin, Jakarta

                        Locality                         Locality
Verbose  \
0  Grand Indonesia Mall, Thamrin  Grand Indonesia Mall, Thamrin,
Jakarta
1     Hotel Shangri-La, Sudirman     Hotel Shangri-La, Sudirman,
Jakarta
2                    Penjaringan                    Penjaringan,
Jakarta
3                       Senopati                       Senopati,
Jakarta
4                        Thamrin                        Thamrin,
Jakarta

    Longitude  Latitude                   Cuisines  ...  \
0  106.821999 -6.196778        Italian, Continental  ...
1  106.818961 -6.203292  Asian, Indonesian, Western  ...
2  106.800144 -6.101298             Sushi, Japanese  ...
3  106.813400 -6.235241                    Japanese  ...
```

```
4  106.821023 -6.196270            French, Western  ...

   Avg Cost for two in USD               Currency Has Table
booking  \
0                    55.89  Indonesian Rupiah(IDR)               No

1                    55.89  Indonesian Rupiah(IDR)               No

2                    34.93  Indonesian Rupiah(IDR)               No

3                    31.44  Indonesian Rupiah(IDR)               No

4                    24.45  Indonesian Rupiah(IDR)               No


  Has Online delivery Price range  Aggregate rating  Rating color
Rating text  \
0                  No           3               4.1         Green
Very Good
1                  No           3               4.6    Dark Green
Excellent
2                  No           3               4.9    Dark Green
Excellent
3                  No           3               4.2         Green
Very Good
4                  No           3               4.3         Green
Very Good

  Votes    Country
0  1498  Indonesia
1   873  Indonesia
2   605  Indonesia
3   395  Indonesia
4   243  Indonesia

[5 rows x 21 columns]
```

```
dummy=['Has Table booking', 'Has Online delivery']
data2=pd.get_dummies(data2,columns=dummy,drop_first=True)
```

```
data2.head(45)
```

```
    Restaurant ID                              Restaurant Name  Country
Code  \
0         7402935                                         Skye
94
1         7410290                   Satoo - Hotel Shangri-La
94
2         7420899                                  Sushi Masa
94
```

3	7421967	3 Wise Monkeys	94
4	7422489	Avec Moi Restaurant and Bar	94
5	18352452	Lucky Cat Coffee & Kitchen	94
6	18386856	Onokabe	94
7	7423482	Lemongrass	94
8	18391256	MONKS	94
9	7422633	Talaga Sampireun	94
10	18425821	OJJU	94
11	7422751	Union Deli	94
12	7400818	Zenbu	94
13	7417455	Talaga Sampireun	94
14	7417450	Talaga Sampireun	94
15	7405789	Toodz House	94
16	18400530	Noah's Barn Coffeenery	94
17	18370659	Flip Burger	94
18	18409146	Fish Streat	94
19	18408381	Fish Streat	94
20	7423620	Momo Milk	94
21	2701	Orient Express - Taj Palace Hotel	1
22	309548	Tian - Asian Cuisine Studio - ITC Maurya	1
23	2742	Bukhara - ITC Maurya	1
24	6300010	Spiral - Sofitel Philippine Plaza Manila	162
25	301523	Nostalgia at 1911 Brasserie - The Imperial	1
26	2724	1911 - The Imperial	1
27	2725	The Spice Route - The Imperial	1

```
28           2694    Wasabi by Morimoto - The Taj Mahal Hotel
1
29           6812                     MEGU - The Leela Palace
1
30           2689         House of Ming - The Taj Mahal Hotel
1
31           3910       24/7 Restaurant - The Lalit New Delhi
1
32           2443                     Wildfire - Crowne Plaza
1
33       18255131                                  Privee'
1
34       18345728                              Masala Library
1
35           3246                  Le Belvedere - Le Meridien
1
36       18277024      Shang Palace - Shangri-La's Eros Hotel
1
37       18261160        Sorrento - Shangri-La's - Eros Hotel
1
38           2681                         Jade - The Claridges
1
39           2727                San Gimignano - The Imperial
1
40           4907              Kitty Su - The Lalit New Delhi
1
41           4910                Le Cirque - The Leela Palace
1
42           4496        The Grill Room - The Taj Mahal Hotel
1
43           2690                Machan - The Taj Mahal Hotel
1
44         305548               Empress of China - Eros Hotel
1

          City                                            Address  \
0      Jakarta  Menara BCA, Lantai 56, Jl. MH. Thamrin, Thamri...
1      Jakarta               Hotel Shangri-La, Jl. Jend. Sudirman
2      Jakarta                   Jl. Tuna Raya No. 5, Penjaringan
3      Jakarta                Jl. Suryo No. 26, Senopati, Jakarta
4      Jakarta  Gedung PIC, Jl. Teluk Betung 43, Thamrin, Jakarta
5      Jakarta  Plaza Festival, South Parking, Jl. HR Rasuna S...
6    Tangerang  Alam Sutera Town Center, Jl. Alam Utama, Serpo...
7        Bogor      Jl. Raya Pajajaran No. 21, Bogor Utara, Bogor
8      Jakarta  Komplek Graha Boulevard Timur, Summarecon Kela...
9      Jakarta                            Jl. Lingkar Luar Barat
10     Jakarta  Gandaria City, Lantai Upper Ground, Jl. Sultan...
11     Jakarta  Grand Indonesia Mall, Lantai Ground, East Mall...
12     Jakarta  Kota Kasablanka, Lantai Upper Ground, Food Soc...
13     Jakarta  Taman Impian Jaya Ancol, Jl. Lapangan Golf 7, ...
```

14	Tangerang	Jl. Boulevard Bintaro Jaya Blok B7/N1, Bintaro...	
15	Jakarta	Jl. Cipete Raya No. 79, Fatmawati, Jakarta	
16	Bandung	Jl. Dayang Sumbi No. 2, Dago, Bandung	
17	Jakarta	Jl. Senopati No. 27, Senopati, Jakarta	
18	Jakarta	Jl. Tanjung Duren Utara III, Blok M Kav. 32, T...	
19	Jakarta	Jl. Tebet Timur Dalam Raya 44B, Tebet, Jakarta	
20	Bogor	Jl. Kantor Pos No. 6, Bogor Timur, Bogor	
21	New Delhi	Taj Palace Hotel, Diplomatic Enclave, Chanakya...	
22	New Delhi	ITC Maurya, Diplomatic Enclave, Chanakyapuri, ...	
23	New Delhi	ITC Maurya, Chanakyapuri, New Delhi	
24	Pasay City	Plaza Level, Sofitel Philippine Plaza Manila, ...	
25	New Delhi	The Imperial, Janpath, New Delhi	
26	New Delhi	The Imperial, Janpath, New Delhi	
27	New Delhi	The Imperial, Janpath, New Delhi	
28	New Delhi	The Taj Mahal Hotel, 1, Mansingh Road, New Delhi	
29	New Delhi	The Leela Palace, Diplomatic Enclave, Chanakya...	
30	New Delhi	The Taj Mahal Hotel, 1, Mansingh Road, New Delhi	
31	New Delhi	The Lalit, Barakhamba Avenue, Barakhamba Road,...	
32	Gurgaon	Crowne Plaza, National Highway 8, Sector 29, G...	
33	New Delhi	Shangri-La's Eros Hotel Complex, Above Kanishk...	
34	New Delhi	21 A, Janpath, New Delhi	
35	New Delhi	Le Meridien, Windsor Place, Janpath, New Delhi	
36	New Delhi	Shangri-La's Eros Hotel, 19, Ashoka Road, Janp...	
37	New Delhi	Shangri-La's Eros Hotel, 19, Ashoka Road, Janp...	
38	New Delhi	The Claridges, 12, Dr. A.P.J. Abdul Kalam Road...	
39	New Delhi	The Imperial, Janpath, New Delhi	
40	New Delhi	The Lalit, Barakhamba Avenue, Barakhamba Road,...	
41	New Delhi	The Leela Palace, Diplomatic Enclave, Chanakya...	
42	New Delhi	The Taj Mahal Hotel, 1, Mansingh Road, New Delhi	
43	New Delhi	The Taj Mahal Hotel, 1, Mansingh Road, New Delhi	
44	New Delhi	Eros Hotel, American Plaza, Nehru Place, New D...	

	Locality \
0	Grand Indonesia Mall, Thamrin
1	Hotel Shangri-La, Sudirman
2	Penjaringan
3	Senopati
4	Thamrin
5	Plaza Festival, Kuningan
6	Alam Sutera Town Center, Serpong Utara
7	Bogor Utara
8	Kelapa Gading
9	Cengkareng
10	Gandaria City Mall, Gandaria
11	Grand Indonesia Mall, Thamrin
12	Kota Kasablanka, Tebet
13	Taman Impian Jaya Ancol, Ancol
14	Pondok Aren
15	Fatmawati
16	Dago

```
17                                    Senopati
18                                Tanjung Duren
19                                       Tebet
20                                  Bogor Timur
21           The Taj Palace Hotel, Chanakyapuri
22                      ITC Maurya, Chanakyapuri
23                      ITC Maurya, Chanakyapuri
24  Sofitel Philippine Plaza Manila, Pasay City
25                         The Imperial, Janpath
26                         The Imperial, Janpath
27                         The Imperial, Janpath
28           The Taj Mahal Hotel, Mansingh Road
29               The Leela Palace, Chanakyapuri
30           The Taj Mahal Hotel, Mansingh Road
31         The Lalit New Delhi, Barakhamba Road
32                      Crowne Plaza, Sector 29
33                              Connaught Place
34                                      Janpath
35                          Le Meridien, Janpath
36           Shangri La's - Eros hotel, Janpath
37           Shangri La's - Eros hotel, Janpath
38                The Claridges, Aurangzeb Road
39                         The Imperial, Janpath
40         The Lalit New Delhi, Barakhamba Road
41               The Leela Palace, Chanakyapuri
42           The Taj Mahal Hotel, Mansingh Road
43           The Taj Mahal Hotel, Mansingh Road
44                      Eros Hotel, Nehru Place

                                    Locality Verbose   Longitude
Latitude  \
0              Grand Indonesia Mall, Thamrin, Jakarta  106.821999  -
6.196778
1                 Hotel Shangri-La, Sudirman, Jakarta  106.818961  -
6.203292
2                               Penjaringan, Jakarta  106.800144  -
6.101298
3                                  Senopati, Jakarta  106.813400  -
6.235241
4                                   Thamrin, Jakarta  106.821023  -
6.196270
5                   Plaza Festival, Kuningan, Jakarta  106.831748  -
6.218932
6   Alam Sutera Town Center, Serpong Utara, Tangerang  106.652688  -
6.241792
7                                Bogor Utara, Bogor  106.807850  -
6.576578
8                             Kelapa Gading, Jakarta  106.911335  -
6.163948
9                                Cengkareng, Jakarta  106.728508  -
```

6.168467
10   Gandaria City Mall, Gandaria, Jakarta 106.783162 -
6.244221
11   Grand Indonesia Mall, Thamrin, Jakarta 106.819749 -
6.197150
12   Kota Kasablanka, Tebet, Jakarta 106.842500 -
6.224333
13   Taman Impian Jaya Ancol, Ancol, Jakarta 106.833553 -
6.126860
14   Pondok Aren, Tangerang 106.726119 -
6.269914
15   Fatmawati, Jakarta 106.801782 -
6.278012
16   Dago, Bandung 107.612790 -
6.887058
17   Senopati, Jakarta 106.808550 -
6.230775
18   Tanjung Duren, Jakarta   0.000000
0.000000
19   Tebet, Jakarta 106.856413 -
6.232816
20   Bogor Timur, Bogor 106.810301 -
6.606917
21   The Taj Palace Hotel, Chanakyapuri, New Delhi   77.170087
28.595008
22   ITC Maurya, Chanakyapuri, New Delhi   77.173455
28.597351
23   ITC Maurya, Chanakyapuri, New Delhi   77.173724
28.597466
24 Sofitel Philippine Plaza Manila, Pasay City, P... 120.980090
14.552990
25   The Imperial, Janpath, New Delhi   77.218187
28.625445
26   The Imperial, Janpath, New Delhi   77.218185
28.625443
27   The Imperial, Janpath, New Delhi   77.218187
28.625445
28   The Taj Mahal Hotel, Mansingh Road, New Delhi   77.224304
28.605253
29   The Leela Palace, Chanakyapuri, New Delhi   77.188965
28.579401
30   The Taj Mahal Hotel, Mansingh Road, New Delhi   77.224618
28.605149
31   The Lalit New Delhi, Barakhamba Road, New Delhi   77.227569
28.631486
32   Crowne Plaza, Sector 29, Gurgaon   77.059909
28.468415
33   Connaught Place, New Delhi   77.218260
28.620999
34   Janpath, New Delhi   77.218645

```
28.618245
35                    Le Meridien, Janpath, New Delhi   77.218555
28.618863
36      Shangri La's - Eros hotel, Janpath, New Delhi   77.217747
28.620668
37      Shangri La's - Eros hotel, Janpath, New Delhi   77.217747
28.620757
38           The Claridges, Aurangzeb Road, New Delhi   77.216896
28.600195
39                   The Imperial, Janpath, New Delhi   77.218187
28.625445
40    The Lalit New Delhi, Barakhamba Road, New Delhi   77.228133
28.631742
41          The Leela Palace, Chanakyapuri, New Delhi   77.188975
28.579390
42      The Taj Mahal Hotel, Mansingh Road, New Delhi   77.224123
28.605154
43      The Taj Mahal Hotel, Mansingh Road, New Delhi   77.224137
28.605165
44                 Eros Hotel, Nehru Place, New Delhi   77.250169
28.550082

                                            Cuisines  ...  \
0                              Italian, Continental  ...
1                         Asian, Indonesian, Western  ...
2                                   Sushi, Japanese  ...
3                                          Japanese  ...
4                                   French, Western  ...
5                                     Cafe, Western  ...
6                                        Indonesian  ...
7                                Peranakan, Indonesian  ...
8                                 Western, Asian, Cafe  ...
9                                    Sunda, Indonesian  ...
10                                            Korean  ...
11                           Desserts, Bakery, Western  ...
12                              Japanese, Sushi, Ramen  ...
13                                   Sunda, Indonesian  ...
14                                   Sunda, Indonesian  ...
15  Cafe, Italian, Coffee and Tea, Western, Indone...  ...
16                        Cafe, Coffee and Tea, Western  ...
17                                            Burger  ...
18                                     Seafood, Western  ...
19                                     Seafood, Western  ...
20                           Cafe, Desserts, Beverages  ...
21                                          European  ...
22              Asian, Japanese, Korean, Thai, Chinese  ...
23                                       North Indian  ...
24                               European, Asian, Indian  ...
25                                 European, Continental  ...
26       North Indian, Chinese, South Indian, Italian  ...
```

27	Malaysian, Thai, Kerala, Vietnamese, Sri Lankan	...		
28	Japanese, Sushi	...		
29	Japanese, Sushi	...		
30	Chinese	...		
31	Continental, North Indian, Italian, Asian	...		
32	South American	...		
33	Chinese, Italian, Continental, North Indian	...		
34	Modern Indian	...		
35	Chinese	...		
36	Chinese	...		
37	Seafood, Italian	...		
38	Chinese	...		
39	Italian	...		
40	Finger Food	...		
41	French, Italian	...		
42	Mediterranean, European	...		
43	North Indian, European, Continental	...		
44	Chinese	...		

	Avg Cost for two in USD	Currency	Price range	\
0	55.89	Indonesian Rupiah(IDR)	3	
1	55.89	Indonesian Rupiah(IDR)	3	
2	34.93	Indonesian Rupiah(IDR)	3	
3	31.44	Indonesian Rupiah(IDR)	3	
4	24.45	Indonesian Rupiah(IDR)	3	
5	20.96	Indonesian Rupiah(IDR)	3	
6	20.96	Indonesian Rupiah(IDR)	3	
7	17.46	Indonesian Rupiah(IDR)	3	
8	17.46	Indonesian Rupiah(IDR)	3	
9	13.97	Indonesian Rupiah(IDR)	3	
10	13.97	Indonesian Rupiah(IDR)	3	
11	13.97	Indonesian Rupiah(IDR)	3	
12	13.97	Indonesian Rupiah(IDR)	3	
13	13.97	Indonesian Rupiah(IDR)	3	
14	13.97	Indonesian Rupiah(IDR)	3	
15	11.53	Indonesian Rupiah(IDR)	3	
16	10.48	Indonesian Rupiah(IDR)	3	
17	8.38	Indonesian Rupiah(IDR)	3	
18	6.99	Indonesian Rupiah(IDR)	3	
19	6.99	Indonesian Rupiah(IDR)	3	
20	4.89	Indonesian Rupiah(IDR)	2	
21	107.55	Indian Rupees(Rs.)	4	
22	94.10	Indian Rupees(Rs.)	4	
23	87.38	Indian Rupees(Rs.)	4	
24	522.00	Botswana Pula(P)	4	
25	80.66	Indian Rupees(Rs.)	4	
26	80.66	Indian Rupees(Rs.)	4	
27	80.66	Indian Rupees(Rs.)	4	
28	80.66	Indian Rupees(Rs.)	4	
29	73.94	Indian Rupees(Rs.)	4	

30	73.94	Indian Rupees(Rs.)	4	
31	68.56	Indian Rupees(Rs.)	4	
32	67.22	Indian Rupees(Rs.)	4	
33	67.22	Indian Rupees(Rs.)	4	
34	67.22	Indian Rupees(Rs.)	4	
35	67.22	Indian Rupees(Rs.)	4	
36	67.22	Indian Rupees(Rs.)	4	
37	67.22	Indian Rupees(Rs.)	4	
38	67.22	Indian Rupees(Rs.)	4	
39	67.22	Indian Rupees(Rs.)	4	
40	67.22	Indian Rupees(Rs.)	4	
41	67.22	Indian Rupees(Rs.)	4	
42	67.22	Indian Rupees(Rs.)	4	
43	67.22	Indian Rupees(Rs.)	4	
44	64.53	Indian Rupees(Rs.)	4	

	Aggregate rating	Rating color	Rating text	Votes	Country	\
0	4.1	Green	Very Good	1498	Indonesia	
1	4.6	Dark Green	Excellent	873	Indonesia	
2	4.9	Dark Green	Excellent	605	Indonesia	
3	4.2	Green	Very Good	395	Indonesia	
4	4.3	Green	Very Good	243	Indonesia	
5	4.3	Green	Very Good	458	Indonesia	
6	3.7	Yellow	Good	155	Indonesia	
7	4.0	Green	Very Good	1159	Indonesia	
8	4.2	Green	Very Good	259	Indonesia	
9	4.9	Dark Green	Excellent	1662	Indonesia	
10	3.9	Yellow	Good	137	Indonesia	
11	4.6	Dark Green	Excellent	903	Indonesia	
12	4.4	Green	Very Good	841	Indonesia	
13	4.9	Dark Green	Excellent	1640	Indonesia	
14	4.9	Dark Green	Excellent	2212	Indonesia	
15	4.6	Dark Green	Excellent	1476	Indonesia	
16	4.2	Green	Very Good	22	Indonesia	
17	4.4	Green	Very Good	410	Indonesia	
18	3.4	Orange	Average	152	Indonesia	
19	4.0	Green	Very Good	331	Indonesia	
20	3.7	Yellow	Good	783	Indonesia	
21	4.0	Green	Very Good	145	India	
22	4.1	Green	Very Good	188	India	
23	4.4	Green	Very Good	2826	India	
24	4.9	Dark Green	Excellent	621	Phillipines	
25	3.2	Orange	Average	12	India	
26	3.9	Yellow	Good	272	India	
27	4.0	Green	Very Good	259	India	
28	3.9	Yellow	Good	183	India	
29	3.9	Yellow	Good	178	India	
30	4.0	Green	Very Good	398	India	
31	3.7	Yellow	Good	419	India	
32	3.7	Yellow	Good	131	India	

33	3.6	Yellow	Good	61	India
34	4.9	Dark Green	Excellent	408	India
35	3.5	Yellow	Good	114	India
36	3.7	Yellow	Good	65	India
37	3.9	Yellow	Good	66	India
38	3.8	Yellow	Good	134	India
39	3.7	Yellow	Good	104	India
40	3.7	Yellow	Good	747	India
41	3.8	Yellow	Good	199	India
42	3.1	Orange	Average	15	India
43	3.9	Yellow	Good	696	India
44	4.2	Green	Very Good	119	India

	Has Table booking_Yes	Has Online delivery_Yes
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	1	0
22	0	0
23	0	0
24	1	0
25	1	0
26	1	0
27	1	0
28	1	0
29	1	0
30	1	0
31	1	0
32	1	0
33	0	0
34	0	0
35	1	0

```
36                      1                       0
37                      1                       0
38                      1                       0
39                      1                       0
40                      0                       0
41                      1                       0
42                      0                       0
43                      0                       0
44                      1                       0

[45 rows x 21 columns]
```

```
TB=data2[data2['Has Table booking_Yes']==1]['Restaurant ID'].count()
NTB=data2[data2['Has Table booking_Yes']==0]['Restaurant ID'].count()
print('Restaurants among that allows table booking vs. those do not
allow table booking:',round((TB/NTB),2))
```

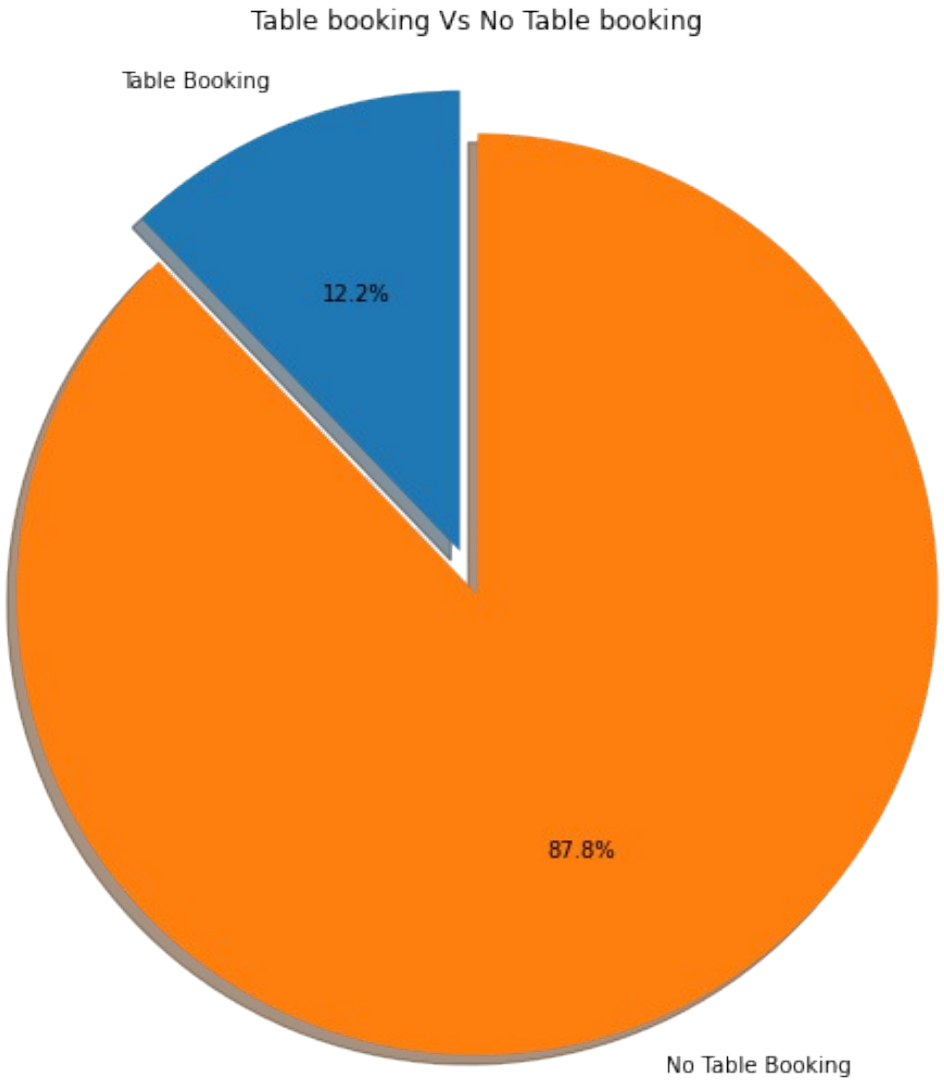
```
Restaurants among that allows table booking vs. those do not allow
table booking: 0.14
```

```
print(TB,NTB)
```

```
1158 8368
```

Pie-Chart for Table Booking Restaurant Vs. No Table Booking Restaurant

```
labels = 'Table Booking','No Table Booking'
sizes= [TB,NTB]
explode=(0.1,0)

fig1, ax1=plt.subplots(figsize=(9,9))
ax1.pie(sizes, explode=explode, labels=labels, autopct='%1.1f%%',
shadow=True, startangle=90)
ax1.set_title('Table booking Vs No Table booking')
ax1.axis('equal')
plt.show()
```



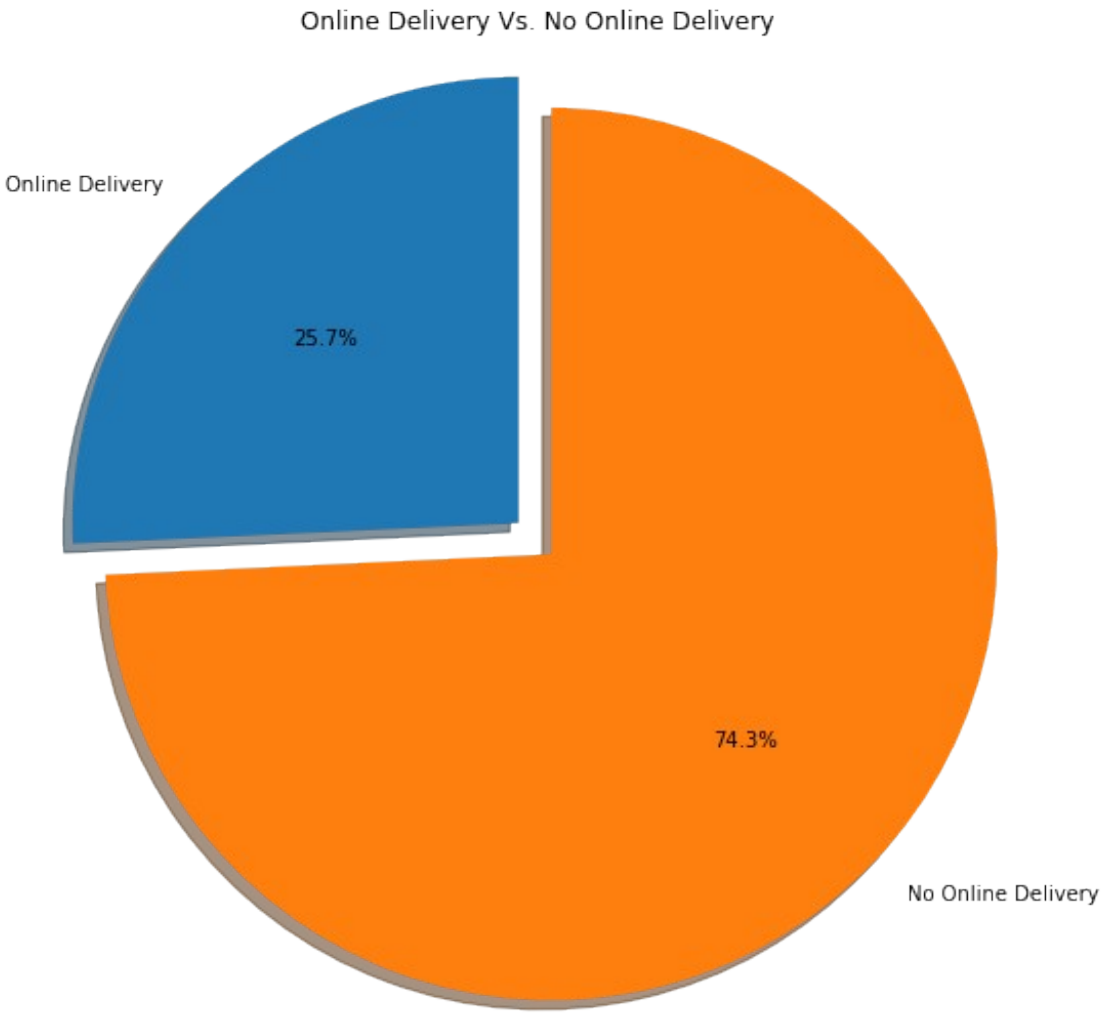
E. Find out the percentage of restaurants providing online delivery

```
OD=data2[data2['Has Online delivery_Yes']==1]['Restaurant ID'].count()
NOD= data2[data2['Has Online delivery_Yes']==0]['Restaurant
ID'].count()
print('Percentage of restaurants providing Online delivery:{}
%'.format((round(OD/len(data2),3)*100)))
```

```
Percentage of restaurants providing Online delivery:25.7%
```

```
labels='Online Delivery','No Online Delivery'
size=[OD,NOD]
explode=(0.1,0)
fig1, ax1 = plt.subplots(figsize=(9,9))
ax1.pie(size, labels=labels, explode=explode, autopct='%1.1f%%',
shadow=True, startangle=90)
```

```
ax1.set_title("Online Delivery Vs. No Online Delivery")
ax1.axis('equal')
plt.show()
```



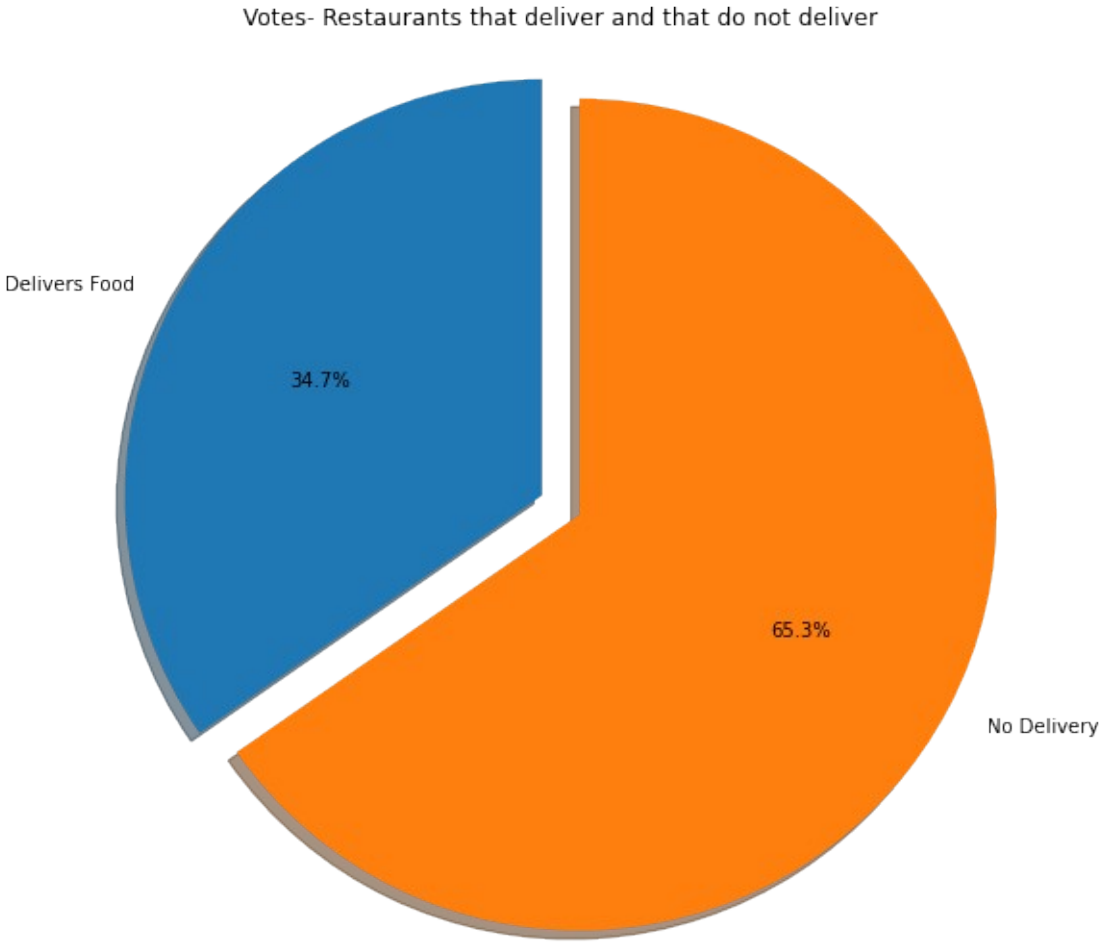
F. Calculate the difference in number of votes for the restaurants that deliver and the restaurants that do not deliver

```
ROD= data2[data2['Has Online delivery_Yes']==1]['Votes'].sum()
RNOD=data2[data2['Has Online delivery_Yes']==0]['Votes'].sum()
print('Difference Between Number of votes for the Restaurants that
deliver and that do not deliver:',abs((ROD-RNOD)))
```

```
Difference Between Number of votes for the Restaurants that deliver
and that do not deliver: 457961
```

```
labels= 'Delivers Food','No Delivery'
size= [ROD,RNOD]
explode=(0.1,0)
```

```
fig1, ax1=plt.subplots(figsize=(9,9))
ax1.pie(size, labels=labels, explode=explode, autopct='%1.1f%%',
startangle=90, shadow= True)
ax1.set_title('Votes- Restaurants that deliver and that do not
deliver')
ax1.axis('equal')
plt.show()
```



G.What are the top 10 cuisines served across cities?

```
data1.head()
```

```
   Restaurant ID              Restaurant Name  Country Code
City  \
0        7402935                         Skye            94  Jakarta

1        7410290     Satoo - Hotel Shangri-La            94  Jakarta

2        7420899                   Sushi Masa            94  Jakarta
```

```
3        7421967               3 Wise Monkeys            94  Jakarta

4        7422489  Avec Moi Restaurant and Bar            94  Jakarta


                                          Address  \
0  Menara BCA, Lantai 56, Jl. MH. Thamrin, Thamri...
1               Hotel Shangri-La, Jl. Jend. Sudirman
2                   Jl. Tuna Raya No. 5, Penjaringan
3                Jl. Suryo No. 26, Senopati, Jakarta
4  Gedung PIC, Jl. Teluk Betung 43, Thamrin, Jakarta

                       Locality                       Locality
Verbose  \
0  Grand Indonesia Mall, Thamrin  Grand Indonesia Mall, Thamrin,
Jakarta
1     Hotel Shangri-La, Sudirman     Hotel Shangri-La, Sudirman,
Jakarta
2                    Penjaringan                    Penjaringan,
Jakarta
3                       Senopati                       Senopati,
Jakarta
4                        Thamrin                        Thamrin,
Jakarta

    Longitude  Latitude                   Cuisines  ...  \
0  106.821999 -6.196778       Italian, Continental  ...
1  106.818961 -6.203292  Asian, Indonesian, Western  ...
2  106.800144 -6.101298            Sushi, Japanese  ...
3  106.813400 -6.235241                   Japanese  ...
4  106.821023 -6.196270            French, Western  ...

   Avg Cost for two in USD               Currency Has Table
booking  \
0                    55.89  Indonesian Rupiah(IDR)               No

1                    55.89  Indonesian Rupiah(IDR)               No

2                    34.93  Indonesian Rupiah(IDR)               No

3                    31.44  Indonesian Rupiah(IDR)               No

4                    24.45  Indonesian Rupiah(IDR)               No


  Has Online delivery Price range  Aggregate rating  Rating color
Rating text  \
0                  No           3               4.1         Green
Very Good
```

```
1                  No           3               4.6    Dark Green
Excellent
2                  No           3               4.9    Dark Green
Excellent
3                  No           3               4.2         Green
Very Good
4                  No           3               4.3         Green
Very Good

  Votes    Country
0  1498  Indonesia
1   873  Indonesia
2   605  Indonesia
3   395  Indonesia
4   243  Indonesia

[5 rows x 21 columns]
```

```
data2.columns
cuisines= data2['Cuisines'].apply(lambda x: pd.Series(x.split(',')))

cuisines.columns=['C1','C2','C3','C4','C5','C6','C7','C8']
cuisines.tail()
```

```
                  C1               C2                  C3   C4   C5
C6   C7  \
9521       Fast Food              NaN                 NaN  NaN  NaN
NaN  NaN
9522  Coffee and Tea              Tea   Modern Australian  NaN  NaN
NaN  NaN
9523         Italian           Fusion                Cafe  NaN  NaN
NaN  NaN
9524          Burger   Coffee and Tea   Modern Australian  NaN  NaN
NaN  NaN
9525       Breakfast   Coffee and Tea                 NaN  NaN  NaN
NaN  NaN

       C8
9521  NaN
9522  NaN
9523  NaN
9524  NaN
9525  NaN
```

```
cuisines1=pd.concat([data2,cuisines],axis=1)
cuisines1.head()
```

```
   Restaurant ID             Restaurant Name  Country Code
City  \
0        7402935                        Skye            94  Jakarta
```

```
1        7410290     Satoo - Hotel Shangri-La            94  Jakarta

2        7420899                   Sushi Masa            94  Jakarta

3        7421967               3 Wise Monkeys            94  Jakarta

4        7422489  Avec Moi Restaurant and Bar            94  Jakarta


                                          Address  \
0  Menara BCA, Lantai 56, Jl. MH. Thamrin, Thamri...
1               Hotel Shangri-La, Jl. Jend. Sudirman
2                   Jl. Tuna Raya No. 5, Penjaringan
3                Jl. Suryo No. 26, Senopati, Jakarta
4  Gedung PIC, Jl. Teluk Betung 43, Thamrin, Jakarta

                        Locality                         Locality
Verbose  \
0  Grand Indonesia Mall, Thamrin  Grand Indonesia Mall, Thamrin,
Jakarta
1     Hotel Shangri-La, Sudirman     Hotel Shangri-La, Sudirman,
Jakarta
2                    Penjaringan                    Penjaringan,
Jakarta
3                       Senopati                       Senopati,
Jakarta
4                        Thamrin                        Thamrin,
Jakarta

    Longitude  Latitude                    Cuisines  ...  \
0  106.821999 -6.196778        Italian, Continental  ...
1  106.818961 -6.203292  Asian, Indonesian, Western  ...
2  106.800144 -6.101298             Sushi, Japanese  ...
3  106.813400 -6.235241                    Japanese  ...
4  106.821023 -6.196270             French, Western  ...

   Has Table booking_Yes  Has Online delivery_Yes        C1
C2  \
0                      0                       0   Italian
Continental
1                      0                       0     Asian
Indonesian
2                      0                       0     Sushi
Japanese
3                      0                       0  Japanese
NaN
4                      0                       0    French
Western
```

```
         C3   C4   C5   C6   C7   C8
0       NaN  NaN  NaN  NaN  NaN  NaN
1   Western  NaN  NaN  NaN  NaN  NaN
2       NaN  NaN  NaN  NaN  NaN  NaN
3       NaN  NaN  NaN  NaN  NaN  NaN
4       NaN  NaN  NaN  NaN  NaN  NaN

[5 rows x 29 columns]
```

```
cuisines2=pd.DataFrame(cuisines1[['Country','City','Locality
Verbose','Votes','C1','C2','C3','C4','C5','C6','C7','C8']])

cuisines2.head(2)
```

```
     Country     City                         Locality Verbose  Votes
C1  \
0  Indonesia  Jakarta  Grand Indonesia Mall, Thamrin, Jakarta   1498
Italian
1  Indonesia  Jakarta     Hotel Shangri-La, Sudirman, Jakarta    873
Asian

             C2        C3   C4   C5   C6   C7   C8
0   Continental       NaN  NaN  NaN  NaN  NaN  NaN
1    Indonesian   Western  NaN  NaN  NaN  NaN  NaN
```

```
keys= [c for c in cuisines2 if c.startswith('C1')]
a=pd.melt(cuisines2, id_vars= 'Locality Verbose', value_vars=keys,
value_name='cuisines')
maxrate=pd.DataFrame(a.groupby(by=['Locality
Verbose','variable','cuisines']).size().reset_index())
maxrate
del maxrate['variable']
maxrate.columns=['Locality Verbose','cuisines', 'count']
maxrate.head()
```

```
                                Locality Verbose      cuisines  count
0      ILD Trade Centre Mall, Sohna Road, Gurgaon          Cafe      1
1      ILD Trade Centre Mall, Sohna Road, Gurgaon  North Indian      1
2  12th Square Building, Banjara Hills, Hyderabad       Mughlai      1
3                 A Hotel, Gurdev Nagar, Ludhiana  North Indian      1
4             ARSS Mall, Paschim Vihar, New Delhi  North Indian      1
```

```
cuisines3=maxrate.sort_values('count',
ascending=False).groupby(by=['Locality Verbose'], as_index=
False).first()
cuisines3.head()
```

```
                                Locality Verbose        cuisines
count
0      ILD Trade Centre Mall, Sohna Road, Gurgaon            Cafe
1
```

```
1  12th Square Building, Banjara Hills, Hyderabad         Mughlai
1
2                 A Hotel, Gurdev Nagar, Ludhiana    North Indian
1
3             ARSS Mall, Paschim Vihar, New Delhi    North Indian
1
4                          Aaya Nagar, New Delhi  Cuisine Varies
1
```

```
ratingc=cuisines3.merge(data2, left_on='Locality Verbose',
right_on='Locality Verbose', how='inner')
ratingc2=pd.DataFrame(ratingc[['Country','Locality
Verbose','Cuisines','count','Votes']])
country= ratingc.sort_values('count',
ascending=False).groupby(by=['Country','Votes'],
as_index=False).first()
cusi=pd.DataFrame(country[['Country','City','Locality','Cuisines','cou
nt']])
cusi.columns=['Country','City','Locality','Cuisines','Number of
restaurants in the country']
cusi1=cusi.sort_values('Number of restaurants in the country',
ascending=False)
cusi1[:10]
TopCuisines=cusi1.drop(cusi1.index[[7,10]])
```

```
TopCuisines
```

```
             Country        City                              Locality
\
329            India   New Delhi                       Connaught Place

211            India   New Delhi                       Connaught Place

163            India   New Delhi                       Connaught Place

167            India   New Delhi                       Connaught Place

748            India   New Delhi                       Connaught Place

...              ...         ...                                   ...

984      New Zealand    Auckland                        Wynyard Quarter

1229  United Kingdom  Manchester                               Deansgate

1230  United Kingdom  Birmingham  Bullring Shopping Centre, Southside

1231  United Kingdom  Birmingham                             Harborne

0          Australia    Mayfield                             Mayfield
```

```
                            Cuisines  Number of restaurants in the
country
329      Burger, Desserts, Fast Food
48
211   North Indian, Chinese, Mughlai
48
163   North Indian, Afghani, Mughlai
48
167                Fast Food, Burger
48
748            Mughlai, North Indian
48
...                               ...
...
984                           Italian
1
1229                          British
1
1230                          Italian
1
1231                          British
1
0                               Asian
1

[1614 rows x 5 columns]
```

According to the number of cuisines we can consider North Indian, Chinese , Pizza, Fast Food, Inidan, Asian, Cafe are top 10 cuisines

But Number restaurants alone cannot decide the Top Cuisines. So thought of considering it based on Votes

```
Votes=ratingc.sort_values('Votes',ascending=False).groupby(by=['Countr
y','count'],as_index=False).first()
votes1=pd.DataFrame(Votes[['Country','City','Locality','Cuisines','cou
nt','Votes']])
votes1.columns=['Country','City','Locality','Cuisines','Votes','Max
Votings for cuisines']
votes2=votes1.sort_values('Max Votings for cuisines', ascending=False)
votes2[:10]
TopVotedcuisines=votes2.drop(votes2.index[[7,10]])

TopVotedcuisines=TopVotedcuisines.drop('Votes', axis=1)
```

TopVotedcuisines

```
      Country           City                Locality  \
5       India       Bangalore             Indiranagar
12      India       New Delhi       Hauz Khas Village
6       India         Kolkata        Park Street Area
42      India       New Delhi         Connaught Place
11      India       New Delhi             Khan Market
..        ...             ...                      ...
1      Brazil      SÌ£o Paulo         Jardim Paulista
3      Brazil  Rio de Janeiro                 Ipanema
49  Singapore       Singapore  Hillcrest, Bukit Timah
2      Brazil      SÌ£o Paulo              Itaim Bibi
41      India       New Delhi              Mahipalpur

                                        Cuisines  Max Votings for
cuisines
5                         Italian, American, Pizza
10934
12     Continental, American, Asian, North Indian
7931
6                        Continental, North Indian
7574
42                                    South Indian
5172
11           Italian, Continental, European, Cafe
4986
..                                             ...
...
1                                       French
73
3                              Brazilian, Bar Food
49
49                                      Italian
35
2                     French, Brazilian, Beverages
30
41  North Indian, Chinese, Continental, Fast Food
23

[67 rows x 5 columns]
```

```
TopVotedcuisines1=TopVotedcuisines[:10]
```

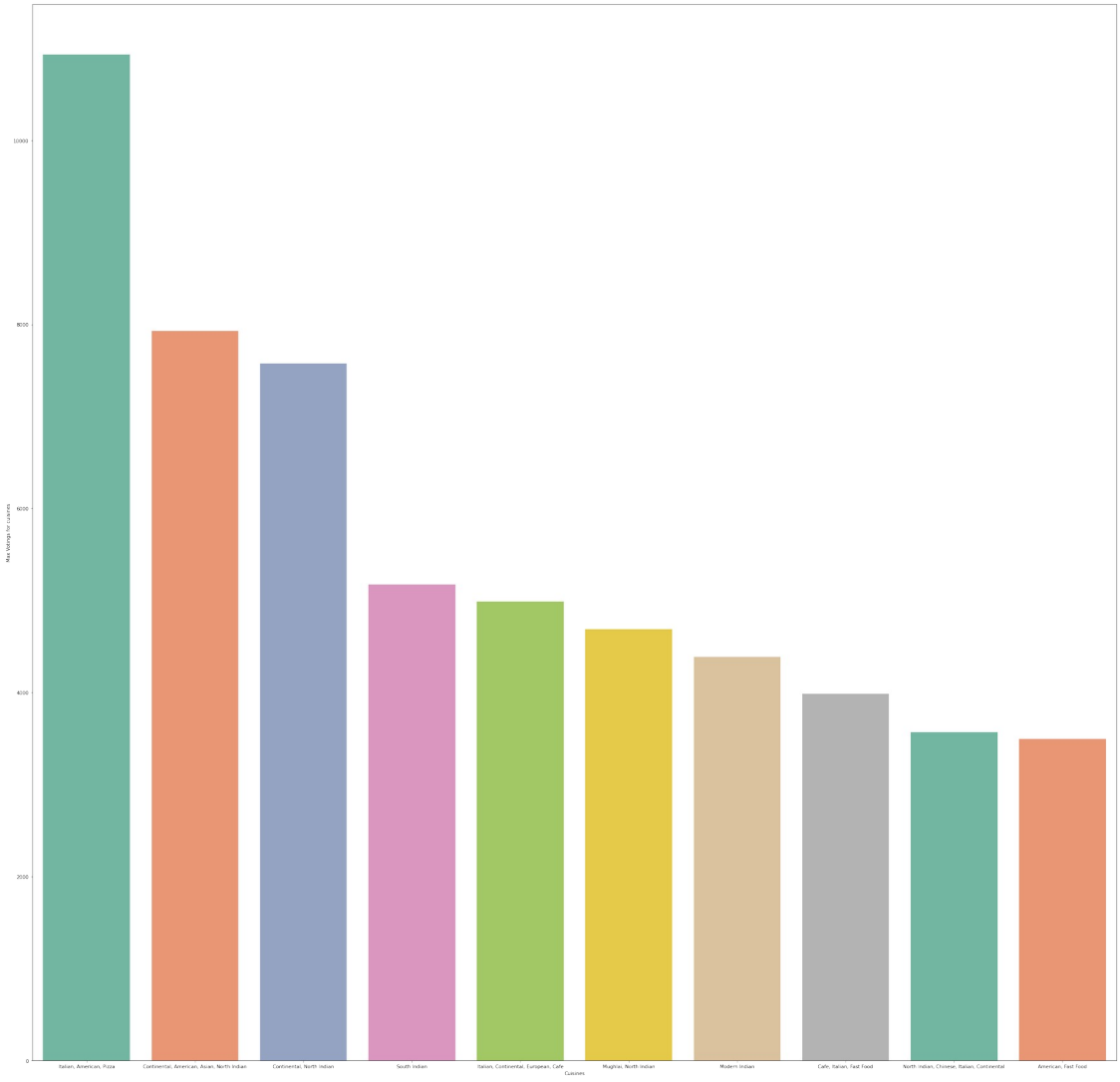
```
TopVotedcuisines1
```

```
   Country       City                   Locality  \
5    India  Bangalore                Indiranagar
12   India  New Delhi          Hauz Khas Village
6    India    Kolkata           Park Street Area
42   India  New Delhi             Connaught Place
```

```
11   India  New Delhi               Khan Market
16   India  New Delhi               Jama Masjid
10   India    Gurgaon  Cyber Hub, DLF Cyber City
13   India  New Delhi               Vijay Nagar
15   India    Gurgaon                 Sector 29
9    India  New Delhi              Lodhi Colony

                                       Cuisines  Max Votings for
cuisines
5                     Italian, American, Pizza
10934
12   Continental, American, Asian, North Indian
7931
6                    Continental, North Indian
7574
42                                  South Indian
5172
11         Italian, Continental, European, Cafe
4986
16                        Mughlai, North Indian
4689
10                                Modern Indian
4385
13                    Cafe, Italian, Fast Food
3986
15  North Indian, Chinese, Italian, Continental
3569
9                           American, Fast Food
3495
```

```
plt.rcParams['figure.figsize']=(40,40)
sns.barplot(x='Cuisines', y='Max Votings for cuisines',
data=TopVotedcuisines1, palette="Set2")
```

```
<AxesSubplot:xlabel='Cuisines', ylabel='Max Votings for cuisines'>
```



While studying based on the votes Italian, Continental American, Asian, North India, Fast Food stands as the top Cuisines.

Moreover Italian and American Continental cuisine stands First on the top

H. What is the maximum and minimum no. of cuisines that a restaurant serves? what is the relationship between No. of cuisines served and Ratings

```
TopVotedcuisines.head(2)
```

```
   Country       City           Locality  \
5    India  Bangalore        Indiranagar
12   India  New Delhi  Hauz Khas Village

                                      Cuisines  Max Votings for
cuisines
5                     Italian, American, Pizza
10934
12  Continental, American, Asian, North Indian
7931
```

```
TopVotedcuisines['Cuisines']=TopVotedcuisines.Cuisines.str.replace("No
rth Indian", "NorthIndian")
TopVotedcuisines['Cuisines']=TopVotedcuisines.Cuisines.str.replace("Fa
st Food", "FastFood")
TopVotedcuisines['Cuisines']=TopVotedcuisines.Cuisines.str.replace("Mo
dern Indian", "ModernIndian")
TopVotedcuisines['Cuisines']=TopVotedcuisines.Cuisines.str.replace("So
uth Indian", "SouthIndian")
TopVotedcuisines['Cuisines']=TopVotedcuisines.Cuisines.str.replace("Ba
r Food", "BarFood")
TopVotedcuisines['Cuisines']=TopVotedcuisines.Cuisines.str.replace("Di
m Sum", "DimSum")
TopVotedcuisines['Cuisines']=TopVotedcuisines.Cuisines.str.replace("St
reet Food", "StreetFood")
TopVotedcuisines['Cuisines']=TopVotedcuisines.Cuisines.str.replace("Sr
i Lankan", "SriLankan")
```

```
TopVotedcuisines['Number of
Cuisines']=TopVotedcuisines.Cuisines.apply(lambda x: len(x.split()))
```

```
TopVotedcuisines
```

```
      Country            City                Locality  \
5       India       Bangalore             Indiranagar
12      India       New Delhi       Hauz Khas Village
6       India         Kolkata        Park Street Area
42      India       New Delhi         Connaught Place
11      India       New Delhi             Khan Market
..        ...             ...                     ...
1      Brazil      SÌ£o Paulo         Jardim Paulista
3      Brazil  Rio de Janeiro                 Ipanema
49  Singapore       Singapore  Hillcrest, Bukit Timah
2      Brazil      SÌ£o Paulo              Itaim Bibi
41      India       New Delhi              Mahipalpur

                                       Cuisines  Max Votings for
cuisines  \
5                      Italian, American, Pizza
10934
12    Continental, American, Asian, NorthIndian
```

```
7931
6                      Continental, NorthIndian
7574
42                                   SouthIndian
5172
11         Italian, Continental, European, Cafe
4986
..                                           ...
...
1                                         French
73
3                            Brazilian, BarFood
49
49                                       Italian
35
2                   French, Brazilian, Beverages
30
41  NorthIndian, Chinese, Continental, FastFood
23

    Number of Cuisines
5                    3
12                   4
6                    2
42                   1
11                   4
..                 ...
1                    1
3                    2
49                   1
2                    3
41                   4

[67 rows x 6 columns]
```

```
ratingTC=data2['Aggregate rating']
print('Aggregate Rating')
display(ratingTC)
```

```
Aggregate Rating

0       4.1
1       4.6
2       4.9
3       4.2
4       4.3
       ...
9521    2.8
9522    3.6
9523    3.8
9524    3.7
```

```
9525    3.8
Name: Aggregate rating, Length: 9526, dtype: float64
```

```
TopVotedcuisines3=TopVotedcuisines.join(ratingTC)
```

```
TopVotedcuisines3
```

```
      Country           City                Locality  \
5       India       Bangalore             Indiranagar
12      India       New Delhi       Hauz Khas Village
6       India         Kolkata        Park Street Area
42      India       New Delhi         Connaught Place
11      India       New Delhi             Khan Market
..        ...             ...                     ...
1      Brazil      SÌ£o Paulo         Jardim Paulista
3      Brazil  Rio de Janeiro                 Ipanema
49  Singapore       Singapore  Hillcrest, Bukit Timah
2      Brazil      SÌ£o Paulo              Itaim Bibi
41      India       New Delhi              Mahipalpur

                                       Cuisines  Max Votings for
cuisines  \
5                     Italian, American, Pizza
10934
12    Continental, American, Asian, NorthIndian
7931
6                     Continental, NorthIndian
7574
42                                  SouthIndian
5172
11         Italian, Continental, European, Cafe
4986
..                                          ...
...
1                                    French
73
3                           Brazilian, BarFood
49
49                                   Italian
35
2                  French, Brazilian, Beverages
30
41  NorthIndian, Chinese, Continental, FastFood
23

    Number of Cuisines  Aggregate rating
5                    3              4.3
12                   4              4.4
6                    2              3.7
42                   1              3.1
11                   4              4.6
```

```
..                  ...               ...
1                     1               4.6
3                     2               4.2
49                    1               3.3
2                     3               4.9
41                    4               3.8

[67 rows x 7 columns]
```

```
TopVotedcuisines3['Number of Cuisines'].max()
```

```
5
```

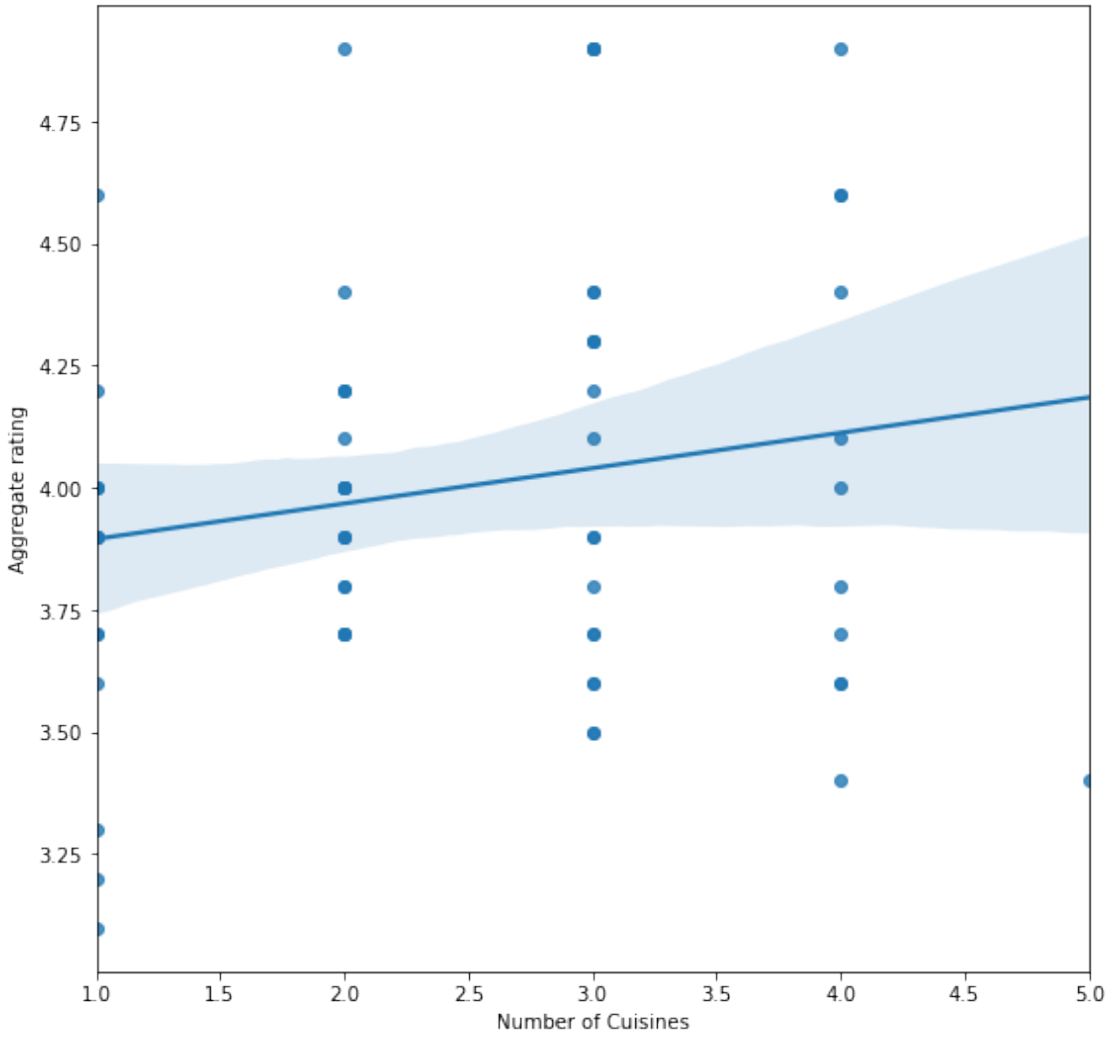
```
TopVotedcuisines3['Number of Cuisines'].min()
```

```
1
```

Maximum number of cuisines served by a restaurant is Five and minimum number of cuisines served by a restaurant is one.

```
plt.rcParams['figure.figsize']=(9,9)
sns.regplot(x='Number of Cuisines', y='Aggregate rating',
data=TopVotedcuisines3)
TopVotedcuisines3[["Number of Cuisines","Aggregate rating"]].corr()
```

```
                    Number of Cuisines  Aggregate rating
Number of Cuisines            1.000000          0.179774
Aggregate rating              0.179774          1.000000
```



There is a Positive Relationship Between No. of cuisines served and Ratings. Hence, more number of cuisines will have highest ratings among customers

```
data2.head(2)
```

```
   Restaurant ID          Restaurant Name  Country Code     City  \
0        7402935                     Skye            94  Jakarta
1        7410290  Satoo - Hotel Shangri-La            94  Jakarta

                                             Address  \
0  Menara BCA, Lantai 56, Jl. MH. Thamrin, Thamri...
1              Hotel Shangri-La, Jl. Jend. Sudirman

                       Locality                       Locality
Verbose  \
0  Grand Indonesia Mall, Thamrin  Grand Indonesia Mall, Thamrin,
```

```
Jakarta
1     Hotel Shangri-La, Sudirman     Hotel Shangri-La, Sudirman,
Jakarta

    Longitude  Latitude                   Cuisines  ...  \
0  106.821999 -6.196778        Italian, Continental  ...
1  106.818961 -6.203292  Asian, Indonesian, Western  ...

   Avg Cost for two in USD               Currency Price range  \
0                    55.89  Indonesian Rupiah(IDR)           3
1                    55.89  Indonesian Rupiah(IDR)           3

   Aggregate rating  Rating color Rating text Votes    Country  \
0               4.1         Green   Very Good  1498  Indonesia
1               4.6    Dark Green   Excellent   873  Indonesia

  Has Table booking_Yes  Has Online delivery_Yes
0                     0                        0
1                     0                        0

[2 rows x 21 columns]
```

i. What is the distribution cost across the restaurants?

```
# take price range, city, cuisines, restaurants and find the cheapest
and costliest hotels in a city or country

Discost=data2[['Restaurant Name', 'City','Country','Cuisines', 'Avg
Cost for two in USD','Price range']]

Discost

                  Restaurant Name             City         Country  \
0                            Skye          Jakarta       Indonesia
1       Satoo - Hotel Shangri-La          Jakarta       Indonesia
2                     Sushi Masa          Jakarta       Indonesia
3                  3 Wise Monkeys          Jakarta       Indonesia
4     Avec Moi Restaurant and Bar          Jakarta       Indonesia
...                           ...              ...             ...
9521            Pepe's Piri Piri       Birmingham  United Kingdom
9522           The Giggling Goat      Dicky Beach       Australia
9523   La Trattoria of Lavandula  Hepburn Springs       Australia
9524               Beach Box Cafe        Inverloch       Australia
9525                Funkey Monkey   Lakes Entrance       Australia

                                       Cuisines  Avg Cost for two in
USD  \
0                        Italian, Continental
55.89
1                    Asian, Indonesian, Western
```

```
55.89
2                                Sushi, Japanese
34.93
3                                       Japanese
31.44
4                                French, Western
24.45
...                                          ...                       .
..
9521                                   Fast Food
13.70
9522     Coffee and Tea, Tea, Modern Australian
5.04
9523                       Italian, Fusion, Cafe
5.04
9524  Burger, Coffee and Tea, Modern Australian
5.04
9525                   Breakfast, Coffee and Tea
5.04

      Price range
0               3
1               3
2               3
3               3
4               3
...           ...
9521            1
9522            1
9523            1
9524            1
9525            1

[9526 rows x 6 columns]
```

```
Distcost1max= Discost.sort_values(by="Price range",
ascending=False).groupby(['Country', 'City'], as_index=False).first()

Distcost1max.head(5)
```

```
     Country          City      Restaurant Name  \
0  Australia      Armidale      Whitebull Hotel
1  Australia      Balingup    Taste of Balingup
2  Australia    Beechworth  Bridge Road Brewers
3  Australia   Dicky Beach    The Giggling Goat
4  Australia  East Ballina    The Belle General

                              Cuisines  Avg Cost for two in USD  \
0                      Bar Food, Steak                    14.40
1                    Modern Australian                    14.40
```

```
2                          Pizza, Bar Food                     14.40
3  Coffee and Tea, Tea, Modern Australian                      5.04
4                                    Cafe                     14.40

   Price range
0            2
1            2
2            2
3            1
4            2
```

We cannot take all countries. So we can consider higher number of restaurant holding countries like India, USA, Australia

```
Distcost_India= Distcost1max[Distcost1max['Country']=='India']
Distcost_India.head()
```

```
   Country        City                                        Restaurant
Name  \
30   India        Agra                                           Bon
Barbecue
31   India   Ahmedabad                    Patang - The Revolving
Restaurant
32   India   Allahabad                                        Cafe El
Chico
33   India    Amritsar                                   Crystal
Restaurant
34   India  Aurangabad  Madhuban Restaurant - Welcome Hotel Rama
Inter...

                                          Cuisines  \
30                North Indian, Chinese, Continental
31                Continental, Chinese, North Indian
32                           Continental, Italian
33                         North Indian, Mughlai
34  North Indian, Chinese, Continental, Italian, M...

    Avg Cost for two in USD  Price range
30                     19.5            4
31                     23.4            4
32                     13.0            4
33                     10.4            3
34                     23.4            4
```

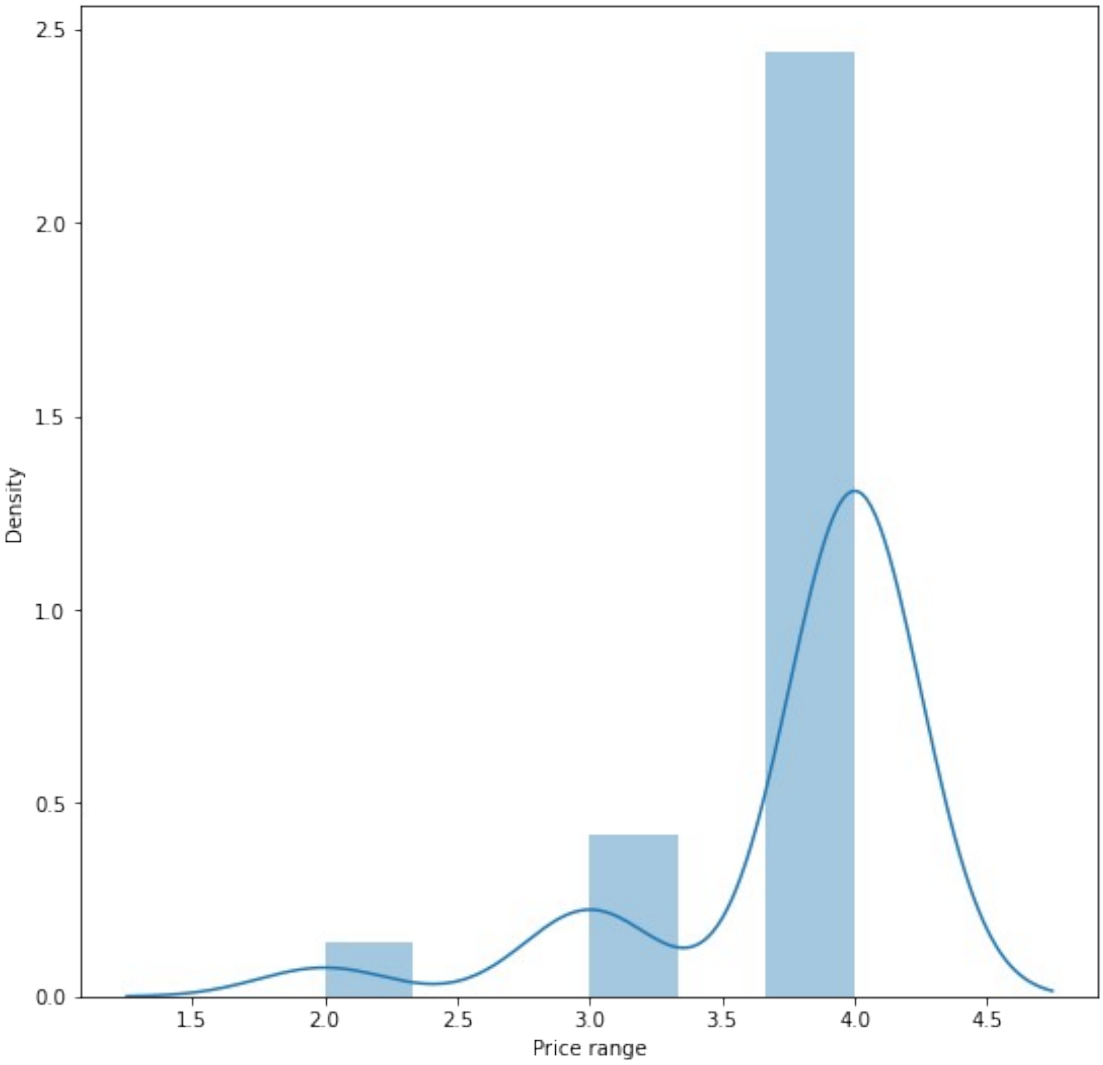
```
Discost_India= Distcost_India.sort_values(by="Price range",
ascending=False)

Discost_India.head()
```

```
   Country       City                Restaurant Name  \
30   India       Agra                   Bon Barbecue
62   India      Noida                RPM - Zanzi Bar
53   India    Lucknow                Barbeque Nation
54   India   Ludhiana  Kitchen At 95 - Hyatt Regency
55   India  Mangalore                Barbeque Nation

                               Cuisines  Avg Cost for two in USD
Price range
30   North Indian, Chinese, Continental                     19.5
4
62                Chinese, North Indian                     26.0
4
53                         North Indian                     20.8
4
54  Mediterranean, Chinese, Continental                     26.0
4
55                North Indian, Chinese                     20.8
4
```

```
sns.distplot(Discost_India['Price range'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\
distributions.py:2557: FutureWarning: `distplot` is a deprecated
function and will be removed in a future version. Please adapt your
code to use either `displot` (a figure-level function with similar
flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
```

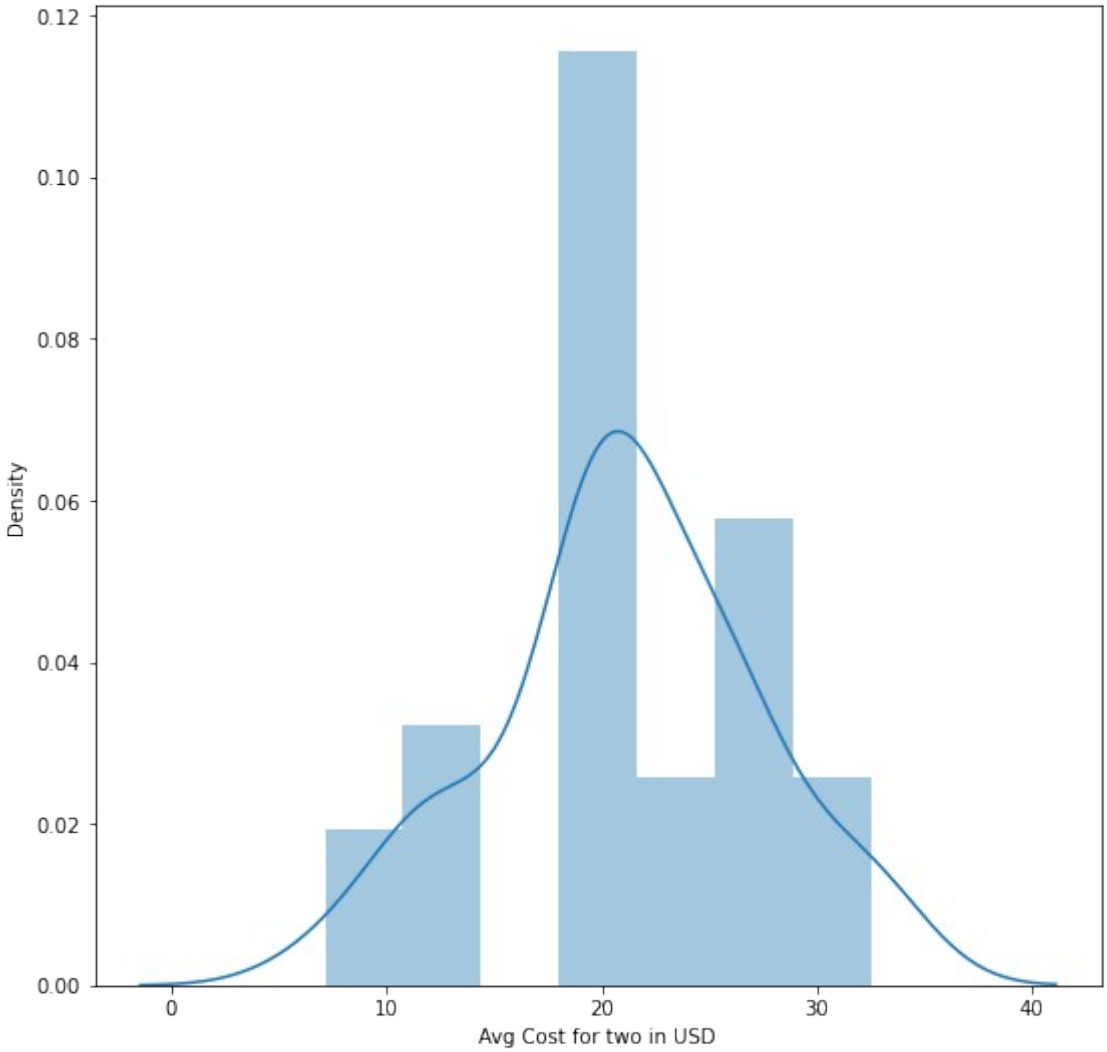
```
<AxesSubplot:xlabel='Price range', ylabel='Density'>
```




```
sns.distplot(Discost_India['Avg Cost for two in USD'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\
distributions.py:2557: FutureWarning: `distplot` is a deprecated
function and will be removed in a future version. Please adapt your
code to use either `displot` (a figure-level function with similar
flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
```

```
<AxesSubplot:xlabel='Avg Cost for two in USD', ylabel='Density'>
```



Distribution cost among the restaurants in India are between $ 10 to $ 30.

```
Distcost_US= Distcost1max[Distcost1max['Country']=='United States']
Distcost_US.head()
```

```
          Country                     City              Restaurant
Name  \
106  United States                   Albany  Henry Campbell's
Steakhouse
107  United States                   Athens                The
National
108  United States                  Augusta              The Chop
House
109  United States                    Boise          Barbacoa
Restaurant
110  United States  Cedar Rapids/Iowa City            Atlas World
```

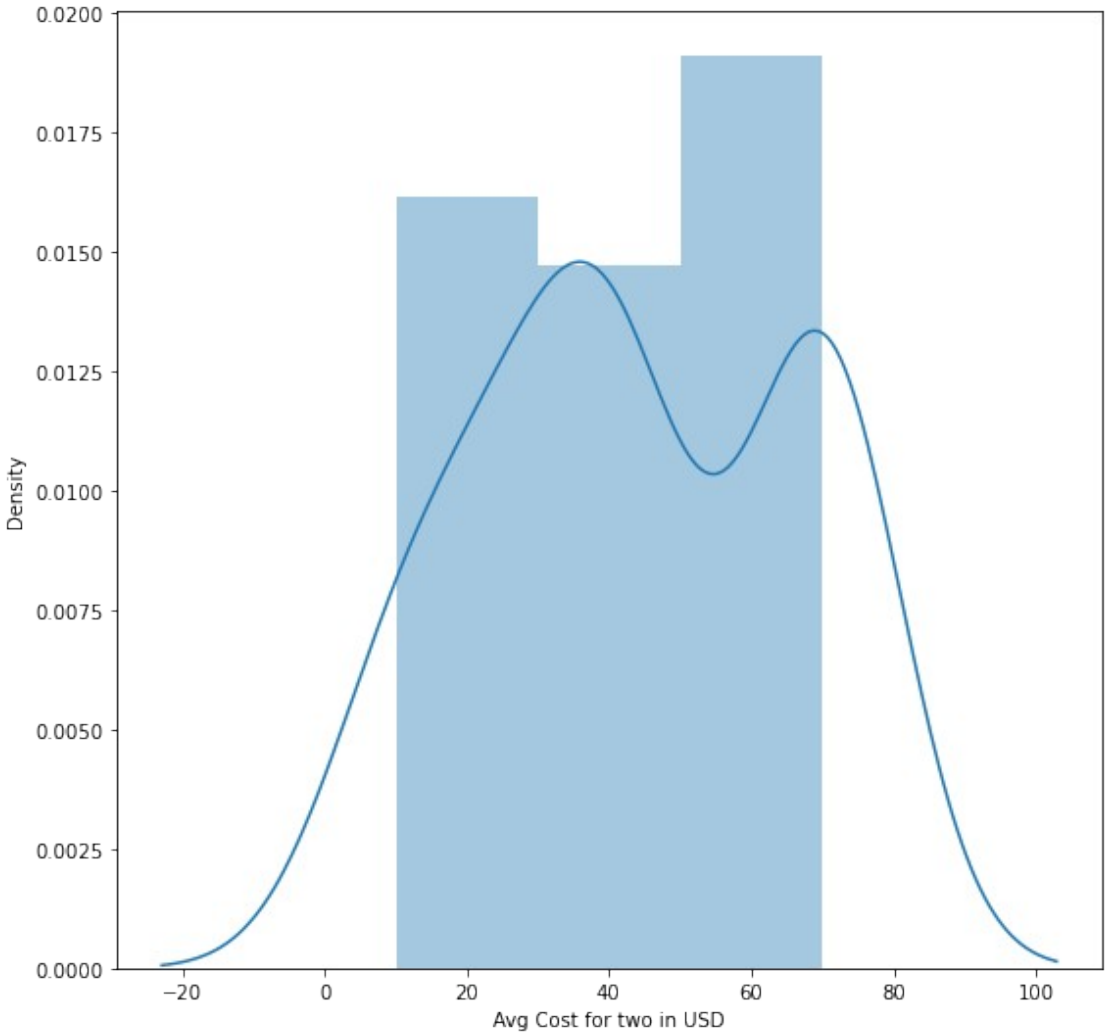
Grill

	Cuisines	Avg Cost for two in USD	Price range
106	Steak, Tapas, Bar Food	70.0	4
107	International, Southern	40.0	3
108	Steak	40.0	3
109	Latin American, Steak	70.0	4
110	International	40.0	3

```
sns.distplot(Distcost_US['Avg Cost for two in USD'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\
distributions.py:2557: FutureWarning: `distplot` is a deprecated
function and will be removed in a future version. Please adapt your
code to use either `displot` (a figure-level function with similar
flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
```

```
<AxesSubplot:xlabel='Avg Cost for two in USD', ylabel='Density'>
```



Distribution cost among the restaurants in United States are between $ 15 to $ 70 dollars

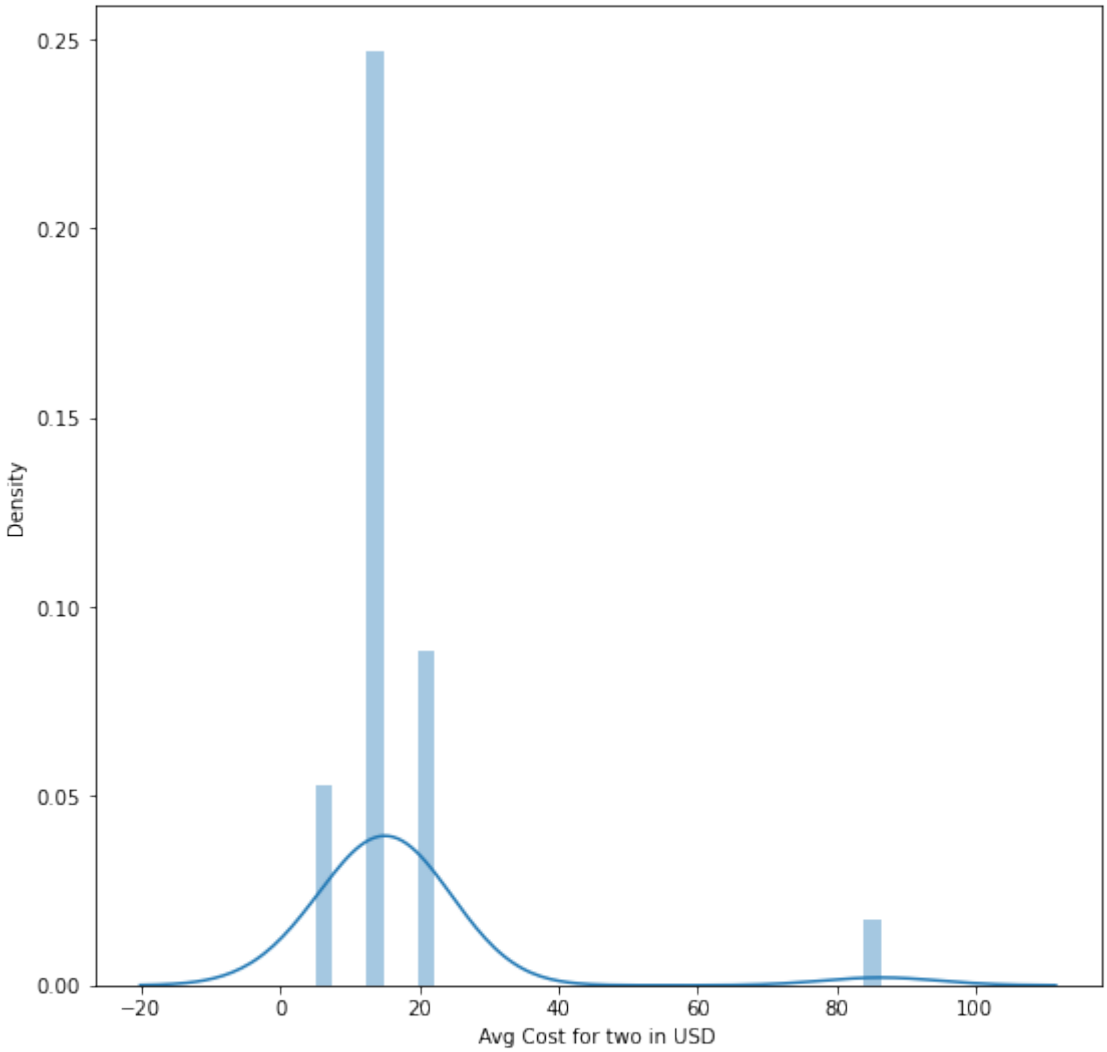
```
Distcost_AU= Distcost1max[Distcost1max['Country']=='Australia']
Distcost_AU.head()
```

```
     Country          City      Restaurant Name  \
0  Australia      Armidale      Whitebull Hotel
1  Australia      Balingup    Taste of Balingup
2  Australia    Beechworth  Bridge Road Brewers
3  Australia   Dicky Beach    The Giggling Goat
4  Australia  East Ballina    The Belle General

                                  Cuisines  Avg Cost for two in USD  \
0                        Bar Food, Steak                    14.40
1                      Modern Australian                    14.40
2                        Pizza, Bar Food                    14.40
3  Coffee and Tea, Tea, Modern Australian                     5.04
4                                   Cafe                    14.40

   Price range
0            2
1            2
2            2
3            1
4            2
```

```
sns.distplot(Distcost_AU['Avg Cost for two in USD'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\
distributions.py:2557: FutureWarning: `distplot` is a deprecated
function and will be removed in a future version. Please adapt your
code to use either `displot` (a figure-level function with similar
flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
```

```
<AxesSubplot:xlabel='Avg Cost for two in USD', ylabel='Density'>
```

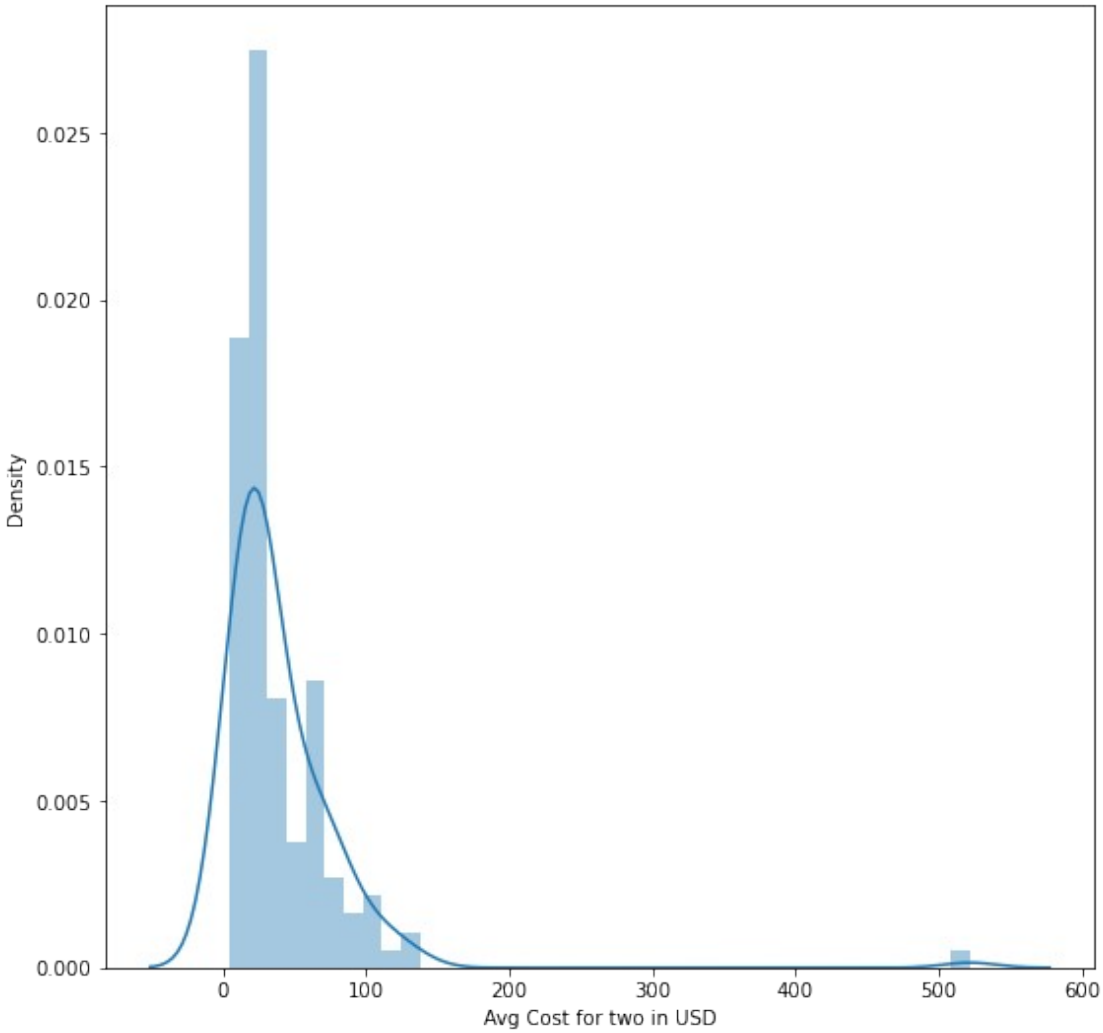


Distribution cost among the restaurants in Australia are between $ 7 to $ 20 dollars.

```
sns.distplot(Distcost1max['Avg Cost for two in USD'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\
distributions.py:2557: FutureWarning: `distplot` is a deprecated
function and will be removed in a future version. Please adapt your
code to use either `displot` (a figure-level function with similar
flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
```

```
<AxesSubplot:xlabel='Avg Cost for two in USD', ylabel='Density'>
```



When we see all over cost distribution for all countries. We can clearly say most of the restaurants are below frequency of 2000.

j.How ratings are distributed among the various factors?

k. Explain the factors in the data that may have an effect on ratings. For example, number of cuisines, cost, delivery option, etc.

```
RD= data2[['Cuisines','City','Country','Avg Cost for two in
USD','Aggregate rating','Has Table booking_Yes','Has Online
delivery_Yes','Locality Verbose']]#sub plot
```

```
cuisines2
```

```
            Country             City                         Locality
Verbose  \
0         Indonesia          Jakarta  Grand Indonesia Mall, Thamrin,
Jakarta
1         Indonesia          Jakarta     Hotel Shangri-La, Sudirman,
Jakarta
2         Indonesia          Jakarta                     Penjaringan,
Jakarta
3         Indonesia          Jakarta                        Senopati,
Jakarta
4         Indonesia          Jakarta                         Thamrin,
Jakarta
...              ...              ...                             ...
...
9521  United Kingdom       Birmingham                   Alum Rock,
Birmingham
9522       Australia      Dicky Beach                Dicky Beach,
Dicky Beach
9523       Australia  Hepburn Springs        Hepburn Springs, Hepburn
Springs
9524       Australia        Inverloch                    Inverloch,
Inverloch
9525       Australia   Lakes Entrance          Lakes Entrance, Lakes
Entrance

      Votes              C1              C2                  C3   C4
C5  \
0      1498         Italian      Continental                 NaN  NaN
NaN
1       873           Asian       Indonesian             Western  NaN
NaN
2       605           Sushi         Japanese                 NaN  NaN
NaN
3       395        Japanese              NaN                 NaN  NaN
NaN
4       243          French          Western                 NaN  NaN
NaN
...     ...             ...             ...                 ...  ...
...
9521     26       Fast Food              NaN                 NaN  NaN
NaN
9522     29  Coffee and Tea              Tea   Modern Australian  NaN
NaN
9523     93         Italian           Fusion                Cafe  NaN
NaN
9524    100          Burger   Coffee and Tea   Modern Australian  NaN
NaN
9525     97       Breakfast   Coffee and Tea                 NaN  NaN
NaN
```

```
       C6   C7   C8
0     NaN  NaN  NaN
1     NaN  NaN  NaN
2     NaN  NaN  NaN
3     NaN  NaN  NaN
4     NaN  NaN  NaN
...   ...  ...  ...
9521  NaN  NaN  NaN
9522  NaN  NaN  NaN
9523  NaN  NaN  NaN
9524  NaN  NaN  NaN
9525  NaN  NaN  NaN

[9526 rows x 12 columns]
```

```
Cuisi1=cuisines2[['C1','Locality Verbose']]
```

```
ratdist1=pd.concat([RD,Cuisi1], axis=1)
```

```
ratdist1
```

```
                                       Cuisines            City  \
0                          Italian, Continental         Jakarta
1                        Asian, Indonesian, Western         Jakarta
2                                  Sushi, Japanese         Jakarta
3                                         Japanese         Jakarta
4                                  French, Western         Jakarta
...                                            ...             ...
9521                                   Fast Food      Birmingham
9522      Coffee and Tea, Tea, Modern Australian     Dicky Beach
9523                        Italian, Fusion, Cafe  Hepburn Springs
9524  Burger, Coffee and Tea, Modern Australian       Inverloch
9525                   Breakfast, Coffee and Tea   Lakes Entrance

             Country  Avg Cost for two in USD  Aggregate rating  \
0          Indonesia                    55.89               4.1
1          Indonesia                    55.89               4.6
2          Indonesia                    34.93               4.9
3          Indonesia                    31.44               4.2
4          Indonesia                    24.45               4.3
...              ...                      ...               ...
9521  United Kingdom                    13.70               2.8
9522       Australia                     5.04               3.6
9523       Australia                     5.04               3.8
9524       Australia                     5.04               3.7
9525       Australia                     5.04               3.8

      Has Table booking_Yes  Has Online delivery_Yes  \
0                         0                        0
1                         0                        0
2                         0                        0
```

```
3                        0                        0
4                        0                        0
...                    ...                      ...
9521                     0                        0
9522                     0                        0
9523                     0                        0
9524                     0                        0
9525                     0                        0

                           Locality Verbose             C1  \
0     Grand Indonesia Mall, Thamrin, Jakarta        Italian
1        Hotel Shangri-La, Sudirman, Jakarta          Asian
2                     Penjaringan, Jakarta          Sushi
3                        Senopati, Jakarta       Japanese
4                         Thamrin, Jakarta         French
...                                     ...            ...
9521                  Alum Rock, Birmingham      Fast Food
9522               Dicky Beach, Dicky Beach  Coffee and Tea
9523       Hepburn Springs, Hepburn Springs        Italian
9524                    Inverloch, Inverloch         Burger
9525         Lakes Entrance, Lakes Entrance      Breakfast

                           Locality Verbose
0     Grand Indonesia Mall, Thamrin, Jakarta
1        Hotel Shangri-La, Sudirman, Jakarta
2                     Penjaringan, Jakarta
3                        Senopati, Jakarta
4                         Thamrin, Jakarta
...                                     ...
9521                  Alum Rock, Birmingham
9522               Dicky Beach, Dicky Beach
9523       Hepburn Springs, Hepburn Springs
9524                    Inverloch, Inverloch
9525         Lakes Entrance, Lakes Entrance

[9526 rows x 10 columns]
```

```
ratdist1.drop(columns='Locality Verbose', axis=1, inplace = True)
```

```
ratdist1
```

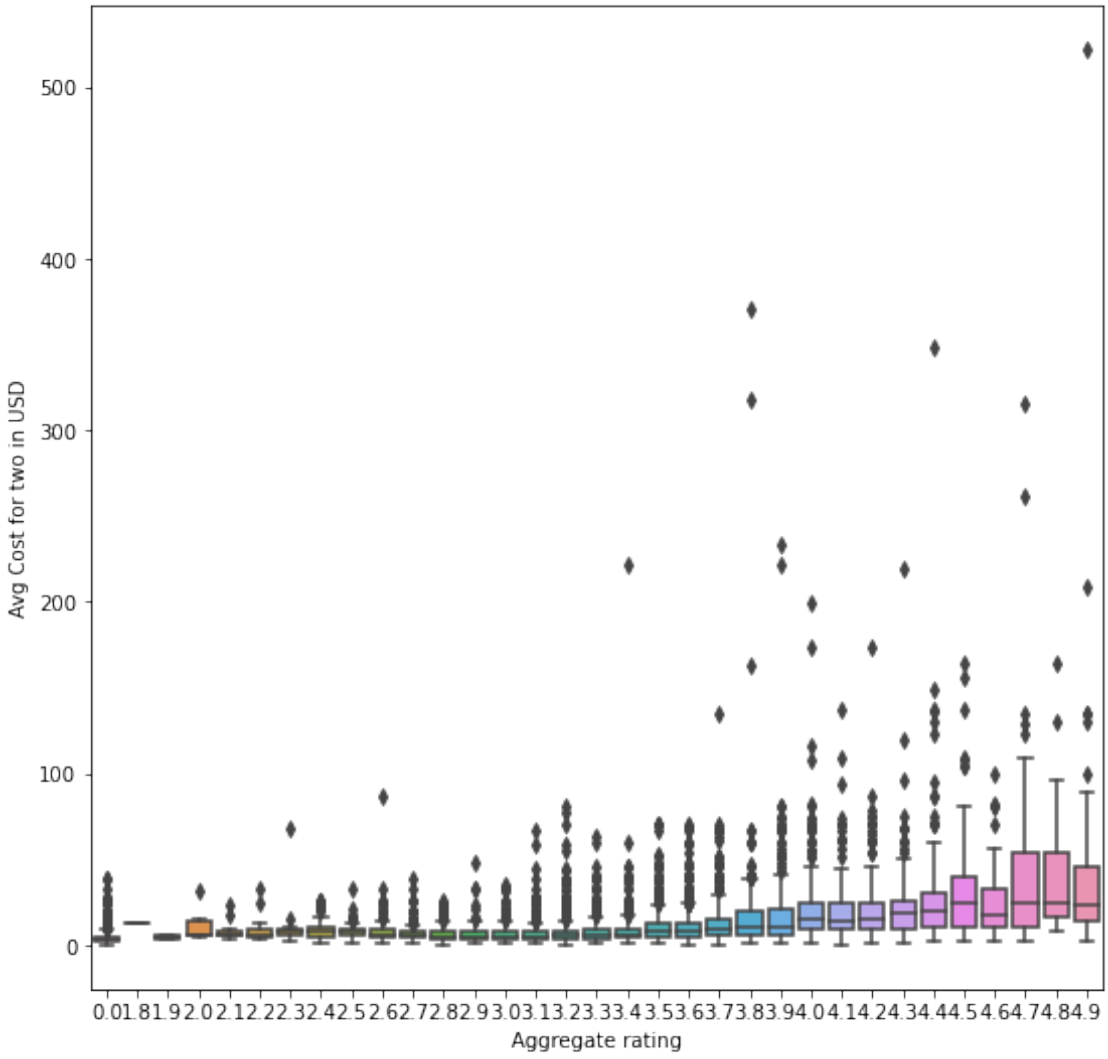
```
                                     Cuisines             City  \
0                        Italian, Continental          Jakarta
1                  Asian, Indonesian, Western          Jakarta
2                            Sushi, Japanese          Jakarta
3                                    Japanese          Jakarta
4                            French, Western          Jakarta
...                                      ...              ...
9521                             Fast Food       Birmingham
9522     Coffee and Tea, Tea, Modern Australian      Dicky Beach
```

```
9523                      Italian, Fusion, Cafe  Hepburn Springs
9524  Burger, Coffee and Tea, Modern Australian        Inverloch
9525                  Breakfast, Coffee and Tea   Lakes Entrance

             Country  Avg Cost for two in USD  Aggregate rating  \
0          Indonesia                    55.89               4.1
1          Indonesia                    55.89               4.6
2          Indonesia                    34.93               4.9
3          Indonesia                    31.44               4.2
4          Indonesia                    24.45               4.3
...              ...                      ...               ...
9521  United Kingdom                    13.70               2.8
9522       Australia                     5.04               3.6
9523       Australia                     5.04               3.8
9524       Australia                     5.04               3.7
9525       Australia                     5.04               3.8

      Has Table booking_Yes  Has Online delivery_Yes             C1
0                         0                        0        Italian
1                         0                        0          Asian
2                         0                        0          Sushi
3                         0                        0       Japanese
4                         0                        0         French
...                     ...                      ...            ...
9521                      0                        0      Fast Food
9522                      0                        0  Coffee and Tea
9523                      0                        0        Italian
9524                      0                        0         Burger
9525                      0                        0      Breakfast

[9526 rows x 8 columns]
```

Distribution Between Ratings and Average Cost

```
sns.boxplot(data= ratdist1, x="Aggregate rating", y="Avg Cost for two
in USD")
```

```
<AxesSubplot:xlabel='Aggregate rating', ylabel='Avg Cost for two in
USD'>
```



As we can see many Outliers, we can takeout the outliers to see the actual distribution

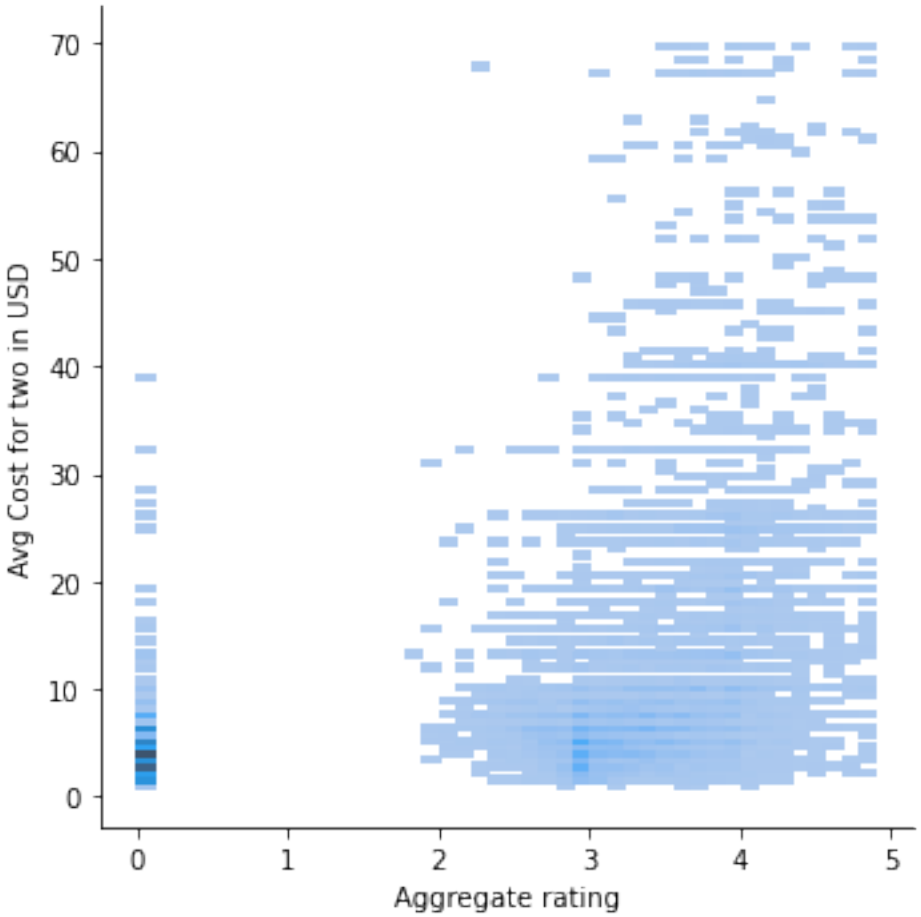
```
ratdist2= ratdist1.loc[ratdist1['Avg Cost for two in USD']<=70]
```

```
ratdist2
```

```
                                      Cuisines             City  \
0                         Italian, Continental          Jakarta
1                  Asian, Indonesian, Western          Jakarta
2                              Sushi, Japanese          Jakarta
3                                     Japanese          Jakarta
4                              French, Western          Jakarta
...                                        ...              ...
9521                                Fast Food       Birmingham
9522     Coffee and Tea, Tea, Modern Australian      Dicky Beach
9523                      Italian, Fusion, Cafe  Hepburn Springs
```

```
9524  Burger, Coffee and Tea, Modern Australian        Inverloch
9525                  Breakfast, Coffee and Tea   Lakes Entrance

             Country  Avg Cost for two in USD  Aggregate rating  \
0          Indonesia                    55.89               4.1
1          Indonesia                    55.89               4.6
2          Indonesia                    34.93               4.9
3          Indonesia                    31.44               4.2
4          Indonesia                    24.45               4.3
...              ...                      ...               ...
9521  United Kingdom                    13.70               2.8
9522       Australia                     5.04               3.6
9523       Australia                     5.04               3.8
9524       Australia                     5.04               3.7
9525       Australia                     5.04               3.8

      Has Table booking_Yes  Has Online delivery_Yes             C1
0                         0                        0        Italian
1                         0                        0          Asian
2                         0                        0          Sushi
3                         0                        0       Japanese
4                         0                        0         French
...                     ...                      ...            ...
9521                      0                        0      Fast Food
9522                      0                        0  Coffee and Tea
9523                      0                        0        Italian
9524                      0                        0         Burger
9525                      0                        0      Breakfast

[9445 rows x 8 columns]
```

```
sns.displot(ratdist2, x='Aggregate rating', y='Avg Cost for two in
USD');
```



So from this distribution plot between Aggregate rating and Average Cost for two. We can derive that ratings are not much affected from the Cost.

Distribution Between Number of Cuisines and Ratings

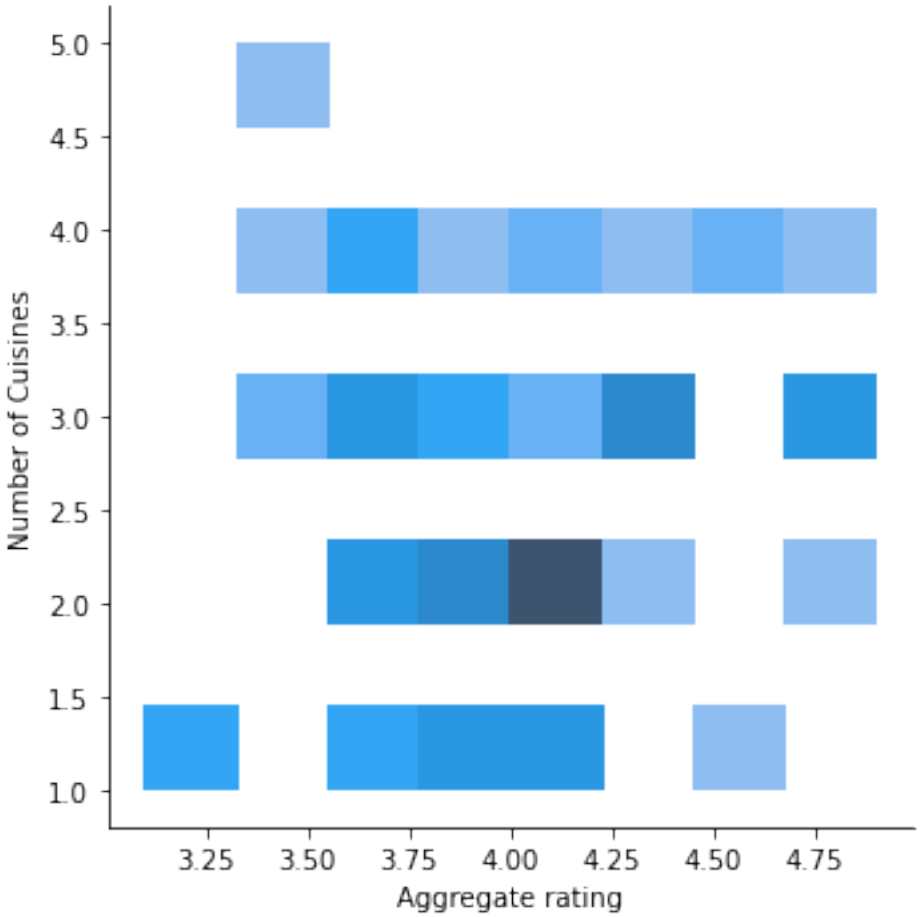
TopVotedcuisines3

	Country	City	Locality	\
5	India	Bangalore	Indiranagar	
12	India	New Delhi	Hauz Khas Village	
6	India	Kolkata	Park Street Area	
42	India	New Delhi	Connaught Place	
11	India	New Delhi	Khan Market	
..	...	...	...	
1	Brazil	SÌ£o Paulo	Jardim Paulista	
3	Brazil	Rio de Janeiro	Ipanema	
49	Singapore	Singapore	Hillcrest, Bukit Timah	
2	Brazil	SÌ£o Paulo	Itaim Bibi	

```
41      India       New Delhi              Mahipalpur

                                        Cuisines  Max Votings for
cuisines  \
5                     Italian, American, Pizza
10934
12    Continental, American, Asian, NorthIndian
7931
6                     Continental, NorthIndian
7574
42                                  SouthIndian
5172
11         Italian, Continental, European, Cafe
4986
..                                           ...
...
1                                      French
73
3                           Brazilian, BarFood
49
49                                     Italian
35
2                  French, Brazilian, Beverages
30
41  NorthIndian, Chinese, Continental, FastFood
23

    Number of Cuisines  Aggregate rating
5                    3              4.3
12                   4              4.4
6                    2              3.7
42                   1              3.1
11                   4              4.6
..                 ...              ...
1                    1              4.6
3                    2              4.2
49                   1              3.3
2                    3              4.9
41                   4              3.8

[67 rows x 7 columns]
```

```
sns.displot(TopVotedcuisines3,x='Aggregate rating', y='Number of
Cuisines')
```

```
<seaborn.axisgrid.FacetGrid at 0x1f35dd47df0>
```

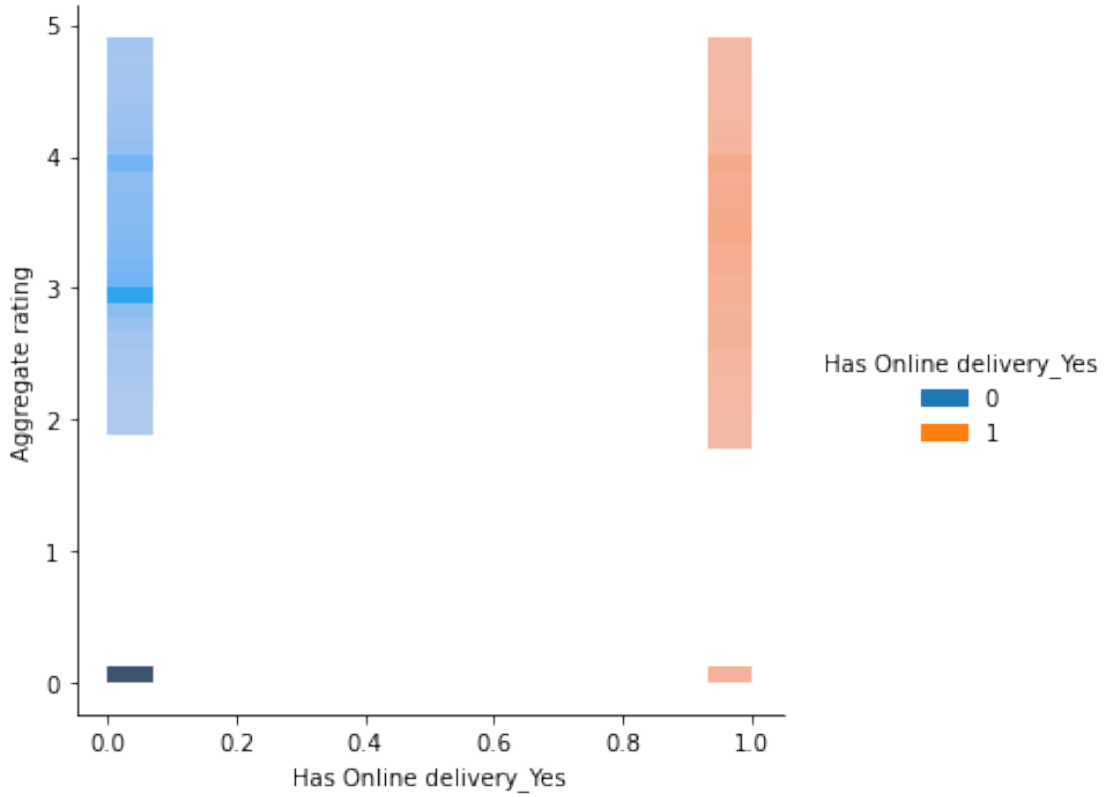


From this plot we can clearly identify that, the restaurants having 2 to 3 Cuisines are having maximum ratings. Moreover, You can refer above TopvotedCuisines visualization. As it is proved that, there is a positive relatioship between them.

Distribution Between Ratings and Restaurants with delivery option

```
sns.displot(data2,x='Has Online delivery_Yes', y='Aggregate rating',
hue='Has Online delivery_Yes')
```

```
<seaborn.axisgrid.FacetGrid at 0x1f35dedb3a0>
```




```
#In this Plot 0 refers restaurants that does not have delivery option
and 1 refers to restaurants that has delivery option
```

From this plot we can clearly state that delivery option is not affecting the ratings.

From the above findings, we can conclude that ratings are postively affected only by number of cuisines served by a restaurant.

Even average costing does not affect much.