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

In [2]:
```
# File read
df = pd.read_csv('zomato.csv',encoding= 'latin-1')
```

In [3]:
```
df.head()
```

Out[3]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Localit Verbos
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenu...	Century City Mall, Poblacion, Makati City	Century Cit Ma Poblacio Makati Cit Mak
1	6304287	Izakaya Kikufuji	162	Makati City	Little Tokyo, 2277 Chino Roces Avenue, Legaspi...	Little Tokyo, Legaspi Village, Makati City	Little Toky Legasp Villag Makati Cit Ma
2	6300002	Heat - Edsa Shangri-La	162	Mandaluyong City	Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...	Edsa Shangri-La, Ortigas, Mandaluyong City	Edsa Shangr La, Ortiga Mandaluyon City, Ma
3	6318506	Ooma	162	Mandaluyong City	Third Floor, Mega Fashion Hall, SM Megamall, O...	SM Megamall, Ortigas, Mandaluyong City	SM Megama Ortiga Mandaluyon Cit Mandal
4	6314302	Sambo Kojin	162	Mandaluyong City	Third Floor, Mega Atrium, SM Megamall, Ortigas...	SM Megamall, Ortigas, Mandaluyong City	SM Megama Ortiga Mandaluyon Cit Mandal

5 rows × 21 columns

In [4]:
```
df.columns
```

Out[4]:
```
Index(['Restaurant ID', 'Restaurant Name', 'Country Code', 'City', 'Address',
       'Locality', 'Locality Verbose', 'Longitude', 'Latitude', 'Cuisines',
       'Average Cost for two', 'Currency', 'Has Table booking',
       'Has Online delivery', 'Is delivering now', 'Switch to order menu',
       'Price range', 'Aggregate rating', 'Rating color', 'Rating text',
       'Votes'],
      dtype='object')
```

In [5]:
```
df.isnull().sum()
```

Out[5]:
```
Restaurant ID           0
Restaurant Name         0
Country Code            0
City                    0
Address                 0
Locality                0
Locality Verbose        0
Longitude               0
Latitude                0
Cuisines                9
Average Cost for two    0
Currency                0
Has Table booking       0
Has Online delivery     0
Is delivering now       0
Switch to order menu    0
Price range             0
Aggregate rating        0
Rating color            0
Rating text             0
Votes                   0
dtype: int64
```

In [6]:
```
df.info()
```

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

In [7]:
```
df.describe()
```

Out[7]:

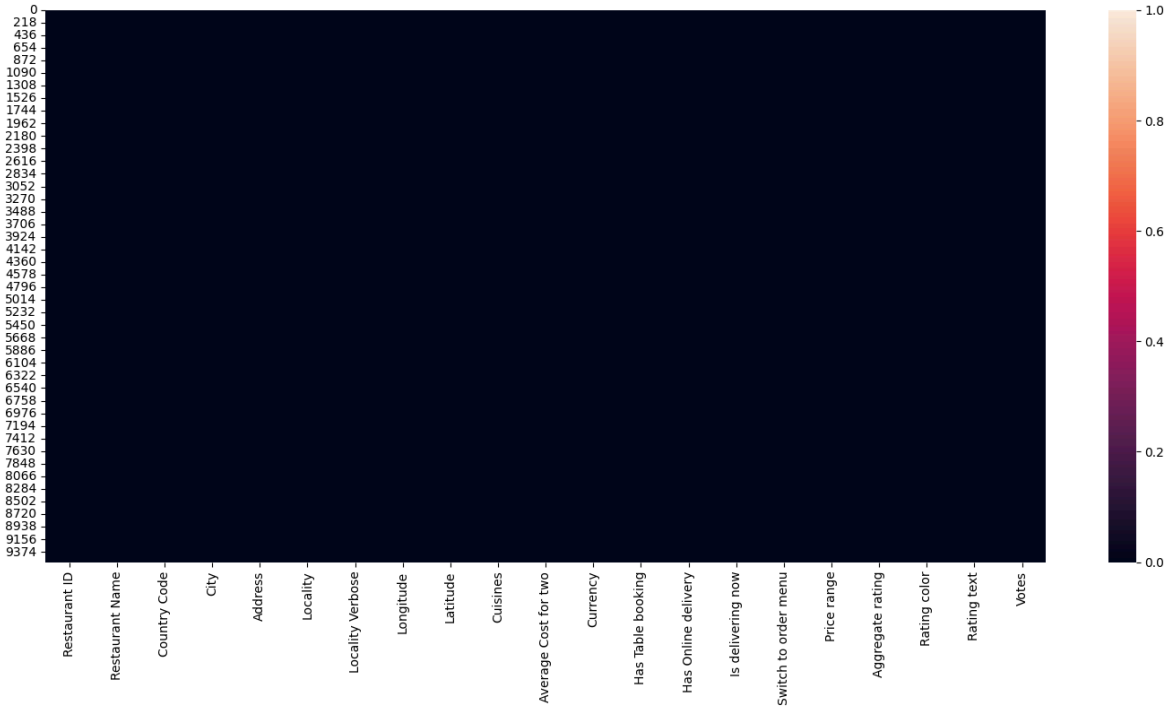
	Restaurant ID	Country Code	Longitude	Latitude	Average Cost for two	Price range
count	9.551000e+03	9551.000000	9551.000000	9551.000000	9551.000000	9551.000000
mean	9.051128e+06	18.365616	64.126574	25.854381	1199.210763	1.804837
std	8.791521e+06	56.750546	41.467058	11.007935	16121.183073	0.905609
min	5.300000e+01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

In [8]:
```
[col for col in df.columns if df[col].isnull().sum()]
```

Out[8]:
```
['Cuisines']
```

In [25]:
```
sns.heatmap(data = df.isnull())
```

Out[25]:
```
<Axes: >
```



In [10]:
```
df_country = pd.read_excel('Country-Code.xlsx')
```

In [11]:
```
df_country.head()
```

Out[11]:

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

In [12]:
```
final_df = pd.merge(df,df_country,on='Country Code',how="left")
```

In [13]:
```
final_df.Country.value_counts()
```

Out[13]:
```
Country
India             8652
United States      434
United Kingdom      80
Brazil              60
UAE                 60
South Africa        60
New Zealand         40
Turkey              34
Australia           24
Phillipines         22
Indonesia           21
Singapore           20
Qatar               20
Sri Lanka           20
Canada               4
Name: count, dtype: int64
```

In [14]:
```
country_name = final_df.Country.value_counts().index
```

In [15]:
```
country_name
```

Out[15]:
```
Index(['India', 'United States', 'United Kingdom', 'Brazil', 'UAE',
       'South Africa', 'New Zealand', 'Turkey', 'Australia', 'Phillipines',
       'Indonesia', 'Singapore', 'Qatar', 'Sri Lanka', 'Canada'],
      dtype='object', name='Country')
```

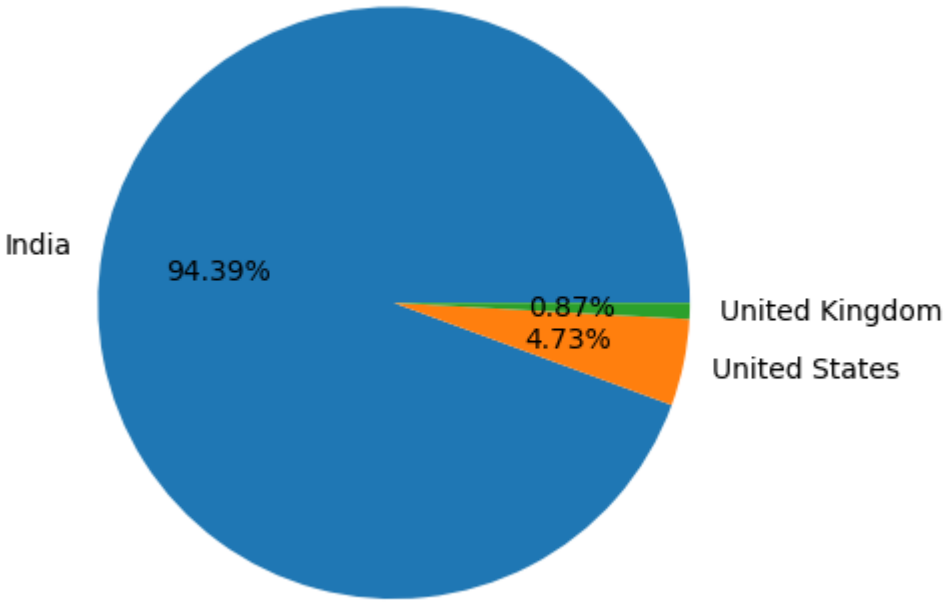
In [16]:
```
country_val = final_df.Country.value_counts().values
```

In [17]:
```
country_val
```

Out[17]:
```
array([8652,  434,   80,   60,   60,   60,   40,   34,   24,   22,   21,
         20,   20,   20,    4], dtype=int64)
```

In [18]:
```
plt.pie(country_val[:3],labels=country_name[:3],autopct="%1.2f%%")
```

Out[18]:
```
([<matplotlib.patches.Wedge at 0x17d47b5aa50>,
  <matplotlib.patches.Wedge at 0x17d480d91d0>,
  <matplotlib.patches.Wedge at 0x17d480db090>],
 [Text(-1.0829742700952103, 0.19278674827836725, 'India'),
  Text(1.077281715838356, -0.22240527134123297, 'United States'),
  Text(1.0995865153823035, -0.03015783794312073, 'United Kingdom')],
 [Text(-0.590713238233751, 0.10515640815183668, '94.39%'),
  Text(0.5876082086391032, -0.12131196618612707, '4.73%'),
  Text(0.5997744629358018, -0.01644972978715676, '0.87%')])
```



In [19]:
```
#Observation: Zomato maximum records or transition are from India after that USA
```

In [20]:
```
final_df.columns
```

Out[20]:
```
Index(['Restaurant ID', 'Restaurant Name', 'Country Code', 'City', 'Address',
       'Locality', 'Locality Verbose', 'Longitude', 'Latitude', 'Cuisines',
       'Average Cost for two', 'Currency', 'Has Table booking',
       'Has Online delivery', 'Is delivering now', 'Switch to order menu',
       'Price range', 'Aggregate rating', 'Rating color', 'Rating text',
       'Votes', 'Country'],
      dtype='object')
```

In [21]:
```
rating = final_df.groupby(['Aggregate rating','Rating color','Rating text']).siz
```

In [22]:
```
rating
```

Out[22]:

	Aggregate rating	Rating color	Rating text	Rating Count
0	0.0	White	Not rated	2148
1	1.8	Red	Poor	1
2	1.9	Red	Poor	2
3	2.0	Red	Poor	7
4	2.1	Red	Poor	15
5	2.2	Red	Poor	27
6	2.3	Red	Poor	47
7	2.4	Red	Poor	87
8	2.5	Orange	Average	110
9	2.6	Orange	Average	191
10	2.7	Orange	Average	250
11	2.8	Orange	Average	315
12	2.9	Orange	Average	381
13	3.0	Orange	Average	468
14	3.1	Orange	Average	519
15	3.2	Orange	Average	522
16	3.3	Orange	Average	483
17	3.4	Orange	Average	498
18	3.5	Yellow	Good	480
19	3.6	Yellow	Good	458
20	3.7	Yellow	Good	427
21	3.8	Yellow	Good	400
22	3.9	Yellow	Good	335
23	4.0	Green	Very Good	266
24	4.1	Green	Very Good	274
25	4.2	Green	Very Good	221
26	4.3	Green	Very Good	174
27	4.4	Green	Very Good	144
28	4.5	Dark Green	Excellent	95
29	4.6	Dark Green	Excellent	78
30	4.7	Dark Green	Excellent	42
31	4.8	Dark Green	Excellent	25
32	4.9	Dark Green	Excellent	61

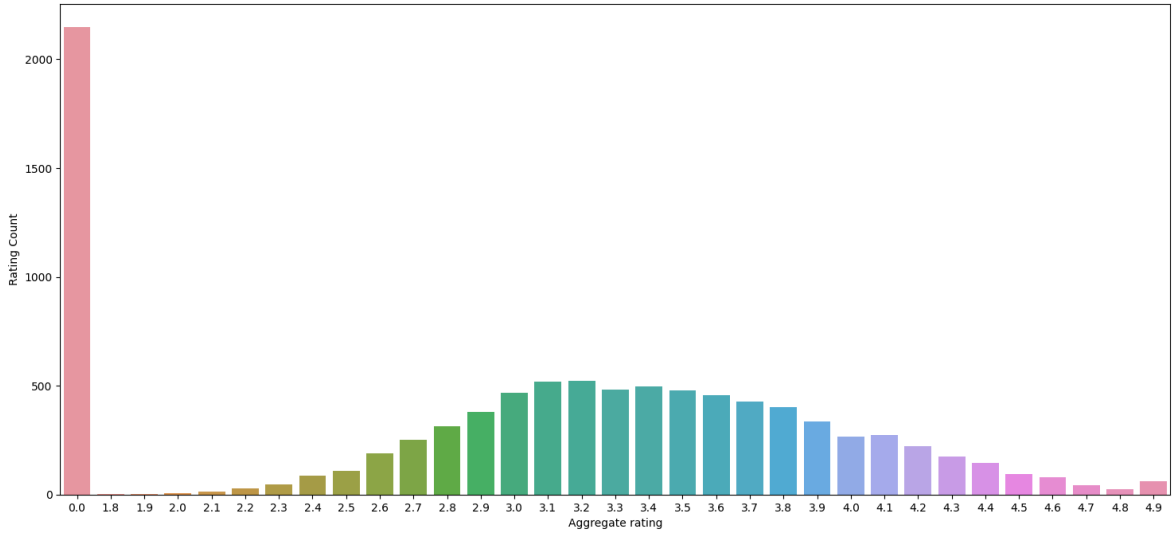
In [23]:
```
rating.head()
```

Out[23]:

	Aggregate rating	Rating color	Rating text	Rating Count
0	0.0	White	Not rated	2148
1	1.8	Red	Poor	1
2	1.9	Red	Poor	2
3	2.0	Red	Poor	7
4	2.1	Red	Poor	15

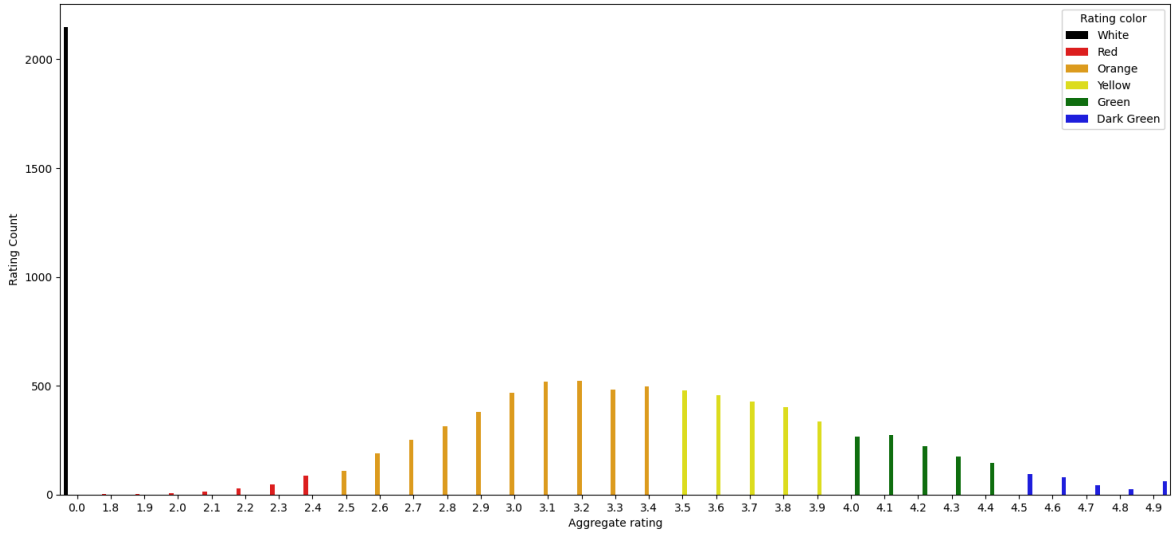
In [24]:
```
plt.rcParams['figure.figsize']= (18,8)
sns.barplot(x='Aggregate rating',y = 'Rating Count',data = rating)
```

Out[24]: <Axes: xlabel='Aggregate rating', ylabel='Rating Count'>



In [35]:
```
sns.barplot(x='Aggregate rating',y = 'Rating Count',hue = "Rating color",data =
```

Out[35]: <Axes: xlabel='Aggregate rating', ylabel='Rating Count'>

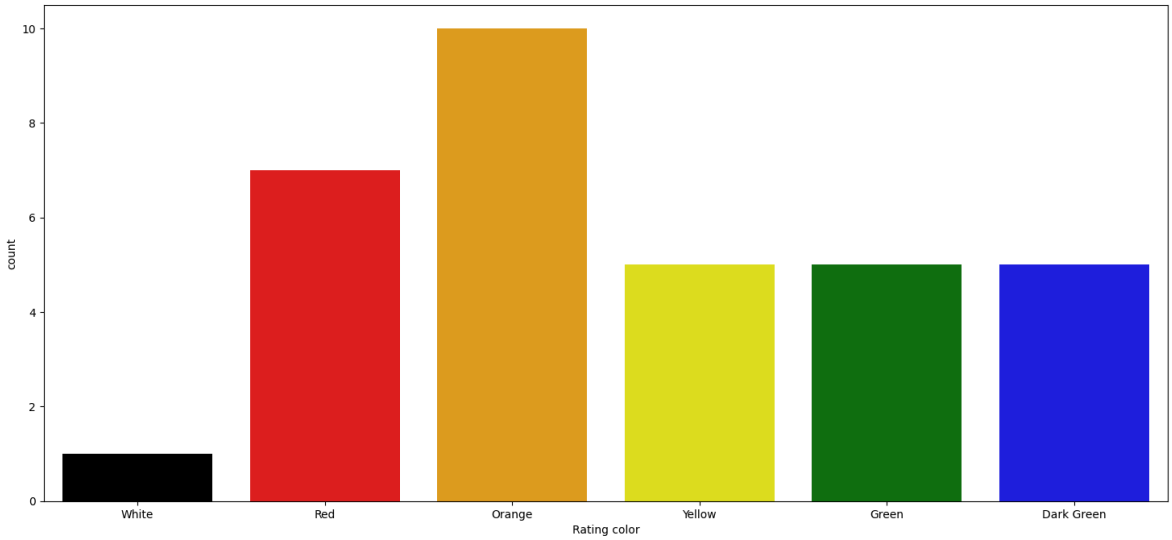


In [30]:
```
# From the above graph we observe that:
# 1- Not rated count is very high (black color)
```

```
# 2- Maximum number of rating are between 2.5 to 3.4
```

In [34]:
```
#count plot
sns.countplot(x="Rating color",data = rating,palette = ['black','red','orange',"
```

Out[34]:
```
<Axes: xlabel='Rating color', ylabel='count'>
```



In [42]:
```
### find the countries name that has given zero rating
final_df[final_df['Aggregate rating'] == 0].groupby('Country').size().reset_inde
```

Out[42]:

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

In [43]:
```
#observation
#Maximum Numbers of 0 ratings are from India Customers
```

In [45]:
```
## Find Out which currency is used by which country
final_df.groupby(['Country','Currency']).size().reset_index()
```

Out[45]:

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

In [48]:
```
#Which country do have online option
final_df.groupby(['Country','Has Online delivery']).size().reset_index()
```

Out[48]:

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

In [54]:
```
#observation: Online deliveries available in India & UAE
```

In [53]:
```
final_df[final_df['Has Online delivery'] == "Yes"]['Country']
```

Out[53]:
```
565       UAE
566       UAE
571       UAE
572       UAE
573       UAE
        ...
9166    India
9168    India
9170    India
9171    India
9194    India
Name: Country, Length: 2451, dtype: object
```

In [51]:
```
final_df[final_df['Has Online delivery'] == "Yes"].Country.value_counts()
```

Out[51]:
```
Country
India    2423
UAE        28
Name: count, dtype: int64
```

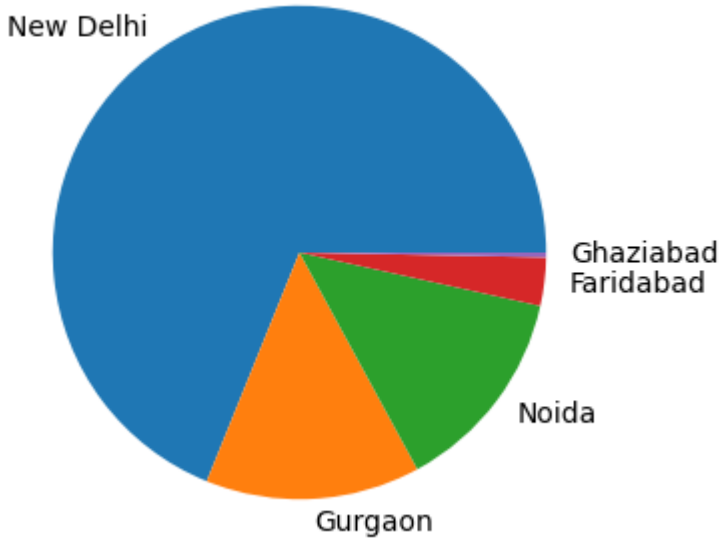
In [55]:
```
# Creat a pie chart for cities distribution
```

In [72]:
```
city_lables = final_df.City.value_counts().index
```

In [73]:
```
city_values = final_df.City.value_counts().values
```

In [79]:
```
plt.figure(figsize=(4, 4))
plt.pie(city_values[:5],labels = city_lables[:5])
```

Out[79]:
```
([<matplotlib.patches.Wedge at 0x17d542c1290>,
  <matplotlib.patches.Wedge at 0x17d542c2090>,
  <matplotlib.patches.Wedge at 0x17d542c3250>,
  <matplotlib.patches.Wedge at 0x17d542c05d0>,
  <matplotlib.patches.Wedge at 0x17d542c8d10>],
 [Text(-0.6145352824185932, 0.9123301960708633, 'New Delhi'),
  Text(0.0623675251198054, -1.0982305276263407, 'Gurgaon'),
  Text(0.8789045225625368, -0.6614581167535246, 'Noida'),
  Text(1.0922218418223437, -0.13058119407559224, 'Faridabad'),
  Text(1.099946280005612, -0.010871113182029924, 'Ghaziabad')])
```



In [80]:
```
final_df.columns
```

Out[80]:
```
Index(['Restaurant ID', 'Restaurant Name', 'Country Code', 'City', 'Address',
       'Locality', 'Locality Verbose', 'Longitude', 'Latitude', 'Cuisines',
       'Average Cost for two', 'Currency', 'Has Table booking',
       'Has Online delivery', 'Is delivering now', 'Switch to order menu',
       'Price range', 'Aggregate rating', 'Rating color', 'Rating text',
       'Votes', 'Country'],
      dtype='object')
```

In [81]:
```
final_df.head()
```

Out[81]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Localit Verbos
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenu...	Century City Mall, Poblacion, Makati City	Century Cit Ma Poblacio Makati Cit Mak
1	6304287	Izakaya Kikufuji	162	Makati City	Little Tokyo, 2277 Chino Roces Avenue, Legaspi...	Little Tokyo, Legaspi Village, Makati City	Little Toky Legasp Villag Makati Cit Ma
2	6300002	Heat - Edsa Shangri-La	162	Mandaluyong City	Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...	Edsa Shangri-La, Ortigas, Mandaluyong City	Edsa Shangr La, Ortiga Mandaluyon City, Ma
3	6318506	Ooma	162	Mandaluyong City	Third Floor, Mega Fashion Hall, SM Megamall, O...	SM Megamall, Ortigas, Mandaluyong City	SM Megama Ortiga Mandaluyon Cit Mandal
4	6314302	Sambo Kojin	162	Mandaluyong City	Third Floor, Mega Atrium, SM Megamall, Ortigas...	SM Megamall, Ortigas, Mandaluyong City	SM Megama Ortiga Mandaluyon Cit Mandal

5 rows × 22 columns

In [86]:
```
final_df['Cuisines'].value_counts(ascending=False).head(10)
```

Out[86]:
```
Cuisines
North Indian                        936
North Indian, Chinese               511
Chinese                             354
Fast Food                           354
North Indian, Mughlai               334
Cafe                                299
Bakery                              218
North Indian, Mughlai, Chinese      197
Bakery, Desserts                    170
Street Food                         149
Name: count, dtype: int64
```

In [ ]: