zomato-analysis

August 3, 2024

[9]:
```python
import pandas as  pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as  sns
```

[10]:
```python
zom = pd.read_csv('zomato.csv', encoding='latin-1')
zom.head()
```

[10]:
```
   Restaurant ID         Restaurant Name  Country Code              City  \
0        6317637        Le Petit Souffle           162       Makati City
1        6304287        Izakaya Kikufuji           162       Makati City
2        6300002  Heat - Edsa Shangri-La           162  Mandaluyong City
3        6318506                    Ooma           162  Mandaluyong City
4        6314302             Sambo Kojin           162  Mandaluyong City

                                             Address  \
0  Third Floor, Century City Mall, Kalayaan Avenu…
1  Little Tokyo, 2277 Chino Roces Avenue, Legaspi…
2  Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal…
3  Third Floor, Mega Fashion Hall, SM Megamall, O…
4  Third Floor, Mega Atrium, SM Megamall, Ortigas…

                                     Locality  \
0   Century City Mall, Poblacion, Makati City
1  Little Tokyo, Legaspi Village, Makati City
2  Edsa Shangri-La, Ortigas, Mandaluyong City
3      SM Megamall, Ortigas, Mandaluyong City
4      SM Megamall, Ortigas, Mandaluyong City

                                    Locality Verbose   Longitude   Latitude  \
0  Century City Mall, Poblacion, Makati City, Mak…  121.027535  14.565443
1  Little Tokyo, Legaspi Village, Makati City, Ma…  121.014101  14.553708
2  Edsa Shangri-La, Ortigas, Mandaluyong City, Ma…  121.056831  14.581404
3  SM Megamall, Ortigas, Mandaluyong City, Mandal…  121.056475  14.585318
4  SM Megamall, Ortigas, Mandaluyong City, Mandal…  121.057508  14.584450

                           Cuisines  …          Currency Has Table booking  \
0        French, Japanese, Desserts  …  Botswana Pula(P)               Yes
1                          Japanese  …  Botswana Pula(P)               Yes
2  Seafood, Asian, Filipino, Indian  …  Botswana Pula(P)               Yes
3                   Japanese, Sushi  …  Botswana Pula(P)                No
4                  Japanese, Korean  …  Botswana Pula(P)               Yes

  Has Online delivery Is delivering now Switch to order menu Price range  \
0                  No                No                   No           3
1                  No                No                   No           3
2                  No                No                   No           4
3                  No                No                   No           4
4                  No                No                   No           4

   Aggregate rating  Rating color Rating text Votes
0               4.8    Dark Green   Excellent   314
1               4.5    Dark Green   Excellent   591
2               4.4         Green   Very Good   270
3               4.9    Dark Green   Excellent   365
4               4.8    Dark Green   Excellent   229

[5 rows x 21 columns]
```

[11]:
```
zom.columns
```

[11]:
```
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')
```

[12]:
```
zom.describe()
```

[12]:
```
       Restaurant ID  Country Code    Longitude     Latitude  \
count   9.551000e+03   9551.000000  9551.000000  9551.000000
mean    9.051128e+06     18.365616    64.126574    25.854381
std     8.791521e+06     56.750546    41.467058    11.007935
min     5.300000e+01      1.000000  -157.948486   -41.330428
25%     3.019625e+05      1.000000    77.081343    28.478713
50%     6.004089e+06      1.000000    77.191964    28.570469
75%     1.835229e+07      1.000000    77.282006    28.642758
max     1.850065e+07    216.000000   174.832089    55.976980

       Average Cost for two  Price range  Aggregate rating        Votes
count           9551.000000  9551.000000       9551.000000  9551.000000
mean            1199.210763     1.804837          2.666370   156.909748
```

```
std          16121.183073     0.905609          1.516378    430.169145
min              0.000000     1.000000          0.000000      0.000000
25%            250.000000     1.000000          2.500000      5.000000
50%            400.000000     2.000000          3.200000     31.000000
75%            700.000000     2.000000          3.700000    131.000000
max         800000.000000     4.000000          4.900000  10934.000000
```

[13]:
```
zom.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
```

0.1 In Data Analysis What All Things We Do

1. Missing Values
2. Explore About the Numerical Variables
3. Explore About categorical Variables
4. Finding Relationship between features

[14]:
```
zom.isnull().sum()
```

```
[14]: 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
```

```
[15]: [features for features in zom.columns if zom[features].isnull().sum()>0]
```

```
[15]: ['Cuisines']
```

```
[16]: coun = pd.read_excel("Country-Code.xlsx")
      coun.head()
```

```
[16]:    Country Code    Country
      0             1      India
      1            14  Australia
      2            30     Brazil
      3            37     Canada
      4            94  Indonesia
```

```
[17]: final_df = pd.merge(zom,coun,on='Country Code', how = 'left')
```

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

```
[18]:    Restaurant ID         Restaurant Name  Country Code              City  \
      0        6317637        Le Petit Souffle           162       Makati City
      1        6304287        Izakaya Kikufuji           162       Makati City
      2        6300002  Heat - Edsa Shangri-La           162  Mandaluyong City
      3        6318506                    Ooma           162  Mandaluyong City
      4        6314302             Sambo Kojin           162  Mandaluyong City
```

```
                                             Address  \
0  Third Floor, Century City Mall, Kalayaan Avenu…
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4  SM Megamall, Ortigas, Mandaluyong City, Mandal…  121.057508  14.584450

                           Cuisines  …  Has Table booking  \
0        French, Japanese, Desserts  …                Yes
1                          Japanese  …                Yes
2  Seafood, Asian, Filipino, Indian  …                Yes
3                   Japanese, Sushi  …                 No
4                  Japanese, Korean  …                Yes

  Has Online delivery Is delivering now Switch to order menu Price range  \
0                  No                No                   No           3
1                  No                No                   No           3
2                  No                No                   No           4
3                  No                No                   No           4
4                  No                No                   No           4

  Aggregate rating  Rating color  Rating text Votes      Country
0              4.8    Dark Green    Excellent   314  Phillipines
1              4.5    Dark Green    Excellent   591  Phillipines
2              4.4         Green    Very Good   270  Phillipines
3              4.9    Dark Green    Excellent   365  Phillipines
4              4.8    Dark Green    Excellent   229  Phillipines

[5 rows x 22 columns]
```

```
[19]: final_df.dtypes
```

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

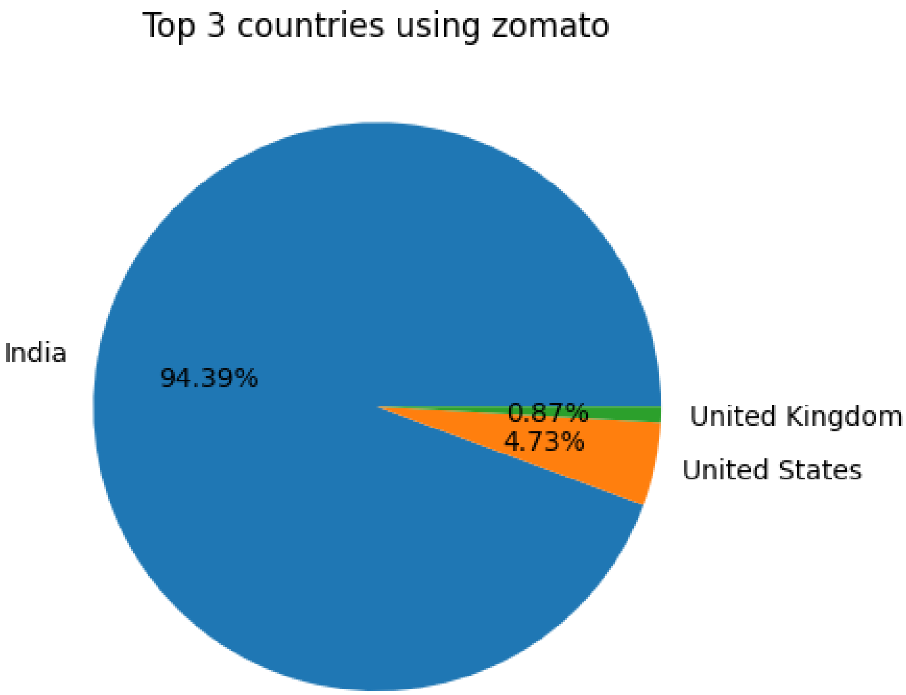
```
[20]: final_df['Country'].value_counts()
```

```
[20]: 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
```

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

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

```
[23]: ## pie plot for the top 3 countries using zomato
      plt.pie(country_val[:3], labels=country_names[:3], autopct= "%1.2f%%")
      plt.title("Top 3 countries using zomato")
      plt.savefig('top_3.jpg')
```



Observation: Zomato maximum records or transactions are from India After that USA and then United Kingdom.

```
[24]: final_df.columns
```

```
[24]: 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')
```

```
[25]: Ratings = final_df.groupby(['Aggregate rating','Rating color','Rating text']).
       ↪size().reset_index().rename(columns={0:"Rating Count"})
      Ratings
```

[25]:

```
    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
```

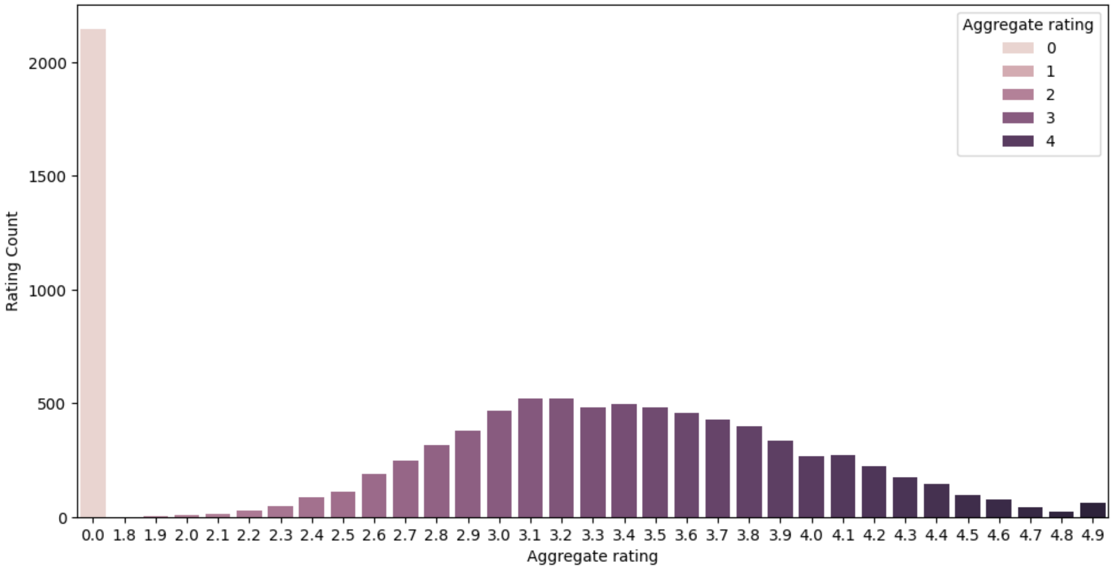
0.2 Observations

1. When Rating is between 4.5 to 4.9 —-> Excellent
2. When Rating are between 4.0 to 4.4—> very good
3. when Rating is between 3.5 to 3.9 —-> good
4. when Rating is between 3.0 to 3.4 —-> average
5. when Rating is between 2.5 to 2.9 —-> average
6. when Rating is between 2.0 to 2 4 —-> Poor

[26]:

```
plt.figure(figsize=[12,6])
sns.barplot(x="Aggregate rating", y = "Rating Count", hue = "Aggregate rating",␣
 ↪data = Ratings)
```

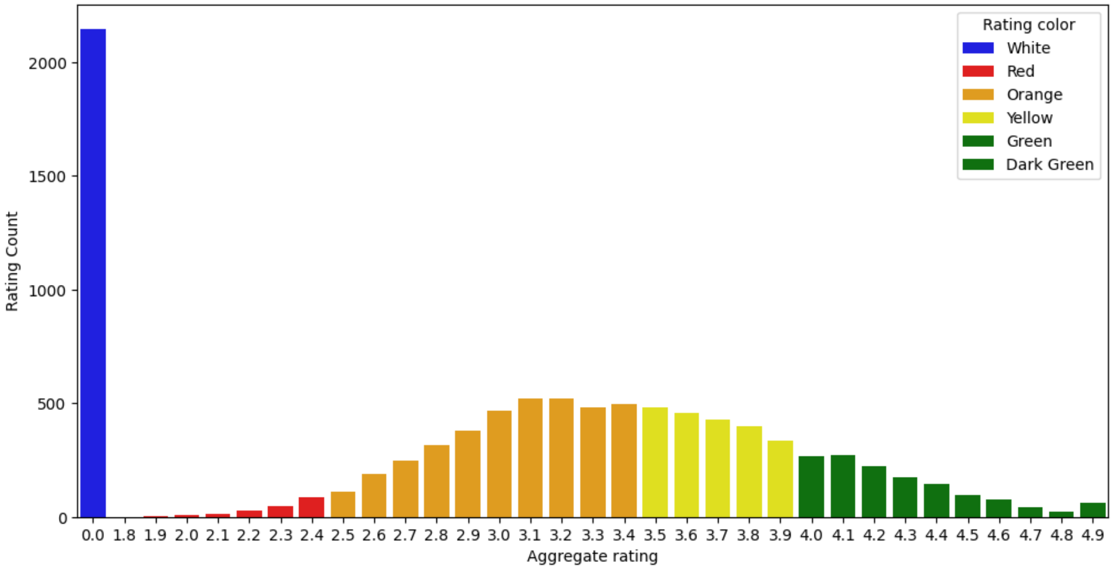
```
plt.savefig("Ag_rc.jpg")
```



[27]:
```
Ratings['Rating color'].unique()
```

[27]:
```
array(['White', 'Red', 'Orange', 'Yellow', 'Green', 'Dark Green'],
      dtype=object)
```

[28]:
```
plt.figure(figsize=[12,6])
sns.barplot(x="Aggregate rating", y = "Rating Count", hue = "Rating color",␣
 ↪data = Ratings, palette=['blue', 'Red', 'Orange', 'Yellow', 'Green',␣
 ↪'Green'])
plt.savefig('Rc_RC.jpg')
```



1 Observation:

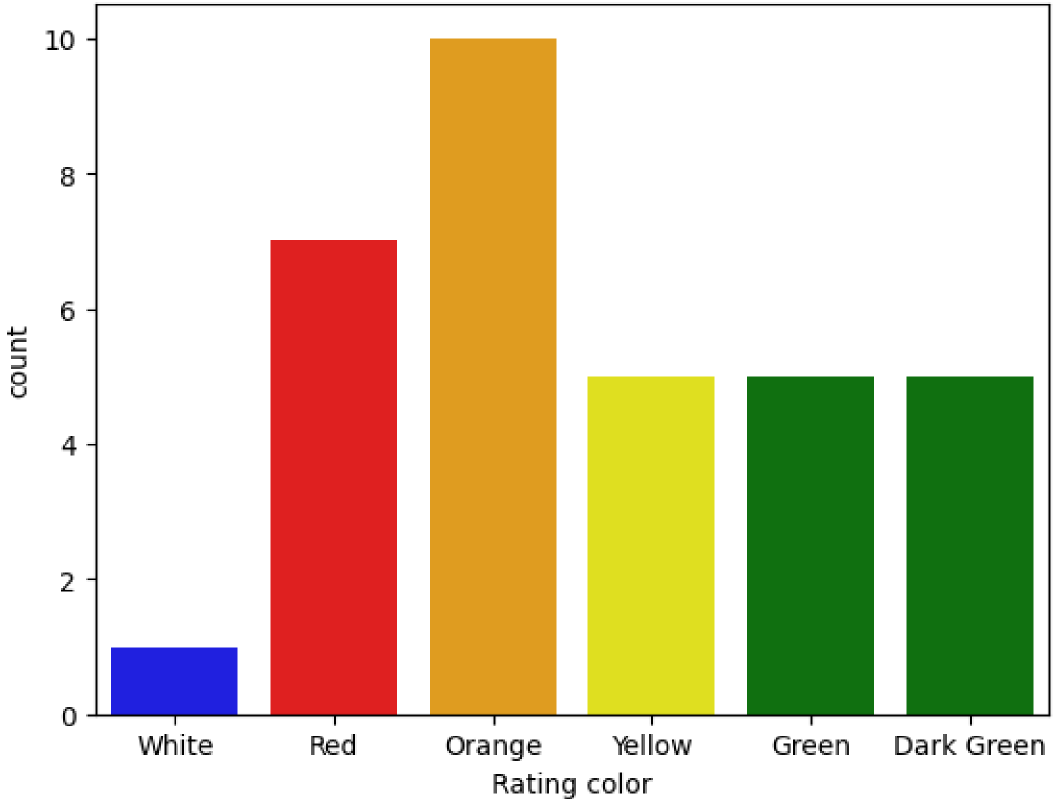
1. Highest number of people has given 0 rating.
2. The average rating is in between 2.5-3.4.

[29]:
```
## count plot
sns.countplot(x = 'Rating color', data = Ratings, palette=['blue', 'Red',␣
 ↪'Orange', 'Yellow', 'Green', 'Green'])
plt.savefig('RC_cp.jpg')
```

```
C:\Users\nagap\AppData\Local\Temp\ipykernel_21508\1676193572.py:2:
FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in
v0.14.0. Assign the `x` variable to `hue` and set `legend=False` for the same
effect.

  sns.countplot(x = 'Rating color', data = Ratings, palette=['blue', 'Red',
'Orange', 'Yellow', 'Green', 'Green'])
```



[30]:
```
## find the countries names which has given 0 rating
final_df[final_df['Rating color'] == "White"].groupby(['Aggregate␣
↪rating','Country']).size().reset_index()
```

[30]:
```
   Aggregate rating         Country     0
0               0.0          Brazil     5
1               0.0           India  2139
2               0.0  United Kingdom     1
3               0.0   United States     3
```

1.1 Observation

india holds the highest 0 ratings

[31]:
```
final_df.columns
```

[31]:
```
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')
```

[32]:

```
## find which currency is used by which country
final_df[['Country','Currency']].groupby(['Country','Currency']).size().
 ↪reset_index()
```

[32]:

```
           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
```

[33]:

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

[33]:

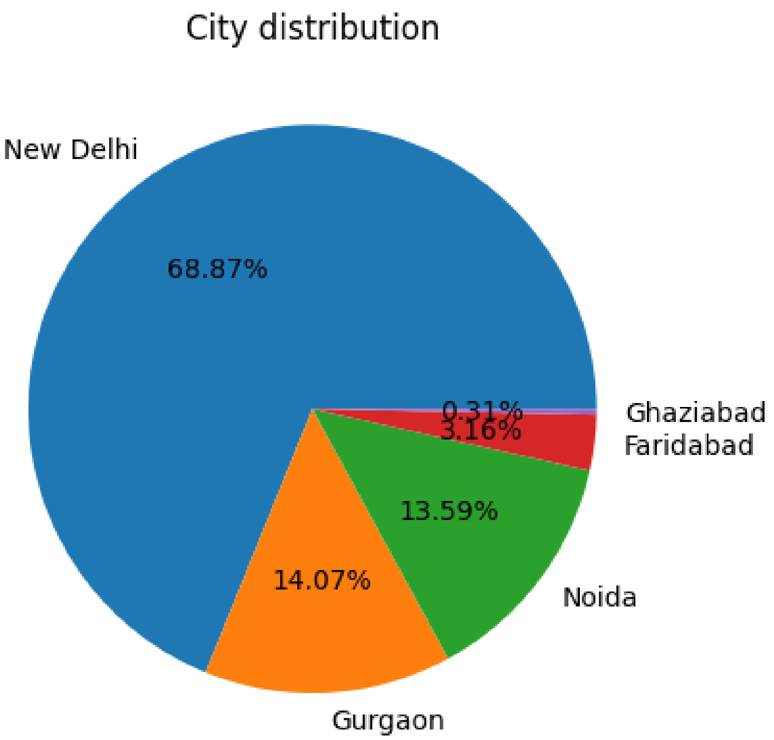
```
Country
India    2423
UAE        28
Name: count, dtype: int64
```

1.2 Observation

Online deliveries were avaliable in the India and UAE.

[35]:

```
## Create the city distribution
plt.pie(final_df.City.value_counts().values[:5],
        labels = final_df.City.value_counts().index[:5],autopct="%1.2f%%")
plt.title("City distribution")
plt.show()
plt.savefig('city_dis.png')
```



```
<Figure size 640x480 with 0 Axes>
```

1.3 Observations

1. Top 5 cities are from india
2. Maximum nuber of transactions were taking places in New Delhi.
3. Online deliveries were avaliable in the India and UAE.
4. india holds the highest 0 ratings
5. Highest number of people has given 0 rating.
6. The average rating is in between 2.5-3.4.
    1. When Rating is between 4.5 to 4.9 —-> Excellent
    2. When Rating are between 4.0 to 4.4—> very good
    3. when Rating is between 3.5 to 3.9 —-> good
    4. when Rating is between 3.0 to 3.4 —-> average
    5. when Rating is between 2.5 to 2.9 —-> average
    6. when Rating is between 2.0 to 2 4 —-> Poor
7. Observation: Zomato maximum records or transactions are from India After that USA and then United Kingdom.