LEVEL 1 - TASK 4: ONLINE DELIVERY

--4:1 Determine the percentage of restaurants that offer online delivery.

--4:2 Compare the average ratings of restaurants with and without online delivery.

4:1 DETERMINE THE PERCENTAGE OF RESTAURANTS THAT OFFER ONINE DELIVERY

```
#import libraries
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px

#import data
dataset= pd.read_csv("dataset.csv")

#check data
dataset.head(10)
```

```
   Restaurant ID                         Restaurant Name  Country
Code  \
0        6317637                        Le Petit Souffle
162
1        6304287                        Izakaya Kikufuji
162
2        6300002                Heat - Edsa Shangri-La
162
3        6318506                                   Ooma
162
4        6314302                             Sambo Kojin
162
5       18189371                           Din Tai Fung
162
6        6300781                             Buffet 101
162
7        6301290                               Vikings
162
8        6300010  Spiral - Sofitel Philippine Plaza Manila
162
9        6314987                              Locavore
162

               City                                              Address
\
0       Makati City  Third Floor, Century City Mall, Kalayaan Avenu...

1       Makati City  Little Tokyo, 2277 Chino Roces Avenue, Legaspi...

2  Mandaluyong City  Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...
```

```
3  Mandaluyong City  Third Floor, Mega Fashion Hall, SM Megamall, O...

4  Mandaluyong City  Third Floor, Mega Atrium, SM Megamall, Ortigas...

5  Mandaluyong City  Ground Floor, Mega Fashion Hall, SM Megamall, ...

6        Pasay City  Building K, SM By The Bay, Sunset Boulevard, M...

7        Pasay City  Building B, By The Bay, Seaside Boulevard, Mal...

8        Pasay City  Plaza Level, Sofitel Philippine Plaza Manila, ...

9        Pasig City  Brixton Technology Center, 10 Brixton Street, ...


                                          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
5           SM Megamall, Ortigas, Mandaluyong City
6  SM by the Bay, Mall of Asia Complex, Pasay City
7  SM by the Bay, Mall of Asia Complex, Pasay City
8      Sofitel Philippine Plaza Manila, Pasay City
9                                        Kapitolyo

                                    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
5  SM Megamall, Ortigas, Mandaluyong City, Mandal...  121.056314
14.583764
6  SM by the Bay, Mall of Asia Complex, Pasay Cit...  120.979667
14.531333
7  SM by the Bay, Mall of Asia Complex, Pasay Cit...  120.979333
14.540000
8  Sofitel Philippine Plaza Manila, Pasay City, P...  120.980090
14.552990
9                              Kapitolyo, Pasig City  121.056532
14.572041
```

```
                              Cuisines  ...          Currency  \
0          French, Japanese, Desserts  ...  Botswana Pula(P)
1                              Japanese  ...  Botswana Pula(P)
2    Seafood, Asian, Filipino, Indian  ...  Botswana Pula(P)
3                     Japanese, Sushi  ...  Botswana Pula(P)
4                    Japanese, Korean  ...  Botswana Pula(P)
5                             Chinese  ...  Botswana Pula(P)
6                      Asian, European  ...  Botswana Pula(P)
7  Seafood, Filipino, Asian, European  ...  Botswana Pula(P)
8              European, Asian, Indian  ...  Botswana Pula(P)
9                             Filipino  ...  Botswana Pula(P)

  Has Table booking Has Online delivery Is delivering now  \
0               Yes                  No                No
1               Yes                  No                No
2               Yes                  No                No
3                No                  No                No
4               Yes                  No                No
5                No                  No                No
6               Yes                  No                No
7               Yes                  No                No
8               Yes                  No                No
9               Yes                  No                No

  Switch to order menu Price range  Aggregate rating  Rating color  \
0                   No           3               4.8    Dark Green
1                   No           3               4.5    Dark Green
2                   No           4               4.4         Green
3                   No           4               4.9    Dark Green
4                   No           4               4.8    Dark Green
5                   No           3               4.4         Green
6                   No           4               4.0         Green
7                   No           4               4.2         Green
8                   No           4               4.9    Dark Green
9                   No           3               4.8    Dark Green

  Rating text Votes
0   Excellent   314
1   Excellent   591
2   Very Good   270
3   Excellent   365
4   Excellent   229
5   Very Good   336
6   Very Good   520
7   Very Good   677
8   Excellent   621
9   Excellent   532

[10 rows x 21 columns]
```

```
#check database shape
dataset.shape
```

```
(9551, 21)
```

```
#check dataset information
dataset.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
```

```
#check dataset column names
dataset.columns
```

```
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')
```

Data Preprocessing

```
#check for null values
pd.isnull(dataset).sum()
```

```
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
```

```
#drop all null values
dataset.dropna(inplace=True)
```

```
#check database
dataset.shape
```

```
(9542, 21)
```

```
dataset.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 9542 entries, 0 to 9550
Data columns (total 21 columns):
 #   Column                Non-Null Count  Dtype
---  ------                --------------  -----
 0   Restaurant ID         9542 non-null   int64
 1   Restaurant Name       9542 non-null   object
 2   Country Code          9542 non-null   int64
 3   City                  9542 non-null   object
```

```
 4   Address               9542 non-null   object
 5   Locality              9542 non-null   object
 6   Locality Verbose      9542 non-null   object
 7   Longitude             9542 non-null   float64
 8   Latitude              9542 non-null   float64
 9   Cuisines              9542 non-null   object
 10  Average Cost for two  9542 non-null   int64
 11  Currency              9542 non-null   object
 12  Has Table booking     9542 non-null   object
 13  Has Online delivery   9542 non-null   object
 14  Is delivering now     9542 non-null   object
 15  Switch to order menu  9542 non-null   object
 16  Price range           9542 non-null   int64
 17  Aggregate rating      9542 non-null   float64
 18  Rating color          9542 non-null   object
 19  Rating text           9542 non-null   object
 20  Votes                 9542 non-null   int64
dtypes: float64(3), int64(5), object(13)
memory usage: 1.6+ MB
```

```
#check description of data
dataset[['Average Cost for two', 'Price range', 'Aggregate rating',
'Votes']].describe()
```

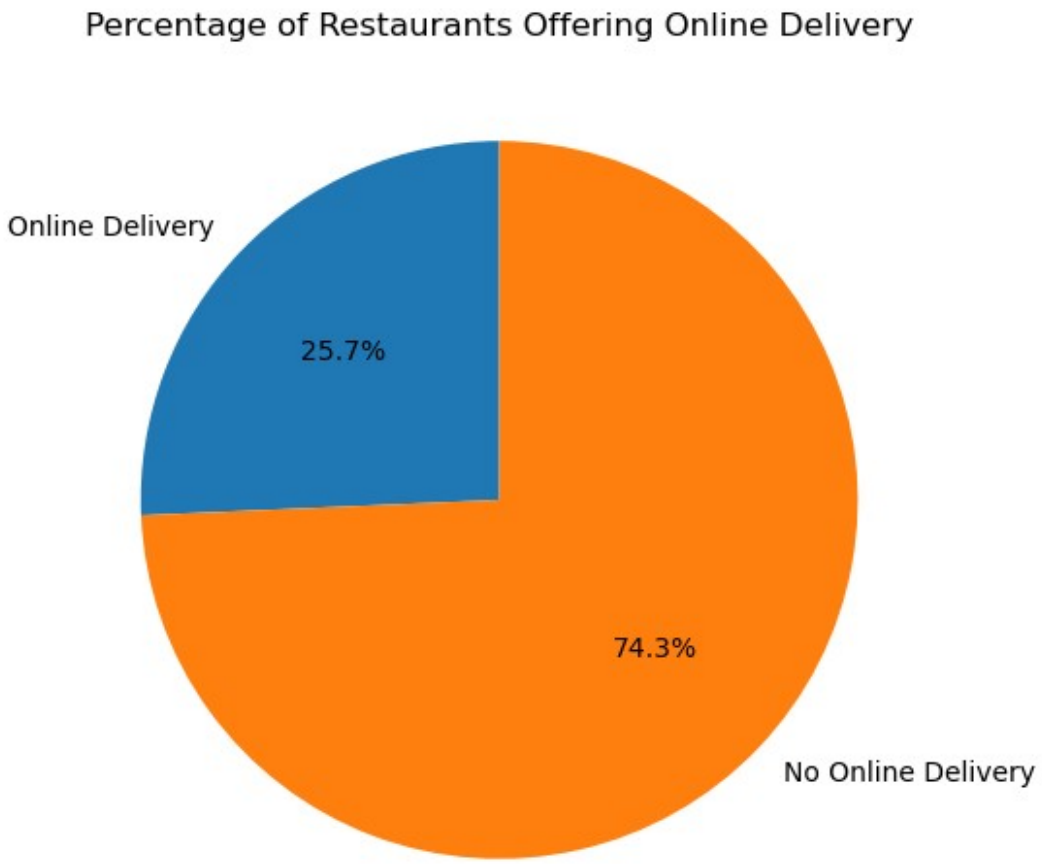
```
       Average Cost for two  Price range  Aggregate rating
Votes
count           9542.000000  9542.000000       9542.000000
9542.000000
mean            1200.326137     1.804968          2.665238
156.772060
std            16128.743876     0.905563          1.516588
430.203324
min                0.000000     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
130.000000
max           800000.000000     4.000000          4.900000
10934.000000
```

```
#check the unique values in 'has online delivery'
print(dataset['Has Online delivery'].unique())

#assuming ' has onLine delivery' has 'Yes' and 'No' values
#filter restaurants offering online delivery
online_delivery_count= dataset[dataset['Has Online delivery']==
'Yes'].shape[0]
```

```
#calculate the total number of restaurants
total_restaurants= dataset.shape[0]

#calculate the percentage
online_delivery_percentage= (online_delivery_count /
total_restaurants) * 100

#print the result
print(f"Percentage of restaurants offering online delivery:
{online_delivery_percentage:.2f}%")
```

```
['No' 'Yes']
Percentage of restaurants offering online delivery: 25.69%
```

```
#count for restaurants offering online delivery
online_delivery_count= dataset[dataset['Has Online delivery']==
'Yes'].shape[0]

#total number of restasurants
total_restaurants= dataset.shape[0]

#count for restaurants not offering online delivery
no_online_delivery_count= total_restaurants - online_delivery_count

#data for visualization
labels= ['Online Delivery', 'No Online Delivery']
counts= [online_delivery_count, no_online_delivery_count]

#pie chart visualization
plt.figure(figsize=(8,6))
plt.pie(counts, labels=labels, autopct='%1.1f%%', startangle=90,
colors=['#1f77b4','#ff7f0e'])
plt.title('Percentage of Restaurants Offering Online Delivery')
plt.show()
```

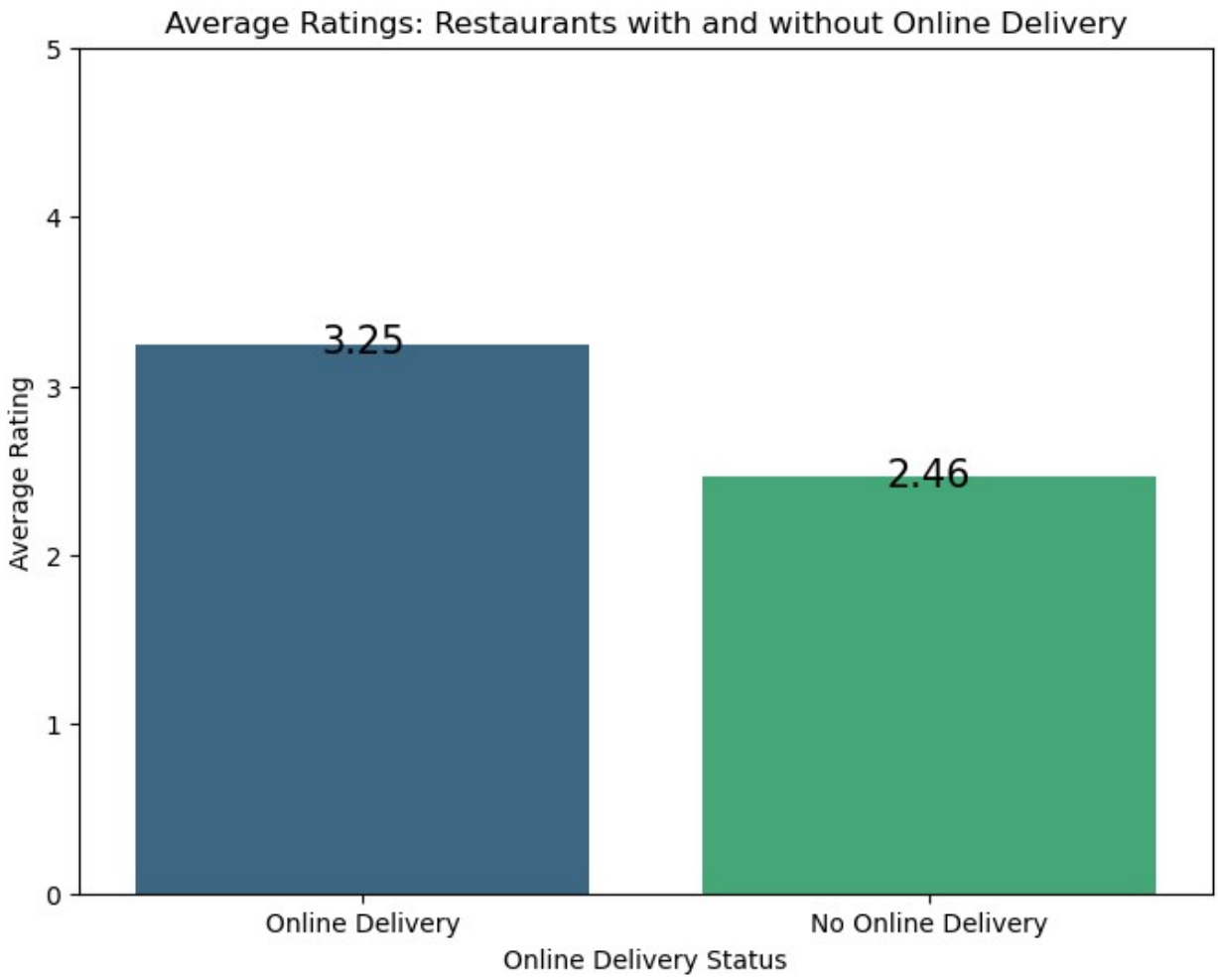


4:2 COMPARE THE AVERAGE RATINGS OF RESTAURANTS WITH AND WITHOUT ONLINE DELIVERY.

```
#calculate the average ratings
online_delivery_ratings= dataset[dataset['Has Online
delivery']=='Yes']['Aggregate rating'].mean()
no_online_delivery_ratings= dataset[dataset['Has Online
delivery']=='No']['Aggregate rating'].mean()

print('Average rating of restuarants with online delivery is :',
(online_delivery_ratings))
print('Average ratings of restaurants with no online delivery is:',
(no_online_delivery_ratings))

#data for visualization
labels= ['Online Delivery','No Online Delivery']
ratings= [online_delivery_ratings, no_online_delivery_ratings]

#bar chart visualization
plt.figure(figsize=(8,6))
bars= sns.barplot(x=labels, y=ratings, hue=labels, palette='viridis')
```

```
#add data labels
for bar,rating in zip(bars.patches, ratings):
    plt.text(
        bar.get_x() + bar.get_width() / 2,    #x-coordinate
        bar.get_height() - 0.1,              #y-coordinate slightly
below the top of the bar
        f'{rating:.2f}',                     #text with 2 decimal
places
        ha='center',                         #horizontal alignment
        va='bottom',                         #vertical alignment
        fontsize=15,
        color='black')

#chart styling
plt.title("Average Ratings: Restaurants with and without Online
Delivery")
plt.ylabel('Average Rating')
plt.xlabel('Online Delivery Status')
plt.ylim(0,5)  #assuming ratings are on a scale of 0 to 5
plt.show()
```

```
Average rating of restuarants with online delivery is :
3.2488372093023257
Average ratings of restaurants with no online delivery is:
2.4635171343957127
```


Average Ratings: Restaurants with and without Online Delivery
Average Rating
0
1
2
3
4
5
3.25
2.46
Online Delivery
No Online Delivery
Online Delivery Status