LEVEL 3 - TASK 3:PRICE RANGE V/S ONLINE DELIVERY AND TABLE BOOKING

--3:1 Analyze if there is a relationship between the price range and the availability of online delivery and table booking.

--3:2 Determine if higher-priced restaurants are more likely to offer these services.

3:1 ANALYZE IF THERE IS A RELATIONSHIP BETWEEN THE PRICE RANGE AND THE AVAILABILITY OF ONLINE DELIVERY AND TABLE BOOKING.

```
#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 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
```

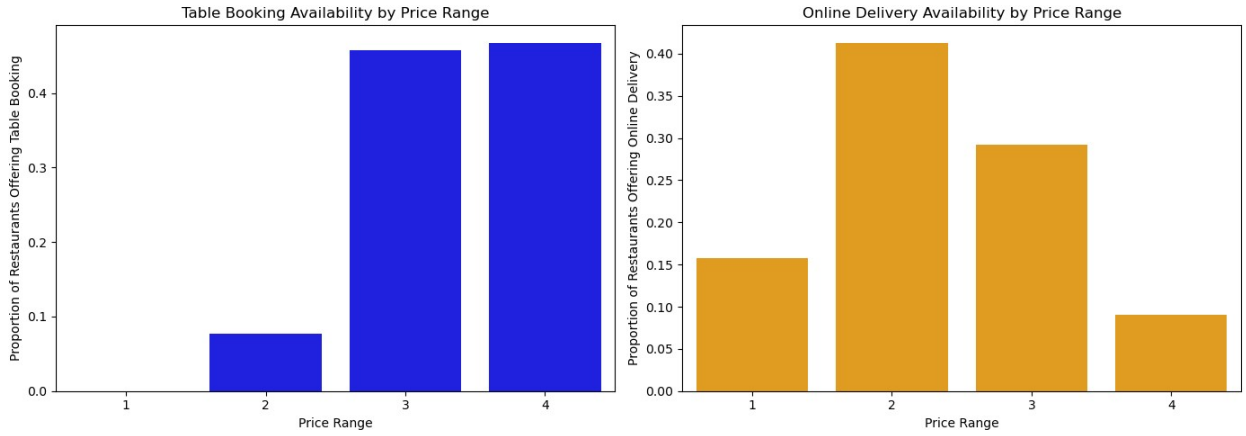
```
Index(['Restaurant ID', 'Restaurant Name', 'Country Code', 'City',
'Address',
       'Locality', 'Locality Verbose', 'Longitude', 'Latitude',
'Cuisines',
       'Average Cost for two', 'Currency', 'Has Table booking',
       'Has Online delivery', 'Is delivering now', 'Switch to order
menu',
   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

```
#convert categorical column to numeric for better visualization
dataset['Has Table booking']= dataset['Has Table
booking'].map({'Yes':1, 'No':0})
dataset['Has Online delivery']= dataset['Has Online
delivery'].map({'Yes':1, 'No':0})

#set figure size
plt.figure(figsize=(12,5))

#plot online delivery vs price range
plt.subplot(1,2,1)
sns.barplot(x='Price range', y='Has Table booking',
data=dataset,color="orange", estimator=lambda x: sum(x)/len(x))
plt.title('Online Delivery Availability by Price Range')
plt.ylabel('Proportion of Restaurants with Online Delivery')
plt.tight_layout()
plt.show()

#plot table booking vs price range
plt.subplot(1,2,1)
sns.barplot(x='Price range', y='Has Table booking', data=dataset,
color="orange", estimator=lambda x: sum(x)/len(x))
plt.title('Table Booking Availability by Price Range')
plt.ylabel('Proportion of Restaurants with Table Booking')

plt.tight_layout()
plt.show()
```

3:2 DETERMINE IF HIGHER-PRICED RESTAURANTS ARE MORE LIKELY TO OFFER THESE SERVICES.

```
# Convert 'Has Table booking' and 'Has Online delivery' to binary
(Yes=1, No=0)
dataset["Has Table booking"] = dataset["Has Table
booking"].map({"Yes": 1, "No": 0})
dataset["Has Online delivery"] = dataset["Has Online
delivery"].map({"Yes": 1, "No": 0})

# Group by price range and calculate the mean availability of services
price_grouped = dataset.groupby("Price range")[["Has Table booking",
"Has Online delivery"]].mean()

# Plot the results
fig, axes = plt.subplots(1, 2, figsize=(14, 5))

# Table Booking
sns.barplot(x=price_grouped.index, y=price_grouped["Has Table
booking"], ax=axes[0], color="Blue", legend=False)
axes[0].set_title("Table Booking Availability by Price Range")
axes[0].set_xlabel("Price Range")
```

```
axes[0].set_ylabel("Proportion of Restaurants Offering Table Booking")

# Online Delivery
sns.barplot(x=price_grouped.index, y=price_grouped["Has Online
delivery"], ax=axes[1], color="Orange",legend=False)
axes[1].set_title("Online Delivery Availability by Price Range")
axes[1].set_xlabel("Price Range")
axes[1].set_ylabel("Proportion of Restaurants Offering Online
Delivery")

plt.tight_layout()
plt.show()

# Display the calculated data
price_grouped
```



Price range	Has Table booking	Has Online delivery
1	0.000225	0.157741
2	0.076775	0.413106
3	0.457386	0.291903
4	0.467577	0.090444