restaurants.02

August 18, 2024

0.1 *Table Booking and Online Delivery*

0.1.1 Import Libraries

[ ]:
```
# Importing Libraries
import pandas as pd
import numpy as np

# Visualization Libraries
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns

# Ignore all warnings
import warnings
warnings.filterwarnings('ignore')
```

0.1.2 Dataset Loading

[ ]:
```
# Load Dataset
df = pd.read_csv("Dataset.csv")
```

0.1.3 Percentage of Table Booking and Online Delivery

[ ]:
```
# Percentage of restaurants offering table booking and online delivery
# Total number of restaurants
total_restaurants = len(df)

# Percentage calculation
table_booking_percentage = (df['Has Table booking'] == 'Yes').sum() /␣
 ↪total_restaurants * 100
online_delivery_percentage = (df['Has Online delivery'] == 'Yes').sum() /␣
 ↪total_restaurants * 100

# Display results
print(f"Percentage of restaurants offering Table Booking:␣
 ↪{table_booking_percentage:.2f}%")
```

```
print(f"Percentage of restaurants offering Online Delivery:␣
 ↪{online_delivery_percentage:.2f}%")
```

```
Percentage of restaurants offering Table Booking: 12.12%
Percentage of restaurants offering Online Delivery: 25.66%
```

0.1.4 Restaurants with and without Table Booking

[ ]:
```
# Compare average ratings of restaurants with and without table booking
avg_rating_with_table = df[df['Has Table booking'] == 'Yes']['Aggregate␣
 ↪rating'].mean()
avg_rating_without_table = df[df['Has Table booking'] == 'No']['Aggregate␣
 ↪rating'].mean()

# Display results
print(f"Average rating with Table Booking: {avg_rating_with_table:.2f}")
print(f"Average rating without Table Booking: {avg_rating_without_table:.2f}")
```

```
Average rating with Table Booking: 3.44
Average rating without Table Booking: 2.56
```

0.1.5 Availability of Online Delivery

[ ]:
```
# Availability of online delivery among restaurants with different price ranges
# Select price ranges
price_ranges = df['Average Cost for two'].apply(lambda x: 'Low' if x < 500 else␣
 ↪'Medium' if 500 <= x <= 1000 else 'High')
online_delivery_by_price_range = df.groupby(price_ranges)['Has Online␣
 ↪delivery'].value_counts(normalize=True).unstack()

# Display results
print("Online Delivery Availability by Price Range:")
print(online_delivery_by_price_range)
```

```
Online Delivery Availability by Price Range:
Has Online delivery         No       Yes
Average Cost for two
High                  0.719149  0.280851
Low                   0.858523  0.141477
Medium                0.566209  0.433791
```

0.2 *Price Range Analysis*

0.2.1 Most Common Price Range

[ ]:
```
# Determining the most common price range among all the restaurants
most_common_price_range = df['Price range'].mode()[0]

# Display result
```

```
print(f"Most Common Price Range: {most_common_price_range}")
```

```
Most Common Price Range: 1
```

0.2.2 Average Rating for Each Price Range

[ ]:
```
# Calculating average rating for each price range
# Group by 'Price range' and calculate the average rating
avg_rating_by_price_range = df.groupby('Price range')['Aggregate rating'].mean()

# Display result
print("Average rating for each price range:")
print(round(avg_rating_by_price_range,3))
```

```
Average rating for each price range:
Price range
1    2.000
2    2.941
3    3.683
4    3.818
Name: Aggregate rating, dtype: float64
```

0.2.3 Highest Average Rating Among Different Price Ranges

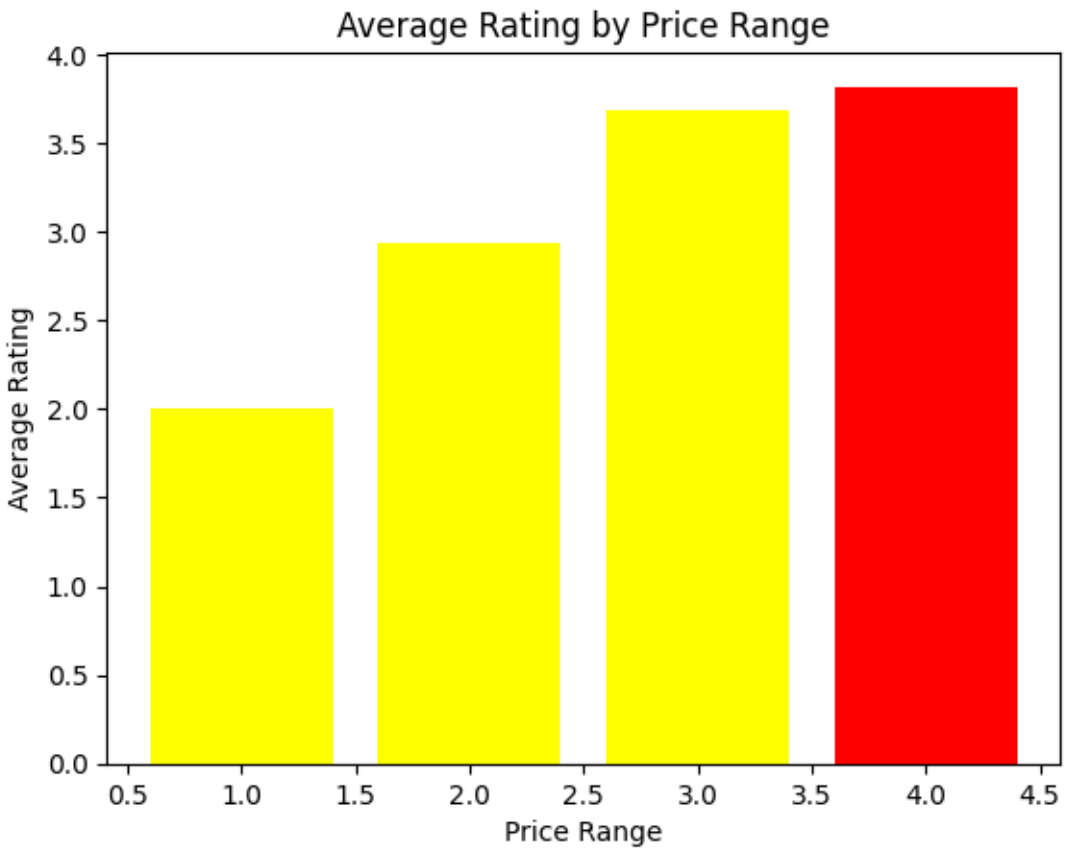
[ ]:
```
# Identifying the color that represents the highest average rating among␣
 ↪different price ranges
# Find the price range with the highest average rating
highest_avg_rating_color = avg_rating_by_price_range.idxmax()

# Create the bar plot
plt.bar(avg_rating_by_price_range.index, avg_rating_by_price_range,␣
 ↪color='yellow')

# Set the color of the bar corresponding to the highest average rating to a␣
 ↪distinct color (e.g., red)
plt.bar(highest_avg_rating_color,␣
 ↪avg_rating_by_price_range[highest_avg_rating_color], color='red')

# Set labels
plt.xlabel('Price Range')
plt.ylabel('Average Rating')
plt.title('Average Rating by Price Range')

# Highlight the bar for the highest average rating
plt.show()
```



0.3 *Feature Engineering*

0.3.1 Extract Additional Features

[ ]:
```
# Extracting additional features from the existing columns, such as the length of the restaurant name or address
# Create a new column for the length of restaurant names
df['Restaurant Name Length'] = df['Restaurant Name'].apply(len)

# Create a new column for the length of restaurant addresses
df['Address Length'] = df['Address'].apply(len)

# Display the updated DataFrame
df.head()
```

[ ]:

	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  …  Has Online delivery  \
0       French, Japanese, Desserts  …                   No
1                           Japanese  …                   No
2  Seafood, Asian, Filipino, Indian  …                   No
3                   Japanese, Sushi  …                   No
4                  Japanese, Korean  …                   No

  Is delivering now Switch to order menu Price range Aggregate rating  \
0                No                   No           3              4.8
1                No                   No           3              4.5
2                No                   No           4              4.4
3                No                   No           4              4.9
4                No                   No           4              4.8

  Rating color  Rating text  Votes Restaurant Name Length Address Length
0   Dark Green    Excellent    314                    16             71
1   Dark Green    Excellent    591                    16             67
2        Green    Very Good    270                    22             56
3   Dark Green    Excellent    365                     4             70
4   Dark Green    Excellent    229                    11             64

[5 rows x 23 columns]
```

0.3.2 Create New Features

[ ]:
```
# Creating new features like "Has Table Booking" or "Has Online Delivery" by␣
 ↪encoding categorical variables
# Create new binary columns
df['Has Table Booking'] = np.where(df['Has Table booking'] == 'Yes', 1, 0)
df['Has Online Delivery'] = np.where(df['Has Online delivery'] == 'Yes', 1, 0)

# Drop the original categorical columns if needed
# df = df.drop(['Has Table booking', 'Has Online delivery'], axis=1)

# Display the updated DataFrame
df.head()
```

[ ]:
```
   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  \
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4  SM Megamall, Ortigas, Mandaluyong City, Mandal…  121.057508  14.584450

                         Cuisines  …  Switch to order menu Price range  \
0       French, Japanese, Desserts  …                    No           3
1                         Japanese  …                    No           3
2  Seafood, Asian, Filipino, Indian  …                    No           4
3                   Japanese, Sushi  …                    No           4
```

```
4                  Japanese, Korean  …                    No           4

  Aggregate rating Rating color Rating text Votes  Restaurant Name Length  \
0              4.8   Dark Green   Excellent   314                      16
1              4.5   Dark Green   Excellent   591                      16
2              4.4        Green   Very Good   270                      22
3              4.9   Dark Green   Excellent   365                       4
4              4.8   Dark Green   Excellent   229                      11

   Address Length Has Table Booking Has Online Delivery
0              71                 1                   0
1              67                 1                   0
2              56                 1                   0
3              70                 0                   0
4              64                 1                   0

[5 rows x 25 columns]
```