# Zomato Data Analysis Using Python

## Import necessary python libraries.

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

pandas is used for data manipulation and analysis.

numpy is used for numrical operation.

matplotlib.pyplot and seaborn are used for data visualization.

## Import a dataset and create a dataframe .

```
df = pd.read_csv('/content/Zomato data .csv')

# Display the first few rows of the DataFrame
print(df.head())
```

```
                    name online_order book_table   rate  votes  \
0                  Jalsa          Yes        Yes  4.1/5    775
1         Spice Elephant          Yes         No  4.1/5    787
2        San Churro Cafe          Yes         No  3.8/5    918
3  Addhuri Udupi Bhojana           No         No  3.7/5     88
4          Grand Village           No         No  3.8/5    166

   approx_cost(for two people) listed_in(type)
0                          800          Buffet
1                          800          Buffet
2                          800          Buffet
3                          300          Buffet
4                          600          Buffet
```

```
df
```

| | name | online_order | book_table | rate | votes | approx_cost(for two people) | listed_in(type) |
|---|---|---|---|---|---|---|---|
| **0** | Jalsa | Yes | Yes | 4.1/5 | 775 | 800 | Buffet |
| **1** | Spice Elephant | Yes | No | 4.1/5 | 787 | 800 | Buffet |
| **2** | San Churro Cafe | Yes | No | 3.8/5 | 918 | 800 | Buffet |
| **3** | Addhuri Udupi Bhojana | No | No | 3.7/5 | 88 | 300 | Buffet |
| **4** | Grand Village | No | No | 3.8/5 | 166 | 600 | Buffet |
| **...** | ... | ... | ... | ... | ... | ... | ... |
| **143** | Melting Melodies | No | No | 3.3/5 | 0 | 100 | Dining |
| **144** | New Indraprasta | No | No | 3.3/5 | 0 | 150 | Dining |
| **145** | Anna Kuteera | Yes | No | 4.0/5 | 771 | 450 | Dining |
| **146** | Darbar | No | No | 3.0/5 | 98 | 800 | Dining |
| **147** | Vijayalakshmi | Yes | No | 3.9/5 | 47 | 200 | Dining |

148 rows × 7 columns

## Lets convert the data type of the "rate" column to float and remove the denominator.

```
def handleRate(value):
  value=str(value).split('/')
  value=value[0];
  return float(value)

df["rate"]=df["rate"].apply(handleRate)
print(df.head())
```

```
                    name online_order book_table  rate  votes  \
0                  Jalsa          Yes        Yes   4.1    775   
1         Spice Elephant          Yes         No   4.1    787   
2        San Churro Cafe          Yes         No   3.8    918   
3  Addhuri Udupi Bhojana           No         No   3.7     88   
4          Grand Village           No         No   3.8    166   

   approx_cost(for two people) listed_in(type)  
0                          800          Buffet  
1                          800          Buffet  
2                          800          Buffet  
3                          300          Buffet  
4                          600          Buffet  
```

## Summary of data frame

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 148 entries, 0 to 147
Data columns (total 7 columns):
 #   Column                       Non-Null Count  Dtype  
---  ------                       --------------  -----  
 0   name                         148 non-null    object 
 1   online_order                 148 non-null    object 
 2   book_table                   148 non-null    object 
 3   rate                         148 non-null    float64
 4   votes                        148 non-null    int64  
 5   approx_cost(for two people)  148 non-null    int64  
 6   listed_in(type)              148 non-null    object 
dtypes: float64(1), int64(2), object(4)
memory usage: 8.2+ KB
```

## Conclusion - there no NULL value in dataframe

```
df.isnull().sum()
```

| | 0 |
|---|---|
| **name** | 0 |
| **online_order** | 0 |
| **book_table** | 0 |
| **rate** | 0 |
| **votes** | 0 |
| **approx_cost(for two people)** | 0 |
| **listed_in(type)** | 0 |

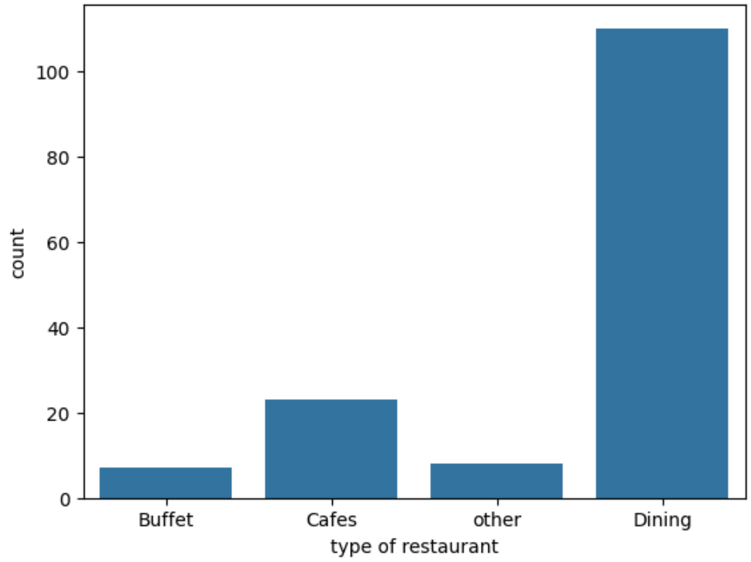
**dtype:** int64

```
df.describe()
```

```
            rate        votes  approx_cost(for two people)
count  148.000000   148.000000                   148.000000
mean     3.633108   264.810811                   418.243243
std      0.402271   653.676951                   223.085098
min      2.600000     0.000000                   100.000000
25%      3.300000     6.750000                   200.000000
50%      3.700000    43.500000                   400.000000
75%      3.900000   221.750000                   600.000000
max      4.600000  4884.000000                   950.000000
```

## Type of restaurant

```
sns.countplot(x=df['listed_in(type)'])
plt.xlabel("type of restaurant")
plt.show()
```

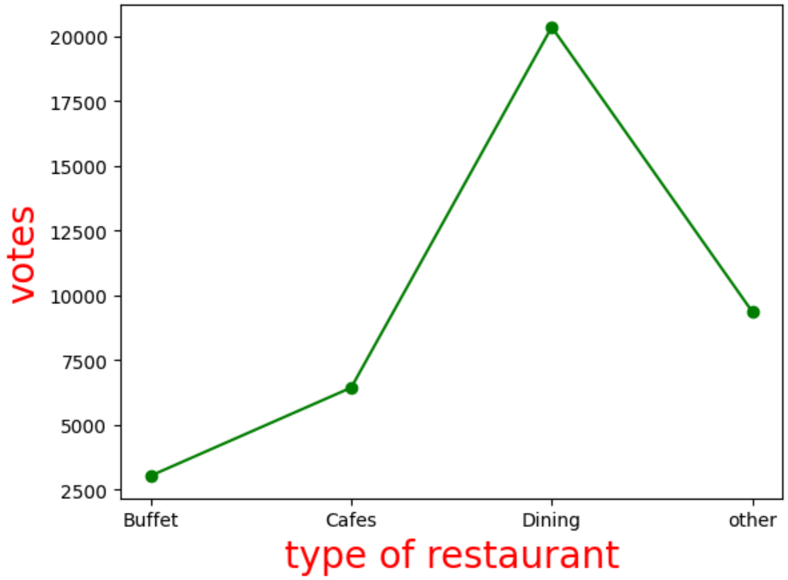


Conclusion: The majority of the restaurant fall into the dinning category.

## Dinning restaurant are preferred by larger number of individuals.

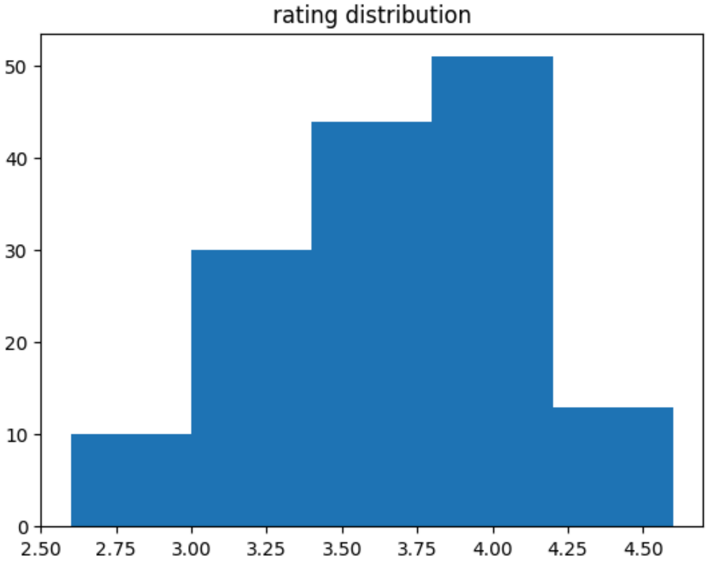
```
grouped_data = df.groupby('listed_in(type)')['votes'].sum()
result = pd.DataFrame({'votes': grouped_data})
plt.plot(result, c="green", marker="o")
plt.xlabel("type of restaurant", c="red", size=20)
plt.ylabel("votes", c="red", size=20)
```

```
Text(0, 0.5, 'votes')
```



## The majority of restaurant received ratings.

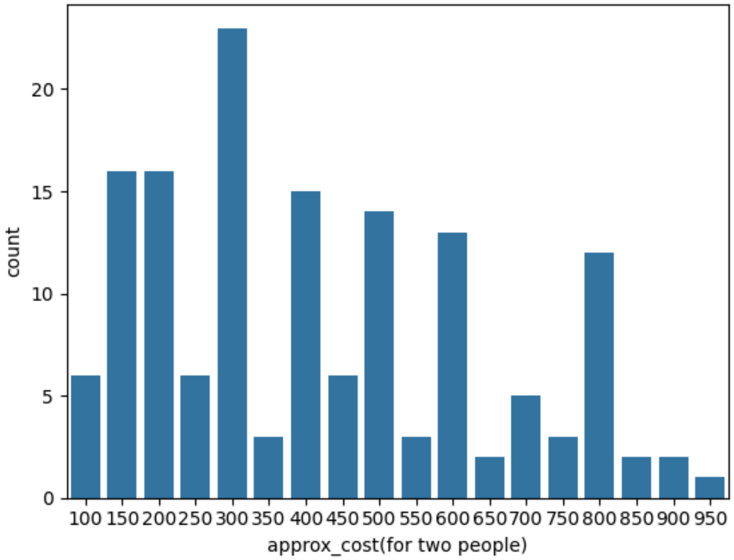
```
plt.hist(df['rate'],bins=5)
plt.title("rating distribution")
plt.show()
```



Conclusion: The majority of restaurants received ratings ranging from 3.5 to 4.

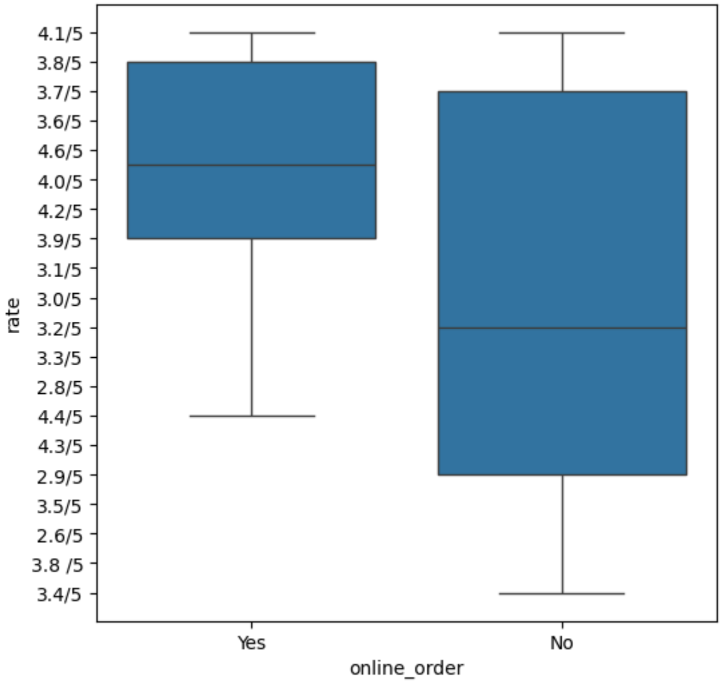
## The majority of couples prefer restaurants with an approximate cost of 300 rupees.

```
couple_data=df['approx_cost(for two people)']
sns.countplot(x=couple_data)
plt.show()
```



## Whether online orders receive higher rating than offline orders.

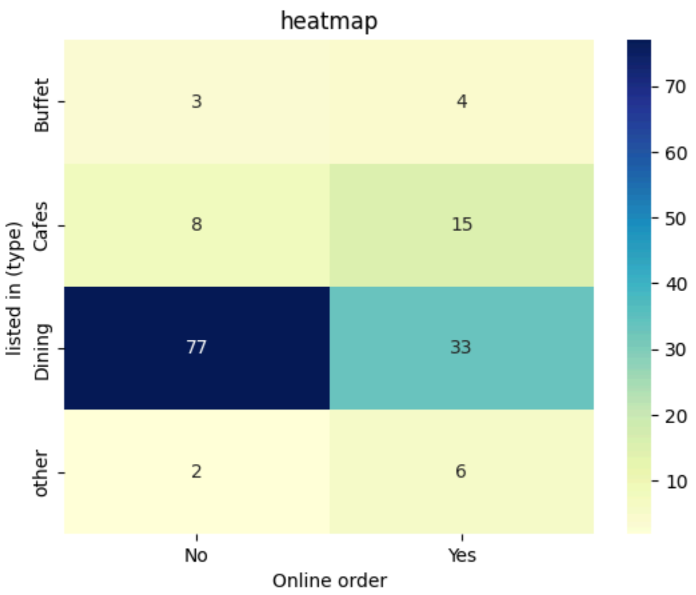
```
plt.figure(figsize = (6,6))
sns.boxplot(x = 'online_order', y = 'rate', data = df)
plt.show()
```



Conclusion: Offline order received lower rating in comparision to online orders, which obtained excellent rating.

## Plot a heatmap

```
pd.pivot_table = df.pivot_table(index='listed_in(type)', columns='online_order', aggfunc='size', fill_value=(0))
sns.heatmap(pd.pivot_table, annot=True, cmap='YlGnBu', fmt='d')
plt.title("heatmap")
plt.xlabel("Online order")
plt.ylabel("listed in (type)")
plt.show()
```



Conclusion: dining restaurant primarily accept offline orders, whereas cafes primarily received online orders. This suggests that client prefer to place orders in person at restaurant, but prefer online ordering at cafes.

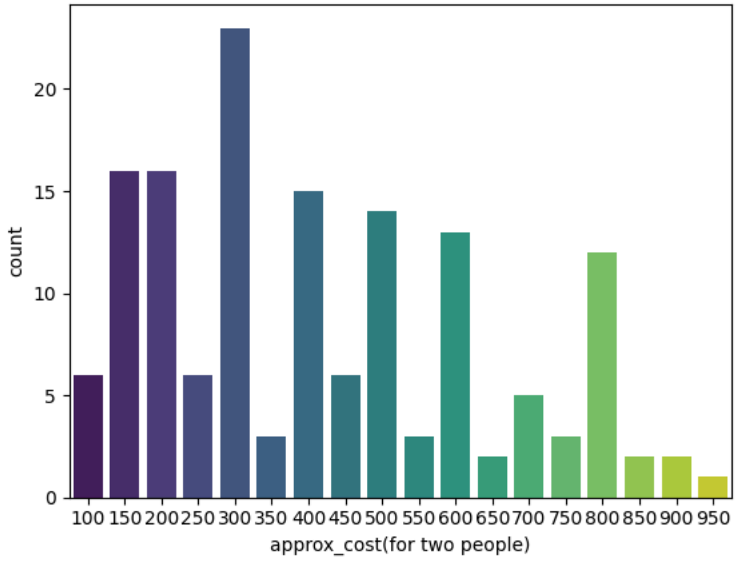
## The majority of couples prefer restaurants with an approximate cost of 300 rupees.

```
couple_data=df['approx_cost(for two people)']
sns.countplot(x=couple_data, palette='viridis')
plt.show()
```

```
/tmp/ipython-input-10-1115780625.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

  sns.countplot(x=couple_data, palette='viridis')
```



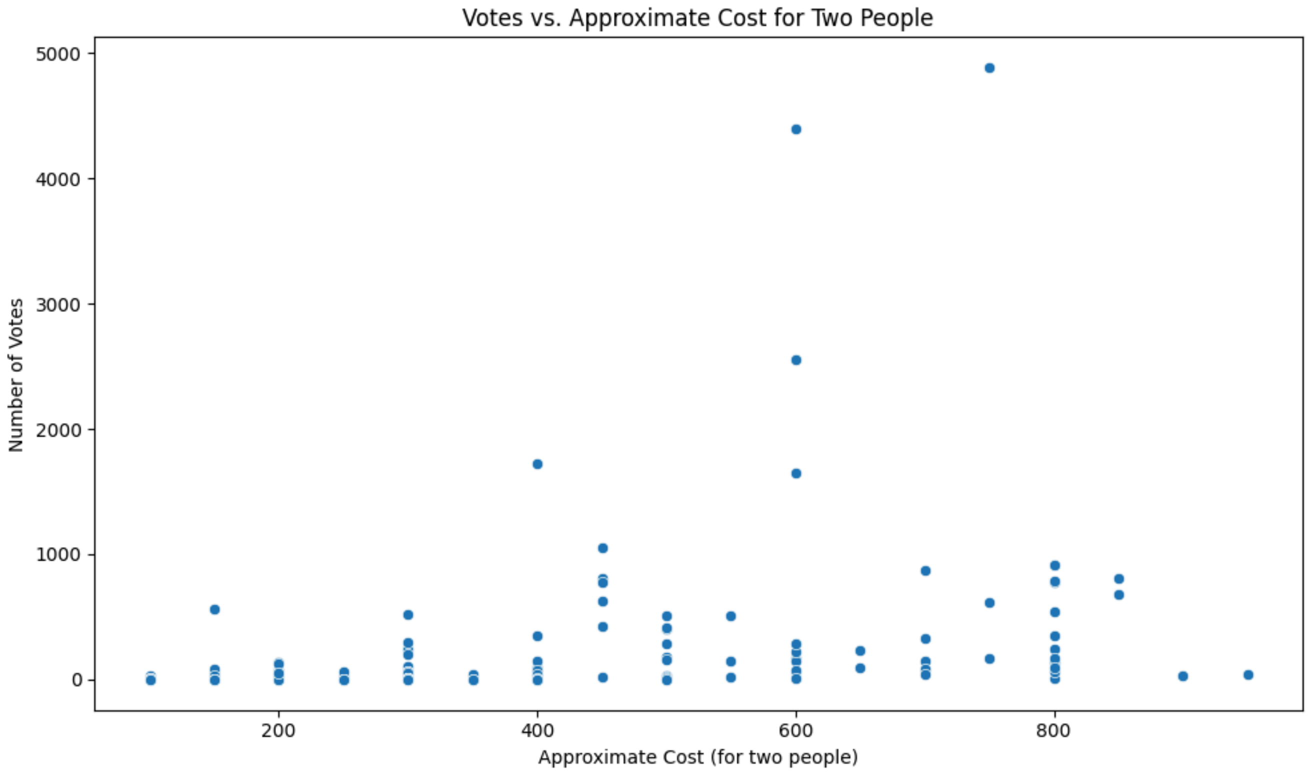
import pandas as pd import numpy as np import matplotlib.pyplot as plt import seaborn as sns df = pd.read_csv('Zomato data .csv')

## Display the first few rows of the DataFrame

print(df.head()) def handleRate(value): value=str(value).split('/') value=value[0]; return float(value)

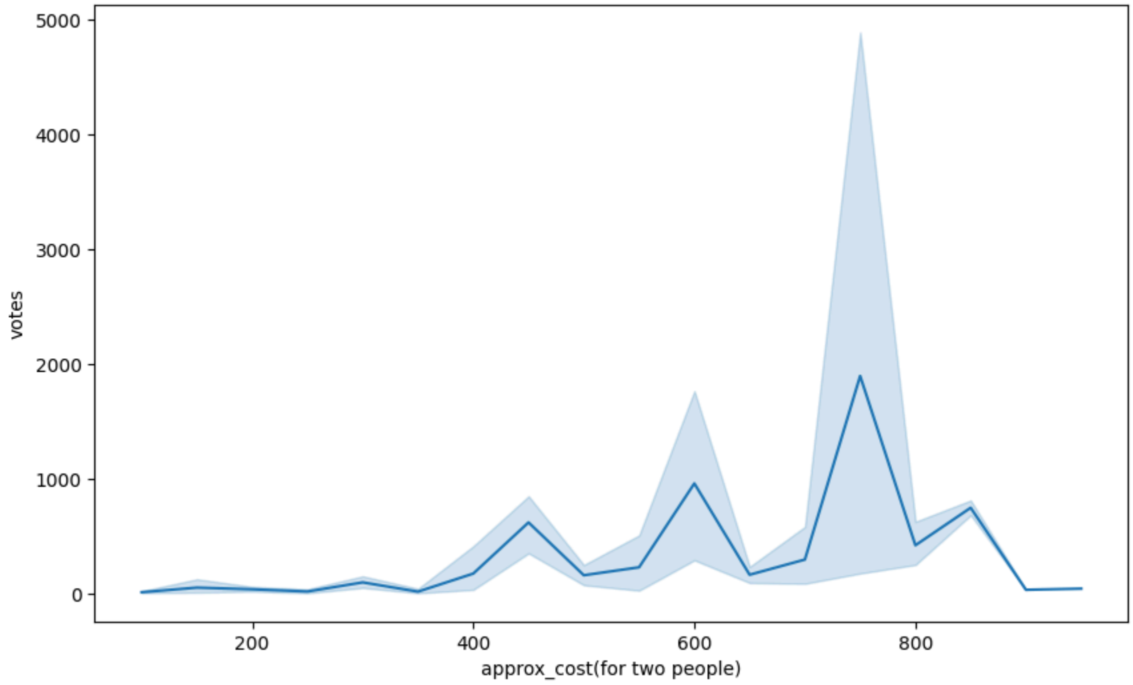
df["rate"]=df["rate"].apply(handleRate) print(df.head()) sns.countplot(x=df['listed_in(type)']) plt.xlabel("type of rastaurant") grouped_data = df.groupby('listed_in(type)')['votes'].sum() result = pd.DataFrame({'votes': grouped_data}) plt.plot(result, c="green", marker="o") plt.xlabel("type of restaurant", c="red", size=20) plt.ylabel("votes", c="red", size=20)plt.show() plt.hist(df['rate'],bins=5) plt.title("rating distribution") plt.show() couple_data=df['approx_cost(for two people)'] sns.countplot(x=couple_data) plt.figure(figsize = (6,6)) sns.boxplot(x = 'online_order', y = 'rate', data = df) plt.show()plt.show() pd.pivot_table = df.pivot_table(index='listed_in(type)', columns='online_order', aggfunc='size', fill_value=(0)) sns.heatmap(pd.pivot_table, annot=True, cmap='YlGnBu', fmt='d') plt.title("heatmap") plt.xlabel("Olineo rder") plt.ylabel("listed in (type)") plt.show() according to this i want chapter 6 Findings, Result, Suggestions and recommendation 7 to 8 sub points

```
# Visualize the relationship between votes and approximate cost
plt.figure(figsize=(10, 6))
sns.scatterplot(x='approx_cost(for two people)', y='votes', data=df)
plt.title('Votes vs. Approximate Cost for Two People')
plt.xlabel('Approximate Cost (for two people)')
plt.ylabel('Number of Votes')
plt.tight_layout()
plt.show()
```



```
# area chart
plt.figure(figsize=(10, 6))
sns.lineplot(x='approx_cost(for two people)', y='votes', data=df)
```

```
<Axes: xlabel='approx_cost(for two people)', ylabel='votes'>
```



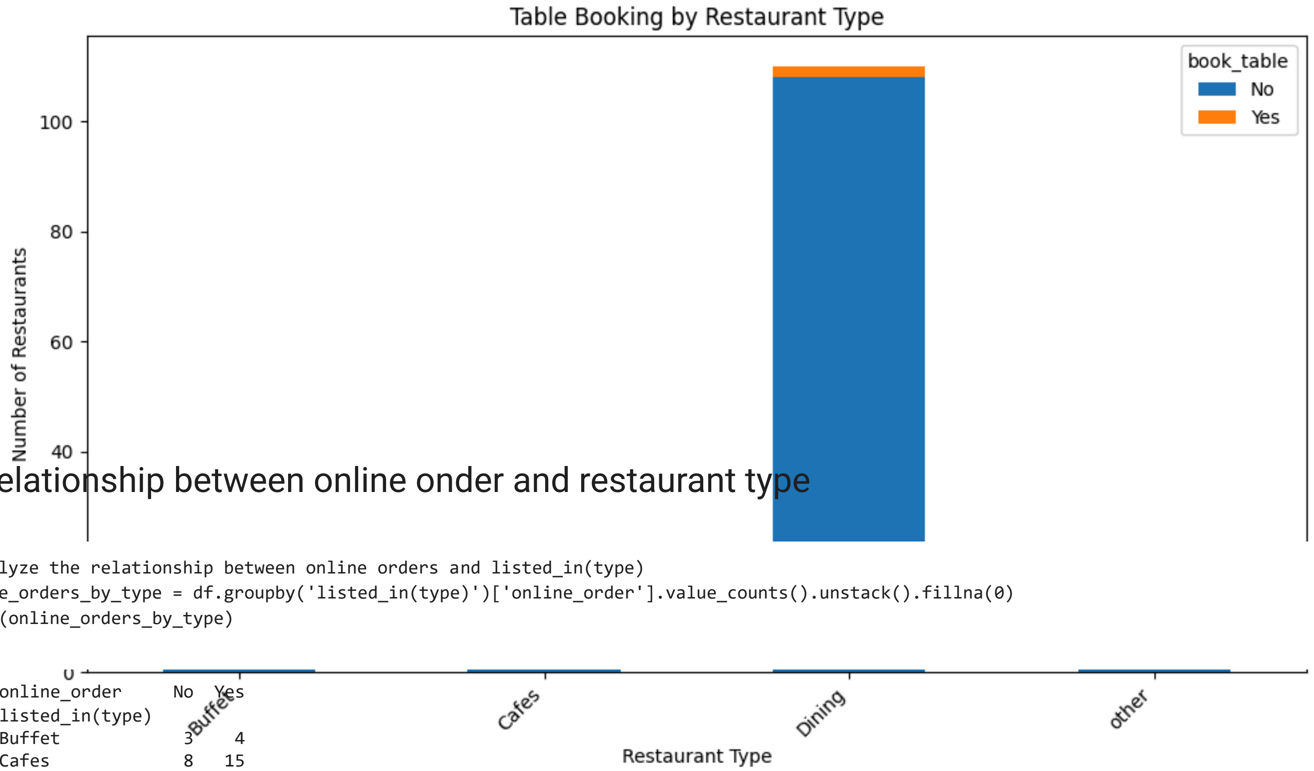
## Relationship between Table Booking and Restaurant Type

```
# Analyze the relationship between table booking and listed_in(type)
book_table_by_type = df.groupby('listed_in(type)')['book_table'].value_counts().unstack().fillna(0)
print(book_table_by_type)
```

```
book_table        No  Yes
listed_in(type)
Buffet             6    1
Cafes             20    3
Dining           108    2
other              6    2
```

This code groups the data by 'listed_in(type)' and counts the occurrences of 'Yes' and 'No' in the 'book_table' column. The result is a table showing the number of restaurants in each type that offer table booking.

```
# Visualize the relationship between table booking and listed_in(type)
book_table_by_type.plot(kind='bar', stacked=True, figsize=(10, 6))
plt.title('Table Booking by Restaurant Type')
plt.xlabel('Restaurant Type')
plt.ylabel('Number of Restaurants')
plt.xticks(rotation=45, ha='right')
plt.tight_layout()
plt.show()
```



## relationship between online onder and restaurant type

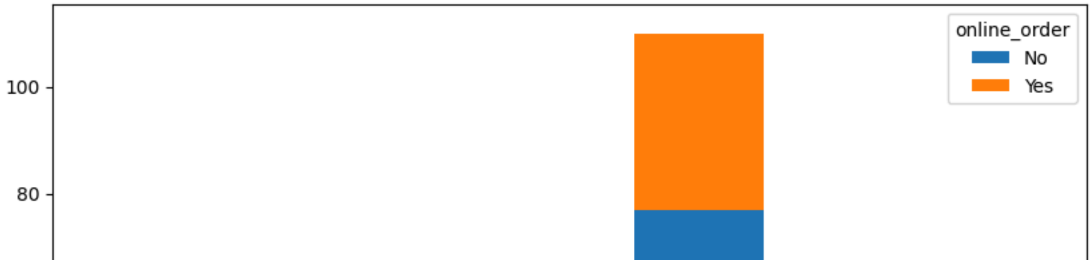
```
# Analyze the relationship between online orders and listed_in(type)
online_orders_by_type = df.groupby('listed_in(type)')['online_order'].value_counts().unstack().fillna(0)
print(online_orders_by_type)
```

```
online_order     No  Yes
listed_in(type)
Buffet            3    4
Cafes             8   15
Dining           77   33
other             2    6
```

## The majority of restaurants are "Dining" type and they receive the most votes, while online orders tend to have higher ratings than offline orders.

```
# Visualize the relationship between online orders booking and listed_in(type)
online_orders_by_type.plot(kind='bar', stacked=True, figsize=(10, 6))
plt.title('Online Orders by Restaurant Type')
plt.xlabel('Restaurant Type')
plt.ylabel('Number of Restaurants')
plt.xticks(rotation=45, ha='right')
plt.tight_layout()
plt.show()
```

```
<Axes: xlabel='listed_in(type)'>
```


online_order
🟦 No
🟧 Yes