Task: Task: Customer Preference Analysis

Level 3 : Task 2

Task :

- Analyze the relationship between the type of

cuisine and the restaurant's rating.

- Identify the most popular cuisines among

customers based on the number of votes.

- Determine if there are any specific cuisines

that tend to receive higher ratings.

1. Analyze the relationship between the type of cuisine and the restaurant's rating.

In [3]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.simplefilter("ignore")
```

In [4]:

```
data=pd.read_csv("Dataset1.csv")
data.head(3)
```

Out[4]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	L
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenu...	Century City Mall, Poblacion, Makati City	Century City Mall, Poblacion, Makati City, Mak...	1
1	6304287	Izakaya Kikufuji	162	Makati City	Little Tokyo, 2277 Chino Roces Avenue, Legaspi...	Little Tokyo, Legaspi Village, Makati City	Little Tokyo, Legaspi Village, Makati City, Ma...	1
2	6300002	Heat - Edsa Shangri-La	162	Mandaluyong City	Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...	Edsa Shangri-La, Ortigas, Mandaluyong City	Edsa Shangri-La, Ortigas, Mandaluyong City, Ma...	1

3 rows × 21 columns

In [7]:

```
df=data.copy()
```

In [9]:

```
df.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
```

In [11]:
```
df.describe()
```

Out[11]:

	Restaurant ID	Country Code	Longitude	Latitude	Average Cost for two	Price range
count	9.551000e+03	9551.000000	9551.000000	9551.000000	9551.000000	9551.000000
mean	9.051128e+06	18.365616	64.126574	25.854381	1199.210763	1.804837
std	8.791521e+06	56.750546	41.467058	11.007935	16121.183073	0.905609
min	5.300000e+01	1.000000	-157.948486	-41.330428	0.000000	1.000000
25%	3.019625e+05	1.000000	77.081343	28.478713	250.000000	1.000000
50%	6.004089e+06	1.000000	77.191964	28.570469	400.000000	2.000000
75%	1.835229e+07	1.000000	77.282006	28.642758	700.000000	2.000000
max	1.850065e+07	216.000000	174.832089	55.976980	800000.000000	4.000000

In [17]:
```
df.isnull().sum()
```

Out[17]:

```
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
```

In [21]:

```
df.duplicated().sum()
```

Out[21]:

```
0
```

In [23]:

```
# Standardize cuisines (if needed)
df['Cuisines'] = df['Cuisines'].str.split(', ').str[0]  # Consider only the primary
```

Group the data by the type of cuisine and compute metrics like the average rating and count of restaurants.

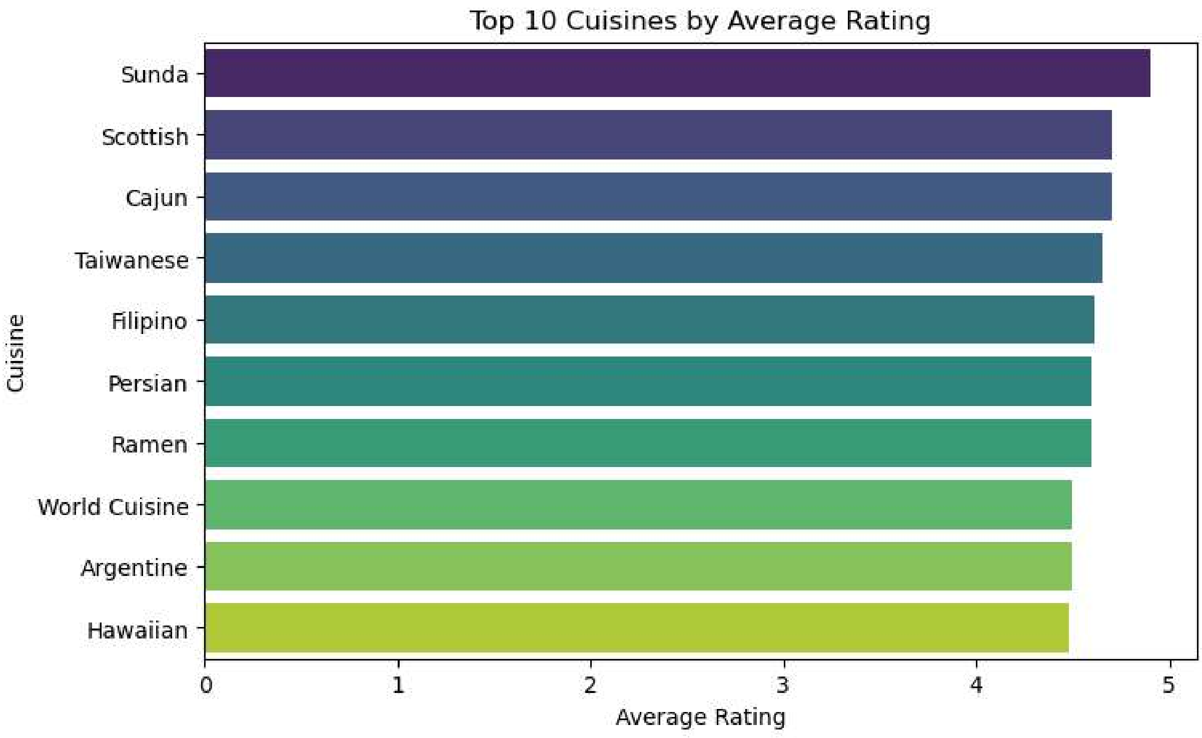
In [26]:

```
# Group by cuisines
cuisine_rating = df.groupby('Cuisines')['Aggregate rating'].agg(['mean', 'count']).

# Sort by average rating
cuisine_rating = cuisine_rating.sort_values(by='mean', ascending=False)

print(cuisine_rating)
```

```
           Cuisines      mean  count
106           Sunda  4.900000      3
96         Scottish  4.700000      1
24            Cajun  4.700000      1
108       Taiwanese  4.650000      2
37         Filipino  4.616667      6
..              ...       ...    ...
110             Tea  1.541176     17
76         Nepalese  1.000000      4
10           Awadhi  0.760000      5
0          Afghani  0.414286      7
32   Cuisine Varies  0.000000      1

[119 rows x 3 columns]
```

Visualisation

```
In [33]: # Show top 10 cuisines by average rating
top_cuisines = cuisine_rating.nlargest(10, 'mean')

# Show bottom 10 cuisines by average rating
bottom_cuisines = cuisine_rating.nsmallest(10, 'mean')

# Plot top cuisines
plt.figure(figsize=(8, 5))
sns.barplot(x='mean', y='Cuisines', data=top_cuisines, palette='viridis')
plt.title('Top 10 Cuisines by Average Rating')
plt.xlabel('Average Rating')
plt.ylabel('Cuisine')
plt.show()
```



Based on the Average rating Sunda is the top Cuisine.

2.Identify the most popular cuisines among customers based on the number of votes.

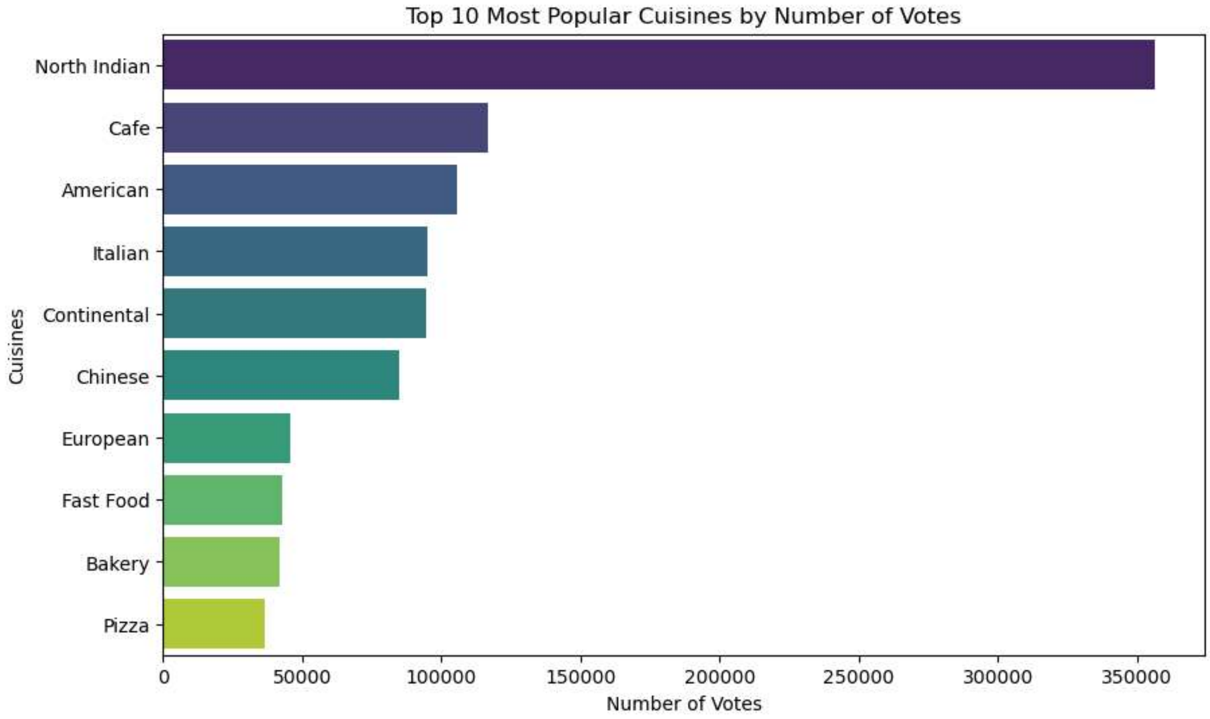
In [41]:

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

# Group by 'Cuisines' and sum the votes
popular_cuisines = df.groupby('Cuisines')['Votes'].sum().reset_index()

# Sort the cuisines by the total votes in descending order
popular_cuisines = popular_cuisines.sort_values(by='Votes', ascending=False)

# Display the top 10 cuisines with the highest votes
top_cuisines = popular_cuisines.head(10)
print(top_cuisines)
```

```
        Cuisines   Votes
79  North Indian  356684
23          Cafe  116576
2       American  105447
54       Italian   95153
30   Continental   94569
27       Chinese   84918
35      European   45842
36     Fast Food   42617
12        Bakery   42008
87         Pizza   36415
```

In [43]:

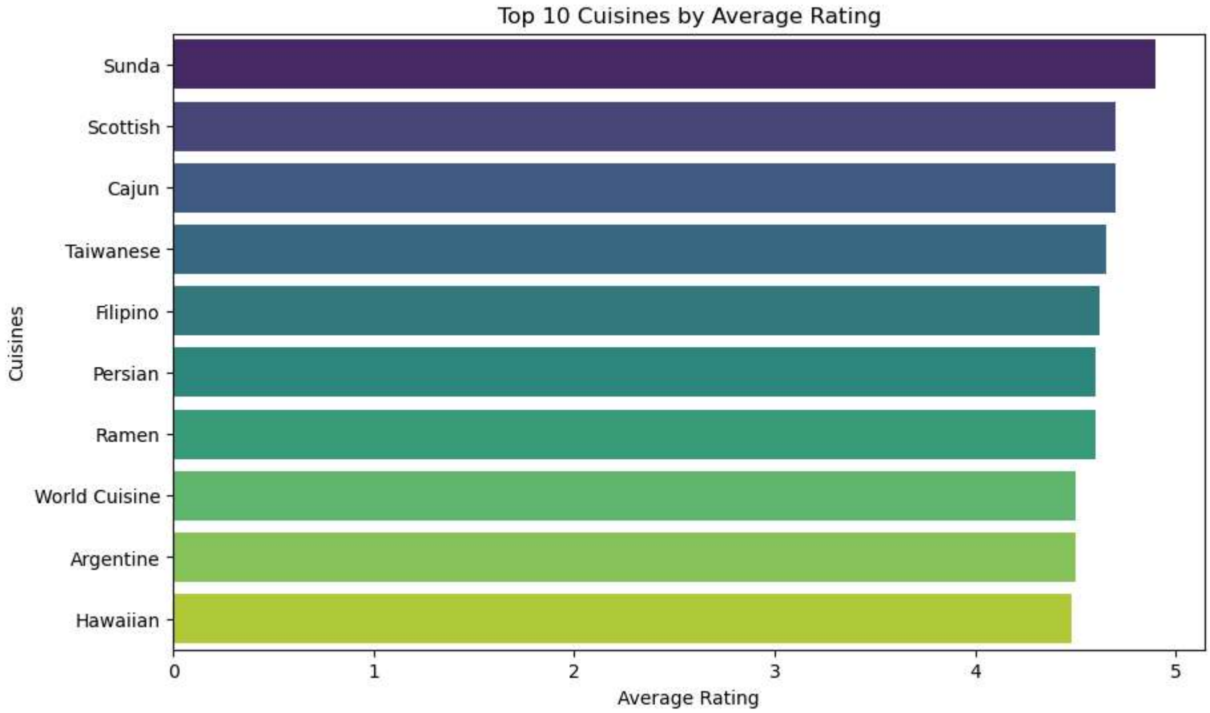
```
# Plot the top 10 cuisines based on votes
plt.figure(figsize=(10, 6))
sns.barplot(data=top_cuisines, x='Votes', y='Cuisines', palette='viridis')
plt.title('Top 10 Most Popular Cuisines by Number of Votes')
plt.xlabel('Number of Votes')
plt.ylabel('Cuisines')
plt.show()
```

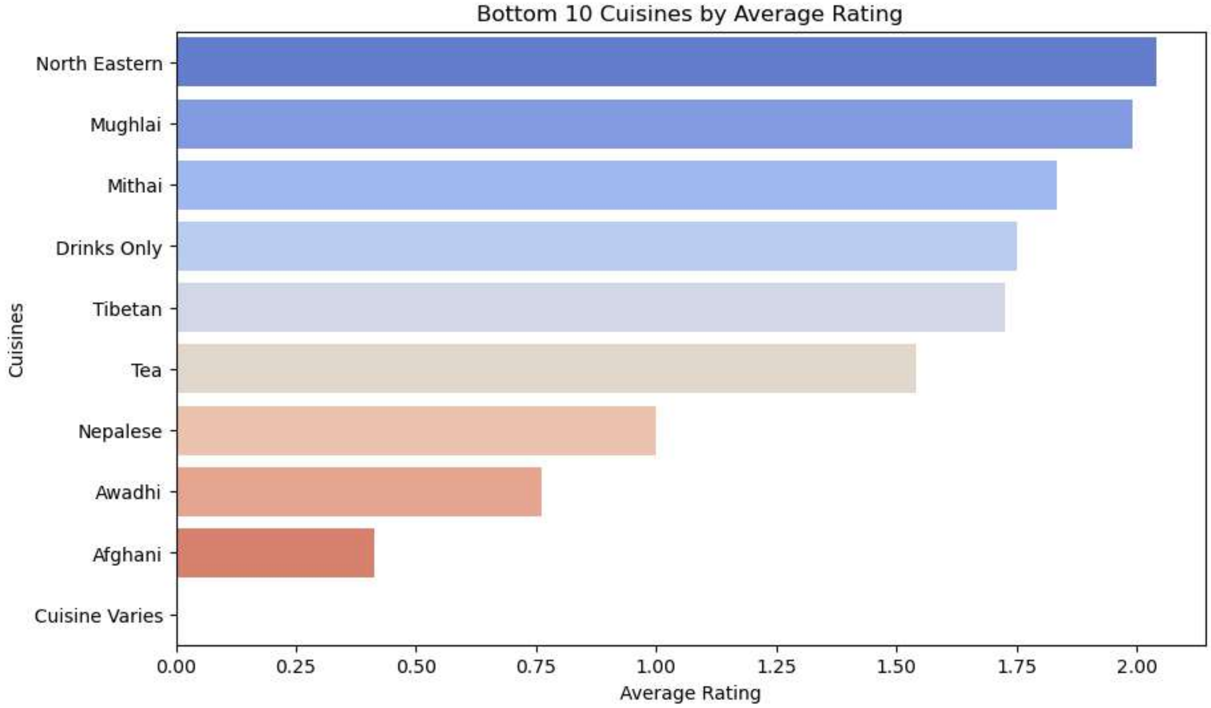


Based on the number of votes North Indian Cuisines is the best.

3. Determine if there are any specific cuisines that tend to receive higher ratings.

In [50]:
```
# Group by 'Cuisines' and calculate the average rating
cuisine_ratings = df.groupby('Cuisines')['Aggregate rating'].mean().reset_index()

# Sort cuisines by average rating in descending order
cuisine_ratings = cuisine_ratings.sort_values(by='Aggregate rating', ascending=Fals

# Display the top 10 cuisines with the highest average ratings
top_rated_cuisines = cuisine_ratings.head(10)

# Plot the top 10 cuisines by average rating
plt.figure(figsize=(10, 6))
sns.barplot(data=top_rated_cuisines, x='Aggregate rating', y='Cuisines', palette='v
plt.title('Top 10 Cuisines by Average Rating')
plt.xlabel('Average Rating')
plt.ylabel('Cuisines')
plt.show()

# Display the bottom 10 cuisines with the lowest average ratings
low_rated_cuisines = cuisine_ratings.tail(10)

# Plot the bottom 10 cuisines by average rating
plt.figure(figsize=(10, 6))
sns.barplot(data=low_rated_cuisines, x='Aggregate rating', y='Cuisines', palette='c
plt.title('Bottom 10 Cuisines by Average Rating')
plt.xlabel('Average Rating')
plt.ylabel('Cuisines')
plt.show()
```





Insights to Look For

Top-Rated Cuisines : Cuisines with the highest average ratings indicate customer satisfaction or premium quality.

Low-Rated Cuisines : Cuisines with consistently low ratings may highlight areas for improvement in quality or service.

Comparison with Popularity : Compare the average ratings with the number of votes to determine if high-rated cuisines are also the most popular.

In [ ]: