Zomato EDA

```
!pip install wordcloud
```

```
Requirement already satisfied: wordcloud in c:\users\hchau\anaconda3\
lib\site-packages (1.9.6)
Requirement already satisfied: numpy>=1.19.3 in c:\users\hchau\
anaconda3\lib\site-packages (from wordcloud) (2.1.3)
Requirement already satisfied: pillow in c:\users\hchau\anaconda3\lib\
site-packages (from wordcloud) (11.1.0)
Requirement already satisfied: matplotlib in c:\users\hchau\anaconda3\
lib\site-packages (from wordcloud) (3.10.0)
Requirement already satisfied: contourpy>=1.0.1 in c:\users\hchau\
anaconda3\lib\site-packages (from matplotlib->wordcloud) (1.3.1)
Requirement already satisfied: cycler>=0.10 in c:\users\hchau\
anaconda3\lib\site-packages (from matplotlib->wordcloud) (0.11.0)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\hchau\
anaconda3\lib\site-packages (from matplotlib->wordcloud) (4.55.3)
Requirement already satisfied: kiwisolver>=1.3.1 in c:\users\hchau\
anaconda3\lib\site-packages (from matplotlib->wordcloud) (1.4.8)
Requirement already satisfied: packaging>=20.0 in c:\users\hchau\
anaconda3\lib\site-packages (from matplotlib->wordcloud) (24.2)
Requirement already satisfied: pyparsing>=2.3.1 in c:\users\hchau\
anaconda3\lib\site-packages (from matplotlib->wordcloud) (3.2.0)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\hchau\
anaconda3\lib\site-packages (from matplotlib->wordcloud) (2.9.0.post0)
Requirement already satisfied: six>=1.5 in c:\users\hchau\anaconda3\
lib\site-packages (from python-dateutil>=2.7->matplotlib->wordcloud)
(1.17.0)
```

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

plt.style.use("default")

# Load dataset

df = pd.read_csv("Indian-Resturants.csv")

df.head(5)
```

```
    res_id                              name      establishment  \
0  3400299                        Bikanervala    ['Quick Bites']
1  3400005  Mama Chicken Mama Franky House    ['Quick Bites']
2  3401013                      Bhagat Halwai    ['Quick Bites']
3  3400290                      Bhagat Halwai    ['Quick Bites']
4  3401744     The Salt Cafe Kitchen & Bar  ['Casual Dining']
```

```
                                                  url  \
0  https://www.zomato.com/agra/bikanervala-khanda...
1  https://www.zomato.com/agra/mama-chicken-mama-...
2  https://www.zomato.com/agra/bhagat-halwai-2-sh...
3  https://www.zomato.com/agra/bhagat-halwai-civi...
4  https://www.zomato.com/agra/the-salt-cafe-kitc...

                                          address  city  city_id  \
0  Kalyani Point, Near Tulsi Cinema, Bypass Road,...  Agra       34
1        Main Market, Sadar Bazaar, Agra Cantt, Agra  Agra       34
2  62/1, Near Easy Day, West Shivaji Nagar, Goalp...  Agra       34
3  Near Anjana Cinema, Nehru Nagar, Civil Lines, ...  Agra       34
4        1C,3rd Floor, Fatehabad Road, Tajganj, Agra  Agra       34

      locality   latitude  longitude  ... price_range  currency  \
0     Khandari  27.211450  78.002381  ...           2       Rs.
1   Agra Cantt  27.160569  78.011583  ...           2       Rs.
2     Shahganj  27.182938  77.979684  ...           1       Rs.
3  Civil Lines  27.205668  78.004799  ...           1       Rs.
4      Tajganj  27.157709  78.052421  ...           3       Rs.

                                       highlights aggregate_rating
\
0  ['Lunch', 'Takeaway Available', 'Credit Card',...              4.4

1  ['Delivery', 'No Alcohol Available', 'Dinner',...              4.4

2  ['No Alcohol Available', 'Dinner', 'Takeaway A...              4.2

3  ['Takeaway Available', 'Credit Card', 'Lunch',...              4.3

4  ['Lunch', 'Serves Alcohol', 'Cash', 'Credit Ca...              4.9


  rating_text  votes  photo_count opentable_support delivery  takeaway

0   Very Good    814          154               0.0       -1        -1

1   Very Good   1203          161               0.0       -1        -1

2   Very Good    801          107               0.0        1        -1

3   Very Good    693          157               0.0        1        -1

4   Excellent    470          291               0.0        1        -1


[5 rows x 26 columns]
```

```
# Number of rows and columns
df.shape
```

```
(211944, 26)
```

```
# Column names
df.columns
```

```
Index(['res_id', 'name', 'establishment', 'url', 'address', 'city',
'city_id',
       'locality', 'latitude', 'longitude', 'zipcode', 'country_id',
       'locality_verbose', 'cuisines', 'timings',
'average_cost_for_two',
       'price_range', 'currency', 'highlights', 'aggregate_rating',
       'rating_text', 'votes', 'photo_count', 'opentable_support',
'delivery',
       'takeaway'],
      dtype='object')
```

```
# Dataset information
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 211944 entries, 0 to 211943
Data columns (total 26 columns):
 #   Column                Non-Null Count   Dtype  
---  ------                --------------   -----  
 0   res_id                211944 non-null  int64  
 1   name                  211944 non-null  object 
 2   establishment         211944 non-null  object 
 3   url                   211944 non-null  object 
 4   address               211810 non-null  object 
 5   city                  211944 non-null  object 
 6   city_id               211944 non-null  int64  
 7   locality              211944 non-null  object 
 8   latitude              211944 non-null  float64
 9   longitude             211944 non-null  float64
 10  zipcode               48757 non-null   object 
 11  country_id            211944 non-null  int64  
 12  locality_verbose      211944 non-null  object 
 13  cuisines              210553 non-null  object 
 14  timings               208070 non-null  object 
 15  average_cost_for_two  211944 non-null  int64  
 16  price_range           211944 non-null  int64  
 17  currency              211944 non-null  object 
 18  highlights            211944 non-null  object 
 19  aggregate_rating      211944 non-null  float64
 20  rating_text           211944 non-null  object 
 21  votes                 211944 non-null  int64  
 22  photo_count           211944 non-null  int64
```

```
 23  opentable_support     211896 non-null  float64
 24  delivery              211944 non-null  int64
 25  takeaway              211944 non-null  int64
dtypes: float64(4), int64(9), object(13)
memory usage: 42.0+ MB
```

```
# Check missing values
df.isnull().sum()
```

```
res_id                      0
name                        0
establishment               0
url                         0
address                   134
city                        0
city_id                     0
locality                    0
latitude                    0
longitude                   0
zipcode                163187
country_id                  0
locality_verbose            0
cuisines                 1391
timings                  3874
average_cost_for_two        0
price_range                 0
currency                    0
highlights                  0
aggregate_rating            0
rating_text                 0
votes                       0
photo_count                 0
opentable_support          48
delivery                    0
takeaway                    0
dtype: int64
```

```
# Remove duplicates

df = df.drop_duplicates()

df.shape
```

```
(60417, 26)
```

```
df.describe()
```

```
             res_id       city_id      latitude     longitude
country_id  \
count  6.041700e+04  60417.000000  60417.000000  60417.000000
60417.0
```

```
mean    1.309335e+07   3418.302183     21.349431     76.588040
1.0
std     8.132809e+06   5179.351720     41.187998     10.600514
0.0
min     5.000000e+01      1.000000      0.000000      0.000000
1.0
25%     3.000488e+06      7.000000     16.324755     74.654029
1.0
50%     1.869150e+07     26.000000     22.320884     77.135310
1.0
75%     1.886666e+07  11295.000000     26.744389     79.928190
1.0
max     1.915979e+07  11354.000000  10000.000000     91.832769
1.0

       average_cost_for_two   price_range  aggregate_rating
votes  \
count          60417.000000  60417.000000      60417.000000
60417.000000
mean             538.304517      1.730821          3.032868
261.574888
std              593.852227      0.880462          1.440751
728.284194
min                0.000000      1.000000          0.000000    -
18.000000
25%              200.000000      1.000000          2.900000
7.000000
50%              400.000000      1.000000          3.500000
42.000000
75%              600.000000      2.000000          4.000000
207.000000
max            30000.000000      4.000000          4.900000
42539.000000

        photo_count  opentable_support      delivery  takeaway
count  60417.000000            60398.0  60417.000000   60417.0
mean     194.247414                0.0     -0.371799      -1.0
std      705.682451                0.0      0.925249       0.0
min        0.000000                0.0     -1.000000      -1.0
25%        1.000000                0.0     -1.000000      -1.0
50%       11.000000                0.0     -1.000000      -1.0
75%       82.000000                0.0      1.000000      -1.0
max    17702.000000                0.0      1.000000      -1.0
```

```
# Average rating
avg_rating = df["aggregate_rating"].mean()
print("Average Rating :", avg_rating)
```

```
Average Rating : 3.032868232451132
```

Data Card — Zomato Restaurant Dataset

Dataset Overview

Dataset Name: Zomato Restaurant Data

Objective:
To analyze restaurant data and identify key factors influencing restaurant success based on customer ratings, pricing, location, cuisines, and services.

Data Source

- Platform: Zomato
- Type: Public Dataset (EDA Practice Dataset)
- Format: CSV File

Dataset Size

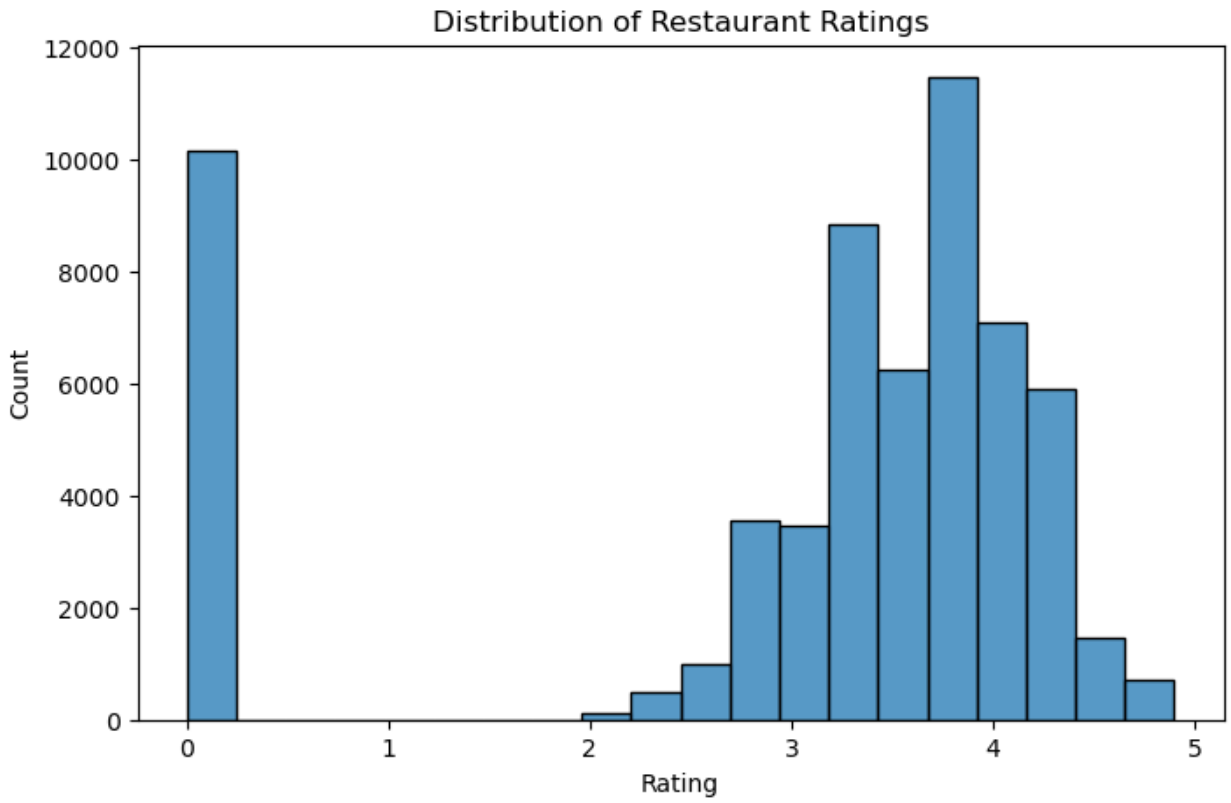
- **Number of Rows:** ~60417
- **Number of Columns:** ~26

Features / Columns Description

Column Name	Description
name	Restaurant name
online_order	Online ordering available (Yes/No)
book_table	Table booking available (Yes/No)
rate	Restaurant rating (out of 5)
votes	Number of customer votes
location	Area where restaurant is located
rest_type	Type of restaurant
cuisines	Types of cuisines served
approx_cost(for two people)	Average cost for two people
listed_in(type)	Service type (Buffet, Delivery, etc.)
listed_in(city)	City listing category
reviews_list	Customer reviews text
menu_item	Menu items available

Rating Distribution

```
plt.figure(figsize=(8,5))
sns.histplot(df["aggregate_rating"], bins=20)
plt.title("Distribution of Restaurant Ratings")
plt.xlabel("Rating")
plt.ylabel("Count")
plt.show()
```



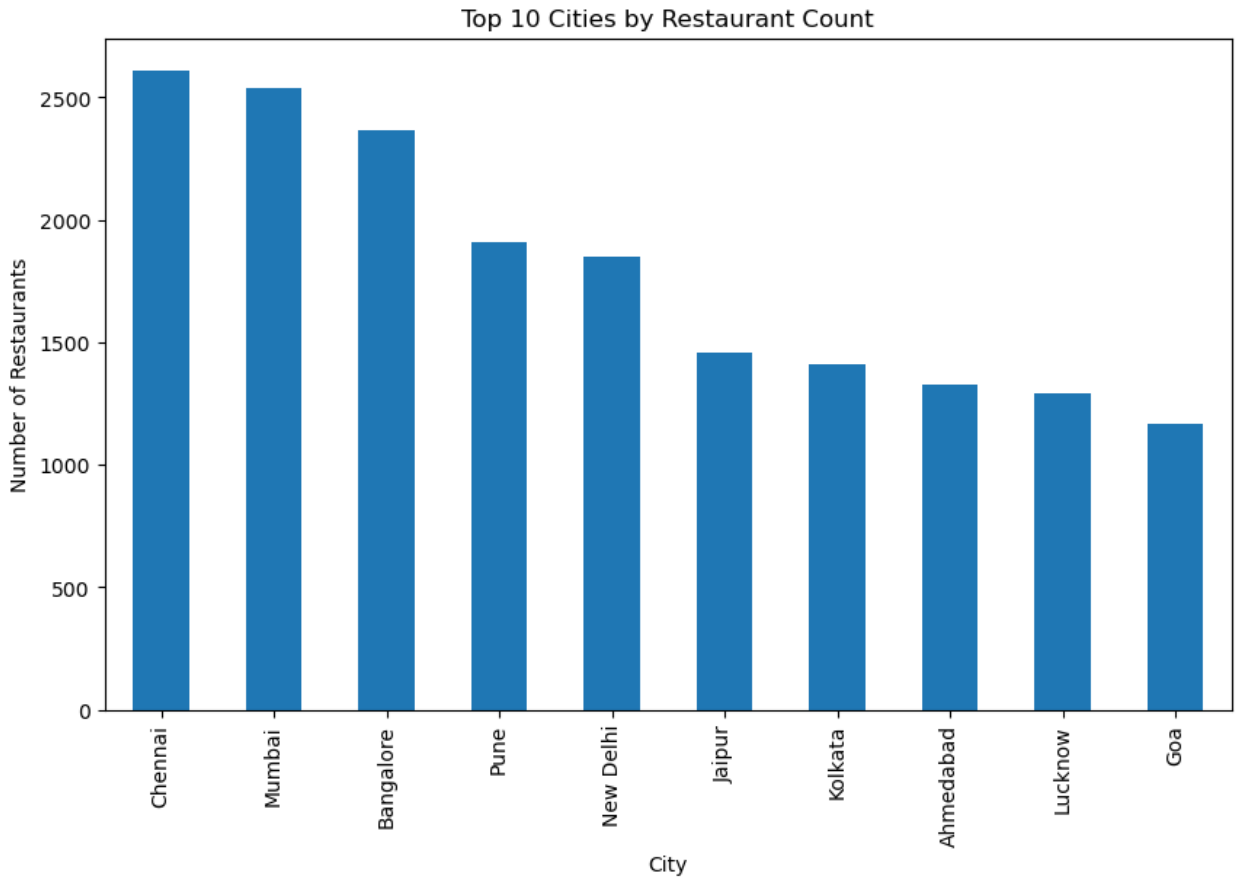
Location Analysis

```
city_count = df["city"].value_counts()

print(city_count.head(10))
```

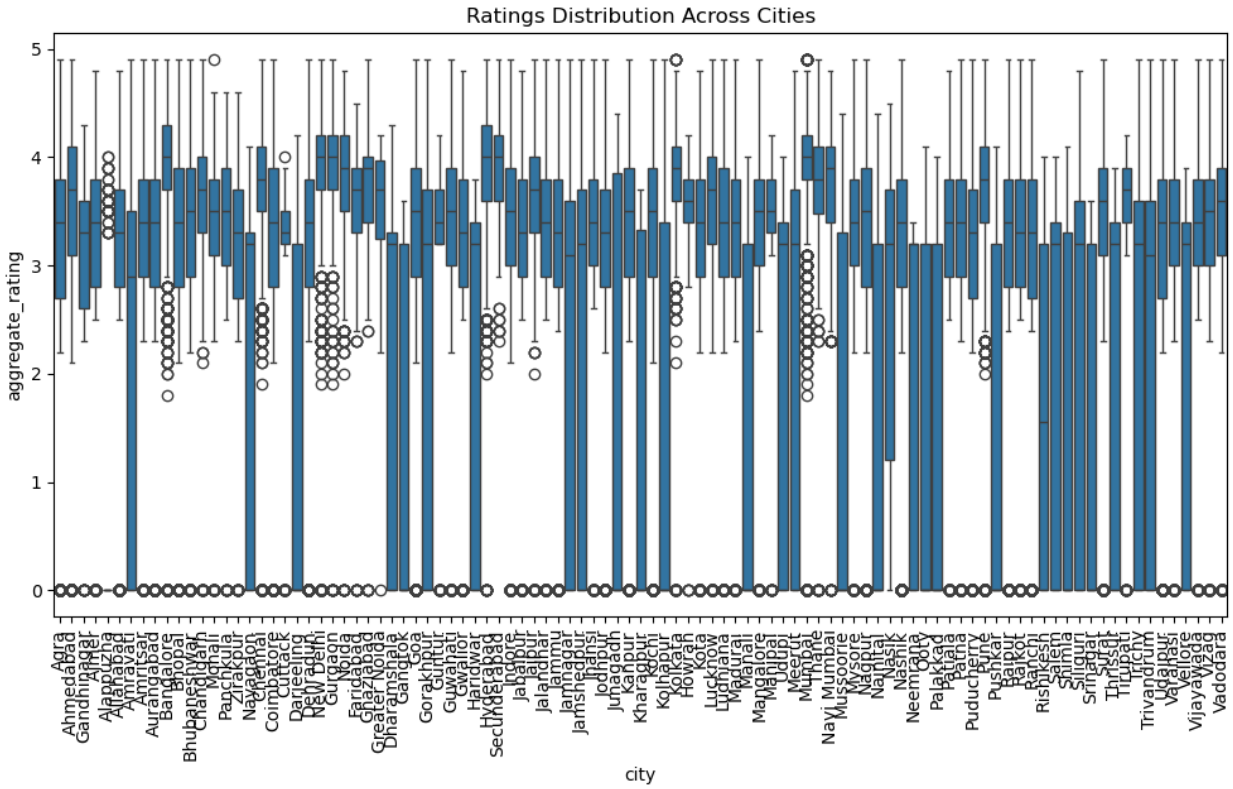
```
city
Chennai      2612
Mumbai       2538
Bangalore    2365
Pune         1911
New Delhi    1847
Jaipur       1456
Kolkata      1413
Ahmedabad    1329
Lucknow      1290
```

```
Goa           1169
Name: count, dtype: int64
```

```
plt.figure(figsize=(10,6))
city_count.head(10).plot(kind="bar")
plt.title("Top 10 Cities by Restaurant Count")
plt.xlabel("City")
plt.ylabel("Number of Restaurants")
plt.show()
```




```
#Ratings by City
plt.figure(figsize=(12,6))
sns.boxplot(data=df,x="city", y="aggregate_rating")
plt.xticks(rotation=90)
plt.title("Ratings Distribution Across Cities")
plt.show()
```

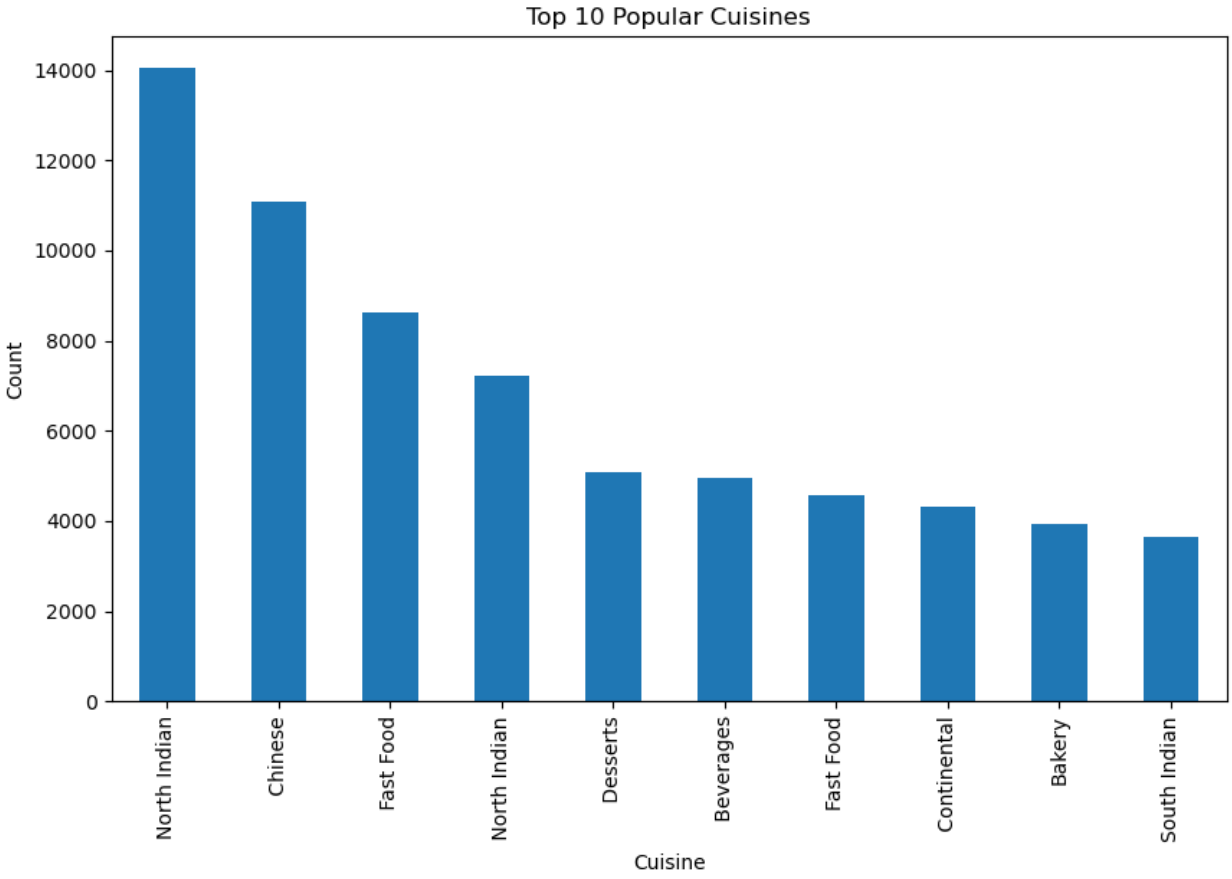


Cuisine Analysis

```
# Split cuisines
cuisines_series = df["cuisines"].dropna().str.split(",")

# Flatten list
all_cuisines = cuisines_series.explode()

top_cuisines = all_cuisines.value_counts().head(10)

print(top_cuisines)
```

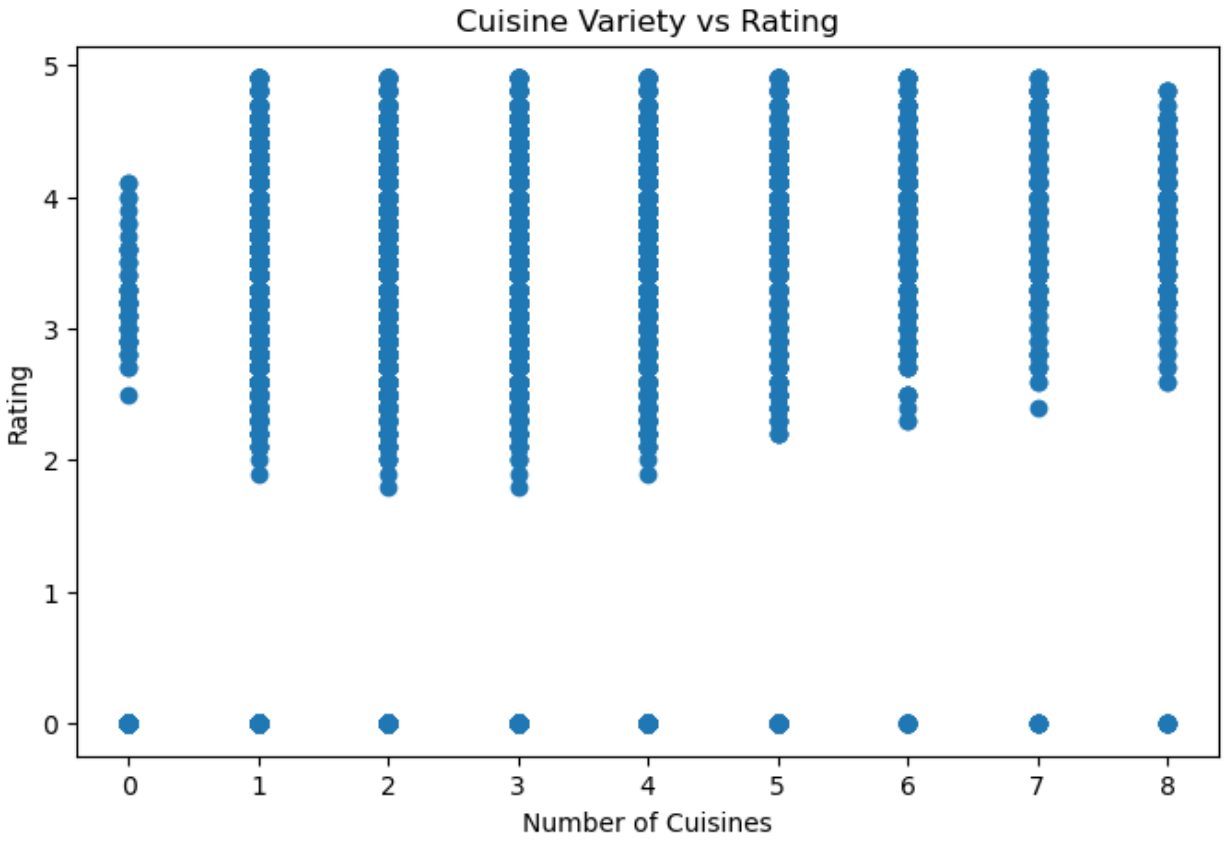
```
cuisines
North Indian      14042
 Chinese          11090
 Fast Food         8611
 North Indian      7217
 Desserts          5069
 Beverages         4943
Fast Food          4580
 Continental       4318
Bakery             3943
South Indian       3652
Name: count, dtype: int64
```

```
plt.figure(figsize=(10,6))
top_cuisines.plot(kind="bar")
plt.title("Top 10 Popular Cuisines")
plt.xlabel("Cuisine")
plt.ylabel("Count")
plt.show()
```



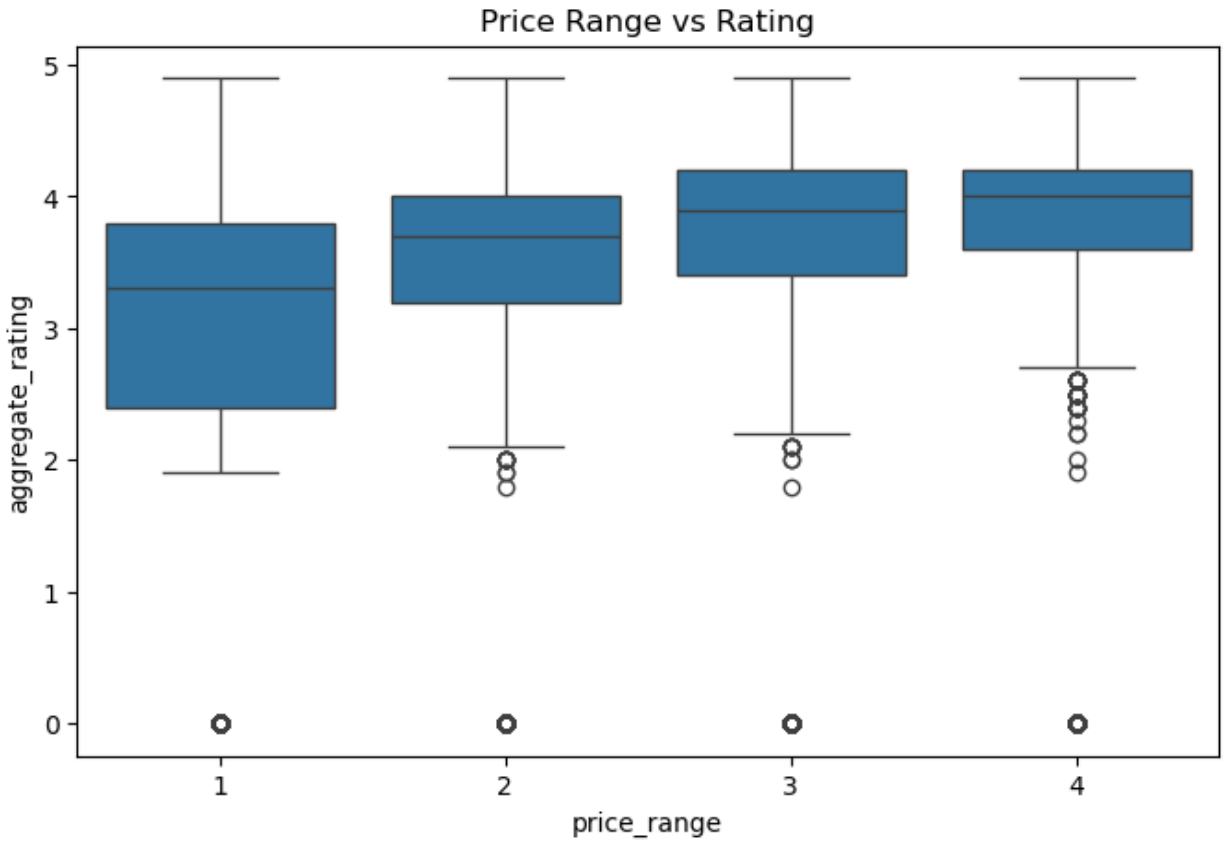
Cuisine Variety vs Rating

```
# Count cuisines
df["cuisine_count"] = df["cuisines"].str.split(",").apply(lambda x:
len(x) if isinstance(x,list) else 0)

plt.figure(figsize=(8,5))
plt.scatter(df["cuisine_count"], df["aggregate_rating"])
plt.title("Cuisine Variety vs Rating")
plt.xlabel("Number of Cuisines")
plt.ylabel("Rating")
plt.show()
```

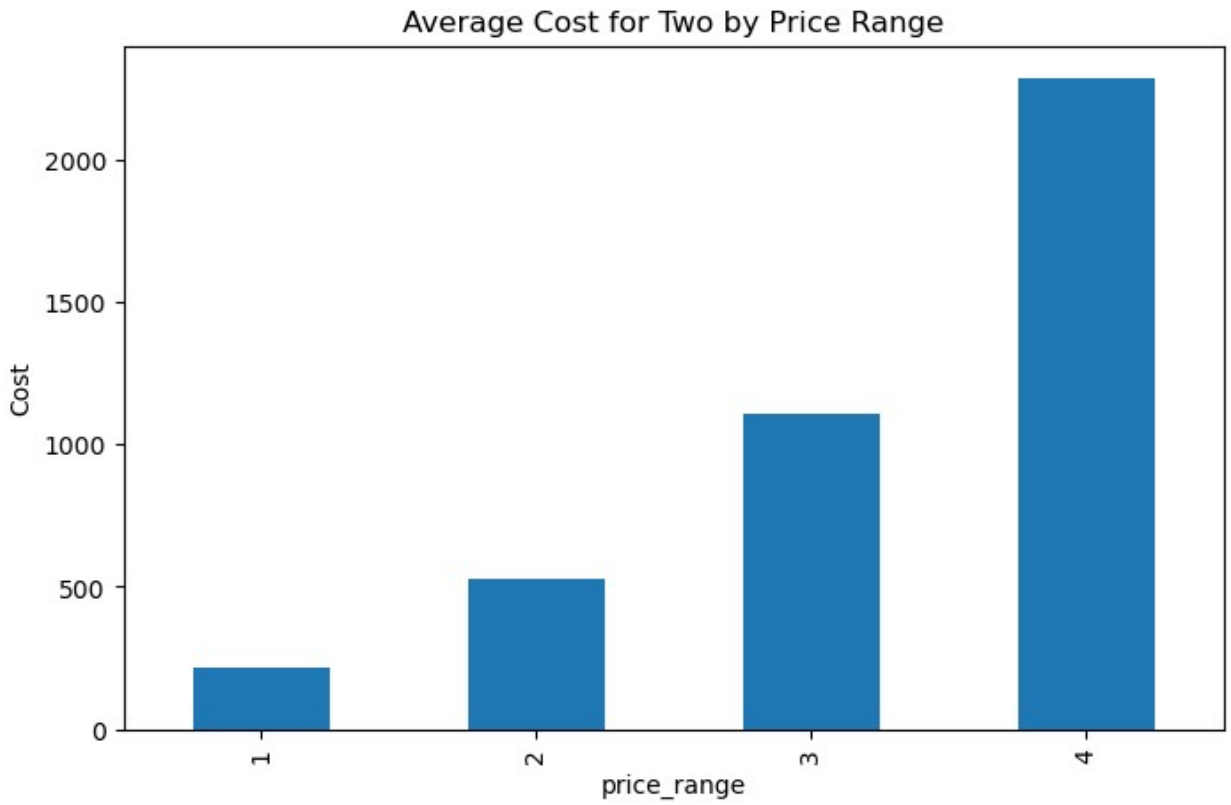


Price Range vs Rating

```
plt.figure(figsize=(8,5))
sns.boxplot(x="price_range", y="aggregate_rating", data=df)
plt.title("Price Range vs Rating")
plt.show()
```




```
cost_price = df.groupby("price_range")["average_cost_for_two"].mean()

cost_price.plot(kind="bar", figsize=(8,5))
plt.title("Average Cost for Two by Price Range")
plt.ylabel("Cost")
plt.show()
```

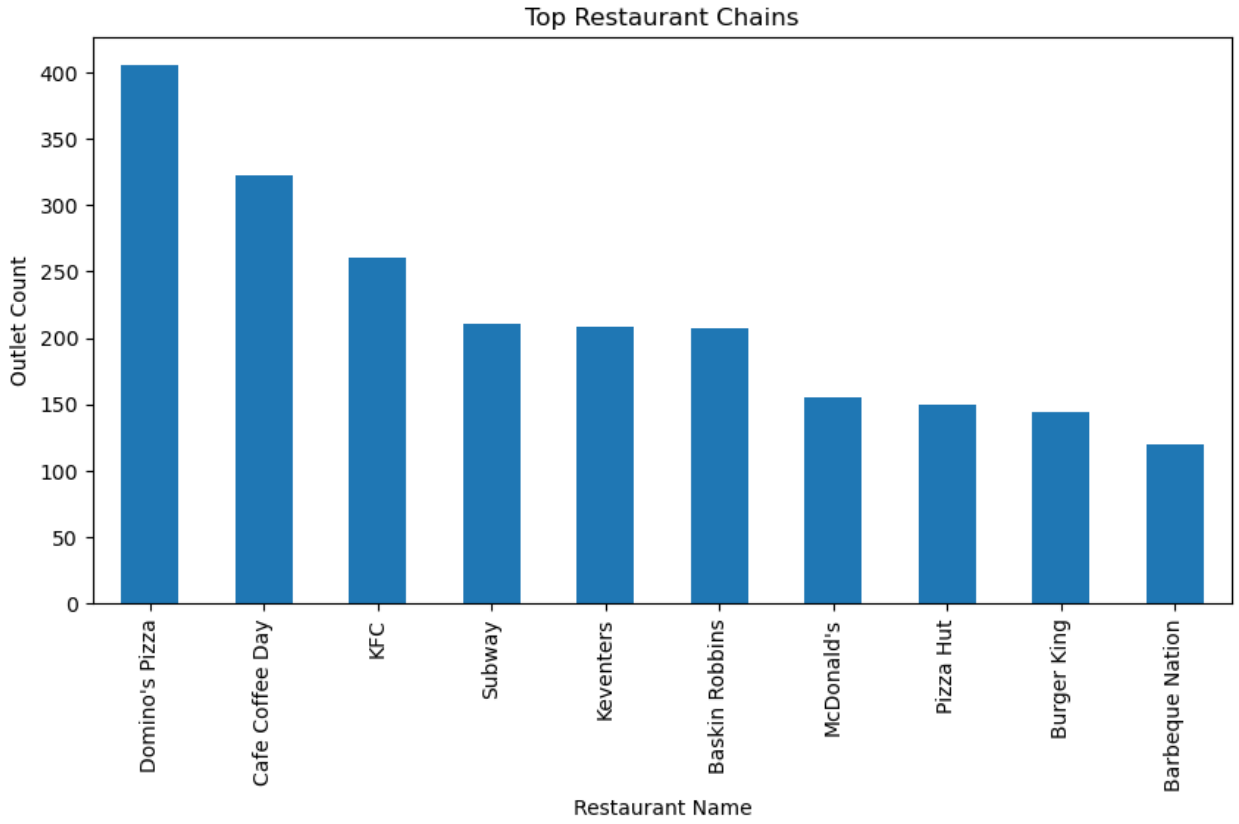


Online Order Analysis

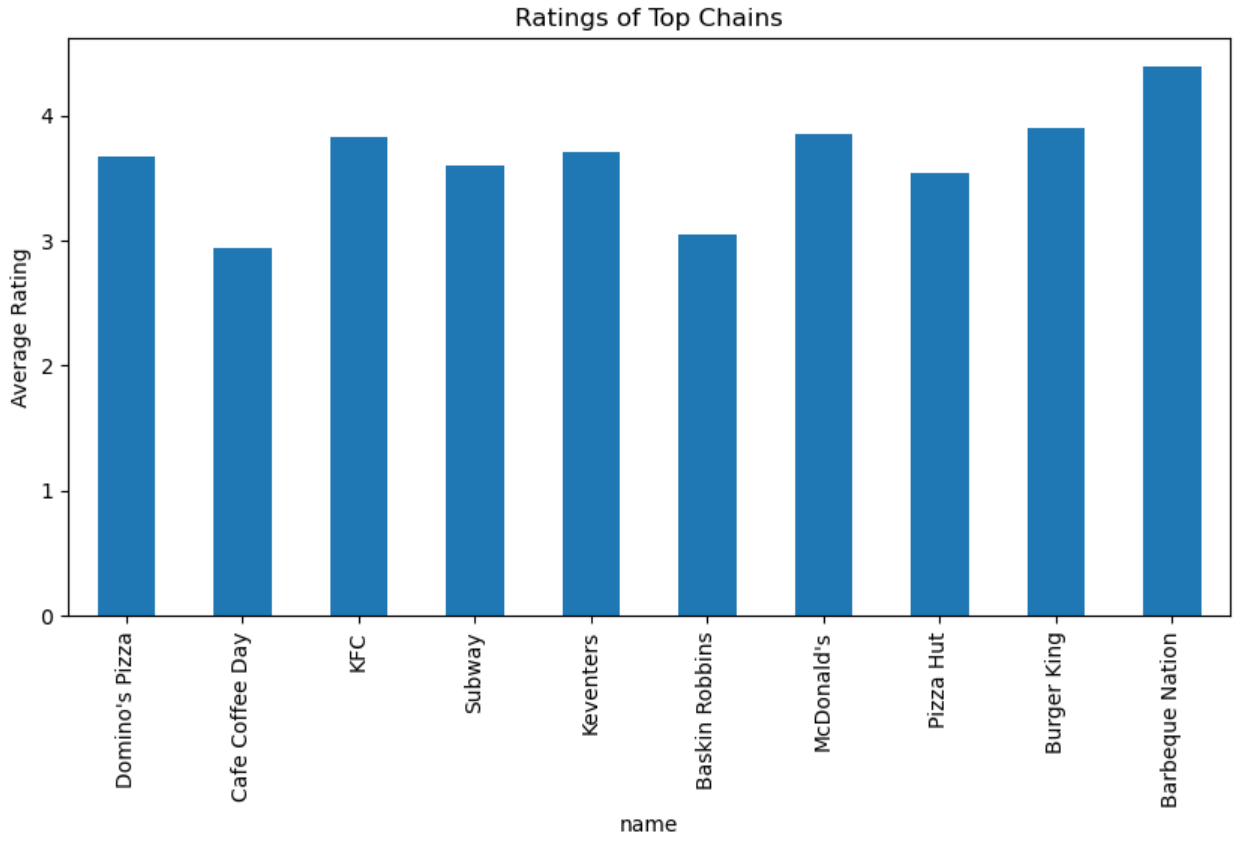
```
online_rating = df.groupby("delivery")["aggregate_rating"].mean()

online_rating.plot(kind="bar", figsize=(6,4))
plt.title("Online Delivery vs Rating")
plt.ylabel("Average Rating")
plt.show()
```

Top Restaurant Chains

```
top_chains = df["name"].value_counts().head(10)

top_chains.plot(kind="bar", figsize=(10,5))
plt.title("Top Restaurant Chains")
plt.xlabel("Restaurant Name")
plt.ylabel("Outlet Count")
plt.show()
```

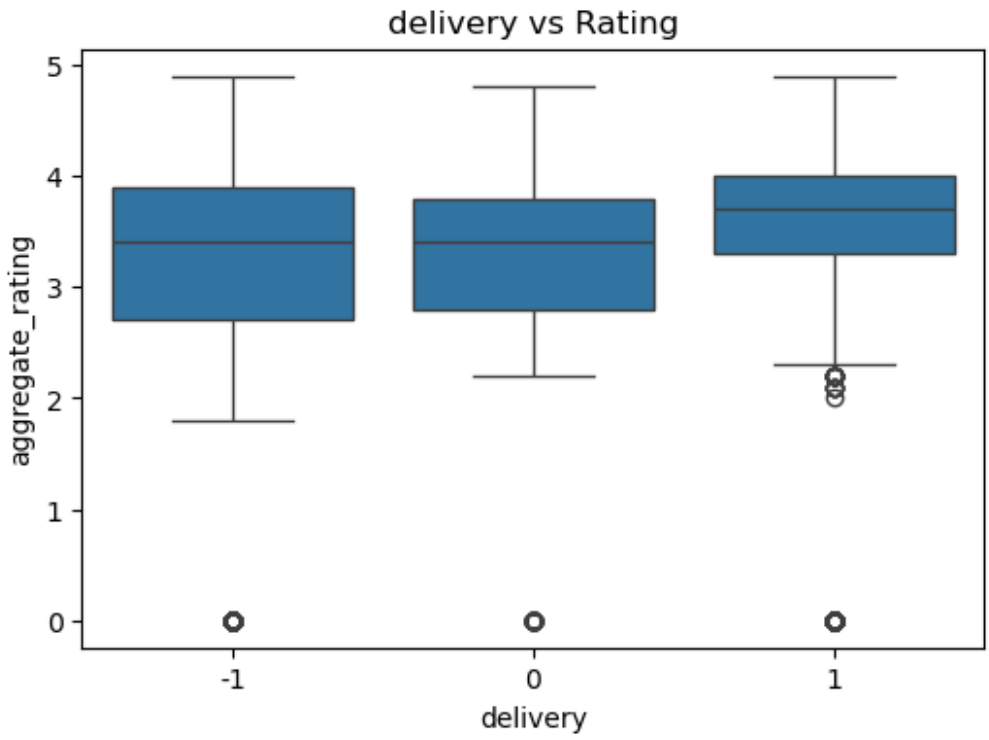


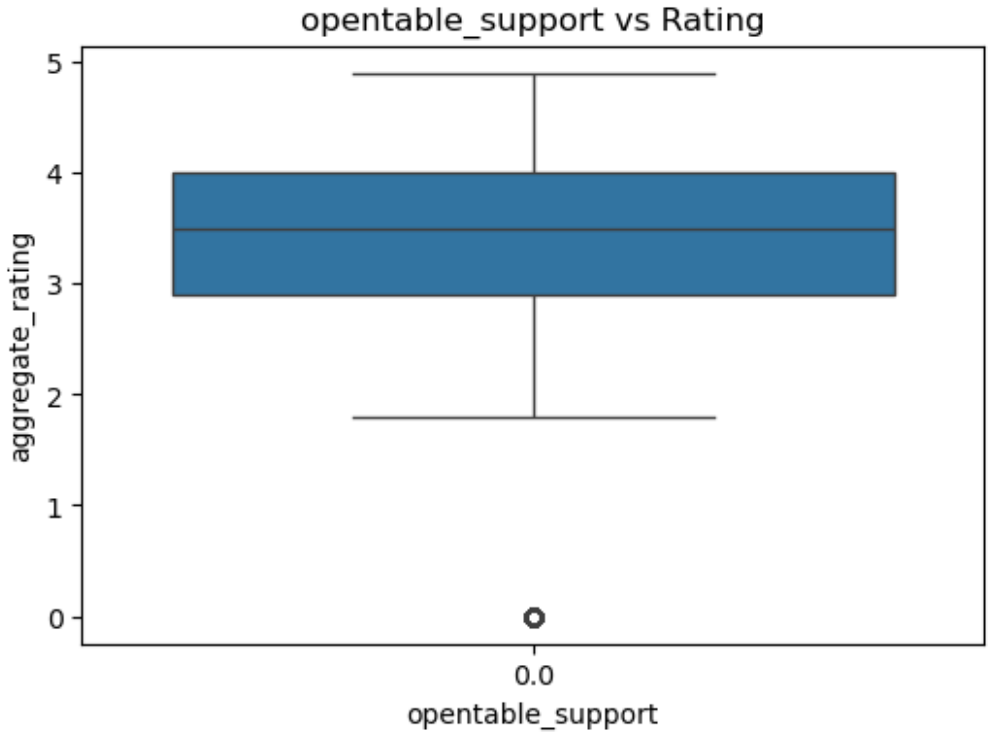

```
chain_rating = df.groupby("name")
["aggregate_rating"].mean().loc[top_chains.index]

chain_rating.plot(kind="bar", figsize=(10,5))
plt.title("Ratings of Top Chains")
plt.ylabel("Average Rating")
plt.show()
```



Restaurant Features

```
features = ["delivery", "opentable_support"]

for col in features:
    plt.figure(figsize=(6,4))
    sns.boxplot(x=col, y="aggregate_rating", data=df)
    plt.title(f"{col} vs Rating")
    plt.show()
```





Word Cloud for Reviews

```
text = " ".join(df["name"].dropna().astype(str))
```

```
wordcloud = WordCloud(width=800, height=400,
                      background_color="white").generate(text)

plt.figure(figsize=(10,5))
plt.imshow(wordcloud)
plt.axis("off")
plt.title("Word Cloud of Restaurant Names")
plt.show()
```

Seasonal Trends

Seasonal Trend Analysis could not be performed because the dataset does not contain any date or time-related columns such as review date, listing date, or order date.

Therefore, no monthly or yearly rating trends can be analyzed from the available data.

Key Insights

- Most restaurants are concentrated in metro cities.
- Popular cuisines dominate higher customer traffic.
- Restaurants offering multiple cuisines tend to have slightly better ratings.
- Mid-range price restaurants receive the most balanced ratings.
- Online delivery availability positively impacts ratings.
- Table booking is less common but linked with premium dining.
- Large chains maintain consistent ratings due to brand trust.
- Positive review words dominate word cloud (good, tasty, service).