

```

import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import missingno as msno
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder, StandardScaler
from sklearn.linear_model import LinearRegression
from sklearn.tree import DecisionTreeRegressor
from sklearn.metrics import mean_squared_error, r2_score
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score, precision_score, recall_score, classification_report
from sklearn.neighbors import NearestNeighbors
import folium

```

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

```
print(df)
```

```

9547      Koşuyolu, İstanbul 29.041297
9548      Kuruçeşme, İstanbul 29.034640
9549      Kuruçeşme, İstanbul 29.036019
9550      Moda, İstanbul 29.026016

   Latitude  Cuisines  ...  Currency \
0   14.565443  French, Japanese, Desserts  ...  Botswana Pula(P)
1   14.553708      Japanese  ...  Botswana Pula(P)
2   14.581404  Seafood, Asian, Filipino, Indian  ...  Botswana Pula(P)
3   14.585318      Japanese, Sushi  ...  Botswana Pula(P)
4   14.584450      Japanese, Korean  ...  Botswana Pula(P)
...      ...      ...      ...
9546  41.022793      Turkish  ...  Turkish Lira(TL)
9547  41.009847  World Cuisine, Patisserie, Cafe  ...  Turkish Lira(TL)
9548  41.055817      Italian, World Cuisine  ...  Turkish Lira(TL)
9549  41.057979      Restaurant Cafe  ...  Turkish Lira(TL)
9550  40.984776      Cafe  ...  Turkish Lira(TL)

   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
...      ...      ...      ...
9546                  No                   No                   No
9547                  No                   No                   No
9548                  No                   No                   No
9549                  No                   No                   No
9550                  No                   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
...      ...      ...      ...
9546                  No           3           4.1         Green
9547                  No           3           4.2         Green
9548                  No           4           3.7        Yellow
9549                  No           4           4.0         Green
9550                  No           2           4.0         Green

   Rating text  Votes
0      Excellent   314
1      Excellent   591
2      Very Good   270
3      Excellent   365
4      Excellent   229
...      ...      ...
9546      Very Good   788
9547      Very Good  1034
9548         Good    661
9549      Very Good   901
9550      Very Good   591

```

```
[9551 rows x 21 columns]
```

```
print(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 ...      Currency Has Table booking \
0      French, Japanese, Desserts ...      Botswana Pula(P)      Yes
1      Japanese ...      Botswana Pula(P)      Yes
2      Seafood, Asian, Filipino, Indian ...      Botswana Pula(P)      Yes
3      Japanese, Sushi ...      Botswana Pula(P)      No
4      Japanese, Korean ...      Botswana Pula(P)      Yes

Has Online delivery  Is delivering now  Switch to order menu  Price range \
0      No      No      No      3
1      No      No      No      3
2      No      No      No      4
3      No      No      No      4
4      No      No      No      4

Aggregate rating  Rating color  Rating text  Votes
0      4.8      Dark Green      Excellent      314
1      4.5      Dark Green      Excellent      591
2      4.4      Green      Very Good      270
3      4.9      Dark Green      Excellent      365
4      4.8      Dark Green      Excellent      229

```

```
[5 rows x 21 columns]
```

```
print(df.tail())
```

```

Restaurant ID      Restaurant Name  Country Code      City \
9546      5915730      Naml' Gurme      208      🇹🇷stanbul
9547      5908749      Ceviz A🇹🇷ac'      208      🇹🇷stanbul
9548      5915807      Huqqa      208      🇹🇷stanbul
9549      5916112      A🇹🇷🇹🇷k Kahve      208      🇹🇷stanbul
9550      5927402      Walter's Coffee Roastery      208      🇹🇷stanbul

Address      Locality \
9546      Kemanke🇹🇷 Karamustafa Pa🇹🇷a Mahallesi, R'ht'm ...      Karak🇹🇷_y
9547      Ko🇹🇷uyolu Mahallesi, Muhittin 🇹🇷st🇹🇷_nda🇹🇷 Cadd...      Ko🇹🇷uyolu
9548      Kuru🇹🇷_e🇹🇷me Mahallesi, Muallim Naci Caddesi, N...      Kuru🇹🇷_e🇹🇷me
9549      Kuru🇹🇷_e🇹🇷me Mahallesi, Muallim Naci Caddesi, N...      Kuru🇹🇷_e🇹🇷me
9550      Cafea🇹🇷a Mahallesi, Bademalt' Sokak, No 21/B, ...      Moda

Locality Verbose  Longitude  Latitude \
9546      Karak🇹🇷_y, 🇹🇷stanbul  28.977392  41.022793
9547      Ko🇹🇷uyolu, 🇹🇷stanbul  29.041297  41.009847
9548      Kuru🇹🇷_e🇹🇷me, 🇹🇷stanbul  29.034640  41.055817
9549      Kuru🇹🇷_e🇹🇷me, 🇹🇷stanbul  29.036019  41.057979
9550      Moda, 🇹🇷stanbul  29.026016  40.984776

Cuisines ...      Currency \
9546      Turkish ...      Turkish Lira(TL)
9547      World Cuisine, Patisserie, Cafe ...      Turkish Lira(TL)
9548      Italian, World Cuisine ...      Turkish Lira(TL)
9549      Restaurant Cafe ...      Turkish Lira(TL)
9550      Cafe ...      Turkish Lira(TL)

```

	Has Table booking	Has Online delivery	Is delivering now	\
9546	No	No	No	
9547	No	No	No	
9548	No	No	No	
9549	No	No	No	
9550	No	No	No	

	Switch to order menu	Price range	Aggregate rating	Rating color	\
9546	No	3	4.1	Green	
9547	No	3	4.2	Green	
9548	No	4	3.7	Yellow	
9549	No	4	4.0	Green	
9550	No	2	4.0	Green	

	Rating text	Votes
9546	Very Good	788
9547	Very Good	1034
9548	Good	661
9549	Very Good	901
9550	Very Good	591

[5 rows x 21 columns]

```
print(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
None
```

Start coding or [generate](#) with AI.

```
import pandas as pd
import folium
import matplotlib.pyplot as plt
import seaborn as sns
from folium.plugins import MarkerCluster

# Check for missing values in location-related columns
df.dropna(subset=['Latitude', 'Longitude', 'City', 'Price range', 'Cuisines', 'Aggregate rating'], inplace=True)

# Create a map with restaurant locations
restaurant_map = folium.Map(location=[df['Latitude'].mean(), df['Longitude'].mean()], zoom_start=10)

# Add markers
marker_cluster = MarkerCluster().add_to(restaurant_map)

for index, row in df.iterrows():
    folium.Marker(
        location=[row['Latitude'], row['Longitude']],
        popup=f"{row['City']} - {row['Cuisines']} - Rating: {row['Aggregate rating']}",
    ).add_to(marker_cluster)
```

```
# Save the map as an HTML file
restaurant_map.save("restaurant_map.html")
print("Map saved as restaurant_map.html")

# Group restaurants by city and analyze concentration
city_counts = df['City'].value_counts()
plt.figure(figsize=(12, 6))
sns.barplot(x=city_counts.index, y=city_counts.values, palette="viridis")
plt.xticks(rotation=90)
plt.xlabel("City")
plt.ylabel("Number of Restaurants")
plt.title("Restaurant Distribution by City")
plt.show()

# Calculate average ratings and price ranges by city
city_stats = df.groupby('City').agg({'Aggregate rating': 'mean', 'Price range': 'mean'}).reset_index()

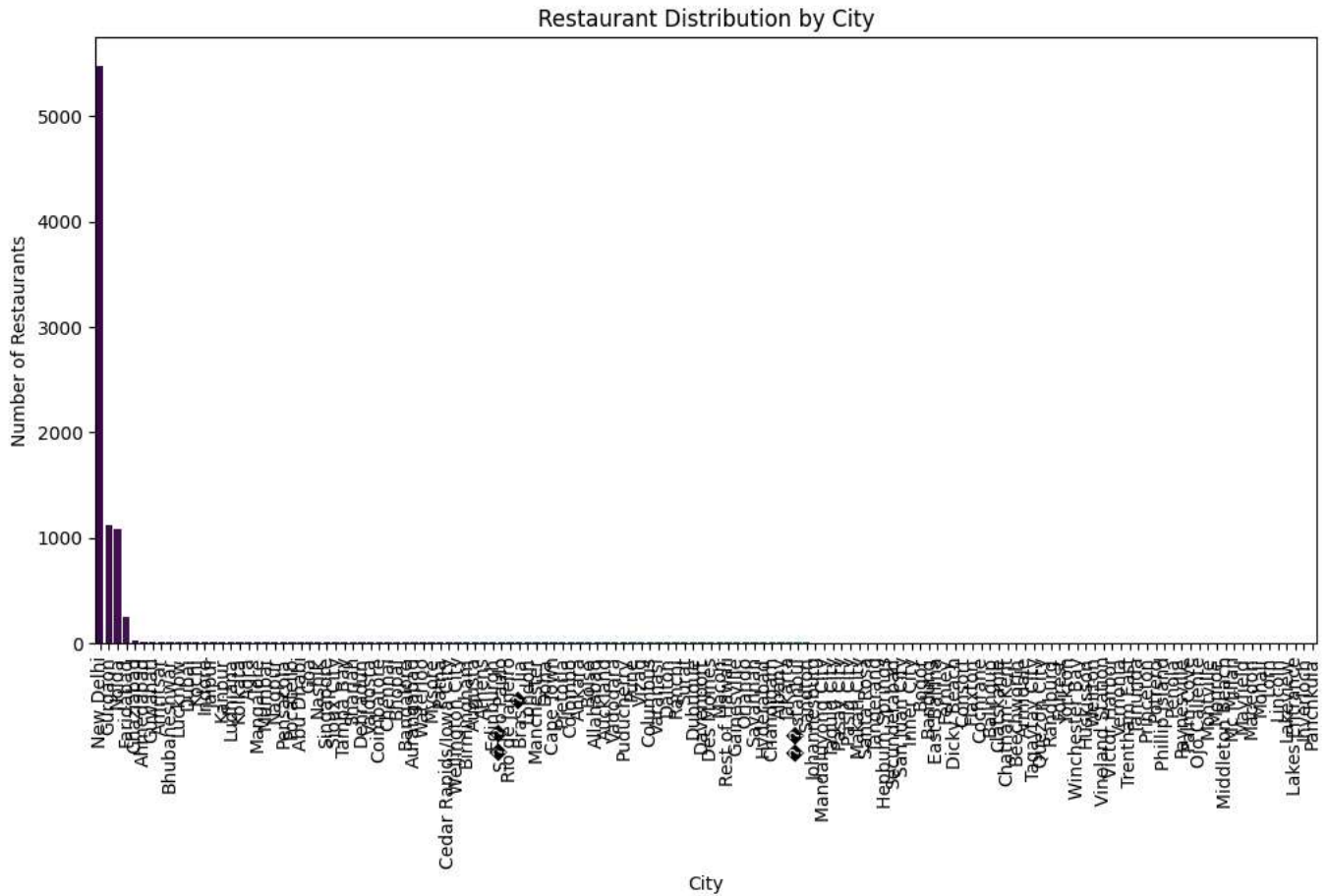
# Plot average ratings
plt.figure(figsize=(12, 6))
sns.barplot(x=city_stats['City'], y=city_stats['Aggregate rating'], palette="coolwarm")
plt.xticks(rotation=90)
plt.xlabel("City")
plt.ylabel("Average Rating")
plt.title("Average Restaurant Rating by City")
plt.show()

# Plot average price ranges
plt.figure(figsize=(12, 6))
sns.barplot(x=city_stats['City'], y=city_stats['Price range'], palette="magma")
plt.xticks(rotation=90)
plt.xlabel("City")
plt.ylabel("Average Price Range")
plt.title("Average Price Range by City")
plt.show()
```

Map saved as restaurant_map.html
 <ipython-input-8-6566c0266d0b>:29: 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.barplot(x=city_counts.index, y=city_counts.values, palette="viridis")
```



<ipython-input-8-6566c0266d0b>:41: 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.barplot(x=city_stats['City'], y=city_stats['Aggregate rating'], palette="coolwarm")
```

