# **5: EDA quantitative and qualitative ploT**

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import pandas as pd

import matplotlib.pyplot as plt

import seaborn as sns

data = {

'total\_bill': [16.99, 10.34, 21.01, 23.68, 24.59],

'tip': [1.01, 1.66, 3.50, 3.31, 3.61],

'sex': ['Female', 'Male', 'Male', 'Male', 'Female'],

'smoker': ['No', 'No', 'No', 'No', 'No'],

'day': ['Sun', 'Sun', 'Sun', 'Sun', 'Sun'],

'time': ['Dinner', 'Dinner', 'Dinner', 'Dinner', 'Dinner'],

'size': [2, 3, 3, 2, 4]

}

df = pd.DataFrame(data)

# Set up Seaborn style for plots

sns.set(style="whitegrid")

# --------------------------

# Quantitative Plots

# --------------------------

plt.figure(figsize=(8, 6))

sns.histplot(df['total\_bill'], kde=True, color='blue', bins=10)

plt.title('Distribution of Total Bill')

plt.xlabel('Total Bill')

plt.ylabel('Frequency')

plt.show()

plt.figure(figsize=(8, 6))

sns.histplot(df['tip'], kde=True, color='green', bins=10)

plt.title('Distribution of Tip')

plt.xlabel('Tip')

plt.ylabel('Frequency')

plt.show()

plt.figure(figsize=(8, 6))

sns.boxplot(x=df['total\_bill'], color='orange')

plt.title('Boxplot of Total Bill')

plt.xlabel('Total Bill')

plt.show()

plt.figure(figsize=(8, 6))

sns.scatterplot(x=df['total\_bill'], y=df['tip'], color='purple')

plt.title('Total Bill vs Tip')

plt.xlabel('Total Bill')

plt.ylabel('Tip')

plt.show()

# --------------------------

# Qualitative Plots

# --------------------------

plt.figure(figsize=(8, 6))

sns.countplot(x='sex', data=df, palette='Set2')

plt.title('Count of Customers by Sex')

plt.xlabel('Sex')

plt.ylabel('Count')

plt.show()

plt.figure(figsize=(8, 6))

sns.countplot(x='smoker', data=df, palette='Set3')

plt.title('Count of Smokers vs Non-Smokers')

plt.xlabel('Smoker')

plt.ylabel('Count')

plt.show()

plt.figure(figsize=(8, 6))

sns.countplot(x='day', data=df, palette='muted')

plt.title('Count of Customers by Day')

plt.xlabel('Day')

plt.ylabel('Count')

plt.show()

plt.figure(figsize=(8, 6))

sns.countplot(x='time', data=df, palette='pastel')

plt.title('Count of Customers by Time')

plt.xlabel('Time')

plt.ylabel('Count')

plt.show()

sns.pairplot(df[['total\_bill', 'tip', 'size']])

plt.suptitle('Pairplot: Total Bill, Tip, and Size', y=1.02)

plt.show()

plt.figure(figsize=(8, 6))

sns.boxplot(x='sex', y='total\_bill', data=df, palette='coolwarm')

plt.title('Boxplot of Total Bill by Sex')

plt.xlabel('Sex')

plt.ylabel('Total Bill')

plt.show()



