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#Import Libraries
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px

sns.set(style="whitegrid")

#  Load Dataset
df = pd.read_csv("/content/titanic-dataset")  # Replace with your dataset path

# Summary Statistics
print(df.describe(include='all'))

# Univariate Analysis - Numerical Features
num_features = ['Age', 'Fare', 'SibSp', 'Parch', 'Pclass']
for col in num_features:
    fig, ax = plt.subplots(1, 2, figsize=(12, 4))
    sns.histplot(df[col], kde=True, ax=ax[0])
    ax[0].set_title(f'Histogram of {col}')
    sns.boxplot(x=df[col], ax=ax[1])
    ax[1].set_title(f'Boxplot of {col}')
    plt.tight_layout()
    plt.show()

#  Univariate Analysis - Categorical Features
cat_features = ['Sex', 'Embarked', 'Pclass', 'Survived']
for col in cat_features:
    sns.countplot(x=col, data=df)
    plt.title(f'Countplot of {col}')
    plt.show()

#  Bivariate Analysis - Categorical vs Survived
for col in ['Sex', 'Pclass', 'Embarked', 'SibSp', 'Parch']:
    sns.barplot(x=col, y='Survived', data=df)
    plt.title(f'Survival Rate by {col}')
    plt.show()

# Correlation Matrix
corr = df.corr(numeric_only=True)
sns.heatmap(corr, annot=True, cmap='coolwarm', fmt=".2f")
plt.title("Correlation Matrix")
plt.show()

#  Pairplot
sns.pairplot(df[['Age', 'Fare', 'Pclass', 'Survived']], hue='Survived')
plt.suptitle("Pairplot of Selected Features", y=1.02)
plt.show()
```

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#  Interactive Plot
fig = px.scatter(df, x='Age', y='Fare', color='Survived', title='Age vs Fare
Colored by Survival')
fig.show()
```