```python
In [1]: import pandas as pd
        import matplotlib.pyplot as plt
        import seaborn as sns
        from pathlib import Path

        # Setup
        sns.set(style='whitegrid')
        plt.rcParams['figure.dpi'] = 120
        DATA_DIR = Path(".")

        # Load datasets
        train = pd.read_csv(DATA_DIR / "train.csv")
        test = pd.read_csv(DATA_DIR / "test.csv")
        gender_submission = pd.read_csv(DATA_DIR / "gender_submission.csv")

        # Quick inspection
        print("\n--- TRAIN INFO ---")
        print(train.info())
        print(train.describe())
        print("\nMissing values:\n", train.isna().sum())

        # Survival by Sex
        plt.figure(figsize=(6,4))
        sns.countplot(data=train, x='Sex', hue='Survived')
        plt.title('Survival by Sex')
        plt.show()

        # Survival by Pclass
        plt.figure(figsize=(6,4))
        sns.countplot(data=train, x='Pclass', hue='Survived')
        plt.title('Survival by Passenger Class')
        plt.show()

        # Age distribution by Survival
        plt.figure(figsize=(8,4))
        sns.histplot(data=train, x='Age', hue='Survived', bins=30, stat='density', commo
        plt.title('Age Distribution by Survival')
        plt.show()

        # Fare distribution by Survival
        plt.figure(figsize=(8,4))
        sns.boxplot(data=train, x='Survived', y='Fare')
        plt.title('Fare by Survival')
        plt.show()

        # Correlation heatmap
        plt.figure(figsize=(8,6))
        sns.heatmap(train.corr(numeric_only=True), annot=True, cmap='coolwarm', fmt=".2f
        plt.title('Correlation Heatmap')
        plt.show()
```

```
--- TRAIN INFO ---
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   PassengerId  891 non-null    int64
 1   Survived     891 non-null    int64
 2   Pclass       891 non-null    int64
 3   Name         891 non-null    object
 4   Sex          891 non-null    object
 5   Age          714 non-null    float64
 6   SibSp        891 non-null    int64
 7   Parch        891 non-null    int64
 8   Ticket       891 non-null    object
 9   Fare         891 non-null    float64
 10  Cabin        204 non-null    object
 11  Embarked     889 non-null    object
dtypes: float64(2), int64(5), object(5)
memory usage: 83.7+ KB
None
       PassengerId    Survived      Pclass         Age       SibSp  \
count   891.000000  891.000000  891.000000  714.000000  891.000000
mean    446.000000    0.383838    2.308642   29.699118    0.523008
std     257.353842    0.486592    0.836071   14.526497    1.102743
min       1.000000    0.000000    1.000000    0.420000    0.000000
25%     223.500000    0.000000    2.000000   20.125000    0.000000
50%     446.000000    0.000000    3.000000   28.000000    0.000000
75%     668.500000    1.000000    3.000000   38.000000    1.000000
max     891.000000    1.000000    3.000000   80.000000    8.000000

            Parch        Fare
count  891.000000  891.000000
mean     0.381594   32.204208
std      0.806057   49.693429
min      0.000000    0.000000
25%      0.000000    7.910400
50%      0.000000   14.454200
75%      0.000000   31.000000
max      6.000000  512.329200

Missing values:
 PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age            177
SibSp            0
Parch            0
Ticket           0
Fare             0
Cabin          687
Embarked         2
dtype: int64
```
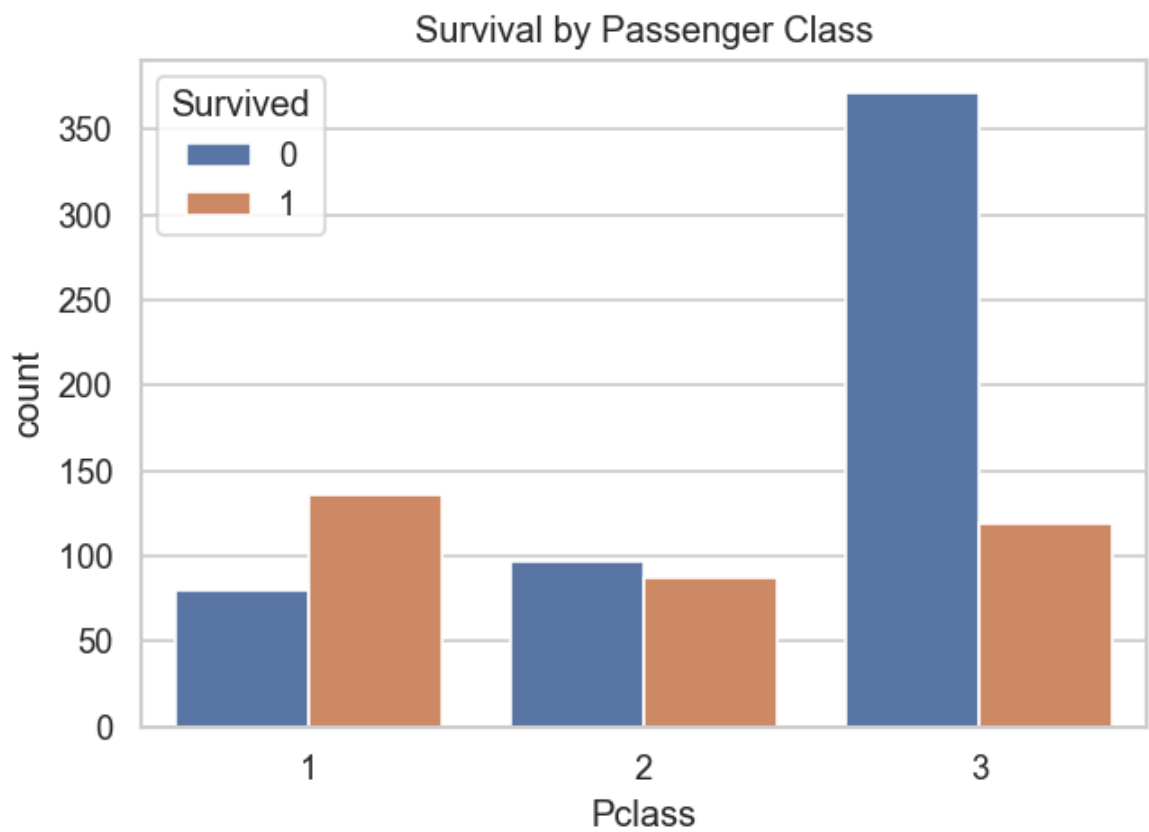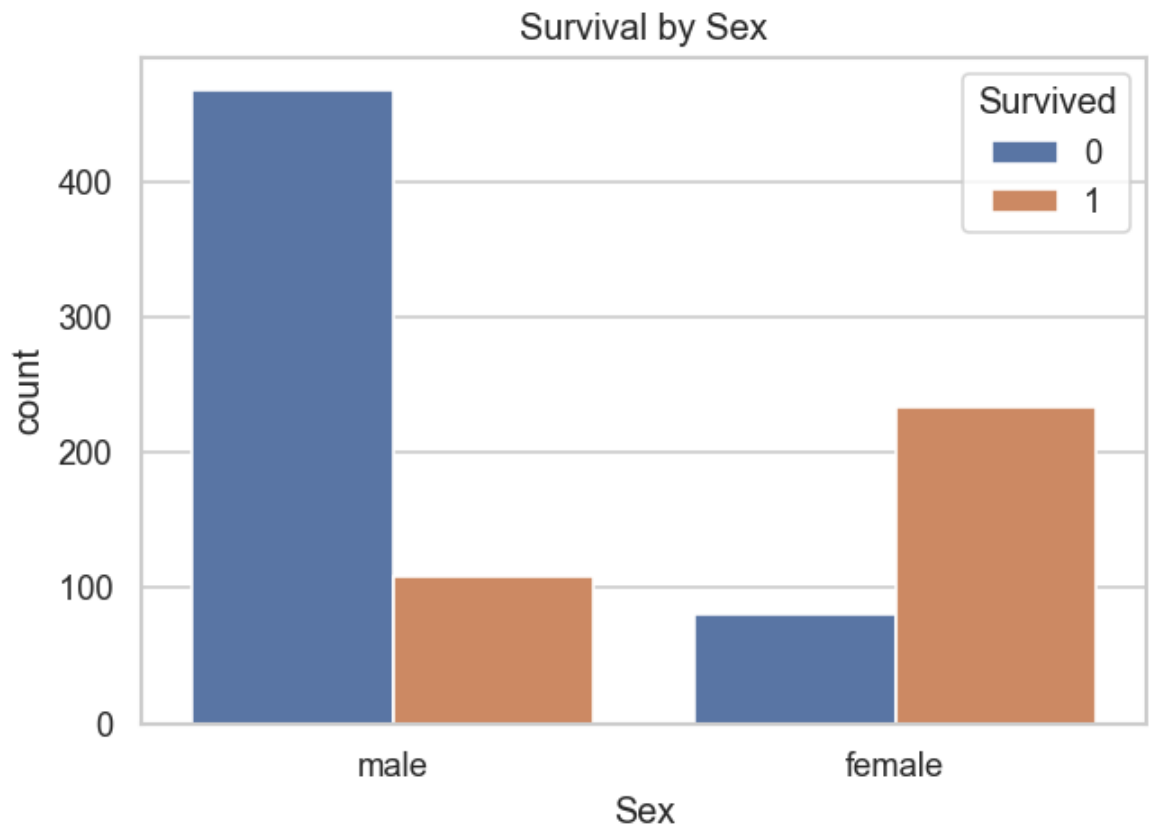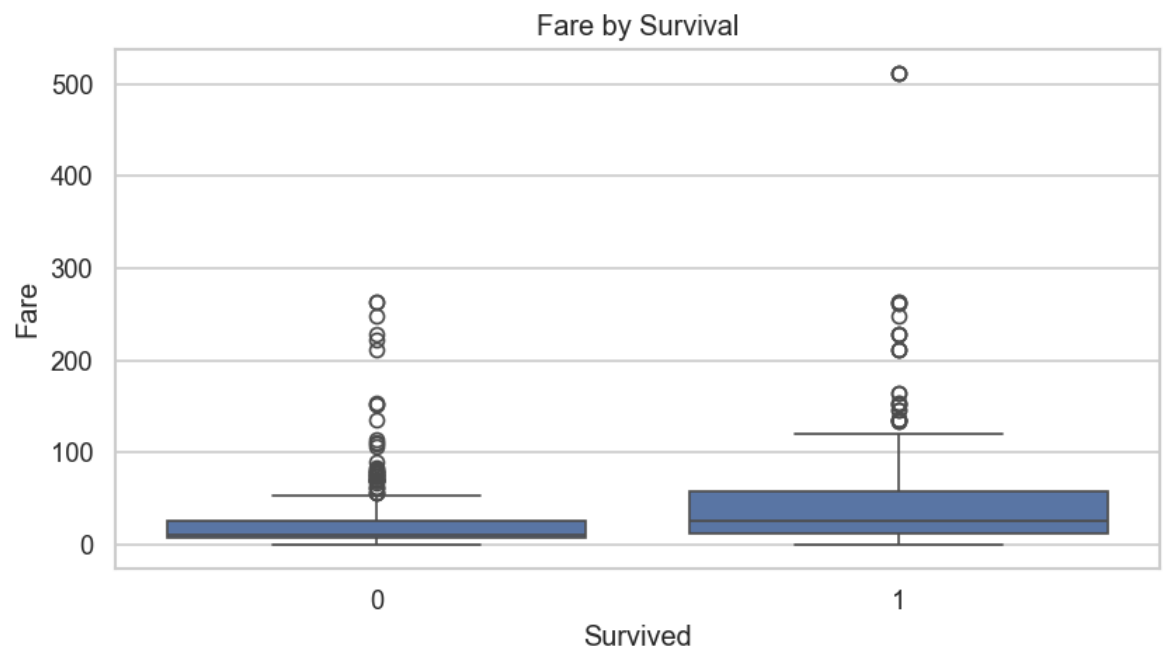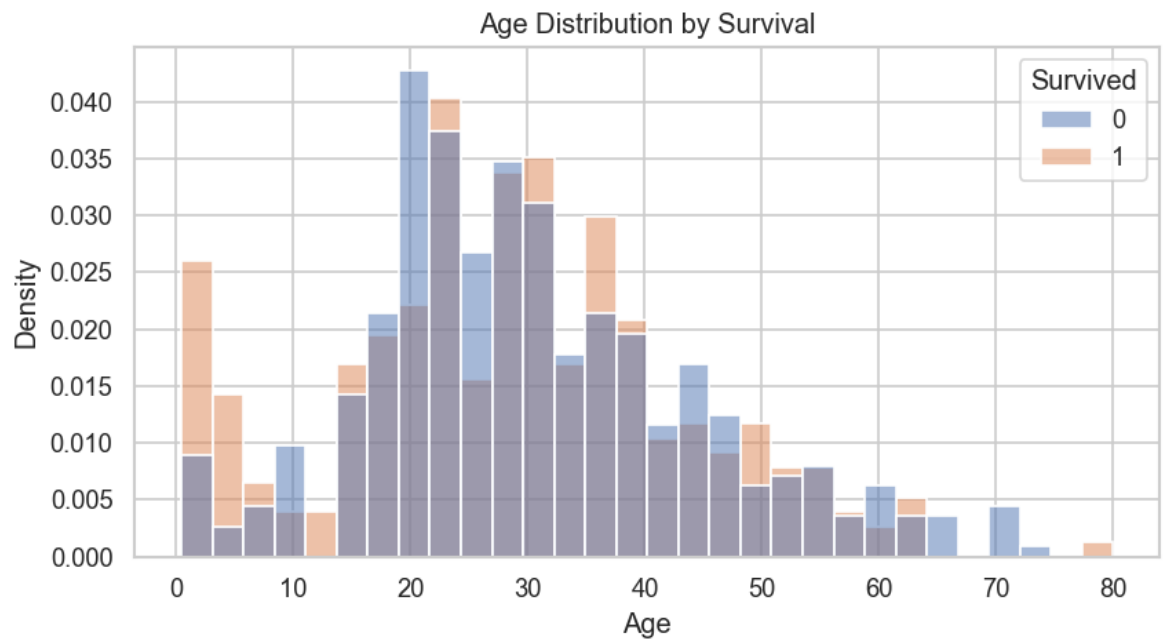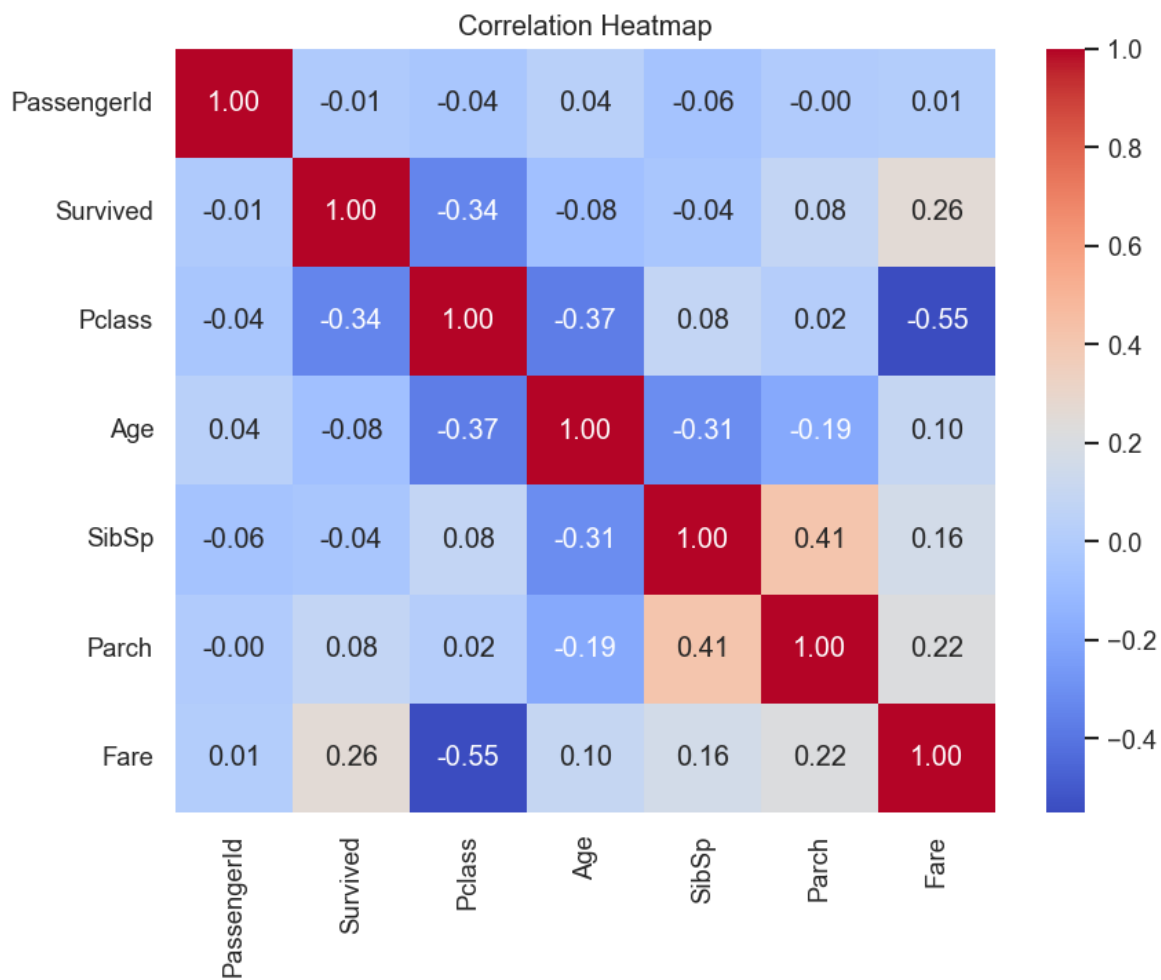
Survival by Sex

Survival by Passenger Class

Age Distribution by Survival

Fare by Survival

Correlation Heatmap

In [ ]: