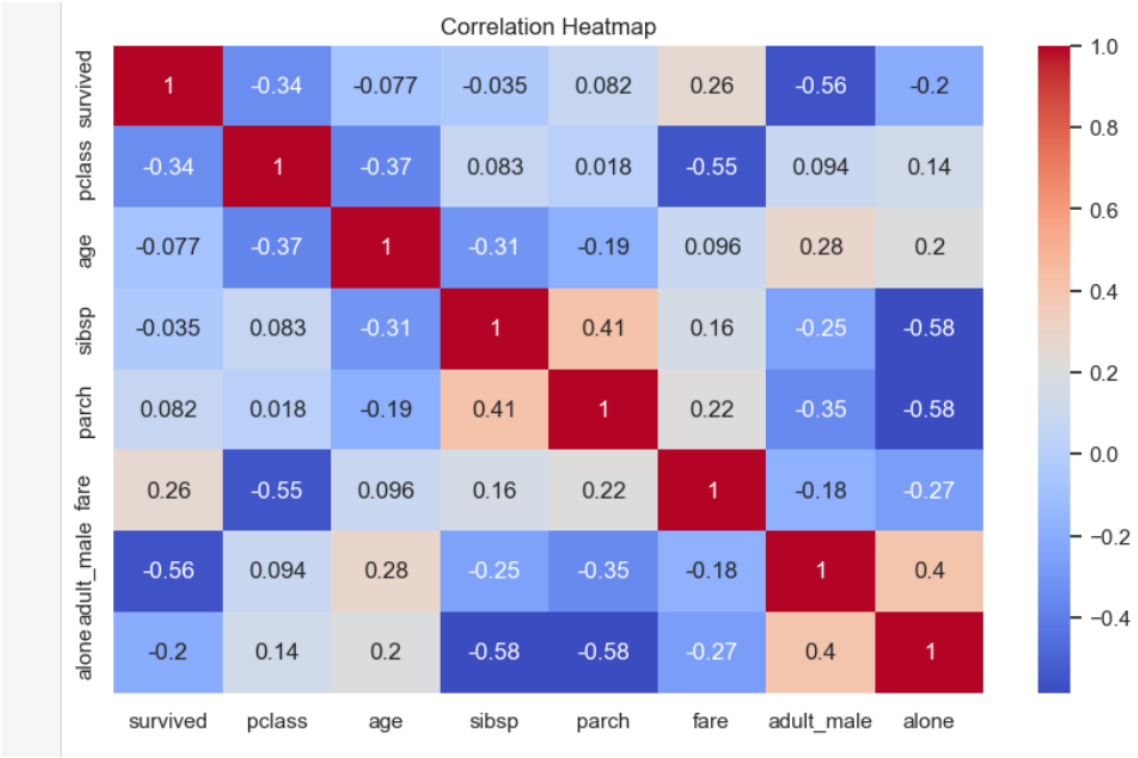
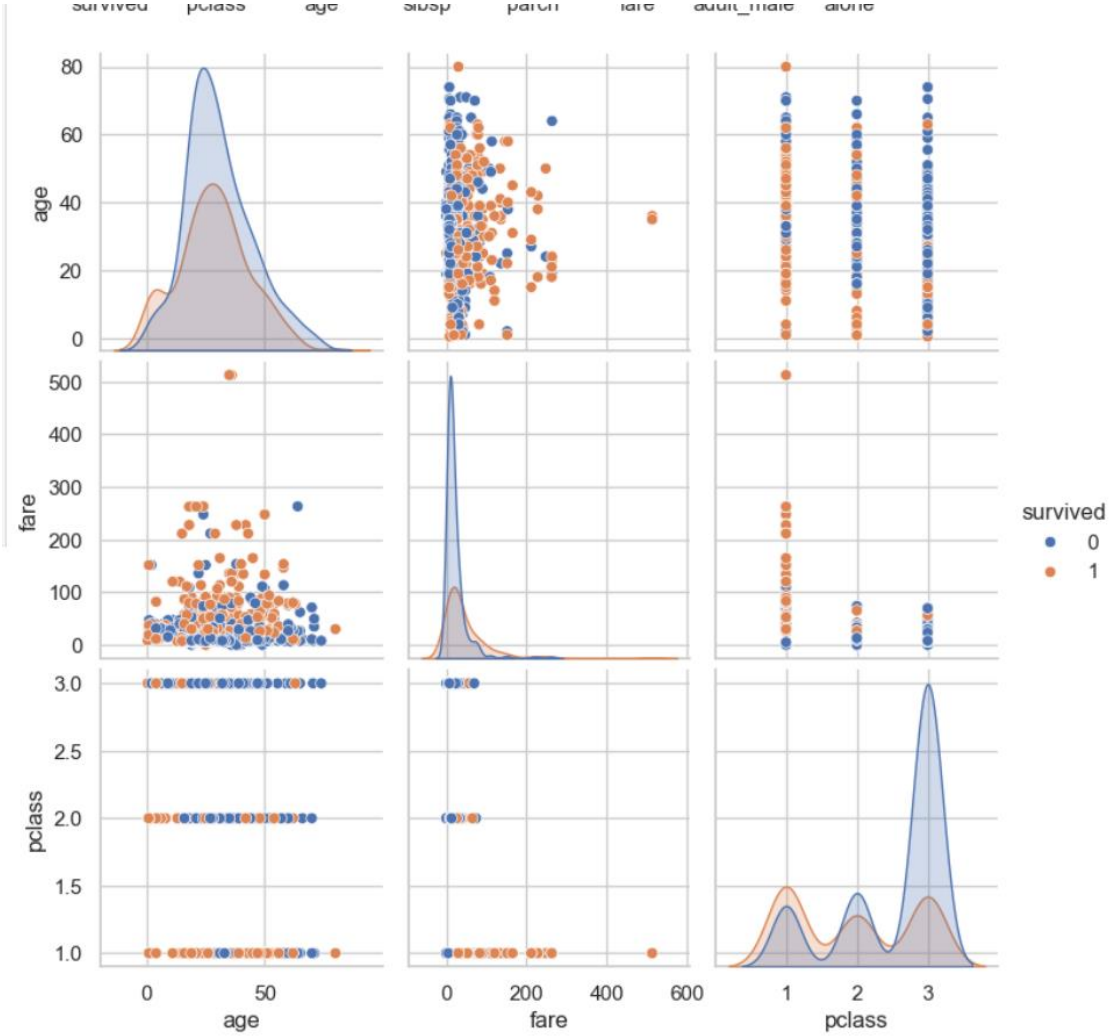
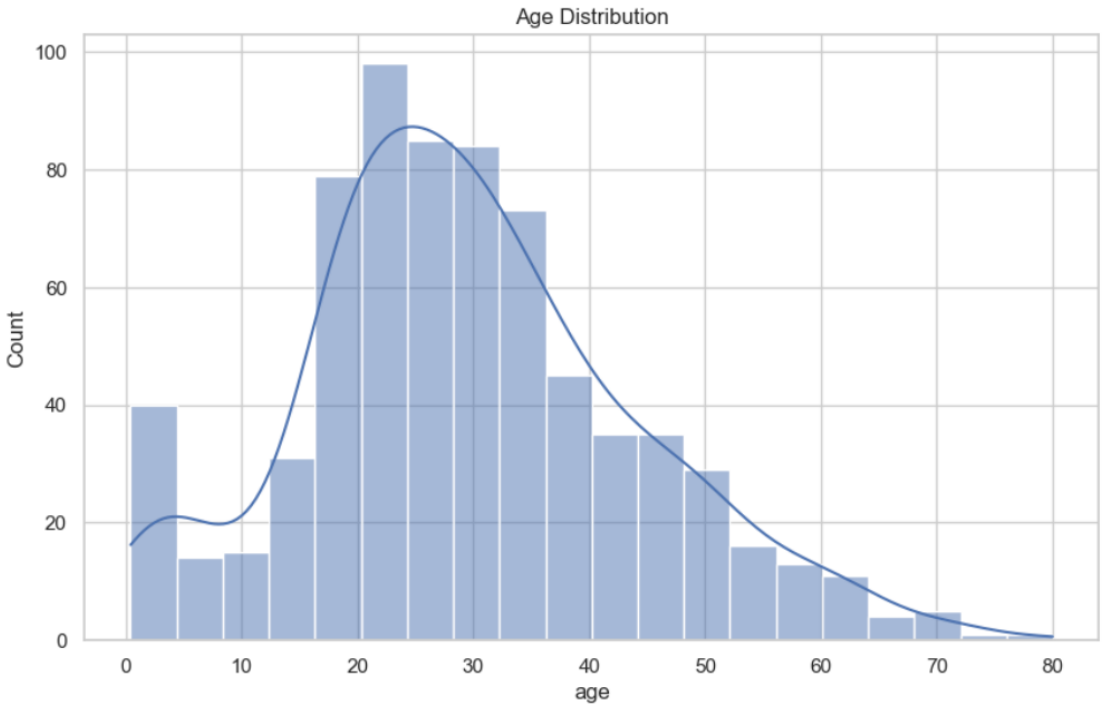
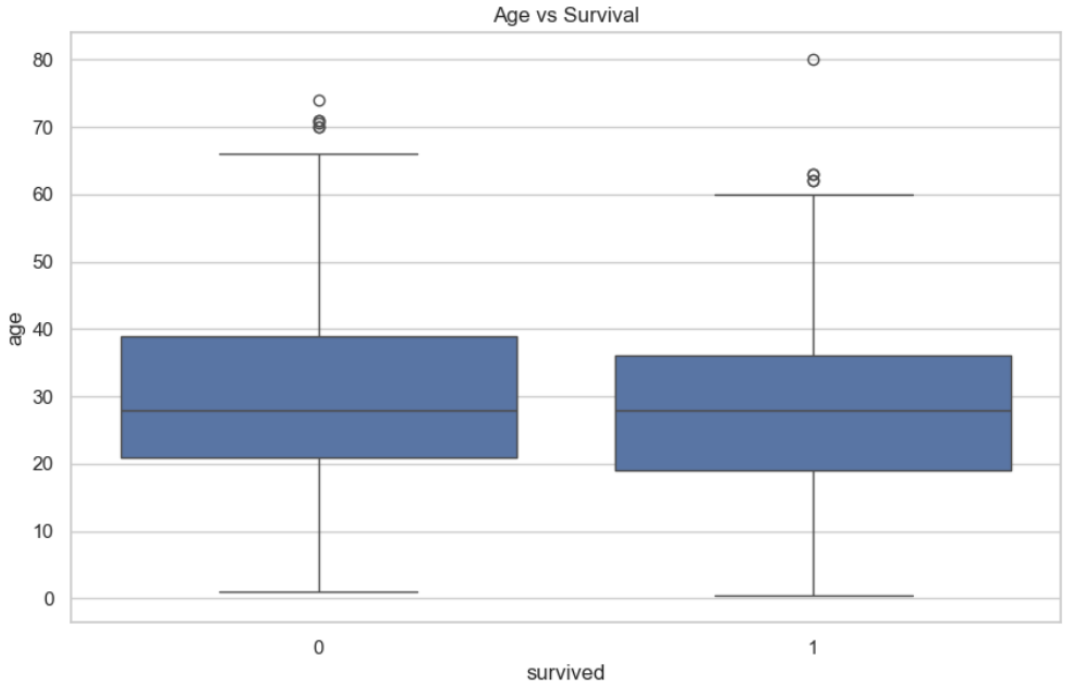
```python
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
# Load the Titanic dataset
df = sns.load_dataset('titanic')  # or use pd.read_csv('path/to/titanic.csv')
df.head()
# Overview of the dataset
print(df.info())
print(df.describe())
print(df.value_counts())
# Correlation heatmap
plt.figure(figsize=(10,6))
sns.heatmap(df.corr(numeric_only=True), annot=True, cmap='coolwarm')
plt.title('Correlation Heatmap')
plt.show()

# Pairplot (optional: filter columns to avoid clutter)
sns.pairplot(df[['age', 'fare', 'survived', 'pclass']], hue='survived')
plt.show()
# Histogram of Age
sns.histplot(df['age'].dropna(), kde=True)
plt.title('Age Distribution')
plt.show()

# Boxplot of Age by Survival
sns.boxplot(x='survived', y='age', data=df)
plt.title('Age vs Survival')
plt.show()

# Scatterplot: Fare vs Age
sns.scatterplot(x='age', y='fare', hue='survived', data=df)
plt.title('Fare vs Age by Survival')
plt.show()
```

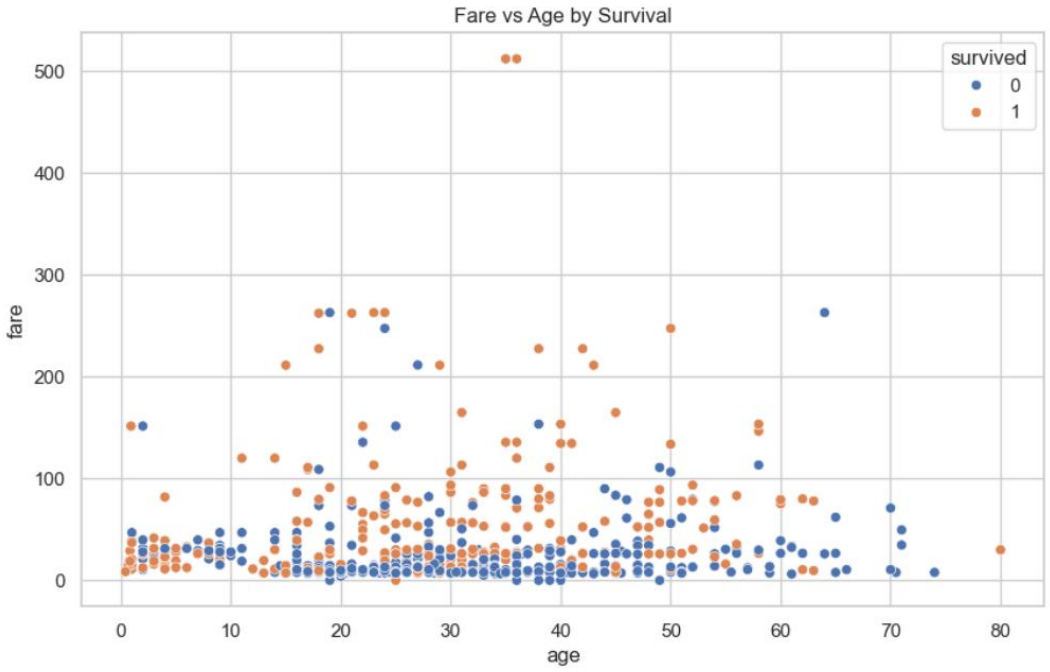
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 15 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   survived     891 non-null    int64
 1   pclass       891 non-null    int64
 2   sex          891 non-null    object
 3   age          714 non-null    float64
 4   sibsp        891 non-null    int64
 5   parch        891 non-null    int64
 6   fare         891 non-null    float64
 7   embarked     889 non-null    object
 8   class        891 non-null    category
 9   who          891 non-null    object
 10  adult_male   891 non-null    bool
 11  deck         203 non-null    category
 12  embark_town  889 non-null    object
 13  alive        891 non-null    object
 14  alone        891 non-null    bool
dtypes: bool(2), category(2), float64(2), int64(4), object(5)
memory usage: 80.7+ KB
None
          survived      pclass         age       sibsp       parch        fare
count  891.000000  891.000000  714.000000  891.000000  891.000000  891.000000
mean     0.383838    2.308642   29.699118    0.523008    0.381594   32.204208
std      0.486592    0.836071   14.526497    1.102743    0.806057   49.693429
min      0.000000    1.000000    0.420000    0.000000    0.000000    0.000000
25%      0.000000    2.000000   20.125000    0.000000    0.000000    7.910400
50%      0.000000    3.000000   28.000000    0.000000    0.000000   14.454200
75%      1.000000    3.000000   38.000000    1.000000    0.000000   31.000000
max      1.000000    3.000000   80.000000    8.000000    6.000000  512.329200
survived  pclass  sex     age   sibsp  parch  fare      embarked  class  who    adult_male  deck  embark_town  alive  alone
1         1       female  24.0  0      0      69.3000   C         First  woman  False       B     Cherbourg    yes    True     2
                         58.0  0      0      26.5500   S         First  woman  False       C     Southampton  yes    True     1
                         49.0  0      0      25.9292   S         First  woman  False       D     Southampton  yes    True     1
                               1      0      76.7292   C         First  woman  False       D     Cherbourg    yes    False    1
                         50.0  0      1      247.5208  C         First  woman  False       B     Cherbourg    yes    False    1
                                                                                                                              ..
                         16.0  0      0      86.5000   S         First  woman  False       B     Southampton  yes    True     1
                               1      0      39.4000   S         First  woman  False       D     Southampton  yes    False    1
                                             57.9792   C         First  woman  False       B     Cherbourg    yes    False    1
                         17.0  1      0      57.0000   S         First  woman  False       B     Southampton  yes    False    1
          3       male    32.0  0      0      8.0500    S         Third  man    True        E     Southampton  yes    True     1
Name: count, Length: 181, dtype: int64
```


Correlation Heatmap
survived
pclass
age
sibsp
parch
fare
adult_male
alone
1 -0.34 -0.077 -0.035 0.082 0.26 -0.56 -0.2
-0.34 1 -0.37 0.083 0.018 -0.55 0.094 0.14
-0.077 -0.37 1 -0.31 -0.19 0.096 0.28 0.2
-0.035 0.083 -0.31 1 0.41 0.16 -0.25 -0.58
0.082 0.018 -0.19 0.41 1 0.22 -0.35 -0.58
0.26 -0.55 0.096 0.16 0.22 1 -0.18 -0.27
-0.56 0.094 0.28 -0.25 -0.35 -0.18 1 0.4
-0.2 0.14 0.2 -0.58 -0.58 -0.27 0.4 1
survived
pclass
age
sibsp
parch
fare
adult_male
alone
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4


survived
pclass
age
sibsp
parch
fare
adult_male
alone
age
fare
pclass
survived
0
1


Age Distribution
Count
age


Age vs Survival
age
survived
0
1
0
10
20
30
40
50
60
70
80


Fare vs Age by Survival
fare
age
survived
0
1
0
100
200
300
400
500
0
10
20
30
40
50
60
70
80