titanic

April 16, 2025

[24]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

# for inline plotting in Jupyter
%matplotlib inline

# Load your dataset
df = pd.read_csv('D:/elevate labs internship/task 5/titanic.csv')
df.head()  # Show first 5 rows
```

[24]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN	S
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th…	female	38.0	1	0	PC 17599	71.2833	C85	C
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN	S
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	S
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN	S

[28]:
```
df.describe()     # Statistical summary
```

[28]:

	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
```

[30]:
```
df.info()          # Summary of dataset structure
```

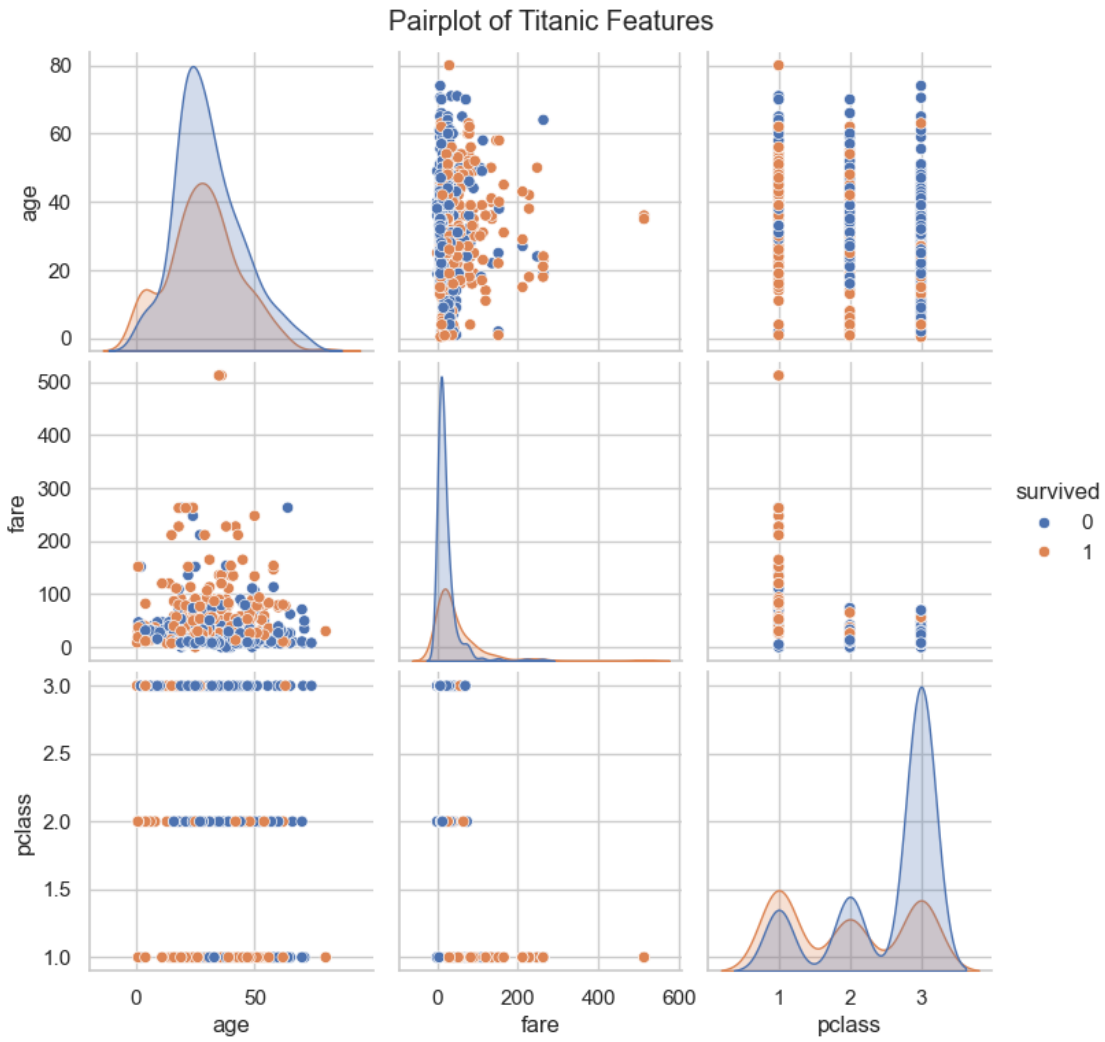
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   PassengerId  891 non-null    int64
 1   Survived     891 non-null    int64
 2   Pclass       891 non-null    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
```

[32]:
```
df.value_counts()
```

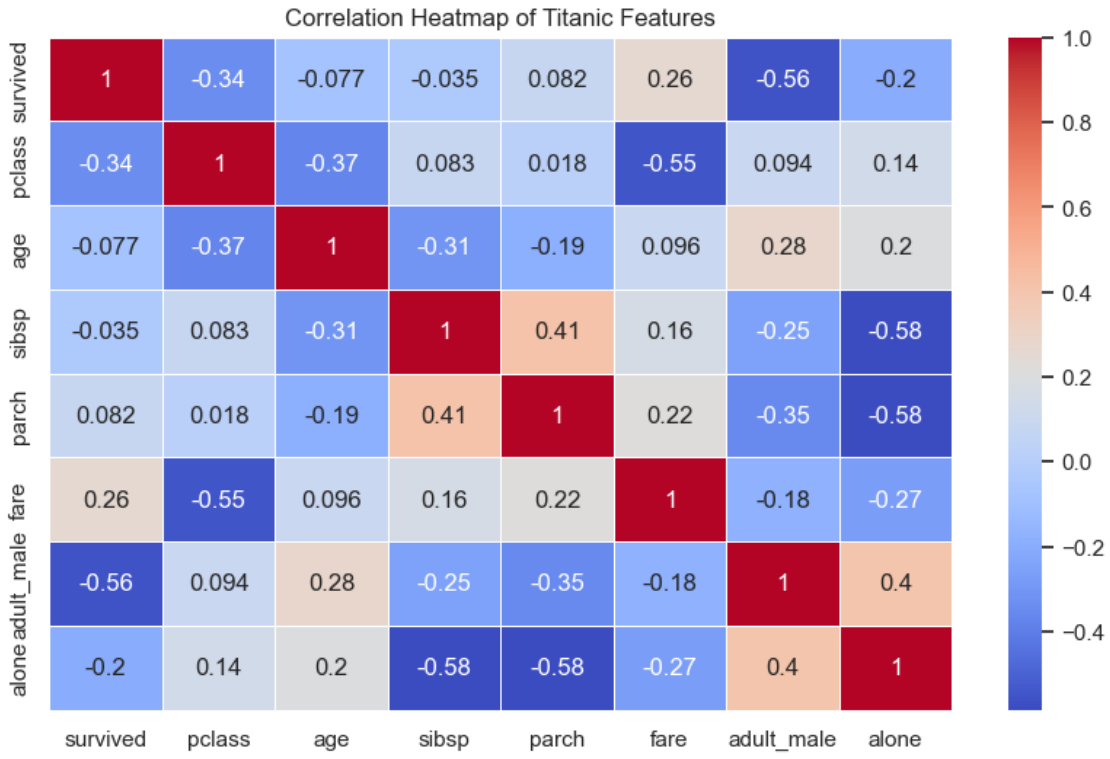
[32]:
```
PassengerId  Survived  Pclass  Name
Sex     Age   SibSp  Parch  Ticket    Fare      Cabin  Embarked
2            1         1       Cumings, Mrs. John Bradley (Florence Briggs
Thayer)   female  38.0  1      0      PC 17599  71.2833   C85    C           1
572          1         1       Appleton, Mrs. Edward Dale (Charlotte Lamson)
female  53.0  2      0      11769     51.4792   C101   S           1
578          1         1       Silvey, Mrs. William Baird (Alice Munger)
```

```
female  39.0  1      0      13507     55.9000   E44    S           1
582          1         1       Thayer, Mrs. John Borland (Marian Longstreth
Morris)  female  39.0  1      1      17421     110.8833  C68    C           1
584          0         1       Ross, Mr. John Hugo
male    36.0  0      0      13049     40.1250   A10    C           1
                                                                        ..
328          1         2       Ball, Mrs. (Ada E Hall)
female  36.0  0      0      28551     13.0000   D      S           1
330          1         1       Hippach, Miss. Jean Gertrude
female  16.0  0      1      111361    57.9792   B18    C           1
332          0         1       Partner, Mr. Austen
male    45.5  0      0      113043    28.5000   C124   S           1
333          0         1       Graham, Mr. George Edward
male    38.0  0      1      PC 17582  153.4625  C91    S           1
890          1         1       Behr, Mr. Karl Howell
male    26.0  0      0      111369    30.0000   C148   C           1
Name: count, Length: 183, dtype: int64
```

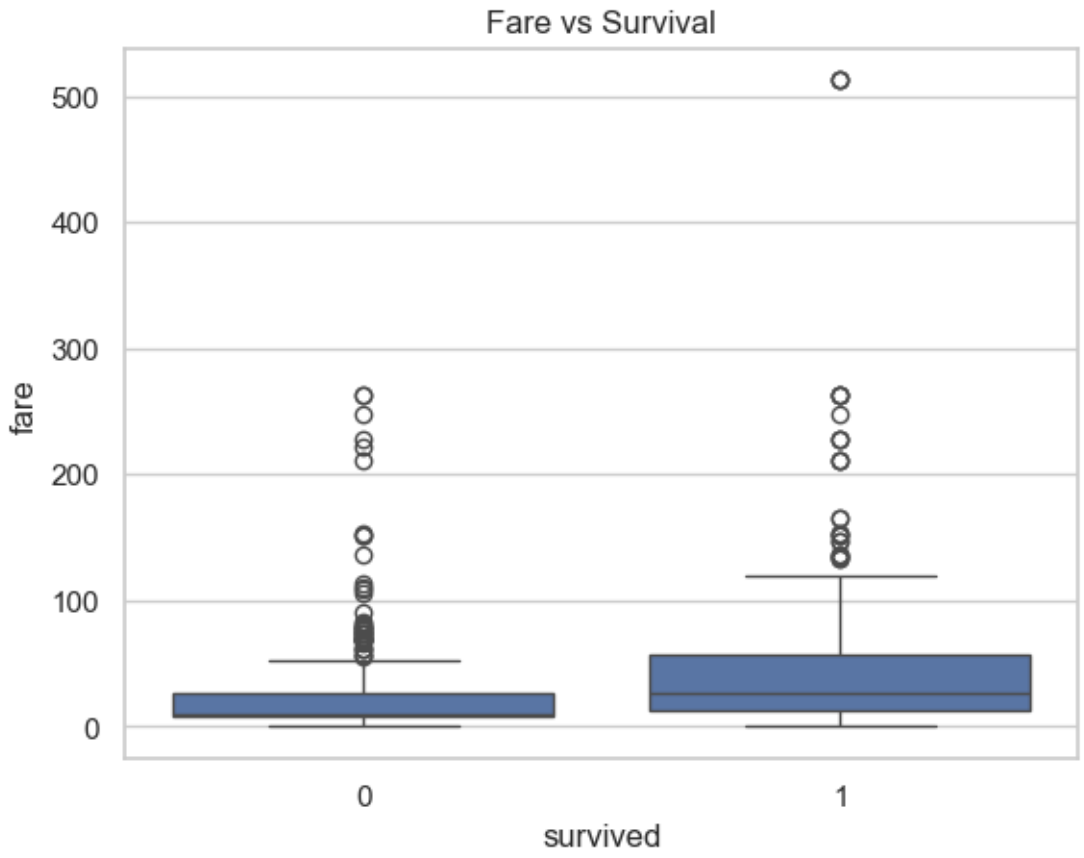
[49]:
```python
# Load Titanic dataset
df = sns.load_dataset("titanic")

# Select numeric columns
selected_columns = ['age', 'fare', 'pclass', 'survived']

# Create pairplot
sns.pairplot(df[selected_columns], hue='survived')
plt.suptitle("Pairplot of Titanic Features", y=1.02)
plt.show()
```

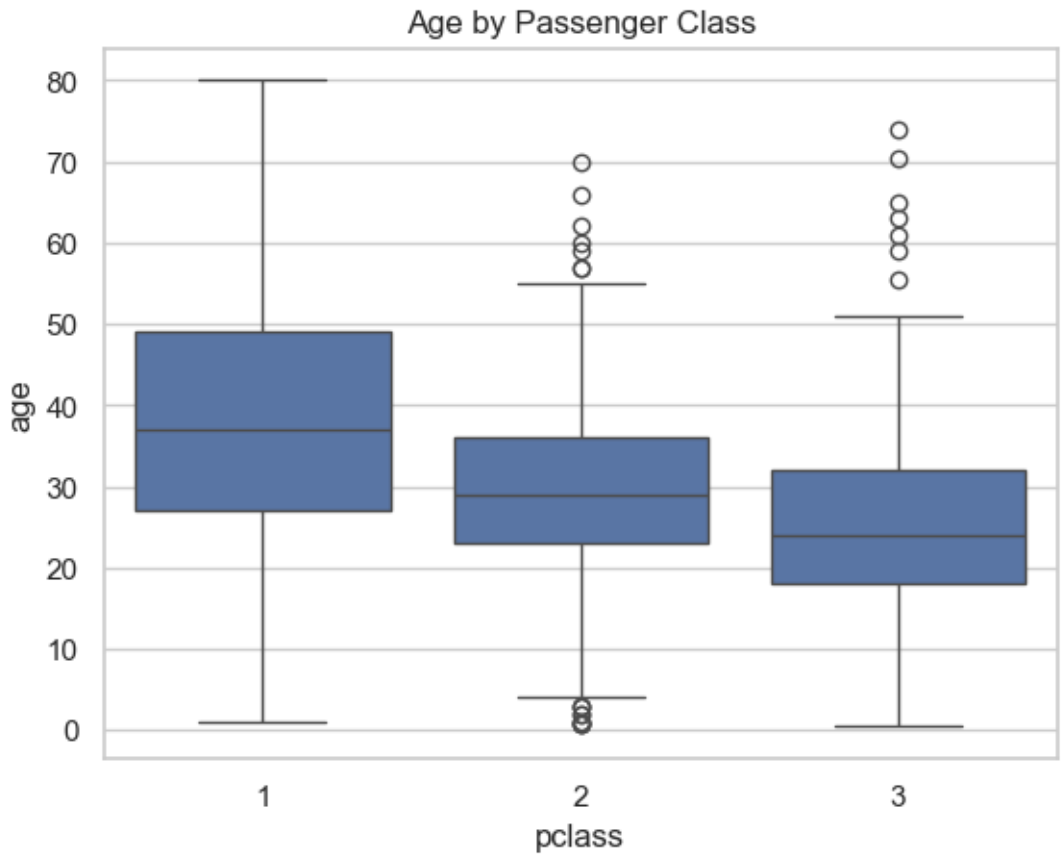


[51]:
```
# Calculate correlation matrix
corr_matrix = df.corr(numeric_only=True)

# Plot heatmap
plt.figure(figsize=(10, 6))
sns.heatmap(corr_matrix, annot=True, cmap='coolwarm', linewidths=0.5)
plt.title("Correlation Heatmap of Titanic Features")
plt.show()
```

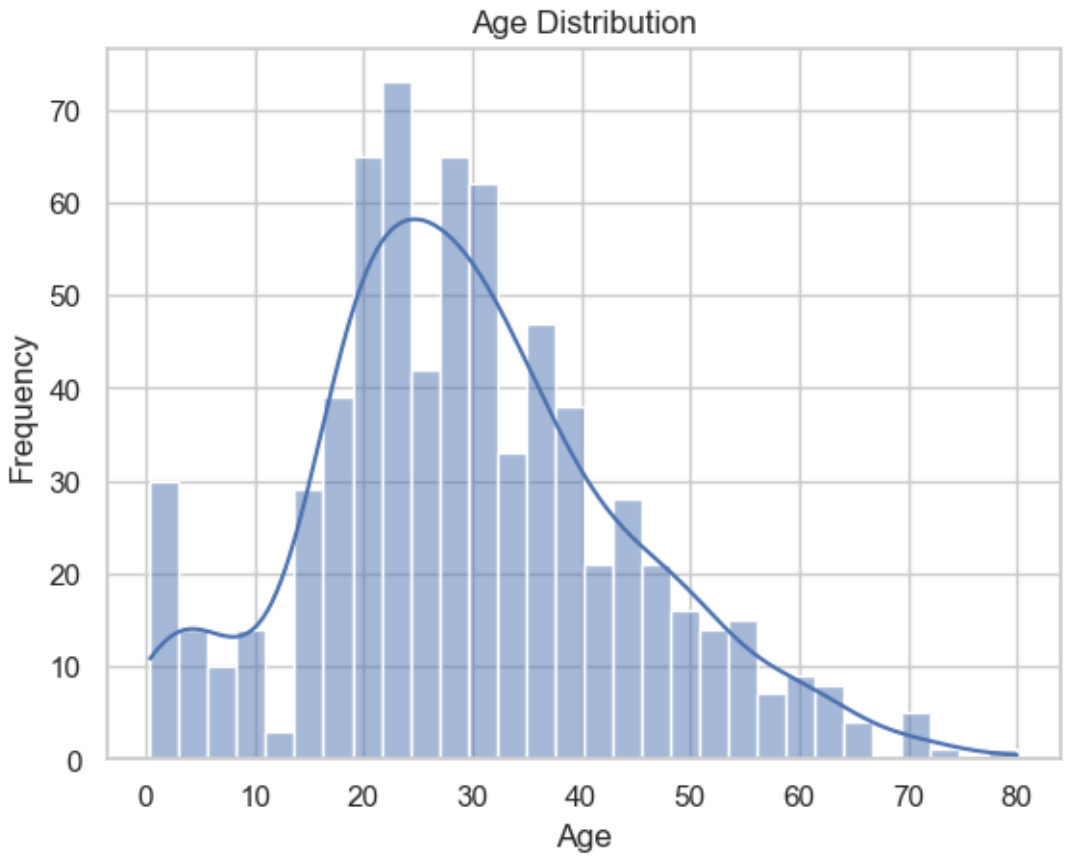


[57]:
```
sns.boxplot(x='survived', y='fare', data=df)
plt.title("Fare vs Survival")
plt.show()

sns.boxplot(x='pclass', y='age', data=df)
plt.title("Age by Passenger Class")
plt.show()
```

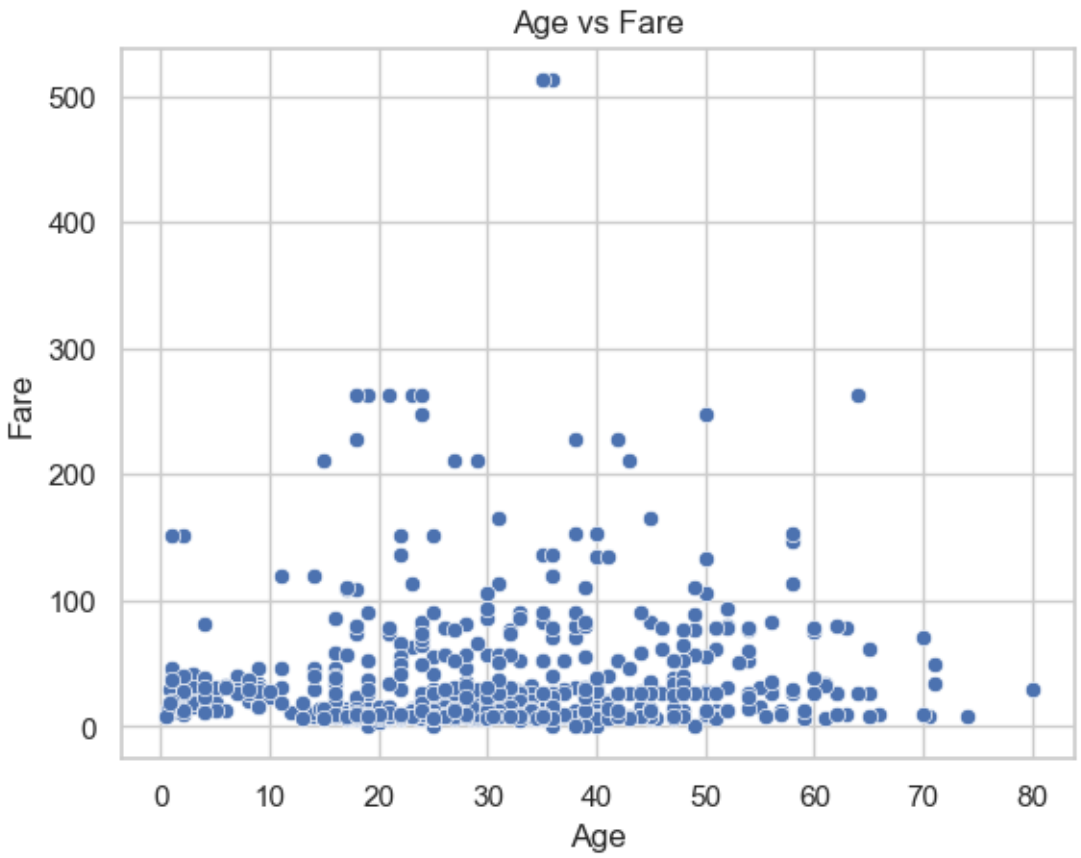

Fare vs Survival
500
400
300
200
100
0
fare
0
1
survived

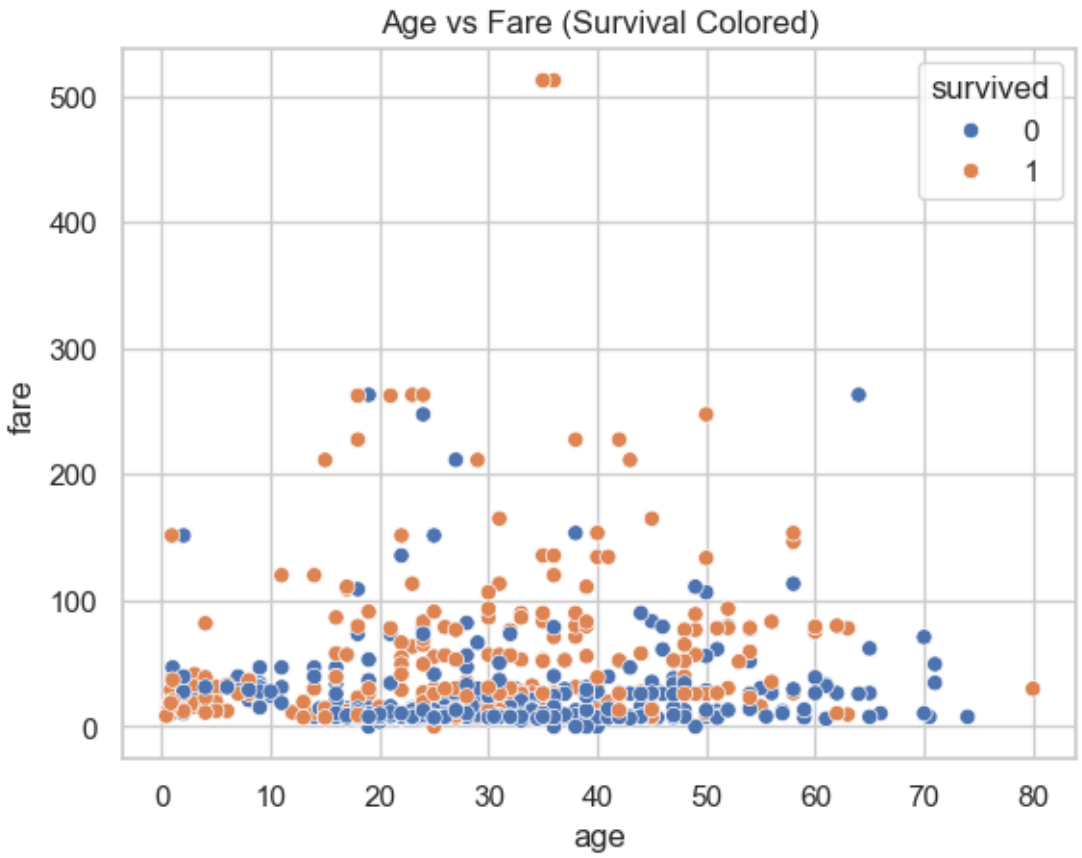


[59]:
```
# Histogram
sns.histplot(df['age'].dropna(), kde=True, bins=30)
plt.title("Age Distribution")
plt.xlabel("Age")
plt.ylabel("Frequency")
plt.show()
```



[61]:
```
sns.scatterplot(x='age', y='fare', data=df)
plt.title("Age vs Fare")
plt.xlabel("Age")
plt.ylabel("Fare")
plt.show()

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


Age vs Fare
Fare
Age
0
100
200
300
400
500
0
10
20
30
40
50
60
70
80


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