task-2

August 3, 2024

[3]:
```
import pandas as pd
titanic_df = pd.read_csv('Titanic-Dataset.csv')
```

[5]:
```
print(titanic_df.head())
```

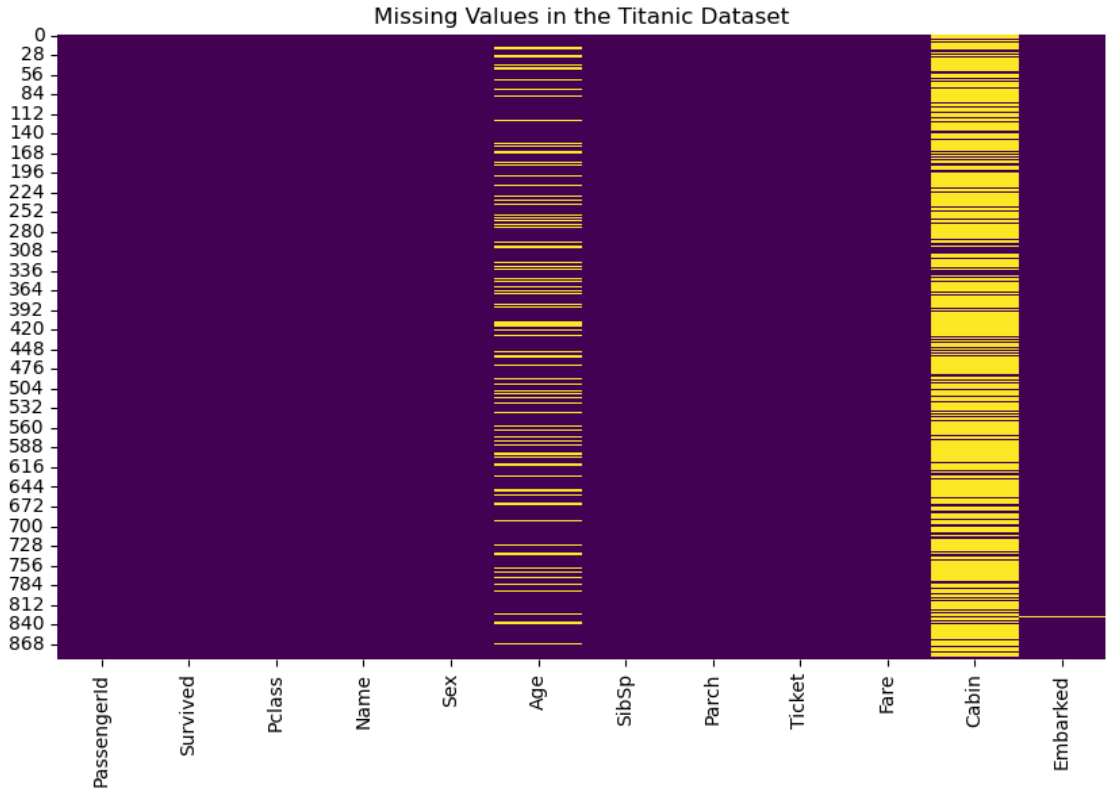
```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name     Sex   Age  SibSp  \
0                            Braund, Mr. Owen Harris    male  22.0      1
1  Cumings, Mrs. John Bradley (Florence Briggs Th…  female  38.0      1
2                             Heikkinen, Miss. Laina  female  26.0      0
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0      1
4                           Allen, Mr. William Henry    male  35.0      0

   Parch            Ticket     Fare Cabin Embarked
0      0         A/5 21171   7.2500   NaN        S
1      0          PC 17599  71.2833   C85        C
2      0  STON/O2. 3101282   7.9250   NaN        S
3      0            113803  53.1000  C123        S
4      0            373450   8.0500   NaN        S
```

[7]:
```
titanic_df.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
```

[9]:
```
import seaborn as sns
import matplotlib.pyplot as plt

plt.figure(figsize=(10,6))
sns.heatmap(titanic_df.isnull(), cbar=False, cmap='viridis')
plt.title('Missing Values in the Titanic Dataset')
plt.show()

titanic_df['Age'].fillna(titanic_df['Age'].median(), inplace=True)

titanic_df.drop(columns=['Cabin'], inplace=True)

titanic_df['Embarked'].fillna(titanic_df['Embarked'].mode()[0], inplace=True)

print(titanic_df.isnull().sum())
```




```
PassengerId    0
Survived       0
Pclass         0
Name           0
Sex            0
Age            0
SibSp          0
Parch          0
Ticket         0
Fare           0
Embarked       0
dtype: int64
```

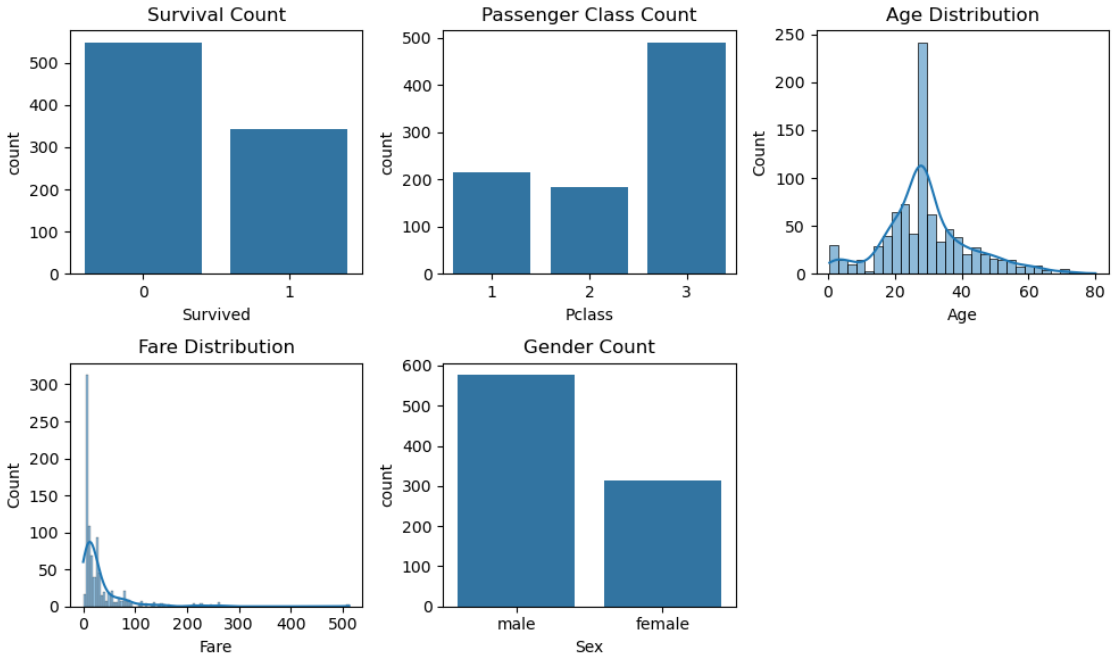
```
C:\Users\Dibyam Jyoti
Pradhan\AppData\Local\Temp\ipykernel_17240\1712176759.py:9: FutureWarning: A
value is trying to be set on a copy of a DataFrame or Series through chained
assignment using an inplace method.
The behavior will change in pandas 3.0. This inplace method will never work
because the intermediate object on which we are setting values always behaves as
a copy.

For example, when doing 'df[col].method(value, inplace=True)', try using
'df.method({col: value}, inplace=True)' or df[col] = df[col].method(value)
```

```
instead, to perform the operation inplace on the original object.


  titanic_df['Age'].fillna(titanic_df['Age'].median(), inplace=True)
C:\Users\Dibyam Jyoti
Pradhan\AppData\Local\Temp\ipykernel_17240\1712176759.py:13: FutureWarning: A
value is trying to be set on a copy of a DataFrame or Series through chained
assignment using an inplace method.
The behavior will change in pandas 3.0. This inplace method will never work
because the intermediate object on which we are setting values always behaves as
a copy.

For example, when doing 'df[col].method(value, inplace=True)', try using
'df.method({col: value}, inplace=True)' or df[col] = df[col].method(value)
instead, to perform the operation inplace on the original object.


  titanic_df['Embarked'].fillna(titanic_df['Embarked'].mode()[0], inplace=True)
```

[11]:
```
print(titanic_df.describe(include='all'))
```

```
        PassengerId    Survived      Pclass                     Name   Sex  \
count    891.000000  891.000000  891.000000                      891   891
unique          NaN         NaN         NaN                      891     2
top             NaN         NaN         NaN  Braund, Mr. Owen Harris  male
freq            NaN         NaN         NaN                        1   577
mean     446.000000    0.383838    2.308642                      NaN   NaN
std      257.353842    0.486592    0.836071                      NaN   NaN
min        1.000000    0.000000    1.000000                      NaN   NaN
25%      223.500000    0.000000    2.000000                      NaN   NaN
50%      446.000000    0.000000    3.000000                      NaN   NaN
75%      668.500000    1.000000    3.000000                      NaN   NaN
max      891.000000    1.000000    3.000000                      NaN   NaN

                Age       SibSp       Parch  Ticket        Fare Embarked
count    891.000000  891.000000  891.000000     891  891.000000      891
unique          NaN         NaN         NaN     681         NaN        3
top             NaN         NaN         NaN  347082         NaN        S
freq            NaN         NaN         NaN       7         NaN      646
mean      29.361582    0.523008    0.381594     NaN   32.204208      NaN
std       13.019697    1.102743    0.806057     NaN   49.693429      NaN
min        0.420000    0.000000    0.000000     NaN    0.000000      NaN
25%       22.000000    0.000000    0.000000     NaN    7.910400      NaN
50%       28.000000    0.000000    0.000000     NaN   14.454200      NaN
75%       35.000000    1.000000    0.000000     NaN   31.000000      NaN
max       80.000000    8.000000    6.000000     NaN  512.329200      NaN
```

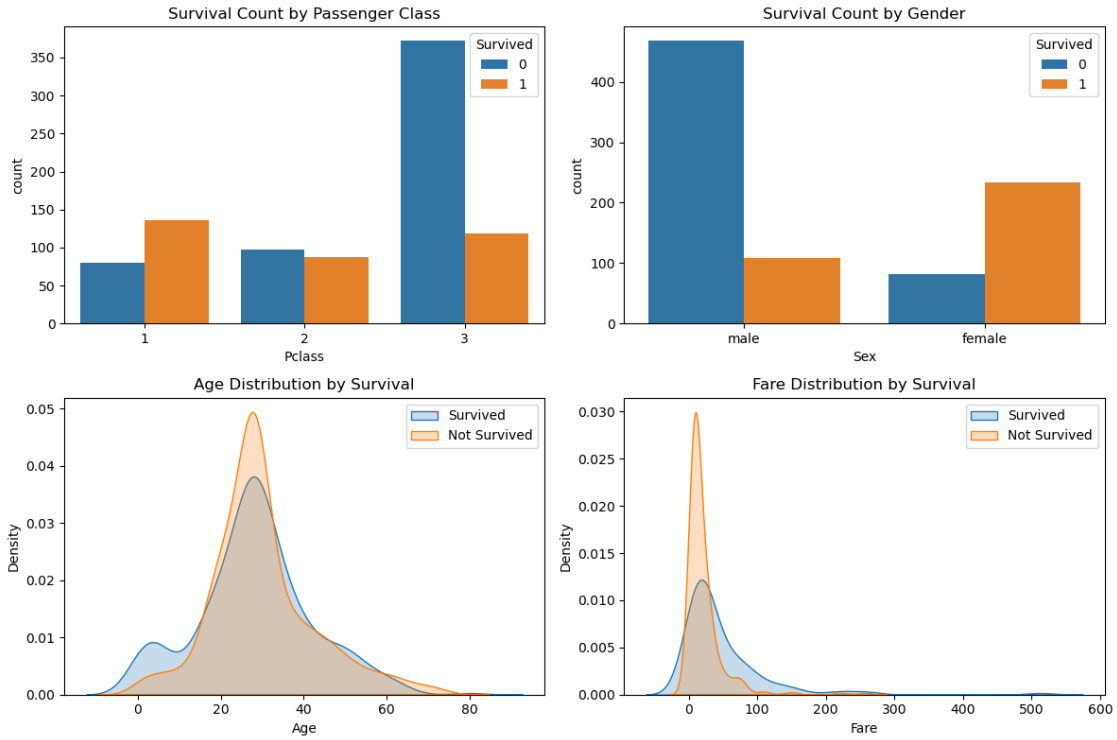
[13]:
```
plt.figure(figsize=(10, 6))


plt.subplot(2, 3, 1)
sns.countplot(x='Survived', data=titanic_df)
plt.title('Survival Count')


plt.subplot(2, 3, 2)
sns.countplot(x='Pclass', data=titanic_df)
plt.title('Passenger Class Count')


plt.subplot(2, 3, 3)
sns.histplot(titanic_df['Age'], kde=True)
plt.title('Age Distribution')


plt.subplot(2, 3, 4)
sns.histplot(titanic_df['Fare'], kde=True)
plt.title('Fare Distribution')


plt.subplot(2, 3, 5)
sns.countplot(x='Sex', data=titanic_df)
plt.title('Gender Count')

plt.tight_layout()
plt.show()
```



[15]:
```
plt.figure(figsize=(12, 8))


plt.subplot(2, 2, 1)
sns.countplot(x='Pclass', hue='Survived', data=titanic_df)
plt.title('Survival Count by Passenger Class')


plt.subplot(2, 2, 2)
sns.countplot(x='Sex', hue='Survived', data=titanic_df)
plt.title('Survival Count by Gender')


plt.subplot(2, 2, 3)
sns.kdeplot(data=titanic_df[titanic_df['Survived']==1]['Age'],␣
 ↪label='Survived', shade=True)
sns.kdeplot(data=titanic_df[titanic_df['Survived']==0]['Age'], label='Not␣
 ↪Survived', shade=True)
plt.title('Age Distribution by Survival')
plt.legend()


plt.subplot(2, 2, 4)
sns.kdeplot(data=titanic_df[titanic_df['Survived']==1]['Fare'],␣
 ↪label='Survived', shade=True)
```

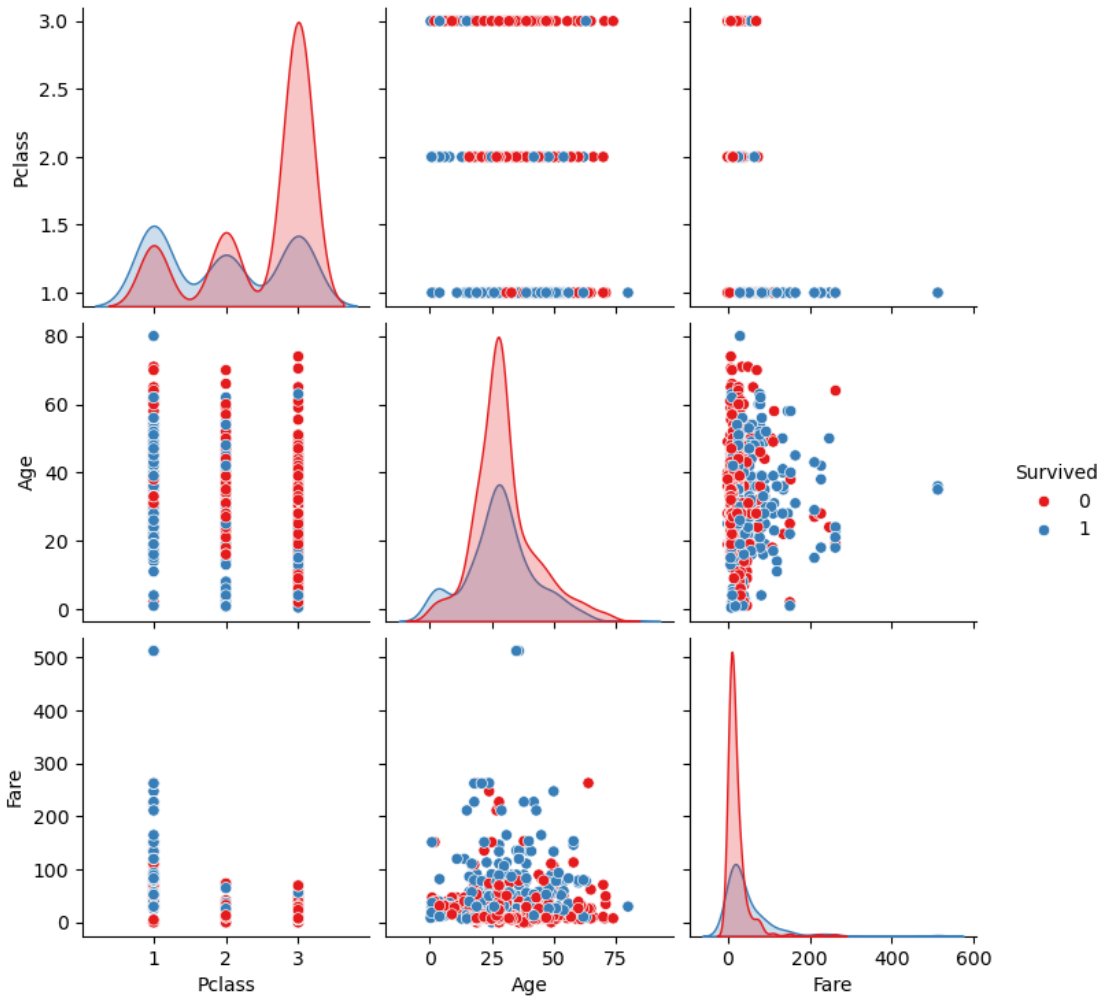
```
sns.kdeplot(data=titanic_df[titanic_df['Survived']==0]['Fare'], label='Not␣
 ↪Survived', shade=True)
plt.title('Fare Distribution by Survival')
plt.legend()

plt.tight_layout()
plt.show()
```

```
C:\Users\Dibyam Jyoti
Pradhan\AppData\Local\Temp\ipykernel_17240\1288160612.py:15: FutureWarning:

`shade` is now deprecated in favor of `fill`; setting `fill=True`.
This will become an error in seaborn v0.14.0; please update your code.

  sns.kdeplot(data=titanic_df[titanic_df['Survived']==1]['Age'],
label='Survived', shade=True)
C:\Users\Dibyam Jyoti
Pradhan\AppData\Local\Temp\ipykernel_17240\1288160612.py:16: FutureWarning:

`shade` is now deprecated in favor of `fill`; setting `fill=True`.
This will become an error in seaborn v0.14.0; please update your code.

  sns.kdeplot(data=titanic_df[titanic_df['Survived']==0]['Age'], label='Not
Survived', shade=True)
C:\Users\Dibyam Jyoti
Pradhan\AppData\Local\Temp\ipykernel_17240\1288160612.py:22: FutureWarning:

`shade` is now deprecated in favor of `fill`; setting `fill=True`.
This will become an error in seaborn v0.14.0; please update your code.

  sns.kdeplot(data=titanic_df[titanic_df['Survived']==1]['Fare'],
label='Survived', shade=True)
C:\Users\Dibyam Jyoti
Pradhan\AppData\Local\Temp\ipykernel_17240\1288160612.py:23: FutureWarning:

`shade` is now deprecated in favor of `fill`; setting `fill=True`.
This will become an error in seaborn v0.14.0; please update your code.

  sns.kdeplot(data=titanic_df[titanic_df['Survived']==0]['Fare'], label='Not
Survived', shade=True)
```



[17]:
```
plt.figure(figsize=(10, 6))
sns.pairplot(titanic_df[['Survived', 'Pclass', 'Age', 'Fare', 'Sex']],␣
 ↪hue='Survived', palette='Set1')

plt.show()
```

```
<Figure size 1000x600 with 0 Axes>
```


Pclass
Age
Fare
Survived
0
1
1
2
3
0
25
50
75
0
200
400
600

[ ]: