```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt

# Slightly different theme
sns.set_style("whitegrid")

df = pd.read_csv("train.csv")
df.head()
```

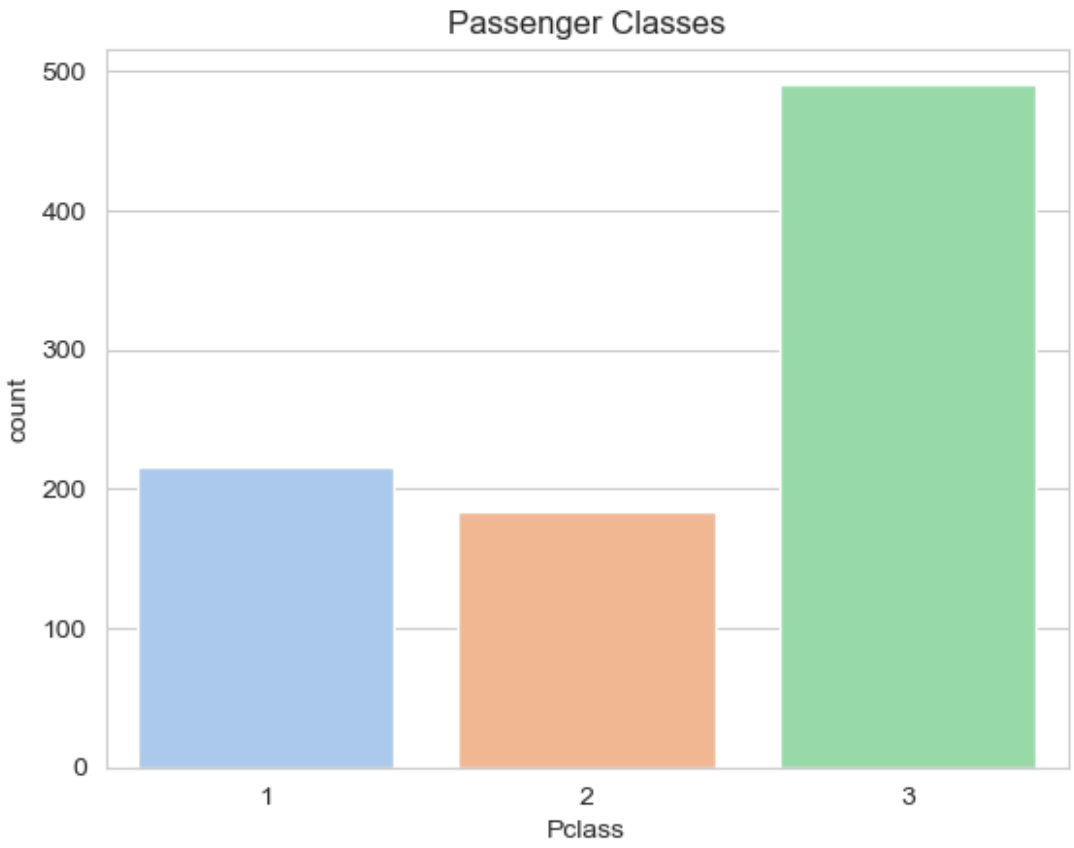
```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                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
```

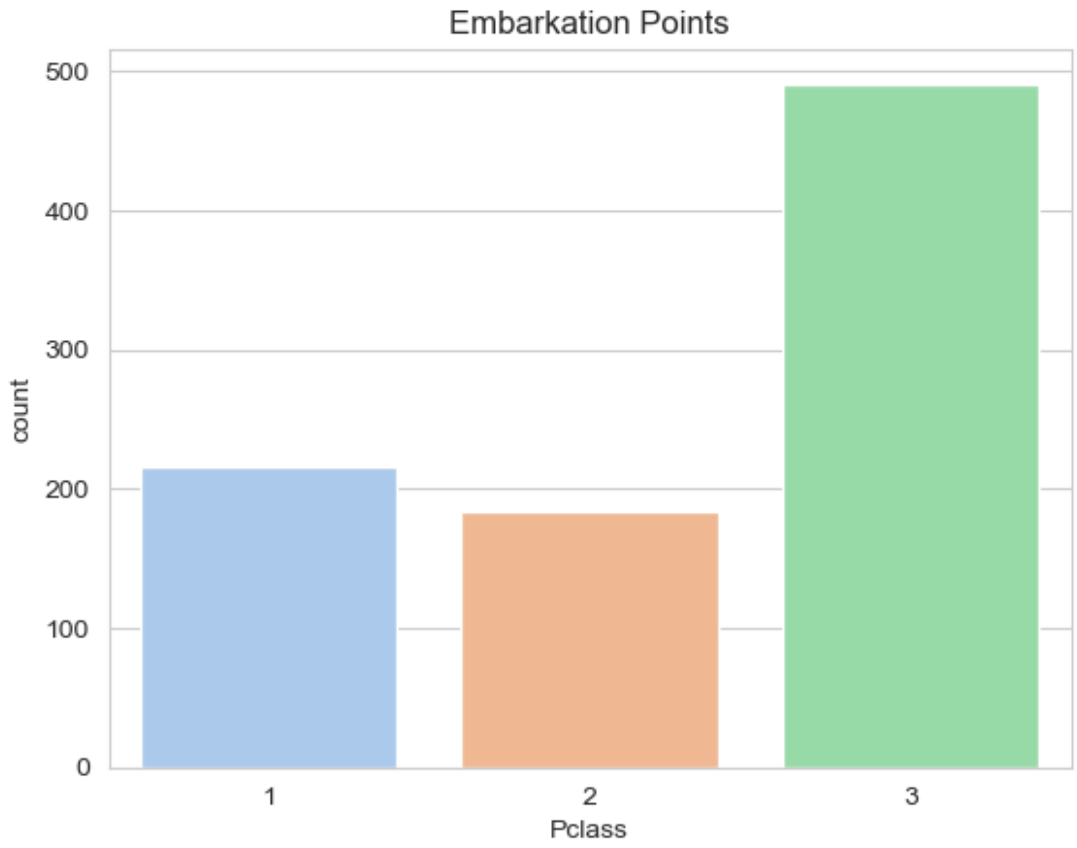
```
df.info()
df.describe()
df.isnull().sum()
```

```
<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
```

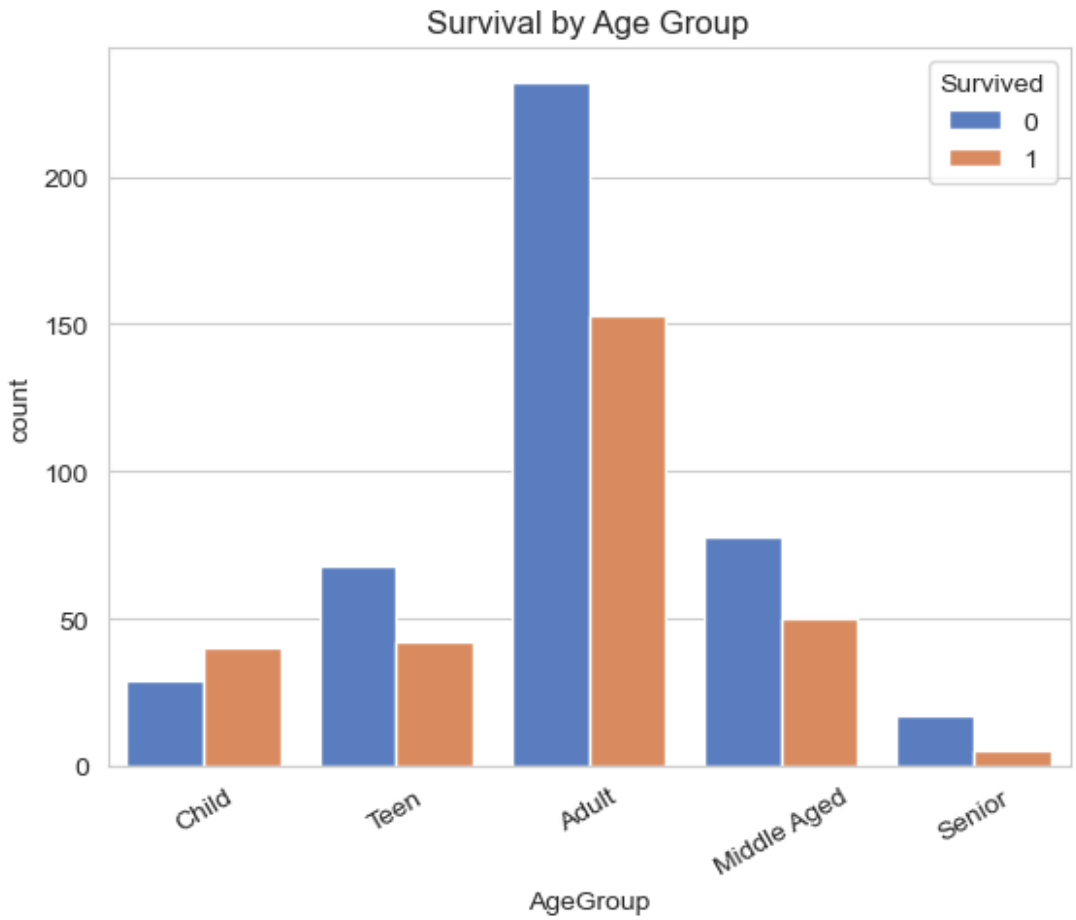
```
 4   Sex          891 non-null    object
 5   Age          714 non-null    float64
 6   SibSp        891 non-null    int64
 7   Parch        891 non-null    int64
 8   Ticket       891 non-null    object
 9   Fare         891 non-null    float64
 10  Cabin        204 non-null    object
 11  Embarked     889 non-null    object
dtypes: float64(2), int64(5), object(5)
memory usage: 83.7+ KB

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
```

```
# Bar charts of categorical columns
sns.countplot(data=df, x='Pclass', hue='Pclass', palette='pastel',
legend=False)

plt.title("Passenger Classes")
plt.show()

sns.countplot(data=df, x='Pclass', hue='Pclass', palette='pastel',
legend=False)

plt.title("Embarkation Points")
plt.show()
```

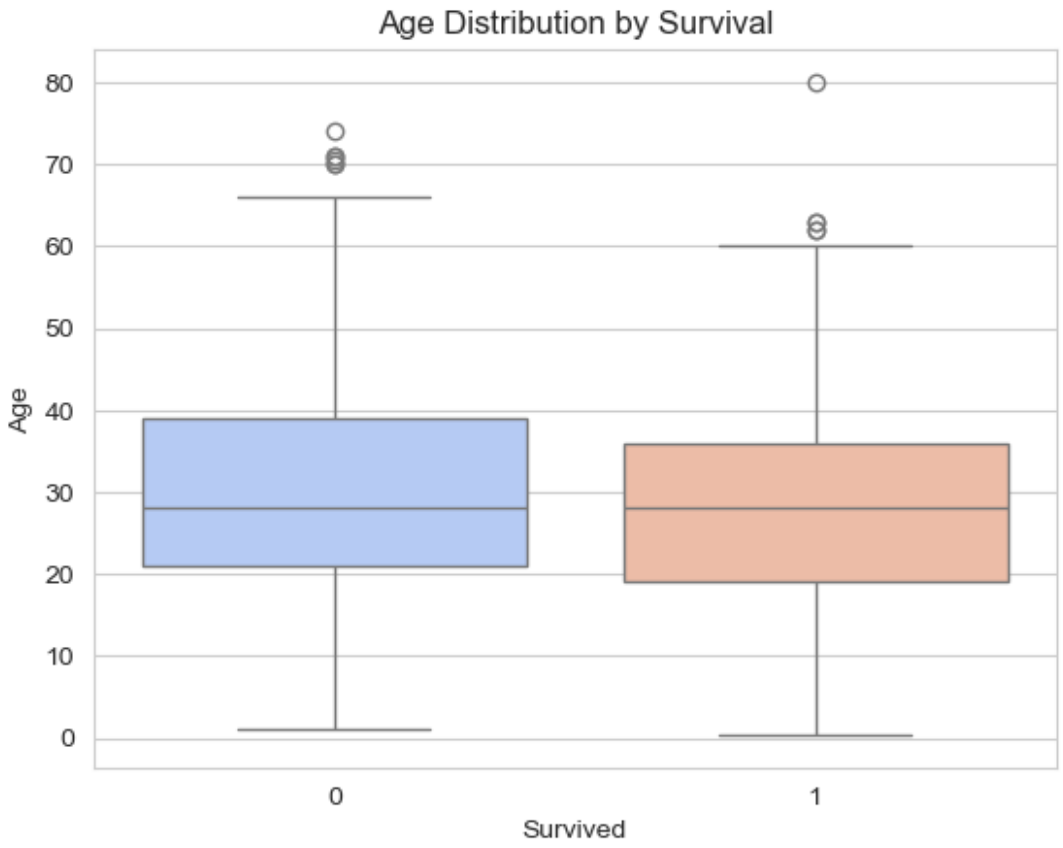

Passenger Classes
500
400
300
200
100
0
count
1
2
3
Pclass

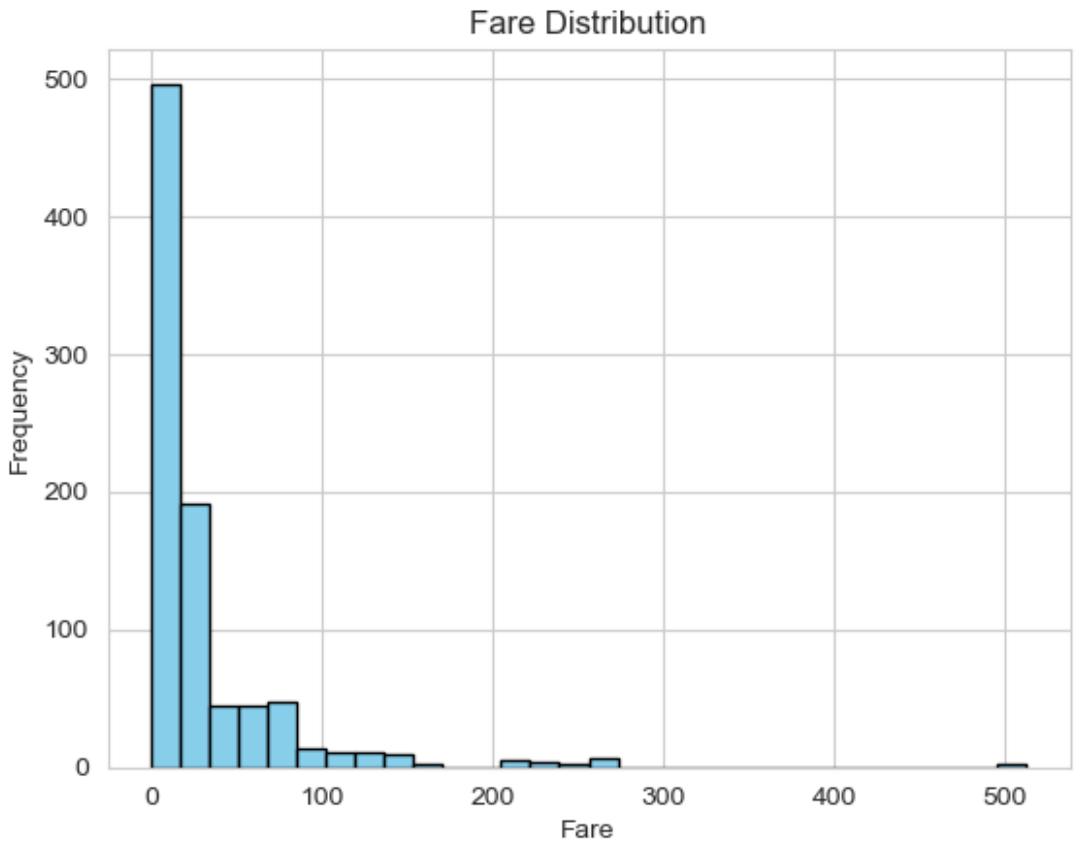



```
# Create age bins
df["AgeGroup"] = pd.cut(df["Age"], bins=[0, 12, 20, 40, 60, 80],
                        labels=["Child", "Teen", "Adult", "Middle
Aged", "Senior"])

# Survival by Age Group
sns.countplot(data=df, x="AgeGroup", hue="Survived", palette="muted")
plt.title("Survival by Age Group")
plt.xticks(rotation=30)
plt.show()
```

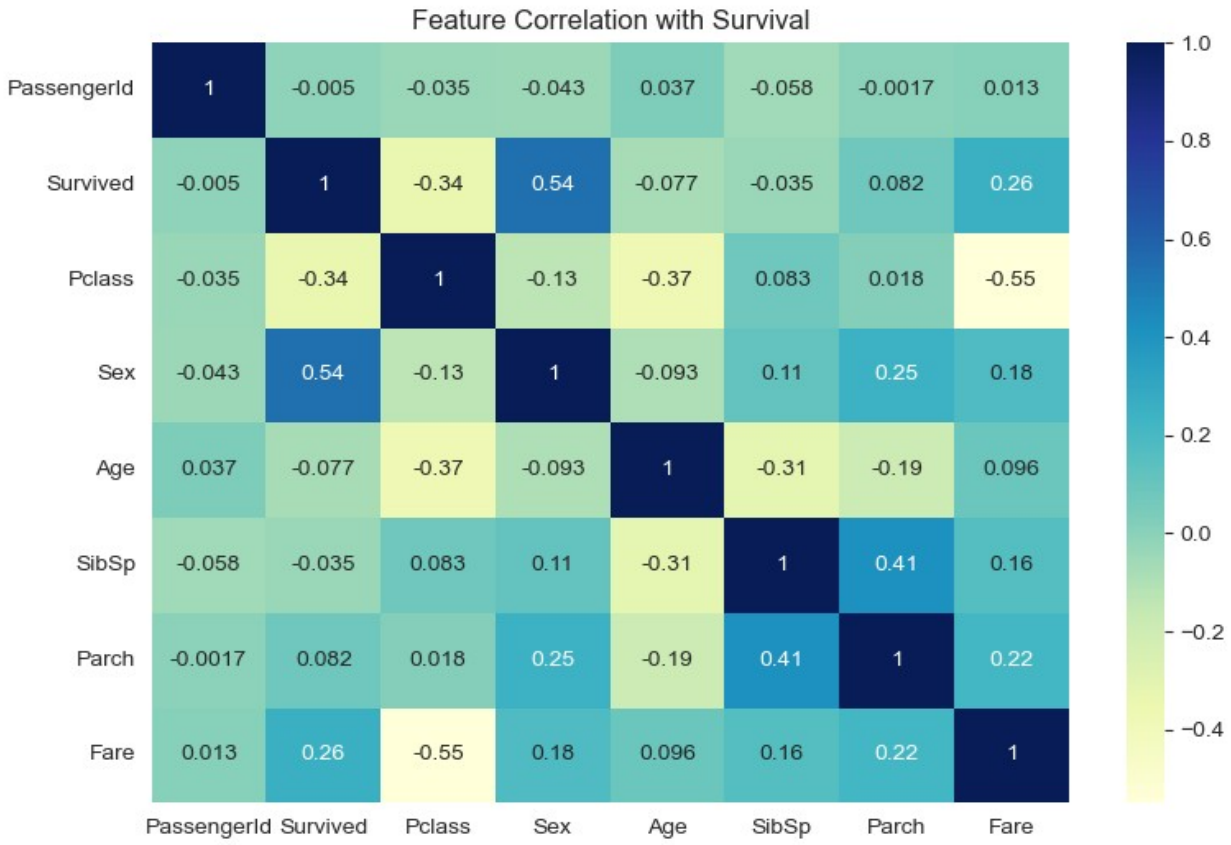



```
sns.boxplot(data=df, x="Survived", y="Age", hue="Survived",
palette="coolwarm", legend=False)
plt.title("Age Distribution by Survival")
plt.show()

df["Fare"].plot.hist(bins=30, color="skyblue", edgecolor="black")
plt.title("Fare Distribution")
plt.xlabel("Fare")
plt.show()
```


Age Distribution by Survival
80
70
60
50
40
30
20
10
0
Age
0
1
Survived

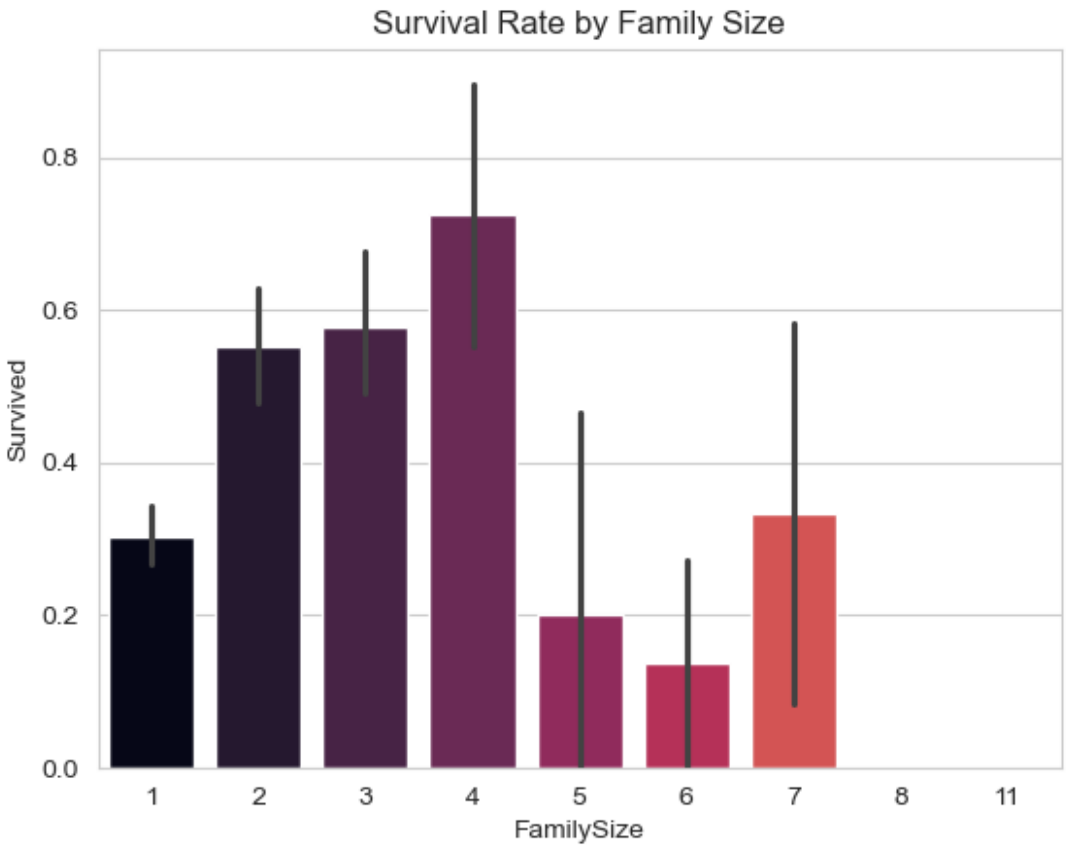



```
# Convert Sex to numeric, drop non-numeric
df_corr = df.copy()
df_corr["Sex"] = df_corr["Sex"].map({"male": 0, "female": 1})
df_corr = df_corr.select_dtypes(include=["number"])

plt.figure(figsize=(9,6))
sns.heatmap(df_corr.corr(), annot=True, cmap="YlGnBu")
plt.title("Feature Correlation with Survival")
plt.show()
```




```
sns.pairplot(df, vars=["Age", "Fare"], hue="Pclass", palette="husl")
plt.suptitle("Age & Fare by Class", y=1.02)
plt.show()
```


```
df["FamilySize"] = df["SibSp"] + df["Parch"] + 1

sns.barplot(data=df, x="FamilySize", y="Survived", hue="FamilySize",
palette="rocket", legend=False)
plt.title("Survival Rate by Family Size")
plt.show()
```


Survival Rate by Family Size
Survived
0.0
0.2
0.4
0.6
0.8
1
2
3
4
5
6
7
8
11
FamilySize