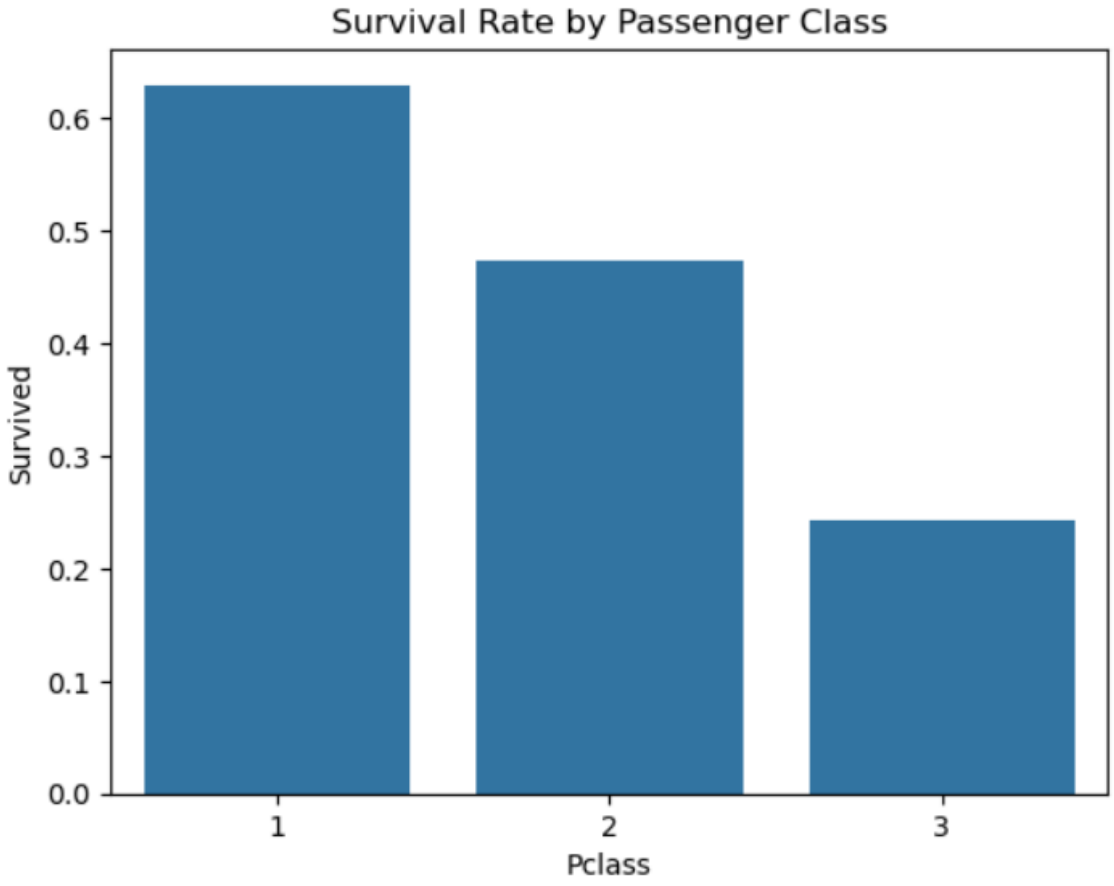
Observations for Each Visual: Titanic Dataset

1. **Survival Rate by Passenger Class (Bar Chart)**

Observation:

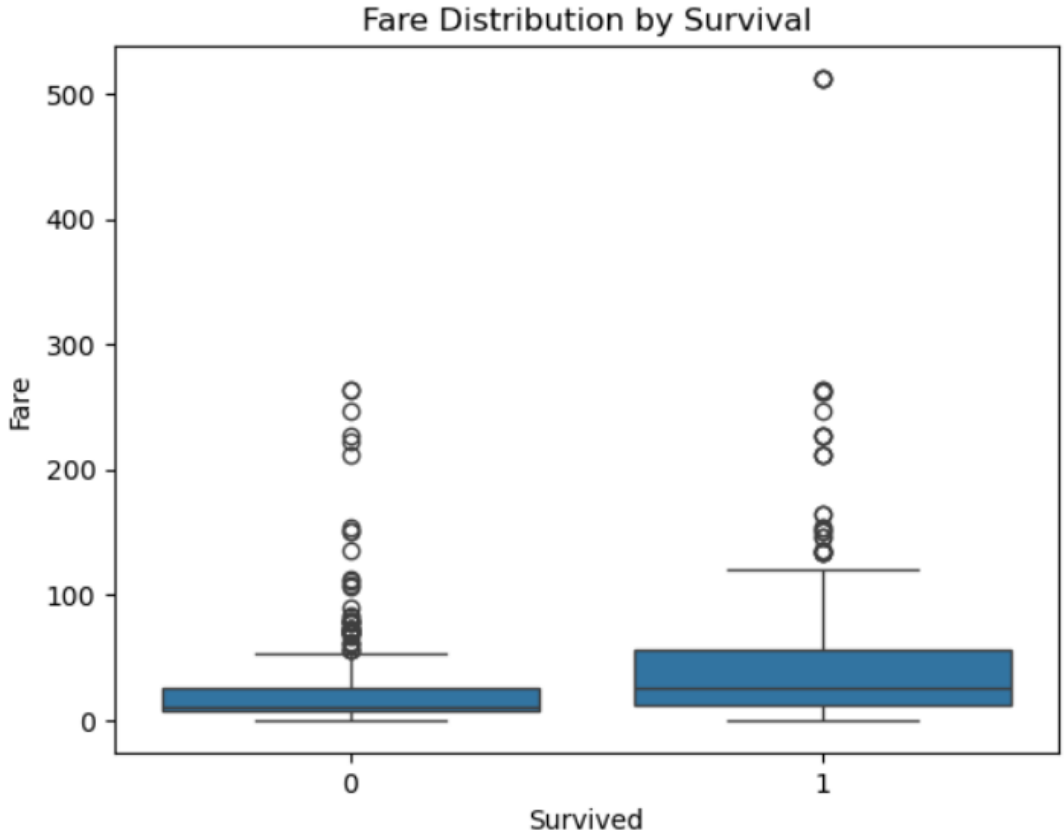
- **Survival rate is highest in 1st Class**, lower in 2nd Class, and lowest in 3rd Class.
- Passengers in **higher classes had significantly better chances of survival.**
- Suggests that **socioeconomic status played a major role in survival.**



2. **Fare Distribution by Survival (Boxplot)**

Observation:

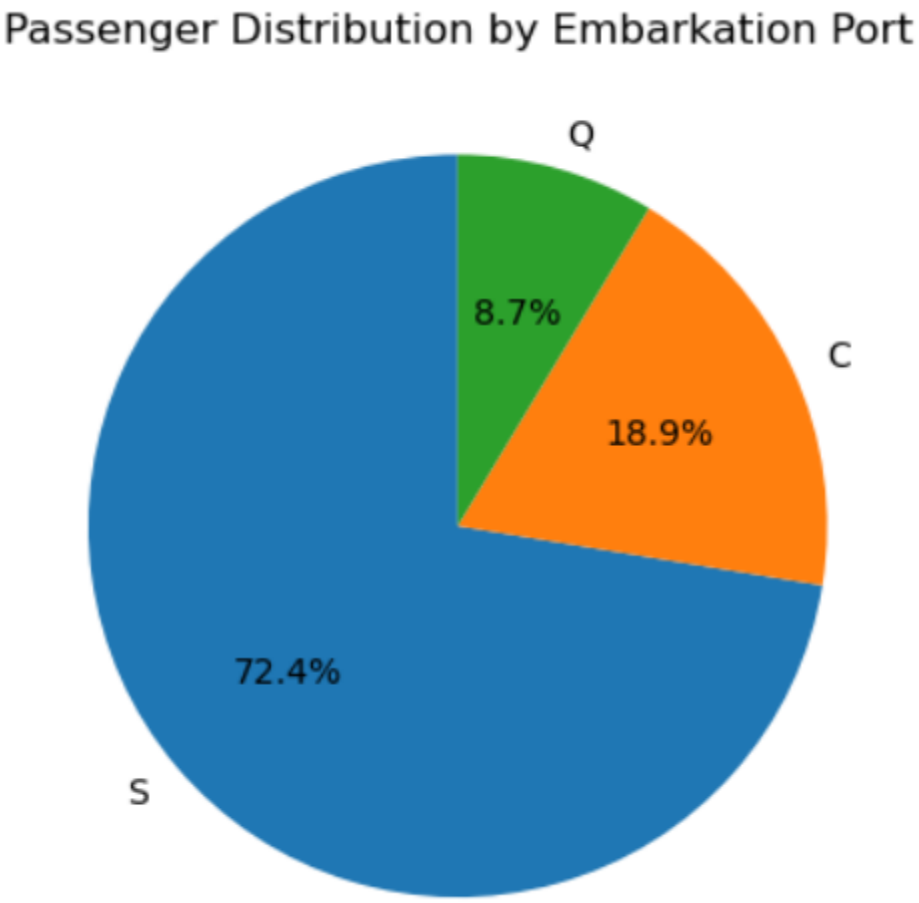
- **Passengers who survived generally paid higher fares.**
- There are some outliers with extremely high fares among survivors.
- **Median fare of survivors is noticeably higher** than non-survivors, indicating that passengers who could afford higher fares likely had access to safer areas or quicker evacuation.



3. **Passenger Distribution by Embarkation Port (Pie Chart)**

Observation:

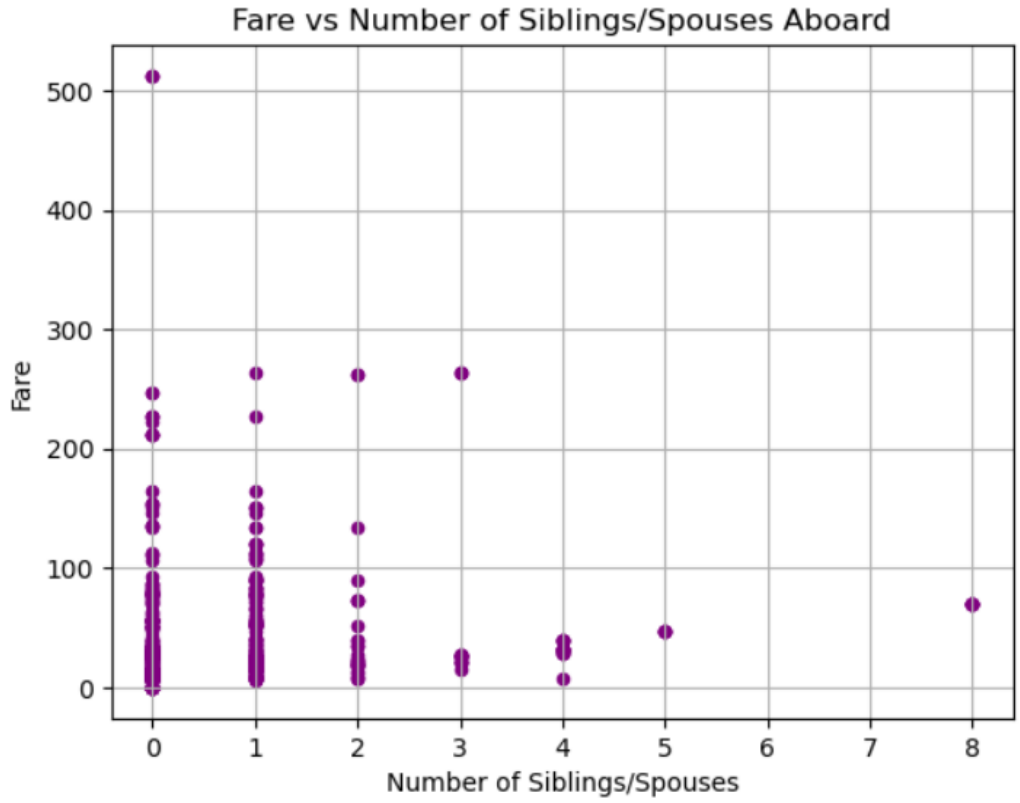
- **Most passengers embarked from port 'S' (Southampton), followed by 'C' (Cherbourg), and then 'Q' (Queenstown).**
- Southampton was the major boarding point.
- Could explore if survival rates varied by embarkation point.



4. **Scatter Plot of Fare vs SibSp (Number of Siblings/Spouses)**

Observation:

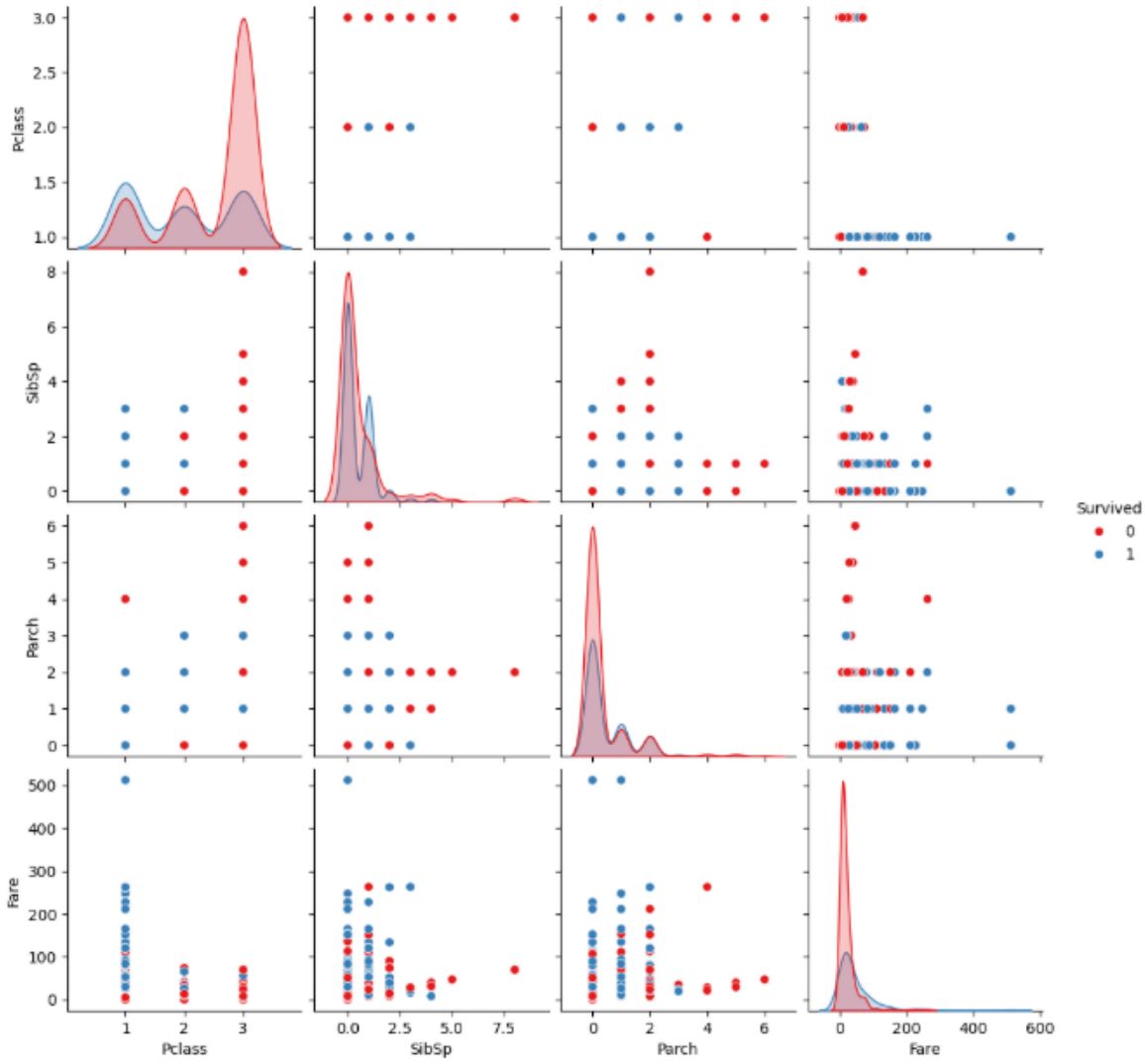
- Most passengers had **0 or 1 sibling/spouse aboard.**
- Passengers traveling alone paid a wide range of fares, but **higher fares were more common for those traveling in small groups.**
- Few passengers with large families, and they generally paid lower fares.



5. **Pairplot of Selected Features**

Observation:

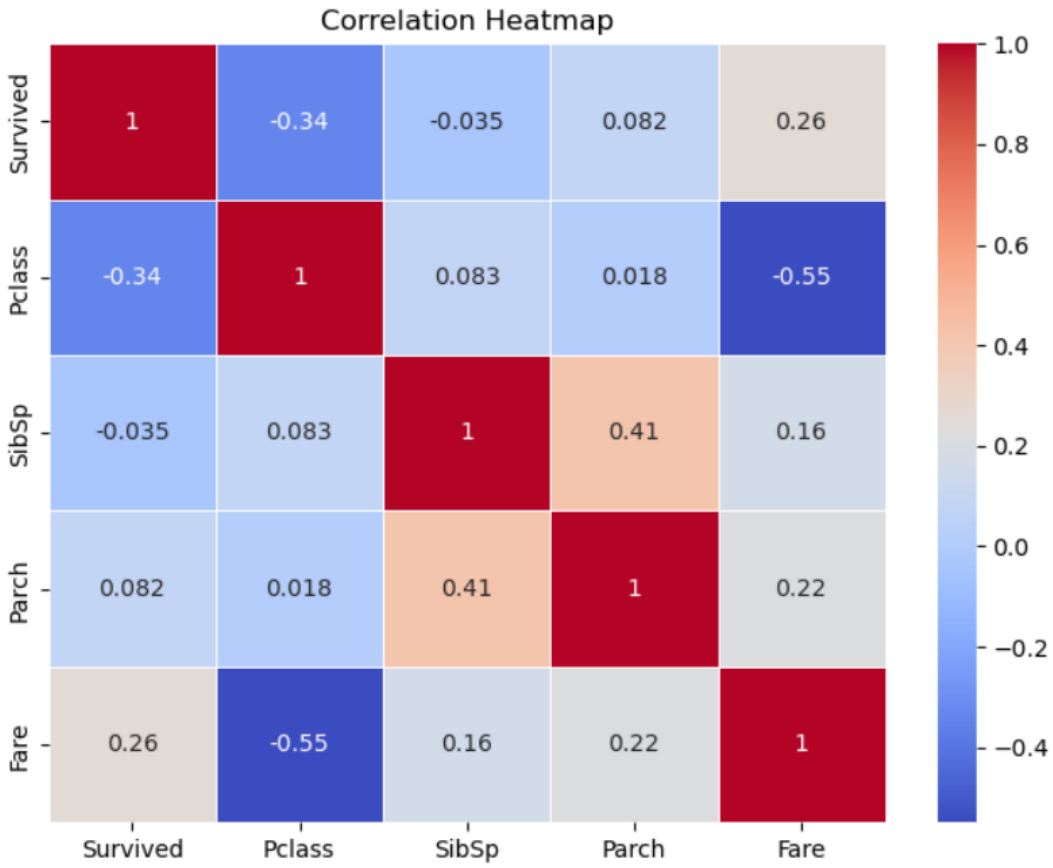
- **Strong separation visible between classes and fares.**
- Survivors cluster more in **higher fares and lower class numbers (1st class).**
- No clear relationship between survival and family size alone, but small families had a slightly better survival rate.



6. **Correlation Heatmap**

Observation:

- **Strong negative correlation between Pclass and Survived (-0.34):** Higher class number (lower ticket class) is associated with lower survival.
- **Moderate positive correlation between Fare and Survived (0.26):** Higher fares increased survival chances.
- **SibSp and Parch show a slight positive correlation with each other**, indicating families often traveled together.



Summary of Findings:

1. **Ticket Class is a major factor in survival:**
   Passengers in **1st Class had the highest survival rates.**
2. **Fare is positively linked to survival:**
   Higher fare-paying passengers had a significantly **better chance of survival.**
3. **Family Size Impact:**
   Small family groups had **slightly better survival rates** compared to passengers traveling alone or with large families.
4. **Port of Embarkation:**
   Most passengers boarded from Southampton. Additional analysis could check whether survival rates varied by embarkation port.
5. **SibSp and Parch Correlation:**
   Passengers traveling with family (siblings/spouses or parents/children) had some association, but family size alone did not guarantee survival.
6. **Visual Correlation Insights:**
   Strongest drivers of survival: **Passenger Class and Fare.**
   Family size and embarkation port have weaker but still noteworthy relationships.