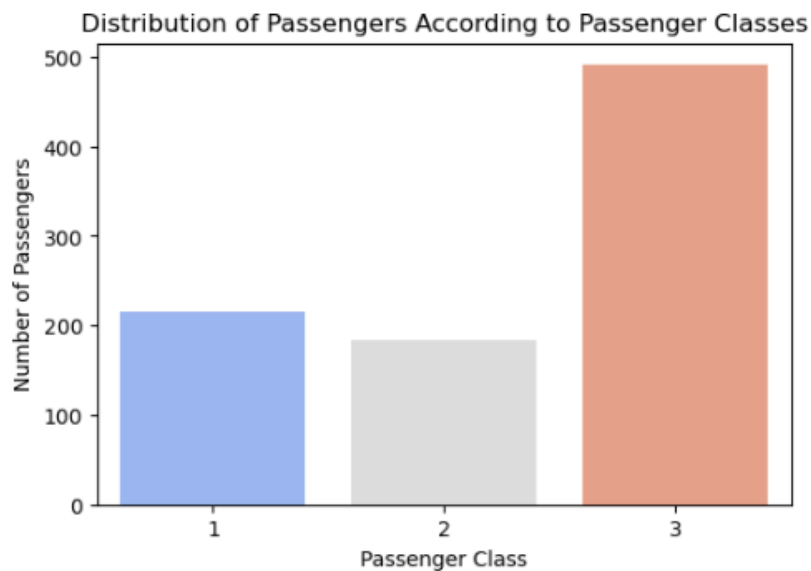


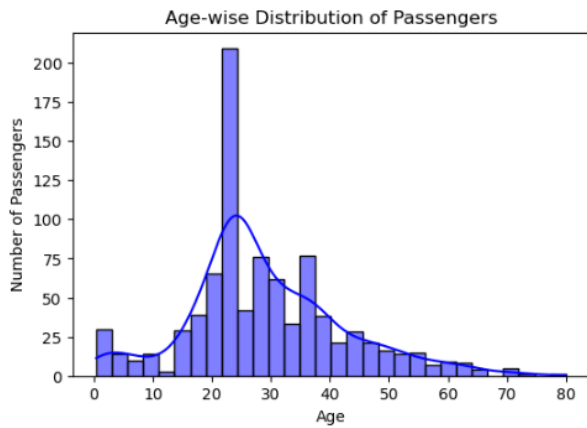
## Dataset Structure:

Data Dictionary		
Variable	Definition	Key
survival	Survival	0 = No, 1 = Yes
pclass	Ticket class	1 = 1st, 2 = 2nd, 3 = 3rd
sex	Sex	
Age	Age in years	
sibsp	# of siblings / spouses aboard the Titanic	
parch	# of parents / children aboard the Titanic	
ticket	Ticket number	
fare	Passenger fare	
cabin	Cabin number	
embarked	Port of Embarkation	C = Cherbourg, Q = Queenstown, S = Southampton



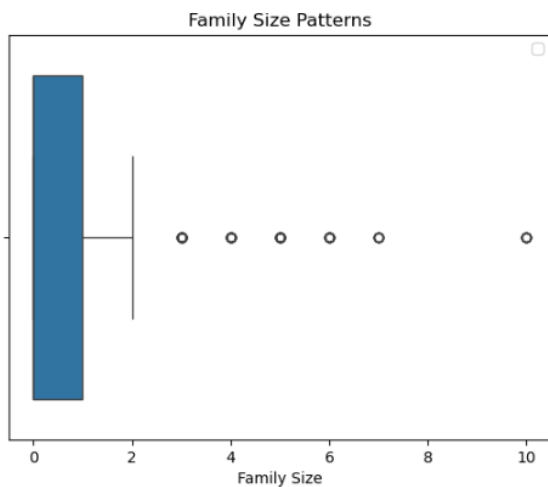
## Observations:

- **Class 3 had the Most Passengers**, with approximately 500 individuals. This suggests that most Titanic passengers were in economy class, likely due to affordability.



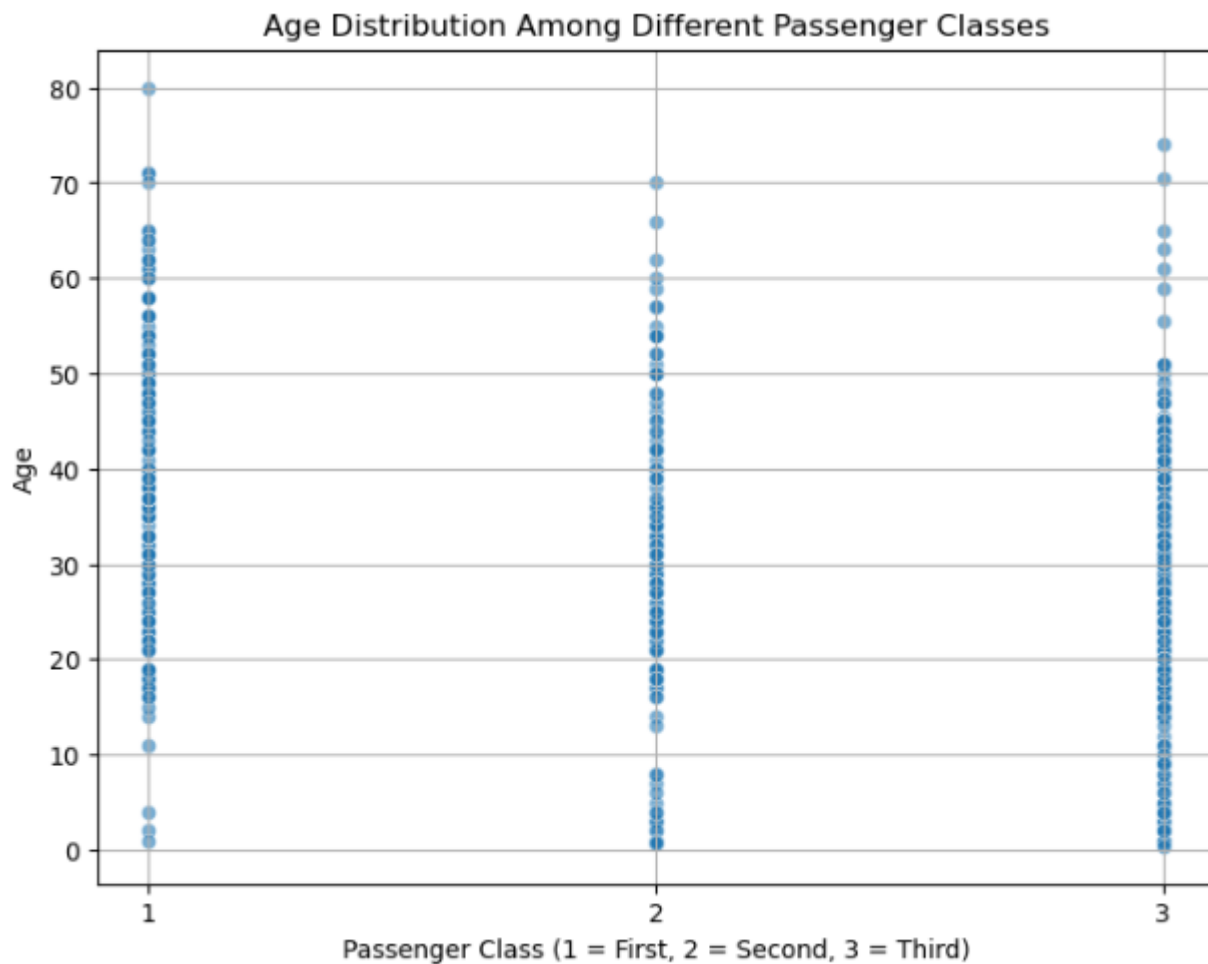
### Observations:

- The highest number of passengers falls within the 20-25 age range, peaking around 200 passengers.
- The distribution is right-skewed, meaning there were more younger passengers compared to older ones.
- As age increases beyond 25, the number of passengers gradually declines.
- There are smaller peaks around the ages of 30 and 40, suggesting secondary age groups with relatively higher passenger counts.
- The number of passengers significantly drops after 50 years, with very few individuals above 70.
- The density curve overlaying the histogram provides a smoothed view of the age distribution, confirming the trend.



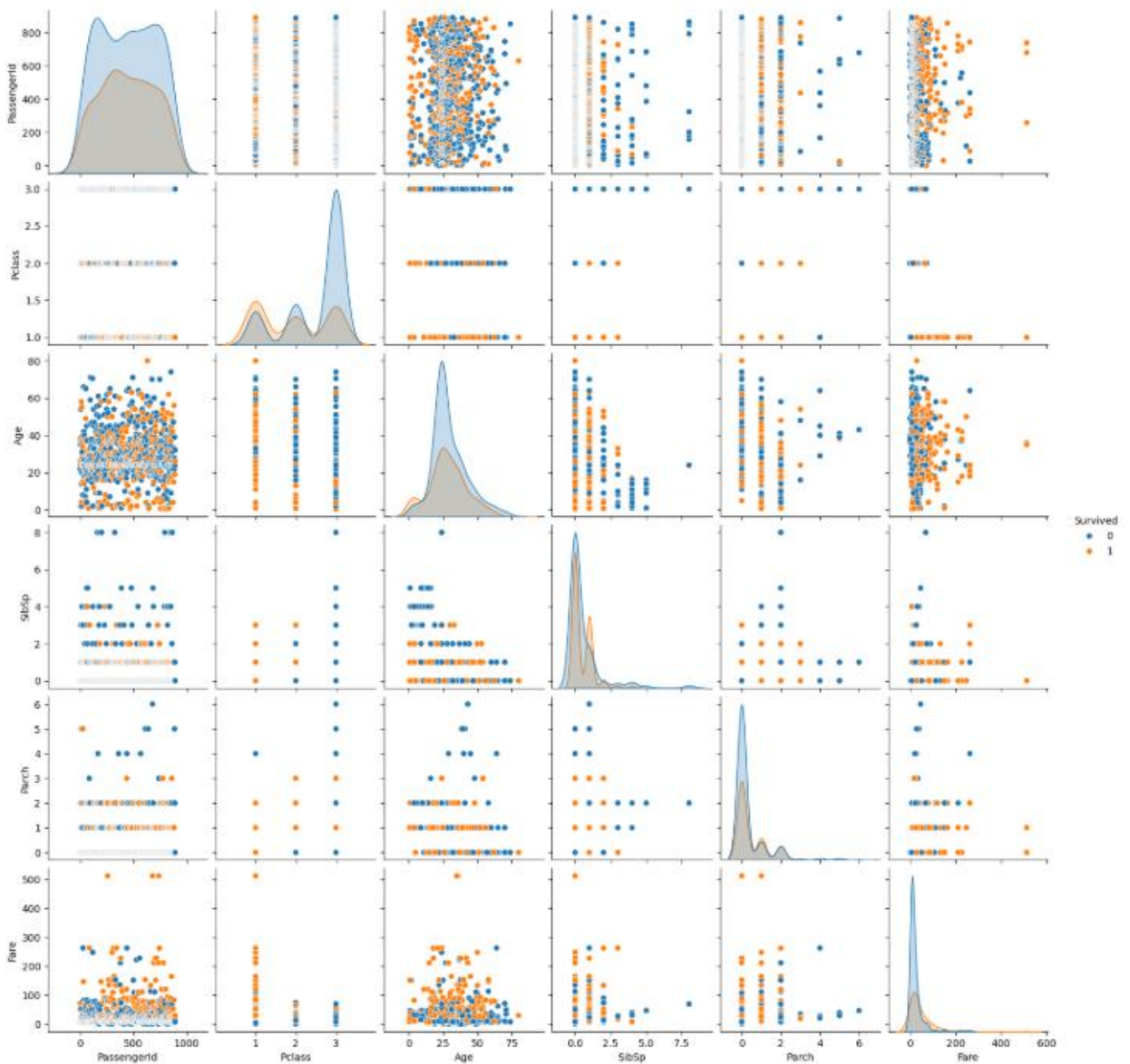
### Observations:

- Most passengers traveled alone or in small families: The majority of family sizes are between 0 and 2, meaning most passengers had no family aboard or were accompanied by only one or two relatives.
- The median family size is around 1: The central line in the box indicates the typical family size.
- Presence of outliers: Some passengers had large families, ranging from 4 to 10 members. These larger family sizes appear as individual points beyond the whiskers, suggesting they were relatively rare.
- Skewed towards smaller family sizes: Since the box and whiskers are concentrated toward the lower end of the scale, it confirms that most passengers were either solo travelers or in small family units.



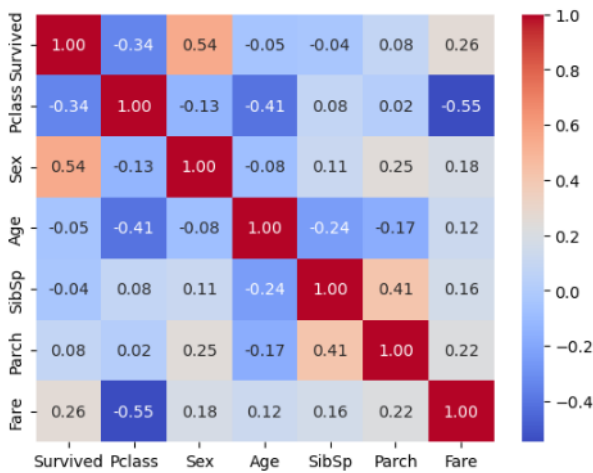
### Observations:

- **Age Range Across Classes:** Passengers from all three classes exhibit a wide range of ages, spanning from infants to elderly individuals.
- **Concentration of Younger Passengers:** The majority of passengers appear to be under 40 years old, suggesting a higher number of younger individuals on board.
- **Presence of Elderly Outliers:** There are a few passengers aged 70 and above, scattered across different classes, indicating that elderly travelers were not restricted to a particular class.
- **First-Class Passenger Age Diversity:** First-class (Pclass 1) passengers have a fairly even age distribution, from infants to senior travelers.
- **Third-Class Younger Passenger Trend:** Third-class (Pclass 3) seems to have a concentration of younger passengers, possibly indicating that families and younger individuals predominantly occupied this class.



## Observations:

- Pclass (Passenger Class): First-class passengers had significantly higher survival rates compared to third-class passengers.
- Age: Younger passengers, especially children, had better survival rates.
- SibSp (Number of Siblings/Spouses Aboard): Passengers traveling with one or two family members had better chances of survival than those traveling alone or with a large family group.
- Parch (Number of Parents/Children Aboard): Similarly, having a small family aboard (1-2 members) seemed to improve survival chances.
- Fare: Higher ticket fares are associated with higher survival rates, indicating that wealthier passengers (likely first-class) had an advantage.



## Observations:

### Survival Correlations:

- There is a moderate positive correlation with Sex ( $\sim 0.54$ ), indicating that female passengers had a significantly higher chance of survival.
- A negative correlation with Pclass ( $\sim -0.34$ ) suggests that passengers in lower classes were less likely to survive.
- Fare ( $\sim 0.26$ ) has a weak positive correlation with survival, meaning passengers who paid higher fares had a slightly better chance of survival.

## Final Takeaways:

First-class passengers had better survival chances.

Women had a significantly higher likelihood of surviving.

Younger individuals were more common on board, but survival was not necessarily age-dependent.

Ticket price played a notable role, as passengers who paid higher fares had better outcomes.