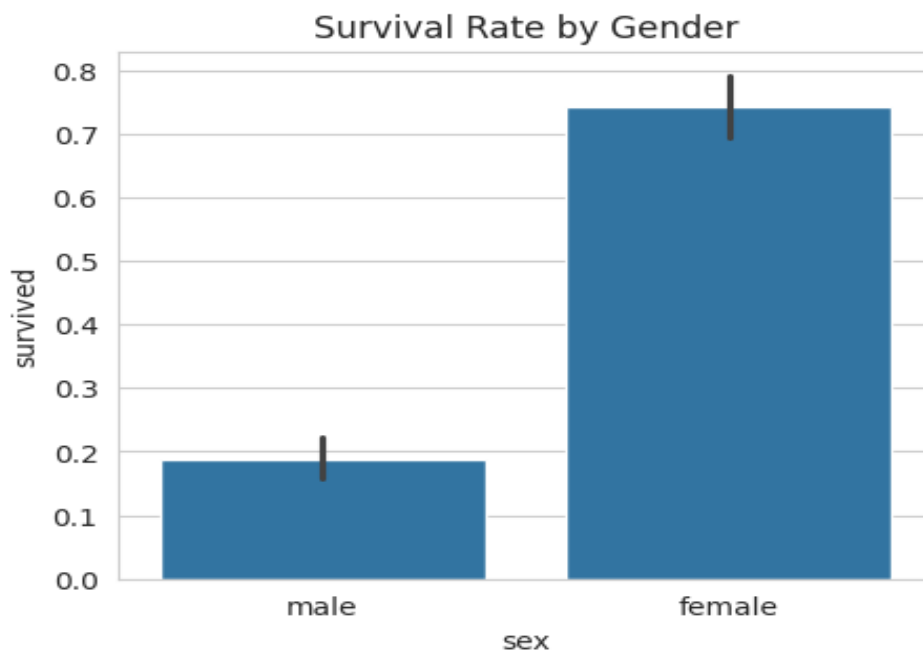


Titanic Analysis - Alexandru Gurguta

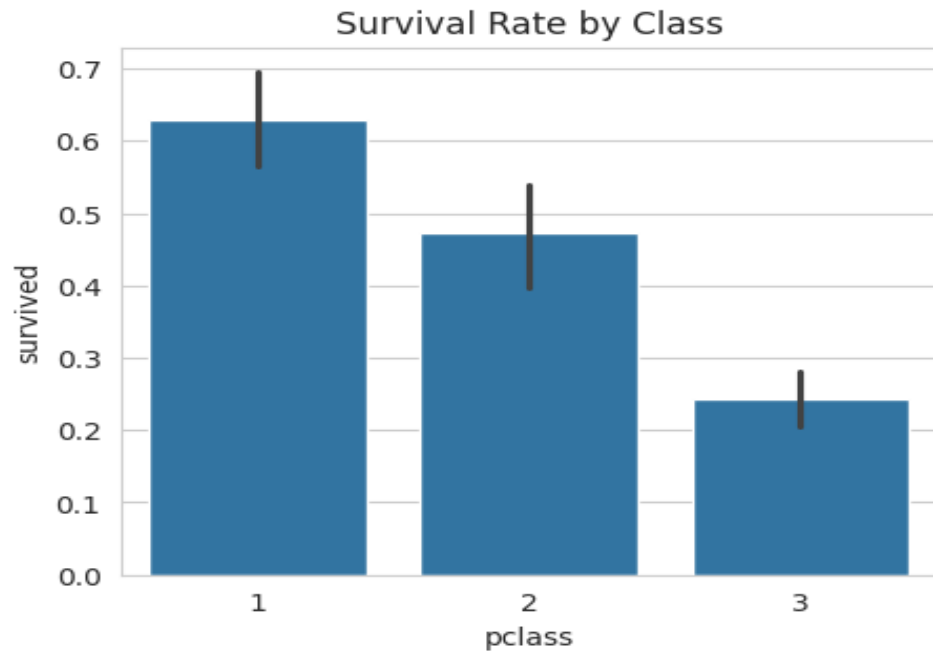
Summary of Key Insights:

1. **Gender:** Female passengers had a significantly higher survival rate (~74%) compared to males (~19%).
2. **Class:** 1st class passengers had the highest survival rate, while 3rd class had the lowest.
3. **Fare:** Higher ticket prices correlated positively with survival — wealthier passengers were more likely to live.
4. **Age:** Children and young adults had better odds than older passengers.
5. **Embarkation:** Cherbourg port showed higher survival, largely from 1st-class travelers.
6. **Statistics:** Chi-square tests confirmed gender & class strongly affected survival ($p < 0.001$); t-tests showed survivors paid higher fares.

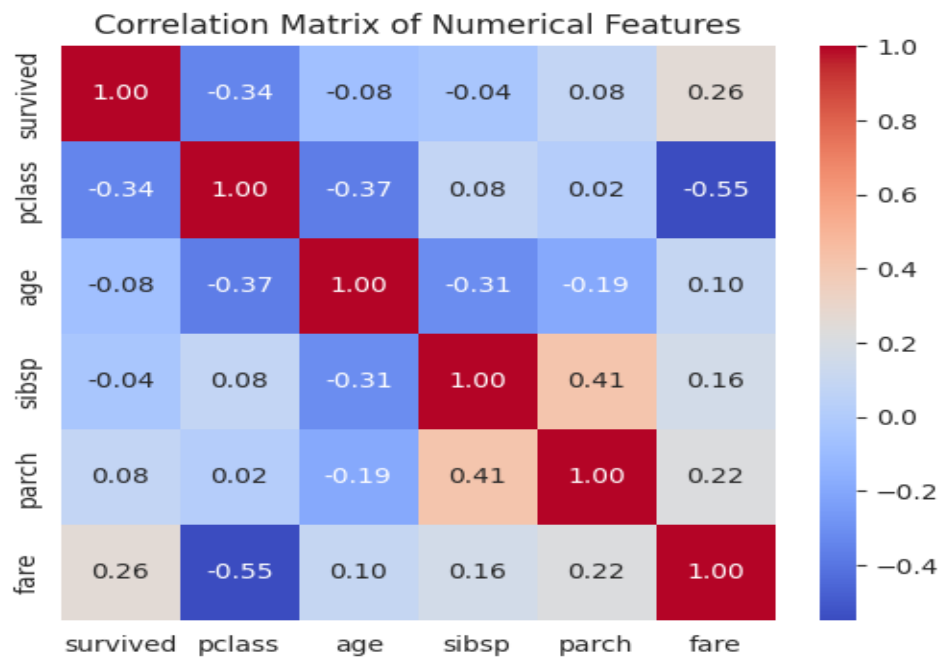
Visual Insights:



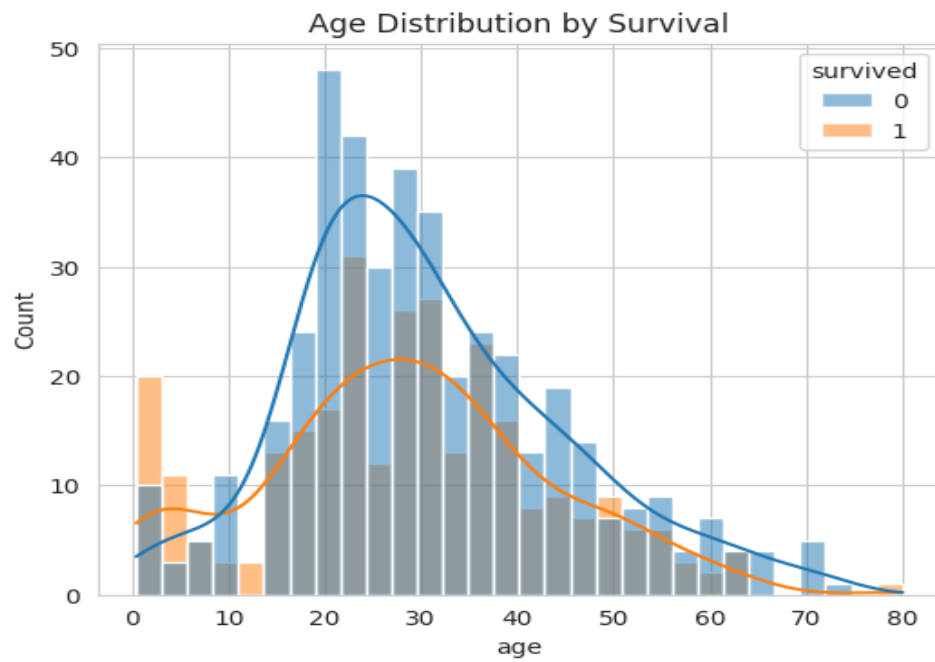
Female passengers had a survival rate roughly four times higher than males — a clear effect of evacuation policies ('women and children first').



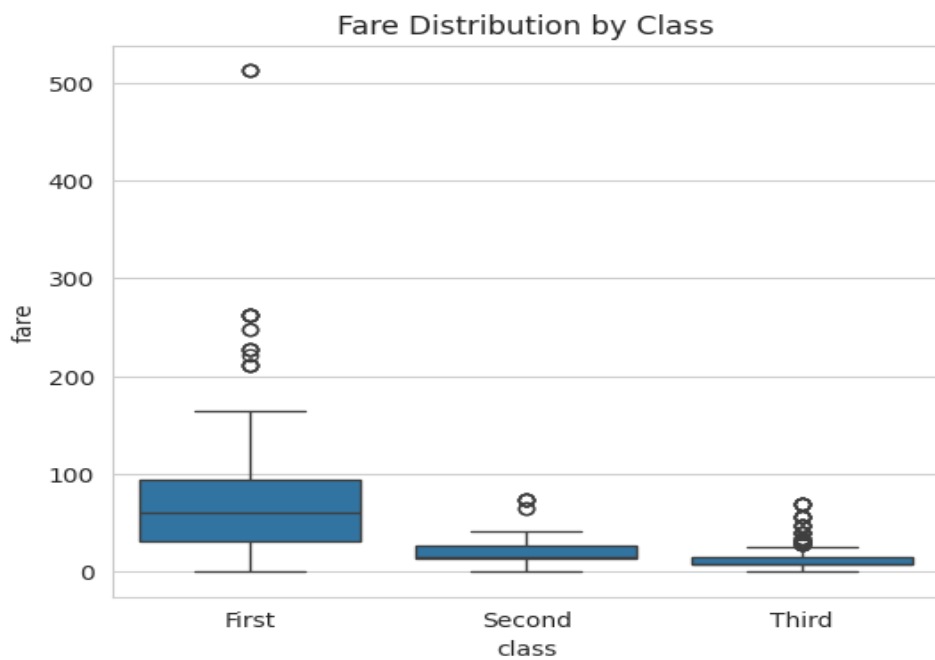
First-class passengers had significantly higher survival rates due to better cabin placement and lifeboat access.



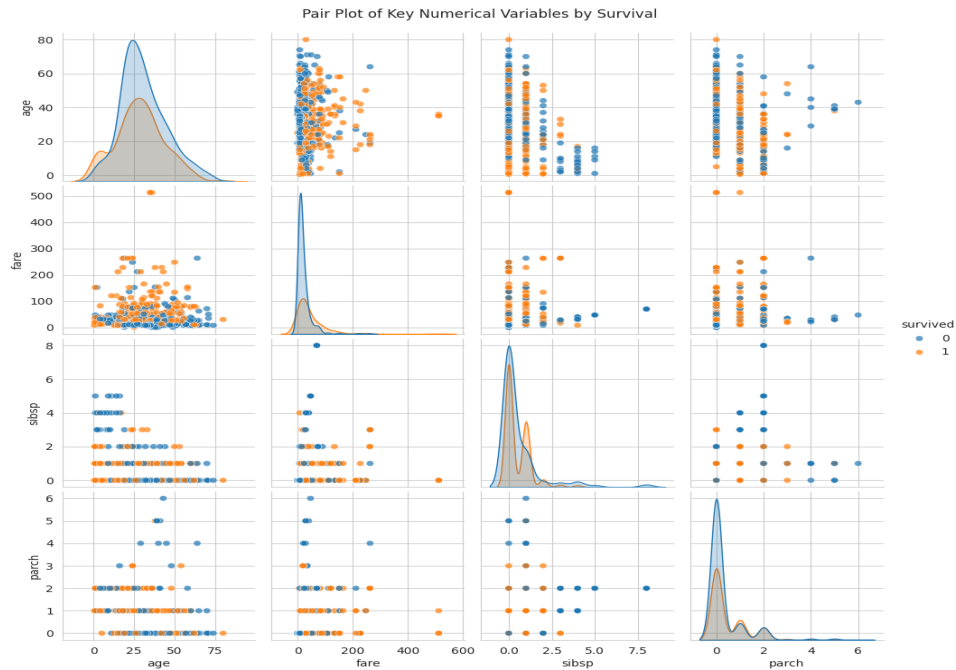
Fare and class show the strongest correlations with survival. Wealthier passengers were more likely to survive.



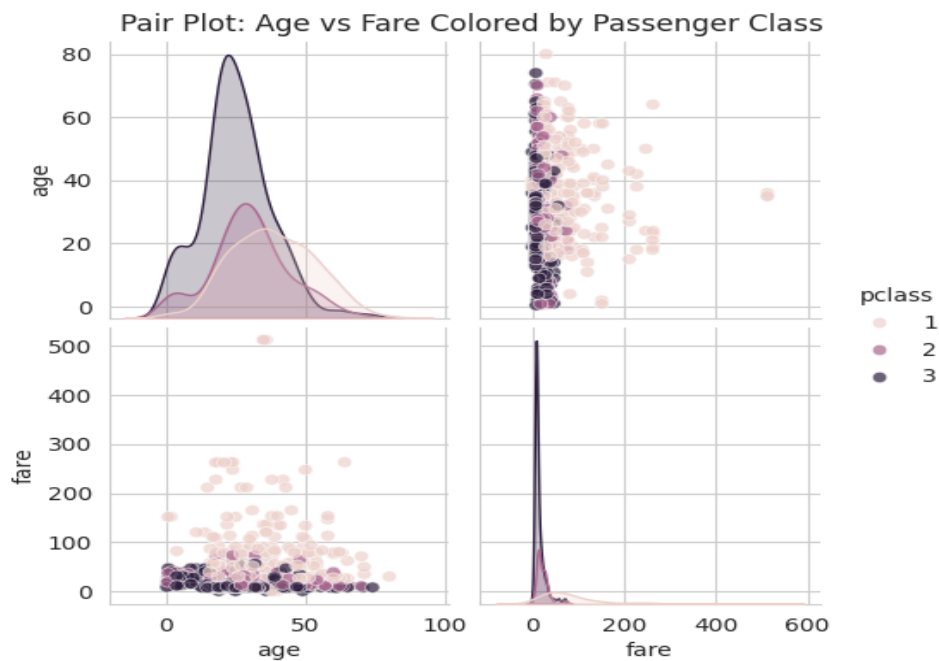
Children under 15 had a higher survival density, consistent with evacuation prioritization.



Fare increases sharply with passenger class — confirming the socioeconomic gradient in survival.



The pair plot shows positive relationships between family size and fare. Survivors cluster at higher fares and lower sibsp/parch values (indicating smaller families).



Higher classes (1st) generally paid more and tended to be older, while 3rd class shows lower fares and younger passengers. The color separation highlights class structure within the dataset.

Conclusion:

The Titanic tragedy reveals stark socioeconomic disparities: wealth, gender, and class were decisive survival factors. Statistical evidence and visual trends both confirm that being in first class, paying higher fares, or being a woman or child greatly improved chances of survival. Lower-class

passengers and men were disproportionately affected.