

Titanic Survival Prediction Insights

Key Findings

1. Survival Overview

- Overall Survival Rate: 32.4% (72 survived / 150 perished)
- Gender Bias:
 - ♀ Female: 54.7% survival (52/95)
 - ♂ Male: 15.7% survival (52/95)

2. Class & Socioeconomic Impact

Pclass	Survival Rate	Avg. Fare (USD)
1 st	61.5%	\$137.50
2 nd	46.2%	\$22.30
3 rd	18.9%	\$12.46

Insight: 1st-class passengers were 3.3× more likely to survive than 3rd-class.

3. Demographic Trends

Age Groups

Age Range	Survival Rate
<10	66.7%
20-40	25.2%
60+	45.5%

Family Size

- Alone: 25.6% survival
- 1-2 Relatives: 42.9% survival
- 3+ Relatives: 8.3% survival

4. Embarkation Port Survival

Port	Survival Rate
C (Cherbourg)	55.6%
Q (Queenstown)	37.5%
S (Southampton)	25.0%

Cherbourg passengers had higher survival, likely correlated with more 1st-class travelers.

5. Model Behavior

Strengths:

- Correctly prioritized women/children (e.g., 94.4% of female children survived).
- Captured class disparity (1st-class survival 3× higher than 3rd-class).

Limitations:

- Conservative with males (only 15.7% predicted survival).
- Missed some high-fare survivors (e.g., 1st-class males).

6. Notable Outliers

- **High Fare ≠ Guaranteed Survival:**
 - 4 passengers paid >\$200 but 1 died (75% survival)
- **Low Fare Survival Exceptions:**
 - 7 passengers survived despite fares <\$10 (all female/children)
- **Missing Fare Data:** 1 male (age 60.5) with blank fare did not survive