

## 📌 Titanic Dataset — EDA Findings Report

### 1. Introduction

This report provides the findings from Exploratory Data Analysis (EDA) performed on the Titanic dataset.

The dataset includes details of 891 passengers such as age, class, gender, fare, family size, and their survival status.

The objective is to understand patterns and factors influencing survival.

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### 2. Dataset Overview

- **Rows:** 891
  - **Columns:** 12
  - **Key Variables:**
    - Survived
    - Pclass
    - Sex
    - Age
    - SibSp
    - Parch
    - Fare
    - Embarked
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### 3. Univariate Analysis Findings

#### Age

- Majority of passengers were between **20-40 years**.
- A few small children and elderly passengers were present.

#### Fare

- Highly **right-skewed**.
- Most passengers bought low-priced tickets (3rd class).

#### Survival

- Majority passengers **did not survive**.
- Shows dataset imbalance.

## **Pclass**

- Most passengers belonged to **3rd class**.
  - Fewest belonged to 1st class.
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## **4. Bivariate Analysis Findings**

### **Survival by Gender**

- **Females survived significantly more** than males.
- Indicates priority for women during evacuation.

### **Survival by Class**

- **1st class:** Highest survival
- **3rd class:** Lowest survival  
This shows clear socioeconomic influence on survival.

### **Survival by Age**

- Younger passengers had slightly higher survival rates.
- Elderly survival rate was very low.

### **Survival by Fare**

- Higher fare → better cabin location → higher survival chances.
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## **5. Correlation Analysis**

### **Key Correlations**

- **Fare ↗ Survival** (positive)
  - **Pclass ↘ Survival** (negative)
  - **Age** has weak correlation with survival.
  - **SibSp** and **Parch** moderately correlate (family groups traveling together).
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## **6. Multivariate Analysis (Pairplot)**

- Many survivors are from **1st and 2nd class**, especially females.
- High-fare passengers cluster strongly with higher survival.

- Younger passengers in upper classes show better survival trends.
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## 7. Conclusion

The EDA clearly shows that survival on the Titanic was strongly influenced by:

- **Gender:** Females had much higher survival chances.
- **Passenger Class:** 1st class passengers showed the highest survival.
- **Fare Paid:** Higher fare passengers had better survival probability.

These findings are consistent with historical reports of Titanic rescue operations:

**"Women, children, and upper-class passengers were given priority."**