# Report of Findings – Titanic Data Analysis

The Exploratory Data Analysis (EDA) was performed on the Titanic data to understand passenger demographics, ticket fares, and survival patterns. Multiple visualizations, including histograms, box-plots, scatter plots, and a heat map, were generated to derive insights.

## 1. Age Distribution (Histogram)

The majority of passengers were between **20–40 years old**.

There is a small peak for children under 10 years, indicating families on board.

Some missing age values were observed, which could impact age-based analysis.

## 2. Fare Distribution (Histogram & Box-plot)

* Ticket fares were highly **skewed** towards lower values, with most fares below **$50**.

* Outliers with extremely high fares were observed, mainly in **first-class cabins**.

* First-class passengers had a significantly higher fare range compared to second and third class.

## 3. Class vs Age (Box-plot)

* First-class passengers were slightly older on average than second and third-class passengers.

* Third-class passengers showed more variability in age, including many young children.

## 4. Survival by Age & Class (Scatter-plot)

* Younger passengers and first-class passengers had a higher survival rate.

* Many older passengers in third class had a lower chance of survival.

* The scatter plot indicates that both **class** and **age** influenced survival probability.

## 5. Correlation Heat map

* **Survival** had a moderate positive correlation with **Passenger Class (inverse scale)** and **Fare**.

* **Fare** was negatively correlated with **Passenger Class**, confirming that higher classes paid more.

* **Age** showed little correlation with survival directly, but patterns emerged when combined with class.

* Overall Conclusions

❖ **Passenger Class** was a major factor in survival, with first-class passengers having better survival chances.

❖ Higher fares correlated with better survival, likely due to better cabin locations and access to lifeboats.

❖ Children had a higher survival rate compared to adults in similar classes.

❖ There is evidence of socioeconomic disparity in survival rates during the Titanic disaster.