Report of Findings: Titanic EDA

---------- Objective ----------

The goal of this EDA was to explore the Titanic dataset to uncover patterns and relationships between passenger features and survival, using statistical summaries and visualizations.

Dataset: Titanic Dataset

------- Key Observations from Visual Analysis -------

Survival Rate: Around 38% of the passengers survived the Titanic disaster, indicating a high fatality rate.

Sex: Gender had a strong impact on survival. Most females survived, whereas the majority of males did not.

Pclass: Passengers in 1st class had the highest survival rate, while those in 3rd class had the lowest.

Age: Younger passengers, especially children, were more likely to survive compared to older passengers.

Fare: Passengers who paid higher fares had better chances of survival, showing that wealth and class influenced rescue priority.

Correlation Heatmap: There was a moderate correlation between Fare and Pclass, and a weak but meaningful correlation between Survived and Fare.

Violin & Box Plots: These visualizations showed that most passengers were aged between 20 and 40, with a few outliers in both age and fare.

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---------- Statistical Insights ----------

Missing Data: Age and Embarked columns contained missing values and were either imputed or dropped depending on strategy.

Distributions: Most passengers had zero family members onboard (SibSp and Parch), and were in the 3rd class.

Outliers: Fare has several extreme values, which may require normalization for further modeling.

---------- Summary ----------

> Survival is influenced most by Sex, Pclass, and Fare.
> Visual analysis confirmed historical rescue policies (e.g., "women and children first").
> The dataset is ready for further processing such as feature engineering or machine leasrning modeling.
> The insights derived can support classification tasks (predicting survival) and guide feature selection.

----------Deliverables ----------

- ✔️ Jupyter Notebook containing code, visualizations, and observations.
- ✔️ PDF report export (if submitted).
- ✔️ Summary of findings for documentation or presentation.