

Aviation Risk Assessment & Aircraft Selection Strategy

- Data-Driven Insights for Safe and Profitable Aircraft Investments
- Presented by: [Olin Wachira]
- Date: [3/28/25]

Business Problem

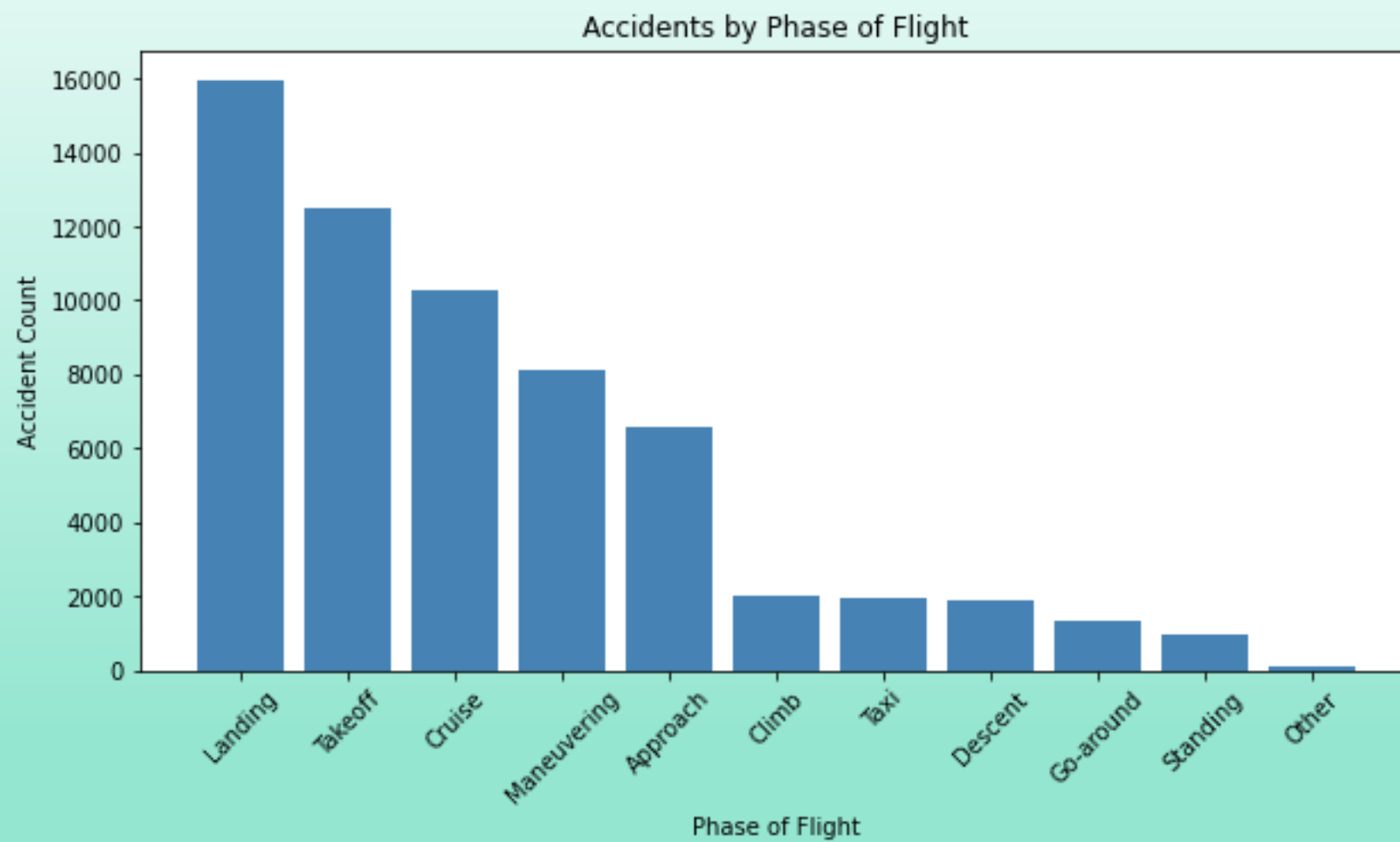
- Objective:
 - - Expanding into commercial & private aviation but lack of aircraft risk knowledge.
 - - Identify the safest and most reliable aircraft models for purchase.
- Key Question:
 - - Which aircraft have the lowest accident risk and highest operational safety?

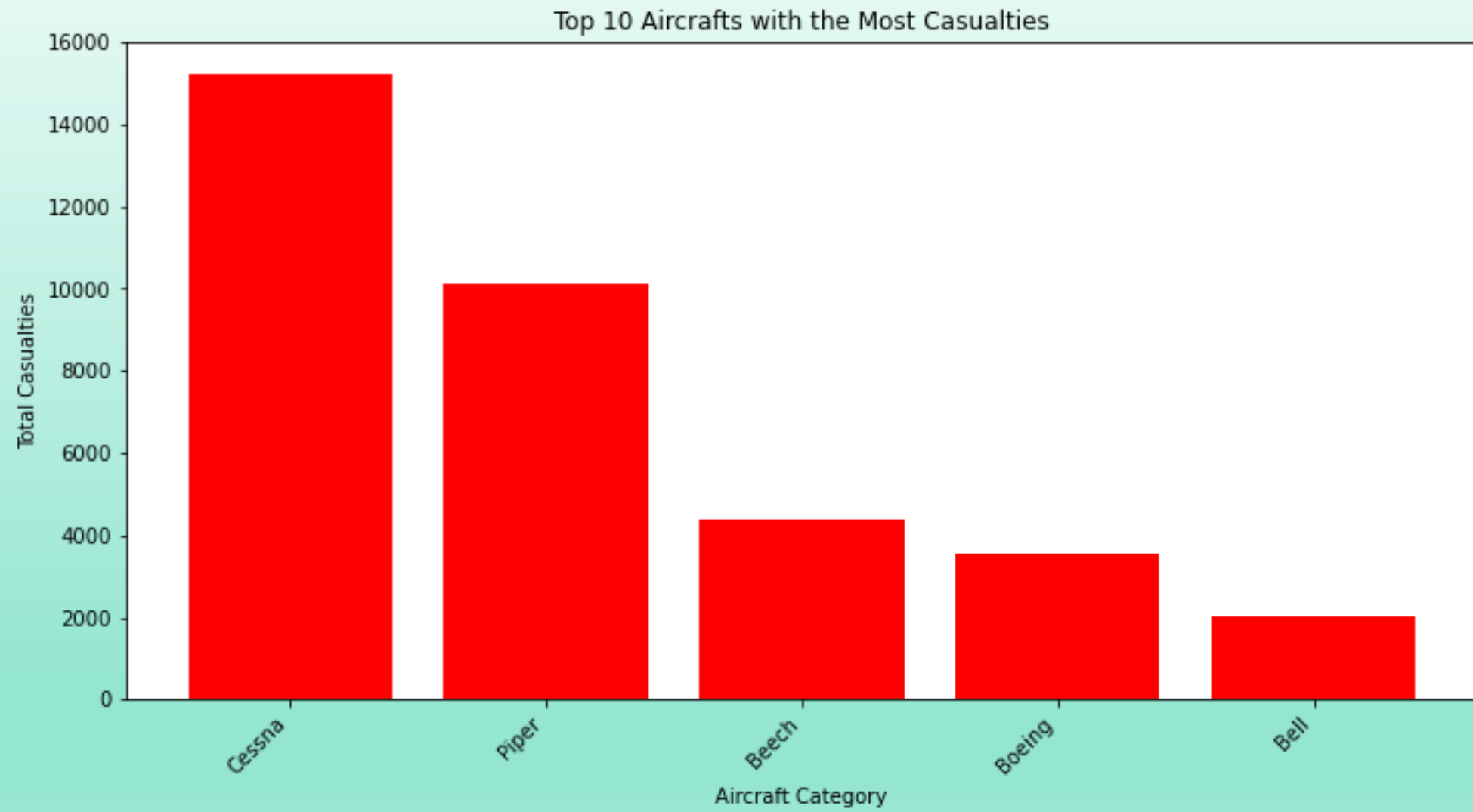
Data Analysis Approach

- Dataset: Aviation accident reports from the NTSB.
- Analysis Focus Areas:
 - - Aircraft models with the highest accident rates.
 - - Phases of flight with the most incidents.
 - - Impact of weather conditions on aircraft damage.
 - - Total casualties per aircraft type.

Key Insights from Data Analysis

- - Most accidents occur during Takeoff & Landing.
- - Certain aircraft models have significantly higher accident & fatality rates.
- - Adverse weather conditions contribute to major aircraft damage.
- - Some aircraft sustain minor damage & have lower casualty rates, making them safer investments.





Risk-Based Aircraft Selection Criteria

- Selection Criteria:
- Low accident frequency
- Minimal casualties (Fatal, Serious, Minor Injuries)
- Resilience in various weather conditions
- Strong manufacturer support & spare parts availability

Proposal 1 – Select Low-Risk Aircraft Models

- - Based on historical accident data, avoid aircraft models with high fatalities.
- - Prioritize aircraft types with strong safety records.
- - Data Used: Total Fatal Injuries per Aircraft Type (Graph from Tableau).

Proposal 2 – Invest in Weather-Resilient Aircraft

- - Aircraft performance varies under IMC (Instrument Meteorological Conditions).
- - Select aircraft models that perform safely in adverse weather.
- - Data Used: Aircraft Damage by Weather Condition (Tableau visualization).

Proposal 3 – Focus on Safe Flight Phases

- - Majority of accidents occur during Takeoff & Landing.
- - Choose aircraft that perform well in these phases.
- - Data Used: Accidents by Phase of Flight (Bar Graph from Tableau).

Proposal 4 – Implement a Risk Assessment Framework

- - Develop a scoring model using accident rates, casualties, and aircraft damage history.
- - Use real-time safety data for continuous monitoring & updates.
- - Data Used: Total Casualties per Aircraft Type (Tableau Chart).

Proposal 5 – Strategic Maintenance & Safety Measures

- - Partner with leading maintenance providers.
- - Implement predictive maintenance using data insights.
- - Reduce mechanical failures through regular inspections.

Conclusion & Next Steps

- Actionable Recommendations:
 - - Invest in low-risk, high-safety aircraft models.
 - - Implement weather & flight phase risk mitigation strategies.
 - - Establish a predictive maintenance program.
 - - Integrate Tableau Dashboard for real-time risk monitoring.
- Next Steps:
 - - Review final aircraft selection.
 - - Align financial & operational feasibility with recommendations.
 - - Execute pilot safety training programs.
- Thank You