



# Aviation Accident Risk Assessment

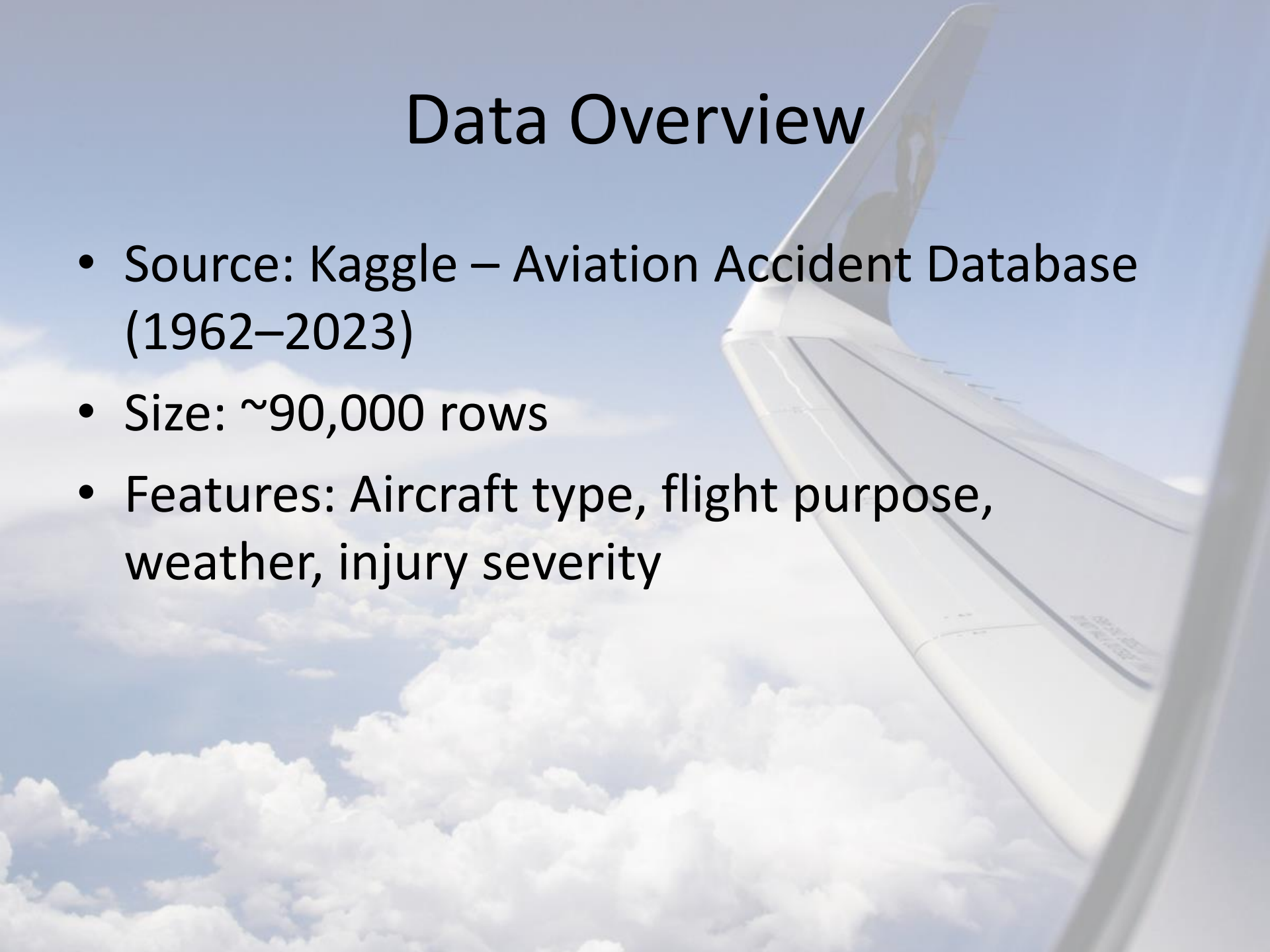
Data-Driven Insights for Strategic  
Aircraft Acquisition

# Business Understanding

- Our company is expanding into the aviation industry.
- We need to understand accident risk factors to guide aircraft purchases.
- Stakeholders: Aviation Division, Strategic Management, Safety Operations

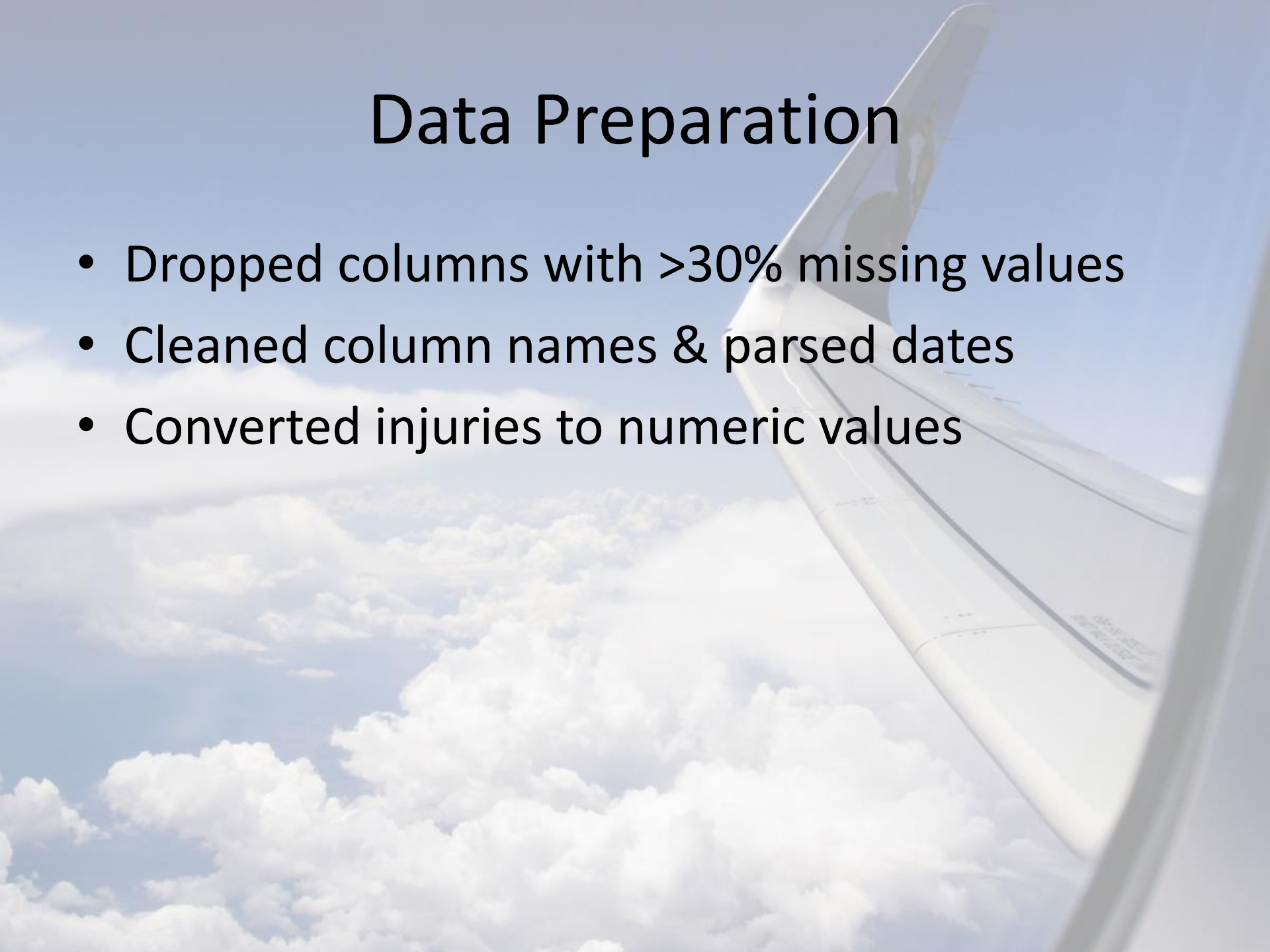
# Data Overview

- Source: Kaggle – Aviation Accident Database (1962–2023)
- Size: ~90,000 rows
- Features: Aircraft type, flight purpose, weather, injury severity



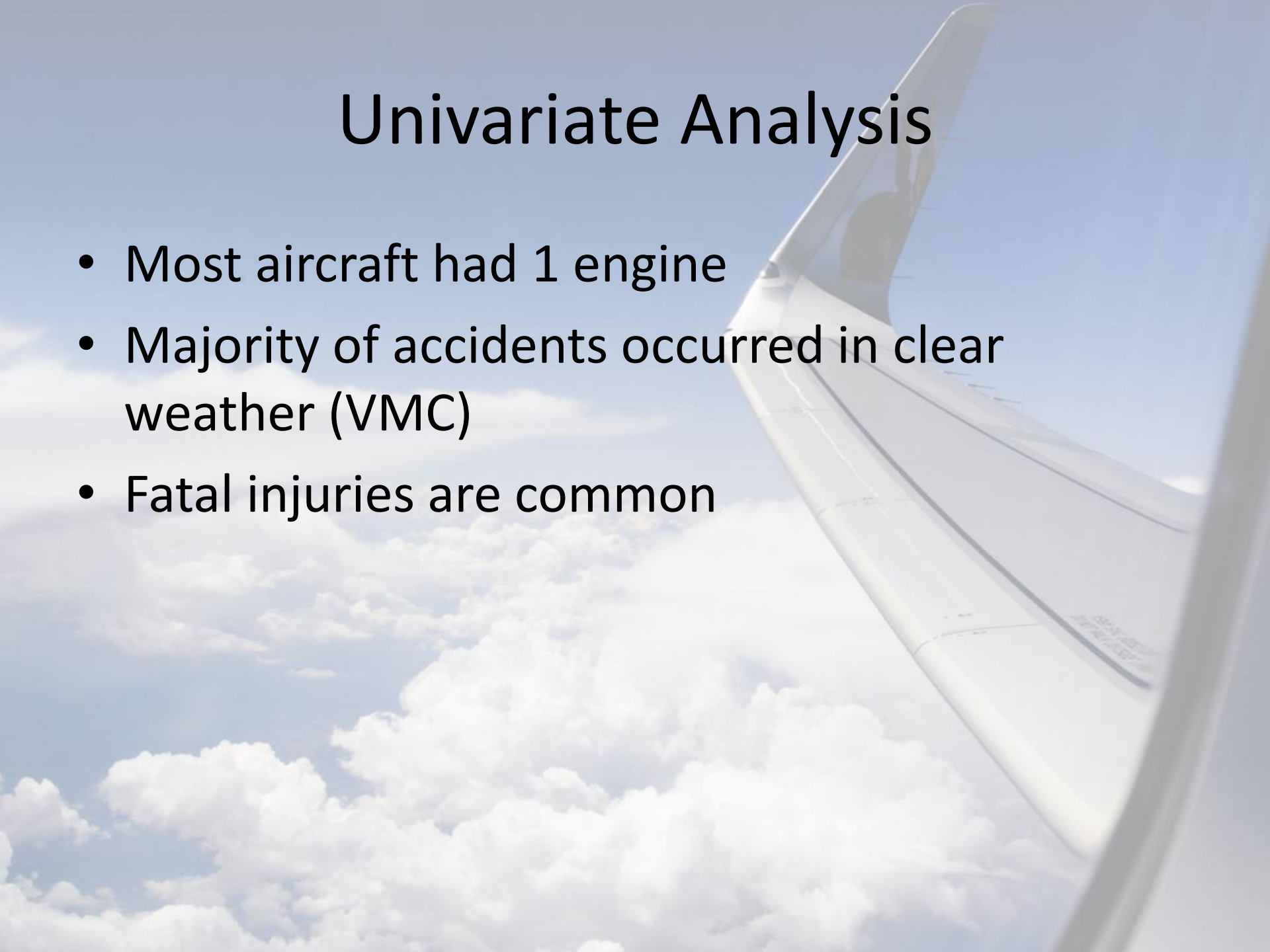
# Data Preparation

- Dropped columns with >30% missing values
- Cleaned column names & parsed dates
- Converted injuries to numeric values



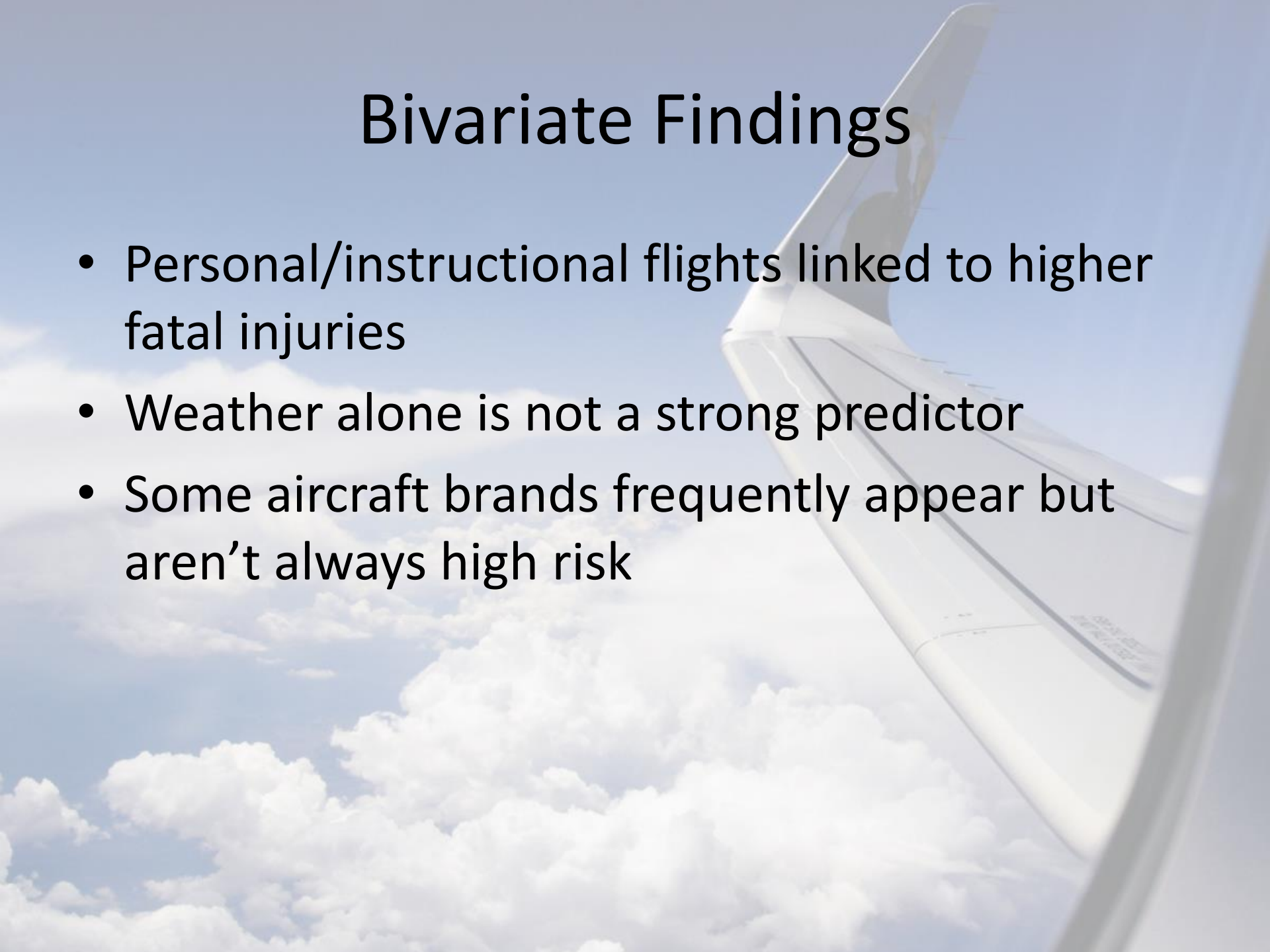
# Univariate Analysis

- Most aircraft had 1 engine
- Majority of accidents occurred in clear weather (VMC)
- Fatal injuries are common



# Bivariate Findings

- Personal/instructional flights linked to higher fatal injuries
- Weather alone is not a strong predictor
- Some aircraft brands frequently appear but aren't always high risk





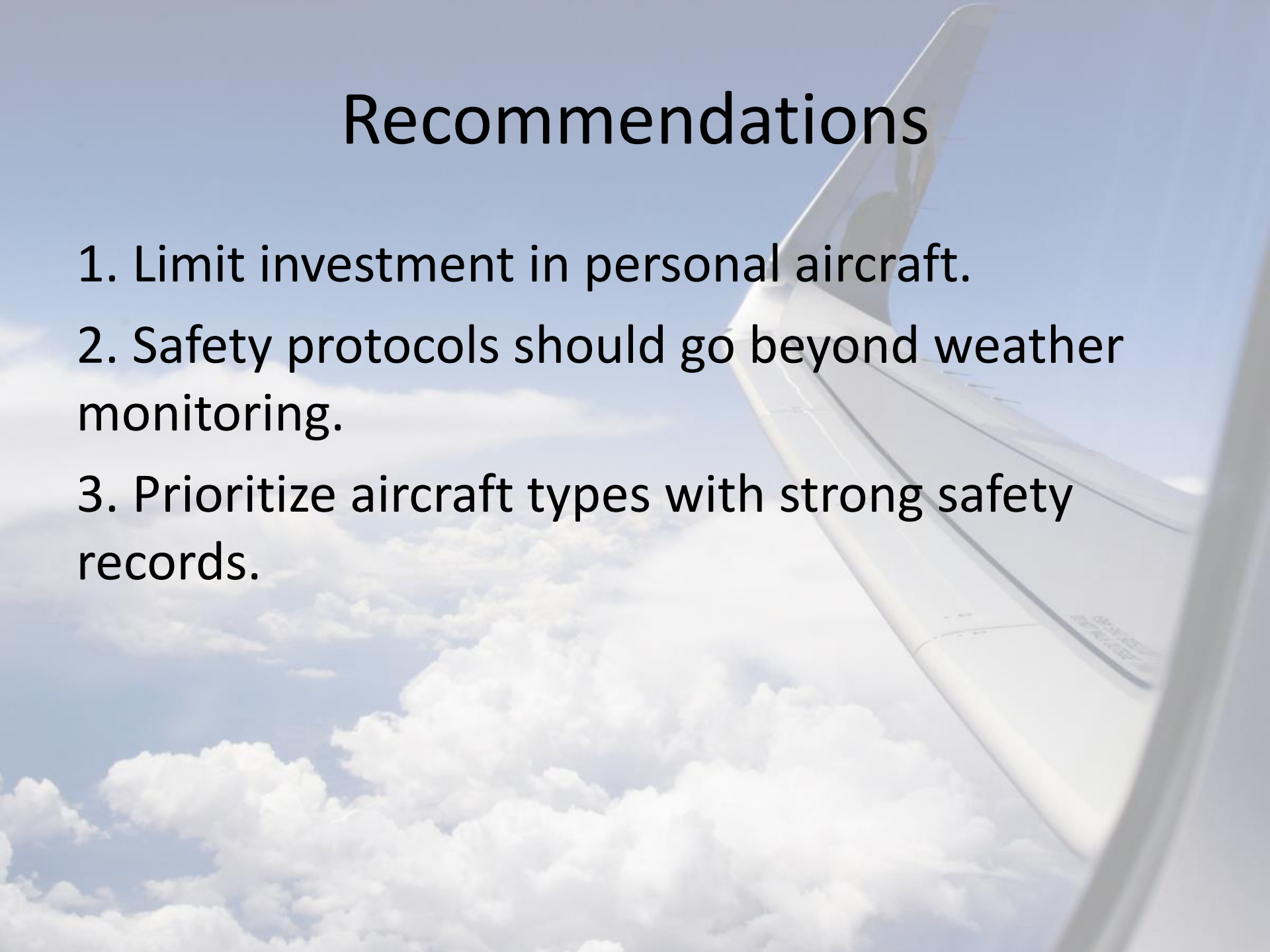
# Multivariate Insights

- Personal flights in clear weather showed high injury counts
- Combination of engine type and flight purpose predicts risk well



# Recommendations

1. Limit investment in personal aircraft.
2. Safety protocols should go beyond weather monitoring.
3. Prioritize aircraft types with strong safety records.





# Conclusion & Next Steps

- Use data-driven insights to guide safe aircraft purchases
- Apply risk metrics during acquisition
- Continue updating models as more data arrives



# Resources & Acknowledgments

- Files: Notebooks, Cleaned Aviation Data
- Tools: Python, Pandas, Seaborn, Matplotlib
- GitHub Repo: [https://github.com/Henry-Njoroge/dsc\\_phase\\_1\\_project](https://github.com/Henry-Njoroge/dsc_phase_1_project)