Aircraft Safety Analysis for Business Expansion

Assessment of Aircraft Accidents for Commercial and Private Operations

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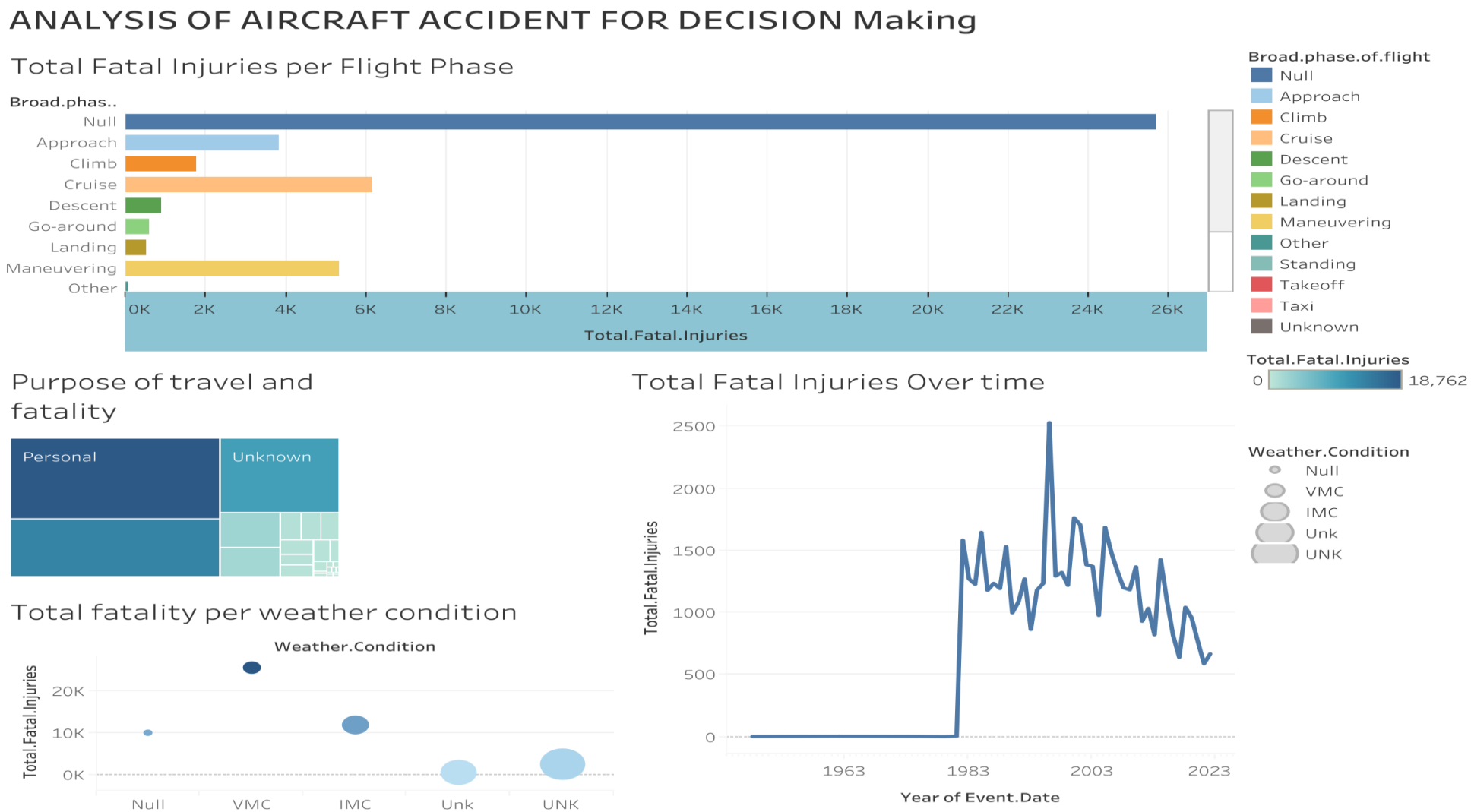
THE DASHBOARD

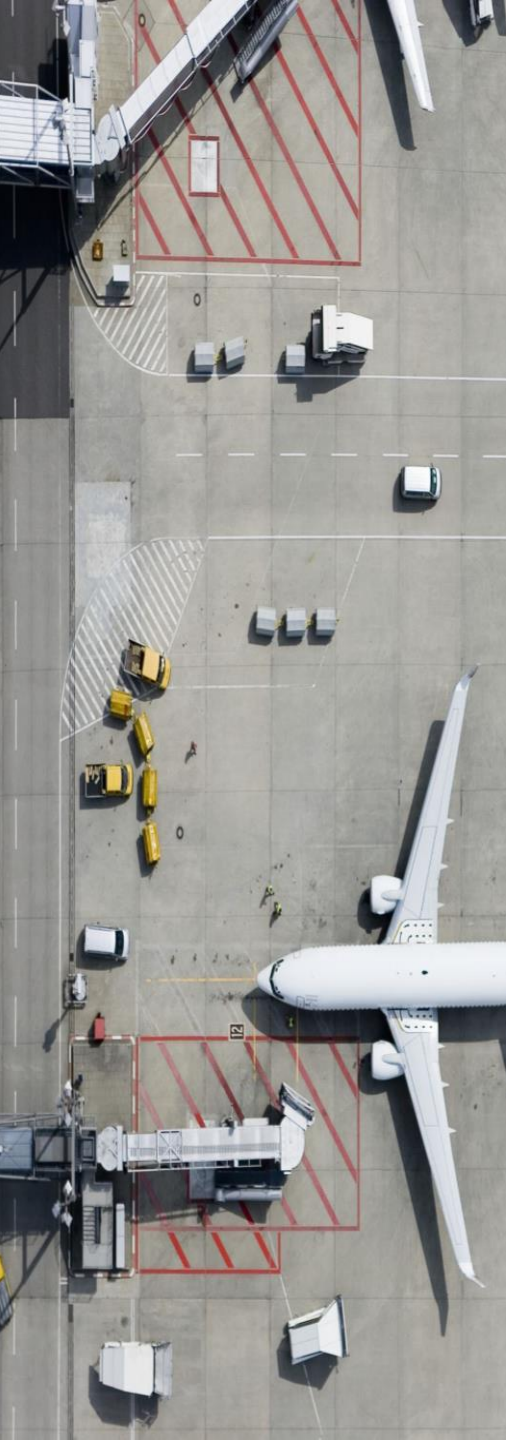


Overview

- **Objective:**
  - Identify the safest aircraft models to minimize business risk.
- **Rationale:**
- Aviation safety impacts operational costs, reputation, and passenger confidence.
- **Method:**
  - Data-driven insights to guide aircraft selection.

The Business Context

- **Company Expansion:**
  - Exploring aviation as a new industry.
- **Potential Risks:**
  - Accidents, maintenance costs, operational safety.
- **Role of Data:**
  - Understanding accident patterns to mitigate risks.



Data Description

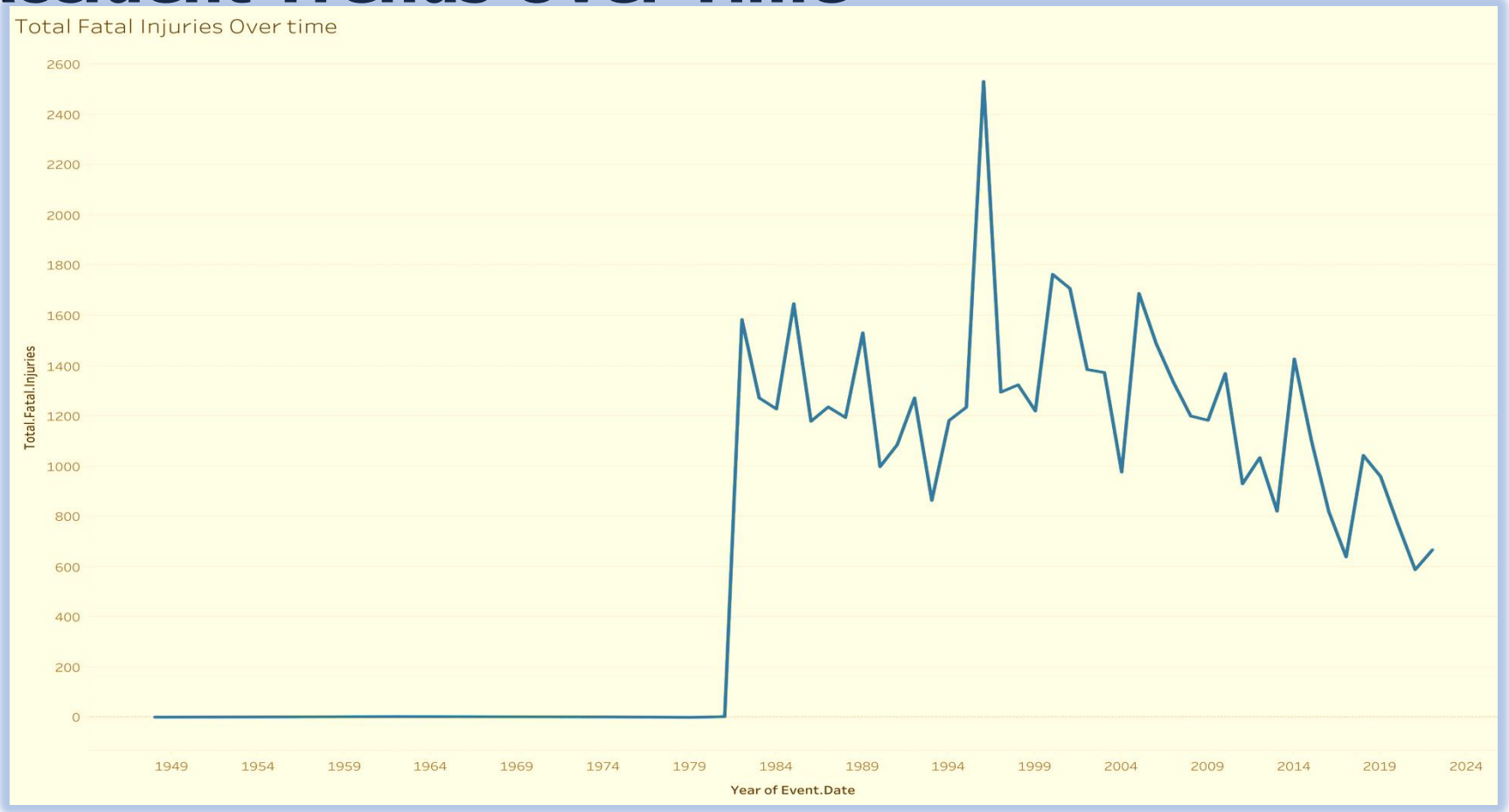
- **Dataset:** Aviation accident reports.
  - Source: (www.kaggle.com/datasets/khsamaha/aviation-accident-database-synopses)

- **Key Variables:**
  - Flight phase (takeoff, landing, cruise, etc.)
  - Weather conditions
  - Total fatal injuries
  - Aircraft model

- **Dealing with Missing Data:**
  - Standardized unknown values to maintain accuracy
  - Ignored the columns with significant missing values

Key Findings And Business Insights

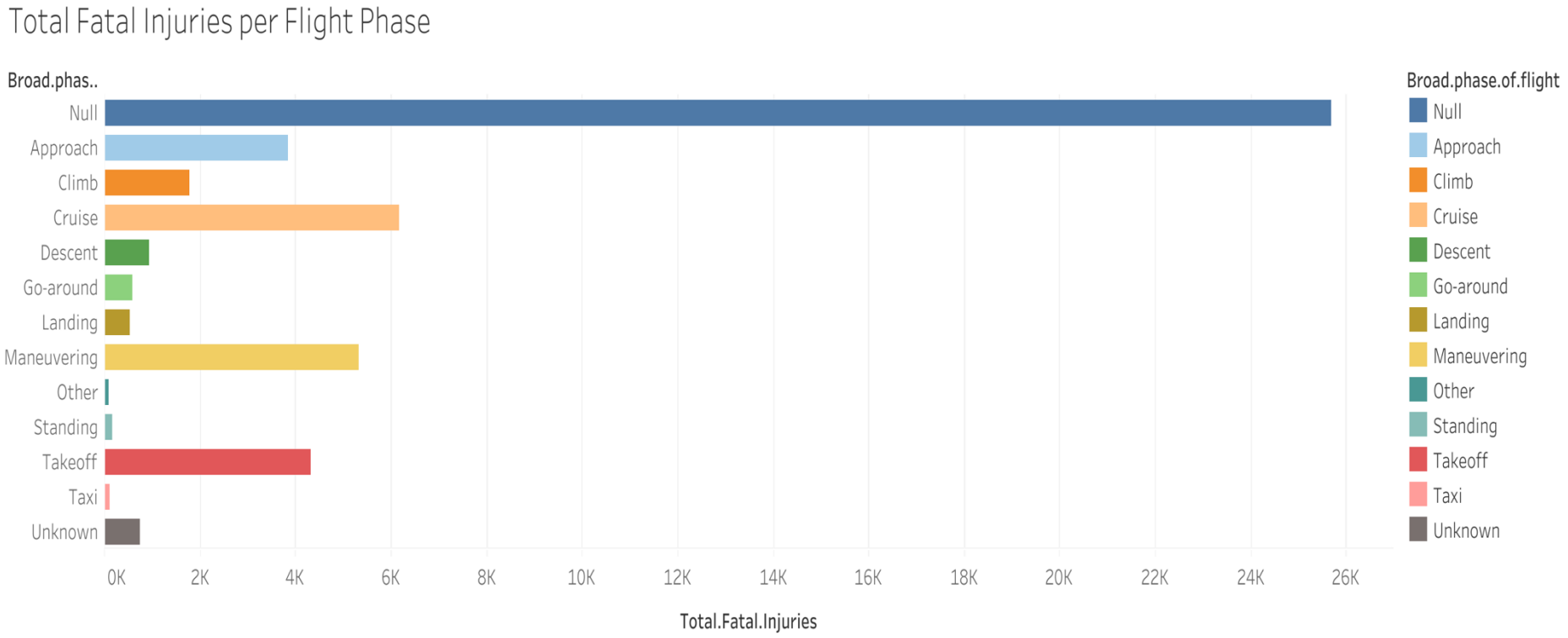
- **1. Accident Trends Over Time**



- **Finding:**
  - Some years had significant spikes in fatalities.
- **Implication:**
  - External factors like regulations, aircraft design improvements, and maintenance have played a role over time to increase safety.

Key Findings And Business Insights

- **2. Risk by Flight Phase**



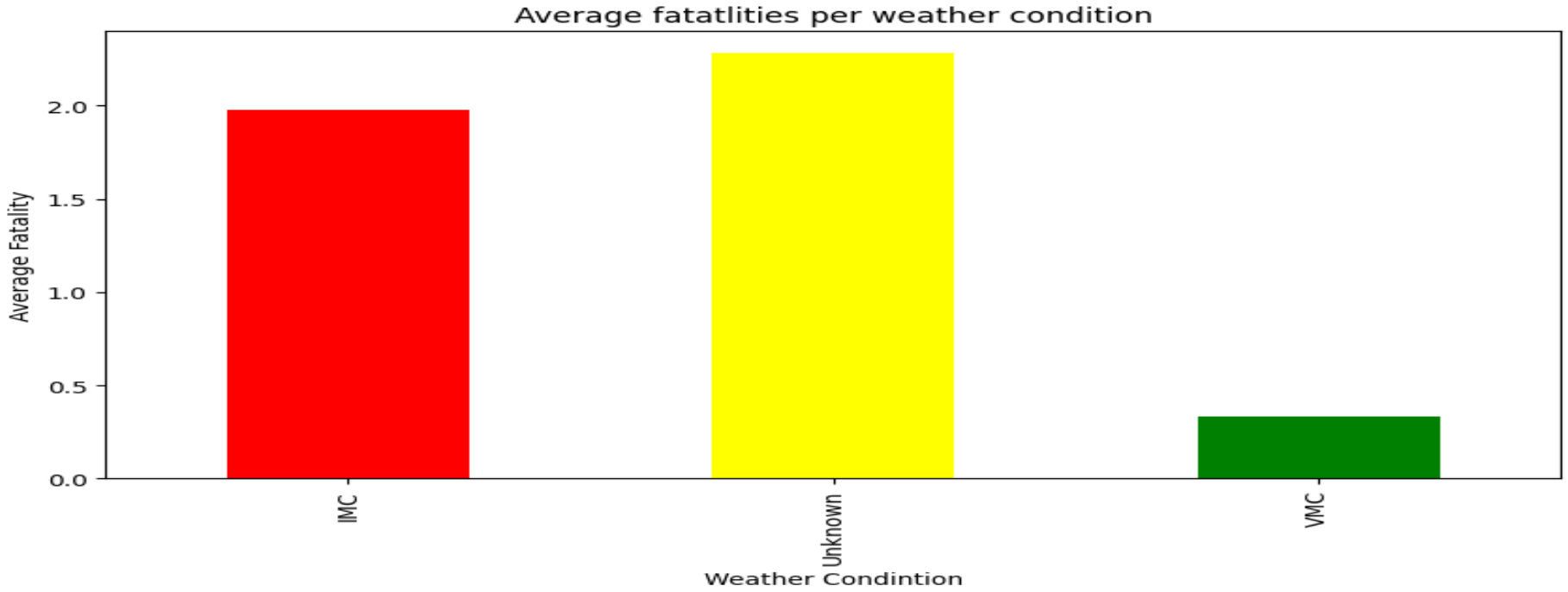
- **Finding:**

  Landing and approach phases have the highest fatality rates.

- **Implication:**
  - More focus is needed on aircraft reliability during these phases.

Key Findings And Business Insights

- **3. Weather and Safety**



- **Finding:**
  - Instrument Meteorological Conditions (IMC) lead to higher fatalities than Visual Meteorological Conditions (VMC).

- **Implication:**
  - Aircraft should have strong all-weather capabilities

Business Recommendations

Prioritize	Invest in	Choose
Prioritize aircraft with strong landing & approach safety records.	Invest in aircraft with proven performance in poor weather conditions.	Choose models with a history of lower fatality rates over time.

Applied Data Analysis Tools and Techniques

Python: Data analysis and visualization

Pandas: Data processing and cleaning

Matplotlib & Seaborn: Creating visualizations

Jupyter Notebook: Running and documenting analysis

Git & GitHub: Version control and project management

Next Steps

- **Additional Research and Analysis:**
  - Cost-benefit analysis of safe aircraft models.
  - Maintenance and operational cost projections.
  - Consult with aviation safety experts before purchase.


Thank
you!