Aircraft Safety Analysis

Identifying the Best Low-Risk Aircraft for Commercial & Private Use

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Introduction

- Why this matters:
  - MyCo is expanding into aviation but needs to assess risks before purchasing aircraft.
- Goal:
  - The goal is to identify the safest aircraft for operation based on historical accident trends and risk factors.

Industry-Wide Safety Trends

- **Overall Improvement**
  - Aircraft accident rates have declined over the years
- **Non-Fatal Accidents Increasing**
  - More recent years show a higher proportion of non-fatal accidents I.e. 93.9% non-fatal in 2022.
- **Key Takeaway**
  - Advancements in aviation technology and regulations have led to safer air travel over time.

Aircraft Makes and Safety

- **Accident Counts**
  - Piper and Cessa have the most accidents, likely due to their popularity and high production volume.
- **Fatality Rates**
  - Cirrus aircraft have the highest average fatality per accident. Manufacturers like Grumman-Schweizer and Beech have lower fatality rates compared to the upper extreme.
- **Recommendation**
  - The company should prioritise aircraft with a low fatality rate over total accident count to minimise operational risks.

Amateur vs Professionally Built Aircraft

- **Higher Risk in Amateur-Built Aircrafts**
  - 26.3% of amateur-built aircrafts accidents result in fatalities vs 16.8% for professionally built.
  - **Potential Causes**
    - Quality control, pilot experience, maintenance standards
  - **Recommendation**
    - The company should avoid amateur-built aircrafts to ensure safer operations.

Engine Type Considerations

- **Fatality Risks by Engine Type:**
  - Electric & Turbo Jet Engines: Highest fatality rates
  - Reciprocating and Turbo Shaft Engines: Lowest fatality rates
- **Non-fatality Trends**
  - Turbo Shaft, Reciprocating and Turbo Fan engines have over 80% non-fatal accident rates
- **Recommendation**
  - The company should favour aircrafts with reciprocating or turbo shaft engines for safer operations

Business Implications & Next Steps

- **Key Findings Recap**
  - Accidents rates are decreasing, but the company should still choose wisely
  - Aircraft Make: Avoid Cirrus due to high fatality risk; prioritise Beech or similar
  - Build Type: Stick to professionally built aircrafts
  - Engine Type: Favour reciprocating or turbo shaft engines

Closing & Questions

- **Final Thoughts**
  - The company’s aviation expansion must be built on safety, reliability and smart decision-making.
- **Q&A**
  - Open floor for questions