OVERVIEW

Data-Assessing Aviation Risk for Strategic Aircraft Investment

content:

- **The Opportunity:** Diversifying into the thriving commercial & private aviation markets.
- **The Challenge:** Aviation carries inherent risks; we need to minimize them from Day 1.
- **Our Solution:** A data-driven approach to identify and acquire the lowest-risk aircraft.
- **The Outcome:** Enhanced safety, reduced operational costs, stronger reputation, and sustainable growth.

BUSINESS UNDERSTANDING

Goal: Define the business context and the problem

Why Risk Matters in Aircraft Selection

Content:

- Aircraft operations involve significant human and financial risk.
- Choosing unsafe aircraft can lead to:

1. High insurance premiums
2. Increased maintenance costs
3. Legal exposure and reputational damage

Business question:

“Which aircraft models are safest and most reliable for commercial or private use?

Define “**Low Risk Aircraft**”

A lower risk aircraft is one that has consistently demonstrated strong safety performance, characterized by a low incidence of fatal and serious injuries, minimal structural damage in reported accidents, and resilience across diverse operational and weather conditions.

- **Our Mission:** To provide the Head of our new Aviation Division with clear, actionable recommendations on aircraft procurement.
- **Our Impact:** Guiding foundational investment for maximum safety and long-term financial health.

DATA UNDERSTANDING

Source:

NTSB Aviation Accidents

scope:

Over 80,000 accident records from NTSB.

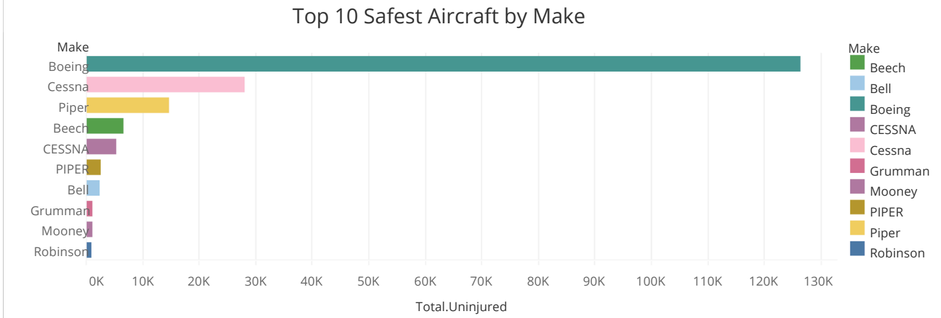
Key fields used:

- Aircraft Type & Make (e.g., Boeing 737, Cessna 172)
- Engine Configuration (e.g., Number of Engines, Engine Type)
- Damage Severity (e.g., Destroyed, Substantial, Minor, None)
- Weather Conditions, Location, etc.
- Data cleaning steps:

1. Accounting for missing information to ensure accuracy.
2. Standardized categories

- Derived new variables: State

Data Analysis-Safest Aircraft Models

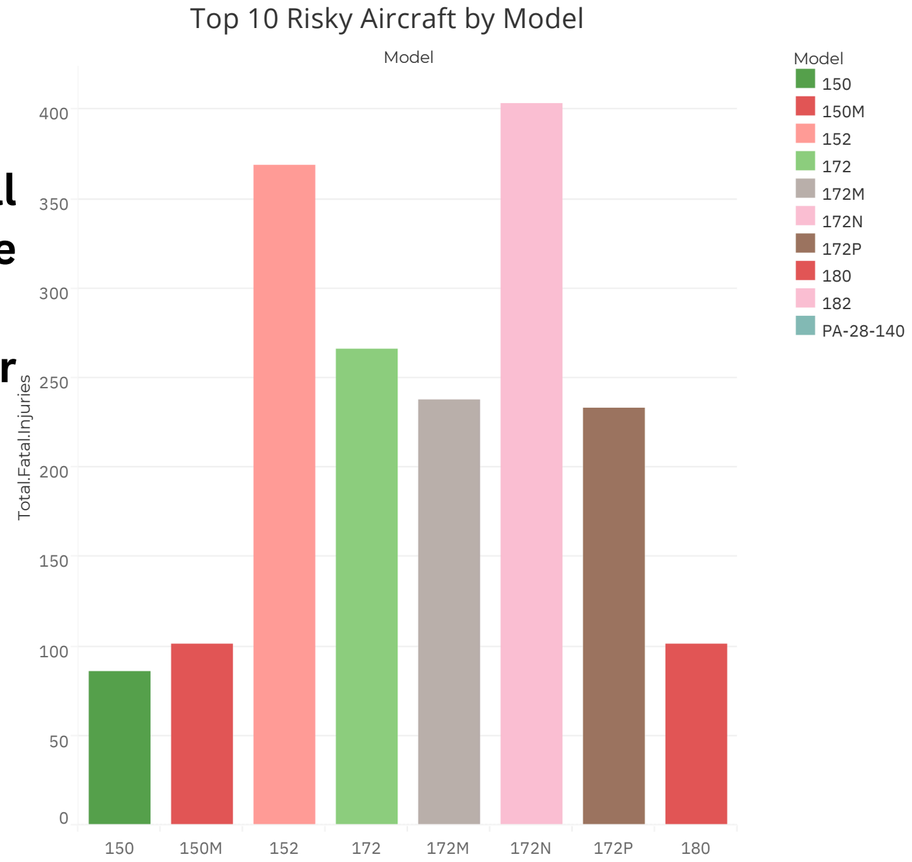


LOW RISK AIRCRAFT

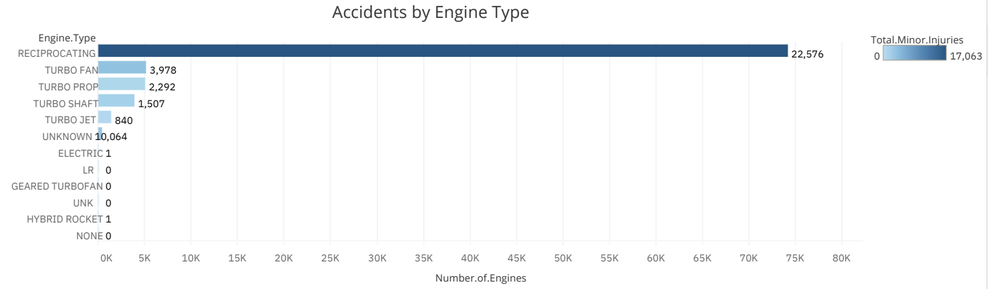
- **Some large aircraft had more fatalities but fewer incidents.**
- **These includes Boeing and Cessna models with rare but high-impact accidents.**
- **Cessna 172 and PA-28 had many incidents but very low fatalities.**
- **These are safer options for commercial and training use**

Data Analysis-Risk Aircraft Models

- **Model 172N had the most fatal injuries after incidents being the riskiest model.**
- **Model 150 have the least number of fatalities after an incident**



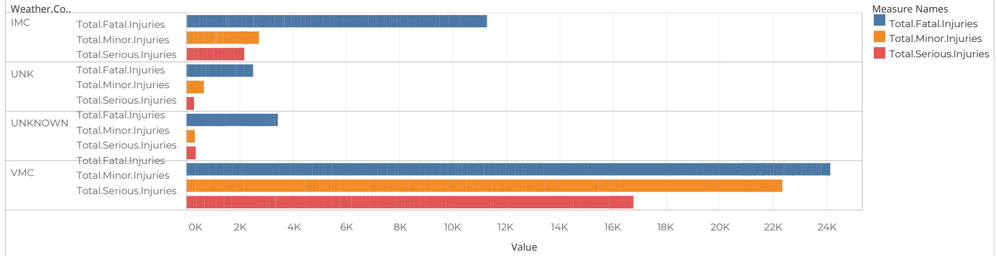
Data Analysis-Engine Type Risk



- **RECIPROCATING engines are the most common , used in small private aircraft. Though fatality rate is lower per accident, total fatalities are the highest due to volume.**
- **TURBO PROP and TURBO SHAFT engines show moderate risk, often used in mid-size and rotorcraft.**
- **TURBO FAN engines with most of passengers uninjured in accidents — the highest survivability rate.**

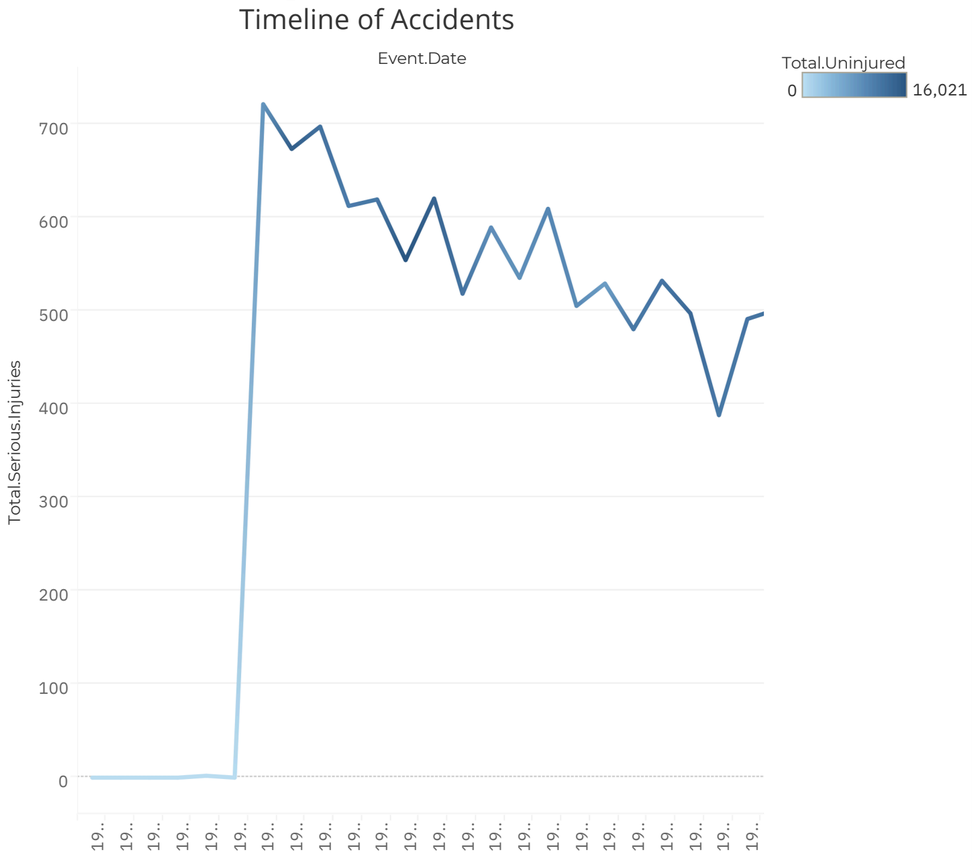
Data Analysis-Weather Risk

Accidents by Weather conditions



Most accidents occur during VMC - because most flights happen in clear weather.
However, these accidents are less fatal and more survivable.
IMC conditions have fewer accidents overall, but a higher fatality rate, due to challenges like low visibility and increased pilot workload.

Data Analysis- Time Trend



RECOMMENDATIONS

- Choose low-risk aircraft models like the Cessna 150, Piper PA-28, or similar based on the lowest average fatality rate.
- Focus acquisition efforts on aircraft models equipped with multiple (e.g., twin) Turbofan or Turboprop engines.
- Limit initial operations to clear weather conditions(VMC) and avoid high-fatality models until better prepared.

NEXT STEPS

- Incorporate weather and region-based forecasting
- Train pilots for low-risk conditions and specific models
- Combine these findings with operational factors (pilot experience, maintenance quality).
- Further deep dive into specific Make/Models once initial aircraft type decisions are made
- Establish systems to track our own fleet's incident data for ongoing risk assessment and improvement.
- Foster a company-wide commitment to safety as our paramount value.

THANK YOU

Thank you for your time and attention today. I hope this presentation has provided clarity on how we're leveraging data to ensure a safe and successful launch into the aviation sector. I'm now happy to take any questions you may have.

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