Aviation Safety Analysis: Identifying Low-Risk Aircraft for Business Expansion

Janine Makorre, 3/30/2025

Summary

Business Context:

Our company is expanding into aviation but lacks risk insights. We need to determine the safest aircraft models to invest in.

Key objective:

- Identify low-risk aircraft for investment using historical accident data.

Business Problem and Key Questions

Business Problem:

Our company is expanding into aviation but lacks insights on accident risks. Understanding historical trends is crucial to making informed investment decisions.

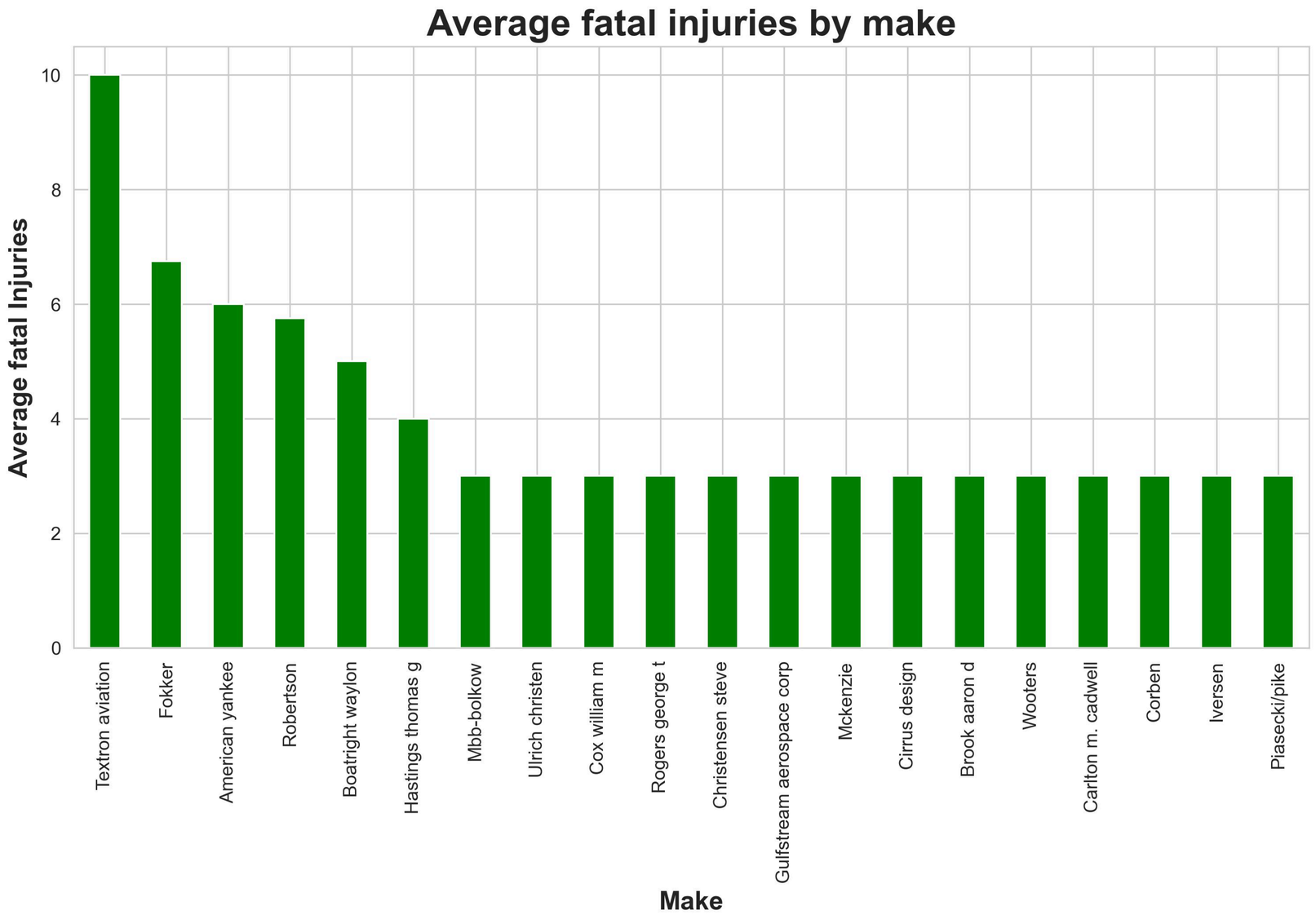
Key Questions (Use Bullet Points for Clarity)

- What factors contribute to aviation accidents?
- Which aircraft models have the highest and lowest fatality rates?
- How does engine type affect accident severity?
- Are there regional trends in aviation accidents?

Dataset Overview

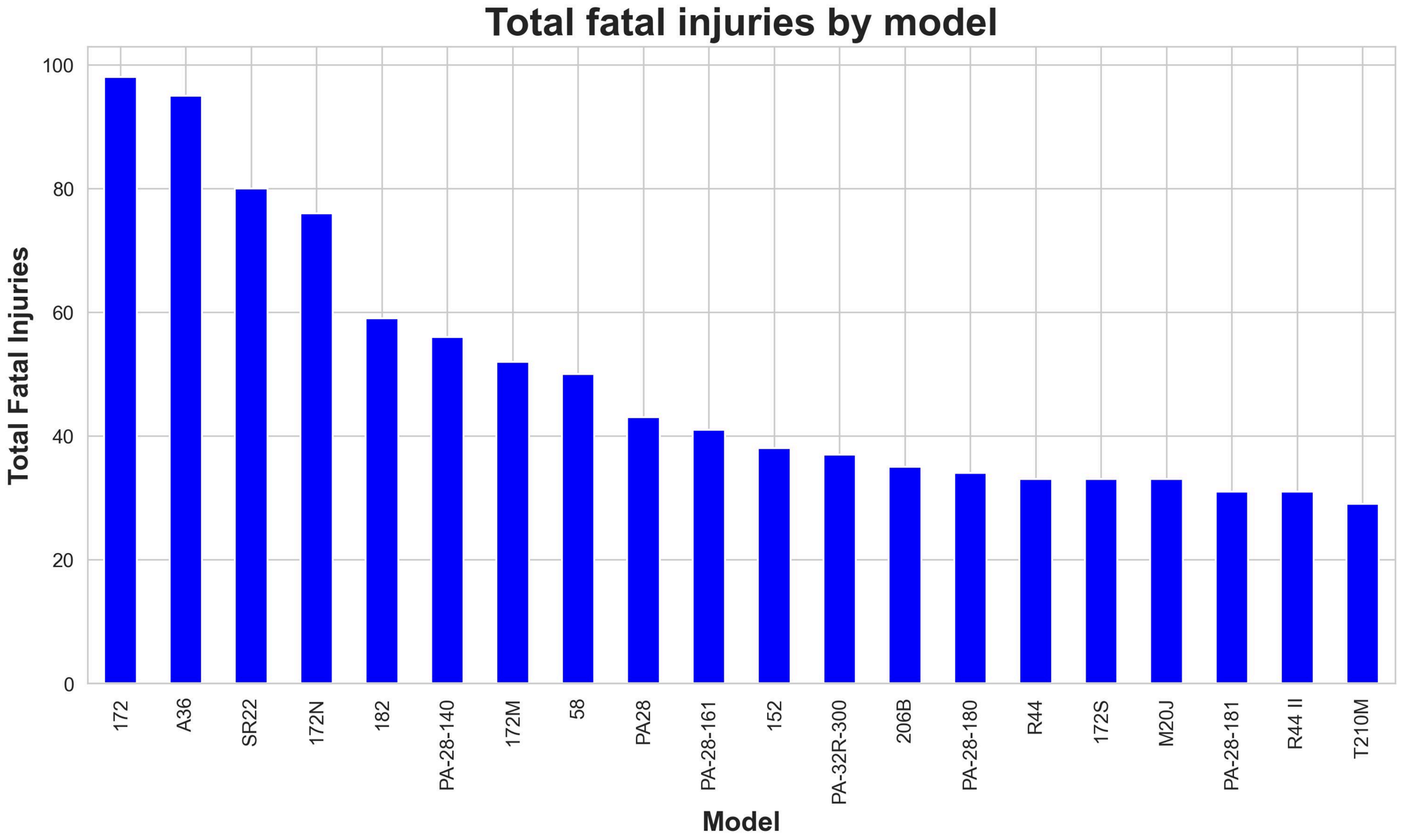
We analyzed NTSB aviation accident data (1962–2023, 88,889 records) to assess risk factors, focusing on accident details, aircraft specifications, and injury reports. A secondary dataset helped standardize location data.

Results



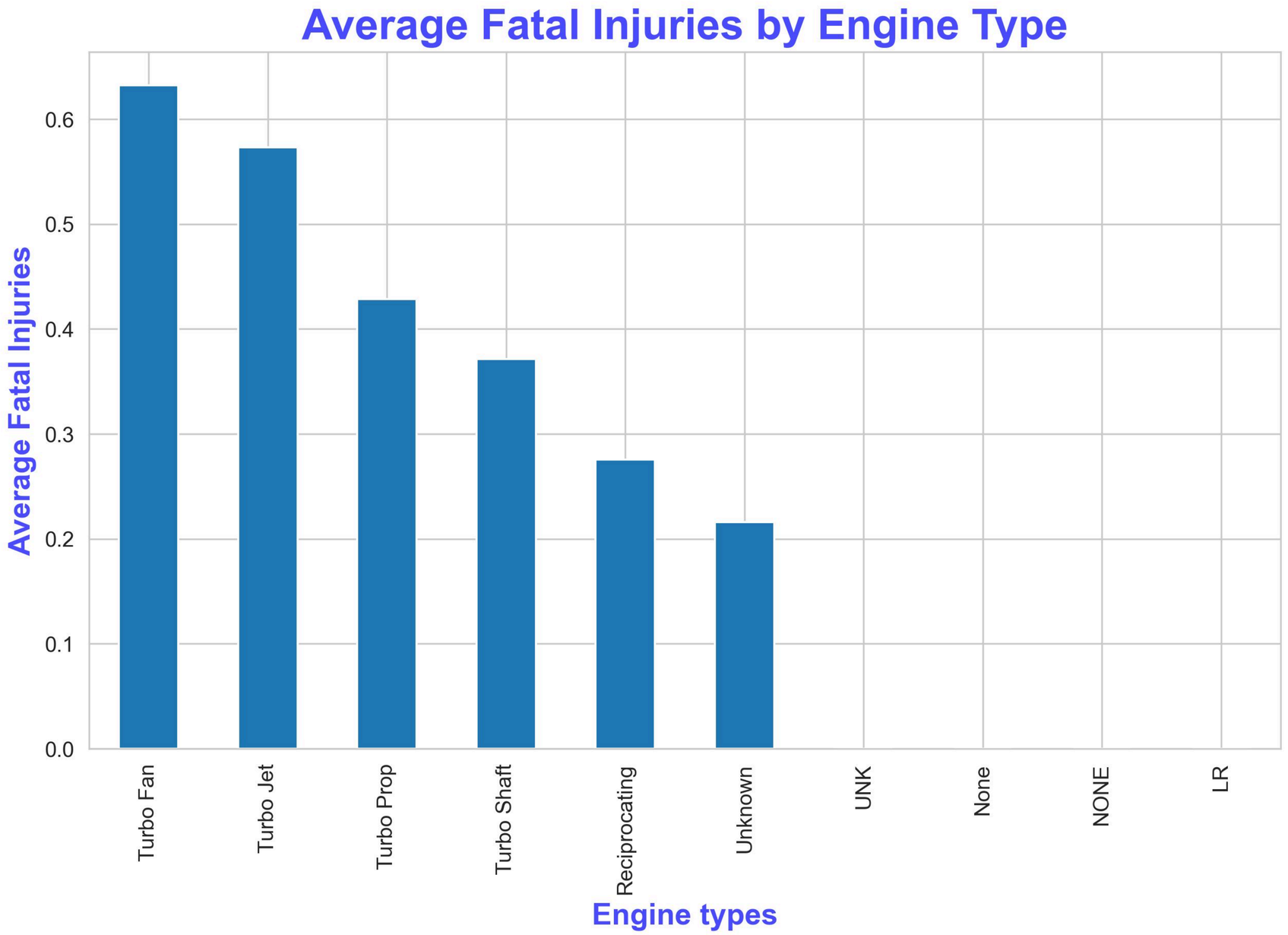
Certain aircraft manufacturers have significantly higher fatality rates. Understanding these trends helps in assessing risk before making purchasing decisions.

Results



Some aircraft models appear in high-fatality incidents more frequently. Identifying these models helps in making safer investment choices.

Results



Jet and turboprop engines generally show lower fatality rates than piston engines. Multi-engine aircraft offer greater redundancy and safety.

Recommendations

- Invest in aircraft models with lower historical fatality rates.
- Prioritize multi-engine aircraft for added safety redundancy.
- Avoid high-risk aircraft makes with consistently high fatality rates.

Next steps

- Utilize machine learning to predict accident risk factors.
- Analyze pilot experience and weather conditions in accident trends.
- Explore regional accident patterns for targeted safety measures.

Thank you!

Questions?

Illustrations: Freepik
Fonts: Futura, Raleway

Janine Makorre, janinemakorre@gmail.com