

Aircraft Risk Analysis for Aviation Business Expansion

*Supporting data-driven aircraft
acquisition decisions*

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Overview

What this project is about

Our company plans to expand into the aviation industry

Aircraft ownership involves safety, financial, and reputational risk

This analysis uses historical aviation accident data to identify lower-risk aircraft options

Goal:

Help business leaders choose aircraft that minimize risk while supporting long-term growth



Business Understanding

The Business Problem

Aviation is a capital-intensive industry where poor aircraft choices can lead to:

- High repair costs
- Fatalities and reputational damage
- Operational downtime



Key Business Questions:

- Which aircraft types are safest?
- Which aircraft tend to suffer less damage in accidents?
- Is aviation a viable long-term investment?



Data Understanding

Data Source:

National Transportation Safety Board (NTSB)

What the data includes:

Accident dates (1960s - 2020s)

Aircraft type and model

Number of fatalities

Damage severity

Operator and location



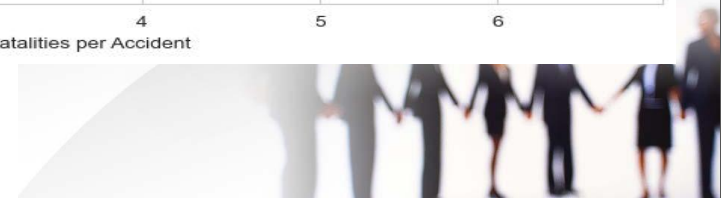
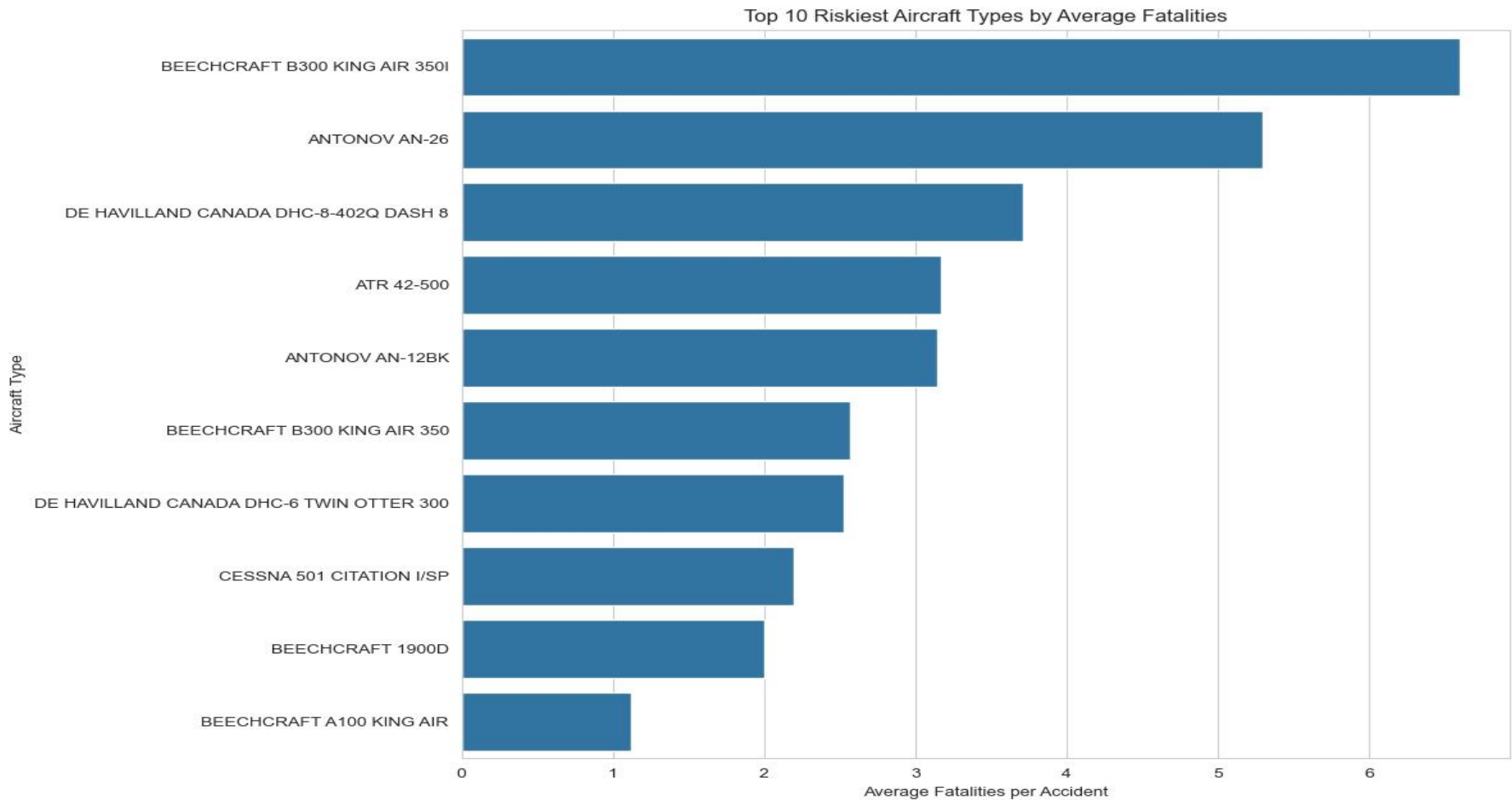
Analysis Approach

How we analyzed risk:

- Calculated average fatalities per accident by aircraft type
- Measured average damage severity to estimate financial risk
- Examined long-term trends to understand industry safety improvements



Visualization 1

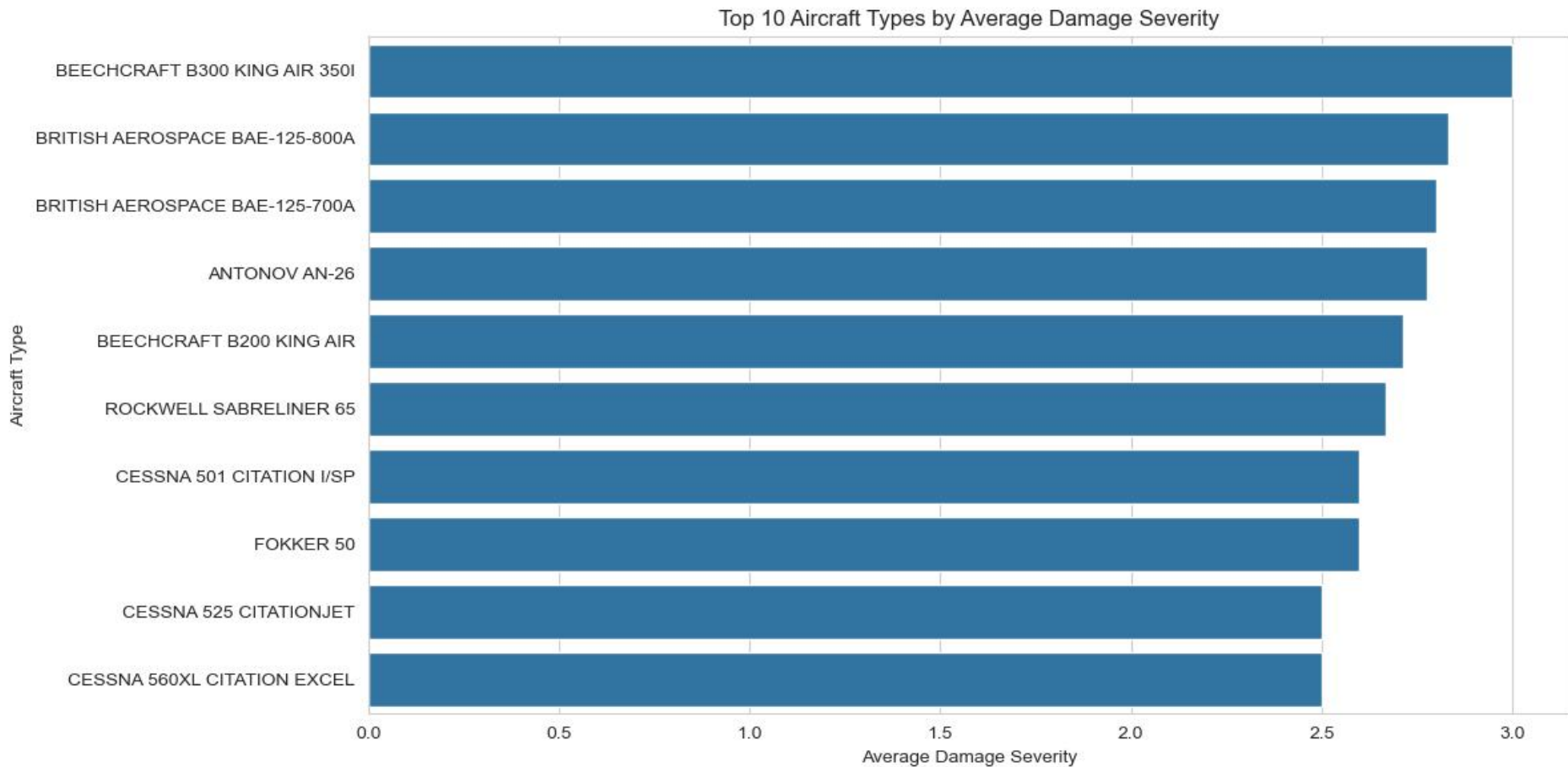


Recommendation 1

- Focus initial aircraft acquisition on models with consistently strong safety records.
- Avoid aircraft with higher average fatalities per accident (e.g., BEEHCRAFT B300 KING AIR 350I), which pose higher operational and reputational risk.



Visualization 2

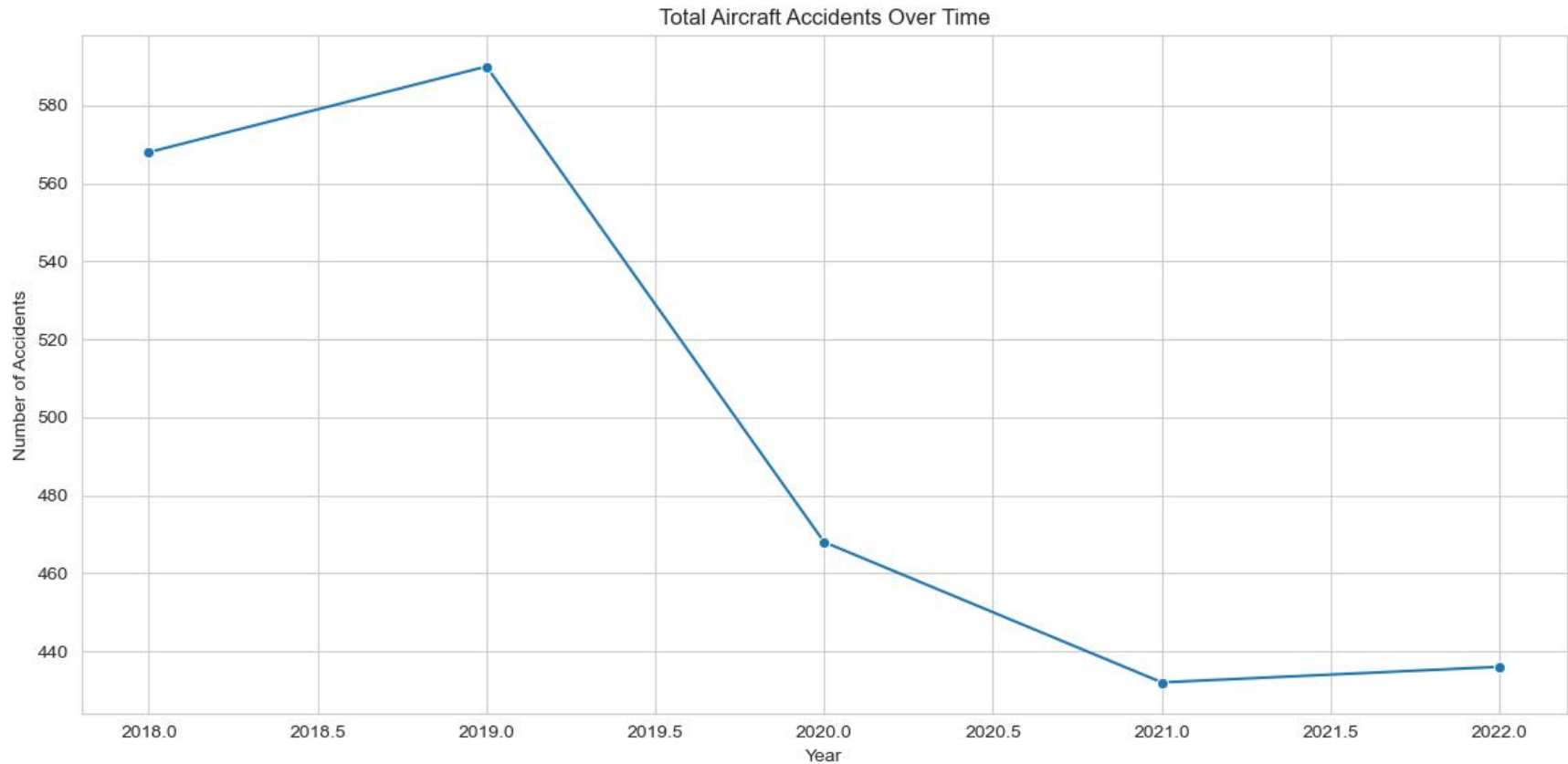


Recommendation 2

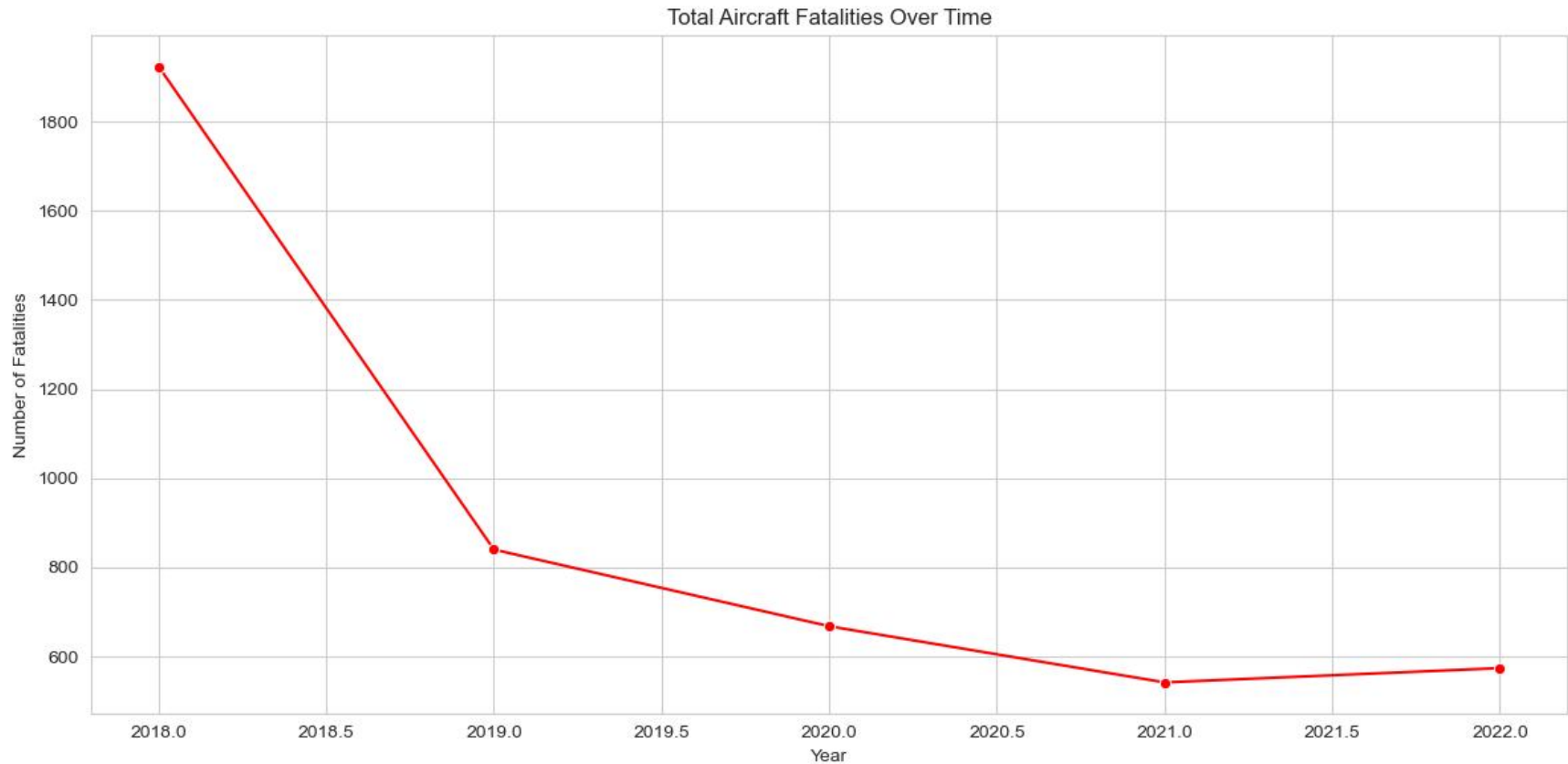
- Prioritize aircraft types that sustain minimal damage in accidents.
- The damage severity analysis shows that aircraft with average damage levels close to minor are associated with lower repair costs, shorter downtime, and safer operational outcomes. In contrast, aircraft with higher average damage levels present significant financial risk due to costly repairs or total loss.



Visualization 3



Visualization 4



Recomendation 3

The aviation industry is a viable business opportunity due to a clear long-term decline in fatalities, indicating substantial improvements in safety.

Analysis of aviation accident data from 1962 to 2023 shows a consistent downward trend in accidents and fatalities over time. Earlier decades experienced significantly higher fatality counts, while more recent years record fewer deaths despite increased air traffic.



This pattern suggests that advancements in aircraft technology, regulations, and operational safety have reduced overall risk.

As a result, investing in the aviation sector is justified when modern aircraft and current safety standards are prioritized.



THANK YOU

