Aviation Risk Analysis for Strategic Aircraft Investment

Using Accident Data to Identify Low-Risk Aircraft Options

Business Problem

- **Goal**
  Enter aviation market safely and profitably.
- **Challenge**
  Aviation investments involve safety, financial, and operational risks.
- **Approach**
  Analyze historical accident data to identify lower-risk aircraft characteristics.

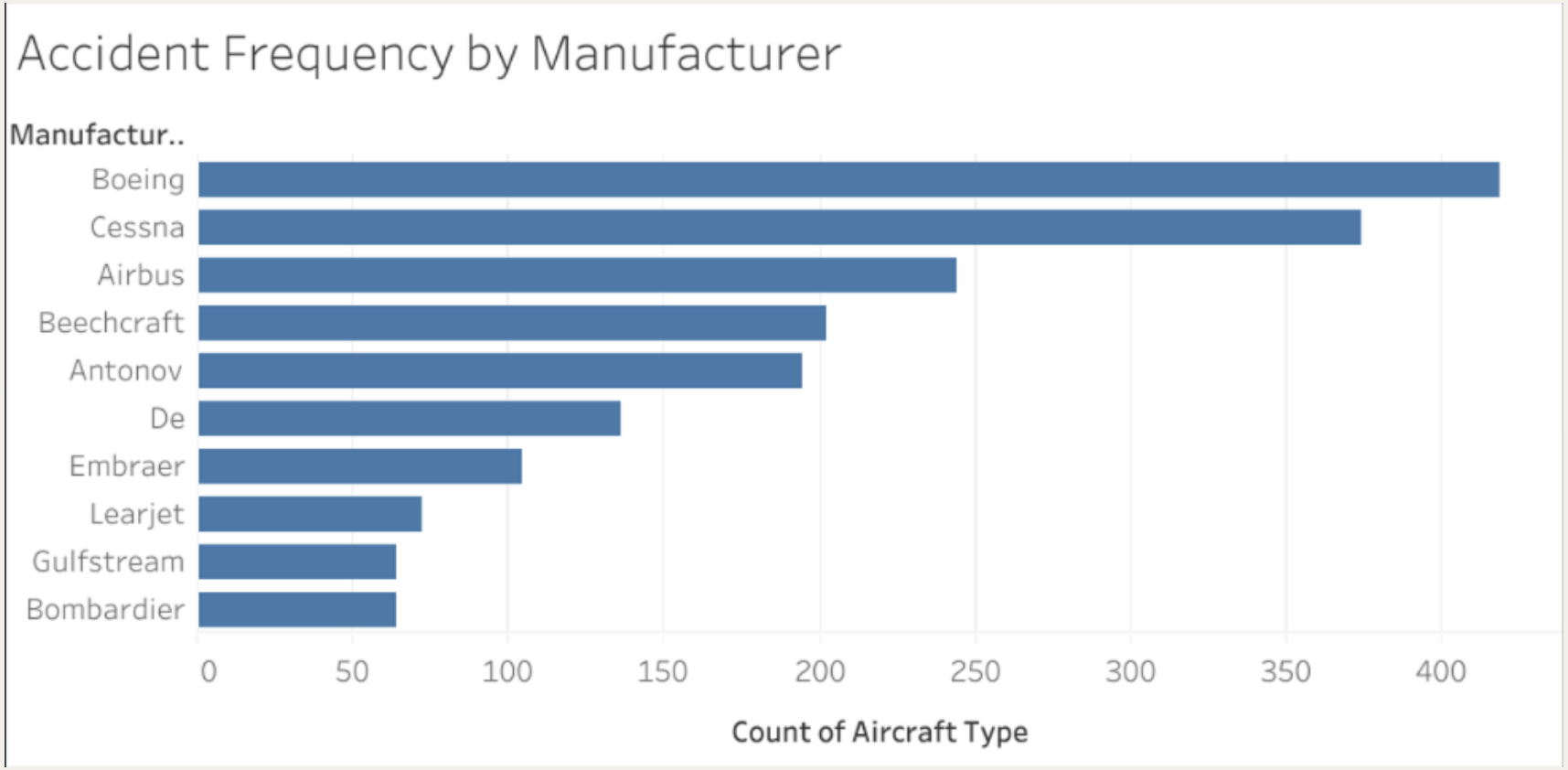
Dataset Overview

Metric	Value
Total accidents analyzed	2,488
Years Covered	1962-2023
Manufacturers Analyzed	100+
Key Variables	Facilities, Damages, Aircraft Type

Key Variables Used

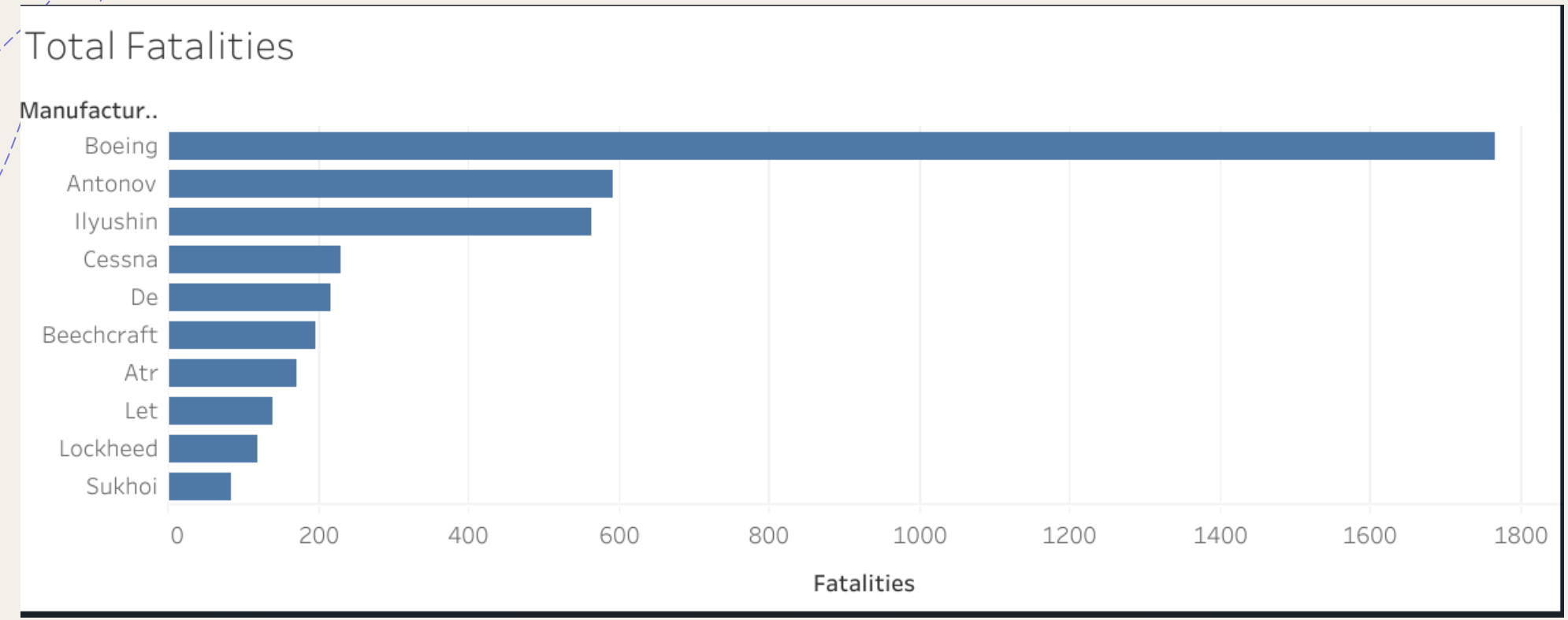
- Aircraft manufacturer
- Fatalities per accident
- Damage severity

Accident Frequency



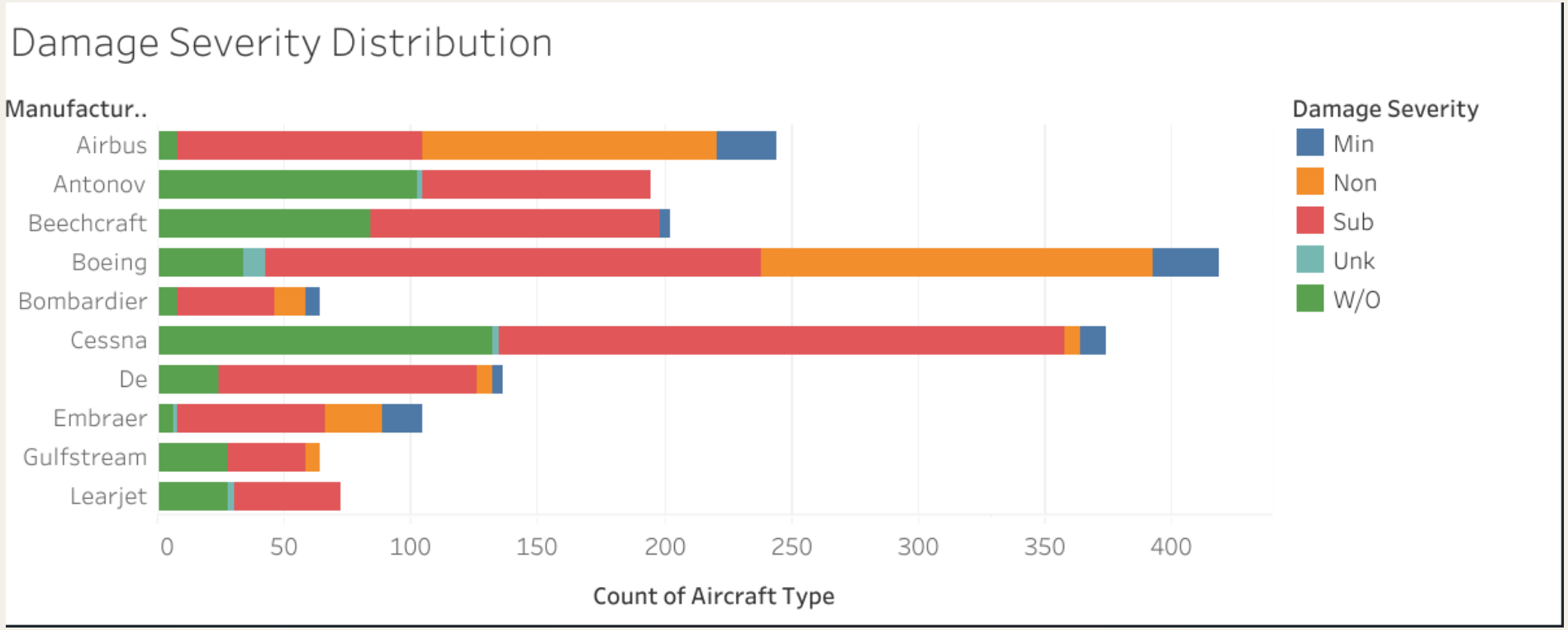
- Boeing and Cessna appear most frequently in recorded accidents.
- However, frequency alone doesn't equal risk, we also evaluate fatalities and damage severity to identify lower risk options.

Fatalities by Manufacturer



- Some manufacturers show significantly higher fatality totals per accident.
- Fatality risk directly impacts reputation, liability, and customer trust.

Damage Severity Distribution by Manufacturer



- Accident severity differs across manufacturers, with some showing a higher share of total aircraft write-offs.
- Manufacturers with fewer aircraft write-offs indicate lower financial and operational loss risk.

Recommendations

1. Prioritize manufacturers with lower accident frequency.
2. Avoid aircraft models with frequent write-offs.
3. Invest in manufacturers with lower fatality patterns.

Conclusion

Safety should guide fleet investment decisions.

Data-driven aircraft selection reduces risk, improves brand trust, and supports long-term profitability.