A Data Analysis of Aircraft Incidents for Business Strategy Minimizing Risk

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Overview

01 Analyzed NTSB aviation accident data (1962-2023)

02 Goal: Help the company identify low-risk aircraft for investment

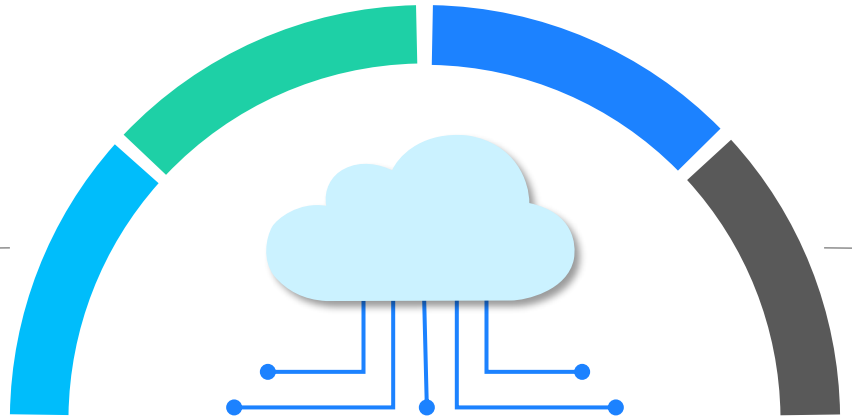
03 Methods: Data cleaning, EDA, and visualizations using Python

04 Output: 3 business recommendations to guide safer aircraft purchasing

Business Problem

Company is expanding into the aviation industry.

Objective: Minimize risk and reduce future costs (insurance, maintenance).



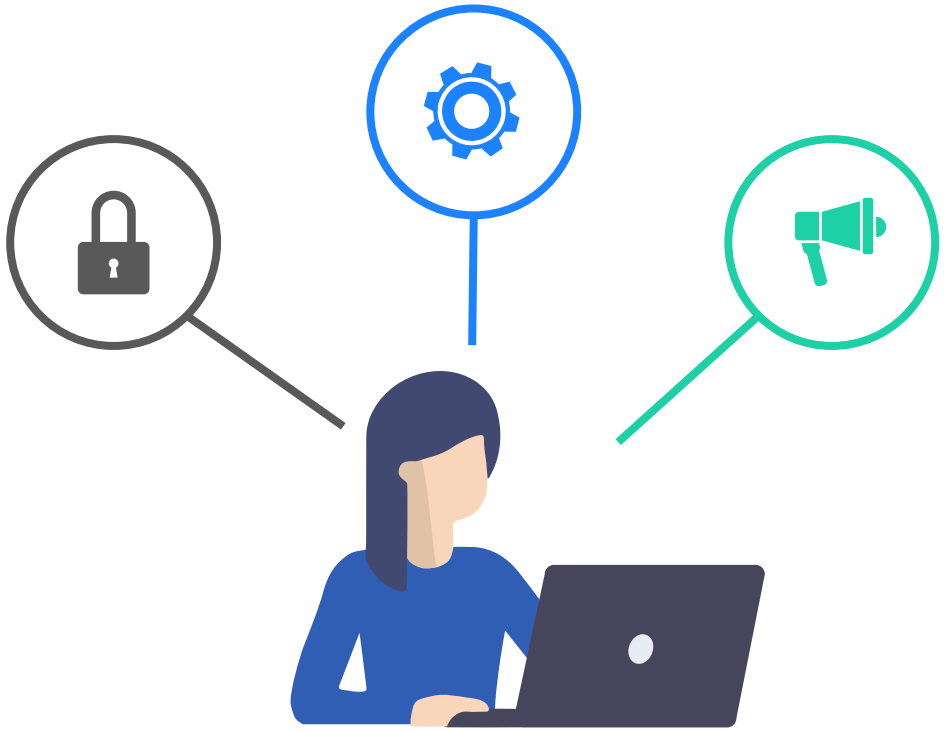
Leadership needs to understand which aircraft are safest.

Solution: Analyze historical accident data to inform decisions.

Data Description

Data Source: National Transportation Safety Board (NTSB)

Civil aviation accidents from 1962 to 2023.



Key Variables:

- Aircraft make and model
- Number of engines
- Injury severity

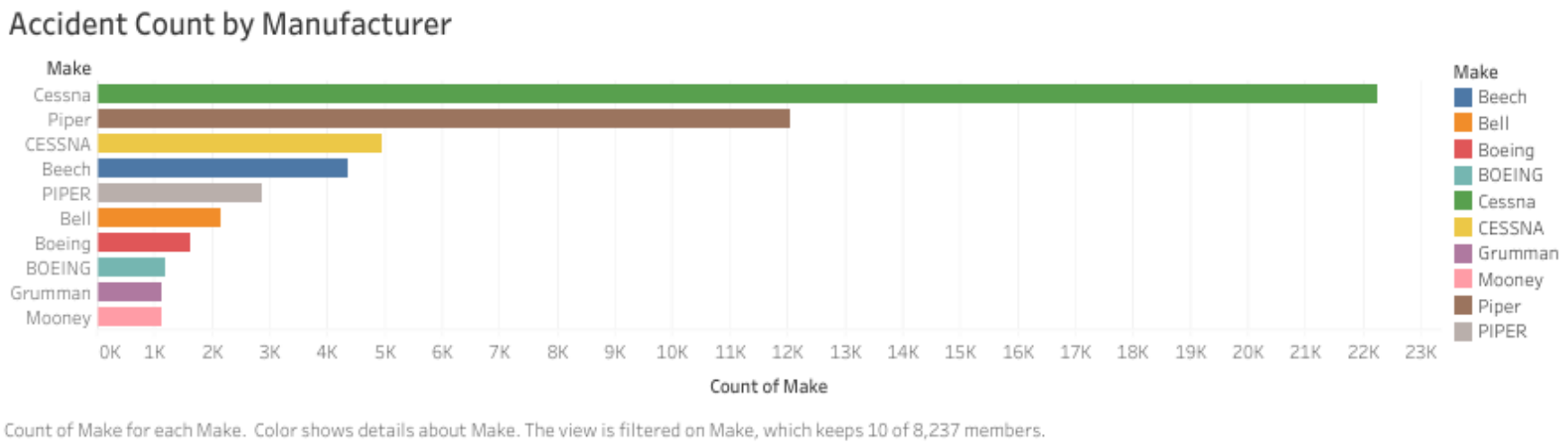
Data Preparation

Dropped irrelevant and high-missing columns

Handled missing data with forward-fill and threshold filtering

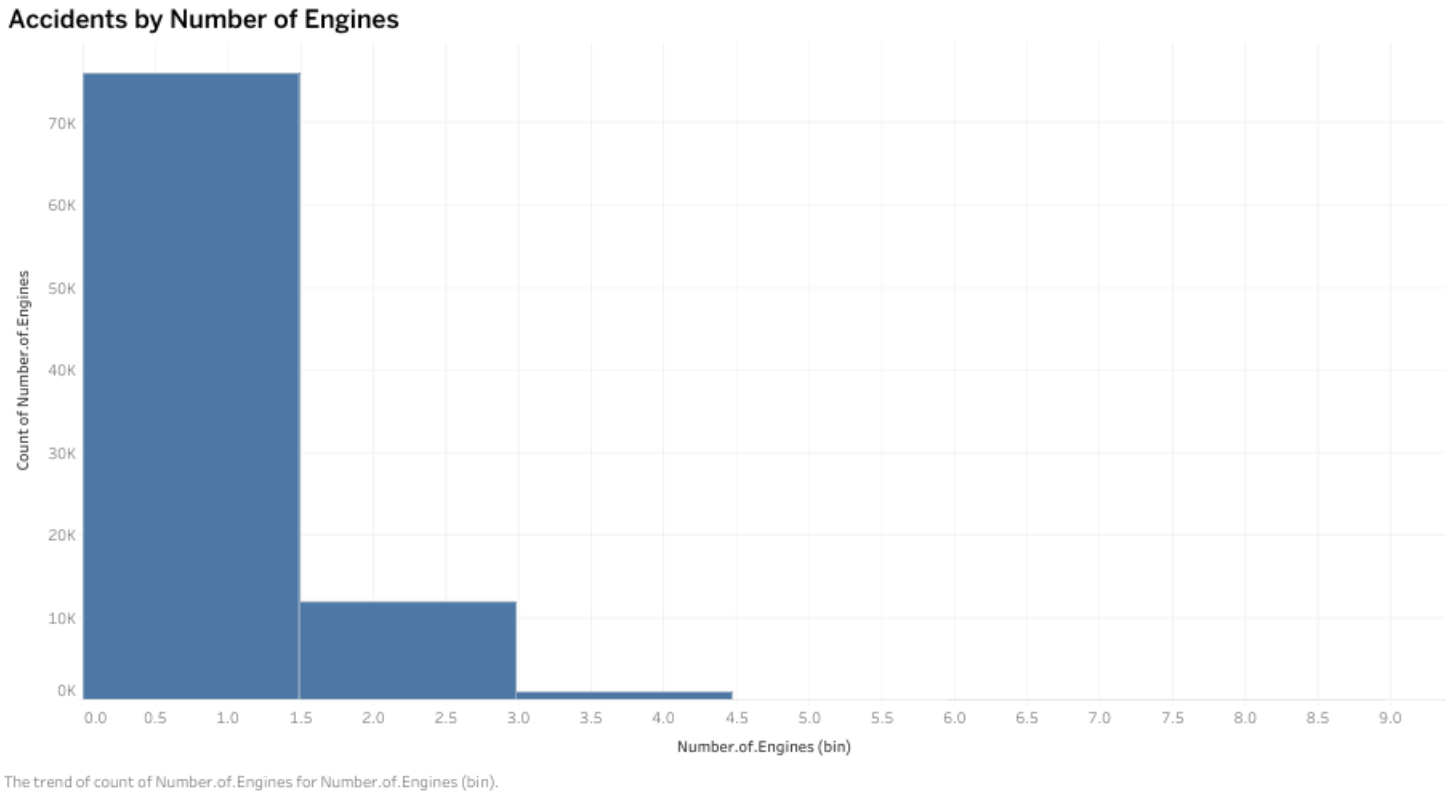
Standardized categorical variables (e.g., make, injury severity

Top Manufacturers with by Accidents



Insight: Some manufacturers are involved in significantly fewer accidents

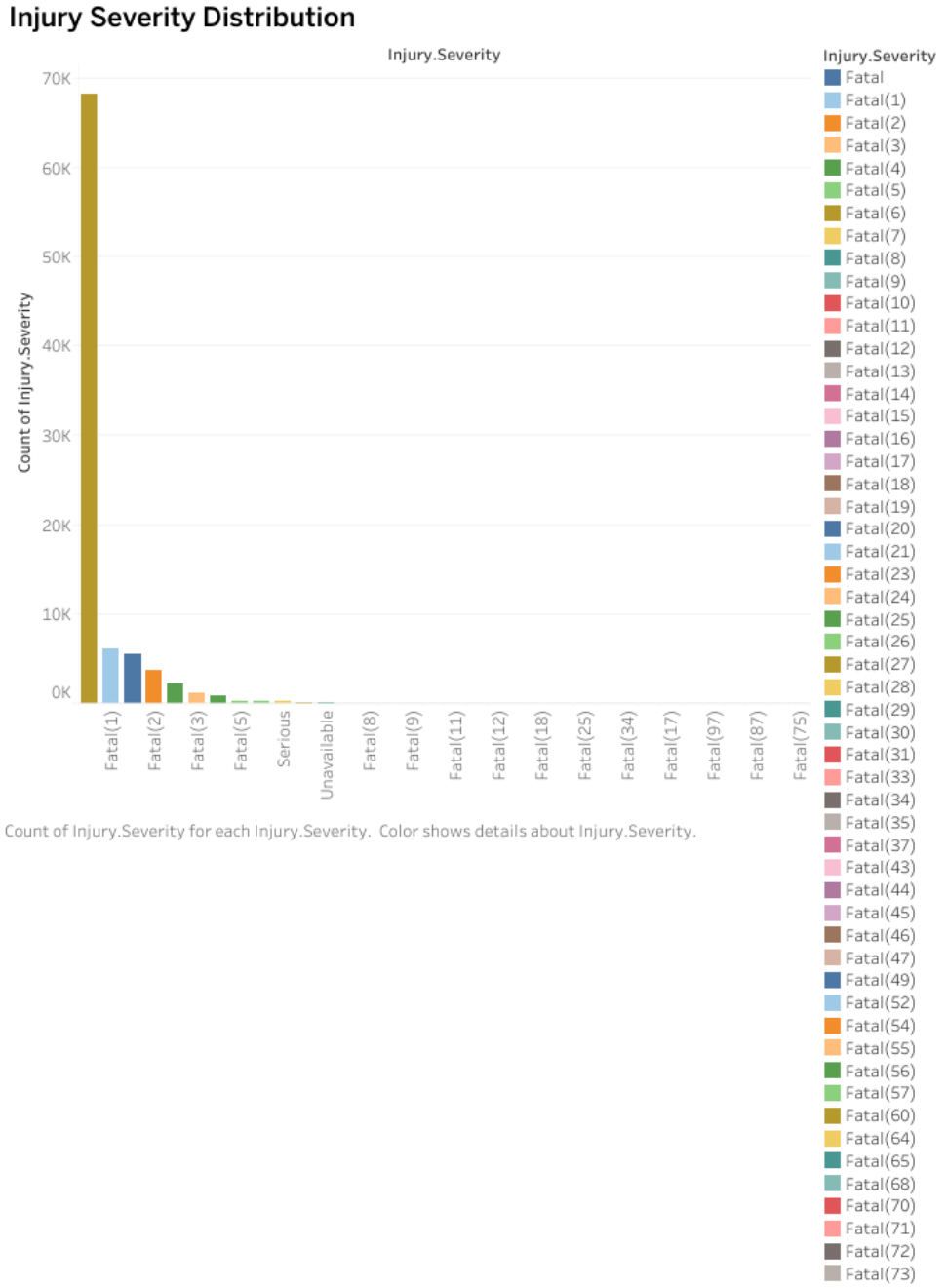
Accidents by Number of Engines



Insight: Aircraft with more engines tend to be involved in fewer incidents.

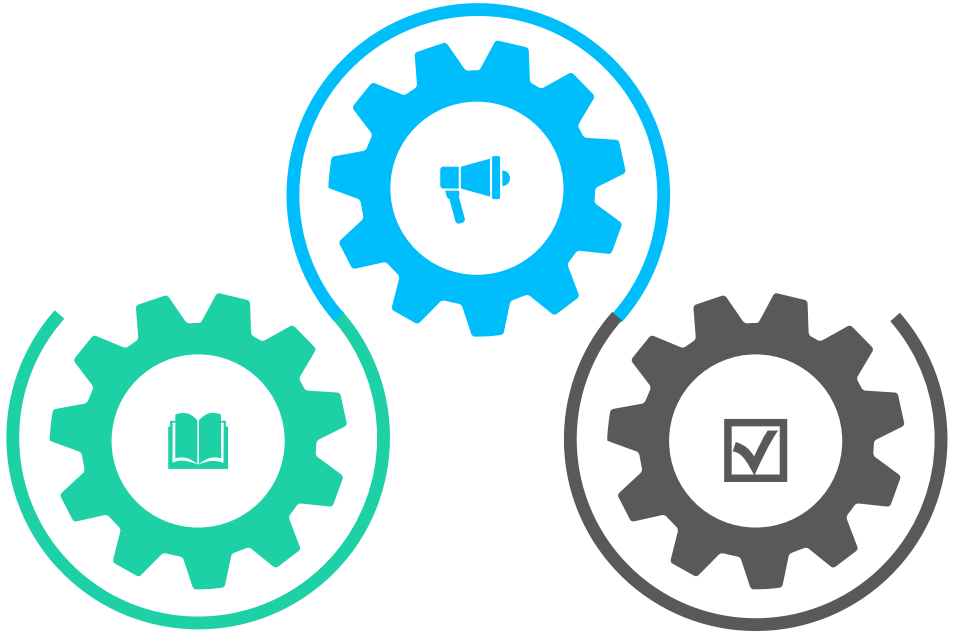
Injury Severity Distribution

Insight: Most incidents result in non-fatal injuries, but some aircraft have higher fatality rates.



Recommendations

Prioritize aircraft from manufacturers with lower accident histories.



Favor aircraft with more engines when possible.

Avoid aircraft models with injury or fatality rates.

Conclusion

1. Analysis support safter, data-driven decisions.
2. Historical trends provide strong foundation for evaluating aircraft safety.
3. Future work: integrate updated operational and maintenance data.

THANK YOU

Any questions?