

Airplane Safety Data Analysis

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Summary

Measuring airplane safety.

- Factors of risk/safety:
 - Total fatal injuries
 - Total serious injuries
 - Total uninjured
 - Aircraft damage
- What we can control:
 - Make
 - Model
 - Number of Engines

Outline

- Business Problem
- Data and Limitations
- Results
- Conclusion
- Next Steps

Business Problem

- Selling small airplanes for instructional purposes in the US
- Goal: least amount of risk → greatest amount of safety
- Frequency of accidents in this market
- Reliability → Sales → Growth
- Accident Data

Data Understanding and Limitations

Dataset:

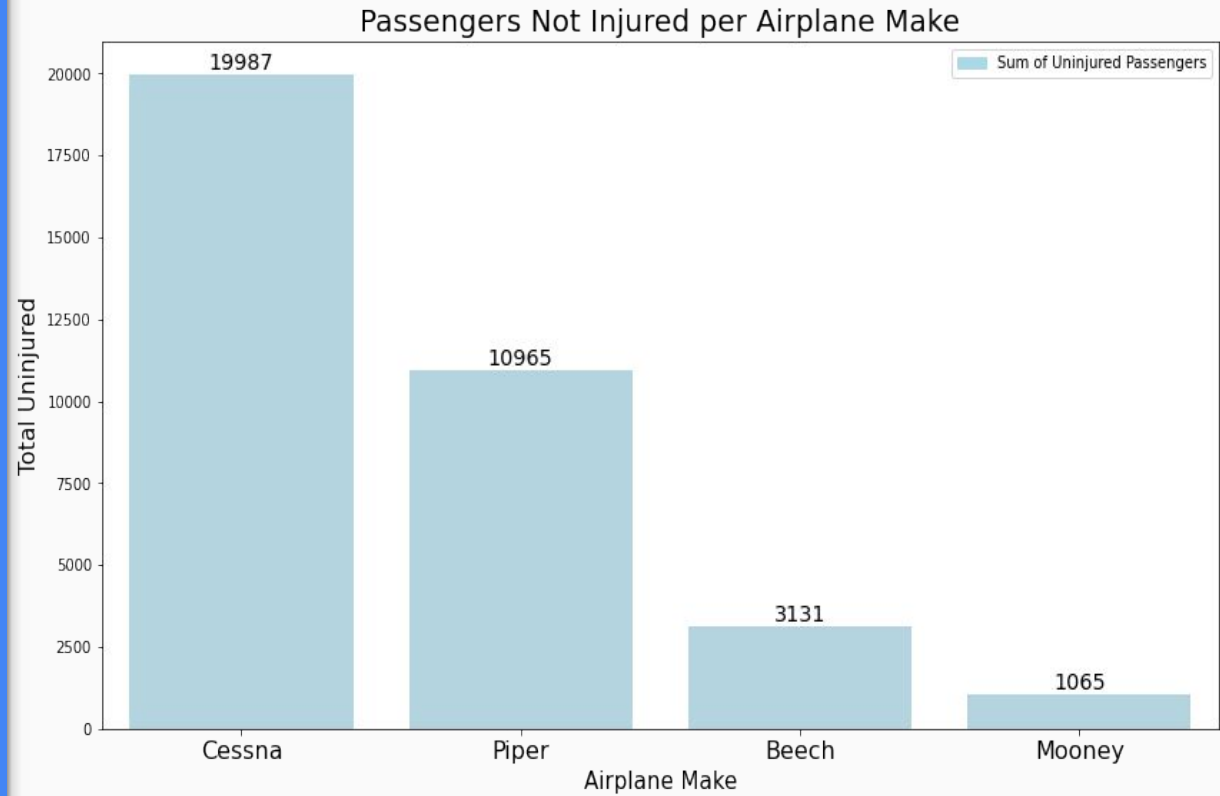
- Dataset: National Transportation Safety Board
- The dataset can be found here on kaggle:
<https://www.kaggle.com/datasets/khsamaha/aviation-accident-database-synopses>
- 90,000 accidents → 40,000 small instructional airplanes accidents

Limitations:

- Availability, cost, number of flights, mileage, or maintenance
- Most highly represented
- Patterns/trends
- Recommend future actions

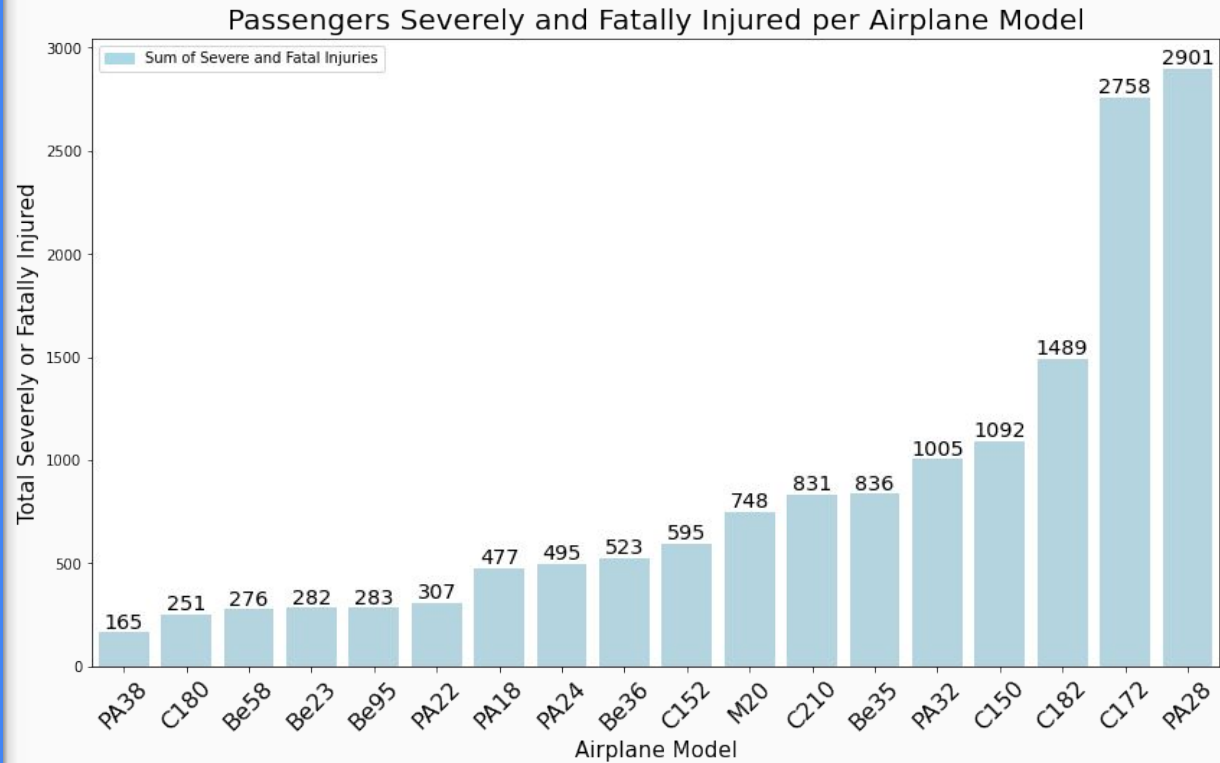
Result 1

- Serious Accident
- Airplane Make vs Uninjured
- Makes recommended:
 - Cessna
 - Piper
 - Beech
 - Mooney



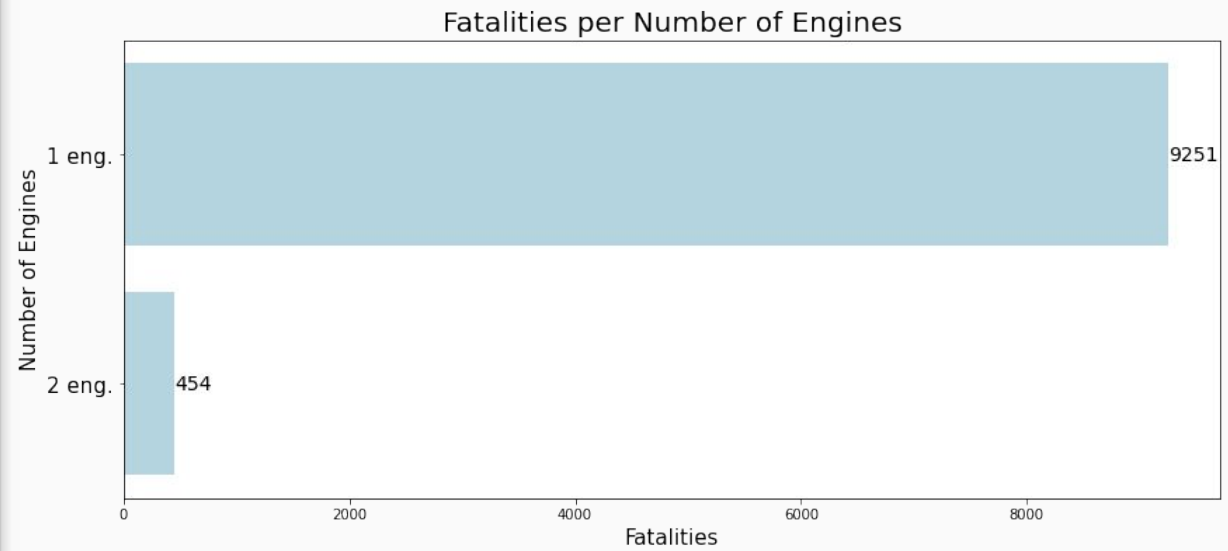
Result 2

- Serious Accident
- Model vs Total Fatal/Serious Injury
- Models recommended:
 - Piper- PA38, PA22, PA18, PA24, PA32, PA28
 - Cessna- C180, C152, C210, C150, C182, C172
 - Beech- Be58, Be23, Be95, Be36, Be35
 - Mooney- M20



Result 3

- Glide Ratio/Landing
- Number of Engines vs Fatalities
- 2 recommended



Conclusion

- Safest airplane
- Increased reliability, sales, and growth
- Limitations
- Make vs. uninjured
 - Cessna, Piper, Beech, and Mooney.
- Model vs. total fatal/serious injuries
 - Piper- PA38, PA22, PA18, PA24, PA32, PA28
 - Cessna- C180, C152, C210, C150, C182, C172
 - Beech- Be58, Be23, Be95, Be36, Be35
 - Mooney- M20
- Number of engines vs. fatalities
 - glide ratio

Next Steps

- Data Enrichment:
 - a. Availability
 - b. Cost
 - c. Total flights
 - d. Total mileage
 - e. Maintenance
- Compare Risk with Cost and Availability

Questions

Thank you

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