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

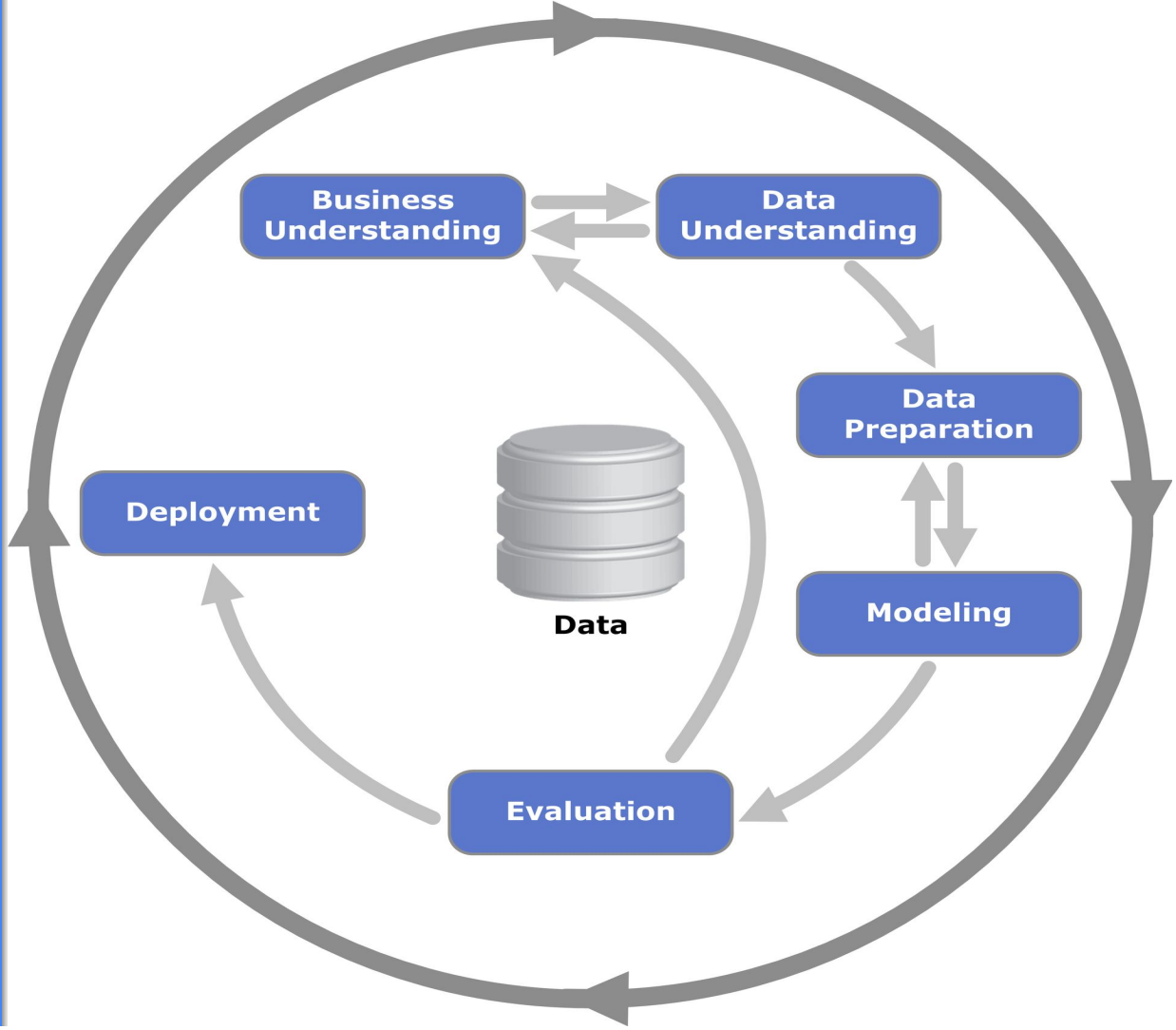
- Business Problem
- Methodology
- Data and Limitations
- Results
- Conclusion
- Next Steps

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

Methodology

- CRISP-DM: Cross-Industry Standard Process for Data Mining



Data Understanding and Limitations

Dataset:

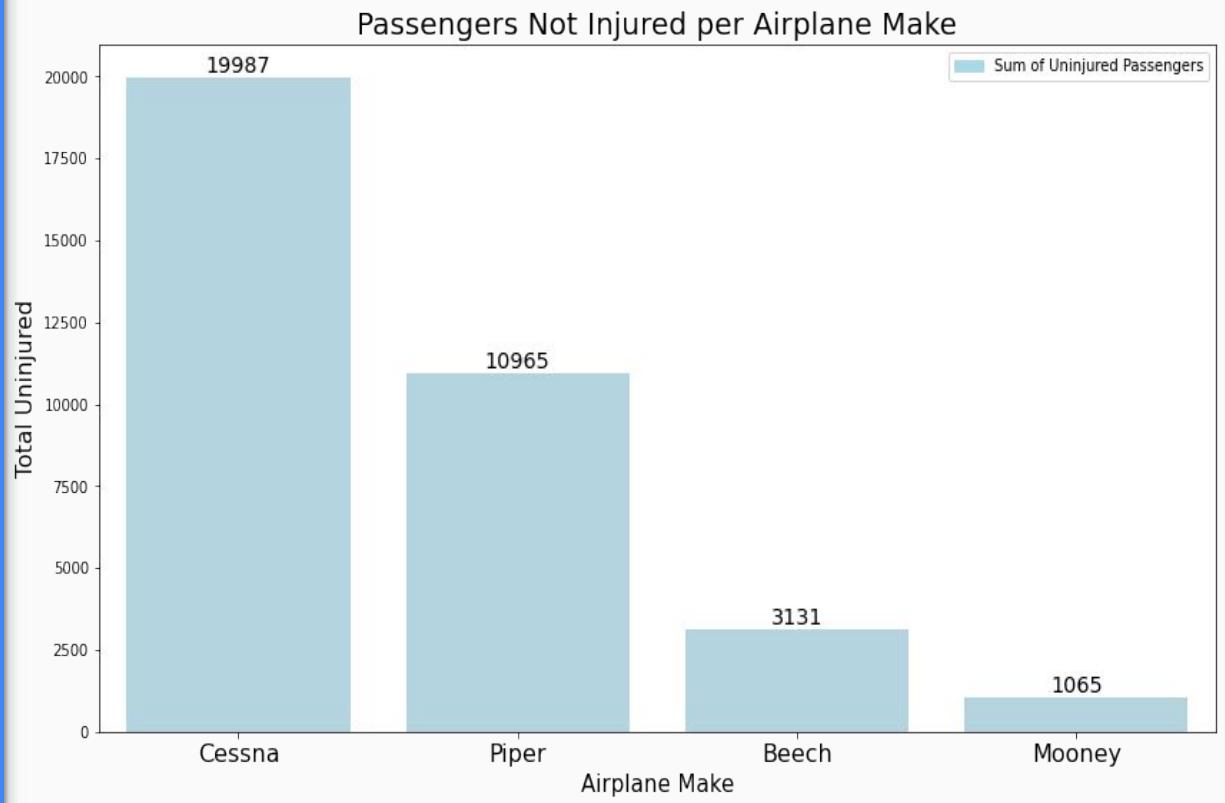
- Dataset: National Transportation Safety Board
- The dataset can be found here on kaggle: https://www.kaggle.com/datasets/khsamaha/aviation-accident-database-synopses
- 90,000 accidents → 40,000 small instructional airplanes accidents
- Safety in the event of accident

Limitations:

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

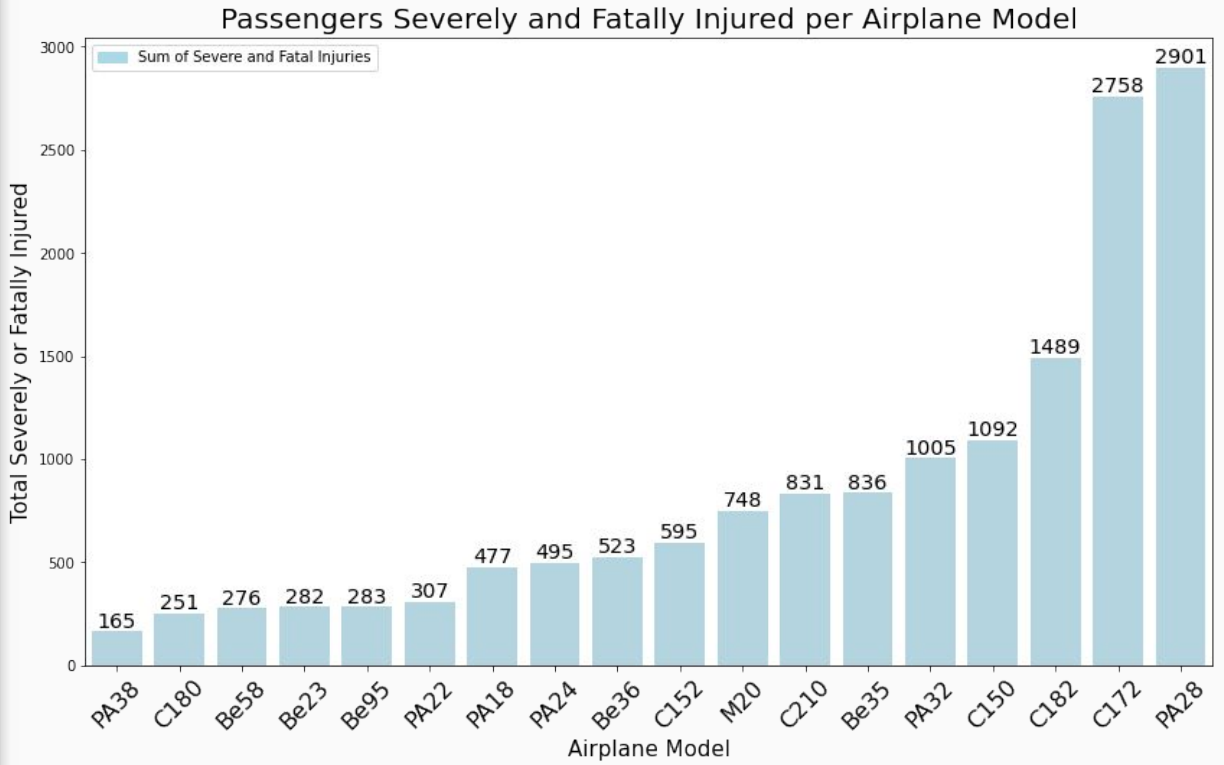
Result 1

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



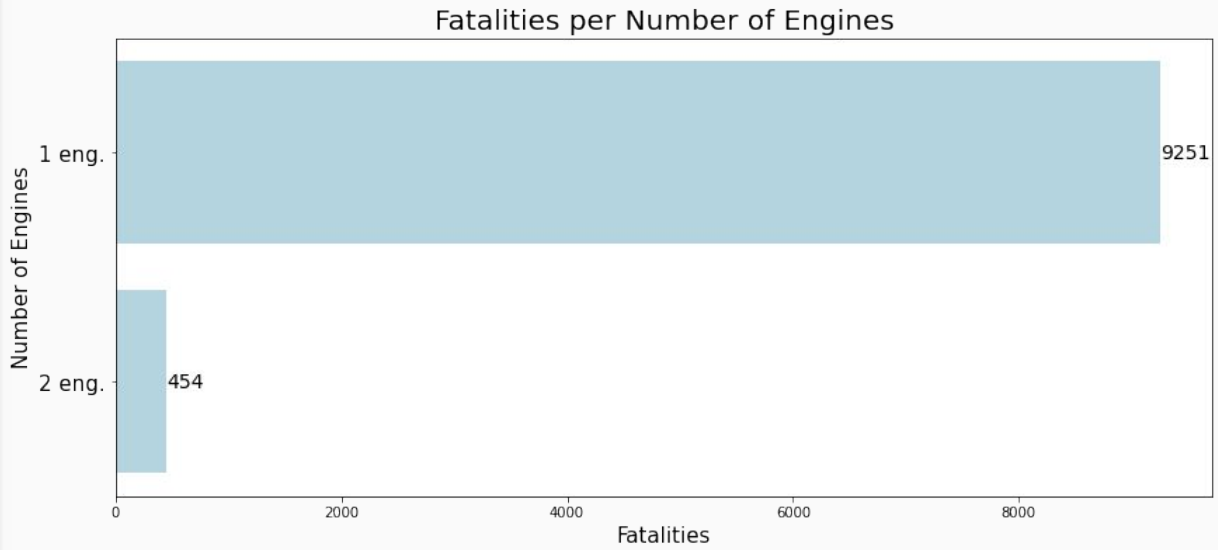
Result 2

- 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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