

Aircraft Operations Business

Safety Risk Analysis

November 16, 2023

Summary

Objective



- Identify manufacturer with best safety record
 - Percentage of accidents involving fatalities
- Analyze safety risk by:
 - Location
 - Purpose
 - Weather Condition

Conclusions



- **Boeing** aircraft safest in all environments
- Safety risk similar for U.S. vs. overseas flights
- Safety risk similar for commercial vs. personal flights
- Safety risk much higher in poor weather

Data Source

Original National Transportation Safety Board dataset:

- 90K accidents, from 1962 to 2023
- Thousands of manufacturers
- 30 variables

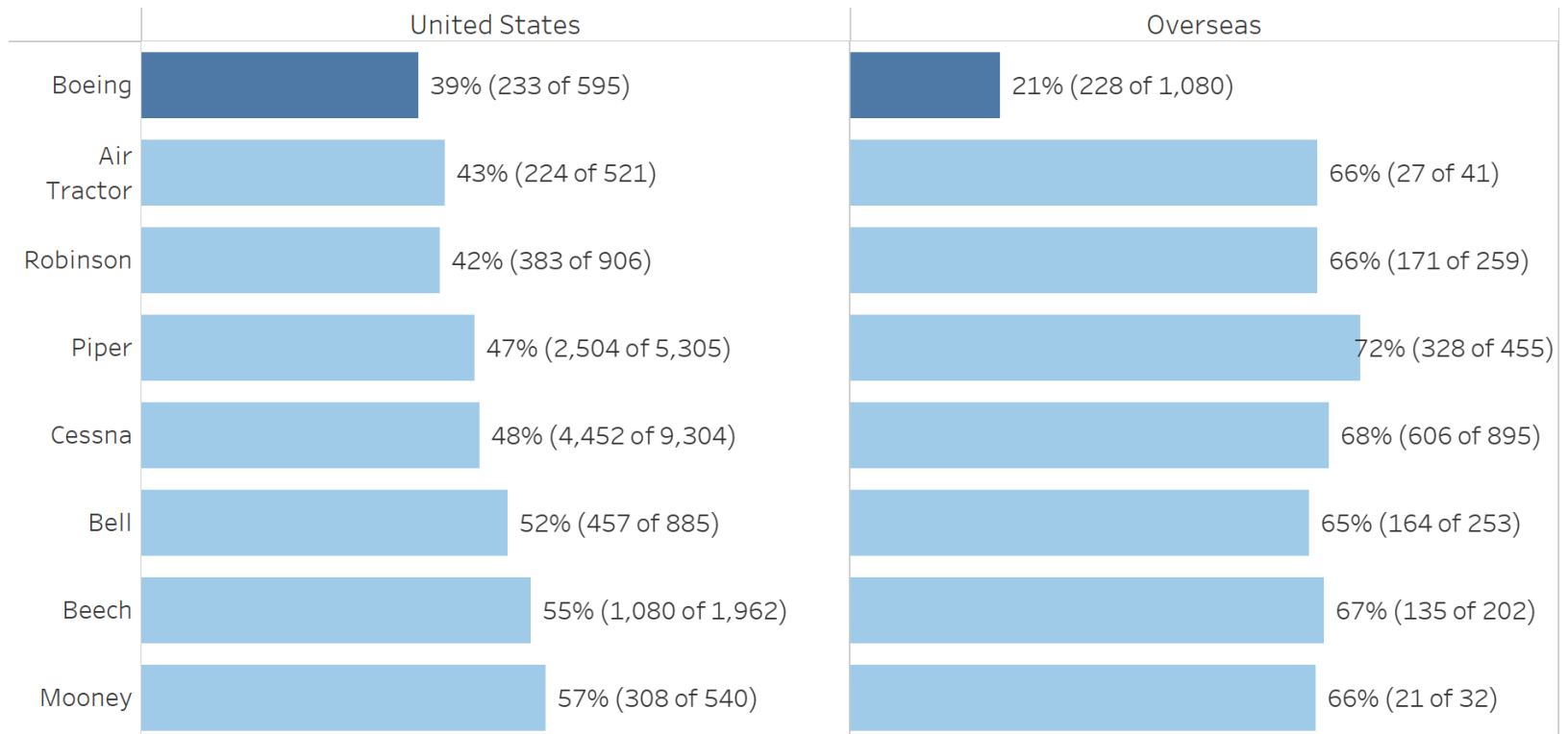
Refined dataset:

- 23K accidents, from 2000 to 2023
- Top 8 manufacturers
- 5 variables: manufacturer, fatalities, location, purpose, weather

Safety Risk by Location

- Percentage of accidents involving fatalities:
 - Across all manufacturers: U.S. 48%, Overseas 52%
 - Boeing: U.S. 39%, Overseas 21%

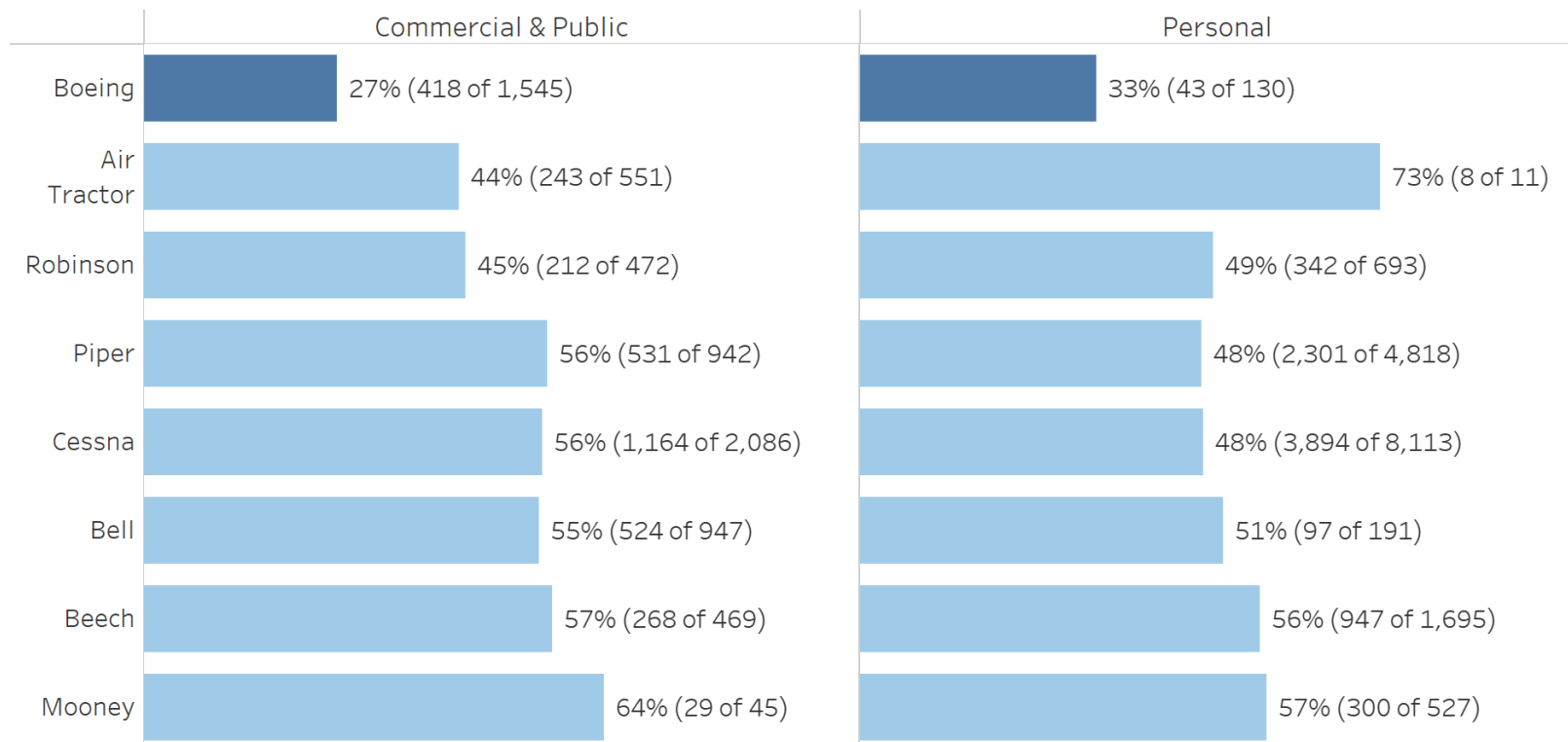
Ratio of Fatal Accidents to Total Accidents, by Location



Safety Risk by Purpose

- Percentage of accidents involving fatalities:
 - Across all manufacturers: Commercial 48%, Personal 49%
 - Boeing: Commercial 27%, Personal 33%

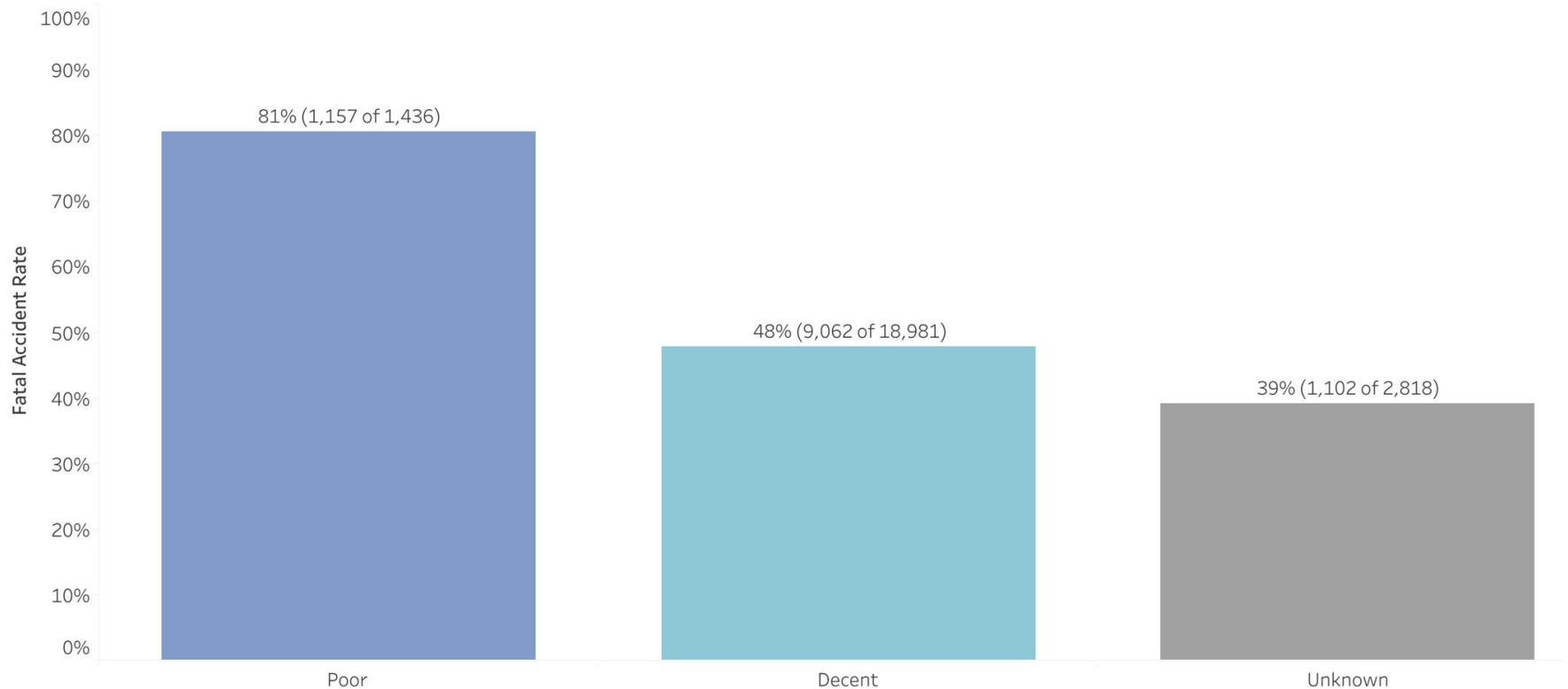
Ratio of Fatal Accidents to Total Accidents, by Purpose



Safety Risk by Weather Condition

- Percentage of accidents involving fatalities:
 - In decent weather: 48%
 - In poor weather: 81%

Ratio of Fatal Accidents to Total Accidents, by Weather Condition



Follow-up Questions

- 1) Alternative measures of safety?
 - Accident rate per million flights
 - Fatal accidents per million passenger miles
- 2) Safety record over different time periods?
- 3) Balancing safety with cost and other considerations?

Q&A

Thank you for your time.

Please contact me with any additional questions you may have at:

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