

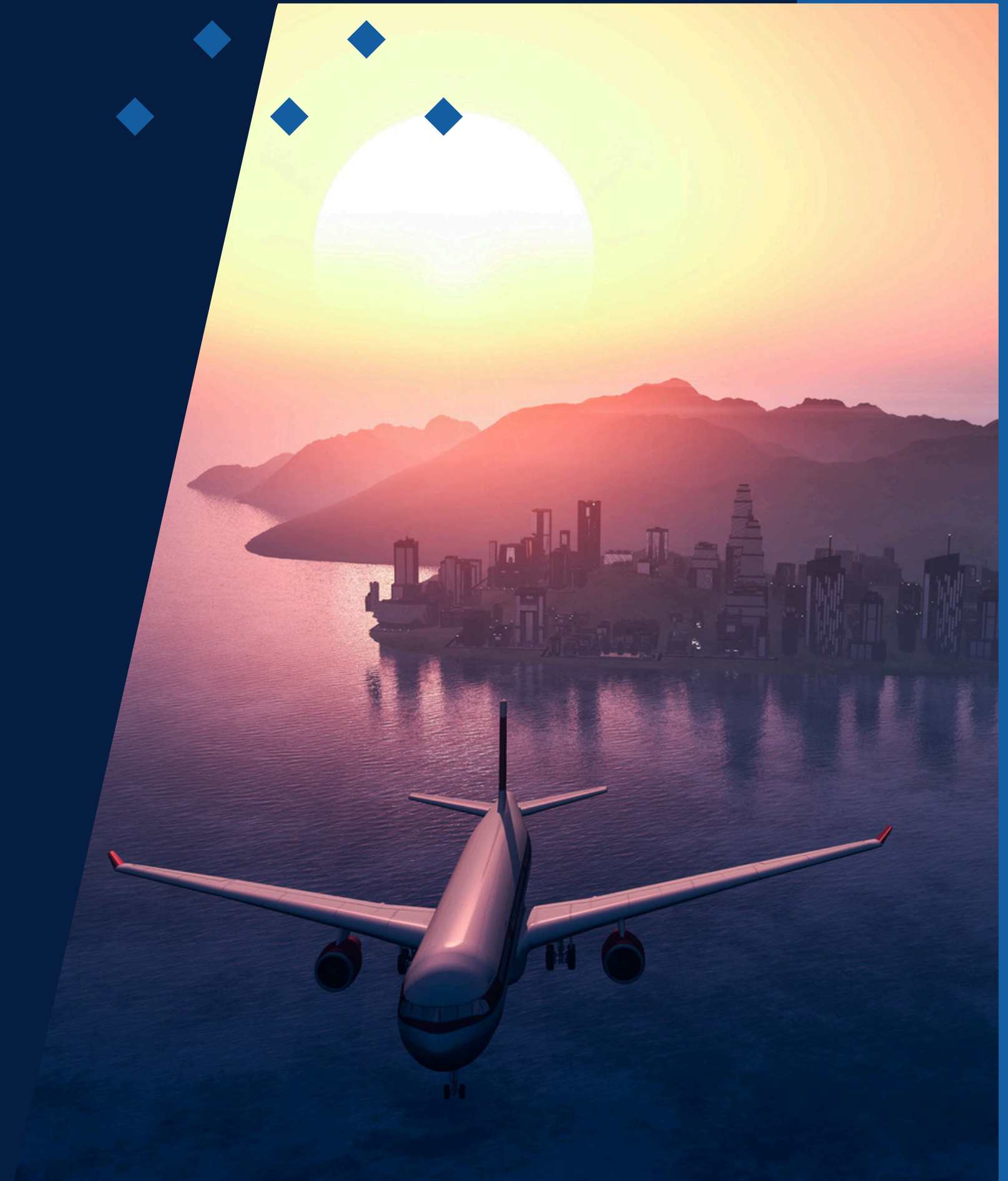
# AVIATION

# PROJECT

Presented by:

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# AGENDA

01

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Business Problem

02

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Data

03

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Results

04

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Recommendations

05

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Future Investigations







# BUSINESS PROBLEM

- Investing in the Aircraft Industry

Determine which manufacturer is the lowest risk for both the private and commercial sector

- Analyze accident data to understand fatalities & risks

# The Data

- The National Transport Safety Board (NTSB) Report
  - civil aviation accidents & incidents from 1962 – present
  - United States & international waters
- ~13,000 event records
- Limitations:
  - Data does not include total flight hours

# Breaking it Down

- Professionally manufactured airplane
- Successful production run is 15–20 years
- Top 5 commercial manufacturers\*
  - Boeing, Airbus, Embraer, Bombardier, Mitsubishi
- Top 5 private manufacturers\*
  - Beechcraft, Cessna, Dassault, Gulfstream, Piper
- Created fatality rate as a main value centered around the lowest risk criteria

# ANALYSIS



# The Typical Event

Private Manufacturer:

- Accident with substantial aircraft damage
- In the middle of summer between Wednesday and Thursday
- Aircraft: Cessna 172 with one reciprocating (piston) engine
- Passengers: 2 persons on board with a high probability of 1 person being a fatal injury



Cessna 172



# The Typical Event

Commercial Manufacturer:

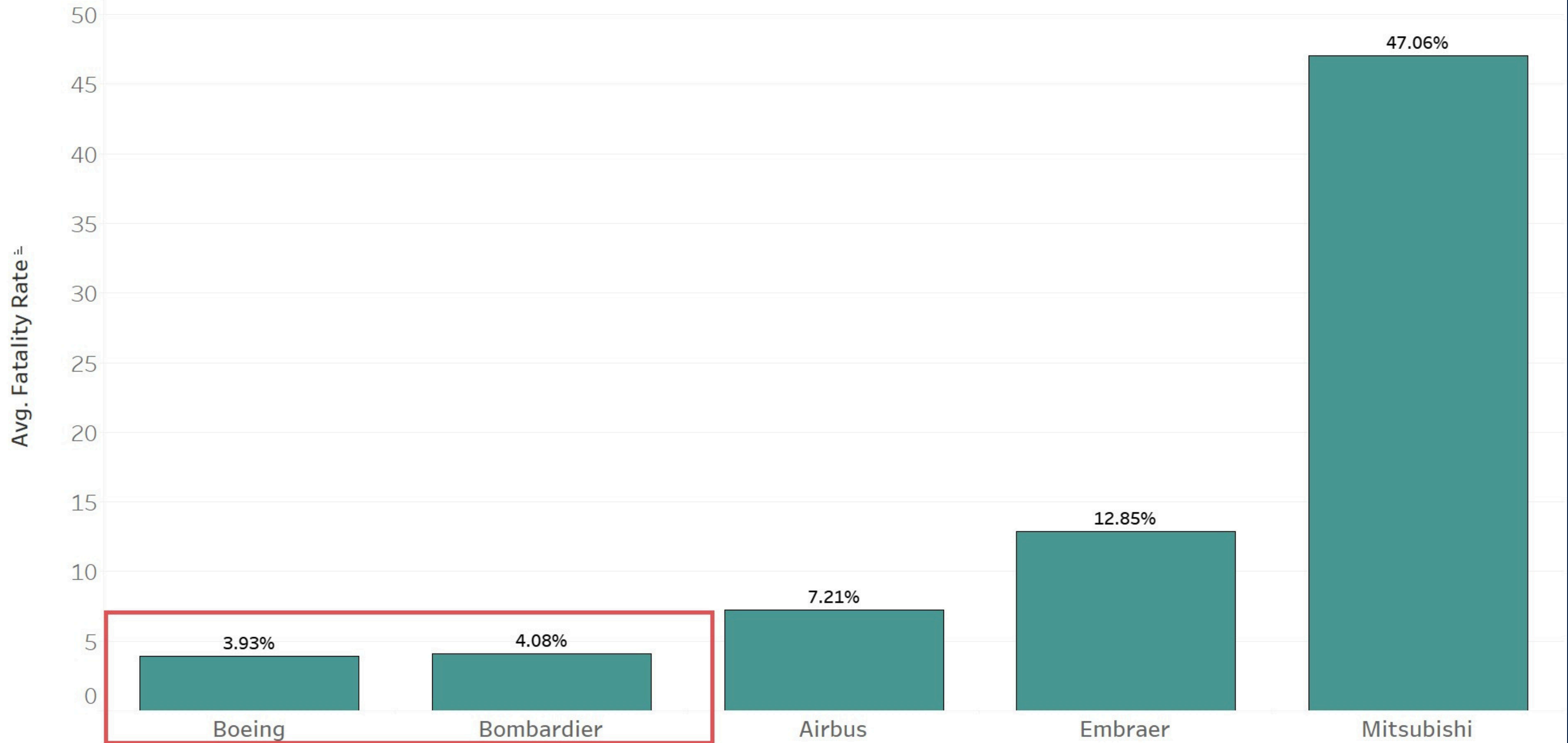
- An incident with unknown type of damage (inclining to minor)
- In the middle of summer between Tuesday and Wednesday
- Aircraft: Boeing 737 with 2 turbo fan engines
- Passengers: 68 passengers on board with 65 uninjured, 2 dead and 1 with serious or minor injury



Boeing 737

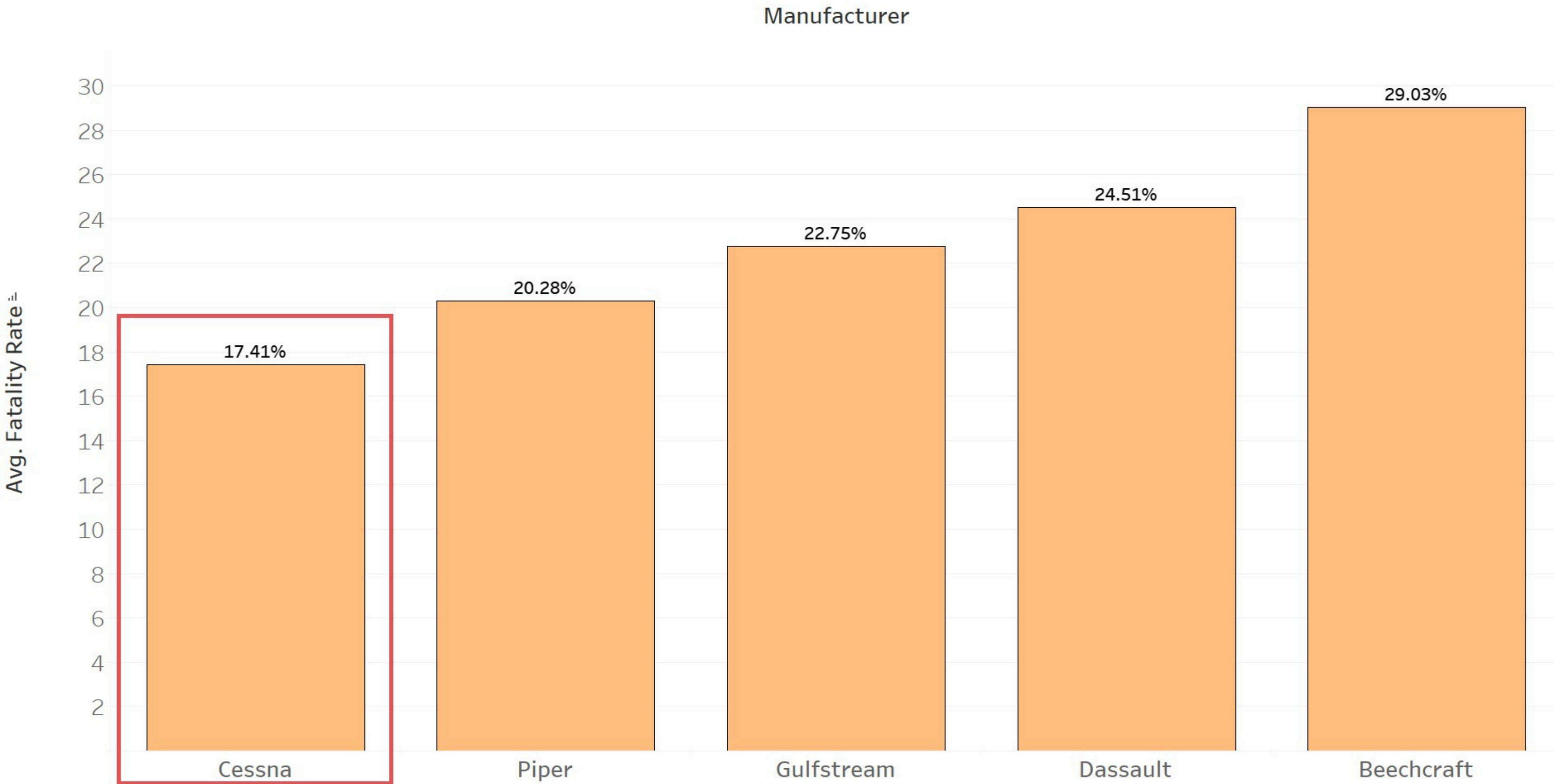
# Fatality Rate by Commercial Manufacturers

Manufacturer

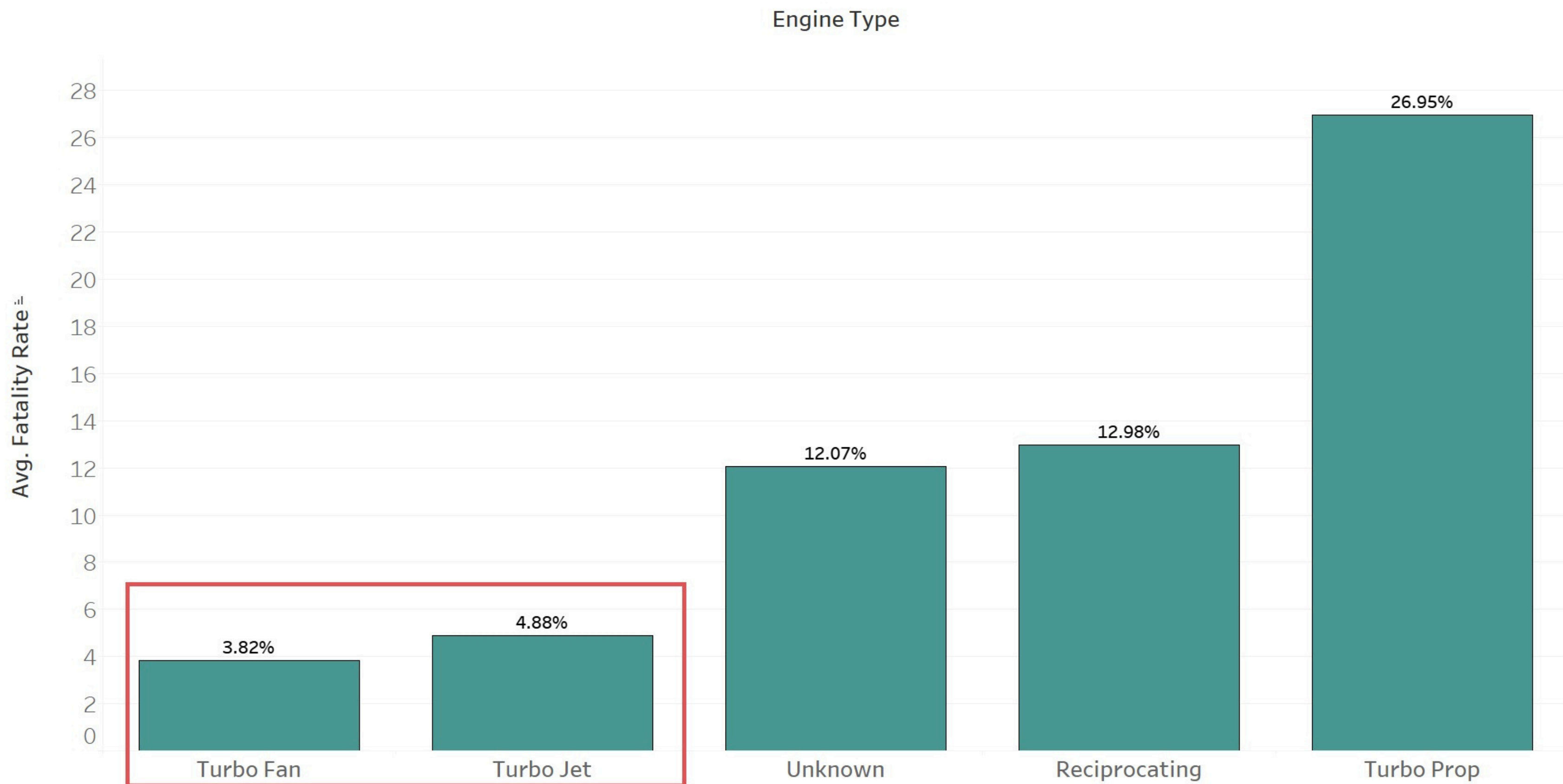




# Fatality Rate by Private Manufacturers

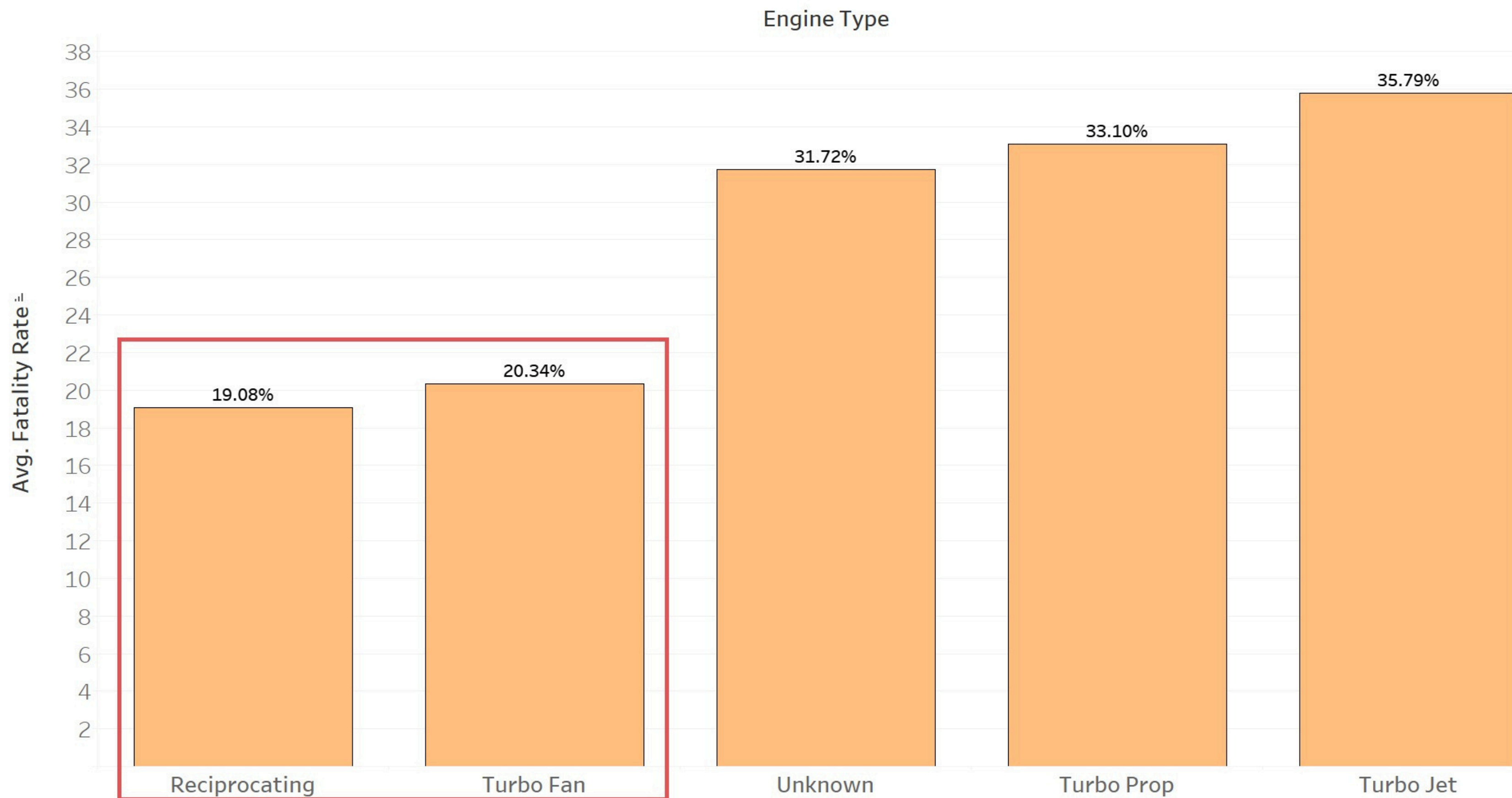


# Fatality Rate by Engine Type in Commercial Manufacturers

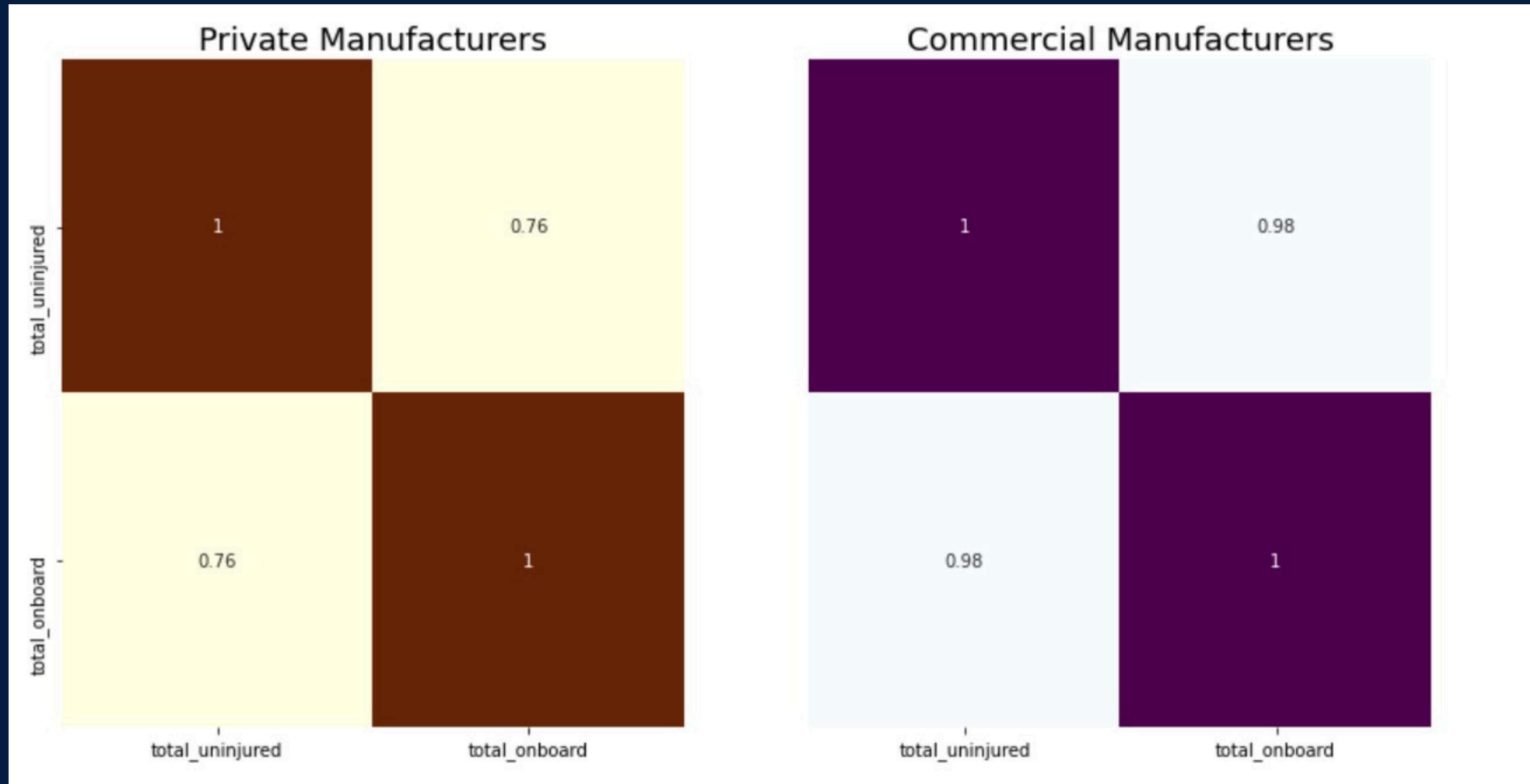




# Fatality Rate by Engine Type in Private Manufacturers



# Correlation between total and uninjured passengers





# Recommendations:

- Makes:
  - Commercial: *Boeing* or *Bombardier*
  - Private: *Cessna*
- Engine Type:
  - Commercial: *Turbo Fan & Turbo Jet*
  - Private: *Reciprocating & Turbo Fan*
- Size matters:
  - The **bigger** the safer

# Future Insights

- Weigh financial options between top 2 commercial and private manufacturers
- Gather further flight information to expand analysis



Questions?

# Appendix

- **Top Manufacturers:**
  - <https://assetsamerica.com/aircraft-manufacturers/>
- **The National Transport Safety Board (NTSB) Report**
  - <https://www.kaggle.com/datasets/khsamaha/aviation-accident-database-synopses>