AVIATION ANALYSIS

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KEY QUESTION

Our company is expanding into aviation, but lacks insight into potential safety risks. This analysis identifies the safest aircraft makes, models, and engine types to inform purchasing decisions.

Which aircraft present the lowest operational risk, based on historical accident, fatality, and damage data?

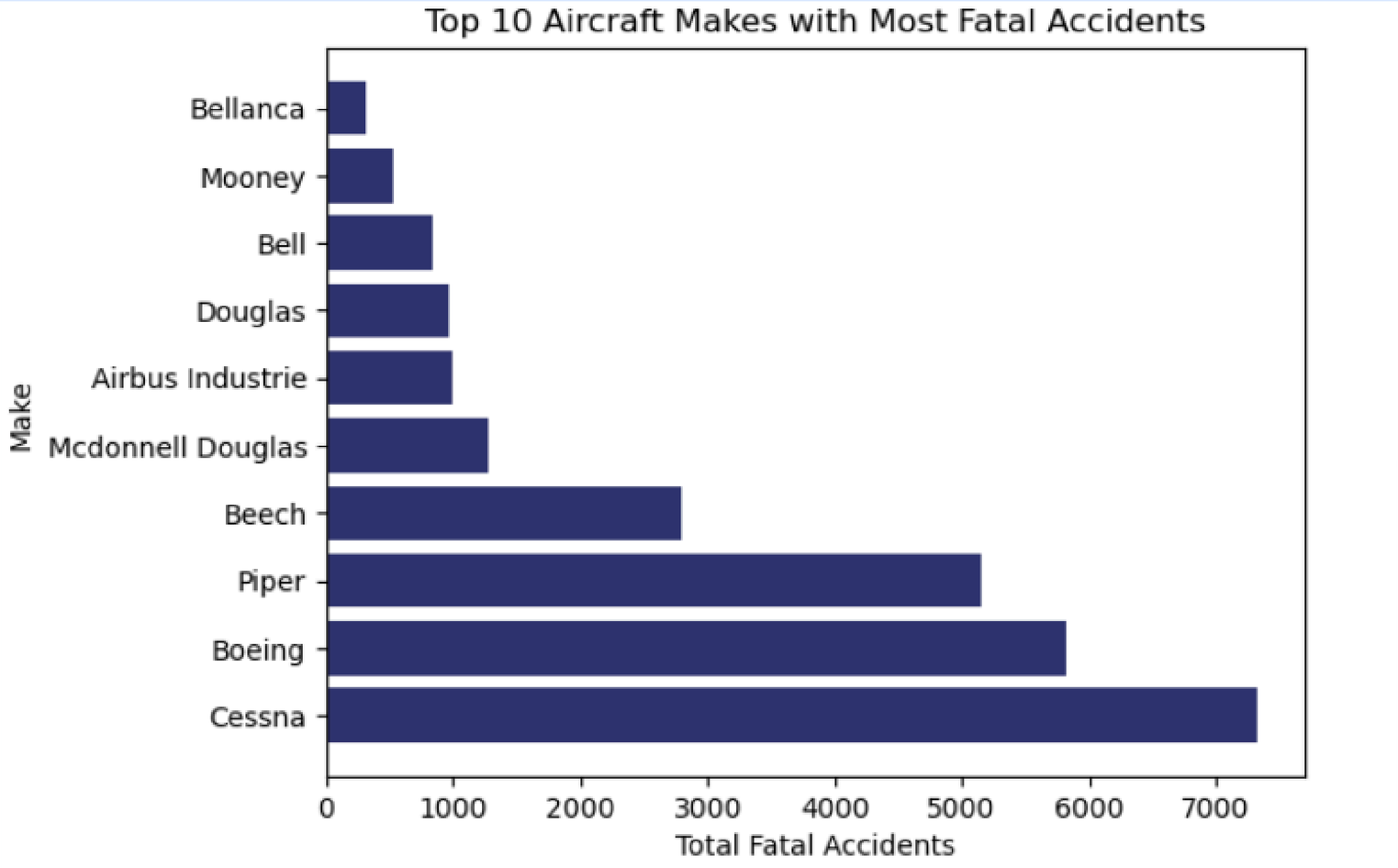
DATA UNDERSTANDING

I analyzed historical aircraft incident data containing over 80,000 records, including details like aircraft make, model, damage type, weather conditions, engine type, and fatalities

STEPS TAKEN:

- Cleaned and prepared the data
- Investigated which makes and models had the most fatalities and damage
- Explored engine type and number of engines in relation to accident severity
- Examined accident patterns under different weather conditions

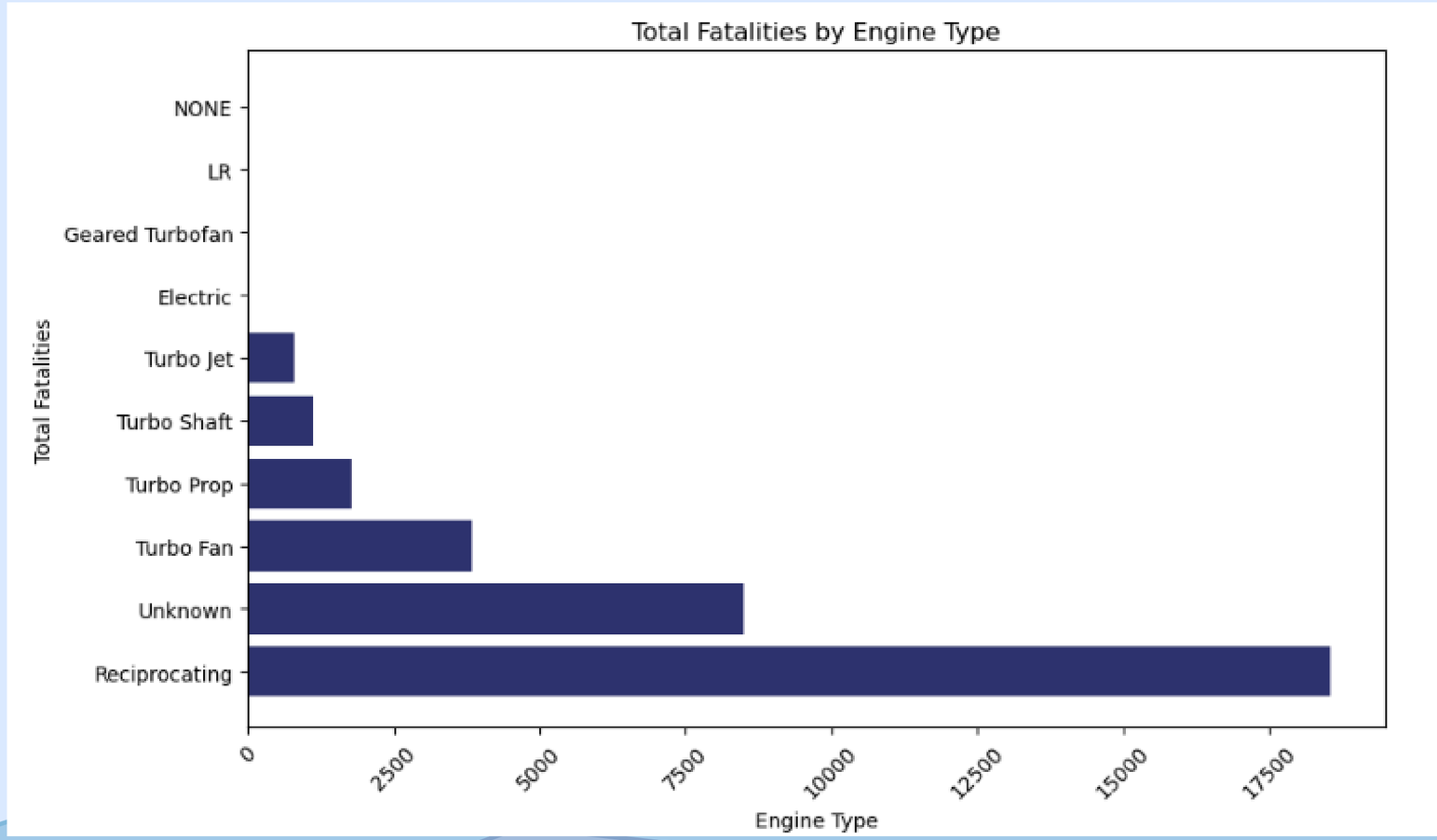
Aircraft Makes with the Most Severe Accidents:



- Cessna and Piper aircraft account for the highest number of destroyed aircraft and fatalities — partly due to their high usage rates.
- Helicopter manufacturers like Bell and Robinson also show significant accident counts.

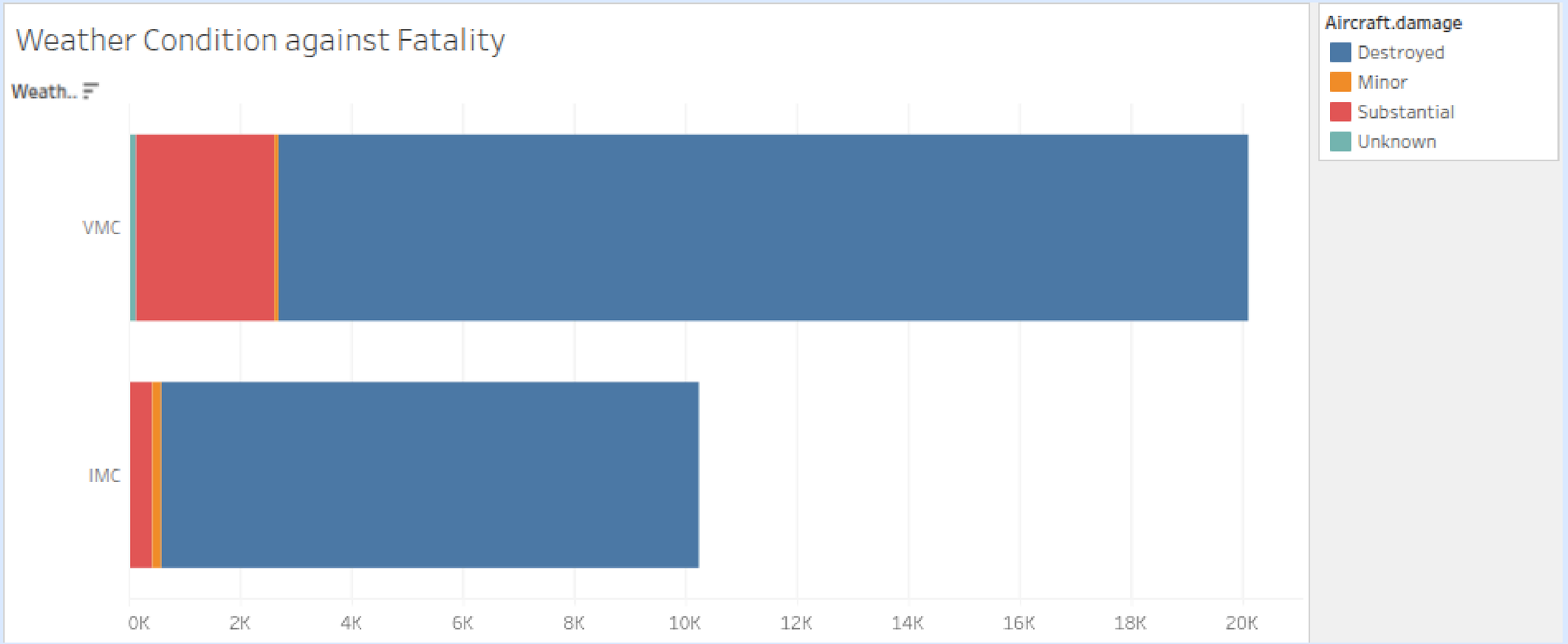
Engine Type with Fatal Accidents

- **Reciprocating engines are associated with the most fatalities which is unsurprising as they dominate the general aviation market.**



- **Turbofan and Turboprop engines, used in larger aircraft, have fewer total accidents but higher severity per incident.**

Weather Condition vs Fatality



- Most accidents occur in good weather (VMC), simply because more flights happen in those conditions.

RECOMMENDATIONS

- Start with larger, commercially proven aircraft, typically twin-engine, with turbofan or turboprop engines, operated under stricter regulations.

- Be cautious of smaller, single-engine, general aviation aircraft, which, while cheaper, have higher accident rates.

NEXT STEPS

- This data-driven analysis provides a foundation for safer aircraft purchasing decisions as we enter the aviation sector.
- Continued risk monitoring is recommended as operations scale.

THANK YOU!