ANALYSIS OF AIRCRAFT RISKS FOR BUSINESS EXPANSION

Based on NTSB Civil Aviation Accident Data (1962–2023)

PURPOSE

With this analysis, we aim to identify the lowest risk aircraft to support safe and strategic entry into the aviation industry.

DATA CLEANING AND PREPARATION

❑Delete columns that are not statistically relevant or that are incomplete

❑Keep the most relevant ones (aircraft make, model and injury related fields)

❑Determine which makes show up the most which will be useful later on.

❑Prepare the data by normalizing columns and get it ready for analysis

ENTR'ACTE

We're now left with a cleaned dataset and we can now proceed with the analysis.

AVIATION ACCIDENTS OVER THE YEAR

- The number of aviation accidents has gone down over the years which means aviation has gotten safer.

- There is also a drop between 2001 and 2006 where the number of accidents suddenly falls to single or double digits but that's most likely due to missing or incomplete data during those years.
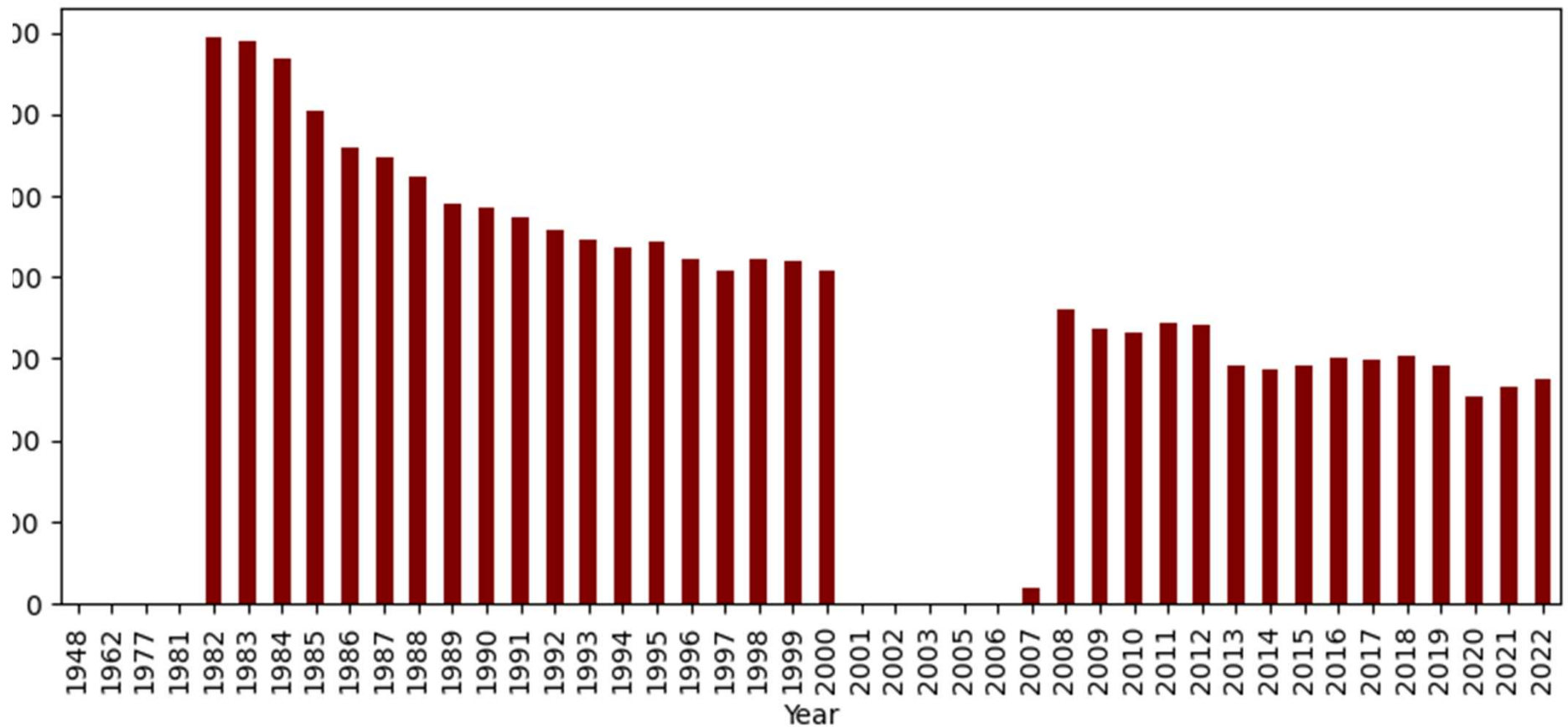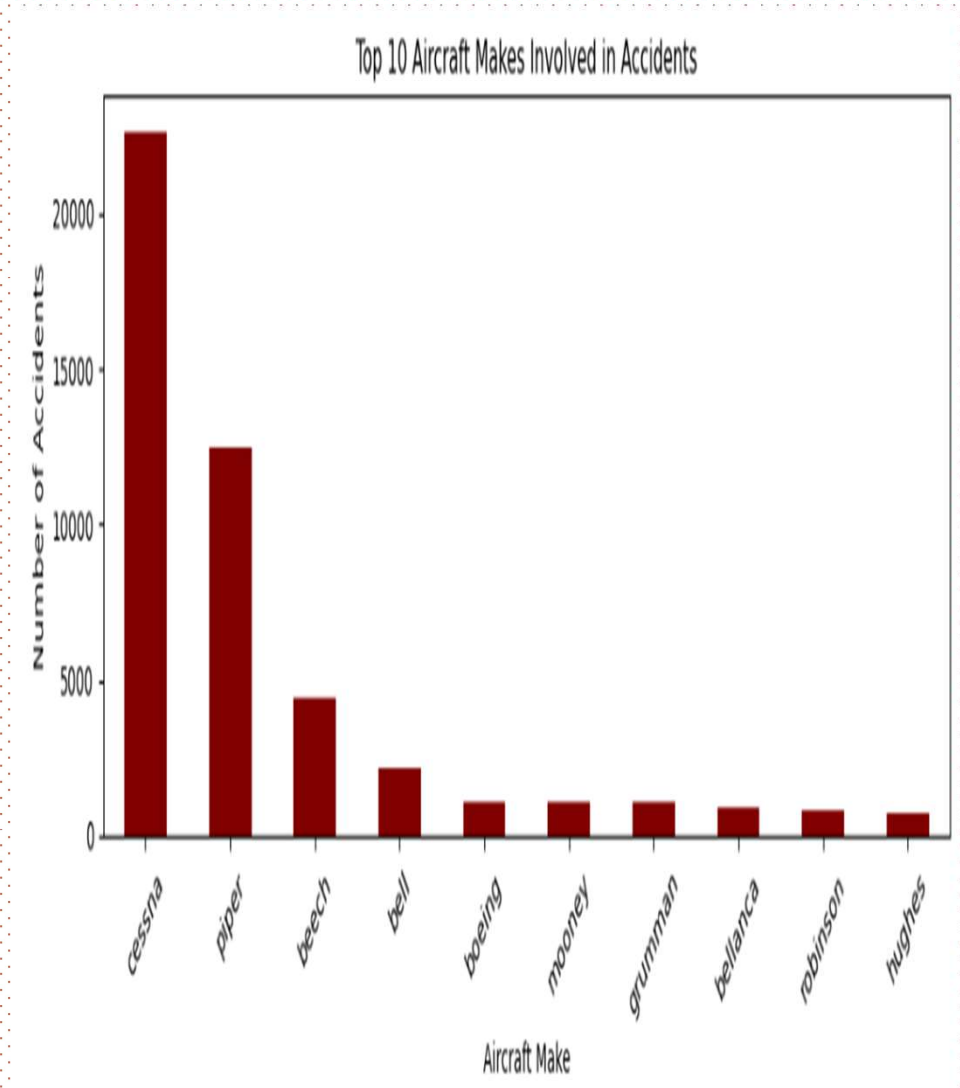
BAR CHART REPRESENTING
AVIATION ACCIDENTS
THROUGHOUT THE YEARS

MOST INVOLVED AIRCRAFT MAKES IN ACCIDENTS

- Some manufacturers show up a lot more than others: Cessna, Piper, Beech, and others.

- This could just mean they're the most used.

Top 10 Aircraft Makes Involved in Accidents

AVERAGE INJURIES PER ACCIDENT PER MANUFACTURER

■ Boeing stands out in terms of average injuries per accident.

■ Most of the other top aircraft manufacturers show low averages across all injury categories.

Average Injury Severity per Accident by Aircraft Make (Top 10)
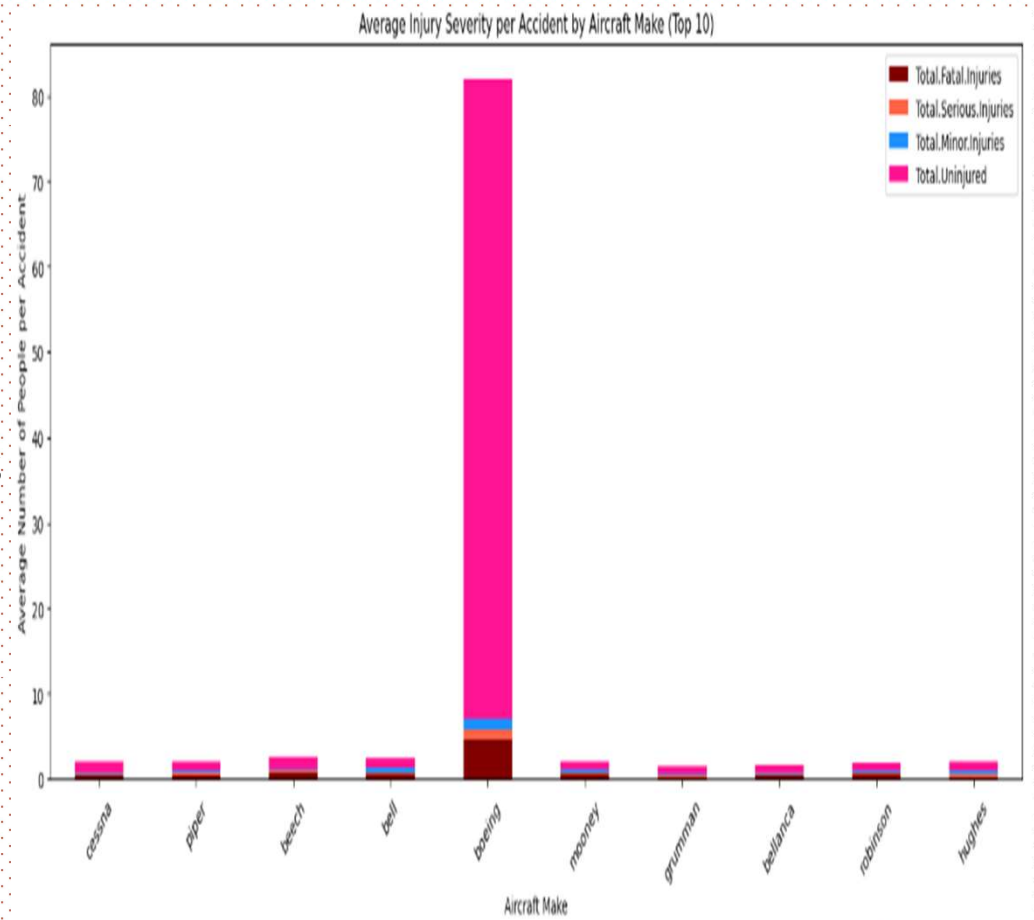
MOST COMMON WEATHER AND AIRCRAFT DAMAGES

- Most accidents happen in clear weather since flights tend to be postponed or cancelled in bad weathers.

- Those accidents in clear weather suggest human or mechanical error.

- The U.S. dominates the accident count, likely due to higher flight volume.

- Overall, most aircraft makes tend to suffer substantial or minor damage in accidents.

Top 10 Weather Conditions in Accidents

Proportional Aircraft Damage by Make (Top 10)
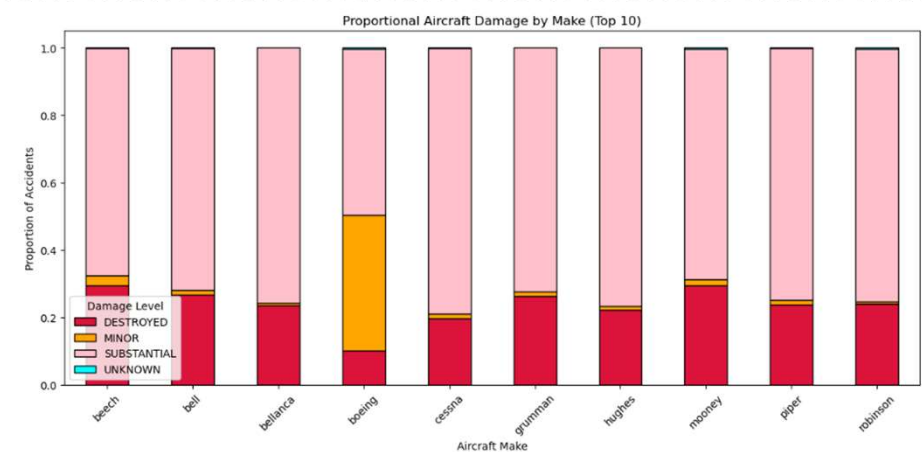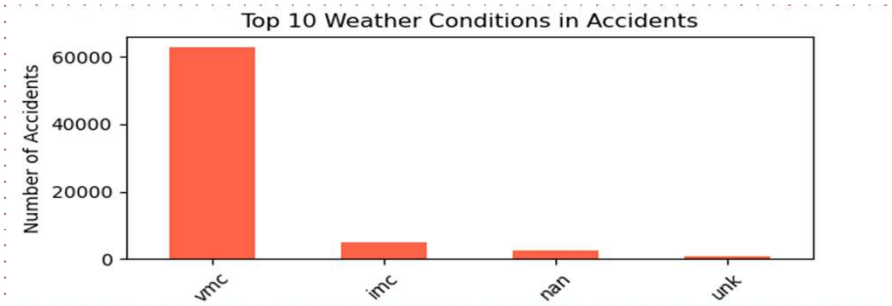
INSIGHTS

- Cessna and Piper are good picks for revenue with manageable risk.

- Boeing is a high risk option unless the company can afford a heavy safety, regulatory, and financial load

- Beech and Grumman fall into a moderate risk zone

- Bell is a risky investment.

OTHER OPTIONS

Many other makes have few accidents and low injury numbers, but limited data makes it hard to judge their safety profile with confidence. They could be a good opportunity but we need a closer look before making a call.

CONCLUSION

This exploratory data analysis of aviation accidents has helped uncover critical insights into aircraft makes, injury severity, and accident outcomes that will help the company in its choice.

RECOMMENDATIONS

We recommend the company to conduct a similar study on cost, efficiency, and maintenance that they'll use in order to compare safety with profitability.

QUESTIONS? CONTACT US!

- Email: rolddysurpris@gmail.com

- LinkedIn: www.linkedin.com/in/rolddy-surpris-8574b0265