DSC-Phase 1 Project

Aircraft Risk Analysis for Private and Commercial Enterprises

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BUSINESS UNDERSTANDING/BRIEF

- The goal of this project is assist to companies that are looking to enter the aviation industry but do not have any expertise in said industry.
- The objective is to identify the aircrafts that pose the lowest risk for Private and Commercial use.
- The study has been done using aviation accidents that occured between 1962 and 2023.

A few disclaimers to note:

- The study data does not include any financial data which is critical of the airplane **Makes** and **Models**
- No of successful flights done by each Make/Model has not been made available. This is extremely dangerous as the data can negatively impact commonly used planes

DATA CLEANING/ANALYSIS

The following steps were taken to ensure that the data was cleaned:

1. Columns that had no relevance to the business problem were dropped. Empty rows were also dropped.
2. Using appropriate data analysis methods, certain categorical columns with empty entries were replaced with “most likely” results. Empty numerical columns were replaced with average figures.
3. Pilot error related accidents were categorised to differentiate between Aircraft and Pilot accidents
4. Case sensitivity was removed for categorical columns

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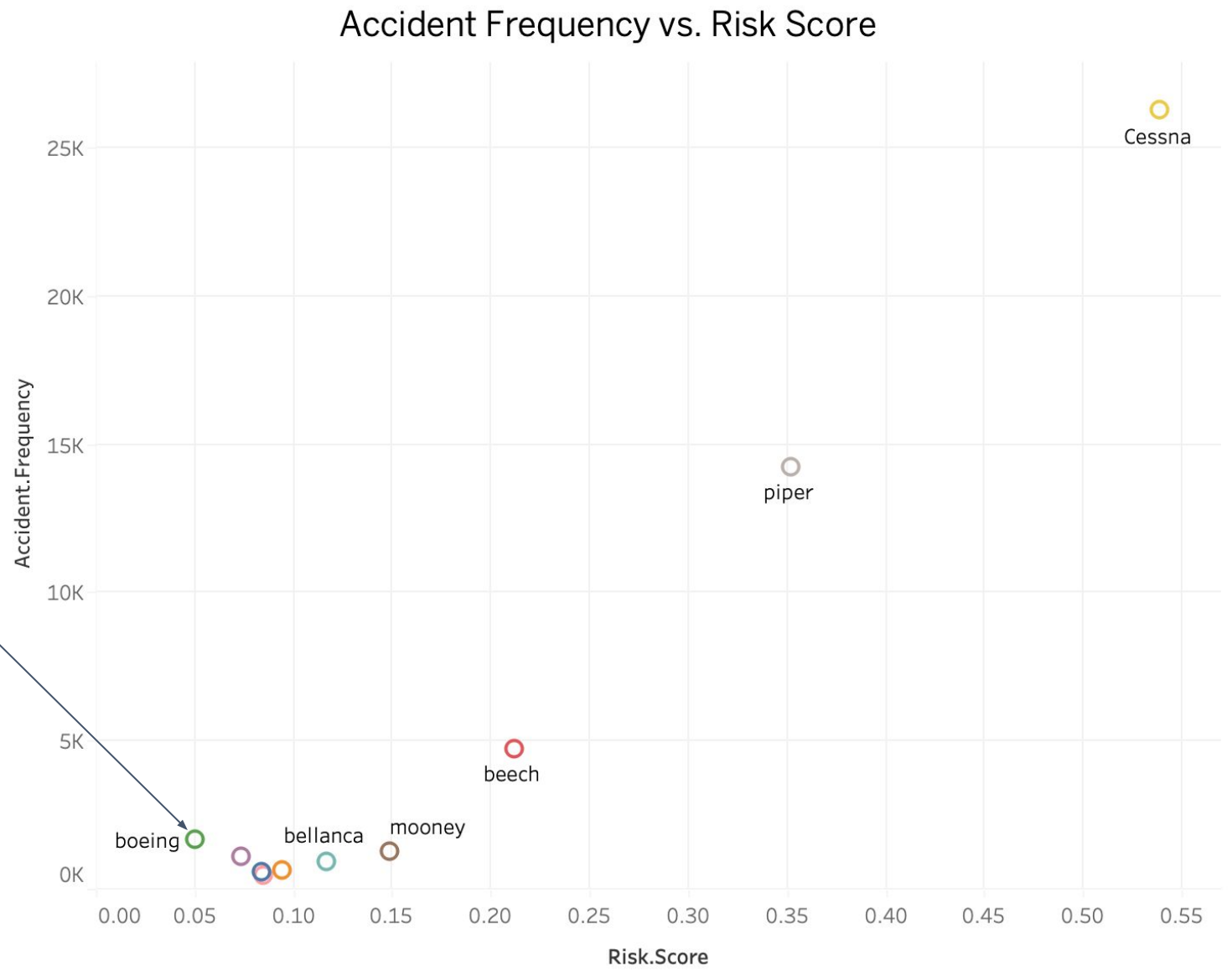
In order to measure risk analysis, certain metrics were created:

1. Fatality Rate
2. Pilot Error Rate
3. Risk score - A combination of the accident frequency, fatality rate and pilot error was used in order for us to compare the different Aircraft Makes/Models.

RISK ANALYSIS EXAMPLE

- Plotting a graph that shows the accident frequency in relation to the risk score enables us to compare which plane models are the not risky to start with. Boeing would be a good example.

- Graph shows a positive correlation between the two metrics. Without the total number of successful flights, I believe that the dataset it too skewed to provide and accurate recommendation



RECOMMENDATION

- **Recommendation 1:** Only purchase aircrafts that have a low risk score
- **Recommendation 2:** Gather more financial and aircraft usage information in order to make a more informed decision
- **Recommendation 3:** Purchase aircrafts that require less pilot training as this can directly have a negative financial impact. Pilot training is related to the number of pilot error related accidents.