



AVIATION AIRCRAFT PROJECT

MAUREEN IMANENE



Overview

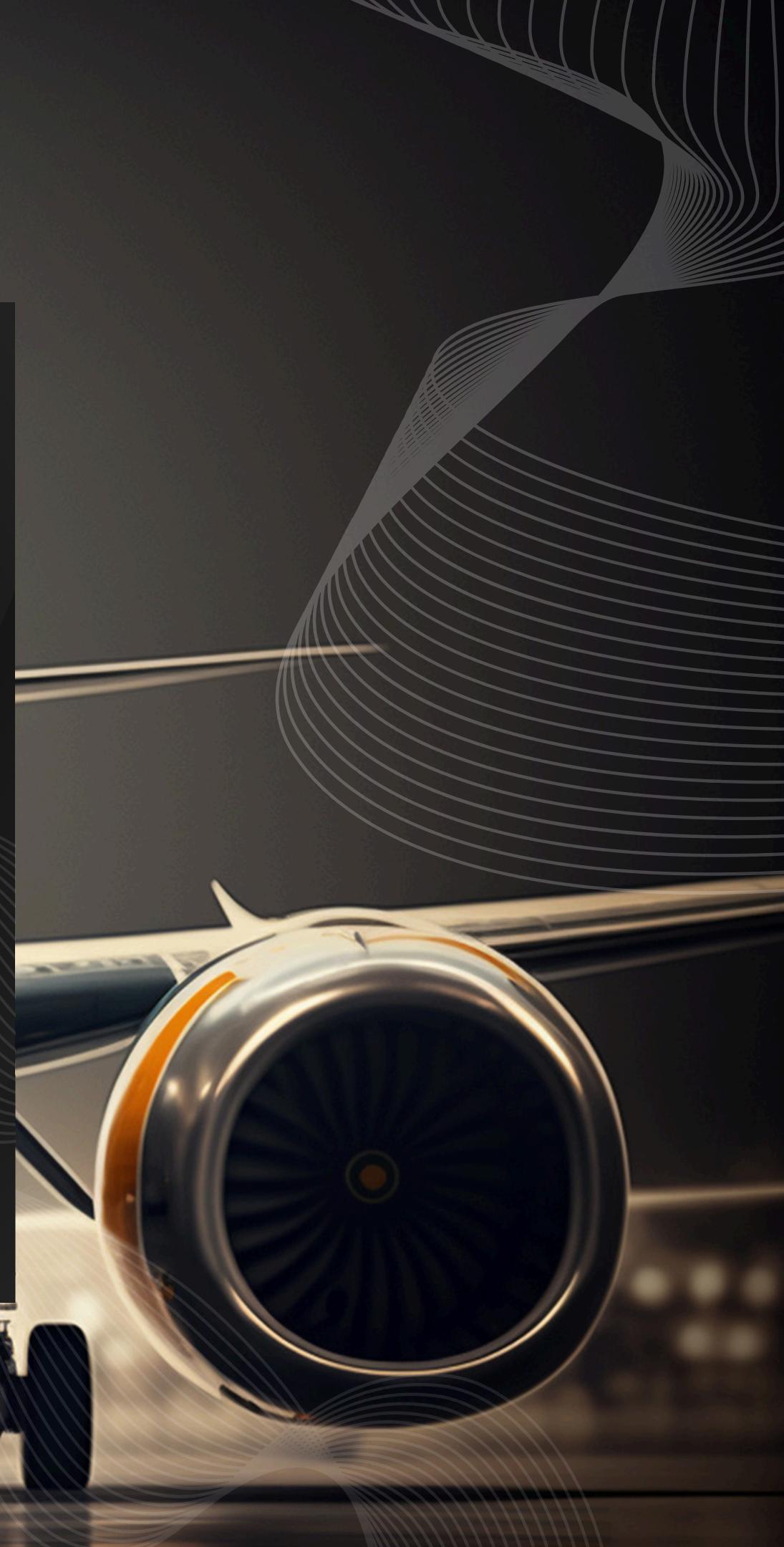
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Introduction

Duckline Company is expanding in to new industries to diversify our portfolio. We are interested in purchasing and operating airplanes for commercial and private enterprises.

The main objective is to go through aviation accidents data and determine which aircrafts are the lowest risk for the company to start this new business endeavor from the findings.



Objectives

The objective of this project was to give recommendations for aircrafts that pose the lowest risk for the company in regards to accidents.

In-order to realise this objective, i took the path illustrated below.



About the Data

Data from the National Transportation Safety Board that includes aviation accident data from 1962 to 2023 about civil aviation accidents and selected incidents in the United States and international waters was used for this project.

This data set had 88889 rows and 31 columns.

Data Limitations

- VERY LARGE DATASET - The dataset was a very large one (This is supposed to be a good problem) however in our case we had:
- NON-RELEVANT COLUMNS - There were very many columns that weren't relevant to us in answering the question at hand . for example; Latitude, Longitude, Airport_Code, Amateur_Built, Schedule, Air_Carrier, Aircraft_Category, Far_Description, Report_Status etc.
- MANY NULL VALUES -There were very many null values present , in some columns more than half of the data was made up of null values.
- NAMING INCONSISTENCIES -Inconsistencies with naming/labeling of the air-craft makes & models , where one exact make is written in several different ways using fullstops, commas or hyphens. Thus they are interpreted as different/distinct makes .

Data Cleaning

To clean the data I :

- **REMOVED NON-RELEVANT COLUMNS:**

I removed columns with data that was not assisting me to answer the question at hand.

- **MISSING VALUES:**

I checked for missing values and dealt with them on a case by case basis by removing some and replacing others with None.

- **STANDARDIZATION:**

I standardized irregular make & models names so that each make was represented in a uniform manner for easier and more accurate interpretation.

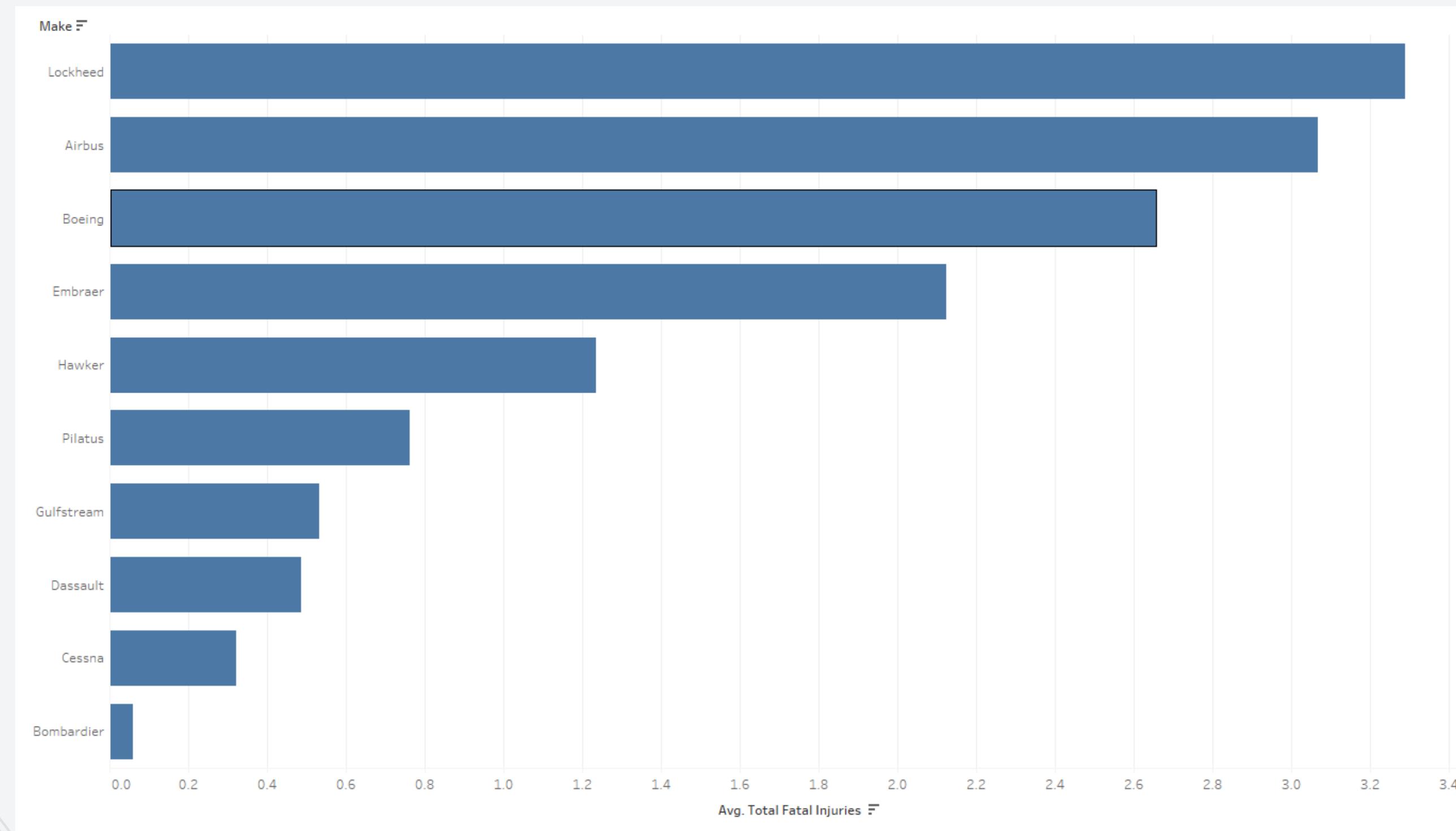


Private Aircraft Recommendation

I recommend the GULFSTREAM aircraft make For the PRIVATE DIVISION. Because;

- Safety Record: Gulfstream has a lower number of total accidents compared to other private aircraft manufacturers.
- Injury Severity: Higher proportion of minor or uninjured incidents, indicating effective safety measures.
- Engine Reliability: Fewer engine-related incidents, reflecting robust engine performance and maintenance protocols.
- Weather Resilience: Better handling of adverse weather conditions, resulting in fewer weather-related accidents.

FATALITY RATE BY MAKE BAR GRAPH

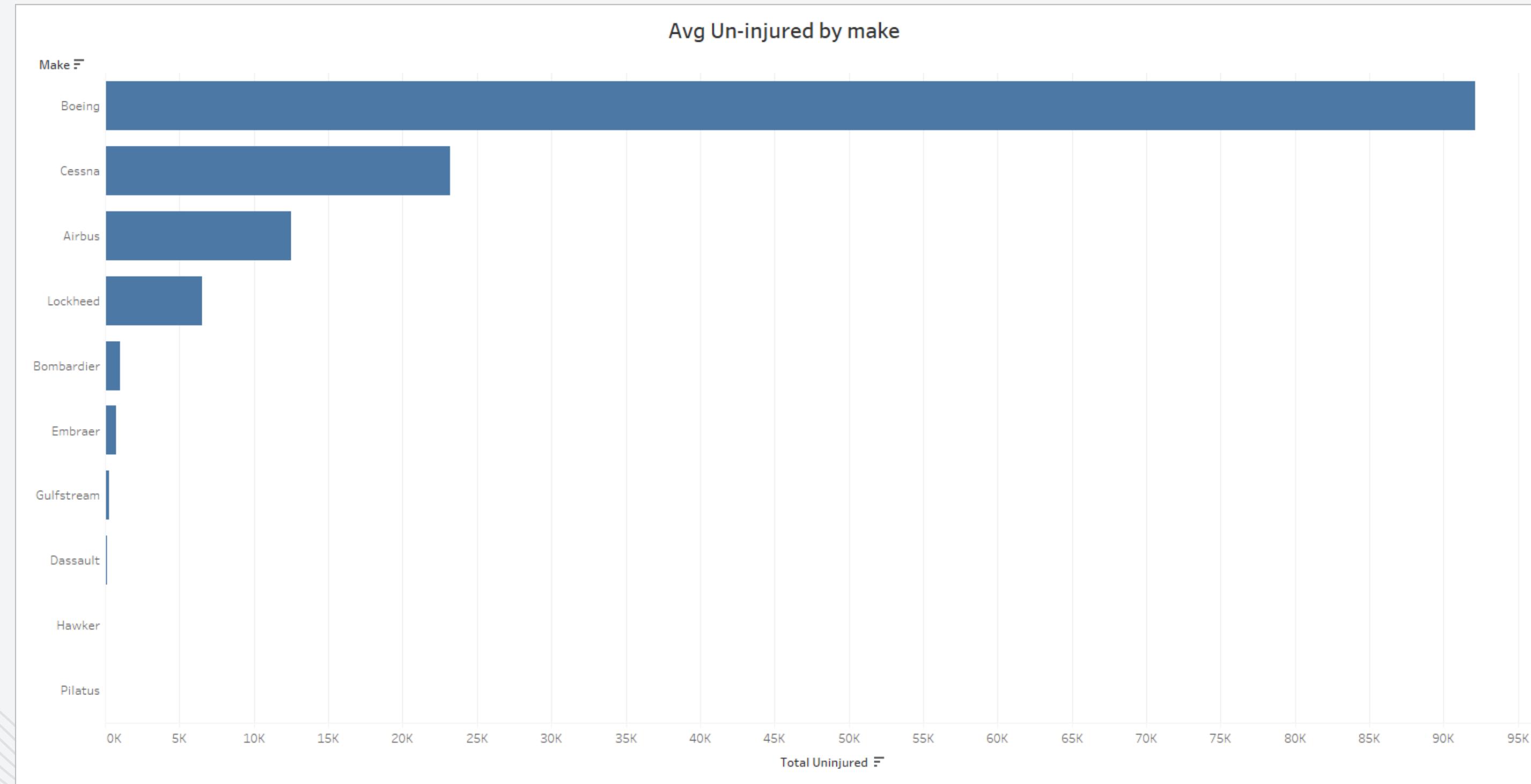


Commercial Aircraft Recommendation

I recommend the BOEING aircraft make for the COMMERCIAL DIVISION. Because;

- Safety Record: Boeing maintains a relatively low accident rate despite a high volume of operations.
- Injury Severity: Lower fatality rate compared to other commercial aircraft manufacturers, showcasing effective safety features. &
- High Uninjured passenger numbers in the accidents.

UNINJURED PASSENGERS BAR GRAPH

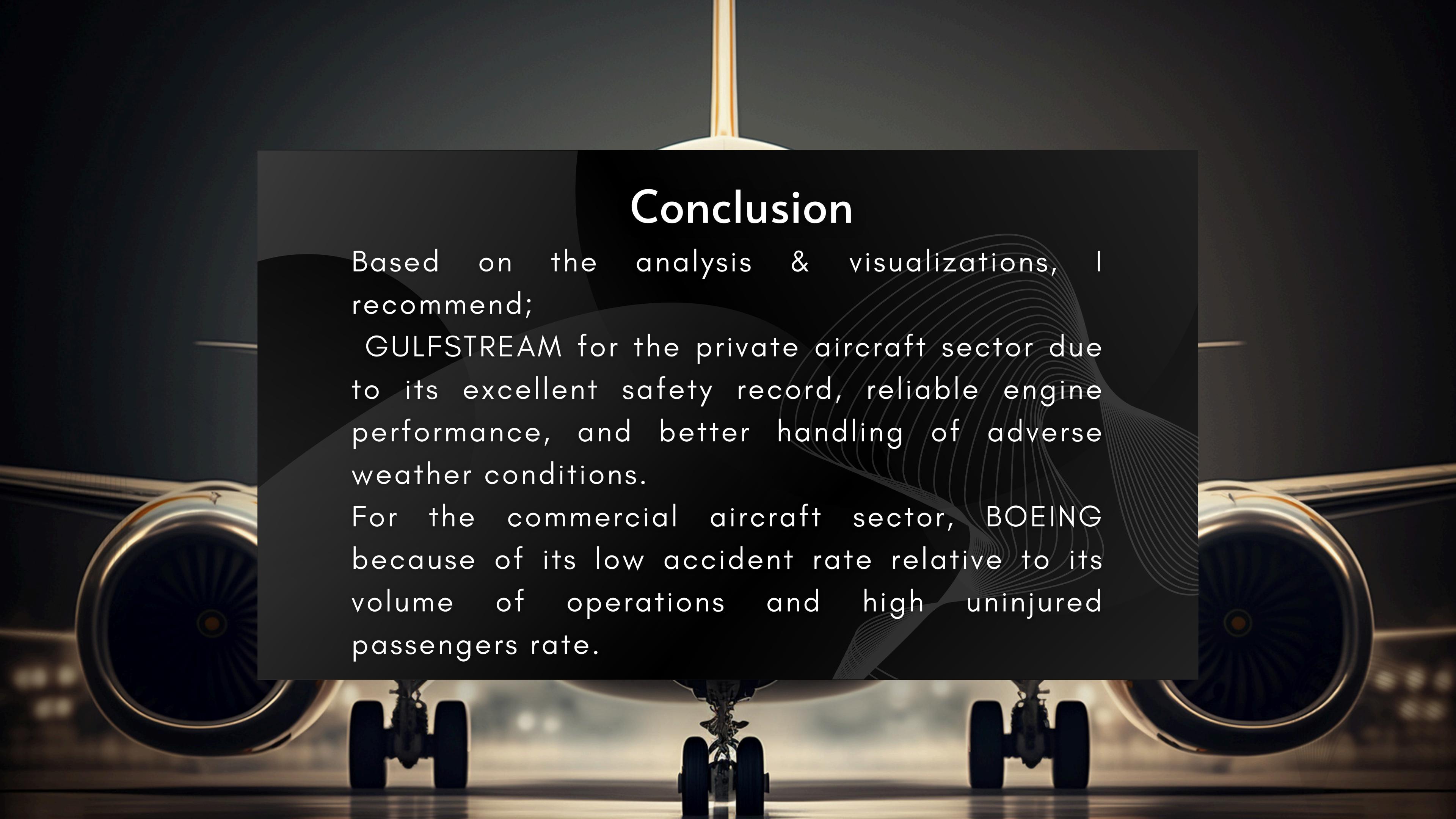


Conclusion

Based on the analysis & visualizations, I recommend;

GULFSTREAM for the private aircraft sector due to its excellent safety record, reliable engine performance, and better handling of adverse weather conditions.

For the commercial aircraft sector, BOEING because of its low accident rate relative to its volume of operations and high uninjured passengers rate.



Our team

This project was done by a team of one.

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Thank You

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