Overview

Royal Air is a modern airliner, which takes a novel approach to airlines. Ditching the notion that an airline must either target the private or commercial space, Royal Air has carved a niche for itself by effectively serving both sets of clients. As a result of this, the airline has seen rapid growth and now seeks to grow its fleet of aircraft in order to scale operations.

Business Objectives

Problem Statement

Due to the growing demand Royal air has experienced, there is a need to acquire more aircraft, for both its commercial and private operations, in order to match this demand. This project aims to analyse accident data and through this, determine which aircraft would be the most appropriate option based on safety criteria.

Business Questions

Expected Benefits

Through the successful completion of this project, Royal Air can expect to be able to make a data-driven decision when purchasing new aircraft which will be the most appropriate in terms of safety criteria.

Business Success Criteria

Success of the project will be evaluated through recommendation of the safest aircraft for the airline to purchase.

Assessment

The data available consists of aviation accidents between 1962 and 2023 collected by the National Transportation Safety Bureau (NTSB).
The most prominent risk of this project would be the scope. This is because the recommendation will be based solely on aircraft safety and does not include other factors which may be important such as fuel consumption. In addition, the data does not contain all aircraft in service and instead only has aircraft that have been involved in accidents or incidents of some sort. Therefore, there is the possibility that the most appropriate aircraft is one that is not in the data as it may have not been involved in any event recorded by the NTSB. In order to mitigate this risk, further studies should be done to evaluate aircraft based on other metrics.

Project Goals

- Clean data in order to remain with only relevant aircraft.
- Analyse the data based on safety criteria
- Identify the safest aircraft
- Make final recommendations

Project Success Criteria

The project will be considered a success upon completion of analysis of the data and two aircraft are selected to satisfy both commercial and private aviation sides of the business and recommendations made.

Data Understanding

The data provided by the NTSB consists of 90348 rows and 31 columns. It contains features such as: Aircraft Make and Model, as well as information about casualties as a result of aircraft related Events (incidents or accidents).

Data Preparation

The dataset is quite extensive with several features which are not relevant to the scope of this project, thus during the cleaning process, several of these columns will be ignored, however in the case that they contain a significant amount of null values.

Recommendations

Further studies should be carried out as it may be preferable to select an aircraft that has had no prior Events over an aircraft that has high survivability in the event of an accident.