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README

Airplane Purchase Risk Assessment

Author: Florence Joy Aran

Project Overview

The objective of this analysis is to evaluate and determine low-risk aircrafts to be purchased by our company, Mawingu Group of Companies as we gear towards expanding our portfolio and breaking into the aviation industry.We aim to opeate airplanes for commercial and private enterprises hence we need to determine the potential risks of aircrafts.

This project analyzes aviation accident data from the National Transportion Safety Board, covering civil aviation accidents and selected incidents that occured in the United States and other countries from 1962 to 2023.By extensive data analysis of this dataset, we aim to identify aircrafts with impeccable safety records.

The major focus areas for this analysis will be on quantifiable metrics like aircraft damage, total fatalities in accidents while comparing them to aircraft categories, make and engine types. Ultimately, Mawingu group of companies aims to build a foundation for long-term success in the aviation industry by prioritizing the safety of its crew and customers.

Business Problem

Inorder for Mawingu Group of Companies to expand its portfolio into the aviation industry, we have to understand the risks associated with purchasing and operating airplanes for both commercial and private enterprises. Choosing aricraft models know to be safe is not only important for our customers' safety but also for the business's finances and reputation.

Assessing historical aviation accident data offers a valuable opportunity to identify key trends, patterns and risk factors linked to different airplane models. This data driven approach will enable us to make informed decisions, as we will prioritize aircraft models with proven track records of safety and avoid those with recurring safety issues.

Data Understanding

The goal is to explore the National Transportation Safety Board data and identify key features that we can use to assess the risks associated with various aircrafts.

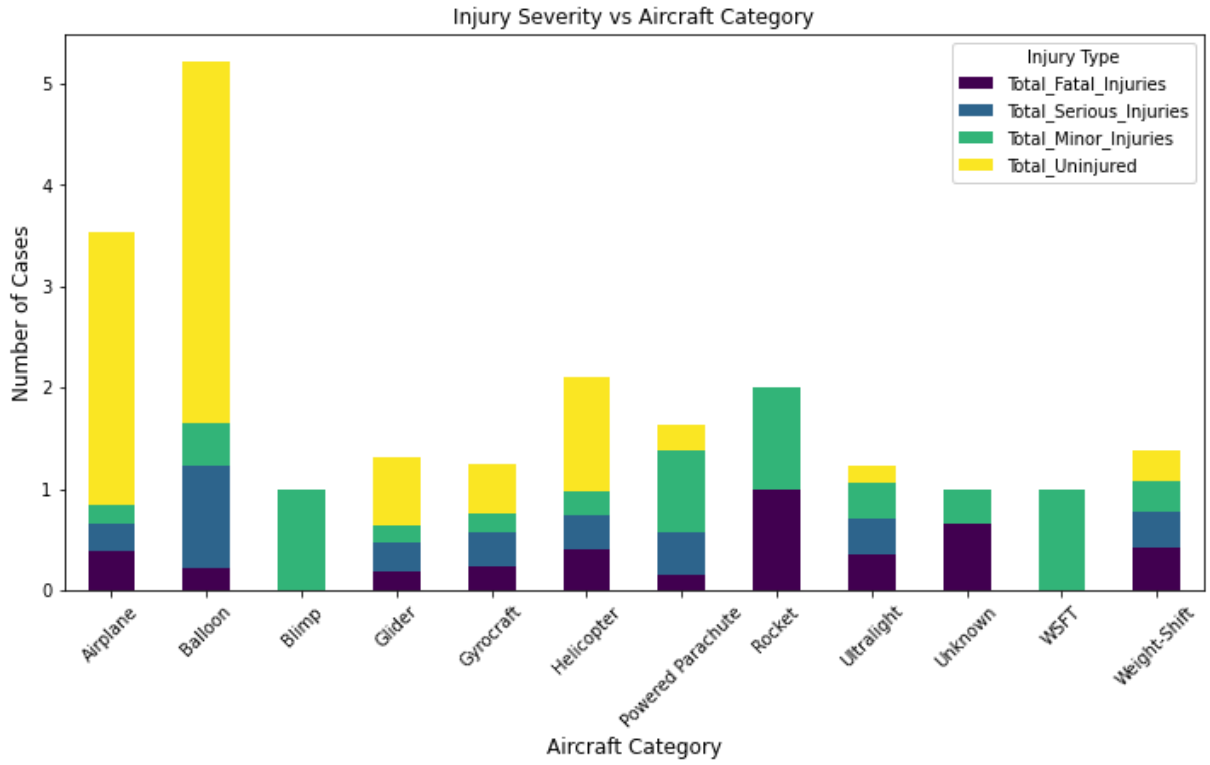
Data Cleaning

After exploring the data, I need to clean the data to make it easier to work with. There are columns and rows that might not be useful for our analysis and we are better of dropping them.

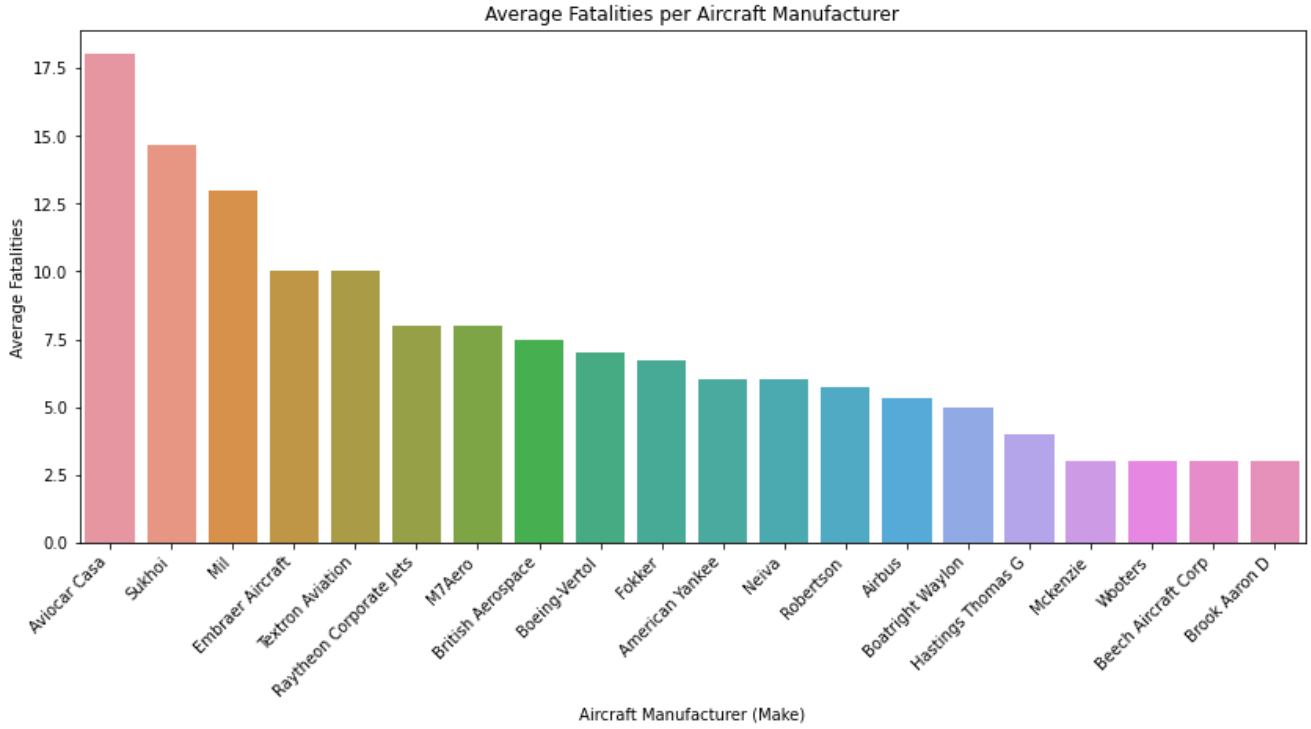
Data Visualizations

We will graphically analyze key variables and their relationships to identify risk factors, patterns and trends across the dataset. The desired outcome of this is to deduce clear and actionable insights for Mawingu Group's aviation business decisions.

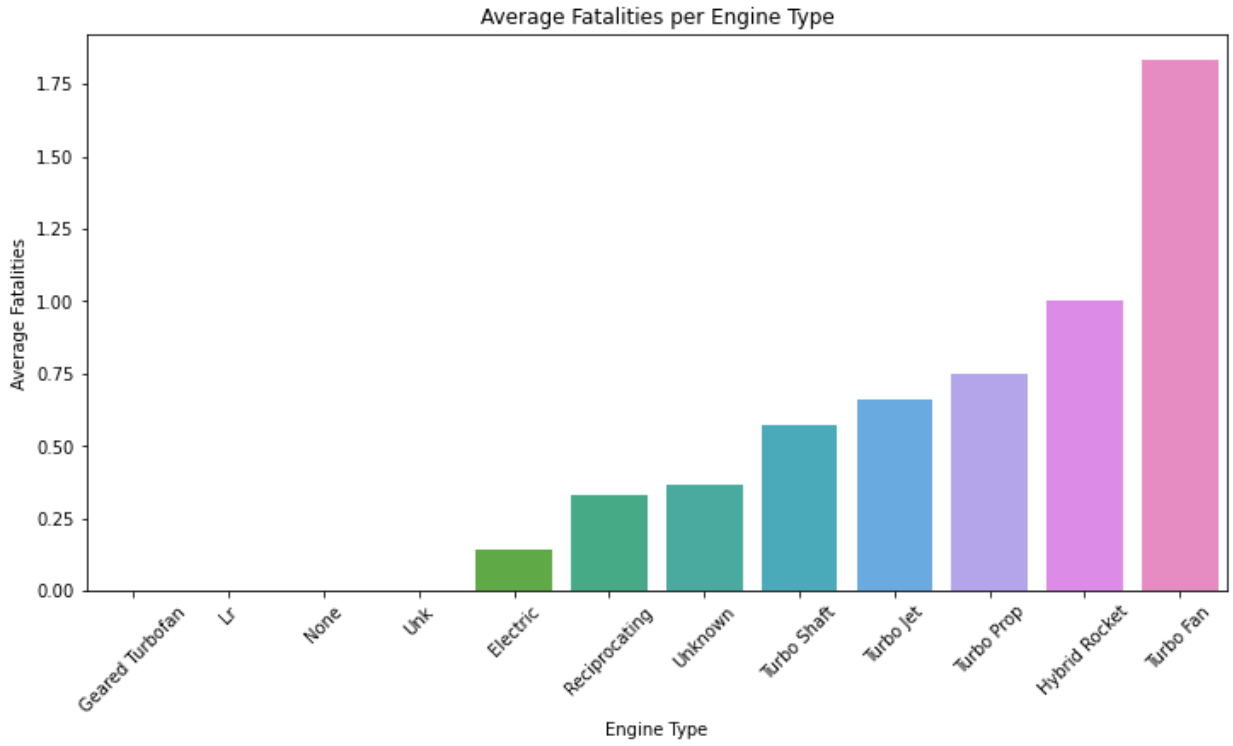
This analysis shows the average number of different injuries(fatalities, minor, serious, uninjured) across different aircraft categories. We an see that most aircrafts had fairly more uninjured people than they did fatalities when accidents/incidents ocurred.



By analyzing the relationship between the make/manufacturer vs average the total fatal injuries, we are able to identify the manufacturers with a history of higher fatalities. This could potentially be due to flaws in their manufacturing or design, or not having proper maintenance or safety procedures.



This analysis elucidates how the complexity, performance, and operational dangers of various engine types vary. We therefore can identify the engine types that have had the most/least fatalities in the event of an accident by analyzing the average number of fatalities linked to each engine type. Turbo fan engine has the highest average fatalities potentially due to the high operating speeds, increased fire hazards from fuel loads, larger passenger capacity and complex failure risks.



Conclusions

Penetrating into the aviation industry necessitates selecting the right aircarfts that guarantee reliability, operational efficiency and safety. Through this analysis, we have established trends that provide critical insights into how different manufacturers, aircraft types and engine configurations contribute to accident occurances and overall safety.

One of the key findings is that the type of aircraft and its safety measures are very vital. Inasmuch as most of the aircraft categories were involved in accidents, it is important to note the number of uninjured people was significantly higher in some aircrafts than fatalities.

Using the event date time, we are able to see total fatalities over the years. We are able to see years that had the least fatalities and do further analysus to understand what safety features were implemented in those years to mitigate accident occurrences.

Lastly, by analysing total fatalities against engine types, we are able to identify engine types deemed to be safer and have less fatalities than others.

Recommendations

Based on the analysis, here are my recommendations:

1. Prioritize aircrafts and manufacturers with proven safety records - having analysed the injury severity for

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