AVIATION RISK ASSESSMENT ANALYSIS

Presented to you by John Isaac

Project Overview

The goal of the project is to analyze aircraft accident data from the National Transportation Safety Board in order to identify the lower risk aircraft types for the company's new aviation division as the company dives into new business, specifically in the aviation sector.

Business Understanding

Our company is expanding into the aviation industry and needs to determine which aircraft types present the lowest risk for the company to purchase and operate. This decision must be informed by historical aviation accident data, which will help in understanding the risk profiles of various aircraft. Some of the key business questions to ask are: 1. What is the distribution of accidents over time? 2. What types of aircraft have the highest and lowest risk based on historical accident data? 3. What are some of the factors leading to most aviation accidents?

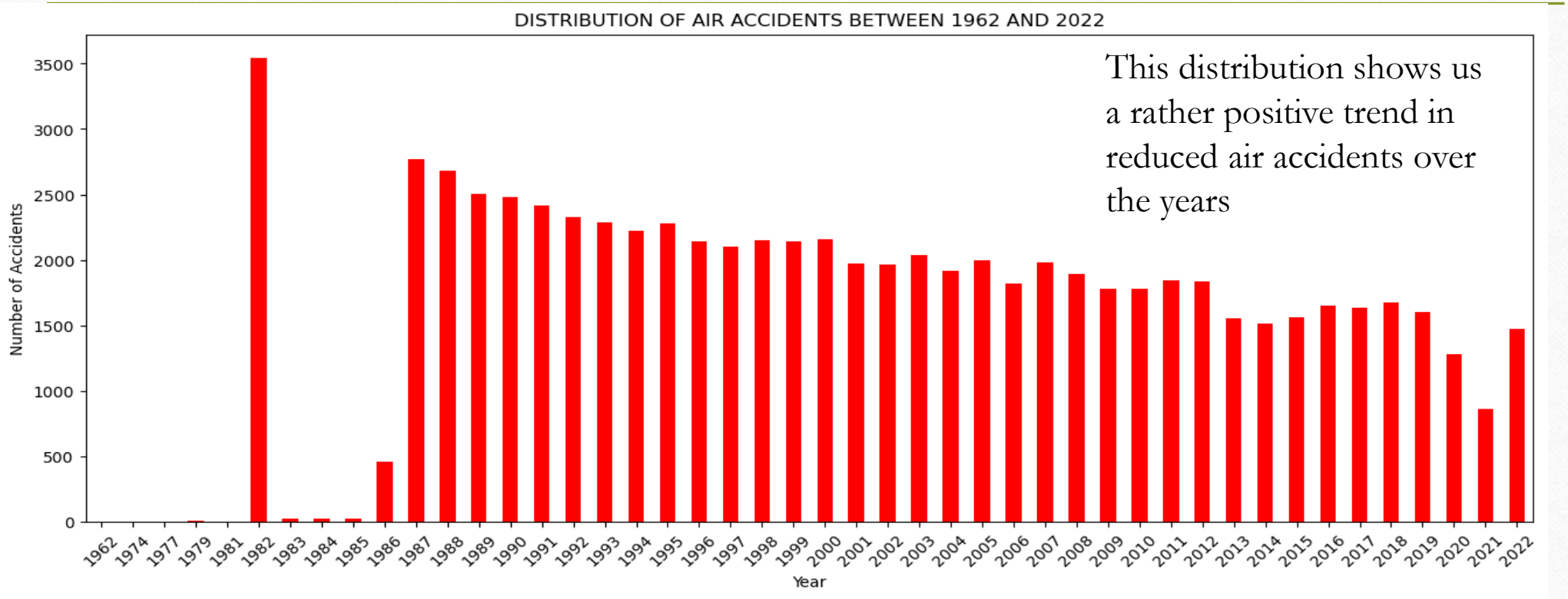
Data Understanding

The dataset is sourced from the National Transportation Safety Board covering aviation accidents from 1962 to 2023. The dataset contains a number of record of accidents(over 80000)with details such as :

- Aircraft type
- Engine type
- Number of fatalities
- Aircraft Damage and more

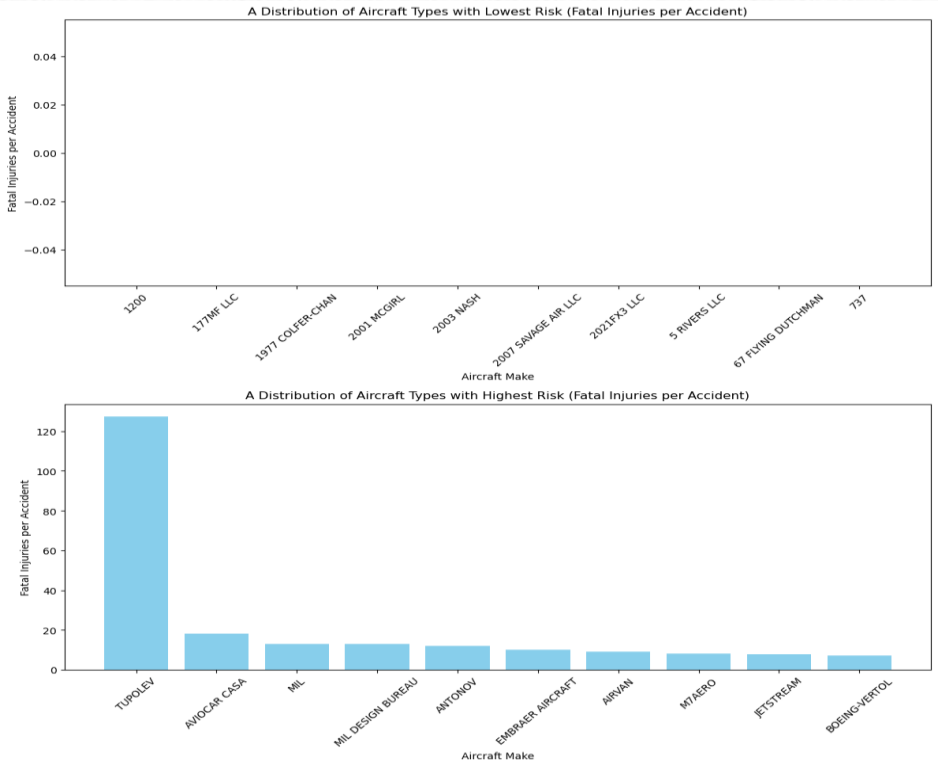
Data Analysis and Visualizations

AIR ACCIDENTS BETWEEN 1962 AND 2022



This distribution shows us a rather positive trend in reduced air accidents over the years

VISUALS FOR TOP 10 RISKIEST AND LEAST RISKY AIRCRAFT BY MAKE

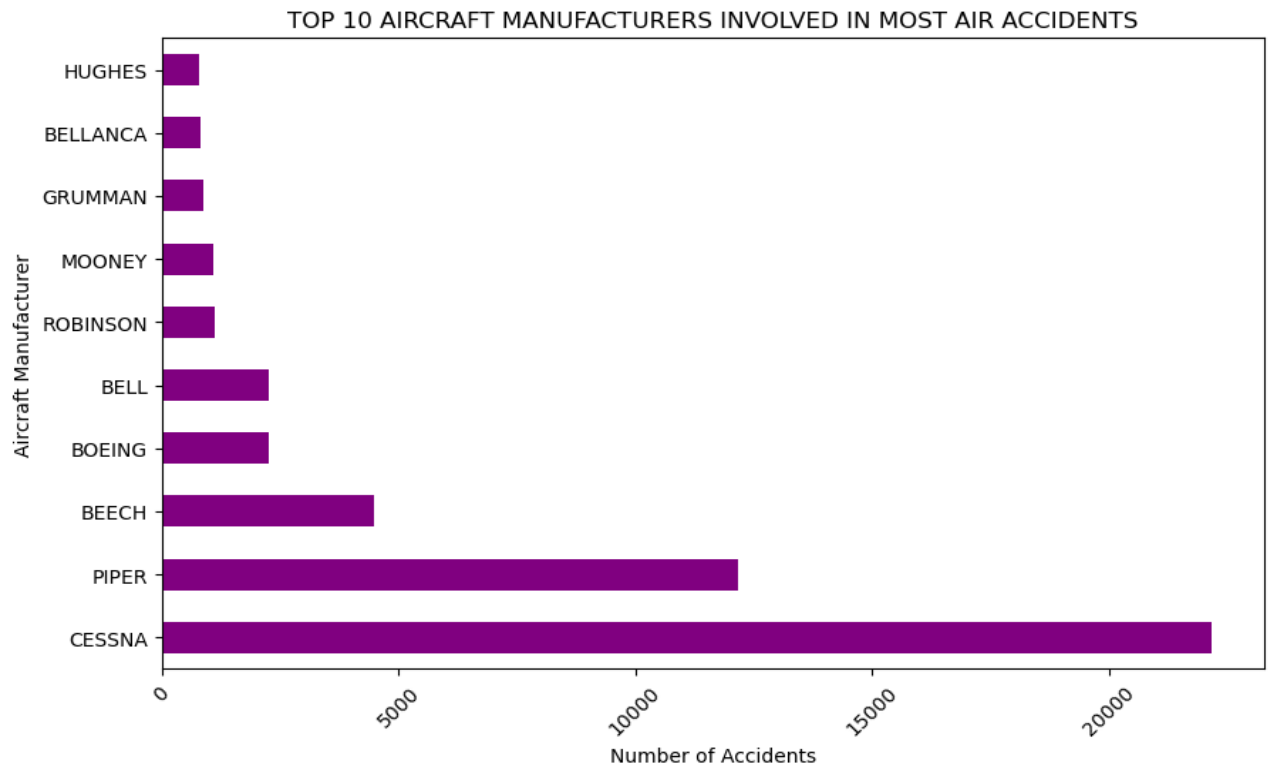


-This distributions show us the top 10 aircraft makes with the lowest and highest risks as per fatalities per accident respectively.

-Plane makes like 1200, 737, 2003 NASH may be considered least risky as they have low fatalities per accident. This means such aircrafts have enhanced safety measures befittingly.

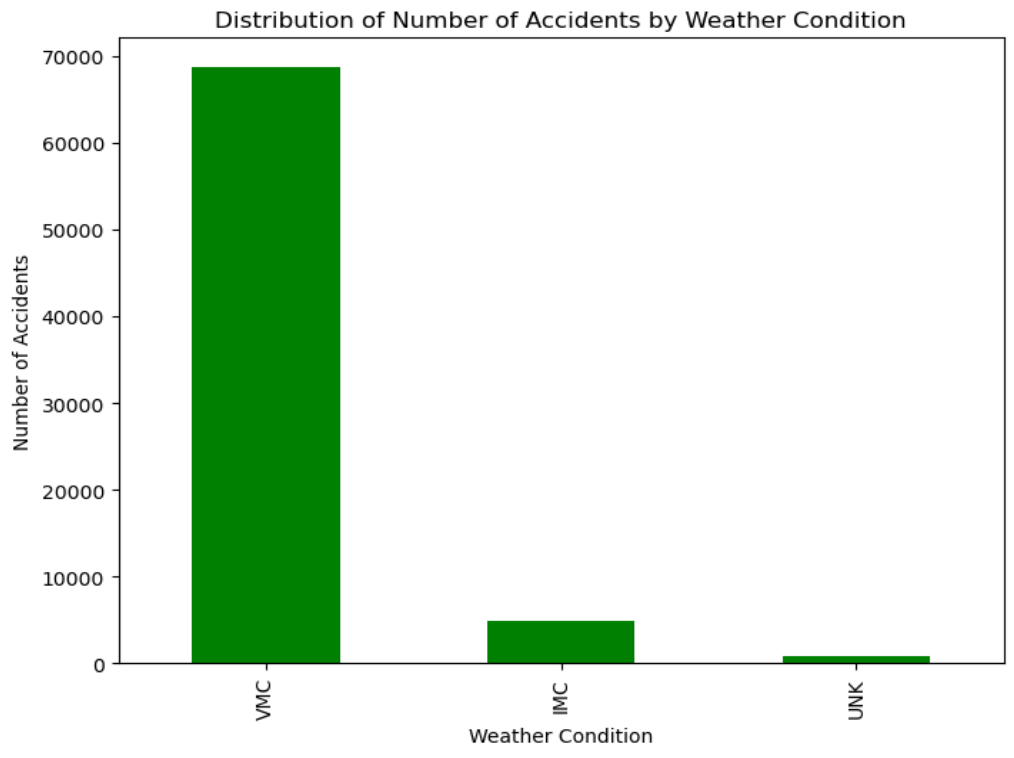
-On the other hand, as per fatalities per accident, TUPOLEV may not be taken into consideration by the company as it has a high number of fatalities per accident

TOP 10 AIRCRAFT MAKES WITH HIGHEST NUMBER OF ACCIDENTS



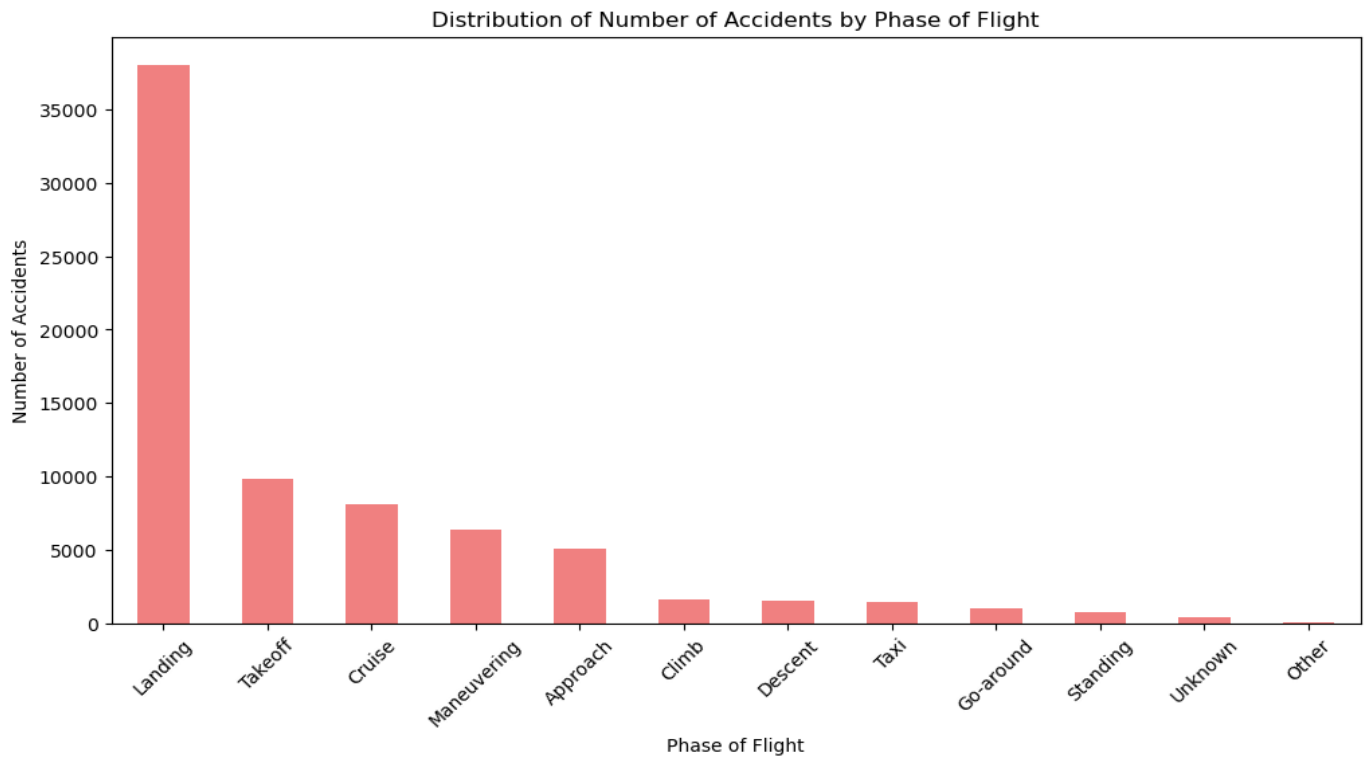
In this distribution, the CESSNA contains the highest records of number of accidents.

VISUAL FOR THE NUMBER OF ACCIDENTS BY WEATHER CONDITION



This visual shows us which weather condition has the highest number of accidents with the weather condition 'VMC' being a weather condition that causes majority of aircraft accidents

VISUALS FOR NUMBER OF ACCIDENTS AS PER PHASE OF FLIGHT



It appears to be that majority of the accidents occur during the landing phase of flight.

Conclusions

In conclusion, we may draw several insights from our analysis:

- ✓ Decreasing Trend in Accidents:

Over the past decades, the overall number of aviation accidents has decreased, reflecting the positive impact of improved safety measures and technological advancements.

- ✓ Aircraft Risk Assessment:

The analysis identified aircraft types with the highest and lowest risk based on fatal injuries per accident. This information is crucial for making informed decisions on aircraft purchases, emphasizing the importance of choosing makes with a proven safety record.

- ✓ Factors Contributing to Accidents:

Weather Conditions- Accidents are frequently associated with Visual Meteorological Conditions (VMC), often due to pilot error, highlighting the need for enhanced pilot training.

Phase of Flight- The landing phase is particularly prone to accidents, suggesting the need for focused safety measures during this critical period.

Recommendations

- INVESTING IN LOW RISK AIRCRAFT:

Based on the analysis, certain aircrafts have low fatalities per accident thus it is recommended that such aircraft be prioritized for purchasing. This decision will enhance safety and improve the company's reputation on safety.

- ENHANCING PILOT TRAINING:

Since majority of the accidents occur under VMC weather condition due to pilot errors, it is encouraged to take further action on training pilots in advanced techniques to reduce human error.

More Recommendations…

- IMPROVING SAFETY DURING LANDING:

Many of the accident occur during the landing phase and it is recommended to enhance safety measures during this critical phase such as conducting specialized landing training for pilots and enhancing runway safety procedures and ground support.

- ADOPTING ADVANCED SAFETY TECHNOLOGIES:

Investing in the latest safety technologies can further mitigate risks such as setting advanced weather radar technology and traffic anti-collision system.This is likely to reduce the risk the number of accidents

END OF PRESENTATION

HOPE YOU ENJOYED☺

Thank You!

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