Data Analysis on Business Potential Risks

BONA FIDE AIRLINES

Overview

- Bona Fide is expanding its horizons by venturing into a new business which involves purchasing and operating airplanes for commercial and private enterprises.
- The company seeks knowkedge of the risks involved in aircraft operation and need research done to provid meaningful insights that will assist in making the right decisions when purchasing th aircraft to start up the business.
- This involves analysis of complex data to uncover patterns and develop insights. From these insights, we've come up with predictive models and recommendations for the business stakeholders.

Dataset

- The dataset for this process has been provided by the National Transportation Safety Board. It entails aviation accident data from 1919-2023, civil aviation accidents abd selected incidents in the United States (including the specific regions in the US that the accidents occurred) as well as International waters.

Information on the Dataset

- The dataset provided the following information:

a) The count of aircraft accidents that have occurred over the years from 1919-2023.

b) The number of fatalities per accident.

c) The specific type of aircrafts and operators involved in the accidents.

- All the information above was very impactful in our ultimate findings and recommendations for this business.

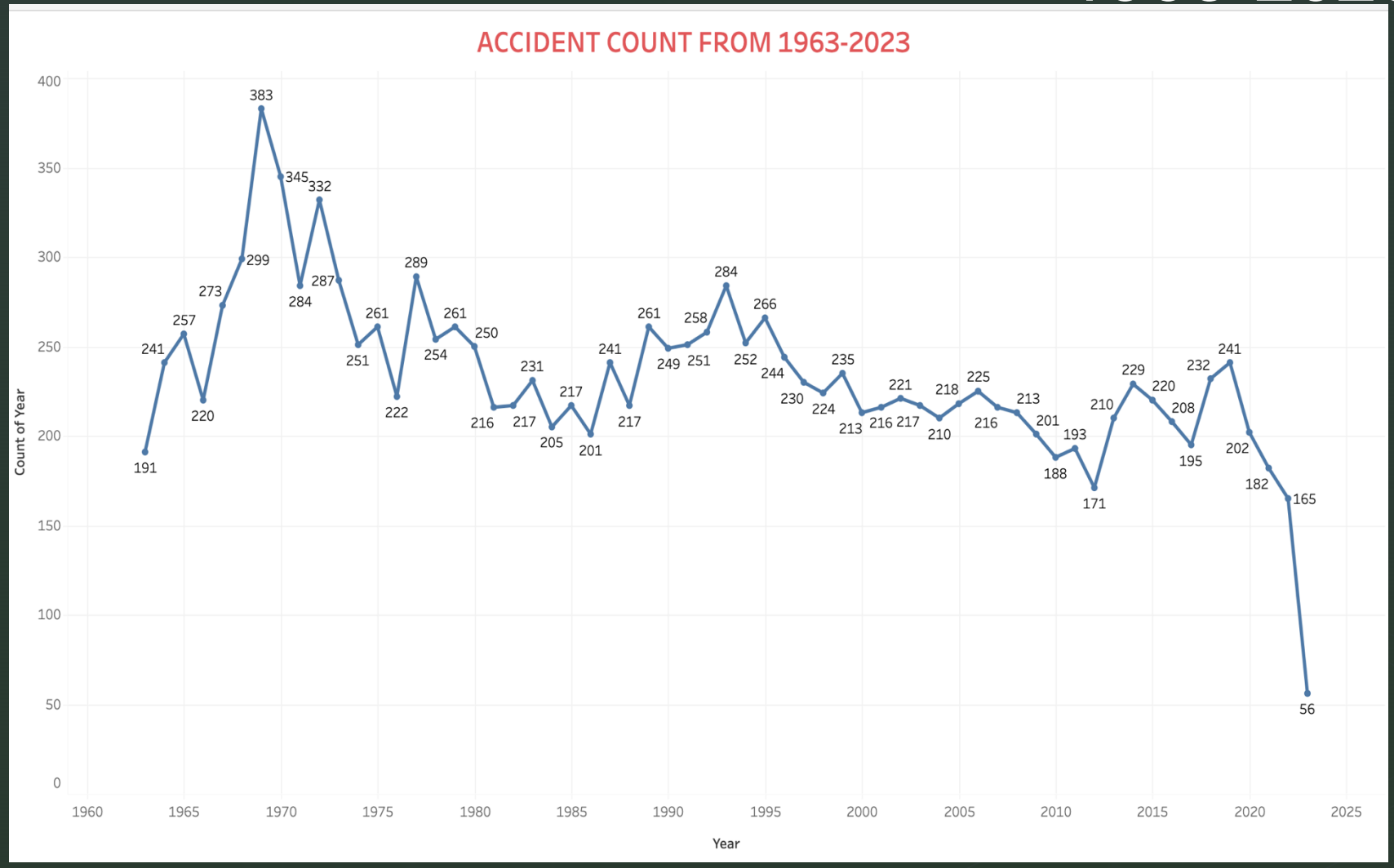
Data Analysis

- The dataset includes records of over 20,000 aviation accidents between 1919–2023. The pattern in which the accidents occurred indicates a decline in accidents over time.
- This basically shows that newer models are less prone to accidents probably due to improved technology that has increased the safety standards of the modern aircraft.
- The number of fatalities has also significantly reduced over time. The count was very high in the seventies and has reduced as compared to recent years. This also proves the improvement in safety standards of operating the aircrafts currently.

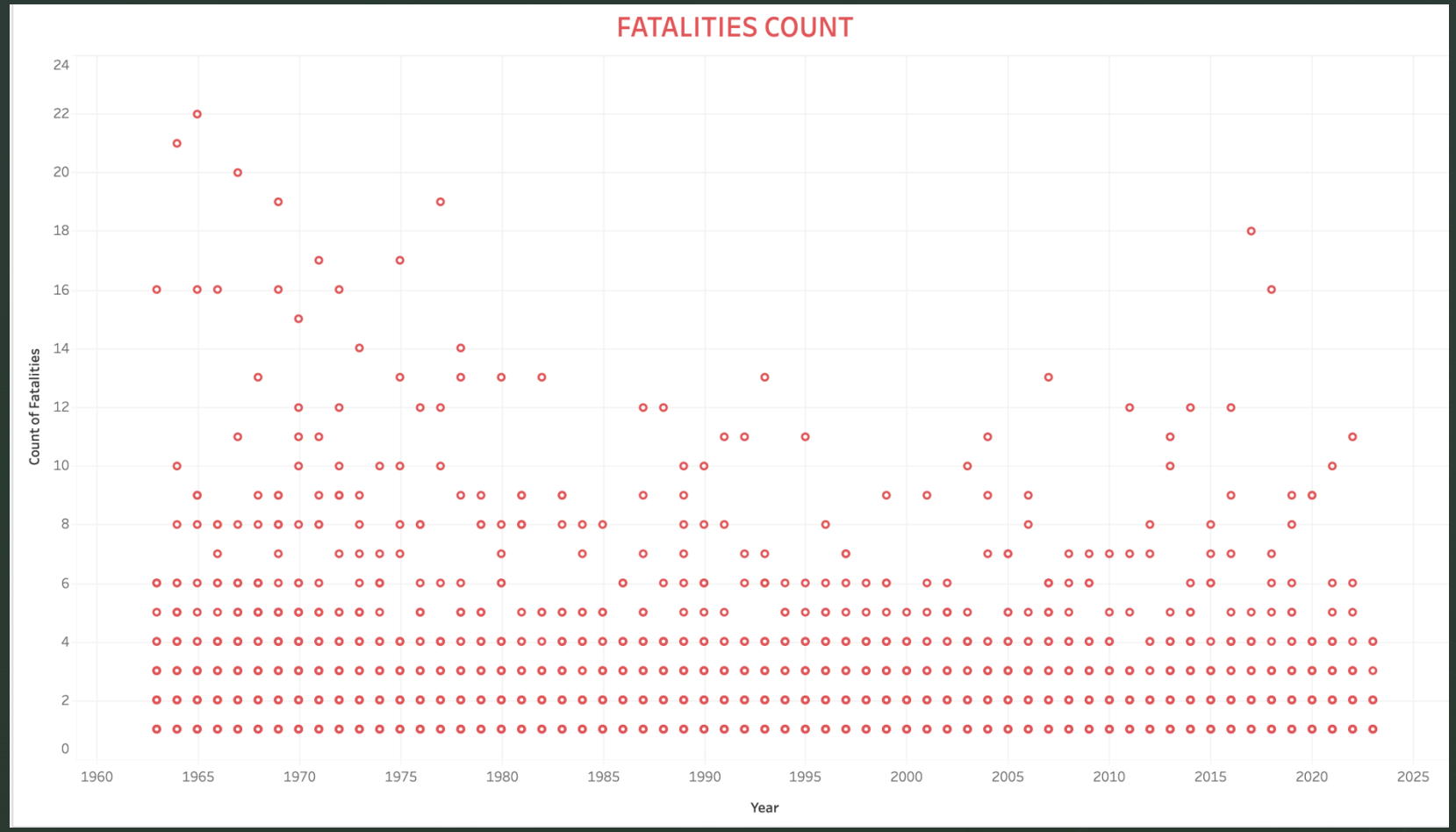
Visualizations

- For the visualizations we use a sample of the data from 1963-2023 for more clarity and focus on modern aircraft.
- The following are visualizations that offer a clearer illustration of the analysis:
  - Line chart - identifies the trends of accidents experienced over the years.
  - Scatter plot – displays the fatalities count per accident hence determining the severity of the accidents.
  - A bar chart – shows the top aircraft types involved in the accidents. This will help the company in choosing the lowest risk types of aircraft to purchase.
  - A map – with regions where accidents occurred from least to most.

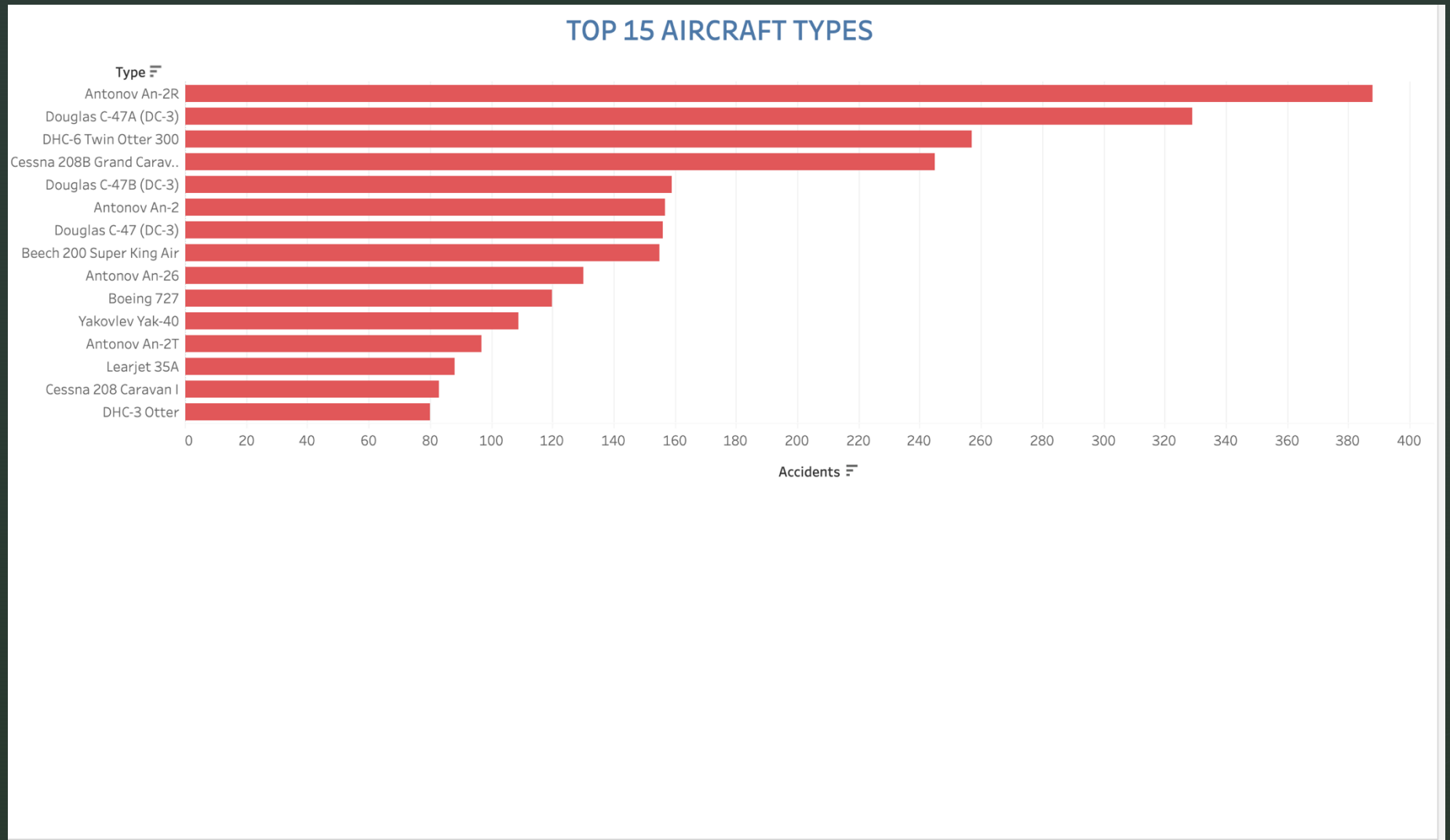
A line chart of accident counts from 1963-2023



A Scatter plot showing fatalities count per accident from 1963-2023



Top 15 Aircraft types involved in the Accidents



Recommendations

- In conclusion, it is recommended that the company focuses on newer models considering that accidents have reduced over time. This indicates that modern aircraft has adapted more advanced safety technology. Older models may be cheaper to purchase but riskier and costly to maintain.
- Overall the commercial and private airplane business is low risk because the number of fatalities from aviation accidents have dropped. With modern safety systems and strong maintenance of the aircraft, the company will thrive.
- Consider purchasing ***'Learjet 35A, Cessna 208 caravan, DHC 3 otter'.*** Despite these aicraft types being among the top 15 involved in accidents, this also indicates that they are among the most commonly used aircraft. According to our data they show lower risk with a less accident count of below 100 as compared to other top 15 aircraft types that have up to 380.