Aircraft Safety Analysis

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Overview

- The goal of this project is to determine the aircraft with the least risk of accident for a company seeking to diversify its portfolio by venturing out into the aviation industry specifically operating airplanes for commercial and private enterprises.
- I can put forward recommendations to the company based on the analysis to help the company become a key player in the aviation industry.

Business understanding

- My company is expanding to new industries to diversify its portfolio, specifically, they are interested in purchasing and operating airplanes for commercial and private enterprises.
- However, there is a lack of knowledge about the potential risks of dealing with aircrafts.
- I am tasked with determining the lowest risk aircraft for the company to venture into the aviation industry..

Data Understanding

- The data utilized in this project was collected by the National Transportation and Safety Board between 1962 and 2003.
- It contains data from aviation accidents that occurred in that time.
- The key variables that were used include:
    - Make
    - Model
    - Number of Engines
    - Total Fatal injuries

Data Preparation and Cleaning

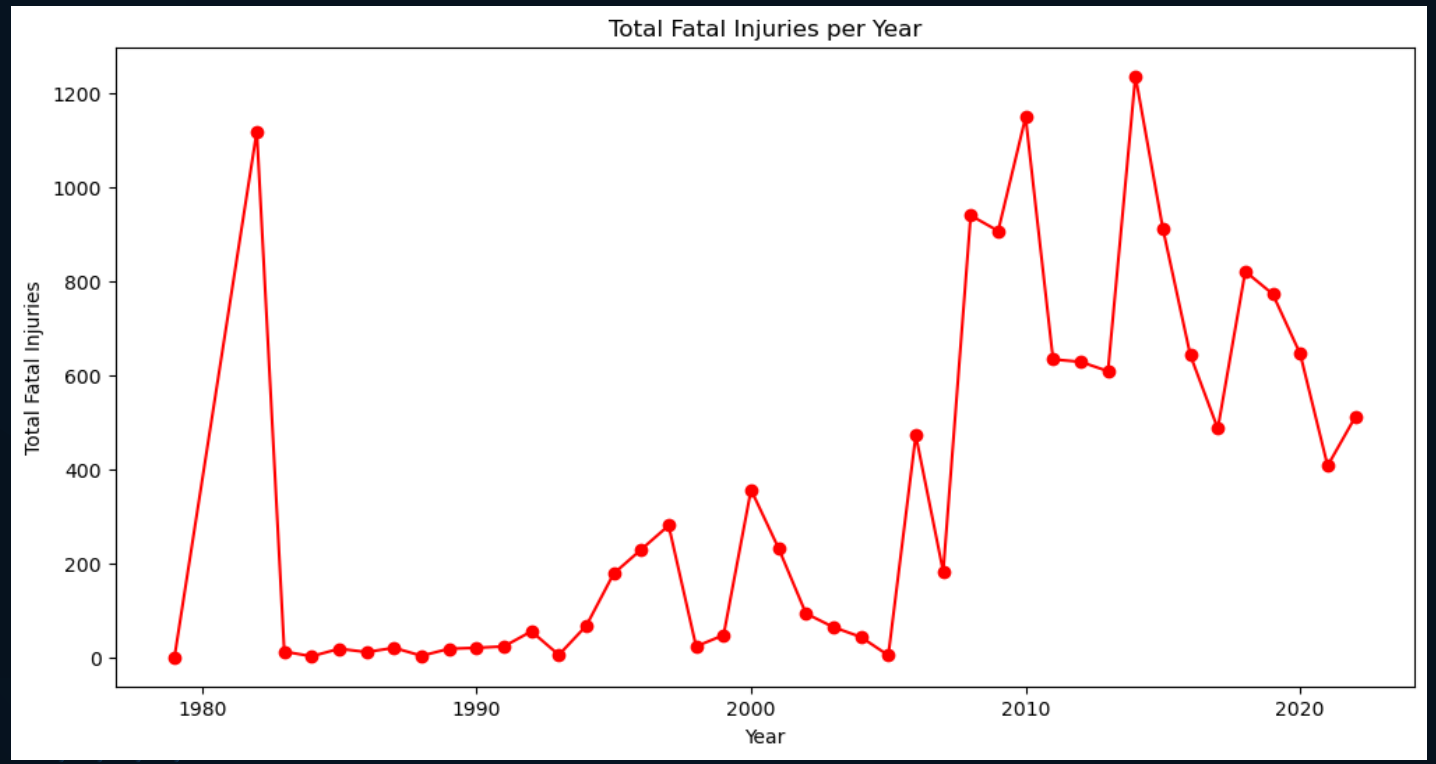
- The data preparation process included the following steps:
    - Checking the shape of the data-frame.
    - Confirming the column datatypes
    - Formatting column values
    - Changing column names for easier readability.
- During data cleaning missing values were handled and irrelevant columns were removed.

Recommendations

- After analysis was done, I have the following recommendations for the company:
  - The company should consider purchasing aircrafts built from 2015 onwards to ensure compliance with the latest technology and safety procedures.
  - The company should consider selecting aircrafts manufactured by Airbus and Embraer. They are both well known manufacturers and did not suffer as many fatal injuries in accidents compared to the other manufacturers.
  - The company should consider selecting aircrafts with 2 engines or 4 engines. Twin engine airplanes are the most popular currently and did not suffer as many accidents as single engine airplanes.

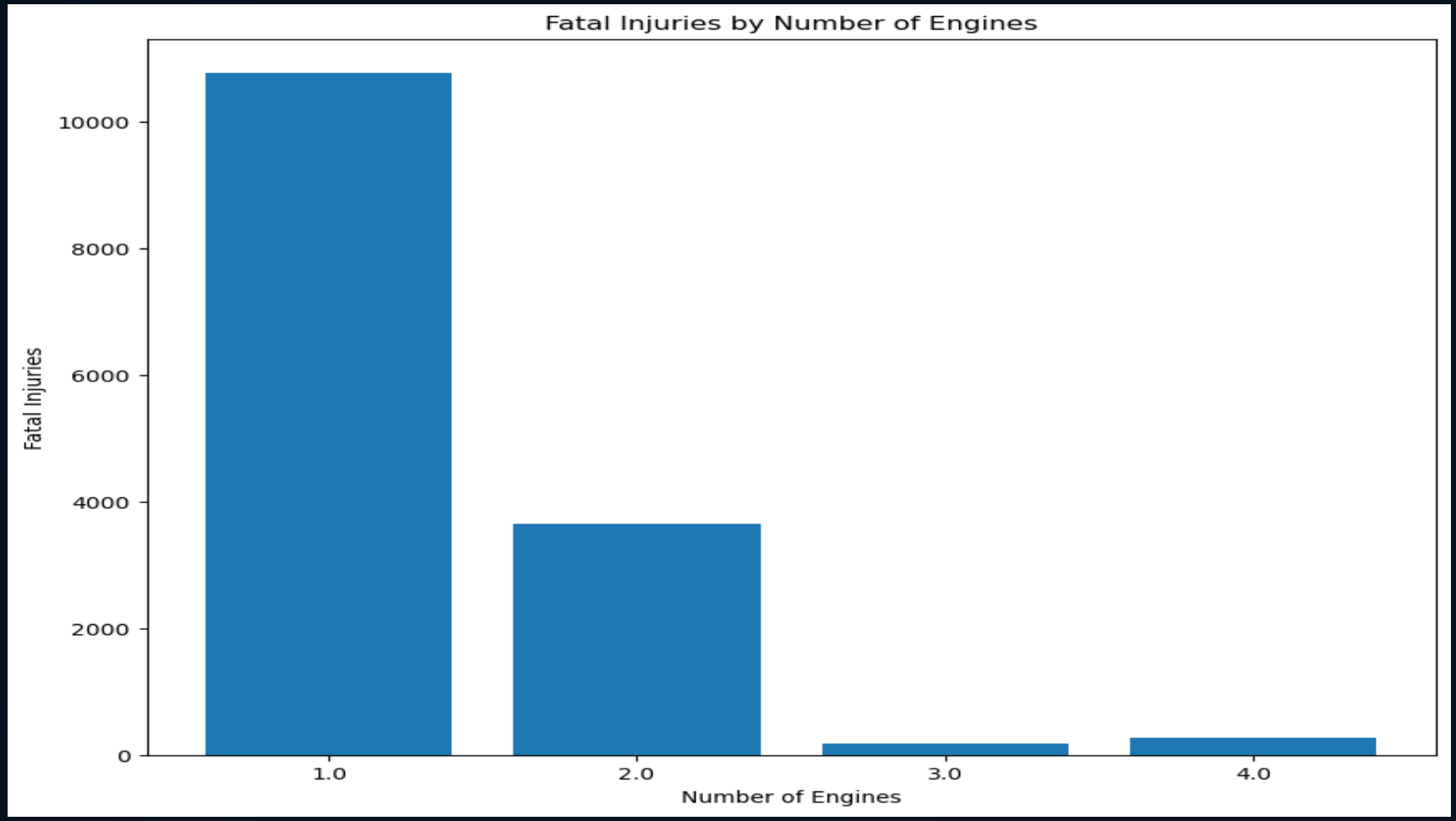
Total Fatal Injuries Per Year

- This visualization shows the number of fatal injuries suffered per year



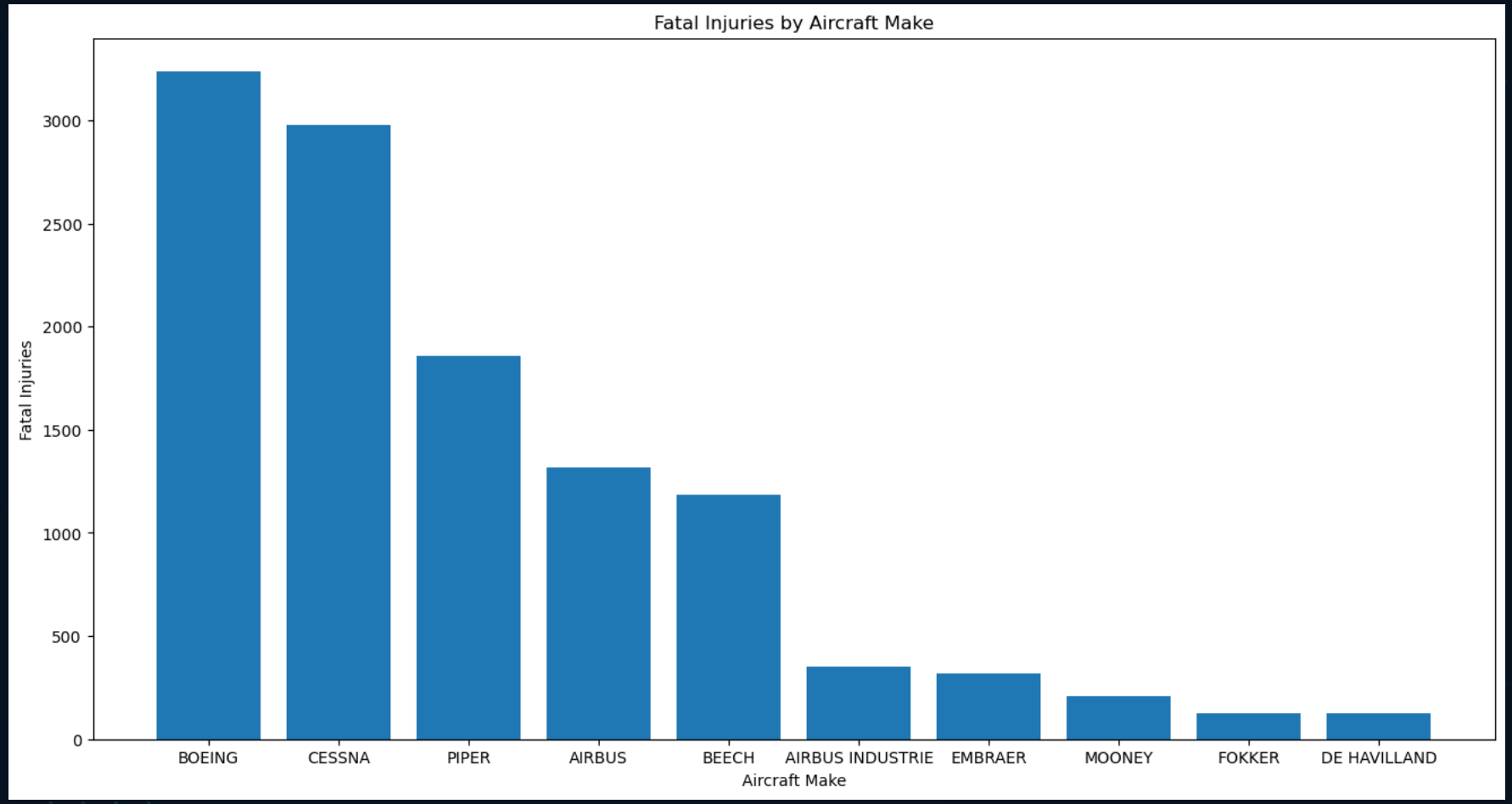
Total Fatal Injuries by Number of Engines

- This visualization shows the number of fatal injuries suffered for the different number of engines in an aircraft



Total Fatal Injuries by Aircraft Make

- This visualization shows the number of fatal injuries suffered per aircraft make.



Conclusion

- In conclusion, the comprehensive analysis done has provided useful insights for my company as we venture into the aviation industry.
- Prioritizing aircrafts manufactured beyond 2015 will ensure that the company purchases aircrafts inline with the technological advancements and safety rules.
- Furthermore, prioritizing Airbus and Embraer as the primary options of airplane manufacturer will improve safety.