Aircraft Safety Analysis

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Summary

Business Problem:

- Interested in commercial and private aircraft enterprises
- Requires a deep understanding on what aircraft will be the safest for this endeavor

Methods used:

- Utilized different data analysis methods to prepare, clean, and statistically model data of potential candidates
- Further research into aviation

Outline

- Business Problem
- Data
- Methods
- Results
- Conclusions

Business Problem

My company has decided to expand in to new industries to diversify its portfolio. Specifically, they are interested in purchasing and operating airplanes for commercial and private enterprises. This requires deeper knowledge on what airplanes will be the safest.

Things to consider:
- Engine types
- Injury rate
- Manufacture reputation

Data

The data provided for this analysis is from the National Transportation Safety Board that includes aviation accident data from 1962 to 2023 about civil aviation accidents and selected incidents in the United States and international waters.

Key variables include:
- Country
- Location
- Make
- Model
- Number of Engines
- Engine Type
- Weather Conditions
- Injury Severity
- Injury count
- Aircraft Damage
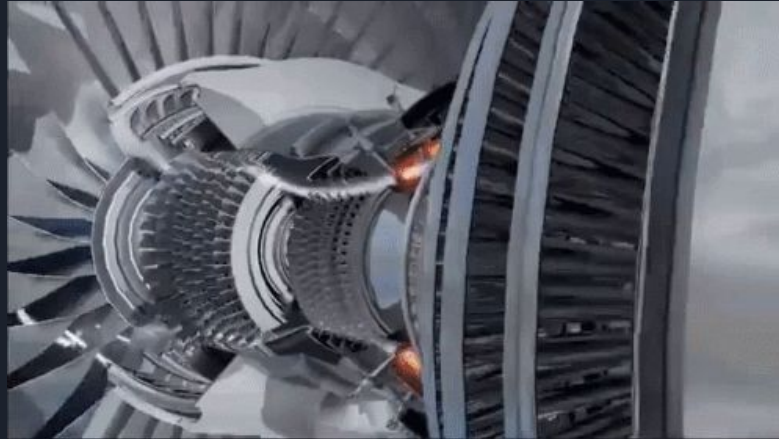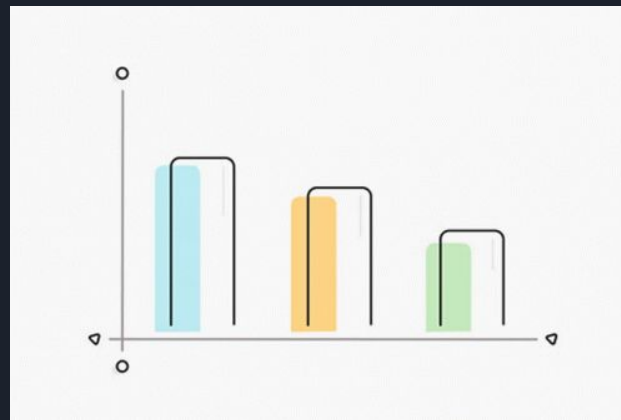
Methods

Data Prep:

- Checking Shape and Values
- Formatting Values
- Confirming Data Types

Data Clean

- Dropping Irrelevant Columns
- Handling Missing Data
- Imputation of Required Data

Statistical Modeling:
- Utilizing different methods to create useful visualizations to further support the recommendations given to the business

Results

Business Recommendations:
- Prioritize aircraft models with the lowest historical average of fatal injuries, as these suggest a better safety record.

- Consider the operational context of aircraft usage, including the frequency of flights and the environments in which the aircraft operate, to make informed decisions beyond the data presented.

- Factor in the technological advancements and safety features of newer models, which may not be fully reflected in historical data.

Conclusions

Through meticulous data preparation, cleansing, and analytical modeling, we have distilled a set of actionable insights and robust aircraft model recommendations tailored to the needs of the business. Our analysis has resulted in several potential models that align with both commercial and private operational requirements, emphasizing safety, reliability, and operational efficiency.

Thank You!

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