Aviation Accident Database Analysis for Risk Assessment

AUREL OCHIENG

INTRODUCTION

To analyze aviation accident data to determine the lowest-risk aircraft for a new aviation business venture.

which aicraft make causes most accidents?

which type of aircraft should the company invest in?

DATA SOURCE

Aviation Accident Database Synopses (Kaggle)

Link: Aviation Accident Database on Kaggle

This dataset contains records of aviation accidents and incidents including details like event date, aircraft make, injury severity, and more.

Data Overview

Number of Records: 88889 accidents

Relevant Columns:
Event Date, Location, Country
Aircraft Make, Model, Injury Severity
Total Injuries (Fatal, Serious, Minor, Uninjured)
Weather Condition, Purpose of Flight.Amateur Built ,
Number Of Engines ,Engine Type

Data Cleaning and Preparation

- Steps Taken:
- Standardizing the column names
  Removed missing and irrelevant data
- Imputed missing values where necessary (e.g., Total fatal accidents)
- Converted date and numerical columns to correct data types
- Tools Used: Python (Pandas), Jupyter Notebook

Data Analysis Approach

Key Analyses Performed:

Accident count by aircraft make
Severity analysis by injury type (fatal, serious, minor)
Correlation between weather conditions and accident outcomes
Trend analysis by year and purpose of flight

Visualizations: Bar charts and line graphs for key insights

Key Findings

Aircraft Makes with Lowest Accidents Risks]:

[hughes and boeing]

Aircraft Makes with Highest Accident Risks:

[cessna and piper]

Key Factors Contributing to Accidents:

Weather (e.g., adverse conditions)

Purpose of flight (e.g., personal flights had higher risk)

Visualizations

Business Implications

Recommendation: Based on the analysis, it is suggested that the company focus on Boeing Aircraft due to their lower accident rates.

Risk Factors:

Consider aircraft makes associated with higher risks and how operational safety procedures can mitigate potential issues.

Weather-related accidents and their impact on aviation operations.

Conclusion

Summary of Insights:
Aircraft make and model are significant indicators of accident risk.
Weather conditions and flight purpose play critical roles in accidents outcome

Next Steps:
Further data collection and monitoring as the business expands into the aviation industry.

Implementing safety protocols for identified high-risk areas.

Thanks