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dsc-phase1-project

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📖 README



Aviation Risk Analysis

Overview

This project aims to analyze aviation accident data to determine the lowest-risk aircraft models for commercial and private enterprises. The analysis will provide actionable insights for the company's aviation division to guide their aircraft purchasing decisions.

Business Understanding

Stakeholder

The primary stakeholder is the head of the company's new aviation division, responsible for making data-driven decisions on aircraft acquisition.

Key Business Questions

- Which aircraft models have the lowest accident rates?
- What are the common causes of aviation accidents?
- How do different aircraft manufacturers compare in terms of safety?
- What factors contribute most to aviation risk, and how can they be mitigated?

Data Understanding and Analysis

Source of Data

The dataset is sourced from Kaggle, containing aviation accident data from the National Transportation Safety Board (NTSB) covering incidents from 1962 to 2023.

Description of Data

- **Accident Number:** Unique identifier for each incident.
- **Aircraft Model:** Type of aircraft involved.
- **Aircraft Manufacturer:** Company that produced the aircraft.
- **Event Date:** Date of the accident.
- **Location:** Geographic location of the incident.
- **Injury Severity:** Classification of accident severity.
- **Probable Cause:** Summary of the likely cause.
- **Weather Conditions:** Environmental factors during the event.
- **Phase of Flight:** Flight phase during which the incident occurred.

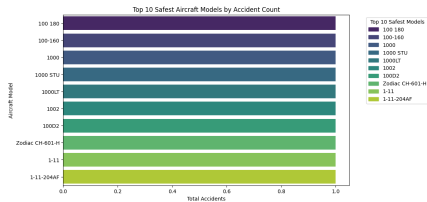
Business Objective 1 Finding

- **Lowest Accident Rates:** The analysis identifies the top 10 safest aircraft models based on accident count. These models have the lowest number of reported accidents in the dataset, making them statistically safer in terms of historical incident records.
- **Aircraft Models with Minimal Incidents:** The models **100 180, 100-160, 1000, 1000 STU, 1000LT, 1002, 100D2, Zodiac CH-601- H, 1-11, and 1-11-204AF** emerged as having the fewest recorded accidents. This suggests that these models have maintained a strong safety record over time.

Business Objective 1 Recommendations

- **Prioritization of Safer Models:** Airlines and aircraft manufacturers should consider prioritizing these low-accident models in fleet decisions, training programs, and safety regulations to enhance overall air travel safety.
- **Continuous Safety Enhancements:** Although these models have demonstrated low accident rates, ongoing improvements in maintenance, pilot training, and regulatory oversight should be sustained to ensure continued safety performance.

Visualizations



Business Objective 2 Finding

Landing Phase is the Most Critical

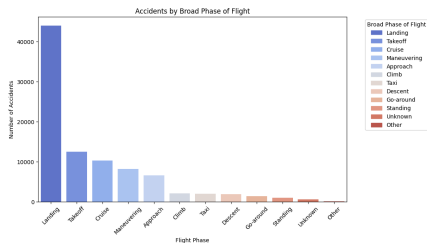
- The landing phase accounts for the highest number of accidents, significantly surpassing all other flight phases.

Business Objective 2 Recommendations

Enhanced Pilot Training and Simulation for Landing and Takeoff

- Increase simulator-based training focused on handling **landing and takeoff** emergencies, such as sudden wind shifts, engine failures, or unstable approaches.

Visualizations



Business Objective 3 Finding

Cessna and Piper have the highest accident counts

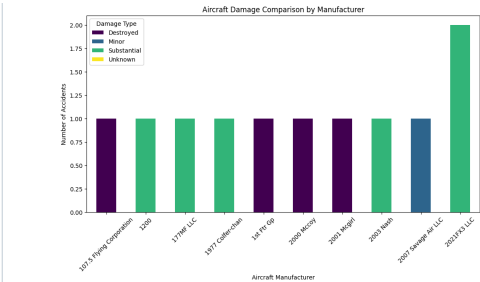
- Cessna leads with the highest number of recorded accidents, significantly outpacing other manufacturers

Business Objective 3 Recommendations

Prioritize aircraft manufacturers with lower accident rates

- Given the high accident rates associated with Cessna and Piper, the company should exercise caution when purchasing aircraft from these manufacturers.

Visualizations



Conclusion

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Configure


Create and test a Python package on multiple Python versions using Anaconda for package management.



Django

Configure

Build and Test a Django Project



Python package

Configure

Create and test a Python package on multiple Python versions.

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