

AVIATION RISK ASSESSMENT REPORT

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Project overview

The company had planned to diversify its portfolio by entering the aviation industry, aiming to acquire and operate aircraft for both commercial and private use.

This project establishes which airplanes have the fewest accidents and problems so the company can buy the safest ones first.

CRISP-DM method was used in the analysis

Business Understanding

The company wants to start a new airplane business, but doesn't know which planes are safe to buy and operate.

I was tasked to find out which airplanes have the fewest accidents and problems so the company can buy the safest ones first.

- By picking the safest airplanes, the company can:
 1. Save money
 2. Avoid disasters
 3. Build a successful new business without taking unnecessary risks.

Data Understanding

- Data source:
The data source was from Kaggle
<https://www.kaggle.com/datasets/khsamaha/aviation-accident-database-synopses>

This data is perfect for the project because it contains detailed records of aircraft incidents, allowing us to identify which planes have the most and fewest accidents.

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- Tools used were: Jupyter Notebook, Tableau(for the dashboard) were used to analyze the dataset.

The time period for the dataset has been from 1948 to 2022.

Data Preparation

1. Imported the necessary libraries.
2. Loaded the data
3. Clean the Data Types
4. Missing values and duplicates
5. Handled Outliers
6. Standardize columns
7. Saved the cleaned data

Data Analysis

- Calculated fatality ratios and accident frequencies by aircraft type

Analyzed fatal vs non-fatal accidents by aircraft

Calculated when accidents happen most

Key Discoveries

Most accidents occur during landing and takeoff phases, with some aircraft showing better performance in these critical phases.

Newer commercial aircraft have lower fatal accident rates compared to older models and smaller private aircraft.

Recommendations

- Prioritize newer models over older variants of the same aircraft type
- Invest heavily in takeoff and landing training since phase analysis shows these are the highest-risk periods
- Purchase aircraft with strong maintenance support networks
- Focus on models with readily available parts and certified mechanics
- Consider airports with better safety records for regular operations

Thank you

