Moringa School Phase 1 Data Science Project

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README

Phase-1-final-project

Overview

This project is part of the Moringa School Phase 1 Data Science curriculum. It aims to analyze aviation accident data using Python and Tableau. The goal is to explore trends and patterns in aviation accidents from 1962 to 2023.

Business Understanding

Aviation safety is critical to the success and trust of the global air travel industry. By understanding the causes and patterns of past aviation accidents, stakeholders can take preventative action.
This project explores the following key questions:

- How have aviation accidents changed over time?
- Which aircraft makes have the highest number of accidents?
- What were the most common purposes of flights involved in accidents?

Data Understanding and Analysis

The dataset used is AviationData.csv, sourced from the National Transportation Safety Board. It includes details about aviation accidents such as:

- Date of event
- Aircraft make and model
- Location
- Purpose of flight
- Nature of accident

Using Python and pandas, the data was:

- Cleaned (handled missing values and removed irrelevant rows)
- Explored using aggregation, grouping, and filtering techniques
- Visualized in both Jupyter Notebook and Tableau

Visualizations

Three key visualizations were created:

1. *Line Chart - Aviation Accidents per Year*
   Shows the trend in total number of accidents per year to understand how aviation safety has changed over time.
2. *Bar Chart - Accidents by Aircraft Make*
   Identifies the aircraft manufacturers most frequently involved in accidents.
3. *Bar Chart - Accidents by Purpose of Flight*
   Highlights whether flights were private, business, instructional, or commercial when accidents occurred.

Conclusion

This analysis revealed the following:

- The number of aviation accidents has generally decreased over the years, reflecting improvements in safety protocols.
- Certain aircraft manufacturers are involved in a higher number of reported accidents, which may reflect popularity or underlying design issues.
- Most accidents occur during personal or instructional flights rather than commercial ones, suggesting areas to target for pilot training and regulation.

These insights can help aviation authorities, training schools, and manufacturers focus on strategies for safety improvement.

📊 Interactive Dashboard

Releases

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Languages

- **Jupyter Notebook** 100.0%