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A data analysis project for aviation safety and risk assessment

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README

Flight Data Analytics

Overview

Flight Data Analytics analyzes aviation accident data to identify potential risks associated with expansion to the aviation industry as well advise on how to mitigate said risks. The analysis leverages accident data to inform decisions on aircraft acquisition, equipment purchase as well as staff training for commercial and private enterprises.

Business Problem

Our company is expanding into aviation and needs to evaluate potential risks associated with managing fleets of airplanes. The goal is to:

1.determine which aircraft are safest

2.Necessary equipment to be purchased to enhance safety

3.Necessary experience needed by new recruits as well as additional training they should undertake

Data Understanding

The data is sourced from the National Transportation Safety Board (NTSB), covering aviation accidents from 1948 to the end of 2022. It includes information such as:

1.accident severity

2.aircraft type

3.injury statistics

4.weather condition

5.plane make and model

For this particular project we will only analyse data going back six(6) years for actionable insight as requested by management

Method

We utilize data analysis techniques to clean and prepare the data, visualize key trends, and assess risks associated with aircraft types, weather conditions, equipment, and other contributing factors.

Results

We can see that majority of accidents, even though they are non-fatal, happen during clear skies and weather conditions when pilots rely on visual references and stimuli

image.png

Modern aircrafts are all relatively safe due to strict regulations by relevant authorites. Even though we can clearly see the Airbus A320 and Boeing 737 have more accidents than the rest

image-2.png

This graph shows that majority of accidents happen during clear weather conditions while pilots use visual flight rules(VFR)

image-3.png

Conclusion

The analysis conducted leads to the following observations and recommendations

1.Invest in advanced training programs for pilots to enhance navigational skills and advanced situational awareness.

This is because most accidents happen during clear skies/ visual meteorological conditions suggesting that over reliance in visual references leads to errors.

2.Consider other factors such as RELIABILITY,EFFICIENCY,VERSATILITY AND PRICE while purchasing aircrafts instead of accident data.

This is because even though we can clearly see the Airbus A320 and Boeing 737 have more accidents than the rest its crucial to note that it's not a reflection on poor safety. These two are the most widely used planes

3.Adopt advanced navigation and auto pilot systems to enhance safety even clear weather conditions

Most accidents happen during VFR conditions which are deceptively safer but pose unique challenges

For more information

See the full analysis http://localhost:8888/notebooks/Desktop/Flight-Data/Flight-Data-Analytics-Notebook.ipynb

See the dashboard
https://public.tableau.com/views/FlightDataAnalytics_17328704277680/FlightDataAnalyticsdashboard?:language=en-US&publish=yes&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

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