AIRCRAFT RISK ANALYSIS

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01

Overview

- Analyzed historical aviation accident data from 1962 to 2022
- Dataset includes over 26,000 cleaned aviation accident records
- Key focus areas:
  - Aircraft manufacturers and models
  - Injury severity and fatality rates
  - Damage levels and external factors (weather, flight purpose)

02

Business Understanding

- The company is expanding into new industries to diversify its portfolio.
- One area of interest is purchasing and operating airplanes for commercial and private use.
- My goal is to help stakeholders identify low-risk aircraft types for safer operations.

02

Business Understanding

KEY BUSINESS QUESTIONS

1. Which types of aircraft and manufacturers should we prioritize to minimize risk?

2. Are there specific aircraft models or manufacturers we should avoid due to safety concerns?

3. Should we consider engine type as a key factor when selecting aircraft models for purchase?

03

Data Understanding

1

- Dataset sourced from the National Transportation Safety Board (NTSB) Aviation Accident Database
- Includes aviation accident records dating from 1962 to 2023
- Contains over 88,000 aviation event records , including accidents and incidents

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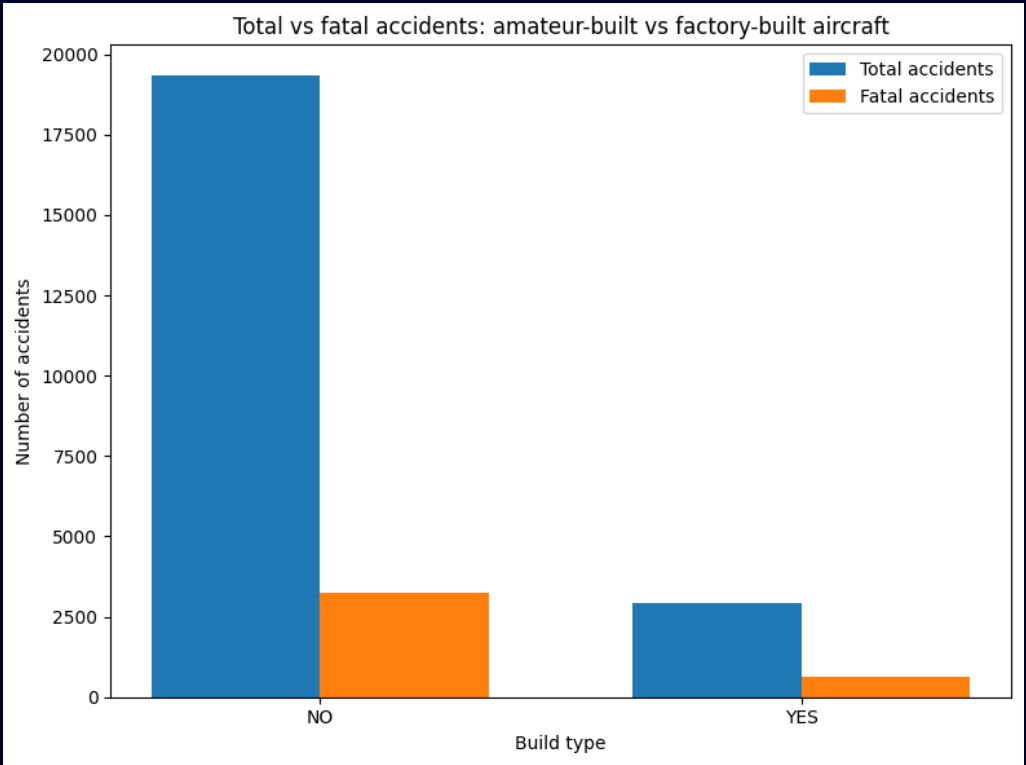
- A cleaned version of the original dataset was used
- Final dataset includes 26,134 accident records after filtering and cleaning

04

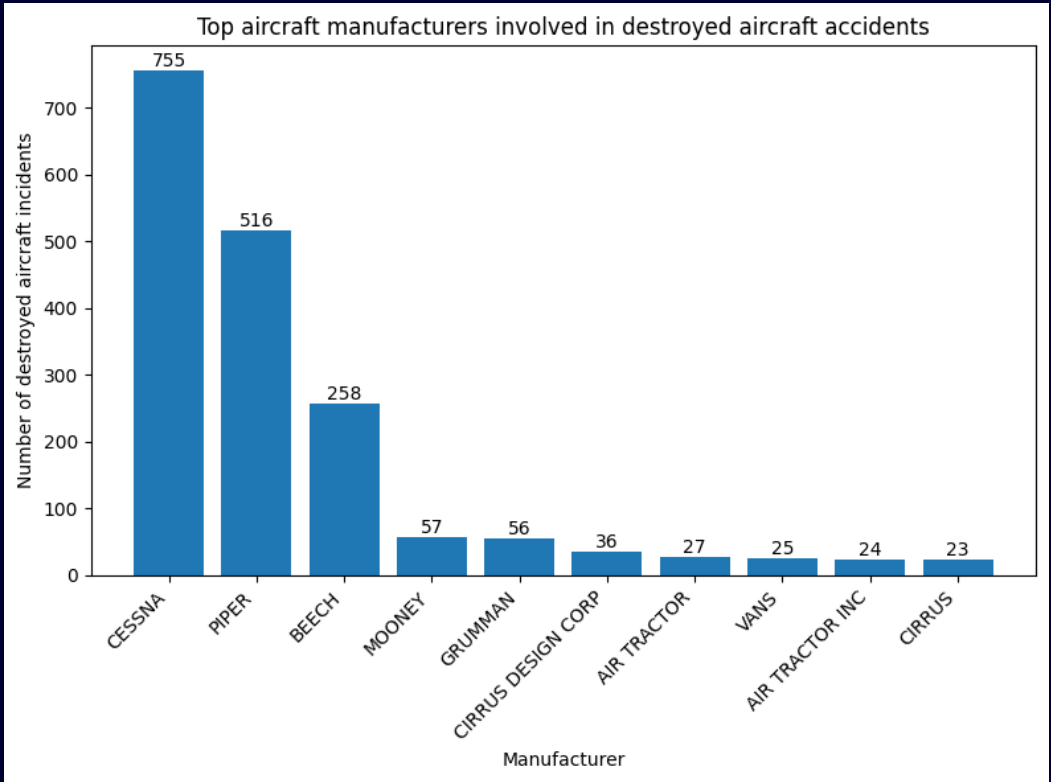
Data Analysis



Amateur-built aircraft have a higher fatality rate despite fewer total accidents, indicating that when accidents occur, they are more likely to be fatal. Factory-built aircraft, while involved in more incidents overall, have a lower proportion of fatal outcomes, suggesting a safer profile.

04

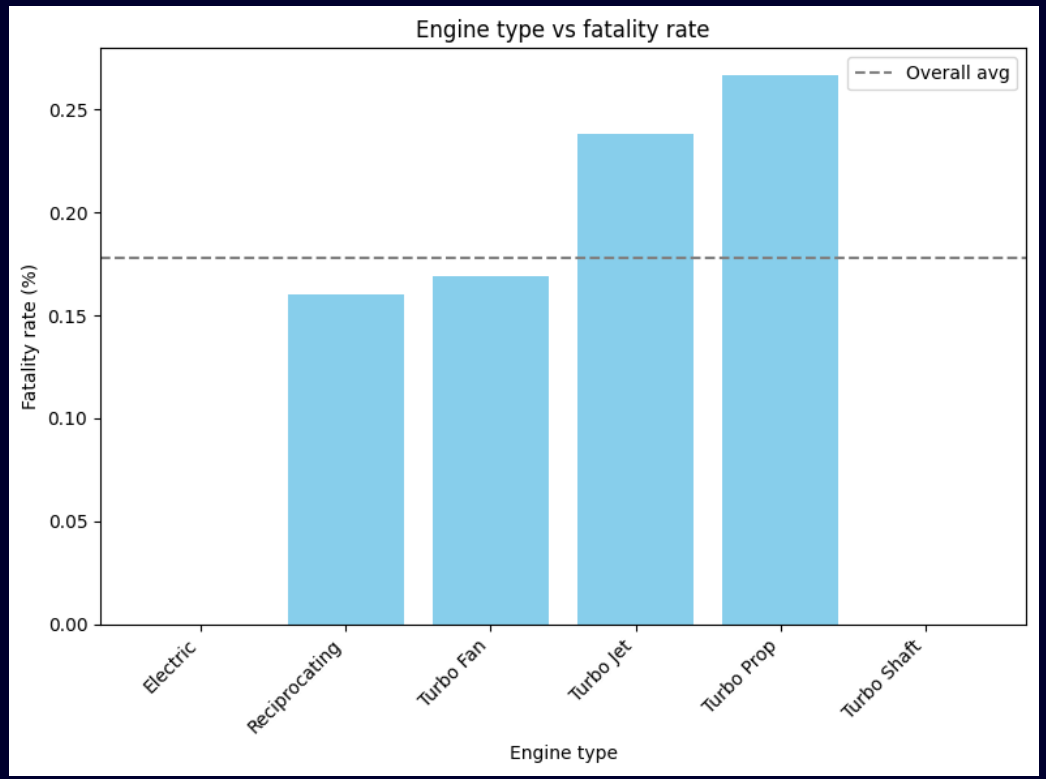
Data Analysis



The chart highlights a significant disparity in the number of destroyed aircraft incidents across different manufacturers. CESSNA and PIPER stand out with the highest numbers, suggesting they may carry a higher risk profile. However, further analysis is needed to contextualize these findings.

04

Data Analysis



Electric engines have the lowest fatality rate, making them the safest option, while Turbo Prop and Turbo Jet engines show significantly higher risks. Reciprocating and Turbo Fan engines fall in the middle with moderate fatality rates. This variation suggests that engine type plays a key role in determining risk levels.

05

Recommendations

1. PRIORITIZE FACTORY-BUILT AIRCRAFT FROM LOW-RISK MANUFACTURERS
2. SELECT AIRCRAFT WITH TURBO FAN OR ELECTRIC ENGINES
3. AVOID HIGH-RISK AIRCRAFT MODELS WITH POOR SAFETY HISTORIES

06

Next Steps

1. DEEP DIVE INTO HIGH-RISK AIRCRAFT MODELS
2. CAUSE ANALYSIS OF ACCIDENTS BY BUILD TYPE
3. MAPPING OF FLIGHT PURPOSE TO RISK PROFILE AND AIRCRAFT TYPE

Thanks!

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