

AIRCRAFT ANALYSIS FOR INVESTMENT

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BUSINESS PROBLEM

Your company is expanding in to new industries to diversify its portfolio. Specifically, they are interested in purchasing and operating airplanes for commercial and private enterprises, but do not know anything about the potential risks of aircraft. You are charged with determining which aircraft are the lowest risk for the company to start this new business endeavor. You must then translate your findings into actionable insights that the head of the new aviation division can use to help decide which aircraft to purchase.




BUSINESS UNDERSTANDING

Why This Matters:

- We're expanding into aviation, but lack insight into aircraft safety.
- Need to identify which makes are safest for commercial/private enterprise.

Key Business Questions:

1. Which aircraft have the most and least incidents?
 2. Are there makes with zero fatalities?
 3. What are the safest aircrafts?
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OBJECTIVES

To help the company make smart, safe investments by identifying aircraft makes with:

- Few or no incidents
- Minimal destruction in crashes
- Low or no fatalities



DATA UNDERSTANDING

The data set was got from the National Transportation Safety Board that includes aviation accident data from 1962 to 2023 about civil aviation accidents and selected incidents in the United States and international waters. It contains 31 columns and 88889 rows.

The relevant columns in my analysis include: Total fatalities , total incidents, weather conditions, degree of destruction of the aircraft after an incident, aircraft make, its engine type and so on.



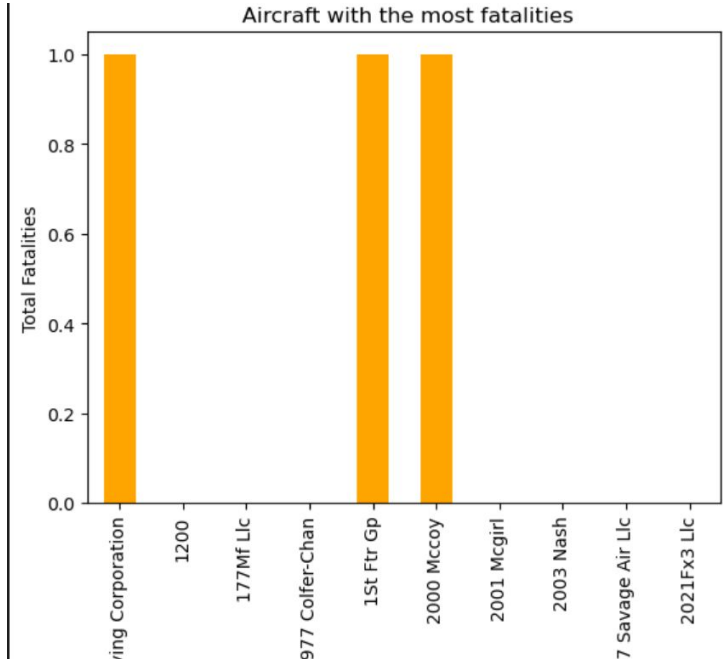
DATA CLEANING

After importing the relevant libraries to the notebook,:

- Checked for missing values using ``isna().sum()``
- Dropped or imputed missing data where necessary
- Used ``info()`` to verify data types and column consistency
- Converted data types (e.g., date strings to datetime)
- Removed duplicate rows to avoid skewed analysis
- Standardized text formatting (e.g., capitalization, spacing)

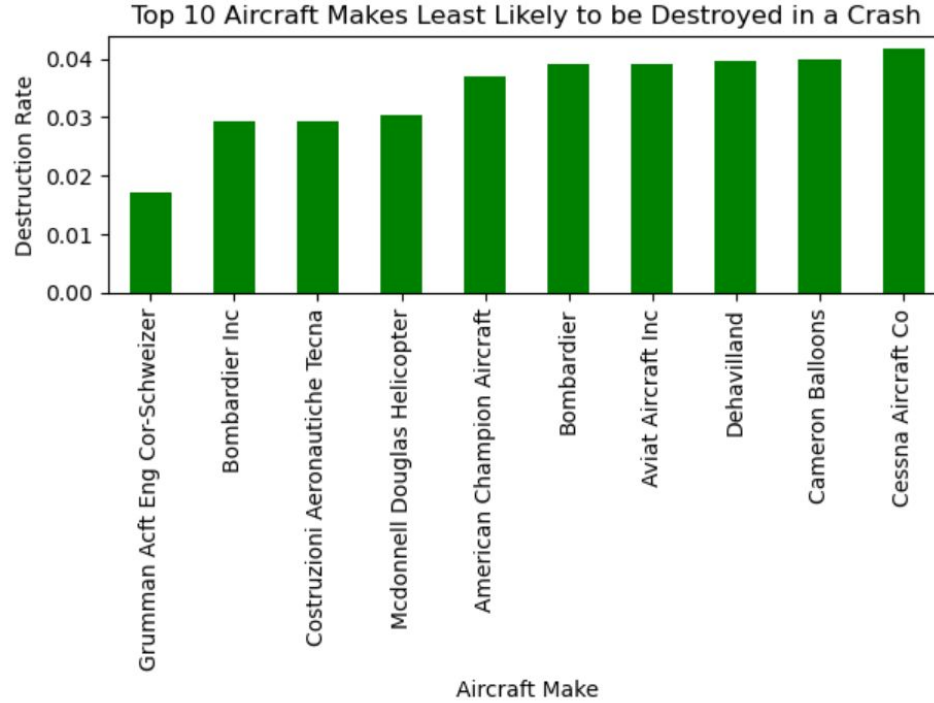


AIRCRAFTS WITH THE MOST FATALITIES

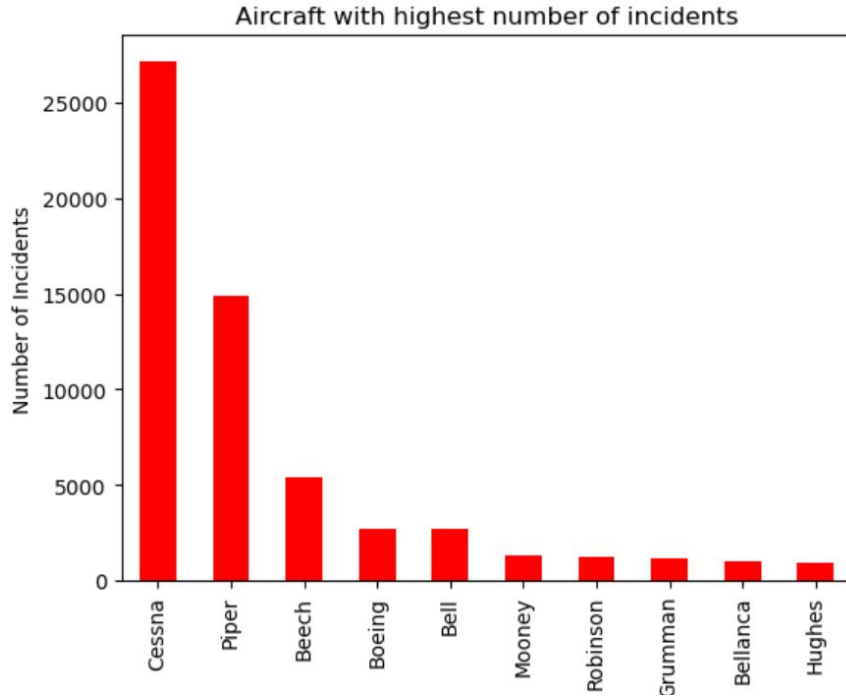


The aircrafts with the most fatalities include: 2000 Mccoy, 107.5 Flying Corporation and 1st Ftr Gp

SAFEST AIRCRAFTS



AIRCRAFTS WITH THE LEAST INCIDENTS



Cessna and Piper have the highest incident counts

CONCLUSIONS

- Not all aircraft makes carry the same level of risk.
- Some makes—like **Kenetic Aviation, Mcnicholas, and McNabb**—had **no fatalities or destruction**, making them ideal low-risk choices.
- Others—like **Cessna, Piper, and Beech**—showed **higher incidents and fatalities**, signaling the need for further investigation.

By relying on historical safety data, the company can **make informed, low-risk investments** in the aviation sector.



RECOMMENDATIONS

Focus on aircraft like **Kenetic Aviation**, **Mcnicholas**, and **Mcnabb**, which had low or zero incidents and fatalities.

Aircraft such as **Cessna**, **Piper**, and **Beech** showed higher incident and fatality rates. More due diligence is needed before purchase.

Incorporate crash data, destruction rates, and weather-related performance into the company's future aircraft selection strategy.



NEXT STEPS

Consult aviation safety professionals to confirm data-driven insights.

Begin with a few low-risk aircraft makes to test operations and gather real-world feedback.

Use performance data from initial investments to refine long-term purchasing decisions.



THANK YOU!

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