

# Aviation Risk Analysis

insights from NTSB Data (1962-2023)

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# Introduction

- This project uses NTSB aviation accident data as from 1962-2023
- It analyzes fatal injuries associated with aircraft model, category and engine type
- The goal is to advise the company on the safer investment choice in aviation

# Problem Statement

- What aircraft models or engine type pose highest fatal injuries
- Which categories show more fatal injuries
- We aim to make recommendations based on the data to reduce aviation injuries

# Data source and Tools used

- Data: NTSB Aviation Accident Database
- Tools-python
  - Jupyter Notebook
  - Pandas ,NumPy
  - matplotlib

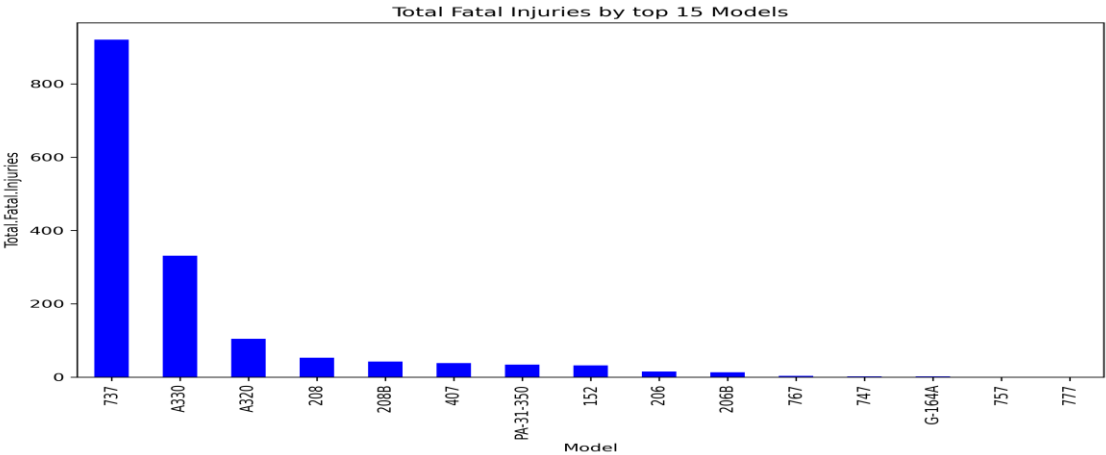
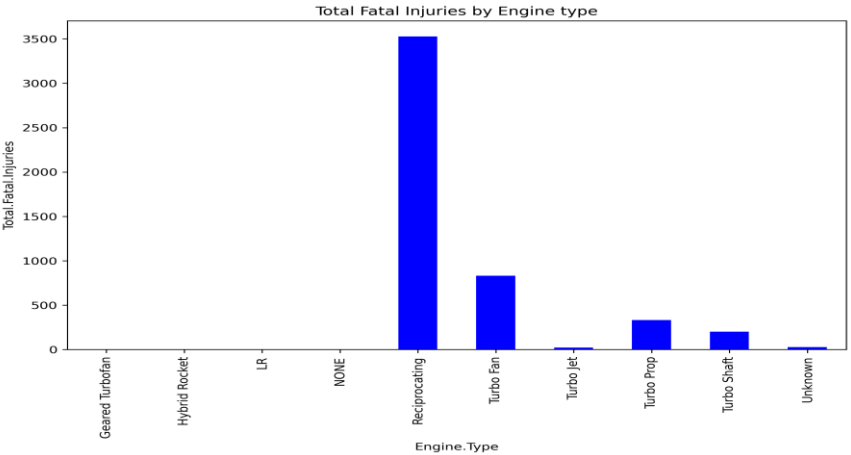
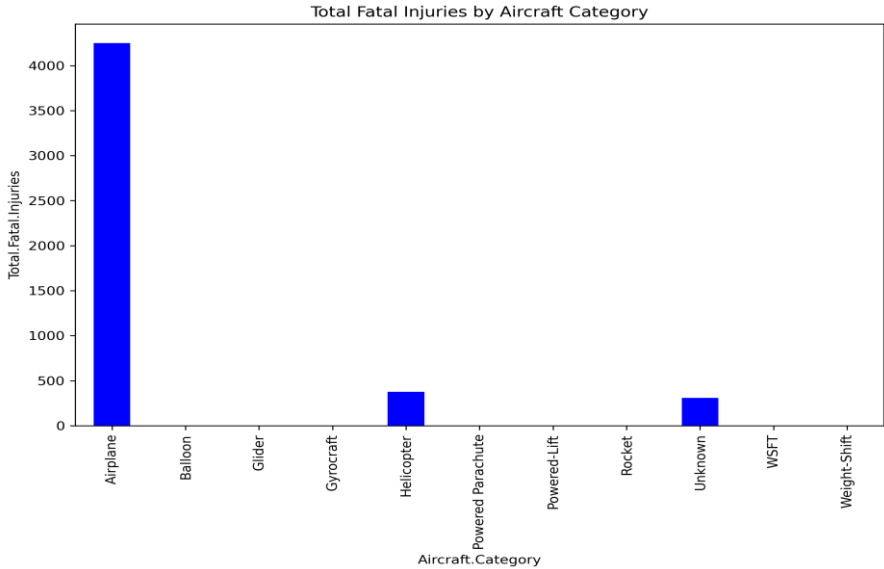
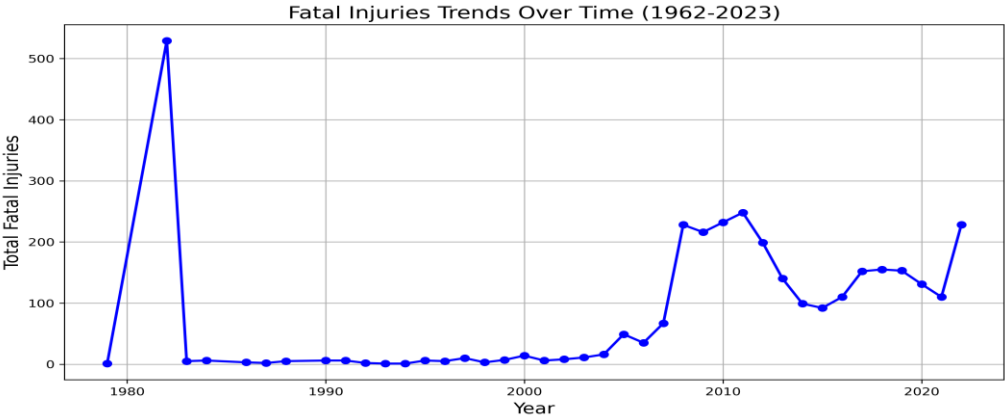
# Data cleaning

- Removed missing and irrelevant entries
- Filled empty rows with mode and unknown and nan
- Prepared columns for analysis (Model, category, engine type)

# Key Area of analysis

- Fatal injuries grouped by:
  - Aircraft model
  - Category(e.g. helicopter, airplane)
  - Engine type (e.g., turbojet)

# Visualization



# Summary

- Aircraft model-the Boeing 777 and Boeing 757 stand out as models with low total fatal injuries and strong safety record
- Category-Airplanes showed highest number of fatal injuries followed by helicopters. -Balloon,Glinder, and the rest recorded the lowest total fatal injuries among all categories.
- Engine type-Reciprocating, turboprop, and turbofans were linked to higher fatal injuries, likely due to their use in high-capacity aircraft. -Simpler engine types (Hybrid, low-risk LR) designs were associated with the lowest fatal injuries.



# Recommendations

- Aircraft category-helicopter and airplanes had relatively high fatal injury totals, alternative categories are recommended.
- Engine type-Aircraft with low Risk (LR) or simpler engine types recommended
- Aircraft model-Boeing 777 and 757 demonstrated strong and safer records with low fatal injuries
- Trends over time-fatal injuries peaked in 9180s and declined steadily. Advancement in technology, regulations and training contribute to the improved safety