BUSINESS INSIGHTS

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BUSINESS UNDERSTANDING

- The company is looking to expand into the aviation industry and wants to purchase and operate airplanes for commercial and private enterprises.
- However, they lack knowledge about the potential risks of aircraft.
- My task is to determine which aircraft pose the lowest risk for the company to start this new business endeavor.

BUSINESS CONTEXT

- By addressing the problem of identifying low-risk aircraft, the company can prioritize safety, ensure regulatory compliance, minimize financial risks, and gain a competitive advantage in the aviation industry, ultimately contributing to its long-term success and sustainability.

THE DATA

Data Overview

- The dataset used for analysis contains aviation accident data from 1962 to 2023, sourced from the National Transportation Safety Board (NTSB). It includes information on civil aviation accidents and selected incidents in the United States and international waters.

SOURCE OF DATA

- The data was obtained from the National Transportation Safety Board (NTSB), a federal agency responsible for investigating transportation accidents, including those involving aircraft.
- The dataset is relevant to the project as it provides valuable insights into aviation accidents, including details about the aircraft involved, the circumstances of the accident, and the outcomes in terms of injuries, fatalities, and damage.

DATA PROCESS

DATA ACQUISTION

We derived our data set from **Kaggle**, and used our Data Science platforms to clean, transform, analyze , visualize and derive business insights.

DATA PROCESS

DATA ANALYSIS

- Conducted an descriptive analysis of the dataset to gain insights into its distributions between variables.
- Used central tendencies, such as mean, median, standard deviation, for to understand their dispersion.
- Visualized the distribution using line graph, to identify any relationships between the data.

DATA PROCESS

Data Cleaning

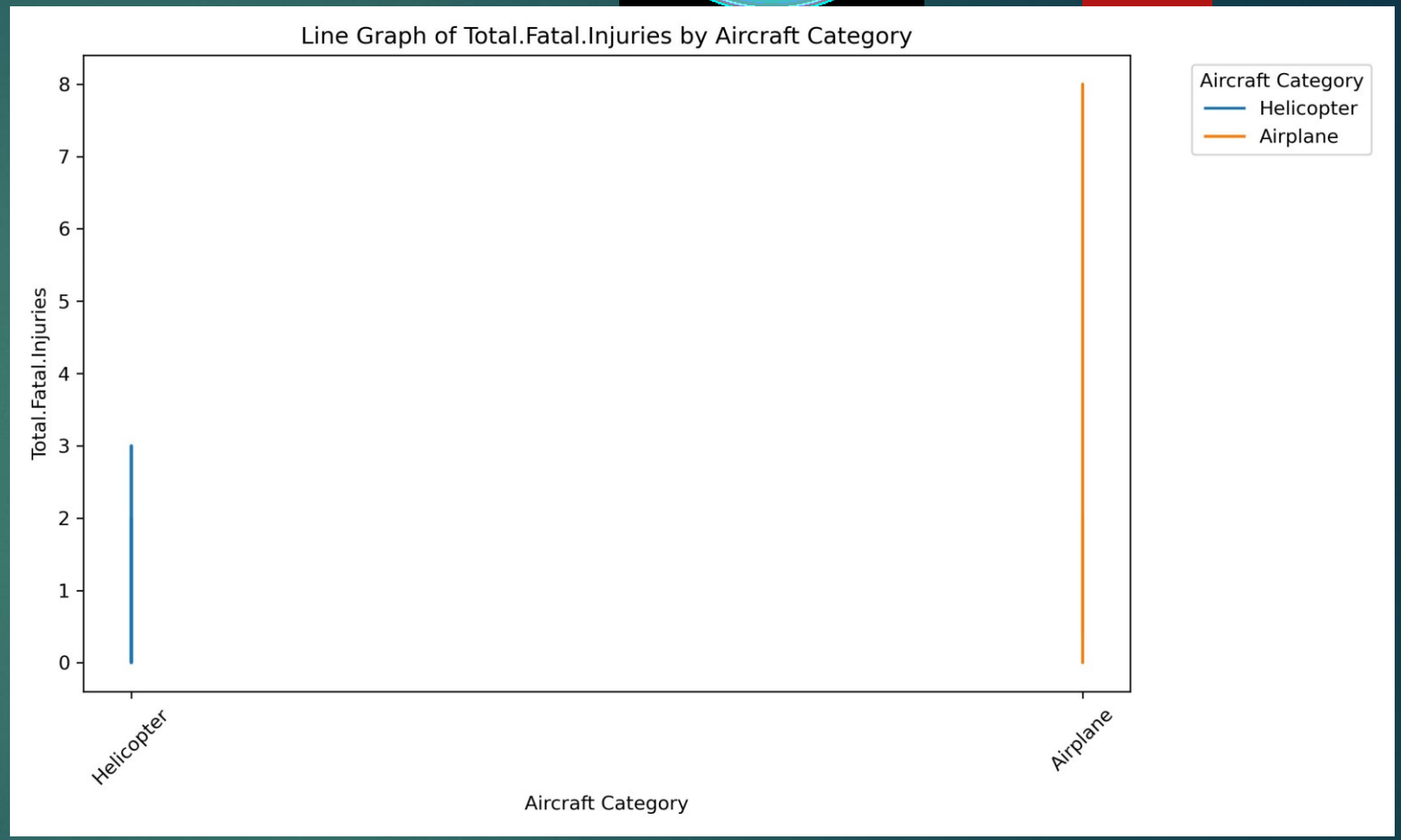
- The dataset was cleaned to remove any irrelevant or duplicate entries, as well as missing values. This involved filtering and correcting all bad data, such as invalid values to ensure the integrity of the data.
- The tools/ Libraries used for the data cleaning process were: **Python**, **Pandas Library**(for Data Cleaning and Analysis) as well Business Intelligence Tools – **Tableau**(for data visualization)

DATA PROCESS

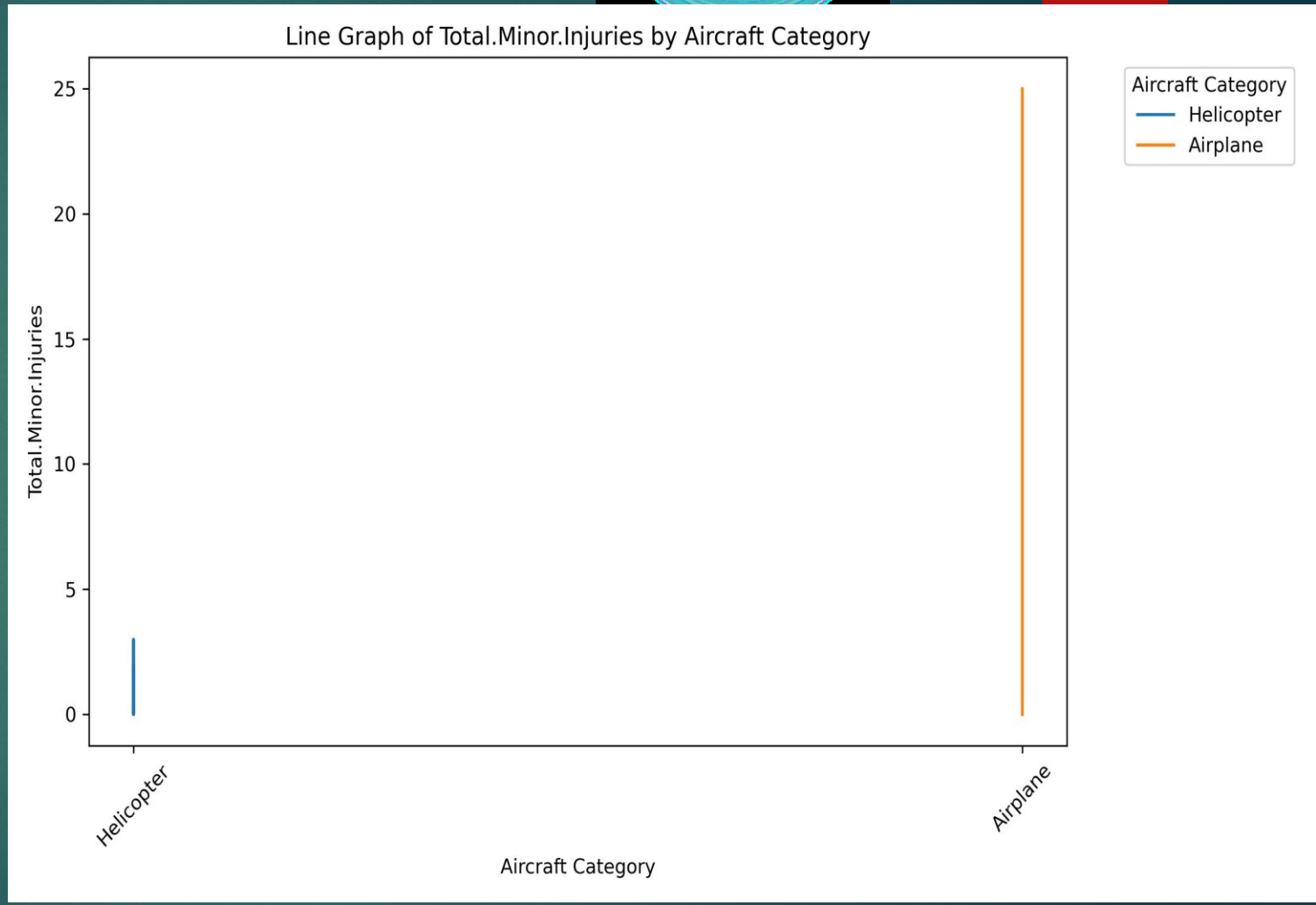
- In this data set based on the business understanding we analysed and found the relationships based on the models, make, airplane category with the **Total Fatal Injuries**, **Total Minor Injuries**, **Total Serious Injuries** and the **Total Uninjured**, to determine which aircrafts are the safest for the company to invest in as to well reduce any risks that may arise and to maintain the integrity of the company

TOTAL FATAL INJURIES BASED ON AIRCRAFT CATEGORY

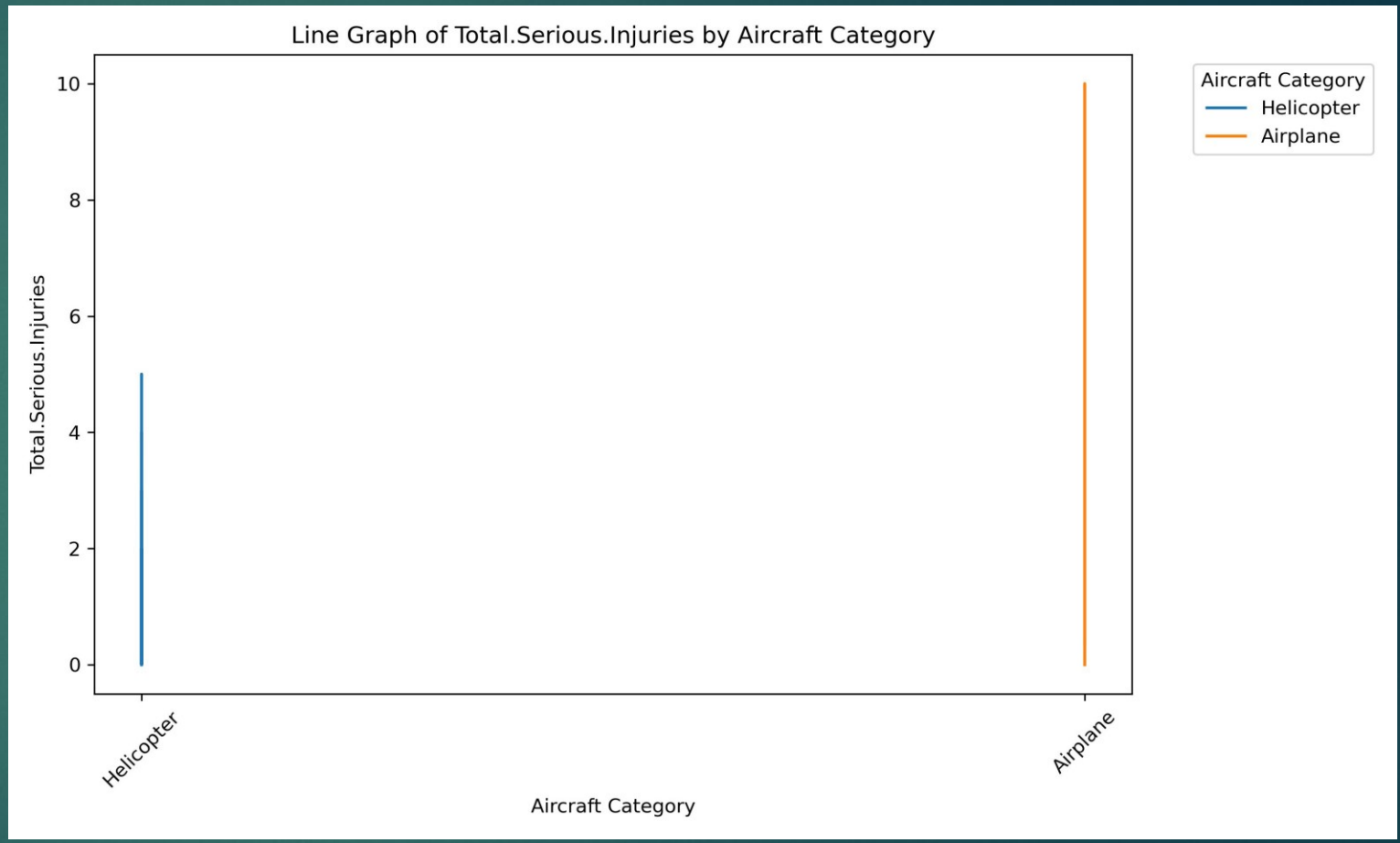
The Total Fatal Injury is high on the airplane side making the Airplane a more dangerous option compared to the helicopter



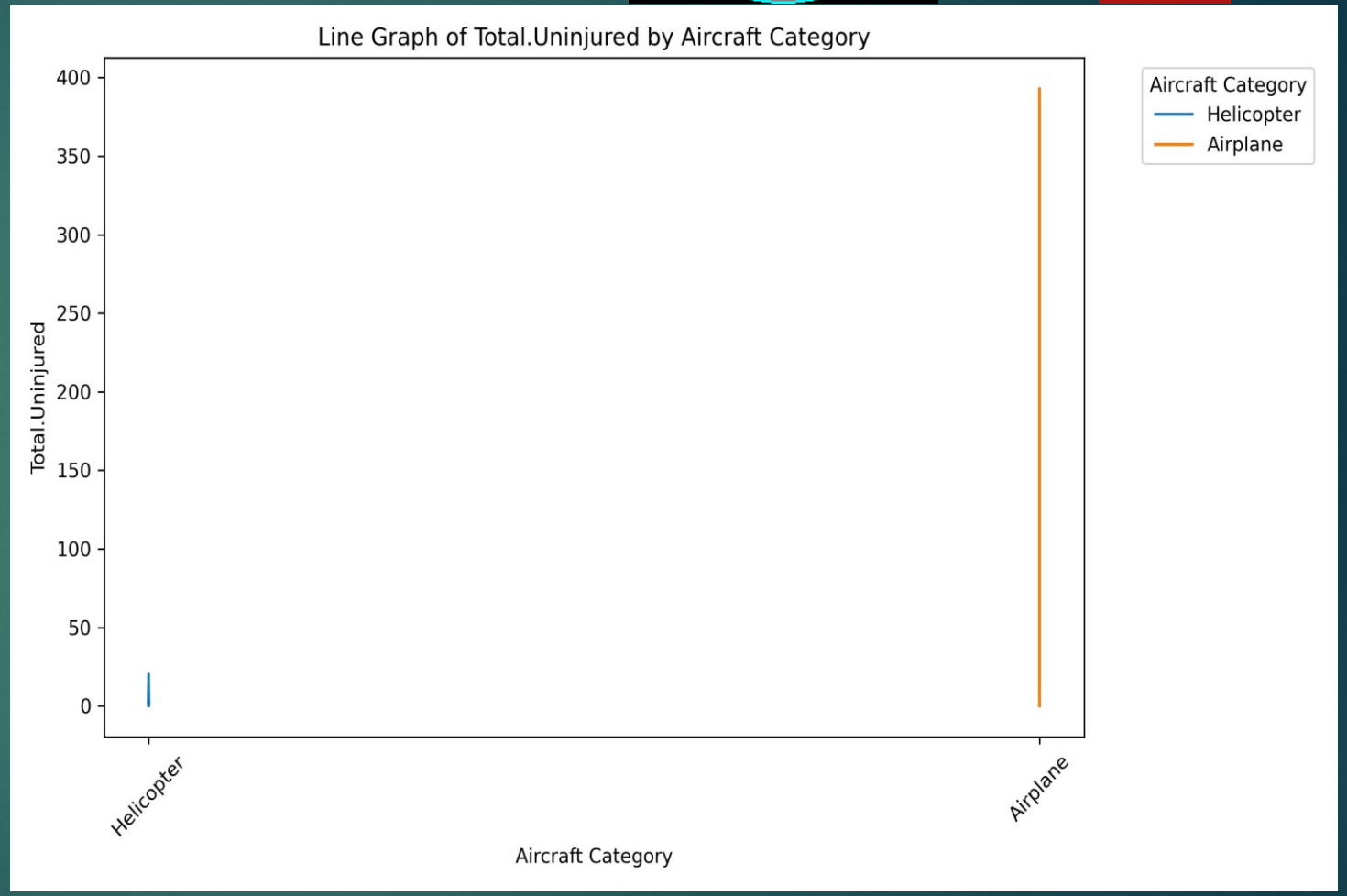
The Total Minor Injuries are higher on the Airplane Side compared to the helicopter.



Total Serious injuries are higher on the Airplane Side rather on the Helicopter side



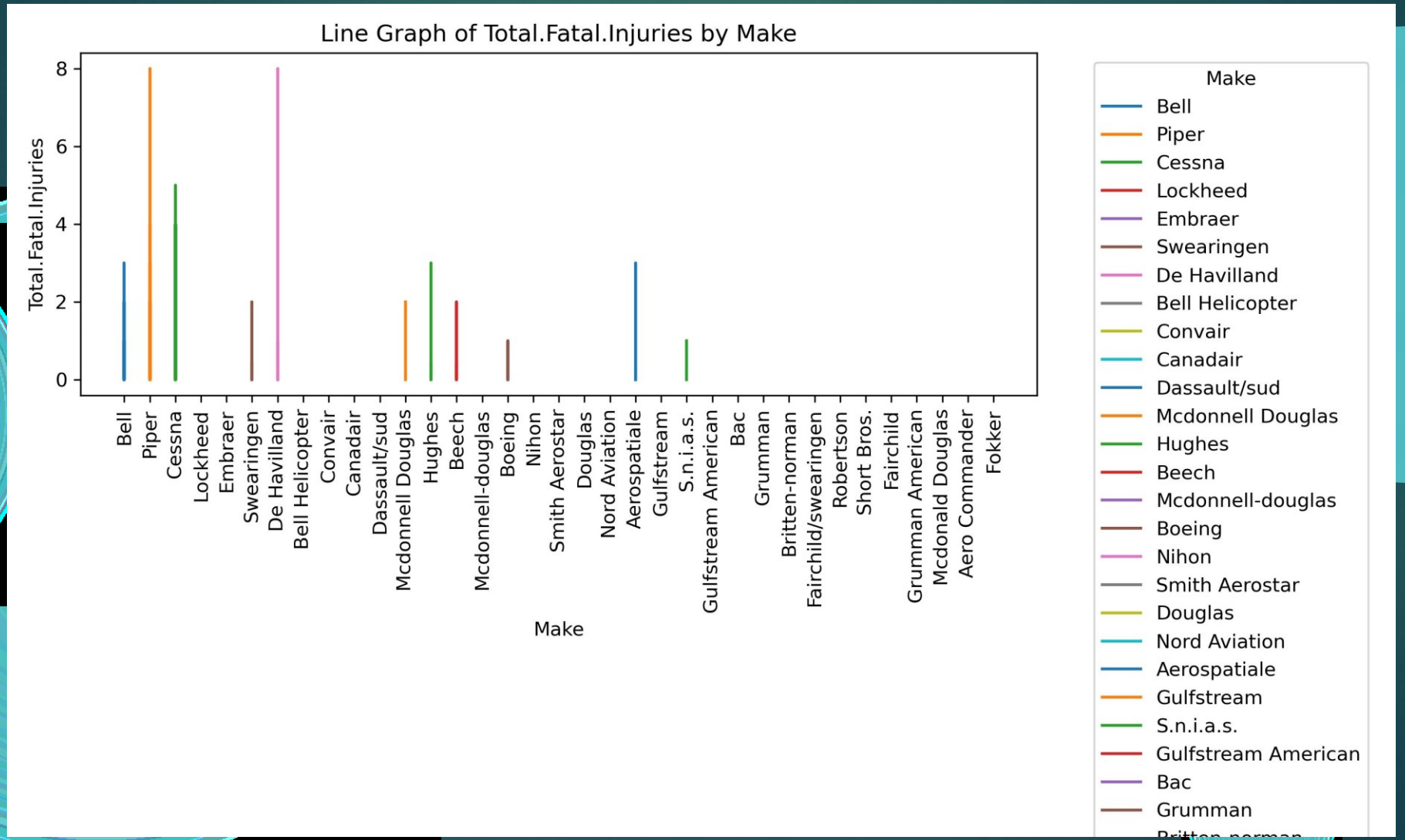
The total uninjured on the Airplane is higher on the Airplane side rather than the helicopter



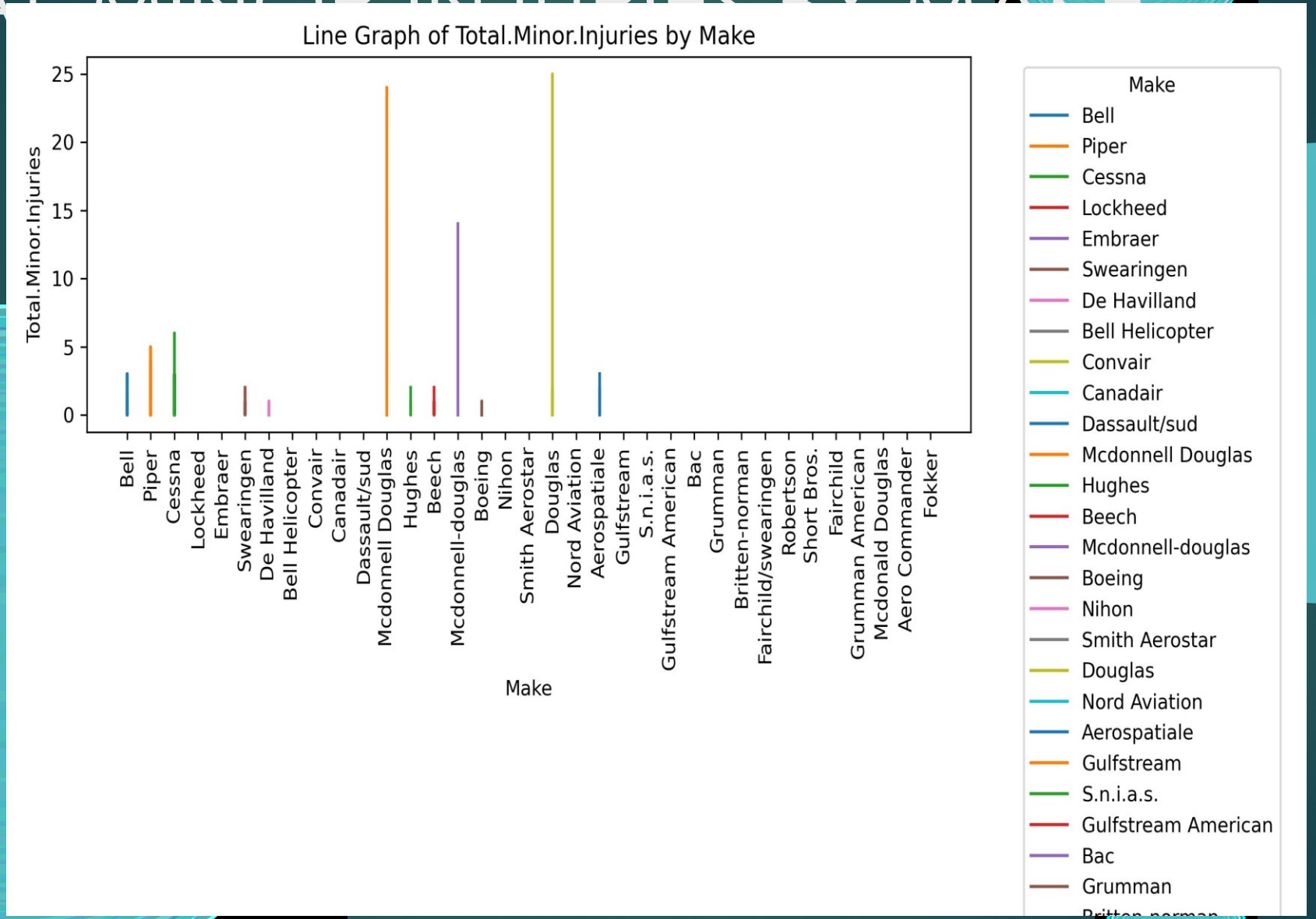
DATA INTERPRETATION

- On the comparison and analysis of our Airplane Category, and the Injuries its safer to judge that the Airplanes had more Injuries compared to the Helicopters making them a rather safer option.

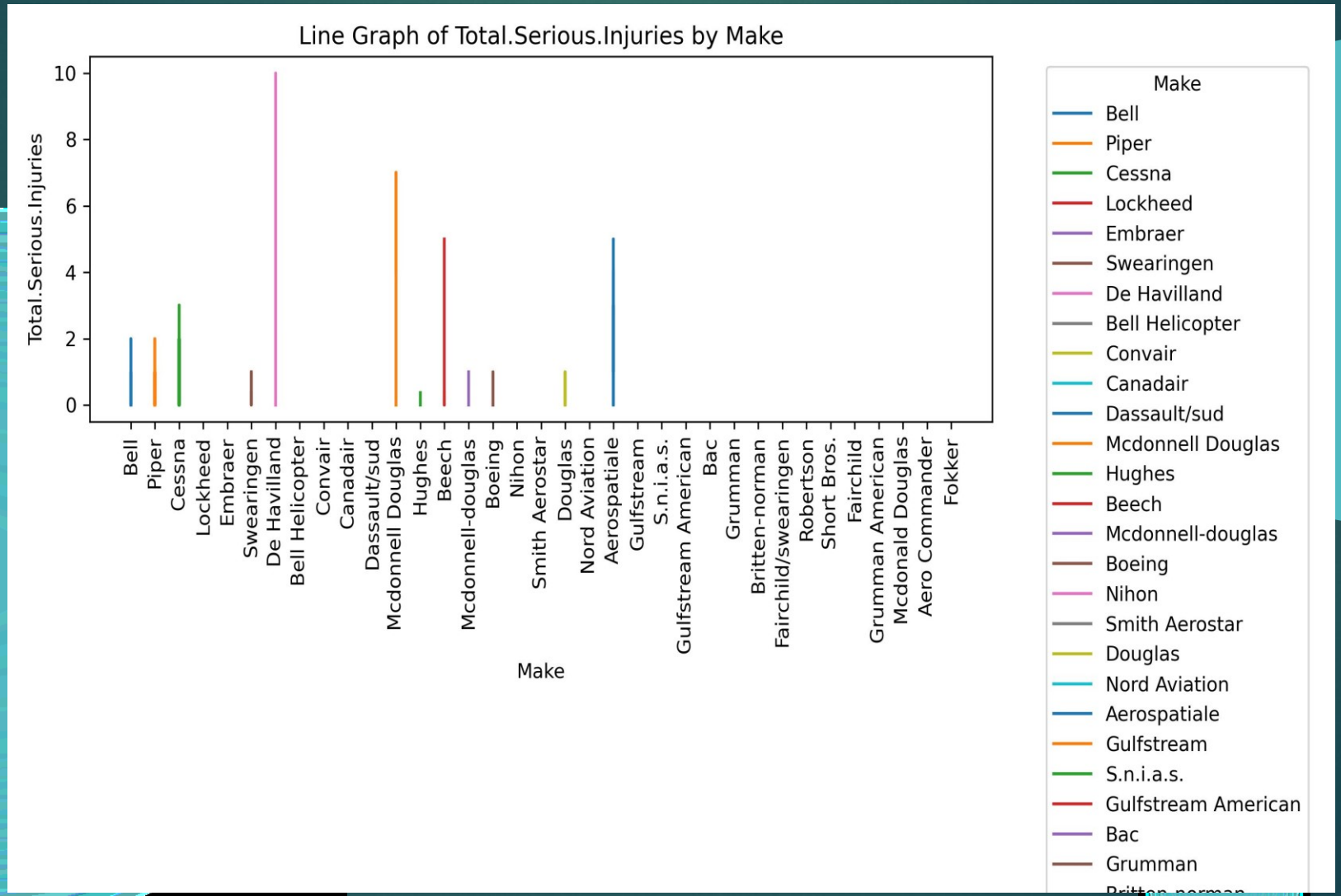
TOTAL FATAL INJURIES BY MAKE



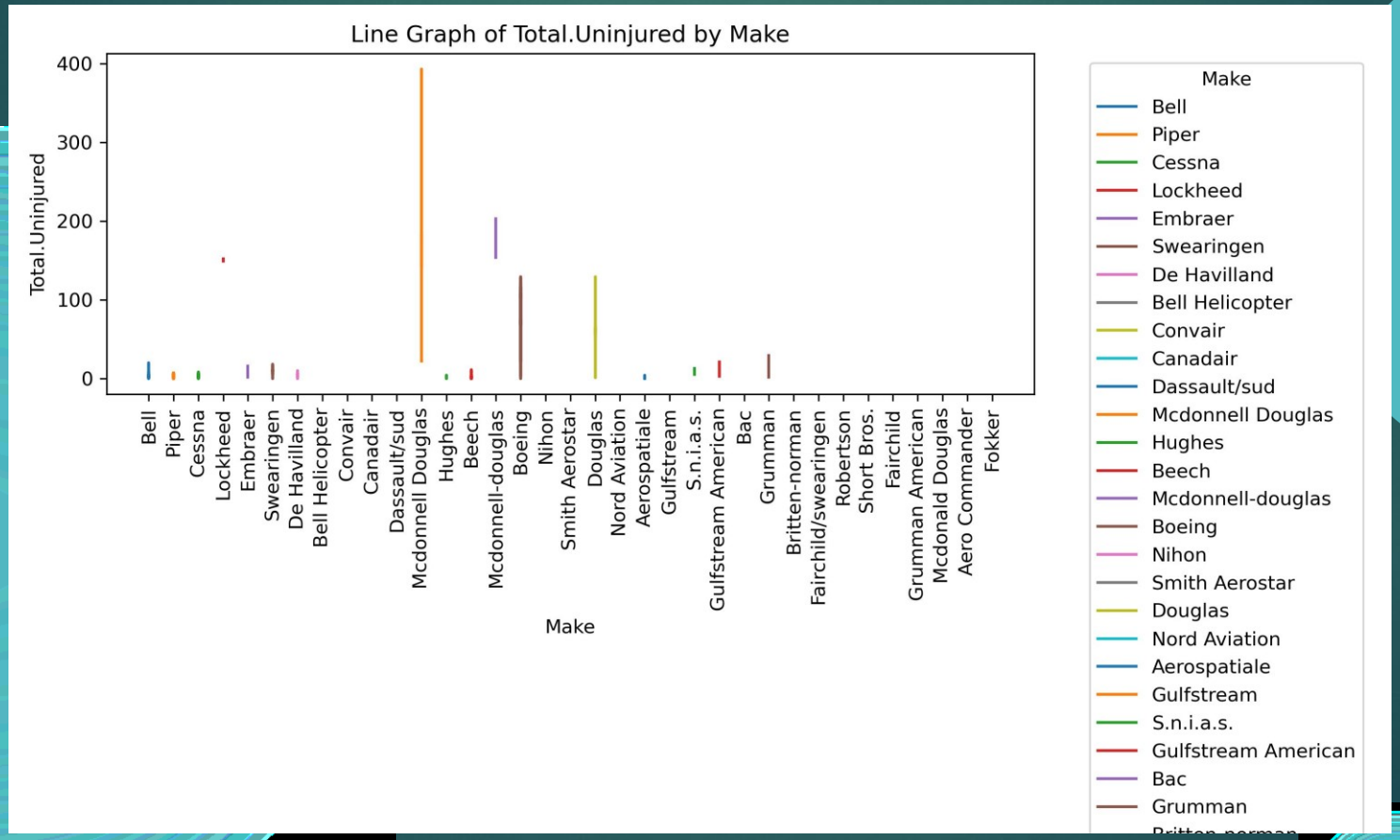
TOTAL MINOR INJURIES BY MAKE



TOTAL SERIOUS INJURIES BY MAKE



TOTAL UNINJURED BY MAKE



DATA INTERPRETATION

- Its safe to safe that the make determines which manufactures are the best to invest in and we need to mitigate our risks factors and to uphold the company's high level of standard.
- In our data set through visual interpretation, the best makes with the least injuries are fokker, Aero commander, Mcdonnell Douglas as well as the short bros.

TYPES OF DATA COLLECTED

- **Categorical Data:**
  - 1. Make
  - 2. Model
  - 3. Aircraft category
  - 4. Engine type
  - Were commonly used among others to derive insights based on the business understanding

TYPE OF DATA COLLECTED

- **NUMERICAL DATA**
  - 1. Total fatal injuries
  - 2. Total Minor Injuries
  - 3. Total Serious Injuries
  - 4. Total Uninjured

RECOMMENDATION

Safety and Reputation

- Aircraft safety is paramount in the aviation industry.
- Accidents or incidents involving aircraft can have severe consequences, including loss of life
- By ensuring the selection of aircraft with the lowest risk profile, the company can minimize the likelihood of accidents.

Financial Stability

- Aviation accidents and incidents can incur significant financial costs.
- By mitigating risks associated with aircraft selection, the company can minimize financial losses
- Ensure the long-term financial stability of its aviation operations.

Regulatory Compliance

- The aviation industry is highly regulated
- Failure to comply with these regulations can result in penalties, sanctions, or suspension of operations.
- By selecting aircraft that meet or exceed regulatory standards for safety

Actionable Recommendations:

Enhanced Safety Protocols

- Implement comprehensive safety protocols and training programs to mitigate the risk of accidents and reduce injury rates across all flight operations.
- Focus on areas with the highest frequency of injuries.

Aircraft Maintenance and Inspection

- Inspect each model/ make and aircraft model before any investment and mitigate the risks based on the data driven decision outlined with the most to least with injuries.

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