

# AIRCRAFT INVESTIGATION REPORT

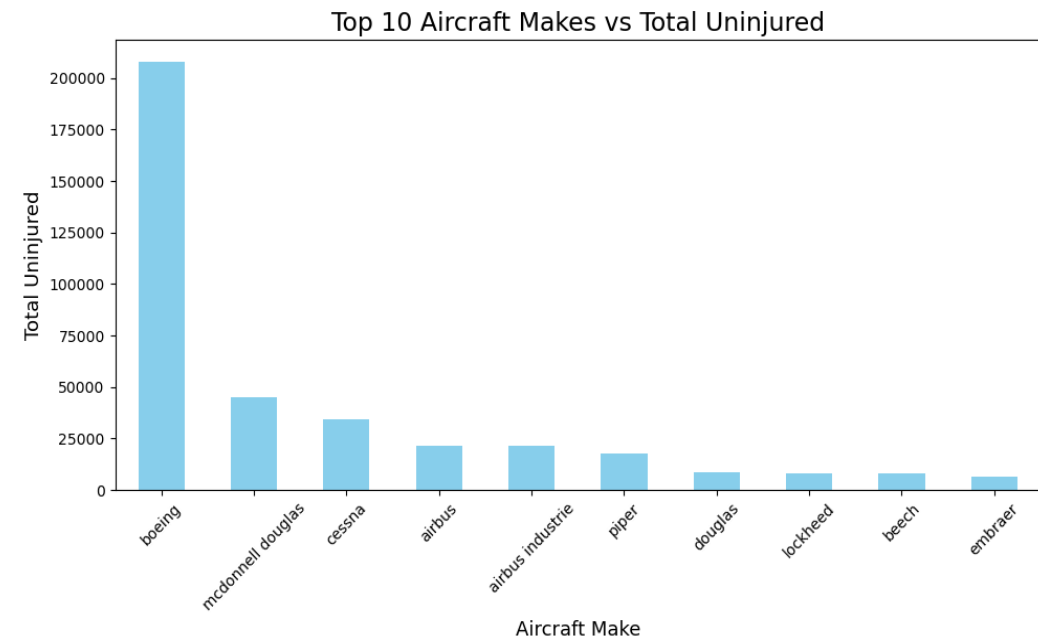
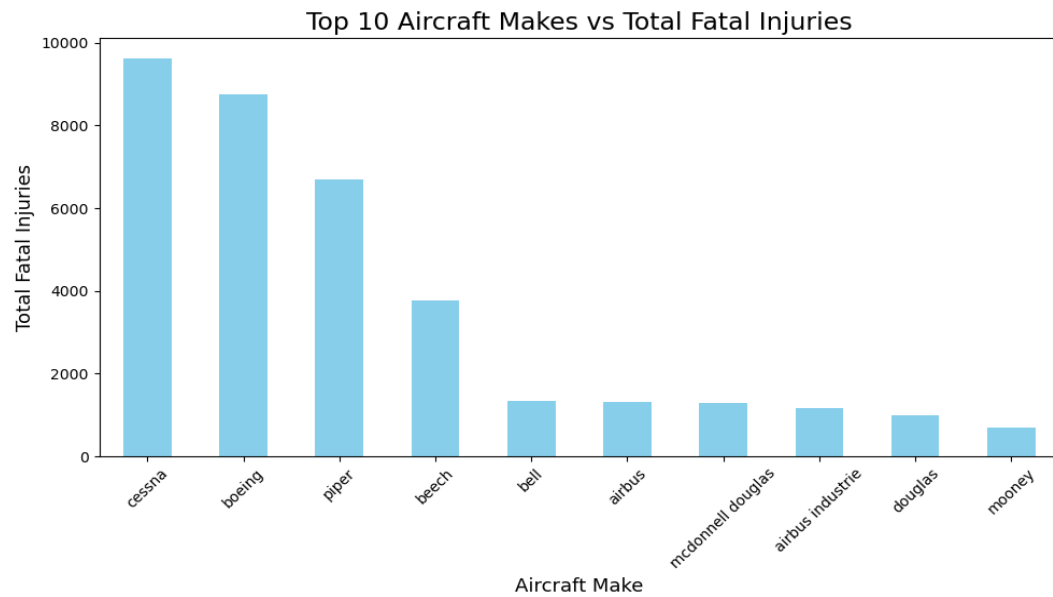
# PROBLEM STATEMENT

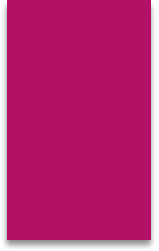
- ▶ The company is interested in purchasing and operating airplanes for commercial and private enterprises, but lack the knowledge on anything about potential risks of aircrafts. You are charged with determining which aircraft are the lowest risk for the company to start this new business endeavor. You 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.

# GOALS

- ▶ The company, is seeking to venture into a new enterprises by diversifying its portfolio.
- ▶ The goal is to figure out which aircrafts cause the least amount of risks and accidents.
- ▶ These are some of the variables that I believe will help in that:
  - ✓ Make of the aircraft
  - ✓ Type of engine used
  - ✓ The statistics of accidents and incidents
- ▶ Let us look at each one of them.

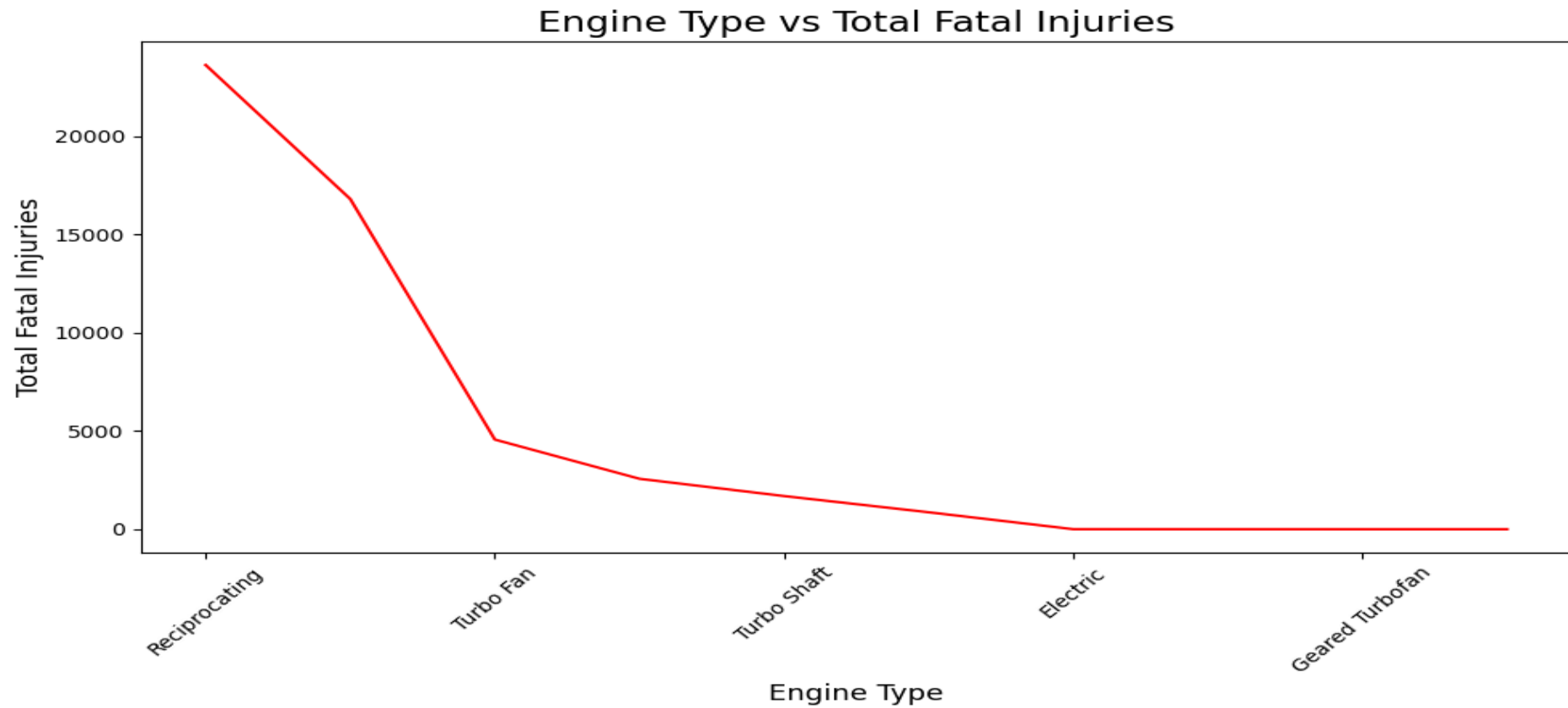
# Top Aircraft Makes vs Fatal Injuries

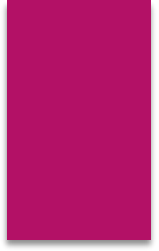




- ▶ The bar graph on the side shows the top 10 aircraft makes that have caused fatal injuries. From this, we can clearly see that Cessna leads in the number of accident occurrences.
- ▶ Compared to the other graph which shows the top 10 aircrafts that have a high number of uninjured. We can see that Boeing is leading in this which indicates a higher level of safety.

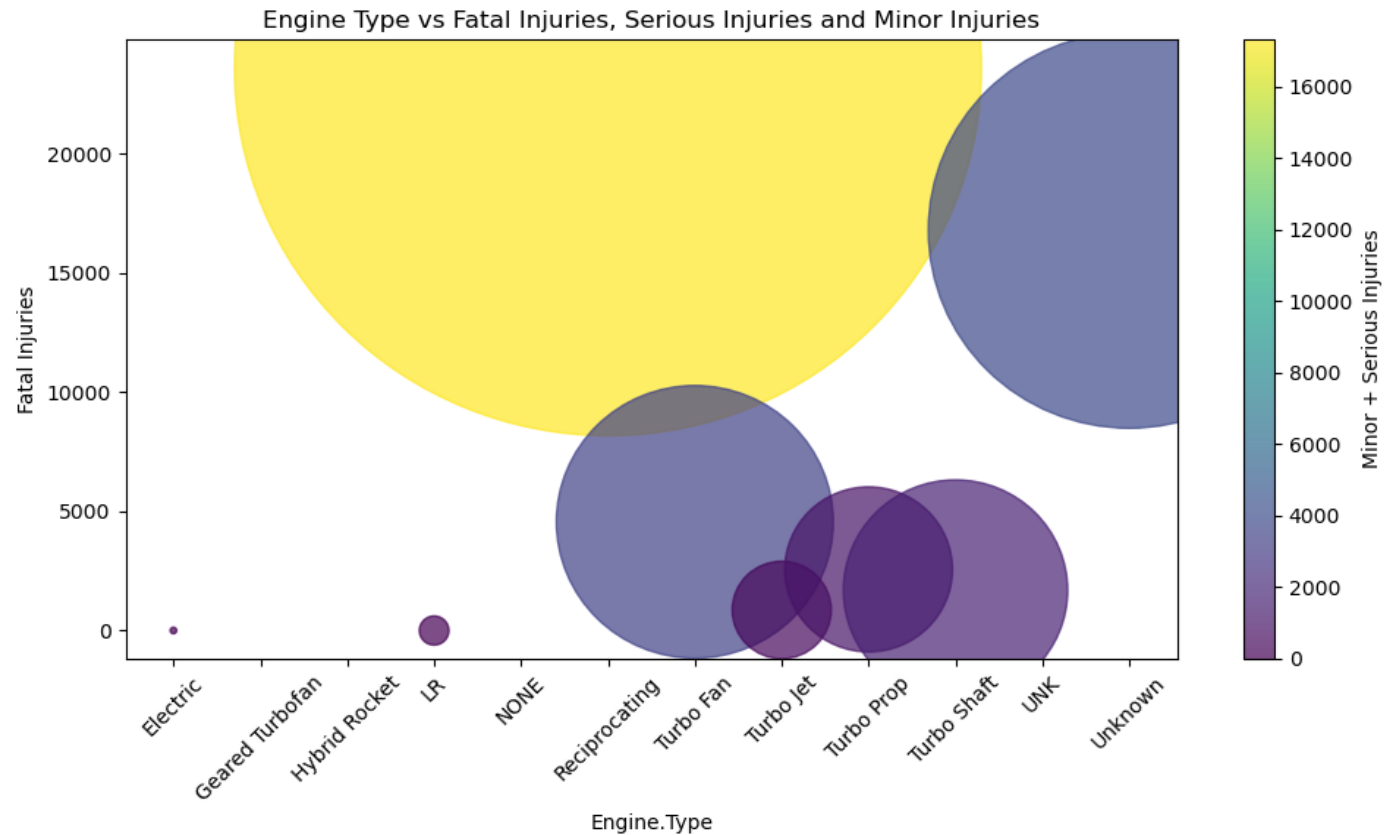
# Type of Engine





- ▶ The observation being made from the graph indicates that the engine type known as 'Reciprocating' has some issues, with the highest number of fatal injuries, above 20,000. Which clearly leads it to having many failures, thus causing so many fatalities.
- ▶ It can be observed that the number of injuries decreases as you move to Turbo Fan and Turbo Shaft engines.
- ▶ Electric and Geared Turbofan engines show almost no fatal injuries, meaning they are safer in this context.

# Statistics of All Injuries







The scatter plot shows the statistics of all types of injuries that have been investigated.

It shows that **Reciprocating engines** have the largest bubble(yellow), meaning they have the highest number of minor + serious injuries. They also have the highest number of fatal injuries. While **Turbo fan** and **Turbo jet engines** have a high number of injuries, but less than reciprocating engines.

On the other hand, **Electric, Geared Turbofan, and Hybrid Rocket engines** have very small bubbles, showing fewer injuries.

The graph tells us that planes with reciprocating engines have caused the most injuries overall, both fatal and non-fatal, while newer technologies like **electric engines** have very few injuries.

# Recommendation

- ▶ From the above, these are some of the recommendations I would give:
  - ▶ The company should shift to safer engine models such as '**Electric**' and '**Geared Turbofan**' since they showed smaller data points, suggesting fewer injury reports and have a lower risk profile.
  - ▶ Take time to investigate **Unknown** and **Unreported Incidents** because they have shown a notable number of incidents with unclear causes. It can help identify overlooked issues and prevent future risks.
  - ▶ Reduce the use of engines with higher fatality rates.
  - ▶ In the event that high risk engines are purchased, the company should focus on their maintenance more often.



**THANK YOU**