

Aircraft Risk Assessment

Using Data to Guide Towards Safer Aircraft Choices

Business Understanding

- The company plans to enter the aviation industry.
- Safety is a top priority when selecting aircraft.
- This analysis identifies aircraft types with higher accident risks.
- Goal: Making safer purchasing decisions based on aviation data.

The DataSet

- 88889 aircraft accident records.
- Key features: Make, Engine Type, Number of Engines.
- Injury details: Fatal, Serious, Minor, Uninjured.
- Used to identify patterns in aircraft safety.

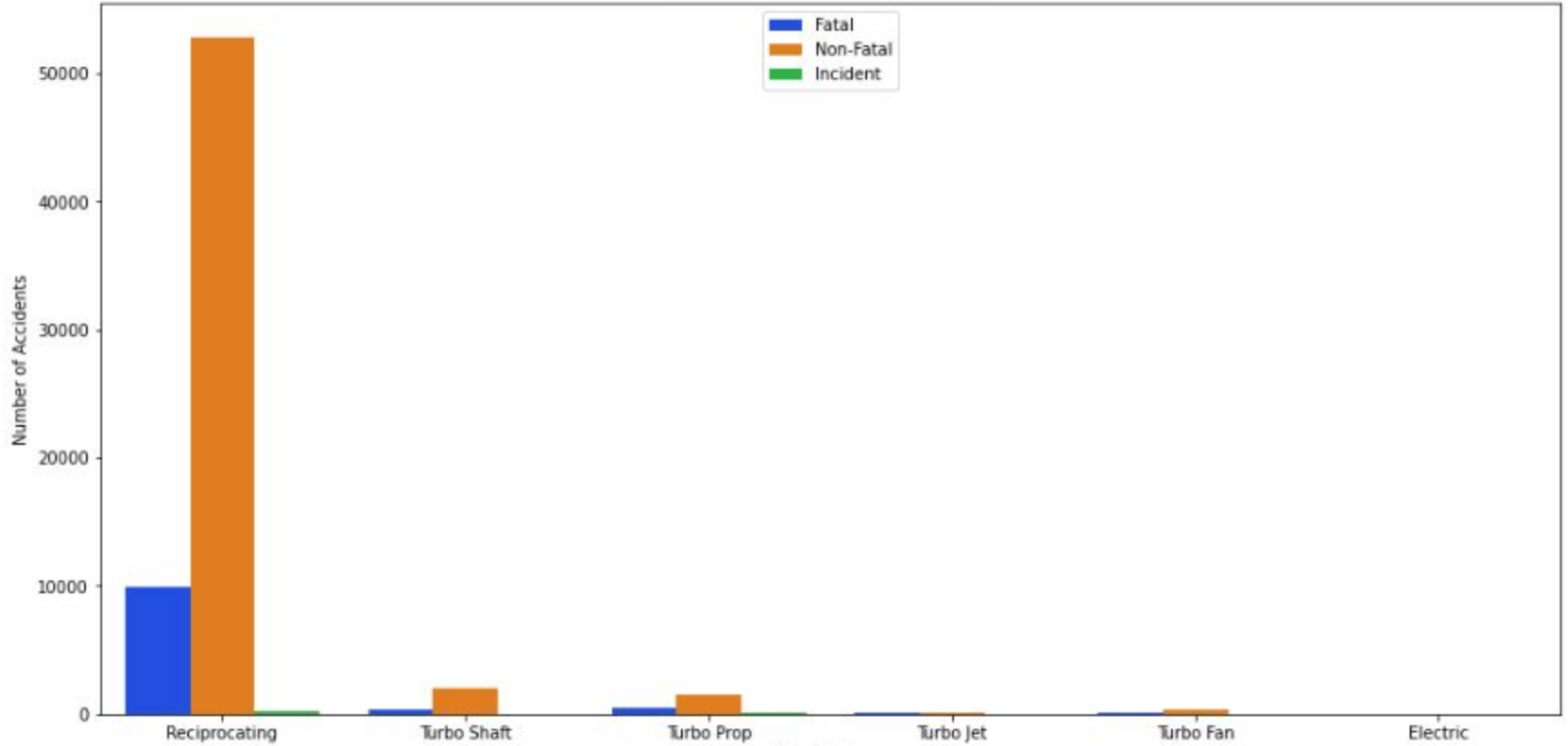
Data Cleaning and Preparation

- Removed null values in key columns, e.g Make, Engine Type, Injury Severity.
- Dropped irrelevant rows.
- Corrected inconsistencies, e.g 'UNK' and 'Unknown'.
- Dropped remaining Unknowns.

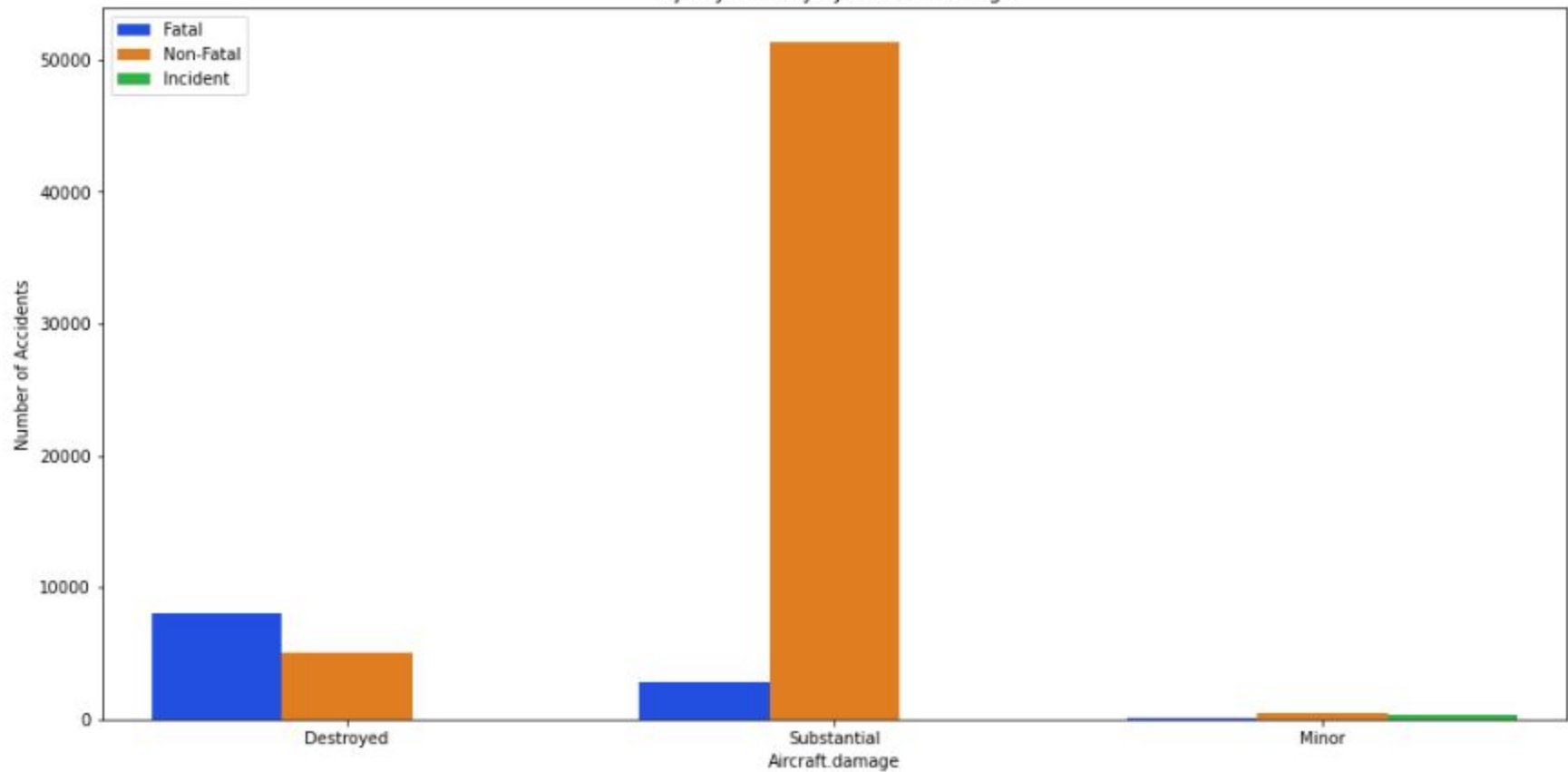
Exploratory Data Analysis

- Visualized trends using barplots, countplots and scatterplots.
- Analyzed injury severity by Make.
- Compared engine types and number of engines to fatal injuries.
- Analyzed fatal injuries by Make.
- Identified features that lead to fatal Injury Severity.

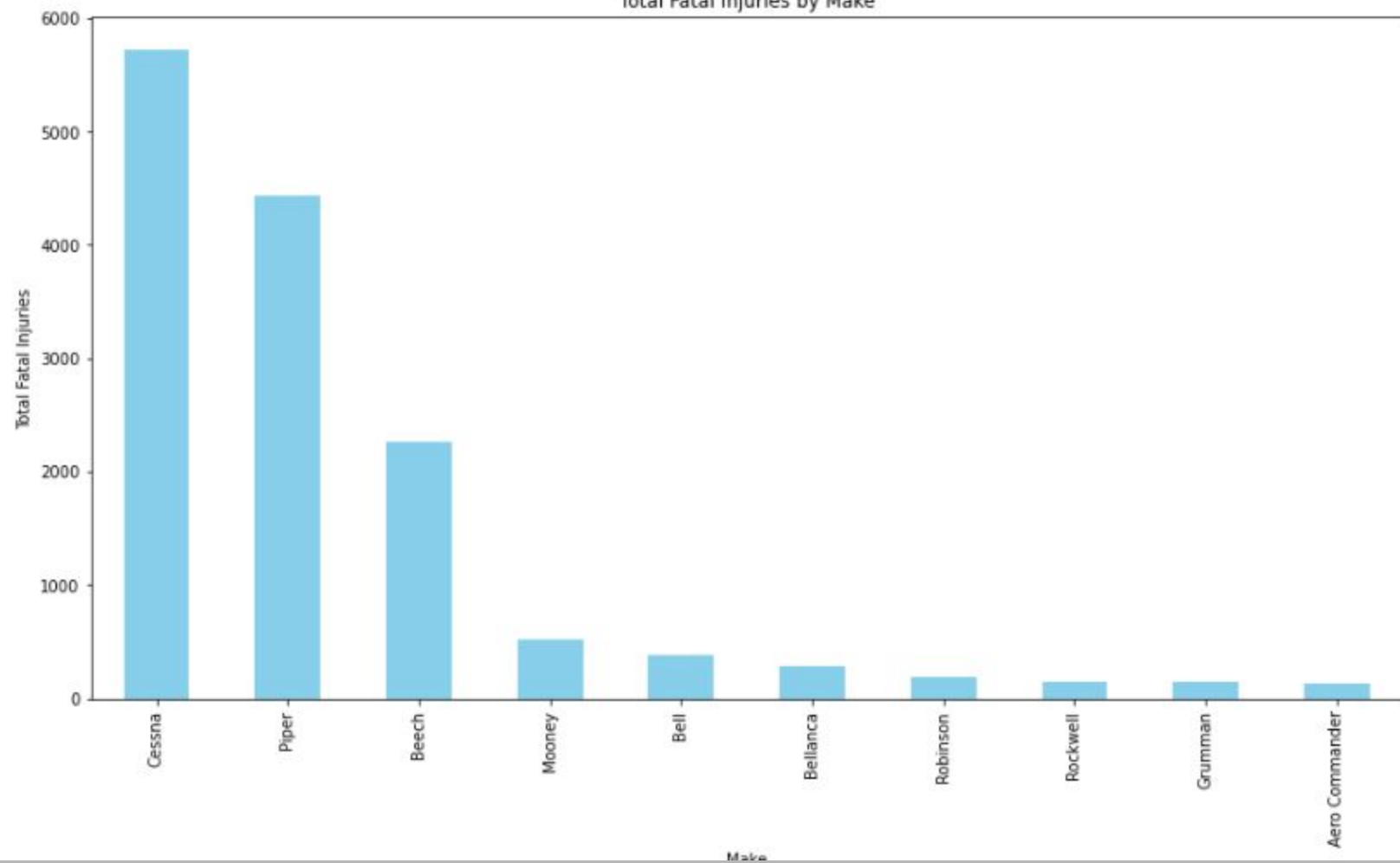
Injury Severity by Engine Type



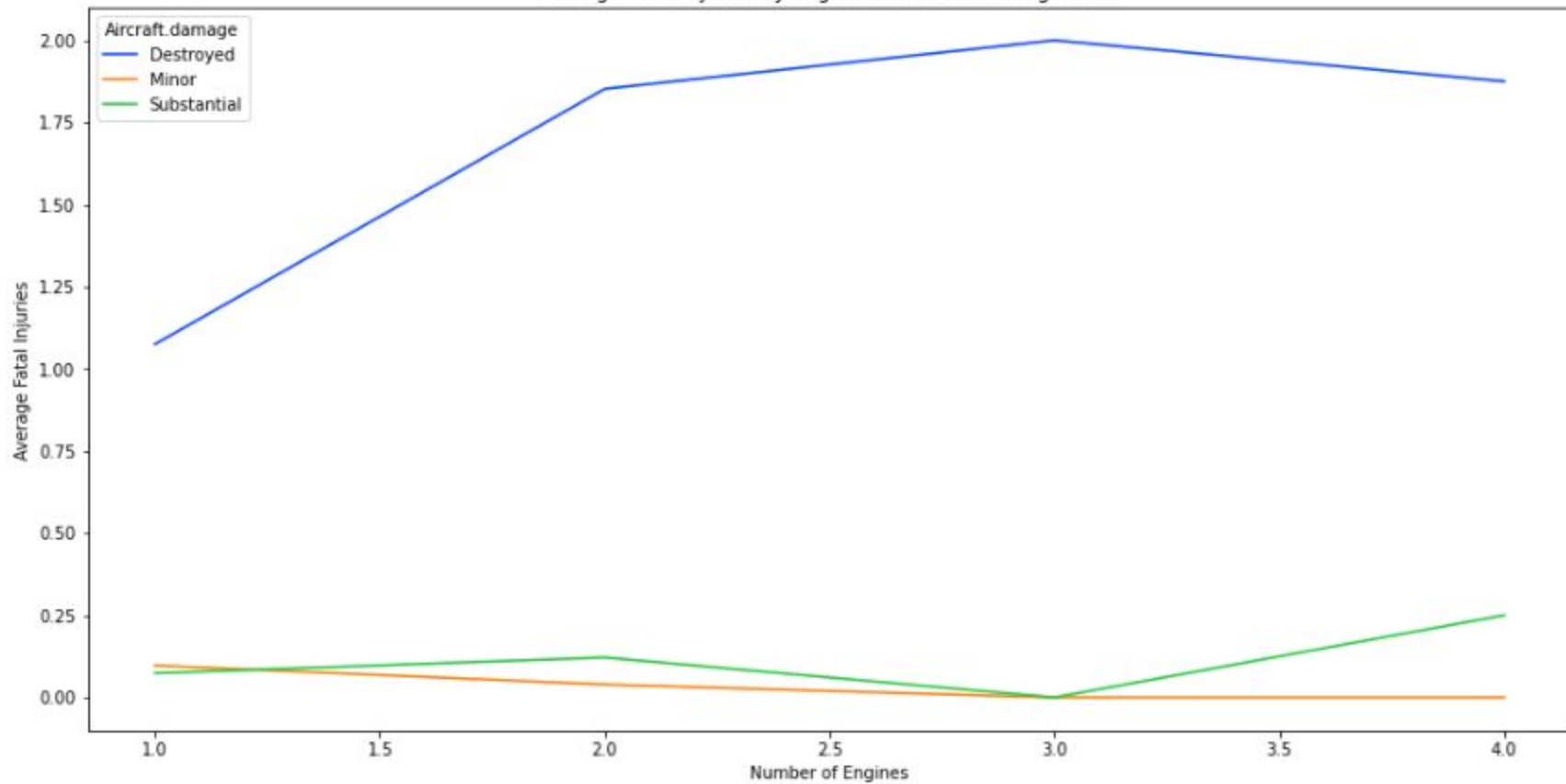
Injury Severity by Aircraft Damage



Total Fatal Injuries by Make



Average Fatal Injuries by Engine Count and Damage Level



Conclusion

1. Single engines are most frequently associated with fatal accidents.
2. Cessna, Piper and Beech make up the majority of fatal cases.
3. Most accidents resulting in fatalities have "Destroyed" aircrafts.

Recommendations

1. Avoid engines with high risks such as reciprocating and single-engine aircraft.
2. Prioritize aircraft with lower fatalities and injuries based on make and engine type.
3. Choose aircraft with high survivability rating in past crash reports.