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Assessing aircraft risk based off of the NTSB aviation accident dataset up to Feb 2021.

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alliwar



MansionAnthony Anthony L Ma...



rjlatail

Languages



Within our repository, you will find our final Jupyter Notebook titled "Final.ipynb". You will also find a pdf version of our Powerpoint presentation labeled "Aircraft_Recommendations.pdf". At the bottom of this README you will find a link to our interactive Tableau dashboard of our analysis.

Business Understanding

StellarSkies is an established US-based company seeking to enter the domestic flight industry utilizing both commercial and private aircraft. They have a large budget and are willing to allocate their funds to the planes that will make the best investments long-term. They requested that we identify planes that will allow them to travel across the United States with the lowest risk.

Source of Data

Our initial data set was pulled from the National Transportation Safety Board's (NTSB) Aviation Accident data set from 1962 to 2023. The data contains information regarding civil aviation accidents and selected incidents in the United States and international waters.

Important Features and Limitations of the Data

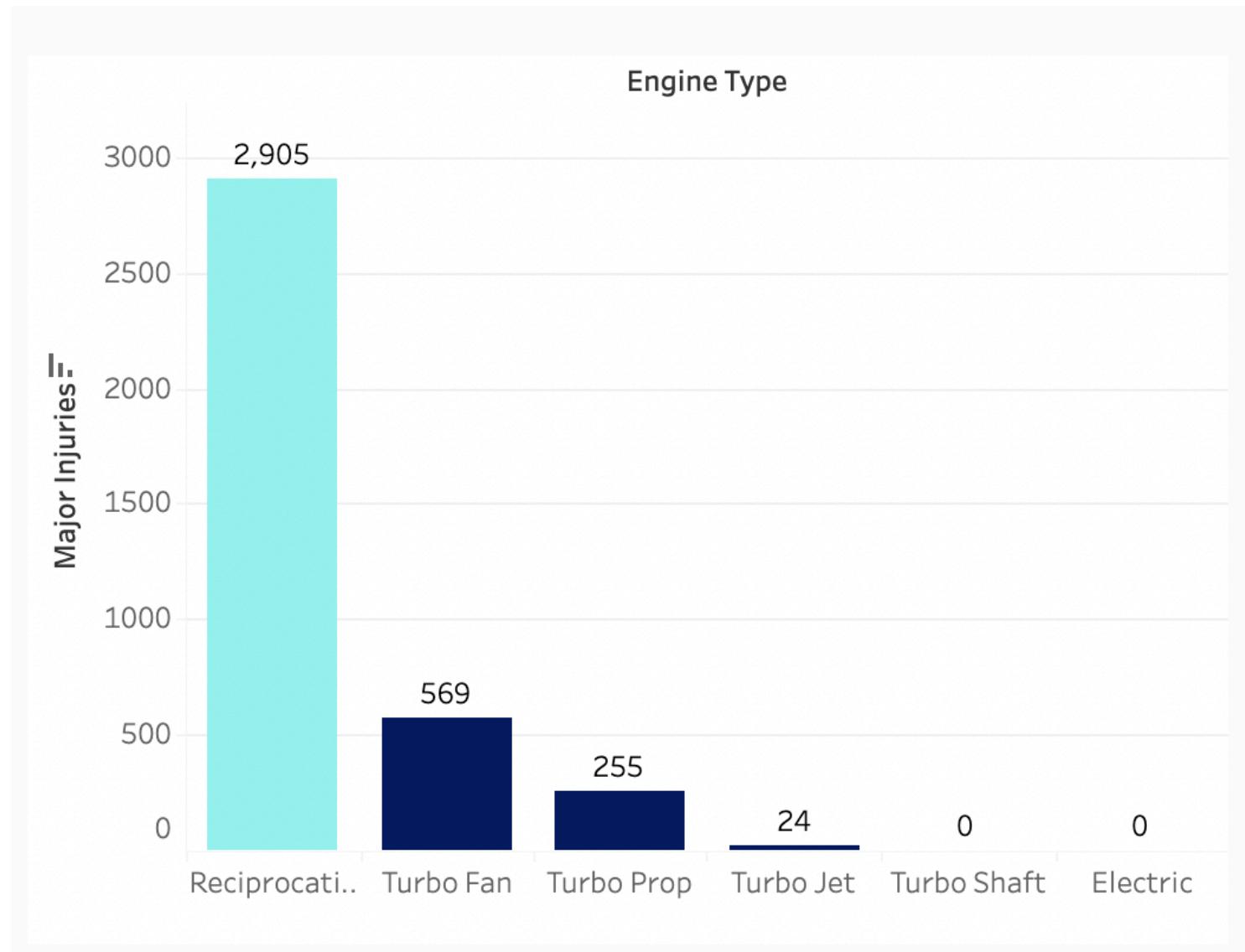
The dataset used in this analysis was provided by The Flatiron School. It only shows planes in accidents; we do not know how many flights took place overall, so we cannot normalize our data. Additionally, it does not differentiate between hardware failures and pilot error. Therefore, the scope of our analysis is limited.

Analysis

Our analysis uses a metric of safety as the most important factor in determining which private and commercial jets to purchase. We utilized a variable "Major Injuries", calculated as a sum of total serious injuries and fatalities per event, as our guide. We filtered out data from 2013 to the present, focusing in particular on major aircraft manufacturers.

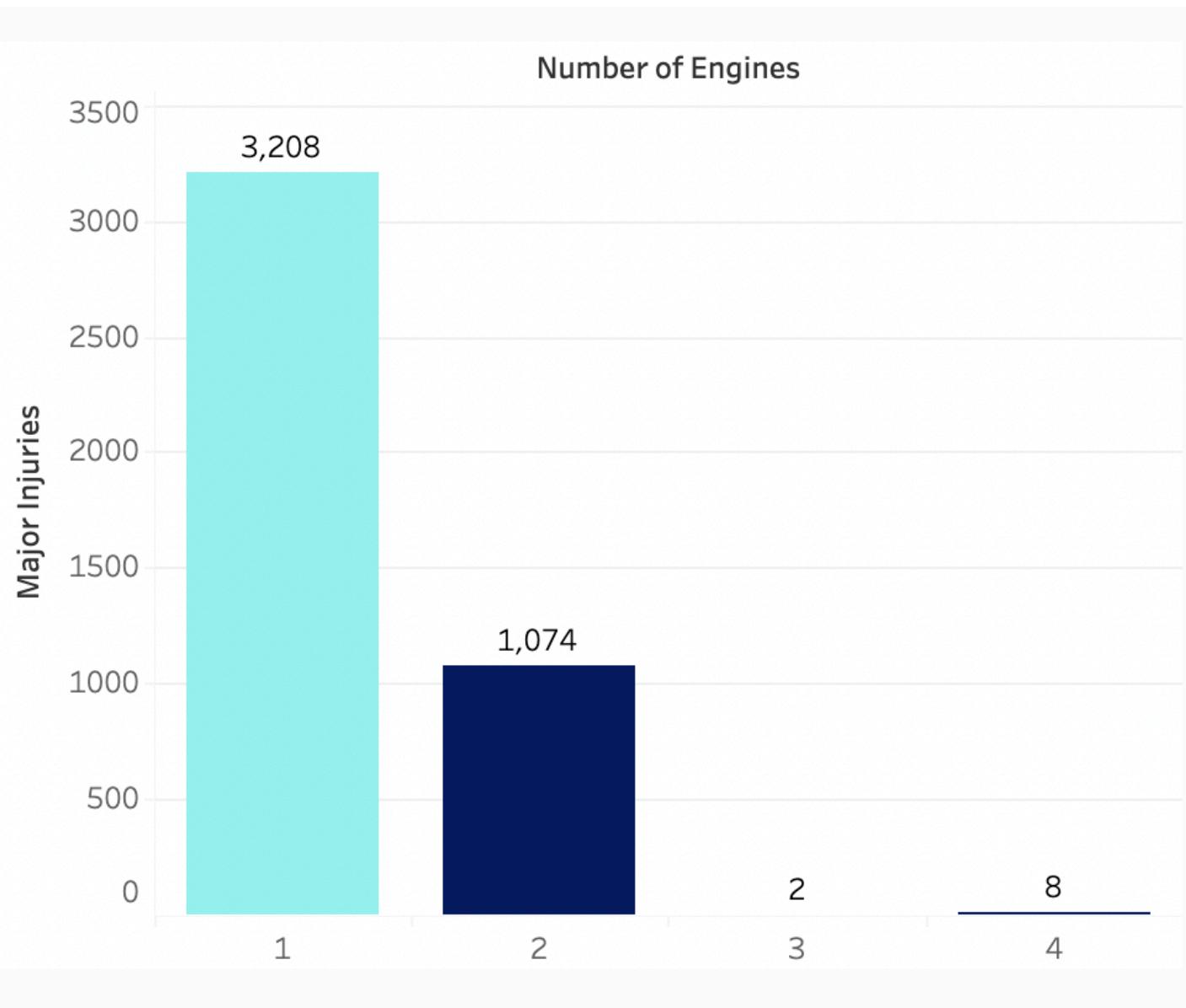
The first part of our analysis identifies the type of plane StellarSkies should consider. Our analysis shows that single-engine and reciprocal-engine planes are the most dangerous.

Single engine airplanes accounted for 75% of major injuries between aircrafts in our dataset between 1-4 engines.

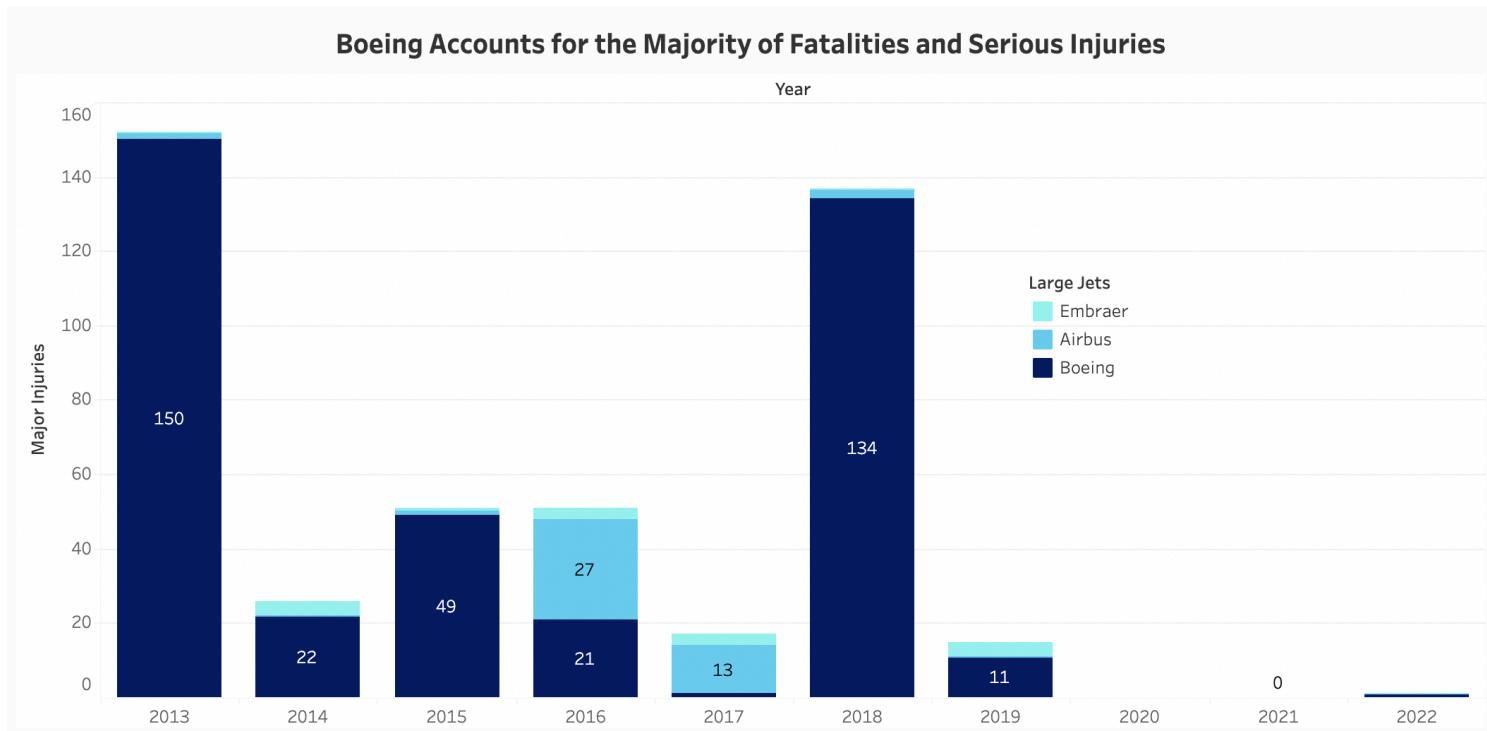


Reciprocating engine planes accounted for 77% of major injuries between those listed as turbo fan, turbo propeller, turbo jet, turbo shaft, and electric engine planes.

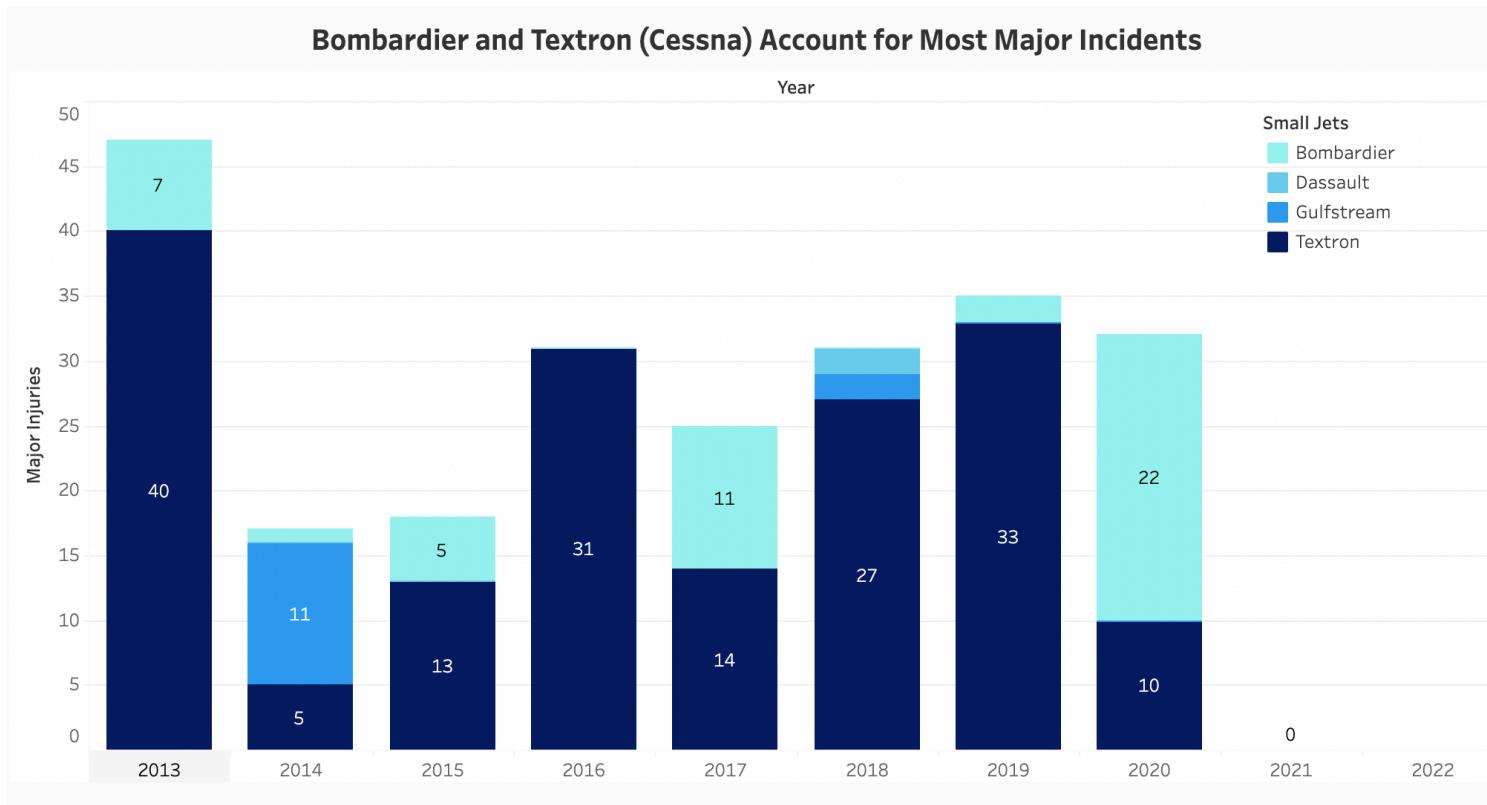
According to the FAA, "Reciprocating engines and turboprop engines work in combination with a propeller to produce thrust."



The second part of our analysis focused on individual manufacturers. Between total major injuries of Boeing, Airbus, and Embraer airlines, Boeing accounted for 85% of major injuries.

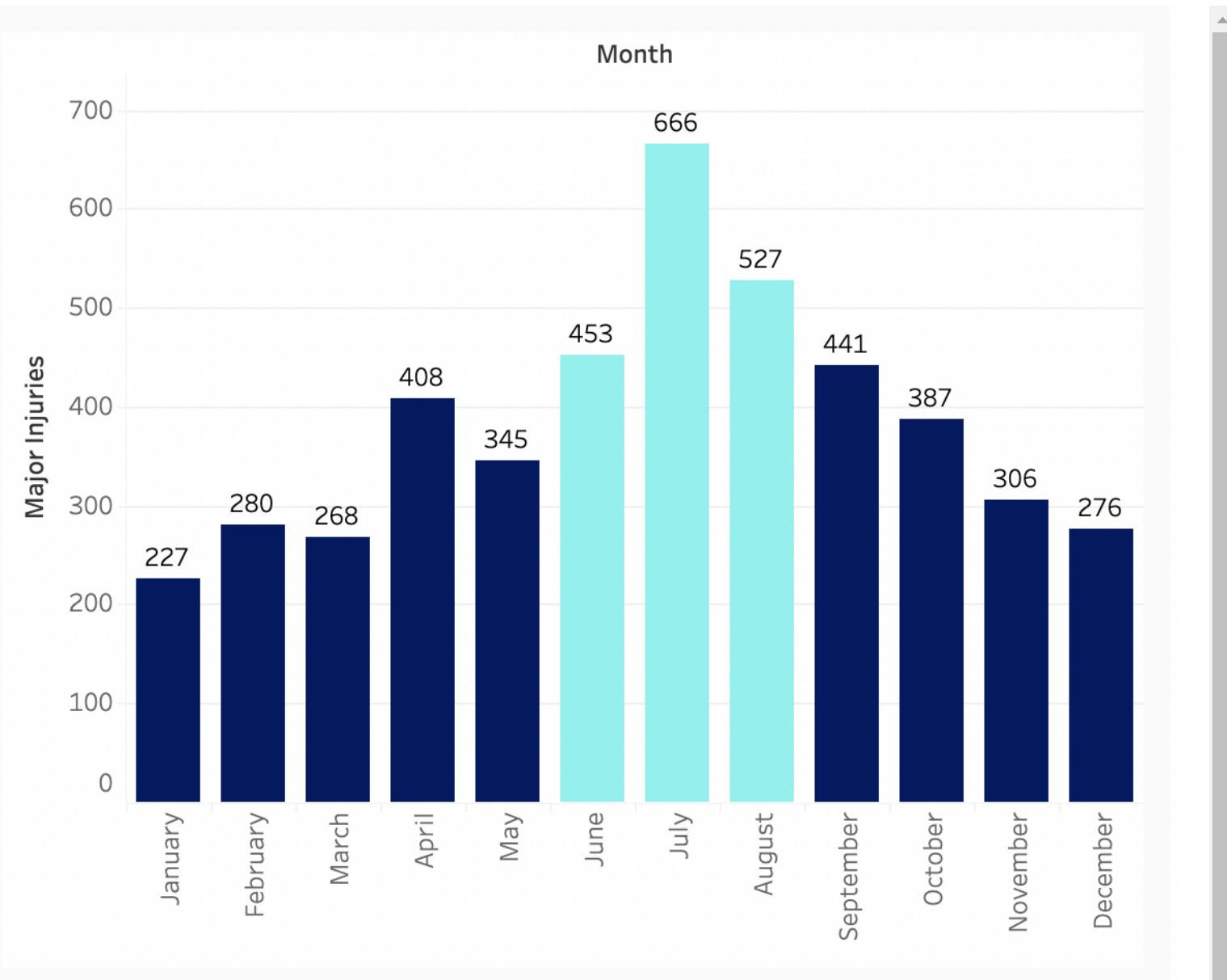


For smaller business jets, Textron accounted for 96% and Bombardier accounted for 3% of major injuries between Textron, Bombardier, Gulfstream and Dassault airlines.

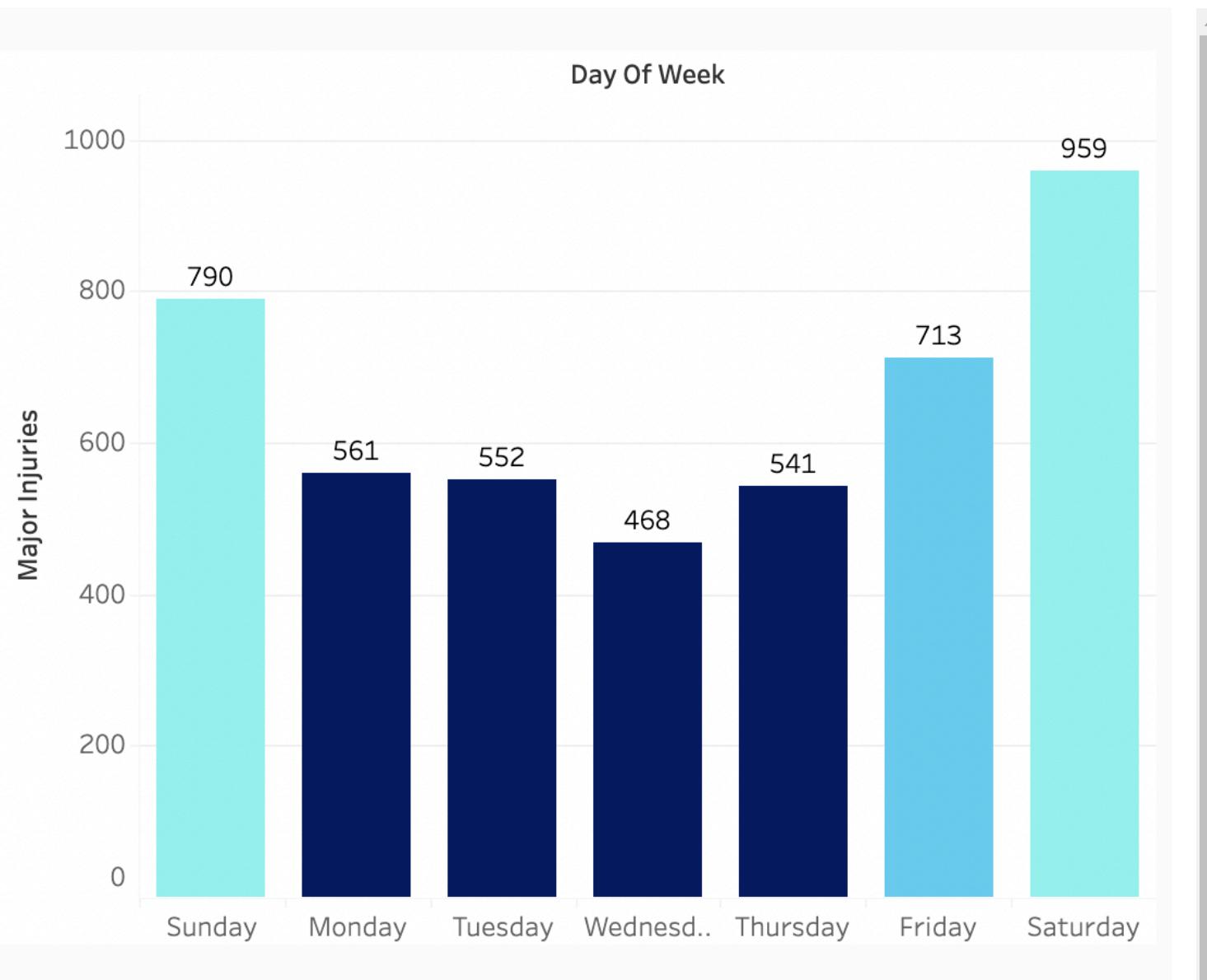


Safety Considerations

Next, we took into account variables that negatively impact safety, such as the schedule of operations. Despite accounting for only 25% of the year, the months of June, July and August accounted for 36% of major injuries.



Incidents on Saturdays and Sundays accounted for 39% of major injuries during the week.



Conclusion

Our analysis reveals that:

1. Reciprocating engines and single-engine planes present the biggest risk of major injury and should

