Aviation Data, Inc.

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Business Understanding

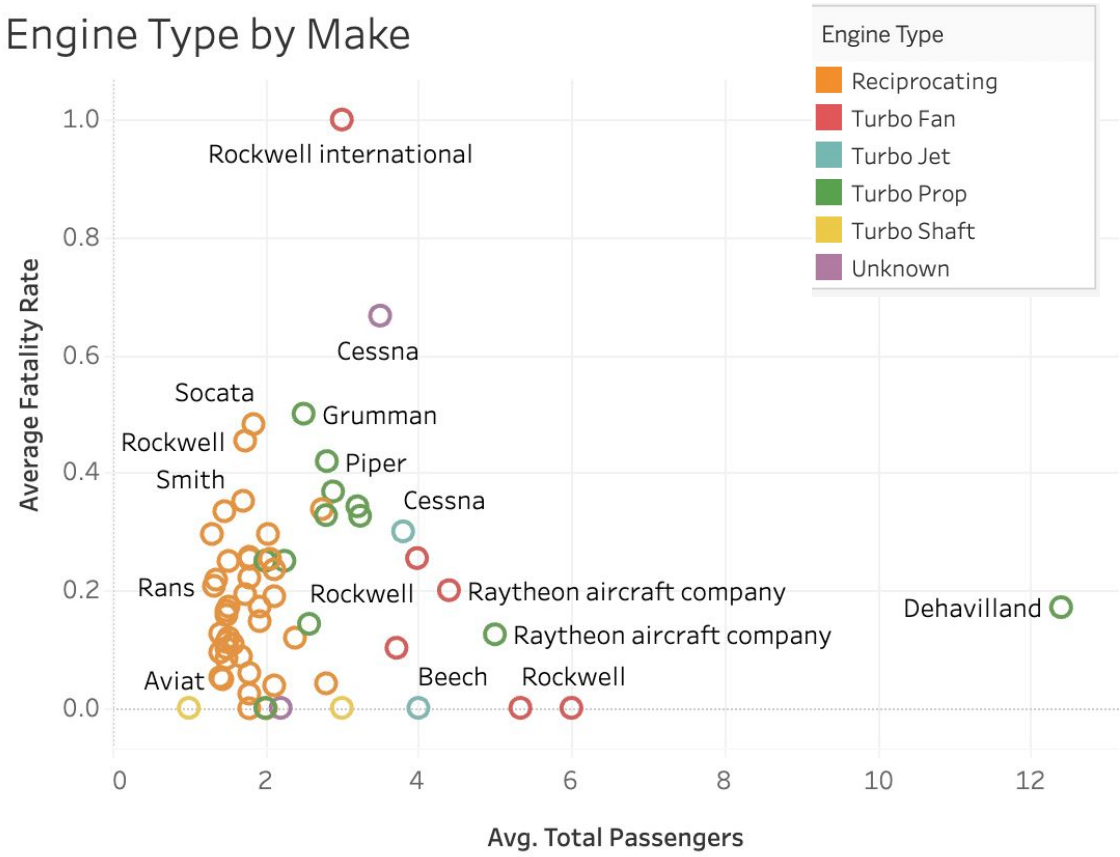
- Our goal was to distinguish which airplanes would be the least risk for this new aviation company for commercial and private flights.
- The stakeholders want to know how to start their company, which involves both commercial and private flights, using planes of differing sizes.
- Included in their aviation data set was information relating to a series of aviation enterprises with detailed explanations about flight locations, design specifications, and crash reports, along with fatality rates.
- Our data team wanted to know which parameters would have the largest impact on fatality rates and destruction levels of different aviation enterprises.

Data Understanding and Analysis

- The data that was given to our team contained a large amount of information, which contained detailed descriptions of the make, model, and manufacturing of each plane.
- Our data team decided to focus on airlines that contained a large enough amount of information on individual flights, for reliability purposes.
- Technological advancements have been implemented by the FAA and the most recent improvement came with the digitization and implementation of anti-collision and terrain warning sensors used by Air Traffic Control (ATC) in 1980, therefore we only took into account data past that date.
- The shape is 90,348 x 31.
- Some of the columns include:
    - Injury Severity
    - Aircraft Damage
    - Total Uninjured
    - Weather Condition

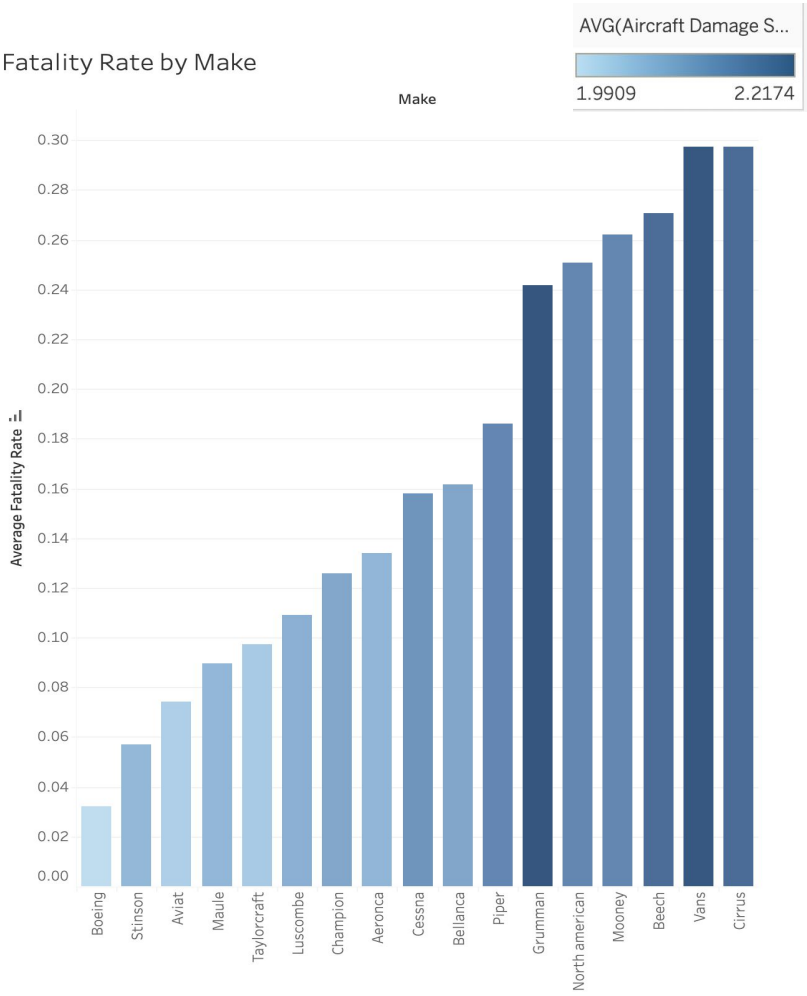
Data Understanding and Analysis

- Compares Average Total Passengers to Average Fatality Rate.
- We see a cluster of orange data points towards the low end of either axis.
- Reciprocating Engines
  - Associated with the lowest average fatality rate of the various engine types present in the data.



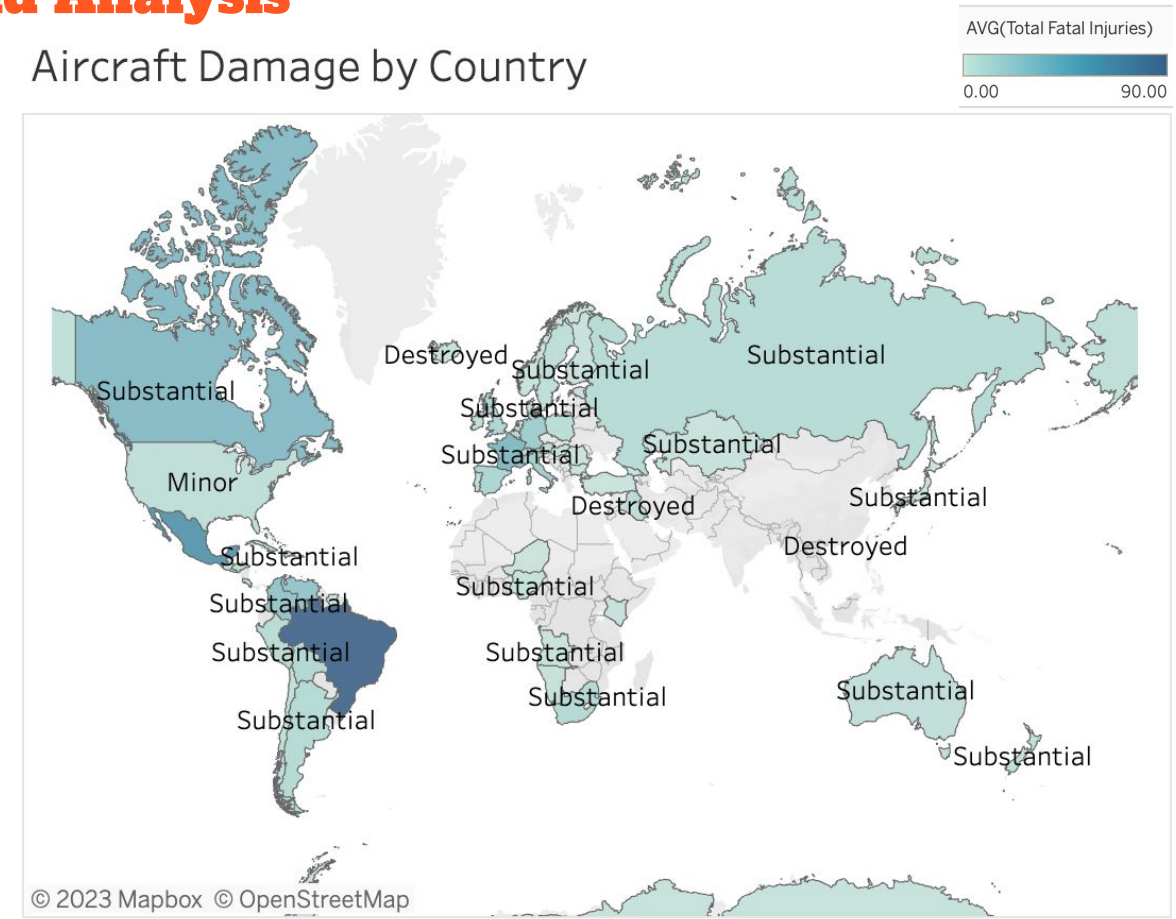
Data Understanding and Analysis

- Compares the Make of each flight and the Average Fatality Rate.
- Boeing is associated with the lowest average fatality rate.
- The darker the color, the higher the destruction severity.
- The combination of higher destruction severity with a lower fatality rate, suggest that the design of the plane by that particular make is safer and more durable.



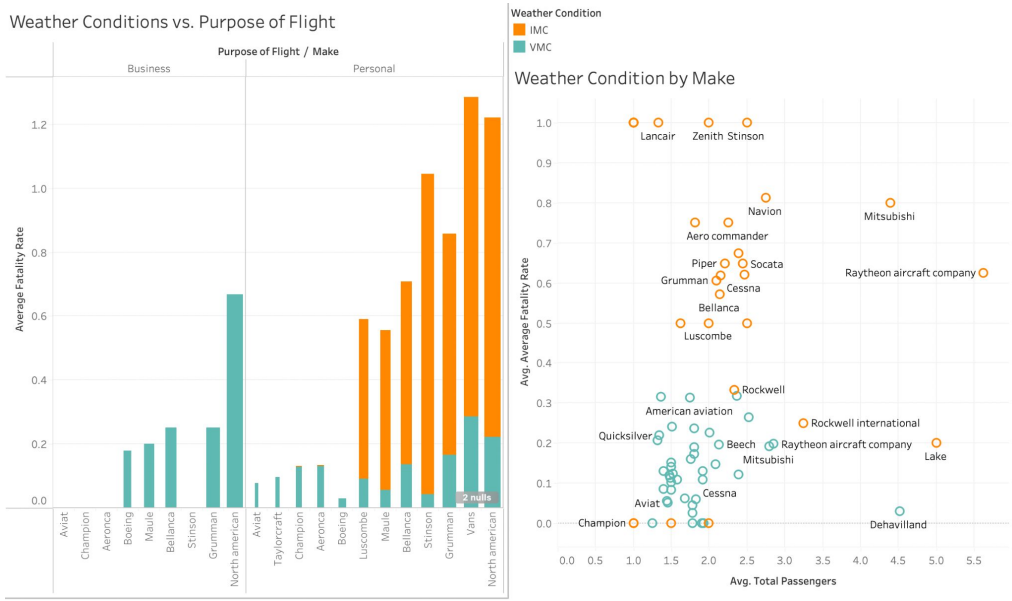
Data Understanding and Analysis

- Average level of damage aircrafts sustained by country.
- Flights originating from the United States on average sustain minor damage, while other countries with a sufficient amount of data list more severe levels of damage.
- The intensity of the color in each country indicate higher fatality rates.
- Least Safe: Brazil, Canada, Mexico, and France.
- Safest: US, Scandinavia, and countries within Oceania.



Data Understanding and Analysis

- Two Weather protocols for flight controllers are IMC (Instrument Meteorological Conditions) and VMC (Visual Meteorological Conditions).
- Fatality rates rise significantly under IMC conditions
- Personal flights seem to be the only airplanes that fly under IMC conditions



Conclusion

- The first visualization included pointed us in the direction of planes with a reciprocating engine. The second visualization let us know that Boeing was going to be the safest make to recommend. Finally, the third visualization confirms the second point.
- Based on our analysis it would seem that the best recommendations for Makes to invest in would be Boeing, Stinson, Aviat, Maule, and Taylorcraft
- The best models to invest in would be planes that use reciprocating engines
- The safest locations to travel from are the United States, Scandinavia, and Oceania

Next Steps

- We would look into whether or not there is a relationship between the facts that most planes in the USA sustained minor damage and that Boeing is popular in the USA.
- For example:
  - What percentage of American flights are Boeing?
  - What percent of international flights are Boeing?

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