

Christopher Jimenez



Aircraft Risk Analysis

Business Problem



- New venture in aviation
- Assess risk of aircrafts
- Informed decisions for success

Summary

- After reviewing the aviation accident dataset, three recommendations stand out to mitigate risk entering the field of aviation.
 - Time-Based Safety Measures
 - Regional Safety Measures
 - Engine-Configuration Awareness



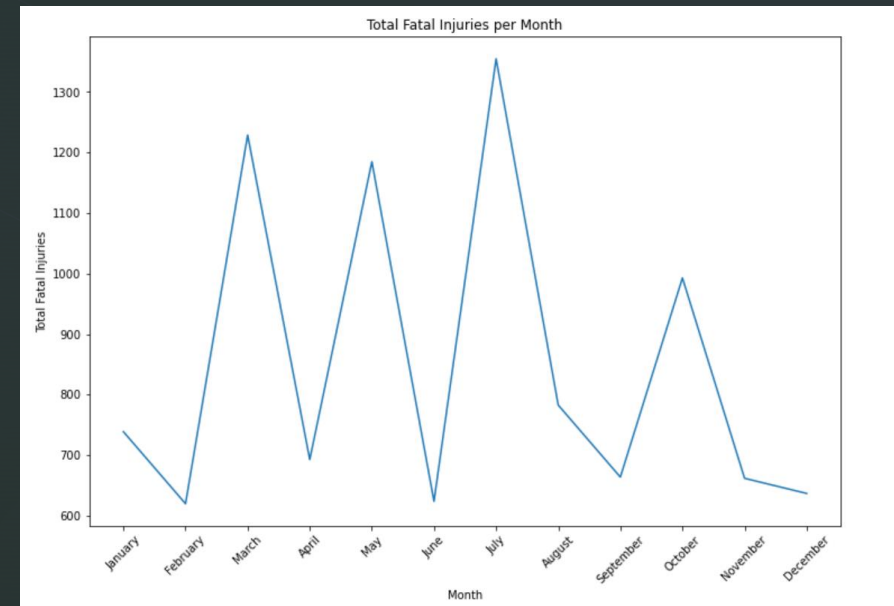
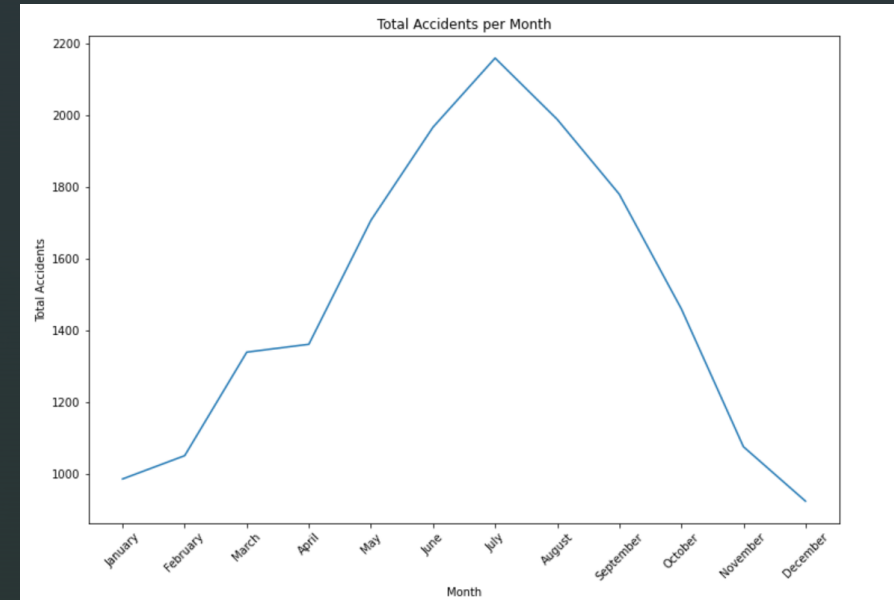


Data

- Airplane accidents
- Data filtered from 2010 to 2023
- Occurred in USA
- Focuses on fatal injuries by
 - o Time by Month
 - o Location by State
 - o Engine Configuration

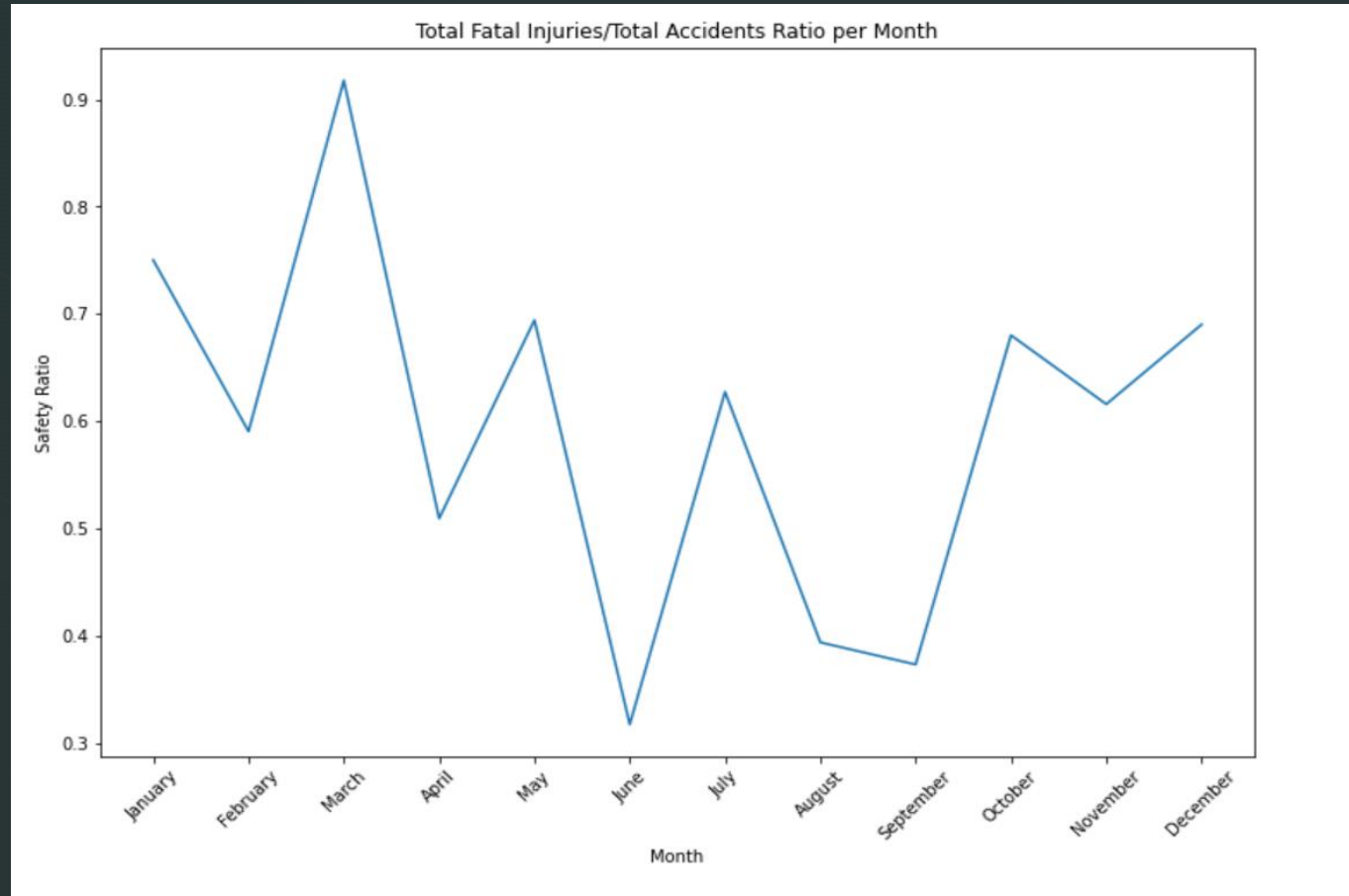
Data

- Total Accidents
- Total Fatal Injuries
- Safety Ratio
 - $\text{Total Fatal Injuries} / \text{Total Accidents}$
 - Lower ratio indicates less total fatal injuries per accidents

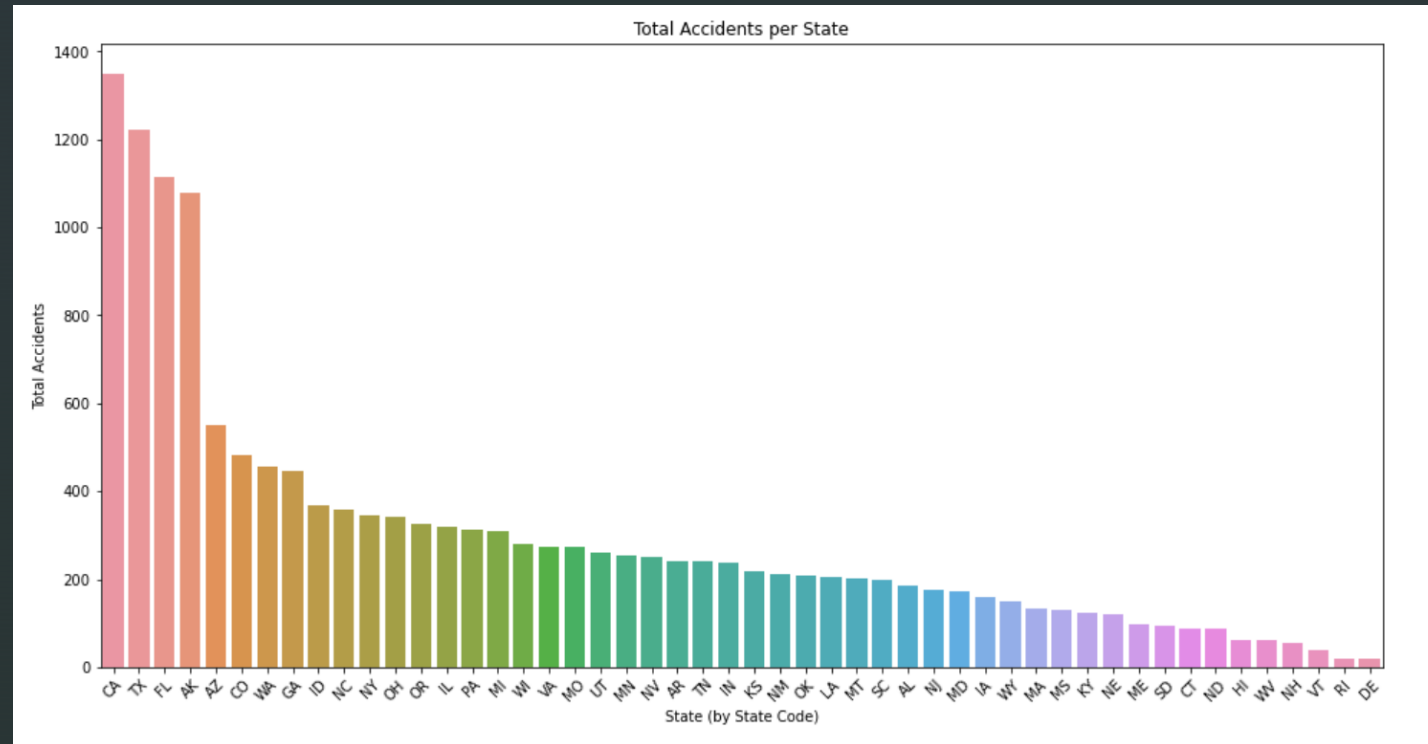


Results – Safety Ratio per Month

- Low Safety Ratio in Summer
 - High Accidents
 - Low Fatalities
- High Safety Ratio in Winter/Early Spring
 - Low Accidents
 - High Fatalities

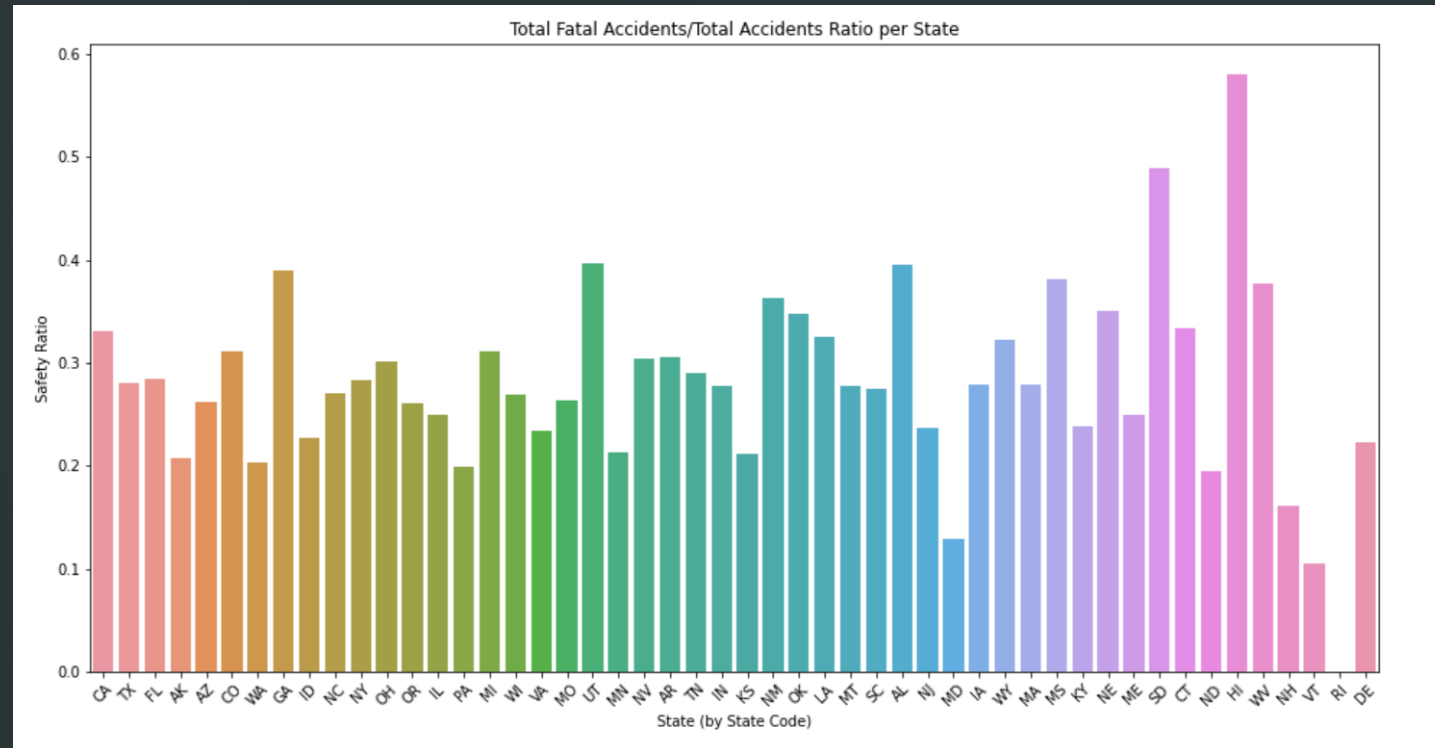


Results – Total Accidents by State



- High traffic areas more accidents
 - o Trend of higher to smaller populated areas

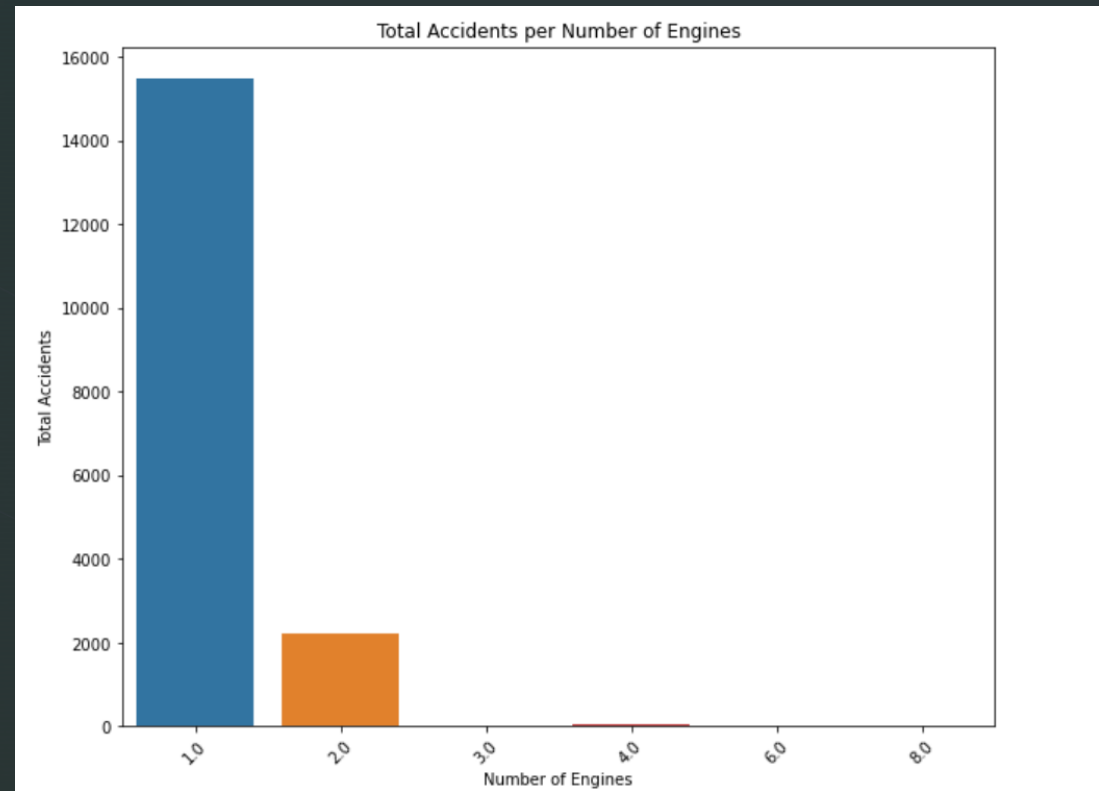
Results – Safety Ratio by State



- Majority lower than .3 Safety Ratio
- High Traffic areas – Low Fatalities/High Accidents
- Focus on High Fatalities-Low accidents
 - o Hawaii, South Dakota, Mississippi

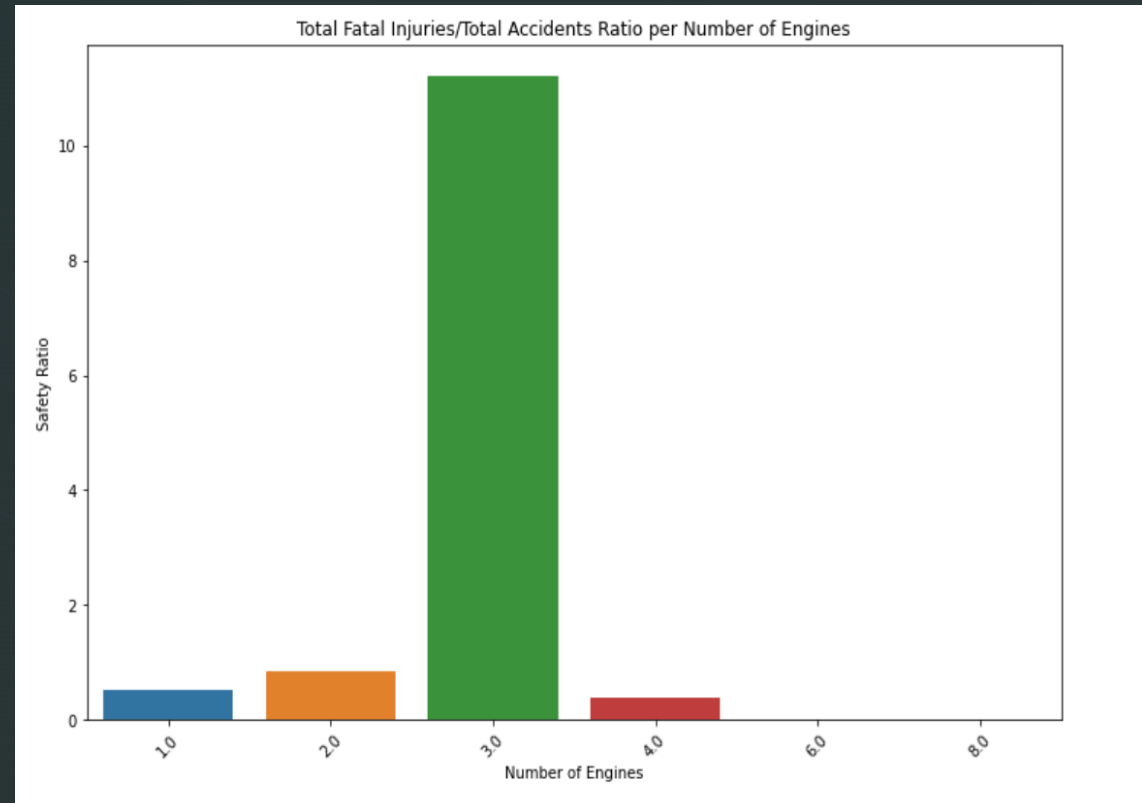
Results – Total Accidents per Engine Configuration

- Planes with 1 engine configuration
 - High Accident Count
- trend is lower with more engines

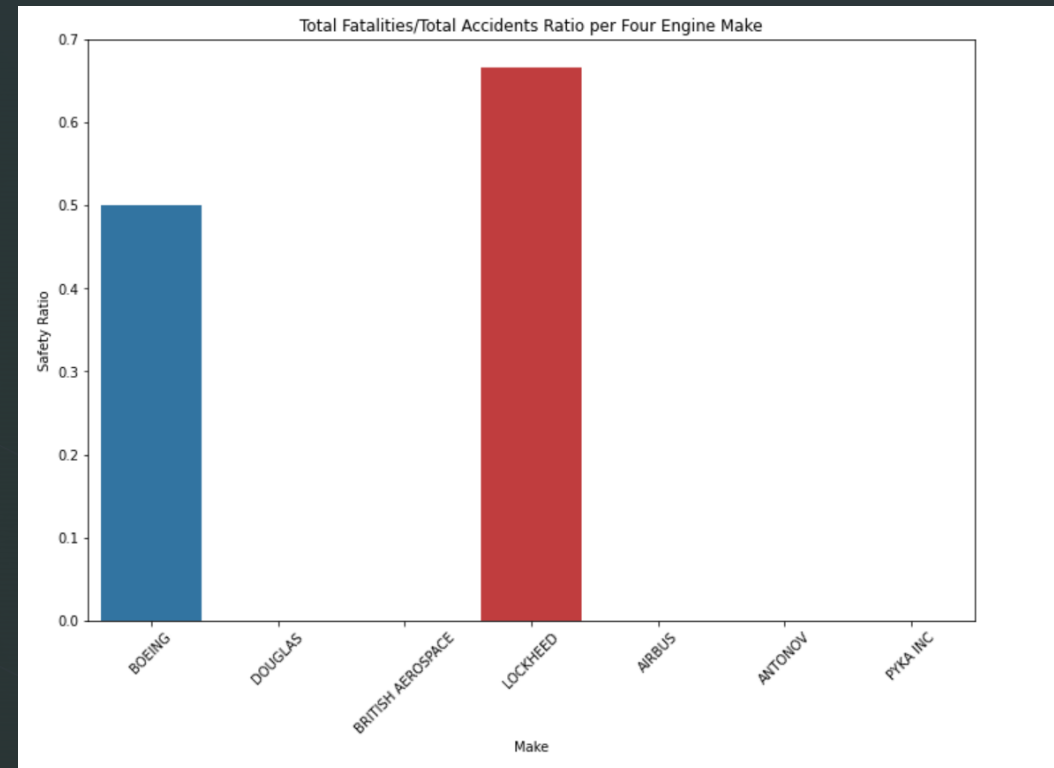
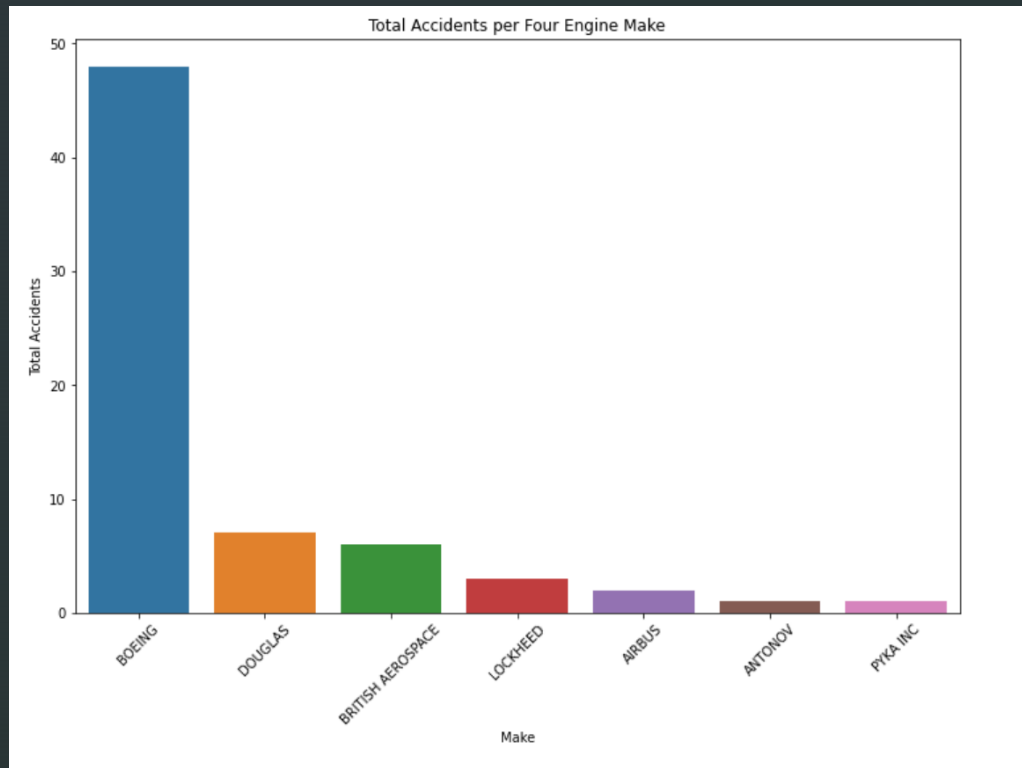


Results – Total Accidents per Engine Configuration

- High Safety Ratio
 - High number of fatal injuries/low number of accidents
- Four Engines
 - Low accident count
 - Low fatality count



Results – Engine Configuration Explored



- Four Engine Configuration
 - o Less Accidents
 - o Zero Safety Ratio indicates no fatalities

► Recommendations

- Time-based Safety Measures:
 - Targeted training programs, extra safety procedures, or enhanced communication protocols
 - Apply Successful measures from Winter and Spring months to improve safety in Summer season
- Regional Safety Initiatives:
 - Collaborate with aviation authorities and local operators in states with lower ratios
 - Tailor safety protocols to address unique challenges in each region
- Engine Configuration Awareness:
 - Consider purchasing airplane models with *Four* or more engines
 - Multiple Engines have decreased the likelihood of accidents therefore less fatalities

Next Steps

- Assess other factors such weather or purpose of flights
- Assess modern safety practices such as maintenance