

# AIRCRAFT SAFETY ANALYSIS

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# OVERVIEW

This aviation safety analysis uses the NTSB aviation accident database old forms that have been recently re-released in a signed digitized separable version and is intend to inform aircraft purchasers concerning the safety performance of various types of aircraft, as determined from historical accident data. This work is a contribution towards the mitigation of risks and the enhancement of operational safety in commercial and private aviation, by analyzing factors that influence aircraft safety.



# BUSINESS UNDERSTANDING

Pleasant and Simple At EasyJet, we have a strong history of innovation and exceptional performance as an airline, adhering to the highest standards for safety and risk management by choosing lower-risk aircraft models.

Our analysis includes tailored recommendations for the best aircraft models to meet our particular operational requirements across business, personal and instructional flights during both private or commercial operations.

Environmental and Operational Conditions In order to sustain the same level of appropriate safety, we need aircrafts that can operate safely at all weather condition, in all critical phases of flight including take off and risky conditions like landing as well be adaptable to different operational constraints.

# DATA UNDERSTANDING

The analysis uses NHSTA data of aviation accidents and incidents from the National Transportation Safety Board (NTSB) that include extensive records of pre-flight, flight, weather conditions and purposes. This data set has 90,348 records with a total of 31 columns covering information such as aircraft model (ex: Cessna, Piper), phase of flight (such as landing and takeoff), weather conditions (clear vs. stormy), purpose of flight (personal vs. business), accident severity (fatal vs. non-fatal) and type of damage to the airplane (minor or destroyed) etc., The number of engines and injury data counts etc is also included for the passengers



# DATA CLEANING

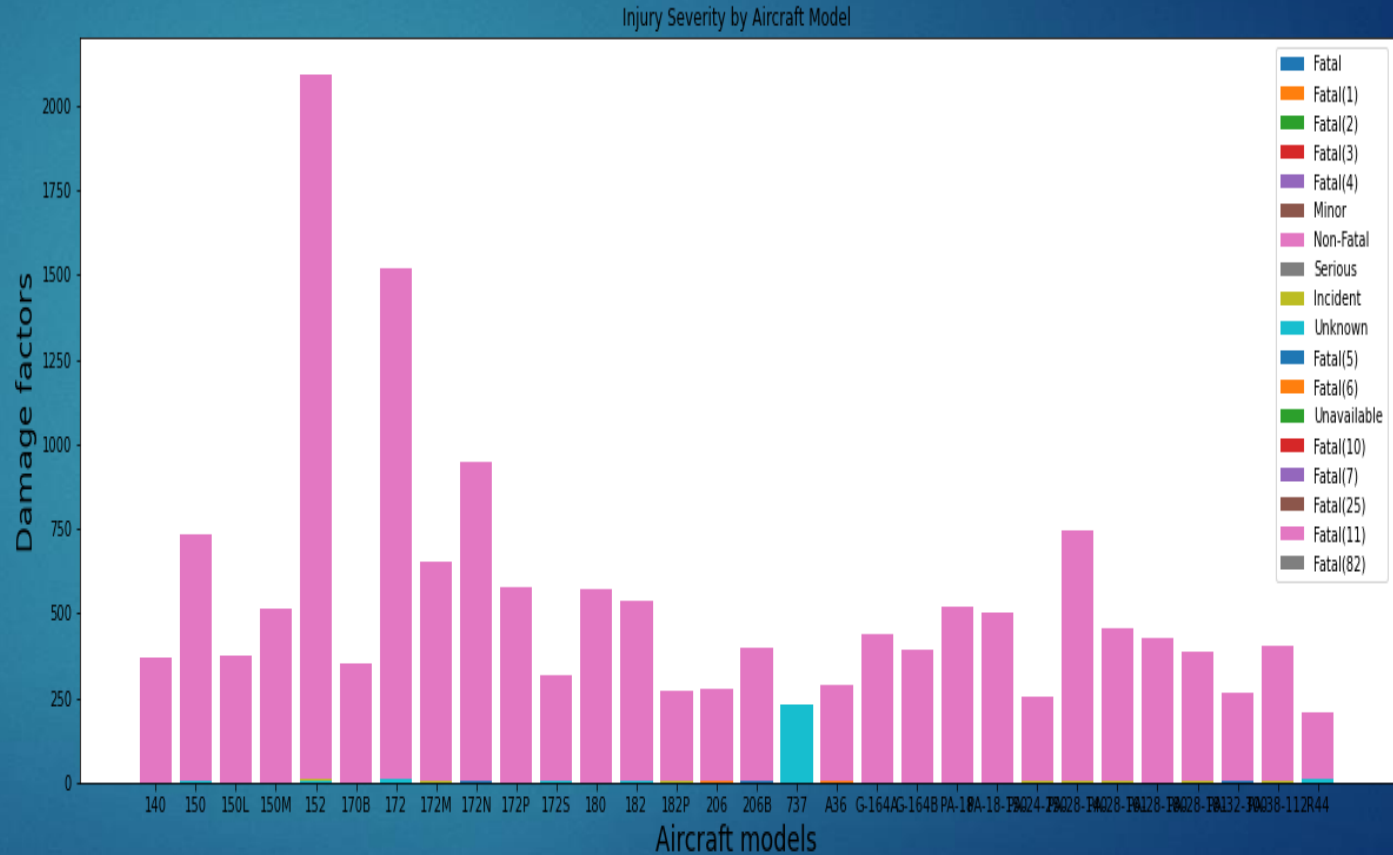
Data Cleaning is a crucial aspect of the analysis process as it ensures the dataset is correct and accurate, so that trusted results can be generated.

Clean-up of data Columns were removed that had more than 25% missing information to improve quality, and duplicates identifications made removals from the wrong accuracies.

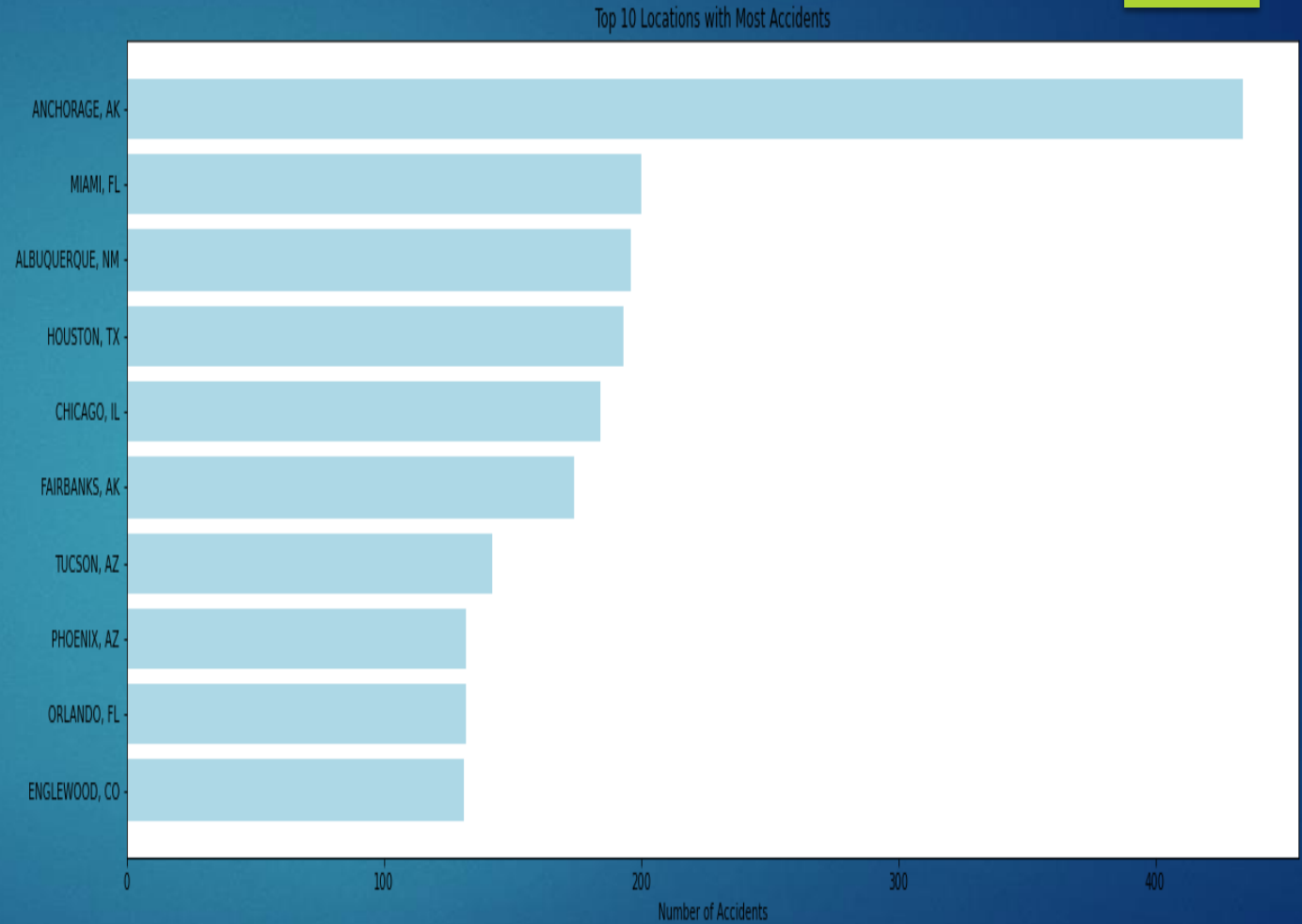
By cleaning the data, all errors, inconsistencies and duplicates will be detected and deleted or columns with an unreasonable amount of missing information will be excluded in order to guarantee reliability.


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The x-axis lists the aircraft models, while the y-axis displays the damage factors. Each bar's height stands for the damage factor of a specific aircraft. This gives you a picture of how aircraft model and category influence the extent of damage. The chart makes it easy to compare the impact across different aircraft types.



The graphic meant for the plot shows how many accidents occurred in a horizontal bar graph with the top 10 locations represented on the y-axis and the corresponding number of accidents on the x-axis. The length of the bars indicate the number of reported accidents in each location. The plot enhances the understanding of the areas that experienced the highest number of accidents.





The safety measures should be targeted to reduce the unsafe condition of specific model aircraft, e.g., B737, A320 and increase the overall safety level in civil aviation. The focus on North America and Europe also makes sense, as these regions have some of the highest accident rates. As with general aviation aircraft, forms discrimination would require enhanced safety regulations and pilot training. There is a wider context of what the best type of engine for safety is, but turboprops and turbofans tend to be regarded as the safer engines. Weather causes the most accidents, primarily thunderstorms and icing — pilots need to enhance their skills to survive these conditions. Lastly, accidents frequently occur at critical points, such as takeoff or landing and it is important to always be aware of this danger. With these focus areas for the aviation industry, it can bring down the accidents and thereby take safety concerns to a scale never experienced before.



# NEXT STEP



Extensive research is very instrumental for weighing aircraft for acquisition, as it will avail valuable insight into major factors like fuel efficiency, planes' life span, how much money is spent on maintenance, and other metrics which could be applicable in making our final decision on which aircraft to acquire for our fleet.



# THANK YOU!

Should you have any queries or require further clarification, kindly do not hesitate to contact.

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