Masinde Victor

Moringa School

AIRPLANE RISKS ANALYSIS PROJECT

PROJECT OVERVIEW

- This project deals with a company that wants to venture into another business so as to expand their portfolio.
- The company is interested in aviation, specifically purchasing planes for use in commercial and private purposes.
- They however do not know the risks that are associated with this type of business and that hinders their decision making.
- My project is aimed at looking into the risks associated with operating this type of business.

BUSINESS UNDERSTANDING

- The Business at hand deals with airplanes which touches on broad fields.
- Since the business targets both public and private business plans, the stakeholders in the business will be of a wide range.
- The Company itself is a stakeholder, the companies selling the airlines, the airports they will be operating in, the passengers, the crew who will handle the business and the government in the country of operation are all stakeholders.
- Our success criteria is entry into aviation business while mitigating risks.

DATA UNDERSTANDING

- For my project, I am working with data that has already been collected by other data scientists and stored in Kaggle.
- The data is stored in a csv format .
- When we read the data to our notebook using the pandas library, we get a dataframe which has 90348 rows and 31 columns.
- The columns define our data by giving the different fields their names while the rows hold the information of different columns.
- From a quick look at the dataframe, we know that the data we are dealing with is from investigation of aircraft accidents.
- We have both continuous and categorical data, the latter making the most part of our data with 26 out of 31 columns being categorical data.
- The categorical data is in object form while the continuous data is in float form.

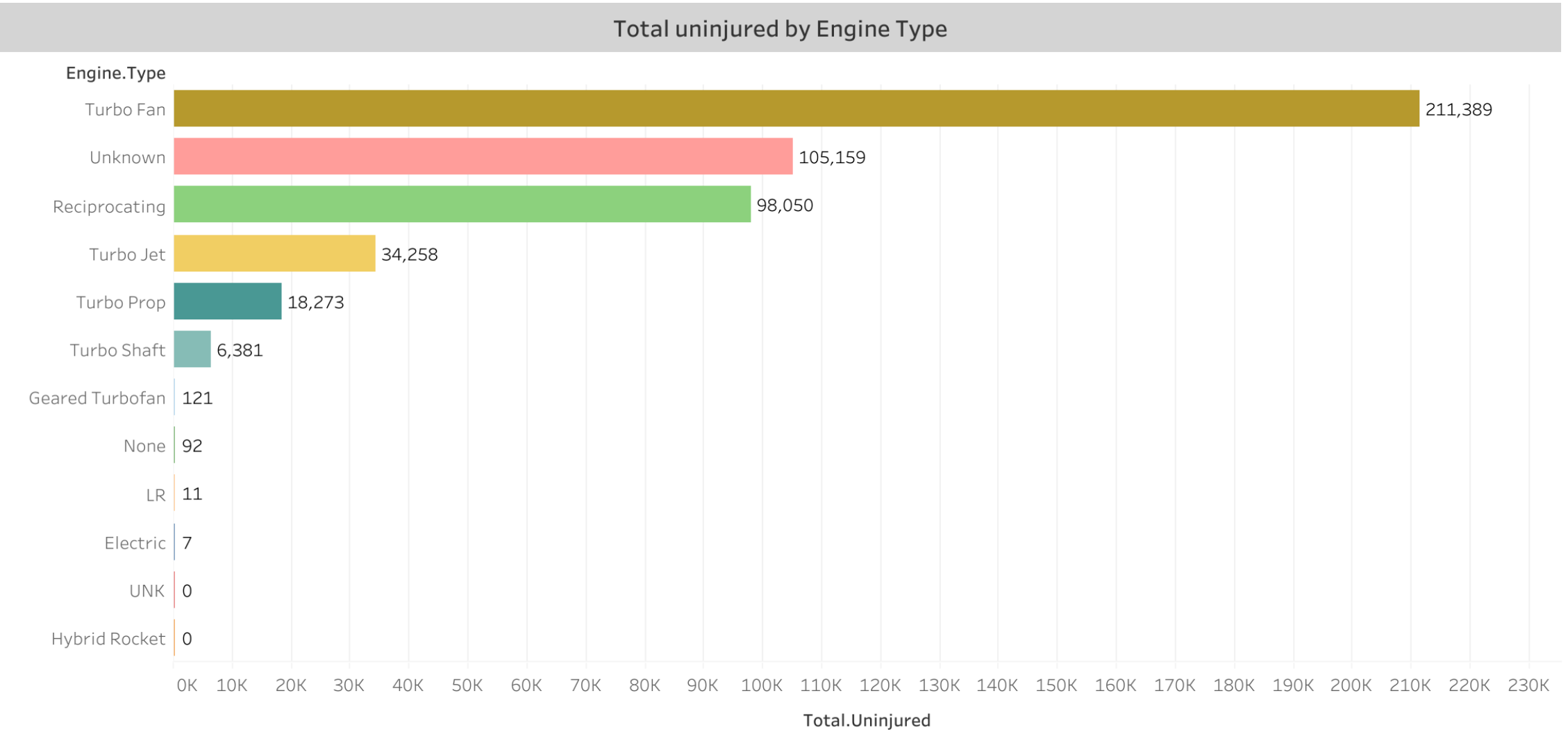
DATA CLEANING

- The data has missing values, unnecessary columns and duplicates in it.
- I started by making a copy of our original data for future reference if I will need to look at original data.
- I Checked for duplicate and dropped them, leaving only one unique row in cases where the rows were duplicated.
- I studied my columns and dropped those that will not be relevant for my project.
- I checked for null values and discovered that our data had missing values in 30 columns.
- For continuous data, I filled the missing values with a mean because it reduces bias and maintains relationship between our data.
- For my categorical data, I filled the missing values with an placeholder, 'Unknown'.
- Dropping the rows with missing values would have led to me losing 90% of my data and it would affect the quality of my research.

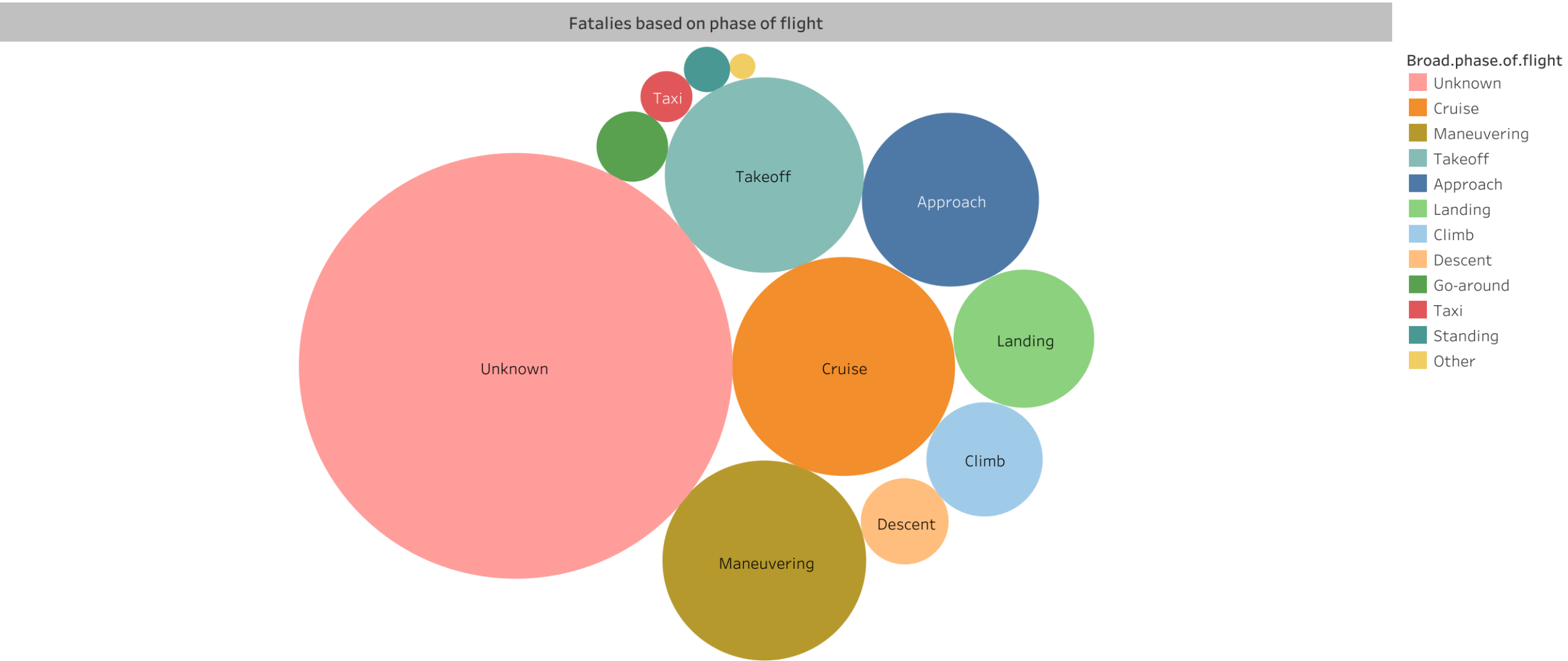
EXPLORATIVE DATA ANALYSIS

- After cleaning my data, it is now ready for analysis and visualization .
- When doing analysis, often you compare two different variables affect an outcome.
- To investigate the various relationships between variables in our data, we use the .groupby() method which helps us to group the columns together and do aggregation.
- Since the project is specific to aircrafts for business, I went to the aircraft column and specified that I only want to deal with airplanes alone in my analysis.
- I perfomed various groupby functions using 'Total.Uninjured' as my aggregation element.
- Since we want to pinpoint the aircrafts with the lowest risk, I used uninjured people as my metric for measuring the level of risk in this project.
- After grouping data in various categories, I came up with visualizations to help in interpreting the grouped data.

VISUALIZATION

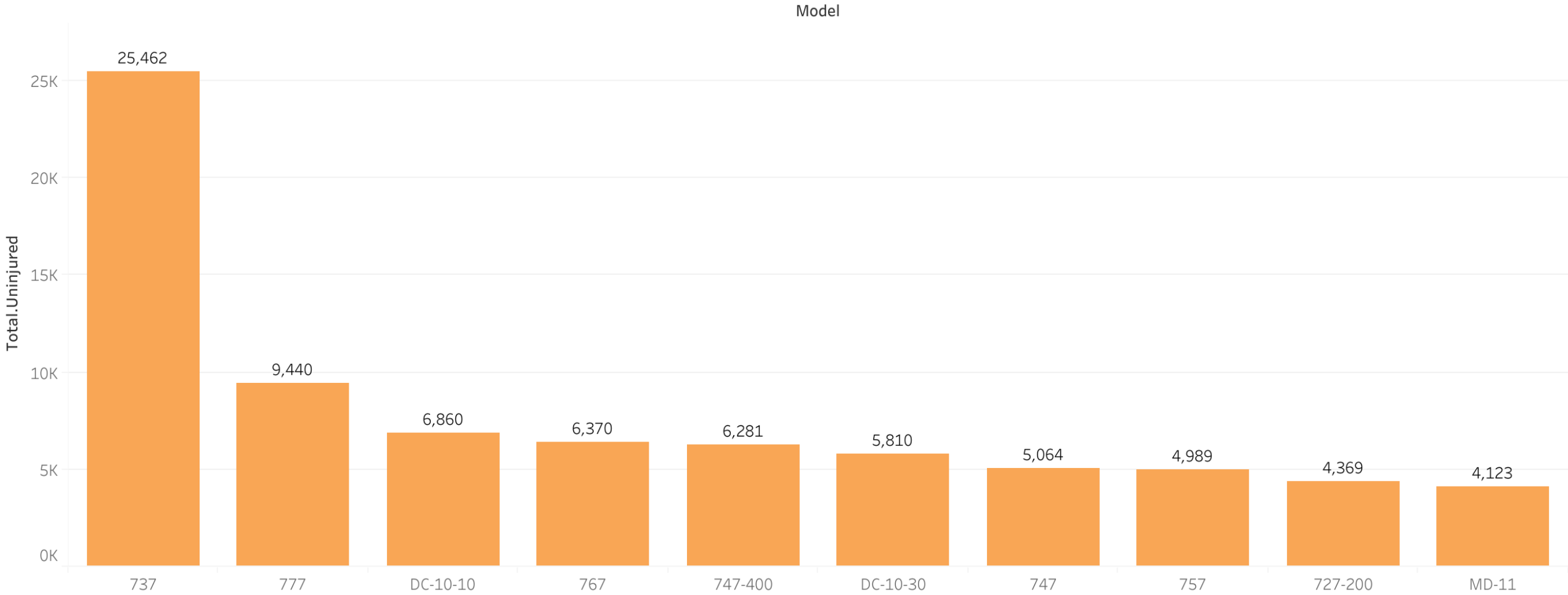


VISUALIZATION

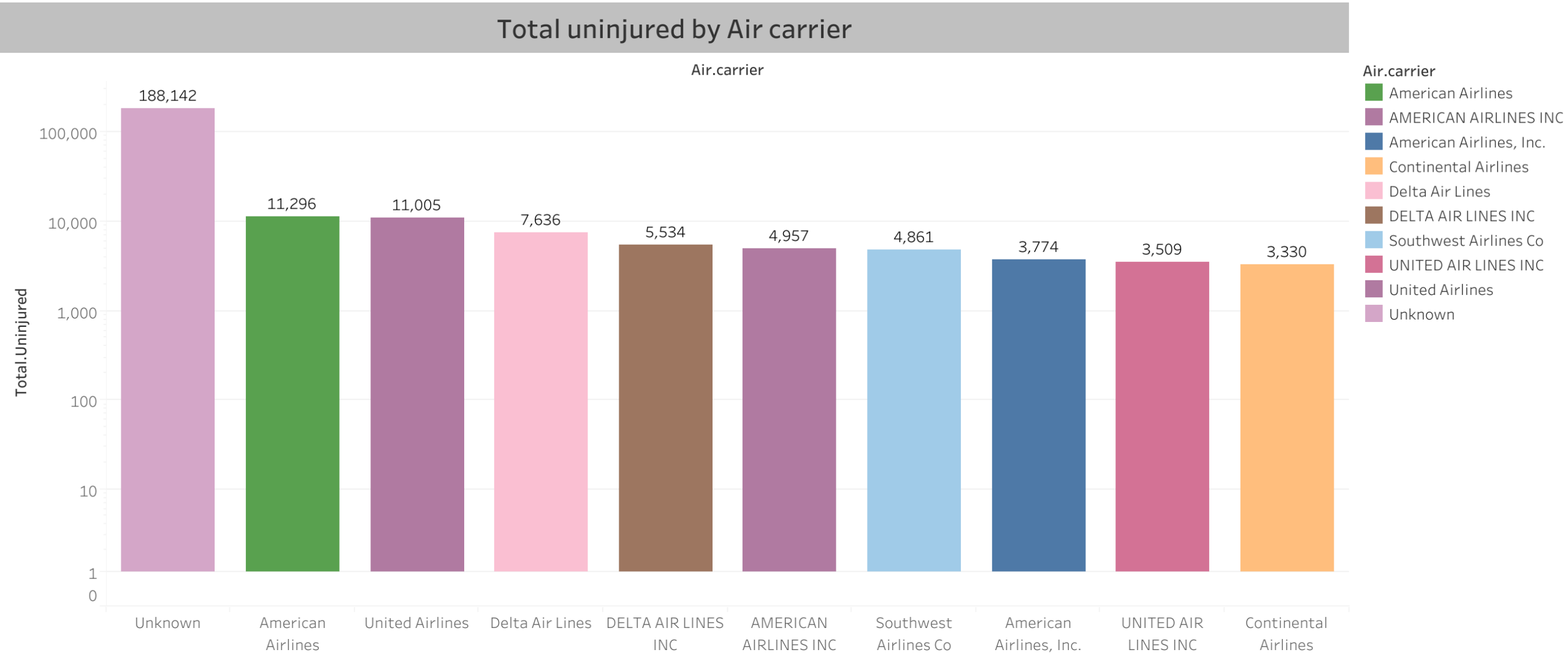


VISUALIZATION

Total uninjured by model



VISUALIZATION



CONCLUSION

- After plotting a bar graph, we find that model 737 has the highest number of uninjured passengers. model 737 is the model with the least risks.
- After visualization, we find that American Airlines has the highest number of uninjured passengers . Airlines is the air carrier with the least risks.
- From our Bar graph visualization, we see that passengers are more likely to be safe in planes with a Turbo fan compared to other planes as it has the highest number of passengers who were uninjured.

RECOMMENDATIONS

- After completing data analysis, the recommendations from the study are as follows:
- Based on our findings, I strongly recommend that the head of the new aviation division focuses on buying the 737
- model aircraft to be used in their new business.
- I recommend that the head of the new aviation division buys aircraft that runs on Turbo fans type of engines.
- I strongly recommend that the head of the new aviation division focuses on using the aircrafts they will purchase only for commercial and private businesses to reduce their exposure to risk.
- I strongly recommend that the head of the new aviation division puts emphasis in training their crew on matters of safety and evacuation in order to know how to deal with different challenges and prevent or reduce loss by minimizing risk.

NEXT STEPS

- The head of the new aviation division should proceed with purchasing the 737 model aircraft as strongly recommended.
- Focus on developing comprehensive training programs for the crew, emphasizing safety and evacuation procedures.

✓ Develop customized training modules for various emergency scenarios

✓ Incorporate regular drills and simulations to practice evacuation procedures

- Implement strategies to minimize risks associated with commercial and private flights.

✓ Conduct thorough risk assessments for each potential client or route

✓ Develop contingency plans for emergency situations

THANK YOU