AIRCRAFT SAFETY SURVEY.

OVERVIEW.

- The purpose for this presentation is to provide an overview of our analysis and recommendations for Aircraft safety and precaution.

- I will begin by discussing the business understanding, followed by an overview of the data, analysis methods, and key findings.

- Project goals: The main goal of this project is to know the category of Aircrafts utilized in business/commercial and private enterprises. What place manufacturing and assembling companies are more inclined to accidents and mishaps.

Business Understanding.

- **Problem statement** - Identifying the least risky aircraft to launch the company's new venture at a reasonable and fair price. Moreover, to achieve a successful entry into the market.

- **Key Stakeholders** - Stakeholders will be of a wide range. Internal {Company stakeholders, potential investors}; External {government policies, competition(other airline businesses), customers}

- **Responsibility** - Acclimating to the aviation sector successfully and selecting an aircraft with the lowest risk.

- **Resources**- Industry reports, budget, data on aircraft safety, and expert consultations.

- **Risks** - Possibility of financial loss, accidents involving safety.

Data Understanding.

- The project entails information that has previously been collected by different data scientists. The data is stored in **Kaggle** whereby it is updated regularly and is stored in a **csv format**. When the data is read into my notebook using the pandas' library, a data frame with 90348 rows and 31 columns emerges. From a brief look at the data frame, we realize that the information we are dealing with is from the investigation of aircraft accidents. There are both categorical and continuous data, with the former making the most of the data.

Data Analysis

- After understanding the data to determine what is necessary/required and why, it is crucial to enter the market equipped with clear, extensive, comprehensive, and relevant knowledge. I identified the total number in percentage(%) of missing values in all columns whereby, it provided a basis for their relevance to provide key insights into my project.

- Decided to drop columns that are not relevant to my study and they included: Schedule, FAR.Description, Latitude, Longitude, Location, Air.carrier and Airport.Name. The column named Schedule has more than 85% missing values and Air.Carrier has more than 80% missing values as well.

- Next, all rows with missing values that were not adding any value to the data were dropped. Continuous data with null values were replaced by their **median** since it is less sensitive to outliers than mean.

The visualization below represents a comparison of engine types that caused fatal injuries.

Comparison of Engine types that caused fatal accidents
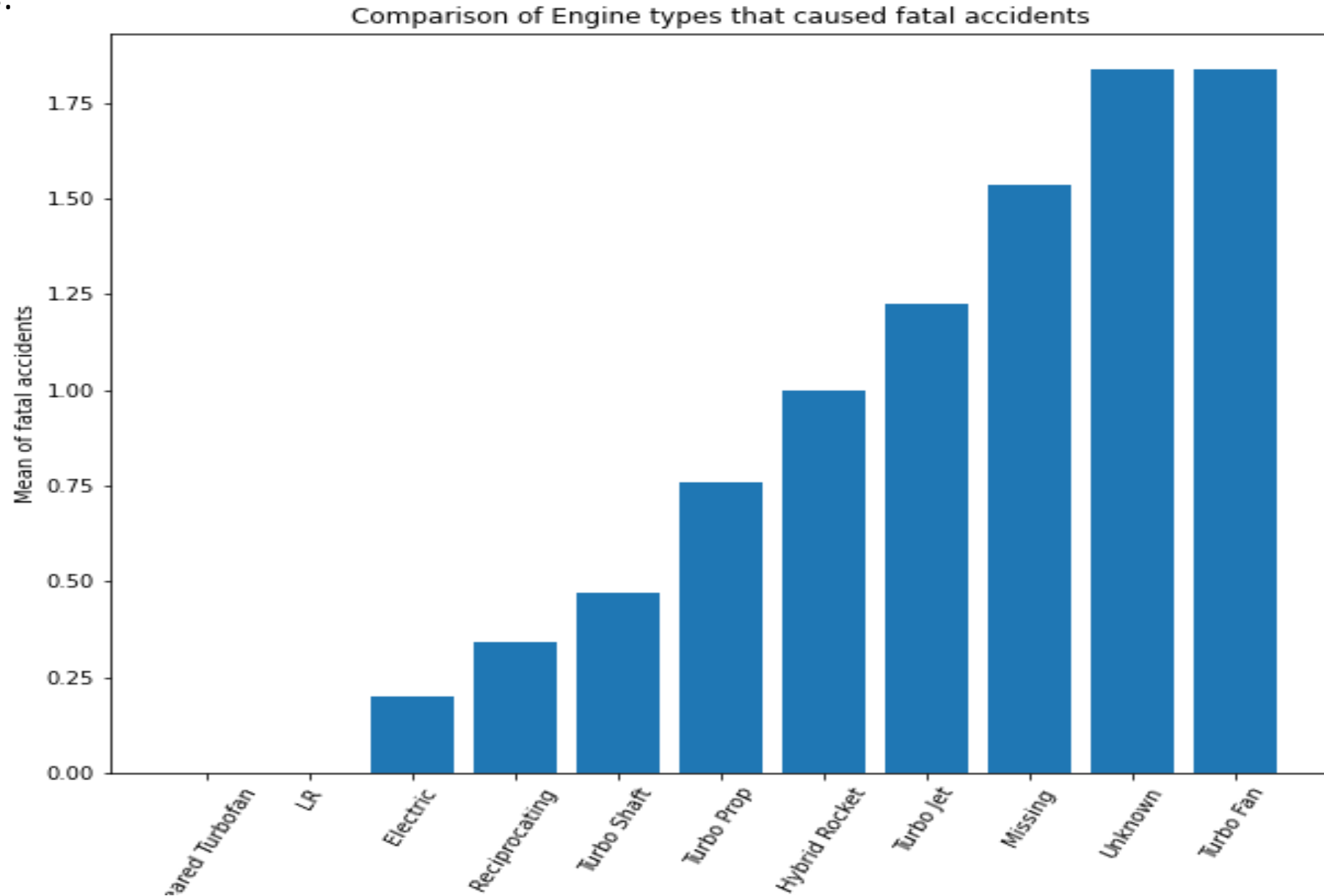
The visualization below represents various aircraft categories that caused fatal injuries.

Aircraft categories that caused Fatal injuries
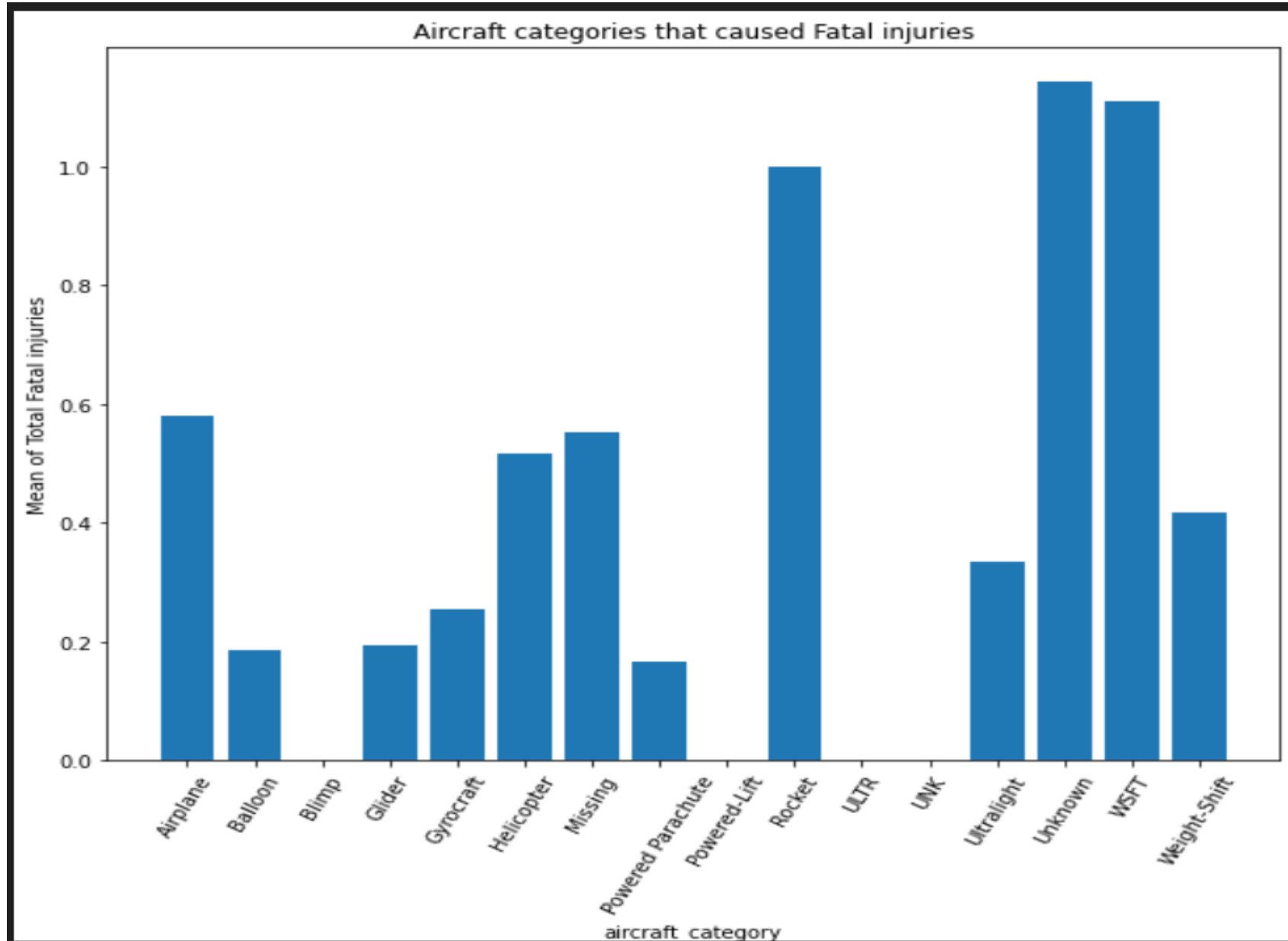
The visualization below represents Aircraft categories that had most survivors without injuries.

Aircraft categories that had survivors
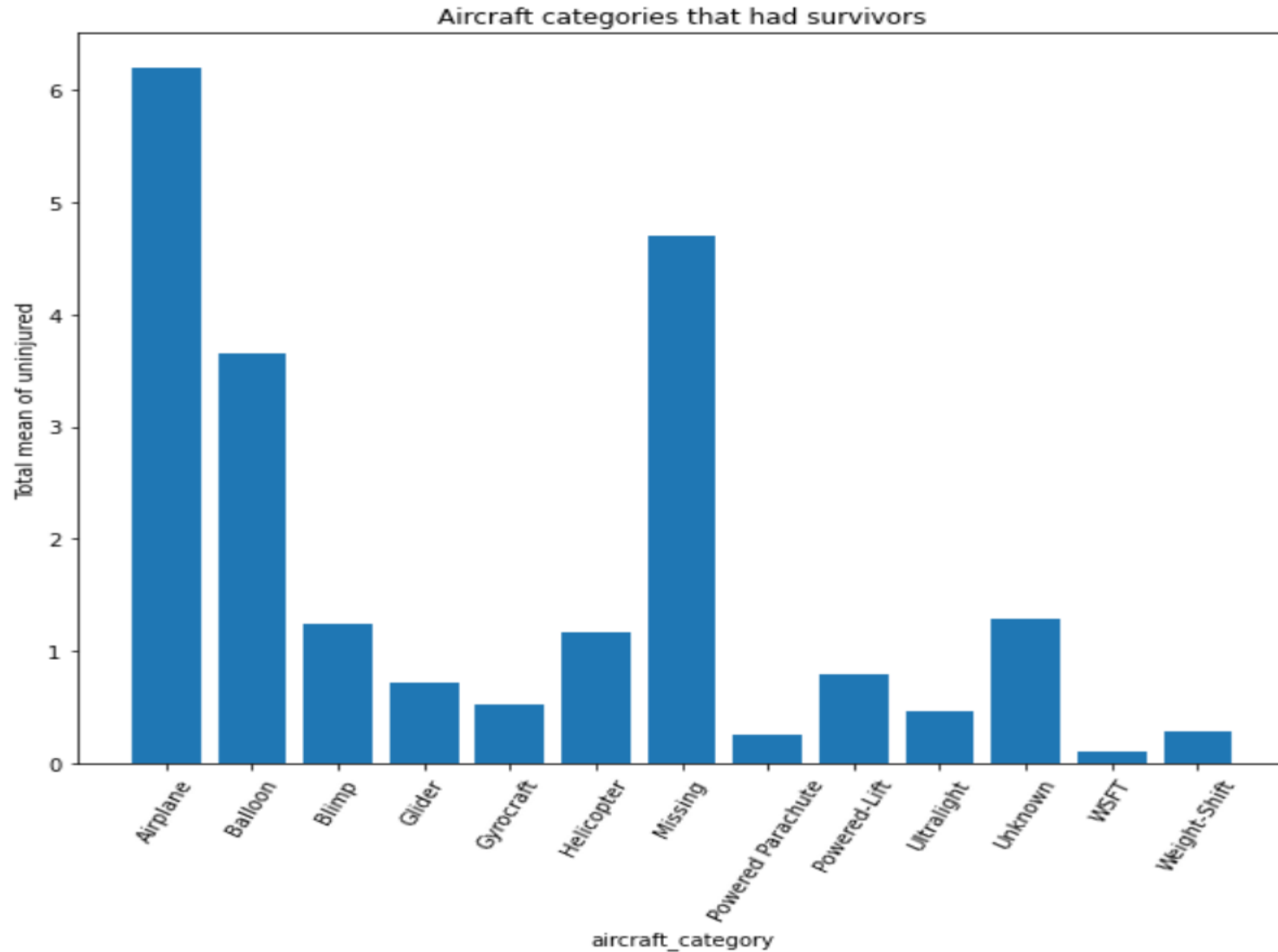
The visualization represents various Aircrafts with minor injuries

Horizontal Bar graph of total minor injuries
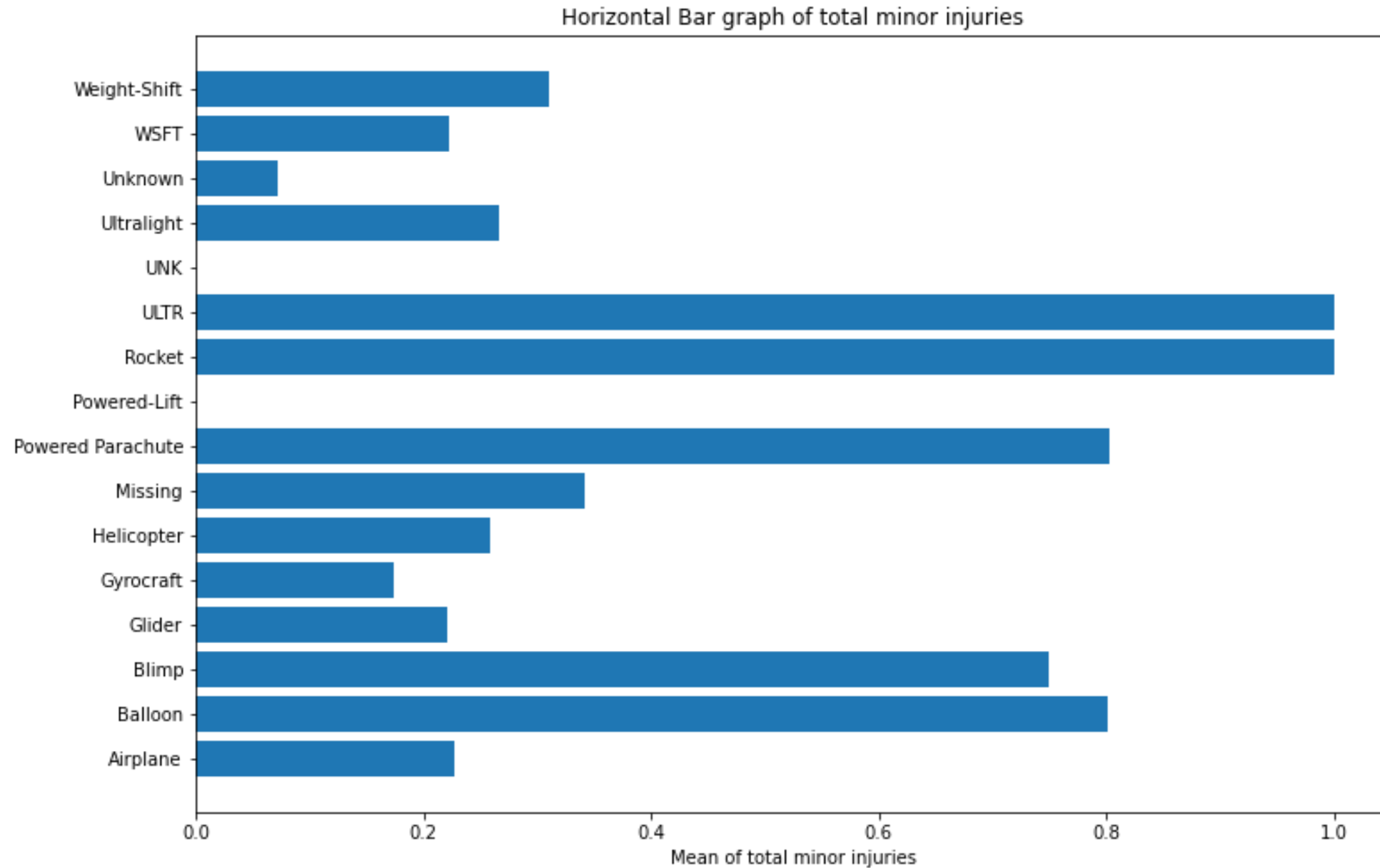
Conclusion and findings.

- Based on the comprehensive analysis and exploratory data analysis (EDA) conducted, the following conclusions can be drawn:

1. Engine-type turbo fan caused most fatal accidents whereas geared turbo fan & LR were the most safest engines since they did not cause any accidents.

2. Safest aircraft were; Blimp & Airplanes. Blimp has no fatalities at all and a low injury rate overall, whereas airplanes have low fatal injuries and the highest rate of uninjured individuals, hence they seem relatively safe.

3. WSFT is the aircraft that recorded the least amount of survivors after an accident, therefore being considered the most dangerous aircraft.

4. Powered-Lift, ULTR, and UNK are the aircraft that did not cause any fatal injuries after an accident.

Recommendations.

- Based on our conclusions and observations, we can go ahead and make the following recommendation:-

The best engine types to be used in aircraft are Geared Turbofan and LR since they have they caused zero(0) fatal accidents. As the company decides to venture in this business they ought to invest in the two engines.

THANK YOU:

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