RISK ASSESSMENTS OF AIRPLANES

Subtitle Here

Summary

Provide a concise summary of your project and findings here.

Outline

- **Business Problem**
- **Data**
- **Methods**
- **Results**
- **Conclusions**

Business Problem

An organization I am working for wants to expand into a new industry for diversity and the aim and focus is on Aircraft specifically Airplanes for commercial and private enterprises. They have decided to select and consider airplanes with the lowest or no risk to invest in.

However, they are unaware of the best airplanes to invest in. Therefore, they want me, as a Data Scientist, to help them understand the Airplane industry. I am in Charge of exploring the data and determining the best model and make of airplane considering the engine type and number of engines that are not risky.

This is in consideration of the weather conditions, location, and purpose of the flight. I must then translate these findings into actionable insights that the head managers and supervisors can use to help decide what airplane to invest in.

Data

The data analyzed was extracted from Kaggle from:

https://moringa.instructure.com/courses/804/pages/phase-1-project-description?module_item_id=126432
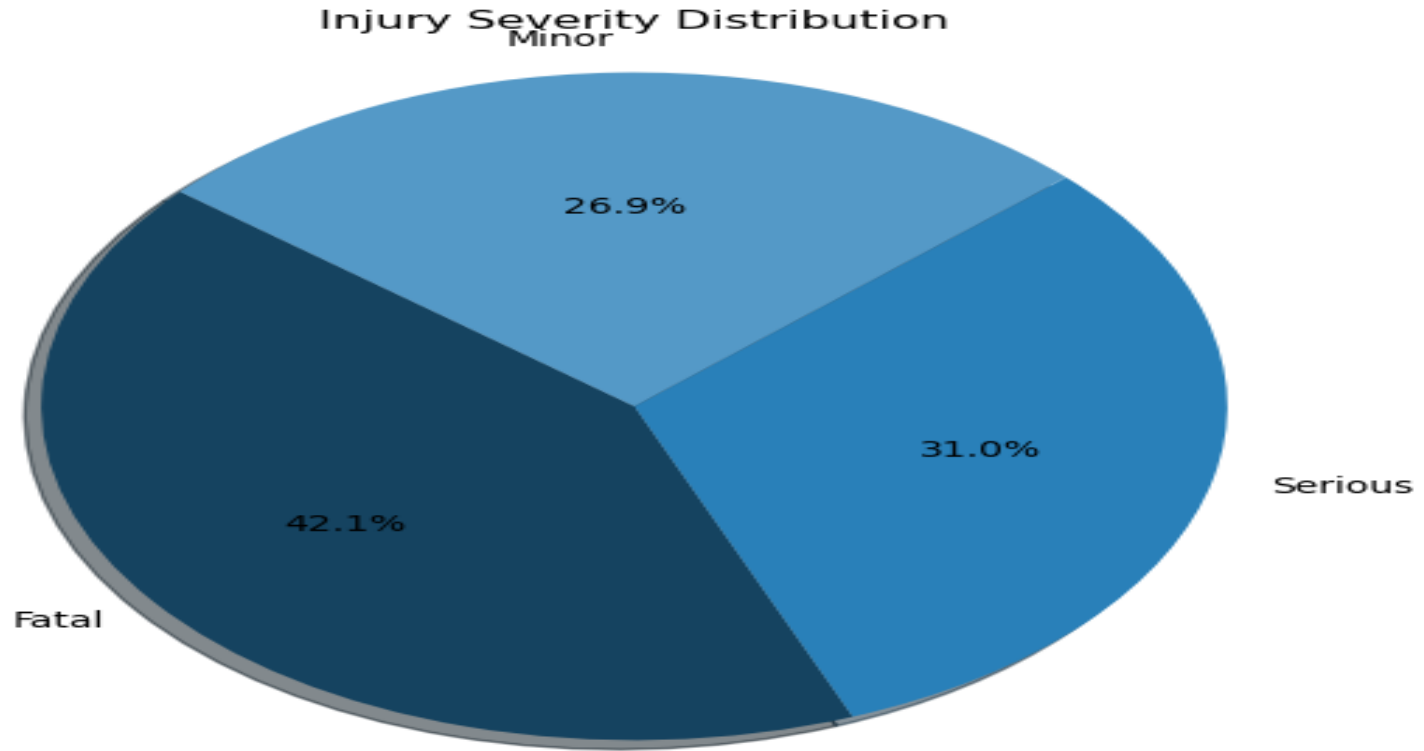
The data had two sheets:

Aviation.csv

US_state_code

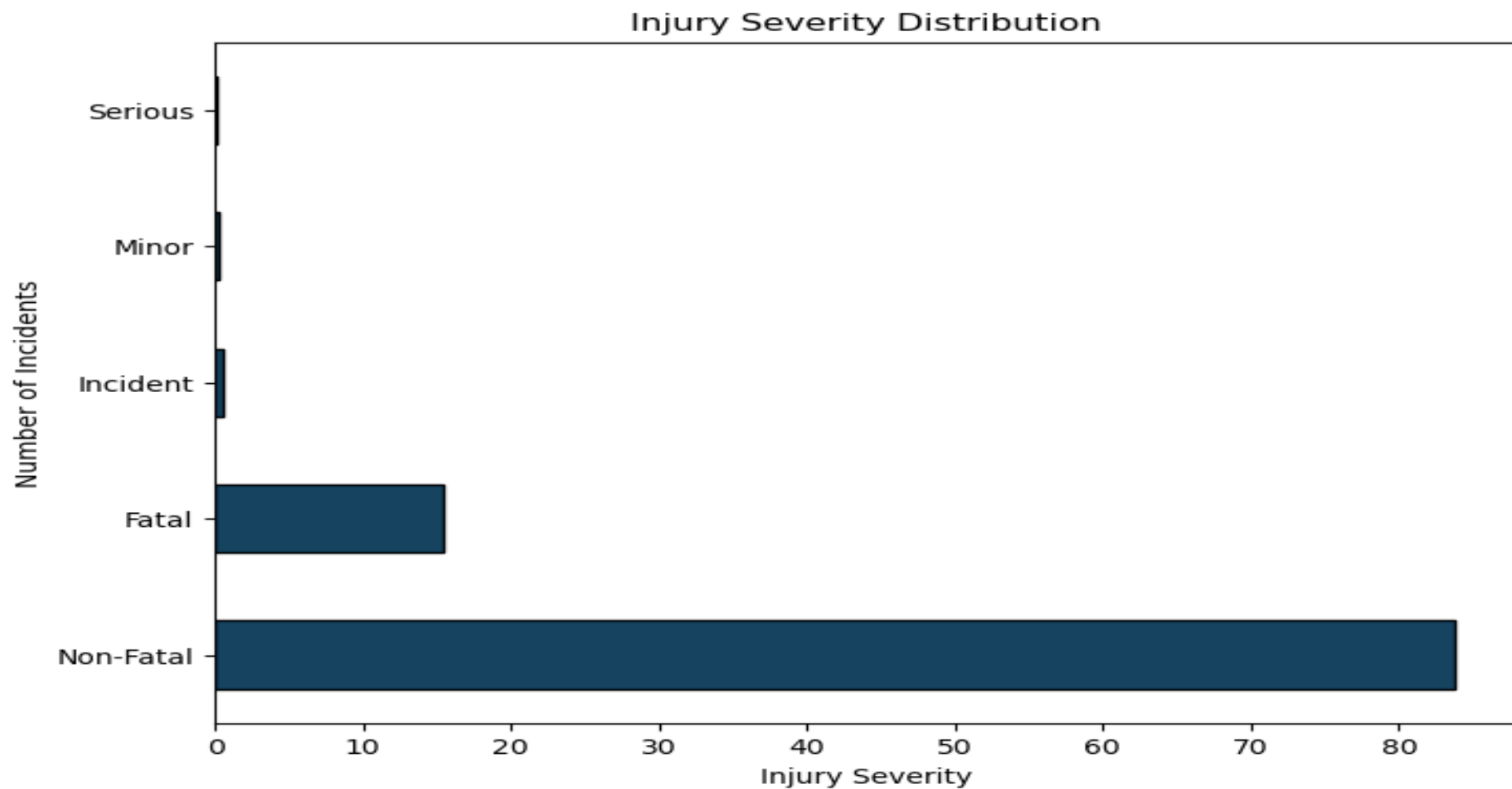The various datatypes include: object, float64, int64, int32.

Methods

- The method used was first the data was cleaned by deleting the unnecessary columns, rows, and duplicates. Other columns were added by adding up existing rows. There was a data merging process of the Aviation.csv and US_state_code.

- Data analysis was carried out using descriptive analysis and Bivariate analysis which was used to determine the relationship between the different variables.
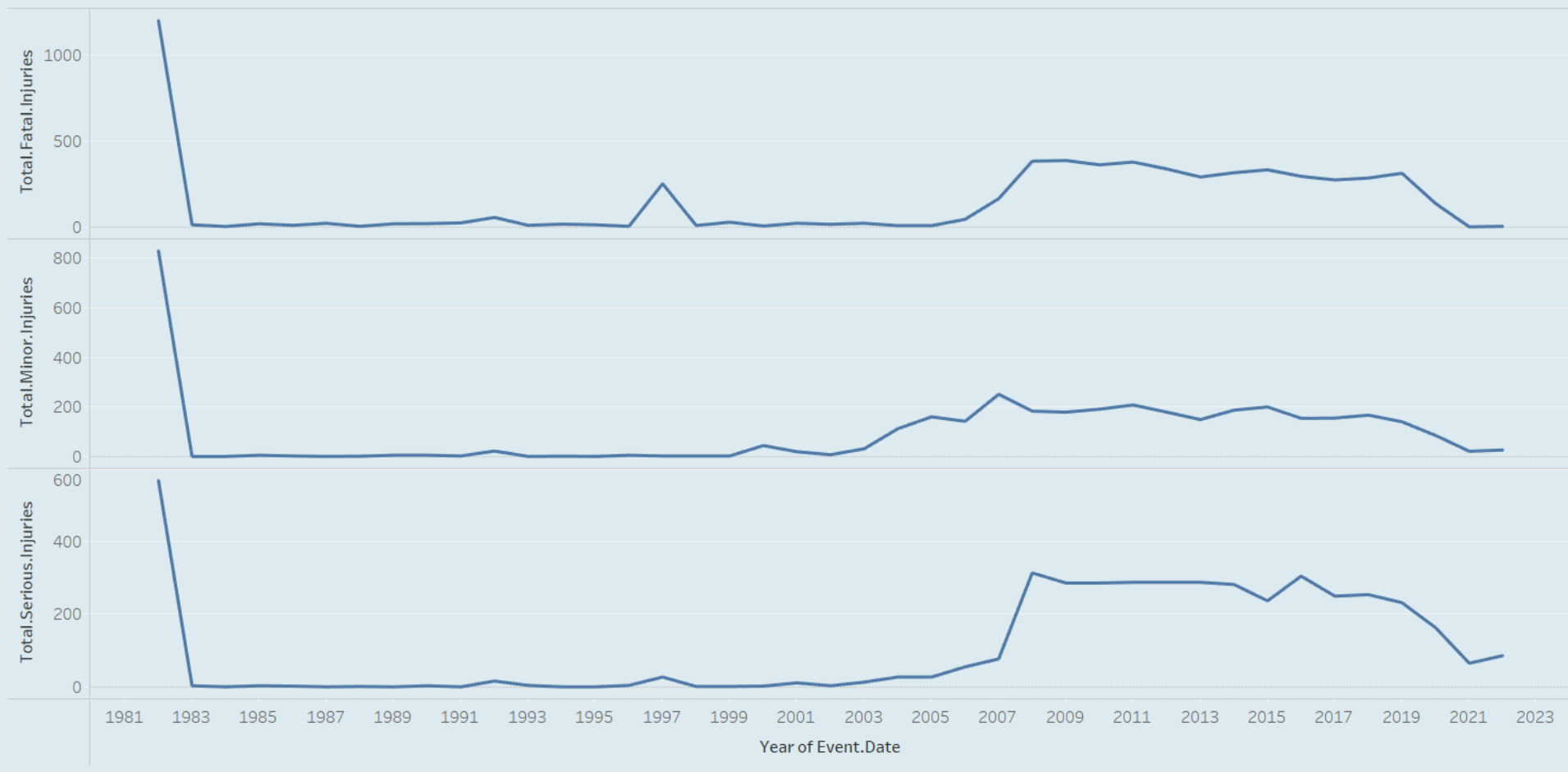
Results

Injury Severity Distribution

Minor 26.9%

Serious 31.0%

Fatal 42.1%

Results

Injury Severity Distribution

Total Different Injuries in Different period of time (in Years)

Results

The analysis shows that the majority of the Injury Severity was Fatal (42.1%)
The Analysis indicates that in 1982 the incidence was more severe compared to 2022 where the plane model and make have been advanced technically.
The Non-fatal incidents were more compared to fatal injuries
The Cessna 172 series (including variants like 172N, 172M, 172S, etc.) dominates the list with the highest number of non-fatal incidents. The Cessna 172 model alone has 634 non-fatal incidents, by far the highest of all aircraft in the dataset.
Piper also features prominently in the list, especially with the PA-28 series (PA-28, PA-28-140, PA-28-161, PA-28-181, etc.). Although the number of non-fatal incidents for Piper aircraft is lower than Cessna, it still represents a significant portion, with incidents ranging from 89 to 176.

Conclusions

When evaluating aircraft safety, it is essential not to rely exclusively on the number of engines as the primary factor. Instead, multiple criteria such as weather conditions, location of operation, pilot experience, and aircraft purpose (commercial or private) should be incorporated. By doing so, we can ensure more accurate and data-driven decisions for improving safety in this new aviation business venture.

From this analysis, we will need to investigate how the number of engines correlates with other performance aspects such as speed, range, and luggage capacity. Understanding these relationships will provide a more holistic view of which aircraft models offer the best overall performance, whether for private or commercial enterprise. This will ensure that safety considerations are balanced with operational needs.

Considering that Beechcraft aircraft have the highest safety scores in the dataset, they should be prioritized for the private enterprise segment where safety and passenger comfort are critical factors. Future analysis can delve deeper into specific models within the Beechcraft lineup to optimize selection further, potentially providing a competitive edge in the private aviation market.

Thank You!

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