



AVIATION ACCIDENT DATABASE SUMMARY

END DATE : 27TH JUNE 2025

BEGIN DATE: 24TH JUNE 2025



INTRODUCTION.

Project goal: To identify which aircraft models and types have the lowest operational risk to guide safe and cost-effective entry into the aviation market.

Importance: This enable the new head of aviation to make decisions straight-forward for the success of the company when joining the aviation market.

DATA OVERVIEW.

Source of data: Aviation Accident Database & Synopses, up to 2023.

Size of data: The data has 88889 records and 31 features.

Main features: The main features were those that could answer questions like ;

- ✓ The types of aircrafts we had
- ✓ Number of incidents within each aircraft type
- ✓ Were the incidents fatal, serious, minor or no occurrence
- ✓ what caused the incident and etc.

DATA CLEANING AND PREPROCESSING.

Missing data: Most of the missing values in features, were filled with unknown placeholders to avoid biasness. A few were dropped and rest filled with values from other relating features.

Duplicated values: They were none.

Outliers check: The outliers were identified but not dropped.

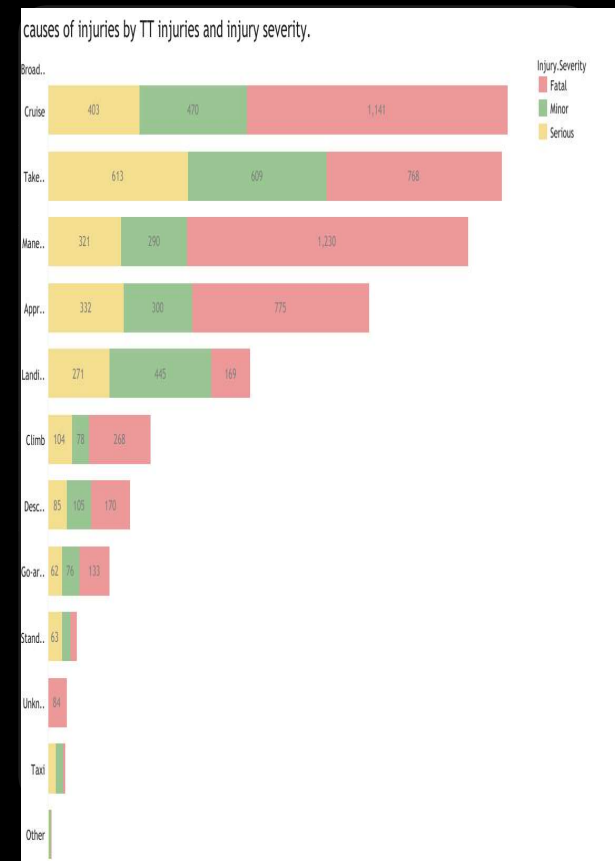
KEY FINDINGS.

distribution of groups by usage and I.S



- In summary, group A and B models have no injury incidents on commercial category.
- Commercial category along all groups C to E have less occurrence of injuries.
- The **Other** type of usage has high incidences and are of high injury severity.
- The private category has high injury severity too.

- ❑ This chart answers the question:
 - What phase do accidents occurs most?
- ❑ On the Cruise phase , maneuvering and take off phase have high injury severity. The accidents are fatal and serious.
- ❑ However, the landing phase has the highest incidence occurrence but there not sever.



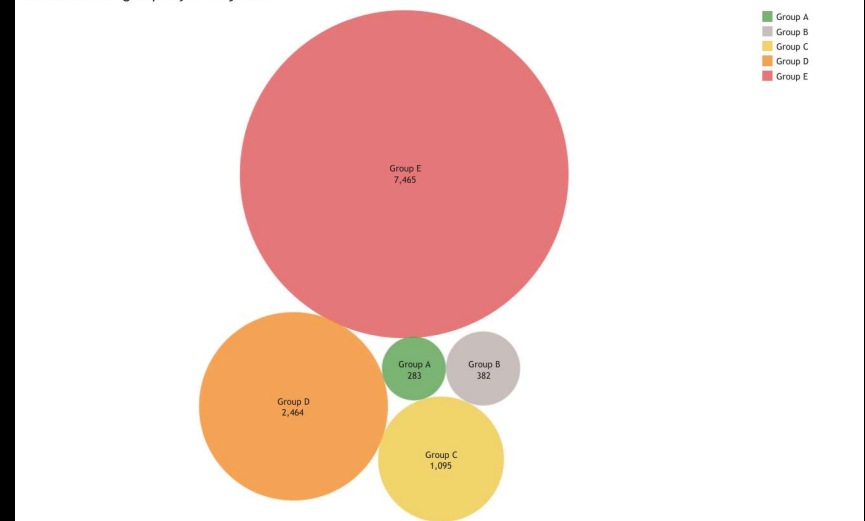
- ✓ The map chart shows the countries with high severity and ones with low severity.
- ✓ India, Finland and Norway countries are among those with low or no incidence of injuries.
- ✓ Russia, Canada and US are among countries with high severity injuries.
- ✓ Red shows fatal injuries while green shows no or minor injuries.

Geo distribution of countries injury severity and ttl incidents



- The packed bubbles show the distribution of injury severity by the model groups.
- The group A and B models with low injury severity thus can be safe for implementation.
- The Group E shows Models with high severity hence the company can choose not to use them.

Distribution of groups by TTL injuries



RECOMMENDATIONS.

- The company should consider doing Commercial or general Aviation since they show low injury severity than the private and other usage types.
- The company can use the Group A and B models for the have operational efficiency.
- On phases:
 - ✓ Prioritize **engine performance monitoring** and **crew readiness training** for rapid decision-making during takeoff roll.
 - ✓ Use **predictive maintenance** and **real-time system monitoring** to detect anomalies early.
 - ✓ Hire well trained pilots to avoid incidences that may cause company bankrupt Ness.
- Conduct further feature engineering for further understanding of the data.

CONCLUSION.

Q And A

THANK YOU FOR YOUR PATIENCE .

By:

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