AIRCRAFT RISK INSIGHTS : A STRATEGIC GUIDE FOR FLEET SELECTION

BY DIANA TERRY ALOO

Objective: Identify safest aircraft models using real-world data

Tools Used: Tableau, Python & Historical Aviation Dataset

Key Outcomes:

- Risk scoring model created
- A clear overview of aviation safety trends.
- Insights into which aircraft types have historically demonstrated low risk.
- Strategic, data-backed recommendations to guide aircraft purchasing decisions.

Executive Overview

BUSINESS PROBLEM

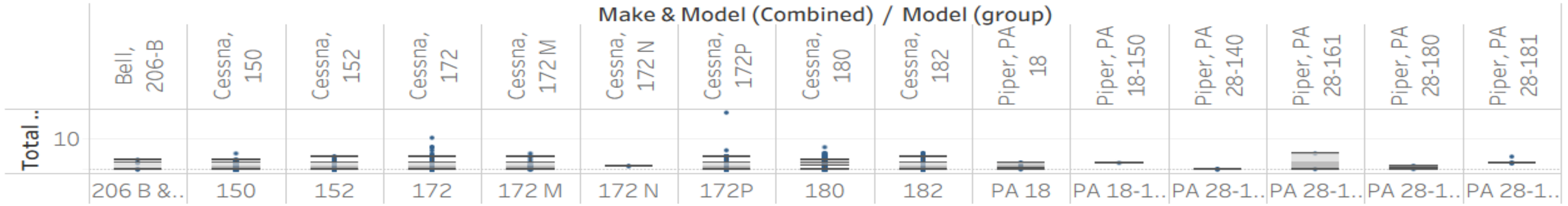
Pitch-Deck :

- ✓ What types of aircraft have the most and least incidents?
- ✓ Are there certain models or categories that are consistently high- or low-risk?
- ✓ Are there missing values that could impact the reliability of our analysis?
- ✓ Can we make profit from our investment?

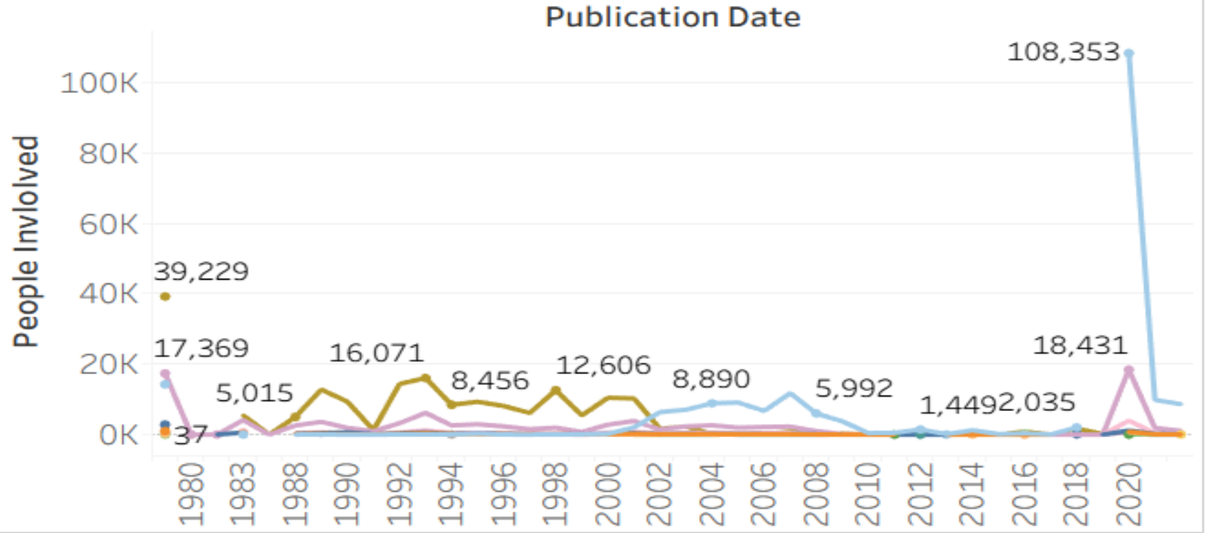
Goal: Select safest aircraft for our Investment

Aviation Dashboard

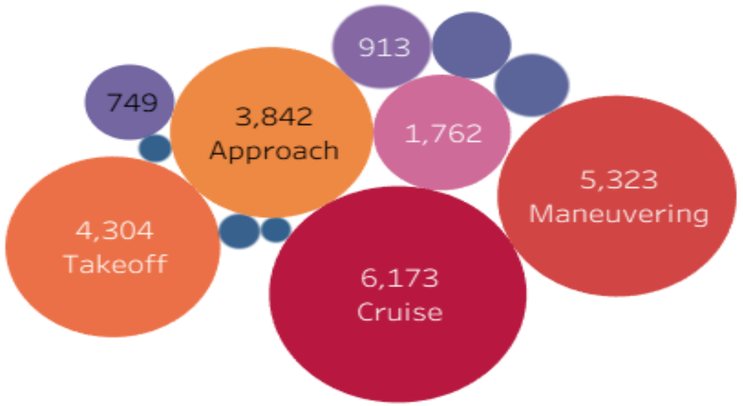
Total Uninjured by Make and Model

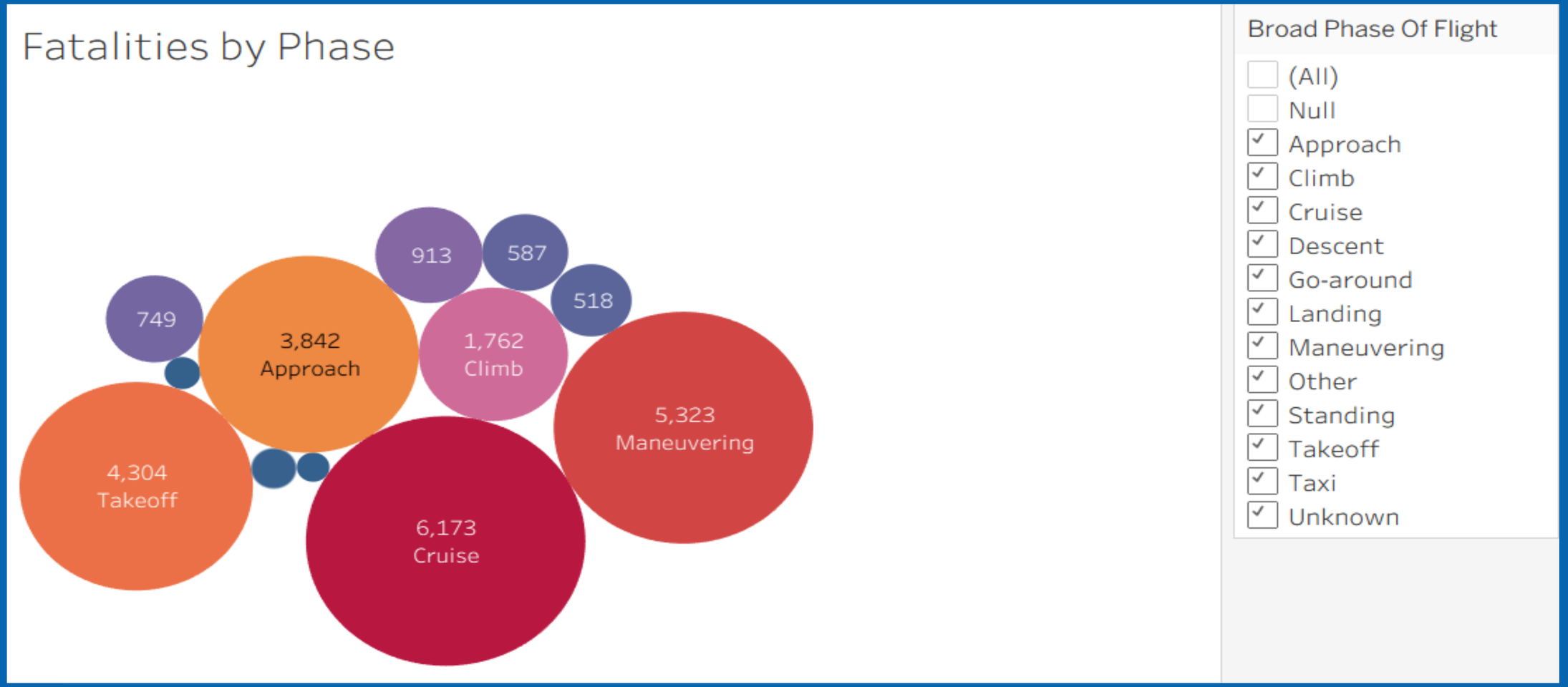


Accident Involvement by Year



Fatalities by Phase



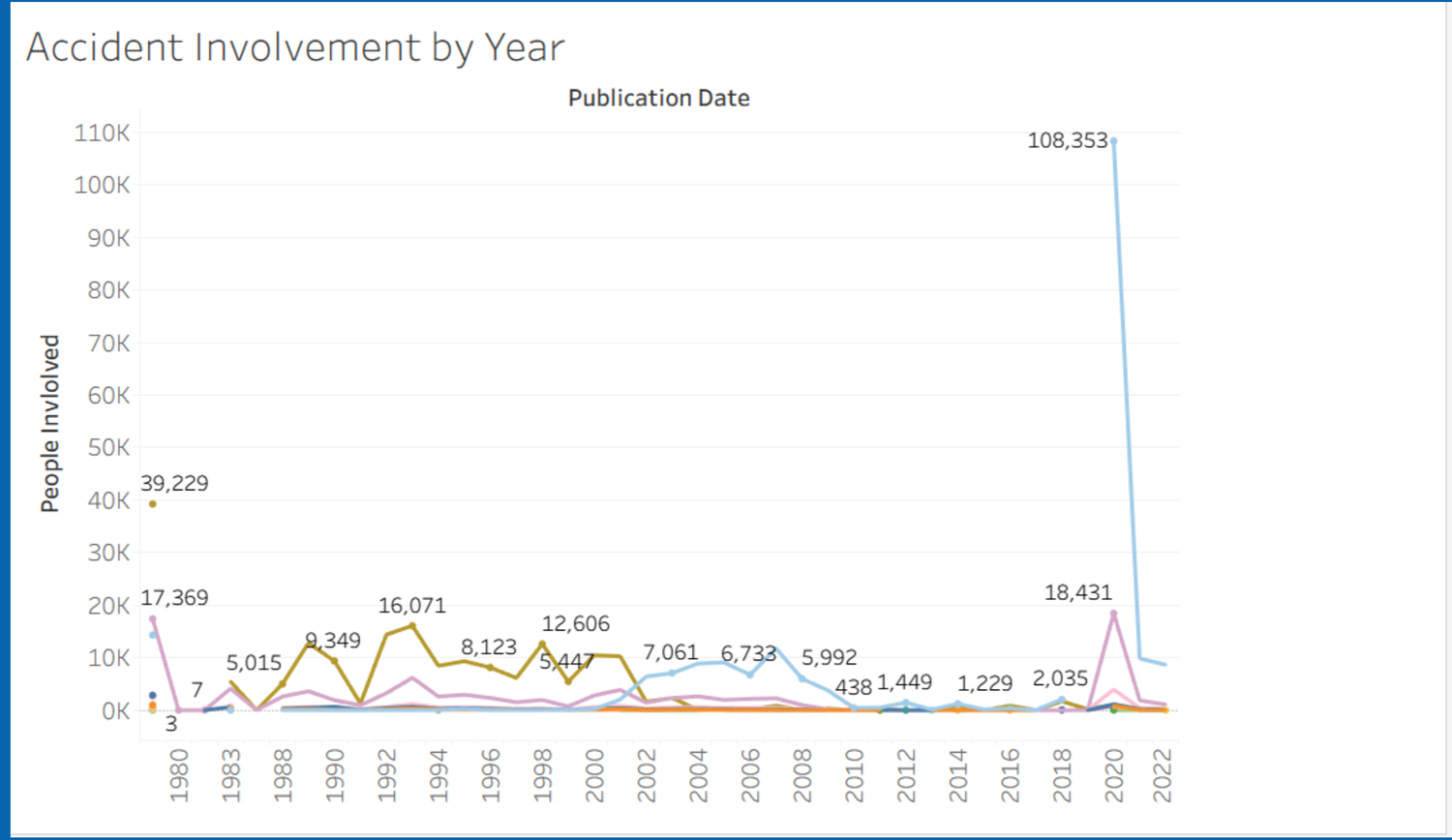


Aircraft Fatalities

This chart tells us which part of the flight is most dangerous.

We can see that most fatalities occur during cruise and maneuvering stages which are supposed to be the safest. This tells us that any aircraft prone to issues during these phases should be considered high-risk."

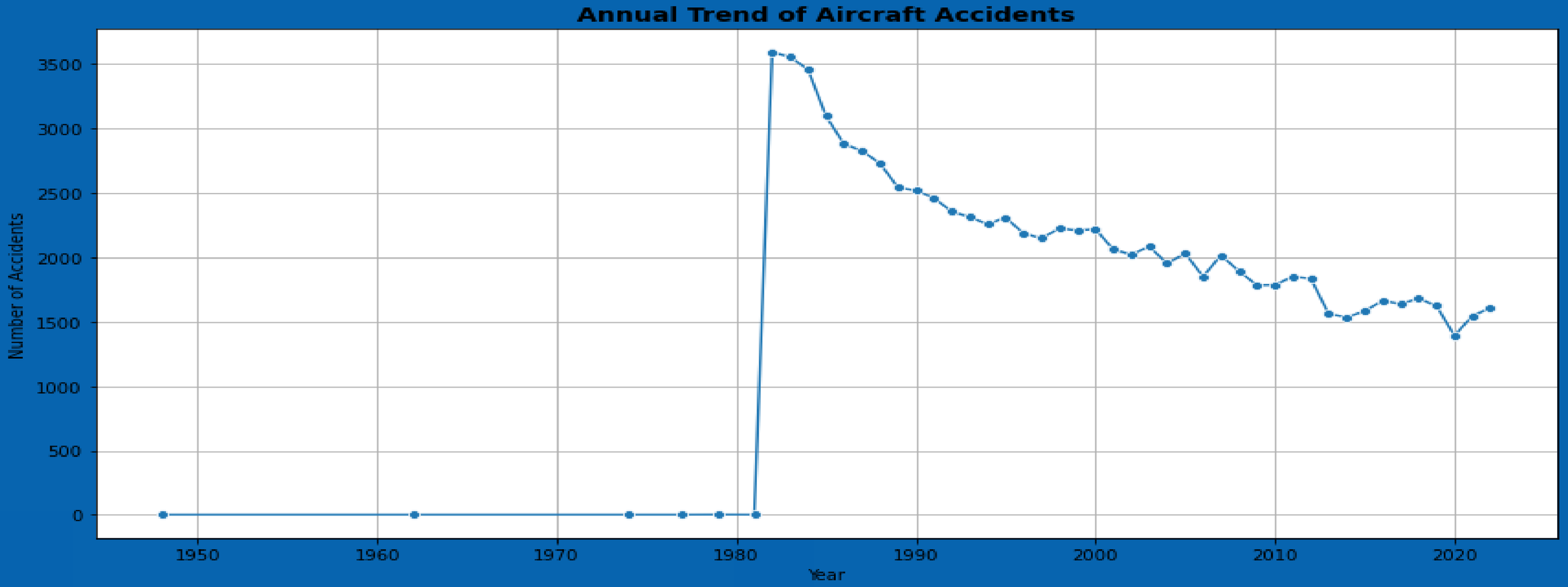
Accident Involvement by Year



Large spike in 2020 likely due to reporting backlog or data anomaly.

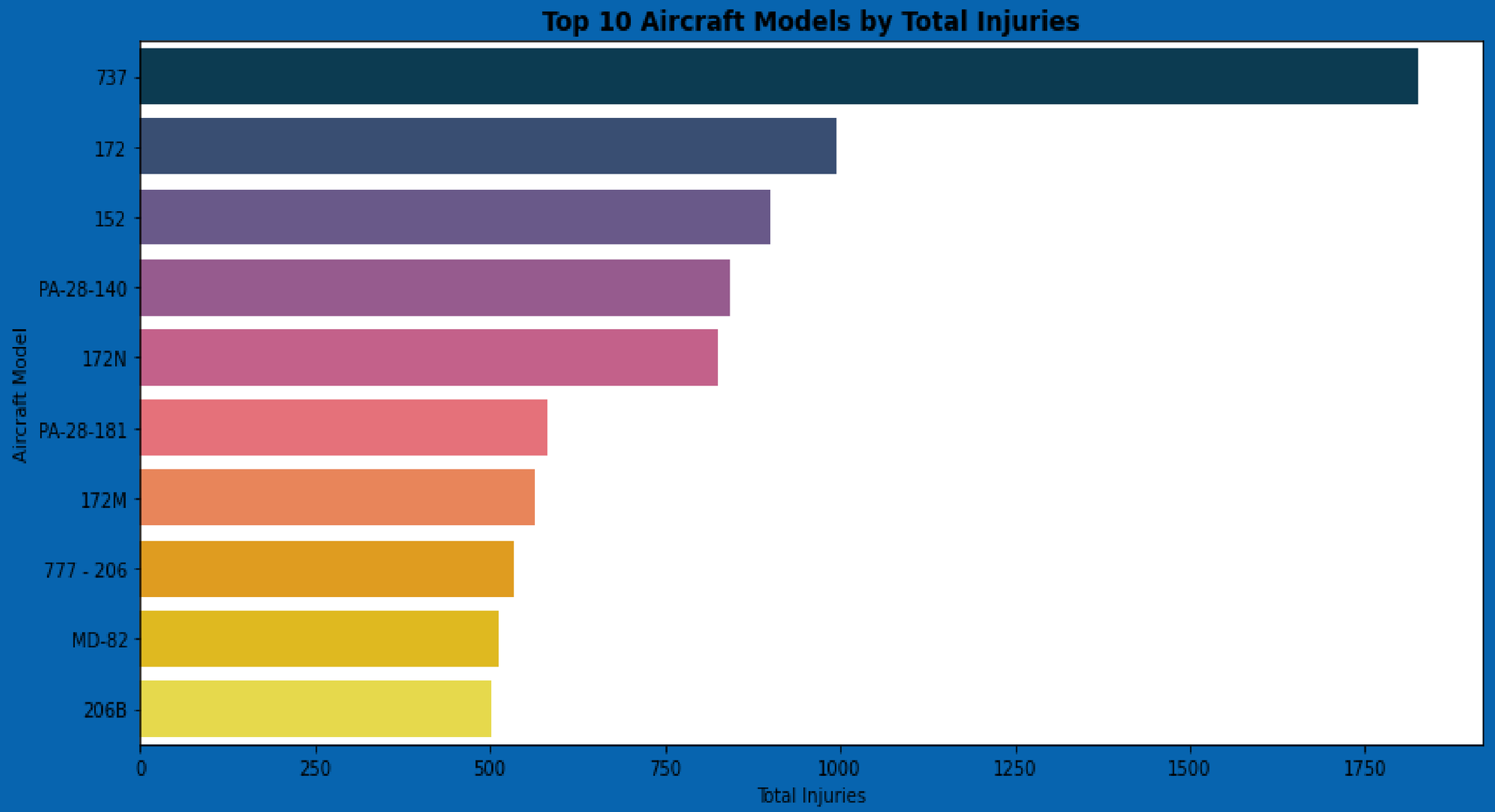
General trend shows decline in accident involvement, especially after 2008.

Indicates improvements in safety, but model-level analysis still necessary.



Annual Trends Line Graph

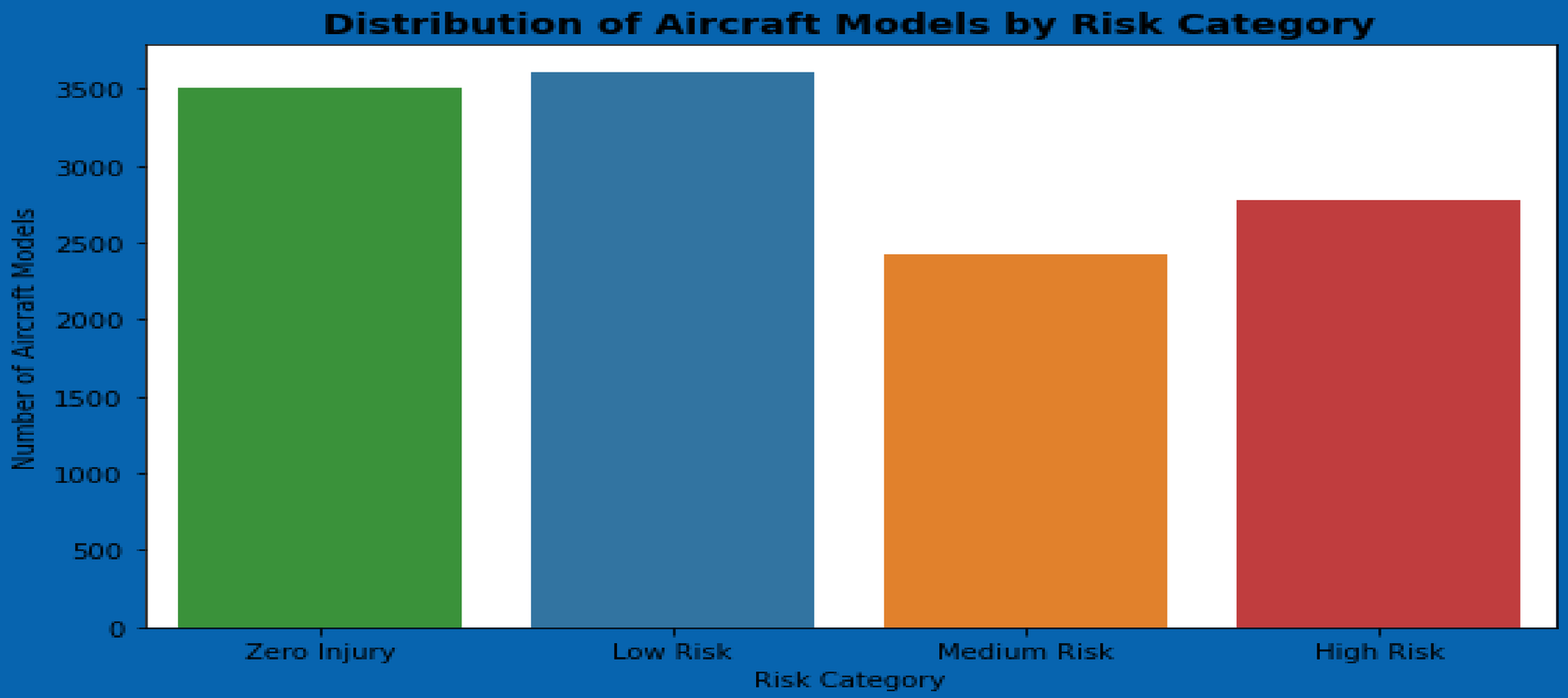
- Models like **Cessna 172P, Piper PA-28-181** report **zero or very low injuries**.
- These should be **top candidates for leasing or purchasing**.
- These aircraft represent **low liability and high public trust**.



- Some aircraft **737,172 and 152** should be **avoided** for new acquisitions.
- Sets foundation for **risk tiering**

Bar Graph

Aircraft Risk Score Overview



- **Green**: Low Risk – Ideal for acquisition
- **Yellow**: Medium Risk – Monitor conditions
- **Red**: High Risk – Avoid

•**Data-driven, repeatable method** to guide future decisions.

RECOMMENDATION

Prioritize Zero-Injury Aircraft Models

- ❑ Aircraft models that consistently show **zero reported injuries** like Bell and Cessna (fatal, serious, or minor) in our dataset stand out as the **safest and most reliable**.
- ❑ These models were highlighted in our "**Top 10 Zero-Injury Models**" bar chart and should be prioritized for:
- ❑ Fleet expansion or leasing decisions
- ❑ Routes requiring high safety assurance
- ❑ Minimizing insurance and maintenance

Deploy Low-Risk Models for Controlled Operations

- ❑ Aircraft falling into the Low Risk category in our Risk Scoring Model demonstrate minimal injury occurrences despite recorded incidents. They are best suited for:

- ❑ Short-haul or regional routes
- ❑ Low-density or lower-risk environments
- ❑ Operations with enhanced monitoring and preventive maintenance
- ❑ These models offer acceptable safety margins when managed properly.

Avoid High-Risk Aircraft with Severe Injury Records

- ❑ Avoid Aircraft with elevated injury scores, driven by high fatal or serious injury counts. These models pose:
- ❑ Reputational risk
- ❑ Higher legal and regulatory scrutiny
- ❑ Costlier insurance and compliance overhead
- ❑ These aircraft are not advisable for acquisition or continued use.

THANK YOU

GET IN TOUCH

+254 742 835 799

https://www.linkedin.com/in/diana-terry-aloo/

dianaterryaloo@gmail.com

Nairobi, Kenya