



AVIATION SAFETY ANALYSIS & RECOMMENDATION

Prepared by: cindy akinyi
Date: 27th July 2025

BUSINESS PROBLEM

A company is planning to buy a new aircraft.

Objective: Use aviation accident data to identify the safest and most reliable aircraft models.

Focus on:

- Fatal injuries
- Total injuries
- Accident trends and aircraft types

DATA SOURCE

Dataset: Aviation accident reports (FAA/NTSB)

Total records: ~90,000+

Key columns:

- Make, Model
- Event.Date
- Purpose.Of.Flight
- Weather.Condition
- Total.Fatal.Injuries
- Total.Serious/Minor Injuries

DATA CLEANING & PREPARATION

Removed rows with critical missing values

Combined 'Make' and 'Model' into a single column

Extracted year from Event.Date

Created new column: $\text{Total.Injuries} = \text{Fatal} + \text{Serious} + \text{Minor}$

Grouped aircraft types under Make_Model_Grouped

VISUALIZATION SUMMARY

Total Accidents by Aircraft – Highlights risky models

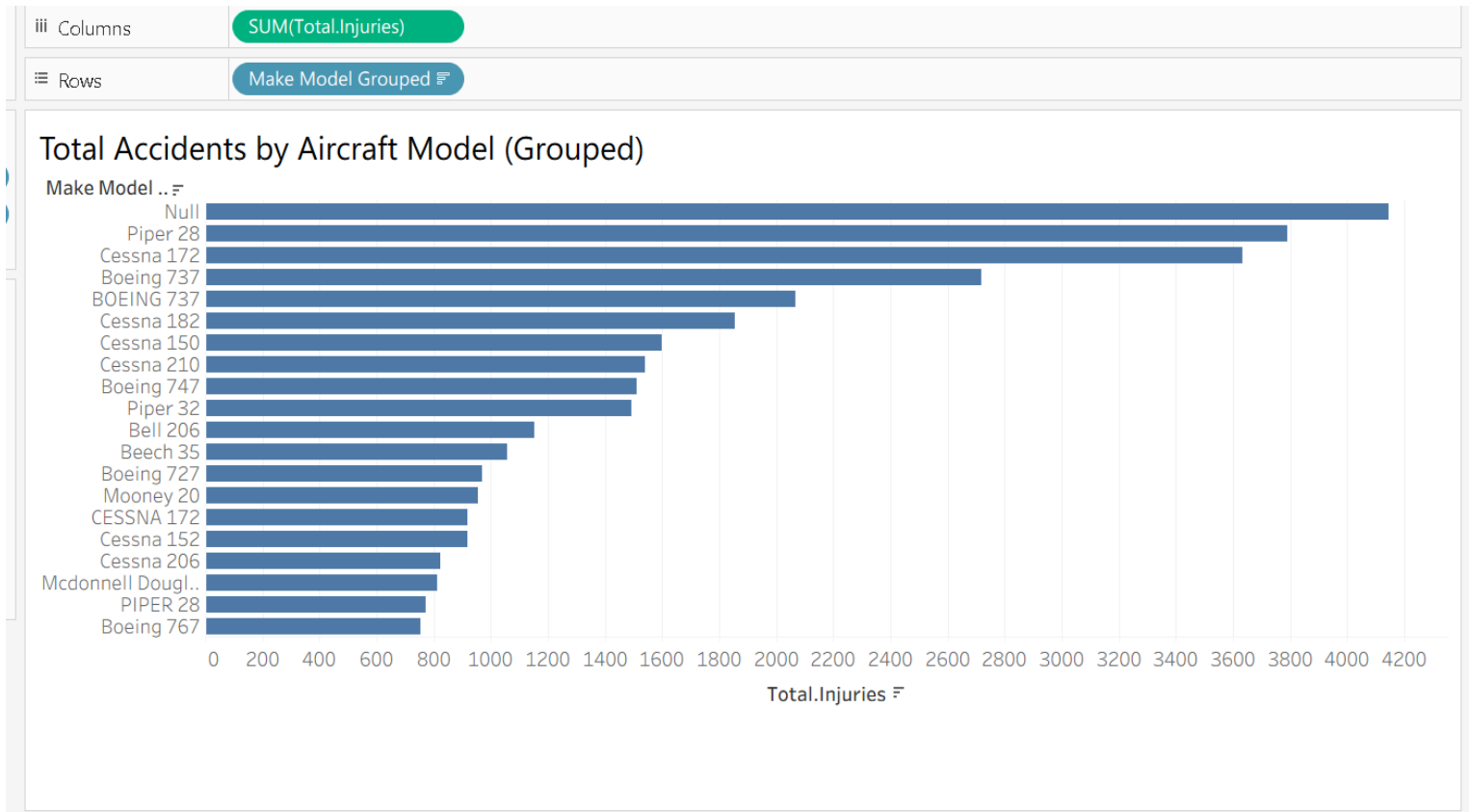
Fatal Injuries by Purpose – Exposes high-risk flight types

Injuries by Weather – Identifies weather-based patterns

Trend of Injuries Over Time – Measures safety improvements

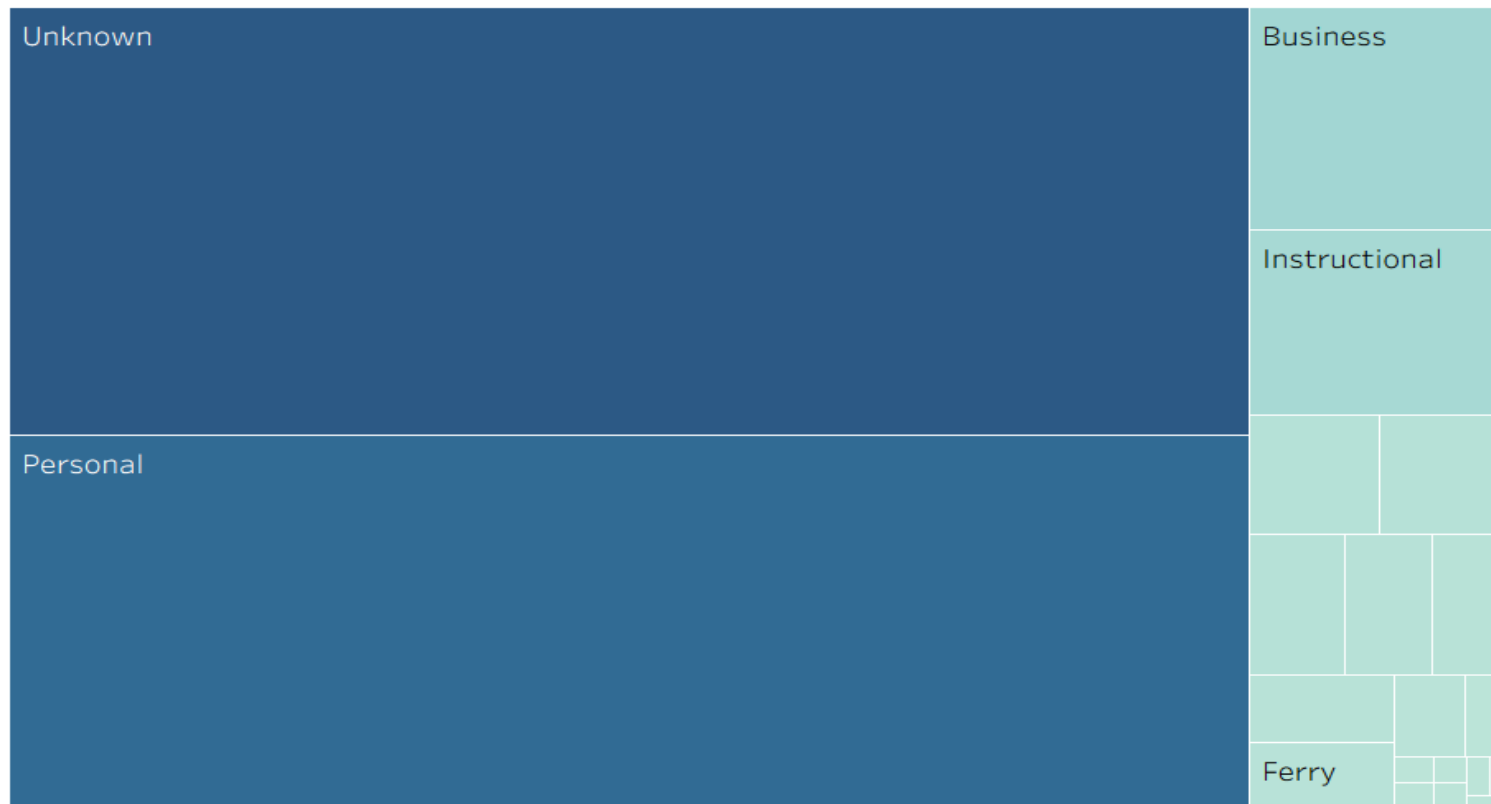
Safest Aircraft Models – Suggests models with highest uninjured

TOP 10 AIRCRAFT MODELS BY TOTAL INJURIES



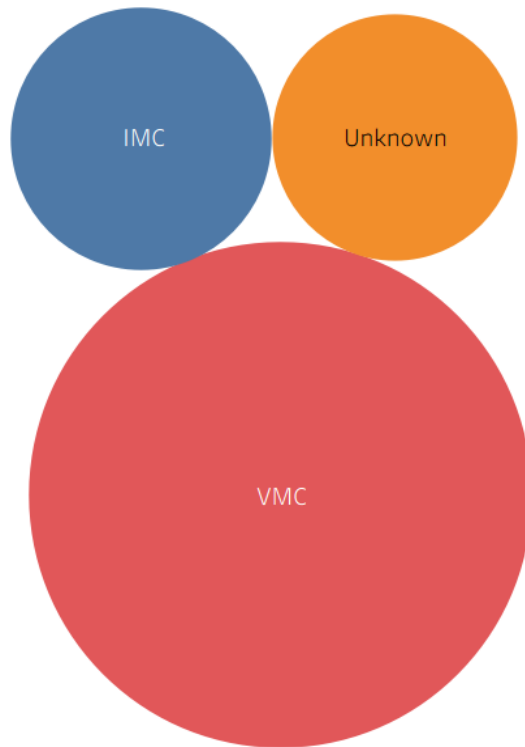
FATAL INJURIES BY PURPOSE OF FLIGHT

Fatal Injuries by Purpose of Flight

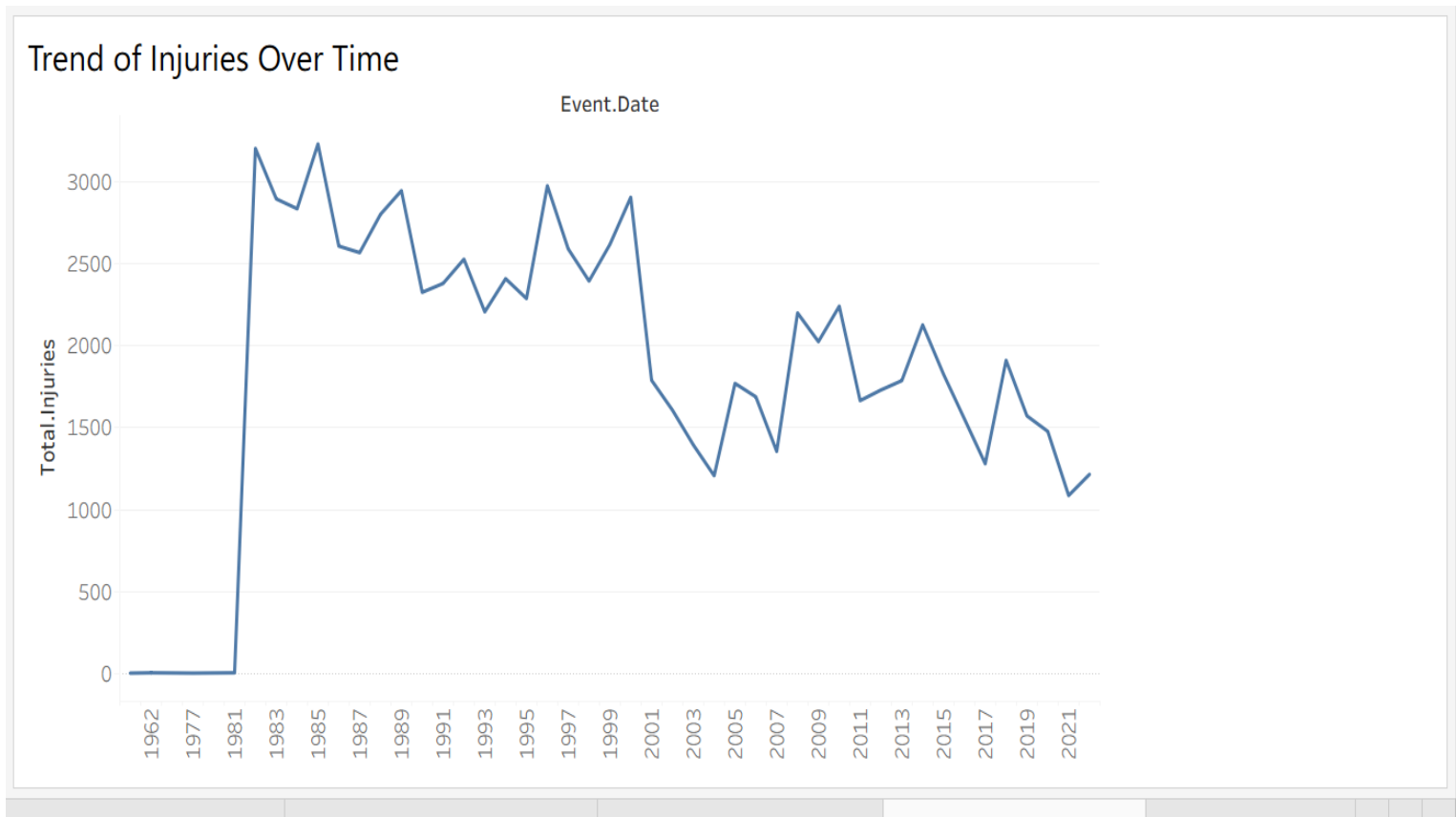


INJURIES BY WEATHER CONDITION

Injuries by Weather Condition

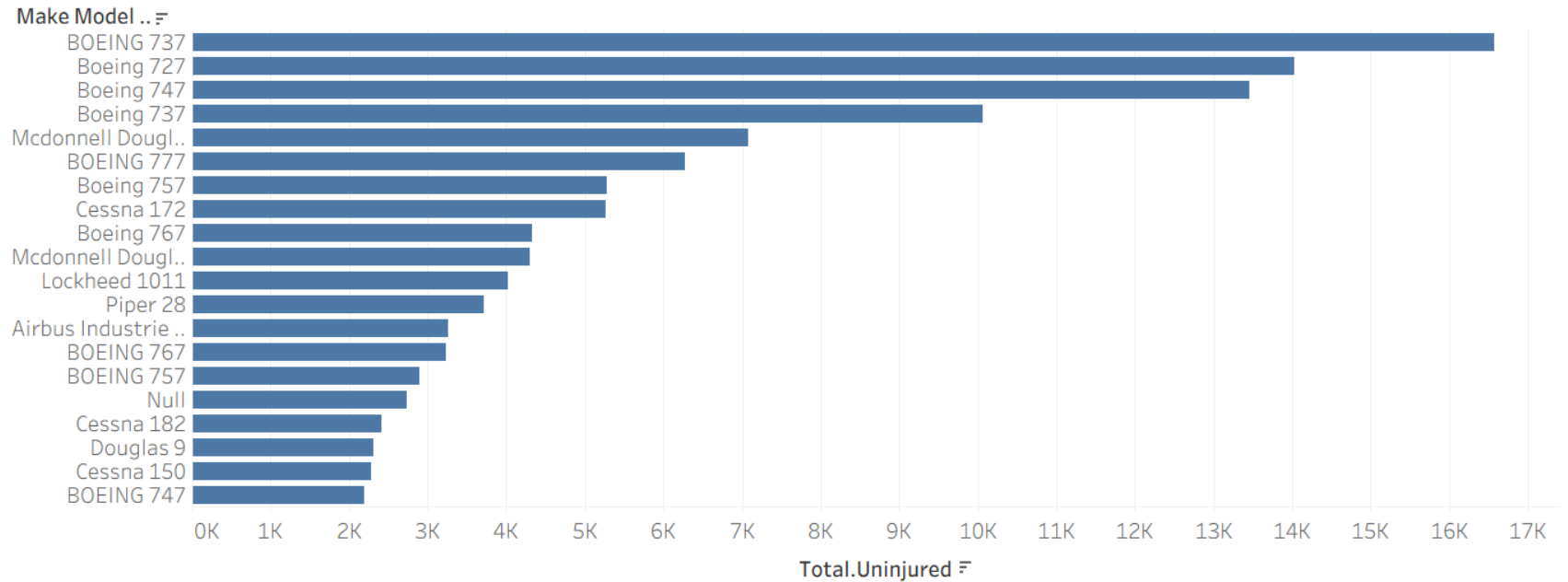


TREND OF INJURIES OVER TIME

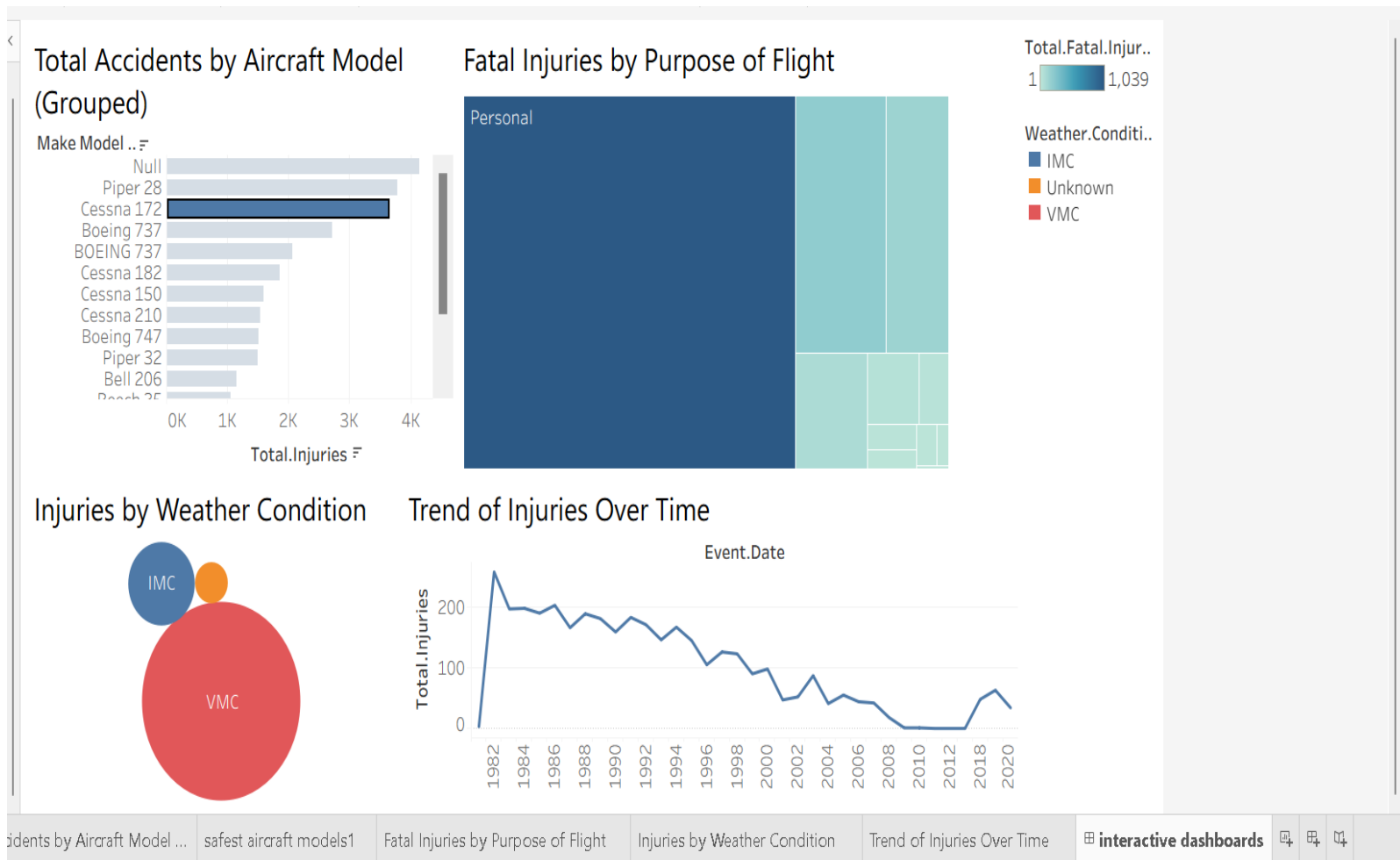


SAFEST AIRCRAFT MODELS

safest aircraft models1



INTERACTIVE DASHBOARD SUMMARY



FINAL RECOMMENDATION

Invest in commercial-grade aircraft with proven safety records:

→ BOEING 737, Boeing 747, McDonnell Douglas 10, Boeing 777

Avoid aircraft with low survivability, poor support, or limited safety history.

CONCLUSION

Business Goal Achieved:

We identified aircraft models with strong safety records to guide future purchase decisions.

These findings offer strategic value in reducing operational risk, boosting passenger confidence,

and ensuring compliance with safety standards in future aircraft acquisitions.

QUESTIONS?



THANK YOU