

Aviation Accident Data Analysis


Uncovering patterns to improve
aviation safety ✈️🔍

Overview

- Project goal: analyze aviation accident records
- Turn raw, messy data into meaningful insights
- Support safety improvements in aviation



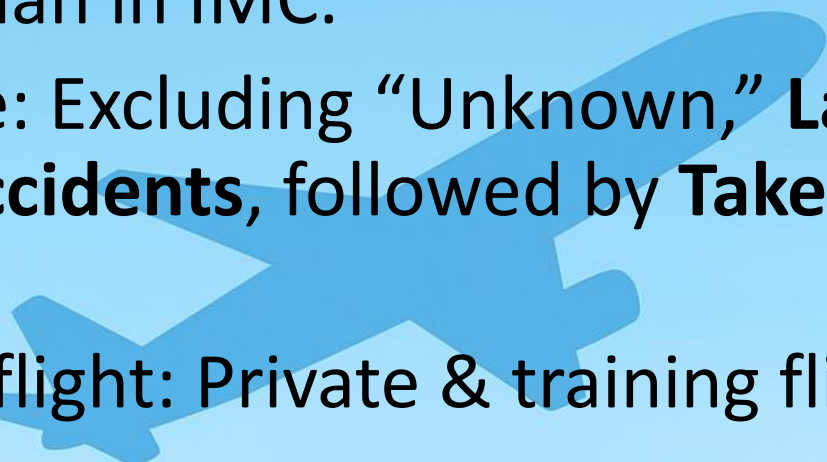
Business Understanding

- Air travel is safe, but accidents still happen
 - Accident data is often incomplete and inconsistent
 - Key questions:
 - What causes most accidents?
 - Does weather matter?
 - Which flight phases are riskiest?
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Data Understanding

- Dataset source: NTSB accident reports
- Key information:
 - Date & Location
 - Weather conditions
 - Flight phase (takeoff, landing, cruise, etc.)
 - Purpose of flight (commercial, private, training)
 - Injury severity
- Challenges: missing values, 'Unknown/UNK', inconsistent columns

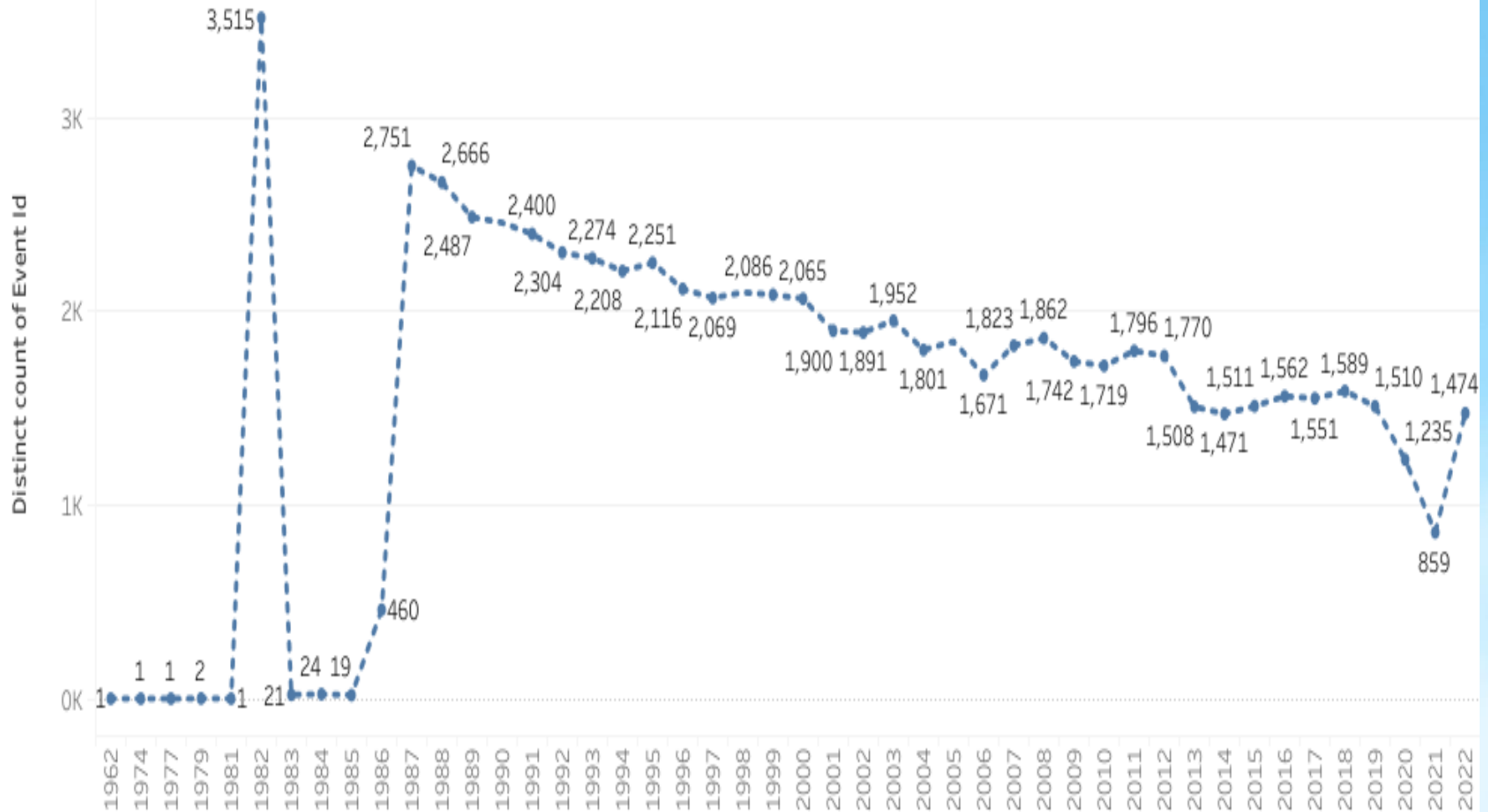
Data Analysis

- Trends over time: Overall accidents decreased, but spikes remain.
 - Most accidents occurred in **VMC**, showing that more flights in good weather also lead to more accidents than in IMC.
 - Flight phase: Excluding “Unknown,” **Landing had the most accidents**, followed by **Takeoff** and **Cruise** phases.
 - Purpose of flight: Private & training flights > commercial.
 - Injuries: many accidents had no fatalities, but serious ones often involved bad weather.
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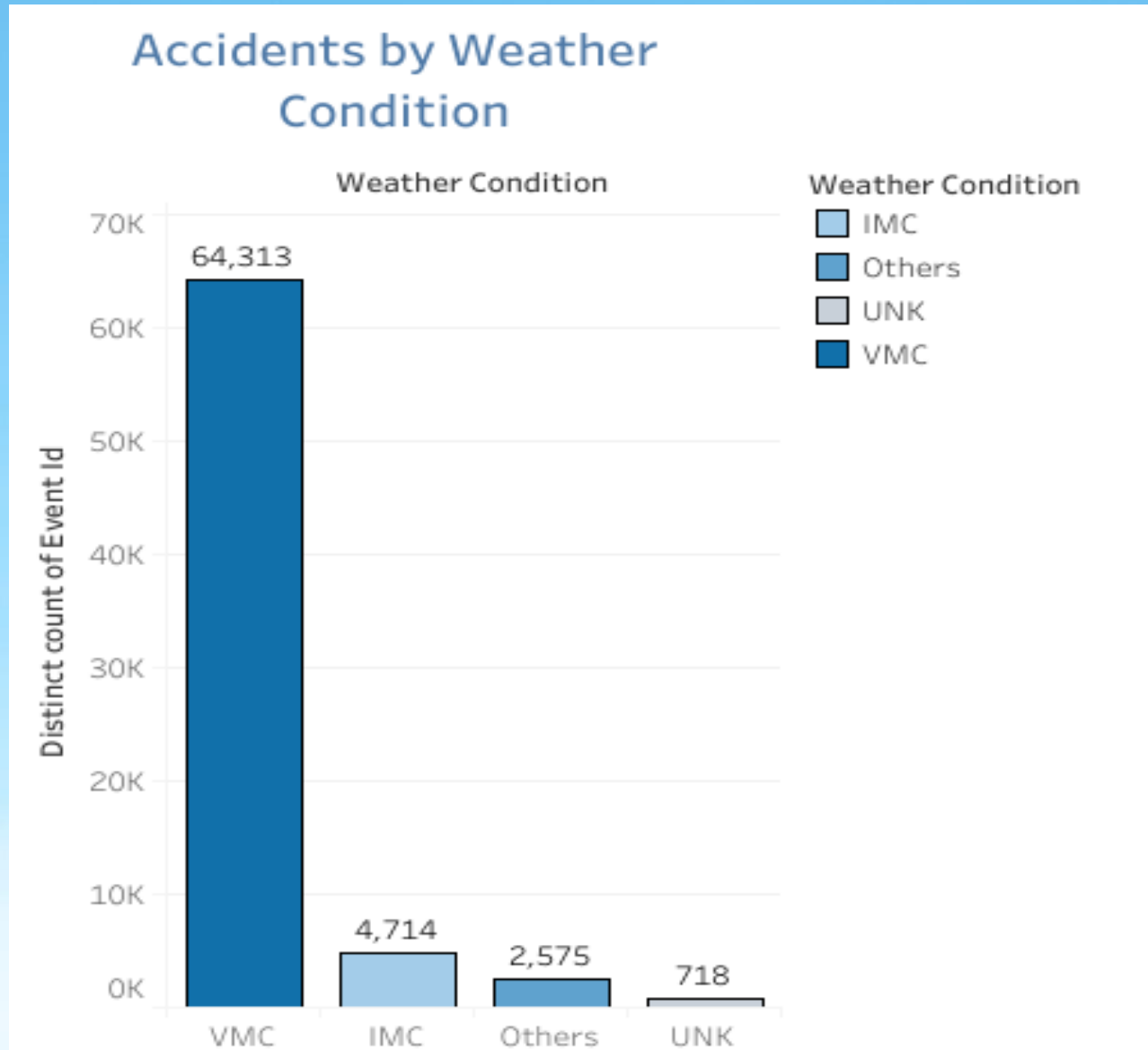
Visual Insights

Trends of Accidents over the years

Event Date

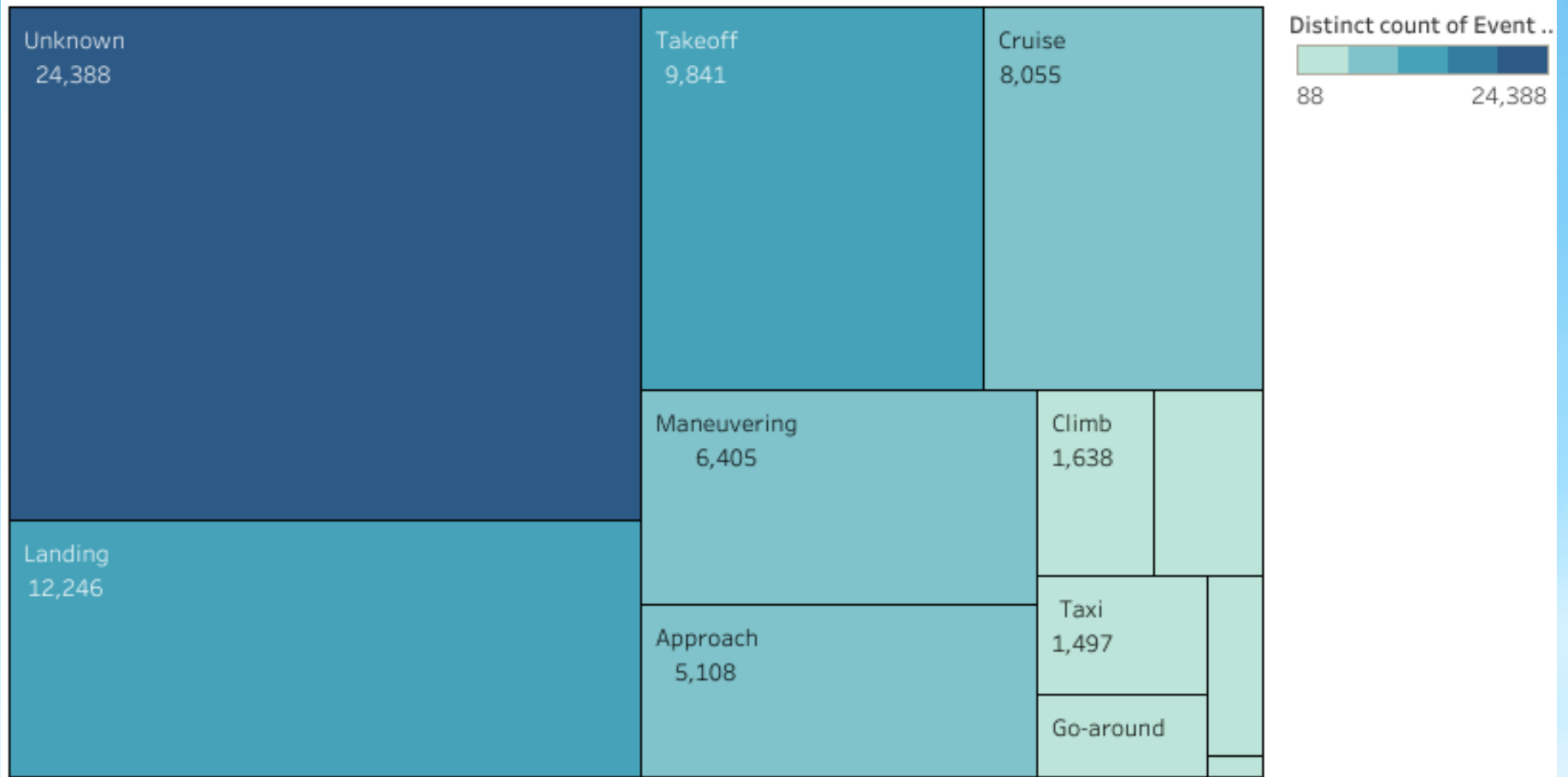


Visual Insights



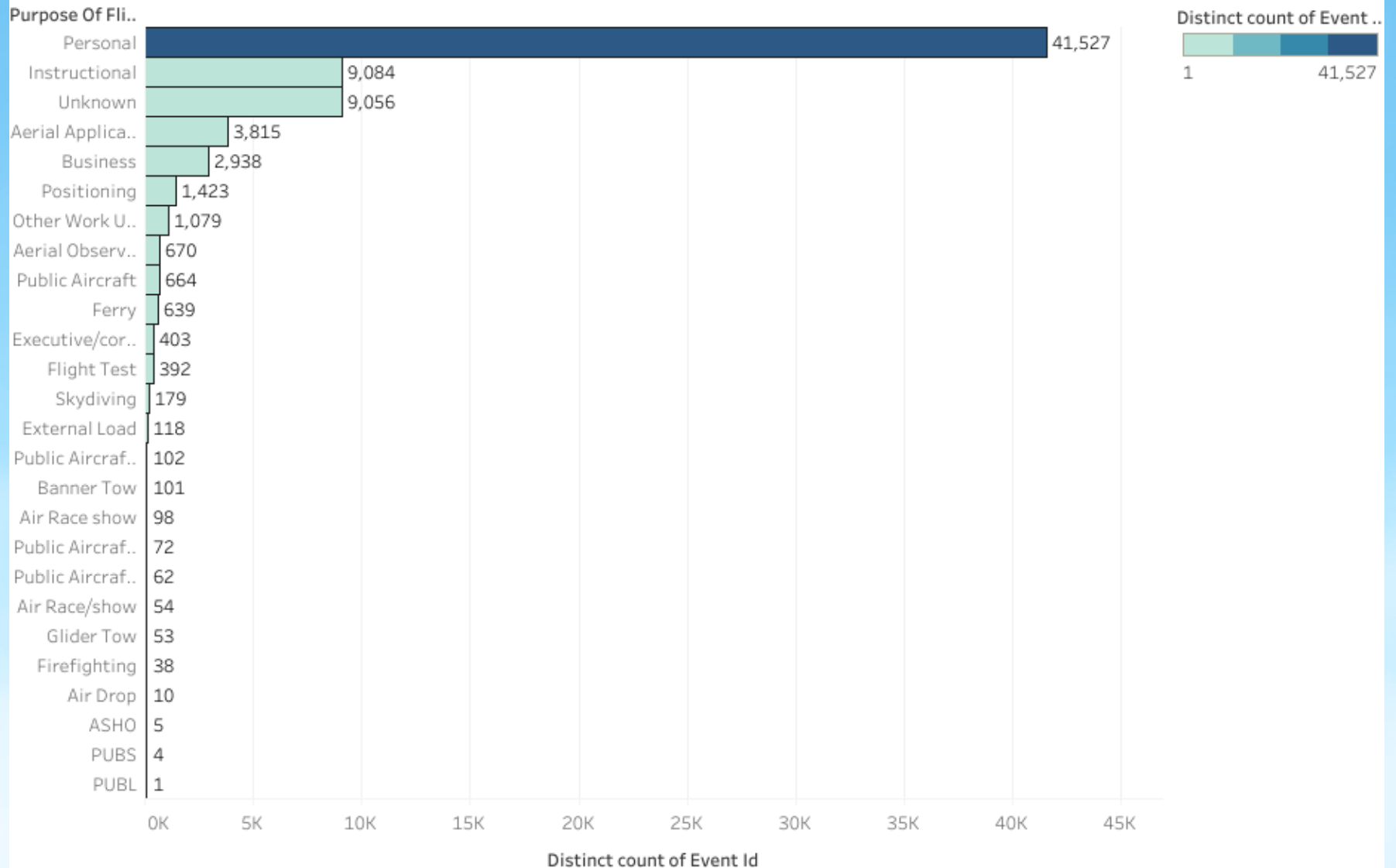
Visual Insights

Accidents by Phase of Flight



Visual Insights

Accidents by Purpose of Flight



Visual Insights

Accidents by Country



Recommendations

1. Pilot Training: Focus on Takeoff & landing safety
2. Weather: Strengthen pilot training and safety protocols in VMC operations'
3. Improve Reporting: Reduce missing data
4. General Aviation Focus: Target private pilots
5. Real-Time Dashboards: Continuous monitoring and targeted safety interventions during high-risk periods.

Closing

- Data-driven insights can save lives
- Better reporting → clearer trends
- Better trends → stronger safety actions
- Safer skies for everyone ✈️🔍

