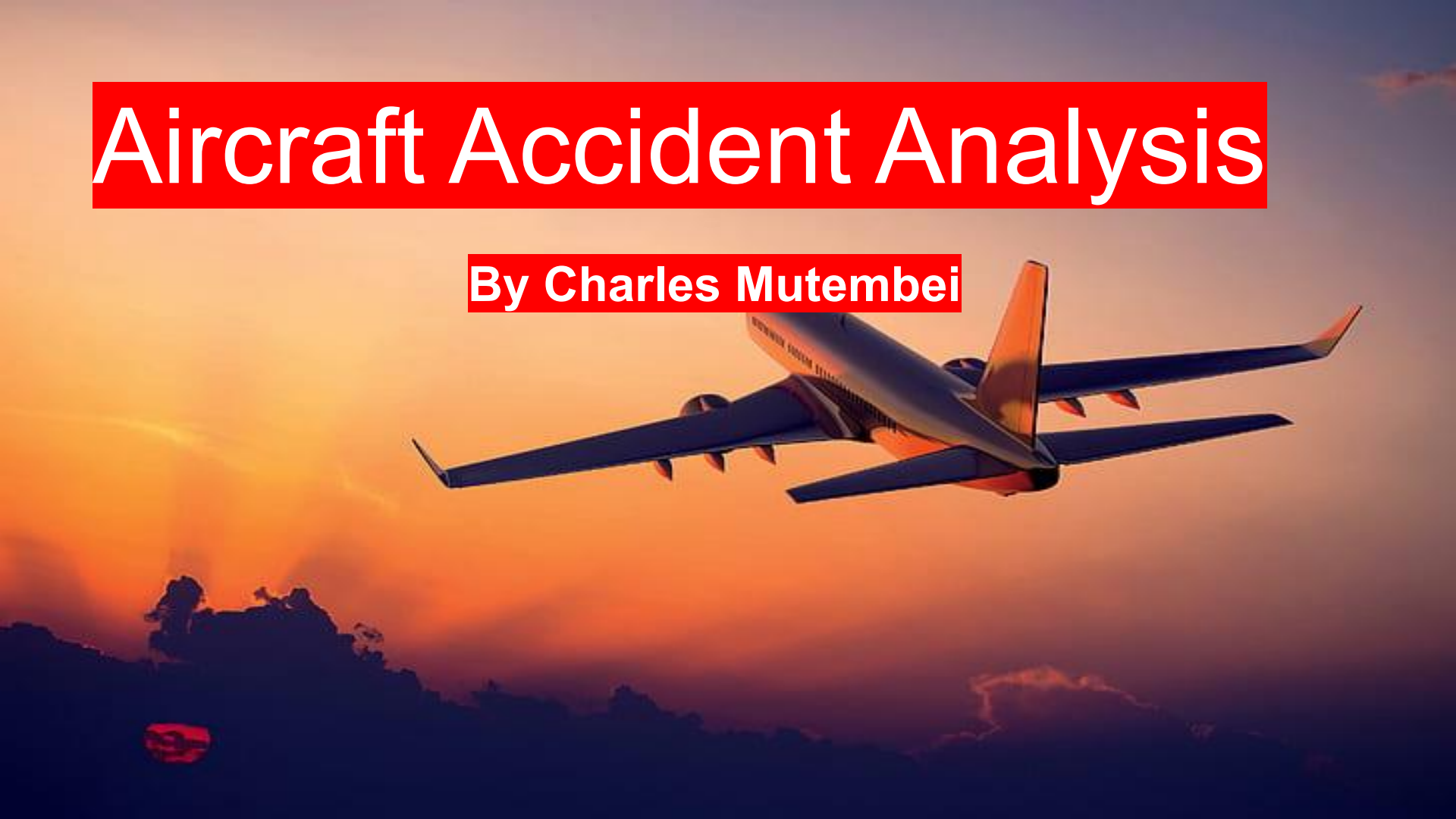
Aircraft Accident Analysis

By Charles Mutembei



Why this analysis?

✈ **Aircraft safety is crucial** for buyers, regulators, and insurers.

📊 Understanding accident trends **helps in risk assessment and decision-making.**

Goal

Identify **accident trends & key risk factors** to improve aviation safety.

Key Questions Answered.

1. Which aircraft models have the most accidents?

2. What impact does weather have?

3. Which flight phases are riskiest?

4. How have accidents changed over time?

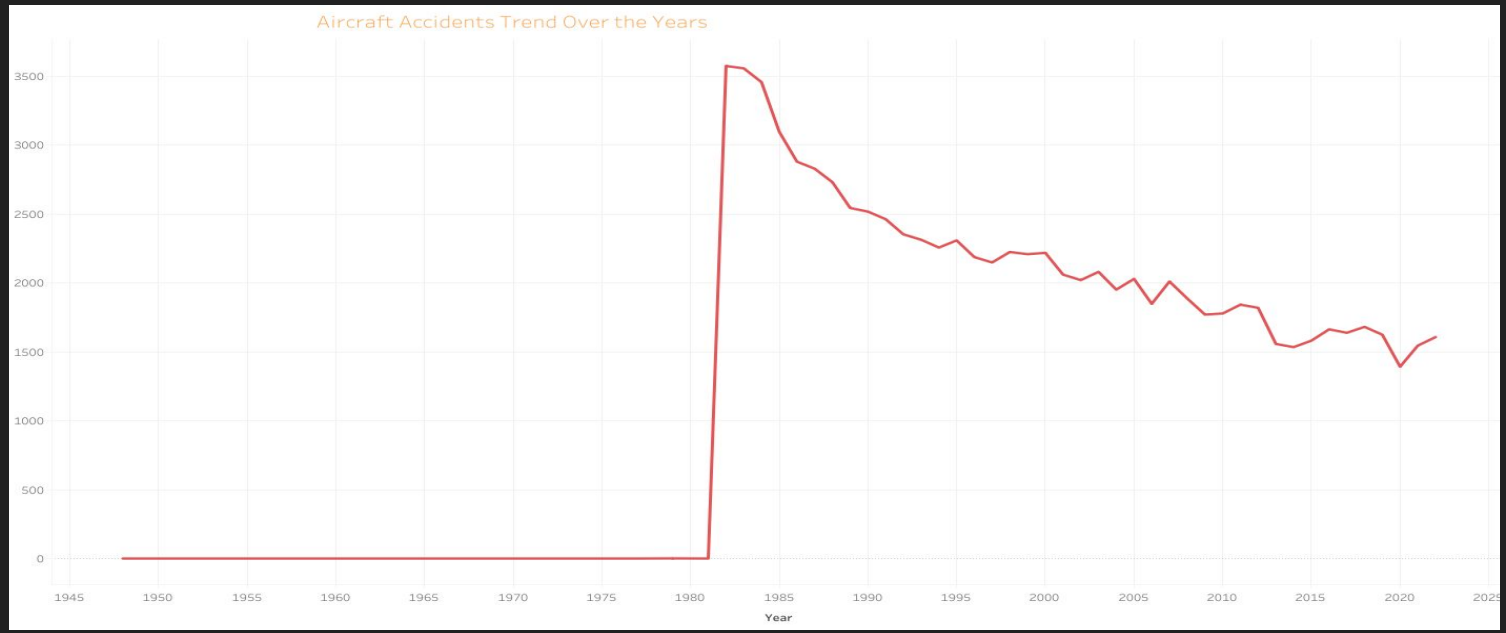
Data & Methodology

Data Source: Kaggle (Aviation Accident Database)

Cleaning & Analysis: Python (Pandas, Matplotlib, Seaborn)

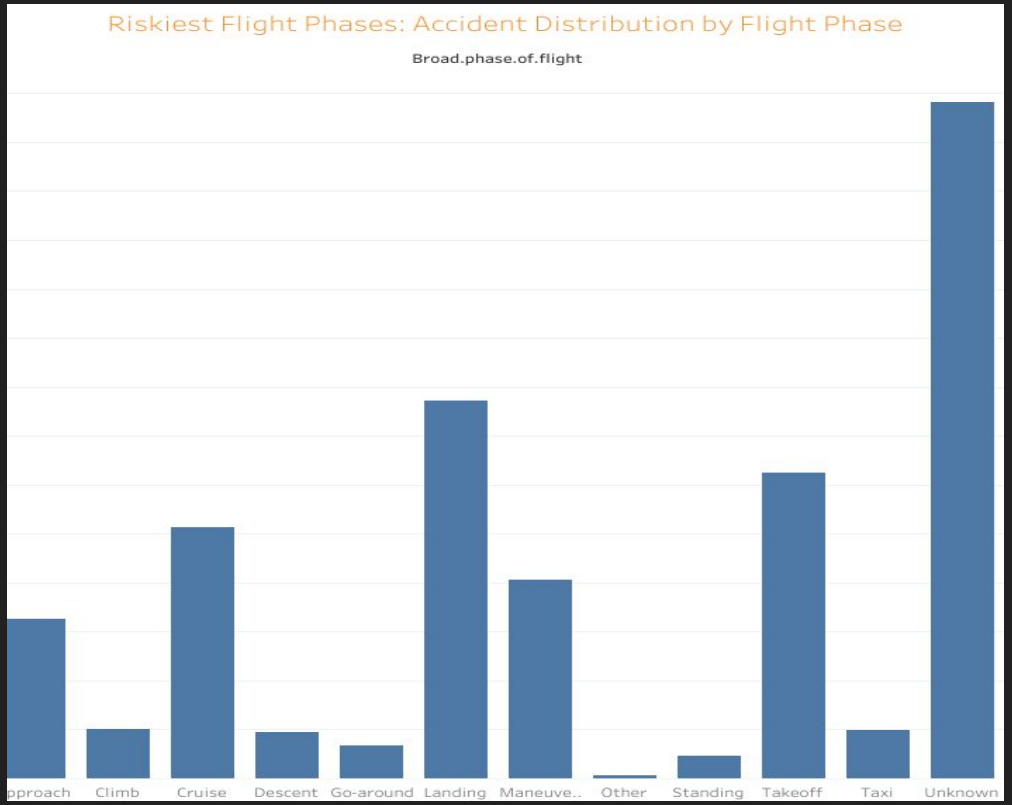
Visualization: Tableau

Aircraft Accidents Over the Years



⚠️Insight: The rate of aircraft accidents has **decreased over time**, showing improvements in aviation safety. While there are occasional spikes, the overall trend suggests **better technology, stricter regulations, and improved training**

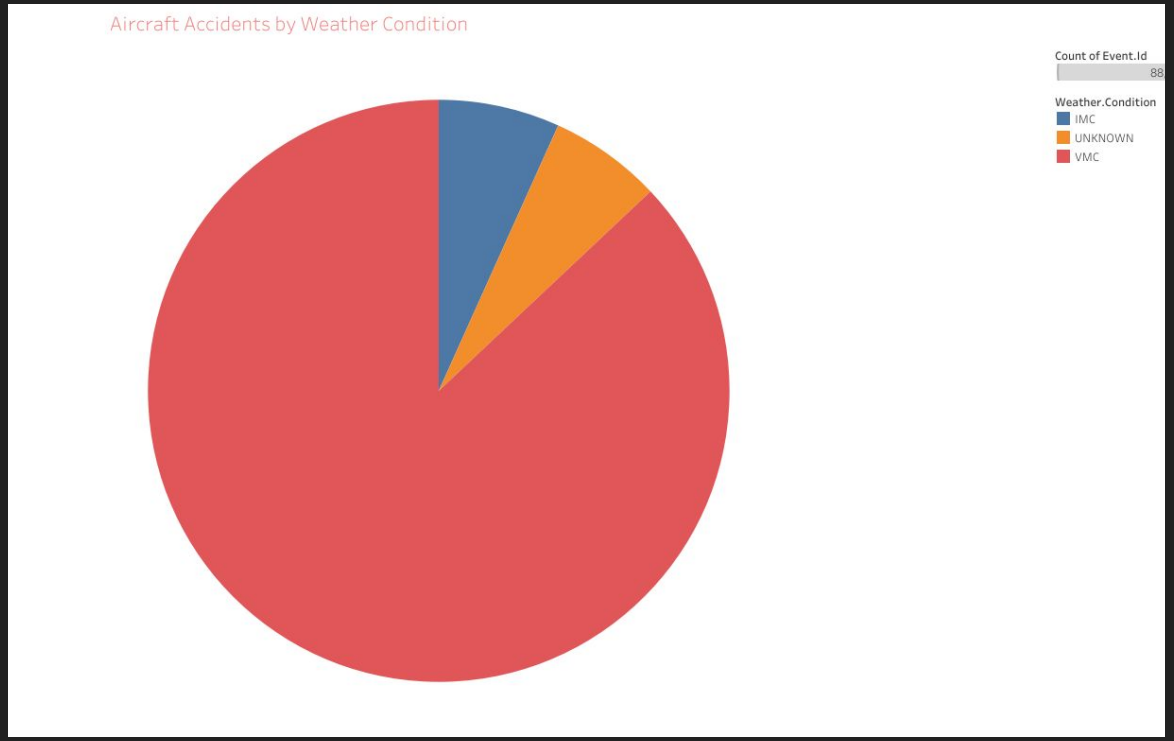
Riskiest Flight Phases



⚠️ **Insight:**

- The most dangerous phases of flight are **Takeoff and Landing**.
- Mid-flight accidents are **less common** but can be catastrophic when they happen.

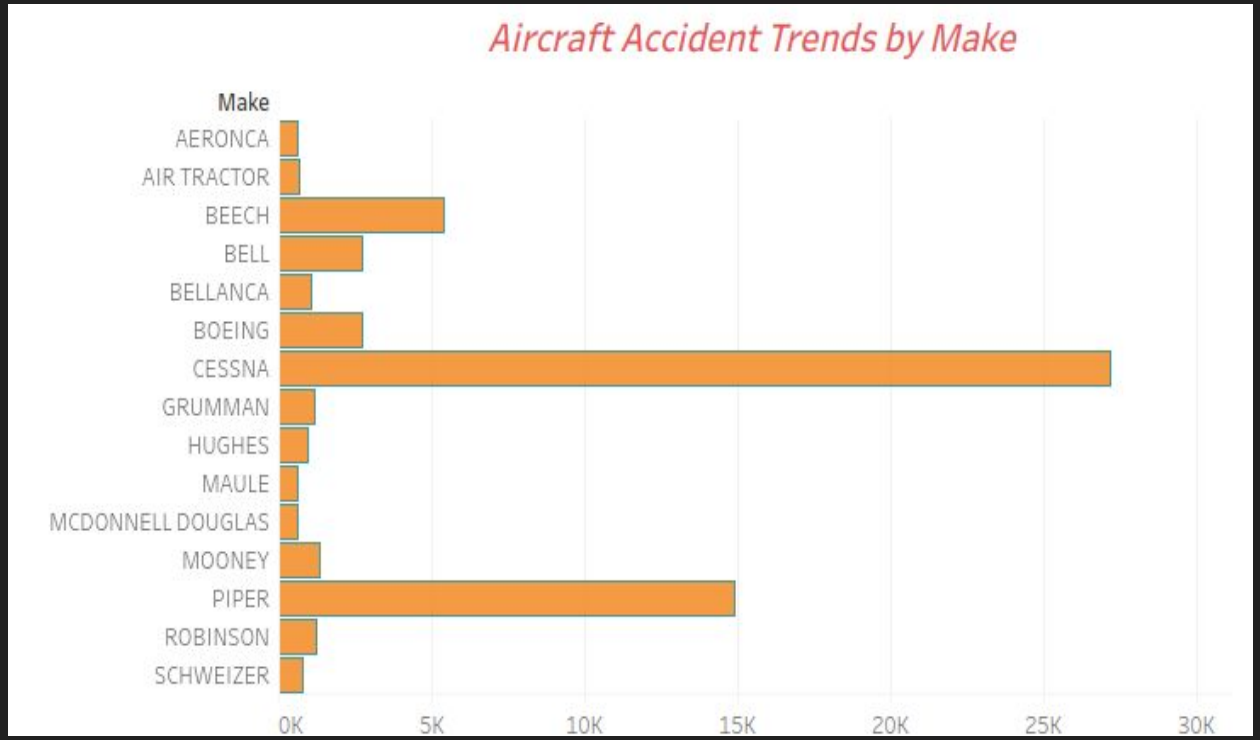
Impact of Weather Conditions on Accidents



⚠️**Insight:**

- Surprisingly, **most accidents happen in clear weather (VMC)** rather than poor weather (IMC).
- This suggests that **human error or mechanical issues** are bigger factors than bad weather alone.

Accidents by Aircraft Make



⚠️**Insight:**

Certain aircraft brands have higher accident counts—Cessna and Piper dominate the list.

These aircraft are widely used in general aviation, **especially for training and small commercial flights.**

Conclusion & Recommendations

Conclusion

- **Risky Aircraft Models:** Cessna & Piper have higher accident rates.
- **Weather Impact:** Most accidents happen in **VMC**, meaning human error is a bigger factor.
- **Riskiest Flight Phases: Takeoff & landing** are the most accident-prone.
- **Trends Over Time:** Accidents have **decreased**, likely due to better safety measures.

Recommendations

1. Choose safer aircraft models.
2. Improve pilot training & safety protocols.
3. Focus on safety during takeoff & landing.
4. Use data to enhance aviation policies.

Final Thoughts & Next Steps

- **Data-Driven Decisions:** Understanding accident trends helps improve aviation safety.
- **Continuous Improvement:** Airlines & manufacturers should keep refining safety measures.
- **Future Work:** Further research into **pilot error**, **maintenance issues**, and **new tech** can enhance safety.

📊 **Explore the Interactive Dashboard:**
[https://public.tableau.com/views/AviationSafetyInsights_17430984497510/Dashboard1?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link]

Thank you