

AVIATION RISK ASSESSMENT FOR AIRCRAFT PURCHASE DECISIONS

Exploring trends, geographic risks, and critical factors for aviation safety.

Prepared by: Zena Weru

INTRODUCTION

Objective:

- Identify low-risk aircraft types using aviation accident data from 1962 to 2023.

Key Deliverables:

- Identify low-risk aircraft models.
- Analyze temporal and geographic trends.
- Evaluate accident causes and contributing factors.
- Provide actionable recommendations.

DATA UNDERSTANDING

- Data Overview:

Data Description:

- Covers 60+ years of aviation accident data.
 - 88,889 aviation accidents.

- Includes fields like `Aircraft Categories`, `Accident Severity`, `Event Date`, `Latitude`, and `Longitude`.

Data Challenges:

- Missing values in key fields like `Air Carrier`.
- Imbalanced distribution of severity levels.

Data source: National Transportation Safety Board (NTSB). [Kaggle]

DATA ANALYSIS

DATA-DRIVEN INSIGHTS TO MINIMIZE RISK
AND MAXIMIZE SAFETY

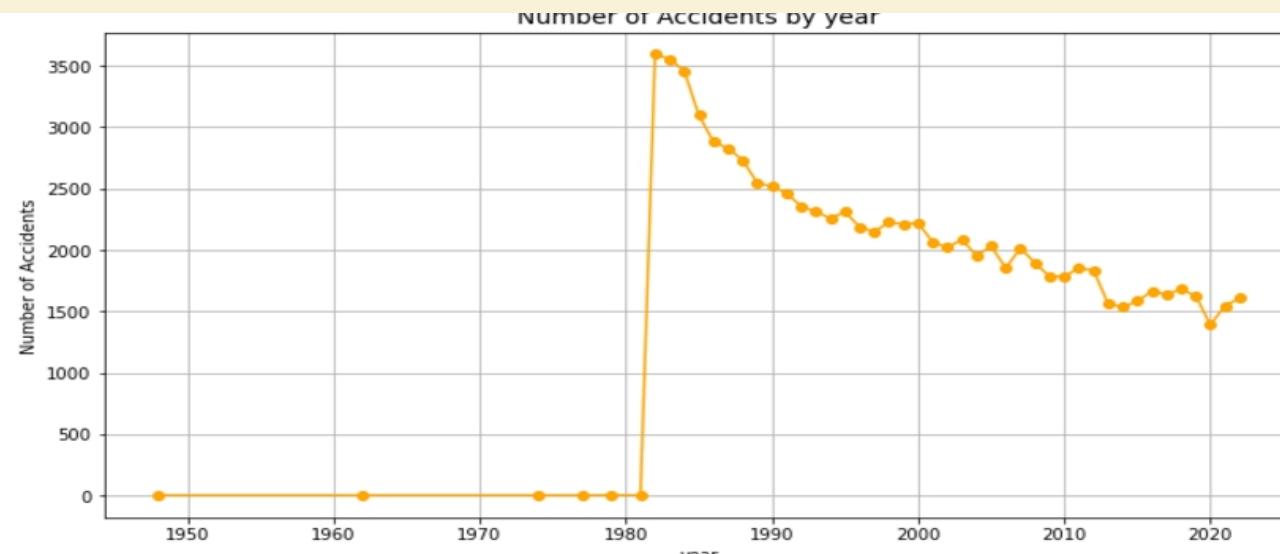
TEMPORAL TRENDS

Trends Over Time

- Decline in accidents after 2000 due to enhanced safety regulations.
- Peaks during specific years linked to major incidents.

Recommendation:

- Investigate operational practices during these spikes to mitigate future risks.

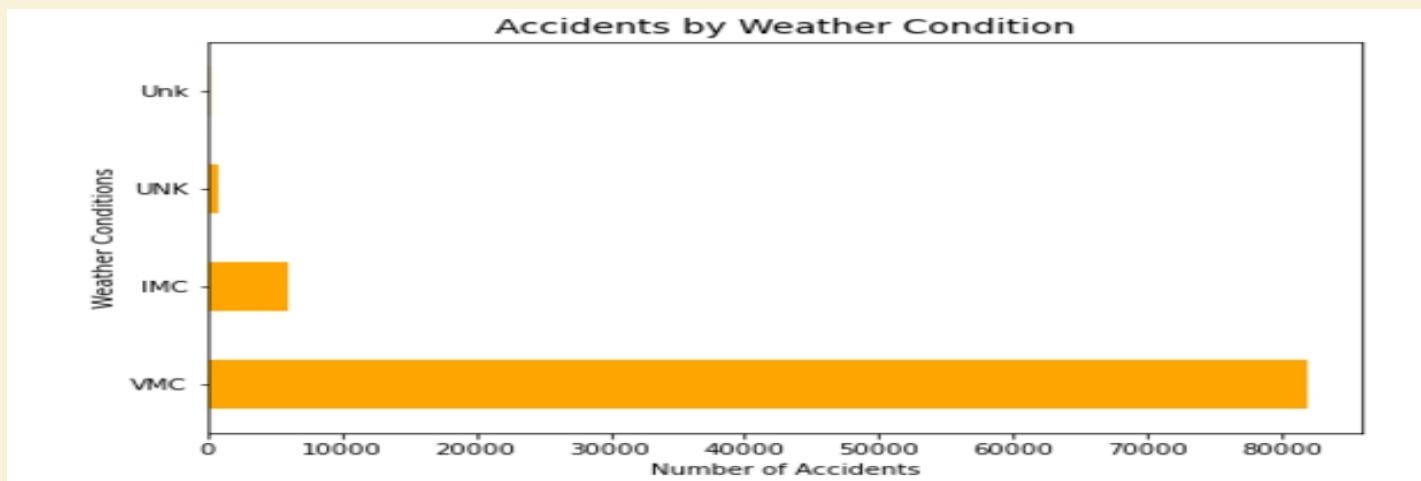


ACCIDENT SEVERITY FACTORS

Factors Contributing to Accident Severity

1. Weather Conditions:

- Most severe accidents occurred during adverse weather conditions.
 - Recommendation
- Getting an aircraft that can handle intense conditions and avoid flights during adverse weather conditions.



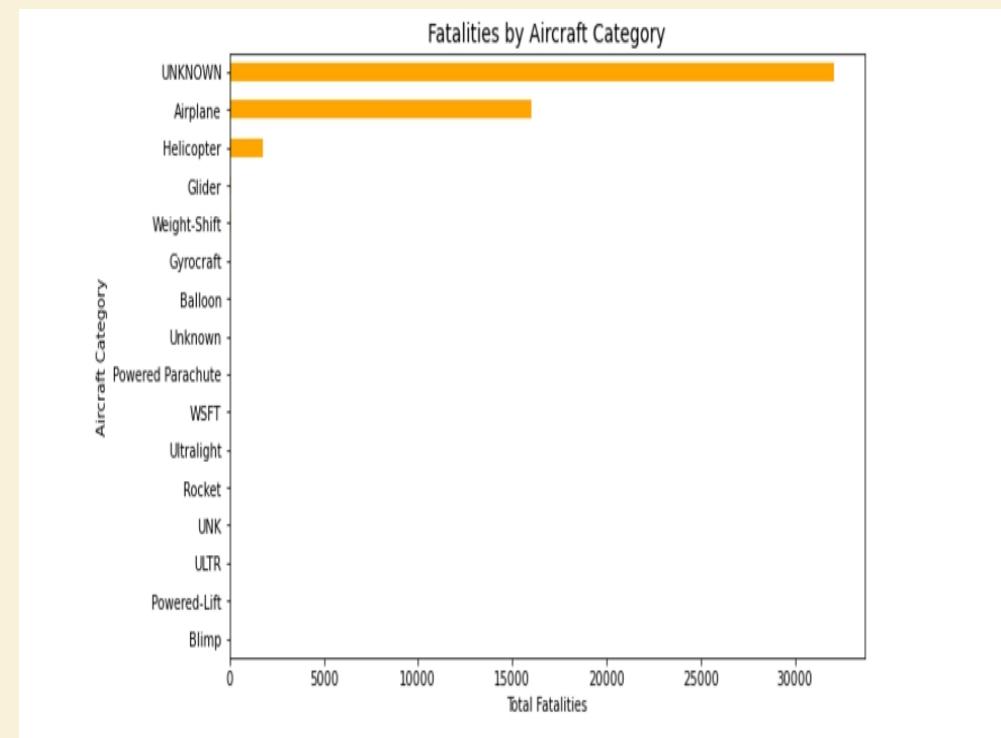
ACCIDENT SEVERITY FACTORS

2. Aircraft Category:

- High correlation with fatal outcomes.
- Aircraft types unknown, Airplanes, and helicopters account for 80% of severe accidents.
- Other types show significantly lower risk profiles.

Recommendation:

- Avoid high-risk types and prioritize safer alternatives.



GEOGRAPHIC ANALYSIS

Countries with the Highest Fatalities

- High concentration of accidents in the United States

Recommendation:

- Focus operations in lower-risk Countries.

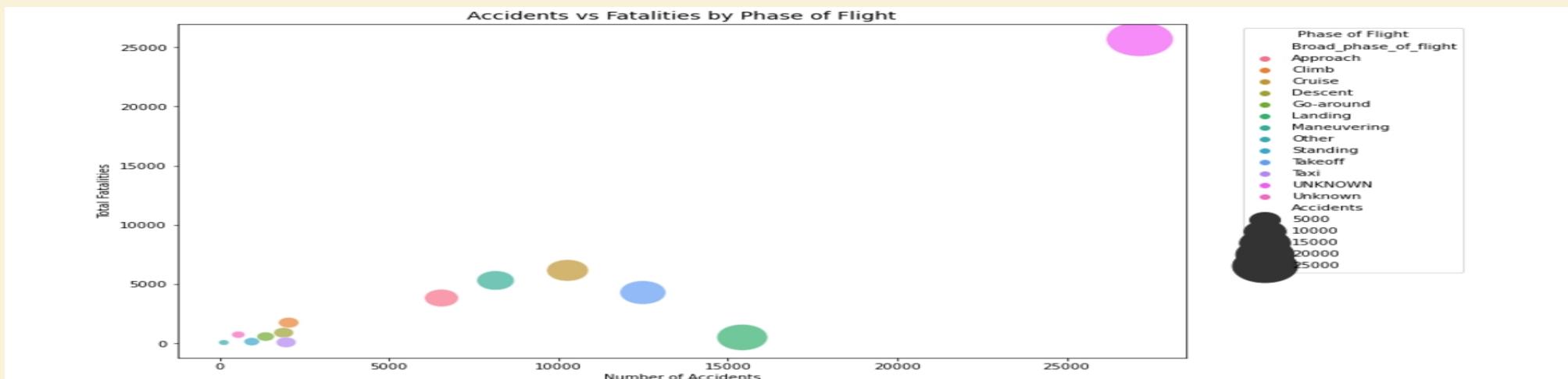


PHASE OF FLIGHT

- High Risk During Takeoff and Landing. A significant number of accidents occur during the landing and takeoff phases, which are traditionally high-risk due to complex operations, reduced altitude, and proximity to the ground.

Recommendation

- Technology Upgrades. Equip aircraft with advanced avionics like ground proximity warning systems (GPWS) and terrain awareness systems to prevent accidents during descent and landing.





RECOMMENDATIONS

INSIGHTFUL GUIDE

10

RECOMMENDATIONS

1. Purchase Priority:

- Focus on aircraft types with consistently low accident severity.
- Aircraft Safety Improvements: Prioritize models with low accident rates

2. Safety Focus:

- Weather Training: Develop comprehensive training for adverse conditions.
- Adopt stringent operational practices and safety protocols in high-risk regions.

3. Continuous Monitoring:

- Geographic Strategies: Avoid operations in regions with frequent accidents.
- Operational Safety Protocols: Enhance inspections during high-risk periods.

WHAT'S NEXT?

Validation:

- Consult domain experts to confirm findings.

Collaboration:

- Partner with aviation consultants to refine the selection process.

Future Improvements:

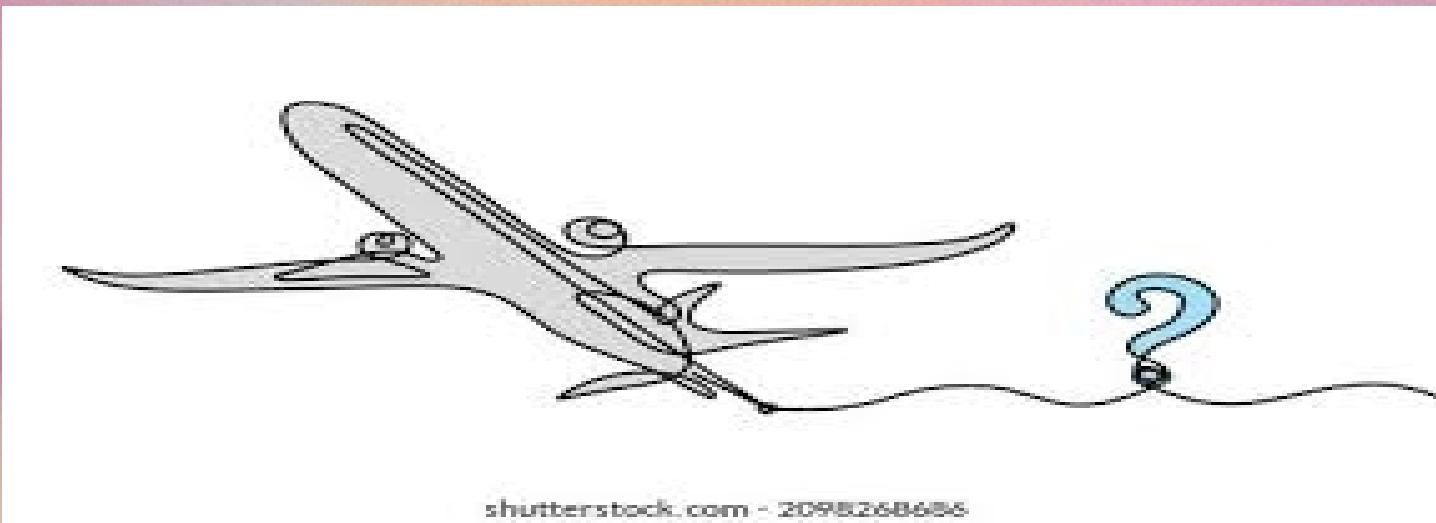
- Incorporate real-time data into dashboards for ongoing risk assessments.

CONCLUSION

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- This analysis identifies critical areas for safety improvement in aviation.
- Leveraging these insights can guide strategic decisions and enhance operational safety.
- We're excited to support our company's expansion into aviation with data-driven insights.

Q & A ?



THANK YOU

ZENA WERU

zenaweru@gmail.com