AVIATION EXPANSION ANALYSIS:

“When once you have tasted flight, you will forever walk the earth with your eyes turned skyward, for there you have been, and there you will always long to return.”
- Leonardo DaVinci

BY: MARTINA KOMEN

WHY THIS MATTERS

- OUR COMPANY IS EXPANDING INTO THE AVIATION INDUSTRY
- AIRCRAFT SELECTION IS A CRITICAL SAFETY AND FINANCIAL DECISION
- DATA HELPS REDUCE RISK AND BUILD PUBLIC TRUST

PROJECT OBJECTIVES:

I

Identify the safest aircraft models for commercial and private operations

II

Analyze historical accident data for trends and insights

III

Provide recommendations that support safety and business goals

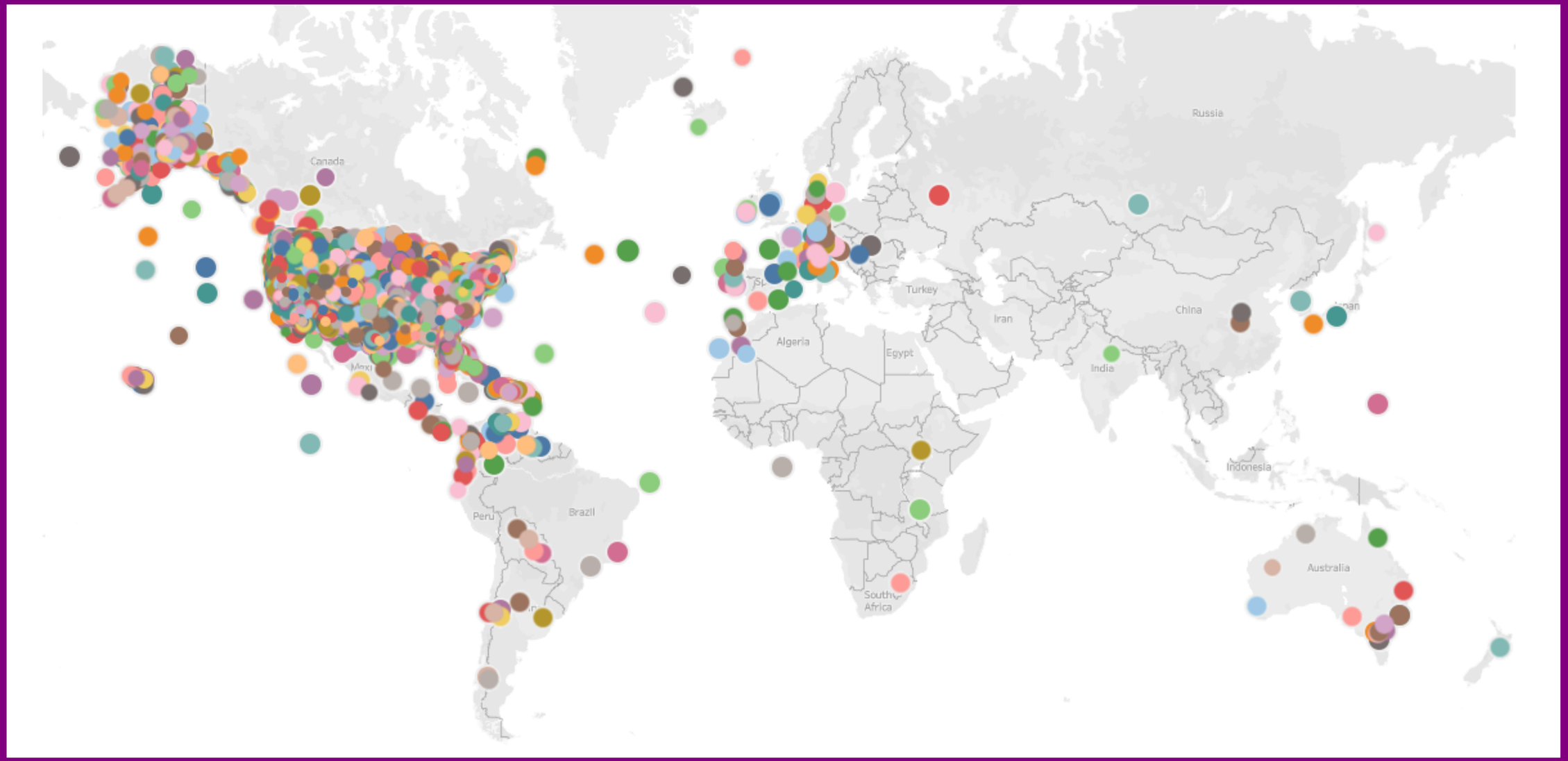
ABOUT THE DATA:

The data is obtained from the National Transportation Safety Board and includes aviation accident data from 1962 to 2023 about civil aviation accidents and selected incidents in the United States and international waters.

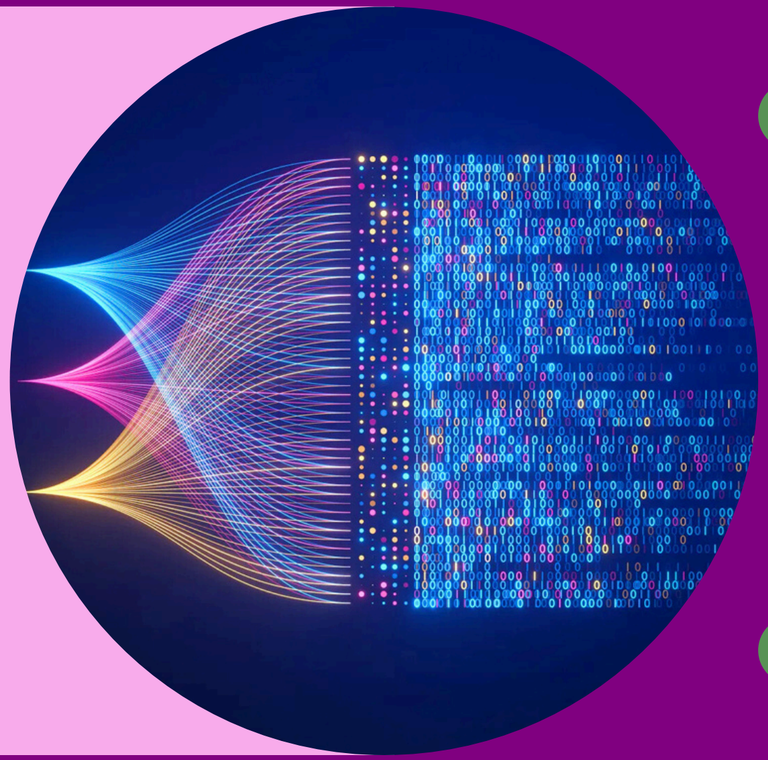
- NTSB Aviation Accident Synopses (Kaggle)
- Time Range: 1982-2020
- 30,000+ accident records (cleaned and analyzed)

Fields included: Aircraft Model, Purpose of Flight, Phase of Flight, Total Fatalities, Location and Date

GEOGRAPHIC DISTRIBUTION OF AVIATION ACCIDENTS:



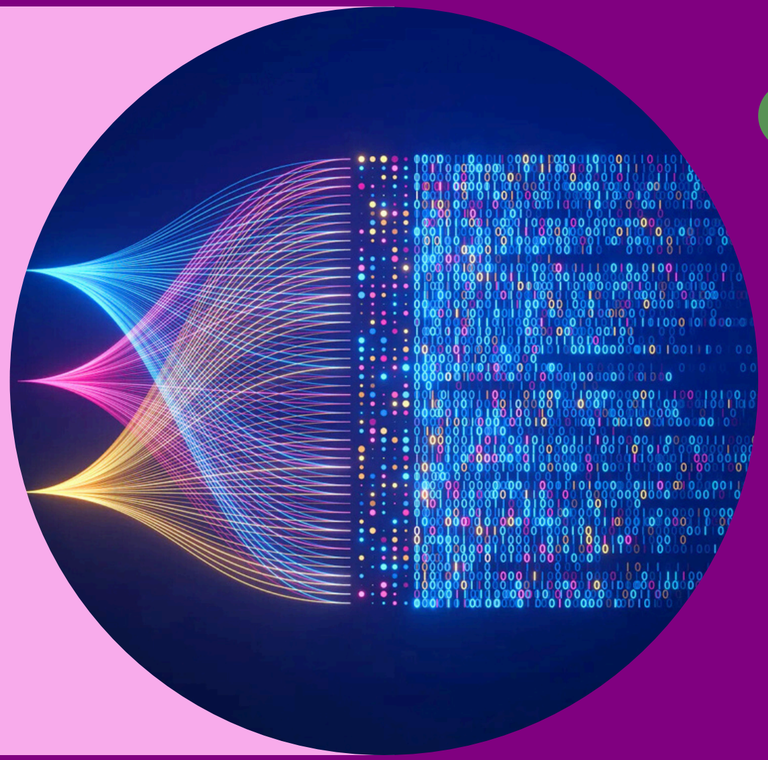
GEOGRAPHIC DISTRIBUTION OF ACCIDENTS (CONT)



KEY INSIGHTS:

- The majority of aviation accidents occur in the United States, as shown in the geographic distribution map
- This trend can be attributed to the high volume of air traffic, large number of registered aircraft, and extensive general aviation activity in the country.
- Other regions with significant accident occurrences include Europe and parts of South America, though at a lower frequency than the U.S.

GEOGRAPHIC DISTRIBUTION OF ACCIDENTS (CONT)

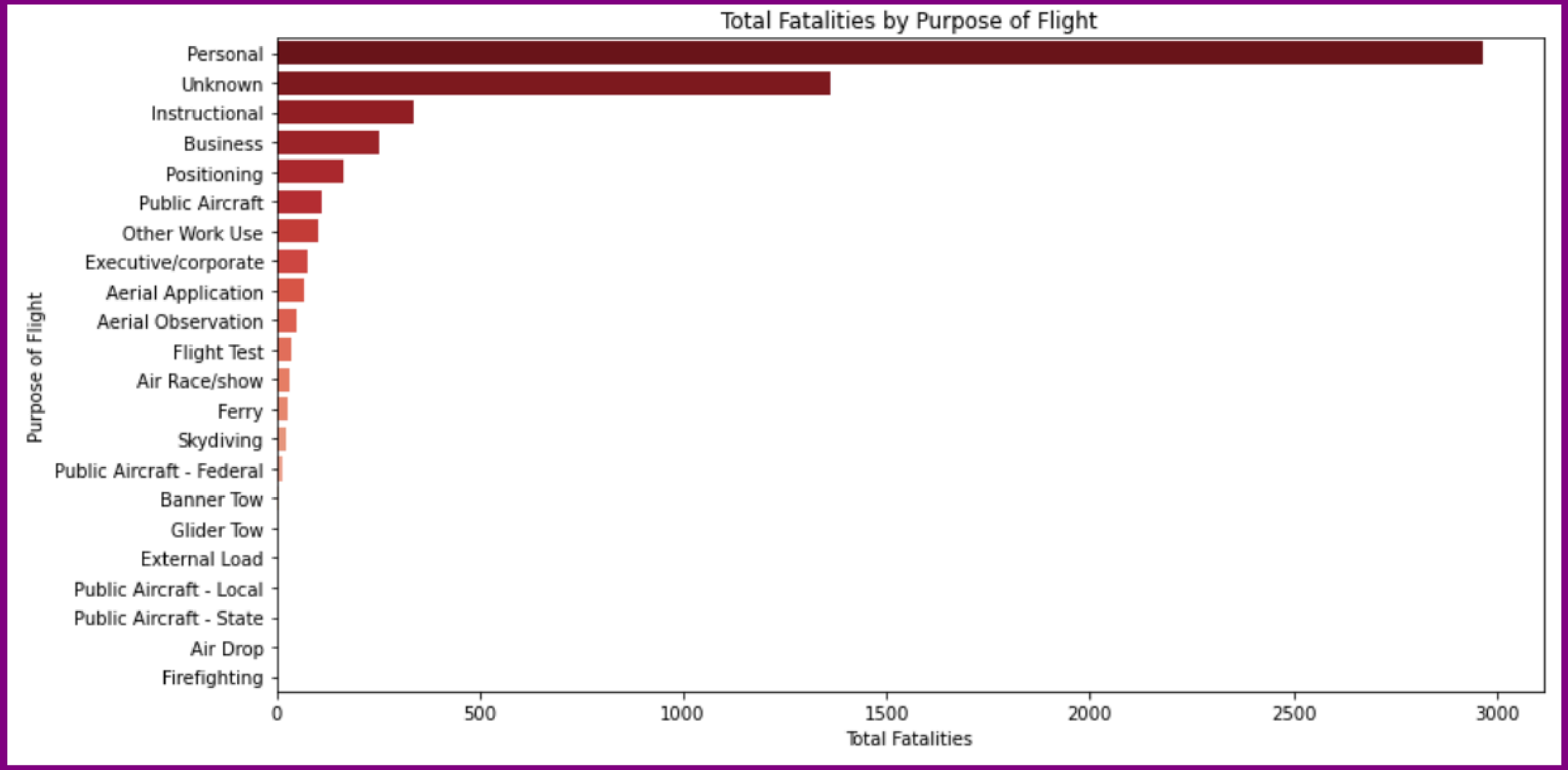


BUSINESS RECOMMENDATIONS:

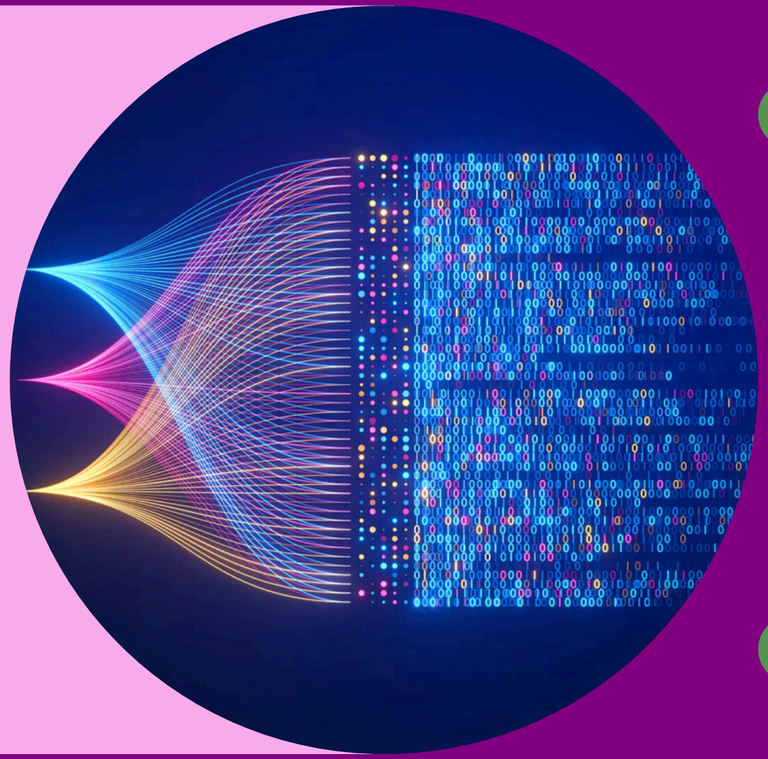
- Given the high frequency of aviation accidents in the United States, companies expanding into the aviation sector should prioritize enhanced safety measures to mitigate risks.

- Investing in advanced pilot training programs, improved aircraft maintenance, and cutting-edge safety technologies can help reduce accident rates.

TOTAL FATALITIES BY PURPOSE OF FLIGHT



TOTAL FATALITIES BY PURPOSE OF FLIGHT (CONT)

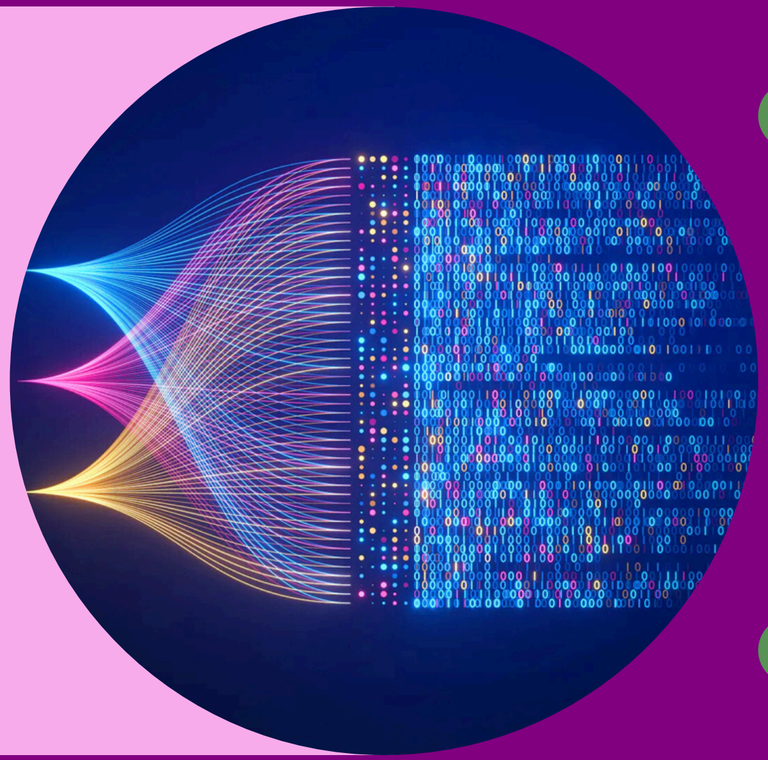


(Unknown Purpose: A large number of accidents have an undocumented or unclear purpose, which suggests potential data collection gaps.)

KEY INSIGHTS:

- **Personal Flights Have the Highest Fatalities:** The majority of fatal aviation accidents occur in personal/private flights, significantly surpassing other flight purposes.
- **High Fatalities in Instructional and Business Flights:** Training flights (instructional) and business-related flights also show a notable number of fatalities, highlighting risks in these categories.
- **Public & Government Aircraft Involvement:** Public aircraft, including federal, state, and local operations, account for a smaller but notable proportion of fatalities.

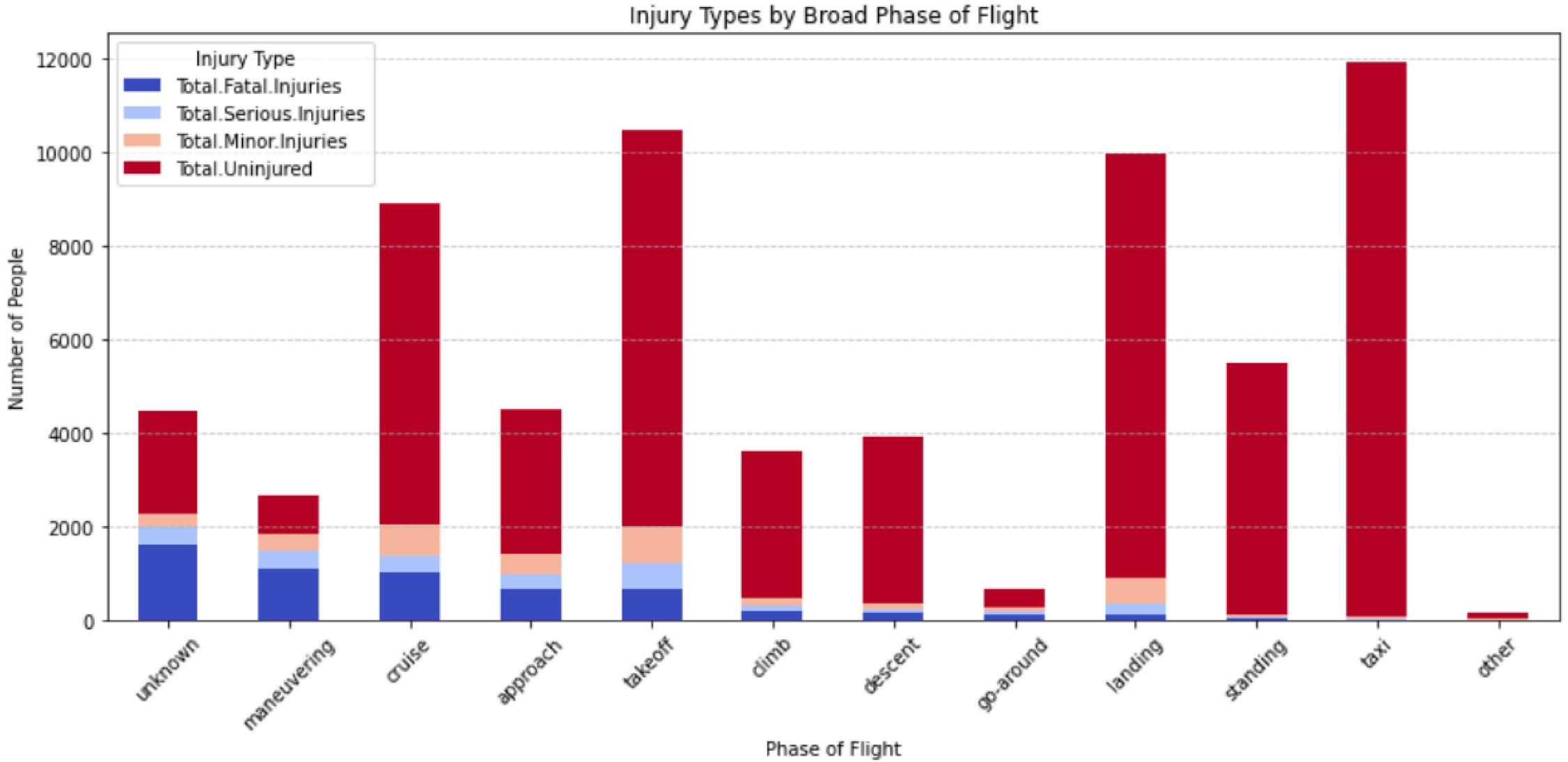
TOTAL FATALITIES BY PURPOSE OF FLIGHT (CONT)



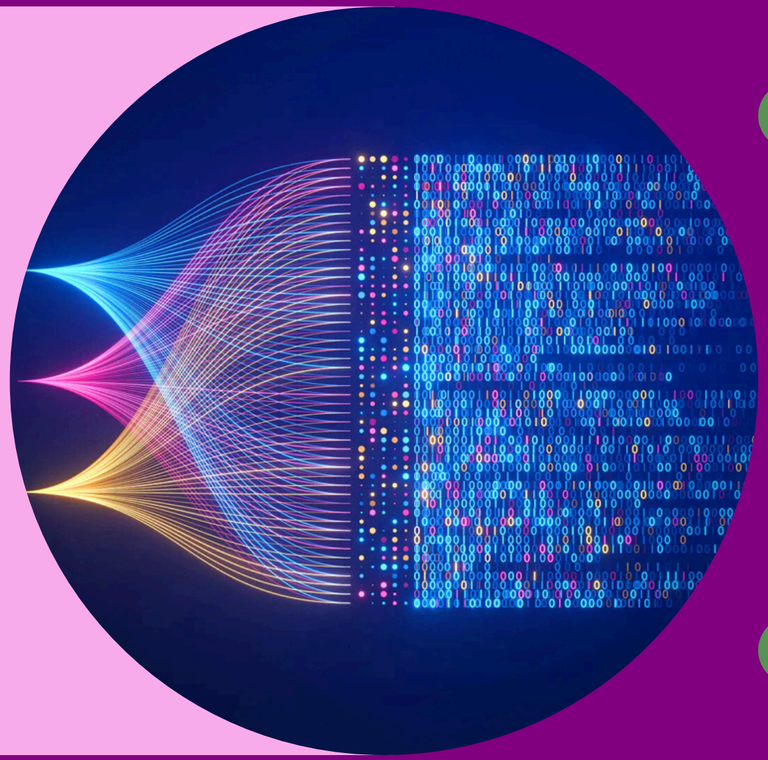
BUSINESS RECOMMENDATIONS:

- **Improve Safety in Private Aviation: Companies offering private aviation services should enhance pilot training, enforce stricter maintenance protocols, and promote advanced safety technologies to reduce accident rates.**
- **Strengthen Safety Measures for Instructional Flights: Flight schools and training programs should adopt enhanced safety protocols, including the use of simulators and supervised in-flight training.**
- **Corporate Travel & Business Aviation Risk Management: Businesses using aviation for transport should invest in risk mitigation strategies, such as ensuring pilot experience, maintaining aircraft rigorously, and using well-established aviation services.**

INJURIES ACROSS VARIOUS PHASES OF FLIGHT:



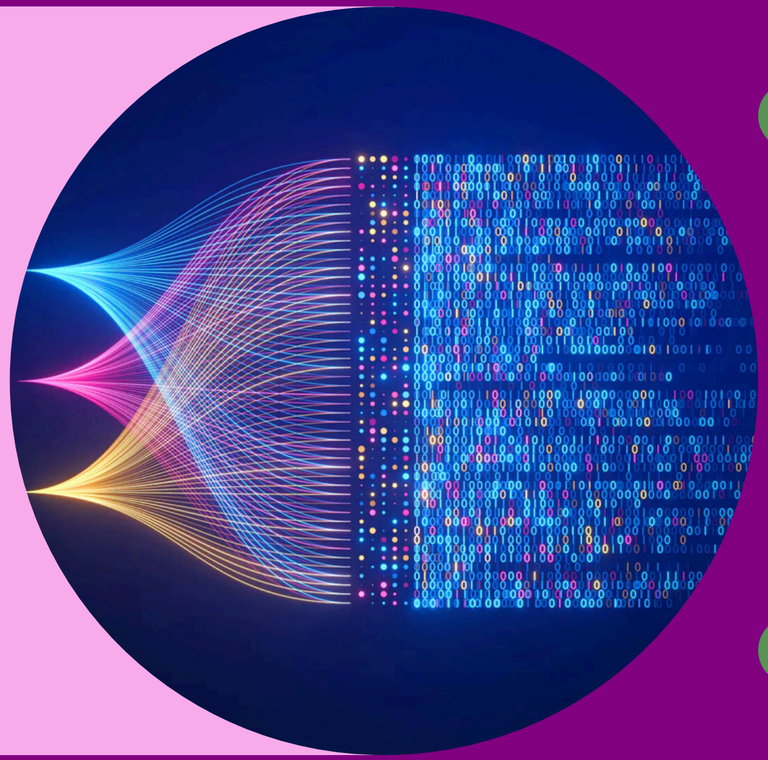
INJURIES ACROSS VARIOUS PHASES OF FLIGHT (CONT)



KEY INSIGHTS:

- **Most Injuries Occur During Landing and Takeoff: These two phases show the highest number of injuries, indicating that critical moments of flight pose the greatest risks.**
- **Maneuvering and Approach Have Moderate Injury Rates: These phases also contribute to accident-related injuries, likely due to pilot errors or challenging conditions.**
- **Taxiing Has the Highest Number of Uninjured Cases: This suggests that many incidents occur on the ground but do not lead to serious injuries.**

INJURIES ACROSS VARIOUS PHASES OF FLIGHT (CONT)



BUSINESS RECOMMENDATIONS

- **Enhance Landing and Takeoff Safety Measures: Prioritize training pilots on takeoff and landing safety, optimize runway conditions, and invest in advanced warning systems to reduce risks.**
- **Implement Safer Taxiing Procedures: Invest in better ground control systems, improve taxiway visibility, and enforce stricter taxiing regulations to prevent minor incidents.**
- **Develop More Effective Pilot Training Programs: A focus on simulated training for critical phases like takeoff, landing, and maneuvering can reduce human error and improve safety outcomes.**

RECOMMENDATIONS

- **Choose aircraft models with strong safety records**
- Learn from commercial/government sector practices
- Prioritize pilot training & maintenance
- Avoid high-risk models unless essential
- Use location-based insights when planning operations

FINAL THOUGHTS

Data tells a clear story:

We can reduce risk through better aircraft selection, training, and operational planning.

These insights are ready to inform real-world business decisions.

QUESTIONS?

THANK YOU!

CONTACT INFO:
+254769153320
komenmartina@gmai.com