



# **DATA VISUALIZATION OF BIRD STRIKES BETWEEN 2000 - 2011**

**Data Science Project**

**By : Siddharth Rawat**

# INTRODUCTION



A bird strike is strictly defined as a collision between a bird and an aircraft which is in flight or on a take-off or landing roll. The term is often expanded to cover other wildlife strikes - with bats or ground animals. Bird Strike is common and can be a significant threat to aircraft safety. For smaller aircraft, significant damage may be caused to the aircraft structure and all aircraft, especially jet-engine ones, are vulnerable to the loss of thrust which can follow the ingestion of birds into engine air intakes. This has resulted in several fatal accidents. Bird strikes may occur during any phase of flight, but are most likely during the take-off, initial climb, approach and landing phases due to the greater numbers of birds in flight at lower levels. To have a closer look the following document visually depicts the data collected on Bird Strikes by FAA between 2000-2011.

# PROBLEM STATEMENT



- **Transport and communication: Crucial domain in the field of analytics.**
- **Major Concerns: Environmental impact and Safety.**
- **Why should we be worried? Bird and other wildlife strikes annually cause over \$650 million in damage to U.S. civil and military aviation. They put the lives of aircraft crew members and their passengers at risk.**
- **Important issue because of the ever-increasing amount of vehicles and people.**

# OBJECTIVES



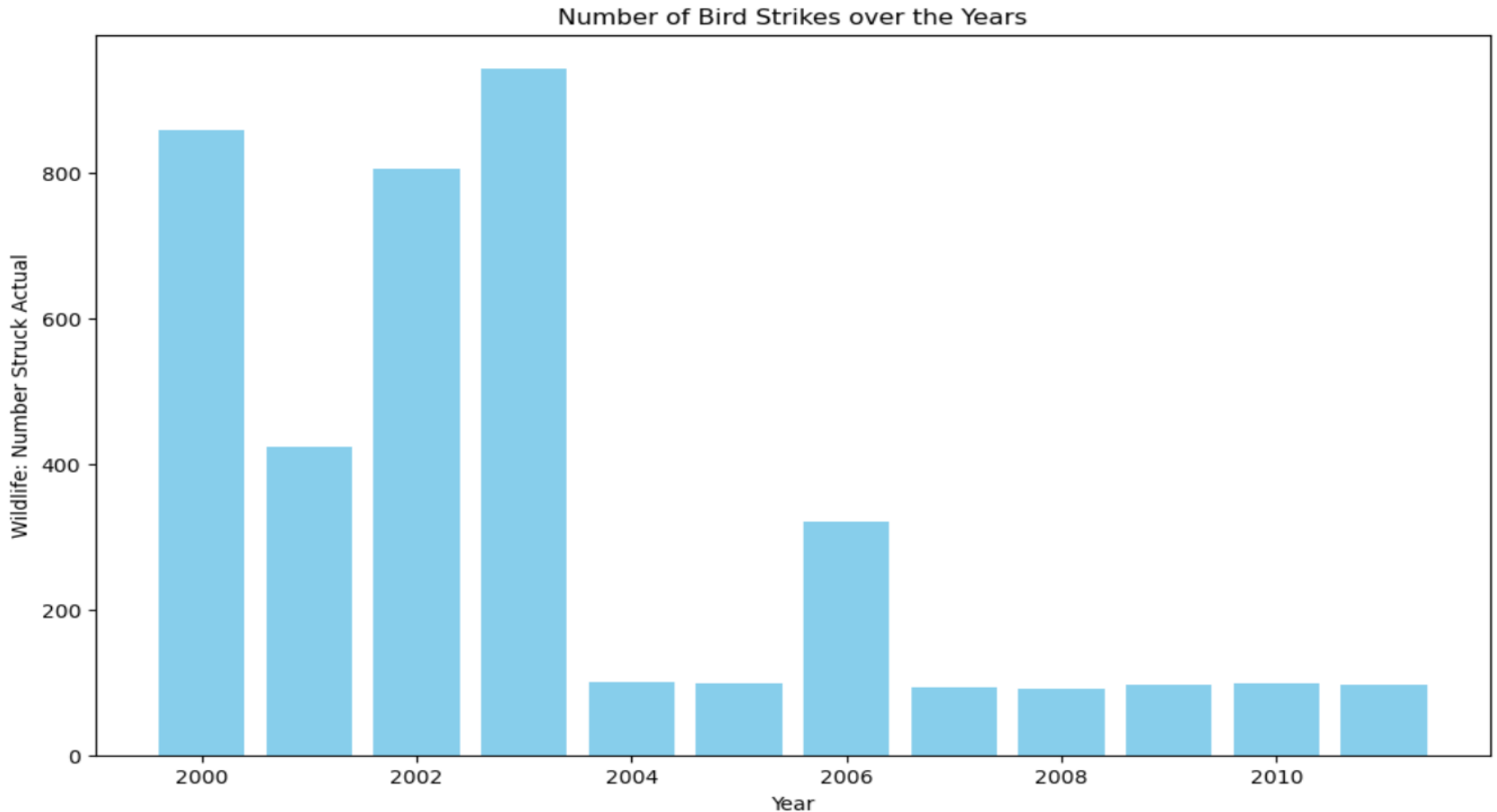
- **Data Exploration** : Analyze and visualize the data to gain insights into the frequency, patterns, and characteristics of bird strikes between 2000 and 2011.
- **Yearly Trends** : Examine the yearly trends in bird strikes, identifying any significant variations and patterns that could inform safety measures.
- **Airline Analysis** : Identify the top 10 U.S. airlines most prone to bird strikes, shedding light on areas for potential safety enhancements.
- **Airport Incidents** : Highlight the 50 airports with the highest incidents of bird strikes, helping prioritize areas for preventive measures.
- **Cost Analysis** : Explore the financial impact of bird strikes on a yearly basis, providing a comprehensive understanding of economic implications.
- **Temporal Analysis** : Determine the times and phases of flights when bird strikes are most prevalent, aiding in targeted safety protocols.

# OBJECTIVES

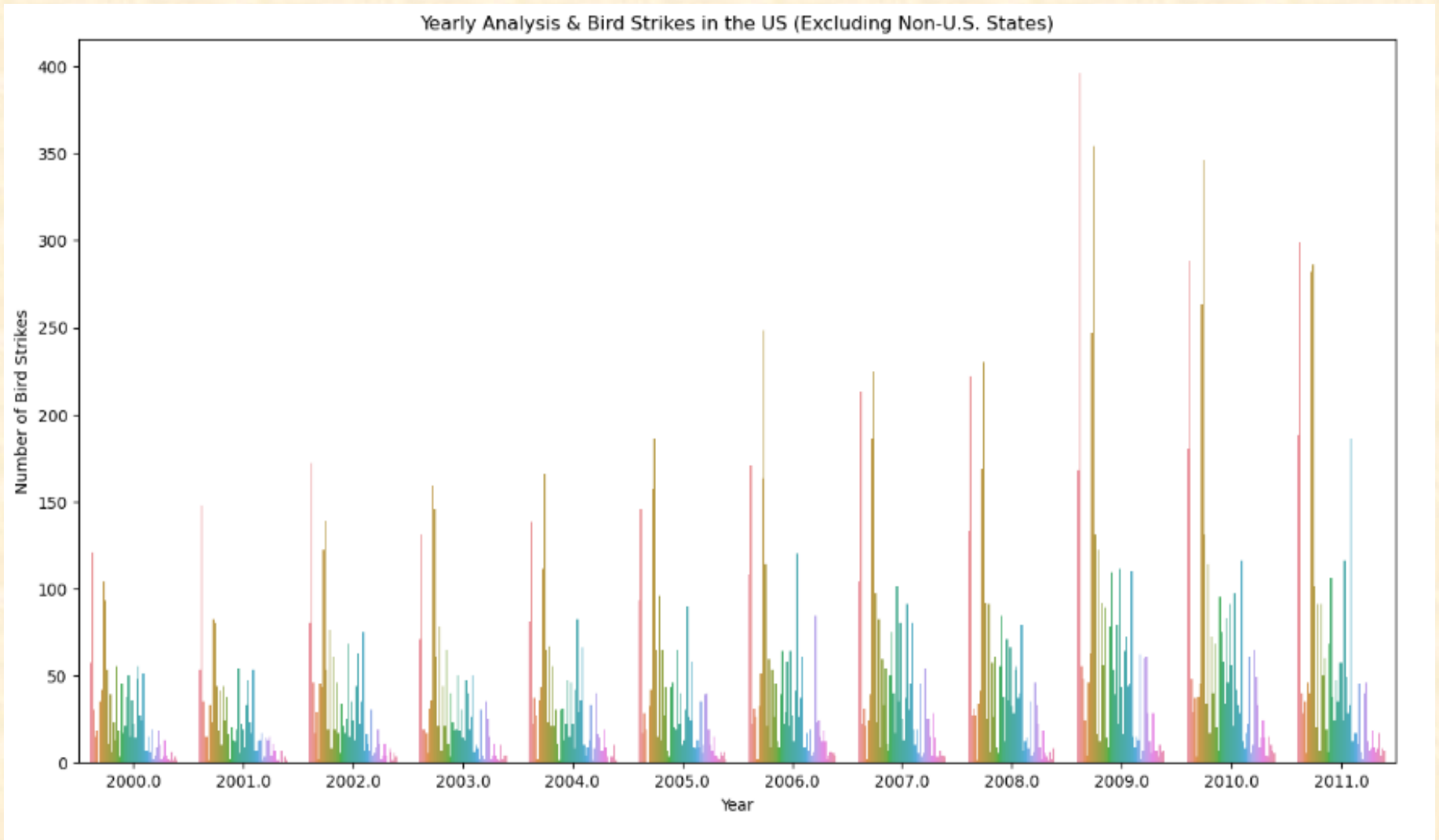


- **Altitude Impact** : Investigate the altitude at which bird strikes commonly occur, contributing to a better understanding of the environmental factors.
- **Flight Phases** : Analyze the impact of bird strikes based on the different phases of flight, guiding safety measures during critical stages.
- **Average Altitude** : Explore the average altitude of airplanes during bird strikes across different flight phases for nuanced insights.
- **Effect on Flight** : Examine the effects of bird strikes on flights, categorizing impacts to enhance safety measures.
- **Altitude - specific Effects** : Investigate the correlation between bird strikes effects and different altitudes, guiding targeted preventive strategies.
- **Pilot Communication** : Assess whether pilots were informed about birds or wildlife, exploring the relationship between prior warnings and the outcome of bird strikes.

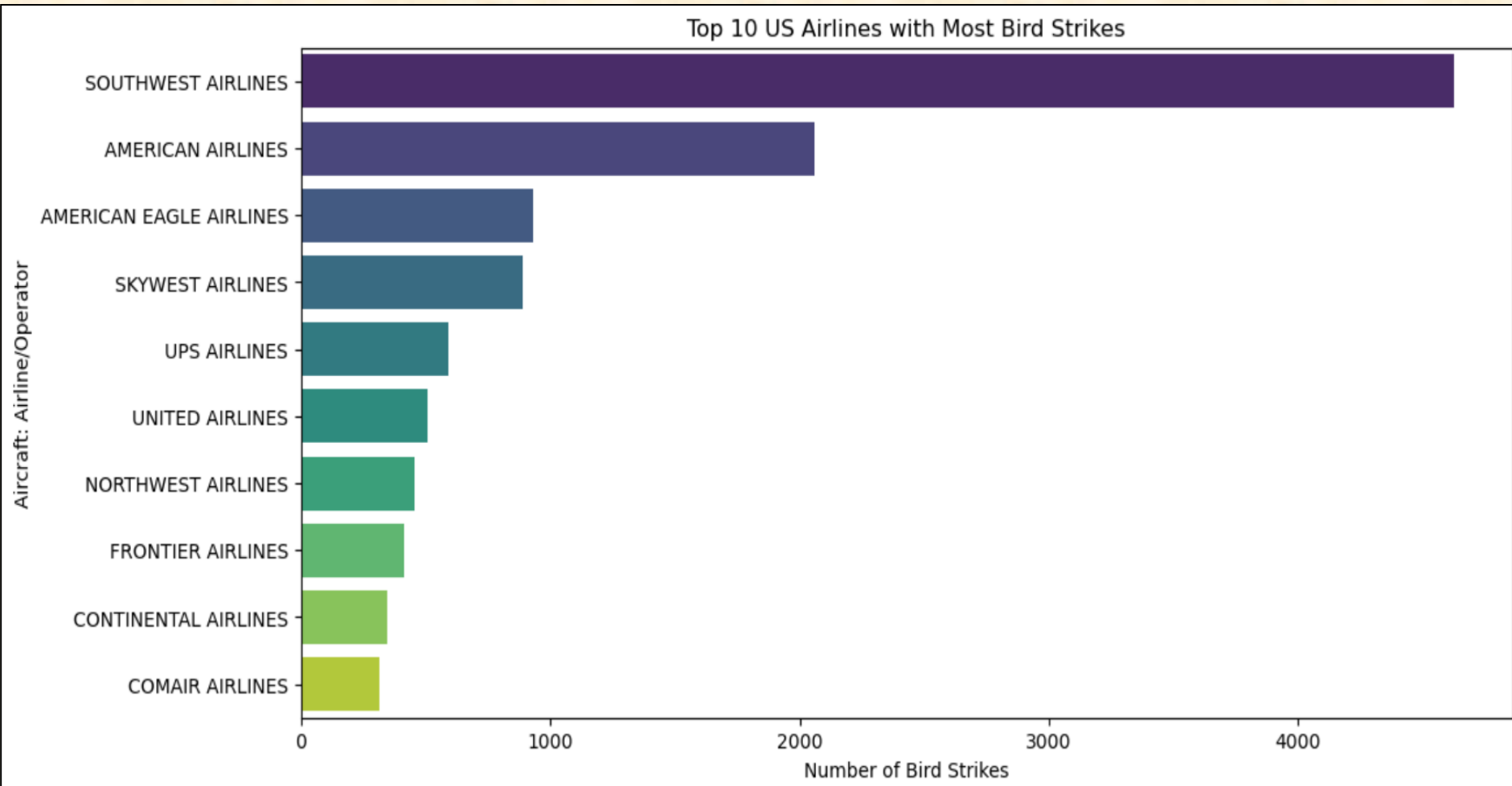
# VISUALIZING NUMBER OF BIRD STRIKES OVER THE YEARS



# YEARLY ANALYSIS & BIRD STRIKES IN THE US

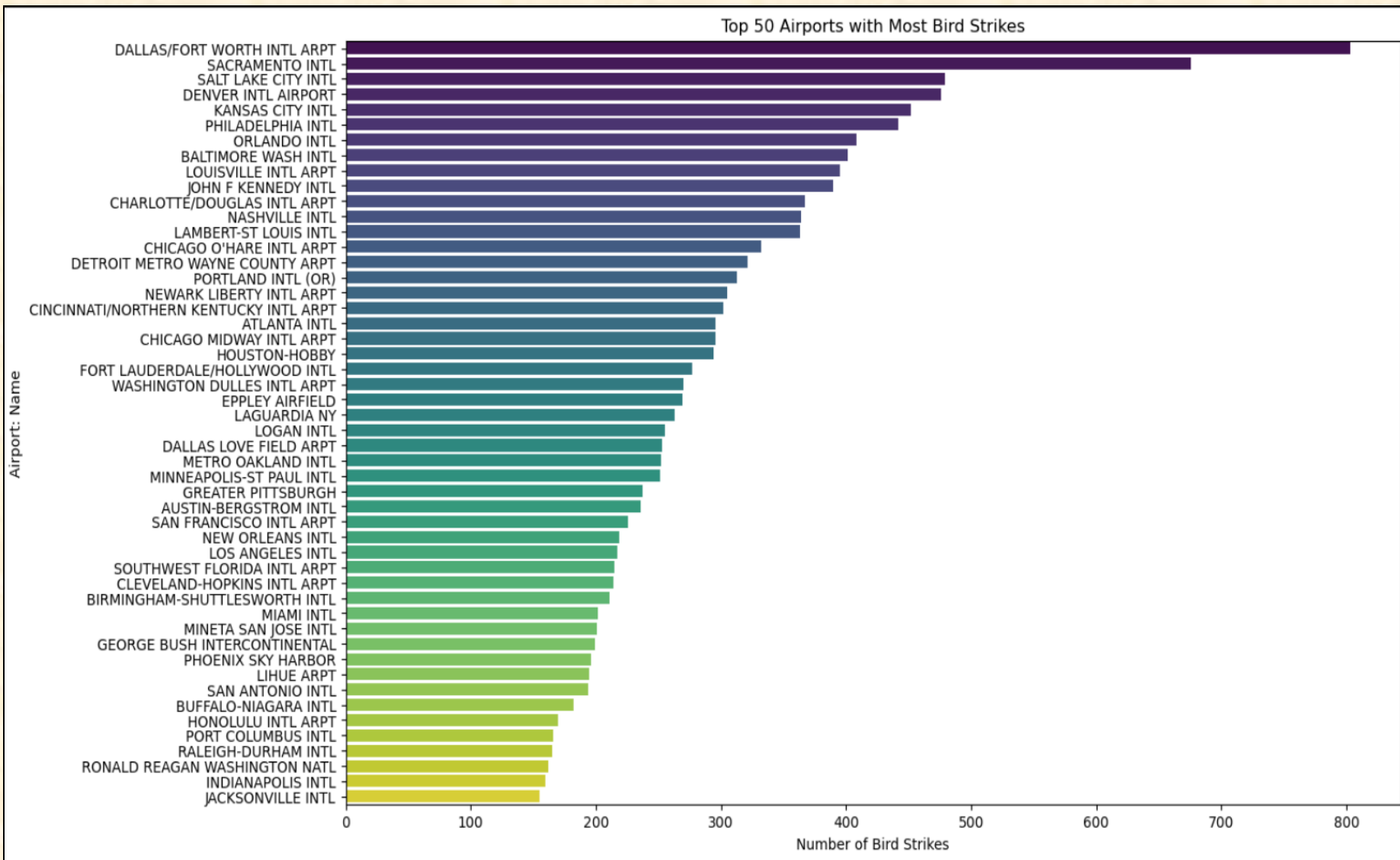


# TOP 10 US AIRLINES IN BIRD STRIKES

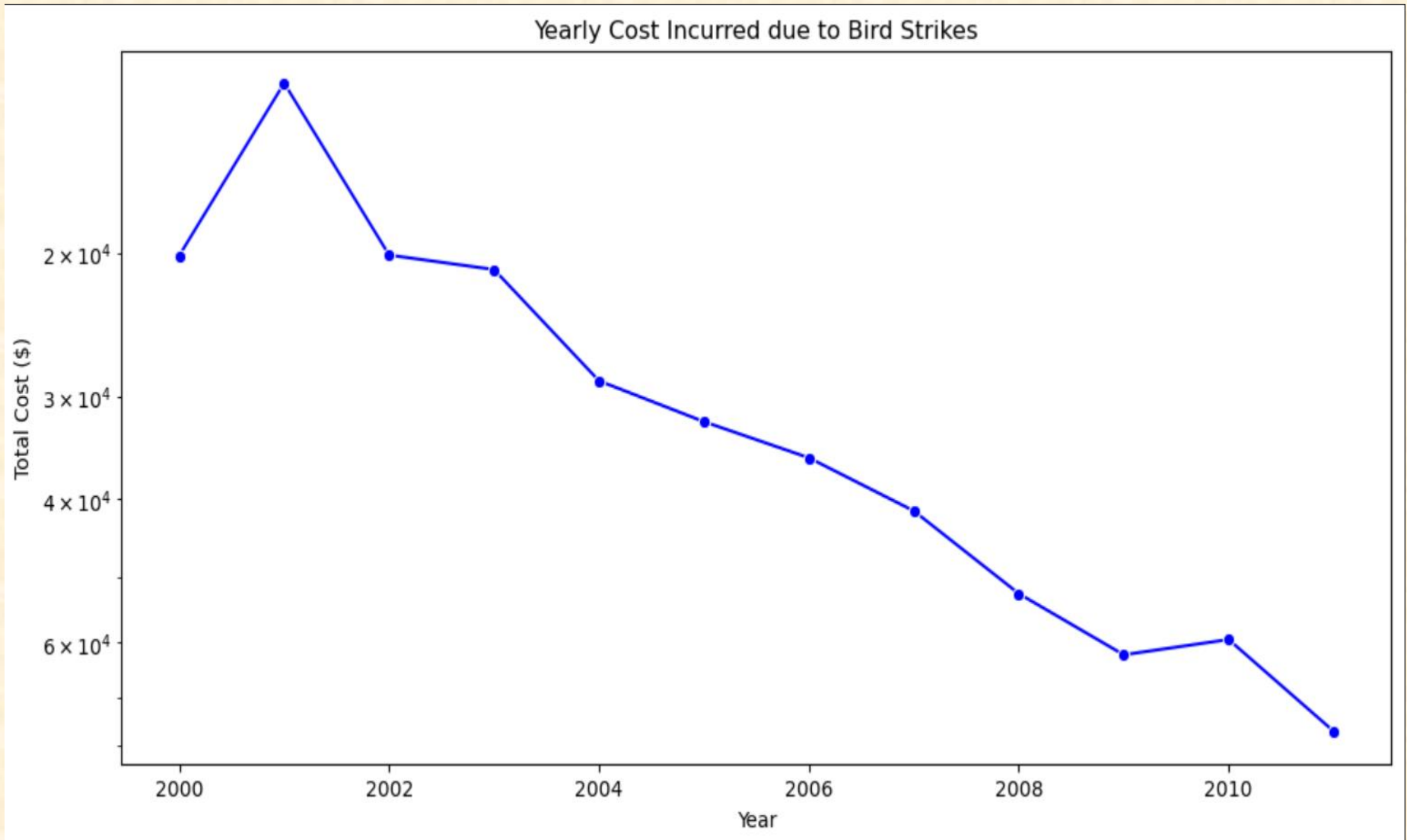




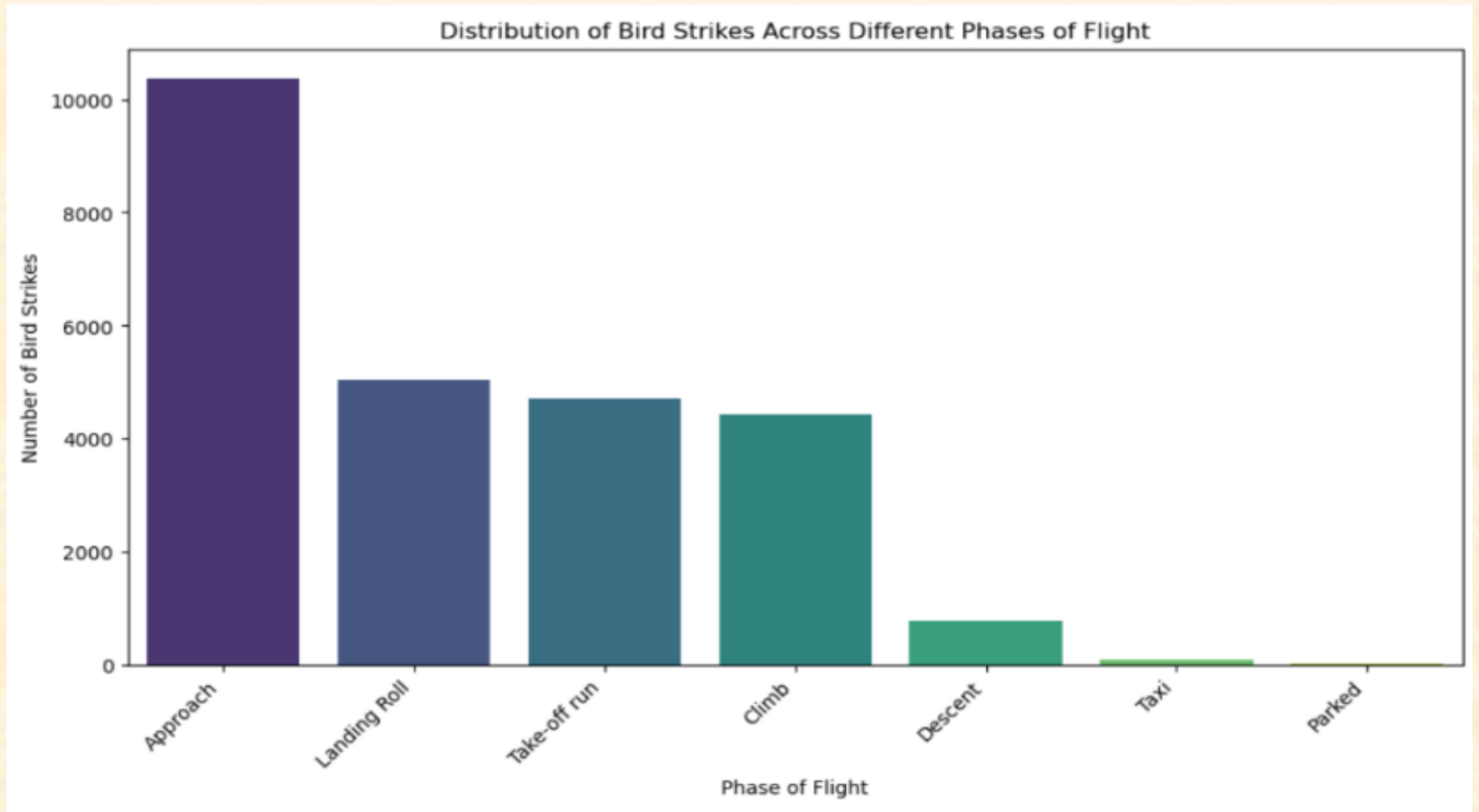
# AIRPORTS WITH MOST INCIDENTS – TOP 50



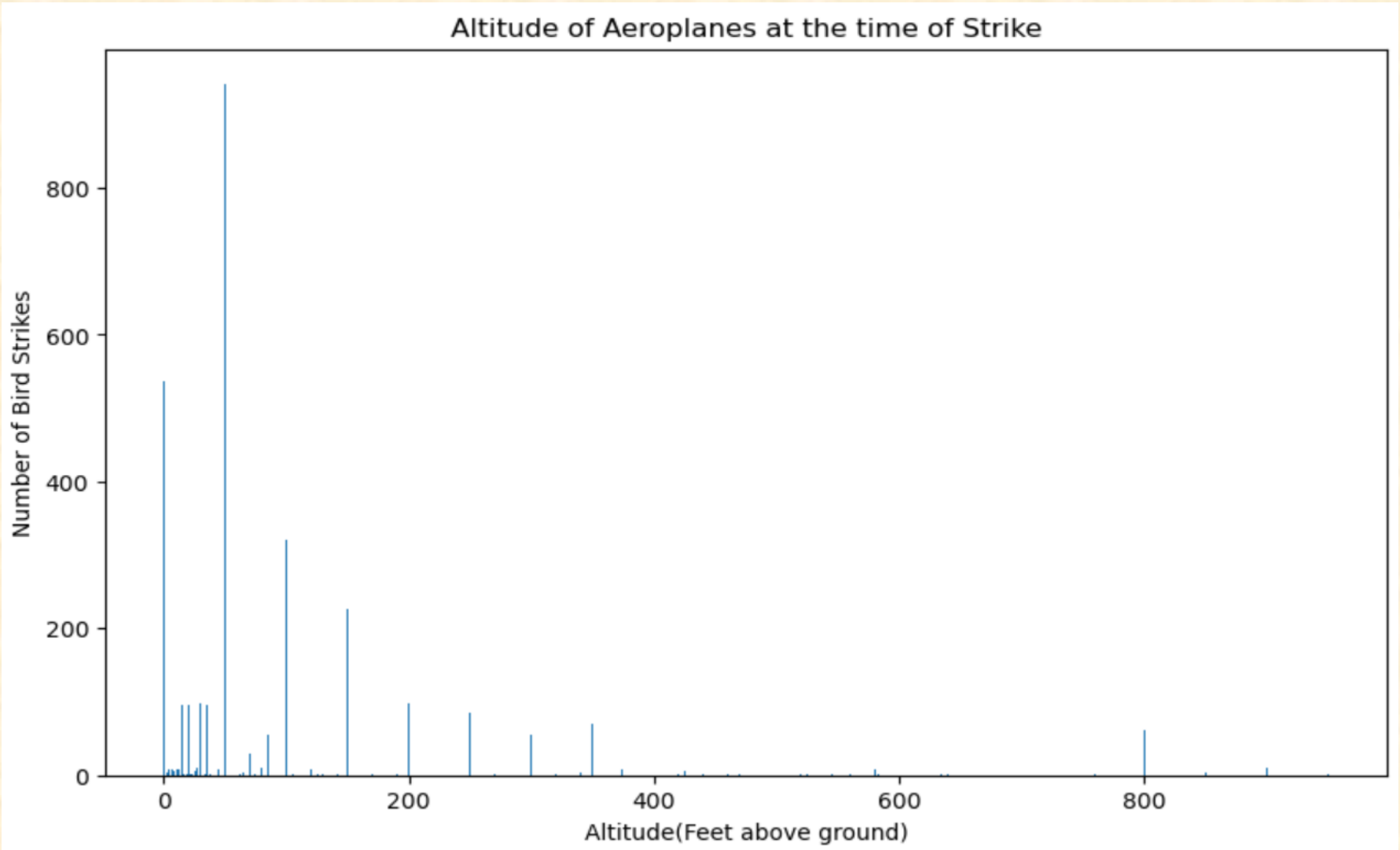
# YEARLY COST INCURRED DUE TO BIRD STRIKES



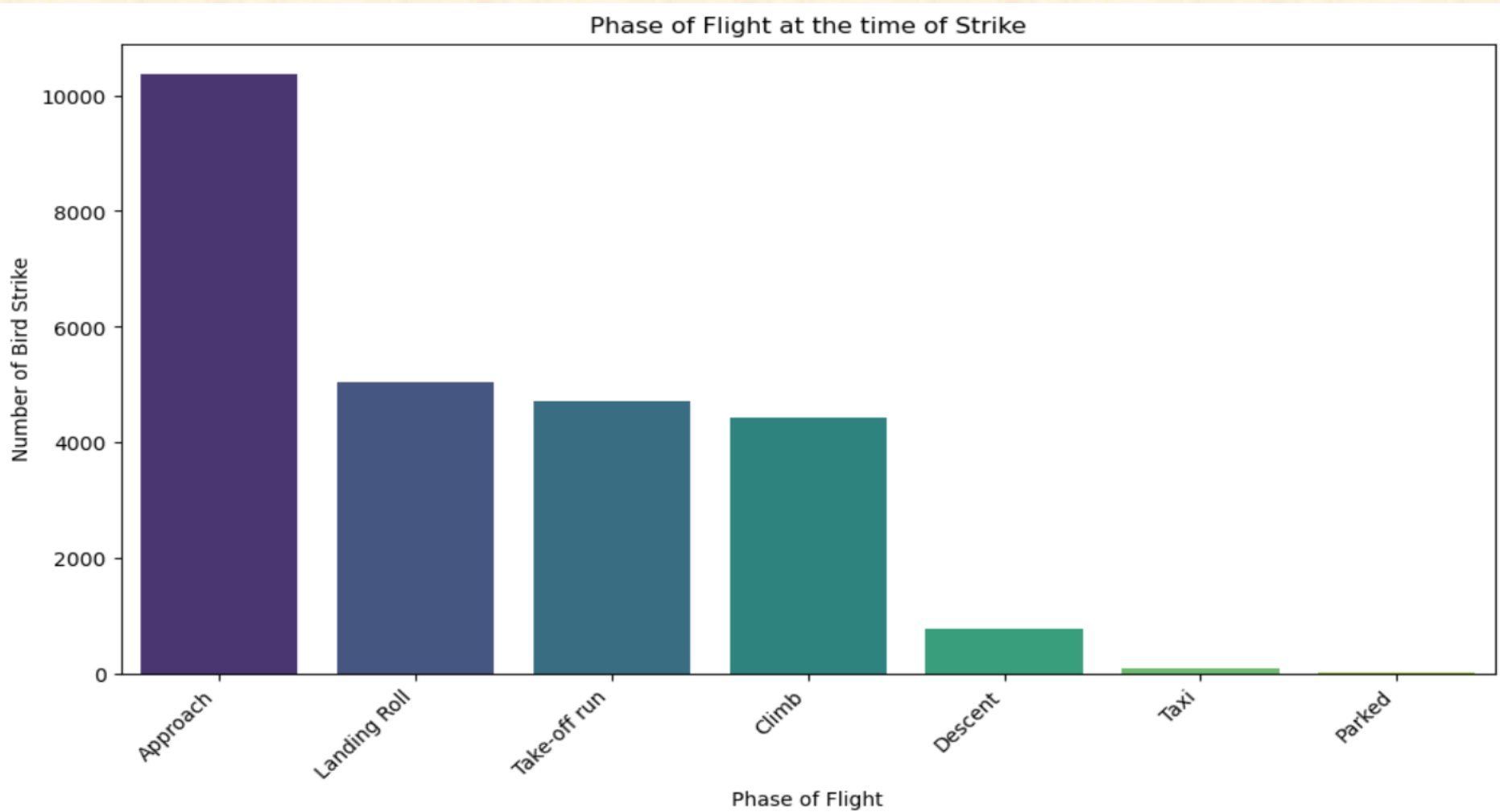
# DISTRIBUTION OF BIRD STRIKES ACROSS PHASES OF FLIGHT



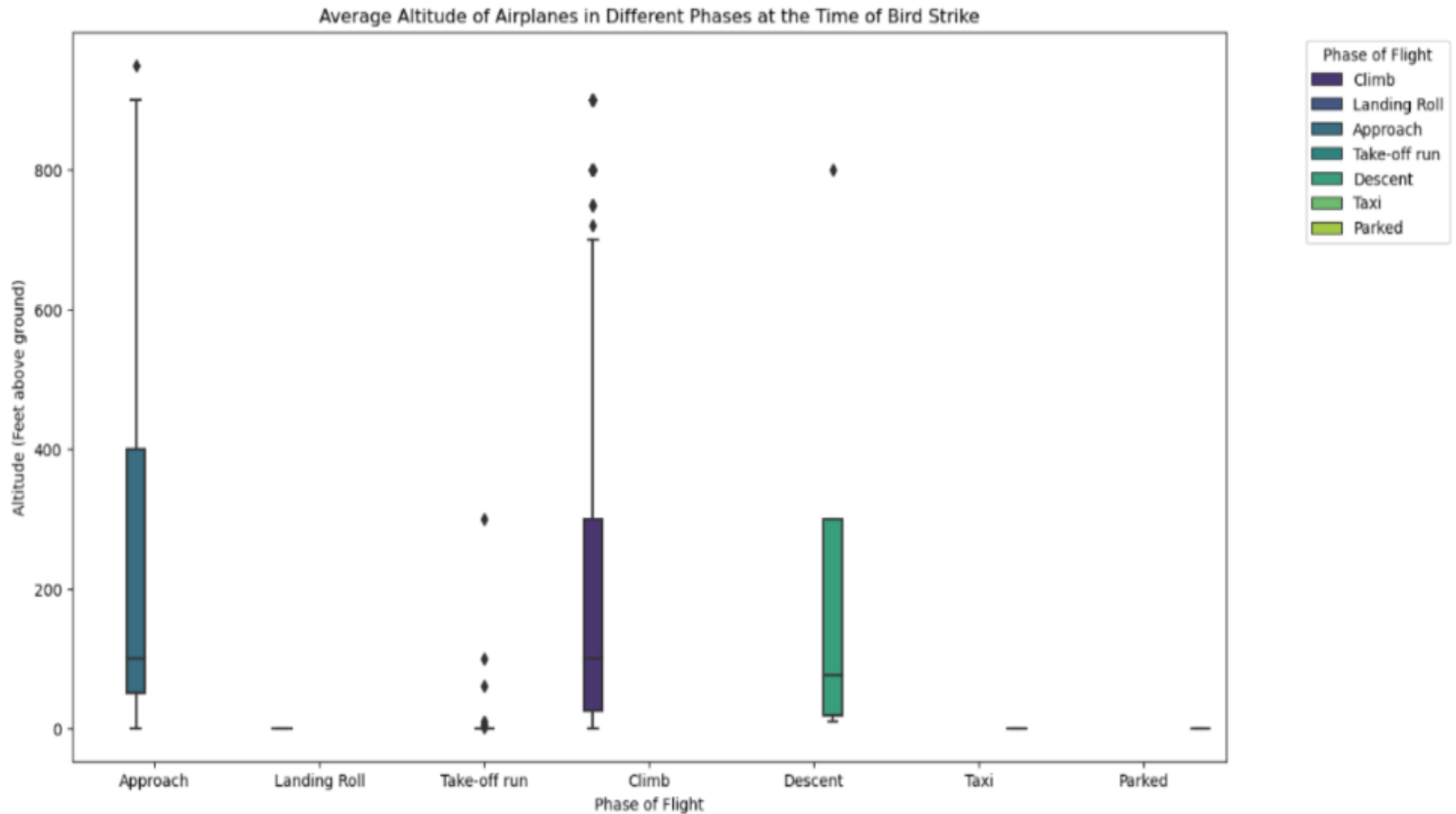
# ALTITUDE OF AEROPLANES AT TIME OF STRIKE



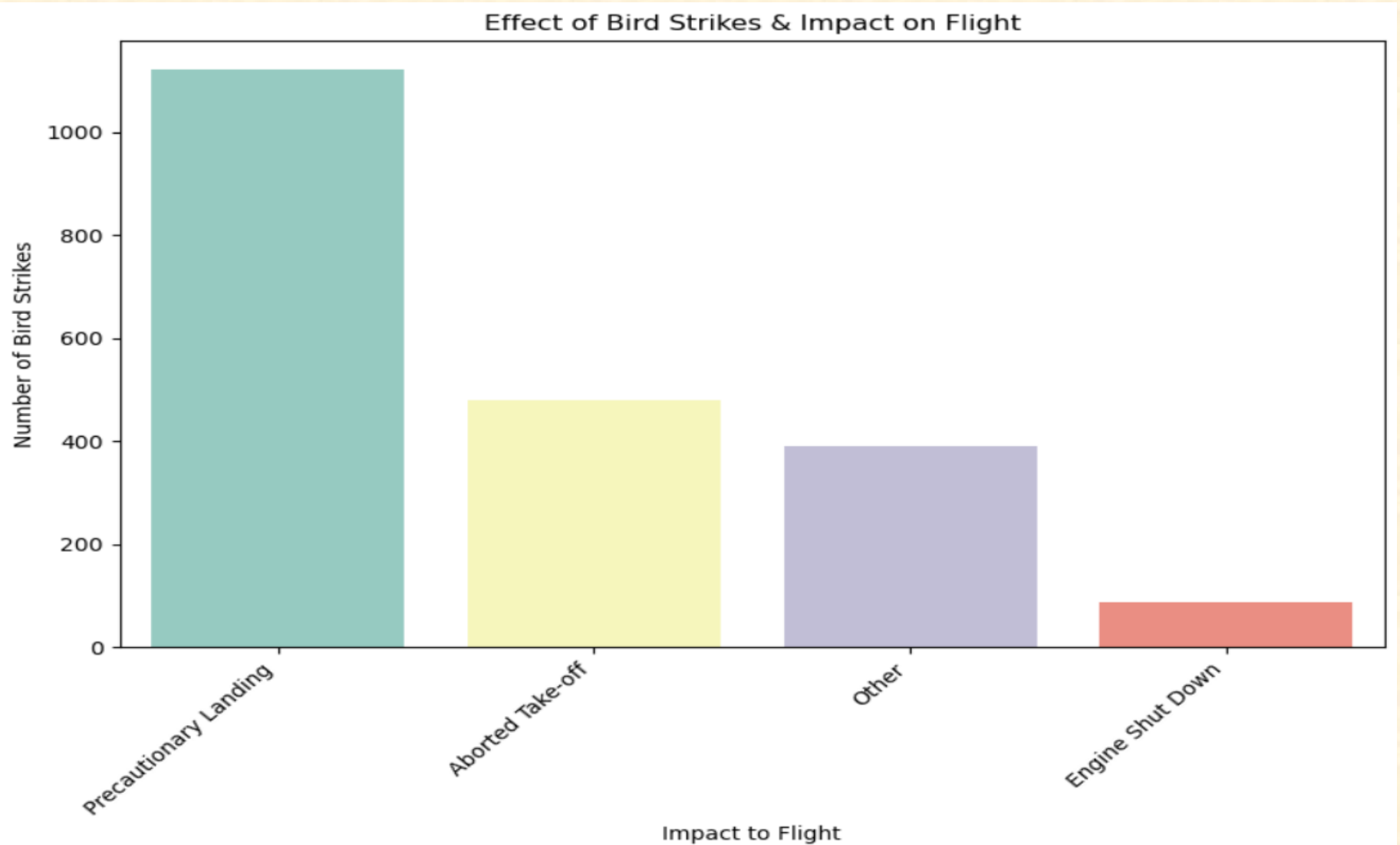
# PHASE OF FLIGHT AT THE TIME OF BIRD STRIKE



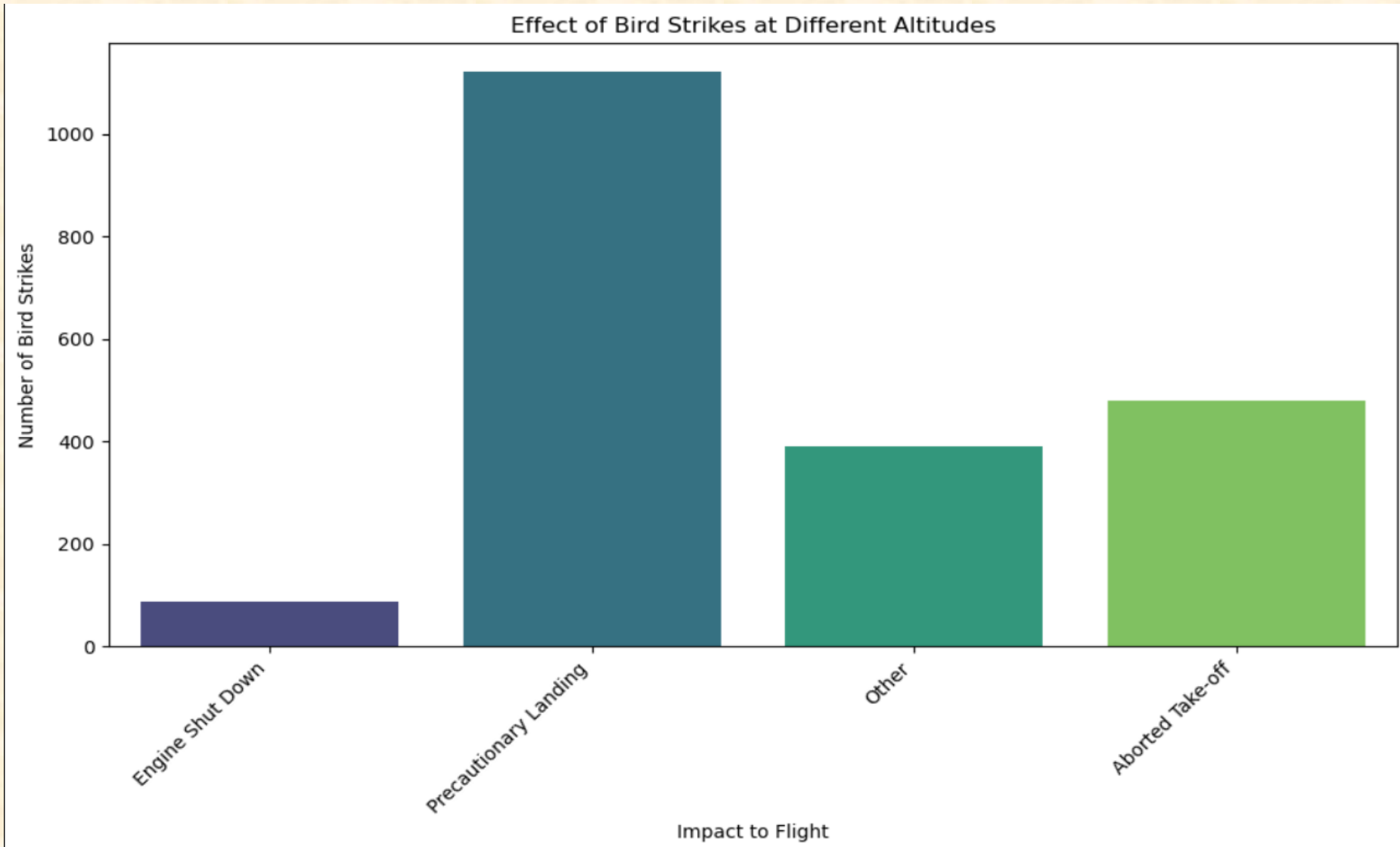
# AVERAGE ALTITUDE IN DIFFERENT PHASES



# EFFECT OF BIRD STRIKES & IMPACT ON FLIGHT

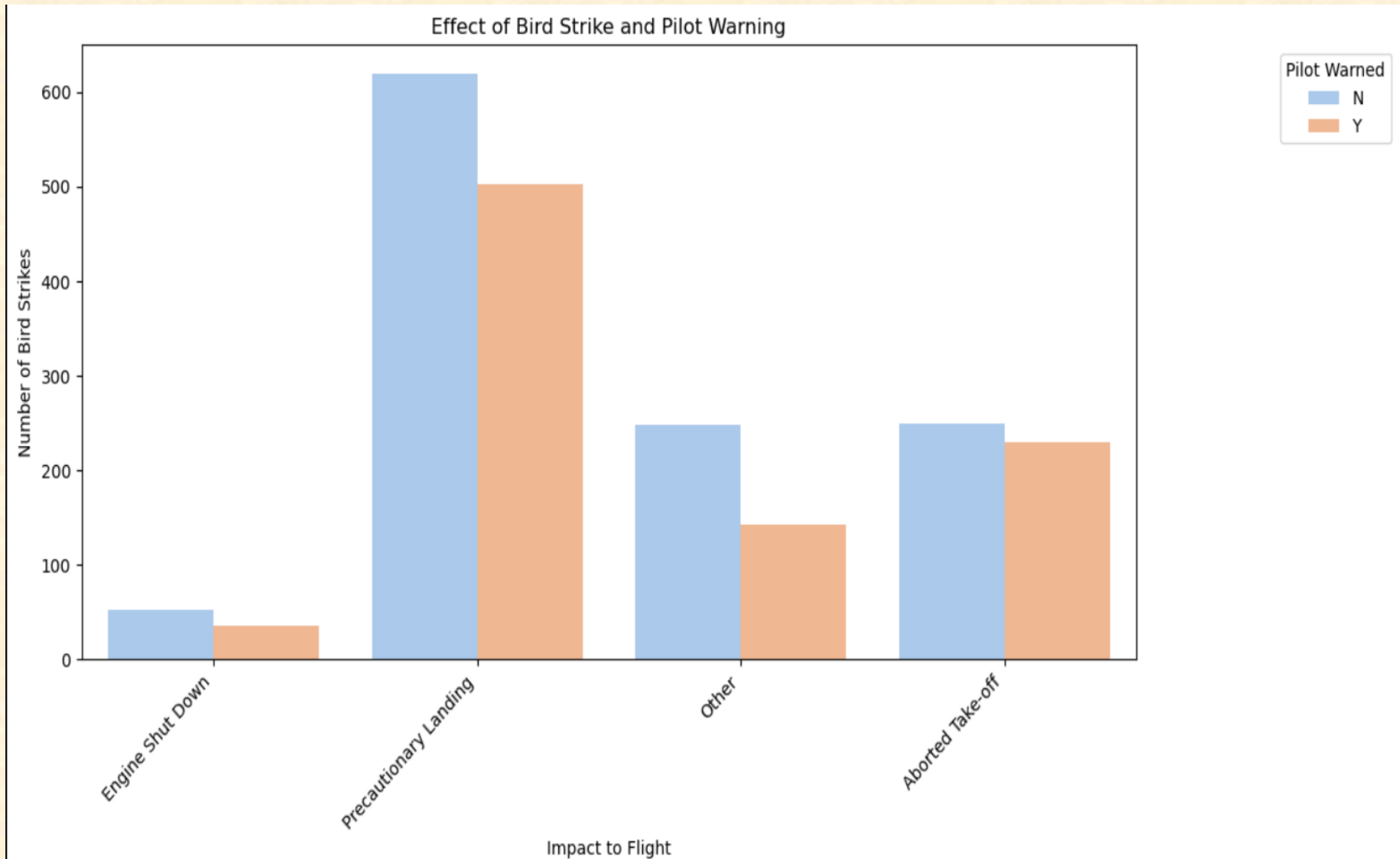


# EFFECT OF STRIKE AT DIFFERENT ALTITUDE





# PILOTS INFORMED & PRIOR WARNING



# CONCLUSION



- In conclusion ,the comprehensive analysis of bird strike incidents from 2000 to 2011 provides valuable insights into the patterns ,risks , and potential mitigations in aviation safety.
- By leveraging advanced data visualization techniques and statistical analyses, we have uncovered trends in bird strikes ,identified high-risk scenarios, and highlighted the impact on different aspects of flight operations.
- The findings emphasize the importance of continued vigilance and proactive measures to address bird strike risks, ensuring the safety of both passengers and aircraft.
- This study contributes to the ongoing efforts in enhancing aviation safety protocols and fostering a proactive approach to wildlife management around airports.



# THANK YOU!

**For Reading**