



DATA VISUALIZATION OF BIRD STRIKES BETWEEN 2000 – 2011

Data Science Project
By: Meet Nakum

PROBLEM STATEMENT



- In the realm of analytics, transportation and communication stand as critical domains. The escalating concerns of environmental impacts and safety, particularly in the face of growing urban areas and vehicle numbers, have prompted a search for innovative solutions. Leveraging available technologies and artificial intelligence, notably Multi-Agent Systems (MAS), emerges as a recognized approach to address these challenges in a distributed and effective manner.
- A specific concern within this context is bird strikes—collisions between birds and aircraft. These incidents pose a significant threat to aviation safety, causing damage to aircraft structures and, in the case of jet-engine planes, risking thrust loss. Fatal accidents have underscored the severity of the issue. Bird strikes can occur at any phase of flight but are most common during take-off, initial climb, approach, and landing due to the higher concentration of birds at lower altitudes. This document visually presents data collected on bird strikes by the FAA from 2000 to 2011, offering insights into this critical aviation safety issue.

OBJECTIVES



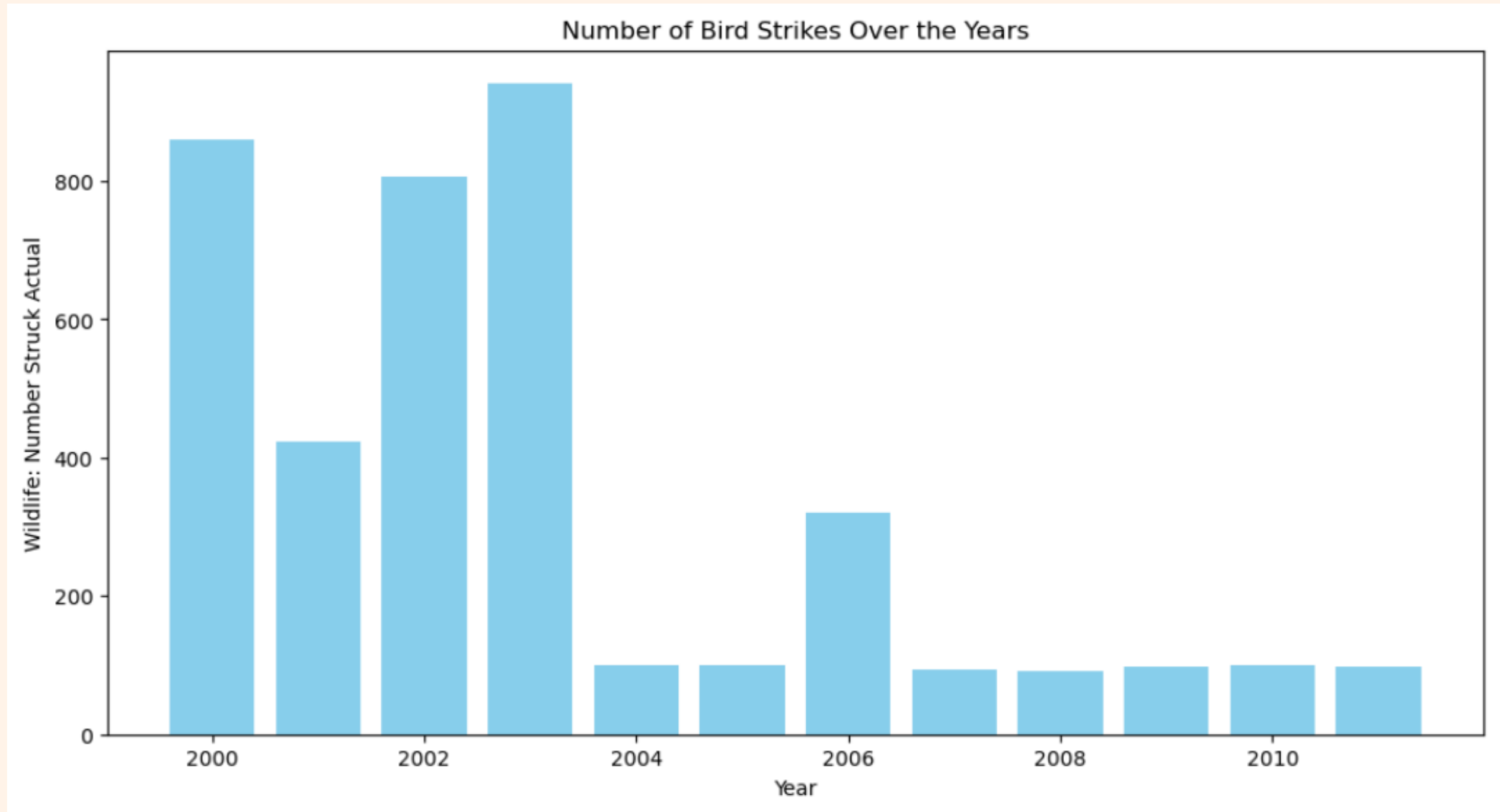
- **Data Exploration:** Analyze and visualize the data to gain insights into the frequency, patterns, and characteristics of bird strikes between 2000 and 2011.
- **Yearly Trends:** Examine the yearly trends in bird strikes, identifying any significant variations and patterns that could inform safety 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 top 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

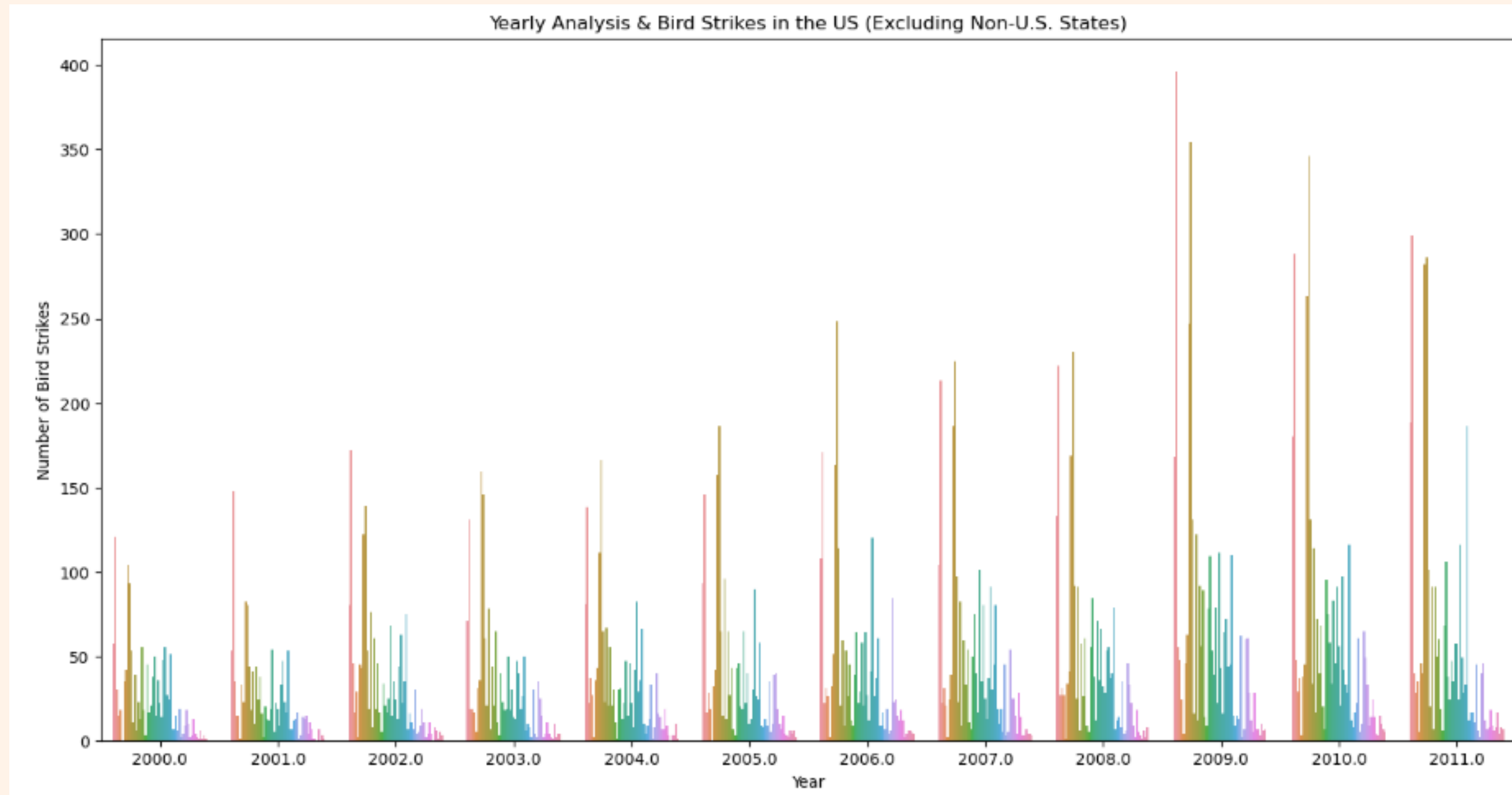


- **Altitude Impact:** Investigate the altitude at which bird strikes commonly occur, contributing to a better understanding of the environmental factors.
- **Flight Phases:** Analyze the impact of bird strikes based on the different phases of flight, guiding safety measures during critical stages.
- **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 strike 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.

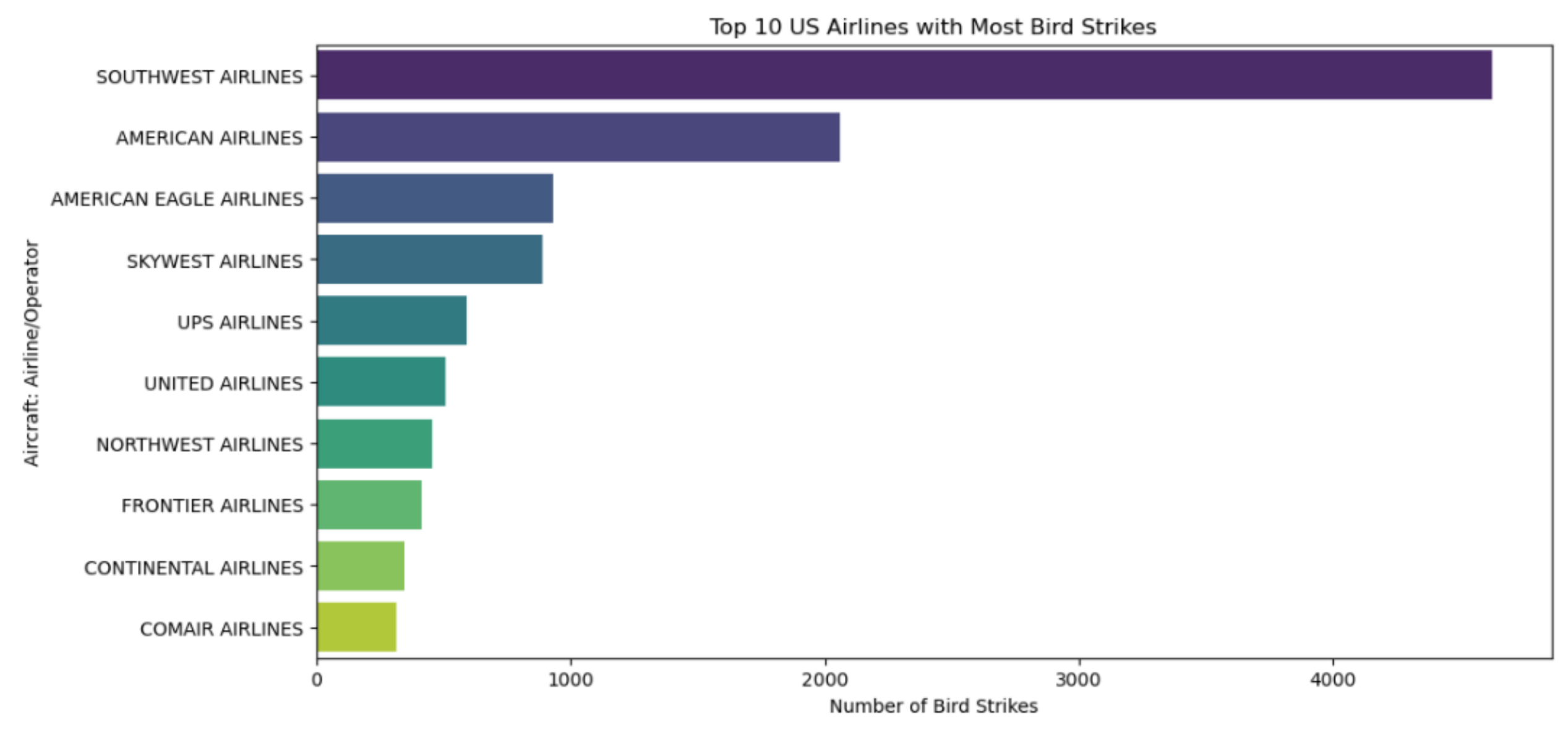
VISUALIZING NUMBER OF BIRD STRIKES OVER THE YEARS



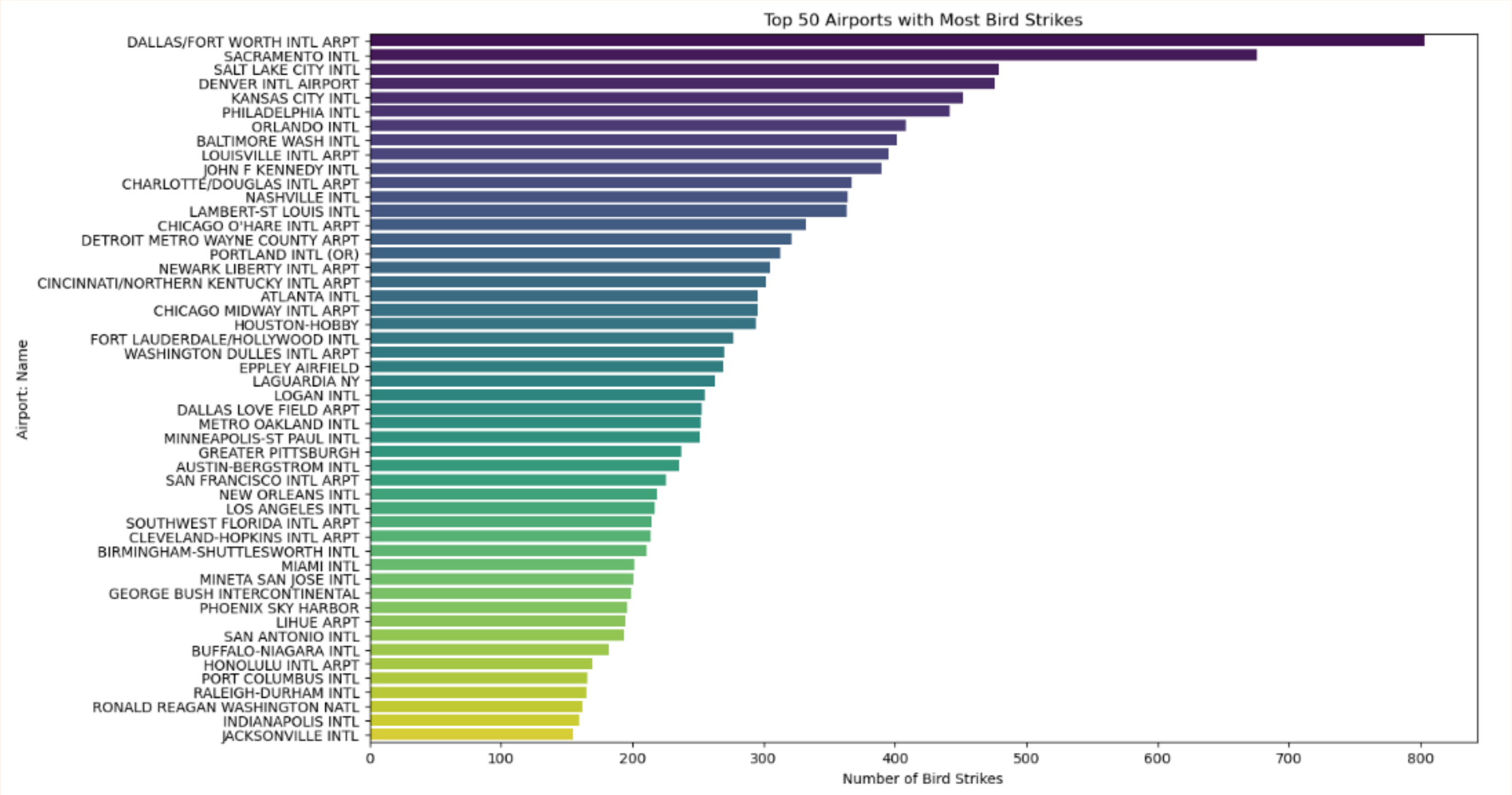
YEARLY ANALYSIS & BIRD STRIKES IN THE US



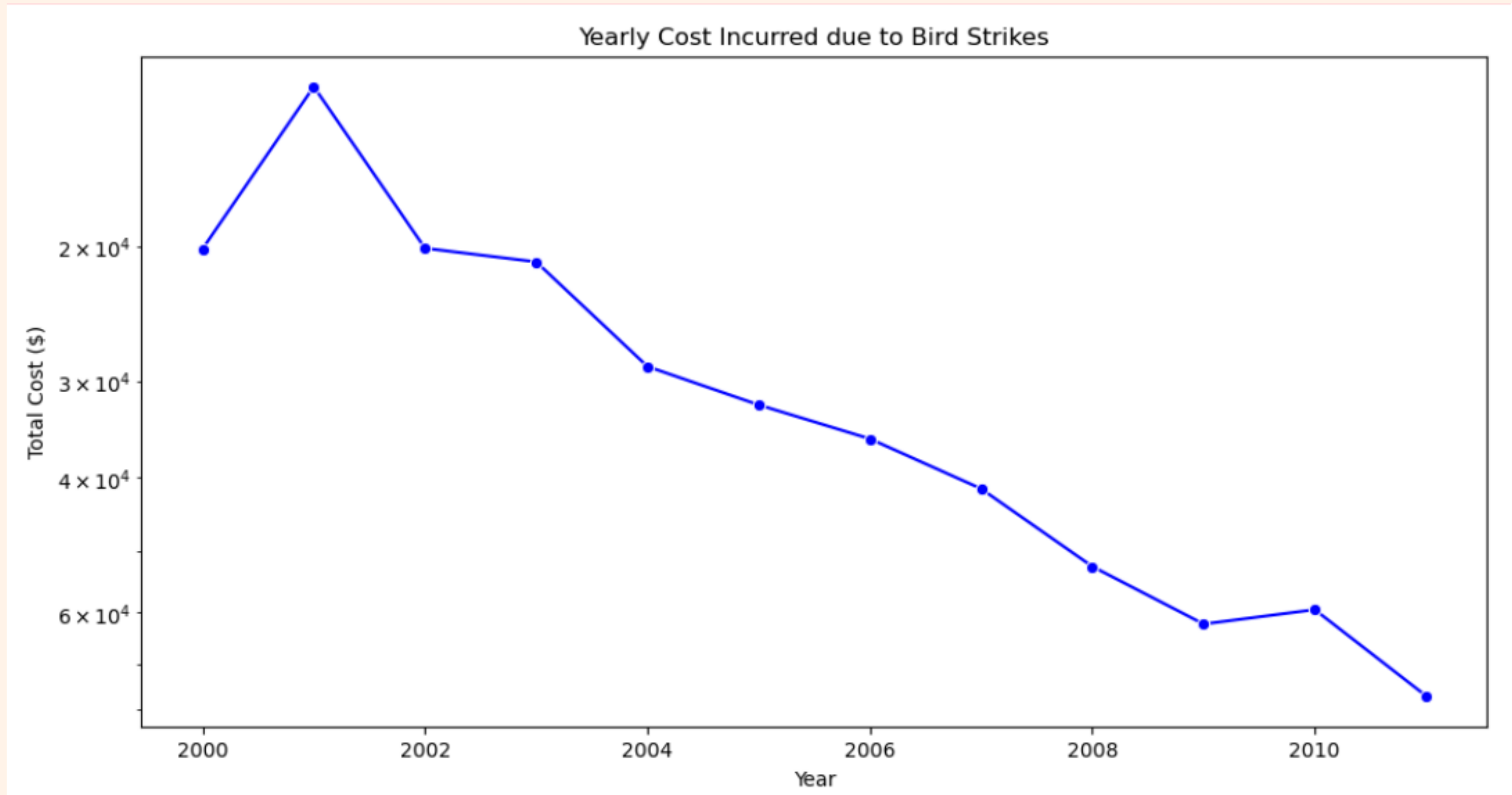
TOP 10 US AIRLINES IN BIRD STRIKES



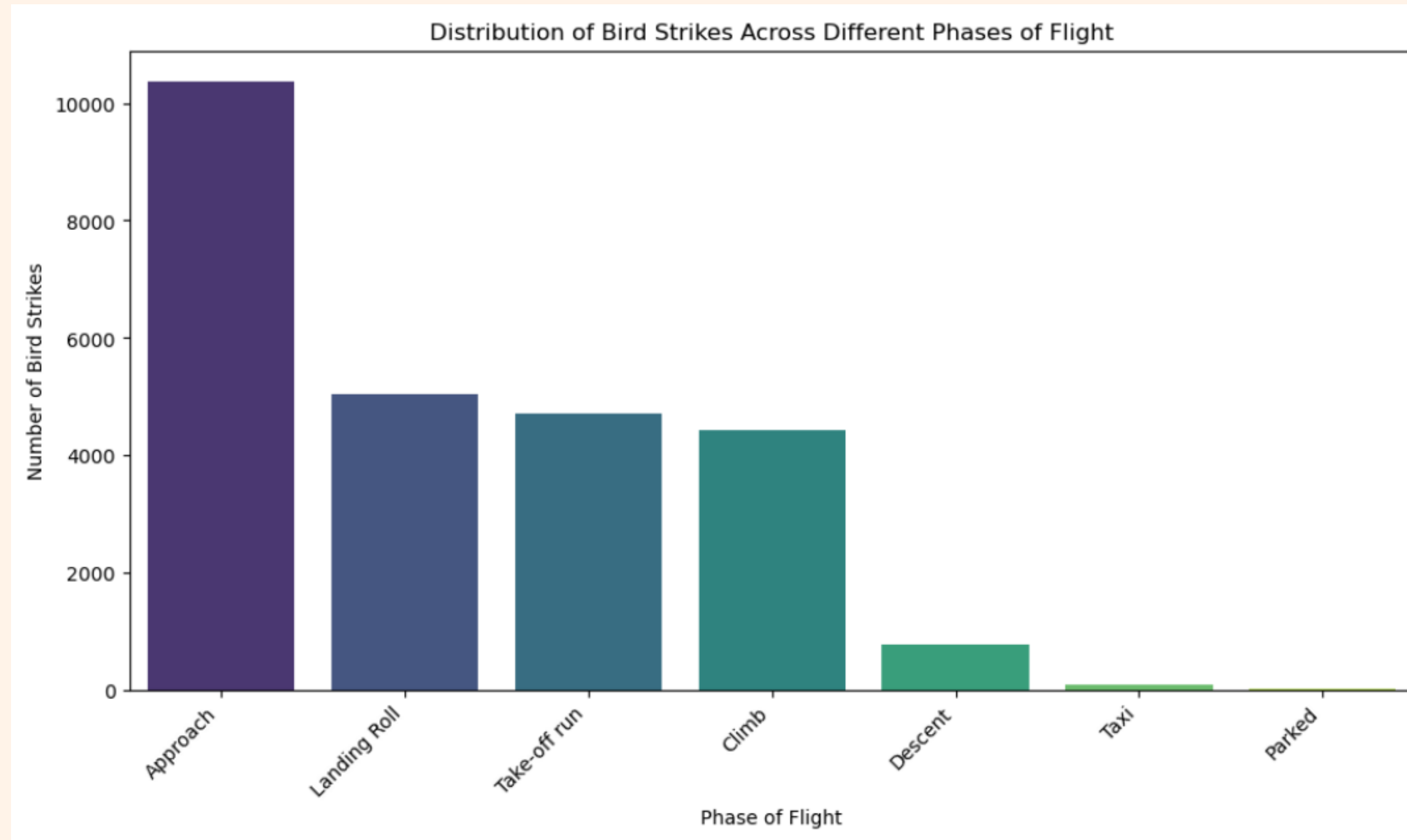
AIRPORTS WITH MOST INCIDENTS - TOP 50



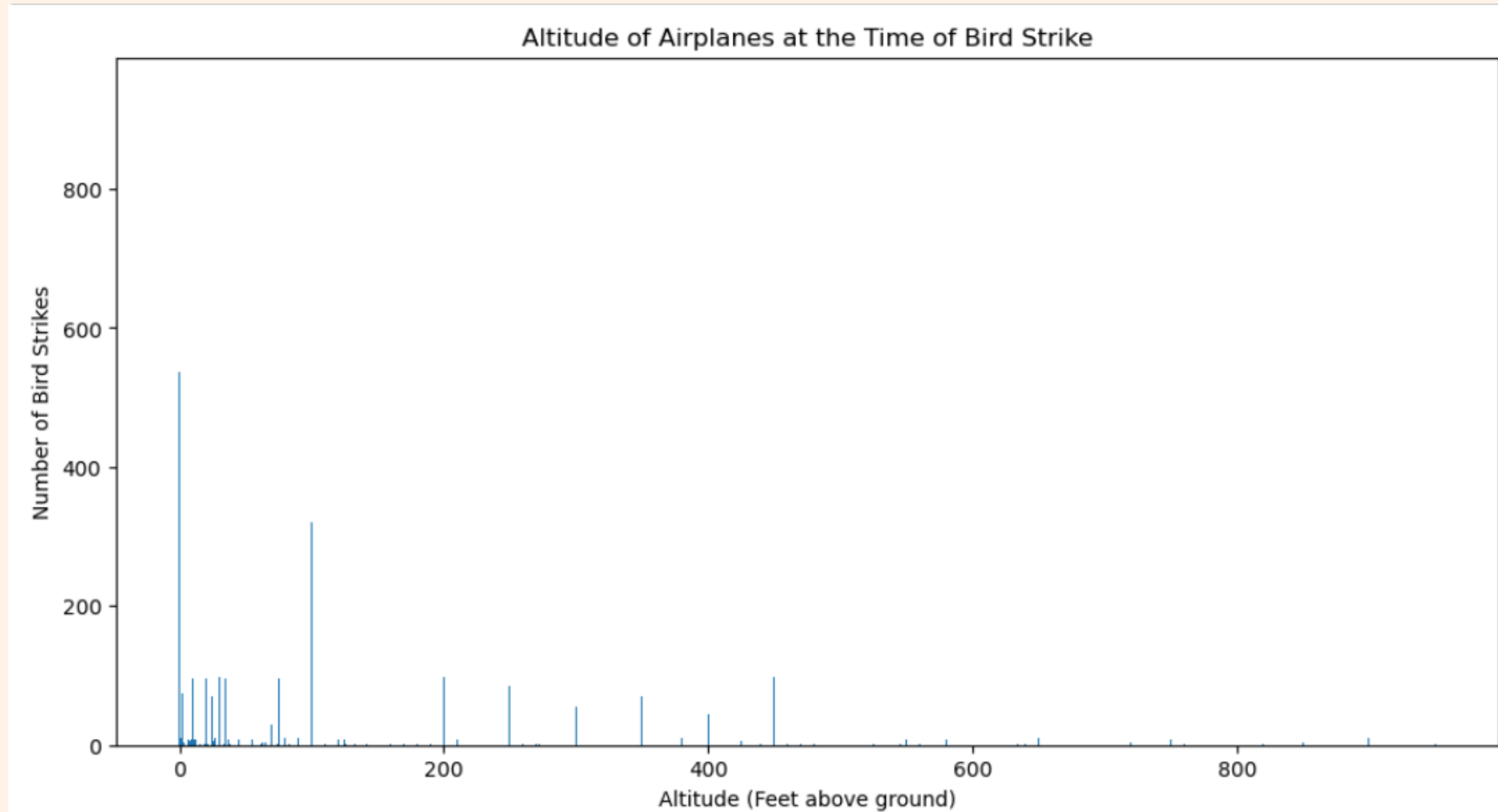
YEARLY COST INCURRED DUE TO BIRD STRIKES



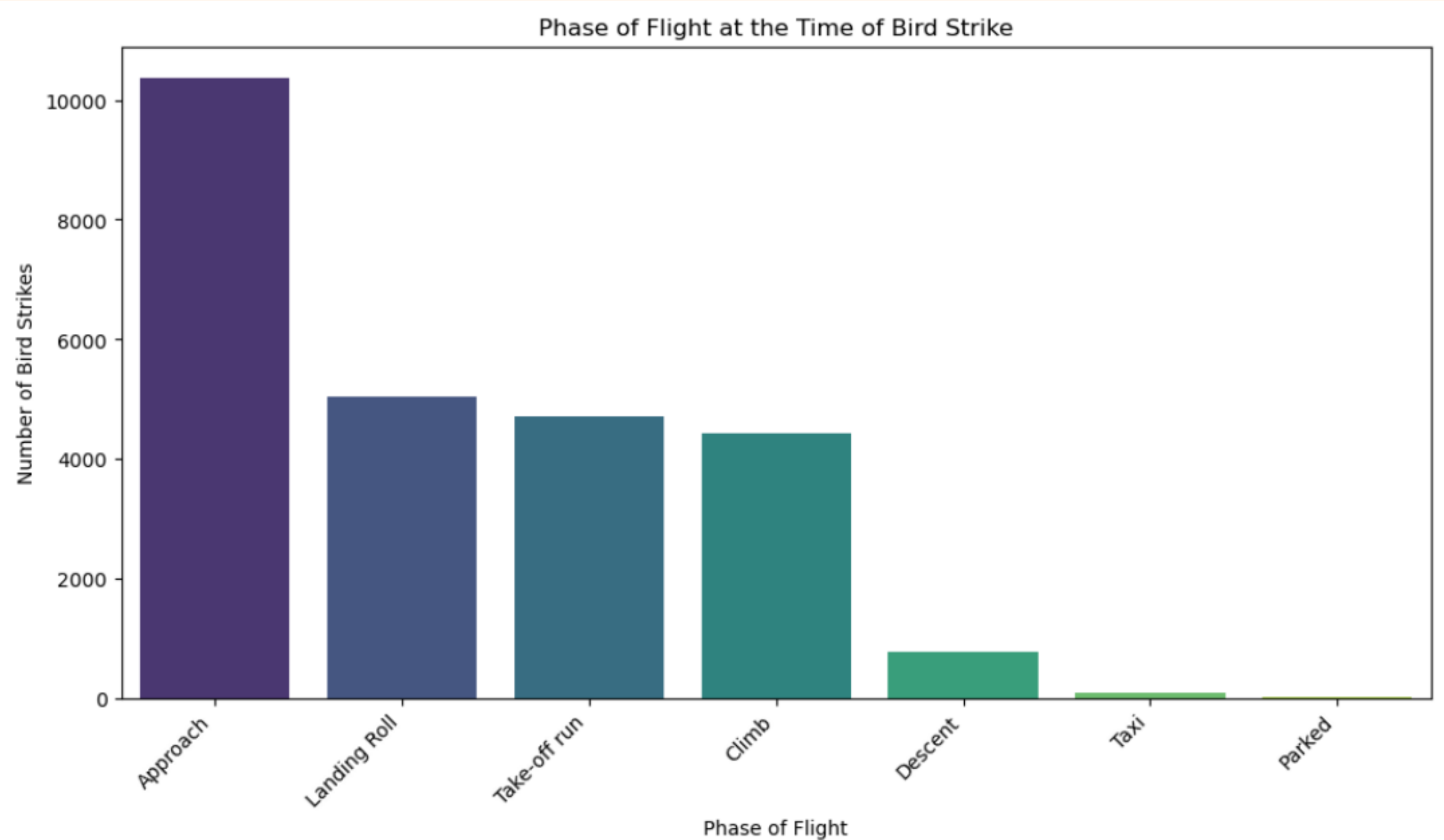
DISTRIBUTION OF BIRD STRIKES ACROSS PHASES OF FLIGHT



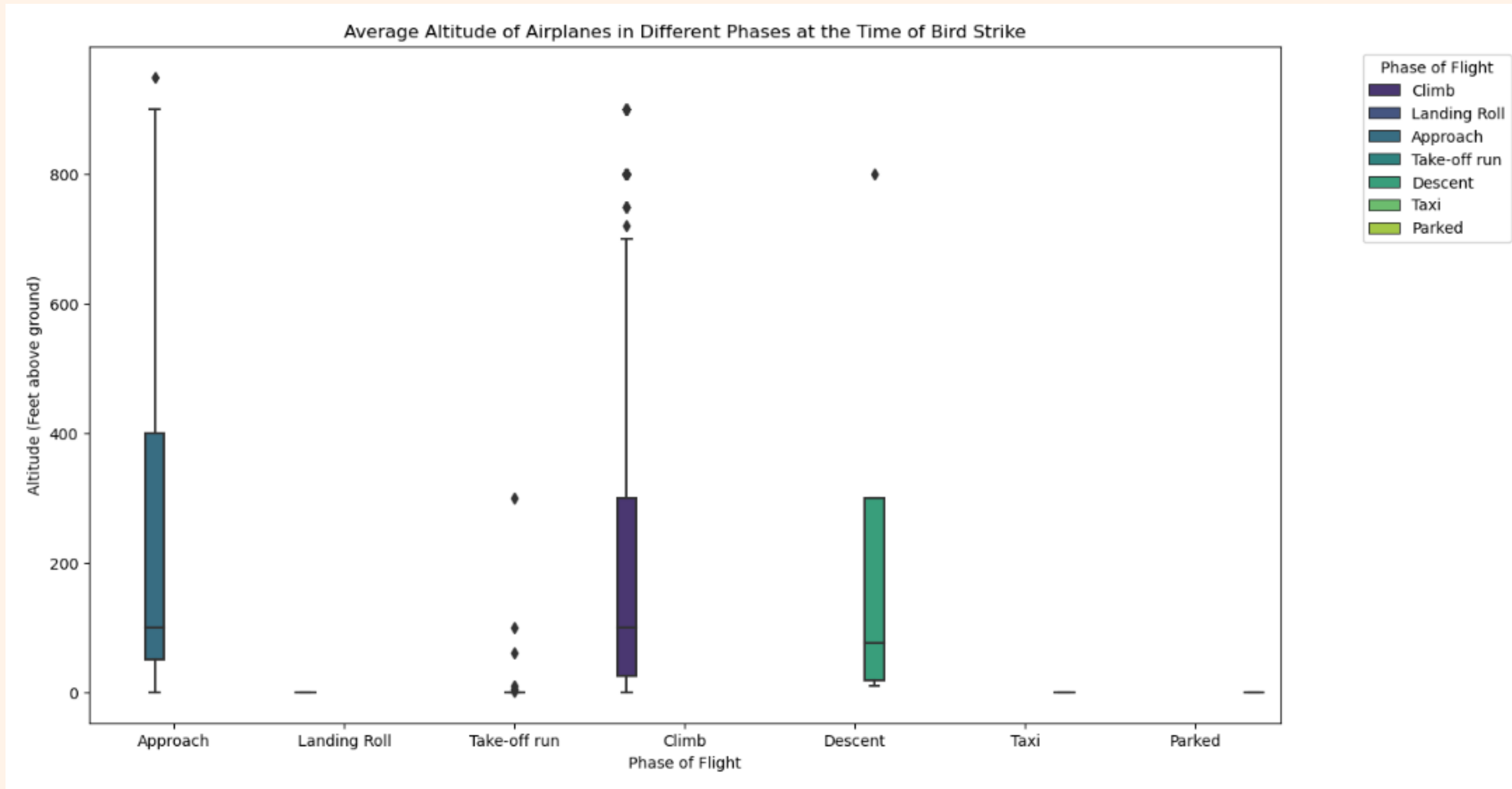
ALTITUDE OF AEROPLANES AT TIME OF STRIKE



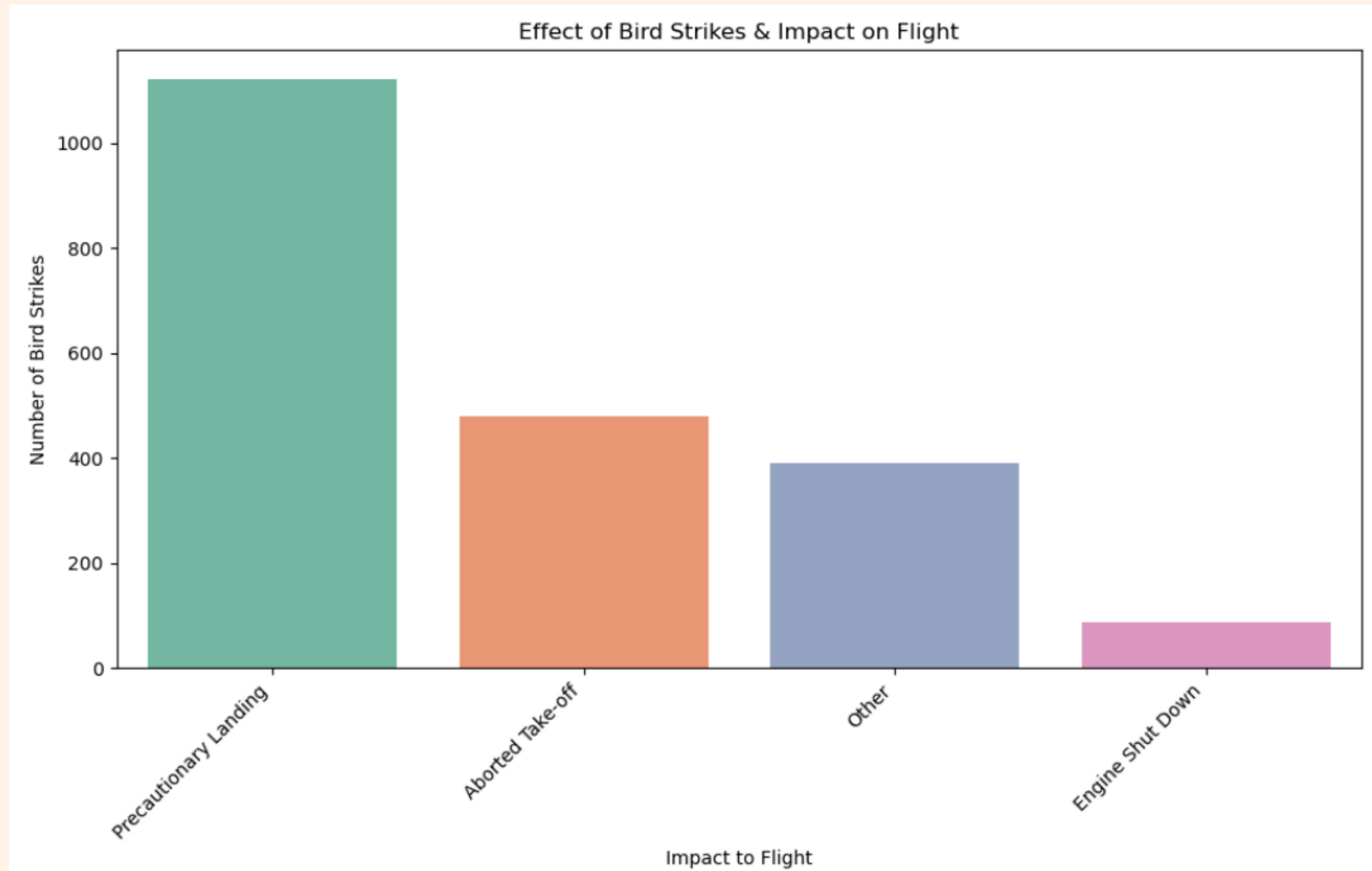
PHASE OF FLIGHT AT THE TIME OF BIRD STRIKE



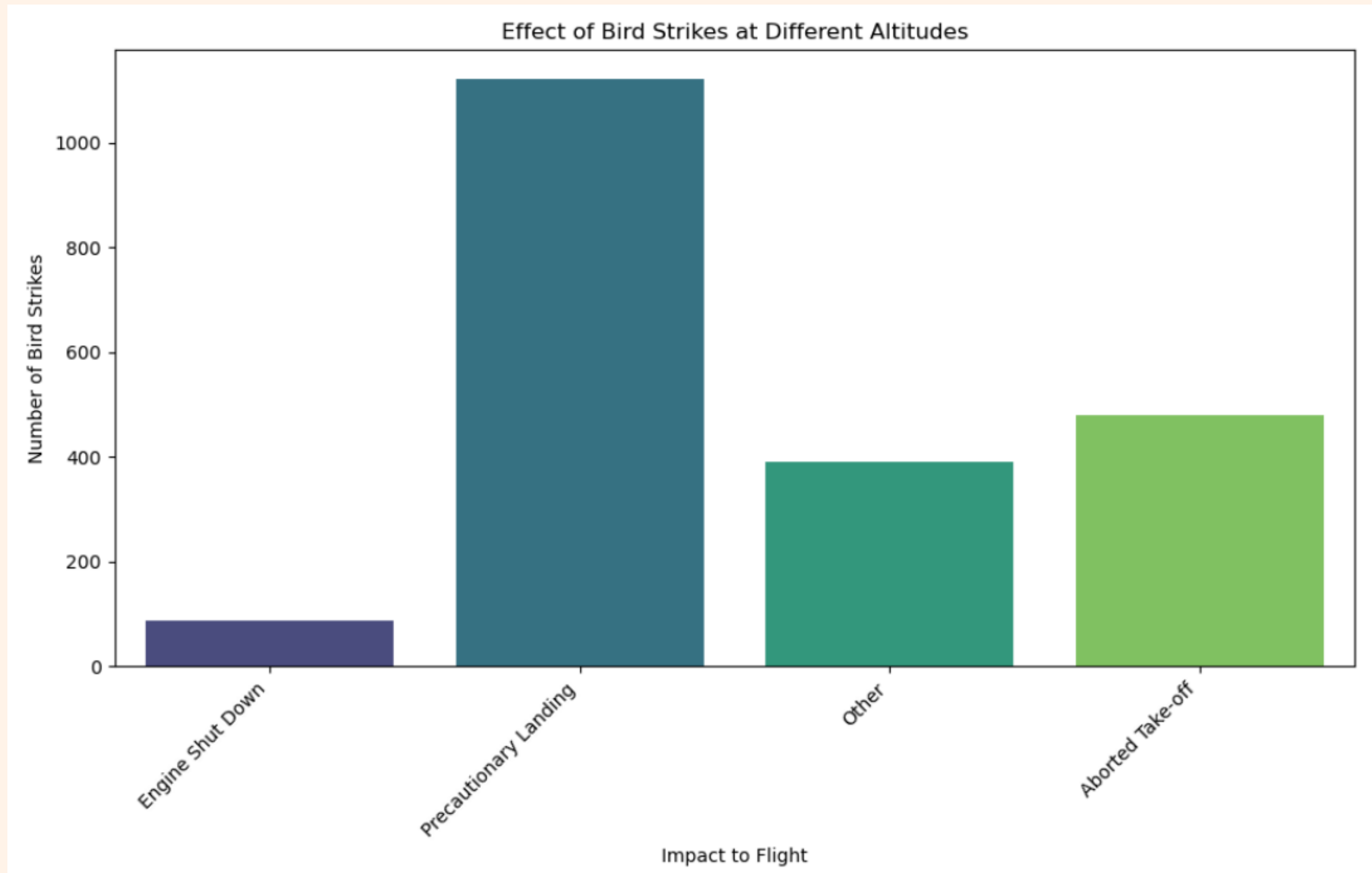
AVERAGE ALTITUDE IN DIFFERENT PHASES



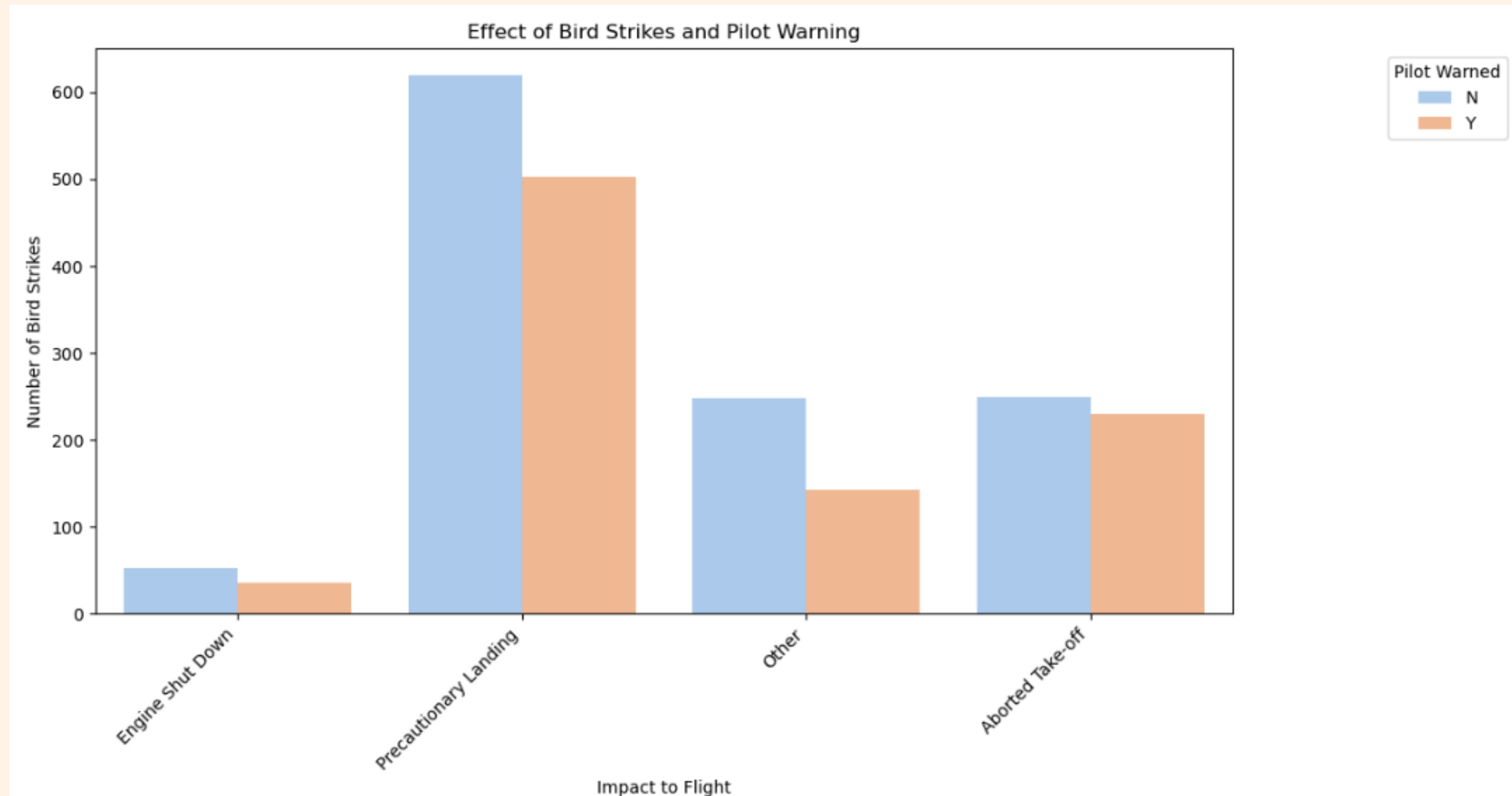
EFFECT OF BIRD STRIKES & IMPACT ON FLIGHT



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