

## **Exploring and Forecasting Wildlife Strikes on Aircraft**

Welcome aboard, young Wahoo! Today, you're not just a student at the University of Virginia; you're about to become a pivotal player in safeguarding the skies. Wildlife strikes with aircrafts are collisions between an animal (most often a bird, but sometimes another species) and a man-made vehicle, such as a plane or helicopter. These wildlife strikes can cause damage to critical parts of an airplane, injuries, or in the most severe cases, possibly fatalities. Airlines are committed to the safety of their passengers and want to do everything they can to keep everyone safe. Wildlife strikes also become fairly expensive for airlines with damage to these big and expensive vehicles, which is another reason they want to avoid the situation as much as possible. There are many factors in play when considering wildlife strikes, also referred to as "bird strikes.". The altitude, time of day, location, and more all have an effect on when bird strikes are more common to occur. It is essential for further research to be done to see specifically when bird strikes more commonly occur and why.

It is now in your hands to do just that, taking the data and exploring what factors are leading to more bird strikes. But why should you care? Beyond the thrill of tackling a real-world challenge, the motivation lies in the tangible impact your work could have on aviation safety. By accurately forecasting bird strikes under certain conditions, you'll not only save lives but also save airlines millions of dollars in potential damages and disruptions. Your mission is clear: dive into the data, uncover hidden patterns, and emerge with forecasts that will arm the Federal Aviation Administration (FAA) with the insights needed to fortify their safety protocols.

Your deliverable will be an R Markdown file that serves as a comprehensive analysis of bird strike forecasting. Within this document, you'll utilize a range of advanced forecasting techniques, prominently featuring ARIMA modeling. You are also tasked with compiling your code, materials, results and outputs into a GitHub repository so more students like you have access to this research. Through this detailed analysis, you'll provide aviation authorities with actionable insights to strengthen safety measures and mitigate the risk of bird strikes.

To kickstart your journey into bird strike forecasting, I've included two valuable resources for further reading. These articles will provide you with additional insights, perspectives, and knowledge to deepen your understanding of the topic. I wish you the best of luck in engaging with these materials and look forward to seeing the innovative solutions you'll bring to the table.