Data Visualization of Bird Strikes between 2000 – 2011

A Visual Analysis of Bird Strikes on Aircrafts

Aditya Singh

Introduction

A Little about Bird Strikes, why it happens and why it needs to be studied..

Imagine hurtling through the air and suddenly colliding with a goose! Bird strikes, though uncommon accidents, can be dangerous.

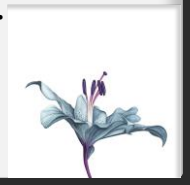
They happen because airplanes and birds share airspace, especially during takeoff, landing, and low-altitude flights.

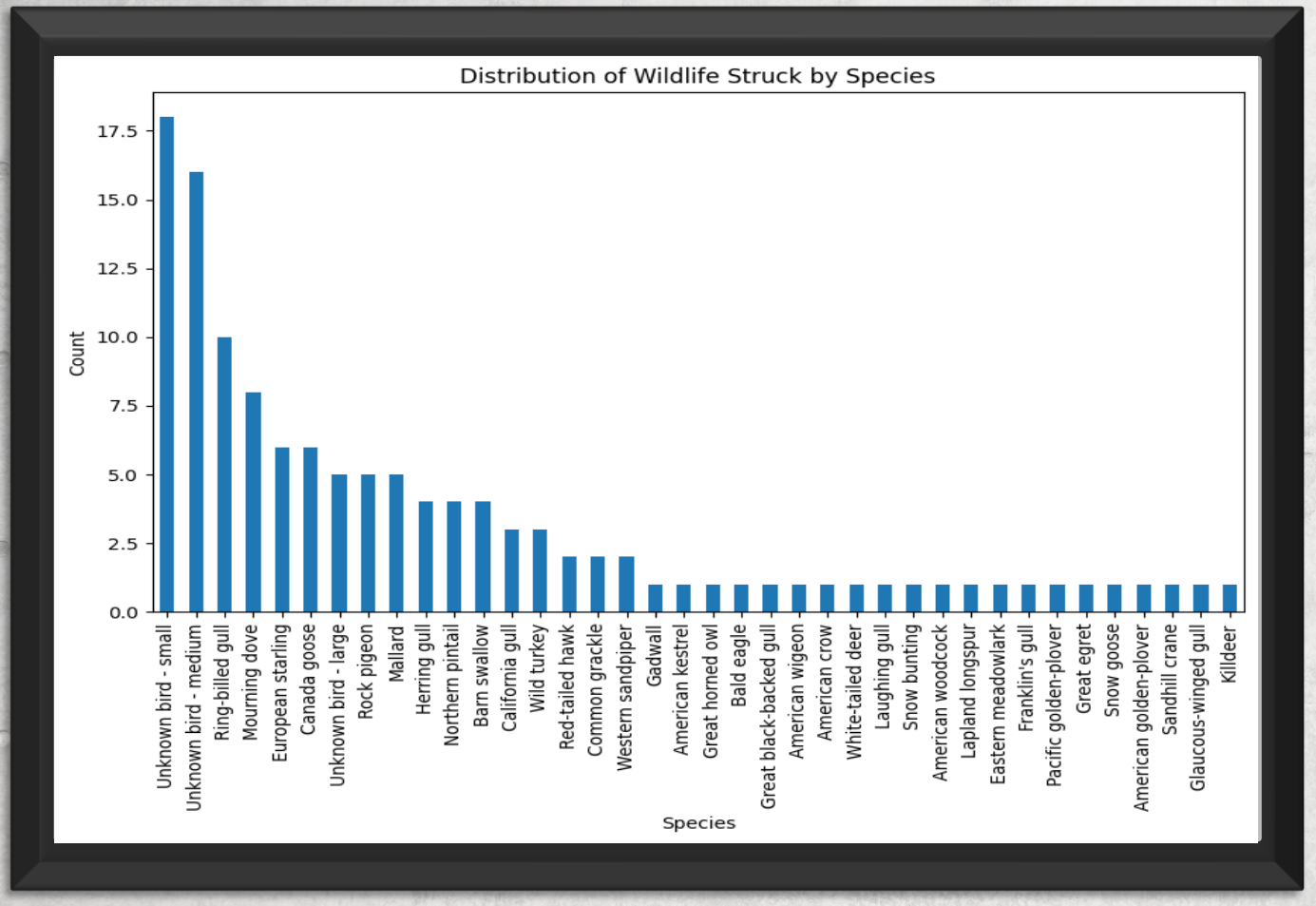
Studying bird strikes visually with tools like radar helps us understand bird migration patterns and flocking behavior. Data science comes in to crunch all this information - pinpointing high-risk areas and times for bird strikes.

By analyzing this visual data along with weather patterns and airport activity, we can pinpoint high-risk areas and times for bird strikes. It's like joining the dots to predict where these unfortunate mid-air meetings might occur. This knowledge helps airlines adjust flight paths and airport authorities implement bird dispersal techniques, keeping both feathered friends and metal birds safe.

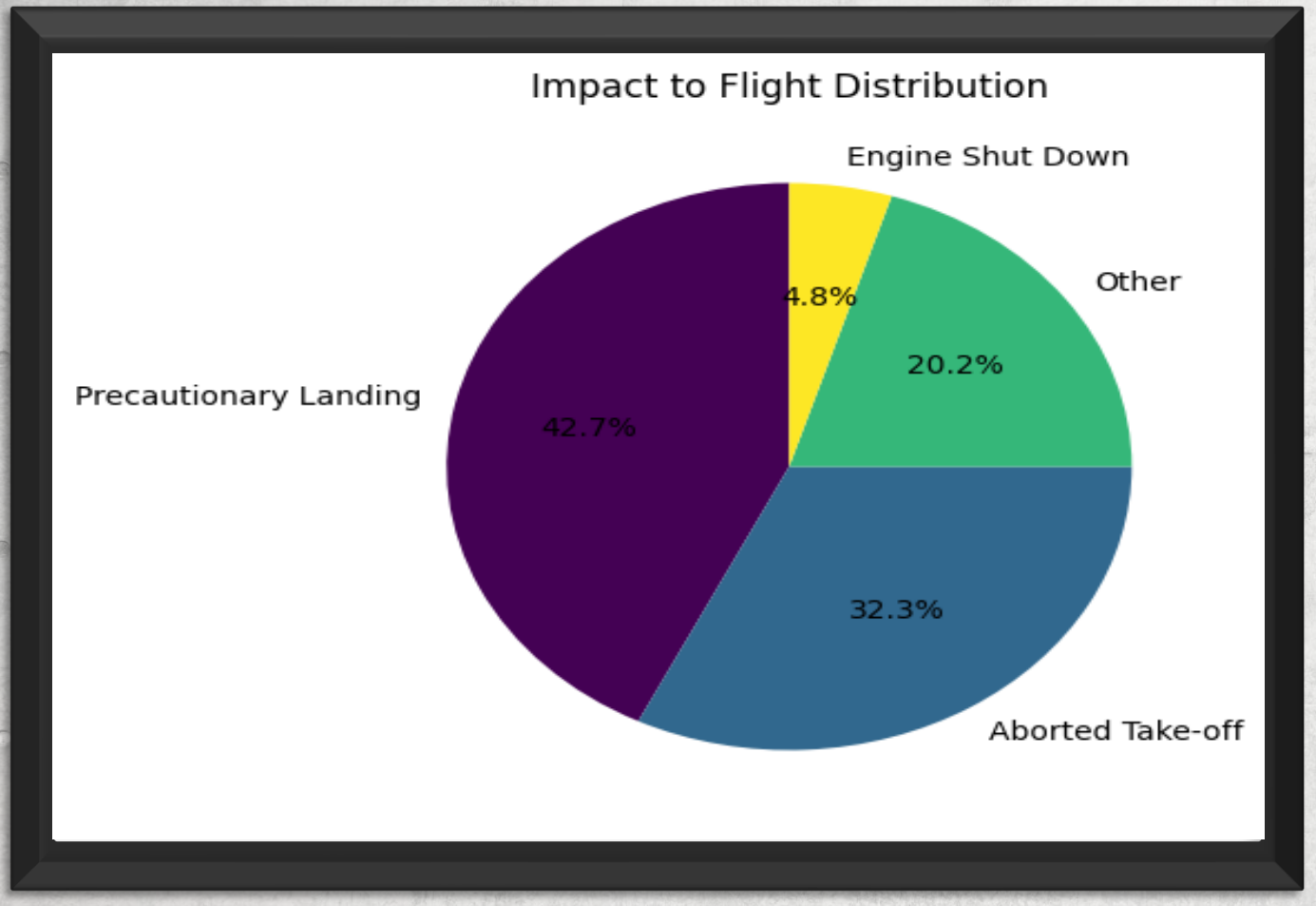
Description of Data

Record ID: Unique identifier for the bird strike incident.
Aircraft Type: Passenger plane, cargo plane, etc.
Airport Name: Where the bird strike occurred (if applicable).
Altitude bin: Low, medium, or high altitude during the incident.
Make/Model: Specific aircraft model involved (e.g., Boeing 737).
Wildlife Struck (estimated/actual): Number of birds involved
Impact to flight: Disrupted flight (diverted, etc.) or continued normally.
Flight Date: Date of the bird strike incident.
Indicated Damage: Whether the aircraft sustained damage.
Engines: Number of engines on the aircraft.
Airline/Operator: The airline involved in the incident.
Origin State: State where the flight originated from.
Phase of flight: Takeoff, landing, etc. during the incident.
Precipitation: Rain, snow, etc. at the time of the incident.
Wildlife remains collected: Whether bird remains were collected.
Sent to Smithsonian: Whether remains were sent for further analysis.
Remarks: Any additional notes or details about the incident.
Wildlife Size: Size of the bird(s) involved (e.g., small, large).
Sky Conditions: Cloud cover (clear, cloudy, etc.) at the time.
Wildlife Species: Type of bird involved (if identified).
Pilot Warned: Whether the pilot received a warning about birds.
Cost: Total monetary cost of the damage caused by the bird strike.
Feet above ground: Aircraft's altitude in feet at the time of impact.
People Injured: Number of people injured in the incident (if any).
Large Aircraft: Categorizes the aircraft size (large or small).

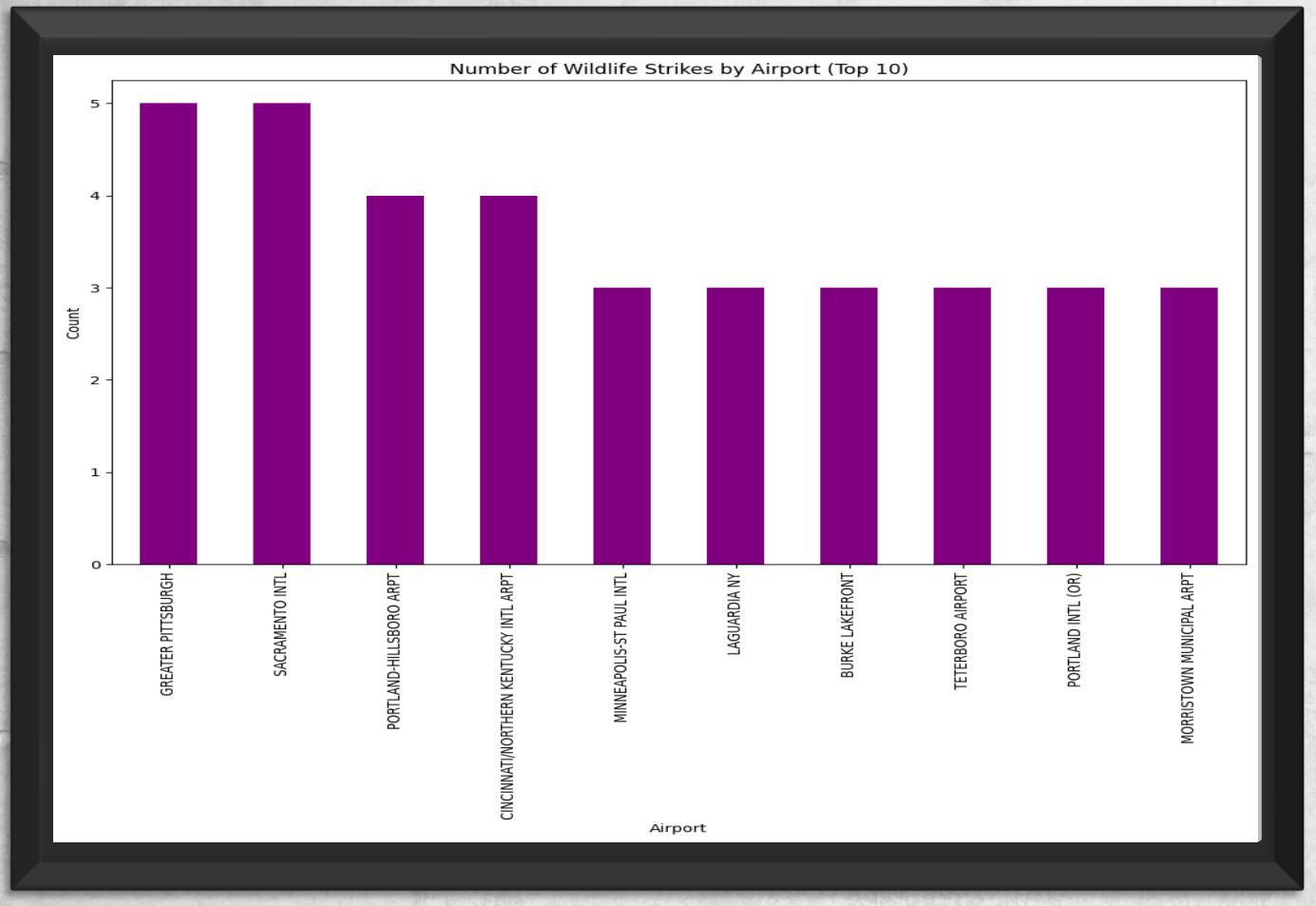




The chart displays the distribution of wildlife species struck, with the x-axis representing different species and the y-axis representing the count of incidents. "Unknown bird - small" and "Unknown bird - medium" have the highest counts, followed by species like Ring-billed gull and Mourning dove. The counts decrease gradually for other species, indicating a higher frequency of strikes involving unknown and common bird species.



The pie chart illustrates the distribution of the impact on flights caused by wildlife strikes. The largest segment, 42.7%, represents precautionary landings. Aborted take-offs account for 32.3%, while 20.2% of impacts fall under the "Other" category. Engine shut-downs are the least common, constituting 4.8% of the total. This chart highlights that precautionary landings and aborted take-offs are the most frequent responses to wildlife strikes, indicating significant disruptions to flight operations.



The bar chart presents the top 10 airports by the number of wildlife strikes. Greater Pittsburgh and Sacramento International airports both have the highest count, with 5 strikes each. Following them are Portland-Hillsboro, Cincinnati/Northern Kentucky International, and Minneapolis-St Paul International airports, each with 4 strikes. LaGuardia, Burke Lakefront, Teterboro, Portland International (OR), and Morristown Municipal airports each reported 3 strikes. This chart highlights the airports most frequently affected by wildlife strikes, with a relatively even distribution among the top contenders.

Visual Dashboard

A Visual Representation of the data in PowerBI

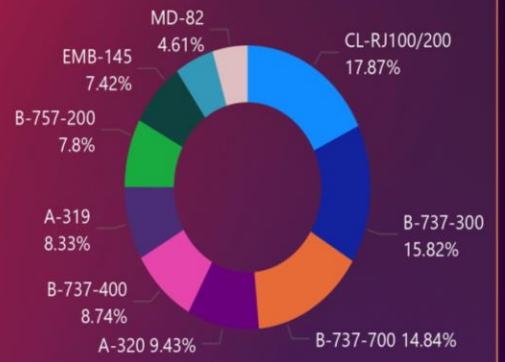
Data Visualization of Bird Strikes between 2000 – 2011

Qtr 1 | Qtr 2 | Qtr 3 | Qtr 4

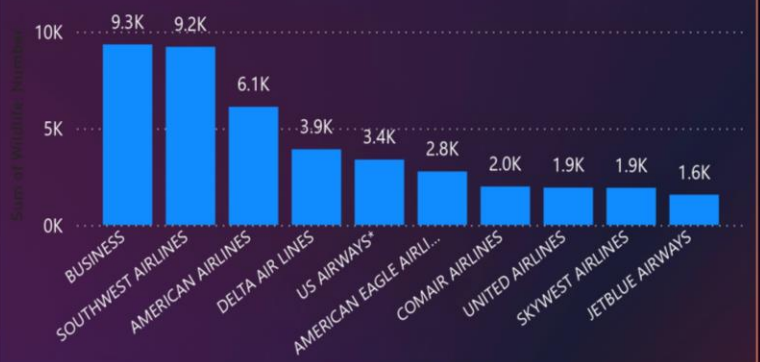
All | All

Number Struck	Total Cost	People Injured	Feet Above Ground	Wildlife: Species	Remarks
69K	142M	21	880.18	Acadian flycatcher	All

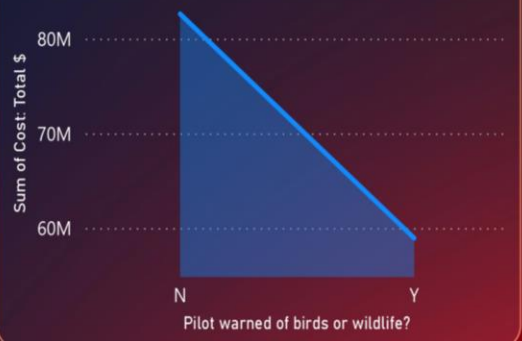
Number Struck - Aircraft Model



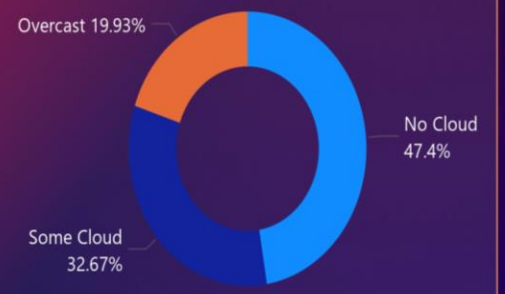
Sum of Wildlife: Number Struck Actual by Aircraft: Airline/Operator



Sum of Cost: Total $ by Pilot warned of birds or wildlife?

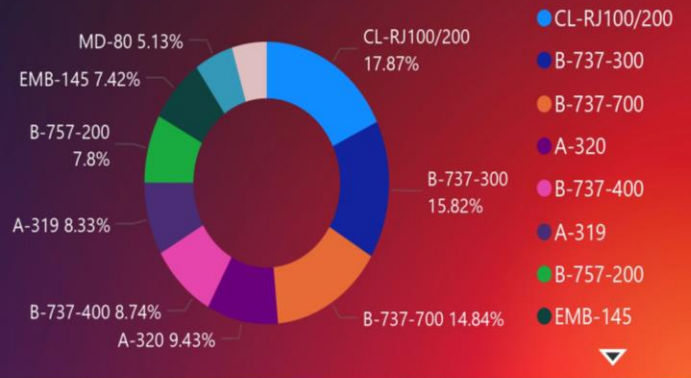


Number Struck - Conditions: Sky



Origin State

Number Struck Actual by Aircraft: Make/Model

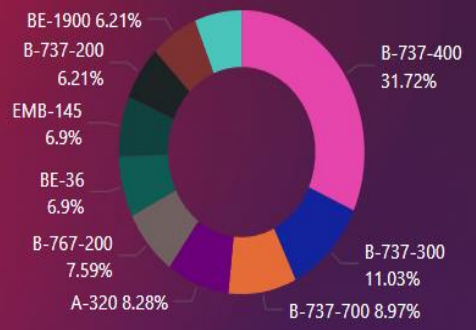


Data Visualization of Bird Strikes between 2000 – 2011

Qtr 4 | December | 2005

Number Struck	Total Cost	People Injured	Feet Above Ground	Wildlife: Species	Remarks
214	363K	0	334.18	American wigeon	All

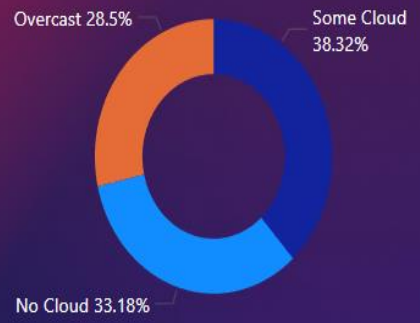
Number Struck - Aircraft Model



Sum of Wildlife: Number Struck Actual by Aircraft: Airline/Operator

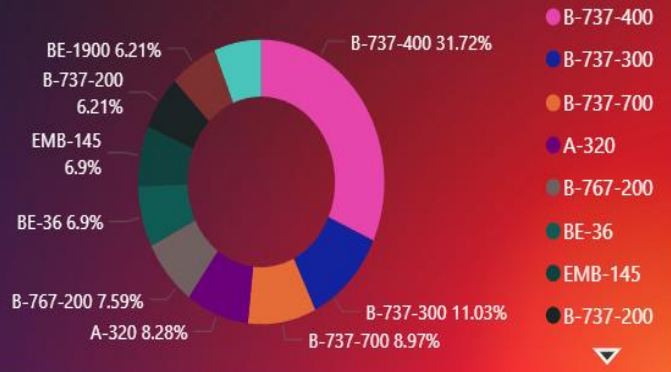
Sum of Cost: Total $ by Pilot warned of birds or wildlife?

Number Struck - Conditions: Sky



Origin State

Number Struck Actual by Aircraft: Make/Model



Data Visualization of Bird Strikes between 2000 – 2011

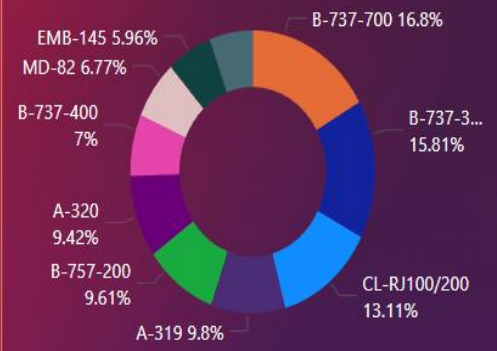
Qtr 2

May

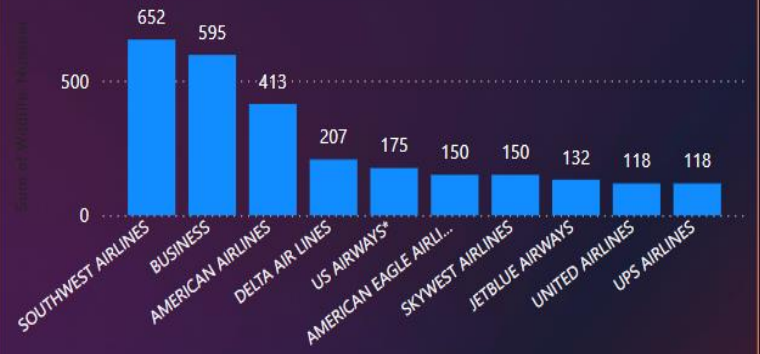
All

Number Struck	Total Cost	People Injured	Feet Above Ground	Wildlife: Species	Remarks
4077	8M	1	1.24K	American crow	All

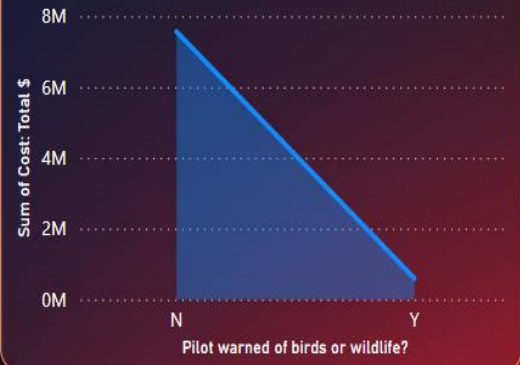
Number Struck - Aircraft Model



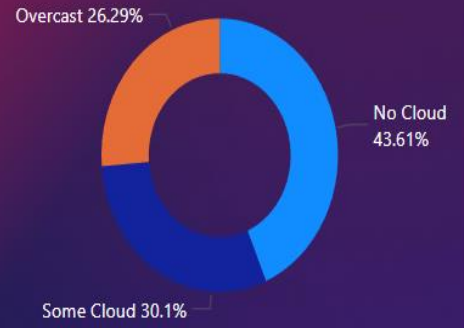
Sum of Wildlife: Number Struck Actual by Aircraft: Airline/Operator



Sum of Cost: Total $ by Pilot warned of birds or wildlife?

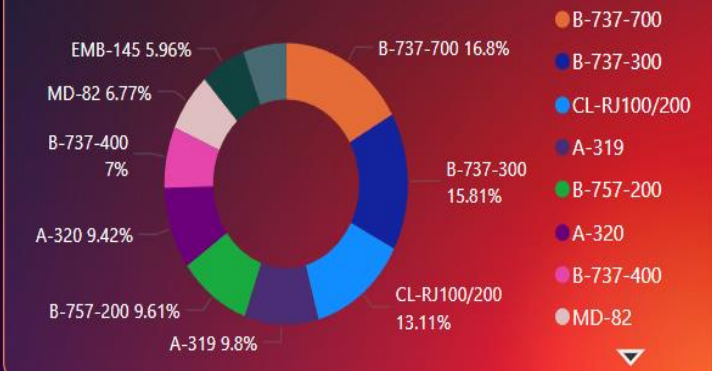


Number Struck - Conditions: Sky



Origin State

Number Struck Actual by Aircraft: Make/Model



Thank You