Data Visualization of Bird Strikes between 2000 – 2011

DETAILED PROJECT REPORT

Detailed Report by:
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Project Detail

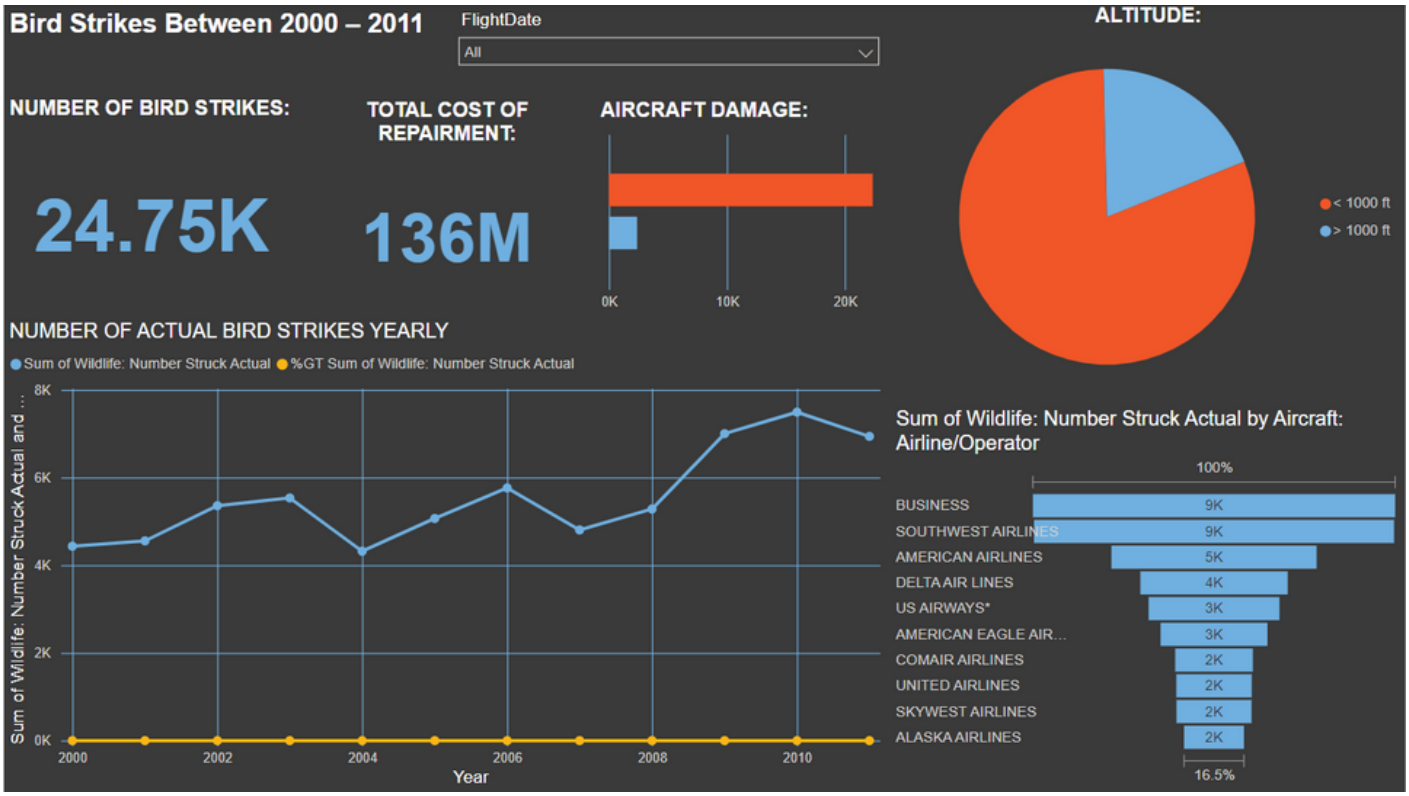
Project Title	Data Visualization of Bird Strikes between 2000 – 2011
Technologies	Data Science
Domain	Transportation and Communication
Project Difficulties level	Advanced

Transport and communication are in the crucial domain in the field of analytics. Environmental impacts and safety are, nowadays, two major concerns of the scientific community with respect to transport scenarios and to the ever-growing urban areas. These issues gain more importance due to the increasing amount of vehicles and people. Seeking new solutions is reaching a point where available technologies and artificial intelligence, especially MAS, are being recognized as ways to cope with and tackle these kinds of problems in a distributed and more appropriate way.

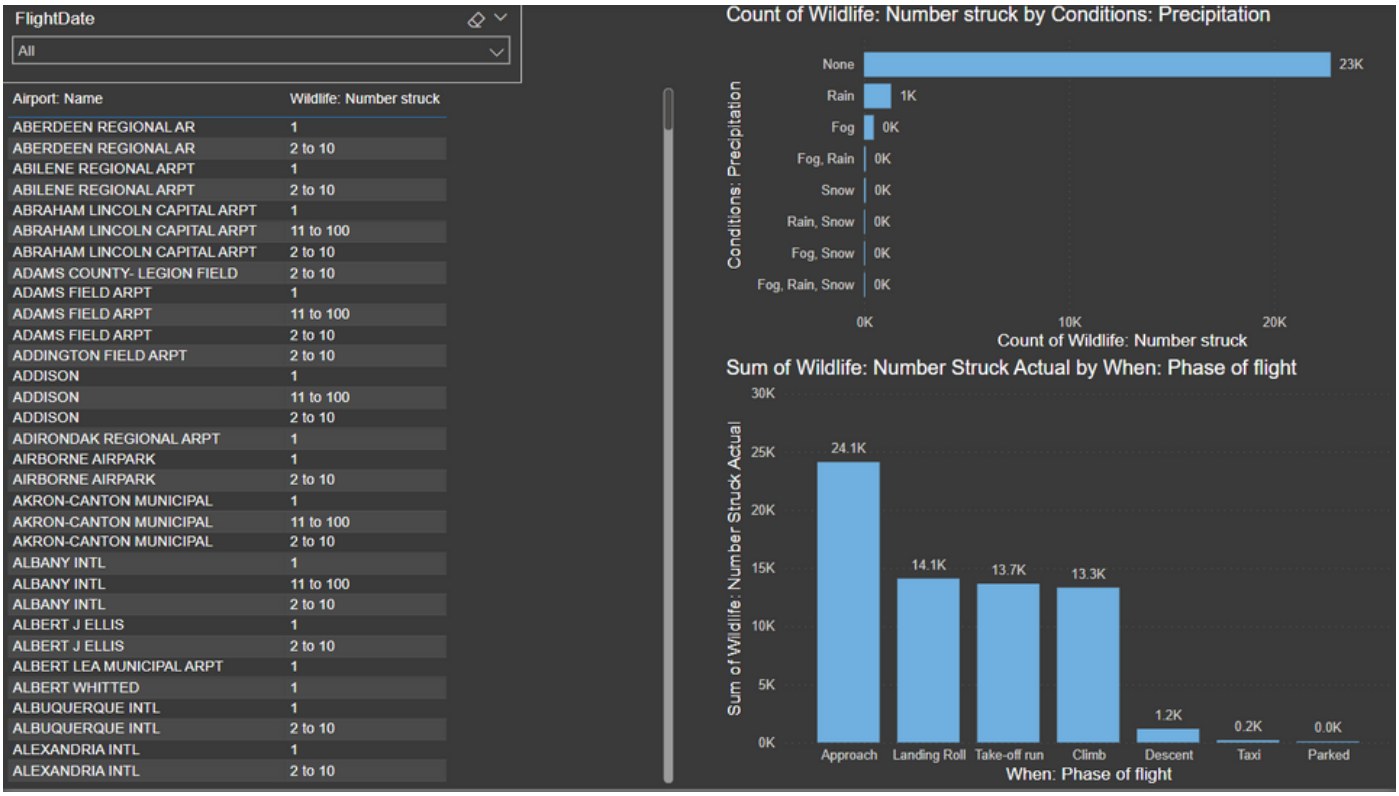
A bird strike is strictly defined as a collision between a bird and an aircraft which is in flight or on a take-off or landing roll. The term is often expanded to cover other wildlife strikes - with bats or ground animals. Bird Strike is common and can be a significant threat to aircraft safety. For 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.



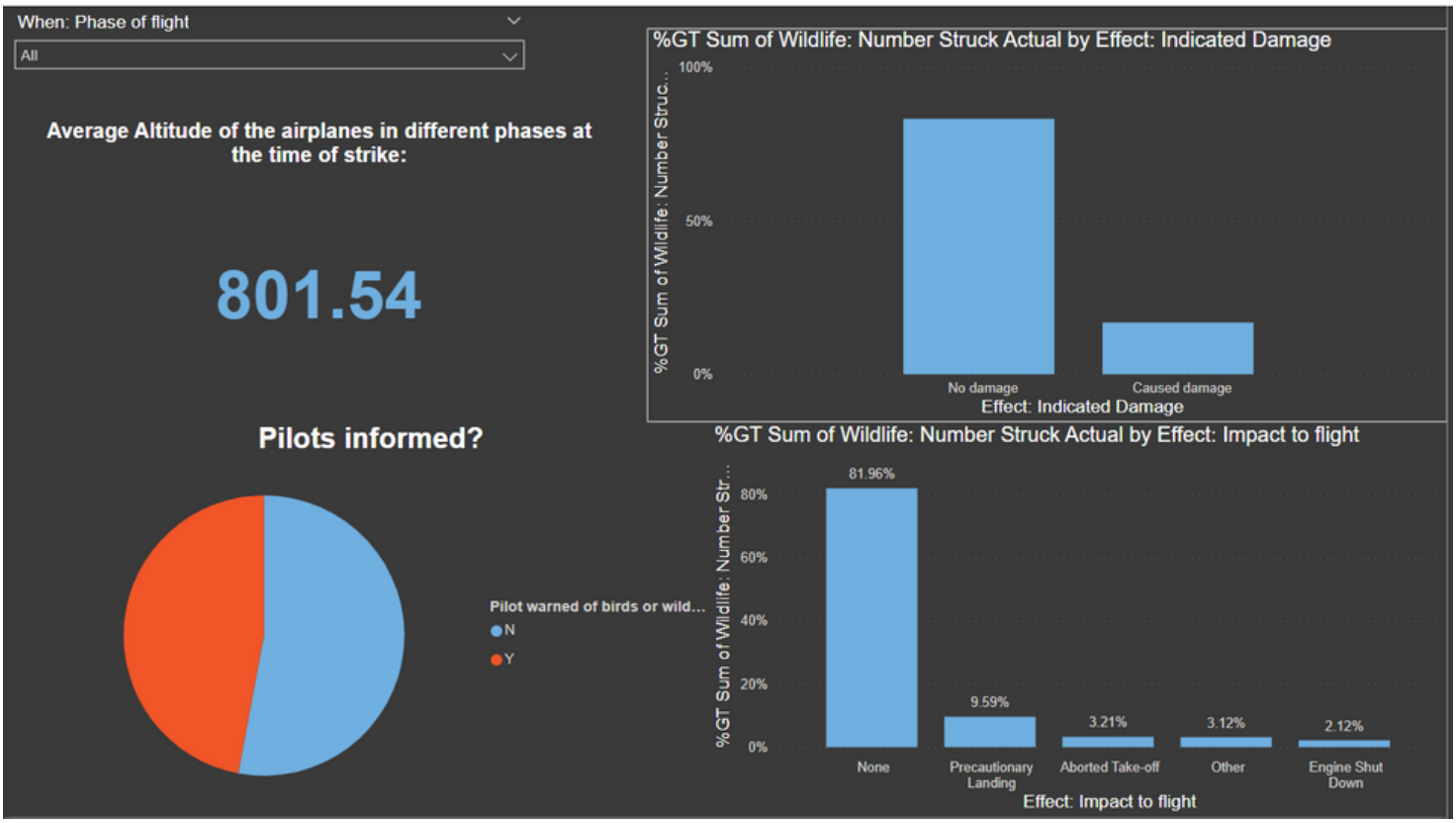
- Total number of bird strikes is approx. **25 thousand** in the span of **11** years which then led to the cost of repairment of **136 million** dollars
- Out of **24.75K** flights that have been involved in a bird strike incident, **22,363** received no damage while **2384** received small to large scale damages.
- Number of bird strikes continue to increase yearly from **2000 to 2011**. Airlines namely, Business , Southwest Airlines , American Airlines, Delta Air Airlines, US Airlines are more involved in bird strikes than other airlines.
- **81** percent of the planes were flying at an altitude **<1000** while **19** percent of the planes were at altitude **>1000** when the strikes occurred.



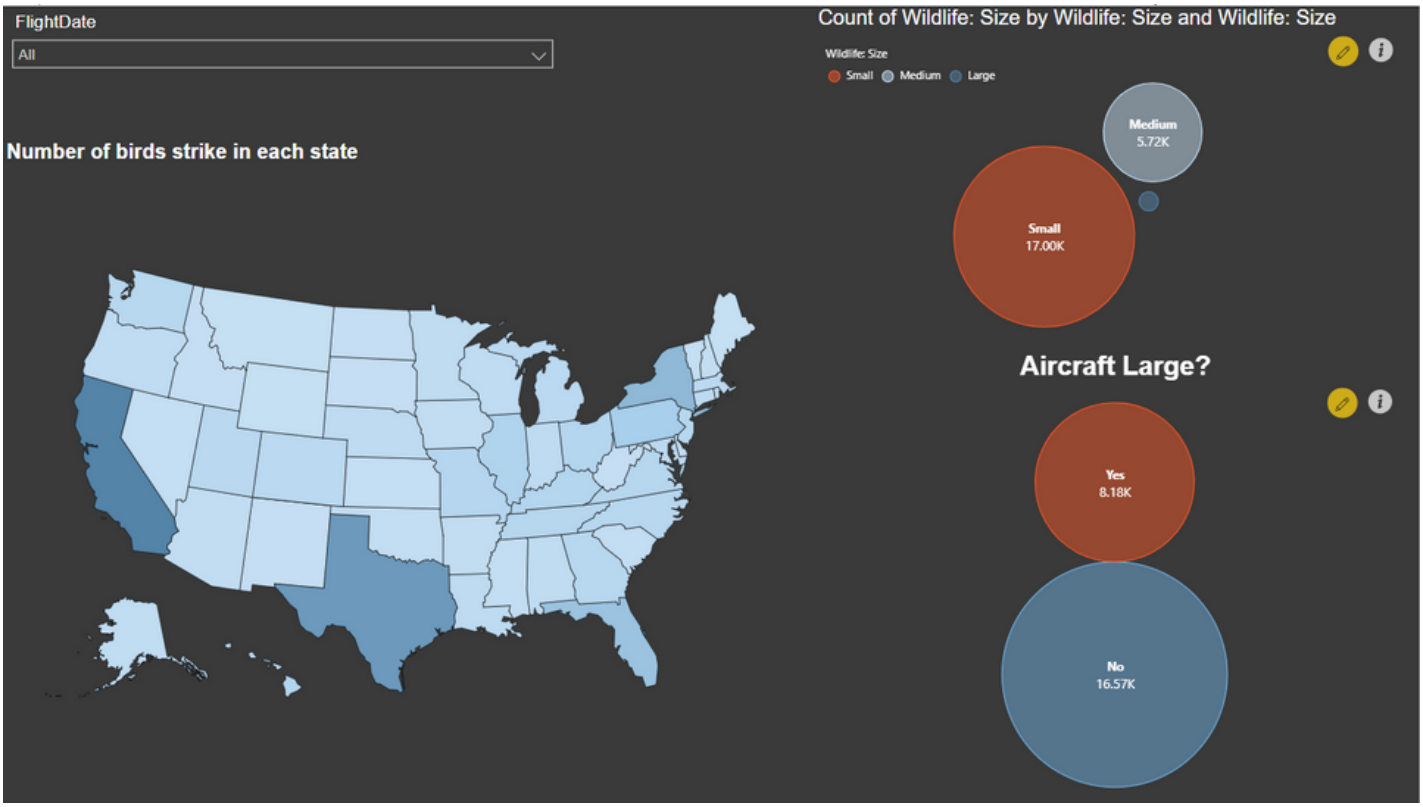
The Dallas/Fort Worth Intl Airport leads in bird strikes, recording 802 incidents, followed by Sacramento Intl with 676. Salt Lake City (479), Denver Intl Airport (476), Kansas City Intl (452), and Philadelphia Intl (442) are also among the top airports with high bird strike counts.

Weather conditions like rain, fog, or snow show little correlation with bird strikes; most incidents happen in fine weather.

The majority of strikes occur during approach to the runway. They also happen during takeoff, landing, climb, and descent. Rarely do strikes occur during parking or taxiing of planes.



- In 52 % cases pilots were not informed or were unaware of the possible bird strikes where as in 47 percent cases they were informed prior to the strikes.
- 81 % bird strikes results in no damage to the plane or the flight schedule.
- 9.59% bird strikes resulted in precautionary landing of the flight.
- 3.21 % bird strikes resulted in Take-off being aborted. 2.21% bird strikes caused engine shut down.
- Average altitude at which most of the strikes occurred is 800 ft. from ground.



- The state of California is involved with most number of bird strikes in all of the USA at 6998 strikes , followed by Taxes with 5983.
- States like Montana received a comparatively low number of strikes.
- In most of the cases aircraft involved was not a large aircraft Size of birds was small in most of the cases of bird strikes follwed by medium and then large.