



A Collision of Worlds: Visualizing Relationships Between Wildlife and Aircraft Using JMP® Software



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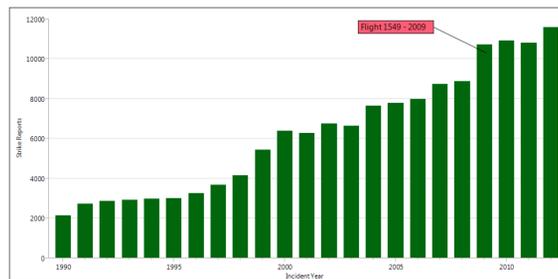
Introduction

Do you remember the “Miracle on the Hudson”? On January 15, 2009, US Airways Flight 1549 struck a flock of Canada Geese during its initial climb out from LaGuardia Airport. Capt. Chesley B. Sullenberger was able to make an emergency landing in the Hudson River. All 155 passengers survived.

The Federal Aviation Administration (FAA) Wildlife Strike Database contains over 140,000 reported wildlife strikes since 1990. Strike reporting is voluntary and this database only represents the information received from airlines, airports, pilots, and other sources. Using the power of JMP®, we explored this database and present here some of our discoveries.

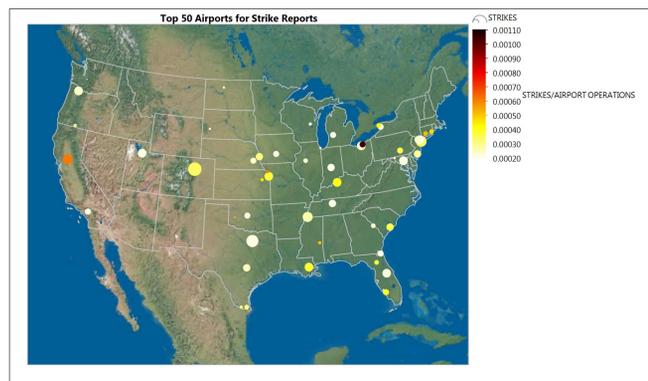
Q. Have strike reports increased since the Flight 1549 incident?

A. This bar chart shows an upward trend in reports over time, with a distinct increase in 2009.



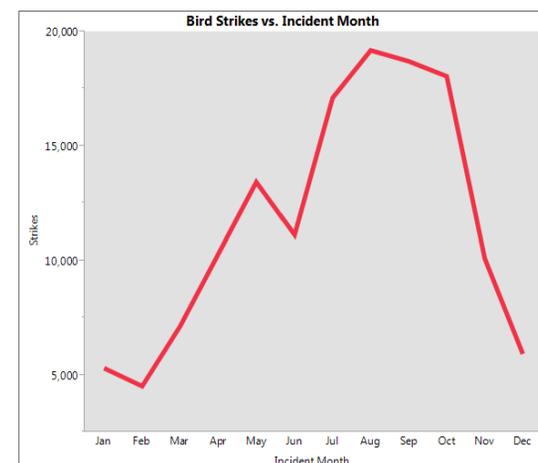
Q. Which airports reported the most wildlife strikes?

A. Dallas (DFW), Denver (DEN), and Kennedy (JFK) are the top three.



Q. What time of year do most bird strikes occur?

A. July through October.

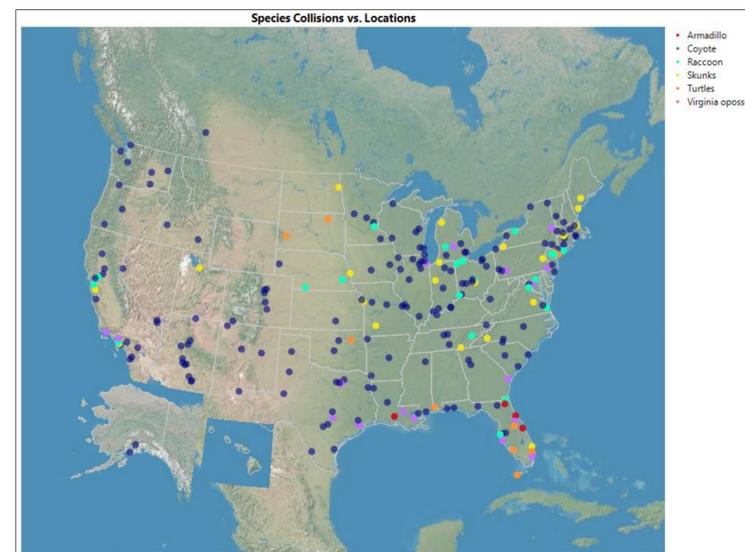


Interesting Facts and Figures (1990-2012):

- Fatalities: 24
- Injuries: 273
- Strikes involving **birds**: 97%
- State with most **alligator** strikes: **Florida** (18)
- Only state with **bear** strike report: **Tennessee** (1)
- Reports where remains sent to Smithsonian for ID: 8,894

Q. What animals other than birds are struck by aircraft?

A. A variety of bats, terrestrial mammals, and reptiles are hit. This map displays selected animals and locations where their strikes were reported.



Q. During what phase of flight do most strikes occur?

A. Airport approach, followed by take-off run, climb, and landing roll. This Graph Builder tornado chart shows these phases are also highest for damaging strikes.

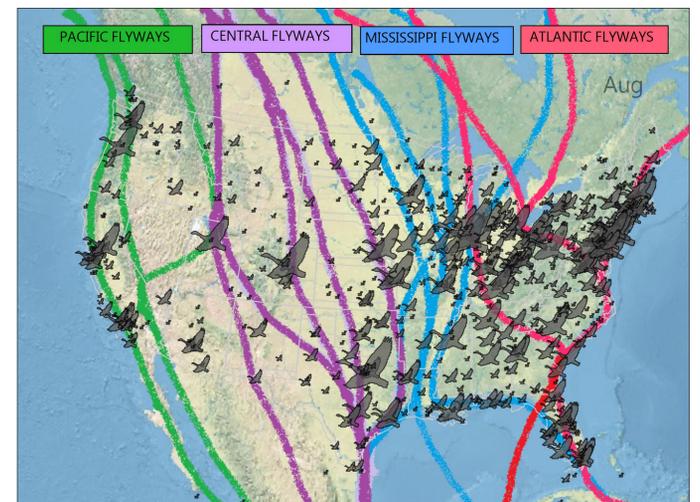


Most Interesting Comment

JUST AFTER LIFT-OFF, THE SPACE SHUTTLE "DISCOVERY" STRUCK AT LEAST 1 TURKEY VULTURE. NO OBVIOUS DAMAGE. NO REMAINS FOUND, BIRD THOUGHT TO HAVE BEEN VAPORIZED BY ROCKET PLUMES.

Q. Do more bird strikes occur near migratory flyways?

A. Without more data, it is a question we could not definitively answer. However, this bubble plot shows interesting patterns for strikes along flyway paths. This plot is for the month of August.



Summary

Using JMP® to explore the FAA Wildlife Strike Database, we answered many of our questions and gained additional interesting insight about this data. We easily imported, merged and shaped data, and with Graph Builder and Bubble Plot graphs, we created visualizations to reveal geographical and other relationships between wildlife and aircraft.

References

- FAA Wildlife Strike Database <http://wildlife.faa.gov/>
- Airport Operations and Ranking Reports http://www.faa.gov/news/media_resources/atadsguide/

Images

- Approach image, with permission from E.B. Frost.
- From wikipedia, originally posted to Flickr as “Plane crash into Hudson River” by Greg L.
- Posted to Flickr as “What’s Bigger - An Eagle or An Airplane?” by Sister72.

Acknowledgments

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