THE LEGACY
OF THE HUDSON

and its Impact on Wildlife Strike Reporting

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Overview

- Objectives of Research
- The importance of reporting wildlife strikes
- Public Response to the Hudson event
- Aviation Industry Response
- Reporting Response
- Methodology
- Results
- Discussion

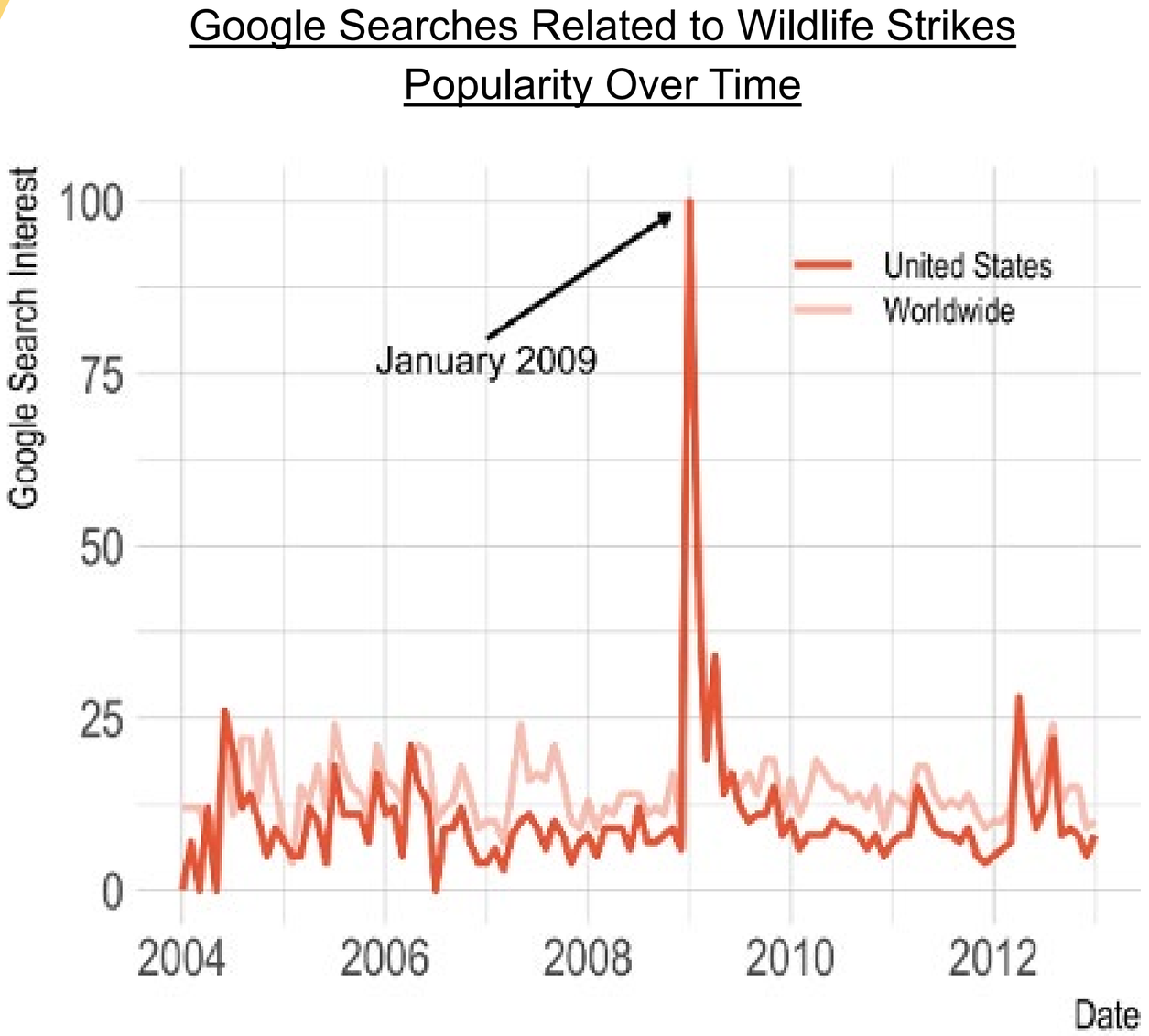
Research Objectives

- Hudson’s impact on the aviation industry and public perception
- Prompted program reevaluations and reform
- Goals
  - Hudson effect on wildlife strike reporting
  - Predict strike reports
  - Compare predictions to reported strikes
    - Calculate the average effect
- Assess longevity & immediacy of the Hudson effect
- Hudson effects for airport classifications & hub sizes
- Structural changes in NWSD reporting

The Importance of Reporting Wildlife Strikes

- 80% of wildlife strikes go unreported*
- Migratory geese deemed responsible for the Hudson bird strike*
- Analyses from the National Wildlife Strike Database (NWSD) are critical*

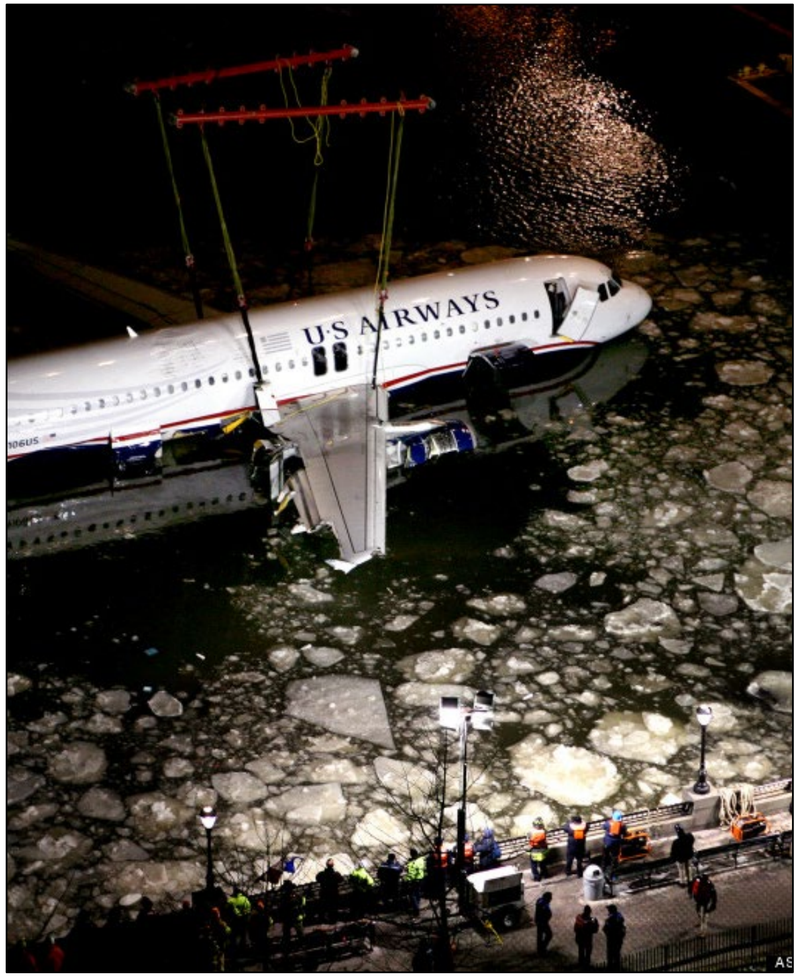
Public Interest after the Hudson



- Public attention to wildlife strikes
- Widespread media coverage
- Inadequate support prior to Hudson event*

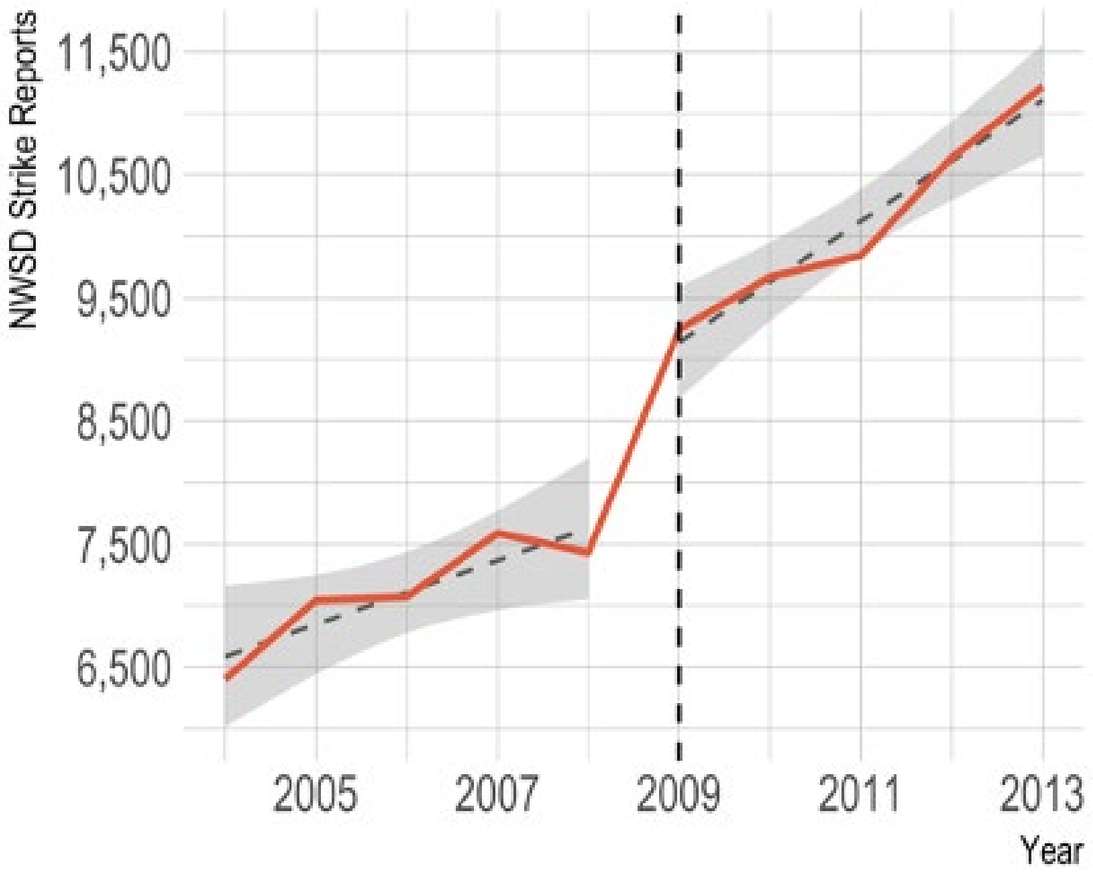
Industry Changes After the Hudson

- Mandatory reporting?
- Education and awareness programs were implemented
- Clearer guidance and means for reporting provided
- Advisory Circulars continue to highlight the importance of reporting
- Updates for ease of reporting
- Data from other sources integrated into the NWSD
- Public access to the NWSD
- Part 139 airports required to develop a WHMP as part of certificate
- Annual Airport Wildlife Strike Summary and Risk Analysis for Part 139 airports



Strike Reporting in Response to the Hudson Event

Number of Wildlife Strikes Reported Over Time



- Increased reporting in 2009
- Overall increase by mean of 42%*
- Commercial aircraft increase by mean 46%*
  - Strike rate increase by 67%
- General Aviation increase by mean 43%*
  - Strike rate increase by 55%
- 47% of known civil aircraft strikes reported in post-period compared to 42% in pre-period*

Methodology

Data

- NWSD years 2002 - 2013
- Air Traffic Activity System (ATADS)

Models

Predict strikes from pre-Hudson reports

↓

1. Yearly model → Longevity
2. Monthly model → Immediacy

Hudson Effect

Hudson Effect =
Reported strikes – Predicted Strikes

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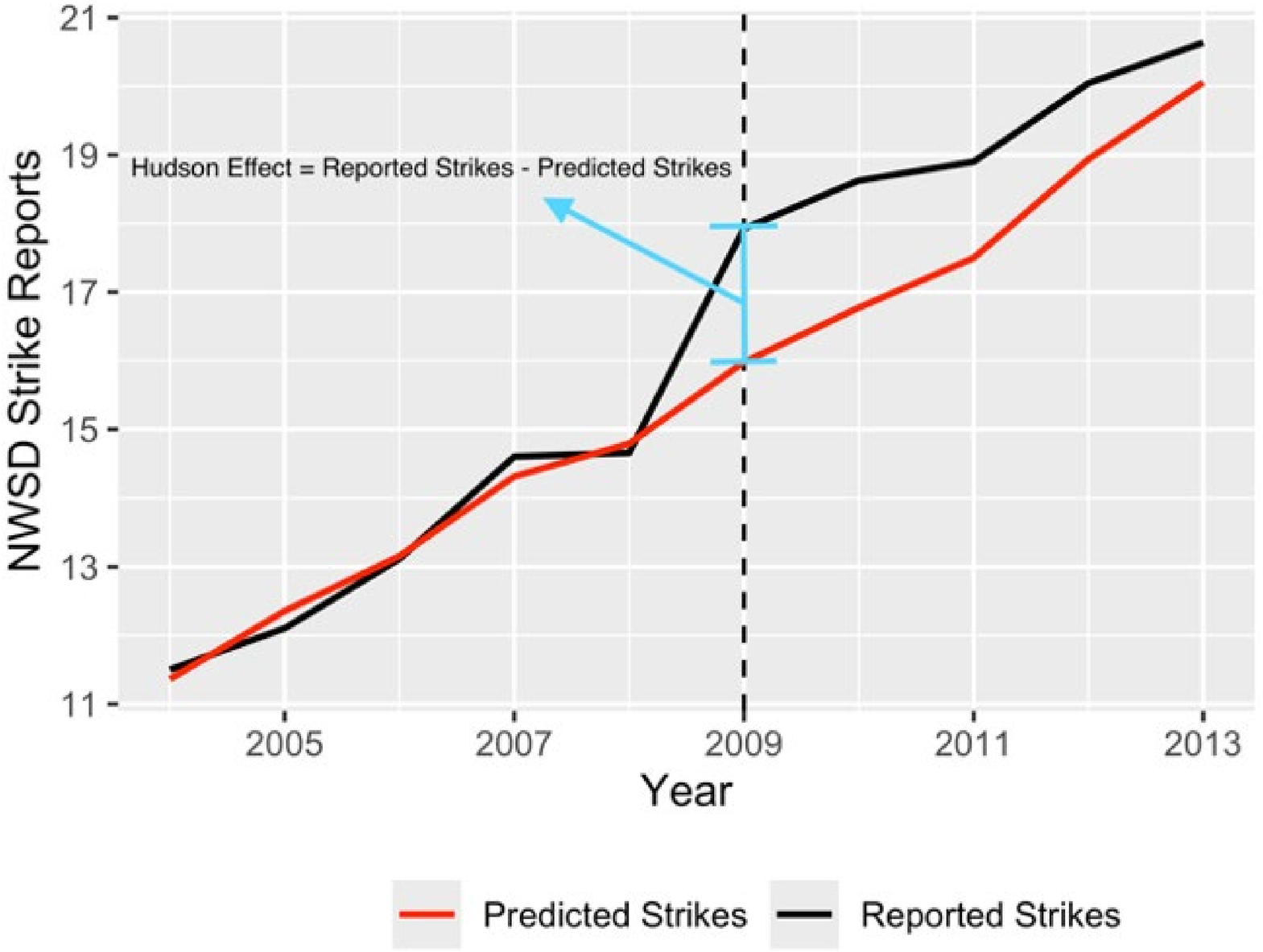
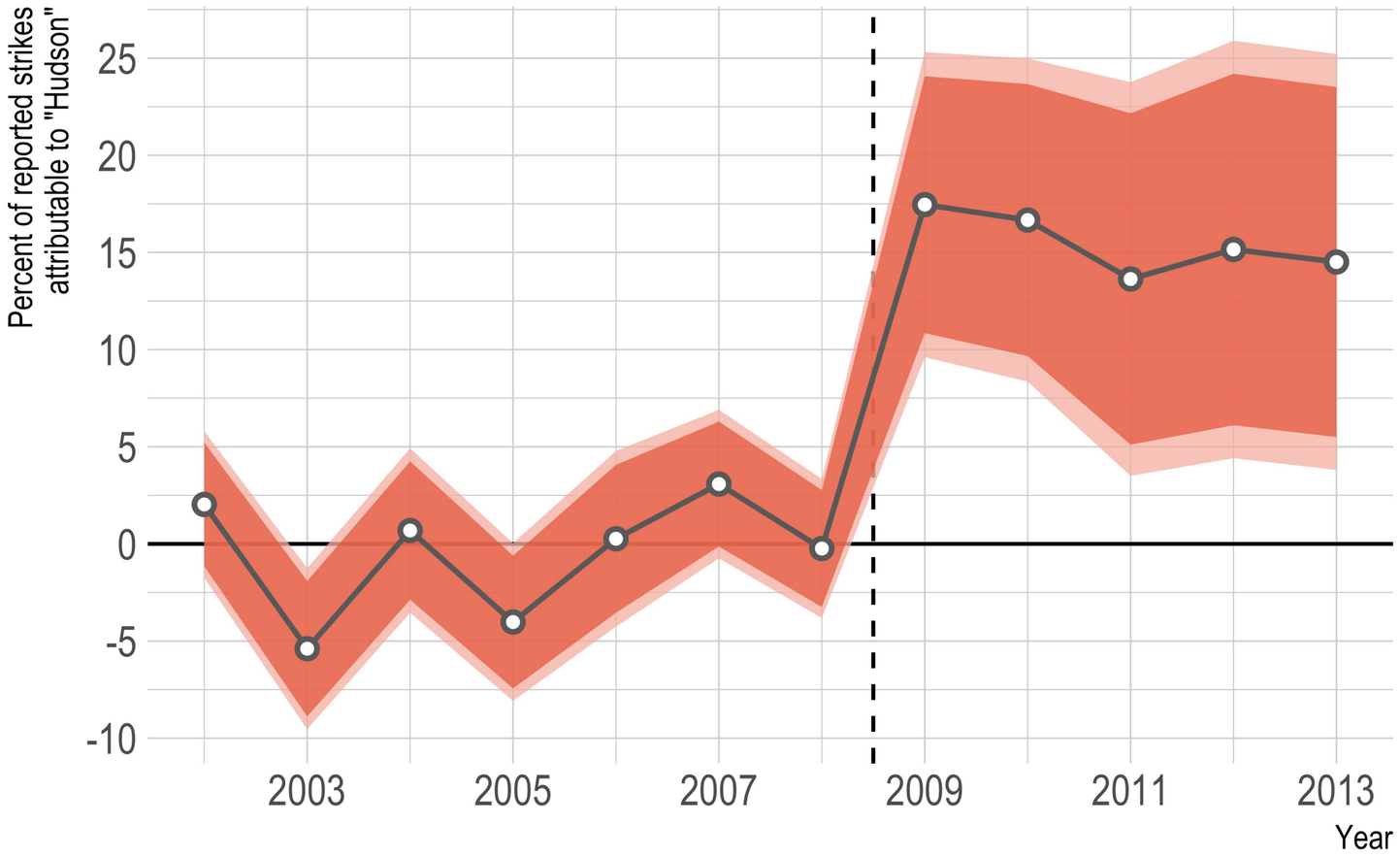
Effects by airport classification & hub size

Average Airport Hudson Effect

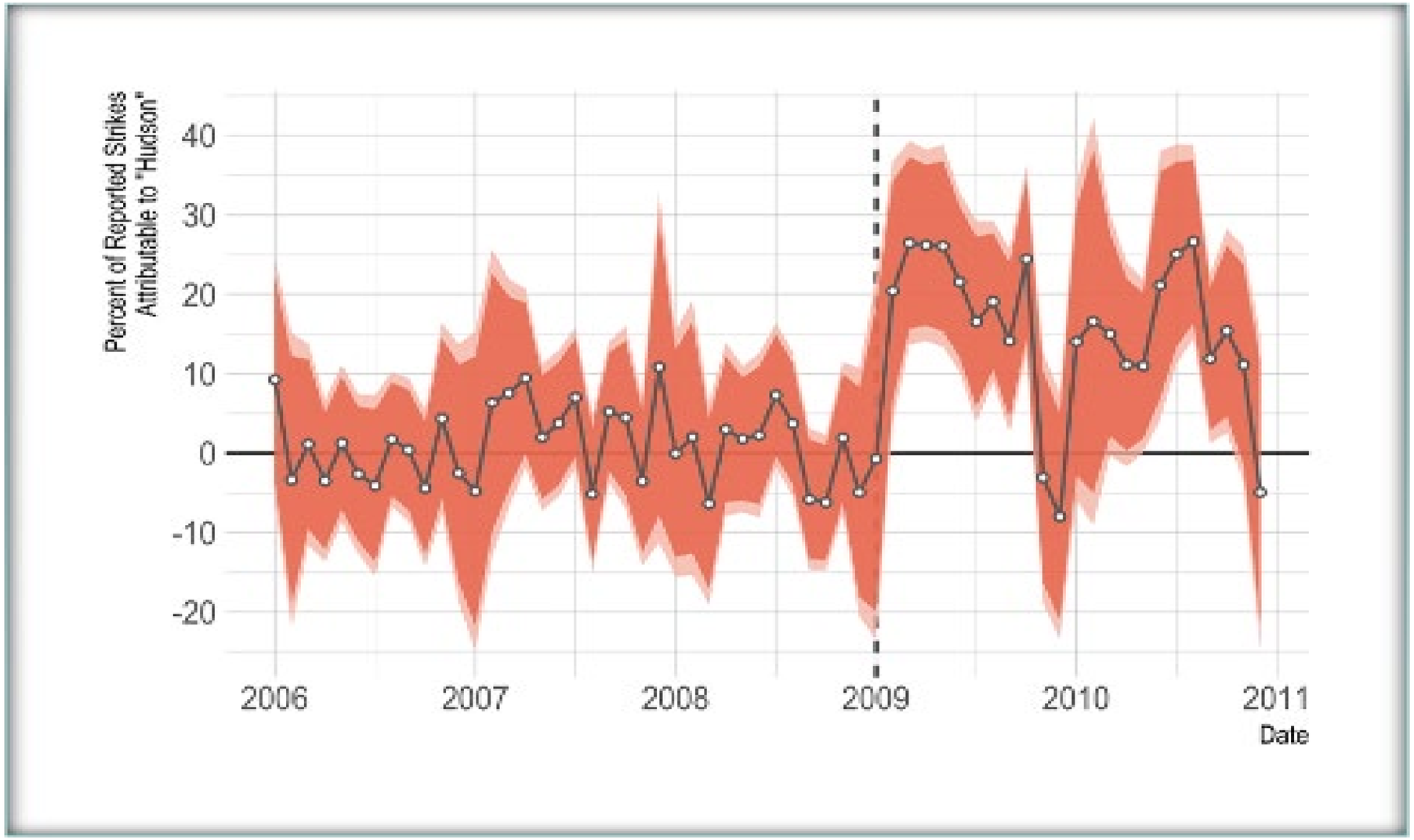


Yearly Model



- Average effect = 17.5% in 2009
- Hudsons effect shows longevity

Monthly Model

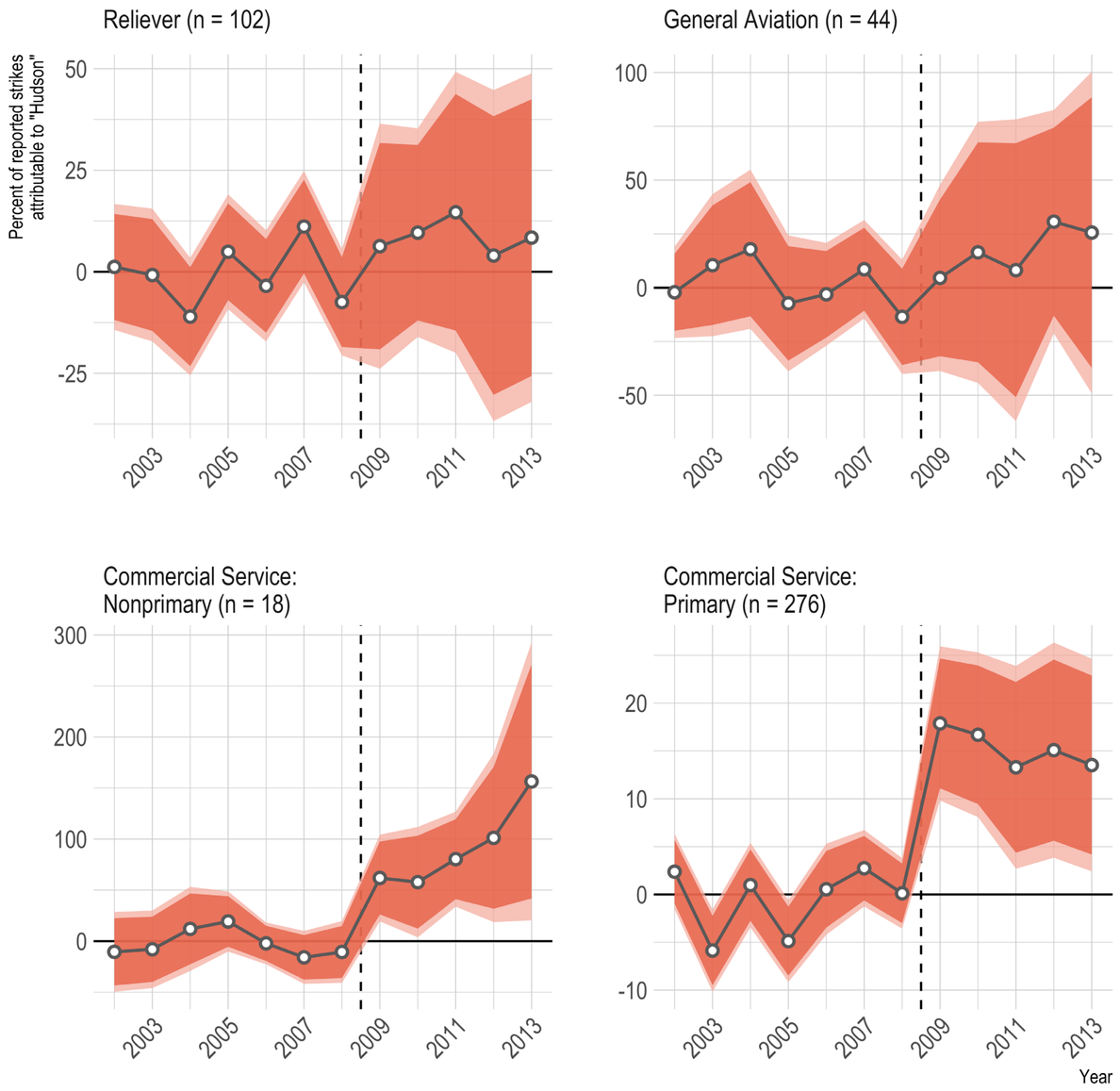


- Hudson effect = 25% January 2009
- Effect predates FAA changes
- Immediacy of Hudson effect supported

Yearly Model by Airport Classification

Airport Classifications

- Reliever airports
- General Aviation
- Nonprimary Commercial Service
- Primary Commercial Service

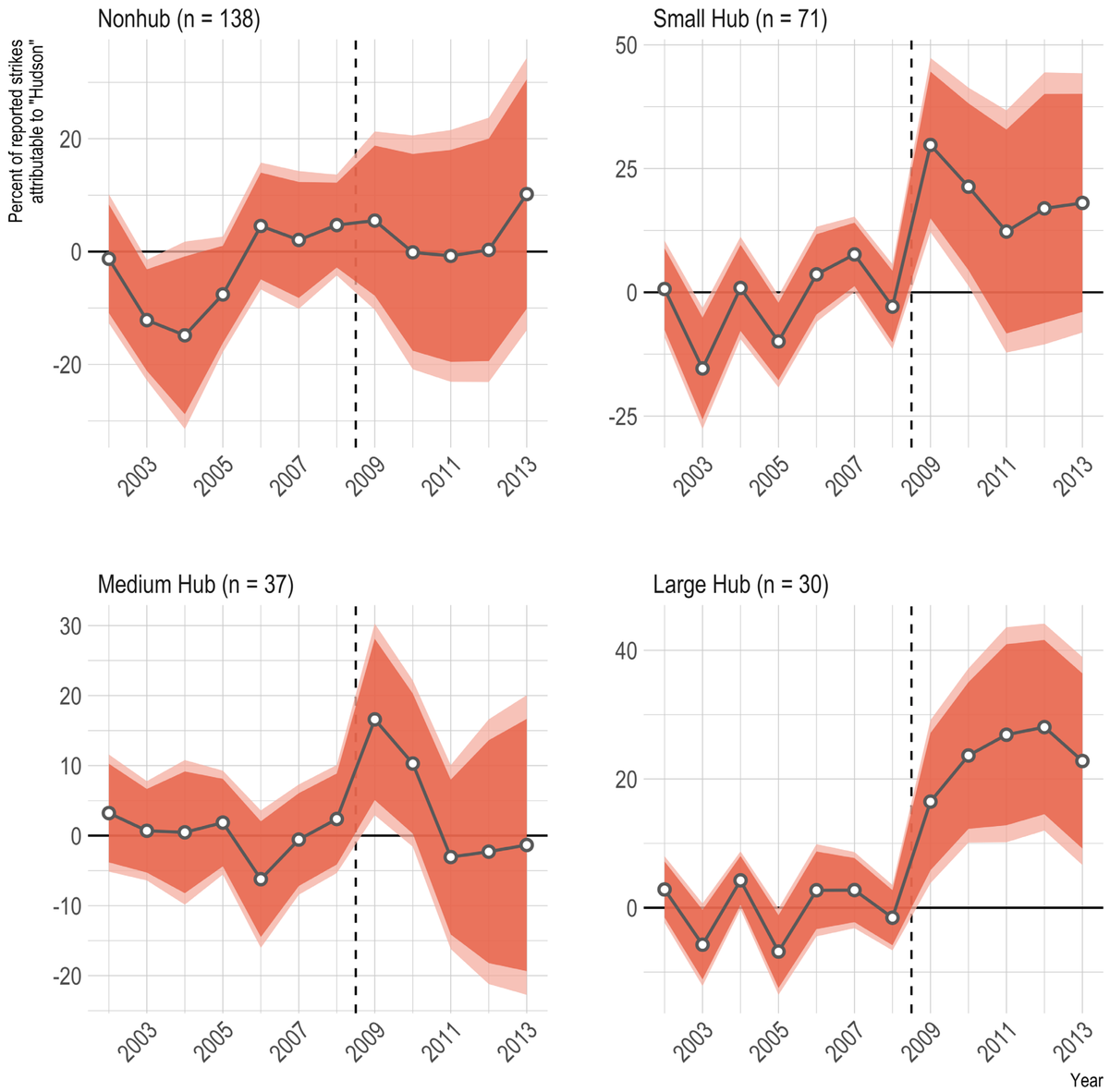


- No significant effect for Reliever and GA
- Commercial Service significant & lasting Hudson effect
- Need to incentivize smaller airports

Yearly Model by Airport Hub Size

Airport Hub Sizes

- Non-hub
- Small hub
- Medium hub
- Large hub



- No effect for Non-hubs
- Brief significant effect for small hubs and medium hubs (30% and 16%)
- Large hubs significant effect (17%)
- Lasting impact

Discussion

- Monthly results showed **immediacy**
  - -Response predates industry changes
- Yearly results showed **longevity**
  - -Industry changes may influence reporting
- Airport classification highlighted shortcomings
  - -Reliever and GA incentivization
  - -Commercial service airports and WHMPs
- Hub size reiterated need for incentivization
  - -Only Large hubs showed lasting significance
  - -Small & medium hubs initial significance

Conclusion

- Analysis underlined importance of Hudson event
- Predicted wildlife strikes in absence of Hudson event
- Identified shortcomings in reporting by classification and hub size
- Provided insights into structure of NWSD
- Necessary to highlight continued need for reporting

References

Dolbeer, Richard A., "Trends in reporting of wildlife strikes with civil aircraft and in identification of species struck under a primarily voluntary reporting system, 1990-2013" (2015). Other Publications in Zoonotics and Wildlife Disease. 188. http://digitalcommons.unl.edu/zoonoticspub/188

Hart, J. D., Colyer, A., & Allan, J. R. (2009). Developing bird-strike risk assessment models for open-water restorations. *Human-Wildlife Conflicts*, *3*(2), 186–198. http://www.jstor.org/stable/24875706

Marra, P.P., Dove, C.J., Dolbeer, R., Dahlan, N.F., Heacker, M., Whatton, J.F., Diggs, N.E., France, C. and Henkes, G.A. (2009), Migratory Canada geese cause crash of US Airways Flight 1549. Frontiers in Ecology and the Environment, 7: 297-301. https://doi.org/10.1890/090066

Dale, L. A. (2009). Personal and corporate liability in the aftermath of bird strikes: a costly consideration. Human-wildlife Interactions, 3(2), 10. https://doi.org/10.26077/24re-wa34

10th anniversary of the 'Miracle on the Hudson': USDA research reduces wildlife hazards at airports. (2019, February 25). USDA. https://www.usda.gov/media/blog/2019/02/25/10th-anniversary-miracle-hudson- usda-research-reduces-wildlife-hazards