

Benjamin Williams

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POSITIONS HELD

Assistant Professor, Business Information & Analytics 2019 - Present
Daniels College of Business, University of Denver, Denver, CO

EDUCATION

Ph.D. Statistical Science May 2019

Southern Methodist University, Dallas, TX

Thesis: Understanding the Effects of Record Linkage on Estimators of Total when Combining a Non-Probability and Probability Sample

Advisor: S. Lynne Stokes

M.S. Statistical Science May 2016

Southern Methodist University

B.S. Mathematics, B.A. Economics May 2014

Wheaton College, Wheaton, IL,

Dean's List, American Physical Society Minority Scholarship Recipient

REFEREED PUBLICATIONS

Williams, B., Zalsha, S., Stokes, L., McShane R, Foster, J. Validating Matches of Electronically Reported Fishing Trips from a Non-Probability Sample. *Transactions of the American Fisheries Society*. Accepted Nov. 2022.

McGee, M., **Williams, B.,** & Sparks, J. (2022). Athlete Recruitment and the Myth of the Sophomore Peak. *The American Statistician*. <https://doi.org/10.1080/00031305.2022.2127896>.

Williams, B., Stokes, L., & Foster, J. (2022). Investigating record linkage for combining voluntary catch reports with a probability sample. *Fisheries Research*. 251, <https://doi.org/10.1016/j.fishres.2022.106301>.

Williams, B., Palmquist, W., & Elmore, R. (2022). Simulation-based decision making in the NFL using NFLSimulatoR. *Annals of Operations Research*. <https://doi.org/10.1007/s10479-022-04524-7>.

Williams, B and Elmore, R. (2021) Teaching Business Analytics During the COVID-19 Pandemic: A Tale of Two Courses, *Communications of the Association for Information Systems*. <https://doi.org/10.17705/1CAIS.04805>.

Stokes, L., **Williams, B.,** McShane, R., Zalsha, S., & Elliott, A. (2021) The Impact of Non-sampling Errors on Estimators of Catch from Electronic Reporting Systems. *Journal of Survey Statistics and Methodology*. 159–184, <https://doi.org/10.1093/jssam/smz042>.

Purkayastha, S., Adair, H., Woodruff, A., Ryan, L. J., **Williams, B.,** James, E., Bell, K.R. Balance Testing Following Concussion: Sensitivity of Postural Sway versus Complexity Index (2019). *Physical Medicine and Rehabilitation*, doi: <https://dx.doi.org/10.1002/pmrj.12129>.

Purkayastha, S., **Williams, B.,** Murphy, M., Lyng, S., Sabo, T., Bell, K., (2019) Reduced Heart Rate Variability and Lower Cerebral Blood Flow Associated with Poor Cognition During Recovery Following Concussion. *Autonomic Neuroscience: Basic and Clinical*, doi: <https://doi.org/10.1016/j.autneu.2019.04.004>.

Williams, B. (2018). Combining a Probability and a Non-Probability Sample in a Capture-Recapture Setting. *Journal of Open Source Software*, 3(28), 886, <https://doi.org/10.21105/joss.00886>.

Guldi, J. and **Williams, B.** (2018). Synthesis and Large-Scale Textual Corpora: A Nested Topic Model of Britain's Debates over Landed Property in the Nineteenth Century. *Current Research in Digital History*, 1, <https://doi.org/10.31835/crdh.2018.01>.

REFEREED BOOK CHAPTERS

Williams, B. Record Linkage in Statistical Sampling: Past, Present, and Future. (2022) In H. K. Tony Ng and Daniel F. Heitjan (Eds.) *Recent Advances on Sampling Methods and Educational Statistics - In Honor of S. Lynne Stokes*. (187 – 198) <https://doi.org/10.1007/978-3-031-14525-4>.

OTHER PUBLICATIONS

Williams, B. (2019). Understanding the Effects of Record Linkage on Estimation of Total when Combining a Big Data Source with a Probability Sample. *Proceedings Statistics Canada Symposium 2018*, Ottawa, Canada. <https://www.statcan.gc.ca/eng/conferences/symposium2018/program>.

Khasawneh, Q., Dworak, J., Gui, P., **Williams, B.**, Elliott, A., Muthaiah, A. (2018). Real-Time Monitoring of Test Fallout Data to Quickly Identify Tester and Yield Issues in a Multi-Site Environment. *2018 IEEE 36th VLSI Test Symposium*, pp. 1 – 6, doi: 10.1109/VTS.2018.8368661.

PAPERS IN PROGRESS

Wang, H., **Williams, B.**, Xie, K., Chen, W. Quality Differentiation and Matching Performance in Peer-to-peer Markets: Evidence from Airbnb Plus. *2nd Round Revise and Resubmit at Management Science*.

Elmore, R., **Williams, B.**, Schliep, E., Fosdick, B. Expected Field Goal Points Above Average in the NBA: A Bayesian Perspective. *In Preparation for Submission to the Journal of Quantitative Analysis in Sports*.

Williams, B. and Williams, A. Incorporating your own research into an introductory statistics course. *In Preparation for Submission to the Journal of Statistics and Data Science Education*.

McGee, M., and **Williams B.** Linking high school and collegiate track and field athletes for analyzing performance over time. *In Preparation for Submission to the Journal of Quantitative Analysis in Sports*.

TALKS AND PRESENTATIONS

“Simulation-based decision making in the NFL using NFLSimulator.” INFORMS Annual Meetings. Oct. 2021. Invited Presentation (Presented by co-author Ryan Elmore).

“Quality Differentiation and Matching Efficiency in Peer-to-peer Markets: Evidence from Airbnb.” *INFORMS Conference on Information Systems and Technology*, Nov. 2020. Contributed Talk.

“Simulation as a Tool for Understanding Data Fusion.” *BigSurv Conference*, Nov. 2020. Contributed Talk.

“Web Scraping Demo for Beginners.” *Daniels College of Business Seminar*, Oct. 2020. Seminar Presentation.

“A Matching Error Model for Record Linkage.” *Joint Statistical Meetings*, Aug. 2020. Poster Presentation.

“Understanding the Effects of Record Linkage on Estimation of Total when Combining a Big Data Source with a Probability Sample.” *BigSurv Conference*, Oct. 2018. Contributed Talk.

“Samples, Unite! Understanding the Consequences of Combining Probability and Non-Probability Samples when Linking Records is Difficult.” *Joint Statistical Meetings*, August 2018 – Vancouver, BC, Canada, Speed Presentation.

“Understanding the Relationship Between Discourses in 19th Century British Parliamentary Debates with a Novel Algorithm for Hierarchically Nesting Topic Models,” *Current Research in Digital History*, March 2018, Arlington, VA. Contributed Talk.

“Text Mining with R,” *SMU Stat Club*, March 2018 – Dallas, TX, Invited Presentation.

“Graphics in R,” *R Users Group at SMU*, November 2017 – Dallas, TX, Invited Presentation.

“Understanding the Measurement Error for Voluntary Angler Reporting Using Electronic Devices,” *American Fisheries Society Annual Meetings*, August 2017 – Tampa, FL, Invited Talk.

“Understanding the Measurement Error on Catch Estimation for Self-Reporting and Randomly Sampled Anglers in the Gulf of Mexico,” *Joint Statistical Meetings*, August 2017 – Baltimore, MD, Poster Presentation.

“Analysis of Dallas Police Shootings: A Comparison Study,” *Dedman Fellows 2015-2016 Presentation*, April 2016 – Dallas, TX.

“PTSD and Medication Adherence in Patients with Uncontrolled Hypertension,” *CSIBS Research Symposium 2013*, July 2013 – New York, NY.

TEACHING

Complex Data Analytics March 2022 - Present
University of Denver – Denver, CO

Analytics III: Business Modeling and Analytics January 2020 – Present
University of Denver – Denver, CO

Text Mining with R Practicum Co-Lecturer September 2017 – October 2017
Southern Methodist University – Dallas, TX

Statistics and Mathematics Tutor August 2015 – May 2016
Learning Enhancement Center – Southern Methodist University – Dallas, TX

Statistics Teaching Assistant September 2014-May 2015
Statistical Science Department, Southern Methodist University – Dallas, TX

Mathematics/Statistics Teaching Assistant August 2012 – May 2014
Mathematics Department, Wheaton College – Wheaton, IL

GRANTS

Faculty Research Fund 2020 - 2022
Awarded University of Denver research fund for research regarding matching efficiency in peer-to-peer markets

Mississippi-Alabama Sea Grant Consortium 2016 Red Snapper Phase I 2016 – 2018
Significant Contributor

Controlling Locomotion over Continuously Varying Activities for Agile Powered Prosthetic Legs 2017
Statistical Consultant

SOFTWARE

blendR August 2018
An R Package for Combining a Probability Sample and a Non-Probability Sample
Peer-reviewed and published in *Journal of Open Source Software* – Available at
<https://github.com/williamsbenjamin/blendR>

NFLSimulatoR October 2020
An R Package for simulating plays and drives in the NFL (co-author) – Available at
<https://datacolorado.com/r/nflsimulator/>

UNIVERSITY SERVICE

- COACHE – Data Analysis Committee Member
- Honors Council

DEPARTMENT SERVICE

- INFO 2020 Course Coordinator
- Research Seminar Series Coordinator
- BIA Tenure-Track Professor Search Committee Member

PROFESSIONAL SERVICE

- Journal Reviewer: *Communications of the Association of Information Systems*, *MIS Quarterly*, *Journal of Quantitative Analysis of Sports, Stats, Big Data and Cognitive Computing*, *International Journal of Environmental Research and Public Health*
- Conference Paper Reviewer: *Workshop on Information Technologies and Systems*
- Conference Poster Judge: *Joint Statistical Meetings (American Statistical Association)*
- Textbook Reviewer: *Business Analytics 2nd ed* (Jaggia et. al.), *Introductory Business Analytics* (Richardson, Terrell, and Watson), *Modern Business Analytics: Practical Data Science for Decision Making* (Taddy).
- Invited Participant: McGraw Hill Business Analytics Virtual Summit

AWARDS

- 2020 University of Denver Faculty Research Fund
- 2018 BigSurv Student Travel Award
- 2nd Place, SMU 2018 3 Minute Thesis Competition

MEMBERSHIPS

- American Statistical Association
- INFORMS

ADVISING

- Zhengmao Zhou (M.A. Capstone Advisor)
- Jacob Weiss (B.S. Thesis Advisor)
- Federica Bologna (M.S. Capstone Advisor)
- Biswanath Das (M.S. Capstone Advisor)
- Mark O'Brien (M.S. Capstone Advisor)
- Angelo Rey (M.S. Capstone Advisor)
- Kai Huang (M.S. Capstone Advisor)
- Bill Holtze (M.S. Capstone Advisor)
- Will Palmquist (B.S. Thesis Advisor)

ADDITIONAL RESEARCH EXPERIENCE

Research Consultant, NOAA Funded

Southern Methodist University – Dallas, TX

Professor Lynne Stokes, PhD – Statistical Science Department

Focus: Estimation of Total Fish Catch in Gulf of Mexico by Recreational Anglers

May 2017 – August 2018

Research Assistant, NSF Funded

Southern Methodist University – Dallas, TX

Professor Jo Guldi, PhD – History Department

Focus: Text Mining of a century of British Parliamentary Debates

May 2017 – May 2018

Summer Institute for Training in Biostatistics, NIH funded

Mailman School of Public Health, Columbia University – New York, NY

Focus: Post Traumatic Stress Disorder and Medication Adherence

June – July 2013

Mentored Research Seminar

Wheaton College – Wheaton, IL

January 2012 – May 2012

Professor Darcie Delzell, PhD – Mathematics Department

Focus: Armed Conflict and Climate in Africa

FELLOWSHIPS

Southern Methodist University Dissertation Fellow

August 2018 – May 2019

Southern Methodist University – Dallas, TX

Focus: Dissertation Research

Dedman College Interdisciplinary Institute Fellow

August 2016 – May 2017

Southern Methodist University – Dallas, TX

Focus: Big Data in the Humanities and the Relevancy of Statistics

Dedman College Interdisciplinary Institute Fellow

September 2015 – May 2016

Southern Methodist University – Dallas, TX

Focus: Analysis of Dallas Police Officer Shootings

WORK EXPERIENCE

Assistant Director of Consulting Center

June 2016 – June 2018

Statistical Consulting Center, Southern Methodist University – Dallas, TX

-Clients from Industry (Non-Profit and For-Profit), Academia, and Government

-Projects Include: Data Analysis; Survey Creation/Implementation/Analysis; Prediction; Machine Learning; Natural Language Processing/Text Mining; Statistical Inference

Consultant for Lee Park Conservancy

February 2016 – May 2016

Lee Park – Dallas, TX

-Survey Creation, Implementation, Analysis

Data Quality Intern

May 2015 – August 2015

Atmospheric Radiation Measurement, NOAA – Boulder, CO

-Develop Outlier Detection Software

Private Mathematics Tutor

August 2011 – April 2014

Wheaton, IL

BreakAway Spring Break Mission Trip Cabinet Chair

August 2012 – May 2013

Wheaton College, Wheaton, IL

Allstate Partnerships for Educational Excellence (APEX) Team Finance Competition

January – February 2013

Wheaton and Northbrook, IL

COMPUTING SKILLS

- R (Including ggplot2, dplyr, and other tidyverse packages)
- SAS, Python, SQL, LaTeX, MALLETT, RAT-STATS, Shiny Applications
- Advanced Beginner in Java, Tableau
- Microsoft Excel, Word, PowerPoint, Google Products
- Experience using Linux computer cluster to run analyses

COURSEWORK

- Computational Statistics, Linear Regression, Statistical Analysis I & II, Mathematical Statistics I & II, Categorical Data Analysis, Mathematical Theory of Sampling, Machine Learning, Time Series Analysis, Applied Multivariate Analysis, Bayesian Statistics, Bayesian Hierarchical Modeling, Non-Parametric Statistics, Advanced Statistical Inference, Probability Theory

INTERESTS

- Statistical Sampling
- Record Linkage

- Survey Methodology
- Text Mining/Natural Language Processing
- Interdisciplinary Statistics
- Data Visualization
- Human Rights Statistics
- Sports Statistics
- Data Quality