

Adeline P. Guthrie

Department of Statistics
Virginia Tech
401-D Hutcheson Hall, 250 Drillfield Drive
Blacksburg, VA 24060, USA

E-mail: apguthrie@vt.edu
Cell: 484-707-6684
LinkedIn: [linkedin.com/in/adeline-guthrie](https://www.linkedin.com/in/adeline-guthrie)
GitHub: <https://github.com/apguthrie>

EDUCATION

Ph.D. in Statistics – Virginia Tech, Blacksburg, VA **Expected May 2025**

Advisor: Dr. Christopher T. Franck

Dissertation: *Boldness-Recalibration for Binary Event Predictions*

M.S. in Statistics – Virginia Tech, Blacksburg, VA

May 2021

GPA: 3.95/4.00

B.S. in Mathematics – Millersville University of Pennsylvania, Millersville, PA

May 2019

GPA: 3.95/4.00; Concentrations: Statistics, Actuarial Science; Minor: Computer Science

RESEARCH INTERESTS

Probability calibration and boldness; Bayesian statistics; computational statistical; optimization; statistical consulting; spatial statistics; statistical modeling in sports, environmental science, social science, and animal science

PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES

Guthrie, Adeline P., and Christopher T. Franck. (2024) “Boldness-Recalibration for Binary Event Predictions.” *The American Statistician*, 1-17. doi: 10.1080/00031305.2024.2339266.

Hitchcock, Miranda, Miranda K. Workman, Audrey Ruple, **Adeline P. Guthrie**, and Erica N. Feuerbacher. (2024) “Factors Associated with Behavioral Euthanasia in Pet Dogs.” *Frontiers in Veterinary Science Section on Animal Behavior and Welfare*, Vol 11. doi: 10.3389/fvets.2024.1387076

Neary, Jessica M., **Adeline P. Guthrie**, and Leonie Jacobs. (2023) “Public and industry knowledge and perceptions of US swine industry castration practices.” *Animal Welfare*, 32, e79. doi: 10.1017/awf.2023.99

IN REVIEW PUBLICATIONS

Guthrie, Adeline P., and Christopher T. Franck. (2024) “BRcal: An R package to Boldness-Recalibrate Probability Predictions.” arXiv preprint: <https://arxiv.org/abs/2409.13858>

OTHER PUBLICATIONS

Nelsen, Eleanor, **Adeline Guthrie**, and Lee Vinsel. "When the Drone is in Your Backyard." *Issues in Science and Technology* 37, no. 3 (Spring 2021): 29-31.

SOFTWARE

BRcal: An R-package for Boldness-Recalibration of Probability Predictions of Binary Events; with Christopher T. Franck. <https://CRAN.R-project.org/package=BRcal>

PRESENTATIONS

Responsibly Emboldening Predictions via Boldness-Recalibration

Invited Talk – December 2024 – **18th International Joint Conference CFE-CMStatistics**, London, UK

Topic Contributed Panel Discussion – August 2024 – **Joint Statistical Meetings**, Portland, OR, USA

BRcal: A Bayesian Approach Towards Balanced Probability Calibration and Boldness in R

Contributed Poster – July 2024 – **ISBA World Meeting**, Venice, Italy

A Bayesian Approach Towards Balanced Probability Calibration and Boldness

Contributed Poster – October 2023 – **Virginia Tech Corporate Partners Event**, Blacksburg, VA, USA
Invited Talk – April 2023 – **10th Annual Hume Center & IC CAE Colloquium**, Blacksburg, VA, USA
Contributed Poster – April 2023 – **Women in Data Science Blacksburg Event**, Blacksburg, VA, USA
Contributed Poster – August 2023 – **Joint Statistical Meetings**, Toronto, ON, Canada
Contributed Poster – February 2023 – **Conference on Statistical Practice**, San Francisco, CA, USA

A Bayesian Approach Towards Probability Calibration

Contributed Poster – October 2022 – **Virginia Tech Corporate Partners Event**, Blacksburg, VA, USA
Contributed Poster – August 2022 – **Joint Statistical Meetings**, Washington, D.C., USA

Predicting Sports Probabilities: How Well Can Pundits Do?

Contributed Talk – October 2021 – **Virginia Tech Corporate Partners Event**, Blacksburg, VA, USA

RESEARCH APPOINTMENTS

Graduate Research Assistant, Hume Center for National Security and Technology Spring 2023

Funded by Leidos through the Hume Center Academic Affiliates Graduate Research Program to investigate recalibration and emboldening strategies for computer vision, cybersecurity, and other defense-oriented applications

Graduate Research Assistant, Virginia Tech Department of Statistics Spring 2022

CONSULTING AND WORK EXPERIENCE

Lead Statistical Collaborator Spring 2020, Spring 2021 - Fall 2023
Virginia Tech | Statistical Applications and Innovations Group Blacksburg, VA

Provided statistical consultation, including study design, data analysis, proposal and publication preparation, and code to faculty and graduate student researchers and industry professionals, from many fields. Industry funded consulting projects:

- Identified noise as a key component of negative sentiment towards Wing delivery drones from survey data, which drove the decision to develop quieter propulsion systems. Project was part of the Virginia Tech Mid-Atlantic Aviation Partnership under the Unmanned Aircraft Systems Integration Pilot Program.
- Tested and documented a predictive modeling pipeline for identifying problematic user-submitted tickets to be audited. Funded by VA811.

Data Science Intern May 2023 - August 2023
Socially Determined | Data Science Group Blacksburg, VA

Delivered key insights regarding data quality and relationship between social determinants of health and predicted health outcomes via clustering, principal components analysis (PCA), and other statistical analyses. Presented findings to Data Science team and Chief Analytics Officer on a weekly basis.

Off-Ice Official January 2015 - April 2023
American Hockey League | Lehigh Valley Phantoms Allentown, PA

Balanced the collection and transmission of live in-game data to league officials, other off-ice officials, and the AHL website in a fast-paced working environment while minimizing errors in the data collected. Served as Off-Ice Official for the Philadelphia Flyers (preseason 2016, 2017, and 2018) and the NCAA D1 Midwest Regionals (2018, 2019).

Applied Statistics Intern June 2020 - August 2020
Eastman Chemical Company | Applied Statistics Group Kingsport, TN

Provided statistical consultation to chemists and engineers to identify problems and solutions for decision makers in product manufacturing. Presented key findings to all Data Science divisions.

Marketing Data Intern*Coventry First, LLC | Marketing***Summer 2018, Winter 2019***Fort Washington, PA*

Identified characteristics of profitable policies, discovered relationships between policies, and presented findings to Chief Operating Officer resulting in changes to policy purchasing strategy. Assisted in extensive testing / debugging of custom Customer Relationship Management (CRM) software.

Mathematics and Statistics Tutor*Millersville University | Math Assistance Center***January 2017 - May 2019***Millersville, PA*

Courses Tutored: Algebra, Pre-Calculus, Calculus I, II, and III, Business Calculus, Statistics, other lower-level courses in Mathematics and related majors (Computer Science, Physics, Economics)

TEACHING EXPERIENCE

LECTURING**STAT 3616 Biological Statistics II** – Virginia Tech

Fall 2024

Undergraduate introductory statistics course covering analysis of variance, categorical data analysis, non-parametric tests, simple linear regression, multiple regression, and logistic regression with applications in biological sciences. Biweekly 75-minute lectures, 71 students.

STAT 4706 Probability and Statistics for Engineers II – Virginia Tech

Summer 2024

Undergraduate introductory statistics course covering sampling distributions, estimation, hypothesis testing, simple linear regression, multiple regression, and one-way analysis of variance with applications in engineering. Six-week online asynchronous course, 25 students.

TEACHING ASSISTANT**STAT 3615 Biological Statistics** – Virginia Tech

Spring 2020

Undergraduate introductory statistics course for various biological science majors. Led weekly recitation reviewing course material and guiding students through labs in R, section of 20 undergraduate students.

STAT 2004 Introductory Statistics – Virginia Tech

Fall 2019

Undergraduate introductory statistics course for non-STEM majors. Led weekly recitation reviewing course material and guiding students through review exercises, section of 50 undergraduate students.

Other Courses at Virginia Tech: **CMDA 2006 Integrated Quantitative Science II** – Spring 2024, Fall 2019, **STAT 4664 Computationally Intensive Stochastic Modeling** – Spring 2024, **STAT 5615 Statistics in Researchers I** – Fall 2020, **CMDA 2014 Data Matter** – Fall 2020

OTHER TEACHING EXPERIENCE**Introduction to Python** – Virginia Tech Explore Data Science Camp

Summer 2024

Created and delivered an interactive introductory Python course for 11th-12th Graders covering the basics of Python, Jupyter Notebooks, and Exploratory Data Analysis, 2-hour course, two sections of 28 students.

Model Selection in R SAIG Short Course – Virginia Tech

Fall 2023

Instruction of short course covering multiple linear regression basics, model diagnostics, and model selection techniques in R, 2-hour hybrid course, 13 students.

Data Science for Leaders Training – Virginia Tech SAIG

Spring 2021 - Fall 2021

Co-created and delivered an Internal Revenue Service (IRS) data science for leaders course in conjunction with the MITRE Corporation covering 41 topics including the basics of statistics, data visualization, hypothesis testing, machine learning and more. Funded by the IRS through MITRE and the Statistical Application and Innovations Group at Virginia Tech.

COURSE DEVELOPMENT**SAIG Short Courses** – Virginia Tech SAIG

Spring 2021 - Fall 2023

Revised short courses for the Statistical Applications and Innovations Group including T-tests in R, Tests of Proportions in R, Model Selection in R, and Machine Learning in R/Python.

AWARDS AND HONORS

International Society for Bayesian Analysis (ISBA):

Best Poster Award – The ISBA 2024 World Meeting Poster Competition July 2024

Virginia Tech Department of Statistics:

Daniel M. Wardrop PhD '85 and Barbara J. Wardrop Graduate Fellowship October 2023

Leadership and commitment to excellence on the MITRE IRS Data Science for Leaders Training and numerous SAIG projects resulting in co-authorship

Gibbons Star Award – Outstanding academic achievement October 2023

Klaus Hinkelmann Award – Outstanding service within the department October 2023

SAIG Collaborator of the Year October 2022

Leadership on Wing project, dedication to Data Science Camp Effort, and determination in seeking appropriate analysis techniques for clients

Rose Costain Award – Outstanding service to the department at the highest level October 2022

John J. Bartko Ph.D. '62 Award October 2021

Communication of statistical concepts to non-statisticians

Jean Dickinson Gibbons Statistics Fellowship – Outstanding 1st Year Ph.D. candidate October 2019

American Statistical Association:

Top Poster Award – Conference on Statistical Practice Student Poster Competition February 2023

Acquisition Innovation Research Center (AIRC) and Defense Logistics Agency (DLA):

Certificate of Excellence – Fourth place team in Defense Data Grand Prix Heat 3 January 2023

Certificate of Excellence – First place team in Defense Data Grand Prix Heat 2 July 2022

Millersville University Department of Mathematics:

Harry E. Canter Award – Outstanding Performance in Statistics May 2019

Lee H. & Laura H. Boyer Award May 2019

Exceptional Scholarship in Mathematics and Computer Science

Class of 1866 Award – Outstanding achievement in Mathematics May 2019

Isaac F. Seiverling Award – Proficiency in Mathematics April 2018

SERVICE AND LEADERSHIP

Virginia Tech First-Year Graduate Student Mentor Summer 2024 - Present

Women in Data Science (WiDS) Blacksburg Planning Committee Spring 2022 - Present

Statapult Activity Leader for VT Explore Data Science Camp Summer 2022 - Summer 2024

Virginia Tech Candidate Search Committee Student Representative Summer 2024

Design and Analysis of Experiments Conference Student Volunteer May 2024

Virginia Tech Corporate Partners Planning Committee Fall 2020 - Fall 2023

Math Club of Millersville University President Fall 2017 - Spring 2019

Math Club of Millersville University Treasurer Fall 2016 - Spring 2017

PROFESSIONAL MEMBERSHIPS

International Society for Bayesian Analysis (ISBA) Spring 2024 - Present

Mu Sigma Rho Honor Society Fall 2021 - Present

American Statistical Association (ASA) Fall 2019 - Present

Association for Women in Mathematics (AWM) Fall 2017 - Spring 2019

Mathematical Association of America (MAA) Fall 2015 - Spring 2019