# Ciaran Evans

*Curriculum Vitae*

*Wake Forest University*
*Winston-Salem, NC*
✉ *evansc@wfu.edu*
🖰 *https://ciaran-evans.github.io/*

## Employment

2021 - present
**Assistant Professor**, *Wake Forest University, Department of Statistical Sciences*.

## Education

2021 **Ph.D. in Statistics**, *Carnegie Mellon University*.
Dissertation: Applications of changepoint detection to label shift and EEG
Advisors: Max G'Sell and Chris Genovese

2017 **M.S. in Statistics**, *Carnegie Mellon University*.

2016 **B.A. in Mathematics**, *Pomona College*, Summa Cum Laude.
Thesis: Normalization of RNA-Seq data in the case of asymmetric differential expression
Advisor: Johanna Hardin

## Teaching Experience

### Wake Forest University

Fall 2023, Spring 2024
**Statistical Computing (STA 279)**.
Course on fundamental statistical computing, including functions, iteration, objects, and data wrangling. Covers R and Python, with some SQL and C++. I created this course in response to student interest in additional computing instruction.

Spring 2023, Spring 2024
**Advanced Statistical Inference (STA 711)**.
Graduate course on the theory of statistical inference, including estimation, asymptotics, hypothesis testing, and confidence intervals. Emphasizes multivariate thinking and analysis and motivates inference through logistic regression models.

Spring 2022, Spring 2023, Spring 2024
**Competitions: DataFest (STA 175)**.
Preparation for participation in the annual DataFest statistics competition. Co-taught with Dr. Nicole Dalzell. We collaborated on a series of modules for the course which are freely available for other DataFest instructors to use: `https://datafest-prep.github.io/`

Fall 2022, Fall 2023
**Generalized Linear Models (STA 712)**.
Graduate course in the theory and application of generalized linear models, including logistic regression, multinomial regression, Poisson regression, and exponential dispersion models. Emphasizes model diagnostics and adapting to assumption violations like overdispersion, zero inflation, and correlated data.

Spring 2022, Fall 2022, Spring 2023
**Applied Generalized Linear Models (STA 214)**.
Course in applied generalized linear models, covering logistic regression, multinomial regression, Poisson regression, and mixed effects models. *(Previously numbered STA 279)*.

Fall 2021, Spring 2022
**Introduction to Regression and Data Science (STA 112)**.
Second semester course covering data wrangling and visualization, simple and multiple linear regression, and logistic regression.

### Carnegie Mellon University (Instructor)

**Summer 2019**   **Reasoning with Data (36-200)**.
Introductory statistics course covering data visualization, basic probability, confidence intervals, and hypothesis testing. Includes a core lab component with a focus on data analysis and reporting.

**Summer 2018**   **Introduction to Statistical Inference (36-226)**.
Undergraduate mathematical statistics course, requiring calculus-based probability. Focuses on theory of estimation, confidence intervals, and hypothesis testing.

### Carnegie Mellon University (Teaching Assistant)

**2019 - 2020**   **Reasoning with Data (36-200)**.
Head TA, responsible for lab instruction, development of lab materials, and training and supervision of other course TAs.

**2016 - 2018**   Other TA positions:
- Regression Analysis (36-707)
- Modern Regression (36-401)
- Introduction to Statistical Inference (36-226)

### Other Experience

**Summer 2017**   **Summer Undergraduate Research Experience in Statistics**, Student Advisor.
Designed and supervised undergraduate summer research for CMU's Summer Undergraduate Research Experience in Statistics program.

**Summers 2013, 2016**   **SOAR for Youth**, Math Instructor.
Designed and taught math classes at a summer program for foster youth. `https://www.soarforyouth.org/`

## Student Research Mentoring

### Undergraduate thesis students

**2023-2024**   Hanna Vaidya: *The Impact of Featurization Complexity on Electroencephalogram Abnormality Prediction Performance*

### M.S. thesis students

**2022-2023**   Johe Johnson: *Efficient classifier building through uncertainty sampling*

### Independent studies and student research

**2023-2024**   Eric Zhang

**2022-2024**   Emily Lu

**2022-2023**   Lynn Li

**2022-2023**   Hanna Vaidya (co-advised with Dr. Carl Langefeld)

**2022**   Wendy Wei

**2022**   Jill Ahmad

## Teaching: Papers

1. Cipolli, W., Dalzell, N.M., Bower, R., **Evans, C.**. Battle of the bands: Trying to identify contributions to a collaboration *(Submitted)*.

2. **Evans, C.**, Reinhart, A., Cooley, E., Cipolli, W. Learning while learning: Psy-

chology case studies for teaching regression *(Under review)*.

3. **Evans, C.**, Cipolli, W., Binfet, J.T., Draper, Z.A. (2023) Repurposing a peer-reviewed publication to engage students in statistics: an illustration of study design, data collection, and analysis. *Journal of Statistics and Data Science Education*, 31:3, 236-247. DOI: 10.1080/26939169.2023.2238018.

4. Dalzell, N.M., **Evans, C.** (2023) Increasing student access to and readiness for statistical competitions. *Journal of Statistics and Data Science Education*, 31:3, 258-263. DOI: 10.1080/26939169.2023.2167750.

5. **Evans, C.** (2022) Regression, transformations, and mixed-effects with marine bryozoans. *Journal of Statistics and Data Science Education*, 30:2, 198-206. DOI: 10.1080/26939169.2022.2074923.

6. Reinhart, A., **Evans, C.**, Luby, A., Orellana, J., Meyer, M., Wieczorek, J., Elliott, P., Burckhardt, P., Nugent, R. (2022) Think-aloud interviews: A tool for exploring student statistical reasoning. *Journal of Statistics and Data Science Education*, 30:2, 100-113, DOI: 10.1080/26939169.2022.2063209.

## Teaching: Presentations

Feb. 2024   **Evans, C.** Coffee with Profs: Finding meaningful data. (Discussion series with undergraduate and graduate TAs at the Wake Forest Math and Stats Center)

Sep. 2023   **Evans, C.**, Cipolli, W. "Repurposing a peer-reviewed publication to engage students in statistics: An illustration of study design, data collection, and analysis." (invited webinar) Consortium for the Advancement of Undergraduate Statistics Education / *Journal of Statistics and Data Science Education* webinar series. `https://www.causeweb.org/cause/webinar/jsdse/2023-09`

Aug. 2023   **Evans, C.** "Teaching with data about college experiences." (invited session) Joint Statistical Meetings 2023, Toronto, CA.

June 2023   Dalzell, N.M., **Evans, C.** "How to read a research paper: tips for teaching students." Breakout session, US Conference on Teaching Statistics (USCOTS) 2023, State College, PA.

Nov. 2022   **Evans, C.**. Coffee with Profs: Finding good examples. (Discussion series with undergraduate and graduate TAs at the Wake Forest Math and Stats Center)

Aug. 2022   **Evans, C.**, Oehrlein, J. "First Year as Faculty." Preparing to Teach workshop, held prior to JSM 2022 in Washington, DC. `https://preparingtoteach.org/`

June 2022   Reinhart, A., **Evans, C.**, Luby, A. "Think-Aloud Interviews: A Tool for Exploring Student Statistical Reasoning." (invited webinar) Consortium for the Advancement of Undergraduate Statistics Education/*Journal of Statistics and Data Science Education* webinar series. `https://www.causeweb.org/cause/webinar/jsdse/2022-06`

May 2022   Dalzell, N.M., **Evans, C.** "Increasing accessibility and student readiness for statistical competitions." Breakout session, Electronic Conference on Teaching Statistics (eCOTS) 2022.

May 2020   **Evans, C.**, Reinhart, A., Burckhardt, P., Nugent, R., Weinberg, G. "Exploring how students reason about correlation and causation." Poster, Electronic Conference on Teaching Statistics. `https://www.causeweb.org/cause/ecots/ecots20/posters/2-03`

May 2020    **Evans, C.**, Burckhardt, P., Nugent, R., Weinberg, G. "Discipline-specific activities in introductory statistics." Poster, Electronic Conference on Teaching Statistics.
`https://www.causeweb.org/cause/ecots/ecots20/posters/1-01`

Dec. 2019    Meyer, M., **Evans, C.** "Introducing think-aloud interviews as a tool to explore student statistical reasoning." (invited webinar) Consortium for the Advancement of Undergraduate Statistics Education webinar.
`https://www.causeweb.org/cause/webinar/teaching/2019-12`

May 2019    Burckhardt, P., Elliott, P.W., **Evans, C.**, Lin, K., Luby, A., Meyer, M., Orellana, J., Yurko, R., Weinberg, G., Wieczorek, J., Nugent, R., Reinhart, A. "Using think-aloud interviews to assess student understanding of statistics concepts." Breakout session, US Conference on Teaching Statistics (USCOTS) 2019, State College, PA.

Oct. 2018    Burckhardt, P., Elliott, P.W., **Evans, C.**, Hyun, S., Lin, K., Luby, A., Makris, C.P., Meyer, M., Orellana, J., Yurko, R., Weinberg, G., Wieczorek, J., Nugent, R., Reinhart, A. "Developing an as-sessment for concepts in introductory statistics and data science." Poster, CMU Eberly Teaching and Learning Summit, Pittsburgh, PA. *(People's Choice Award winner)*

May 2018    Hyun, S., Burckhardt, P., Elliott, P.W., **Evans, C.**, Lin, K., Luby, A., Makris, C.P., Orellana, J., Reinhart, A., Wieczorek, A., Yurko, R., Weinberg, G., Nugent, R. "Identifying misconceptions of introductory data science using a think-aloud protocol." Poster, Electronic Conference on Teaching Statistics.
`https://www.causeweb.org/cause/ecots/ecots18/posters/3-10`

## Teaching: Professional Development

2021-2024    **ASA SSDSE Mentoring Program**, Participated as a mentee, paired with senior faculty mentors for guidance on teaching.
`https://sds-ed-mentoring.weebly.com`

2019-2020    **Future Faculty Program**, Participated in workshops and teaching observations run by Eberly Center for Teaching Excellence and Educational Innovation.
`https://www.cmu.edu/teaching/graduatestudentsupport/futurefacultyprogram.html`

2019    **Preparing to Teach workshop**, A workshop to help prepare graduate students and recent graduates for careers in teaching, held prior to JSM 2019.
`https://preparingtoteach.org/`

## Honors, Awards, and Fellowships

2024    Faculty Research and Experiential Learning Grant, Wake Forest University

2020    TA Excellence Award, Carnegie Mellon Department of Statistics and Data Science

2018    People's Choice Award, Teaching as Research Poster Session, Eberly Center Teaching and Learning Summit

2016    Honorable Mention, NSF Graduate Research Fellowships Program

2016    The Rena Gurley Archibald High Scholarship Prize, Pomona College

2016    The Phi Beta Kappa Award, Pomona College

2016    The Hugh J. Hamilton Prize, Pomona College Department of Mathematics

2015    Goldwater Scholarship

# Service and Outreach

## Professional Service

Peer reviewer for *Journal of Statistics and Data Science Education*; *Briefings in Bioinformatics*; *PeerJ*; *PLOS Biology*; *PLOS One*; *Annals of Applied Statistics*; *Bioinformatics Advances*; *Harvard Data Science Review*; *SCORE Network*

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| 2024 - present | US Conference on Teaching Statistics (USCOTS) 2025 Program Committee (breakout session subcommittee) |
| 2024 - present | Associate Editor, *Journal of Statistics and Data Science Education* |
| 2024 - present | Webinar coordinator and host, Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) / Journal of Statistics and Data Science Education (JSDSE) webinar series https://www.causeweb.org/cause/webinars |
| 2023 - present | ASA Section on Statistics and Data Science Education (SSDSE) Mentoring Committee. https://sds-ed-mentoring.weebly.com/ |
| 2023 - present | Undergraduate Statistics Project Competition (USPROC) organizing committee. https://www.causeweb.org/usproc/ |
| 2022 - present | Judge for the ASA Community College DataFest |
| 2021 - 2023 | Judge for the Undergraduate Statistics Project Competition (USPROC). https://www.causeweb.org/usproc/ |

## University Service (Wake Forest University)

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| 2022 - 2023 | 21st Century Stewardship Cohort, QDA. *Selected to help develop and pilot the 21st Century Stewardship requirements in the Wake Forest curriculum. Member of the Quantitative Data Analysis (QDA) group. Advised on QDA requirements, reviewed QDA materials, and provided a draft syllabus for QDA approval of STA 112.* |

## Department Service (Wake Forest University)

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| 2022 - present | ASA DataFest at Wake Forest. *Co-organizer of the annual DataFest event with Dr. Nicole Dalzell.* |
| 2024 | Developed computing resources for incoming graduate students. https://wfu-r-resources.github.io/ |
| 2022 - present | Undergraduate major advisor |
| 2021 - 2023, 2024-present | Curriculum Committee |
| 2022 - 2024 | STA 383 (CPT internship) advisor |
| 2022 - 2024 | Colloquium Committee (chair 2022-2023) |
| 2021 - 2022, 2023 - 2024 | Graduate Committee |
| 2023 - 2024 | Chair merit evaluation committee |
| 2023 | Volunteer, Florence Nightingale Day |

## Ph.D. thesis committees (Wake Forest University)

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| 2024 | Dizhou Wu |

### M.S. thesis committees (Wake Forest University)

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| 2024 | Eileen Qiu |
| 2024 | Dizhou Wu |
| 2023 | Mayson Zhang |
| 2022 | Jihyeon Kwon |

### Department Service (Carnegie Mellon University)

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| 2020 - 2021 | Diversity, Equity, and Inclusion Committee |
| 2020 | Curriculum development for 36-247, Statistics for Lab Sciences |
| 2019 - 2020 | Developing and leading TA training workshops for introductory statistics |

## Other research

1. **Evans, C.**, Berenhaut, K.S. (2024) Two-sample testing with local community depth. *International Journal of Data Science and Analytics*. `https://doi.org/10.1007/s41060-024-00606-w`

2. Lu, B., Li, Y., **Evans, C.** Assessing generalizability of a dengue classifier across multiple datasets. *(Under review)* `https://www.biorxiv.org/content/10.1101/2023.07.17.549435v2`

3. **Evans, C.**, G'Sell, M. Sequential label shift detection in classification data: An application to dengue fever. *(accepted, PLOS One)* `https://arxiv.org/abs/2009.08592`

4. Zimmerman, K. D., **Evans, C.**, Langefeld, C. D. (2022). Reply to: A balanced measure shows superior performance of pseudobulk methods in single-cell RNA-sequencing analysis. *Nature Communications*, 13(1), 1-2. DOI: 10.1038/s41467-022-35520-x

5. **Evans, C.**, Weinberg, Z.Y., Puthenveedu, M.A., G'Sell, M. Inference with generalizable classifier predictions. `https://arxiv.org/abs/2106.07623`

6. **Evans, C.**, Hardin, J., Stoebel, D. (2018). Selecting between-sample RNA-Seq normalization methods from the perspective of their assumptions. *Briefings in Bioinformatics*, 19(5): 776-792. `https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6171491/pdf/bbx008.pdf`

7. Wong, G., Bonocora, R., Schep, A., Beeler, S., Lee, A., Shull, L., Batachari, L., Dillon,M., **Evans, C.**, Becker, C., Bush, E., Hardin, J., Wade, J., and Stoebel, D. (2017). The genome-wide transcriptional response to varying RpoS levels in Escherichia coli K-12. *Journal of Bacteriology*, 199:e00755-16. `https://pubmed.ncbi.nlm.nih.gov/28115545/`

## Other presentations

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| March 2024 | **Evans, C.** "Label shift and generalizable classifiers." (invited seminar) Wake Forest Biostatistics and Data Science Seminar Series, Winston-Salem, NC. |
| Nov. 2023 | **Evans, C.** "Non-parametric hypothesis testing and changepoint detection." (invited seminar) Pomona College Applied Math Seminar Series, Claremont, CA. |

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| Oct. 2022 | **Evans, C.**, Berenhaut, K.S. "Two-Sample Testing With Local Community Depth." AISC 2022, Greensboro, NC. |
| Aug. 2022 | **Evans, C.**, G'Sell, M. "Label Shift and Generalizable Classifiers." Contributed talk, Joint Statistical Meetings, Washington, DC. |
| Aug. 2020 | **Evans, C.**, G'Sell, M. "Sequential changepoint detection for classifier label shift." Contributed talk, Joint Statistical Meetings (virtual). |
| July 2019 | **Evans, C.**, G'Sell, M., Weinberg, Z., Puthenveedu, M. "Clustering and classification of exocytic events." Speed talk, Joint Statistical Meetings, Denver, CO. |

## Software

1. `depthtestr`, an R package for two-sample hypothesis testing using data depth. `https://github.com/ciaran-evans/depthtestr`

## Memberships

American Statistical Association