# Maria Tackett

# Assistant Professor of the Practice Duke University

Education

Ph.D. in Statistics

2018

University of Virginia

M.S. in Statistics

2010

University of Tennessee-Knoxville

**B.S.** in Mathematics

2009

University of Tennessee-Knoxville

Academic Appointments

Assistant Professor of the Practice

2018 - present

Duke University, Department of Statistical Science

Teaching

Duke University

1. STA 199: Introduction to Data Science & Statistical Thinking

Fall 2021, Fall 2020, Fall 2019, Spring 2019

2. STA 210: Regression Analysis

Spring 2025, Fall 2023, Fall 2022, Fall 2021, Spring 2021, Fall 2020, Spring 2020, Fall 2019, Spring 2019, Fall 2018

3. STA 221: Regression Analysis: Theory and Applications

Spring 2025, Fall 2024

4. STA 310: Generalized Linear Models

Spring 2024, Spring 2022

University of Virginia

6. STAT 1100: An Introduction to Statistics

Spring 2018, Fall 2017, Spring 2017, Fall 2016, Spring 2016, Fall 2015, Summer 2015

7. STAT 2120: Introduction to Statistical Analysis

Summer 2017, Summer 2016

Virginia Commonwealth University

8. SLWK 609: Foundations of Research in Social Work Practice

Spring 2017

University of Tennessee-Knoxville

9. STAT 201: Introduction to Statistics

Fall 2010, Spring 2010

Workshops (Facilitator)

- 10. Introduction to R. ASA/AMATYC Introduction to Data Science Technology Tools. Online. July 2024.
- 11. Designing the Data Science Classroom. rstudio::conf(2022). National Harbor, MD. July 2022.
- 12. STATPrep Workshop. Ft. Myers, FL. May 2022.
- 13. Introduction to R. ENAR Fostering Diversity in Biostatistics Workshop. Online. March 2022.
- 14. Strengthening Conceptual Understanding in Introductory Statistics: Incorporating active and inclusive teaching and learning strategies for in-person and virtual settings (6 session series). Charles A. Dana Center. June July 2021.
- 15. Introduction to R. ENAR Fostering Diversity in Biostatistics Workshop. Online. March 2021.

### **Publications**

Published and In Press: Peer Reviewed

#### Published

(\* indicates undergraduate student)

- 1. Easter, M., Schramm-Sapyta, N., Swartz, M., **Tackett, M.**, Greenblatt, L. (2024). Primary care need and engagement by people with criminal legal involvement: Descriptive and associational analysis using retrospective data on the entire population ever detained in one southeastern U.S. county jail 2014-2020. *PLoS One*, 19(10): e0308798. doi.org/10.1371/journal.pone.0308798
- 2. Tackett, M. (2023). Three Principles for Modernizing an Undergraduate Regression Analysis Course. Journal of Statistics and Data Science Education, 31(2), 116-127. doi.org/10.1080/26939169.2023.2165989
- 3. Noll, J., **Tackett, M.** (2023). Insights from DataFest Point to New Opportunities for Undergraduate Statistics Courses: Team collaborations, Designing Research Questions, and Data Ethics. *Teaching Statistics*, 45(S1), S5-S21. doi.org/10.1111/test.12345
- 4. Easter, M., Schramm-Sapyta, N., **Tackett, M.**, Larsen, I.\*, Tang, B., Ralph, M.\*, Huynh, L.\* (2023). Reliance on Community Emergency Departments by People Ever Detained in Jail: Retrospective Cross-Sectional Study. *Journal of Correctional Health Care*. doi.org/10.1089/jchc.22.02.0011
- 5. **Tackett, M.**, Viel, S., Manturuk, K. (2023). A validation of the short-form classroom community scale for undergraduate mathematics and statistics students. *Journal of University Teaching & Learning Practice*, 20(1). doi.org/10.53761/1.20.01.08
- 6. Schramm-Sapyta, N., Ralph, M.\*, Huynh, L.\*, Tang, B., **Tackett, M.**, Easter, M., Larsen, I.\* (2023). Relationships between substance use disorders, 'severe mental illness' and re-arrest in a county detention facility: a 4-year follow-up cohort study. *Criminal Behaviour & Mental Health*, 33(3), 185-195. doi.org/10.1002/cbm.2277
- 7. Fannin, D., Elleby, J., **Tackett, M.**, Minga, J. (2023). Intersectionality of race and question asking in women after right hemisphere brain damage. *Journal of Speech, Language, and Hearing Research*, 66(1), 314-324. doi.org/10.1044/2022 JSLHR-22-00327
- 8. Beckman, M. D., Çetinkaya-Rundel, M., Horton, N. J., Rundel, C. W., Sullivan, A. J., **Tackett, M**. (2020). Implementing version control with Git and GitHub as a learning objective in statistics and data science courses. *Journal of Statistics Education*, 29(1), 132-144. doi.org./10.1080/10691898.2020.1848485
- 9. Dotson, M., Alvarez, V.\*, **Tackett, M.**, Asturias, G., Leon, I., Ramanujam, M. (2020) Design Thinking-Based STEM Learning: Preliminary Results on Achieving Scale and Sustainability Through the IGNITE Model. *Frontiers in Education*, 5: 14-24. doi.org/10.3389/feduc.2020.00014

#### In Press

(\* indicates undergraduate student)

- 10. Rubin, N\*, **Tackett**, **M**., Çetinkaya-Rundel, M., Meyer, E. (in press). Evaluating Student Perceptions of Assessment in Introductory Quantitative Studies. *The International Journal of Assessment and Evaluation*.
- 11. Viel, S., **Tackett, M.**, Das, S., Choo, J.\* Classroom Community amid Covid-19: A Mixed-Methods Study of Undergraduate Students in Introductory Mathematics and Statistics. *Creating More Inclusive and Equitable Teaching and Learning: How Crises Can Transform the Higher Education Landscape*. Preprint available at https://arxiv.org/abs/2206.00590

#### Published: Other

(\* indicates undergraduate student)

- 12. Roith, J., **Tackett**, M. (2025). Probability and Probability Distributions. *Using Data-Centric Methods to Teach Introductory Statistics*. Mathematical Association of America.
- 13. Hart, F.\*, **Tackett, M.**, Purohit, S., Schramm-Sapyta, N. (2024). A Meta-Analysis of Medication-Assisted Treatment Initiated in Carceral Settings: Six Months Post-Release. *Qeios.* doi.org/10.32388/OGHTNJ
- 14. **Tackett, M.**, & Çetinkaya-Rundel, M. (2023). Analyzing and Recreating Data Visualizations of W.E.B. Du Bois. *CHANCE*, 36(1), 40-47. doi.org/10.1080/09332480.2023.2179279
- 15. Tackett, M. (2022). My ASA Story: Maria Tackett. Amstat News, 20, 5.
- Tackett, M., Burbank, K., Canner, J., & Çetinkaya-Rundel, M. (2021). Teaching Courses Focused on Social Good. CHANCE, 34(3), 69-72. doi.org/10.1080/09332480.2021.1979821
- 17. **Tackett, M.** (2021, January 14). A flipped classroom sparks online engagement. Duke Covid Diaries Series.
- 18. **Tackett**, **M.**, & Çetinkaya-Rundel, M. (2020). COVID-19 Data in the Classroom. *CHANCE*, 33(3), 63-66. doi.org/10.1080/09332480.2020.1820257
- 19. Tackett, M. (2020, July 23). Creating Interactive Web Apps for Statistics. Duke Musings Blog.
- 20. Çetinkaya-Rundel, M., & **Tackett**, M. (2020). From drab to fab: Teaching visualization via incremental improvements. CHANCE, 33(2), 31-41. doi.org/10.1080/09332480.2020.1754074
- 21. Banks, D., **Tackett**, M. (2020). Bayesian Methods and Forensic Evidence. In Banks, D., Kafadar, K., Kaye, D., Tackett, M. (Eds.), *Handbook of Forensic Statistics* (pp. 73 90), Chapman & Hall.
- 22. Banks, D., Kafadar, K., Kaye, D., **Tackett, M.** (Eds.), *Handbook of Forensic Statistics*, Chapman & Hall.

# **Invited Talks**

- 1. Noll, J., Tackett, M. What can we learn about teaching undergraduate statistics and data science courses from studying DataFest? Teaching Statistics Section seminar. Royal Statistical Society. Online. October 2024.
- 2. Tackett, M. The data just got real: Preparing students to use statistics beyond the classroom. Electronic Conference on Teaching Statistics (eCOTS). Online. June 2024. (Keynote).
- 3. Tackett, M. More than methods: Preparing students for data-driven work outside the classroom. CANSSI Applied Research Education seminar. Toronto, ON. April 2024.

- 4. Tackett, M. Three principles for modernizing an undergraduate regression analysis course. Teaching Statistics Section seminar. Royal Statistical Society. Online. February 2024.
- 5. Tackett, M. Communication as a learning objective in an intermediate statistics course. Teaching and Evaluating Data Communication At Scale. Institute for Mathematical and Statistical Innovation. Chicago, IL. January 2024.
- 6. Tackett, M. *Teaching intro data science*. Preparing to Teach Workshop. George Mason University. August 2022.
- 7. Tackett, M. Knit, Commit, and Push: Teaching version control in undergraduate statistics courses. Toronto Workshop on Reproducibility. Online. February 2022.
- 8. Tackett, M. Mentoring Undergraduate Research: Creating productive experiences and sharing student work. ASA Mentoring Undergraduate Research Panel. Online. February 2022.
- 9. Tackett, M. Women in Industry and Academia. FEMMES+ Hacks Conference. Online. October 2021. (Panelist)
- 10. Tackett, M. What a tap class has taught me about teaching statistics. USCOTS. Online. June 2021.
- 11. Tackett, M. Building Websites in RStudio. RLadies Baltimore. Online. April 2021.
- 12. Tackett, M. Building Websites in RStudio. RLadies Amherst. Online. March 2021.
- 13. Tackett, M. *Telling stories with data*. Abraham Lincoln High School. Online (Philadelphia, PA). January 2021.
- 14. Tackett, M. Undergraduate research in statistics. OURFA<sup>2</sup>M<sup>2</sup> Conference. Online. December 2020.
- 15. Tackett, M. *Thinking about lectures in an intro data science course*. Toronto Data Workshop. Online (University of Toronto Department of Statistical Sciences). December 2020.
- 16. Tackett, M. Women in Statistics and Computing. FEMMES Hacks Conference. Online. October 2020. (Panelist)
- 17. Tackett, M. Opportunities in Statistics and Data Science: Lightning Talks (Academia, Government, & NonProfit). StatFest. Online. September 2020. (Panelist)
- 18. Tackett, M. Who's Underrepresented? Modeling Undercounts in the U.S. Census. Joint Statistical Meeting. Online. August 2020.
- 19. Tackett, M. Making remote lectures active and inclusive in a large undergraduate course. Teaching Statistics Teaching and Learning Statistics Online. Online (Royal Statistical Society Teaching Statistics Special Interest Group). July 2020.
- 20. Tackett, M. You don't have to be an expert to create something meaningful. rstudio::conf. San Francisco, CA. January 2020.
- 21. Tackett, M. Reproducible Research Education and Practice. Duke Center for Data and Visualization Sciences. Durham, NC. November 2019. (Panelist)
- 22. Tackett, M. My Journey in Statistics. FEMMES Hacks Conference. Durham, NC. November 2019. (Keynote)
- 23. Tackett, M. Statistics in Practice. FOCUS Cluster Dinner Series at Duke University: What if? Explaining the Past/Predicting the Future. Durham, NC. November 2019.
- 24. Tackett, M. Beyond the Buzzword: A Look at Data Science in Practice and How You Can Be a Part of It. SAMSI Diversity in Data Science and Machine Learning Conference. Washington, DC. October 2019. (Plenary talk)

- 25. Tackett, M. Women in Machine Learning and Data Science. Duke Machine Learning Day. Durham, NC. March 2019. (Panelist)
- 26. Tackett, M. Women in Industry. Duke University Business Oriented Women Meeting. Durham, NC. September 2018. (Panelist)

# Contributed Talks & Posters

- 1. Teaching-Intensive Positions at R1 Universities in the US. Joint Statistical Meeting. Portland, OR. August 2024.
- 2. Viel, S., Tackett, M. Classroom Community in Introduction Undergraduate Mathematics and Statistics. The Converging Challenges for Inclusive Education. Online. July 2024. (Poster)
- 3. Tackett, M., Using Quarto for Making and Organizing Teaching Materials. Joint Statistical Meeting. Toronto, ON. August 2023.
- 4. Tackett, M., Viel, S. Undergraduate Students' Sense of Community in Introductory Math and Statistics Courses. eCOTS. Online. May 2022.
- 5. Tackett, M., Çetinkaya-Rundel, M., Presman, R. *Modernizing the undergraduate regression analysis course.* eCOTS. Online. May 2022.
- 6. Tackett, M., Viel, S. *Undergraduate Students' Sense of Community in Introductory Math and Statistics Courses.* Pandemic Pedagogy Research Symposium. Online. May 2022.
- 7. Tackett, M. Version control as a learning objective in statistics and data science courses. 63rd World Statistics Congress. Online. July 2021.
- 8. Horton, N., Tackett, M. GitHub and intro stats: technology to support group and project-based learning. USCOTS. Online. July 2021. (Poster)
- 9. Tackett, M., Li, S. Mokel, M., Tian, S. Developing Interactive Statistics Apps: A look at the project and student experience. USCOTS. Online. July 2021. (Poster)
- 10. Tackett, M. You don't have to be an expert to create something meaningful. Women in Statistics and Data Science Conference. Online. October 2020.
- 11. Tackett, M. Using GitHub and RStudio to Facilitate Authentic Learning Experiences in a Regression Analysis Course. Women in Statistics and Data Science Conference. Bellevue, WA. October 2019.
- 12. Tackett, M. Using GitHub and RStudio to Facilitate Authentic Learning Experiences in a Regression Analysis Course. Joint Statistical Meeting. Denver, CO. July 2019.
- 13. Tackett, M. Using GitHub and RStudio to Facilitate Authentic Learning Experiences in a Regression Analysis Course. United States Conference on Teaching Statistics. State College, PA. May 2019. (Poster)
- 14. Teaching Large Classes in Statistics Using Active Learning Spaces. Innovation in Pedagogy Summit. Charlottesville, VA. May 2016. (Panelist)
- 15. Tackett, M. Clustering High-Dimensional Categorical Data Using a Bayesian Finite Mixture Model. Quantitative Collaborative Fellows Poster Session. Charlottesville, VA. April 2017. (Poster)
- 16. Tackett, M. Understanding Variability Between Groups of Sequences Using a Bayesian Object-Oriented Data Model. Joint Statistical Meeting. Seattle, WA. August 2016.
- 17. Tackett, M. Understanding Object-Oriented Data Using Optimal Matching. Quantitative Collaborative Fellows Poster Session. Charlottesville, VA. April 2015. (Poster)

# Honors & Awards

Bass Connections Leadership Award, 2024.

Mathematically Gifted and Black Circle of Excellence Honoree, 2020.

# Grants & Fellowships

National Institutes of Health R25: Research Education Program. Developing a Pathway for Preparing Underrepresented Minority Students for a Career in Otolaryngology and Communication Sciences, 2024 - 2029, Role: Statistician, \$154,416.

Collaborative Project Courses Faculty Fellows, 2024 - 2025.

National Science Foundation ECR: Broadening Participation in STEM. Achieving Critical Transformations in Undergraduate Programs in Mathematics (ACT UP MATH), 2022 - 2025, Role: Duke Co-PI, \$237,749 (to Duke).

Duke Trinity Research Enhancement Fund. Toward a More Sustainable Culture of Undergraduate Research in Statistical Science, 2022 - 2023, Role: PI, \$13,000.

Duke Learning Innovation's Carry the Innovation Forward. Building Community and Self-Efficacy Through Inclusive Teaching Practices, 2021 - 2023, Role: Co-PI, \$4,616.

Duke Trinity Research Enhancement Fund. Toward a More Sustainable Culture of Undergraduate Research in Statistical Science, 2021 - 2022, Role: PI, \$11,000.

Duke Bass Connections - Brain & Society. Mental Health and the Justice System in Durham, 2020 - 2024, Role: Co-PI, \$14,200 each academic year.

Duke Data+. Mental Health and the Justice System in Durham. 2020 - 2024, Role: Co-PI, \$17,500 each year.

Duke Trinity Research Enhancement Fund. Toward a More Sustainable Culture of Undergraduate Research in Statistical Science, 2020 - 2021, Role: PI, \$3,000.

Duke Learning Innovation Jump Start Grant, 2019, Role: PI.

National Science Foundation. Collaborative Research: Accelerating the Pace of Research and Implementation of Writing-to-Learn Pedagogies Across STEM Disciplines, 2018 - 2020, Role: Key Faculty.

Duke University Learning Innovation Active Learning Fellows, 2019 - 2020.

University of Virginia Course Design Institute Fellowship, 2016.

# Service to Profession

# Course design & Curriculum development

 $Guidelines\ for\ Assessment\ and\ Instruction\ in\ Statistics\ Education\ (GAISE)\ Revision\ Steering\ Committee,$  2023 - present

- Revising guidelines for teaching undergraduate statistics and data science
- Revising learning objectives for introductory statistics
- Part of sub-team focused on learning objectives and course design for introductory data science
- Authoring revised report expected to release 2025

Charles A. Dana Center High School Math Pathways, 2023 - 2024

• Invited as major contributor for Data Science Course Framework

- Served as a contributor for the Statistics Course Framework and the Integrated Statistics and Quantitative Reasoning Course Framework
- Each framework includes course design principles and learning objectives for high school courses

Charles A. Dana Center Introductory Statistics Curriculum Authoring Group, 2021

- Authored 5 lessons for the Statistical Reasoning curriculum used by educators teaching undergraduate introductory statistics. Each lesson contained a preview assignment, in-class assignment with student and instructor guides, practice assignment, and co-requisite assignment.
- Invited to join sub-team that developed 3 projects for an introductory statistics course. Each project contained a student guide, instructor guide, and rubric.

Charles A. Dana Center Introductory Statistics Curriculum Design Team, 2020

• Developed course design principles and learning objectives for introductory statistics courses

Howard Hughes Medical Institute Data Exploration Course Advisory Committee, 2020 - 2021

• Advised the development of data-driven high school biology lessons

#### Editorial service

Journal of Data Science Special Issue: Symposium on Data Science and Statistics, Associate Editor, 2022 & 2024

Journal of Statistics and Data Science Education, Associate Editor, 2020 - present

CHANCE Magazine Statistics Education Column: Taking a Chance in the Classroom, Editor, 2019 - present

Journal Reviews: Journal of Statistics and Data Science Education, Technology Innovations in Statistics Education, Harvard Data Science Review, Criminology, Criminal Justice, Law & Society

Book Reviews: Chapman & Hall

#### ASA and Statistics Education

Justice, Equity, Diversity, and Inclusion (JEDI) Outreach Group Secretary, 2025 - present

Bill & Melinda Gates Introductory Statistics and Chemistry Courseware Expert Panel, 2023 - 2024

Charles A. Dana Center High School Math Pathways Advisory Group, 2023 - 2024

ASA/MAA Joint Committee on Undergraduate Statistics and Data Science Education, 2022 - 2024

Bill & Melinda Gates Foundation Statistics Courseware Advisory Group, 2022 - 2024

Symposium on Data Science and Statistics Program Committee, Short Course Chair, 2022 - 2023

Symposium on Data Science and Statistics Program Committee, Poster Chair, 2021 - 2022

CAUSE Undergraduate Statistics Project Competition Co-Chair, 2020 - 2023

ASA Section on Statistics and Data Science Education, Communications Officer, 2020 - 2022

ASA DataFest Steering Committee, 2019 - 2022

CAUSE Undergraduate Statistics Project Competition Judge, 2019

ASA Section on Bayesian Statistical Science Student Paper Competition Review Committee, 2019

# University & departmental service

### Service to Duke University

College Advisor, 2022 - present

Master in Interdisciplinary Data Science Faculty Search Committee, 2022

Library Council, 2021 - 2024

Women in Research House Course, Faculty Advisor, 2021

A.B. Duke Scholars Program Interviewer, 2021

Trinity Arts & Sciences Committee on Curriculum, 2019 - 2021

Master in Interdisciplinary Data Science Admissions Committee, 2020 - 2021, 2024 - 2025

Duke SPIRE Fellows Program Mentor, 2019 - present

Females Excelling More in Math, Engineering, & Science (FEMMES) Capstone, 2019

# Service to Department of Statistical Science

Statistical Science Anti-Racism Committee, 2021 - 2022

ASA DataFest@Duke Lead Organizer, 2020 - 2021

ASA DataFest@Duke Organizing Committee, 2019 - present

Statistical Science Undergraduate Curriculum Committee, 2019 - present

Statistical Science Master's Student Advisor, 2019 - present

Statistical Science Committee on Departmental Code of Conduct, 2019

Statistical Science Master's Program Admissions Committee, 2019 & 2021

Statistical Science Undergraduate Major Advisor, 2018 - present

Duke Datathon Judge, 2018 & 2021

# Advising

### Mental Health and the Justice System in Durham County (Data+ & Bass Connections)

- Jacqueline Dinh, 2024 present
- Christina Lee, 2024 present
- Miranda Li, 2024 present
- Irene Biju, 2023 present
- Madeline Brown, 2023 present
- Will Lieber, 2023 present
- Foxx Hart, 2023 2024
- Jordan Hamelsky, 2022 present
- Zoe Svec, 2022 2024

- Andrew Shi, 2022
- Maya Pandey, 2021 2024
- Brianna Cellini, 2021 2022
- William Feng, 2021 2023
- John Liakos, 2021
- Isabella Larson, 2020 2023
- Liz Huynh, 2020 2023
- Matthew Ralph, 2020 2022

# $Undergraduate\ thesis\ advisees$

- Nathan Yang, 2024 2025
- Jordan Hamelsky, 2024 2025
- Shelby Tisdale, 2024 2025
- Naomi Rubin, 2022 2023

### Undergraduate thesis committees

- Sofia Hletko, 2025
- Kareena Legare, 2025
- Dav King, 2025
- Jerry Hou, 2024
- Benjamin Thorpe, 2024

- Malavi Ravindran, 2021
- Michael Model, 2020
- Daniel Levine, 2019
- Ben Feder, 2019
- Srini Sunil, 2019

### Doctoral thesis committees

• Meng Xie, 2021

# Independent study

- Nathan Yang, 2024
- Joe Choo, 2022
- Larry Chen, 2022
- Steven Herrera, 2020
- Caroline Levenson, 2019

# Other supervised research

- Garrett Allen, 2022
- Martin Olarte, 2022
- Angela Kan, 2022
- Allison Li, 2022
- Aarushi Verma, 2022
- Jenny Yang, 2022
- Sean Li, 2021

- Emmanuel Mokel, 2021
- Shari Tian, 2021
- Joe Choo, 2020
- Abbey List, 2020
- Glenn Morgenstern, 2020
- Samantha Owusu-Antwi, 2020

# Professional Experience

Data Science Academy Mentor

Posit

2022

Led cohort of industry professionals through 10-session curriculum to learn R programming skills for data science

Senior Statistician 2013

Capital One, Richmond, VA

Developed the first generation of statistical models to perform deposit forecasts for Capital One Bank

Statistician 2011 - 2012

Capital One, Richmond, VA

Designed experiments for mail marketing campaigns in Capital One Bank

# **Professional Affiliations**

Mathematical Association of America, 2022 - present

International Statistical Institute, 2022 - present

Caucus for Women in Statistics, 2021 - present

International Society for Bayesian Analysis, 2021 - present

RStudio Certified Instructor, 2020 - present

American Statistical Association, 2017 - present

National Math Alliance, 2019 - present

Center for Statistics and Applications in Forensic Evidence, 2017 - 2019