

Suzanne M Thornton, PhD

CURRICULUM VITAE

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ORCID: 0000-0002-8221-3792

Education:

Graduate Education: **Ph.D.**, Statistics.

Thesis title: [Advanced computing methods for statistical inference](#)

Thesis advisor: Minge Xie

Rutgers, The State University of New Jersey; New Brunswick, NJ, 2014 - 2019

Undergraduate: **B.S.**, Statistics. *Summa Cum Laude*; Senior Thesis title:

[Geometric ergodicity of Gibbs sampler for a hierarchical random effects model: Re-explained.](#)

Thesis advisor: James Hobert.

University of Florida, Gainesville, FL, 2010 - 2014

B.S., Mathematics.

University of Florida, Gainesville, FL, 2010 - 2014

Professional Experience:

PREP Postdoctoral Assistant, Statistical Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD, 2024 - Present

Assistant Professor, Mathematics and Statistics Department, Swarthmore College, Swarthmore, PA, 2020 – 2023

Special government employee, U.S. Census Bureau National Advisory Committee on Racial, Ethnic, and Other Populations, 2022 – 2025

Statistics Education Facilitator, Strengthening Conceptual Understanding in Introductory Statistics Courses, DANA Center for Mathematics Pathways at University of Texas Austin, Remote, Summer 2021 & Summer 2022

Interdisciplinary faculty panelist, Engaged Scholarship across Divisions: Faculty Panels, Lang Center for Civic and Social Responsibility, Swarthmore, PA, March 2022

Interdisciplinary faculty participant, Environmental Studies (ENVS) Curriculum Workshop, Swarthmore College, remote due to COVID-19, January 2022

Visiting Assistant Professor, Mathematics and Statistics Department, Swarthmore College, Swarthmore PA, 2019 – 2020

Statistical Consultant, Office of Statistical Consulting, Rutgers University, New Brunswick, NJ, 2016 – 2019

Teaching Assistant, Statistics Department, Rutgers University, New Brunswick, NJ, 2014 – 2019

Teaching Assistant, Statistics Department, University of Florida, Gainesville, FL, 2013 – 2014

Publications:

Papers

Tractenberg R, LaLonde D, **Thornton S**. The Mastery Rubric for Statistics and Data Science: promoting coherence and consistency in data science education and training. 2023. *arXiv*: 2308.08004. (*pre-print*)

Thornton, Suzanne, Li, Wentao, and Ming Xie. Approximate Confidence Distribution Computing. *The New England Journal of Statistics in Data Science* 2023 Jul;1(2):270-282. <https://doi.org/10.51387/23-NEJSDS38>.

Thornton, S. and Xie, M. (2023). An exploration of parameter duality in statistical inference. *Philosophy of Science*, 1-18. <https://doi.org/10.1017/psa.2023.174>

Choi H, Detyniecki K, Bazil C, **Thornton S**, Crosta P, Tolba H, Muneeb M, Hirsch LJ, Heinzen EL, Sen A, Depondt C, Perucca P, Heiman GA; EPIGEN Consortium. Development and validation of a predictive model of drug-resistant genetic generalized epilepsy. *Neurology*. 2020 Oct 13;95(15):e2150-e2160. doi: 10.1212/WNL.00000000000010597. Epub 2020 Aug 5. PMID: 32759205; PMCID: PMC7713754.

Michael H, **Thornton S**, Xie M, Tian L. Exact inference on the random-effects model for meta-analyses with few studies. *Biometrics*. 2019 Jun;75(2):485-493. doi: 10.1111/biom.12998. Epub 2019 Apr 13. PMID: 30430540; PMCID: PMC7045874.

Articles

Thornton S. (2022, June) Statistics Education and Reconsidering the Status Quo. *AMSTAT News: The JEDI Corner*. Issue #540, 20–21, https://www.academia.edu/81302006/Statistics_Education_and_Reconsidering_the_Status_Quo.

Thornton S, Roy D, Parry S, LaLonde D, Martinez W, Ellis R, Corliss D. (2022, Jan). Towards best practices for collecting gender and sex data. *Significance*, 19(1), 40–45. <https://doi.org/10.1111/1740-9713.01614>

Cook, SH, **Thornton S**, Robinson, SE, Cochran, J, Yung, G. Statistics for Equity: Capturing, Not Masking, Intersectional Dynamics in Data. (2021, Nov) *AMSTAT News: The JEDI Corner*. Issue #533, 14–15, <https://magazine.amstat.org/blog/2021/11/01/the-jedi-corner-statistics-for-equity-capturing-not-masking-intersectional-dynamics-in-data/>

LaLonde D, Martinez W, Miller J, Ott M, **Thornton S**. (2019, May) LGBT+ resources for statisticians and data scientists. *Significance* (online). https://www.academia.edu/81301435/LGBT_resources_for_statisticians_and_data_scientists

Thornton S, Green B, Benn E. (2019, May). Friends and allies: LGBT+ inclusion in statistics and data science. *Significance*, 16(3), 39–41. <https://doi.org/10.1111/j.1740-9713.2019.01280.x>

Books and Proceedings

- Thornton S** and Tractenberg RE. (2023). Ethical considerations for data involving human gender and sex variables. In, H. Doosti, (Ed.). *Ethics in Statistics*. Cambridge, UK: Ethics International Press. Originally published (verbatim) in Proceedings of the 2022 Joint Statistical Meetings, Washington, DC. Alexandria, VA: American Statistical Association. pp. 340-414. Preprint available at StatArXiv: <http://arxiv.org/abs/2401.01966>
- Tractenberg RE and **Thornton S**. (2023). Facilitating the integration of ethical reasoning into quantitative courses: stakeholder analysis, ethical practice standards, and case studies. In, H. Doosti, (Ed.). *Ethics in Statistics*. Cambridge, UK: Ethics International Press. Originally published (verbatim) in Proceedings of the 2022 Joint Statistical Meetings, Washington, DC. Alexandria, VA: American Statistical Association. pp. 1493-1519. Preprint available at StatArXiv: <http://arxiv.org/abs/2401.01973>
- Thornton S** and Xie M. (2024) Bridging Bayesian, frequentist and fiducial inferences using confidence distribution. In [*Handbook on Bayesian, Fiducial and Frequentist \(BFF\) Inferences*](#). (co-editors: Berger JO, Meng XL, Reid N, & Xie M) Chapman & Hall/CRC Handbooks of Modern Statistical Methods, New York.

Media

- Stats + Stories Podcast: Episode 247: Inclusive Data Collection. Sept 29, 2022
- Taylor & Francis Celebrates Pride Month 2022. Twitter @tandfphysci. June 10, 2022
- Practical Significance Podcast: Episode 6: American Statistical Association (ASA) Pride. May 28, 2021

Other Professional Activities:

Invited Lectures

- Approximate confidence distribution computing*. Villanova University, Villanova, PA, December, 2019.
- Statistical computing with confidence distributions*. Icahn School of Medicine at Mount Sinai, New York City, NY, April, 2019.
- Introduction to Common Statistical Methods*. Rutgers Center for Cell Biology and Neuroscience Weekly Seminar, Piscataway, NJ, 2016.

Abstracts for Conference Papers and Presentations (*organizer/co-organizer)

- Cook S, Johns M, **Thornton S**, Chapman E, and Benn E. (2024, August) Invited panelist in *Missingness, Marginalization, and Misinformation: How data issues perpetuate cultural biases and impede scientific research for underrepresented communities*. Joint Statistical Meetings, Session 1400. Portland, OR.
- Thornton S**. (2024, August) *Presentation* (individual slide deck). *Lost in Translation: The categorization of multidimensional constructs in the human sciences*. For Panel at Joint Statistical Meetings, Session 1400. Portland, OR.

- *Asher J, Tractenberg R, **Thornton S.** (2023, August) Invited panel session on *Incorporating Social Justice and Ethics into the Undergraduate Curriculum*. 2023 Joint Statistical Meetings, Session #1328. Toronto, Canada.
- Thornton S.** (2022, November) *Presentation* (individual slide deck). *Building Stewards in Mathematical Statistics*. For Panel at the 2023 Joint Statistical Meetings, Session #1328. Toronto, Canada.
- Berger J, Glymour C, Mayo-Wilson C, **Thornton S**, Mayo D. (2022, November) Invited panelist in *Multiplicity, Data-Dredging, and Error Control*. The 28th Biennial Meeting of the Philosophy of Science Association, Session #DAJNQ4097. Pittsburgh, PA.
- Thornton S.** (2022, November) *Presentation* (individual slide deck). *The Duality of Parameters and the Duality of Probability*. For Panel at the 28th Biennial Meeting of the Philosophy of Science Association, Session #DAJNQ4097. Pittsburgh, PA.
- Corliss D, Sinco BR, **Thornton S**, Warner, S, Asher JL. (2022, August) Data-Driven Ethics as Statistical Practice. Topic contributed panel, Joint Statistical Meetings, Abstract #322960, Session 59. Washington, D.C.
- Thornton S.** (2022, August) *Presentation* (individual slide deck). *Sex and gender: Data quality and ethical considerations for statistical analyses*. For Panel at Joint Statistical Meetings, Abstract #322960, Session 59. Washington, D.C.
- Corliss D, Parker, D, Sharp J, Shilane D, **Thornton S.** (2021, February) Invited panelist in Ethics Panel: Data and Analytic Issues in the Age of COVID-19. Conference on Statistical Practice, Abstract #304217. Virtual (due to coronavirus pandemic).
- Auerbach J, Cipolli W, Corliss D, Evans D, **Thornton S**, Tractenberg RE, Carver R. (2020, July) Invited panelist in Balderdash, codswallop, and malarkey: A panel. Joint Statistical Meetings, Abstract #309691, Session 551. Virtual (due to coronavirus pandemic).
- *Benn E, Green B, Martinez W, Miller J, Ott M, **Thornton S.** (2019, October) *Conference Within a Conference: A Forum for Sharing a Research and Education Agenda*. Women in Statistics and Data Science Conference, Abstract #306457. Bellevue, WA.
- *Martinez W and **Thornton S.** (2019, July) *Facilitator* for the first *LGBT Diversity Townhall*. Other Cmte/Business at Joint Statistical Meetings Abstract #218876. Denver, CO.
- Gosh D, de Queiroz G, Hecht J, Martinez W, Ram K, **Thornton S**, Hicks S. (2019, August) Invited panelist in Changing the Statistics Community: Effective Strategies for Promoting an Inclusive and Equitable Culture for Women. Panel at Joint Statistical Meetings, Abstract #301726, Session 400. Denver, CO.
- *Benn E, Green B, **Thornton S.** (2018, October) *Preparing for Increased Gender Diversity and Inclusion in Statistics and Data Science: Important Perspectives from Gender Non-Conforming and LGBTQ Scholars*. Women in Statistics and Data Science Conference, Abstract #304803. La Jolla, CA.
- Thornton S**, Li W, Xie M. (2017, June) *Presentation* (individual slide deck). *Approximate Confidence Distribution Computing: A likelihood-free method with statistical guarantees*. Invited speaker for session on Urging a paradigm change: New developments on statistical inferences. International Chinese Statistical Association Applied Statistics Symposium, Session 142. Chicago, IL.

- Thornton S.** (2017, September) *Presentation* (individual slide deck). *Approximate Confidence Distribution Computing*. Joint Conference of the Central European Network of the International Biometric Society and the International Society of Biopharmaceutical Statistics, Abstract #909-0003-00019. Vienna, Austria.
- Thornton S, Xie M.** (2017, June) *Presentation* (individual slide deck). *Approximate Confidence Distribution Computing*. Session on New developments in fusion learning and statistical inferences. First International Conference on Econometrics and Statistics, Abstract #0834, Session EO210. Hong Kong University of Science and Technology, Hong Kong.
- Thornton S.** (2016, December) *Presentation* (individual slide deck). *Approximate Confidence Distribution Computing (ACC)*. Invited speaker to Special Invited Session:BFF (Bayesian/frequentist/fiducial) Inferences in the New Era of Data Science, The 10th International Chinese Statistical Association Conference, Abstract #00776, Session 138. Shanghai, China.

Abstracts for Conference Posters (*corresponding author)

- Thornton S** and Tractenberg RE. (2022, November) *Stewardship and Stakeholders: Making ethical quantitative practice practical*.* Philosophy of Science Symposium, Pittsburgh, PA.
- Thornton S.** (2017, October) *Approximate Confidence Distribution Computing: An effective likelihood-free method with statistical guarantees*.* Women in Statistics and Data Science Conference, Abstract #303836, Speed Session 4. La Jolla, CA.
- Thornton S** and Xie M. (2017, April) *Approximate Confidence Distribution Computing: An effective likelihood-free method with statistical guarantees*.* New England Statistics Symposium, Abstract #2190. Storrs, CT.
- Thornton S** and Xie M. (2017, July) Invited Poster, *Approximate Confidence Distribution Computing: An effective likelihood-free method with statistical guarantees*.* Joint Statistical Meetings, Abstract #322649, Session 83, Baltimore, MD.
- Thornton S** and Xie M. (2016, December) Invited Poster, *Approximate confidence distribution computing (ACC): An effective likelihood-free computing method with statistical guarantees*.* 72nd Annual Deming Conference on Applied Statistics, Atlantic City, NJ.
- Thornton S** and Xie M. (2016, September) *Approximate Confidence Distribution Computing*.* Workshop on Higher-Order Asymptotics and Post-Selection Inference, St. Louis, MI.
- Thornton S** and Xie M. (2016, October) *Approximate Confidence Distribution (ACC) Computing Method*.* Women in Statistics and Data Science Conference, Abstract #303234, Charlotte, NC.
- Thornton S** and Xie M. (2016, April) *Approximate Confidence Distribution Computing*.* Fusion Learning & Bayesian, Frequentist, and Fiducial Inferences and Statistical Foundations Workshop, Piscataway, NJ.

Research Funding:

Applied NIST ITL Building the Future Seeker Award <i>Deepfake Learning: Detecting Deception</i>	\$50,000
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Spencer Research Grant on Education
February 2023 – January 2025 \$216,896
Education in Flux: Measuring the role of education in displacement decisions for families of school-age children in Syria

Dubai Cares and INEE E-Cubed Grant
August 2022 – July 2024 \$461,348
Education in Flux: Measuring the role of education in displacement decisions for families of school-age children in Syria

Awarded

Lang Center for Civic and Social Responsibility
Summer 2022 \$6300
Faculty-led Engaged Research: Gender as a concept in data science

Lang Center for Civic and Social Responsibility
Summer 2021 \$4800
Faculty-led Engaged Research: Designing an ethical statistics curriculum for all majors

Institutional Funding:

NIST	Travel Stipends	2024	\$4600
Swarthmore College	Faculty Research Support Grant	2020 – 2022	\$3000
Swarthmore College	Faculty Travel Fund	2021 – 2022	\$2687
Swarthmore College	NCFDD Faculty Success Program	Spring 2021	\$3950
Swarthmore College	Faculty Research Support Grant	2019 – 2020	\$1750
Rutgers University	Assistant Professional Development Fund	2018 – 2019	\$752
Rutgers University	Assistant Professional Development Fund	2017 – 2018	\$925
Rutgers University	Assistant Professional Development Fund	2016 – 2017	\$1082
Rutgers University	Conference Travel Support	Fall 2015	\$823

Teaching:

Swarthmore College

Mathematical Statistics I (STAT061) Fall 2022
Statistical Methods II (STAT021) Spring 2022, Spring 2021, Fall 2020, Fall 2019
Statistical Methods I (STAT011) Spring 2023, Fall 2021, Spring 2020

Rutgers University

Regression Analysis (STAT 463/563) Fall 2017, Summer 2015

University of Florida

Intro to Statistics I (STA 2023 - lab) Spring 2014

Mentoring: (*co-mentor)

Marianne Nguyen, NIST Summer 2024

Summer Undergraduate Research Fellowship Co-mentor with Dr. Adam Pintar on building a Shiny app for implementing novel measurement error model fitting.	
Shikha Shrestha, Swarthmore College	Summer 2022
Work sponsored by the Lang Center for Civic and Social Responsibility. "Gender as a concept in data science" poster presentation.	
Haron Mwangangi Kalii and Nancy Vu, Swarthmore College	2021 – 2022
Undergraduate quantitative Research Assistants working in Education in Conflict Interdisciplinary Research Group. Prepared two grant applications to for collaborative work with the Assistance Coordination Unit (international).	
Nancy Vu, Swarthmore College	Summer 2021
Sponsored by the Lang Center for Civic and Social Responsibility. "Creating an Ethical Statistics Course from Scratch: A Student's Perspective" presented at the annual Sigma Xi Student Poster Presentation.	
Xoe Porterfield, Swarthmore College	Summer 2019
Undergraduate Research Assistant studying statistical survey methodology for gender and sex minorities.	
Ryan Gross*, Rutgers University	Summer 2018
Rutgers Center for Discrete Mathematics & Theoretical Computer Science REU. Co-advised with Dr. Minge Xie on approximate computational inference.	

Service:

National	
ASA LGBTQ+ Advocacy Committee	
Chair	2024
Chair elect and selected advisor for the Pride Fellowship.	2019 – 2023
Volunteer for the Peaty Greene Program	2023
Math tutor with an emphasis in GRE prep.	
ASA Education Council	2020 – 2023
Appointed Isolated Statisticians (ISOSTAT) representative.	
Justice, Equity, Diversity, and Inclusion (JEDI) Organizing Group	2021 – 2022
Appointed Chair of the Communications Committee.	
JEDI Organizing Group	2020 – 2021
Selected member of the Organizing Committee	
Quantitative Study of Inclusion, Diversity, and Equity	2021
Volunteer faculty participant for the inaugural Datathon4Justice	
Undergraduate Statistics Project Competition	2020
Volunteer Undergraduate Statistics Research Project Judge	
ASA Presidential Appointee	2020
Chair of LGBTQ+ Inclusion Working Group	

International

Reviewer for <i>Statistical Analysis and Data Mining</i>	2024
Reviewer for <i>The American Statistician</i>	2022
International Mathematical Statistics Association Watercooler Chat <i>Selected representative to provide feedback on engaging young professionals.</i>	2021
Reviewer for <i>Synthese</i>	2021
Reviewer for the <i>Journal of the American Statistical Association</i>	2019

Honors and Awards:

International Chinese Statistical Association Student Paper Award <i>Awarded for the paper entitled <i>Approximate confidence distribution computing: an effective likelihood-free method with statistical guarantees.</i></i>	2018
The 31st New England Statistics Symposium IBM Watson Research Center Student Research Award <i>In honor of outstanding research in the field of Statistics and Probability presented at the 31st New England Statistics Symposium at the University of Connecticut, Storrs, CT.</i>	2017
Deming Scholar Award <i>Award presented at the 72nd annual Deming Conference on Applied Statistics to foster and recognize a select number of outstanding graduate students who are helping their statistics/biostatistics department.</i>	2016
Rutgers Presidential Fellowship <i>Presidential Fellowships are awarded to the most highly qualified candidates admitted to the Rutgers Graduate School.</i>	2015 – 2019
Rutgers Excellence Fellowship <i>Fellowships offered only to a limited number of students at Rutgers, who demonstrate outstanding qualifications.</i>	2014 – 2015