JENNIFER STARLING, PH.D.

Statistician and Data Scientist | Healthcare analytics, Bayesian methods, Simulations, RWD
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PROFESSIONAL SUMMARY

- Statistician and data scientist with 8+ years of experience developing and executing analyses, methods, and products supporting healthcare decision-making and policy.
- Specialized in Bayesian methods, hierarchical models, probabilistic simulations, and real-world evidence (including claims, EHR, and EMR data) to quantify uncertainty, model treatment outcomes, and optimize study designs.
- Proven record of leading analytic teams, mentoring, and translating complex findings into actionable insights to drive strategy and demonstrate clinical value.

PROFESSIONAL EXPERIENCE

Mathematica, Inc. | Researcher, Statistics & Methods | 2020 – Present

Key projects include:

- Led development of RWD analyses and dashboard design using augmented synthetic controls and Bayesian interrupted time series models. Mentored a team in developing metrics to quantify and monitor outcome heterogeneity. *(For California's Children and Youth Behavioral Health Initiative.)*
- Led RWD analyses, including development of Aggregate Bayesian Causal Forests (aBCF) method to identify high-performing primary care practices, and designed a subgroup power simulation study comparing performance of BART, Bayesian hierarchical models, and linear models to optimize trade-offs between covariate diversity and statistical power. *(For the Centers for Medicare & Medicaid Services.)*
- Developed predictive models and decision support tool to optimize hospital resource allocation and reduce preventable emergency department visits. *(For the Vermont Green Mountain Care Board.)*
- Led analyses to monitor outcomes for historically underserved populations in the Ryan White HIV/AIDS Program. *(For the Health Resources & Services Administration).*
- Implemented Bayesian hierarchical models to improve analytical precision of small-sample impact estimates. *(For the Social Security Administration.)*

The University of Texas at Austin | Researcher, NIH Biomedical Big Data Fellow | 2016 – 2025

- Developed predictive models to improve maternal and reproductive health outcomes, applying Bayesian and machine learning methods to HER data
- Designed R packages (tsBART, tsBCF) and Shiny applications for individualized risk prediction and treatment-effect estimation.
- Collaborated with Dell Medical School and British Pregnancy Advisory Service on EHR-based studies informing national clinical standards of care.

UBS | Financial Reporting Analyst | 2009 – 2016

- Led cross-functional teams to design and deliver software to fulfill corporate regulatory reporting requirements.
- Designed user interface functionality, product requirements, and dashboards for earnings-per-share forecasting.
- Organized and led annual user conferences, on-site and remote education courses, and sales demonstrations.

Financial Reporting Product Manager | Transcentive, Inc. | 2007-2009

- Managed end-to-end development lifecycle for equity compensation software.
- Translated regulatory requirements to technical specifications.
- Created user software experience, reports and visualizations.
- Designed quality assurance processes and delivered time-sensitive functionality to meet clients' regulatory requirements.

EDUCATION

- Ph.D., Statistics – The University of Texas at Austin, 2020
- M.S., Statistics (Biostatistics Certificate) – Texas A&M University, 2016
- B.S., Mathematics; B.A., Theatre Arts – Virginia Tech, 2006

TECHNICAL SKILLS

- Hierarchical modeling
- Bayesian analysis
- Subgroup analysis
- Real-world data (causal inference, synthetic control methods, propensity analysis, matching)
- Probability theory
- Uncertainty quantification
- Machine learning, including clustering, pattern recognition, decision trees, optimization, data exploration and visualization
- Data pipelines
- Statistical programming and package development (R, Python, SQL, GitHub, ggplot2

AWARDS & HONORS

- Biomedical Big Data Fellowship, National Institutes of Health (2018–2020)
- Student Paper Award, Section on Bayesian Statistical Science, Joint Statistical Meetings (2020)
- Student Paper Award, International Chinese Statistical Association (2019)
- Thomas R. Ten Have Award, Atlantic Causal Inference Conference (2018)

PUBLICATIONS

Selected peer-reviewed publications:

- Thal, D., Forrow, L.V., Lipman, E.R., **Starling, J.E.**, Finucane, M. *Aggregate Bayesian Causal Forests: The ABCs of Flexible Causal Inference for Hierarchically Structured Data.* Bayesian Analysis, under review.

- Deshpande, S.K., Bai, R., Balocchi, C., **Starling, J.E.,** Weiss, J. *VCBART: Bayesian Trees for Varying Coefficients.* Bayesian Analysis, 2024.
- Rosendahl, M., Gill, B., **Starling, J.E.** *Stabilizing school performance indicators in New Jersey to reduce the effect of random error.* U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. 2024. (REL 2025-009)
- Aiken, A.R.A, **Starling, J.E.**, van Blitterswijk, D.C., Looijen, C., van Vliet, T., Essink, D.R., Gomperts, R. *Advance provision of mifepristone and misoprostol via online telemedicine in the US.* JAMA Internal Medicine, 184(2) pp. 220-223. Feb. 2024.
- Aiken, A.R.A., **Starling, J.E.**, Scott, J.G., Gomperts, R. *Requests for Self-Managed Medication Abortion Provided Using Online Telemedicine in 30 US States Before and After the Dobbs v Jackson Women's Health Organization Decision.* Journal of the American Medical Association, vol. 328, no. 17, 2022, pp. 1768-1770.
- **Starling, J.E.**, Murray, J.S., Carvalho, C.M., Scott, J.G. *Targeted Smooth Bayesian Causal Forests: An Analysis of Heterogeneous Treatment Effects for Simultaneous Versus Interval Medical Abortion Regimens over Gestation.* Annals of Applied Statistics, Sept. 2021.
- Hu, X., **Starling, J.E.**, Lipman, E., Pendl-Robinson, E. *Developing and Validating an Individual-Level Risk Calculator for COVID-19 in the United States.* Preprint, 2021.
- Aiken, A.R.A., Lohr, P.A., Lord, J. , Ghosh, N. , **Starling, J.E.** *Effectiveness, Safety and Acceptability of No-Test Medical Abortion Provided via Telemedicine.* BJOG, vol 128, no. 9, 2021, pp. 1464-1474.
- **Starling, J.E.**, Murray, J.S., Carvalho, C.M., Bukowski, R., Scott, J.G. *BART with Targeted Smoothing: An Analysis of Patient-Specific Stillbirth Risk.* Annals of Applied Statistics, vol. 14, no. 1, 2020, pp. 28-50.
- Tec, M., Lachmann, M., Fox, S.J., Pasco, R., Woody, S., **Starling, J.E.**, Dahan, M., Gaither, K., Scott, J.G., Meyers, L.A. *Austin COVID-19 Transmission Estimates and Healthcare Projections.* Austin, TX: The University of Texas at Austin COVID-19 Modeling Consortium, July 2020.
- Aiken, A.R.A., **Starling, J.E.**, Gomperts, R., Tec, M., Scott, J.G., Aiken, C.E. *Demand for Self-Managed Online Telemedicine Abortion in the United States During the Coronavirus Disease 2019 (COVID-19) Pandemic.* Obstetrics & Gynecology, July 21, 2020.
- Nakimuli, A., **Starling, J.E.**, Nakubulwa, S., Namagembe, I., Sekikubo, M., Nakabembe, E., Scott, J.G., Moffett, A., Aiken, C.E. *Relative Impact of Pre-eclampsia on Birth Weight in a Low Resource Setting: A Prospective Cohort Study.* Pregnancy Hypertension, vol. 21, July 2020, pp. 1-6.
- Lohr, P.A., **Starling, J.E.**, Scott, J.G., Aiken, A.R.A. *Simultaneous Compared with Interval Medical Abortion Regimens Where Home Use Is Restricted*. Obstetrics & Gynecology, vol. 132, no. 1, April 2018, p. 219.

Selected Reports, Briefs, and Other Publications:

- Pendl-Robinson, E., Shao, C., **Starling, J.E.** "Mitigating Bias to Improve Fairness in Predictive Risk Modeling Using Healthcare Data: An Analysis of Long COVID Risk." Mathematica Data Innovation Lab, 2024.

- **Starling, J.E.**, Michaels, E., Aikens, R., Pohl, V. *Subgroup Analysis for the Evaluation of Section 1115 Demonstrations.* CMS Report, 2024.
- **Starling, J.E.**, Deke, J. *Assessing design and analysis considerations for increasing statistical power in subgroup analysis.* CMS, 2023.
- Gill, B., **Starling, J.E.** *The Nation's Report Card Has More To Say – If We Listen Carefully.* Mathematica Blog, 2023.

Software Contributions:

- 19andMe COVID-19 Risk Score Calculator — https://19andme.covid19.mathematica.org
- tsBART R package — Bayesian Targeted Smoothing (https://github.com/jestarling/tsbart)
- tsBCF R package — Bayesian Causal Forests with Targeted Smoothing (https://github.com/jestarling/tsbcf)
- Stillbirth Risk Prediction Dashboard (Shiny) — https://jestarling.shinyapps.io/stillbirth-risk-with-tsbart

PRESENTATIONS & INVITED TALKS

- **Starling, J.E.** *Introduction to Bayesian Analysis.* Mathematica Statistical Workgroup, Feb 2025.
- Bailey, J., Gill, B., **Starling, J.E.**, Carren, L. *Promoting Equity Through Data: Resources and Insights for Education Leaders.* IES Cross-REL Webinar, Dec 2024.
- **Starling, J.E.**, Rosendahl, L., Gill, B. *Assessing the Assessment: Reinterpreting Changes in State- and District-Level NAEP Scores Using a Hierarchical Bayesian Approach.* FCSM Conference, Oct 2024.
- Johnson, D.M., **Starling, J.E.**, Gomperts, R. *Adolescent Demand for Medication Abortion Pre- and Post-Dobbs.* Society of Family Planning, 2024.
- Aikens, R., Thal, D., **Starling, J.E.** *Measures of Race and Ethnicity for Medicare Data.* Academy Health Annual Research Meeting, 2024.
- **Starling, J.E.** *Identifying Primary Care Practices with Exemplar Response Using Bayesian Causal Forests.* UMMC Biostatistics and Data Science Seminar, 2022.
- **Starling, J.E.** *Smooth Extensions to BART: Applications to Women's Healthcare Practice and Policy.* SAMSI Causal Inference Workshop, 2019.
- **Starling, J.E.** *Targeted Smooth Bayesian Causal Forests for Time-Varying Treatment Effects.* Atlantic Causal Inference Conference, 2019.