DAMON M. BAYER, PH.D.

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EXPERIENCE

Data Analyst
Glooko

🗓 May 2023–Present   📍 Remote

- Created interactive dashboards, reports, and presentations to support analysis requests from internal and external stakeholders and drive decision-making.

Graduate Student Researcher
University of California, Irvine

🗓 March 2020–June 2023   📍 Irvine, CA

- Developed Bayesian compartmental models to forecast COVID-19 cases, hospitalizations, and deaths in all California counties.
- Frequently discussed results with the California Department of Public Health to inform policy decisions.
- Built a custom dashboard website to share COVID-19 data and model visualizations (featured in the *Los Angeles Times*).

Graduate Intern
MITRE Corporation

🗓 June 2022–September 2022   📍 Remote

- Designed and executed simulations of the bioeconomy using discrete event simulation in R.
- Demonstrated the value of modeling and simulation to the Synthetic Biology Moonshot leadership team, resulting in four additional modelers being added to the project.
- Awarded "employee of the month" in my department (70 people).

Student Trainee – Biostatistics Research Branch
National Institute of Allergy and Infectious Diseases

🗓 June 2021–September 2021   📍 Remote

- Developed novel statistical method for improved confidence intervals to estimate prevalence of rare diseases in complex surveys.
- Designed and executed simulation study to evaluate properties of a proposed Bayesian group sequential clinical trial.

Data Science Intern
Tidepool

🗓 March 2019–November 2020   📍 Remote

- Collaborated with product and medical advisory teams to make data-informed decisions about product features.
- Contributed to Tidepool's open-source software after employment.

EDUCATION

PhD Statistics
University of California, Irvine

🗓 2018 – 2023   📍 Irvine, CA

- Dissertation: Semi-Parametric Modeling of Infectious Disease Dynamics

MS Math & Statistics
South Dakota State University

🗓 2016 – 2018   📍 Brookings, SD

- Arnold K. Skeie Analytics Graduate Fellow
- Senator Thomas A. Daschle Student Fellow
- Thesis: Constrained Fisher–von Mises–Langevin Mixtures for Clustering Data on a Unit Hypersphere

BS Math & Statistics
South Dakota State University

🗓 2013 – 2016   📍 Brookings, SD

- Honors College Distinction

SKILLS & SPECIALTIES

Computing:

R | Python | Julia | Stan | SQL
R Shiny | git | HPC | Unix | tidyverse
pandas | Dashboards (Metabase) | JIRA

Statistics & Applications:

Bayesian Statistics | Infectious Diseases
Epidemic Models | Surveys | Clinical Trials
Diabetes | Clustering

Coursework:

Machine Learning | Statistical Computing
Correlated Data | Generalize Linear Models
Stochastic Processes | Causal Inference
Spatial Statistics

PUBLICATIONS

📄 Journal Articles

- Bayer, Damon, Jonathan Fintzi, et al. (2023+). "Semi-parametric modeling of SARS-CoV-2 transmission using tests, cases, deaths, and seroprevalence data". In: *Under revision at The Annals of Applied Statistics*. arXiv: `2009.02654 [stat.AP]`.
- Bayer, Damon M., Michael P. Fay, and Barry I. Graubard (2023). "Confidence intervals for prevalence estimates from complex surveys with imperfect assays". In: *Statistics in Medicine* 42.11, pp. 1822–1867. DOI: `https://doi.org/10.1002/sim.9701`.
- Goldstein, Isaac H. et al. (Dec. 2022). "Using genetic data to identify transmission risk factors: Statistical assessment and application to tuberculosis transmission". In: *PLOS Computational Biology* 18.12, pp. 1–18. DOI: `10.1371/journal.pcbi.1010696`. URL: `https://doi.org/10.1371/journal.pcbi.1010696`.
- Bayer, Damon and Semhar Michael (2019). "Exploring the Daschle Collection using text mining". In: DOI: `10.48550/ARXIV.1904.12623`. URL: `https://arxiv.org/abs/1904.12623`.
- Bayer, Damon (2018). "Variable Selection Techniques for Clustering on the Unit Hypersphere". In: *South Dakota State University*.
- Bayer, Damon, Cedric Neumann, and Anjali Ranadive (2016). "Communication of Statistically Based Conclusions to Jurors- A Pilot Study". In: *Journal of Forensic Identification* 66.5, pp. 405–427.

👥 Conference Poster & Oral Presentations

- Bayer, Damon (June 2021a). "Accounting for time-varying testing patterns when estimating and forecasting SARS-CoV-2 transmission dynamics". In: *World Meeting of the International Society for Bayesian Analysis*. Virtual.
- – (May 2021b). "Accounting for time-varying testing patterns when estimating and forecasting SARS-CoV-2 transmission dynamics". In: *MIDAS Network Annual Meeting*. Virtual.
- – (Dec. 2021c). "Semi-parametric modeling of SARS-CoV-2 transmission in Orange County, California using tests, cases, deaths, and seroprevalence data". In: *Epidemics8 - 8th International Conference on Infectious Disease Dynamics*. Virtual.
- Michael, Semhar and Damon Bayer (July 2019). "Variable selection techniques for model-based clustering of directional data". In: *Joint Statistical Meetings*. Denver, CO.
- Bayer, Damon and Semhar Michael (Feb. 2018). "Variable selection methods for clustering with mixtures of von Mises–Fisher distributions". In: *SDSU Data Science Symposium*. Brookings, SD. Awarded third place overall.
- Bayer, Damon (Apr. 2016). "The 2016 presidential primary debates: a natural language processing analysis". In: *SDSU Undergraduate Research, Scholarship, and Creative Activity Day*. Brookings, SD. Awarded second place in Math, Engineering, and Physics.
- – (Apr. 2015). "Improving the communication of forensic evidence to jurors: a pilot study". In: *SDSU Undergraduate Research, Scholarship, and Creative Activity Day*. Brookings, SD.
- Bayer, Damon and Jessie Hendricks (July 2015). "Statistical interpretation of forensic evidence". In: *South Dakota Experimental Program to Stimulate Competitive Research*. Pierre, SD.

👥 Invited Non-Conference Presentations

- Bayer, Damon (Feb. 2023). *Introduction to high-performance computing*. Virtual: UCI Statistics Student Seminar.
- – (Mar. 2022). *A brief tour of Julia*. Virtual: California Department of Public Health Continuing Education Seminar.
- Bayer, Damon and Volodymyr Minin (May 2022). *Pragmatic forecasting of SARS-CoV-2 transmission in California*. Virtual: California Department of Public Health CalCAT Open House.
- Bayer, Damon and Semhar Michael (Oct. 2017). *Topic modeling the Daschle collection*. Brookings, SD. Private meeting with former Senate Majority Leader Thomas Daschle.