Andrew Bean

CONTACT INFORMATION

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SUMMARY

Statistician in drug development with broad experience, and particular interest on Bayesian methodologies, use of trial-external data, and statistical software and tool development

EDUCATION

The Ohio State University, Columbus, Ohio

Ph.D., Statistics, August 2017

- *Dissertation:* Transformations and Bayesian Estimation of Skewed and Heavy-Tailed Densities
- *Advisors:* Steven MacEachern and Xinyi Xu

M.S., Statistics, December 2012

Colorado College, Colorado Springs, Colorado

B.A., Mathematics, May 2009

- *cum laude*, Distinction in Mathematics
- Minor in Spanish Language

PROFESSIONAL EXPERIENCE

Novartis Pharmaceuticals, East Hanover, New Jersey

Advanced Methodology & Data Science

Associate Director Statistical Consultant — **May 2023 – present**
Senior Principal Statistical Consultant — **June 2020 – April 2023**

- Consultant within the Advanced Exploratory Analytics group
- Provide expert consulting advice and support to quantitative scientists across the Analytics organization
- Serve all development units, with special emphasis on the post-marketing development group (Medical Affairs Biostatistics & Data Science)
- Deliver training for Analytics associates on topics including Applied Bayesian Modelling in Drug Development, Indirect Treatment Comparisons, Model-based Dose Escalation
- Organize the department's methodology-focused seminar series featuring internal and external speakers
- Develop and maintain several software packages to support methodological work on topics such as Probability of Success, model-based dose escalation for Oncology, and simulation of realistic clinical trial data

Early Development Biostatistics

Senior Principal Biostatistician — **May – June 2020**
Principal Biostatistician — **September 2017 – May 2020**

- Served as the primary statistical contact for Phase-I Oncology studies
- Collaborated on cross-functional teams at both the clinical-trial and clinical-program level
- Took primary responsibility for statistical considerations in trial planning, including statistical analysis plans and key input on study concepts, protocols, and database designs
- Oversaw trial execution, including statistical support for dose escalation meetings, periodic safety reporting, and external publications
- Ensured timely study closeout, including preparation of clinical study reports

- Developed statistical tools to support analysis of safety data, including an open-source R package to support dose-toxicity modelling

Eli Lilly and Company, Indianapolis, Indiana

Statistics Intern **May – August 2016**

- Implemented novel Bayesian models to guide dose escalation under minimal assumptions, including constrained reference priors, Dirichlet-process-based nonparametric Bayesian models
- Designed and carried out a simulation study in Julia to assess these methods in comparison to parametric counterparts, such as logistic regression, model-assisted designs like MTPI, and rule-based dose escalation designs like 3+3

Institute for Defense Analyses, Alexandria, Virginia

Summer Associate **June – August 2013**

- Built a Bayesian hierarchical model for the combined analysis of data from several rounds of operational tests of a military system
- Collaborated with teams of quantitative researchers and military technology experts

Pearson Education, Glenville, Illinois

Mathematics Courseware Developer **April – September 2011**

- Created interactive exercises for Pearson's MyMathLab software for college mathematics.

Publications

- Weber, S., Holzhauer, B., Widmer, L. A., & **Bean, A.** (Eds.). (2024). Bayesian Applied Modelling in Drug Development: Flexible regression modelling in Stan via brms. Open-source e-book: https://opensource.nibr.com/bamdd/.

- Widmer, L. A., **Bean, A.**, Ohlssen, D., & Weber, S. (2023). Principled Drug-Drug Interaction Terms for Bayesian Logistic Regression Models of Drug Safety in Oncology Phase I Combination Trials. (In revisions) arXiv preprint: 2302.11437.

- Meric-Bernstam, F., Sweis, R. F., Kasper, S., Hamid, O., Bhatia, S., Dummer, R., Stradella, A., Long, G. V., Spreafico, A., Shimizu, T., Steeghs, N., Luke, J. J., McWhirter, S. M., Müller, T., Nair, N., Lewis, N., Chen, X., **Bean, A.**, Kattenhorn, L., Pelletier, M., & Sandhu, S. (2023). Combination of the STING Agonist MIW815 (ADU-S100) and PD-1 Inhibitor Spartalizumab in Advanced/Metastatic Solid Tumors or Lymphomas: An Open-Label, Multicenter, Phase Ib Study. Clinical Cancer Research, 29(1), 110-121. doi:10.1158/1078-0432.CCR-22-2235

- Meric-Bernstam, F., Sandhu, S. K., Hamid, O., Spreafico, A., Kasper, S., Dummer, R., Shimizu, T., Steeghs, N., Lewis, N., Talluto, C. C., Dolan, S., **Bean, A.**, Brown, R., Trujillo, D., Nair, N., & Luke, J. J. (2019). Phase Ib study of MIW815 (ADU-S100) in combination with spartalizumab (PDR001) in patients (pts) with advanced/metastatic solid tumors or lymphomas. Journal of Clinical Oncology, 37(15_suppl), 2507-2507. doi:10.1200/JCO.2019.37.15_suppl.2507

- **Bean, A.**, Xu, X., & MacEachern, S. (2016). Transformations and Bayesian Density Estimation. Electronic Journal of Statistics, 10(2), 3355-3373. doi:10.1214/16-EJS1158

Honors and Awards

Craig Cooley Memorial Prize, Department of Statistics, Ohio State, 2017

Thomas and Jean Powers Award for Outstanding Graduate Teaching Associate, 2015

University Fellowship, Graduate School, Ohio State, 2011

Lubrizol Corporate Fellowship, Department of Statistics, Ohio State 2011

Phi Beta Kappa, Colorado College, 2009

Software and computing

Software

- OncoBayes2: Bayesian Logistic Regression for Oncology Dose-Escalation Trials (CRAN)
- Novartis proprietary R package supporting Probability of Success assessments at the full-development transition point

Computing

- Statistical computing: R and some Julia
- Literate programming: Quarto, R Markdown, Shiny
- Bayesian computation: Stan
- Additional skills: Git, Make, Snakemake, cluster computing and parallel computation (LSF, SLURM)

Conferences and Workshops

(forthcoming) Sebastian Weber, David Ohlssen, Andrew Bean, Björn Holzhauer. Applied Modeling in Drug Development Using brms (short course). Joint Statistical Meetings, 2024.

Andrew Bean, Biju Wang, and Daniel Sabanes Bove. Good Software Engineering Practice for R Packages (workshop). George Washington University, Rockville, MD 2023. Website.

Andrew Bean and Thibaud Coroller. Bayesian Topic Modeling of Adverse Event Data (contributed talk). Joint Statistical Meetings, virtual, 2020.

Andrew Bean, Xinyi Xu, and Steve MacEachern. Bayesian Estimation of Heavy-Tailed Densities using Transformations (contributed talk). Joint Statistical Meetings, Chicago, IL, 2016.

Andrew Bean, Xinyi Xu, and Steve MacEachern. Transformations and Bayesian Density Estimation (poster presentation). Joint Statistical Meetings, Seattle, WA, 2015.

Andrew Bean, Xinyi Xu, and Steve MacEachern. Transformations and Bayesian Density Estimation (contributed talk). 10^{th} Conference on Bayesian Nonparametrics, Raleigh, NC, 2015.

Andrew Bean, Amelia Taylor, Laura McQuaid, Ralph Bertrand. Bootstrap Confidence Estimates in Phylogenetics (talk). First Annual NIMBioS Undergraduate Research Conference at the Interface of Biology and Mathematics, Nashville, TN, 2009.

Teaching Experience

The Ohio State University, Columbus, Ohio
Graduate Teaching Associate **August 2012 – May 2017**

- *Sole Instructor*: Calculus-based course in introductory statistics (about 150 engineering majors).
  Statistics 3470 Introduction to Probability and Statistics for Engineers AU 2016
- *Lecturer*: General education statistical literacy course (about 200 undergraduates).
  Statistics 1350 Elementary Statistics AU 2012, AU 2015, SP 2016
- *Data Analytics T.A.*: Introduced students to R for statistical computing and data analysis, and R Markdown for reproducible documents with integrated code (sections of 15-20 from new Data Analytics major).
  Statistics 3202 Intro. to Stat. Inference for Data Analytics SP 2015, SP 2017

- *Recitation Instructor*: Led recitations including group work, practice exercises, or statistical computing with software like R or JMP (sections of about 30 undergraduates).

Statistics 2480 Statistics for the Life Sciences	SP 2015
Statistics 1450 Intro. to Practice of Statistics	SP 2013, AU 2013, SP 2014, SU 2015
Statistics 1350 Elementary Statistics	AU 2012, AU 2014, SP 2016

Colorado College, Colorado Springs, Colorado

Paraprofessional **August 2009 – May 2010**

Academic duties included running daily problem sessions for all courses, coordinating nightly tutors, holding open office hours for Math & C.S. students. Planning and advertising department events.

Statistical Consulting Experience

Abbott Nutrition, Columbus, Ohio

Statistical Consultant / Graduate Research Associate **August 2015 – May 2016**

- Work with small team of Ohio State researchers to develop statistical methods for monitoring a complex industrial process using a large volume of physical measurements on the system.

References

Available on request.