Kristin A. Linn

ADDRESS

Department of Biostatistics and Epidemiology
Center for Clinical Epidemiology and Biostatistics
Perelman School of Medicine
University of Pennsylvania
423 Guardian Drive
Philadelphia, PA 19104

Email: klinn@upenn.edu
Webpage: kristinlinn.com
GitHub: https://github.com/kalinn

EDUCATION

Ph.D., Statistics, North Carolina State University 2014
- Advisors: Dr. Eric B. Laber and Dr. Leonard A. Stefanski
- Thesis Title: Interactive Model Building Techniques for Non-smooth Functionals in Dynamic Treatment Regimes

M.Stat., North Carolina State University 2011

B.M., Music Performance (Statistics Minor), University of Michigan 2008

EXPERIENCE

Post-doctoral Fellow 2014 - present
Department of Biostatistics and Epidemiology, University of Pennsylvania
- Developing methods for causal inference and predictive modeling in neuroimaging.
- Mentor: Dr. Russell Shinohara

The Recurse Center August - November 2015
New York, NY
- Self-directed retreat for programmers. Working on projects involving Python, web-scraping, visualization, relational databases, data analysis, JavaScript, and web applications.

GAANN Fellow in Scientific Computation 2013 - 2014
Department of Statistics, North Carolina State University
- Graduate Assistance in Areas of National Need (GAANN) Fellows complete two semesters of supervised teaching and fulfill an interdisciplinary course requirement.

SAMSI Graduate Research Fellow 2012 - 2013
Research Triangle Park, North Carolina
- Participated in the Data-Driven Decisions in Healthcare program and the dynamic treatment regimes working group.

Consultant at Three Ships Media Fall 2011
Raleigh, North Carolina
- Duties included cleaning data sets, writing R code, and brainstorming analysis ideas.
- Worked with large data sets that contained daily revenue and spending in various media marketing categories.

PROGRAMMING

Expertise: R, Python, SAS

Some experience: C/C++, SQL, HTML/CSS, JavaScript, CPLEX, WinBUGS, bash

Applications: LaTeX, Microsoft Office Suite

PAPERS

Linn, K.A., Gaonkar, B., Doshi, J., Davatzikos, C., Shinohara, R.T. (2015) "Control-group Feature Normalization for Multivariate Pattern Analysis using the Support Vector Machine." Submitted.

Linn, K.A., Gaonkar, B., Doshi, J., Davatzikos, C., Shinohara, R.T. (2015) "Multivariate Pattern Analysis and Confounding in Neuroimaging." Under revision.

Linn, K.A., Wong, J.C., Shinohara, R.T., Mateen, F.J. (2015) "Modeling Incidence of Traumatic Brain Injury in Africa in 2050." Accepted.

Holloway, S.T., Laber, E.B., **Linn, K.A.**, Zhang, B. (2015) "Dynamic Treatment Regimes in R using DynTxRegime." Submitted.

Abdulhaqq, S.A., Zorrilla, C., Kang, G., Yin, X., Tamayo, V., Seaton, K.E., Jocelin Joseph, J., Garced, S., Tomaras, G.D., **Linn, K.A.**, Andrea S. Foulkes, A.S., Azzoni, L., VerMilyea, M., Coutifaris, C., Kossenkov, A.V., Showe, L.C., Kraiselburd, E., Li, Q., Montaner, L.J., (2015) "HIV-1 Negative Female Sex Workers Sustain High Cervical IFN, and Low Immune Activation and Expression of HIV-1 Required Host Genes." Accepted, *Mucosal Immunology.*

Linn, K.A., Laber, E.B., Stefanski, L.A. (2015) "Constrained Estimation for Competing Outcomes." To appear in a new textbook on Dynamic Treatment Regimes.

Linn, K.A., Laber, E.B., Stefanski, L.A. (2015) "Interactive Q-learning for Probabilities and Quantiles." Under revision, manuscript available on arXiv.

Takeshita, J., Wang, S., Shin, D.B., Callis Duffin, K., Krueger, G.G., Kalb, R.E., Weisman, J.D., Sperber, B.R., Stierstorfer, M.B., Brod, B.A., Schleicher, S.M., Robertson, A.D., **Linn, K.A.**, Shinohara, R.T., Troxel, A.B., Van Voorhees, A.S., Gelfand, J.M. (2014) "Comparative Effectiveness of Less Commonly Used Systemic Monotherapies and Common Combination Therapies for Moderate-to-Severe Psoriasis in the Clinical Setting." *Journal of the American Academy of Dermatology.* 71(6). 1167–1175.

Linn, K.A., Laber, E.B., Stefanski, L.A. (2014). "iqLearn: Interactive Q-learning in R." *Journal of Statistical Software.* Vol. 64. Issue 1.

Laber, E.B., **Linn, K.A.**, Stefanski, L.A. (2014) "Interactive model building for Q-learning." *Biometrika.* 101(4). 831–847.

Software

Linn, K.A., Laber, E.B., Stefanski, L.A. "iqLearn." `R` package that implements Interactive Q-learning.

Invited Presentations

Linn, K.A., Gaonkar, B., Doshi, J., Davatzikos, C., Shinohara, R.T. "Inverse Probability Weighting for Confounding Adjustment." Organization for Human Brain Mapping; Honolulu, HI; June 2015.

Linn, K.A., Gaonkar, B., Doshi, J., Davatzikos, C., Shinohara, R.T. "Multivariate Pattern Analysis and Confounding in Neuroimaging." Harvard Medical School; Boston, MA; April 2015.

Linn, K.A., Gaonkar, B., Davatzikos, C., Shinohara, R.T. "Consequences of Confounding in Predictive Modeling." Department of Statistics, Columbia; New York, NY; October 2014.

Laber, E.B., **Linn, K.A.**, Stefanski, L.A. "Interactive Q-learning." Department of Statistics, George Mason University; Fairfax, VA; January 2014.

Linn, K.A., Laber, E.B., Stefanski, L.A. "Smooth Estimators of Optimal Dynamic Treatment Regimes." Joint Statistical Meetings; Montréal, Canada; August 2013.

Ibid. INFORMS Healthcare; Chicago, IL; June 2013.

Ibid. NC State Scope Academy; Raleigh, NC; April 2013. (poster presentation)

Laber, E.B., **Linn, K.A.**, Stefanski, L.A. "Interactive Q-learning." IMPACT Symposium; Raleigh, NC; November 2012.

Select Contributed Presentations

Linn, K.A., Gaonkar, B., Doshi, J., Davatzikos, C., Shinohara, R.T. "Multivariate Pattern Analysis and Confounding in Neuroimaging." Joint Statistical Meetings; Seattle, WA; August 2015.

Linn, K.A., Laber, E.B., Stefanski, L.A. "Interactive Q-learning for Dynamic Treatment Regimes." NCSU Graduate Research Symposium; Raleigh, NC; March 2013. (poster presentation)

Ibid. AAAS Annual Meeting; Boston, MA; February 2013. (poster presentation)

Linn, K.A., Ghosh, S.K. "Approaches to Assess the Risk of QT Prolongation of an Investigational New Drug." Joint Statistical Meetings; Miami Beach, FL; August 2011.

Linn, K.A., Ghosh, S.K. "A Bayesian Analysis of a Thorough QT Study." SRCOS Summer Research Conference; Jekyll Island, GA; June 2012. (poster presentation)

Select Honors and Awards

- Invited oral presentation at the 2015 Human Brain Mapping Conference (less than 3% of abstracts invited).
- Accepted to the Recurse Center's Fall I 2015 batch.
- Awarded the Graduate Assistance in Areas of National Need (GAANN) Fellowship in Scientific Computation. Provided stipend support for the 2013-2014 academic year.
- 2nd place in the 2013 NC State Graduate Research Symposium Poster Competition, Physical and Mathematical Sciences Category.
- Honorable Mention in the Medicine and Public Health Category at the 2013 AAAS Student Poster Competition.
- Joshua E. Neimark Memorial Travel Assistance Award to attend the 2013 AAAS Annual Meeting in Boston, MA.
- 2012 NSF Young Researcher Travel Award to present a talk at the International Conference on Advances in Interdisciplinary Statistics and Combinatorics in Greensboro, NC.
- 2012 Winner of the Clint Miller Best Poster Award at the SRCOS Summer Research Conference in Jekyll Island, GA.
- 2012 Boyd Harshbarger Travel Award to participate in the R.L. Anderson poster session at the SRCOS Summer Research Conference in Jekyll Island, GA.
- 2011 Gertrude M. Cox Award for Outstanding Ph.D. Candidate. This departmental award is presented to the student with the top written preliminary exam.
- 1st Place, 2011 A-mu-sing competition in the joke and cartoon category. Winning entry was displayed at the US Conference On Teaching Statistics, May 19–21, 2011.

Teaching

Instructor (Spring 2014); Introduction to Statistics.

Lab Instructor (Summer 2013); Experimental Statistics for Biological Sciences II. The class covers multiple linear regression, ANOVA, blocked and nested designs, random effects, and split-plots.

Mentor (2013); SAMSI Undergraduate Modeling Workshop.

Guest Lecturer (2013); invited by Professors Anastasios Tsiatis and Hua Zhou to talk about Interactive Q-learning in Causal Inference and Advanced Computing classes at NC State.

Lab Instructor (2013); used R to teach students about dynamic treatment regimes and Q-learning at the SAMSI Undergraduate Healthcare Workshop.

Tutor (2009, 2012–2013); tutored students in Introductory Statistics, Undergraduate Mathematical Statistics, Introduction to Biostatistics, High School Pre-Calculus, and SAT preparation.

Service

- Reviewer for: Journal of the American Statistical Association, PLOS ONE, Computational Statistics & Data Analysis, International Journal of Biostatistics, Communications in Statistics.
- Co-organizer of the first Statistics and Zoology Graduate Research Symposium (2013).
- Conference volunteer: USCOTS (2013), AAAS (2013), and IISA (2011).
- Co-Vice President of the Statistics Graduate Student Association (2012–2013).
- International Dinner Chair, NC State Department of Statistics (2011).
- Prospective and new student orientation volunteer (2010–2012).
- "Stat Buddy" mentor (2010 and 2011).

Professional Societies and Development

- Member of the American Statistical Association (ASA).
- Member of the Eastern North American Region of the Biometrics Society (ENAR).
- NC State Certificate of Accomplishment in Teaching participant (2013–2014).
- NC State Women in Statistics Networking Group (2012–2014).
- Graduate Student Professional Development Workshop (2012); one of two students nominated by the NC State Department of Statistics to participate in the workshop.
- Summer Institute in Statistical Genetics (2011); completed the "MCMC for Genetics" and "Mixed Models for Quantitative Genetics" modules, Department of Biostatistics at the University of Washington, Seattle, WA.