Matthew J. Heiner

Ph.D. Candidate
Department of Statistics
University of California, Santa Cruz

email: mheiner@ucsc.edu
web: mheiner.github.io
phone: (801) 205-6687

EDUCATION

University of California, Santa Cruz, Santa Cruz, CA
Ph.D., Statistical Science — anticipated August 2019
Thesis: Mixture modeling methods for Bayesian inference of nonlinear dynamics
Advisors: Athanasios Kottas and Stephan Munch

Brigham Young University, Provo, UT
M.S., Statistics — April 2014
Project: An absorbing Markov chain model for skill importance in women's soccer
Advisor: Gilbert Fellingham

B.S., Statistics: Actuarial Science Emphasis — April 2014
Minor, Mathematics
magna cum laude

PAPERS and MANUSCRIPTS

IN PREPARATION

Heiner, M., Kottas, A., and Munch, S. (2018), "A Bayesian model for estimation and order selection in high order Markov chains," Tech. Rep. UCSC-SOE-18-07, Jack Baskin School of Engineering, University of California, Santa Cruz.

PEER-REVIEWED PUBLICATIONS

Heiner, M., Kottas, A., and Munch, S. (2019), "Structured priors for sparse probability vectors with application to model selection in Markov chains," *Statistics and Computing*, 29.

Lamas, L., Santana, F., **Heiner, M.**, Ugrinowitsch, C., and Fellingham, G. (2015), "Modeling the offensive-defensive interaction and resulting outcomes in basketball," *PloS one*, 10, e0144435.

Heiner, M., Fellingham, G. W., and Thomas, C. (2014), "Skill importance in women's soccer," *Journal of Quantitative Analysis in Sports*, 10, 287–302.

TEACHING EXPERIENCE

Graduate Student Instructor, *UC, Santa Cruz*
AMS 7 – Statistical Methods for the Biological, Environmental, and Health Sciences
Taught Summer 2017, Winter 2018, Summer 2018, Winter 2019
AMS 7L – Biostatistics Lab
Taught Fall 2017, Fall 2018

Online Course Developer/Instructor, *UC, Santa Cruz* — March 2016 to April 2017
Coursera – Bayesian Statistics: Techniques and Models
Rated 4.8/5 (153 ratings); 10,000+ cumulative learners as of December 2018.
Coursera – Bayesian Statistics: From Concept to Data Analysis (assistant to Herbert Lee)

Teaching Assistant, *UC, Santa Cruz*

AMS 131 – Introduction to Probability Theory — Fall 2015, Spring 2018
AMS 7 – Stat. Methods for the Bio., Env., and Health Sciences — Spring 2017
AMS 80A – Gambling and Gaming — Winter 2016

Teaching Assistant, *Brigham Young University* — Jan. 2012 to April 2014

STAT 497R – Introduction to Research: Sports Analytics
STAT 340 – Statistical Inference
STAT 301 – Statistics and Probability for Secondary Educators
STAT 240 – Discrete Probability
STAT 230 – Analysis of Variance
STAT 224 – Statistical Computing 1
STAT 201 – Statistics for Engineers and Scientists

EXPERIENCE

Summer Graduate Pedagogy Mentor, *UC, Santa Cruz* — June to Aug. 2018

Peer mentor to six summer graduate student instructors.

Online Course Developer/Instructor, *UC, Santa Cruz* — March 2016 to April 2017

Built content and exercises for introductory Bayesian statistics course on Coursera (with Herbert Lee). Principal developer and instructor for a second course in the sequence, launched in April 2017.

Student Intern, *Lawrence Livermore National Laboratory* — June to Aug. 2015, 2016

Statistical modeling of surface temperature simulation data from an international ensemble of climate models to extract and characterize natural climate variability and seasonality.

Statistician Intern, *Savvysherpa Inc.* — May to Sept. 2014

Data visualization with Tableau, accelerometer data modeling with hidden Markov models, health care cost modeling, debit card transaction data mining.

Research Assistant, *Brigham Young University*

Skill Importance Modeling — June 2012 to April 2014

Developed Bayesian absorbing Markov chain models for evaluation of skill importance in men's basketball and women's soccer. Applied to space creation and space protection dynamics in basketball and to offensive skill sequences in soccer. Two publications.

Sports Analytics Group — Sept. 2012 to April 2014

Student database manager for consulting project with Brigham Young University athletics. Teaching assistant responsible for training students.

R Programmer/Intern, *Acxiom Corporation* — Dec. 2012 to Nov. 2013

Natural language processing for social media sentiment analysis.

Actuarial Intern, *Aon Hewitt* — May to Aug. 2011

Assisted health and benefits consulting actuarial team. Worked with pricing and estimation models, updated reports with claims data, and assisted in development of model automation.

PRESENTATIONS

"Bayesian model selection for Markov chains using sparse probability vectors." Joint Statistical Meetings, Vancouver, BC, Canada, July 2018.

"Bayesian model selection for Markov chains using sparse probability vectors." Chapter Meeting, San Francisco Chapter of the American Statistical Association, San Francisco, CA, June 2018.

Poster: "Bayesian model selection for Markov chains using sparse probability vectors." Graduate Research Symposium, University of California, Santa Cruz, Santa Cruz, CA, April 2018.

"The interaction of Arctic sea ice and global temperature, and their bias in climate simulation experiments." Engineering Summer Intern Seminar, Lawerence Livermore National Laboratory, Livermore, CA, August 2016.

"Characterizing natural climate variability of mean global temperature in CMIP-5 models." Applied Statistics Group Seminar, Lawerence Livermore National Laboratory, Livermore, CA, September 2015.

"Skill importance in women's soccer." Student Research Conference, Brigham Young University, Provo, UT, March 2013.

"Bayesian analysis of diet intervention in young adults." Student Research Conference, Brigham Young University, Provo, UT, March 2012.

RECOGNITIONS

JSM Student Travel Award, San Francisco Chapter of the American Statistical Association (3rd place), May 2018.

Chancellor's Fellowship, Applied Mathematics and Statistics, UC Santa Cruz, 2014–2015.

Brigham Young Scholarship, 2006–2007, 2010–2013.

Section Award, Student Research Conference, Brigham Young University, March 2013.

SERVICE

President, Mu Sigma Rho, Utah BYU Chapter, 2012–2013.

Full-time Volunteer Representative for The Church of Jesus Christ of Latter-day Saints, Queens, NY, 2007–2009.

MEMBERSHIPS

International Society for Bayesian Analysis, 2013–Present.

American Statistical Association, 2011–Present.

Mu Sigma Rho, 2010–2014.