

Matthew J. Heiner

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Vitae updated: February 27, 2020

EDUCATION

University of California, Santa Cruz, Santa Cruz, CA

Ph.D., Statistical Science

August 2019

Thesis: Bayesian Mixture Modeling and Order Selection for Markovian Time Series

Committee: Athanasios Kottas (chair), Stephan Munch, Raquel Prado, and Abel Rodríguez

Brigham Young University, Provo, UT

M.S., Statistics

April 2014

Project: An Absorbing Markov Chain Model for Skill Importance in Women's Soccer

Committee: Gilbert Fellingham (chair), David Dahl, and Candace Berrett

B.S., Statistics: Actuarial Science Emphasis

April 2014

Minor in Mathematics

magna cum laude

EXPERIENCE

Assistant Professor, *Brigham Young University*

Aug. 2019 – Present

Graduate Pedagogy Mentor, *UC, Santa Cruz*

June – Aug. 2018

Online Course Developer/Instructor, *UC, Santa Cruz*

March 2016 – April 2017

Student Intern, *Lawrence Livermore National Laboratory*

June – Aug. 2015, 2016

Statistician Intern, *Savvysherpa Inc.*

May – Sept. 2014

R Programmer/Intern, *Acxiom Corporation*

Dec. 2012 – Nov. 2013

Actuarial Intern, *Aon Hewitt*

May – Aug. 2011

PUBLICATIONS

PEER-REVIEWED PUBLICATIONS

3. **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*. [link](#)
2. 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. [link](#)
1. **Heiner, M.**, Fellingham, G. W., and Thomas, C. (2014), “Skill importance in women's soccer,” *Journal of Quantitative Analysis in Sports*, 10, 287–302. [link](#)

UNDER REVIEW

1. **Heiner, M.** and Kottas, A. (2019+), “Estimation and selection for high-order Markov chains with Bayesian mixture transition distribution models,” *arXiv preprint arXiv:1906.10781*. Under review with *Journal of Computational and Graphical Statistics*. [link](#)

IN PREPARATION

2. **Heiner, M.** and Kottas, A. (2020+), “Bayesian Nonparametric Density Autoregression with Lag Selection,” in preparation for: *JASA: Theory and Methods*.
1. **Heiner, M.** and Kottas, A. (2020+), “The Gaussian Process Mixture Transition Distribution for Transition Density Estimation,” in preparation for: *Undecided*.

PRESENTATIONS

“Bayesian Nonparametric Density Autoregression with Lag Selection”

- Statistics Department Seminar, Brigham Young University, Provo, UT, September 2019

“Bayesian Model Selection for Markov Chains Using Sparse Probability Vectors.”

- Joint Statistical Meetings, Vancouver, BC, Canada, July 2018.
- Chapter Meeting, San Francisco Chapter of the American Statistical Association, San Francisco, CA, June 2018.
- Poster at the 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, Lawrence Livermore National Laboratory, Livermore, CA, August 2016.

“Characterizing Natural Climate Variability of Mean Global Temperature in CMIP-5 Models.”

- Applied Statistics Group Seminar, Lawrence 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.

TEACHING EXPERIENCE

Instructor, *Brigham Young University*

Stat 201 – Statistics for Engineers and Scientists

Winter 2020

Stat 240 – Probability and Inference 1

Fall 2019

Online Course Developer/Instructor, *UC, Santa Cruz*

March 2016 – April 2017

Coursera – Bayesian Statistics: Techniques and Models

Rated 4.8/5 (249 ratings); 24,000+ cumulative enrollment as of December 2019.

Coursera – Bayesian Statistics: From Concept to Data Analysis (assistant to Herbert Lee)

Rated 4.6/5 (1,830 ratings); 77,000+ cumulative enrollment as of December 2019.

Graduate Student Instructor, UC, Santa Cruz

AMS 7 – Statistical Methods for the Biological, Environmental, and Health Sciences
Summer 2017, Winter 2018, Summer 2018, Winter 2019

AMS 7L – Biostatistics Lab
Fall 2017, Fall 2018, Summer 2019

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

Stat 497R – Introduction to Research: Sports Analytics	Winter 2014
Stat 340 – Statistical Inference	Winter 2012
Stat 301 – Statistics and Probability for Secondary Educators	Summer 2012
Stat 240 – Discrete Probability	Winter 2012
Stat 230 – Analysis of Variance	Fall 2012
Stat 201 – Statistics for Engineers and Scientists	Summer 2012

STUDENT ADVISING

Year	Student	Role	Position Following Graduation
2021	Taylor Grimm	Undergrad. Research Mentor	
2021	Hayden Smith	Undergrad. Research (co-)Mentor	
2020	Brittany Russell	MS Committee Member	
2020	Matthew Drewes	MS Committee Member	

SERVICE**PROFESSION**

IMA Journal of Management Mathematics (sp. issue on sports), Referee February 2020 – Present

DEPARTMENT

Strategic Planning Committee for Online Courses, Member September 2019 – Present

STUDENT

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 - Section on Bayesian Statistical Science	2011 – Present
Mu Sigma Rho	2010 – 2014