

## Jarad B. Niemi

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Department of Statistics  
Iowa State University  
Ames, IA 50011-1210  
niemi@iastate.edu

Office: 515.294.8679  
Fax: 515.294.4040

<http://jarad.me>

### Education

Ph.D. Statistical Science, Duke University, 2009

Thesis: Bayesian Analysis and Computational Methods for Dynamic Modeling

Advisor: Mike West

M.S. Biostatistics, University of Minnesota, 2005

Thesis: Identifying and Evaluating Contrarian Strategies for NCAA Tournament Pools

Advisor: Brad Carlin

B.ChE. Chemical Engineering, University of Minnesota, 1999

### Academic Positions

|                     |                       |
|---------------------|-----------------------|
| Statistics          | Iowa State University |
| Professor           | 2023–present          |
| Associate Professor | 2017–2023             |
| Assistant Professor | 2011–2017             |

|                                   |                         |
|-----------------------------------|-------------------------|
| Statistics and Actuarial Sciences | Simon Fraser University |
| Visiting Scholar                  | 2019–2020               |

|                                  |   |
|----------------------------------|---|
| Statistics & Applied Probability | University of California, Santa Barbara |
| Assistant Professor              | 2009–2011                               |

### Employment

|                    |                                       |           |
|--------------------|---------------------------------------|-----------|
| Consultant         | Boehringer Ingelheim Vetmedica, Inc.  | 2012–2013 |
|                    | Natural Resources Research Institute  | 2009–2010 |
|                    | Denver Health                         | 2008      |
|                    | Purdue Pharma LP                      | 2007–2008 |
| Research Assistant | Duke University (Mike West)           | 2006–2009 |
|                    | University of Minnesota (Brad Carlin) | 2004–2005 |
|                    | University of Minnesota (Grace Peng)  | 2003–2004 |
| Junior Scientist   | University of Minnesota               | 2001–2004 |
|                    | Natural Resources Research Institute  | 2003      |
| Research Engineer  | Procter & Gamble                      | 1999–2001 |

## Publications

\* Indicates a student advisee or co-advisee.

### Refereed Journal Articles

Cole Dutter, Luis A. Damiano\*, **Jarad Niemi**, Bradley A. Miller, Lisa A. Schulte, Matt Liebman, Matt Helmers, Rick Cruse, and Marshall D. McDaniel. (2023) Contour prairie strips affect adjacent soil but have only slight effects on crops. *Field Crops Research*, **296**. [url](#)

Zachary P. Simpson, Jim Jordahl, Andrea Leptin, Fernando E. Miguez, **Jarad Niemi**, Lisa A. Schulte, Michael L. Thompson, Sebastian H. Villarino, and Marshall D. McDaniel. (2023) No - tillage does not on average reduce soil carbon storage compared to conventional tillage. *Geoderma*, **430**. [url](#)

Qinglong Tian, Colin Lewis-Beck\*, **Jarad Niemi**, and William Meeker. (2023) Specifying prior distributions in reliability applications. *to appear in Applied Stochastic Models in Business and Industry* [url](#)

Matt Nowatzke, Luis Damiano\*, Fernando Miguez, Gabe McNunn, **Jarad Niemi**, Lisa Schulte-Moore, Emily Heaton, Andy VanLoocke. (2022) Augmenting agroecosystem models with remote sensing data and machine learning changes overall estimates of nitrate-nitrogen leaching *Environmental Research Letters*, **17**:11, 114010. [url](#)

Estee Cramer, Yuxin Huang, Yijin Wang, Evan Ray, Matthew Cornell, Johannes Bracher, Andrea Brennen, Alvaro Castro Rivadeneira, Aaron Gerding, Katie H House, Dasuni Jayawardena, Abdul H Kanji, Ayush Khandelwal, Khoa Le, Vidhi Mody, Vrushti Mody, **Jarad Niemi**, Ariane Stark, Apurv Shah, Nutch Wattanachit, Martha Zorn, and Nicholas Reich. (2022) The United States COVID-19 Forecast Hub dataset *Scientific Data*, **9**(462). [url](#)

Estee Y Cramer, Evan L Ray, Velma K Lopez, Johannes Bracher, Andrea Brennen, Alvaro J Castro Rivadeneira, Aaron Gerding, Tilmann Gneiting, Katie H House, Yuxin Huang, Dasuni Jayawardena, Abdul H Kanji, Ayush Khandelwal, Khoa Le, Anja Muhlemann, **Jarad Niemi**, [256 other authors], Nicholas G Reich. (2022) Evaluation of individual and ensemble probabilistic forecasts of COVID-19 mortality in the US. *Proceedings of the National Academy of Sciences*, **119**(15), e2113561119. [url](#)

Matthew Stephenson, Lisa Schulte, Robert Klaver, and **Jarad Niemi**. (2022) Miniature temperature data loggers increase precision and reduce bias when estimating the daily survival rate for bird nests. *Journal of Field Ornithology*, **92**(4), 492–505. [url](#)

Mark Tomer, Sarah Porter, David James, Jessica Van Horn, and **Jarad Niemi**. (2021) Comparing riparian buffer design classification data among watersheds representing Iowa landscapes *Agrosystems, Geosciences, and Environment*, **4**(2), e20159. [url](#)

Adam Martin-Schwarze\*, **Jarad Niemi**, and Philip Dixon. (2021) Joint modeling of distances and times in point-count surveys. *Journal of Agricultural, Biological, and Environmental Statistics*, **26**, 289–305. [url](#)

Ashley N. Dean, **Jarad B. Niemi**, John C. Tyndall, Erin W. Hodgson, and Matthew E. O'Neal. (2021) Developing a decision-making framework for insect pest management: a case study using soybean aphid (Hemiptera: Aphididae). *Pest Management Science*, **77**(2), 886–894. [url](#)

Nate Garton\*, **Jarad Niemi**, and Alicia Carriquiry. (2020) Knot selection in sparse Gaussian processes with a variational objective. *Statistical Analysis and Data Mining*, **13**(4), 324–336. [url](#)

M.D. Tomer, J.D. Van Horn, S.A. Porter, D.E. James, and **J. Niemi**. (2020) Comparing agricultural conservation planning framework (ACPF) practice placements for runoff mitigation and controlled drainage

among 32 watersheds representing Iowa landscapes. *Journal of Soil and Water Conservation*, **75**(4), 460–471. [url](#)

Colin Lewis-Beck\*, **Jarad Niemi**, Petrutza Caragea, Brian Hornbuckle, Victoria Walker. (2020) Extracting agronomic information from SMOS vegetation optical depth in the US corn belt using a nonlinear hierarchical model. *Remote Sensing*, **12**(5), 827. [url](#)

E. A. Hines, M. R. Romoser, Z. E. Kiefer, A. F. Keating, L. H. Baumgard, **J. Niemi**, N. K. Gabler, J. F. Patience, G. Haberl, N. H. Williams, B. J. Kerr, K. J. Touchette, and J. W. Ross. (2019) The impact of dietary supplementation of arginine during gestation in a commercial swine herd: II. Offspring performance. *Journal of Animal Science*, **97**(9), 3626–3635. [url](#)

E. A. Hines, M. R. Romoser, Z. E. Kiefer, A. F. Keating, L. H. Baumgard, **J. Niemi**, N. K. Gabler, J. F. Patience, G. Haberl, N. H. Williams, B. J. Kerr, K. J. Touchette, and J. W. Ross. (2019) The impact of dietary supplementation of arginine during gestation in a commercial herd: I. Gilt reproductive performance. *Journal of Animal Science*, **97**(9), 3617–3625. [url](#)

Craig J. McGowan, Matthew Biggerstaff, Michael Johansson, Karyn M. Apfeldorf, Michal Ben-Nun, Logan Brooks, Matteo Convertino, Madhav Erraguntla, David C. Farrow, John Freeze, Saurav Ghosh, Sangwon Hyun, Sasikiran Kandula, Joceline Lega, Yang Liu, Nicholas Michaud\*, Haruka Morita, **Jarad Niemi**, Naren Ramakrishnan, Evan L. Ray, Nicholas G. Reich, Pete Riley, Jeffrey Shaman, Ryan Tibshirani, Alessandro Vespignani, Qian Zhang, Carrie Reed & The Influenza Forecasting Working Group. (2019) Collaborative efforts to forecast seasonal influenza in the United States, 2015–2016. *Scientific Reports*, **9**. [url](#)

Ignacio Alvarez\* and **Jarad Niemi**. (2019) Fully Bayesian analysis of allele-specific RNA-seq data. *Mathematical Biosciences and Engineering*, **16**(6), 7751–7770. [url](#)

Nathaniel Garton\* and **Jarad Niemi**. (2019) Multivariate temporal modeling of crime with dynamic linear models. *PLOS ONE*, **14**(7), e0218375. [url](#)

Will Landau\*, **Jarad Niemi**, and Dan Nettleton. (2019) Fully Bayesian analysis of RNA-seq counts for the detection of gene expression heterosis. *Journal of the American Statistical Association*, **114**(526), 610–621. [url](#)

Adam Martin-Schwarze\*, **Jarad Niemi**, and Philip Dixon. (2017) Assessing the impacts of time to detection distribution assumptions on detection probability estimation. *Journal of Agricultural, Biological, and Environmental Statistics*, **22**(4), 465–480. [url](#)

Lisa A. Schulte, **Jarad B. Niemi**, Matthew J. Helmers, Matt Liebman, J. G. Arbuckle, David E. James, Randall K. Kolka, Matthew E. O’Neal, Mark D. Tomer, John C. Tyndall, Heidi Asbjornsen, Pauline Drobney, Jeri Neal, Gary Van Ryswyk, and Chris Witte. (2017) Prairie strips improve biodiversity and the delivery of multiple ecosystem services from corn-soybean croplands *Proceedings of the National Academy of Sciences*, **114**(42), 11247–11252. [url](#)

Matthew Simpson\*, **Jarad Niemi**, and Vivekananda Roy. (2017) Interweaving Markov chain Monte Carlo strategies for efficient estimation of dynamic linear models. *Journal of Computational and Graphical Statistics*, **26**:1, 152–159. [url](#)

Lisa Schulte, Anna MacDonald, **Jarad Niemi**, and Matthew Helmers. (2016) Prairie strips as a mechanism to promote land sharing by birds in industrial agricultural landscapes. *Agriculture, Ecosystems & Environment*, **220**, 55–63. [url](#)

- Jarad Niemi**, Eric Mittman\*, Will Landau\*, and Dan Nettleton. (2015) Empirical Bayes analysis of RNA-seq data for detection of gene expression heterosis. *Journal of Agricultural, Biological, and Environmental Statistics*, **20**(4), 614–628. [url](#)
- David M. Brenner, Jack Dekker, **Jarad Niemi**, and Lisa Pfiffner. (2015) Medical oxygen concentrators for releasing seed dormancy. *Crop Science*, **55**(5), 2291–2293. [url](#)
- Robert B. Gramacy, **Jarad Niemi**, and Robin Weiss. (2014) Massively parallel approximate Gaussian process regression. *SIAM/ASA Journal on Uncertainty Quantification*, **2**, 568–584. [url](#)
- Daniel Sheinson\*, **Jarad Niemi**, and Wendy Meiring. (2014) Comparison of the performance of particle filter algorithms applied to tracking of a disease epidemic. *Journal of Mathematical Biosciences*, **255**, 21–32. [url](#)
- Jonathan Dess, Jennifer L. Momsen, **Jarad Niemi**, and Lisa Montplaisir. (2014) Student interpretations of phylogenetic trees in an introductory biology course. *CBE - Life Sciences Education*, **13**(4), 666–676. [url](#)
- Jo Eidsvik, Benjamin A. Shaby, Brian J. Reich, Matthew Wheeler\*, and **Jarad Niemi**. (2014) Estimation and prediction in spatial models with block composite likelihoods. *Journal of Computational and Graphical Statistics*, **23**(2), 295–315. [url](#)
- Bernie J Daigle Jr, Min K Roh, Linda R Petzold, and **Jarad Niemi**. (2012) Accelerated maximum likelihood parameter estimation for stochastic biochemical systems. *BMC Bioinformatics*, **13**(68). [url](#)
- David Banks, Gauri Datta, Alan Karr, James Lynch, **Jarad Niemi**, and Francisco Vera. (2012) Bayesian CAR models for syndromic surveillance on multiple data streams: theory and practice. *Information Fusion*, **13**(2), 105–116. [url](#)
- Mike Ludkovski and **Jarad B. Niemi**. (2010) Optimal dynamic policies for influenza management. *Statistical Communications in Infectious Diseases*, **2**(1):5. [url](#)
- Jarad B. Niemi** and Mike West. (2010) Adaptive mixture modelling Metropolis methods for Bayesian analysis of non-linear state-space models. *Journal of Computational and Graphical Statistics*, **19**(2), 260–280. [url](#)
- Quanli Wang, **Jarad Niemi**, Cheemeng Tan, Lingchong You, and Mike West. (2010) Image segmentation and dynamic lineage analysis in single-cell fluorescent microscopy. *Cytometry: Part A*, **77A**(1), 101–110. [url](#)
- Jarad Niemi**, Brad Carlin, and Jon Alexander. (2008) Contrarian strategies for NCAA tournament pools: a cure for March madness? *Chance*, **21**(1), 39–46. [url](#)
- Michael J. Simmons, **Jarad B. Niemi**, Don-Felix Ryzek, Cecile Lamour, Joseph W. Goodman, Wojtek Kraszkiewicz, and Ryan Wolff. (2007) Cytotype regulation by telomeric *P* elements in *Drosophila melanogaster*: Interactions with *P* elements from M’ strains. *Genetics*, **176**(4), 1957–1966.
- Cheemeng Tan, Hao Song, **Jarad Niemi**, and Lingchong You. (2007) A synthetic biology challenge: making cells compute. *Molecular BioSystems*, **3**, 343–353.
- Kevin J. Haley, Jeremy R. Stuart, John D. Raymond, **Jarad B. Niemi**, and Michael J. Simmons. (2005) Impairment of cytotype regulation of *P*-element activity in *Drosophila melanogaster* by mutations in the

Su(var)205 gene. *Genetics*, **171**, 583–595.

**Jarad B. Niemi**, John D. Raymond, Ryan Patrek, and Michael J. Simmons. (2004) Establishment and maintenance of the *P* cytotype associated with telomeric *P* elements in *Drosophila melanogaster*. *Genetics*, **166**, 255–264.

Michael J. Simmons, John D. Raymond, **Jarad B. Niemi**, Jeremy R. Stuart, and Peter J. Merriman. (2004) The *P* cytotype in *Drosophila melanogaster*: A maternally transmitted regulatory state of the germ line associated with telomeric *P* elements. *Genetics*, **166**, 243–254.

Michael J. Simmons, Kevin J. Haley, Craig D. Grimes, John D. Raymond, and **Jarad B. Niemi**. (2002) A hobo transgene that encodes the *P* element transposase in *Drosophila melanogaster*: Autoregulation and cytotype control of transposase activity. *Genetics*, **161**, 195–204.

## Book Chapters

**Jarad B. Niemi** and Gerald J. Niemi. (2015) Linear regression, model averaging, and Bayesian techniques for predicting chemical activities from structure. Ebook chapter on Advances in Mathematical Chemistry and Applications , Editors: Subhash C. Basak, Guillermo Restrepo and Jose Luis Villaveces, Bentham Publishers ([url](#))

## Refereed Conference Proceedings

Ignacio Alvarez\*, **Jarad Niemi**, and Matt Simpson\*. (2014) Bayesian inference for a covariance matrix. *Proceedings for the Conference on Applied Statistics in Agriculture* ([url](#))

Michael Ludkovski and **Jarad Niemi** (2011) Optimal disease outbreak decisions using stochastic simulation. *Proceedings of the 2011 Winter Simulation Conference*, eds. S. Jain, R. R. Creasey, J. Himmelspack, K. P. White, and M. Fu.

**Jarad Niemi**, Meredith Smith, and David Banks. (2008) Test power for drug abuse surveillance. in *Biosurveillance and Biosecurity, Proceedings of BioSecure 2008, Lecture Notes in Computer Science*, eds. Daniel Zeng, Hsinchun Chen, Henry Rolka, and William B. Lober. pp. 131–142

## Refereed Abstracts

Nicholas L. Michaud\* and **Jarad Niemi**. (2016) A Bayesian Hierarchical Model for Estimating Influenza Epidemic Severity. ISDS Annual Conference Proceedings 2015. *Online Journal of Public Health Informatics* 8:1. ([url](#))

Nicholas L. Michaud\*, Aaron Kite-Powell, and **Jarad Niemi**. (2016) CDCPlot: an Application for Viewing Weekly CDC MMWR Disease Count Data. *Online Journal of Public Health Informatics* 8:1. ([url](#))

**Jarad Niemi**. (2014) A Tool for Interactive Disease Outbreak Visualization, Detection, and Forecasting. *Online Journal of Public Health Informatics* 6:1. ([url](#))

**Jarad Niemi** and Michael Ludkovski. (2013) Tau-leaped particle learning. *Online Journal of Public Health Informatics* 5:1. ([url](#))

**Jarad Niemi** and Michael Ludkovski. (2011) Optimal sequential management decisions for measles outbreaks. *Emerging Health Threats Journal* 4. ([url](#))

**Jarad Niemi**. (2011) An exploratory analysis of the 2010 measles outbreak in Zimbabwe. *Emerging Health Threats Journal* 4. ([url](#))

**Jarad B. Niemi**, Michael D. Porter, and Brian J. Reich. (2008) Mixture likelihood ratio scan statistic for disease outbreak detection. *Advances in Disease Surveillance* 5:49. ([url](#))

## Book reviews

**Jarad B. Niemi**. Statistics Done Wrong: The Woefully Complete Guide. *The American Statistician* 70(1), pg 125 [url](#)

**Jarad B. Niemi**. (2010) Dynamic Linear Models with R. *The American Statistician* 64(3), pg 268 [url](#)

## Patent Applications

Tim W. Dake, **Jarad B. Niemi**, Don L. Hughes, Jeff J. Kester, Don B. Compton, Jon J. Calderas, Rich G. Schafermeyer, and Kevin P. Christmas. (2002) Compositions with high intensity sweetener having enhanced aqueous solubility and methods of their preparation. United States Patent Application 20030026872 <https://patentscope.wipo.int/search/en/detail.jsf?docId=W02002091856>

## Other manuscripts

Luis Damiano\* and **Jarad Niemi**. The RITAS Algorithm: a constructive yield monitor data processing algorithm. <https://arxiv.org/abs/2209.11313>

Will Landau\* and **Jarad Niemi**. A fully Bayesian strategy for high-dimensional hierarchical modeling using massively parallel computing. <https://arxiv.org/abs/1606.06659>

**Jarad Niemi** and Andrew Gelman. (2011) Statistical graphics: making information clear – and beautiful. *Significance* 8, 135–137

**Jarad B. Niemi** and Matthew Wheeler. (2011) Efficient Bayesian inference in stochastic chemical kinetic models using graphical processing units. <http://arxiv.org/abs/1101.4242>

**Jarad B. Niemi**. (2010) Evaluating individual player contributions to team offense and defense: a model based approach. *JSM Proceedings, Section on Statistics in Sports*. Vancouver, BC, Canada: American Statistical Association. 4914–4923.

## Invited Talks

### At other universities

“Building statistical emulators of computer models,” St. Olaf College, 14 Nov 2022

“Toward emulators for agricultural computer models,” Virginia Tech, 3 Nov 2022

“COVID-19 forecast hub,” University of Iowa, 15 Oct 2020

“Sequential knot selection in sparse Gaussian processes,” Simon Fraser University, 10 Jan 2020

“Fully Bayesian analysis for hierarchical count regression models.” University of California, Irvine, 28 Nov 2017

“Fully Bayesian analysis of RNAseq data for gene expression heterosis detection.” University of Massachusetts - Amherst, 24 March 2017

“A computational approach to the sequential control problem.” Duke Department of Statistical Science 25<sup>th</sup> Anniversary Celebration, 20 Oct 2012

“Determining optimal sequential disease outbreak interventions.” University of Iowa, Computational Epidemiology Seminar, 20 Jan 2012

“Early outbreak detection using syndromic surveillance networks.” University of California, Los Angeles Biostatistics departmental seminar, 19 November 2009

“Computational methods for general state-space models.” University of New Mexico Mathematics and Statistics departmental seminar, 19 February 2009

“Computational methods for general state-space models.” University of Michigan Statistics departmental seminar, 17 February 2009

“Computational methods for general state-space models.” University of Texas, Austin Information, Risk, and Operations Management departmental seminar, 17 February 2009

“Computational methods for general state-space models.” Johns Hopkins Biostatistics departmental seminar, 6 February 2009

“Computational methods for general state-space models.” University of California, Los Angeles Biostatistics departmental seminar, 28 January 2009

“Computational methods for general state-space models.” Iowa State Statistics departmental seminar, 26 January 2009

“Computational approaches for general state-space models.” University of California, Santa Barbara Statistics and Applied Probability departmental seminar, 12 January 2009

### At conferences

“Gaussian processes with functional length-scales for agricultural models.” Statistical Society of Canada Annual Meeting, 11 Jun 2021



“Multivariate temporal modeling of crime with dynamic linear models.” Joint Statistical Meetings, 6 Aug 2020,

“OAT knot selection for approximate Gaussian processes.” SIAM UQ20, March 2020 (canceled due to COVID-19)

“Parallelized Markov chain Monte Carlo algorithms utilizing GPUs with an application to RNAseq data analysis.” 9th International Conference of the ERCIM WG on Computational and Methodological Statistics, University of Seville, Spain, 9-11 December 2016

“Massively parallel approximate Gaussian process regression.” Spring Research Conference, Illinois Institute of Technology, 26 May 2016

“Massively parallel approximate Gaussian process regression.” Joint Statistical Meetings, 7 Aug 2014

“Particle learning for sequential estimation and prediction of disease outbreaks.” 2013 ICSA-ISBS Joint Statistical Conference, 10 Jun 2013

“Particle learning for low counts in disease outbreaks.” Midwest Statistics Research Colloquium, 15 Mar 2013

“Rejection sampling on a graphical processing unit.” 11th World Meeting of the International Society for Bayesian Analysis, 28 Jun 2012

“Adaptive mixture modeling Metropolis methods for state inference in nonlinear time series.” Joint Statistical Meetings, 3 August 2009

“Test power for drug abuse surveillance.” BioSecure, 2 December 2008

### **At agencies, companies, other venues**

“Emulation of Agricultural Production Systems sIMulator (APSIM).” Los Alamos National Labs, 23 Sep 2020

“Hierarchical modeling and data fusion.” Centers for Disease Control and Prevention Seasonal Influenza Forecasting Workshop, 31 Aug 2016

“Stochastic dynamic models for low count observations.” Institute for Disease Modeling Symposium, 19 Apr 2016

“Particle learning for low counts in disease outbreaks.” Institute for Disease Modeling, 18 Apr 2016

### **Contributed Talks at Major Conferences**

“Subfield Yield Analysis for Precision Agriculture.” Joint Statistical Meetings, 30 July 2019

“Fully Bayesian Analysis of Hierarchical Count Regression Models.” Joint Statistical Meetings, 31 July 2018

“Optimal sequential management decisions for measles outbreaks.” 10<sup>th</sup> International Society for Disease Surveillance 10<sup>th</sup> Annual Conference, 7 Dec 2011

“Evaluating individual player contributions in basketball.” Joint Statistical Meetings, 4 Aug 2010

“Optimal sequential management decisions for influenza outbreaks.” 9<sup>th</sup> International Society for Disease Surveillance 9<sup>th</sup> Annual Conference, 2 Dec 2010

“Mixture likelihood ratio scan statistic for disease outbreak detection.” 7<sup>th</sup> Annual Meeting of the International Society for Disease Surveillance, 3 December 2008

“Bayesian modeling and inference in single cell dynamic networks.” 39<sup>th</sup> Symposium on the Interface: Computing Science and Statistics, 26 May 2007

“Identifying and evaluating contrarian strategies for NCAA tournament pools.” 2006 Joint Statistical Meetings, 8 August

## **Other Talks**

“Gaussian Process Emulators with Functional Inputs for Water Erosion Prediction Project” NCCC170, 15 Jun 2023

“Advancing Scientific Practice through Agricultural Statistics,” Iowa State University, 26 Sep 2022

“Computer Model Emulation in Agriculture.” NCCC170, 16 Jun 2022

“COVID-19 Forecast Hub.” ISU Undergraduate STAT Club, 22 Oct 2020

“Bayesian analysis in R.” Rgronomists/Lunchinators, 1 Feb 2019

“Emulation of WEPP and DEP.” SAMSI MUMS Prediction Uncertainty and Extrapolation working group, 28 Nov 2018

“Using information underlying missing data for improve estimation of NFL field goal kicker accuracy.” Midwest Sports Analytics Meetings, 19 Nov 2016

“Bayesian analysis for heterosis detection in RNAseq data.” Department of Statistics, Colorado State University, 11 Dec 2015

“Bayesian analysis for heterosis detection in RNAseq data.” Department of Applied Mathematics, University of Colorado-Boulder, 7 Dec 2015

“Empirical Bayes analysis for detection of gene heterosis in RNAseq data.” Conference on Applied Statistics in Agriculture, Manhattan, KS, 27 Apr 2015

“Empirical Bayes identification of gene heterosis using RNAseq counts.” Animal Breeding and Genetics, Iowa State University, 28 Jan 2015

“Particle learning for low counts in disease outbreaks.” Department of Statistics, Iowa State University, 16 September 2013

“Statistical methods for identifying gene expression heterosis.” Conference on Applied Statistics in Agriculture, Manhattan, KS, 30 Apr 2013 (joint with Dan Nettleton)

“A sequential Monte Carlo primer.” Iowa State University, Department of Statistics, Computational Statistics working group, 12 Oct 2011

“Statistical computing on graphical processing units.” Iowa State University, Department of Statistics, Computational Statistics working group, 28 Sep 2011

“Time management.” UCSB IGERT Career Development Seminar Series, 12 Apr 2011

“Optimal dynamic policies for influenza management.” Iowa State University departmental seminar, 24 February 2011

“Optimal sequential management decisions for influenza outbreaks.” University of California, Santa Barbara Statistics and Applied Probability departmental seminar, 12 January 2011 (joint with Mike Ludkovski)

“A brief introduction to R.” University of California, Santa Barbara Quantitative Methods in Social Sciences seminar, 8 Apr 2010

“A sequential Monte Carlo primer.” University of California, Santa Barbara Statistics and Applied Probability departmental seminar, 21 October 2009

“Assessing the effectiveness of a national drug intervention policy.” Graduate Student Seminar Series, 17 November 2008

“Discrete-time models for intracellular processes in systems biology.” Graduate Student Research Day, Duke University, 02 Apr 2008

“Bayesian analysis in systems biology: advances and impact in single-cell dynamical networks.” Graduate Student Seminar Series, 25 February 2008

“Stochastic modelling and estimation in dynamic cellular networks.” 39<sup>th</sup> Symposium on the Interface: Computing Science and Statistics, 24 May 2007 (invited, given on behalf of Mike West)

## Posters

**Jarad Niemi** and Will Landau. Fully Bayesian analysis of hierarchical count regression models applied to RNAseq. 2018 ISBA World Meeting, 26 Jun 2018

**Jarad Niemi** and Will Landau. **fbseq**: An R package for fully Bayesian analysis of RNAseq data.

Nicholas L. Michaud\*, Aaron Kite-Powell, and **Jarad Niemi**. CDCPlot: an Application for Viewing Weekly CDC MMWR Disease Count Data. 2015 International Society for Disease Surveillance Conference, 10 Dec 2015

Nicholas L. Michaud\* and **Jarad Niemi**. A Bayesian Hierarchical Model for Estimating Influenza Epidemic Severity. Epidemics5, 3 Dec 2015

Will Landau\*, and **Jarad Niemi**. A Hierarchical Modeling Strategy for Identifying Gene Expression Heterosis using Parallel Computing with Graphics Processing Units (GPUs). Conference on Applied Statistics in Agriculture, Kansas State University, Apr 2015

Eric Mittman\*, **Jarad Niemi**, and Dan Nettleton. Hierarchical Bayesian modeling of RNA-seq data with Stan. Conference on Applied Statistics in Agriculture, Kansas State University, Apr 2015

**Jarad Niemi** and Michael Ludkovski. Poisson-binomial state-space model for disease outbreaks with low counts. International Society for Bayesian Analysis World Meeting, 16 July 2014

Ignacio Alvarez\* and **Jarad Niemi**. Bayesian Inference for covariance matrix. Conference on Applied Statistics in Agriculture, Manhattan, KS, 29 Apr 2014

**Jarad Niemi**. “A Tool for Interactive Disease Outbreak Visualization, Detection, and Forecasting” 2013 International Society for Disease Surveillance Conference, 7 Dec 2013

MacDonald, A.L., L.A. Schulte Moore, M.J. Helmers, and **J.B. Niemi**. Bird response to native habitat strips integrated into agricultural fields. International Conference on Agricultural Biodiversity and Sustainability, Hokkaido University, Japan, 29 Aug 2012

A.L. MacDonald, L.A. Schulte, M.J. Helmers, and **J.B. Niemi**. 2012. Testing a new conservation practice for agricultural landscapes: Bird response to prairie strips in row-cropped landscapes. 97th Annual Meeting of the Ecological Society of America, Portland, Oregon, 7 Aug 2012

**Jarad Niemi**. “An exploratory analysis of the 2010 measles outbreak in Zimbabwe” 2011 International Society for Disease Surveillance Conference, 7 Dec 2011

**Jarad Niemi** and Matthew Wheeler. “Parameter inference in stochastic chemical kinetic models on GPUs.” MCM-Ski3: 4<sup>th</sup> International IMS/ISBA Joint Meeting, 6 Jan 2011

**Jarad Niemi** and Mike West. “Nonlinear dynamic models for single-cell time-lapse microscopy.” Duke Center for Systems Biology Retreat, 18 May 2009

**Jarad Niemi** “Adaptive mixture filtering: an alternative to particle filtering?” SAMSI Sequential Monte Carlo Kickoff Workshop, 8 September 2008

**Jarad Niemi** and Mike West. “Bayesian parameter estimation for systems biological models of dynamic cellular networks.” SAMSI Biosystems Modeling Workshop, 5 March 2007

**Jarad Niemi** and Mike West. “Bayesian parameter estimation for systems biological models of dynamic cellular networks.” 1<sup>st</sup> Annual Duke Systems Biology Symposium, 14 September 2006

**Jarad Niemi** and Mike West. “Bayesian parameter estimation for systems biological models of dynamic cellular networks.” 8<sup>th</sup> Valencia International Meeting on Bayesian Statistics, 5 Jun 2006

#### News interviews (hyperlinked)

[CNBC](#), [CBS Moneywatch](#), [MSN MoneyCentral](#), [Slate](#) ([2009](#), [2011](#), [2012](#), [2013](#)), [The Duke Chronicle](#)

#### Courses taught

##### Regular courses

|  |              |   |
|--|--------------|---|
| At Iowa State University:                    |              |   |
| Spring 2023                                  | STAT 486/586 | Introduction to Statistical Computing               |
| Fall 2022                                    | STAT 330     | Probability and Statistics for Computer Science     |
| Spring 2022                                  | HCI 522      | Scientific Methods in Human Computer Interaction    |
| Fall 2021                                    | STAT 587-1   | Statistical Methods For Research Workers            |
|  | STAT 615     | Advanced Bayesian Methods                           |
| Spring 2021                                  | STAT 330-2   | Probability and Statistics for Computer Science     |
|  | STAT 587-3   | Statistical Methods For Research Workers            |
| Fall 2020                                    | STAT 587-2   | Statistical Methods For Research Workers            |
| Spring 2019                                  | STAT 544     | Bayesian Statistics                                 |
|  | STAT 587C    | Statistical Methods for Research Workers            |
| Fall 2018                                    | STAT 226     | Introduction to Business Statistics                 |
| Spring 2018                                  | STAT 544     | Bayesian Statistics                                 |
|  | STAT 401C    | Statistical Methods for Research Workers            |
| Fall 2017                                    | STAT 615     | Advanced Bayesian Methods                           |
| Spring 2017                                  | STAT 401D    | Statistical Methods for Research Workers            |
|  | STAT 544     | Bayesian Statistics                                 |
| Fall 2016                                    | STAT 330     | Probability and Statistics for Computer Science     |
| Spring 2016                                  | STAT 544     | Bayesian Statistics                                 |
| Fall 2015                                    | STAT 615     | Advanced Bayesian Methods                           |
| Spring 2015                                  | STAT 544     | Bayesian Statistics                                 |
| Fall 2014                                    | STAT 401A    | Statistical Methods for Research Workers            |
|  | STAT 330     | Probability and Statistics for Computer Science     |
| Spring 2014                                  | STAT 544     | Bayesian Statistics                                 |
| Fall 2013                                    | STAT 401A    | Statistical Methods for Research Workers            |
|  | STAT 615     | Advanced Bayesian Methods                           |
| Spring 2013                                  | STAT 544     | Bayesian Statistics                                 |
| Fall 2012                                    | STAT 401A    | Statistical Methods for Research Workers            |
|  | HON 321E     | Paradox   |
| Spring 2012                                  | STAT 401A    | Statistical Methods for Research Workers            |
| Fall 2011                                    | STAT 615     | Advanced Bayesian Methods                           |
| At University of California - Santa Barbara: |              |   |
| Spring 2011                                  | PSTAT 120C   | Probability and Statistics                          |
|  | PSTAT 230    | Seminars and Projects in Statistical Consulting     |
| Winter 2011                                  | PSTAT 220B   | Advanced Statistical Methods (GLMs)                 |
| Fall 2010                                    | PSTAT 120B   | Probability and Statistics                          |
| Spring 2010                                  | PSTAT 120B   | Probability and Statistics (estimation and testing) |
|  | PSTAT 230    | Seminar and Projects in Statistical Consulting      |
| Winter 2010                                  | PSTAT 262    | Applied Bayesian Time Series                        |

## Short courses

|          |   |                 |                    |
|----------|---|-----------------|--------------------|
| Jan 2022 | Data Management Workshop                  | ISU             | 1-day              |
| Dec 2016 | Introduction to R for Biosurveillance     | ISDS            | 1-day              |
| Dec 2015 | Introduction to R for Biosurveillance     | ISDS            | 1-day              |
| Dec 2014 | Introduction to R for Biosurveillance     | ISDS            | 1-day              |
| Apr 2010 | Sequential Monte Carlo methods            | ASA-Albuquerque | $\frac{1}{2}$ -day |
| Dec 2009 | Introduction to statistical analysis in R | NRRI            | 2-day              |

## Grants

USDA NIFA (#2020-68012-31824) Consortium for Cultivating Human and Naturally reGenerative Enterprises (C-CHANGE), Role: Co-PI. 1 Sep 2020 to 31 Aug 2025. [\$10,000,000; \$62,614 to Niemi]

Foundation for Food and Agriculture Research, Prairie Strips for Healthy Soils and Thriving Farms, Role: Co-PI 1 October 2018 to 30 September 2021 [\$746,204.44; \$69,747 to Niemi]

Iowa State University Presidential Interdisciplinary Research Initiative (ISU-PIRI), Initiative for Cultivating Human And Naturally reGenerative Enterprises (I-CHANGE), Role: Co-PI. 1 June 2018 to 31 May 2021 [\$741,480; \$6,175 to Niemi]

D. Nettleton, P. Liu, **J. Niemi**, P. Schnable. Hierarchical Modeling and Parallelized Bayesian Inference for the Analysis of RNAseq Data, National Institutes of Health, September 1, 2013 to May 31, 2017 [\$1,088,156; \$272,039 to Niemi]

## Honors, and Awards

2022 Iowa State University College of Liberal Arts & Sciences Outstanding Achievement in Extension or Professional Practice

2022 Iowa State University Interdisciplinary Team Research Award (C-CHANGE)

2021 American Society of Agronomy Presidential Award (NCCC170)

2020 Conservation Innovation Award, Soil and Water Conservation Society (STRIPS Team)

2018 Iowa State University College of Liberal Arts & Sciences Institutional Service Award

2018 Iowa State University College of Agriculture and Life Sciences Team Award (STRIPS Team)

Iowa State University Health Research Initiative on Infectious Diseases (PI Michael Cho, I was one of many investigators) [\$150,000] (2012)

World Meeting of the International Society for Bayesian Analysis Early Career Researchers Travel Grant [\$500] (2012)

Iowa State University College of Liberal Arts and Sciences grant for GPU cluster and RA support [\$88,000] (2011)

University of California Regents Junior Faculty Fellowship [\$7,500] (2011)

MCMSki3 conference travel support [\$650] (2011)

NVIDIA Academic Partnership Program award [2× NVIDIA C2050 GPUs] (2010)

Section on Bayesian Statistical Science Student Paper Competition winner [\$1,000] (2009)

International Society for Disease Surveillance Technical Contest 2<sup>nd</sup> place (2008)

NSF National Research Service Award Fellowship (2003–2004)

## Memberships

American Association for the Advancement of Science  
American Statistical Association  
International Society for Bayesian Analysis  
International Society for Disease Surveillance

## Service

### Profession

NSF Panel (2018, 2024)

Associate Editor for *Journal of Agricultural, Biological, and Environmental Statistics* (2016–current)

Conference organization

- International Society for Disease Surveillance Analytical Methods track chair (2012,2013)
- International Society for Disease Surveillance session chair (2010)
- Joint Statistical Meetings, Section on Statistical Computing session chair (2009)

Other statistical community service (hyperlinked if appropriate)

- Iowa State Science & Technology Fair Judge (2022–2023)
- First Lego League Coach (2022–2023)
- [NCCC170 Website](#) Development Lead (2022–present)
- Cross-validated user [4,561 rep](#)
- [International Society for Bayesian Analysis - Web Editor](#) (2013–2015)
- Professional website (<http://jarad.me/>) (2009–present)
- News Editor for Significance Magazine (2010–2012)
- Professional twitter account ([@jaradniemi](#))
- Professional YouTube channel (<https://www.youtube.com/jaradniemi>) (2011–present)

### University service

- ISU Provost Working Group on Faculty Salary Equity Study (2022–present)
- ISU LAS CASTLE (2020–present, chair 2023–present)
- C-CHANGE Smart Technologies Lead (2020–present)
- ISU STRIPS Data lead (2018–present)
- ISU Faculty Compensation Committee (2016–2022)
- ISU Transportation Advisory Council (2015–2018)
- ISU Faculty Senate departmental representative (2012–2018)
- UCSB Faculty Legislature, member (2010–2011)
- Center for Research in Financial Mathematics and Statistics, UCSB, member (2010–2011)
- Quantitative Methods in the Social Sciences, UCSB, core faculty (2009–2011)

### Departmental service

- ISU Department of Statistics
  - \* Director of Graduate Recruiting and Admissions (2022–current)
  - \* Graduate Student Services Specialist Search Committee, member (2022, 2023)

- \* Faculty Search Committee, member (2018–2019, 2021–2022)
- \* Graduate Curriculum and Exams Review, co-chair (2022–present)
- \* Graduate Curriculum Review Committee, chair (2021–2022)
- \* Graduate Exams Review Committee, member (2021–current)
- \* Diversity, Equity, and Inclusion Committee, member (2020–2021)
- \* Website Committee, chair (2020–current)
- \* Graduate Recruiting and Admissions Committee, member (2020–current)
- \* Computation Advisory Committee, member (2011–2022), chair (2017–2019)
- \* Chair Search Advisory committee (2018–2019)
- \* Qualifying Exam Committee, member (2016–2019)
- \* Snedecor Sustainability Committee, co-chair (2015–2017)
- \* Preparing Future Faculty mentor:
  - Will Landau (2013–2014)
  - Natalia da Silva (2015–2016)
- \* STAT-ers advisor (2011–2017)
- \* Statistics/BCB search committee (2014–2015)
- \* Director of Statistical Consulting search committee (2014–2015)
- \* Department Chair search committee (2012–2014)
- \* Computational Statistics working group, chair (2011–2014)
- \* Social committee (2011–2015)



## Student Committees and Advisees

Table 1: Graduate students advised

| Student                | School | Department | Degree | Completed   | Chair    | Co-chair          |
|------------------------|--------|------------|--------|-------------|----------|-------------------|
| Fredrick Osei          | ISU    | STAT       | MS     | In progress | Co-chair | Danica Ommen      |
| Spencer Wadsworth      | ISU    | STAT       | MS     | 2022        | Chair    |                   |
| Luis Damiano           | ISU    | STAT       | MS     | 2020        | Chair    |                   |
| Xiyuan Sun             | ISU    | STAT       | MS     | 2019        | Chair    |                   |
| Gulzina Kuttubekova    | ISU    | STAT       | MS     | 2019        | Chair    |                   |
| Nate Garton            | ISU    | STAT       | MS     | 2018        | Chair    | Dan Nettleton     |
| Katie Will             | ISU    | STAT       | MS     | 2017        | Chair    |                   |
| Eric Mittman           | ISU    | STAT       | MS     | 2015        | Chair    |                   |
| Ignacio Alvarez-Castro | ISU    | STAT       | MS     | 2014        | Chair    |                   |
| Adam Martin-Schwarze   | ISU    | STAT       | MS     | 2014        | Chair    |                   |
| Casey Oliver           | ISU    | STAT       | MS     | 2012        | Co-chair | Alicia Carriquiry |
| Aditya Ranade          | ISU    | STAT       | PhD    | In progress | Chair    |                   |
| Spencer Wadsworth      | ISU    | STAT       | PhD    | In progress | Chair    |                   |
| Luis Damiano           | ISU    | STAT       | PhD    | 2023        | Chair    |                   |
| Nate Garton            | ISU    | STAT       | PhD    | 2020        | Co-chair |                   |
| Nehemias Ulloa         | ISU    | STAT       | PhD    | 2019        | Chair    | Petrutza Caragea  |
| Colin Lewis-Beck       | ISU    | STAT       | PhD    | 2018        | Co-chair |                   |
| Ignacio Alvarez-Castro | ISU    | STAT       | PhD    | 2017        | Chair    |                   |
| Eric Mittman           | ISU    | STAT       | PhD    | 2017        | Chair    |                   |
| Adam Martin-Schwarze   | ISU    | STAT       | PhD    | 2017        | Co-chair |                   |
| Will Landau            | ISU    | STAT       | PhD    | 2016        | Chair    | Philip Dixon      |
| Nicholas Michaud       | ISU    | STAT       | PhD    | 2016        | Chair    |                   |
| Matthew Simpson        | ISU    | STAT&ECON  | PhD    | 2015        | Co-chair |                   |
| Danny Sheinson         | UCSB   | PSTAT      | MS     | 2011        | Co-chair |                   |
| Danny Sheinson         | UCSB   | PSTAT      | PhD    | 2014        | Co-chair |                   |

Table 2: Graduate student committees

| Chair/Co-chair | STAT | Degree | Completed | In progress |
|----------------|------|--------|-----------|-------------|
| Yes            | Yes  | MS     | 11        | 1           |
| Yes            | Yes  | PhD    | 11        | 2           |
| No             | No   | MS     | 12        | 1           |
| No             | No   | PhD    | 21        | 4           |
| No             | Yes  | MS     | 14        | 0           |
| No             | Yes  | PhD    | 24        | 2           |

Table 3: Undergraduate Research Projects Supervised

| Student              | Year | Topic  |
|----------------------|------|--|
| Aridania Gerardo     | 2021 | Bayesian Hierarchical Model for Reward Probabil... |
| Roger Castillo-Ramos | 2021 | Shiny App for Visualization of Fertilizer Effec... |
| Benedict Neo         | 2022 | Development of WEPPR: an R interface to the WEP... |
| Benedict Neo         | 2023 | Python Implementation of RITAS Yield-processing... |
| Ben Monroe           | 2023 | Wrestling Data Analysis                            |
| Feifan (Fiona) Cao   | 2023 | Empirical Study of Card Shuffling                  |