

# Curriculum Vitae

John Hughes

## Academic Rank

Associate Professor

## Degrees Awarded

PhD, Statistics, The Pennsylvania State University, 2011

MS, Statistics, The Pennsylvania State University, 2009

MS, Applied Computer Science, Frostburg State University, 2002

BS, Mathematics and Computer Science, Frostburg State University, 1995

## Academic Employment

### University of Colorado, Denver

Associate Professor of Biostatistics, 2016–2018

### University of Minnesota, Twin Cities

Assistant Professor of Biostatistics, 2011–2016

### The Pennsylvania State University, University Park

Research Assistant to John Fricks, 2008–2011

Teaching Assistant to Manfred Denker, Math/Stat 416 Stochastic Modeling, fall 2008

### Frostburg State University, Frostburg, MD

Lecturer of Computer Science, 1995–2007

## Consulting

Minnesota Center for Chemical and Mental Health, 2015–2016

TRE Los Angeles, 2015–2016

Courage Kenny Research Center, 2011–2015

## Memberships in Professional Organizations

American Association of University Professors  
International Statistical Institute  
International Association for Statistical Computing  
International Environmetrics Society  
International Society for Bayesian Analysis  
American Statistical Association  
Institute of Mathematical Statistics  
International Biometric Society (WNA) (WNAR)  
Society for Industrial and Applied Mathematics  
Bernoulli Society  
Heterodox Academy

## Honors and Awards

Student Travel Award; MCMSki V; Lenzerheide, Switzerland; January 4–7, 2016  
NSF Early Career Researchers Travel Grant; ISBA 2012 World Meeting; Kyoto, Japan; June 25–29, 2012  
Student Travel Award; MCMSki III; Park City, UT, USA; January 5–7, 2011  
University Graduate Fellowship, The Pennsylvania State University, 2007–2008

## Editorships/Journal Reviewer Experience

Editorial Board, *Medeniyet Medical Journal*  
Associate Editor, 2014–2018, *Journal of Agricultural, Biological, and Environmental Statistics*  
Referee, *Spatial and Spatiotemporal Epidemiology*  
Referee, *Statistical Methods in Medical Research*  
Referee, *Environmental and Ecological Statistics*  
Referee, *Biostatistics*  
Referee, *Statistics in Medicine*  
Referee, *Statistica Sinica*  
Referee, *Biometrics*  
Referee, University of Wisconsin ICTR Novel Methods Translational Research Pilot Program  
Referee, *Journal of Evaluation in Clinical Practice*  
Referee, *Journal of Agricultural, Biological, and Environmental Statistics*  
Referee, *Journal of the Royal Statistical Society, Series A*

Referee, *Journal of the Royal Statistical Society, Series C*

Referee, *Clinical Trials*

Referee, *Statistical Methodology*

Referee, *Environmetrics*

Referee, *Journal of the American Statistical Association*

Referee, *The Annals of Applied Statistics*

Referee, *The American Statistician*

Referee, *Bayesian Analysis*

Referee, *Frontiers in Applied Mathematics and Statistics*

Referee, *Journal of Computational and Graphical Statistics*

## Research and Training Grants

### Completed Grants

1. **Role:** Co-Investigator  
**Title:** Routes to Sustainability for Natural Gas Development and Water and Air Resources in the Rock Mountain Region  
**PI:** John Adgate and Joseph Ryan  
**Source:** NSF  
**Purpose:** The goals of this study are to assess the sustainability of natural gas development and its impacts on environmental media and health in the Rocky Mountain Region.  
**Period:** 2012–2018  
**Award:** 10% salary support
  
2. **Role:** Co-Investigator  
**Title:** Colorado Clinical and Translational Sciences Institute  
**PI:** Ronald Sokol  
**Source:** NIH/NCATS UL1 TR001082  
**Purpose:** The major goals of this project are to enhance clinical and translational research and science, training of clinical and translational scientists, and collaboration with the communities of Colorado and the surrounding region.  
**Period:** 2016–2018  
**Award:** 20% salary support
  
3. **Role:** Co-Investigator  
**Title:** Genetic Epidemiology of COPD (COPDGene)  
**PI:** James Crapo and Edwin Silverman  
**Source:** NIH/NHLBI  
**Purpose:** The goals of this study are to discover what heritable or genetic factors contribute to the development of COPD in some people and to use this information to develop new therapeutic approaches to control this disease.  
**Period:** 2016–2017  
**Award:** 25% salary support
  
4. **Role:** Co-Investigator  
**Title:** Develop a Center for Excellence for Mental Health Workforce

- PI:** Piper Meyer–Kalos  
**Source:** MN Department of Human Services  
**Purpose:** The major goal of this project is to develop an individual practitioner certification for co-occurring mental health and substance use disorders, provide training and consultation in evidence-based practices, and pilot an intervention for co-occurring disorders.  
**Period:** 2014–2016  
**Award:** 12.5% salary support
5. **Role:** **Co-Investigator**  
**Title:** Mental Health Quality Improvement Project for Assertive  
**PI:** Piper Meyer–Kalos  
**Source:** MN Department of Human Services  
**Purpose:** The major goals of this project are to pilot an intervention for integrated mental health and medical disorders on assertive community treatment teams.  
**Period:** 2014–2015  
**Award:** 12.5% salary support
6. **Role:** **Principal Investigator**  
**Title:** Copula Models for Spatial Epidemiology of Cancer  
**Source:** National Cancer Institute (R03)  
**Purpose:** The aim of the proposed research is to develop a new class of statistical models that could potentially provide a more accurate description of cancer risk. New, user-friendly software will enable a diverse community of practitioners to apply the new models to spatially aggregated cancer data.  
**Period:** 2014–2016  
**Award:** 20% salary support
7. **Role:** **Co-Investigator**  
**Title:** University of Minnesota Clinical and Translational Science Institute (UMN CTSI)  
**PI:** Bruce Blazar  
**Source:** NIH/NCATS UL1 TR000114 and KL2 TR000113  
**Purpose:** The two major CTSI goals are to (1) create an academic home and a flexible infrastructure to coordinate and integrate CTS research and foster transparent communications and interactions between UMN and the community for the purpose of maximizing health outcome impact statewide, and (2) train and reward interdisciplinary CTS teams at UMN and in the community.  
**Period:** March 2013–February 2016  
**Award:** 20% salary support
8. **Role:** **Principal Investigator and sole author of proposal**  
**Title:** New Methods for Spatial Statistics and Processive Motor Proteins  
**Source:** Simons Foundation  
**Purpose:** This award supports mathematical collaboration by funding travel and visitors.  
**Period:** September 2012–December 2015  
**Award:** \$35,000
9. **Role:** **Co-Investigator**  
**Title:** RF Safety for Brain MRI at Ultra-High Fields  
**PI:** Thomas Vaughn  
**Source:** NIH R01  
**Purpose:** The overall objective of this proposal is to investigate high frequency RF heating in order to improve RF safety for high field MRI.  
**Period:** April 2012–January 2015  
**Award:** 9% salary support

10. **Role:** **Principal Investigator and sole author of proposal**  
**Title:** Open-Source Software for New Methods in Spatial Statistics  
**Source:** Grant-in-Aid of Research, Artistry, and Scholarship  
**Purpose:** The aim of this project is to design, develop, document (including a journal article), and freely distribute a new software package called `ngspatial` 1.0, which will support the use of several new spatial models.  
**Period:** January 2012–June 2013  
**Award:** \$26,072

## Pending Grants

1. **Role:** **Principal Investigator**  
**Title:** Spatial Radiomics for Pulmonary Sarcoidosis  
**Source:** Colorado Clinical and Translational Sciences Institute Novel Methods Development Program  
**Purpose:** This project will (1) yield a collection of spatially varying spatial radiomic biomarkers for pulmonary sarcoidosis, and (2) yield efficient, mature, user-friendly functional regression software suitable for use by non-statisticians. This work will also serve as the pilot for a broader collaborative grant application integrating radiomic features with clinical and genetic characteristics.  
**Period:** 2018–2019  
**Award:** 11% salary support
2. **Role:** **Co-Investigator**  
**Title:** Effect of Increased Lean Mass on Postural Blood Pressure in Older Adults with Low Lean Mass  
**PI:** Melissa Benton  
**Source:** NIH R21  
**Purpose:** Falls are a serious and costly problem in older adults, and are linked to hydration status and orthostatic hypotension. Current fall prevention guidelines for older adults with orthostatic (postural) hypotension recommend withdrawal of anti-hypertension medications, placing them at risk for long-term consequences of hypertension. If successful, this study will provide an alternate non-pharmacologic management strategy that allows older adults to maintain medication therapy for hypertension and cardiovascular disease.  
**Period:** 2018–2020  
**Award:** 10% salary support
3. **Role:** **Co-Investigator**  
**Title:** Novel Approaches to Phenotyping in Sarcoidosis  
**PI:** Nichole Carlson, Tasha Fingerlin, and Lisa Maier  
**Source:** NIH R01  
**Purpose:** The goals of this project are to 1) develop new measures of lung damage in the disease sarcoidosis using CT scans, and 2) to integrate these new measures with clinical data and genomic information to identify and describe the ways sarcoidosis disease appears in the lung. This project will identify new ways to group patients when following them to understand why disease gets worse in some and better in others and when testing new treatments for disease.  
**Period:** 2018–2022  
**Award:** 15% salary support
4. **Role:** **Co-Investigator**  
**Title:** Defining Personal Environmental Boundaries in Cancer Control  
**PI:** Myles Cockburn

- Source:** NCI R21  
**Purpose:** We will develop and pilot test a simple and scalable approach to incorporating place into the patient medical record: a tablet-based mapping system that allows patients to define their local environment by drawing a boundary on a map depicting where they spend most of their time, known as a Personal Environment Boundary, or PEB. We will record PEBs for at least 500 cancer patients in both university clinic (in our Comprehensive Cancer Center) and community clinic (through a Practice-Based Research Network) settings, link them to medical records, and use them to enhance linkage with available data on place-based factors associated with outcomes for cancer patients.  
**Period:** 2018–2020  
**Award:** 10% salary support
5. **Role:** **Co-Investigator**  
**Title:** A Multi-State Examination of Oil and Gas Development and Childhood Leukemia  
**PI:** Lisa McKenzie  
**Source:** NIEHS R01  
**Purpose:** In this multi-state, population-based case-control study of childhood ALL among children born in Colorado, Ohio, Pennsylvania, and Texas, an innovative UO&G activity model and U.S. Census data will be used to evaluate two childhood ALL risk factors linked to UO&G: leukemogenic air pollutants and population mixing.  
**Period:** 2018–2023  
**Award:** 8–20% salary support
6. **Role:** **Co-Investigator**  
**Title:** Ambient Aromatic Hydrocarbon Exposure in Communities: Characterization of Biomarkers of Exposure and Effect  
**PI:** Lisa McKenzie  
**Source:** NIEHS R21  
**Purpose:** In this pilot study, biomarkers of BTEX exposure and indicators of short-term nucleic acid damage and lipid peroxidation will be longitudinally measured in 15 people living near a large O&G well pad to evaluate associations between biomarkers of BTEX exposure and subclinical health effects.  
**Period:** 2018–2020  
**Award:** 5–10% salary support
7. **Role:** **Co-Investigator**  
**Title:** Quantitative MRI Assessment of the Heterogeneity of Knee OA: A Longitudinal Full-Joint Multi-Parametric Approach  
**PI:** Julio Carballido-Gamio  
**Source:** NIH/NIAMS  
**Purpose:** To identify structural and biochemical MRI features associated with different phenotypes of knee osteoarthritis.  
**Period:** 2018–2023  
**Award:** 10% salary support
8. **Role:** **Biostatistician**  
**Title:** Use of a Medication Risk Mitigation Tool by Clinical Pharmacists to Manage At-Risk Patients and Reduce Adverse Drug Events  
**PI:** Heather Anderson  
**Source:** AHRQ  
**Purpose:** Examine the impact of a medication risk mitigation tool on clinical pharmacists medication recommendations and patients adverse drug event risk in primary care settings.  
**Period:** 2018–2021  
**Award:** 5–30% salary support

9. **Role:** **Co-Investigator**  
**Title:** Exposure and Health Effects Near Petroleum Development: A Longitudinal Study  
**PI:** John Adgate  
**Source:** NIEHS  
**Purpose:** This panel study will explore the association between exposure to air and noise pollution and subclinical markers of inflammation and cardiovascular health for subjects residing in the midst of oil and gas development near Greeley, CO.  
**Period:** 2018–2023  
**Award:** 10–20% salary support
  
10. **Role:** **Co-Investigator**  
**Title:** The Influence of *In Utero* Cannabis Exposure on Offspring Brain Morphology and Network Connectivity in the Prefrontal Regions During Infancy  
**PI:** Tessa Crume  
**Source:** NIDA  
**Purpose:** The aim of this project is to determine whether *in utero* exposure to maternal chronic cannabis use during pregnancy impacts offspring brain morphology, white matter microstructure, and the typology of functional neural connectivity within attention networks of the brain in the first year of life.  
**Period:** 2018–2020  
**Award:** 5% salary support

## Publications

### Books or Monographs

1. **J. Hughes.** *A Concise Introduction to Object-Oriented Data Structures and Algorithm Analysis.* Pearson Custom Publishing, 2006.

### Book Chapters

1. D. Musgrove, D. Young, **J. Hughes**, and L. E. Eberly. A sparse areal mixed model for multivariate outcomes, with an application to zero-inflated Census data. In ?, editors, *Modern Statistical Methods for Spatial and Multivariate Data.* Springer, in preparation.
2. M. Bezener, L. E. Eberly, **J. Hughes**, G. Jones, and D. R. Musgrove. Bayesian spatiotemporal modeling for detecting neuronal activation via functional magnetic resonance imaging. In W. K. Härdle, H. H.–S. Lu, and X. Shen, editors, *Handbook of Big Data Analytics,* Springer Handbooks of Computational Statistics. Springer, 2018.

### Peer-Reviewed Journal Articles

§ = student paper

† = co-first author

- § 1. M. Bezener, **J. Hughes**, and G. Jones. Bayesian spatiotemporal modeling using hierarchical spatial priors, with applications to functional magnetic resonance imaging. *Bayesian Analysis*, in press.
2. L. McKenzie, B. Blair, **J. Hughes**, W. Allshouse, N. Blake, D. Helmig, P. Milmoie, H. Halliday, D. Blake, and J. Adgate. Ambient non-methane hydrocarbon levels along Colorado’s Northern Front Range: Acute and chronic health risks. *Environmental Science & Technology*, in press.
3. P. Morgan, M. J. Nissi, **J. Hughes**, S. Mortazavi, and J. Ellermann. T2\* mapping provides information that is statistically comparable to an arthroscopic evaluation of acetabular cartilage. *Cartilage*, in press.

- † 4. E. Kürüm, **J. Hughes**, and R. Li. Time-varying copula models for longitudinal data. *Statistics and Its Interface*, in press.
5. S. Elwir, A. Shaukat, M. Shaw, **J. Hughes**, and J. Colton. Variability in, and factors associated with, sizing of polyps by endoscopists at a large community practice. *Endoscopy International Open*, 5(08):E742–E745, 2017.
- § 6. L. Henn, **J. Hughes**, E. Iisakka, J. Ellermann, S. Mortazavi, C. Ziegler, M. J. Nissi, and P. Morgan. Disease severity classification using quantitative magnetic resonance imaging data of cartilage in femoroacetabular impingement. *Statistics in Medicine*, 36:1491–1505, 2017.
7. A. E. Bantle, L. S. Chow, L. M. Steffen, Q. Wang, **J. Hughes**, N. H. Durant, K. H. Ingram, J. P. Reis, and P. J. Schreiner. The association of Mediterranean diet and cardiorespiratory fitness with development of prediabetes and diabetes: The coronary artery risk development in young adults (CARDIA) study. *BMJ Open Diabetes Research and Care*, in press.
8. D. J. Bond, A. C. Andreazza, **J. Hughes**, T. Dhanoa, I. J. Torres, J.–M. Kozicky, L. T. Young, A. Morgan, R. W. Lam, and L. N. Yatham. A longitudinal study of the relationships between mood symptoms, body mass index, and serum adipokines in bipolar disorder. *Journal of Clinical Psychiatry*, 78(4):441–448, 2017.
- § 9. D. Musgrove, **J. Hughes**, and L. E. Eberly. Hierarchical copula regression models for areal data. *Spatial Statistics*, 17:38–49, 2016.
10. L. S. Chow, A. O. Odegaard, T. A. Bosch, A. E. Bantle, Q. Wang, **J. Hughes**, M. Carnethon, K. H. Ingram, N. Durant, C. E. Lewis, J. Ryder, C. M. Shay, A. S. Kelly, P. J. Schreiner. Twenty year fitness trends in young adults and incidence of prediabetes and diabetes: the CARDIA study. *Diabetologia*, 1–7, 2016.
11. D. Bond, A. Andreazza, **J. Hughes**, J.–M. Kozicky, D. Taj, I. Torres, L. T. Young, R. Lam, and L. Yatham. Association of peripheral inflammation with body mass index and depressive relapse in bipolar disorder. *Psychoneuroendocrinology*, 65:76–83, 2016.
- § 12. D. Musgrove, **J. Hughes**, and L. E. Eberly. Fast, fully Bayesian spatiotemporal inference for fMRI data. *Biostatistics*, 17(2):291–303, 2016.
13. E. Kürüm, **J. Hughes**, and R. Li. A semivarying joint model for longitudinal binary and continuous outcomes. *Canadian Journal of Statistics*, 44(1):44–57, 2016.
14. P.–Y. Iroh Tam, J. S. Menk, **J. Hughes**, and S. L. Kulasingam. An ecological analysis of pertussis disease in Minnesota, 2009–2013. *Epidemiology and Infection*, 144(4):847–855, 2016.
- § 15. E. J. Nelson, **J. Hughes**, J. M. Oakes, J. S. Pankow, and S. L. Kulasingam. Geospatial patterns of human papillomavirus vaccine uptake in Minnesota. *BMJ Open*, 5(8), 2015.
16. **J. Hughes**. copCAR: A flexible regression model for areal data. *Journal of Computational and Graphical Statistics*, 24(3):733–755, 2015.
- † 17. N. Kohli, **J. Hughes**, C. Wang, C. Zopluoglu, Y. Chang, and M. Davison. Fitting a linear–linear piecewise growth mixture model with unknown knots: A comparison of two common approaches to inference. *Psychological Methods*, 20(2):259–275, 2015.
18. M. Nissi, S. Mortazavi, **J. Hughes**, P. Morgan, and J. Ellermann. T2\* relaxation time of acetabular and femoral cartilage with and without intra-articular gadopentetate dimeglumine in patients with femoroacetabular impingement. *American Journal of Roentgenology*, 204(6):W695–W700, 2015.
- § 19. E. J. Nelson, **J. Hughes**, J. M. Oakes, J. S. Pankow, and S. L. Kulasingam. Estimation of geographic variation in human papillomavirus vaccine uptake in men and women: An online survey using Facebook recruitment. *Journal of Medical Internet Research*, 16(9):e198, 2014.



20. **J. Hughes**. `ngspatial`: An R package for fitting the centered autologistic and sparse spatial generalized linear mixed models for areal data. *The R Journal*, 6(2):81–95, 2014.
21. N. B. Paulson, A. J. Gilbertsen, J. J. Dalluge, C. W. Welchlin, **J. Hughes**, W. Han, T. S. Blackwell, T. A. Laguna, and B. J. Williams. The arginine decarboxylase pathways of host and pathogen interact to impact inflammatory pathways in the lung. *PLOS ONE*, 9(10):e111441, 2014.
- § 22. E. J. Nelson, **J. Hughes**, J. M. Oakes, B. Thyagarajan, J. S. Pankow, and S. L. Kulasingam. Human papillomavirus infection in women who submit self-collected vaginal swabs after internet recruitment. *Journal of Community Health*, 1–8, 2014.
- § 23. E. J. Nelson, S. L. Kulasingam, and **J. Hughes**. Spatial patterns of human papillomavirus-associated cancers within the state of Minnesota, 1998–2007. *Spatial and Spatiotemporal Epidemiology*, 9:13–21, 2014.
24. C. Ziegler, J. Ellermann, M. Nissi, R. Goebel, **J. Hughes**, M. Benson, P. Holmberg, R. Frei, and P. Morgan. Acetabular cartilage assessment in patients with femoroacetabular impingement using T2\* mapping with arthroscopic verification. *Radiology*, 271(2):512–523, 2014.
25. D. Shrivastava, L. Utecht, J. Tian, **J. Hughes**, and J. T. Vaughan. In vivo radiofrequency heating in swine in a 3T (123.2 MHz) birdcage whole-body coil. *Magnetic Resonance in Medicine*, 72(4):1141–1150, 2014.
26. **J. Hughes**, S. Shastry, W. O. Hancock, and J. Fricks. Estimating velocity for processive motor proteins with random detachment. *Journal of Agricultural, Biological, and Environmental Statistics*, 18(2):204–217, 2013.
27. **J. Hughes** and M. Haran. Dimension reduction and alleviation of confounding for spatial generalized linear mixed models. *Journal of the Royal Statistical Society, Series B*, 75(1):139–159, 2013.
28. D. Shrivastava, A. Abosch, **J. Hughes**, U. Goerke, L. DelaBarre, R. Visaria, N. Harel, and J. T. Vaughan. Heating induced near deep brain stimulation lead electrodes during magnetic resonance imaging with a 3T transceive volume head coil. *Physics in Medicine and Biology*, 57:5651–5665, 2012.
29. **J. Hughes**, W. O. Hancock, and J. Fricks. Kinesins with extended neck linkers: A chemomechanical model for variable-length stepping. *Bulletin of Mathematical Biology*, 74:1066–1097, 2012.
30. **J. Hughes**, M. Haran, and P. C. Caragea. Autologistic models for binary data on a lattice. *Environmetrics*, 22(7):857–871, 2011.
31. **J. Hughes**, W. O. Hancock, and J. Fricks. A matrix computational approach to kinesin neck linker extension. *Journal of Theoretical Biology*, 269(1):181–194, 2011.
32. **J. Hughes** and J. Fricks. A mixture model for quantum dot images of kinesin motor assays. *Biometrics*, 67(2):588–595, 2011.
33. **J. Hughes**, J. Fricks, and W. Hancock. Likelihood inference for particle location in fluorescence microscopy. *The Annals of Applied Statistics*, 4(2):830–848, 2010.

## Manuscripts Submitted

§ = student paper

1. **J. Hughes**. Sklar’s Omega: A Gaussian copula-based framework for assessing agreement. *Econometrics and Statistics*.
2. K. Dannull, J. Stein, **J. Hughes**, and B. Kline–Fath. Grading of liver herniation in cases of congenital diaphragmatic hernia: Further refining neonatal mortality.

3. B. Blair, S. Brindley, **J. Hughes**, E. Dinkeloo, L. McKenzie, and J. Adgate. Measuring environmental noise from airports, oil and gas operations, and traffic with smartphone applications: Laboratory and field trials. *Journal of Exposure Science and Environmental Epidemiology*.
4. **J. Hughes**. Spatial regression and the Bayesian filter. *Statistical Science*.
5. B. Blair, **J. Hughes**, W. Allshouse, L. McKenzie, and J. Adgate. Truck and multi-vehicle truck accidents with injuries near Colorado oil and gas operations. *Traffic Injury Prevention*.
6. P. Meyer-Kalos, S. Potretzke, T. Line, K. Wagenmann, **J. Hughes**, C. Fisher, and K. Mueser. Integrating treatment of chronic health conditions with mental health care: Outcomes from a pilot study of integrated illness management and recovery. *Social Psychiatry and Psychiatric Epidemiology*.
7. S. Potretzke, A. Talan, **J. Hughes**, and P. Meyer-Kalos. Measuring clinical competency in implementing enhanced illness management and recovery: Preliminary validation of the Minnesota clinical competency scale for co-occurring disorders. *Psychiatric Research*.
8. J. M. Ellermann, B. Donald, S. Rohr, **J. Hughes**, M. Tompkins, B. Nelson, A. Crawford, J. Macalena. Magnetic resonance imaging of osteochondritis dessicans: Does MRI accurately and consistently predict lesions' stability? *Magnetic Resonance Imaging*.

## Workshops and Short Courses

1. Regression Models for Spatially Referenced Data

Biostatistics Workshop Series 2017; University of Colorado Denver; July 17, 2017

## Invited Presentations

1. Bayesian Spatiotemporal Modeling for Detecting Neuronal Activation via Functional Magnetic Resonance Imaging

Bayesian Statistics: A Paradigm for 21st Century Science; Tucson, AZ, USA; April 20, 2018

2. Spatial Regression and the Bayesian Filter

University of Kentucky Department of Statistics; Lexington, KY, USA; February 9, 2018

3. Spatial Regression and the Bayesian Filter

University of Colorado Denver Department of Mathematical and Statistical Sciences; Denver, CO, USA; November 6, 2017

4. Regression for Binary Outcomes

University of Colorado Denver Department of Radiology; Aurora, CO, USA; October 18, 2017

5. Statistical Models for Spatially Referenced Data

Colorado Summer Institute in Biostatistics; Aurora, CO, USA; July 11, 2017

6. Bayesian Spatiotemporal Modeling for Detecting Neuronal Activation via Functional Magnetic Resonance Imaging

Arizona State University School of Mathematical and Statistical Sciences; Tempe, AZ, USA; April 7, 2017

7. T2\* Relaxation Time of Acetabular and Femoral Cartilage with and without Intra-Articular Gadopentetate Dimeglumine in Patients with Femoroacetabular Impingement

University of Colorado Denver Department of Radiology; Aurora, CO, USA; February 8, 2017

8. Disease Severity Classification Using Quantitative Magnetic Resonance Imaging Data of Cartilage in Femoroacetabular Impingement

University of Colorado Denver Department of Radiology; Aurora, CO, USA; December 8, 2016

9. Hierarchical Copula Regression Models for Areal Data

2nd International Conference on Statistical Distributions and Applications; Niagara Falls, Canada; October 15–16, 2016

10. Fast, Fully Bayesian Spatiotemporal Inference for fMRI Data

XXVIIIth International Biometric Conference (IBC 2016); Victoria, BC, Canada; July 10–16, 2016

11. Fast, Fully Bayesian Spatiotemporal Inference for fMRI Data

2016 ICSA Applied Statistics Symposium; Atlanta, GA, USA; June 12–15, 2016

12. Bayesian Spatiotemporal Modeling for Detecting Neuronal Activation via Functional Magnetic Resonance Imaging

Yale University Department of Biostatistics; New Haven, CT, USA; April 12, 2016

13. Bayesian Spatiotemporal Modeling for Detecting Neuronal Activation via Functional Magnetic Resonance Imaging

University of Colorado Denver Department of Biostatistics and Informatics; Aurora, CO, USA; February 4, 2016

14. Bayesian Spatiotemporal Modeling for Detecting Neuronal Activation via Functional Magnetic Resonance Imaging

Colorado State University Department of Statistics; Fort Collins, CO, USA; January 28, 2016

15. Bayesian Spatiotemporal Modeling for Detecting Neuronal Activation via Functional Magnetic Resonance Imaging

Virginia Tech Department of Statistics; Blacksburg, VA, USA; January 14, 2016

16. Fast, Fully Bayesian Spatiotemporal Inference for fMRI Data

MCMSki V; Lenzerheide, Switzerland; January 4–7, 2016

17. Fast, Fully Bayesian Spatiotemporal Inference for fMRI Data

WNAR/IMS 2015 Annual Meeting; Boise, ID, USA; June 14–17, 2015

18. Estimating Velocity for Processive Motor Proteins with Random Detachment

St Olaf College; Northfield, MN, USA; May 4, 2015

19. Estimating Velocity for Processive Motor Proteins with Random Detachment

University of California Riverside Department of Statistics; Riverside, CA, USA; December 9, 2014

20. Estimating Velocity for Processive Motor Proteins with Random Detachment  
SIAM Conference on the Life Sciences (LS14); Charlotte, NC, USA; August 4–7, 2014
21. Disease Severity Classification Using Quantitative Magnetic Resonance Imaging Data of Cartilage in Femoroacetabular Impingement  
University of Minnesota Summer Institute in Biostatistics; Minneapolis, MN, USA; June 27, 2014
22. Estimating Velocity for Processive Motor Proteins with Random Detachment  
ENAR 2014 Spring Meeting; Baltimore, MD, USA; March 16–19, 2014
23. Advances in MCMC for Spatial Generalized Linear Mixed Models  
2013 Joint Statistical Meetings; Montréal, QC, Canada; August 3–8, 2013
24. Estimating Velocity for Processive Motor Proteins with Random Detachment  
Istanbul Medeniyet University Department of Statistics; Istanbul, Turkey; June 13, 2013
25. Dimension Reduction and Alleviation of Confounding for Spatial Generalized Linear Mixed Models  
University of Miami Spatial Statistics Conference 2012; Miami, FL, USA; December 13–15, 2012
26. Dimension Reduction and Alleviation of Confounding for Spatial Generalized Linear Mixed Models  
ENVR Workshop on Environmetrics 2012: Spatial Modeling and Inference for Environmental Science; Raleigh, NC, USA; October 4–6, 2012
27. Autologistic Models for Binary Data on a Lattice  
International Chinese Statistical Association 2011 Applied Statistics Symposium; New York City, NY, USA; June 26–29, 2011
28. Dimension Reduction and Confounding in Spatial Generalized Linear Models  
Iowa State University Department of Statistics; Ames, IA, USA; March, 2011
29. Dimension Reduction and Confounding in Spatial Generalized Linear Models  
Oregon State University Department of Statistics; Corvallis, OR, USA; February, 2011
30. Dimension Reduction and Confounding in Spatial Generalized Linear Models  
Los Alamos National Laboratory Statistical Sciences Group; Los Alamos, NM, USA; February, 2011
31. Dimension Reduction and Confounding in Spatial Generalized Linear Models  
Virginia Tech Department of Statistics; Blacksburg, VA, USA; February, 2011
32. Dimension Reduction and Confounding in Spatial Generalized Linear Models  
University of Minnesota Division of Biostatistics; Minneapolis, MN, USA; January, 2011

## Contributed Presentations

1. Hierarchical Copula Regression Models for Areal Data  
Spatial Statistics 2017; Lancaster, UK; July 4–7, 2017
2. Hierarchical Copula Regression Models for Areal Data  
WNAR/IMS 2017 Annual Meeting; Santa Fe, NM, USA; June 25–28, 2017
3. Disease Severity Classification Using Quantitative Magnetic Resonance Imaging Data of Cartilage in Femoroacetabular Impingement  
3rd Annual Conference for Statistical Methods in Imaging; Pittsburgh, PA, USA; May 31–June 2, 2017
4. Estimating Velocity for Processive Motor Proteins with Random Detachment  
The 5th Annual Winter q-bio Meeting; Poipu, HI, USA; February 21–24, 2017
5. Fast, Fully Bayesian Spatiotemporal Inference for fMRI Data  
5th Nordic–Baltic Biometric Conference; Reykjavik, Iceland; June 8–10, 2015
6. Fast, Fully Bayesian Spatiotemporal Inference for fMRI Data  
ENAR 2015 Spring Meeting; Miami, FL, USA; March 15–18, 2015
7. Bayesian Inference for Gaussian Copula Regression Models  
2014 Joint Statistical Meetings; Boston, MA, USA; August 2–7, 2014
8. Estimating Velocity for Processive Motor Proteins with Random Detachment  
XXVIIth International Biometric Conference (IBC 2014); Florence, Italy; July 6–11, 2014
9. Fast, Fully Bayesian Spatiotemporal Inference for fMRI Data  
7th Annual Bayesian Biostatistics and Bioinformatics Conference; Houston, TX, USA; February 12–14, 2014
10. Dimension Reduction and Alleviation of Confounding for Spatial Generalized Linear Mixed Models  
Spatial Statistics 2013; Columbus, OH, USA; June 4–7, 2013
11. Time-Varying Copula Models for Longitudinal Data  
ENAR 2013 Spring Meeting; Orlando, FL, USA; March 10–13, 2013
12. Dimension Reduction and Alleviation of Confounding for Spatial Generalized Linear Mixed Models  
2012 Joint Statistical Meetings; San Diego, CA, USA; July 28–August 2, 2012
13. Dimension Reduction and Alleviation of Confounding for Spatial Generalized Linear Mixed Models  
ISBA 2012 World Meeting; Kyoto, Japan; June 25–29, 2012
14. copCAR: A Flexible Model for Areal Data  
ENAR 2012 Spring Meeting; Washington, DC, USA; April 1–4, 2012

15. A Mixture Model for Quantum Dot Images of Kinesin Motor Assays

Gordon Research Conference: Stochastic Physics in Biology; Ventura, CA, USA; January 23–28, 2011

16. Autologistic Models for Binary Data on a Lattice

MCMSki3; Park City, UT, USA; January 5–7, 2011

17. Autologistic Models for Binary Data on a Lattice

2010 Joint Statistical Meetings; Vancouver, BC, Canada; July 31–August 5, 2010

18. A Mixture Model for Quantum Dot Images of Kinesin Motor Assays

Eastern North American Region of the International Biometric Society 2010 Spring Meeting; New Orleans, LA, USA; March 21–24, 2010

## Software

1. The `sklarsomega` package for R (forthcoming)
2. The `copCAR` package for R (with Emily Goren, Iowa State University Department of Statistics) (current version: 2.0-2)
3. The `pearson7` package for R (current version: 1.0-2)
4. The `ngspatial` package for R (with Xiaohui Cui, Illumina) (current version: 1.2-1)
5. The `mcmcse` package for R (with James Flegal, University of California Riverside Department of Statistics; Dootika Vats, University of Warwick Department of Statistics; and Ning Dai, University of Minnesota School of Statistics) (current version: 1.3-1)
6. The `batchmeans` package for R (with Murali Haran, Penn State Department of Statistics) (current version: 1.0-3)
7. The `CellularAutomaton` package for R (current version: 1.1-1)
8. The `Crypt::RC6` extension for Perl
9. The `Crypt::Serpent` extension for Perl

## Teaching and Advising

‡ = course developer

### University of Colorado

#### Courses Taught

- ‡ BIOS 7717, Bayesian Inference, spring 2018
- ‡ Statistical Literacy for Radiologists, spring 2017
- BIOS 6611, Biostatistical Methods I, fall 2016 (substantially revised the curriculum)

#### Postdocs Mentored

Allison Shapiro (Epidemiology)

### **Master's Projects Directed**

Maxene Meier (Biostatistics, 2018; co-advisor Katie Colborn)

Sarah Ryan (Biostatistics, 2017; co-advisor Nichole Carlson)

Aixin Zhang (Statistics; co-advisor Erin Austin)

### **Doctoral Committees Served on**

Alexandria Jensen (Biostatistics)

Lauren Hall (Statistics)

Manish Dalwani (Biostatistics, 2017)

Chris Czaja (Public Health)

### **Master's Committees Served on**

Andrea Fidell (Public Health)

Logan Langholz (Bioengineering)

## **University of Minnesota**

### **Courses Taught**

‡ PubH 8422 Modern Nonparametrics, fall 2012, 2013, 2014, 2015

‡ PubH 7406 Advanced Regression and Design, spring 2012, 2013, 2014, 2015

### **Doctoral Students Advised**

Donald Musgrove (Biostatistics, 2016; co-advisor Lynn Eberly)

Martin Bezener (Statistics, 2015; co-advisor Galin Jones)

Lisa Henn (Biostatistics, 2015; co-advisor Jim Hodges)

### **Master's Projects Directed**

Xu Guo (Biostatistics, 2015)

Jeremiah Aakre (MPH, 2014)

Michelle Warren (Biostatistics, 2014)

Eleena Iisakka (Biostatistics, 2014)

Emily Goren (Biostatistics, 2014)

Xiaohui Cui (Biostatistics, 2013)

### **Doctoral Committees Served on**

Yang Yang (Statistics)

Dootika Vats (Statistics, 2017)

– also Dootika’s co-mentor (with Charles Geyer) for Google Summer of Code 2015

Emre Eftelioglu (Computer Science)

Christina Knudson (Statistics, 2016)

Felipe Acosta (Statistics, 2015)

Erik Nelson (Epidemiology, 2014)

Ethan Van Norman (School Psychology, 2014)

Harrison Quick (Biostatistics, 2013)

Wenjun Kang (Biostatistics)

### **Master’s Committees Served on**

Tyler Kinzy (Biostatistics, 2016)

Andrew Nicklawsky (Biostatistics, 2014)

Stephanie Stoway (MPH, 2014)

Logan Stuck (Biostatistics, 2013)

Bryan McCauley (Statistics, 2013)

### **PhD Student Academic Advisees**

Brian Hart

Rosalia Alcoser (transferred)

### **Master’s Student Academic Advisees**

Xiaoyue Ma (Biostatistics, 2016)

Tyler Kinzy (Biostatistics, 2016)

Stephanie Stoway (MPH, 2014)

## **Frostburg State University**

### **Courses Taught**

COSC 100 Introduction to Computer Science

COSC 220 Introduction to Software Applications

COSC 240 Computer Science 1

‡ COSC 241 Computer Science 2

COSC 310 Data Structures and Algorithm Analysis

‡ COSC 330 Web Design and Development



- ‡ COSC 350 Low-Level Programming Concepts
  - COSC 489 Capstone Course
- ‡ COSC 491 Seminar in Computer Science: Perl + Web Development
- ‡ COSC 491/591 Seminar in Computer Science: Java Certification Preparation
- ‡ COSC 499 Individual Problems in Computer Science

## **Service to the Profession**

- Member, WNAR Regional Advisory Board, 2017–2019
- External Reviewer for Faculty Promotion and Tenure at Robert Morris University, 2017
- Member, Byar Award Committee, 2017
- Member, Applications Subcommittee, Midwest Statistics Research Colloquium, 2013

## **Service to the University/College/Department**

### **University of Colorado**

- Coordinator, Biostatistics Workshop Series 2017
- Member, Compass Steering Committee, 2016–2018

### **University of Colorado, Department of Biostatistics and Informatics**

- Coordinator, Imaging Working Group, fall 2017–2018
- Member, MS Exam Committee, 2017
- Chair, CBC Research Associate Search Committee, spring, fall 2017, spring 2018
- Member, Informatics Search Committee, spring 2017

### **University of Colorado, Department of Radiology**

- Coordinator, Radiology Pilot Research and Faculty Development Grant Program, fall 2017
- Judge, 2017 Spring Research Symposium
- Member, Research Committee, 2017–2018
- Member, Biostatistician Search Committee, fall 2017
- Member, Psychometrician Search Committee, spring 2017

### **University of Minnesota**

- Member, OVPR Research Misconduct Investigation Panel, 2014–2015

### **University of Minnesota, School of Public Health**

- Team for Environment/Water, SPH 2030 Strategic Plan

**University of Minnesota, Division of Biostatistics**

Member, Computing Committee, 2014–2015 (Chair, 2015)

Member, Exam Committee, 2015

Member, Search Committee, spring 2013, fall 2013, fall 2014

Member, Seminar Committee, 2011–2012 (Chair, 2012–2015)

**The Pennsylvania State University, Department of Statistics**

Vice President, Student Advisory Committee, 2009–2010

**Frostburg State University, Department of Computer Science**

Chair, Curriculum Committee

Member, Equipment Committee

Member, Search Committee