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4626 SPH-I (inside Suite 4600)
Ann Arbor, MI 48109-2029
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EDUCATION

2014 **Johns Hopkins Bloomberg School of Public Health**, Baltimore, MD
Ph.D. in Biostatistics
Thesis title: *Statistical Methods for Individualized Health: Etiology, Diagnosis, and Intervention Evaluation*
Advisors: Scott Zeger and Constantine Frangakis

2009 **Fudan University**, Shanghai, China
B.Sc. in Mathematics

PROFESSIONAL EXPERIENCE

2016 - present **Assistant Professor**
Department of Biostatistics, University of Michigan
Research Assistant Professor
Michigan Institute for Data Science (MIDAS), University of Michigan

2017 - present **Faculty Associate**
Quantitative Methodology Program, Survey Research Center
Institute for Social Research (ISR), University of Michigan

2016- present **Member**
Cancer Epidemiology and Prevention (CEP) research program, Rogel Cancer Center

2018 - present **Member**
Institute for Health Policy Innovation, University of Michigan

2014 - 2016 **Postdoctoral Fellow**
Hopkins individualized Health (*in*Health), Johns Hopkins University
Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health

2014 - 2016 **Co-lead Statistician**
Pneumonia Etiology Research for Child Health (PERCH) funded by Gates Foundation, International Vaccine Access Center (IVAC), Johns Hopkins Bloomberg School of Public Health
Principal Investigator: Katherine O'Brien

2015 August **Visiting Scholar**
Combining Health Information, Computation and Statistics (CHICAS)
Lancaster University, Lancaster, England

2013 - 2014 **External Consultant**
Child Health Research Foundation (CHRF), Dhaka, Bangladesh; National Center for Immunization and Respiratory Diseases (NCIRD), The U.S. CDC

2010 - 2014 **Research Assistant**
International Vaccine Access Center (IVAC), Johns Hopkins Bloomberg School of Public Health

Advisor: Scott Zeger; *Principal Investigator*: Katherine O'Brien

2008 **Research Scholar**
California NanoSystems Institute, and Department of Mechanical and Aerospace Engineering, University of California, Los Angeles

2007 - 2009 **Research Scholar**
Center for Computational Systems Biology, Fudan University, Shanghai, China

PROFESSIONAL ACTIVITIES (*upcoming)

Committee Member
Eastern North American Regional Meeting of the International Biometric Society
- Paper Award Committee (2019-2021)
- Regional Advisory Board (2018-2020)
- Educational Advisory Committee (2018; Atlanta, GA)

Session Organizer
Statistical Methods for Improving Inferences and Decision-Making in Population Health, Joint Statistical Meeting (July 27 - August 1, 2019, Denver, CO)

Session Chair
New Weighting Methods for Causal Inference, 2020 ENAR (March 24; Virtual)
Towards a Learning-Health System: Methods and Strategies for Data-Driven Healthcare, Joint Statistical Meetings (July 29 - August 3, 2017; Baltimore, MD)

Poster Judge
Statistical Learning and Data Science (SLDS), Joint Statistical Meeting (July 30, 2019, Denver, CO); IISA, 2019, Mumbai, India.

Member
MIDAS mobile sensor analytics working group

Hopkins inHealth (HiH) Learning Methodologies Working Group

Founding Member
Chinese Public Health Forum (CPHF) at Johns Hopkins, 2010-12

Consultant
Studio Consultation, Johns Hopkins Institute for Clinical and Transnational Research (ICTR)

Hosted Attendee
Use of Wearable and Implantable Devices in Health Research, BIRS Workshop, Banff, AB, Canada. Feb 23-28, 2020
Statistical Methods for Developing Personalized Mobile Health Interventions, National University of Singapore, Feb 4 - March 1, 2019
Program on Statistical, Mathematical, and Computational Methods for Precision Medicine (PMED), SAMSI, Raleigh, Durham, NC. August 13-17, 2018.
Methods Summit. PCORI Annual Meeting: Building a Patient-Centered Research Community. Arlington VA. October 6-8, 2015
U-M Ideas Lab: Predicting Human Performance. Biosciences Initiative, University of Michigan. Oct 13-15, 2019

Panelist
Foundations of Data Science. Fifth Bayesian, Fiducial and Frequentist Conference (BFF5) (May 6-9, 2018; Ann Arbor, MI)

Referee
The numbers in parentheses indicate the number of manuscripts reviewed or currently reviewing, excluding revisions or resubmissions.
Journals: *Biometrics (7), Biostatistics (1), Journal of Business and Economic Statistics (1), Statistics in Medicine (7), Annals of Statistics (1), Computational Statistics and Data Analysis (2), Epidemiology (1), Pharmaceutical Statistics(1), PLOS One (1), Statistical Science (1), Sankhya (The Indian Journal of Statistics) (1), Technometrics (1), Nature Partner Journal (npj) Digital Medicine (1), International Journal of Epidemiology (1), Ophthalmic Epidemiology (1), Psychiatric Services (1)*
Final Reports: Patient-Centered Outcomes Research Institute (PCORI) (1)
Grants: 2019 UM Precision Health Investigator Awards; 2019 MIDAS Propelling Original Data Science (PODS) Grants; 2017, 2018 Michigan Institute for Clinical and Health Research (MICHR) Pilot Grant; 2016 Johns Hopkins Individualized Health Initiative Request for Proposal (RFP); 2016 Methodology Research Grant, Medical Research Council, United Kingdom

HONORS AND AWARDS

UNIVERSITY OF MICHIGAN

2019 Co-winner of Shark Tank for Research Ideas in Data Science and Statistics (STRIDES); joint with Gongjun Xu (Michigan Statistics), February 1. Michigan Biostat/Stat Research Retreat.

2018 Chair's Faculty Citizenship Award

2017 Travel Award for ENAR Junior Investigator Workshop, International Biometric Society. Washington, DC.

JOHNS HOPKINS UNIVERSITY

2016 New Researcher Conference Travel Award, Institute of Mathematical Statistics. Madison, WI.

2015 Top Performer for 2015 Prostate Cancer DREAM Challenge 1b; As part of *Bmore Dream Team*. Press Release.

2015 Scholarship for Summer Institute in Statistics and Modeling in Infectious Diseases. University of Washington, Seattle, WA

2015 NSF Big Data Travel award for Drawing Causal Inference from Big Data. National Academy of Sciences, Washington DC

2015 Induction into Alpha Chapter of *Delta Omega* Public Health Honor Society

2015 Induction into *Phi Beta Kappa* Honor Society

2014 First Place: Biostatistics Section of the Delta Omega Poster Competition

2012, 2013 Joseph Zeger Travel Award to ENAR and JSM

2012 June B. Culley Award, for outstanding achievement on school-wide oral exam paper

2011-14 Johns Hopkins Sommer Scholar

2009-14 Department of Biostatistics Graduate Fellowship

UNIVERSITY OF CALIFORNIA, LOS ANGELES

2008 UCLA-China Cross Disciplinary Scholarship in Science and Technology (CSST)

FUDAN UNIVERSITY

2009 B.Sc. with First Class Honors

2007-09 Chun-Tsung Scholar, Chinese Undergraduate Research Endowment (CURE) Scholarship

2008 First Class National Scholarship, Ministry of Education, China

2007 Excellent Undergraduate Student, Government of Shanghai

2006-07 First Class People's Scholarship

2006 First Class Shi Dai Scholarship

PUBLICATIONS (†: alphabetical order; ♯: advisee)

JOURNAL ARTICLES (STATISTICAL METHODOLOGY)

Wu Z, Casciola-Rosen L, Shah AA, Rosen A, Zeger SL (2019). Estimating AutoAntibody Signatures to Detect Autoimmune Disease Patient Subsets. *Biostatistics*, 20 (1): 30-47. doi:10.1093/biostatistics/kxx061.

Wu Z, Deloria-Knoll M, and Zeger SL (2017). Nested Partially-Latent Class Models (npLCM) for Dependent Binary Data; Estimating Disease Etiology. *Biostatistics*, 18 (2): 200-213. doi:10.1093/biostatistics/kxw037.

Wu Z, Deloria-Knoll M, Hammitt LL, and Zeger SL, for the PERCH Core Team (2016). Partially Latent Class Models (pLCM) for Case-Control Studies of Childhood Pneumonia Etiology. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 65: 97-114. doi: 10.1111/rssc.12101.

Bmore Dream Team: Deng D, Du Y, Ji Z, Rao K, **Wu Z**, Zhu Y, Coley RY (2016). Predicting Survival Time for Metastatic Castration-Resistant Prostate Cancer: An Iterative Imputation Approach. *F1000Research 2016, 5:2672*. doi: 10.12688/f1000research.8628.1.

Frangakis CE, Qian T, **Wu Z**, Diaz I (2015). Deductive Derivation and Turing-computerization of Semiparametric Efficient Estimation. *Biometrics*. doi:10.1111/biom.12362. Discussion paper.

Frangakis CE, Qian T, **Wu Z**, Diaz I (2015). Rejoinder: Deductive Derivation and Turing-computerization of Semiparametric Efficient Estimation. *Biometrics*. doi:10.1111/biom.12365.

Wu Z, Frangakis CE, Louis TA, Scharfstein DO (2014). Estimating Treatment Effects in Cluster Randomized Trials by Calibrating Covariate Imbalances between Clusters. *Biometrics*, 70: 1014-1022. doi: 10.1111/biom.12214.

JOURNAL ARTICLES (SUBSTANTIVE RESEARCH)

NeCamp T$^\sharp$, Sen S, Frank E, Walton M, Ionides E, Fang Y, Tewari A, **Wu Z** (2020). Assessing Real-Time Moderation for Developing Adaptive Mobile Health Interventions for Medical Interns: Micro-Randomized Trial. *Journal of Medical Internet Research (JMIR)*, 22(3): e15033. doi: 10.2196/15033. PMID: 32229469.
Trial Registration: 2018 Intern Health Study Micro-randomized Trial (IHS), NCT03972293.

Kuang H, **Wu Z**, Fujiwara H, Whitesall S, Zajac C, Choi SW, Reddy P, Tewari M (2019). Computational Analysis of Continuous Body Temperature Provides Early Discrimination of Graft-versus-Host Disease in Mice Undergoing Hematopoietic Cell Transplantation. *Blood Advances*, 3(23):3977-3981.

O'Brien KL, . . ., **Wu Z**, . . ., Zaman SMA (2019). Causes of severe pneumonia requiring hospital admission in children without HIV infection from Africa and Asia: the PERCH multi-country case-control study. *The Lancet*. In Press. https://doi.org/10.1016/S0140-6736(19)30721-4. [DataViz: http://perchresults.org][Press Release]

Fritsche L, Gruber SB, **Wu Z**, Schmidt E, Zawistowski M, Moser SE, Blanc VM, Brummet CM, Kheterpal S, Abecasis GR, Mukherjee B (2018). Association of Polygenic Risk Scores for Multiple Cancers in a Phenome-wide Study: Results from The Michigan Genomics Initiative. *American Journal of Human Genetics*, 102 (6): 1048-1061. https://doi.org/10.1016/j.ajhg.2018.04.001.

Deloria-Knoll M, Fu W, Shi Q, Prosperi C, **Wu Z**, Hammitt LL, Feikin DR, Baggett HC, Howie SRC, Scott JAG, Murdoch DR, Madhi SA, Thea DM, Brooks WA, Kotloff KL, Li M, Park DE, Lin W, Levine OS, O'Brien KL, Zeger SL (2017). Bayesian Estimation of Pneumonia Etiology: Epidemiologic Considerations and Applications to PERCH. *Clinical Infectious Diseases*, 64 (suppl 3): S213-S227. doi: 10.1093/cid/cix144.

Georgiades C, Geschwind J-F, Neil H, Hines-Peralta A, Liapi E, Hong K, **Wu Z**, Kamel I, Frangakis CE (2012). Lack of response after initial chemoembolization for hepatocellular carcinoma: Does it predict fail-

ure of subsequent treatment? *Radiology*, 265:115-123.

JOURNAL ARTICLES (SUBSTANTIVE RESEARCH; GROUP AUTHORSHIP)

Wu Z as part of the PERCH Study Group (2017). **16** articles in *Clinical Infectious Diseases*; 64 (suppl 3). Link to the complete list: https://goo.gl/3egRN1.

Seyednasrollah F et al. - **Wu Z** in Prostate Cancer DREAM Challenge Community (2017). A DREAM Challenge to Build Prediction Models for Short-Term Discontinuation of Docetaxel in Metastatic Castration-Resistant Prostate Cancer. *JCO Clinical Cancer Informatics* 1, 1-15. doi: 10.1200/CCI.17.00018

Guinney J et al. - **Wu Z** in PCC DREAM Consortium (2017). Prediction of Overall Survival for Patients with Metastatic Castration-Resistant Prostate Cancer: Development of A Prognostic Model Through A Crowdsourced Challenge with Open Clinical Trial Data. *The Lancet Oncology*, 18 (1): 132-142. doi: 10.1016/S1470-2045(16)30560-5.

OTHER REFEREED PUBLICATIONS

Xu G, **Wu Z** and Murphy SA (2018). Micro-Randomized Trial. In Wiley StatsRef: Statistics Reference Online (eds N. Balakrishnan, T. Colton, B. Everitt, W. Piegorsch, F. Ruggeri and J. L. Teugels). doi:10.1002/9781118445112.stat08050

UNDER REVIEW/REVISION

Wu Z, Casciola-Rosen L, Rosen A, Zeger SL (2020+). A Bayesian Approach to Restricted Latent Class Models for Scientifically-Structured Clustering of Multivariate Binary Outcomes. *Major Revision for Biometrics*. https://doi.org/10.1101/400192.

Wu Z and Chen I♯ (2020+). Probabilistic Cause-of-disease Assignment using Case-control Diagnostic Tests: A Hierarchical Bayesian Approach. Submitted to *Statistics in Medicine*. https://doi.org/10.1101/672808.

Boss J, Rix A, Chen YH, Narisetty NN, **Wu Z**, Ferguson K, Meeker J, Mukherjee B (2020+). A Hierarchical Integrative Grouped Lasso (HIGLASSO) Framework for Analyzing Environmental Mixtures. *Submitted to Environmetrics.* https://arxiv.org/abs/2003.12844.

Wang J, Du L, Zou C, **Wu Z** (2020+). Dynamic Tracking and Screening in Massive Data Streams. *submitted to JASA TM*.

Chung S, Kontar R, **Wu Z** (2020+). Weakly-Supervised Multi-output Regression via Correlated Gaussian Processes. *submitted to Technometrics.* https://arxiv.org/abs/2002.08412

Moreno A, **Wu Z**, Yap J, Wetter D, Kumar S, Lam C, Nahum-Shani I, Dempsey W, Regh J (2020+). A functional EM algorithm for panel count data with missing counts. *submitted to ICML2020.* https://arxiv.org/abs/2003.01169

Schaefer JK, Li M♯, **Wu Z**, Basu T, Barnes G, Carrier M, Griggs JJ and Sood SL (2020+). Clinical and Sociodemographic Factors Associated with Anticoagulant Use for Cancer Associated Thrombosis. Submitted to *Journal of Thrombosis and Haemostasis.*

Schaefer JK, Li M♯, **Wu Z**, Basu T, Dorsch M, Barnes GD, Carrier M, Griggs JJ and Sood SL (2020+). Medication Adherence in Cancer Associated Thrombosis: A Comparison of LMWH to DOACs. Submitted to

Journal of Thrombosis and Haemostasis.

Bi Q, Hong C, Meng J, **Wu Z**, Zhou P, Ye C, Sun B, Mucirka LM, Azman AS, Wang T, Chen J, Wang Z, Liu L, Lessler J, Edwards JK, Ma T, Zhang G (2020+). Characterization of Clinical Progression of COVID-19 Patients in Shenzhen, China: An Observational Cohort Study. Submitted to *Annals of Internal Medicine*. https://www.medrxiv.org/content/10.1101/2020.04.22.20076190v1

IN PREPARATION

Yao TH♯, **Wu Z** and Baladandayuthapani V (2020+). Approximate Bayesian Computation for Dirichlet Diffusion Trees. In preparation for *NeuroIPS 2020*.

Moreno A, Dempsey W, Yap J, **Wu Z**, Lam C, Wetter D, Nahum-Shani I, Rehg JM (2020+). Survival-HMM: Joint Modeling of Continuous-time Latent Markov State Trajectories and Time-to-Event.

Gu Y, Li M♯, Xu G and **Wu Z** (2019+). Doubly Multi-resolution Restricted Latent Class Models. *In preparation for JRSS-B*.

Li M♯ and **Wu Z** (2020+). Longitudinal Structural Topic Models for Estimating Latent Health Trajectories using Administrative Claims Data.

Wu Z, Xu G and Murphy SA (2020+). Statistics in mHealth/Just in Time Adaptive Intervention. *In preparation for Wiley StatsRef: Statistics Reference Online*.

Wu Z (2020+). **baker**: Bayesian Analytic Kit for Etiology Research. *In preparation for Journal of Statistical Software*

Wu Z, Casciola-Rosen L, Shah AA, Rosen A (2020+). Weakly Supervised Restricted Latent Class Models.

Wu Z, Casciola-Rosen L, Shah AA, Rosen A (2020+). Subsetting Autoimmune Disease Patients via Reconstruction of Cellular Machine Components from Autoantibody Signatures. Applied paper.

Wu Z (2020+). Inferring Multi-Component Causes of Death and Disease: A Structured Discrete Latent Variable Approach

Wu Z, Moreno A, Rehg J, Lam C, Wetter D, Nahum-Shani I (2020+). Latent Variable Regression Analysis of Longitudinal Multivariate Data with Irregular and Informative Observation Times.

SOFTWARE

baker: Bayesian Analysis Kit for Etiology Research - Fitting and visualizing Bayesian nested partially-latent class models for estimating disease etiology
https://github.com/zhenkewu/baker

mpcr: Robust covariate-calibrated estimation of treatment effect in matched-pair cluster randomized trials.
https://github.com/zhenkewu/mpcr

spotgear: Subset Profiling and Organizing Tools for Gel Electrophoresis Autoradiography in R

https://github.com/zhenkewu/spotgear

rewind: Reconstructing Etiology with Binary Decomposition
https://github.com/zhenkewu/rewind

slamR: Structured Latent Attribute Models in R
https://github.com/zhenkewu/slamR

TEACHING AND ADVISING (see website for materials)

ADVISING (*expected graduation)

2022* Mengbing Li, PhD student. Department of Biostatistics, University of Michigan (MSc in May 2019).

- Best Doctoral Qualifying Exam Award, 2019
- Outstanding Biostatistics Graduate Student Instructor Award, 2018

2023* Irena Chen, PhD student. Department of Biostatistics, University of Michigan

- Poster Competition Award, "Most Likely to Make an Impact in the Field", MIDAS Annual Data Science Symposium, November 15, 2019

2017-2019 Tim NeCamp, PhD student (**Co-Chair** with Edward Ionides).
Design and Analysis of Sequential Randomized Trials with Applications to Mental Health and Online Education. Department of Statistics, University of Michigan

- NSF Graduate Student Fellowship
- 2018 Rackham Outstanding Graduate Student Instructor Award
- Best Speed Oral Presentation at MSSISS 2018: "Predicting mood using multivariate mobile sensor data streams for medical interns"

PRELIMINARY ORAL PARTICIPATION (*upcoming)

2020 Youfei Yu* (Biostat), Yiwang Zhou* (Biostat), Nina Zhou* (Biostat), Xubo Yue* (IOE), Seokhyun Chung* (IOE)
2019 Lan Luo (Biostat), Yingchao Zhong (Biostat)
2018 Yuqi Gu (Stat), April Cho (Stat), Tim NeCamp (Stat)

FINAL ORAL PARTICIPATION (*upcoming)

2020 Yuqi Gu (Stat), Brook Luers* (Stat), April Cho* (Stat), Aritra Guha* (Stat)
2019 Tim NeCamp (Stat), Ruofei Zhao (Stat)
2018 Jun Guo (Stat)

K-AWARD ADVISEE

2020 Adam Horwitz, PhD (Psychiatry). Mentored Clinical Scientists Career Development (MICHR K) Award

ACADEMIC ADVISOR

2019-2020 Yajing Li, Ruohan Liao, Tian Xie, Zheng Xu

GRADUATE STUDENT TEMPORARY EMPLOYEE

2018 Summer Zhongyuan Lyu

PARTICIPATION IN RESEARCH

2020 Winter Jiayuan Dong (Accelerated MS, Applied Statistics)
2018 Fall Jing Chu (MS, Applied Statistics)
2018 Summer Jitao Wang (Biostat)

GRADUATE STUDENT INSTRUCTOR (GSI)

Pedro Orozco del Pino (BIOSTAT523, Fall 2017, *Outstanding GSI Award*); Chen Liang (BIOSTAT523, Fall2017); Nina Zhou (BIOSTAT653, Fall2018); Zheng Xu (BIOSTAT653, Fall 2019)

MENTOR

2017 Summer Big Data Summer Institute, NIH BD2K R25 (PI: Mukherjee)
Undergraduate Projects on Statistical Methods for **Electronic Health Records** (data: Michigan Genomics Initiative). Department of Biostatistics, University of Michigan

INSTRUCTOR

2020 Fall* Applied Generalized Linear Models (BIOSTAT 594; **Coursera**; Biostatistics Concentration; Online MPH Program at University of Michigan School of Public Health)
2020 Fall* Theory and Application of Longitudinal Analysis (BIOSTAT 653) Department of Biostatistics, University of Michigan.
2019 Fall Applied Stats III: Longitudinal Analysis (BIOSTAT 653), Department of Biostatistics, University of Michigan. 67 Master/Doctoral Biostat Students.
2018 Fall Applied Stats III: Longitudinal Analysis (BIOSTAT 653), Department of Biostatistics, University of Michigan. 47 Master/Doctoral Biostat Students.
2017 Fall Statistical Methods in Epidemiology (BIOSTAT 523), Department of Biostatistics, University of Michigan. 84 Master/Doctoral Epidemiology Students.
2016 Fall Statistical and Computational Methods for Learning through Graphical Models (Advanced Topics in Biostatistics; BIOSTAT 830), Department of Biostatistics, University of Michigan. 11 Doctoral Students.
2014 Statistical Methods for Individualizing Health (Short course taught with Scott Zeger), Mayo Clinic, Department of Health Sciences Research, November 17, Rochester, MN.

GUEST LECTURER

2018, 2019 Causal Inference. Big Data Summer Institute, Department of Biostatistics, University of Michigan. June.

2017 Network. Big Data Summer Institute, Department of Biostatistics, University of Michigan. June 22. Link: `http://bigdatasummerinst.sph.umich.edu/wiki/index.php/Main_Page`.

2016 Predicting Survival Time for Metastatic Castration Resistant Prostate Cancer: An Iterative Imputation Approach. Cancer Biostatistics Seminar Course (BIOSTAT 803), Department of Biostatistics, University of Michigan (Instructor: Jeremy M G Taylor). October 28.

2016 Data Visualization for Individualized Health via `ggplot2`. Public Health Studies, Undergraduate Seminar Course, Johns Hopkins University (taught by Yates Coley). March 1.

2016 Methods in Biostatistics (140.653; Master-level). Johns Hopkins University. February 11.

2015 A Survey of Automatic Bayesian Software and Why You Should Care. Hopkins Biostatistics Student Computing Club.

2015 Exploring the Posterior Distribution by Markov chain Monte Carlo. Hopkins Biostatistics Student Computing Club.

2014 Introduction to Empirical Processes and Semiparametric Inference. SLAM Working Group.

2012 Advanced Special Topics in Statistical Machine Learning, 140.840 (taught by Han Liu).

TEACHING ASSISTANT

2014 Multilevel Statistical Models, Graduate, 140.656 (taught by Elizabeth Colantuoni).

2014 Analysis of Longitudinal Data, Graduate, 140.655 (taught by Elizabeth Colantuoni).

2013 Biostatistics in Public Health, Undergraduate, 280.346 (taught by Scott Zeger).

2013 Case-based Introduction to Biostatistics, **www.coursera.org** (taught by Scott Zeger;$\sim 23,000$ global enrollments).

2013 Bayesian Methods **I-II**, Graduate, 140.762-763 (taught by Gary Rosner).

2012 Biostatistics in Public Health, Undergraduate, 280.346 (taught by Scott Zeger).

2011-12 Advanced Probability Theory **I-II**, Graduate, 550.620 - 621 (taught by James Fill).

2010-11 Essentials of Probability and Statistical Inference **I-IV**, Graduate, 140.646-649 (taught by Michael Rosenblum and Charles Rohde).

PRESENTATIONS (*upcoming)

ORAL: INVITED

2020* Longitudinal Structural Topic Models for Estimating Latent Health Trajectories using Administrative Claims Data. Joint Statistical Meeting. August 1-6. Philadelphia, PA.

2020* ICSA Applied Statistics Symposium. May 17-20, Houston, TX.

- Longitudinal Structural Topic Models for Estimating Latent Health Trajectories using Administrative Claims Data.
- Inferring Multi-Component Causes of Death and Disease: A Structured Discrete Latent Variable Approach

2019 Probabilistic Cause-of-disease Assignment using Case-control Diagnostic Tests: A Hierarchical Bayesian Latent Variable Regression Approach. International Indian Statistical Association Conference. December 26-30, IIT Bombay, Mumbai, India.

2019-20 Assessing Real-Time Moderation for Developing Adaptive Mobile Health Interventions for Medical Interns: A Micro-Randomized Trial.

- Mental Health Data Science, Department of Psychiatry, Columbia University. March 10.
- 11th International Chinese Statistical Association (ICSA) **International** Conference. Zhejiang University, Hangzhou, China. December 20-22.

2019 Regression Analysis for Probabilistic Cause-of-disease Assignment using Case-control Diagnostic Tests: A Hierarchical Bayesian Approach.

- Department of Statistics and Data Science (SDS), University of Texas, Austin, November 1
- Department of Statistics, Taxes A&M University, September 13

2019 Big Data and Mobile Health. Data Science and Mobile Health. Symposium for Big Data Summer Institute. July 25. Ann Arbor, MI.

2019 Regression Analysis of Dependent Binary Data for Estimating Disease Etiology from Case-Control Studies.

- Invited Session: *Statistical Methods for Improving Inferences and Decision-Making in Population Health*, Joint Statistical Meeting, July 27 - August 1, Denver, Colorado.
- 2019 International Chinese Statistical Association (ICSA) **China** Conference. July 1-4, Naikai University, Tianjin, China.
- 3rd International Conference on Econometrics and Statistics (EcoStat 2019). Session: "Recent applications of latent variable models". June 25-27, National Chung Hsing University (NCHU), Taichung, Taiwan.

2019 Sparse latent class regression for multivariate binary data: A Bayesian approach. Applied International Chinese Statistical Association (ICSA) Statistics Symposium. Session: "Latent attribute models and their applications". June 9-12, Raleigh, North Carolina.

2019 Latent variable regression analysis of longitudinal multivariate data with irregular and informative observation times. Invited Workshop *Statistical Methods for Developing Personalized Mobile Health Interventions*, Feb 4 - March 1, National University of Singapore.

2018 Estimating clusters from multivariate binary data via hierarchical Bayesian Boolean matrix factorization. 2nd International Conference on Econometrics and Statistics (EcoStat 2018). June 19-21, The City University of Hong Kong.

2018 Partially Observed Dynamic Models for Tracking Therapeutic and Engagement Outcomes. "Statistics Methods and Applications in Mobile Health", Applied Statistics Symposium. International Chinese Statistical Association (ICSA). June 14-17, New Brunswick, NJ, USA.

2018 Junior Faculty Lightning Talks. Cancer Control and Population Sciences (CCPS), University of Michigan Cancer Center. May 4.

2018 Predicting mood using multivariate mobile sensor data streams for medical interns. Health Sciences Challenge Symposium. Michigan Institute for Data Sciences, University of Michigan. May 1.

2018 Bayesian Hierarchical Methods to Power Disease Discovery and Improve Clinical Decisions. Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS) University of Michigan. Apr 2-3. **Junior Faculty Keynote Speaker**.

2017 Partially Observed Dynamic Models for Therapeutic and Engagement Outcomes. Statistical Reinforcement Learning Lab. December 22. Department of Statistics, Harvard University, Cambridge, MA.

2017 Estimating AutoAntibody Signatures to Detect Autoimmune Disease Patient Subsets.

- Rheumatology Data Science Meeting. December 1, Johns Hopkins School of Medicine, Bayview Medical Center.
- International Biometric Society, Brazilian Regional Meeting. July 24 - July 28, Federal University of Lavras (UFLA), Lavras, MG, Brazil. **Conference Plenary Talk**.
- Big Data Summer Institute, University of Michigan. July 10, Ann Arbor, MI.
- Interdisciplinary Group Seminar (IGS), Center for Statistical Genetics, University of Michigan. November 29, 2016, Ann Arbor, MI

2016 Statistical Methods for Individualized Health. Annual School of Public Health Excellence in Research Symposium, University of Michigan. November 11, Ann Arbor, MI.

2016 Bayesian Nested Partially-Latent Class Models for Dependent Binary Data; Estimating Disease Etiology.

- 9th International Conference of the ERCIM WG on Computational and Methodological Statistics. December 9-11, University of Seville, Spain.
- Department of Biostatistics, University of Michigan. February 25, Ann Arbor, MI.
- Department of Biostatistics, University of Massachusetts, Amherst. February 5, Amherst, MA.
- Biostatistics Research Branch, Division of Clinical Research, National Institute of Allergy and Infectious Diseases, NIH. February 1, Rockville, MD.

2016 Sparse Latent Class Regression for Multivariate Binary Data; A Bayesian Approach. Survival, Longitudinal and Multivariate Data Working Group. Department of Biostatistics, Johns Hopkins University. May 6, Baltimore, MD.

2015 Informative Bayes Models for Estimating Disease Etiology.

- Biostatistics Grand Rounds, Johns Hopkins Bloomberg School of Public Health. November 9, Baltimore, MD.
- CHICAS, Medical School, Lancaster University. August 17, Lancaster, England.
- Department of Biostatistics, Brown University. February 17, Providence, RI.

2014 Partially Latent Class Models (npLCM) for Case-Control Studies of Childhood Pneumonia Etiology. SLAM Working Group. December 12, Baltimore, MD.

2014 Partially Latent Class Models (npLCM) for Case-Control Studies of Childhood Pneumonia Etiology. Pneumonia Etiology Research for Child Health (PERCH) Executive Committee Meeting. December 2, London, England.

2013 Estimating Infectious Etiology from Hierarchical Dirichlet Process Perspective. Pneumonia Etiology Research for Child Health (PERCH) Executive Committee Meeting. December 2, London, England.

2013 Partially Latent Class Models (pLCM) for Case-Control Studies of Childhood Pneumonia Etiology. US Centers for Disease Control and Child Health Research Foundation: Aetiology of Neonatal Infection in South Asia (ANISA) Project Committee Meeting. November 10, San Diego, CA.

2012 Revealing and Addressing Existing Basic Inadequacies in the Use of Paired Cluster Randomized Trials. Department of Biostatistics. Johns Hopkins Biostatistics Causal Inference Working Group. December 6, Baltimore, MD.

ORAL: CONTRIBUTED

2018 Estimating clusters from multivariate binary data via hierarchical Bayesian Boolean matrix factorization. Joint Statistical Meeting. July 28-August 2, Vancouver, Canada.

2018 Mixed Membership Regression Models for Estimating Autoimmune Disease Patient Subsets. Eastern North American Regional meeting of the International Biometric Society. March 25-28, Atlanta, GA.

2017 Detecting Autoimmune Disease Subsets for Estimated Autoantibody Signatures. Eastern North American Regional meeting of the International Biometric Society. March 12-15, Washington, DC.

2016 Sparse Latent Class Regression for Multivariate Binary Data; A Bayesian Approach. Joint Statistical Meetings. July 31-August 4, Chicago, IL.

2016 Bayesian Regression Analysis for Estimating Disease Etiology. Eastern North American Regional meeting of the International Biometric Society. March 6-9, Austin, TX.

2015 Bayesian Nested-Partially Latent Class Models for Estimating Disease Etiology. Eastern North American Regional meeting of the International Biometric Society. March 15-18, Miami, FL.

2014 Nested Partially Latent Class Models (npLCM) for Case-Control Studies of Childhood Pneumonia Etiology. Joint Statistical Meetings. August 7, Boston, MA.

2014 Estimating Treatment Effects in Cluster Randomized Trials by Calibrating Covariate Imbalances between Clusters. Eastern North American Regional meeting of the International Biometric Society. March 18, Baltimore, MD.

2013 Estimating Treatment Effects in Cluster Randomized Trials by Calibrating Covariate Imbalances between Clusters. Joint Statistical Meeting. August 4, Montreal, QC, Canada.

POSTER

2020* Interpretable Clustering of Hierarchical Dependent Binary Data: A Doubly-Multi-Resolution Approach. Eastern North American Regional meeting of the International Biometric Society. March 22-25, Nashville, TN.

2020* Latent Variable Regression Analysis of Longitudinal Multivariate Data with Irregular and Informative Observation Times. 2020 Getting SMART About Adaptive Interventions in Education workshop. March 17-20. Ann Arbor, MI.

2018 A Bayesian Approach to Restricted Latent Class Models for Scientifically-Structured Clustering of Multivariate Binary Outcomes.

- MIDAS Annual Symposium, October 9-10, University of Michigan, Ann Arbor, MI.
- Program on Statistical, Mathematical, and Computational Methods for Precision Medicine (PMED), SAMSI. August 14, Raleigh, NC.
- 25th Model-Based Clustering Workshop. July 16-20, University of Michigan, Ann Arbor, MI.

2017 Estimating AutoAntibody Signatures to Detect Autoimmune Disease Patient Subsets. Data Science Research Forum. December 1, University of Michigan, Ann Arbor, MI.

2016 Bayesian Nested-Partially Latent Class Models for Estimating Disease Etiology. 18th Meeting of New Researcher Conference in Statistics and Probability. July 28-30, University of Wisconsin, Madison.

2014 Estimating Childhood Pneumonia Episodes Attributable to Putative Pathogens from Indirect Measurements: Seasonality and Impact of HIV Infection. Delta Omega Scientific Poster Competition. Feburary 8, Baltimore, MD.

2013 Hierarchical Bayesian Model for Combining Information from Multiple Biological Samples with Measurement Errors: An Application to Children Pneumonia Etiology Study. Eastern North American Regional meeting of the International Biometric Society. March 12, Orlando, FL.

Research Grant Participation

FUNDED

Principal Investigator, Precision Health Investigator Awards 12/01/2018 - 12/01/2020
Bayesian Hierarchical Models for Using Mobile Technology to Individualize Care in Mental Health
Precision Health at University of Michigan; Total: $300,000
Effort: 20%.

Co-Investigator, NIH 2R01NR013658 (PI: Carlozzi) 12/01/2019-11/31/2024
Improving Outcomes for Care Partners of Persons with Traumatic Brain Injury
Effort: 5% Yr 1; 10% Yr 2-4, 20% Yr 5.

MPI, Accerlerating Synergy Award, UL1TR002240 (PIs: Carlozzi, Choi, Sen, Wu) *03/01/2020-02/28/2021*
Mobile Technology and Data Analytics to Identify Real-Time Predictors of Caregiver Well-Being
Michigan Institute for Clinical Health Research (MICHR) and Institute for Healthcare Policy and Innovation (IHPI)
Effort: 3%

Co-PI (with Gongjun Xu) 03/01/2019 - 03/01/2020
Structured Latent Variable Models for Multivariate Binary Data Observed over Taxonomies
Shark Tank for Research Ideas in Data Science and Statistics (STRIDES), Department of Biostatistics and Statistics, University of Michigan; Total: $15,000
Co-PI (with Yang Chen and Gongjun Xu), Mcubed 3.0 09/01/2018 - 12/31/2020
Personalized Diagnosis for Disease Etiology Studies and Cognitive Assessment
University of Michigan; Total: $60,000

Co-Investigator (PI: Gordon) 03/01/2020 -
Sinai-Emory Multiinstitutional CIVIC (Collaborative Influenza Vaccine Innovation Centers)
Effort: 10%.

Co-Investigator, NIH 2R01MH101459 (PI: Sen; U of Michigan) 07/01/2018 - 03/31/2023
Mobile Technology to Identify Mechanisms Linking Genetic Variation and Depression
Effort: 10%.

Subcontract PI, NIH R01AR073208 (PIs: Casciola-Rosen and Shah; Hopkins) 04/01/2018 - 03/31/2023
Autoantibodies Define Scleroderma Subgroups with Distinct Relationships to Cancer
Subcontract to UMich 18-PAF07330; Effort: 13.5%.

Co-Investigator, NIH U01CA229437 (PI: Nahum-Shani, ISR, U of Michigan and Wetter, U of Utah) 09/01/2018 - 08/31/2022
Novel Use of mHealth Data to Identify States of Vulnerability and Receptivity to JITAIs
Effort: 10%

PENDING (Selected)

Principal Investigator, MIDAS (Co-PI: Baladandayuthapani) 05/15/2020-12/31/2020
Informing COVID-19 Response Preparedness via Individual-Level Temporal and Network Modeling

Co-Investigator, UM Biosciences Initiative (BSI) (Co-PIs: Kozloff, Burmeister, Bodary) 03/01/2020-02/28/2022
You-M: Personalizing Student Performance at the University of Michigan
Effort: 7%. Total: $1 million.

Co-Investigator, NIH (PI: Ryan) 09/01/2020-08/31/2025
The Effects of Bundled Payment on Acute Cardiovascular Outcomes among Older Adults
Effort: 10%. Total: $3,679,770

COMPLETED

Co-Investigator, MIDAS Challenge Awards (PI: Sen) 03/01/2017-02/28/2019
Identifying Real-Time Data Predictors of Stress and Depression Using Mobile Technology.
Funding for methodological research in the area of health sciences, Michigan Institute for Data Science (MIDAS), University of Michigan; Total: $521,051.

Subcontract PI, PCORI ME-1408-20318 (PI: Zeger) 07/01/2015 - 08/31/2018
Bayesian Hierarchical Models for Design and Analysis of Studies to Individualize Healthcare.
Funding for Methodological Research, Patient-Centered Outcomes Research Institute.
Subcontract to UMich 17-PAF02898; Effort: 30%. $890,032.

Co-lead Statistician, Gates Foundation 305215 (PI: O'Brien) 09/01/2014-12/31/2017
Pneumonia Etiology Research for Child Health (PERCH).
Subcontract to UMich 17-PAF02901; Effort: 32%.

Investigator, Project Data Sphere, LLC (PDS) by AstraZeneca 10/01/2015-03/31/2016
Prostate Cancer DREAM Challenge Educational Program Award
$2307.69.

Academic Service

DEPARTMENT OF BIOSTATISTICS, UNIVERSITY OF MICHIGAN

2017-present	Seminars/Brown Bag
2019	Student Awards
2018	Rod Little Distinguished Lectureship Organizing Committee
2018	Computing, Social Media and Website Reform
2018	Faculty Speaker on Prospective Student Day, November 10
2017	Qualifying Exam Modernization Proposal
2017	Faculty Search
2016	Admissions

SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF MICHIGAN

2019 - Junior Faculty Advisory Board (J-FAB)

2018 Health Informatics

MICHIGAN INSTITUTE OF DATA SCIENCE

2019, 2020 Program Committee, Annual MIDAS Symposium, November
2016 Poster Competition Judge, Michigan Institute of Data Science Symposium, November 15