

ZHENKE WU  
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[zhenkewu.com](http://zhenkewu.com)

## EDUCATION

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- 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

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- 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 (*inHealth*), 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)

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|-------------------|--|
| Committee Member  | Eastern North American Regional Meeting of the International Biometric Society<br>- Paper Award Committee (2019-2021)<br>- Regional Advisory Board (2018-2020)<br>- Educational Advisory Committee (2018; Atlanta, GA)   |
| Program Committee | <i>AI for Behavior Change, The AAAI-21 Workshop on AI For Behavior Change, Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI-21)</i> (February 8-9, 2021; Virtual)   |
| Session Organizer | <i>Statistical Methods for Improving Inferences and Decision-Making in Population Health</i> , Joint Statistical Meeting (July 27 - August 1, 2019, Denver, CO)  |
| Session Chair     | <i>Modern Graphical Modeling of Complex Biomedical Systems</i> , 2020 JSM (August 6; Virtual)<br><i>New Weighting Methods for Causal Inference</i> , 2020 ENAR (March 24; Virtual)<br><i>Towards a Learning-Health System: Methods and Strategies for Data-Driven Healthcare</i> , 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<br><br>Hopkins inHealth (HiH) Learning Methodologies Working Group   |
| Founding Member   | <a href="#">Chinese Public Health Forum (CPHF) at Johns Hopkins</a> , 2010-12  |
| Consultant        | <a href="#">Studio Consultation, Johns Hopkins Institute for Clinical and Transnational Research (ICTR)</a>  |
| Hosted Attendee   | <a href="#">Use of Wearable and Implantable Devices in Health Research</a> , BIRS Workshop, Banff, AB, Canada. Feb 23-28, 2020<br><a href="#">Statistical Methods for Developing Personalized Mobile Health Interventions</a> , National University of Singapore, Feb 4 - March 1, 2019<br><a href="#">Program on Statistical, Mathematical, and Computational Methods for Precision Medicine (PMED)</a> , SAMSI, Raleigh, Durham, NC. August 13-17, 2018.<br>Methods Summit. PCORI Annual Meeting: Building a Patient-Centered Research Community. Arlington VA. October 6-8, 2015<br>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.<br><b>Journals:</b> <i>Biometrics</i> (7), <i>Biostatistics</i> (1), <i>Journal of Business and Economic Statistics</i> (1), <i>Statistics in Medicine</i> (8), <i>Annals of Statistics</i> (1), <i>Computational Statistics and Data Analysis</i> (2), <i>Epidemiology</i> (1), <i>Pharmaceutical Statistics</i> (1), <i>PLOS One</i> (1), <i>Statistical Science</i> (1), <i>Sankhya (The Indian Journal of Statistics)</i> (1), <i>Technometrics</i> (1), <i>Nature Partner Journal (npj) Digital Medicine</i> (1), <i>International Journal of Epidemiology</i> (1), <i>Ophthalmic Epidemiology</i> (1), <i>Psychiatric Services</i> (1), <i>Journal of Educational and Behavioral Statistics</i> (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

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### UNIVERSITY OF MICHIGAN

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- 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

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- 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

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

### FUDAN UNIVERSITY

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- 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)

### PUBLISHED PEER-REVIEWED ARTICLES

1. **Wu Z** and Chen I<sup>‡</sup> (2020). Probabilistic Cause-of-disease Assignment using Case-control Diagnostic Tests: A Hierarchical Bayesian Approach. *Statistics in Medicine*. To Appear. <https://doi.org/10.1101/672808>.
2. **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. *Biometrics*. To appear. DOI:10.1111/biom.13388. <https://doi.org/10.1111/biom.13388>.
3. Moreno A<sup>‡</sup>, **Wu Z**, Yap J, Wetter D, Kumar S, Lam C, Nahum-Shani I, Dempsey W, Regh J (2020). A Robust Functional EM Algorithm for Incomplete Panel Count Data. *NeurIPS2020*. To Appear. <https://arxiv.org/abs/2003.01169>
4. Schaefer JK, Li M<sup>‡</sup>, **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. *Journal of Thrombosis and Haemostasis*. To Appear. doi:10.1111/jth.15153.
5. Xiang X, Xuan L, Halavanau A, Jia X, Sun Y, Lai P, **Wu Z** (2020). Modern Senicide in the Face of a Pandemic: An Examination of Public Discourse and Sentiment about Older Adults and COVID-19 Using Machine Learning. *The Journals of Gerontology: Series B*. <https://doi.org/10.1093/geronb/gbaa128>
6. NeCamp T<sup>‡</sup>, 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](https://doi.org/10.2196/15033). PMID: [32229469](https://pubmed.ncbi.nlm.nih.gov/32229469/). Trial Registration: 2018 Intern Health Study Micro-randomized Trial (IHS), [NCT03972293](https://clinicaltrials.gov/ct2/show/study/NCT03972293).
7. 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.
8. **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.
9. 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*. [https://doi.org/10.1016/S0140-6736\(19\)30721-4](https://doi.org/10.1016/S0140-6736(19)30721-4). [DataViz: <http://perchresults.org>][Press Release]
10. 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>.
11. 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. Piegorisch, F. Ruggeri and J. L. Teugels). doi:10.1002/9781118445112.stat08050

12. 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.
13. **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.
14. **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>.
15. 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
16. 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.
17. **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.
18. 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.
19. 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.
20. 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.
21. **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.
22. 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 failure of subsequent treatment? *Radiology*, 265:115-123.

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#### OTHER PEER-REVIEWED PUBLICATIONS

23. Zeger SL, **Wu Z**, Coley Y, Fojo AT, Carter B, O'Brien K, Zandi P, Cooke M, Carey V, Crainiceanu C, Muscelli J, Gherman A, Mekosh J (2020). Using a Bayesian Approach to Predict Patients' Health and Response to Treatment. *Patient-Centered Outcomes Research Institute (PCORI)*.  
<https://doi.org/10.25302/09.2020.ME.140820318>

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#### UNDER REVIEW/REVISION

24. 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. Major Revision for *Environmetrics*. <https://arxiv.org/abs/2003.12844>.
25. Wang J, Du L, Zou C, **Wu Z** (2020+). Dynamic Tracking and Screening in Massive Data Streams. *submitted*.
26. Schaefer JK, Li M<sup>#</sup>, **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*.
27. Bi Q, Hong C, Meng J, **Wu Z**, Zhou P, Ye C, Sun B, Kucirka 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*.  
<https://www.medrxiv.org/content/10.1101/2020.04.22.20076190v1>
28. Cleary J, Lima KP, Meeks L, Zhao J, Fang Y, **Wu Z**, Frank E, Mata D, Sen S (2020+). Effects of the COVID-19 Pandemic on Depression Risk in US Training Physicians: A Prospective Cohort Study. *Submitted*.
29. Chung S, Kontar R, **Wu Z** (2020+). Weakly-Supervised Multi-output Regression via Correlated Gaussian Processes. *Submitted*. <https://arxiv.org/abs/2002.08412>
30. Li Q, Zhang T, Yang S, Su D, **Wu Z**, Zhang M (2020+). A Novel Compartment Modeling of COVID-19 Infection among Three American States . *Submitted*.

## SOFTWARE

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<b>baker:</b>	Bayesian Analysis Kit for Etiology Research - Fitting and visualizing Bayesian nested partially-latent class models for estimating disease etiology <a href="https://github.com/zhenkewu/baker">https://github.com/zhenkewu/baker</a>
<b>mpcr:</b>	Robust covariate-calibrated estimation of treatment effect in matched-pair cluster randomized trials. <a href="https://github.com/zhenkewu/mpcr">https://github.com/zhenkewu/mpcr</a>
<b>spotgear:</b>	Subset Profiling and Organizing Tools for Gel Electrophoresis Autoradiography in R <a href="https://github.com/zhenkewu/spotgear">https://github.com/zhenkewu/spotgear</a>
<b>rewind:</b>	Reconstructing Etiology with Binary Decomposition <a href="https://github.com/zhenkewu/rewind">https://github.com/zhenkewu/rewind</a>
<b>slamR:</b>	Structured Latent Attribute Models in R <a href="https://github.com/zhenkewu/slamR">https://github.com/zhenkewu/slamR</a>
<b>lotR:</b>	latent class analysis for observations over leaves in a tree <a href="https://github.com/zhenkewu/lotR">https://github.com/zhenkewu/lotR</a>



**TEACHING AND ADVISING (see [website](#) for materials)**

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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
- 2024\* Jitao Wang, PhD student. Department of Biostatistics, University of Michigan (MSc in May 2019).
- Outstanding First Year Masters Student Biostatistics Award, 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 On-line 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), Lan Luo (Biostat)
- 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

2020-2021     Yajing Li, Qiyuan Shi, Jitao Wang, Tian Xie, Yuliang Xu

#### GRADUATE STUDENT TEMPORARY EMPLOYEE

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2018 Summer     Zhongyuan Lyu

#### PARTICIPATION IN RESEARCH

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2020 Winter     Jiayuan Dong (Accelerated MS, Applied Statistics)

2018 Fall         Jing Chu (MS, Applied Statistics)

2018 Summer     Jitao Wang (Biostat)

#### GRADUATE STUDENT INSTRUCTOR (GSI)

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Pedro Orozco del Pino (BIOSTAT523, Fall 2017, *Outstanding GSI Award*); Chen Liang (BIOSTAT523, Fall 2017); Nina Zhou (BIOSTAT653, Fall 2018); Zheng Xu (BIOSTAT653, Fall 2019); Yuliang Xu (BIOSTAT653, Fall 2020)

#### MENTOR

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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

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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

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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](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).

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#### 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](https://www.coursera.org) (taught by Scott Zeger; ~ 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).

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#### PRESENTATIONS (\*upcoming)

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##### ORAL: INVITED

- 2020 Micro-randomized Trials in Mobile Health. Environmental Statistics Discussion. Integrated Health Science Core, Michigan Center on Lifestage Environmental Exposures and Disease (M-LEEaD). September 22nd, Ann Arbor, MI
- 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, Texas 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.

- 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.

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#### POSTER

- 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. February 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.

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#### RESEARCH GRANT PARTICIPATION

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##### FUNDED

Principal Investigator, Precision Health Investigator Awards

12/01/2018 - 12/01/2021

Bayesian Hierarchical Models for Using Mobile Technology to Individualize Care in Mental Health

[Precision Health at University of Michigan](#); Total: \$300,000

Co-Investigator, NIH 2R01NR013658 (PI: Carlozzi) 12/01/2019-11/31/2024

Improving Outcomes for Care Partners of Persons with Traumatic Brain Injury

MPI, Accelerating 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 \(MICHHR\) and Institute for Healthcare Policy and Innovation \(IHPI\)](#)

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)

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

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

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)

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

#### 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; \$890,032.

Co-lead Statistician, Gates Foundation 305215 (PI: O'Brien) <a href="#">Pneumonia Etiology Research for Child Health (PERCH)</a> . Subcontract to UMich 17-PAF02901	09/01/2014-12/31/2017
Investigator, Project Data Sphere, LLC (PDS) by AstraZeneca Prostate Cancer DREAM Challenge Educational Program Award \$2307.69.	10/01/2015-03/31/2016

## ACADEMIC SERVICE

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### DEPARTMENT OF BIOSTATISTICS, UNIVERSITY OF MICHIGAN

2017-2020	Seminars/Brown Bag
2019-present	Student Awards
2018	Rod Little Distinguished Lectureship Organizing Committee
2018,2020	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