Xu Shi

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CONTACT INFORMATION

Department of Biostatistics
University of Michigan
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PROFESSIONAL POSITIONS

Assistant professor Sep 2019 – present
Department of Biostatistics, University of Michigan

Postdoctoral fellow Sep 2017 – Aug 2019
Data Science Initiative and Department of Biostatistics, Harvard University
Advisors: Tianxi Cai, Eric J. Tchetgen Tchetgen

EDUCATION

University of Washington, Seattle, WA Sep 2012 – Aug 2017

- Ph.D. in Biostatistics
  Dissertation: Multivariate Inference and Surveillance using Population Scale Data
  Advisors: Andrea J. Cook, Patrick J. Heagerty

Zhejiang University, Hangzhou, China Sep 2008 – Jun 2012

- B.S. in Mathematics and Applied Mathematics
  Science Honors Class

RESEARCH INTERESTS

- Causal inference; electronic health records; data harmonization; machine translation; post-marketing safety surveillance; healthcare policy; semiparametric efficiency theory.

PUBLICATIONS

Underline indicates advisee; # indicates corresponding author

Methods

1. **Shi X**, Li Q, Mukherjee B. (2022). Current Challenges with the Use of Test-Negative Designs for Modeling COVID-19 Vaccination and Outcomes. *American Journal of Epidemiology*, in press.
2. Zhou D, Gan Z, **Shi X**, Patwari A, Rush E, Bonzel C, Panickan VA, Hong C, Ho Y, Cai T, Costa L, Li X, Castro VM, Murphy SN, Brat G, Weber G, Avillach P, Gaziano JM, Cho K, Liao K, Lu J, Cai T (2022). Multiview Incomplete Knowledge Graph Integration with Application to Cross-institutional EHR Data Harmonization. *Journal of Biomedical Informatics*, 2022 Jul 21:104147.

†3. Wu W, He K, **Shi X**, Schaubel D, Kalbfleisch J. (2021) Analysis of Readmissions Data Taking Account of Competing Risks. *Statistical Methods in Medical Research*, in press.

[3] † Student Paper Award, Lifetime Data Science Section 2021 of the American Statistical Association

4. **Shi X**, Pan Z, and Miao W. (2021). Data Integration in Causal Inference. WIRES Computational Statistics, in press.
5. Yu Y, Hou L, **Shi X**, Sun X, Liu X, Yu Y, Yuan Z, Li H, Xue H. Impact of Nonrandom Selection Mechanisms on the Causal Effect Estimation for Two-sample Mendelian Randomization Methods. *PLOS Genetics*, in press.
6. Tchetgen Tchetgen EJ, Dukes O, **Shi X**, Miao W, Richardson D (2022). Errors-in-variables bias in Synthetic Controls: a cautionary note and a potential solution. *American Journal of Epidemiology*, in press.
¶7. **Shi X**, Li X, and Cai T. (2021) Spherical regression under mismatch corruption with application to automated knowledge translation. *Journal of the American Statistical Association: Theory and Methods*, 116(536):1953-1964.
8. **Shi X**, Miao W, and Tchetgen Tchetgen EJ (2020). A Selective Review of Negative Control Methods in Epidemiology. *Current Epidemiology Reports*, Oct 15:1-3.
9. Yu Y, Zhang M, **Shi X**, Caram M, Little R, Mukherjee B (2020). A Comparison of Parametric Propensity Score-Based Methods for Causal Inference with Multiple Treatments and a Binary Outcome. *Statistics in Medicine*, 40(7):1653-1677.
10. Ross R, **Shi X**, Caram M, Tsao P, Lin P, Bohnert A, Zhang M, Mukherjee B (2020). Veridical Causal Inference using Propensity Score Methods for Comparative Effectiveness Research with Medical Claims. *Health Services and Outcomes Research Methodology*, 21(2), pp.206-228.
11. Salvator, M, Beesley L, Fritsche L, Hanauer D, **Shi X**, Mondul A, Pearce C, Mukherjee B (2020) Phenotype risk scores (PheRS) for pancreatic cancer using time-stamped electronic health record data: Discovery and validation in two large biobanks. *Journal of Biomedical Informatics*, 113, p.103652.
12. **Shi X**, Miao W, and Tchetgen Tchetgen EJ. (2020) Multiply robust causal inference with double negative control adjustment for categorical unmeasured confounding. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, 82(2):521-540.
13. **Shi X**, Wellman R, Heagerty PJ, Nelson JC, and Cook AJ. (2020). Safety surveillance and the estimation of risk in select populations: flexible methods to control for confounding while targeting marginal comparisons via standardization. *Statistics in Medicine*, 39(4):369-386.
14. Beam AL, Kompa B, Fried I, Palmer N, **Shi X**, Cai T, and Kohane I. (2020). Medical Concept Embeddings Estimated from Massive Sources of Biomedical Data. *Pacific Symposium on Biocomputing (PSB)*, 25: 295-306.
15. Fulcher IR, **Shi X**, and Tchetgen Tchetgen EJ. (2019). Estimation of natural indirect effects robust to unmeasured confounding and mediator measurement error. *Epidemiology*, 30(6):825-834.
16. Tchetgen Tchetgen EJ, **Shi X**, Wong HW, and Sofer T. (2019). A general approach to detect gene (G)-environment (E) additive interaction leveraging G-E independence in case-control studies. *Statistics in Medicine*, 38(24):4841-4853.
17. **Shi X**, Pashova H, and Heagerty PJ. (2017). Comparing healthcare utilization patterns via global differences in the endorsement of current procedural terminology codes. *Annals of Applied Statistics*, 11(3):1349-1374.

[7] ¶ 2022 Outstanding Statistical Application Award of the American Statistical Association

18. Cook AJ, Wellman RD, **Shi X**, Izem R, Zhang R, Nguyen M, Tiwari RC, Heckbert SR, Gruber S, and Nelson JC. (2017). Safety signaling methods for survival outcomes to control for confounding in the Mini-sentinel distributed database, *FDA's Sentinel Initiative: Project Report*.

Preprints

19. Qiu H, **Shi X**, Miao W, Dobriban E, Tchetgen Tchetgen EJ. (2022) Doubly Robust Proximal Synthetic Controls. arXiv preprint arXiv:2210.02014
20. Kummerfeld E, Lim J, #**Shi X**. (2022) Data-driven Automated Negative Control Estimation (DANCE): Automated Search for and Validation of Negative Controls. arXiv preprint arXiv:2210.00528
21. Li Q, **Shi X**, Miao W, Tchetgen Tchetgen EJ. (2022). Doubly Robust Proximal Causal Inference under Confounded Outcome-Dependent Sampling. arXiv preprint arXiv:2208.01237
22. Li Q, **Shi X**, Miao W, Tchetgen Tchetgen EJ. (2022). Double Negative Control Inference in Test-Negative Design Studies of Vaccine Effectiveness. arXiv preprint arXiv:2203.12509
23. **Shi X**, Luo L. (2022). Online Causal Inference with Application to Near Real-Time Post-Market Vaccine Safety Surveillance. arXiv preprint arXiv:2111.13775
24. **Shi X**, Miao W, Hu M, and Tchetgen Tchetgen EJ. (2022). Theory for identification and Inference with Synthetic Controls: A Proximal Causal Inference Framework. arXiv preprint arXiv:2108.13935
25. Zhang G, Beesley LJ, Mukherjee B, #**Shi X**. (2022). Patient Recruitment Using Electronic Health Records Under Selection Bias: a Two-phase Sampling Framework. arXiv preprint arXiv:2011.06663.
26. Wu KH, Douville NJ, Yu X, Mathis MR, Graham SE, Global Biobank Meta-analysis Initiative (GBMI), Surakka I, Hornsby WE, Willer CJ, #**Shi X**. (2022). Integrating Large Scale Genetic and Clinical Information to Predict Cases of Heart Failure. medRxiv preprint doi: https://doi.org/10.1101/2022.07.19.22277830
27. Hu M, **Shi X**, Song PXK. (2022) Collaborative Causal Inference With a Distributed Data-sharing Management. arXiv preprint arXiv:2204.00857.
28. Ying A, Miao W, **Shi X**, and Tchetgen Tchetgen EJ. (2021). Proximal Causal Learning for Complex Longitudinal Studies. arXiv preprint arXiv:2109.07030.
29. Tchetgen Tchetgen EJ, Ying A, Cui Y, **Shi X**, and Miao W. (2021). An Introduction to Proximal Causal Learning. arXiv preprint arXiv:2009.10982.
30. Cui Y, Pu H, **Shi X**, Miao W, Tchetgen Tchetgen EJ. (2021). Semiparametric Proximal Causal Inference. arXiv preprint arXiv:2011.08411.
31. Miao W, **Shi X**, and Tchetgen Tchetgen EJ. (2021). A Confounding Bridge Approach for Double Negative Control Inference on Causal Effects. arXiv preprint arXiv:1808.04945.

[27] § Distinguished Student Paper Award, ENAR 2021

[28] ‡ David P. Byar Young Investigator Award, Biometrics section of the American Statistical Association

Application

32. Haupert SR, **Shi X**, Chen C, Fritsche LG, Mukherjee B (2022). A Case-Crossover Phenome-wide Association Study (PheWAS) for Understanding Post-COVID-19 Diagnosis Patterns. *Journal of Biomedical Informatics*, in press.
33. Springer MV, Lisabeth LD, Gibbs R, **Shi X**, Case E, Chervin RD, Dong L, Brown DL (2022). Racial and ethnic differences in sleep-disordered breathing and sleep duration related to stroke. *Journal of Stroke and Cerebrovascular Diseases*, in press.
34. Lisabeth LD, Brown DL, Dong L, Zahuranec DB, Kwicklis M, **Shi X** , Case E, Smith MA, Campbell M, Carrera JF, Morgenstern LB (2022). Outcomes in the year after first-ever ischemic stroke in a bi-ethnic population. *Annals of Neurology*, in press.
35. Patel MR, Zhang G, Heisler M, Song PXK, Piette JD, **Shi X**, Choe HM, Smith A, Resnicow K (2022). Measurement and validation of the Comprehensive Score for financial toxicity (COST) in a population with diabetes. *Diabetes Care*, in press.
36. Risk M, Hayek S, Schiopu E, Yuan L Shen C, **Shi X**, Freed G, Zhao L (2022). COVID-19 Vaccine Efficacy against Omicron Variant Infection and Hospitalisation in Patients taking Immunosuppressive Medications: A Retrospective Cohort Study. *The Lancet Rheumatology*, in press.
37. Chen C, Haupert SR, Zimmermann L, **Shi X**, Fritsche LG, Mukherjee B (2022). Global Prevalence of Post COVID-19 Condition or Long COVID: A Meta-Analysis and Systematic Review. *Journal of Infectious Diseases*, in press.
38. Schütz SG, Lisabeth L, Gibbs R, **Shi X**, Chervin RD, Kwicklis M, Case E, Brown, DL (2022). Ten-Year Trends in Sleep-Disordered Breathing After Ischemic Stroke: 2010 to 2019 Data From the BASIC Project. *Journal of the American Heart Association*, in press.
39. Patel MR, Zhang G, Leung C, Song PXK, Heisler M, Choe HM, Mehdipanah R, **Shi X**, Resnicow K, Rajaee G, Piette JD (2021). Impacts of the COVID-19 pandemic on unmet social needs, self-care, and outcomes among people with diabetes and poor glycemic control. *Primary Care Diabetes*, in press.
40. Zhao Z, Salerno S, **Shi X**, Lee S, Mukherjee B, Fritsche LG (2021). Understanding the Patterns of Serological Testing for COVID-19 Pre- and Post-Vaccination Rollout in Michigan. *Journal of Clinical Medicine*, in press.
41. Wu KH, Hornsby WE, Klunder B, Krause A, Driscoll A, Kulka J, Bickett-Hickok R, Fellows A, Graham S, Kaleba EO, Hayek SS, **Shi X**, Sutton NR, Douuville N, Mukherjee B, Jammerson K, Brummett CCM, Willer CJ (2021). Exposure and risk factors for COVID-19 and the impact of staying home on Michigan residents. *PLOS ONE*, 16(2), p.e0246447.
42. Morgenstern LB, Zahuranec DB, Lim J, **Shi X**, Brown DL, Kerber KA, Meurer WJ, Skolarus LE, Adelman EE, Campbell MS, Case E, Lisabeth LD. (2021) Tissue-based stroke definition impacts stroke incidence but not ethnic differences. *Journal of Stroke and Cerebrovascular Diseases*, 30(6), 105727.
43. Schütz SG, Lisabeth LD, Gibbs R, **Shi X**, Case E, Chervin RD, Brown DL. (2021) Wake-Up Stroke is not associated with Obstructive Sleep Apnea. *Sleep Medicine*, 81:158-62.
44. Patel MR, Heisler M, Piette JD, Resnicow K, Song PXK, Choe HM, **Shi X**, Tobi J, Smith A (2020). Study Protocol: CareAvenue program to improve unmet social risk factors and diabetes outcomes – A randomized controlled trial. *Contemporary Clinical Trials*, 89:105933.

†45. Thornblade LW, **Shi X**, Ruiz A, Flum DR, Park JO. (2017). Comparative effectiveness of minimally invasive surgery and conventional approaches for major or challenging hepatectomy. *Journal of the American College of Surgeons*, 224(5):851–861.

46. Thornblade LW, Varghese TK, **Shi X**, Johnson EK, Bastawrous A, Billingham RP, Thirlby R, Fichera A, Flum DR. (2017). Preoperative immunonutrition and elective colorectal resection outcomes. *Diseases of Colon and Rectum*, 60(1):68-75.

47. Friedly JL, Comstock BA, Turner JA, Heagerty PJ, Deyo RA, Bauer Z, Avins AL, Nedeljkovic SS, Nerenz DR, **Shi, X**, Annaswamy T, Standaert CJ, Smuck M, Kennedy DJ, Akuthota V, Sibell D, Wasan AD, Diehn F, Suri P, Rundell SD, Kessler L, Chen AS, Jarvik JG. (2017). Long term effects of repeated injections of local anesthetic with or without corticosteroid for lumbar spinal stenosis: a randomized trial. *Archives of Physical Medicine and Rehabilitation*, 98(8):1499–1507.

48. Jarvik JG, Gold LS, Comstock BA, Heagerty PJ, Rundell SD, Turner JA, Avins AL, Bauer Z, Bresnahan BW, Friedly JL, James K, Kessler L, Nedeljkovic SS, Nerenz DR, **Shi X**, Sullivan SD, Chan L, Schwalb JM, Deyo RA. (2015). Association of early imaging for back pain with clinical outcomes in older adults. *Journal of the American Medical Association*, 313(11):1143-1153.

49. Jarvik JG, Comstock BA, Heagerty PJ, Turner JA, Sullivan SD, **Shi X**, Nerenz DR, Nedeljkovic SS, Kessler L, James K, Friedly JL, Bresnahan BW, Bauer Z, Avins AL, Deyo RA. (2014). Back pain in seniors: the back pain outcomes using longitudinal data (BOLD) cohort baseline data. *BMC Musculoskeletal Disorders*, 15(134):1-11.

SOFTWARE

iSphereMAP

- Python package: `https://github.com/shixu0830/iSphereMAP-python-package`

CPT-SCAN

- Shiny app: `https://xu-rita-shi.shinyapps.io/CPT_visualization/`.
- R package: `https://github.com/shixu0830/VisualCPT`.

PFS-AUDIT

- Shiny app: `https://xu-rita-shi.shinyapps.io/PFS_Audit/`

FUNDING

- **Principal Investigator** (10% FTE, PI: Shi) 2022-2024
  Precision Health Investigator Awards, University of Michigan $200,000
  Automated Harmonization of Multi-Institutional Electronic Health Records Data
- **Principal Investigator** (25% FTE, PI: Shi/Tchetgen Tchetgen) 2021-2025
  1R01GM139926-01, NIH $1,490,831
  Accounting for Hidden Bias in Vaccine Studies: A Negative Control Framework
- **Principal Investigator** (20% FTE, PI: Shi/Nelson/Heagerty) 2021-2023
  WO2008, FDA $1,200,000
  Using Unsupervised Learning to Generate Code Mapping Algorithms to Harmonize Data Across Data Systems

[45]† Covered by *the Seattle Times*: JoNel Aleccia. "Minimally invasive surgery a safe option for major liver cases, UW study finds", Oct 17, 2016.

- **Subcontract Principal Investigator** (15% FTE, PI: Vydiswaran/Shi) 2020-2023
  Moody Endowment/University of Texas Medical Branch $349,939
  Phenotyping Patients with Brain Injury Associated Fatigue and Altered Cognition (BIAFAC) Across Two Institutions
- **Co-Investigator** (5% FTE, PI: Richard/Dutcher/Lee), 2019-2022
  WO2003.1, FDA
  Enhancing Causal Inference in the Sentinel System: An Evaluation of Targeted Learning and Propensity Scores for Confounding Control in Drug Safety
- **Co-Investigator** (5% FTE, PI: Nelson), 2021-2022
  HOI 2.0, FDA
  Extending Machine Learning Methods Development in Sentinel: Follow-up Analyses for Anaphylaxis Algorithm and Formalization of a General Phenotyping Framework (Phase 3)
- **Co-Investigator** (1% FTE, PI: Patel) 2019-2023
  5-R01DK116715-02, NIH
  Improving diabetes outcomes and health disparities through a patient activation intervention addressing unmet resource needs
- **Co-Investigator** (5% FTE, PI: Messana) 2020-2023
  RFP-CMS-MIDS-2013-0001, DHHS-CMMS
  Measure & Instrument Development and Support (MIDS)
- **Co-Investigator** (10% FTE, PI: Lisabeth/ Morgenstern), 2020-2024
  2R01NS038916-21, NIH
  Brain Attack Surveillance in Corpus Christi (BASIC) Project
- **Co-Investigator** (5% FTE, PI: Lisabeth/ Morgenstern), 2020-2024
  1R01NS107463-01A1, NIH
  Improving Post-acute Care to Reduce Ethnic Stroke Disparities

INVITED TALKS

1. "Harmonizing Electronic Health Record Data Across FDA Sentinel Initiative Data Partners: Case Study and Lessons Learned"
   - Joint Statistical Meetings (JSM) invited session, Toronto, Canada (Aug 2023)
   - 2023 ICSA Applied Statistics Symposium, Ann Arbor, Michigan (June 2023)
   - CMStatistics, London (Dec 2021)
2. "Estimating Vaccine Effectiveness in a Test-Negative Design With Negative Control Variables to Reduce Unmeasured Confounding"
   - Department of Epidemiology and Health Statistics, Shandong University, China (Oct 2022)
   - Divisions of Biostatistics and Bioinformatics, University of California, San Francisco (November 2022, virtual)
   - Division of Biostatistics, Ohio State University (August 2022, virtual)
   - Division of Biostatistics and Bioinformatics, Department of Epidemiology and Public Health, School of Medicine, University of Maryland (March 2022, virtual)
3. "Analysis of Electronic Health Record Data: Opportunities and Challenges"
   - Department of Epidemiology and Health Statistics, Shandong University, China (Oct 2022)
   - WNAR Journal Club (Dec 2022, virtual)

- Quantitative Sciences Seminar series, Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University School of Medicine (Jan 2022, virtual)
- Learning Health System Collaboratory Webinar, Department of Learning Health Sciences, University of Michigan (Oct 2021) [link to recording]
- T32 Biobehavioral Pain Research Quantitative Seminar Series, Johns Hopkins University (Sep 2021, virtual)

4. "An Introduction to Negative Control and Proximal Causal Learning"

   - Flatiron Health (Apr 2022)
   - FDA Sentinel Innovation Center Webinar Series (Jan 2022) [link to recording]
   - Biostatistics Brown Bag Seminar, Department of Biostatistics, University of Michigan (Jan 2022)
   - Division of Biostatistics, Department of Population Health Sciences, University of Utah School of Medicine (Apr 2021, virtual)
   - The MRC Integrative Epidemiology Unit, University of Bristol, UK (Jan 2021, webinar) [link to recording]
   - Michigan Institute for Data Science (Oct 2020)
   - Department of Epidemiology and Health Statistics, Shandong University, China (June 2020, virtual)

5. "Theory for identification and Inference with Synthetic Controls: A Proximal Causal Inference Framework"

   - EcoSta, Kyoto, Japan (June 2022)
   - Department of Statistics, Texas A&M University (March 2022)
   - CMStatistics, London (Dec 2021, virtual)
   - Department of Statistics and Actuarial Science at the University of Iowa (Oct 2021, virtual)
   - 2021 ICSA Applied Statistics Symposium (Sep 2021, virtual)
   - Department of Preventive Medicine – Biostatistics, Northwestern University (May 2021, virtual)
   - Western North American Region (WNAR) invited session, Anchorage, Alaska (June 2021, virtual)
   - Department of Statistics and Actuarial Science, University of Hong Kong, China (March 2021, virtual)
   - Center for Causal Inference, University of Pennsylvania (March 2021, virtual; contributed talk)
   - IMS Asia Pacific Rim Meeting, Melbourne, Australia (Jan 2021, cancelled due to COVID-19)
   - CMStatistics, London (Dec 2020, session cancelled due to COVID-19)

6. "Harmonizing Electronic Health Records from Heterogeneous Systems via Automated Translation of Medical Concepts"

   - Department of Biostatistics, University of Washington (Oct 2020) [link to recording]
   - FDA Sentinel Innovation Center Webinar Series (Aug 2020) [link to recording]

7. "Patient Recruitment Using Electronic Health Records: A Two-Phase Sampling Framework"

   - Joint Statistical Meetings (JSM) invited session, Seattle WA(Aug 2021, virtual)
   - Eastern North American Region (ENAR) invited session, Baltimore, MD (Mar 2021, virtual)

8. "Beyond Curve Fitting: Transfer Learning and Causal Reasoning"

- Biostatistics Virtual Admitted Student Experience, University of Michigan (Mar 2021)
- Joint Statistical Meetings (JSM) invited session, Philadelphia PA (Aug 2020, virtual due to COVID-19)
- 12th Annual Sentinel Initiative Public Workshop, Washington DC (Aug 2020, postponed due to COVID-19)
- American Statistical Association (Boston, Connecticut, Florida, New Jersey, Princeton/Trenton, and Washington chapters) , Boehringer Ingelheim Pharmaceuticals, Inc. (Biostatistics and Data Sciences Department) and New England Statistics Symposium (NESS) bi-monthly webinar (Feb 2020)
- Department of Statistical Sciences, University of Toronto, Canada (Oct 2019)
- Student Seminar on Data Science, Department of Statistics, University of Michigan (Oct 2019)

9. "Multiply Robust Causal Inference with Double Negative Control Adjustment for Unmeasured Confounding"

   - Vaccine Safety Datalink Methods Call, Centers for Disease Control and Prevention (CDC) (Sep 2018)
   - Joint Statistical Meetings (JSM) invited session, Vancouver, BC, Canada (Aug 2018)
   - International Chinese Statistical Association (ICSA) Applied Statistics Symposium, New Brunswick, NJ (June 2018)
   - Atlantic Causal Inference Conference (ACIC), Pittsburgh, PA (Mar 2018)

10. "A General Approach to Detect Gene-Environment Additive Interaction Leveraging G-E Independence in Case-control Studies"

    - Eastern North American Region (ENAR) invited session, Philadelphia PA (Mar 2019)

11. "Bridging the Gap between Noisy Healthcare Data and Knowledge: Causality and Portability"

    - 2019 International Conference on Frontiers of Data Science, Hangzhou, China (May 2019)
    - The 33rd New England Statistics Symposium (NESS), Connecticut, MA (May 2019)
    - Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health (April 2019)
    - Department of Biostatistics, Vanderbilt University (Feb 2019)
    - Department of Statistics, North Carolina State University (Feb 2019)
    - Department of Biostatistics, Yale University (Jan 2019)
    - Department of Statistics, University of California, Irvine (Jan 2019)
    - Division of Epidemiology and Biostatistics, University of California, Berkeley (Jan 2019)
    - Kaiser Permanente Washington Health Research Institute (Jan 2019)
    - Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health (Jan 2019)
    - Department of Biostatistics, University of Michigan (Jan 2019)
    - Department of Biostatistics, Harvard University (Dec 2018)
    - Division of Biostatistics, University of Minnesota (Dec 2018)
    - Department of Statistics, University of Florida (Nov 2018)

12. "Promoting Interoperability via Automated Translation of Medical Terminology"

    - International Chinese Statistical Association (ICSA) Applied Statistics Symposium, Raleigh, NC (June 2019)
    - The 3rd Seattle Symposium on Health Care Data Analytics, Seattle, WA (Oct 2018)

13. "Safety Surveillance and the Estimation of Risk in Select Populations: Flexible Methods to Control for Confounding while Targeting Marginal Comparisons"
    - The International Conference on Health Policy Statistics (ICHPS), Charleston, SC (Jan 2018)
14. "Comparing Healthcare Utilization Patterns via Global Differences in the Endorsement of Current Procedural Terminology (CPT) Code"
    - Harvard Data Science Initiative, Harvard University, Cambridge, MA (April 2017)
    - Department of Biostatistics and Bioinformatics, Duke University, Durham, NC (Mar 2017)
    - RAND Corporation, Santa Monica, CA (Feb 2017)
15. "Counterfactuals and Propensity Score Methods in Causal Inference"
    - The Building Research across Inter-Disciplinary Gaps (BRIDG) T90/R90 Clinical Research Training Program in Complementary and Integrative Health, University of Washington, Seattle, WA (Feb 2017)
    - Kidney Research Institute, Seattle, WA (Jun 2015)
16. "Interim Sample Based Progression Free Survival Audit Strategy"
    - Genentech, Inc., South San Francisco, CA (Aug 2016)

TEACHING

University of Michigan

- BIOSTAT 650: Theory and Application of Linear Regression 2020, 2021
- BIOSTAT 830: Analysis of EHR data 2020, 2023

Short Course

- "Extracting Real-World Evidence from Real-World Data", the 77th Annual Deming Conference on Applied Statistics, Dec 2021
- "Analysis of Electronic Health Record Data", New England Statistics Symposium (NESS), University of Rhode Island, Sep 2021
- "Regression Methods: Concepts & Applications", 26th Summer Institute in Statistical Genetics (SISG), University of Washington, July 2021
- "Introduction to Electronic Health Records", Big Data Summer Institute, University of Michigan, July 2021
- "Bioinformatics in Clinical Data - Electronic Health Records (EHR) Phenotyping", VERITY (NIH-P30-AR072577) 2021 Summer Short Course, June 2021
- "Regression Methods: Concepts & Applications", 25th Summer Institute in Statistical Genetics (SISG), University of Washington, July 2020

Guest Lecture

- BIOSTAT 620: Introduction to Health Data Science, "Introduction to EHR data", Department of Biostatistics, University of Michigan, Feb 2022, Feb 2021, Jan 2020
- Advanced Methods for Statistical Genetics and Genomics, "Introduction to EHR data", Department of Biostatistics, Johns Hopkins University, May 2020
- HSERV 524: Advanced Health Services Research Methods, "Special Topic: Causal Inference", Department of Health Services, University of Washington, Jan 2016

MENTORSHIP

PhD Advisees

- Jiacong Du, Biostatistics (co-advise with Dr. Bhramar Mukerjee) Jan 2021-present
- Fatema Shafie-Khorassani, Biostatistics (co-advise with Dr. Jeremy Taylor) Apr 2020-present
- Mengtong Hu, Biostatistics (co-advise with Dr. Peter Song) Sep 2019-present
- Guanghao Zhang, Biostatistics Sep 2019-present

Postdoctoral Advisees

- Qijun (Kendrick) Li Jul 2021-present

Master Advisees

- Shubo Zhang, Biostatistics May 2022-present
- Yidan Zhang, Biostatistics May 2022-present

Graduate Student Research Assistant

- Yuqi Zhai, Biostatistics Sep 2022-present

Doctoral Committees

- Cheng Jiang, Bioinformatics Aug 2022-present
- Yibo Wang, Biostatistics Apr 2022-present
- Nicholas Hartman, Biostatistics Apr 2022-present
- Peijin Han, Bioinformatics Mar 2022-present
- Yufeng Zhang, Bioinformatics Feb 2022-present
- Charlotte Mann, Statistics Oct 2021-present
- Haeyoon Chang, Epidemiology Sep 2021-present
- Cheng Ma, Statistics Aug 2021-present
- Jie Cao, Bioinformatics Apr 2020-present
- Xinyan Zhao, Information Mar 2020-Jul 2022
- Tingyang Li, Bioinformatics Jul 2020-Oct 2022
- Jung Yeon Won, Biostatistics Mar 2020-Jul 2022

Past PhD Advisees

- Kuan-Han Wu, Bioinformatics (co-advise with Dr. Cristen Willer) Feb 2020-Aug 2022
  Current position: Regeneron

Past Postdoctoral Advisees

- Xianshi Yu Sep 2021-Aug 2022
  Current position: Department of Computer Sciences, University of Wisconsin - Madison

Past Master Advisees

- Ziyang Pan, Biostatistics Jan 2021-Dec 2021
  Current position: PhD student, Department of Biostatistics, University of Michigan
- Yufeng Zhang, Bioinformatics (lab rotation) Jan 2021-Mar 2021
  Current position: PhD student, Program in Biomedical Sciences, University of Michigan
- Jaewon Lim, Biostatistics Mar 2020-April 2021
  Current position: PhD student, Department of Biostatistics, University of Washington
- Ningyuan Wang, Statistics May 2020-April 2021
  Current position: PhD student, Department of Biostatistics, Boston University
- Iris Emerman, Biostatistics, University of Washington Jan 2020 - Sep 2021
  Current position: Biostatistician, Seattle Children's Hospital
- Guanghao Zhang, Biostatistics Sep 2019-Sep 2021

Current position: PhD student, Department of Biostatistics, University of Michigan

AWARDS/SCHOLARSHIPS

- ASA 2022 Outstanding Statistical Application Award
- Rackham Predoctoral Fellowship 2022, Dissertation co-advisee Fatema Shafie Khorassani
- ENAR 2022 Distinguished Student Paper Award, Dissertation co-advisee Mengtong Hu
- Student Travel Award, International Conference on Health Policy Statistics (ICHPS), 2018
- Distinguished Oral Presentation Award, Western North American Region (WNAR) of International Biometric Society Meeting, 2015

PROFESSIONAL ACTIVITIES

Associate Editor

- Journal of Computational and Graphical Statistics

Journal Referee Service

- Aging
- American Journal of Epidemiology (AJE)
- Annals of Applied Statistics (AOAS)
- Biometrics
- BMJ Open
- BMC Bioinformatics
- Clinical Trials: Journal of the Society for Clinical Trials
- Drug Safety
- Health Services and Outcomes Research Methodology
- Journal of the American Medical Association (JAMA) Oncology
- Journal of Statistical Software
- Journal of the American Statistical Association (JASA)
- Nature
- Nature Communications
- Nature Medicine
- npj Digital Medicine
- Observational Studies
- Stat
- Statistics and Its Interface
- Statistics in Medicine
- Statistica Sinica
- Vaccine
- WIRES Computational Statistics

Conference Service

- Senior Program Committee, the 10th IEEE international conference on healthcare informatics conference, June 2022
- Program Committee, the Conference on Uncertainty in Artificial Intelligence (UAI), Apr 2021
- Reviewer, the AAAI-21 Workshop on AI For Behavior Change, Feb 2021

Grant Review Service

- Medical Research Council (MRC), UK, 2022
- Patient-Centered Outcomes Research Institute (PCORI), November, 2022
- Patient-Centered Outcomes Research Institute (PCORI), March, 2022
- Mitacs Accelerate Research, Canada, 2020
- UG3/UH3: Comparative Effectiveness Research in Clinical Neurosciences, NIH/NINDS, 2020
- Michigan Institute for Clinical and Health Research (MICHR) Pilot Grant, 2019
- The Harvard Data Science Initiative Postdoctoral Fellow Research Fund, 2019

Data Safety and Monitoring Board

- Sympatho-inhibition With Mindfulness in Chronic Kidney Disease, (PI: Dr. Park), 2019-2021

Working Group and Seminar

- Organizer for the Diversity, Equity, and Inclusion (DEI) Research Seminar at Department of Biostatistics, University of Michigan, Jan 2021-present
- Organizer for the Causal Inference Working Group at Department of Biostatistics, University of Michigan, Sep 2019-present
- Member of the Anti-Racism Working Group at School of Public Health, University of Michigan, July 2020-present

Organizer for Invited Sessions

- EcoSta, Kyoto, Japan 2022
- International Chinese Statistical Association (ICSA) Applied Statistics Symposium 2021
- Eastern North American Region (ENAR) 2019
- Atlantic Causal Inference Conference (ACIC) 2018

Chair for Invited Sessions

- Western North American Region (WNAR) invited session 2021

Affiliations

- University of Michigan Center for Computational Medicine and Bioinformatics (CCMB)
- Institute for Healthcare Policy & Innovation (IHPI), University of Michigan
- Michigan Institute for Data Science (MIDAS)
- Rogel Cancer Center, University of Michigan

Membership

- American Statistical Association (ASA)
- Western North American Region (WNAR)
- Eastern North American Region (ENAR)
- International Chinese Statistical Association (ICSA)