Hongxiang (David) Qiu

Assistant Professor
Department of Epidemiology and Biostatistics   qiuhongx@msu.edu
Michigan State University   https://QIU-Hongxiang-David.github.io/
East LAnsing, MI 48824

Current position

Michigan State University
Assistant Professor, Epidemiology and Biostatistics   2023–now
Research areas: causal inference, semiparametric inference, machine learning

Education

University of Washington
PhD, Biostatistics   2016–2021
Dissertation advisor: Marco Carone, PhD and Alex Luedtke, PhD

The Chinese University of Hong Kong
B.Sc., Mathematics; Minor in Statistics   2012–2016

Previous Work Experience

Wharton School, University of Pennsylvania   2021–2023
Postdoctoral researcher, Statistics
Supervisor: Eric Tchetgen Tchetgen, PhD and Edgar Dobriban, PhD
Research areas: machine learning, causal inference, semiparametric inference

Kaiser Permanente Washington Health Research Institute   2016–2021
Graduate Research Assistant
PRimary care Opioid Use Disorders Treatment (PROUD) Trial
Advisor: Jennifer F. Bobb, PhD

Teaching Experience

University of Washington
Tutor   Spring 2019
STAT 583: Advanced Theory of Statistical Inference
Topics including: empirical processes, semiparametric efficiency
Instructors: Alex Luedtke, PhD and Marco Carone, PhD

University of Washington

Teaching Assistant   Winter 2019

BIOST 557: Applied Statistics and Experimental Design

Topics including: one/two-sample t-test, linear models, GLMs, causation versus correlation

Instructor: Brian Lerous, PhD

University of Washington

Grader   Winter 2018

STAT 582: Advanced Theory of Statistical Inference

Topics including: Bayes methods, decision theory, UMPU test

Instructor: Jon A. Wellner, PhD

Publications

(† stands for equal contribution.)

Methodology

1. **Qiu H** (2024). Non-Plug-In Estimators Could Outperform Plug-In Estimators: a Cautionary Note and a Diagnosis. Epidemiologic Methods, 13(1), 1–11. https://doi.org/10.1515/EM-2024-0008

2. **Qiu H**, Tchetgen Tchetgen E, Dobriban E (2023). Efficient and Multiply Robust Risk Estimation under General Forms of Dataset Shift. *arXiv preprint: arXiv:2306.16406.* Accepted by *Annals of Statistics.*

3. **Qiu H**, Cook A, Bobb J (2024). Evaluating tests for cluster-randomized trials with few clusters under generalized linear mixed models with covariate adjustment: a simulation study. *Statistics in Medicine*, 43(2), 201–215. doi: 10.1002/sim.9950.

4. **Qiu H**, Dobriban E, Tchetgen Tchetgen E (2022). Prediction Sets Adaptive to Unknown Covariate Shift. *arXiv preprint: arXiv:2203.06126.* Accepted by *Journal of the Royal Statistical Society, Series B (Statistical Methodology).*

5. **Qiu H**, Luedtke A (2022). Adversarial Meta-Learning of Gamma-Minimax Estimators That Leverage Prior Knowledge. *Electronic Journal of Statistics*, 17(2), 1996–2043.

6. **Qiu H**, Carone M, Luedtke A (2022). Individualized treatment rules under stochastic treatment cost constraints. *Journal of Causal Inference*, 10(1), 480–493.

7. **Qiu H**, Luedtke A, Carone M (2021). Universal sieve-based strategies for efficient estimation using machine learning tools. *Bernoulli*, 27(4), 2300–2336.

8. **Qiu H**, Carone M, Sadikova E, Petukhova M, Kessler R, Luedtke A (2020). Optimal individualized decision rules using instrumental variable methods. *Journal of the American Statistical Association* (with discussion), 116(533), 174–191.

9. Bobb J, **Qiu H**, Matthews, A, McCormack J, Bradley K (2020). Addressing identification bias in the design and analysis of cluster-randomized pragmatic trials: a case study. *Trials*, 21(1), 289.

10. **Qiu H**, Luedtke A, van der Laan M (2019). Contribution to discussion of "Entropy Learning for Dynamic Treatment Regimes" by Jiang B, Song R, Li J, Zeng D. *Statistica Sinica*, 29(4): 1666–1678.

Application

11. Wartko PD, Bobb JF, Boudreau DM, Matthews AG, McCormack J, Lee AK, **Qiu H**, Yu O, Hyun N, Idu AE, Campbell CI, Saxon AJ, Liu DS, Altschuler A, Samet JH, Labelle CT, Zare-Mehrjerdi M, Stotts AL, Braciszewski JM, Murphy MT, Dryden D, Arnsten JH, Cunningham CO, Horigian VE, Szapocznik J, Glass JE, Caldeiro RM, Phillips RC, Shea M, Bart G, Schwartz RP, McNeely J, Liebschutz JM, Tsui JI, Merrill JO, Lapham GT, Addis M, Bradley KA, PROUD Trial Collaborators (2023). Nurse Care Management for Opioid Use Disorder Treatment: The PROUD Cluster Randomized Clinical Trial. *JAMA Internal Medicine.* DOI: 10.1001/jamainternmed.2023.5701.

12. Wartko PD, **Qiu H**, Idu A, Yu O, McCormack J, Matthews AG, Bobb JF, Saxon AJ, Campbell CI, Liu D, Braciszewski JM, Murphy SM, Burganowski RP, Murphy MT, Horigian VE, Hamilton LK, Lee AK, Boudreau DM, Bradley KA (2022). Baseline representativeness of patients in clinics enrolled in the PRimary care Opioid Use Disorders treatment (PROUD) trial: comparison of trial and non-trial clinics in the same health systems. *BMC Health Services Research*, 22(1), 1–11.

13. Fitts W, Tassiou NR, Cisse FA, Vogel A, Atakla HG, Sakadi F, **Qiu H**, Conde ML, Balde AT, Bah AK, Hamani ABD, Anand P, Patenaude B, Mateen F (2019). School Status and its Associations among Children with Epilepsy in the Republic of Guinea. *Epilepsy & Behavior*, 97, 275–281.

14. Jang M, Sakadi F, Tassiou NR, Abass CF, Grundy SJ, Woga A, Kenda BA, Lamine CM, Talibé BA, **Qiu H**, Cohen JM, Carone M, Mateen FJ (2018). Impact of Poorly Controlled Epilepsy in the Republic of Guinea. *Seizure*, 61, 71–77.

15. Zhou Y†, **Qiu H**†, Xu S (2017). Modeling continuous admixture using admixture-induced linkage disequilibrium. *Scientific Reports*, 7, 1–10.

Preprint/under review

16. **Qiu H**, Shi X, Miao W, Dobriban E, Tchetgen Tchetgen E (2022). Doubly robust proximal synthetic controls. *arXiv preprint arXiv:2210.02014*

Presentations

Methodology

1. "Doubly Robust Proximal Synthetic Controls." **Qiu H**, Xu S, Miao W, Dobriban E, Tchetgen Tchetgen E.

   - 2023 American Causal Inference Conference

2. "Prediction Sets Adaptive to Unknown Covariate Shift." **Qiu H**, Dobriban E, Tchetgen Tchetgen E.

   - 2024 5th International Conference on Artificial Intelligence in Electronics Engineering
   - 2022 Joint Statistical Meeting
   - 2022 American Causal Inference Conference (poster)

3. "Optimal individualized decision rules using instrumental variable methods." **Qiu H**, Carone M, Sadikova E, Petukhova M, Kessler R, Luedtke A.

   - 2021 Joint Statistical Meetings

- 2020 ENAR Spring Meeting

4. "Constructing asymptotically normal plug-in estimators with highly adaptive Lasso and data adaptive series." **Qiu H**, Luedtke A & Carone M.

  - 2019 WNAR/IMS/JR (Japanese Region) meeting

Application

5. "Prevalence and characteristics of prenatal cannabis use in Michigan: Results from a statewide population-based pregnancy cohort." Al-Sahab B, Alshaarawy O, Bohnert K, Jaber A, **Qiu H**, Kerver J & Paneth N. 37th Annual Meeting Society for Pediatric and Perinatal Epidemiologic Research, Austin, TX, 2024.

6. "Statistical challenges in the design of a pragmatic trial of primary care-based treatment for opioid use disorders: the PROUD trial." Bobb JF, **Qiu H**, Matthews A & Bradley K. 12th International Conference on Health Policy Statistics, Charleston, SC, 2018

Reviewer for International Journals and Conferences

- *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*

- *Journal of the American Statistical Association*

- *Biometrics*

- *Journal of Causal Inference*

- *Biostatistics*

- *Statistica Sinica*

- *Journal of Computational and Graphical Statistics*

- *Electronic Journal of Statistics*

- *International Journal of Biostatistics*

- *Statistical Methods in Medical Research*

- *Stat*

- *Statistical Science*

- 5th International Conference on Artificial Intelligence in Electronics Engineering (AIEE 2024)

- 37th Conference on Uncertainty in Artificial Intelligence (UAI 2021)

Awards and Fellowships

University of Washington
Scholarship for 6th Seattle Symposium in Biostatistics   October 2020
2018 Donovan J. Thompson Award   October 2018

Software

RiskEstDShift   Efficient risk estimation under dataset shift.

APACpredset   Asymptotically Probably Approximately Correct prediction sets under unknown covariate shift.

CAMer   Continuous Admixture Modeling based on the result of iMAAPs.

Languages and Skills

Programming:

- proficient: R

- familiar: Python, MATLAB

- basic: SAS, Stan, JAGS, C++, C

Operating systems: Windows, Unix
Other computer skills: Git, LaTeX, Markdown, Microsoft Office
Languages: English (fluent), Chinese Mandarin (native), Chinese Cantonese (basic)