CHARLES J. WOLOCK

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Department of Biostatistics and Computational Biology, University of Rochester

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EDUCATION

University of Washington	**Seattle, WA**
Ph.D., Biostatistics	*2018 – 2023*
Advisors: Marco Carone and Noah Simon	

Harvard University	**Cambridge, MA**
B.A., Organismic and Evolutionary Biology	*2011 – 2015*
Language citation, Spanish	
Summa cum laude, Highest Honors	

PROFESSIONAL POSITIONS

University of Rochester	**Rochester, NY**
Assistant Professor	*2025–present*
Department of Biostatistics and Computational Biology	

University of Pennsylvania	**Philadelphia, PA**
Postdoctoral Researcher	*2023–2025*
Department of Biostatistics, Epidemiology and Informatics	
Host: Yong Chen	

Columbia University	**New York, NY**
Research Staff Associate	*2016 – 2018*
Institute for Genomic Medicine	

TEACHING

University of Washington	**Seattle, WA**
Instructor of Record	
BIOST 311: Regression Methods in the Health Sciences	*2022*
Teaching Assistant	
BIOST 310: Biostatistics for the Health Sciences	*2021*
BIOST 511: Medical Biometry I	*2020*
Guest Lecturer	
BIOST 561: Computational Skills for Biostatistics	*2023*

ADVISING AND FORMAL MENTORING

University of Rochester   **Rochester, NY**
PhD Committees in a Non-chair Role
Nathan Provost (Ph.D., Statistics. Chair: R.L. Strawderman and A. Wahed)

University of Washington   **Seattle, WA**
Other Mentoring
Directed Reading Program: Introduction to Prediction   *2023*
Pathways Undergraduate Research Program   *2021*

AWARDS, HONORS, FELLOWSHIPS

NSF Graduate Research Fellowship	*2020 – 2023*
Thomas R. Fleming Excellence in Biostatistics Award (University of Washington)	*2023*
Donovan J. Thompson Award (University of Washington)	*2020*
NIH T32 Statistical Genetics Training Grant (University of Washington)	*2018 – 2020*
Phi Beta Kappa (Harvard University)	*2015*
Herchel Smith Research Fellowship (Harvard University)	*2014*
Microbial Sciences Initiative Research Fellowship (Harvard University)	*2014*
John Harvard Scholar (Harvard University)	*2013*

PROFESSIONAL SERVICE

Manuscript Reviewer
Bayesian Analysis
Biometrics
Biostatistics
Communications in Statistics: Case Studies, Data Analysis and Applications
Journal of Machine Learning Research
Journal of the Royal Statistical Society: Series B
Scientific Reports
Statistics and Computing
Statistics in Biopharmaceutical Research

Conference Session Chair
Exploring Frontiers in Functional Data Analysis and Applications (*ENAR, New Orleans, 2025*)
Next Generation Methods for Evidence Synthesis and Reproducibility (*JSM, Portland, 2024*)
Heterogeneous Treatment Effects (*ACIC, Seattle, 2024*)

Paper Competition Reviewer
ICSA Applied Statistics Symposium Student Paper Competition (*2025*)

UNIVERSITY SERVICE

University of Washington, Department of Biostatistics	**Seattle, WA**
Faculty Search Committee	*2022 – 2023*
Student Seminar Coordinator	*2020 – 2022*
Admissions Committee	*2021 – 2022*
Education Policy and Teaching Evaluation Committee	*2020 – 2021*
Equity, Diversity, and Inclusion Committee	*2019 – 2021*

BIBLIOGRAPHY

(*equal contribution)

Refereed Research Articles

1. Sperling EA, **Wolock CJ**, Morgan AS, Gill BC, Kunzmann M, Halverson GP, Macdonald FA, Knoll AH, Johnston DT. (2015). Statistical analysis of iron geochemical data suggests limited late Proterozoic oxygenation. **Nature** 523: 451–454. doi:10.1038/nature14589

2. Raghavan NS, Brickman AM, Andrew H, Manly JJ, Schupf N, Lantigua R, The Alzheimer's Disease Sequencing Project, **Wolock CJ**, Kamalakaran S, Petrovski S, Tosto G, Vardarajan BN, Goldstein DB, Mayeux R. (2018). Whole exome sequencing in 20,197 individuals identifies ultra-rare SORL1 loss-of-function variants in late-onset Alzheimer's disease. **Annals of Clinical and Translational Neurology** 5(7): 832–842. doi:10.1002/acn3.582

3. Bittleston LS, **Wolock CJ**, Bakhtiar EY, Chan XY, Chan KG, Pierce NE, Pringle A. (2018). Convergence between the microcosms of Southeast Asian and North American pitcher plants. **eLife** 7. doi:10.7554/eLife.36741

4. Hayeck TJ, Stong N, **Wolock CJ**, Copeland B, Kamalakaran S, Goldstein DB, Allen AS. (2019). Improved Pathogenic Variant Localization using a Hierarchical Model of Sub-regional Intolerance. **American Journal of Human Genetics** 104(2): 299–309. doi:10.1016/j.ajhg.2018.12.020

5. **Wolock CJ**, Stong N, Ma F, Nagasaki T, Lee W, Tsang SH, Kamalakaran S, Goldstein DB, Allikmets R. (2019). A case-control collapsing analysis identifies retinal dystrophy genes associated with ophthalmic disease in patients with no pathogenic *ABCA4* mutations. **Genetics in Medicine** 21: 2336–2344. doi:10.1038/s41436-019-0495-0

6. Gelfman S, Dugger SA, Moreno CAM, Ren Z, **Wolock CJ**, Shneider NA, Phatnani H, Cirulli ET, Lasseigne BN, Harris T, Maniatis T, Rouleau GA, Brown RH, Gitler AD, Myers RM, Petrovski S, Allen AS, Harms MB, Goldstein DB. (2019). A new approach for rare variation collapsing on functional protein domains implicates specific genic regions in ALS. **Genome Research** 29(5): 809–818. doi:10.1101/gr.243592.118

7. Cameron-Christie S, **Wolock CJ**, Groopman E, Petrovski S, Kamalakaran S, Povysil G, Zhang M, Fleckner J, Mar. RE, Gelfman S, Marasa M, Li Y, Sanna-Cherchi S, Kiryluk K, Allen AS, Fellström B, Haefliger C, Platt A, Goldstein DB, Gharavi A. (2019). Exome-based rare-variant analyses in chronic kidney disease. **Journal of the American Society of Nephrology** 30(6): 1109–1122. doi:10.1681/ASN.2018090909

8. Ma CJ, **Wolock CJ**, Stong N, Nagasaki T, Lee W, Goldstein DB, Allikmets R. (2019). Case-control collapsing analysis identifies genes mimicking Stargardt/ABCA4 disease. **Investigative Ophthalmology & Visual Science** 60(9): 2935–2935.

9. Eade K, Gantner ML, Hostyk JA, Nagasaki T, Giles S, Harkins-Perry S, Fallon R, Baldini M, Scheppke L, Dorrell MI, Cai C, Baugh EH, **Wolock CJ**, Wallace M, Berlow RB, Goldstein DB, Metallo CM, Friedlander M, Allikmets R. (2021). Serine biosynthesis defect due to haploinsufficiency of phosphoglycerate dehydrogenase (PHDGH) causes retinal disease. **Nature Metabolism** 3(3): 366–377. doi:10.1038/s42255-021-00361-3

10. Bansal A, Heagerty PJ, Inoue LYT, Veenstra DL, **Wolock CJ**, Basu A. (2021). A Value of Information Framework for Personalizing the Timing of Surveillance Testing. **Medical Decision Making** 42(4): 474–486. doi:10.1177/0272989x211049213

11. Wasser SK, **Wolock CJ**, Kuhner MK, Brown JE, Morris C, Horowitz R, Wong A, Fernandez CJ, Otiende MY, Hoareau Y, Kaliszewska ZA, Jeon E, Han KL, Weir BS. (2022). Elephant genotypes reveal the size and connectivity of transnational ivory traffickers. **Nature Human Behaviour** 6(3): 371–382. doi:10.1038/s41562-021-01267-6

12. Heil J, **Wolock CJ**, Pierce NE, Pringle A, Bittleston LS. (2022). *Sarracenia* pitcher plant-associated microbial communities differ primarily by host species across a longitudinal gradient. **Environmental Microbiology** 24(8): 3500–3516. doi:10.1111/1462-2920.15993

13. Alfieri J, Coble MD, Conroy C, Dahl A, Hares D, Weir BS, **Wolock CJ**, Zhao E, Kingston H, Zolandz T. (2022). A new implementation of a semi-continuous method for DNA mixture interpretation. **Forensic Science International: Reports** 6: 100281. doi:10.1016/j.fsir.2022.100281

14. Chen YT, Williamson BD, Okonek T, **Wolock CJ**, Spieker AJ, Hee Wai TY, Hughes JP, Emerson SS, Willis AD. (2022). `rigr`: Regression, Inference, and General Data Analysis Tools in R. **The Journal of Open Source Software** 7(80): 4847. doi:10.21105/joss.04847

15. Kohn M, **Wolock CJ**, Poulson I, Fernando N. (2023). A meta-analysis of outcomes of patients with chronic hepatitis C vs. patients without chronic hepatitis C undergoing total hip or total knee arthroplasty. **EFORT Open Reviews** 8(4): 180–188. doi:10.1530/eor-22-0117

16. Bittleston LS[*], **Wolock CJ**[*], Maeda J, Infante V, Ané JM, Pierce NE, Pringle, A. (2023). Carnivorous *Nepenthes* pitchers with less acidic fluid house nitrogen-fixing bacteria. **Applied and Environmental Microbiology** 89(7): e00812-23. doi:10.1128/aem.00812-23

17. **Wolock CJ**, Gilbert PB, Simon N, Carone M. (2024). A framework for leveraging machine learning tools to estimate personalized survival curves. **Journal of Computational and Graphical Statistics** 33(3): 1098—1108. doi:10.1080/10618600.2024.2304070

18. Kennedy CJ, Kearns JC, Geraci JC, Gildea SM, Hwang IH, King AJ, Liu H, Luedtke A, Marx BP, Panini S, Petukhova MV, Sampson NA, Smoller JW, **Wolock CJ**, Zainal HN, Stein MB, Ursano RJ, Kessler RC. (2024). Predicting Suicides Among US Army Soldiers After Leaving Active Service. **JAMA Psychiatry** 81(12): 1215–1224. doi:10.1001/jamapsychiatry.2024.2744

19. Wu Q, Pajor NM, Lu Y, **Wolock CJ**, Tong J, Lorman V, Johnson KB, Moore JH, Forrest CB, Asch DA, Chen Y. (2024). A latent transfer learning method for estimating hospital-specific post-acute healthcare demands following SARS-CoV-2 infection. **Patterns** 5(11): 101079. doi:10.1016/j.patter.2024.101079

20. **Wolock CJ**, Williamson BD, Shortreed SM, Simon GE, Coleman KJ, Yeargans R, Ahmedani BK, Daida Y, Lynch FL, Rossom RC, Ziebell RA, Cruz M, Wellman RD, Coley RY. (2024). Importance of variables from different time frames for predicting self-harm using health system data. **Journal of Biomedical Informatics** 160: 104750. doi:10.1016/j.jbi.2024.104750

21. **Wolock CJ**, Gilbert PB, Simon N, Carone M. (2025). Assessing variable importance in survival analysis using machine learning. **Biometrika** 112(2): asae061. doi:10.1093/biomet/asae061

22. **Wolock CJ**[*], Jacob S[*], Bennett JC, Elias-Warren A, O'Hanlon J, Kenny A, Jewell NP, Rotnitzky A, Cole SR, Weil AA, Chu HY, Carone M. (2025). Investigating symptom duration using current status data: a case study of post-acute COVID-19 syndrome. **Epidemiology** 36(5): 650–659. doi:10.1097/EDE.0000000000001882

23. Zhang D, Zhang B, Wang H, Lu Y, **Wolock CJ**, Hu W, Wang L, Hripcsak G, Chen Y. (2025) Negative control-calibrated difference-in-difference analyses: addressing unmeasured confounding in real-world data

with application to quantifying the impact of pandemic on racial/ethnic differences. **npj Digital Medicine** 8: 452. doi:10.1038/s41746-025-01821-w

24. Kenny A, **Wolock CJ**. (2025). SimEngine: A Modular Framework for Statistical Simulations in R. **The R Journal** 17(1): 200–220. doi:10.32614/RJ-2025-010

25. Frivold C, Cox SN, Starita L, Babu TM, Hoffman KL, Carone M, Lockwood CM, Kuntz JL, Mularski RA, Varga A, Han PD, Reed J, Piliper EA, Mohamed Bakhash SAK, Greninger AL, Clark E, Stone J, Grindstaff S, Boisvert CL, Yetz N, Lo NK, Hatchie TL, Marshall G, **Wolock CJ**, Feldstein LR, Weil AA, Englund JA, Naleway AL, Chu HY. (2025). Correlates of Risk of Respiratory Syncytial Virus Disease: A Prospective Cohort Study. **Nature Communications** 16: 8490. doi:10.1038/s41467-025-63434-x

26. Wollum A, Ralph L, Grossman D, **Wolock CJ**, Moseson H. (2025+) Evaluating a double list experiment to measure the population proportion of people who have attempted a self-managed abortion in the United States: analysis of a nationally representative cross-sectional survey in 2017. To appear in **AJE Advances: Research in Epidemiology**.

Other Refereed Scholarly Publications

27. Coates MM, **Wolock CJ**, Arah OA. (2025) Re: Pre-diagnostic exposures and cancer survival: Can a meaningful causal estimand be specified? **Epidemiology**. doi:10.1097/EDE.0000000000001909

28. Carone M, **Wolock CJ**, Olivas-Martinez A, Rotnitzy A, Gilbert PB. (2025). Immune Correlates and Vaccine Immunobridging: Statistical Innovations, Challenges and Opportunities. **The Journal of Infectious Diseases**: jiaf451. doi:10.1093/infdis/jiaf451

Submitted Manuscripts and Preprints

29. He H, Li L, Zhang D, Wang H, Zhang B, Lu Y, **Wolock CJ**, Shen Y, Alemayehu D, Chu H, Schuemie M, Suchard M, Ryan P, Hripcsak G, Xu H, Zou J, Asch DA, Chen Y. (2025+) RWE-Transformer: A pretrained transformer model with negative control outcomes for debiased real-world evidence. Under review, **Nature Communications**.

30. Hoffman KL, Marshall G, Frivold C, Acker Z, Arnould IS, Babu TM, Barnes SR, Briggs-Hagen M, Casto A, Clark E, Cox SN, Drummond M, Ehmen B, Englund JA, Gamboa L, Greninger AL, Grindstaff S, Grioni H, Han P, Hatchie T, Hollcroft M, Kuntz JL, Lo NK, Lockwood CM, McAllister KD, McCormick CJ, MacMillan MP, Midgley CM, Nguyen D, Plumb ID, Reed JC, Reich S, Roychoudhury P, Schmidt M, Starita LM, Stone J, Varga A, Weil AA, **Wolock CJ**, Yetz N, Gilbert PB, Naleway AL, Chu HY, Carone M. (2025+) Immune Correlates of Risk for SARS-CoV-2 Infection in Children. Under review, **Nature Medicine**.

31. Morenz ER*, **Wolock CJ***, Carone M. (2025+) Debiased machine learning for survival functionals based on left-truncated right-censored data. arXiv.2411.09017.

SOFTWARE

survML	Tools for flexible survival analysis using machine learning (`cre, aut`)
SimEngine	Framework for reproducible statistical simulations in R (`aut`)
rigr	Regression, inference, and general data analysis tools for R (`aut`)
vimp	Inference on algorithm-agnostic variable importance (`ctb`)

PRESENTATIONS

(*invited)

Institute of Mathematical Statistics New Researchers Conference[*]   **Nashville, TN**
Nonparametric approaches to assessing variable importance using health data   2025

ICSA Applied Statistics Symposium[*]   **Storrs, CT**
Nonparametric approaches to assessing variable importance using health data   2025

ENAR Spring Meeting   **New Orleans, LA**
Transfer learning for model-free variable importance   *2025*

Columbia University Biostatistics Levin Lecture[*]   **New York, NY**
Nonparametric approaches to assessing variable importance using health data   2025

University of Rochester Biostatistics and Computational Biology Seminar[*]   **Rochester, NY**
Nonparametric approaches to assessing variable importance using health data   2024

University of Minnesota Biostatistics Seminar[*]   **Minneapolis, MN**
Nonparametric approaches to assessing variable importance using health data   2024

Joint Statistical Meetings (JSM)   **Portland, OR**
Estimating causal effects from electronic health records data with underreported exposure   *2024*

ENAR Spring Meeting   **Baltimore, MD**
Nonparametric variable importance for time-to-event outcomes with application to prediction of HIV infection   *2024*

Joint Statistical Meetings (JSM)[*]   **Toronto, Canada**
Nonparametric variable importance for time-to-event outcomes with application to prediction of HIV infection   *2023*

ENAR Spring Meeting   **Nashville, TN**
Flexible estimation of the conditional survival function via observable regression models   *2023*

Joint Statistical Meetings (JSM)   **Washington, DC**
Flexible estimation of the conditional survival function via observable regression models   *2022*

WNAR Annual Meeting   **virtual**
Flexible estimation of the conditional survival function via observable regression models   *2022*

PROFESSIONAL AFFILIATIONS

American Statistical Association
International Biometric Society (ENAR)
Institute of Mathematical Statistics