Christian Covington

Department of Biostatistics, Harvard T.H. Chan School of Public Health
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EDUCATION

Ph.D. in Biostatistics 2022 – 2027 (Expected)
Harvard T.H. Chan School of Public Health, Boston, MA
Dissertation: *A formal framework for Bayesian model criticism with frequentist guarantees*.

MMath in Computer Science 2020 – 2022
University of Waterloo, Waterloo, ON, Canada

B.A. in Statistical Science 2014 – 2016
Cornell University, Ithaca, NY

RESEARCH INTERESTS

Model misspecification, Model uncertainty, Bayesian statistics, Foundations of statistical inference

PUBLICATIONS

Works in progress

Chattopadhyay, S., C. T. Covington, and J. W. Miller (n.d.). *Uniform parametrization checks for Bayesian nonparametric models*.

Covington, C. T., M. B. Mathur, and T. J. VanderWeele (n.d.). *Multiverse analysis for causal inference (and vice-versa)*.

Covington, C. T. and J. W. Miller (n.d.). *Canonical representations of u-values for Bayesian model criticism via the generalized Rosenblatt transform*.

Statistical Theory & Methodology

Covington, C. T. and J. W. Miller (2025a). *A powerful goodness-of-fit test using the probability integral transform of order statistics*. arXiv: `2510.22854 [stat.ME]`. Under review.

Covington, C. T. and J. W. Miller (2025b). *Bayesian model criticism using uniform parametrization checks*. arXiv: `2503.18261 [stat.ME]`. Under review.

Mathur, M. B., C. T. Covington, and T. J. VanderWeele (2023). "Variation across analysts in statistical significance, yet consistently small effect sizes". In: *Proceedings of the National Academy of Sciences* 120.3, e2218957120.

Covington, C., X. He, J. Honaker, and G. Kamath (2021). "Unbiased statistical estimation and valid confidence intervals under differential privacy". In: *Statistica Sinica*.

Collaborative & Applied Research

Song, N., M. Frean, C. T. Covington, M. Tietschert, E. Ling, and H. Bahadurzada (2022). "Patients' perceptions of integrated care among Medicare beneficiaries by level of need for health services". In: *Medical Care Research and Review* 79.5, pp. 640–649.

Frean, M., C. Covington, M. Tietschert, H. Bahadurzada, J. So, and S. J. Singer (2021). "Patient experiences of integrated care in Medicare Accountable Care Organizations and Medicare Advantage versus traditional Fee-for-Service". In: *Medical Care* 59.3, pp. 195–201.

Ling, E. J., M. Frean, J. So, M. Tietschert, N. Song, and C. Covington (2021). "Differences in patient perceptions of integrated care among Black, Hispanic, and White Medicare beneficiaries". In: *Health Services Research* 56.3, pp. 507–516.

Jiang, X., A. B. Hall, T. D. Arthur, D. R. Plichta, C. T. Covington, and M. Poyet (2019). "Invertible promoters mediate bacterial phase variation, antibiotic resistance, and host adaptation in the gut". In: *Science* 363.6423, pp. 181–187.

Teaching/Mentoring Experience

Teaching Assistant

BST 240: Probability II, *Harvard T.H. Chan School of Public Health* 2024, 2025
BST 210: Applied Regression Analysis, *Harvard T.H. Chan School of Public Health* 2023
SOC 2580: Six Pretty Good Books, *Cornell University* 2016

Mentor

Betania Adane, *Harvard Undergraduate OpenBio Lab SRI* 2024

Tutor

Statistics Tutor, *Cornell University* 2015 – 2016

Reviewing Experience

Journals: Philosophical Transactions of the Royal Society A
Conferences: ICML, NeurIPS

Professional Experience

BridgeBio, *Research Extern* 2025 – 2026
Apple, *Summer Intern* 2021
Harvard University Privacy Tools Project, *Research Fellow* 2019 – 2020
Broad Institute, *Associate Computational Biologist* 2018 – 2019
Harvard Laboratory for Systems Medicine, *Data Scientist* 2017 – 2018
Harvard Business School, *Research Associate* 2016 – 2017

AWARDS

Distinction in Teaching, *Harvard University* 2023, 2024
Graduate Excellence Award, *University of Waterloo* 2020 – 2022
David R. Cheriton Graduate Scholarship, *University of Waterloo* 2020 – 2022
Dr. Derick Wood Graduate Scholarship, *University of Waterloo* 2020 – 2021
Hunter R. Rawlings III Presidential Research Scholar, *Cornell University* 2014 – 2016