

# Christian T. Covington

PhD Candidate in Biostatistics, Harvard T.H. Chan School of Public Health

✉ [ccovington@g.harvard.edu](mailto:ccovington@g.harvard.edu)    [ctcovington.github.io](https://github.com/ctcovington)    [Google Scholar](#)

## Research Interests

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Model misspecification, Model uncertainty, Bayesian statistics

## Education

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<b>Harvard T.H. Chan School of Public Health</b> <i>PhD in Biostatistics</i> Advisor: Jeffrey W. Miller Boston, MA	September 2022 – Present
<b>University of Waterloo</b> <i>MMath in Computer Science</i> Advisors: Xi He and Gautam Kamath Waterloo, ON, Canada	September 2020 – June 2022
<b>Cornell University</b> <i>BA in Statistical Science</i> Magna Cum Laude and Distinction in Statistical Science Ithaca, NY, USA	January 2014 – May 2016

## Honors & Awards

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

## Publications

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### Papers in Submission

#### **Bayesian model criticism using uniform parameterization checks**

Christian T. Covington, Jeffrey W. Miller

– Reading group presentation at Flatiron Institute (2025)   – Poster at Columbia University Optimization and Statistical Learning Workshop (2025)

### Papers in Progress

#### **A powerful goodness-of-fit test using the probability integral transform of order statistics**

Christian T. Covington, Jeffrey W. Miller

#### **Multiverse Analysis for Causal Inference**

Christian Covington, Tyler VanderWeele, Maya Mathur

## Published Papers

### Unbiased Statistical Estimation and Valid Confidence Intervals Under Differential Privacy

Christian Covington, Xi He, James Honaker, Gautam Kamath

*Statistica Sinica: Special Issue on Data Privacy* (2025)

- Poster at Social Statistics Speed Session at the Joint Statistical Meetings (2021)
- Poster at ICML Theory and Practice of Differential Privacy Workshop (2021)

### Differences in patient perceptions of integrated care among black, hispanic, and white Medicare beneficiaries

Emilia J Ling, Molly Frean, Jody So, Maike Tietschert, Nancy Song, Christian Covington, Hassina Bahadurazada, Sonia Khurana, Luis Garcia, Sara J Singer

*Health Services Research* (2021)

### Patient experiences of integrated care in Medicare accountable care organizations and Medicare Advantage versus traditional fee-for-service

Molly Frean, Christian Covington, Maike Tietschert, Hassina Bahadurzada, Jodi So, Sara J Singer

*Medical Care* (2021)

### Invertible promoters mediate bacterial phase variation, antibiotic resistance, and host adaptation in the gut

Xiaofang Jiang, A. Brantley Hall, Timothy D. Arthur, Damian R. Plichta, Christian T. Covington, Mathilde Poyet, Jessica Crothers, Peter L. Moses, Andrew C. Tolonen, Hera Vlamakis, Eric J. Alm, Ramnik J. Xavier

*Science* (2019)

### Variation in Patients' Perceptions of Integrated Care Among Medicare Beneficiaries By Level of Need

Nancy Song, Molly Frean, Christian Covington, Maike Tietschert, Emilia Ling, Hassina Bahadurzada, Michaela Kerrissey, Mark Friedberg, Sara Singer

*AcademyHealth Annual Research Meeting* (2019)

## Teaching Experience

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### BST 240: Probability II

Fall 2024

*Teaching Fellow*

Harvard University

### BST 210: Applied Regression Analysis

Fall 2023

*Teaching Fellow*

Harvard University

## Professional Experience

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### Apple

May 2021 – August 2021

*Summer Intern*

Cupertino, CA

- Developed differentially private algorithms for product teams

### Harvard University

July 2019 – August 2020

*Research Fellow: Privacy Tools Project*

Cambridge, MA

- Part of core development team for the [SmartNoise](#) Rust library
- Created [software implementation](#) of and extended theoretical results for differentially private Snapping Mechanism

**Broad Institute**

August 2018 – June 2019

*Associate Computational Biologist*

Cambridge, MA

- Wrote computational pipelines for preparation and analysis of biological data, including RNA-Sequencing and CRISPR screens
- Created centralized storage and [documentation](#) of lab's computational resources
- Contributed to automated system for CRISPR repair template design

**Harvard Laboratory for Systems Medicine**

July 2017 – August 2018

*Data Scientist*

Cambridge, MA

- Contributed to R package [ehR](#) to assist in analyzing electronic medical record data
- Built machine learning models for [research](#) on physician testing decisions

**Harvard Business School**

July 2016 – June 2017

*Research Associate*

Boston, MA

- Helped develop simulations of dynamic strategic interactions

## Service

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### Reviewing

ICML, Philosophical Transactions of the Royal Society A, NeurIPS

### Mentoring

**Betania Adane (High School Student)***Next Position:* Undergraduate at Stanford University

- Mentored through Harvard Undergraduate OpenBio Lab's Summer Research Institute
- Research project was designated as one of the top five original works in the program and selected for publication in *The Young Researcher*