

Elizabeth C. Chase

Curriculum Vitae

University of Michigan
Department of Biostatistics, SPH II
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Updated: 8/25/2022
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RESEARCH INTERESTS

- Methods: Bayesian statistics, statistical shrinkage, Gaussian processes and Gaussian Markov random fields, longitudinal data, censored data, competing risks
- Applications: cancer, women's health, Flint Water Crisis

EDUCATION

2017-2023 (anticipated)	Ph.D. in Biostatistics University of Michigan (U-M), Ann Arbor, MI M.S. awarded in May 2019 Advisors: Drs. Philip S. Boonstra and Jeremy M. G. Taylor Dissertation: <i>Two Biostatistical Problems</i>
2013-2017	B.S.P.H. in Biostatistics B.A. in History University of North Carolina (UNC-Chapel Hill), Chapel Hill, NC Advisors: Drs. Jane Monaco and Molly Worthen Thesis: <i>Disease and Distrust: Mandatory Premarital HIV Testing in Illinois</i>

AWARDS

2021	Gertrude M. Cox Scholarship (American Statistical Association)
2019	U-M Biostatistics Outstanding Citizenship Award
2018	Richard G. Cornell Fellowship (U-M)
2017	Delta Omega Theta Undergraduate Excellence Award
2016	Summer Undergraduate Research Fellow (UNC-Chapel Hill)
2015	Phi Beta Kappa
2015	Phi Alpha Theta
2014	Colonel Robinson Summer Fellow (UNC-Chapel Hill)
2013-2017	Colonel Robinson Scholar (UNC-Chapel Hill)
2013	National Merit Scholar

FUNDING

- **U-M Rackham Graduate School** Predoctoral Fellowship, 2022-2023
- **U-M Rogel Cancer Center** Blue Boxer Grant, 2021 — \$50,000
 - Co-Investigator (PI Dr. Matthew J. Schipper, Research Professor, U-M Radiation Oncology)
- **NSF** Graduate Research Fellowship, 2018-2021
- **NIH T32** Biostatistics in Cancer Training Grant, 2017-2018
 - Coordinator: Dr. Jeremy Taylor, Professor, U-M Biostatistics

PUBLICATIONS

* indicates co-first author, # indicates co-senior author

Peer Reviewed Manuscripts

Statistical

1. Boonstra PS; Braun TM; **Chase EC**. “A modular framework for seamless oncology trials.” *Clinical Trials* (Jan. 21, 2021). PMCID: PMC8382494
2. **Chase EC** and PS Boonstra. “Accounting for established predictors with the multi-step elastic net.” *Statistics in Medicine* 38.23 (October 2019): 4534-4544. PMCID: PMC6736688

Cancer

3. **Chase EC**; Bryant AK; Sun Y; Jackson WC; Spratt DE; #Dess RT; #Schipper MJ. “Development and Validation of a Life Expectancy Calculator for U.S. Prostate Cancer Patients.” *BJU International* (April 2022). PMID: 35373440
4. Hartman HE; Sun YE; Devasia T; **Chase EC**; Jairath NK; Dess RT; Jackson WC; Morris EL; Li P; Hochstedler KA; Abbott MR; Kidwell KM; Walter V; Wang M; Wang X; Zaorsky N; Schipper MJ; Spratt DE. “Integrated Survival Estimates for Cancer Treatment Delay Among Adults With Cancer During the Coronavirus Disease 2019 (COVID-19) Pandemic.” *JAMA Oncology* 6.12 (2020): 1881-1889. PMCID: PMC7596687

Flint Water Crisis

5. Ezell JM and **EC Chase**. “Forming a critical race theory of environmental disaster: management and social meanings in the Flint Water Crisis.” *Journal of Environmental Management* 320 (Aug. 2022). DOI: <https://doi.org/10.1016/j.jenvman.2022.115886>
6. Ezell JM; Bhardwaj S; **Chase EC**. “Child lead screening behaviors and health outcomes following the Flint Water Crisis: a cross-sectional analysis.” *Journal of Racial and Ethnic Health Disparities* (Jan. 2022). PMID: 35041153
7. Ezell JM; Griswold D; **Chase EC**; Carver E. “The blueprint of disaster: COVID-19, the Flint water crisis, and unequal ecological impacts.” *Lancet Planetary Health* (May 2021). DOI: [https://doi.org/10.1016/S2542-5196\(21\)00076-0](https://doi.org/10.1016/S2542-5196(21)00076-0)
8. Ezell JM and **EC Chase**. “A population-based assessment of physical symptoms and mental health outcomes among adults following the Flint Water Crisis.” *Journal of Urban Health* (Apr. 2021). PMCID: PMC8566686
9. Ezell JM; Salari S; Rooker JC; **Chase EC**. “Intersectional Trauma: COVID-19, the Psychosocial Contract, and America’s Racialized Public Health Lineage.” *Traumatology* (Feb. 2021). DOI: <http://dx.doi.org/10.1037/trm0000302>

History

10. **Chase EC**. “Doctor Knows Best: Informed Consent and Medical Misconduct in the 1960s.” *Georgetown Journal of History* (Fall 2017).

11. **Chase EC**. “‘They Know Not What They Do’: Evil in the Anti-Smallpox Vaccine Movement.” *Harvard Synthesis* (Fall 2016).
12. **Chase EC**. “Writing Woman: Caroline Gordon’s Struggle with Catholicism and Gender.” *Traces: UNC Undergraduate Journal of History* (Spring 2016).

Under Review

13. Shreves AH; Buller ID; **Chase EC**; Creutzfeldt H; Fisher JA; Graubard BI; Hoover RN; Silverman DT; Devesa SS; Jones RR. “Geographic patterns in U.S. lung cancer mortality and cigarette smoking.”
14. Ezell JM and **EC Chase**. “How Does Race Impact Resource Uptake Following Environmental Disaster? Examining Responses to Government Intervention During the Flint Water Crisis.”

Submitted

15. **Chase EC**; Taylor JMG; Boonstra PS. “Modeling data using horseshoe process regression.”
16. Shelton J; **Chase EC**; Lee A; Ezell JM. “Gender, health, and social networks during public health disasters: an evaluation of the Flint Water Crisis.”

Not Peer Reviewed

17. **Chase EC**; Bowen CM; Director H; Baladandayuthapani V; Pierson S. “Panel shares advice on applying for NSF fellowships.” *Amstat News* (Nov. 2020).
18. Armstrong EA; Levitsky SR; Porter KB; Gleckman-Krut M; **Chase EC**; Garrick JR. “Defining Sexual Consent on Campus: What’s in Media vs. What’s in the Policies.” *2019 Defining Consent Symposium*, Council on Contemporary Families, University of Texas-Austin (Oct. 21, 2019).
19. Brewster WR; Rumbach JT; Tippet R; Smith J; Wasser H; **Chase EC**; Boggess K; Corbie-Smith G; Girdler S; Gourlay M; Jones H; Meltzer-Brody S; Nicholson W; Stuebe A. “2016 North Carolina Women’s Health Report Card: A progress report on women’s health and their health care needs.” Center for Women’s Health Research, UNC-Chapel Hill (May 2016).
20. **Chase EC**. “Interview with Molly Worthen.” *Traces: UNC Undergraduate Journal of History* (Spring 2016).

SOFTWARE

- HPR (<https://github.com/elizabethchase/HPR>). R package to implement horseshoe process regression from Chase, Taylor, and Boonstra (2022+).
- seamlesssim (<https://github.com/elizabethchase/seamlesssim>). R package to implement seamless trial designs from Boonstra, Braun, and Chase (2021).
- STAR-CAP (star-cap.org). R Shiny app to provide predictions from the STAR-CAP model of Dess, Suresh, et al. (2020) for use by clinicians. Development code at <https://github.com/elizabethchase/STAR-CAP-app>
- OCCAM (occam-cap.org). R Shiny app to provide predictions from the OCCAM model of Chase et al. (2022) for use by clinicians. Development code at <https://github.com/elizabethchase/PCOtherCause>

PRESENTATIONS

Invited - Oral

1. "Reproducible Research in Data Science." Roundtable. Joint Statistical Meetings, Washington, DC. Aug. 8, 2022.
2. "Data Integration to Improve Prostate Cancer Mortality Prediction." U-M Cancer Biostatistics Seminar, Ann Arbor, MI. Oct. 22, 2021.
3. "Development of a Clinically Usable Prediction Model for Other-Cause Mortality in Men with Prostate Cancer." U-M Radiation Oncology Biostatistics Division Meeting, Ann Arbor, MI. Sept. 29, 2020.
4. "NSF Graduate and Postdoctoral Fellowships: Opportunities and Advice." ASA Webinar. Sept. 14, 2020.

Contributed - Oral

5. "Horseshoe processes in partial linear models." ENAR, Houston, TX. Mar. 28, 2022.
6. "Modeling data using horseshoe processes." Joint Statistical Meetings, Seattle, WA (moved to virtual for COVID-19). Aug. 8, 2021.

Poster

7. "Model Integration for Prostate Cancer Mortality Absolute Risk Prediction." Joint Statistical Meetings, Washington, DC. Aug. 8, 2022.
8. "Development and Validation of a Clinically Usable Prediction Model for Other-Cause Mortality in Men with Prostate Cancer using Two Prospective National Cohorts." American Society for Radiation Oncology Annual Meeting, Miami, FL (moved to virtual for COVID-19). Oct. 24, 2020.
9. "Policy predictors of domestic violence shooting incidence in the United States, 2014-2018." Data Science for Public Good Symposium, Ann Arbor, MI. Feb. 25, 2020.
10. "Accounting for established predictors with the multi-step elastic net." Joint Statistical Meetings, Denver, CO. July 29, 2019.
11. "Penalized regression with prior research support: the multi-step elastic net." Michigan Student Symposium for Interdisciplinary Statistical Sciences, Ann Arbor, MI. April 2, 2018.
12. "Trends and Geographic Patterns in U.S. Lung Cancer Rates and Cigarette Smoking." NIH Summer Research Program Poster Day, Shady Grove, MD. July 29, 2016.

RESEARCH EXPERIENCE

Statistical Consultant

May 2020-Present

Cornell University, Ithaca, NY
Africana Studies and Research Center

- Collaborator: Dr. Jerel M. Ezell
- Analyzed survey data collected by Dr. Ezell on adults living in Flint, MI during Flint Water Crisis.
- Studied racial and socioeconomic disparities in lived experience of the water crisis.

- Experience with generalized linear models, mixed models, and generalized estimating equations.

Research Assistant

June 2019-Sep. 2021

University of Michigan, Ann Arbor, MI

Department of Radiation Oncology

- Advisors: Drs. Matthew J. Schipper, Robert T. Dess, William C. Jackson, Daniel E. Spratt
- Studied tradeoffs in risk of different causes of mortality depending on treatment choice 1) in prostate cancer patients and 2) in all cancer patients in early COVID-19 pandemic.
- Built prediction model for other-cause mortality in men with prostate cancer.
- Experience with survival analysis, competing risks, absolute risk estimation, survey weights, model building, model validation, and model dissemination.

Research Assistant

June 2018- Dec. 2019

University of Michigan, Ann Arbor, MI

Department of Sociology

- Advisors: Drs. Elizabeth A. Armstrong and Sandra R. Levitsky
- Analyzed data collected by the U-M University Responses to Sexual Assault (URSA) Project, which studied patterns in university sexual misconduct policies.
- Experience with data management, data visualization, descriptive statistics.

Summer Intern

May 2016-July 2016

National Cancer Institute, Shady Grove, MD

Division of Cancer Epidemiology and Genetics, Biostatistics Branch

- Advisor: Dr. Barry I. Graubard
- Studied risk factors for liver cancer and their effect on the population attributable fraction for liver cancer in the United States using data from the National Health and Nutrition Examination Survey (NHANES) and Surveillance, Epidemiology, and End Results (SEER)-Medicare.
- Explored temporal and geographical variation in patterns of lung cancer in the United States using data from the Behavioral Risk Factor and Surveillance System (BRFSS).
- Compared cancer risk factors in HIV-positive and HIV-negative patients using NHANES data.
- Experience with survey methods, epidemiology, descriptive statistics, population attributable fraction.

Research Assistant

Dec. 2015-May 2017

University of North Carolina, Chapel Hill, NC

Carolina Center for Women's Health Research

- Advisor: Dr. Wendy R. Brewster
- Characterized the state of women's health in North Carolina using data from the Behavioral Risk Factor and Surveillance System (BRFSS) and the Pregnancy Risk Assessment Monitoring System (PRAMS)
- Contributed to the compilation of the NC Women's Health Report Card, a brief delivered to all NC state legislators biannually.
- Experience with survey methods, descriptive statistics, data visualization, statistical communication.

TEACHING EXPERIENCE

- Guest Lecturer, Big Data Summer Institute (2022; 40 students)
- Student in BIOSTAT 834: Biostatistical Pedagogy
- Statistical Inference, U-M Biostatistics, Tutor (2020; 3 students)
- Introduction to R Workshop, U-M URSA, Developer and Instructor (2019; 15 students)

OTHER PROFESSIONAL ACTIVITIES

Guest Associate Editor

- Journal of Data Science (2022-2023)

Journal Referee Service

- Frontiers in Public Health (2022)
- International Journal of Radiation Oncology, Biology, and Physics (2021)
- Scientific Reports (2021)
- PLOS One (2018-2021)
- U-M Undergraduate Journal of Public Health (2018-2019)

Conference Service

- Short Course Chair, ASA Symposium on Data Science and Statistics, June 2022

Working Groups and Seminars

- Biostatistics Graduate Student Working Group, Founder and Co-Chair (2018-2022)
- U-M Biostatistics Student Summer Journal Club, Co-Chair (2018)

Diversity, Equity, and Inclusion

- Statistical Reviewer, Pre-Publication Support Service (2020-2022)
- U-M Biostatistics Student Diversity, Equity, and Inclusion Committee (2020-2022)
- U-M Rackham Professional Development DEI Certificate (2020-2021)

Student Advocacy and Mentorship

- U-M Biostatistics Student Conflict Resolution Committee (2020-2021)
- U-M Biostatistics Peer Mentor (2018-2022)
- U-M Biostatistics Peer Mentoring Committee (2018-2020)
- U-M Undergraduate-Graduate Mentoring Program Mentor (2018-2020)
- U-M Biostatistics Curriculum Committee, Student Representative (2018-2019)

Membership

- Eastern North American Region of the International Biometrics Society
- American Statistical Association