Madeline R. Abbott
Department of Biostatistics
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EDUCATION

University of Michigan School of Public Health — Ann Arbor, MI
Ph.D. student in Biostatistics — 2020-present
- *Thesis topic*: Joint longitudinal and survival models for intensive longitudinal data from mobile health studies
- *Co-advisors*: Drs. Walter Dempsey and Jeremy Taylor

M.S. in Biostatistics — 2020

Macalester College — Saint Paul, MN
B.A. in Applied Mathematics and Statistics — 2018
Minor in Biology
Concentration in Community and Global Health
- Graduated *Summa cum laude*
- *Honors project*: Statistical Modeling of Asthma Exacerbations using Environmental Factors
- *Semester abroad in Chile*: Program in Public Health, Traditional Medicine, and Community Empowerment

AWARDS

University of Michigan
- NIH F31 Ruth L. Kirschstein Predoctoral Individual National Research Service Award: *Joint longitudinal and survival models for intensive longitudinal data from mobile health studies of smoking cessation* — 2023
- International Chinese Statistics Association Applied Statistics Symposium Research Poster Award — 2023
- Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS) award for Best Oral Presentation — 2023
- Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS) award for Best Speed Presentation — 2022
- NIH T32 Predoctoral Biostatistics Training in Cancer Research trainee — 2018-2021

Macalester College
- Phi Beta Kappa Honor Society — 2018
- Capstone Prize—selected by Mathematics, Statistics, and Computer Science faculty for a distinguished senior capstone presentation — 2018
- American Statistical Association DataFest Competition award for project with Best Insight — 2018
- Recipient of Dewitt Wallace Distinguished Scholarship—annual award based on academic merit — 2014-2018
- Dean's List — 2014-2018

RESEARCH EXPERIENCE

University of Michigan

Department of Biostatistics — 2022-present
Graduate Student Research Assistant
Advisor: Walter Dempsey, PhD

- Designing a Thompson sampling algorithm to inform delivery of a just-in-time adaptive intervention in collaboration with researchers in the College of Pharmacy.

Institute for Social Research — 2021-2023
Graduate Student Research Assistant
Advisors: Walter Dempsey, PhD and Inbal Nahum-Shani, PhD

- Developed a scientifically motivated approach for analyzing intensive longitudinal data collected from a mobile health study of smoking cessation in collaboration with behavioral scientists.

Department of Biostatistics — 2018-2021
Graduate Student Research Assistant
Advisor: Jeremy Taylor, PhD

- Analyzed adverse surgical pathology outcomes in patients with renal cell carcinoma using renal biopsy cell cycle proliferation score in collaboration with physicians in the Department of Urology.
- Compared machine learning and statistical models to predict outcomes among patients with prostate cancer and with oropharyngeal cancer through extensive simulation studies and analysis of clinical data.

Department of Biostatistics — Summer 2019
Graduate Student Research Assistant
Advisor: Matthew Schipper, PhD

- Analyzed post-treatment outcomes for patients with pancreatic cancer in collaboration with physicians in the Department of Radiation Oncology.

University of Wisconsin-Madison

Department of Biostatistics and Medical Informatics — Summer 2017
Undergraduate Student Researcher
Advisor: Mark Craven, PhD

- Modeled patterns of asthma control in data extracted from electronic health records using machine learning methods.

Brown University

Institute for Computational and Experimental Research in Mathematics — Summer 2016
Undergraduate Summer Researcher
Advisors: Bjorn Sandstede, PhD and Alexandria Volkening, PhD

- Modeled pattern formation in zebrafish caudal fins using agent-based modeling that incorporated biologically-based rules for cellular interactions.

TEACHING EXPERIENCE

Macalester College

Preceptor for Epidemiology — Fall 2017

- Attended class and assisted students with in-class activities. Held office hours twice a week to help students with homework questions and explain epidemiology topics covered in class. Graded homework and exams.

Statistics Fellow — Fall 2016

- Held regular office hours twice a week to help students learn R and answered questions about data analysis, including linear regression and ANOVA. Worked closely with a student to use a specific R package for analysis of ecology research data. Visited biology laboratory class to help with data analysis activity.

SERVICE

University of Michigan

Student Diversity, Equity, & Inclusion Committee member — 2020-2022

- Assisted Department Diversity, Equity, & Inclusion committee with the analysis of a departmental climate survey as a Rackham Student Diversity Ally.
- Member of journal club.

Peer Mentor — 2019-present

- Provide advice to incoming biostatistics students regarding course selection, department navigation, and Ann Arbor life.

Statistics in the Community member — 2018-2019

- Worked as part of a team to evaluate the algorithm used by the Michigan Commission on Services to the Aging to determine factors that influence distribution of funds across the state of Michigan.

Committee Member

- Department Diversity, Equity, & Inclusion Committee — 2020-2021
- External Review Planning Committee — 2019-2020
- Health Data Science Committee — 2019-2020

Peer Reviewer

- Journal of Data Science — 2022
- University of Michigan Undergraduate Journal of Public Health — 2022

Macalester College

Women in Science and Math Peer Mentor — 2015-2018

PUBLICATIONS

Peer-reviewed

- Das R*, **Abbott MR***, Schipper MJ, Sahai V, Bednar F, Hadley S, Evans JR, Lawrence TS, Cuneo KC. Predictors of acute and late toxicity in patients receiving chemoradiation for unresectable pancreatic cancer. *Advances in Radiation Oncology*. 2023; 8(6).
- **Abbott MR**, Beesley LJ, Bellile EL, Shuman AG, Rozek LS, Taylor JMG. Comparing individualized survival predictions from random survival forests and multistate models in the presence of missing data: a case study of patients with oropharyngeal cancer. *Cancer Informatics*. 2023; 22.
- Tosoian JJ, Feldman AS, **Abbott MR**, Mehra R, Tiemeny P, Stuart Wolf Jr J, Stone S, Wu S, Daignault-Newton S, Taylor JMG, Wu C-L, Morgan TM. Biopsy cell cycle proliferation score predicts adverse surgical pathology in localized renal cell carcinoma. *European Urology*. 2020; 78(5): 657-660.
- Hartman HE, Sun Y, Devasia TP, Chase EC, Jairath NK, Dess RT, Jackson WC, Morris E, Li P, Hochstedler KA, **Abbott MR**, Kidwell KM, Walter V, Wang M, Wang X, Zaorsky NG, Schipper MJ, Spratt DE. Integrated survival estimates for cancer treatment delay among adults with cancer during the COVID-19 pandemic. *JAMA Oncology*. 2020; 6(12): 1881-1889.
- Cobian A, **Abbott M**, Sood A, Sverchkov Y, Hanrahan L, Guilbert T, Craven M. Modeling asthma exacerbations from electronic health records. *AMIA Joint Summits on Translational Science Proceedings*. 2020; 98-107.
- Volkening A, **Abbott MR**, Catey D, Chandra N, Dubois B, Lim F, Sandstede B. Modeling stripe formation on growing zebrafish tailfins. *Bulletin of Mathematical Biology*. 2020; 82(5).

Preprints

- **Abbott MR**, Dempsey WH, Nahum-Shani I, Lam CY, Wetter DW, Taylor JMG. A continuous-time dynamic factor model for intensive longitudinal data arising from mobile health studies. arXiv preprint. 2023. arXiv:2307.15681 [stat.ME].

*equal contributions as co-first authors

PRESENTATIONS

Oral Presentations

- **Abbott MR**, Dempsey W, Nahum-Shani I, Taylor JMG. A continuous-time dynamic factor model for intensive longitudinal data arising from mobile health studies. Joint Statistical Meetings (Toronto, ON, 2023)
- **Abbott MR**, Dempsey W, Nahum-Shani I, Taylor JMG. A continuous-time dynamic factor model for intensive longitudinal data arising from mobile health studies. Eastern North American Region of the International Biometrics Society (Nashville, TN, 2023)
- **Abbott MR**, Nahum-Shani I, Dempsey W. A latent variable approach to jointly modeling emotions and cigarette use in a mobile health study of smoking cessation. Michigan Student Symposium for Interdisciplinary Statistical Sciences (University of Michigan, Ann Arbor, MI, 2023)
- **Abbott MR,** Dempsey W, Nahum-Shani I, Taylor JMG. A joint longitudinal-survival model for mobile health data. Eastern North American Region of the International

Biometrics Society (Houston, TX, 2022)
- **Abbott MR**, Beesley LJ, Taylor JMG. Comparing individualized survival predictions from random survival forests and multistate models: a case study of patients with oropharyngeal cancer. Biostatistics in Cancer Seminar (University of Michigan, Ann Arbor, MI, 2021)
- **Abbott MR**, Sverchkov Y, Craven M. Modeling asthma exacerbations using a semi-Markov model. Summer Research Symposium (University of Wisconsin, Madison, WI, 2017)
- Volkening A, **Abbott MR**, Catey D, Chandra N, Dubois B, Lim F, Sandstede B. Modeling stripe formation on zebrafish fins. Society for Industrial and Applied Mathematics Conference on Life Sciences (Boston, MA, 2016)

Posters
- **Abbott MR**, Nahum-Shani I, Dempsey W. A latent variable approach to jointly modeling emotions and cigarette use in a mobile health study of smoking cessation. International Chinese Statistical Association Applied Statistics Symposium (University of Michigan, Ann Arbor, MI, 2023)
- **Abbott MR**, Beesley LJ, Taylor JMG. Comparing individualized survival predictions from random survival forests and multistate models: a case study of patients with oropharyngeal cancer. Joint Statistical Meetings (Washington DC, 2022)
- **Abbott MR**, Beesley LJ, Morgan T, Spratt D, Taylor JMG. Machine learning and statistical models to predict prostate cancer outcomes. Rogel Cancer Center Spring Symposium (University of Michigan, Ann Arbor, MI, 2019)
- **Abbott MR**, Sverchkov Y, Craven M. Modeling asthma exacerbations using a semi-Markov model. Fall Poster Session (Macalester College, Saint Paul, MN, 2017)
- Volkening A, **Abbott MR**, Catey D, Chandra N, Dubois B, Lim F, Sandstede B. Modeling stripe formation on zebrafish fins. Fall Poster Session (Macalester College, Saint Paul, MN, 2016)

SKILLS

Programming languages
- R, RShiny, RMarkdown (advanced); Python (proficient); C++ (proficient); MATLAB (intermediate); SAS (basic)

Foreign language
- Spanish (proficient)