

# Wyatt Madden M.S.

Grace Crum Rollins Room 359  
Department of Biostatistics & Bioinformatics  
Emory University  
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EDUCATION	<b>Emory University</b> Ph.D. in Biostatistics & Bioinformatics	2021 – Present
	<b>Montana State University</b> M.S. in Statistics	2017 – 2019
	<b>University of California, Santa Cruz</b> Bachelor of Arts, Economics & Mathematics <i>With Honors</i> Bachelor of Arts, Film & Digital Media <i>With Honors</i>	2011 – 2015
RESEARCH INTERESTS	Bayesian computation, spatio-temporal modeling, probabilistic machine learning & deep learning, data integration, Bayesian nonparametrics, variational inference and sequential Monte Carlo methods. Applications include viral surveillance, disease ecology, epidemiology and quality control.	
PUBLICATIONS	<ol style="list-style-type: none"><li>1. P. Eby, A. Peel, A. Hoegh, <b>W. Madden</b>, J. Giles, P. Hudson, and R. Plowright, “Pathogen spillover driven by rapid changes in bat ecology,” <i>Nature</i>, pp. 1–3, Nov. 2022, <a href="#">Full Paper</a>.</li><li>2. D. J. Becker, P. Eby, <b>W. Madden</b>, A. J. Peel, and R. K. Plowright, “Ecological conditions predict the intensity of hendra virus excretion over space and time from bat reservoir hosts,” <i>Ecology Letters</i>, Oct. 2022, <a href="#">Full Paper</a>.</li><li>3. M. S. Y. Lau, A. Becker, <b>W. Madden</b>, L. A. Waller, C. J. E. Metcalf, and B. T. Grenfell, “Comparing and linking machine learning and semi-mechanistic models for the predictability of endemic measles dynamics,” <i>PLOS Computational Biology</i>, vol. 18, no. 9, pp. 1–14, Sep. 2022, <a href="#">Full Paper</a>.</li><li>4. M. D. Cherne, A. B. Gentry, A. Nemudraia, <i>et al.</i>, “Severe acute respiratory syndrome coronavirus 2 is detected in the gastrointestinal tract of asymptomatic endoscopy patients but is unlikely to pose a significant risk to healthcare personnel,” <i>Gastro Hep Advances</i>, vol. 1, no. 5, pp. 844–852, 2022, <a href="#">Full Paper</a>.</li><li>5. A. Hoegh, A. Peel, <b>W. Madden</b>, M. Ruiz-Aravena, A. Morris, A. Washburne, and R. Plowright, “Estimating viral prevalence with data fusion for adaptive two-phase pooled sampling,” <i>Ecology and Evolution</i>, vol. 11, Sep. 2021, <a href="#">Full Paper</a>.</li><li>6. W. Rogers, M. Ruiz-Aravena, D. Hansen, <i>et al.</i>, “High-frequency screening combined with diagnostic testing for control of sars-cov-2 in high-density settings: An economic evaluation of resources allocation for public health benefit,” <i>medRxiv</i>, 2021, <a href="#">Under Review</a>.</li></ol>	
INVITED PRESENTATIONS	Machine Learning Approaches for Epidemic Modeling Princeton Serology Conference Princeton, New Jersey	March 2023
	Compartmental Models: Deterministic & Bayesian Approaches Rocky Mountain Data Science Bozeman, Montana	Nov 2020
	R Studio in Action - DataFest Montana ASA Chapter Meeting Bozeman, Montana	Oct 2018
PROFESSIONAL EXPERIENCE	<b>Bozeman Disease Ecology Lab</b> Statistician	Bozeman, MT Jan 2019 – Present
	<ul style="list-style-type: none"><li>• Researched spatio-temporal data integration techniques for viral surveillance and prediction.</li><li>• Provided statistics &amp; machine learning consulting for international team of scientists.</li><li>• Developed R packages to automate routine statistical analysis, visualization, and wrangling.</li></ul>	

- Designed and implemented SQL database and data pipelines, ensuring data quality and access.

## **Weyerhaeuser**

Statistics Intern

Seattle, WA

*May 2018 – August 2018*

- Implemented machine learning models aimed at lowering defects in industrial processes, after diagnosing issues through exploratory visualization and analyses.
- Formulated mixed-model experimental designs.
- Developed Shiny web applications to automate data cleaning/wrangling workflows.

## **Accenture**

Analyst

Sacramento, CA

*Jul 2016 – Apr 2017*

- Improved loan approval processes through analysis of credit profiles.

## **CONSULTING & COLLABORATION EXPERIENCE**

Collaborator

*Aug 2018 – Dec 2018*

Statistical Consulting And Research Services (SCRS)

Department of Mathematical Sciences, Montana State University

Volunteer

*Jan 2018 – Apr 2018*

Statistics Without Borders (SWB)

Under direction of Dr. Nicole Carnegie, Montana State University

## **TEACHING**

Instructor, Creator

*Spring 2023*

Neural Networks with PyTorch Tutorial

Department of Biostatistics and Bioinformatics, Emory University

Teaching Assistant

*Fall 2022, Spring 2023*

INFO 534 - Applied Machine Learning

Department of Biostatistics and Bioinformatics, Emory University

Instructor

*Fall 2017, Spring 2018, Fall 2018*

MATH 105 - Contemporary Mathematics

Department of Mathematical Sciences, Montana State University

## **AWARDS**

Outstanding Graduate Student Award, Montana State University

*May 2019*

Excellence in Data Visualization, ASA Data Fest - Montana State University

*Apr 2018*

## **SERVICE**

Emory BIOS Student Council, Pre-quals Representative

*Spring 2022 – Present*

[Georgia Statistics Day 2021](#), Student Volunteer

*October 11th, 2021*

Bozeman Environmental Statistics Group, Member

*2019 – 2021*

American Statistical Association Student Chapter at Montana State, Treasurer

*2018 – 2019*

## **MEMBERSHIP**

American Statistical Association