

# BRYAN D. MARTIN

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## CONTACT INFORMATION

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## EDUCATION

**University of Washington**, Seattle, Washington  
Ph.D. Statistics Candidate

- Research topic: Statistical methods for compositional data, applied to the microbiome
- Advisors: Daniela Witten and Amy Willis
- Coursework: Applied regression analysis, Bayesian statistics, cluster analysis, convex optimization, data ethics, spatial statistics, statistical computing, statistical inference, statistical machine learning, stochastic modeling

**Macalester College**, St. Paul, Minnesota

B.A. Honors Applied Mathematics & Statistics (summa cum laude), May 2015

B.A. Economics (summa cum laude), May 2015

- Coursework: Bayesian statistics, econometrics, mathematical statistics, numerical analysis, probability, real analysis, signal processing

## PUBLICATIONS

1. Amy D Willis and **Bryan D Martin**. Estimating diversity in networked ecological communities. *Biostatistics*, 2020
2. **Bryan D Martin**, Daniela Witten, and Amy D Willis. Modeling microbial abundances and dysbiosis with beta-binomial regression. *Annals of Applied Statistics*, 14(1):94–115, 2020
3. Hayden S Hayden<sup>+</sup>, Alexander Eng<sup>+</sup>, Christopher E Pope, Mitchell J Brittnacher, Ahn T Vo, Eli J Weiss, Kyle R Hager, **Bryan D Martin**, Daniel Leung, Sonya Heltshe, Elhanan Borenstein\*, Samuel I Miller\*, and Lucas R Hoffman\*. Fecal dysbiosis in infants with cystic fibrosis is associated with early somatic growth failure. *Nature Medicine*, pages 1–7, 2020
4. Evan Bolyen, Jai Ram Rideout, Matthew R Dillon, Nicholas A Bokulich, [105 others, including **Bryan D Martin**], Rob Knight, and J Gregory Caporaso. QIIME 2: Reproducible, interactive, scalable, and extensible microbiome data science. *Nature Biotechnology*, 37(8):852–857, 2019
5. Zehang Li, Yuan Hsiao, Jessica Godwin, **Bryan D Martin**, Jon Wakefield, and Samuel J Clark. Changes in the spatial distribution of the under-five mortality rate: Small-area analysis of 122 DHS surveys in 262 subregions of 35 countries in Africa. *PLoS One*, 14(1):e0210645, 2019
6. Nicolas Tromas, Zofia E Taranu, **Bryan D Martin**, Amy Willis, Nathalie Fortin, Charles W Greer, and B Jesse Shapiro. Niche separation increases with genetic distance among bloom-forming cyanobacteria. *Frontiers in Microbiology*, 9:438, 2018
7. **Bryan D Martin**, Vittorio Addona, Julian Wolfson, Gediminas Adomavicius, and Yingling Fan. Methods for real-time prediction of the mode of travel using smartphone-based GPS and accelerometer data. *Sensors*, 17(9):2058, 2017

## SUBMITTED MANUSCRIPTS & PREPRINTS

1. Zehang Richard Li, **Bryan D Martin**, Tracy Qi Dong, Geir-Arne Fuglstad, John Paige, Andrea Riebler, Samuel Clark, and Jon Wakefield. Space-time smoothing of demographic and health indicators using the R package SUMMER. *arXiv preprint arXiv:2007.05117*, 2020

INVITED  
CONFERENCE  
PRESENTATIONS

1. **Bryan D Martin**, Daniela Witten, and Amy D Willis. corncob: Statistical modeling of microbial abundances and dysbiosis with beta-binomial regression. In *Joint Statistical Meetings*, Seattle, WA, August 2021
2. **Bryan D Martin**, Daniela Witten, and Amy D Willis. corncob: modeling microbial abundances and dysbiosis. In *Fourth Workshop on Statistical and Algorithmic Challenges in Microbiome Data Analysis (SACMDA4)*, San Diego, CA, April 2020\*  
\* Cancelled due to COVID-19
3. **Bryan D Martin** and Amy Willis. Inference for diversity under networked models. In *Symposium on Data Science & Statistics*, Bellevue, WA, May 2019
4. **Bryan D Martin**. Machine learning algorithms for predicting mode of transportation using smartphone sensor data. In *Undergraduate Statistics Project Competition (USPROC) E-Conference*, October 2015. (Plenary speaker)

CONTRIBUTED  
CONFERENCE  
PRESENTATIONS

1. Thomas N Serrano and **Bryan D Martin**. mRkov: a statistical tool to scrape and imitate Twitter activity. In *University of Washington Undergraduate Research Symposium*, Seattle, WA, May 2020
2. Elena Erosheva, **Bryan D Martin**, and Ross L Matsueda. Trajectory models revisited. In *Joint Statistical Meetings*, Baltimore, MD, August 2017
3. **Bryan D Martin**, Elena Erosheva, and Ross L Matsueda. A comparison of group-based trajectory modeling techniques. In *The American Society of Criminology Annual Meeting*, New Orleans, LA, November 2016
4. **Bryan D Martin**, Anya Phillips, Heather Berlin, Mitchell Kinney, and Lindsey Schadler. SmarTrAC: Activity detection with smartphone sensor data. In *Joint Meeting in Mathematics*, San Antonio, TX, January 2015. (Poster presentation)

SOFTWARE

1. **Bryan D Martin**, Daniela Witten, and Amy D Willis. *corncob: Count Regression for Correlated Observations with the Beta-Binomial*, 2020. R package version 0.1.0. <https://github.com/bryandmartin/corncob>  
**Availability:** [GitHub](#)
2. Thomas N Serrano and **Bryan D Martin**. *mRkov: a statistical tool to scrape and imitate Twitter activity*, 2020. R package version 0.1.0. <https://github.com/serrat839/mRkov>  
**Availability:** [Shiny web app](#) and [GitHub](#)
3. **Bryan D Martin**, Zehang R Li, Yuan Hsiao, Jessica Godwin, Jon Wakefield, and Samuel J Clark. *SUMMER: Spatio-Temporal Under-Five Mortality Methods for Estimation*, 2019. R package version 0.2.2. <https://CRAN.R-project.org/package=SUMMER>  
**Availability:** [CRAN](#) and [GitHub](#)
4. Amy D Willis and **Bryan D Martin**. *DivNet: Diversity Estimation in Networked Ecological Communities*, 2018. R package version 0.3.1. <https://github.com/adw96/DivNet>  
**Availability:** [GitHub](#)
5. Amy Willis, **Bryan D Martin**, Pauline Trinh, Kathryn Barger, and John Bunge. *breakaway: Species Richness Estimation and Modeling*, 2018. R package version 4.6.8. <https://adw96.github.io/breakaway>  
**Availability:** [GitHub](#)

RESEARCH  
EXPERIENCE

**University of Washington**, Seattle, Washington

Research Assistant, May 2017–Present

- Advisors: Daniela Witten and Amy Willis
- Model development and statistical inference for compositional data applied to the microbiome

**University of Washington**, Seattle, Washington

Research Assistant, January 2017–May 2017

- Advisor: Jon Wakefield
- Space-time modeling for small-area under-five mortality estimation using complex survey data

**University of Washington**, Seattle, Washington

Research Assistant, January 2016–January 2017

- Advisor: Elena Erosheva
- Unimodal mixed membership trajectory modeling

**Macalester College Department of Statistics**, St. Paul, Minnesota

Statistics Honors Thesis, May 2014–May 2015

- Advisor: Vittorio Addona
- Classification method for mode of transportation data using combinations of dictionary learning, classification algorithms, and dimension reduction techniques

TEACHING  
EXPERIENCE

**University of Washington**, Seattle, WA

**Instructor of Record**, Winter 2020, Fall 2020, Winter 2021, Spring 2021

- Statistics 302: Statistical Computing
- Designed and implemented curriculum, course materials, and course webpage
- Adjusted combined median teaching evaluation rating: 4.6/5
- Topics: Programming fundamentals, data visualization, data manipulation, hypothesis testing, statistical models, debugging, version control, statistical prediction
- Course webpage: [Link](#)
- Remote in Fall 2020

**University of Washington**, Seattle, WA

**Instructor of Record**, Summer 2020

- Statistics 311: Elements of Statistical Methods
- ~180 students, remote due to COVID-19
- Managed team of 3 TAs and 2 graders
- Adjusted combined median teaching evaluation rating: 4.7/5
- Topics: data fundamentals, programming fundamentals, probability, foundations for statistical inference, hypothesis testing

**Marine Biological Laboratory**, Woods Hole, MA

Research Facilitator, July–August (2018, 2019, 2020\*)

\* Invited but cancelled due to COVID-19

- Strategies and Techniques for Analyzing Microbial Population Structures (STAMPS)
- Teach coding, data analysis methodologies, and statistical thinking to established investigators, postdoctoral fellows and advanced graduate students from biological fields

**University of Washington**, Seattle, Washington

Statistics Tutor, September 2015–March 2018

- Drop-in tutoring provided for students in all undergraduate statistics courses

**University of Washington**, Seattle, Washington

Teaching Assistant, September 2015–May 2016

- Statistics 221: Statistical Concepts & Methods for the Social Sciences

**Macalester College**, St. Paul, Minnesota

Supplemental Instructor, August 2014–December 2014

- Economics 361: Intermediate Microeconomic Analysis
- Planned and taught an optional supplementary two-hour weekly lecture on Sundays, maintained an average attendance of 60% of total enrollment
- Created practice problems and study exercises for students

**Macalester College**, St. Paul, Minnesota

Undergraduate Teaching Assistant, September 2013–May 2014 & January 2015–May 2015

- Mathematics 254: Probability and Mathematical Statistics
- Economics 361: Intermediate Microeconomic Analysis
- Economics 119: Principles of Economics

MENTORSHIP

**University of Washington**, Seattle, Washington

Statistics Undergraduate Directed Reading Program, October 2020–December 2020

- Mentee: Jinghua Sun
- Project: Ethics in Data Science and Statistics
- Directed Reading Program website: [Link](#)

**University of Washington**, Seattle, Washington

Statistics Undergraduate Directed Reading Program, January 2020–March 2020

- Mentee: Thomas Serrano
- Project: mRkov: a statistical tool to scrape and imitate Twitter activity
- Presented at the UW Undergraduate Research Symposium, May 2020
- Shiny web app: [Link](#)

**Electronic Undergraduate Statistics Research Conference (eUSR)**

Graduate School Information Session, November 2019

- Invited panelist

HONORS AND  
AWARDS

2016–Present	NSF Graduate Research Fellow
2017	University of Washington Center for Statistics and the Social Sciences Grant
2015	University of Washington Department of Statistics Top Scholar Award
2015	Third place in national Undergraduate Statistics Research Competition (USRESP)
2015	Konhauser Achievement Award in Mathematics ( <i>Department of Mathematics, Statistics, and Computer Science, Macalester College</i> )
2015	Vasant Sukhatme Academic Excellence Award in Economics ( <i>Department of Economics, Macalester College</i> )
2015	Phi Beta Kappa ( <i>honors society for the liberal arts</i> )
2014	John M. Dozier Scholarship in Economics ( <i>Department of Economics, Macalester College</i> )

2014	Omicron Delta Epsilon ( <i>honors society for economics</i> )
2011–2015	DeWitt Wallace Distinguished Scholarship ( <i>Macalester College</i> )
2011–2015	Macalester College Dean’s List (all semesters)
2011–2015	National Merit Scholarship
2011–2015	Elks National Foundation Scholarship ( <i>national scholarship</i> )

#### SKILLS

**Advanced:** R, LaTeX

**Intermediate:** Bash

**Basic:** Python, C++, HTML, MATLAB, Mathematica, Excel, Stata

#### SERVICE

- Reviewer for *Microbiome* and *Frontiers in Genetics*
- UW Statistics Department Directed Reading Program Organizing Committee (2020–present)
- UW Statistics Department Diversity, Inclusion, Community, and Equity Committee (2017–present)
- UW Statistics Department PhD student peer mentor (2017–present)
- UW Statistics Department Fun Committee co-founder and member (2018–present)
- UW Statistics Department Graduate Student Representative (2018–2019)
- UW Statistics Department Admissions Screening Committee (2018)
- UW Statistics Department Website Committee (2017)

#### RELEVANT ACTIVITIES

- UW Statistical Diversity Lab member (2018–present)
- UW Statistical Learning Applied to Biostatistics Lab member (2017–2018)
- Macalester College Students for Education Reform Board Member (2013–2015)
- Macalester College Students for Economic Justice Organizer (2014)
- Macalester College slacklining organization founder and president (2014–2015)