

CONTACT INFORMATION

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RESEARCH INTERESTS

Inference in high-dimensional models using targeted maximum likelihood estimation; data visualization; statistical methods for high-dimensional data; statistical methods for neurological research; statistical methods for genetic research; statistical methods for cancer research; statistical methods for HIV/AIDS research; developing statistical packages

EDUCATION

University of Washington, Seattle, Washington
 Ph.D., Biostatistics 2014–2019 (expected)
 M.S., Biostatistics 2017
 Advisors: Marco Carone, Ph.D. and Noah Simon, Ph.D.

Pomona College, Claremont, California
 B.A., Mathematics 2010–2014
 Thesis: Shrinkage Estimators for High-Dimensional Covariance Matrices
 Advisor: Johanna Hardin, Ph.D.

HONORS AND AWARDS

University of Washington Department of Biostatistics:

- WNAR Most Outstanding Oral Paper Award June 2017
- Biostatistics Department Conference Travel Award Spring 2017
- Graduate School Fund for Excellence and Innovation Travel Award Spring 2017
- Graduate and Professional Student Senate Travel Grant Spring 2017
- Top Scholar Incoming Student Award September 2014

Pomona College:

- Distinction in the Senior Exercise May 2014
- Inducted into Sigma Xi Scientific Research Honor Society May 2014
- Pomona-Pitzer Varsity Swimming and Diving Captain 2013–2014
- All SCIAC Conference Academic Team 2013 and 2014
- All SCIAC Conference Swimmer 2013
- UCLA DataFest Best Insight Award June 2013

RESEARCH EXPERIENCE

Fred Hutchinson Cancer Research Center, Seattle, Washington
 Statistical Center for HIV/AIDS Research & Prevention (SCHARP)
Graduate Research Assistant Summer 2015 – Present
 Advisor: James Hughes, Ph.D.

Stanford University School of Medicine, Stanford, California
Integrative Cancer Biology Program Research Fellow Summer 2013
 Advisors: Benedict Anchang, Ph.D. and Sylvia Plevritis, Ph.D.

TEACHING EXPERIENCE

University of Washington, Seattle, Washington

Co-instructor

Inaugural School of Public Health Math and R skills preparatory workshop Fall 2016, 2017
Advisor: Annette Fitzpatrick, Ph.D.

Teaching Assistant

Summer Institute in Statistics for Big Data
Module 3, Reproducible Research for Biomedical Big Data July 2017
Instructors: Keith Baggerly, Ph.D. and Karl Broman, Ph.D.

Teaching Assistant

Summer Institute for Statistics for Big Data
Module 2, Visualization of Biomedical Big Data July 2016, 2017
Instructors: Dianne Cook, Ph.D. and Heike Hofmann, Ph.D.

Graduate Teaching Assistant

BIOST 311 — Regression Methods in the Health Sciences Spring 2017
Instructor: Anna Plantinga

Graduate Teaching Assistant

BIOST 571 — Advanced Regression Methods for Dependent Data Winter 2017
Instructor: Adam Szpiro, Ph.D.

Co-instructor

First Year Statistical Theory Exam Review Sessions Spring 2016
Advisor: Scott Emerson, M.D. Ph.D.

Teaching Assistant

Summer Institute for Statistics for Big Data
Module 1, Accessing Biomedical Big Data July 2015
Instructors: Jeff Leek, Ph.D. and Raphael Gottardo, Ph.D.

Graduate Teaching Assistant

R package development for introductory biostatistics courses Summer 2014 – Summer 2015
Advisor: Scott Emerson, M.D. Ph.D.

Pomona College, Claremont, California

Mentor/Teaching Assistant

MATH 58b — Introduction to Biostatistics Spring 2014
MATH 58 — Introduction to Statistics Fall 2013
Instructor: Johanna Hardin, Ph.D.

Grader

MATH 58b — Introduction to Biostatistics Spring 2013
Instructor: Johanna Hardin, Ph.D.

MATH 31H — Honors Calculus II Fall 2012
Instructor: Shahriar Shahriari, Ph.D.

PUBLICATIONS

5. **Williamson BD**, Gilbert PB, Simon N, and Carone M. Nonparametric variable importance assessment using machine learning techniques. *University of Washington Department of Biostatistics Working Paper Series*, (422), 2017 (submitted to *Biometrics*)
4. Hanscom B, Donnell D, **Williamson B**, and Hughes JP. Adaptive non-inferiority margins under observable non-constancy. *University of Washington Department of Biostatistics Working Paper Series*, (417), 2017 (under review in *Statistics in Medicine*)
3. Anchang B, Davis KL, Fienberg H, **Williamson B**, Bendall SC, Karacosta L, Tibshirani R, Nolan GP, and Plevritis SK. DRUG-NEM: optimizing drug combinations using single-cell

perturbation response to account for intratumoral heterogeneity. *submitted to Proceedings of the National Academy of Sciences*, 2017

2. Safren SA, Hughes JP, Mimiaga MJ, Moore AT, Friedman RK, Srithanaviboonchai K, Limbada M, **Williamson BD**, Elharrar V, Cummings V, Magidson JF, Gaydos CA, Celentano D, and Mayer KH for the HPTN063 Study Team. Frequency and predictors of estimated HIV transmissions and bacterial STI acquisition among HIV-positive patients in HIV care across three continents. *Journal of the International AIDS Society*, 19, 2016
1. Ritchwood TD, Hughes JP, Jennings L, MacPhail C, **Williamson B**, Selin A, Kahn K, Gómez-Olivé XF, and Pettifor A. Characteristics of age-discordant partnerships associated with HIV risk among young South African women (HPTN 068). *Journal of Acquired Immune Deficiency Syndromes*, 72:423–429, 2016

PRESENTATIONS

7. **Williamson B**, Gilbert P, Simon N, and Carone M. Assessing Variable Importance Non-parametrically using Machine Learning Techniques. Joint Statistical Meetings. June 2017, Baltimore, MD.
6. **Williamson B**, Gilbert P, Simon N, and Carone M. Assessing Variable Importance Nonparametrically using Machine Learning Techniques. WNAR Student Paper Competition. June 2017, Santa Fe, NM.
5. **Williamson B**, Carone M, and Simon N. Assessing Variable Importance Nonparametrically using Machine Learning Techniques. University of Washington Statistical Learning Applied to Biostatistics (SLAB) Lab meeting. May 2017, Seattle, WA.
4. **Williamson B**. An Introduction to Targeted Learning. University of Washington Department of Biostatistics Student Seminar. February 2017, Seattle, WA.
3. **Williamson B**, Carone M, and Simon N. Assessing Variable Importance Nonparametrically. University of Washington Department of Biostatistics Student Seminar. March 2016, Seattle, WA.
2. **Williamson B**. Shrinkage Estimators for High-Dimensional Covariance Matrices. Pomona College Mathematics Seminar. April 2014, Claremont, CA.
1. **Williamson B** and Anchang B. Automating Cell Gating and Creating a Nested Effects Model to Compare Drug Effects. Stanford University Center for Cancer Systems Biology Meeting. August 2013, Stanford, CA.

MIXED MEDIA PRESENTATIONS

1. **Williamson B**, Carone M, and Simon N. Assessing Variable Importance Nonparametrically using Machine Learning Techniques. Sigma Xi Student Research Showcase. April 2017, <https://briandwilliamson.tumblr.com/>

POSTER PRESENTATIONS

1. **Williamson B**, Carone M, and Simon N. Assessing Variable Importance Nonparametrically. University of Washington Biostatistics Department Retreat. September 2015, Blaine, WA.

PROFESSIONAL SOCIETIES

Western North American Region of the International Biometric Society (WNAR) <i>Student Member</i>	Autumn 2014 – Present
American Statistical Association <i>Student Member</i>	Autumn 2013 – Present
Bernoulli Society <i>Student Member</i>	Spring 2016 – Present

UNIVERSITY SERVICE

University of Washington Department of Biostatistics

Student Member

Educational Policy and Teaching Evaluation Committee (EPTEC) Autumn 2015 – Present

Peer Mentor

Peer mentoring program Autumn 2016 – Present

Co-organizer

Statistical Learning Applied to Biostatistics (SLAB) Lab Autumn 2016 – Autumn 2017

Student Member

Diversity Committee Autumn 2016 – Present

Student Member

Website Committee Spring 2015 – Summer 2015

PROFESSIONALLY-RELATED SERVICE

- *Session Chair*, “Quantification, Association Testing, and Integration of the Microbiome”, Invited Session, JSM 2017
- *Alumni Mentor*, SagePost 47 Summer 2015 – Present
- *Statistical Consultant*, Sierra Streams Institute, Nevada City, California Spring 2016

SOFTWARE

uwIntroStats package – R software for introductory biostatistics students, developed with Scott Emerson M.D. Ph.D., Andrew Spieker Ph.D., Travis Hee Wai, and Solomon Lim (Available on CRAN at <https://cran.r-project.org/web/packages/uwIntroStats/>)

vimp and **vimpv** packages – R and Python software implementing variable importance methods (Available on GitHub at <https://github.com/bdwilliamson/vimp> and <https://github.com/bdwilliamson/vimpv>)

TECHNICAL SKILLS

Statistical packages: Advanced knowledge of R, basic knowledge of SAS and Stata

Languages: Proficient in Python, basic knowledge of Java, C++, SML

Applications: Advanced knowledge of L^AT_EX, common Windows software

Operating Systems: Advanced knowledge of Unix/Linux, Windows

PROFESSIONAL EXPERIENCE

Global Market Insite, Inc. (GMI), Bellevue, Washington

Intern

Summer 2012

- Analyzed the survival of a cohort of recruits to GMI’s panel of consumer market research survey respondents and built a function to model survivorship of survey respondents
- Built a life table to model the survivorship of survey respondents
- Built a model which predicts revenue gained from interventions at certain steps in a panelist’s life cycle