Brian D. Segal

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https://bdsegal.github.io

EDUCATION

Ph.D. in Biostatistics, University of Michigan, Ann Arbor, MI — July 2017

M.S. in Biostatistics, University of Michigan, Ann Arbor, MI — May 2013

B.S. in Biology, Virginia Tech, Blacksburg, VA, *summa cum laude* — May 2007

RESEARCH INTERESTS

Computationally efficient resampling methods; nonparametric and semiparametric regression; longitudinal analysis; estimation-based alternatives to hypothesis testing; applications in medicine, the life sciences, sociology, psychology, and the environment

POSITIONS

Flatiron Health, New York, NY
Quantitative Scientist — Aug 2017 – present

Google, Advanced Measurement Technologies, New York, NY
Intern — May 2016 – Aug 2016

University of Michigan, Department of Orthopaedic Surgery, Ann Arbor, MI
Research Associate II — Sep 2015 – Nov 2016

University of Michigan, Institute for Social Research, Ann Arbor, MI
Graduate Student Research Assistant — Sep 2014 – Aug 2015
Regents' Fellow — Sep 2013 – Aug 2014

University of Michigan, Department of Biostatistics, Ann Arbor, MI
Graduate Student Research Assistant — Jan 2012 – Aug 2013

Abt Associates, Environment and Resources Division, Bethesda, MD
Analyst — Jun 2010 – Mar 2011
Associate Analyst — Jun 2008 – May 2010
Research Assistant — Jul 2007 – May 2008

Virginia Tech, Department of Civil and Environmental Engineering, Blacksburg, VA
Research Assistant — Aug 2006 – May 2007

Environmental Protection Agency, Office of Pesticide Programs, Communication Services Branch, Crystal City, VA
Intern — May 2006 – Aug 2006

Virginia Tech, Department of Biological Sciences, Blacksburg, VA
Research Assistant — May 2005 – Aug 2005

PUBLICATIONS

Segal, B. D., Braun, T., Elliott, M. R. and Jiang, H. (2017). Fast approximation of small p-values in permutation tests by partitioning the permutations. Biometrics. doi:10.1111/biom.12731 (non-final version available at arXiv:1605.03992).

Submitted

Segal, B. D., Elliott M., Braun T., and Jiang, H. P-splines with an ℓ_1 penalty for repeated measures. arxiv:1707.08933. (Under revision).

Burgard, S. A., Lin, K. Y., **Segal, B. D.**, Elliott, M. R., and Seelye, S. S. Stability and Change in Health Risk Behavior Profiles of U.S. Adults. (Under revision).

Segal, B. D., Braun, T., Gonzalez, R., and Elliott, M. R. Tests of matrix structure for construct validation. (Under revision).

Segal, B. D. Exceedance probability for parameter estimates.

TALKS AND POSTERS

Invited talk (upcoming): "P-splines with an ℓ_1 penalty for repeated measures." Statistical learning and data science/nonparametric statistics conference, June 2018.

Contributed poster (winner of best poster from Biostatistics department): "Tests of matrix structure for construct validation." Michigan Student Symposium for Interdisciplinary Statistical Sciences, Mar 2017.

Contributed poster: "P-splines with an ℓ_1 penalty for repeated measures." ENAR, Mar 2017.

Contributed talk (winner of travel award): "Fast approximation of small p-values in permutation tests by partitioning the permutation space." JSM Biometrics section student paper awards session, Aug 2016.

Contributed poster: "Fast approximation of small p-values in permutation tests by partitioning the permutation space." ENAR, Mar 2016.

TECHNICAL REPORTS

Amarakoon, S., Smith, J., **Segal, B. D.** Lithium-ion batteries and nanotechnology for electric vehicles: life cycle assessment study. U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics, Design for the Environment Program. EPA 744-R-08-001, Apr 2012.

Socolof, M., Amarakoon, S., Smith, J., **Segal, B. D.** Life-cycle assessment of plenum space communication cable. The Society of the Plastics Industry, Oct 2009.

Greco, S., Smith, J., **Segal, B. D.**, Post, E., Lynch, M., Hattis, D. Evaluating methods for quantifying human noncancer health risks: case study application, draft report. US EPA, Mar 2009.

Greco, S., Acquaye, A., Peak, K., **Segal, B. D.**, Rast, M. Framework for estimating costs and benefits associated with changes in the reference dose at federal facility hazardous waste sites. US EPA, Oct 2008.

Segal, B. D. Biofilm forming properties of the ammonia oxidizing bacteria Nitrosomonas europaea. Undergraduate research project. Department of Civil and Environmental Engineering, Virginia Tech, May 2007.

SOFTWARE

`fastPerm`: R package for quickly approximating small permutation p-values for the difference and ratio of means. Available at https://github.com/bdsegal/fastPerm.

`gammaDist`: R package for computing the distribution and density of the difference of two gamma random variables under the null of equal distributions. Includes a saddlepoint approximation to the density. Available at https://github.com/bdsegal/gammaDist.

In development

`matrixTest`: R package for testing symmetric matrices for block-diagonal structure under the null of exchangeable off-diagonal elements. Based on a permutation test with Hubert's gamma and a t-statistic. Available at https://github.com/bdsegal/matrixTest.

`psplinesl1`: R package for fitting additive mixed models with P-splines and an ℓ_1 penalty using alternating direction method of multipliers and cross validation. Available at https://github.com/bdsegal/psplinesl1.

TEACHING EXPERIENCE

Instructor: Statistical Programming Workshop, University of Michigan, Winter 2016. Notes available at https://bdsegal.github.io/BSA-computing-workshop.

Grader: Introduction to Public Health (PUBHLTH 610), University of Michigan, Fall 2014

Graduate Student Instructor: Introduction to Biostatistics (BIOSTAT 503), University of Michigan, Fall 2011

HONORS AND AWARDS

Best Poster from Biostatistics Departments at Michigan Student Symposium for Interdisciplinary Statistical Sciences, "Tests of matrix structure for construct validation" 2017

Rackham Predoctoral Fellowship 2016

Travel Award for JSM, Biometrics Section, "Fast approximation of small p-values in permutation tests by partitioning the permutation space" 2016

Rackham Graduate Student Research Grant 2014

Regents' Fellowship 2013

Phi Beta Kappa 2005

Virginia Tech Paul Dirksen Smith Cycling Scholarship 2004

PROFESSIONAL SERVICE

Reviewer for:

Biometrics

Statistical Methods in Medical Research

PROFESSIONAL INVOLVEMENT

Member, Eastern North American Region International Biometric Society 2015 – present

Volunteer, Statisticians Without Borders, response to Ebola outbreak Oct 2014

Member, American Statistical Association 2012 – present

Committee Member, Abt Associates Community Engagement Program 2009 – 2010

COMMUNITY INVOLVEMENT

Volunteer Juggling Instructor, Zip Zap Circus, Washington, DC Apr 2011 – Aug 2011

Volunteer, Al-Rowwad Children's Art Center, Bethlehem, West Bank Jul 2010

Participant, Service learning project to help recent immigrants adjust to life in the United States, Roanoke, VA Jan 2006 – May 2006

Volunteer English Teacher, Salomon Kim School, Quito, Ecuador Sep 2005 – Dec 2005

President, Virginia Tech Cycling Club, Blacksburg, VA Aug 2004 – May 2005

Sponsorship Officer, Virginia Tech Cycling Club, Blacksburg, VA Aug 2003 – May 2004

COMPUTER SKILLS

Proficient: R, SAS, LaTeX

Familiar: Python, C, Unix, SQL, Git/GitHub, Mplus

REFERENCES

Available upon request