

Karen E. Nielsen
BioSocial Methods Collaborative
University of Michigan
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Education

Ph.D. in Statistics, University of Michigan, 2017

Dissertation title: "Selecting and Evaluating Models to Reflect Underlying Scientific Principles:
Using Basis Sets to Parameterize Hypotheses"

Master of Arts in Statistics, University of Michigan, 2014

Bachelor of Arts in Mathematics and Psychology, University of Oklahoma, 2011

Research Experience

Postdoctoral Research Fellow - University of Michigan

Spring 2017 - present

Within the University of Michigan BioSocial Methods Collaborative, acted as both a statistician and co-investigator. Projects include Implications of Emotional Experiences on Lifespace, Immediate Emotional and Cognitive Responses and Adoption of Novel Technologies, and Study of Activities in Older Adulthood. Designed studies and prepared IRB documentation. Consulted with industry partners. Reviewed budgets and contracts. Supervised research assistants and associates. Prepared and presented manuscripts, posters, presentations, and reports to both industry and academic audiences.

Graduate Student Research Assistant - University of Michigan

Summer 2013 - Spring 2017

Conducted dissertation research and contributed to multiple research projects as a member of the University of Michigan BioSocial Methods Collaborative. Projects include exploration of models for testing statistical interactions, applications of linear and nonlinear mixed models for EEG and ERP data, and development of tools for analyzing multi-modal multivariate time series.

Research Intern - SUMSRI / Miami University

Summer 2010

As a member of a research group, undertook statistical research using Beta-Binomial distributions to investigate robust scoring methods. Research presented at the culmination of the project was published in the Summer Undergraduate Mathematical Sciences Research Institute (SUMSRI) Journal, and findings have been presented at several national conferences.

Research Assistant - University of Oklahoma

Fall 2009 - Spring 2010

Researched and wrote items for surveys, conducted those surveys, compiled data, and analyzed and interpreted that data for projects concerning workplace perceptions of individuals with disabilities.

Research Intern - National Weather Center

Summer 2009

Participated in a Research Experiences for Undergraduates program, partnering with a computer science professor in the University of Oklahoma's Center for Spatial Analysis. Research concerned qualitative and quantitative investigation of usage of Warning Decision Support System Integrated Information (WDSS-II) visualization tool. Presented exploratory study aimed at guiding further research on the developments of visualization tools, particularly in meteorology.

Teaching Experience

Graduate Student Instructor - University of Michigan

Fall 2011 - Winter 2013

STATS 250 Introductory Statistics Fall 2011, Winter 2012, Spring 2012,
Fall 2012, Winter 2013

- Special Mention for Teaching Award, 2011-2012
- Outstanding Teaching Award, 2012-2013

Teaching Assistant - University of Oklahoma

Fall 2008

PSY 2113 Research Methods I Fall 2008

Graduate Student Mentor - University of Michigan

Fall 2012 - Winter 2013

Worked in close coordination with the University of Michigan Statistics Department's Faculty GSI Training Coordinator to facilitate GSI training and mentoring, created materials for GSI reference and education, organized pedagogical discussions with GSIs, observed classes and met individually with GSIs to discuss classroom experiences and midterm feedback from students.

Graduate Media Assistant - University of Michigan

February 2012 - December 2015

As a member of the MELO3D group at the University of Michigan, implemented online learning objects in collegiate courses by working with group members to create and assess new learning objects, and composed wrappers to make the objects relevant and approachable to students.

Graduate Teaching Consultant - University of Michigan

Fall 2013 - Spring 2017

Worked with the University of Michigan's Center for Research on Learning and Teaching (CRLT), met with Graduate Student Instructors (GSIs) across campus to consult on teaching best practices, and facilitated workshops for a variety of audiences.

Research Papers

Published Works

Nielsen, K. & Gonzalez, R. (2017). **Regression Spline Mixed Models for Testing Meaningful Landmarks in Time Series Data.** (abstract) *Multivariate Behavioral Research*, 52(1), 116.

In Preparation

Nielsen, K. & Gonzalez, R. (under revision). **Comparison of Common Amplitude Metrics in Event-Related Potential Analysis.**

Nielsen, K. & Gunderson, B. (revised & resubmitted). **Applet-Based Learning for Identifying Statistical Tests.**

Nielsen, K. & Gonzalez, R. (in preparation). **Capitalizing on the Use of Basis Sets in Regression Spline Mixed Models for ERP Analysis.**

Presentations

Nielsen, K., Mejia, S., Gonzalez, R., & Carmichael, A. (2018). Deviation from Typical Paths as a Measure of Intraindividual Variation in Lifespace. Poster presentation at Gerontological Society of America's Annual Scientific Meeting, Boston, MA.

Nielsen, K., Gonzalez, R., Mejia, S., & Raichur, V. (2016). Combining Biophysiological Streams to Disentangle Cognitive and Physical Components of Everyday Life. Poster presentation at Gerontological Society of America's Annual Scientific Meeting, New Orleans, LA.

Nielsen, K. & Gonzalez, R. (2016). Regression Spline Mixed Models for Testing Meaningful Landmarks in Time Series Data. Poster presentation at the 14th Annual Society of Multivariate Experimental Psychology (SMEP) Graduate Student Conference, Richmond, VA.

- **Abstract Published, see above**

Nielsen, K. & Gonzalez, R. (2016). Capitalizing on the Use of Basis Sets in Regression Spline Mixed Models. Oral presentation at the Joint Statistical Meetings (JSM), Chicago, IL.

Nielsen, K. & Gonzalez, R. (2016). Exploring Event-Related Potentials via Regression Spline Mixed Models. Poster at Modeling of Neural Activity (MONA2), Waikoloa, HI.

Mejia, S., Carmichael, A., Gonzalez, R., Jackson, J. & **Nielsen, K.** (2016). Toward the Collection of Multiple Biophysical Assessments during Everyday Activities: Challenges and Applications. Poster at Society 2030: Anticipating the Demands of a Changing Society Research Meetings, Ann Arbor, MI.

Nielsen, K. & Gonzalez, R. (2016). Regression Spline Mixed Models for Analyzing EEG Data and Event-Related Potentials. Poster at Society 2030: Anticipating the Demands of a Changing Society Research Meetings, Ann Arbor, MI.

Nielsen, K. (2016). Capitalizing on the Use of Basis Sets in Regression Spline Mixed Models. Oral Presentation at the Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS), Ann Arbor, MI.

Nielsen, K. & Gonzalez, R. (2015). Regression Spline Mixed Models for Analyzing EEG Data and Event-Related Potentials. Poster at From Industrial Statistics to Data Science (conference in honor of Vijay Nair), Ann Arbor, MI.

Nielsen, K. & Gonzalez, R. (2015). Regression Spline Mixed Models for Analyzing EEG Data and Event-Related Potentials. Lightning Talk at the International R User Conference (user!2015), Aalborg, Denmark.

Nielsen, K. & Gonzalez, R. (2015). Regression Spline Mixed Models for Analyzing EEG Data and Event-Related Potentials. Poster at the Seventh International Workshop for the Statistical Analysis of Neuronal Data (SAND7), Pittsburgh, PA.

Nielsen, K. & Gonzalez, R. (2015). Regression Spline Mixed Models for Analyzing EEG Data and Event-Related Potentials. Poster at the Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS), Ann Arbor, MI.

- **Best Poster Award**

Nielsen, K. & Gonzalez, R. (2014). Bivariate Interaction Models in the Context of Generalized Linear Mixed Models. Oral presentation at the Joint Statistical Meetings (JSM), Boston, MA.

Nielsen, K. & Gonzalez, R. (2014). Bivariate Interactions. Poster at the University of Michigan Researchpalooza, Ann Arbor, MI.

Gunderson, B. & **Nielsen, K.** (2014). Using Actionable Intelligence to to Enhance Student Success in Introductory Statistics Courses. Poster at the International Conference On Teaching Statistics (ICOTS), Flagstaff, AZ.

Nielsen, K. & Gonzalez, R. (2014). Bivariate Interactions. Poster at the Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS), Ann Arbor, MI.

Gunderson, B. & **Nielsen, K.** (2014). Using Technology to Provide Personalized Coaching and Tailored Feedback to STEM Students. Oral presentation at the 7th Annual Emerging Technologies for Online Learning International Symposium (ET4Online), Dallas, TX.

Casey, S. & **Nielsen, K.** (2013). GAISEing into the Common Core Statistics Standards: A Chapter's Grassroots Approach to Preparing Teachers. Invited webinar for the American Statistical Association's (ASA) K-12 Statistics Education Webinar Series.

Lloyd, B. & **Nielsen, K.** (2013). Being a Successful Lab Instructor. Information session for the Engineering Graduate Student Instructor Teaching Orientation (EGSITO), Ann Arbor, MI.

Fisher, A. & **Nielsen, K.** (2013). Facilitating Group Work to Maximise Learning in Labs and Discussions. Information session for the Graduate Student Instructor Teaching Orientation (GSITO), Ann Arbor, MI.

Kerner, N., Gunderson, G., Bonem, E., **Nielsen, K.**, Rottenstein, A., & Winschel, G. (2012). Integration of Technology Into Undergraduate Education Via Cross-Disciplinary Pollination. Oral presentation at the 5th Annual Emerging Technologies for Online Learning International Symposium (ET4Online), Las Vegas, NV.

- **Effective Practice Award**

Nielsen, K., Good, M., Kinson, C., & Thiam, M. (2011). The Fairest of Them All: Using Variations of the Beta-Binomial Distribution to Investigate Robust Scoring Methods. Poster at the Joint Math Meetings (JMM), New Orleans, LA.

Nielsen, K., Good, M., Kinson, C., Rapp-Olsson, M., & Thiam, M. (2011). Using Variations of the Beta-Binomial Distribution to Investigate Robust Scoring Methods. Oral presentation at the University of Oklahoma (OU) Honors College Undergraduate Research Day (URD), Norman, OK.

Good, M., Kinson, C., **Nielsen, K.**, Rapp-Olsson, M., & Thiam, M. (2010). The Fairest of Them All: Using Variations of the Beta-Binomial Distribution to Investigate Robust Scoring Methods. Oral presentation at the Shenandoah Undergraduate Mathematics and Statistics (SUMS) Conference, Harrisonburg, VA.

Nielsen, K. & Weaver, C. (2009). Evaluating Interaction in Visualization Tools in Meteorology. Oral presentation at the National Weather Center (NWC) Research Experiences for Undergraduates (REU) Final Presentations, Norman, OK.

Workshops

Minonne, F., **Nielsen, K.**, Peplin, K., Ghekas, J., Sutter, S., Greenberg, R., & Bakewell, M. (2016) Canvas for GSIs: Pedagogies and Practicalities. Workshop hosted by the Center for Research on Learning and Teaching (CRLT), Ann Arbor, MI.

Minonne, F., **Nielsen, K.**, Peplin, K., Garcia, M., Ghekas, J., Sutter, S., Greenberg, R., & Bakewell, M. (2015) Canvas for GSIs. Workshop hosted by the Center for Research on Learning and Teaching (CRLT), Ann Arbor, MI.

Minonne, F. & **Nielsen, K.** (2015) Everyday Technologies in Your Teaching. Workshop hosted by the University of Michigan's Teaching and Technology Collaborative during Enriching Scholarship, Ann Arbor, MI.

Bridges, T., Harmon, A., & **Nielsen, K.** (2015) Let's Make a Screencast!. Workshop hosted by the University of Michigan's Teaching and Technology Collaborative during Enriching Scholarship, Ann Arbor, MI.

Bakewell, M., Bridges, T., Erbaggio, P., Harmon, A., Minonne, F., **Nielsen, K.**, Suhadolnik, S., & Sutter, S. (2015). Organize, Streamline, and Simplify. Workshop hosted by the Center for Research on Learning and Teaching (CRLT), Ann Arbor, MI.

Bakewell, M., Bridges, T., Erbaggio, P., Harmon, A., Minonne, F., **Nielsen, K.**, Suhadolnik, S., & Sutter, S. (2014). Next Steps with IT. Workshop hosted by the Center for Research on Learning and Teaching (CRLT), Ann Arbor, MI.

Casey, S., Fankel, M., Gunderson, B, **Nielsen, K.**, & Ross, A. (2014). GAISEing into the Common Core. One-day workshop for the Kent Intermediate School District (ISD), Grand Rapids, MI.

Bakewell, M., Bonem, E., Engel, S., Harmon, A., & **Nielsen, K.** (2014). Checking for Understanding and Giving Feedback. Online workshop hosted by the Center for Research on Learning and Teaching (CRLT).

Bakewell, M., Bonem, E., Engel, S., Harmon, A., Kilgore, T., & **Nielsen, K.** (2014). Next Steps with IT. Workshop hosted by the Center for Research on Learning and Teaching (CRLT), Ann Arbor, MI.

Jackman, D., Harmon, A., & **Nielsen, K.** (2014). How Can Technology Help Me Teach More Effectively: CTools, Google, and Beyond. Workshop for the Graduate Student Instructor Teaching Orientation (GSITO), Ann Arbor, MI.

Bakewell, M., Bonem, E., Engel, S., Harmon, A., Kilgore, T., & **Nielsen, K.** (2013). Next Steps with IT. Workshop hosted by the Center for Research on Learning and Teaching (CRLT), Ann Arbor, MI.

Casey, S., Fankel, M., Gunderson, B, **Nielsen, K.**, & Ross, A. (2013). GAISEing into the Statistics Common Core. Three-day workshop for the Ann Arbor Public Schools, Ann Arbor, MI.

Outreach

Ann Arbor Data Dive Participant / Consultant, *November 2017*

Class visit to Pioneer High School AP Stats Class, *December 2014*

Co-organized ASA-Sponsored ‘Statistics in the Common Core’ Workshops, *2013 - 2014*
(See “Workshops” and “Presentations” for related events)

Awards and Honors

Best Poster Presentation, *March 2015*

University of Michigan Department of Statistics / MSSISS Conference
(See “Presentations” for details)

Best Academic Progress, *September 2014*

University of Michigan Department of Statistics

Outstanding Teaching Award, *May 2013*

University of Michigan Department of Statistics
(See “Teaching Experience” for details)

Special Mention for Teaching, *April 2012*

University of Michigan Department of Statistics
(See “Teaching Experience” for details)

Grants, Fellowships, and Funding

Instructional Development Fund with B. Gunderson, \$495, *September 2016*

Center for Research on Learning and Teaching, University of Michigan

SMEP Travel Funds (based on competitive presentation selection), \$1500, *August 2016*

Society of Multivariate Experimental Psychology

Special Student Funding (competitive award), \$900, *July 2014*

American Statistical Association

Statistics Department First-Year Fellowship, *August 2011*

University of Michigan Department of Statistics

Professional Memberships

American Statistical Association (ASA)

American Psychological Association (APA)

Gerontological Society of America (GSA)

Programming Languages and Computer Skills

R, SPSS, SAS, Python, \LaTeX , Git