JACOB M. MARONGE

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RESEARCH INTERESTS

Experimental design, retrospective sampling, statistical computing, neuroimaging, longitudinal studies

EDUCATION

University of Wisconsin-Madison August 2016 - Present
PhD, Statistics (Emphasis in Biostatistics)
Advisor: Paul J. Rathouz

Louisiana State University Health Sciences Center May 2016
MS, Biostatistics
Thesis: "Optimal Designs for Wavelet Regression Models"
Advisor: Zhide Fang

University of Wisconsin-Milwaukee May 2014
BS, Physics

PROFESSIONAL EXPERIENCE

University of Wisconsin-Madison
Waisman Center January 2018 - Present
Predoctoral Fellow, Morse Society Scholars Program *Madison, WI*

· Awarded membership to the Morse Society Scholars Program. This fellowship offers a unique training opportunity to graduate students in multiple disciplines who are conducting research in the areas of developmental psychopathology and the psychiatric aspects of developmental disabilities.

University of Wisconsin-Madison
School of Medicine and Public Health, Department of Biostatistics and Medical Informatics September 2017 - Present
Research Assistant, Advisor: Paul J. Rathouz *Madison, WI*

· Studying how to generalize the notion of case-control studies to non-binary responses. The aim of this work is to supply tools for the analysis of data arising from studies with outcome-dependent sampling (ODS), as well as give guidelines for the design of efficient ODS studies.

University of Wisconsin-Madison
School of Medicine and Public Health, Department of Biostatistics and Medical Informatics August 2016 - August 2017
NIH Predoctoral Trainee in Biostatistics, Program Director: Paul J. Rathouz *Madison, WI*

· Grant number: T32HL083806
· Performed three semester-long rotations:
1.) Summer 2017: Worked with Paul J. Rathouz and Katie Hustad on a longitudinal study focusing on expressive language development of children diagnosed with Cerebral Palsy.
2.) Spring 2017: Worked with Michael Newton on an Empirical Bayes Method to compare covariance matrices across multiple conditions.

3.) Fall 2016: Worked with Christina Kendziorski on analysis of single cell mRNA sequencing experiments.

Johns Hopkins University
Bloomberg School of Public Health, Department of Biostatistics Summer 2016
Summer Intern, Advisor: Ciprian M. Crainiceanu *Baltimore, MD*

- Worked with the Statistical Methods and Applications for Research in Technology (SMART) Research Group.
- Addressed issues in segmentation of stroke ischemia patients by implementing a localized neighborhood principal components analysis approach.
- Participated in the France Life Imaging-Information Analysis and Management (FLI-IAM) Multiple Sclerosis Lesion Segmentation Challenge with John Muschelli, Elizabeth Sweeney, and Russell Shinohara. We implemented a random forest technique in the challenge.

HONORS

JSM Biometrics Section Young Investigator Travel Award	August 2020
Morse Society Fellowship	January 2018-Present
NIH Predoctoral Trainee in Biostatistics	August 2016-August 2017
Delta Omega Honorary Society for Public Health	May 2016

PUBLICATIONS

Under preperation:

3. **Maronge JM**, Huling JD, Chen G. *Interpretable nonlinear heterogeneous treatment effects.*

2. **Maronge JM**, Schildcrout JS, Rathouz PJ. *Design for retrospective studies with generalized linear models.*

1. **Maronge JM**, Rathouz PJ. *Power analysis for clustered and longitudinal studies using between-within covariate decomposition.*

Submitted:

4. Kepper M, Zabaleta J, Lin H, Velasco-Gonzalez C, Griffiths L, Skizim M, Boulares AH, Beiter K, Pelligrino N, Uddo B, **Maronge J**, Estrada, J, Sothern, M. *The addition of diet to an exercise lifestyle program improves cardio-metabolic health outcomes in minority female adolescents with obesity.* Submitted.

3. Tao R, Mercaldo N, Haneuse S, **Maronge JM**, Rathouz PJ, Heagerty P, Schildcrout JS. *Two-wave two-phase outcome-dependent sampling for longitudinal binary data.* Undergoing revisions at *Statistics in Medicine.*

2. **Maronge JM**, Tao R, Schildcrout JS, Rathouz PJ. *Generalized case-control sampling under generalized linear models.* Undergoing revisions at *Biometrics.* (An earlier version of this manuscript was selected for a 2020 JSM Biometrics Section Young Investigator travel award.)

1. **Maronge JM**, Muschelli J, Crainiceanu C. *Global PCA of local moments with application to multi-sequence MRI segmentation.* Submitted.

Peer-Reviewed:

3. Cahill L, Fisher K, Robinson W, Beiter K, Zabaleta, J, Tseng T, Kepper M, Skizim M, Griffiths L, Uddo R, Pelligrino N, **Maronge J**, Happel K, Scribner R, Sothern M. *Asthma Status Moderates the Relationship between Neighborhood Disadvantage and Obesity in African American Adolescent Females*, Obesity Science and Practice, 5, 564-569, 2019.

2. **Maronge JM**, Zhai Y, Wiens DP, Fang Z. *Optimal designs for spline wavelet regression models*, Journal of Statistical Planning and Inference, 184, 94-104, 2017.

1. Tudorascu DL, Karim HT, **Maronge JM**, Alhilali L, Fakhran S, Aizenstein HJ, Muschelli J, Crainiceanu CM. *Reproducibility and bias in healthy brain segmentation: comparison of two popular neuroimaging platforms*, Frontiers of Neuroscience, 10, 503, 2016.

PRESENTATIONS

Invited Talks:

4. *Generalized case-control sampling under generalized linear models.* Virtual Joint Statistical Meetings, August 3, 2020.

3. *Global PCA of local neighborhood moments with applications to MRI segmentation.* Statistical Methods in Imaging Conference, Philadelphia, PA, June 6, 2018.

2. *Empirical Bayes analysis of covariance.* University of Wisconsin Department of Biostatistics and Medical Informatics Student Seminar, Madison, WI, May 5, 2017.

1. *Single cell RNA sequencing: analysis and applications.* University of Wisconsin Department of Biostatistics and Medical Informatics Student Seminar, Madison, WI, December 16, 2016.

Posters:

3. *Global PCA of local neighborhood moments with applications to MRI segmentation.* ENAR, Atlanta, GA, March 25, 2018.

2. *Optimal designs for wavelet regression models.* Louisiana State University Health Sciences Center School of Public Health Delta Omega Research Day, New Orleans, LA, April 20, 2016.

1. *Optimal designs for wavelet regression models.* Louisiana State University Health Sciences Center School of Graduate Studies Research Day, New Orleans, LA, November 6, 2015.

PROFESSIONAL MEMBERSHIPS

International Biometrics Society, Eastern North American Region	January 2020 - Present
The Morse Society	January 2018 - Present
Delta Omega Honorary Society for Public Health	May 2016 - Present
American Statistical Association	April 2015 - Present

JOURNAL REFEREE

Biometrics, PLOS ONE

COMPUTING SKILLS

Languages:	R, SAS, MATLAB
Markup:	LaTeX, Markdown
Version Control:	Git/GitHub

SOFTWARE

gldrm: Adjusted the existing R package gldrm (generalized linear density ratio model) to account for outcome-dependent sampling. Original package available on CRAN. Developmental version with outcome-dependent sampling available on GitHub.

medals: R package to implement Memory Efficient Decomposition for Analysis of Local neighborhood moments for Segmentation (MEDALS). Available on Neuroconductor and GitHub.