

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

Predocutorial 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 Predocutorial Trainee in Biostatistics, Program Director: Paul J. Rathouz

Madison, WI

- Grant number: T32HL083806-10
- 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. We implemented a multivariate, longitudinal model to analyze and interpret these data.
 - 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 Kendzierski on analysis of single cell mRNA sequencing experiments.

Johns Hopkins University

Bloomberg School of Public Health, Department of Biostatistics

Summer Intern, Advisor: Ciprian M. Crainiceanu

Summer 2016

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 preparation:

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:

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*. Submitted.
2. **Maronge JM**, Tao R, Schildcrout JS, Rathouz PJ. *Generalized case-control sampling under generalized linear models*. Submitted. (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, Sothorn 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, Fakhraan 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*. Joint Statistical Meetings, Philadelphia, PA, August, 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

COMPUTING SKILLS

Languages: R, SAS, MATLAB
Markup: L^AT_EX, Markdown

SOFTWARE

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