

# JACOB M. MARONGE

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## RESEARCH INTERESTS

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Experimental design, retrospective sampling, generalized linear models, clinical trials, Bayesian methods, statistical computing, longitudinal studies

## EDUCATION AND TRAINING

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**University of Texas, MD Anderson Cancer Center** August 2021 - Present

Postdoctoral Fellowship

*Mentors:* Ying Yuan and Peter F. Thall

**University of Wisconsin-Madison** June 2021

PhD, Statistics (Emphasis in Biostatistics)

*Thesis:* “Robust Methods in Outcome-Dependent Sampling under Generalized Linear Models”

*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

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**University of Texas**

**MD Anderson Cancer Center, Department of Biostatistics**

August 2021 - Present

*Postdoctoral Fellow, Mentors: Ying Yuan and Peter F. Thall*

*Houston, TX*

- Studying Bayesian clinical trial design for cancer studies, particularly those studying the effects of treatments which target biomarkers.

**University of Wisconsin-Madison**

**Waisman Center**

January 2018 - June 2021

*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 - June 2021

*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 Kendzierski on analysis of single cell mRNA sequencing experiments.

## Johns Hopkins University

Bloomberg School of Public Health, Department of Biostatistics

Summer 2016

Summer Intern, Mentor: 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

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JSM Biometrics Section Young Investigator Travel Award

August 2020

Morse Society Fellowship

January 2018 - June 2021

NIH Predoctoral Trainee in Biostatistics

August 2016 - August 2017

Delta Omega Honorary Society for Public Health

May 2016

## PUBLICATIONS

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### *Peer-Reviewed:*

5. **Maronge JM**, Tao R, Schildcrout JS, Rathouz PJ. *Generalized case-control sampling under generalized linear models*. To appear in Biometrics. (An earlier version of this manuscript was selected for a 2020 JSM Biometrics Section Young Investigator travel award.)
4. 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*. Statistics in Medicine, 2021.
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, 2019.
2. **Maronge JM**, Zhai Y, Wiens DP, Fang Z. *Optimal designs for spline wavelet regression models*, Journal of Statistical Planning and Inference, 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, 2016.

### ***Submitted:***

3. **Maronge JM**, Schildcrout JS, Rathouz PJ. *Model misspecification and robust analysis for outcome-dependent sampling designs under generalized linear models*. Submitted.
2. **Maronge JM**, Huling JD, Chen G. *A reluctant generalized additive model framework for interpretable nonlinear individualized treatment rules*. Submitted.
1. 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, Sothorn, M. *The addition of diet to an exercise lifestyle program improves cardio-metabolic health outcomes in minority female adolescents with obesity*. Submitted.

### ***Under preparation:***

3. **Maronge JM**, Thall PF, Yuan Y. *P-BASIC: A Bayesian precision design for phase II clinical trials with adaptive matching*.
2. Cochran A, **Maronge JM**, Victory A, Hoel S, Murphy SA, McInnis MG, Kroska EB. *A pilot micro-randomized trial on mobile acceptance and commitment therapy in bipolar disorder*.
1. **Maronge JM**, Rathouz PJ. *Power analysis for clustered and longitudinal studies using between-within covariate decomposition*.

### ***Unpublished***

1. **Maronge JM**, Muschelli J, Crainiceanu C. *Global PCA of local moments with application to multi-sequence MRI segmentation*. (Manuscript available here)

## **PRESENTATIONS**

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### ***Invited Talks:***

6. *Generalized case-control sampling under generalized linear models*. ENAR, March 29, 2022.
5. *Robustness for retrospective studies with outcome-dependent sampling under generalized linear models*. ENAR, March 17, 2021.
4. *Generalized case-control sampling under generalized linear models*. 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**

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International Biometrics Society, Eastern North American Region  
The Morse Society  
Delta Omega Honorary Society for Public Health  
American Statistical Association

January 2020 - Present  
January 2018 - June 2021  
May 2016 - Present  
April 2015 - Present

## JOURNAL REFEREE

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Biometrics, PLOS ONE

## COMPUTING SKILLS

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**Languages:** R, SAS, MATLAB  
**Markup:** L<sup>A</sup>T<sub>E</sub>X, Markdown  
**Version Control:** Git/GitHub

## SOFTWARE

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**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.