JACOB M. MARONGE

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RESEARCH INTERESTS

Clinical trial design, epidemiological study design, retrospective sampling, generalized linear models, machine learning, Bayesian methods, statistical computing, oncology, and neurodegenerative diseases.

EDUCATION AND TRAINING

University of Texas, MD Anderson Cancer Center   2021 - 2022
Postdoctoral Fellowship
Mentors: Ying Yuan and Peter F. Thall

University of Wisconsin-Madison   2021
Ph.D., 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   2016
M.S., Biostatistics
Thesis: "Optimal Designs for Wavelet Regression Models"
Advisor: Zhide Fang

University of Wisconsin-Milwaukee   2014
B.S., Physics

PROFESSIONAL EXPERIENCE

Unlearn.AI   2022 - Present
Biostatistics Research Fellow   *San Francisco, CA*

· Leading research on innovative clinical trial design that leverages methods in machine learning to create more efficient clinical trials.

University of Texas
MD Anderson Cancer Center, Department of Biostatistics   2021 - 2022
Postdoctoral Fellow, Mentors: Ying Yuan and Peter F. Thall   *Houston, TX*

· Lead research on novel Bayesian clinical trial design for personalized medicine in early-phase oncology trials. I also collaborated with colleagues in oncology and provided biostatistical support.

University of Wisconsin-Madison
Waisman Center   2018 - 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   2017 - 2021
Research Assistant, Advisor: Paul J. Rathouz   *Madison, WI*

· Studied how to generalize the notion of case-control studies to non-binary responses. This work supplied robust tools for the analysis of data arising from studies with outcome-dependent sampling (ODS), as well as gave guidelines for the design of efficient ODS studies.

University of Wisconsin-Madison
School of Medicine and Public Health, Department of Biostatistics and Medical Informatics   2016 - 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   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

JSM Biometrics Section Young Investigator Travel Award	2020
Morse Society Fellowship	2018 - 2021
NIH Predoctoral Trainee in Biostatistics	2016 - 2017
Delta Omega Honorary Society for Public Health	2016

PUBLICATIONS

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, Sothern 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*, <u>Frontiers of Neuroscience</u>, 2016.

Submitted:

8. Gregory TA, Williford GL, **Maronge JM**, Alfaro K, Fuller GN, de Groot J, Puduvalli VK, Ballester LY, Majd NK. *An expedited strategy for accurate and timely integrated molecular diagnosis of gliomas.* Submitted.

7. **Maronge JM**, Thall PF, Yuan Y. *A Bayesian phase II design with subgroup specific futility stopping rules and matching to historical controls.* Submitted.

6. Cochran A, **Maronge JM**, Victory A, Hoel S, Murphy SA, McInnis MG, Thomas EBK. *A pilot micro-randomized trial on mobile acceptance and commitment therapy in bipolar disorder.* Submitted.

5. Thomas EBK, Gruichich TS, **Maronge JM**, Hoel S, Victory A, Stowe ZN, Cochran A. *A pilot micro-randomized trial of acceptance and commitment therapy with distressed first-generation college students.* Submitted.

4. **Maronge JM**, Muschelli J, Crainiceanu C. *Global PCA of local moments with application to multi-sequence MRI segmentation.* 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, Sothern, M. *The addition of diet to an exercise lifestyle program improves cardio-metabolic health outcomes in minority female adolescents with obesity.* Submitted.

Under preparation:

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

PRESENTATIONS

Invited Talks:

8. *Robust methods for two-phase studies under generalized linear models.* ICSA, Gainesville, FL, June 20, 2022.

7. *Robust methods for outcome-dependent sampling under generalized linear models.* Louisiana State University Health Sciences Center Biostatistics Seminar, April 18, 2022.

6. *Generalized case-control sampling under generalized linear models.* ENAR, Houston, TX, 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

International Biometrics Society, Eastern North American Region	2020 - Present
The Morse Society	2018 - 2021
Delta Omega Honorary Society for Public Health	2016 - Present
American Statistical Association	2015 - Present

JOURNAL REFEREE

Biometrics, PLOS ONE, Statistics in Medicine

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.