JACOB M. MARONGE

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RESEARCH INTERESTS

Clinical trial design, epidemiological study design, Bayesian methods, generalized linear models, machine learning, statistical computing, and oncology

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

GSK
Statistics & Data Science Innovation Hub, Oncology & Vaccines 2023 - Present
Statistics Leader

· Supporting innovative clinical trial implementation through the identification, development, and application of novel statistical methodologies, particularly in oncology and vaccine trials.

Unlearn.AI 2022 - 2023
Biostatistics Research Fellow

· Lead 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

· 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

· 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

· 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

· 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

· 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:

11. Ferrarotto R, Nagarajan P, **Maronge JM**, Johnson JM, Rosenthal DI, Myers JN, Gross ND. *Long-term oncologic outcomes of neoadjuvant cemiplimab for advanced, resectable cutaneous squamous cell carcinoma of the head and neck.* To appear in JAMA Otolaryngology.

10. **Maronge JM**, Huling JD, Chen G. *A reluctant generalized additive model framework for interpretable nonlinear individualized treatment rules.* To appear in Annals of Applied Statistics.

9. 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.* To appear in JMIR Mental Health.

8. 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.* To appear in JMIR Mental Health.

7. 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.* Neuro-Oncology, 2023.

6. **Maronge JM**, Schildcrout JS, Rathouz PJ. *Model misspecification and robust analysis for outcome-dependent sampling designs under generalized linear models.* Statistics in Medicine, 2023.

5. **Maronge JM**, Tao R, Schildcrout JS, Rathouz PJ. *Generalized case-control sampling under generalized linear models.* Biometrics, 2021. (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*, Frontiers of Neuroscience, 2016.

Submitted:

3. **Maronge JM**, Thall PF, Yuan Y. *A Bayesian phase II design with subgroup specific futility stopping rules and matching to historical controls.* Invited for revisions at Biometrics.

2. **Maronge JM**, Muschelli J, Crainiceanu C. *Global PCA of local moments with application to multi-sequence MRI segmentation.* Under review at Statistics in Biosciences.

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, JAMA Oncology, 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.