Xinran Miao

University of Wisconsin-Madison
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EDUCATION

Ph.D. in Statistics — *Fall 2021 - present*
University of Wisconsin-Madison, USA
- Advisor: Prof. Jiwei Zhao

M.S. in Statistics — *Fall 2019 - Spring 2021*
University of Wisconsin-Madison, USA

B.S. in Statistics — *Fall 2016 - Spring 2020*
Nankai University, China

RESEARCH INTERESTS

Model transportability, distribution shift, sensitivity analysis, semiparametric inference, and causal inference.

PUBLICATIONS

3. Mao, L.*, Kim, K. and Miao, X., 2022. Sample size formula for general win ratio analysis. Biometrics, 78(3), pp.1257-1268.
2. Zheng, M., Miao, X. and Sankaran, K.*, 2022. Interactive Visualization and Representation Analysis Applied to Glacier Segmentation. ISPRS International Journal of Geo-Information, 11(8), p.415.
1. Hernando, D., Zhao, R., Yuan, Q., Aliyari Ghasabeh, M., Ruschke, S., Miao, X., Karampinos, D.C., Mao, L., Harris, D.T., Mattison, R.J. and Jeng, M.R., Pedrosa, I., Kamel, I.R., Vasanawala, S., Yokoo, T. and Reeder, S.B.* 2022. Multicenter Reproducibility of Liver Iron Quantification with 1.5-T and 3.0-T MRI. Radiology, p.213256.

WORKING PAPERS

2. Miao, X. and Zhao. J*, 2023+. Efficient Estimation for the Transportability Index using Neural Networks. In preparation.
1. Miao, X.†, Jiang, H.†, Beebe, M., Thairu M., Handelsman, J. and Sankaran, K.*, 2023+. Logistic-Normal Multinomial Mediation Analysis of Microbiome Community Profiles. In preparation.

* Corresponding author; † Co-first authors.

RESEARCH EXPERIENCE

Efficient Estimation for the Transportability Index with Neural Networks
Superviser: Prof. Jiwei Zhao — *Summer 2022, Spring 2023*

- Proposed a framework to study the sensitivity of the distribution exchangeability assumption in a transfer setting.
- Proposed a new measure, transportability index, that quantifies the sensitivity with respect to perturbation in quantity of interest.
- Provided an estimation procedure for the transportability index that guarantees asympototic normality when number of covaraties grows with sample size N with rate no greater than $\{\log(N)\}^{1/2}$.

Mediation Analysis of Microbiome Community Profiles
Supervisor: Prof. Kris Sankaran *Fall 2022*

- Introduced a framework for Logistic-Normal Multinomial mediation analysis where the response of interest is a microbiota profile.
- Developed a simulation procedure for calibrating inferences and guaranteeing false sign rate control.
- Built an R package for modeling, inference, and visualizations.

TEACHING EXPERIENCE

Teaching Assistant at UW-Madison

- STAT 301: Introductory to Statistics *Fall 2021, Spring 2022*

PROFESSIONAL ORGANIZATIONS

- Institute of Mathematical Statistics.