Tuo Lin

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Research Interests

Semiparametric theory, survey methodology, statistical learning in clinical research, causal inference, missing data, network data analysis, functional data analysis, and neuroimaging.

Education

2018–2023	Ph.D., Biostatistics, University of California, San Diego
2016–2018	M.S., Statistics, University of California, San Diego
2012–2016	B.S., Mathematics (Applied), University of California, San Diego
	B.A., Economics, University of California, San Diego

Appointments

2023–Present	Research Assistant Professor, Biostatistics, University of Florida
2020–2023	Graduate Student Researcher, University of California, San Diego
2022–2022	Teaching Assistant, Biostatistics, University of California, San Diego
2017–2020	Graduate Student Researcher, Altman Clinical and Translational Research Institution, University of California, San Diego
2015–2017	Teaching Assistant, Mathematics, University of California, San Diego
2014–2015	Grader, Mathematics, University of California, San Diego

Honors and Awards

2023 Excellence in Graduate Studies in Biostatistics Award, UC San Diego

2021 ASA Statistical Significance Competition Honorable mention

2021 ASA GSS-SSS-SRMS Student Paper Competition Honorable mention

2019 OHSU Knight Biostatistics WNAR Housing Scholarship

Publications and Preprints

Methodology

[1] De Gruttola, V., Nakazawa, M., **Lin, T.**, Liu, J., Tu, X., Goyal, R., Little, S. and Mehta, S. (2023). Modeling Homophily in Dynamic Networks with Application to HIV Molecular Surveillance. Under review.

[2] Liu, J., **Lin, T.**, Chen, T., Zhang, X., Tu, X.M. (2022). On Semiparametric Efficiency of an Emerging Class of Regression Models for Between-subject Attributes. arXiv preprint arXiv:2205.08036.

[3] Liu, J., Zhang, X., **Lin, T.**, Chen, R., Zhong, Y., Chen, T., Wu, T., Nguyen, T.T, Lee, E., Jeste, D.V. and Tu, X.M. (2022). A Distance-Based Semiparametric Regression Framework for the Between-Subject Attributes of High-dimensional Data. Under review.

[4] Zou, J., **Lin, T.**, Di, C., Bellettiere, J., Jankowska, M. M., Hartman, S. J., ... & Natarajan, L. (2022). A Riemann Manifold Model Framework for Longitudinal Changes in Physical Activity Patterns. Annals of Applied Statistics, in press. arXiv preprint arXiv:2202.03019.

[5] **Lin, T.**, Niu, X., Liu, J., Wu, T., Chen, R., Li, Y., Huang, X., Yang, K., Chen, G., Chen, T., Strong, D.R., Messer, K. and Tu, X.M. (2022). On Outcome and Sampling Weights: An In-depth Look at the Dueling Weights. Under reivew.

[6] Zhang, J., **Lin, T.**, Yang, K., Wu, T., Chen, R., Chen, T., Suarez-Lopez, J.R. and Tu, X.M. (2022). A Hybrid Parametric and Semi-parametric Regression Model for Informative Missingness in Explanatory Variables Due to Detection Limit. Under review.

[7] Chen, R., **Lin, T.**, Liu, L., Liu, J., Chen, R, Liu, C., Zou, J., Natarajan, L., Tang, W., and Tu,X.M. (2022). A Double Robust Estimator for Mann Whitney Wilcoxon Rank Sum Test When Applied for Causal Inference in Observational Studies. Under review.

[8] Vu, T., **Lin, T.**, Novitsky, V., Zou, J., Tu, X.M., De Gruttola, V. (2021). Estimating Viral Genetic Linkage Rates in the Presence of Missing Data. arXiv preprint arXiv:2203.12779.

[9] **Lin, T.**, Chen, T., Liu, J., & Tu, X. M. (2021). Extending the Mann-Whitney-Wilcoxon Rank Sum Test to Survey Data for Comparing Mean Ranks. Statistics in Medicine, 40(7), 1705-1717. https://doi.org/10.1002/sim.8865.

[10] Liu, J., Zhang, X., Chen, T., Wu, T., **Lin, T.**, Jiang, L., ... & Tu, X. M. (2021). A semiparametric model for between-subject attributes: Applications to beta-diversity of microbiome data. Biometrics. https://doi.org/10.1111/biom.13487.

Collaboration

[1] **Lin, T.**, Karthikeyan, S., Satterlund, A., Knight, R., Schooley, R., De Gruttola, V., Martin, N., Zou, J. (2023). Optimizing campus-wide COVID-19 test notification strategy with interpretable wastewater time series features using machine learning models. Under review.

[2] **Lin, T.**, Zhao, R., Tu, S., Wu, H., Zhang, H., and Tu, X.M. (2023). On modeling relative risks for longitudinal binomial responses: implications from two dueling paradigms. General Psychiatry, 36:e100977. doi: 10.1136/gpsych-2022-100977.

[3] Bu, Y., Harrington, D.L., Lee, R.R., Shen, Q., Angeles-Quinto, A., Ji, Z., Hansen, H., Hernandez-Lucas, J., Baumgartner, J., Song, T., Nichols, S., Baker, D., Rao, R., Lerman, I., **Lin, T.**, Tu, X.M. and Huang, M. (2023). Magnetoencephalogram-based brain-computer interface for hand-gesture decoding using deep learning. Cerebral Cortex, in press.

[4] Grunvald, E, Wei, J., **Lin, T.**, Yang, K., Tu, X.M., Fontanesi, J., Lunde, O., Fontanesi, J., Ross, E., Cheng, J., Farber, N. and Grunvald, E. (2023). The impact of standardized patients and an interactive lecture on anti-obesity attitudes in third-year medical students: a quasi-experimental study. Journal of Medical Education and Curricular Development, in press.

[5] Chronister, B.N.C., Yang, K., Yang, A.R., **Lin, T.**, Tu, X.M., Lopez-Paredes, D., Checkoway, H., Suarez-Torres, J., Gahagan, S., Martinez, D., Ospina, M., Calafat, A.M., Barr, D., Moore, R.C. and Suarez-Lopez, J.R. (2022). Glyphosate, 2,4-D and DEET biomarkers in relation to neurobehavioral performance in Ecuadorian adolescents in the ESPINA cohort. Under review.

[6] Kim, B. K., Tamaki, N., Imajo, K., Yoneda, M., Sutter, N., Jung, J., **Lin, T.**, Tu, X.M., ... & Loomba, R. (2022). Head to head comparison between MEFIB, MAST, and FAST for detecting stage 2 fibrosis or higher among patients with NAFLD. Journal of Hepatology.

[7] Dickson, S. D., Thomas, I. C., Bhatia, H. S., Nishimura, M., Mahmud, E., Tu, X. M., **Lin, T.**, Adler, E., Greenberg, B., & Alshawabkeh, L. (2021). Methamphetamine-Associated Heart Failure Hospitalizations Across the United States: Geographic and Social Disparities. Journal of the American Heart Association, 10(16), e018370.

[8] Odish, M., Yi, C., Tainter, C., Najmaii, S., Ovando, J., Chechel, L., Lipinski, J., Ignatyev, A., Pile, A., Yeong Jang, Y., **Lin, T.**, Tu, X.M., Madani, M., Patel, M., Meier, A., Pollema, T.,& Owens, R. L. (2021). The Implementation and Outcomes of a Nurse-Run Extracorporeal Membrane Oxygenation Program, a Retrospective Single-Center Study. Critical care explorations, 3(6).

[9] Wu, T. C., Zhou, Z., Wang, H., Wang, B., **Lin, T.**, Feng, C., & Tu, X. M. (2020). Advanced machine learning methods in psychiatry: an introduction. General Psychiatry, 33(2).

[10] Kern, L., Eichberger, L., Wang, H., **Lin, T.**, & Rhee, K. E. (2020). Parental Knowledge and Attitudes About Universal Lipid Screening Among Children Aged 9 to 11 Years. Clinical Pediatrics, 59(4-5), 439-444.

[11] Richardson, S., **Lin, T.**, Li, Y., Niu, X., Xu, M., Stander, V., & Tu, X. M. (2019). Guidance for use of weights: an analysis of different types of weights and their implications when using SAS PROCs. General Psychiatry, 32(1).

[12] Proudfoot, J. A., **Lin, T.**, Wang, B., & Tu, X. M. (2018). Tests for paired count outcomes. General psychiatry, 31(1).

[13] Meier, A., Gross, E. T., Schilling, J. M., Seelige, R., Jung, Y., Santosa, E., Searles, S., **Lin, T.**,

Tu, X. M., Patel, H. H., & Bui, J. D. (2018). Isoflurane Impacts Murine Melanoma Growth in a Sex Specific, Immune-Dependent Manner: A Brief Report. Anesthesia and analgesia, 126(6), 1910.

[14] Galant-Swafford, J., **Lin, T.**, Tu, X., Christiansen, S., & Kim, A. (2018). Methicillin-resistant Staphylococcus Aureus and Clostridium Difficile Infections Among Penicillin-Allergic Patients in a University Hospital. Annals of Allergy, Asthma & Immunology, 121(5), S14-S15.

[15] Zheng, J. Z., Li, Y., **Lin, T.**, Estrada, A., Xiang, L., & Changyong, F. (2017). Sample size calculations for comparing groups with continuous outcomes. Shanghai archives of psychiatry, 29(4), 250.

Presentations

[1] *On Outcome and Sampling Weights: An In-depth Look at the Dueling Weights*, WNAR, Jun. 2023

[2] *Novel Nonparametric Random-Forests-based and Semiparametric Models for Between-subject Attributes: Application to Linkage Network Analysis and Observational Studies and Beyond*, Department of Biostatistics, University of Florida, May. 2023

[3] *Novel Nonparametric Random-Forests-based and Semiparametric Models for Between-subject Attributes: Application to Survey and Observational Studies and Beyond*, Department of Biomedical Informatics, Ohio State University, Feb. 2023

[4] *Novel Nonparametric Random-Forests-based and Semiparametric Models for Between-subject Attributes: Application to Survey and Observational Studies and Beyond*, Biostatistics shared resources, Siteman Cancer Center, Washington University St. Louis, Feb. 2023

[5] *Novel Nonparametric Random-Forests-based and Semiparametric Models for Between-subject Attributes: Application to Survey and Observational Studies and Beyond*, Massachusetts General Hospital (MGH) Biostatistics, Jan. 2023

[6] *Novel Nonparametric Random-Forests-based and Semiparametric Models for Between-subject Attributes: Application to Survey and Observational Studies and Beyond*, Department of Biostatistics, Vanderbilt University, Jan. 2023

[7] *Extending the Mann-Whitney-Wilcoxon rank sum test to survey data for comparing mean ranks*, JSM, Aug. 2021

[8] *An extension of the Mann-Whitney-Wilcoxon rank sum test for comparing group mediums for survey data*, WNAR, Jun. 2019

[9] *Methicillin-resistant Staphylococcus Aureus and Clostridium Difficile Infections Among Penicillin-Allergic Patients in a University Hospital*, Public Health Research Day, UC San Diego, Apr. 2019

Teaching Activities

Biostatistics Courses

- FMPH 244B - Foundations in Biostatistics B, Winter 2022.

- FMPH 225 - Advanced Topics in Biostatistical Inference (nonparametric and semiparametric statistics, functional data analysis), Spring 2022.

Math Courses

- MATH 10B, 20A&B - Calculus, Spring 2016, Fall 2016 & Winter 2017.
- MATH 18 - Linear Algebra, Spring 2017.
- MATH 4C - Precalculus for Science and Engineering, Fall 2015

Professional Activities

Scholarly Reviews

- Scientific Reports, Jul. 2021

Seminar Organization

- Chair of Biostatistics Student Seminar Series, UC San Diego, 2021-2023

Membership

- American Statistical Association (ASA), 2018-Present
- Western North American Region of the International Biometric Society (WNAR of IBS), 2019-Present

Conference Attendance

- Statistical Methods in Imaging (SMI), Jun. 2019
- Western North American Region (WNAR) Annual Meeting, Jun. 2019 & Jun. 2023
- Joint Statistical Meetings (JSM), Aug. 2020 & Aug. 2021

Software and Computing Skills

- **R package**: BRACE - an R library for Bias Reduction through Analysis of Competing Events (BRACE)
- **Matlab package**: MCDLM (completed and will be published soon) - a Matlab library for computing peak height distribution in a discrete lattice, using proposed MCDLM method
- **Programming Language**: R (advanced), Matlab (advanced), Python, SAS, JAVA, Stata