Dayu Sun

Department of Biostatistics and Health Data Science
School of Medicine
Indiana University, Indianapolis, IN

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IU Faculty Profile
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EDUCATION

Ph.D. Statistics, University of Missouri – Columbia, 2020
Dissertation: *Regression Analysis of Complex Longitudinal Data*
Supervisor: Dr. Jianguo (Tony) Sun

M.A. Statistics, University of Missouri – Columbia, 2019

M.Phil. Statistics, The Hong Kong Polytechnic University, 2016
Supervisors: Dr. Xingqiu Zhao and Dr. Zhisheng Ye

B.S. *First Class Honours*, The Hong Kong Polytechnic University, 2013

APPOINTMENTS

Sep 2023- **Affiliated Scientist**
Center of Aging Research,
Regenstrief Institute

Jun 2023- **Assistant Professor (tenure–track)**
Department of Biostatistics and Health Data Science,
School of Medicine, Indiana University

2020–23 **Postdoctoral Fellow**
Department of Biostatistics and Bioinformatics,
Rollins School of Public Health, Emory University
Supervisors: Dr. Limin Peng, Dr. Ying Guo, and Dr. Amita Manatunga

PUBLICATIONS

* indicates equal contributions; † indicates (co-)corresponding author(s)

Statistical Methodology

[1] **Sun**, **D.**, Peng, L., Qiu, Z., Stevens, J., Manatunga, A., and Guo, Y. "Sparse partial generalized tensor regression with application to neuroimaging data," Submitted.

[2] LIKASSA, H. T., Chen, D.-G., Chen, K., Wang, Y., Zhu, W., Dumitrascu, O., and **Sun**, **D.** "Robust Principal Component Analysis with Truncated Weighted Nuclear Norm and Adaptive Histogram Equalization: A Novel Method for Low-Quality Retinal Image Enhancement," Accepted to Statistics and Data Science in Imaging.

[3] **Sun**, **D.**, Sun, Z., Zhao, X., and Cao, H. (2025). "Kernel Meets Sieve: Transformed Hazards Models with Sparse Longitudinal Covariates," *Journal of the American Statistical Association*. DOI: 10.1080/01621459.2025.2476781.

[4] Zhao, S., Guo, Z., Wang, K., Sun, S., **Sun**, **D.**, Wang, W., He, D., Chong, M. K., Hao, Y., and Yeoh, E.-K. (2025). "modelSSE: An R Package for Characterizing Infectious Disease Superspreading from Contact Tracing Data," *Bulletin of Mathematical Biology*, 87 (4). DOI: 10.1007/s11538-025-01421-5.

[5] **Sun**, **D.**, Guo, Y., Li, Y., Sun, J., and Tu, W. (2024). "A flexible time-varying coefficient rate model for panel count data," *Lifetime Data Analysis*. DOI: 10.1007/s10985-024-09630-1.

[6] **Sun**, **D.**, Guo, Y., Li, Y., Tu, W., and Sun, J. (2024). "A robust approach for regression analysis of panel count data with time-varying covariates," *Bernoulli*, 30 (4), 3251–3275. DOI: 10.3150/23-bej1713.

[7] **Sun**, **D.**, Qiu, Z., Peng, L., Guo, Y., and Manatunga, A. (2024). "Partial quantile tensor regression," *Journal of the American Statistical Association*. DOI: 10.1080/01621459.2024.2422129.

[8] Guo, Y.[*], **Sun**, **D.**[*], and Sun, J. (2023). "Regression analysis of panel count data with both time-dependent covariates and time-varying effects," *Statistica Sinica*, 33, 1–21. DOI: 10.5705/ss.202021.0036.

[9] Sun, R., **Sun**, **D.**, Zhu, L., and Sun, J. (2023). "Regression analysis of general mixed recurrent event data," *Lifetime Data Analysis*, 29 (4), 807–822. DOI: 10.1007/s10985-023-09604-9.

[10] Guo, Y., **Sun**, **D.**[†], and Sun, J. (2022). "Inference of a time-varying coefficient regression model for multivariate panel count data," *Journal of Multivariate Analysis*, 192, 105047. DOI: 10.1016/j.jmva.2022.105047.

[11] **Sun**, **D.**, Zhao, H., and Sun, J. (2021). "Regression analysis of asynchronous longitudinal data with informative observation processes," *Computational Statistics & Data Analysis*, 157, 107161. DOI: 10.1016/j.csda.2020.107161.

[12] Zhao, H., **Sun**, **D.**, Li, G., and Sun, J. (2019). "Simultaneous estimation and variable selection for incomplete event history studies," *Journal of Multivariate Analysis*, 171, 350–361. DOI: 10.1016/j.jmva.2019.01.005.

[13] Zhao, H., **Sun**, **D.**, Li, G., and Sun, J. (2018). "Variable selection for recurrent event data with broken adaptive ridge regression," *Canadian Journal of Statistics*, 46 (3), 416–428. DOI: 10.1002/cjs.11459.

[14] Shen, L., **Sun**, **D.**, Ye, Z., and Zhao, X. (2017). "Inference on an adaptive accelerated life test with application to smart-grid data-acquisition-devices," *Journal of Quality Technology*, 49 (3), 191–212. DOI: 10.1080/00224065.2017.11917990. Alphabetical authorship.

Collaborative Work

[15] Aalsma, M. C., Schwartz, K., **Sun**, **D.**, O'Reilly, L. M., Brown, S. A., Monahan, P. O., Saldana, L., Wiehe, S. E., Zapolski, T. C., Hulvershorn, L. A., Adams, Z. W., and Dir, A. L. "Effects of Learning Health Systems on the Substance Use Care Cascade among Justice-Involved Youth: A Randomized Clinical Trial," Major Revision at *JAMA Pediatrics*.

[16] Sun, Y., Li, J., Liu, X., Mortensen, G. A., Gu, X., Adams, D. C., Tang, H., Su, J., Liu, Z., **Sun**, **D.**[†], and Meng, L.[†] (Aug. 2025). "The HM-TARGET personalised real-time haemodynamic targets in critical care," *Nature Communications*, 16 (1). DOI: 10.1038/s41467-025-62527-x.

[17] **Liu**, **L.**, Padron, M., Sun, D., and Pettit, J. W. (2024). "Temporal Trends in Suicide Ideation and Attempt among Justice-Involved Youth from 2016 to 2021," *Suicide and Life-Threatening Behavior*. DOI: 10.1111/sltb.13133. Accepted.

[18] Tracy, E. L., Lehrer, M., Buysse, D., Hall, M., Hasler, B., Krafty, R., So, C., **Sun**, **D.**, and Wilckens, K. "Effects of CBT-I on circadian rhythmicity and homeostatic sleep drive in older adults with insomniaunu," In preparation.

[19] Liu, L., Mowen, T. J., Visher, C. A., and **Sun**, **D.** (2022). "Violent victimization during reentry: prevalence, triggers, and impact on mental health," *Justice Quarterly*, 40, 534–558. DOI: 10.1080/07418825.2022.2104747.

[20] Liu, L., Bachman, R., Qiu, J., and **Sun**, **D.** (2021). "Do both petty and serious female offenders have shorter incarcerations than their male counterparts? Testing the universality of chivalrous treatment," *Women & Criminal Justice*, 1–15. DOI: 10.1080/08974454.2021.1962479.

[21] Liu, L., Visher, C. A., O'Connell, D. J., and **Sun**, **D.** (2021). "When post-incarcerated individuals return to high-risk neighborhoods: staying out of trouble, social withdrawal, and mental health," *Crime & Delinquency*, 001112872110647. DOI: 10.1177/00111287211064785.

[22] Yang, P., **Sun**, **D.**, Manatunga, A., Harris, F., Wells, L., Bhavani, S., Martin, G., and Esper, A. (2021). "Examining the Association Between Angiopoietin-2 Levels and Acute Respiratory Distress Syndrome Subtypes in Critically Ill Patients with Sepsis," in: *American Journal of Respiratory and Critical Care Medicine*. Vol. 203, A2669–A2669. DOI: 10/h8rm.

[23] Liu, L., Miller, S. L., Qiu, J., and **Sun**, **D.** (2020). "An early adverse experience goes a long, criminogenic, gendered way: the nexus of early adversities, adult offending, and gender," *Women & Criminal Justice*, 31 (1), 24–39. DOI: 10.1080/08974454.2020.1805395.

[24] Liu, L., Visher, C. A., and **Sun**, **D.** (2020). "Do released prisoners' perceptions of neighborhood condition affect reentry outcomes?" *Criminal Justice Policy Review*, 32 (7), 764–789. DOI: 10.1177/0887403420980806.

CONFERENCES AND PRESENTATIONS

Invited Talks

2025 "Sparse Partial Generalized Tensor Regression." ICSA Applied Statistics Symposium 2025, Storrs, Connecticut, USA. Jun 15 - Jun 18, 2025.

2025 "Scalable Regression Analysis for Non-normal Longitudinal Data in the Presence of Informative Observation Times with Application to EHR Data." 2025 LiDS, New York, USA. May 28-30, 2025.

2025 "Partial Quantile Tensor Regression." Healthcare AI Conference, Indianapolis, IN, USA. Feb 11-12, 2025.

2024 "Sparse Partial Generalized Tensor Regression." Ecosta 2024, Beijing, China. July 17-19, 2024.

2024 "Scalable Regression Analysis for Non-Normal Longitudinal Data in the Presence of Informative Observation Times with Application to EHR Data." 2024 ICSA China Conference, Wuhan, China. June 28-30, 2024.

2024 "Semiparametric Rate Model for Panel Count Data: Challenges of Time-varying." 2024 ICSA Applied Statistics Symposium, Nashville, TN. June 16-19, 2024.

2024 "Sparse Partial Generalized Tensor Regression." Statistical Methods in Imaging Conference 2024, Indianapolis, IN. May 29-31, 2024.

2023 "Partial Quantile Tensor Regression." Being Significant: 60 Years of Mizzou Statistics Conference, University of Missouri, Columbia, MO, USA. October 12-14.

2023 "Partial Quantile Tensor Regression." 12th ICSA International Conference, Chinese University of Hong Kong, Hong Kong, China. July 7-9.

2023 "Partial Quantile Tensor Regression." ICSA 2023 Applied Statistics Symposium, University of Michigan, Ann Arbor, MI. June 11-14.

2023 "Sparse Partial Logistic Tensor Regression with Application to Neuroimaging Data." Statistical Methods in Imaging Conference, University of Minnesota, Minneapolis, MN. May 22-24.

2023 "Kernel meets sieve: transformed hazards models with asynchronous longitudinal covariates." 2023 Lifetime Data Science Conference, Raleigh, North Carolina. May 31 – Jun 2.

2022 "A new robust approach for regression analysis of panel count data with time-varying covariates." 4th International Conference on Statistical Distributions and Applications, Huntington, WV. Oct 13-15.

2022 "A new robust approach for regression analysis of panel count data with time-varying covariates." The 5th International Conference on Econometrics and Statistics (EcoSta 2022), Ryukoku University, Kyoto, Japan. Jun 4-6.

2022 Invited Panelist, NISS GSN Webinar: Postdoctoral Panel, Virtual. Jan 27.

2021 "Kernel meets sieve: transformed hazards models with asynchronous longitudinal covariates." Biostatistics Group Seminar, University of Missouri. May 11.

2021 "Kernel meets sieve: transformed hazards models with asynchronous longitudinal covariates." Statistics Department Seminar, Georgia State University. Mar 26.

2021 "Kernel meets sieve: transformed hazards models with asynchronous longitudinal covariates." Dr. Hongyuan Cao's group, Florida State University. Mar 11.

Sessions Organized

2024 "Recent Advances in Statistical Imaging Analysis." Joint Statistical Meeting, Portland, OR. August 3-8, 2024. (Co-organized with Dr. Xin Ma)

2024 "Recent Developments in Statistical Methodology for Neuroimaging Data Analysis." Statistical Methods in Imaging Conference 2024, Indianapolis, IN. May 29-31, 2024.

2024 "Recent Developments for Dynamic and Time-to-event Data Analysis." 2024 ICSA Applied Statistics Symposium, Nashville, TN. June 16-19, 2024.

2022 "Recent developments in complex imaging data analysis." The 5th International Conference on Econometrics and Statistics (EcoSta 2022), Ryukoku University, Kyoto, Japan. June 4-6.

2021 "Statistical Approaches to Addressing Challenges in Neuroimaging Research." The Statistical Methods in Imaging Conference, Atlanta, GA. May 17-19.

Sessions Chaired

2025 "Statistical Learning Methods for High-dimensional and Heterogeneous Data." ICSA Applied Statistics Symposium 2025, Storrs, Connecticut. Jun 15 - Jun 18, 2025.

2025 "Recent Advances in Lifetime Data Analysis." 2025 LiDS, New York, USA. May 28-30, 2025.

2024 "Recent Advances in Statistical Imaging Analysis." Joint Statistical Meeting, Portland, OR. August 3-8, 2024.

2023 "Statistical and Deep Learning for Survival Data." 12th ICSA International Conference, Chinese University of Hong Kong, Hong Kong, China. July 7-9.

2023 "Advanced Methods for Challenging Problems in Brain Imaging Studies." ICSA 2023 Applied Statistics Symposium, University of Michigan, Ann Arbor, MI. June 11-14.

2022 "Statistical Methods in Handling Longitudinal Data and Temporal Effect." Joint Statistical Meeting, Washington, DC. Aug 6–11.

2022 "Recent developments in complex imaging data analysis." The 5th International Conference on Econometrics and Statistics (EcoSta 2022), Ryukoku University, Kyoto, Japan. Jun 4–6.

2021 "Contributed Papers: Advanced Modeling for Imaging Data." ENAR Spring Meeting, Virtual. Mar 14–17.

2021 "Parallel session 4." Georgia Statistics Day. Oct 11.

2021 "Statistical Approaches to Addressing Challenges in Neuroimaging Research." The Statistical Methods in Imaging Conference. Atlanta, GA. May 17-19.

Campus Talks

2025 "Sparse partial generalized tensor regression." Center for Computational Biology and Bioinformatics, Indiana University, IN, USA. Jan 24.

2024 "Partial quantile tensor regression with application to neuroimaging data." Department of Biostatistics and Bioinformatics Seminar, College of Medicine, University of Cincinnati, OH, USA. Dec 6.

2023 "Partial Tensor Regression." Department of Bioinformatics and Biostatistics Seminar, University of Louisville, Louisville, KY, USA. October 20.

2022 "Partial quantile tensor regression." CBIS seminar, Emory University, Atlanta, GA. Sep 30.

2022 "Partial quantile tensor regression with application to neuroimaging data." Post-doc research talk for accepted students, Emory University, Atlanta, GA.

Conference Papers Presented

2023 "Envelop-based generalized tensor regression model with application to neuroimaging data." ENAR Spring Meeting , Nashville, NT . Mar 19–22.

2022 "Envelop-based quantile tensor regression model with application to neuroimaging data." Joint Statistical Meeting , Washington, DC . Aug 6–11.

2022 "Envelop-based quantile tensor regression model with application to neuroimaging data." ENAR Spring Meeting , Huston, TX . Mar 27–30.

2021 "Tensor partial least squares for the quantile regression model with multiway neuroimaging data." Joint Statistical Meeting , Virtual . Aug 8–12.

2020 "Semiparametric maximum likelihood estimation for panel count data with time-dependent covariates." Joint Statistical Meeting , Virtual . Aug 2–6.

2020 "Semiparametric maximum likelihood estimation for panel count data with time-dependent covariates." ENAR Spring Meeting , Virtual . Mar 22-25.

2019 "Regression analysis of sparse asynchronous longitudinal data with informative observation times." Joint Statistical Meeting , Denver, Colorado . Jul 27–Aug 1.

2018 "Variable selection for recurrent event data with broken adaptive ridge regression." Symposium on Data Science & Statistics , Reston, VA . May 16–19.

Posters

2023 Tracy, E. L., Lehrer, H. M., Sun, D., Krafty, R. T., Hasler, B. P., Wilckens, K., Hall, M. H., & Buysse, D. "Effects of CBT-I on Circadian rhythmicity and homeostatic sleep regulation in older adults with insomnia." Pittsburgh Psychiatry Research Day , Pittsburgh, PA . June 8.

2020 "Semiparametric maximum likelihood estimation for panel count data with time-dependent covariates." ICSA Applied Statistics Symposium , Virtual . Dec 13–16.

2019 "Regression analysis of sparse asynchronous longitu-dinal data with informative observation times." ICSA Midwest & NIC-ASA Joint All Meeting , Chicago, IL . Oct 24-25.

2018 "Variable selection for recurrent event data with broken adaptive ridge regression." Statistical Analyses of Multi-Outcome Data Workshop , Saint Louis, MO . Jun 11–12.

AWARDS AND HONORS

2023 **Junior Researcher Award**, 12th ICSA International Conference, *Hong Kong, China*. July 7–9

2020 **Poster Award**, ICSA Applied Statistics Symposium, *Virtual*. Dec 13–16

2019 **First Place in Poster Competition**, ICSA Midwest & NIC-ASA Joint All Meeting, *Chicago, IL*. Oct 24-25

2019 **First Place in Poster Competition**, Statistical Analyses of Multi-Outcome Data Workshop, *Saint Louis, MO*. Jun 11–12

2018 **Registration Award**, Symposium on Data Science & Statistics

2016-20 **G. Ellsworth Huggins Scholarships**, University of Missouri

2011-13 **The Hong Kong Polytechnic University Scholarship**

2013 **Scholarship in Economics**, The Hong Kong Polytechnic University

2012 **Dean's Honored List**, The Hong Kong Polytechnic University

SOFTWARE

`PQTR`, A MATLAB package for Partial Quantile Tensor Regression, dayusun/PQTR

`SMKLE`: Sieve Maximum Kernel-weighed Log-likelihood Estimation, dayusun/SMKLE

`SurvSparse`: Survival Analysis with Sparse Longitudinal Covariates, DOI: 10.32614/CRAN.package.SurvSparse

TEACHING

G: Graduate level, UG: Undergraduate level.

Indiana University

Instructor:

2025 Spring INFO-H 515 Statistical Learning (G)

2025 Summer Advanced Statistics Summer Workshop, Course 3: High-Dimensional Data Analysis

Emory University

Instructor:

2022-23 BIOS 590R (Advanced) Seminar in Biostatistics (G)

Guest Lecturer:

2022 Spring BIOS 711 Statistical Inference II (G)

2021 Spring BIOS 711 Statistical Inference II (G)

2020 Fall BIOS 522 Survival Analysis Methods (UG)

2021 Fall BIOS 707 Linear Models (G)

University of Missouri

Teaching Assistant:

2016-20 STAT1200 Introductory Statistical Reasoning (UG)

Instructed Lecturer:

2020 Fall STAT7420 Applied Survival Analysis (UG/G)

The Hong Kong Polytechnic University

Independent Tutor:

2014-15 Engineering Mathematics (UG)

2014-15 Introduction to Statistics for Business (UG)

SERVICE

Editorial Service

2023 - Associate Editor, American Journal of Emerging Scholars

Academic Journal Referee/Reviewer

JASA

JRSSB

Annals of Applied Statistics

Biometrics

Computational Statistics & Data Analysis

Lifetime Data Analysis

Statistics and its Interface

International Journal of Biostatistics

BMC Medical Research Methodology

Statistics in Medicine

Statistical Methods in Medical Research

Journal of Applied Statistics

Grant Reviewer

2024 Developmental Grant, Arizona Alzheimer's Disease Research Center

2023 Postgraduate Research Scholarship Application Review of Xi'an Jiatong-Liverpool University

2022 Research Development Fund of Xi'an Jiatong-Liverpool University

Conference Service

2025 Program Book Committee Chair; Online Platform Committee, 2025 Lifetime Data Science Conference, New York, NY, USA. May 28–30.

2024 Student Paper Award Committee chair; Online Platform Committee,Statistical Methods in Imaging Conference 2024, Indianapolis, IN. May 29-31.

2023 Program Book Committee chair; IT and Website Committee, 12th ICSA International Conference Conference 2023, Hong Kong, China. July 7–9.

2023 Program Book Committee chair, ICSA China Conference 2023, Chengdu, China. June 30 – July 3.

2022 COPSS Reception Receptionist at Joint Statistical Meeting 2022. Aug 10

2022 Program Committee, ICSA China Conference, Xi'an, Shaanxi, China. Jul 1–3

2021 Postdoc Conference Organizing Group, The Statistical Methods in Imaging Conference, Atlanta, GA. May 17–19

University/Departmental Service

2024-25 Departmental Seminar Committee (Co-Chair), Department of Biostatistic and Health Data Science, Indiana University School of Medcine

2024 Qualifying Examination Committee Member, Department of Biostatistic and Health Data Science, Indiana University School of Medcine

2024 Admission Committee Member, Department of Biostatistic and Health Data Science, Indiana University School of Medcine

2022-23 Department Seminars in Biostatistic and Bioinformatics organizer (with Joshua Lukemire), Emory University, Fall 2022 – Spring 2023

2022 Ph.D. qualifying exam proctor, Department of Biostatistic and Bioinformatics, Emory University

2022 Survival and Longitudinal Data Analysis Study Group organizer, Department of Biostatistic and Bioinformatics, Emory University, Spring 2022

2019-20 Biostatistics Group Seminar organizer, Department of Statistic, University of Missouri

SKILLS

Programming: R, Python, MATLAB, C++, SAS, Mathematica, Linux Shell Scripting

Languages: Mandarin (Native), English (Fluent), Cantonese (Conversational)

Software/Tools: Git, LaTeX, Microsoft Office Suite

PROFESSIONAL EXPERIENCE

05–08/2019 **Intern**, Eli Lilly and Company, *Indianapolis*. IN

01–04/2017 **Research Assistant**, School of Journalism, University of Missouri and Chinese University of Hong Kong

2014 **Visiting Research Engineer**, Department of Industrial and Systems Engineer, The National University of Singapore, *Singapore*

MEMBERSHIPS

American Statistical Association (ASA)

International Biometrics Society - Eastern North American Region (ENAR)

International Chinese Statistical Association (ICSA)

Updated August 2025