Department of E Rutgers School of 683 Hoes Lane V Piscataway, NJ ( Education	Biostatistics and Epidemiology of Public Health Vest 08854	Email: Office: Phone: Website:	l.luo@rutgers.edu Room 218 206-384-6535 https://www.luolsph.com
2016 - 2020	UNIVERSITY OF MICHIGAN Ph.D. Biostatistics		Ann Arbor, MI
2014 - 2016	UNIVERSITY OF MICHIGAN M.S. Biostatistics		Ann Arbor, MI
2009 - 2013	Huazhong University of Science . B.S. Biology	and Techno	DLOGY Wuhan, China

### **Research Interests**

Online statistical inference, epigenetic clocks, transfer learning, mobile health, dynamic mediation analysis, longitudinal data analysis, causal inference, adaptive experimental design

## **Professional Appointments**

2023 - Present	Assistant Professor	
	Department of Biostatistics and Epidemiology	
	School of Public Health	
	Rutgers University	Piscataway, NJ
2020 - 2023	Assistant Professor	
	Department of Statistics and Actuarial Science	
	College of Liberal Arts and Science	
	University of Iowa	Iowa City, IA

# **Teaching Experience**

2023 - 2024 Fall	Instructor, Biostatistics Theory I
	Department of Biostatistics & Epidemiology, Rutgers University
2023 Spring	Instructor, Applied Linear Regression
	Department of Statistics & Actuarial Science, University of Iowa
2021 Fall	Instructor, Introduction to Data Science (new course)
	Department of Statistics & Actuarial Science, University of Iowa
2020 - 2022 Fall	Instructor, Mathematical Statistics I
	Department of Statistics & Actuarial Science, University of Iowa
2021 - 2023 Spring	Instructor, Mathematical Statistics II
	Department of Statistics & Actuarial Science, University of Iowa

## Publications

1. Li, Y.<sup>†</sup>, Goodrich, J., Peterson, K., Song, P.X.K. and **Luo**, **L**.<sup>#</sup> (2025). Uncertainty quantification in epigenetic clocks via conformalized quantile regression. *Genetic Epidemiology* (accepted).

- Ghosh, J., Tan, A. and Luo, L. (2025). Online Bayesian variable selection and Bayesian model averaging for streaming data. *Stat*, 14(1), e70044.
- 3. Liu, W., Li, G., Zhou, L. and Luo, L. (2025). High-dimensional large-scale mixed-type data imputation under missing at random. *Science China Mathematics* (accepted).
- Luo, L.\*, Shi, C.\*, Wang, J.\*, Wu, Z. and Li, L. (2025). Multivariate dynamic mediation analysis under a reinforcement learning framework. *The Annals of Statistics*, 53(1), 400– 425.
- 5. Li, Z., Luo, L., Wang, J. and Feng, L. (2024). Efficient quantile covariate adjusted response adaptive experiments. *The Journal of Econometrics* (accepted).
- Luo, L., Risk, M. and Shi, X. (2024). Online causal inference with application to near realtime post-market vaccine safety surveillance. *Statistics in Medicine*, 43(14), 2734–2746.
- Han, R.\*, Luo, L.\*, Lin, Y. and Huang, J. (2024). Online inference with debiased stochastic gradient descent. *Biometrika*, 111(1): 93–108.
- Tran, L., Li, G., Luo, L. and Jiang, H. (2023). A fast solution to the lasso problem with equality constraints. *The Journal of Computational and Graphical Statistics*, 33(3), 804–813.
- Luo, L.\*, Han, R.\*, Lin, Y. and Huang, J. (2023). Online inference in high-dimensional generalized linear models with streaming data. *Electronic Journal of Statistics*, 17(2), 3443–3471.
- Liu, W., Luo, L.<sup>#</sup> and Zhou, L. (2023). Online missing value imputation for highdimensional mixed-type data via generalized factor models. *Computational Statistics and Data Analysis*, 187, 107822.
- Luo, L., Wang, J. and Hector, E.C. (2023). Rejoinder: 'Statistical inference for streamed longitudinal data'. *Biometrika*, 110(4): 871–874.
- Luo, L., Wang, J. and Hector, E.C. (2023). Statistical inference for streamed longitudinal data. *Biometrika* 110(4), 841–858. (Selected as a discussion paper.)
- Luo, L., Zhou, L. and Song, P.X.K. (2022). Real-time regression analysis of streaming clustered data with possible abnormal data batches. *Journal of the American Statistical Association (Theory & Methods)*, 118(543), 2029–2044.
- Luo, L. and Li, L. (2022). Online two-way estimation and inference via linear mixed-effects models. *Statistics in Medicine*, 41(25), 5113–5133.
- Hector, E.C.\*, Luo, L.\* and Song, P.X.K. (2022). Parallel-and-stream accelerator for computationally fast supervised learning. *Computational Statistics and Data Analysis*, 177, 107587.
- Luo, L. and Song, P.X.K. (2021). Multivariate online regression analysis with heterogeneous streaming data. *The Canadian Journal of Statistics*. 51(1), 111–133. (Top 10 most-cited article in 2022-2023.)
- 17. Luo, L. and Song, P.X.K. (2020). Renewable estimation and incremental inference in generalised linear models with streaming datasets. *Journal of the Royal Statistical Society:*

Series B (Statistical Methodology), 82, Part1, 69–97. (An earlier version of this paper "realtime regression analysis of streaming health datasets" won the 2019 ENAR Distinguished Student Paper Award.)

- Luo, L., She, X., Cao, J., Zhang, Y., Li, Y. and Song, P.X.K. (2019). Detection and prediction of ovulation time from body temperature measured by an in-ear wearable thermometer. *IEEE Transactions on Biomedical Engineering*, 67(2): 512–522.
- 19. Shen, R., Luo, L. and Jiang, H. (2017). Identification of gene pairs through penalized regression subject to constraints. *BMC Bioinformatics*, 18: 466.
- 20. Yang, Y.\*, Luo, L.\*, Xu, J.\* et al. (2013). Novel EDA p.Ile260Ser mutation linked to non-syndromic hypodontia. *Journal of Dental Research*, **92**: 500–506.

Preprints

- 21. Luo, L.<sup>#</sup>, Shang, L., Goodrich, J., Peterson, K., and Song, P.X.K. (2025). Bridging the gap: Enhancing the generalizability of epigenetic clocks through transfer learning.
- 22. Zheng, S., Liu, W., **Luo, L.**, and Zhou, L. (2025). Online partial functional linear regression.
- 23. Han, R.\*, Luo, L.\*, Luo, Y.\*, Lin, Y., and Huang, J. (2024). Adaptive debiased lasso in high-dimensional generalized linear models with streaming data.
- (\*: Co-first author; #: Corresponding author; †: Student author)

#### Grants

1. Transfer learning and uncertainty quantification in epigenetic clocks

Role:	Principal Investigator
Agency:	NIH (R21AG083364)
Period:	09/30/2023 - 05/31/2025
Amount:	\$327,576
Effort:	20% FTE

2. Network of Biostatisticians for RECOVER (Researching COVID to Enhance Recovery)

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3. Systemic and dietary advanced glycation end products in type 2 diabetes-related cognitive decline and incident dementia: effects on Alzheimer's pathology and cerebrovascular disease

Co-Investigator
Michal Beeri
NIH (R01AG061093)
12/1/2023 - 11/30/2025
15% FTE

4. Cognitive and brain imaging correlates of apathy-components in asymptomatic middle aged individuals at high ADRD-risk

Role:	Co-Investigator
PI:	Michal Beeri
Agency:	NIH (R21AG080827)
Period:	3/1/2024 - 2/28/2025
Effort:	10% FTE

 5. Maternal inflammation in relation to offspring epigenetic aging and neurodevelopment

 Role:
 Co-Investigator

 PI:
 Stephanie Shiau

 Agency:
 NIH (R01HD111550)

 Period:
 6/1/2023 - 5/31/2027 

Effort: 5% FTE

6. Improving glycemic control among underserved patients with insulin-treated type 2 diabetes through nurse-led, app-based behavioral intervention

Role:	Co-Investigator
PI:	Helen Fu
Agency:	NIH (K99NR020377)
Period:	2/12/2025 - 6/30/2028

#### Graduate Student Mentored

2024 - 2025	Student Research Assistant Advisor	Rutgers University
	Qilei Sheng (co-advised with Stephanie Shiau)	
2024 - 2025	Student Academic Advisor	Rutgers University
	Alexandra Lopes Ferreira, Zixuan Le	
2024 - 2025	Applied Practice Experience Advisor	Rutgers University
	Maria Pineda, Deen Sonbol, Tanisha Patel	
2022 - 2023	MS Creative Component Advisor	University of Iowa
	Yilin Wang, Online statistical inference and conformal pre-	diction with nonsta-
	tionary streaming data	
2023	PhD Dissertation Committee Member	University of Iowa
	Yoon Cho, Modeling association between wearable device me	etrics and health out-
	comes	

#### Honors and Awards

Old Gold Summer Fellowship
Student Paper Competition Award for Statistical Learning and Data Science
Winning Proposal in the 2020 Joint Shark Tank Retreat
Excellence in Research Honorable Mention
Rackham Predoctoral Fellowship for Academic Year 2019-2020
The International Biometric Society Eastern North American Region's (ENAR)
Distinguished Student Paper Award
The Michigan Institute for Data Science (MIDAS) Annual Symposium Poster
Award of Most Innovative Use of Data
Outstanding Academic Performance First-Year Master's Program
Certificate in Public Health Genetics (CPHG) Award
HUST Excellent Graduate
China National Scholarship

# Presentations

Department - Colloquium

2024	Uncertainty quantification in epigenetic clocks via conformalized quantile regres- sion, Data Management and Modeling Core meeting of ELEMENT study, School of Public Health, University of Michigan (virtual)
2024	Online Statistical Inference in Streaming Data: Renewability, Dependence, and Dynamics, Department of Mathematics and Statistics, Auburn University (virtual).
2024	Adaptive experiments for learning quantile treatment effects, Department of Bio- statistics, University of Nebraska Medical Center (virtual).
2024	Adaptive experiments for learning quantile treatment effects, Collaborative Lec- ture Series, Rutgers School of Public Health/Cochin University of Science and Technology (virtual).
2023	Online Statistical Inference with Streaming Data: Renewability, Dependence, and Dynamics, Department of Statistics, North Carolina State University, Raleigh, NC, United States.
2022	Online Statistical Inference in Streaming Data: Renewability, Dependence, and Dynamics, Department of Biostatistics and Epidemiology, Rutgers University (virtual)
2022	Online Statistical Inference in Streaming Data: Renewability, Dependence, and Dunamics, Department of Statistics, North Carolina State University (virtual).
2022	Online Statistical Inference with Dynamic and Dependent Streaming Data, Data Mining Iowa Group, Business Analytics Department, University of Iowa, Iowa City, IA, United States.
2022	Real-Time Regression Analysis with Dynamic Streaming Datasets, StatScale sem- inars, Lancaster University, Bailrigg, Lancaster, United Kingdom (virtual).
2021	Real-Time Regression Analysis with Streaming Health Datasets, Department of Biostatistics, College of Public Health, University of Iowa, Iowa City, IA, United States (virtual).
2020	Renewable Estimation and Incremental Inference with Streaming Health Datasets, Department of Statistics and Actuarial Science, University of Iowa, Iowa City, IA, United States.
2020	Real-Time Regression Analysis with Streaming Health Datasets, Public-Health Sciences – Biostatistics Program, Fred Hutchinson Cancer Research Center, Seat- tle, WA, United States.
2020	Renewable Estimation and Incremental Inference with Streaming Health Datasets, Department of Statistics, UW Madison College of Letters & Science, Madison, WI United States
2020	Renewable Estimation and Incremental Inference with Streaming Health Datasets, Department of Statistics and Data Sciences, College of Natural Sciences, The University of Texas at Austin Austin TX United States
2020	Renewable Estimation and Incremental Inference with Streaming Health Datasets, Department of Statistics and Operations Research, The University of North Car- olina at Chapel Hill, Chapel Hill, NC, United States.

2020	Real-Time Regression Analysis with Streaming Health Datasets, Department of
	Biostatistics, Fielding School of Public Health, University of California, Los An-
	geles, CA, United States.
2020	Real-Time Regression Analysis with Streaming Health Datasets, Department of
	Biostatistics, University of Minnesota, Minneapolis, Minnesota, United States.
2020	Renewable Estimation and Incremental Inference with Streaming Health Datasets,
	Department of Mathematics and Statistics, McGill University, Montreal, Quebec,
	Canada.
2020	Renewable Estimation and Incremental Inference with Streaming Health Datasets,
	Department of Statistics and Actuarial Science, University of Waterloo, Water-
	loo, ON, Canada.

International - Conference Presentation

2025	Online statistical inference with dynamic and dependent streaming data. 2025 ENAR Spring Meeting, New Orleans, LA, United States (scheduled)
2024	Adaptive experiments for learning quantile treatment effects. The Fifth Inter- national Workshop on Statistical Analysis of Multi-Outcome Data (SAM 2024), Salzburg, Austria.
2023	Sequential Monitoring and Near Real-Time Post-Market Vaccine Safety Surveil- lance 2023 ICSA Applied Statistics Symposium Ann Arbor MI United States
2022	Multivariate Online Regression Analysis with Heterogeneous Streaming Data.
2022	Multivariate Online Regression Analysis with Heterogeneous Streaming Data. The Fifth ICSA-Canada Chapter Symposium Banff, Canada
2021	Multivariate Online Regression Analysis with Heterogeneous Streaming Data. In- ternational Chinese Statistical Association (virtual)
2021	Sequential Monitoring and Near Real-Time Post-Market Vaccine Safety Surveil- lance International Chinese Statistical Association (virtual)
2020	Real-Time Regression Analysis of Streaming Clustered Datasets. Joint Statistical Meetings (virtual).

#### $\mathbf{Software}$

R packages: glmADMM, RenewGLM, RenewQIF, OnlineCausal, OnlineDSGD (available on https://github.com/luolsph)

## **Professional Activities and Service**

<u>Editorial Positions</u> 2024 - Present Associate Editor, Biometrics

# Journal Referee

	Nature Communications, Journal of the American Statistical Association, Biometrika, Journal of Econometrics, Journal of Machine Learning Research, Journal of Royal Statistical Society: Series A, Annals of Applied Statistics, Sta- tistical Sinica, Biometrics, Statistics in Medicine, Electronic Journal of Statistics, Journal of Computational and Graphical Statistics, Technometrics, Journal of Nonparametric Statistics, Statistics and Its Interface, Scandinavian Journal of Statistics, Computational Statistics and Data Analysis, Statistical Analysis and Data Mining, IEEE Transactions on Neural Networks and Learning Systems, International Journal of Biostatistics
<u>Grant Reviews</u> 2023	Department of Defense, Biostatistical Reviewer
Department	
2024 - Present	Seminar Committee, Co-chair, Department of Biostatistics and Epidemiology, Rutgers University
2023 - Present	Statistical Health for AI Committee, Member, Department of Biostatistics and Epidemiology, Rutgers University
2024	Rutgers Cancer Institute of New Jersey (CINJ) Faculty Search Committee, Member
2023	Colloquium Committee, Member, University of Iowa
2022 - 2023	Executive Committee, Member, University of Iowa
2021 - 2022	Graduate Minor Exam Committee, Member, University of Iowa
2020 - 2023	Computer Committee, Member, University of Iowa
2020 - 2022	Social Committee, Chair, University of Iowa
Member	
2021 - Present	International Chinese Statistical Association
2018 - Present	American Statistical Association
2017 - Present	International Biometric Society, ENAR
Conference ser	vice
2024	JSM 2024, Session Chair, New Methods for Correlated Data
2024	SAM 2024, Session Chair, Joint Modeling of Complex Survival Data
2024	SAM 2024, Session Organizer, Analysis of data with multiple treatments and mixed outcomes
2024	SAM 2024, Committee Member on Junior Researcher Award
2023	ICSA Applied Statistics Symposium, Session Organizer and Chair, Causal infer- ence in observational studies and adaptive experiments
2023	ICSA Applied Statistics Symposium, Student Paper Competition Committee
2023	Joint Statistical Meetings, Statistical Learning and Data Science (SLDS) Student Paper Competition Committee
2022	Joint Statistical Meetings, Session Organizer and Chair, <i>Recent advances in streaming data analytics</i>