

Paul A. Parker

Department of Statistics
University of California, Santa Cruz
Santa Cruz, CA 95064

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EDUCATION **University of Missouri**, Columbia, MO
Ph.D., Statistics, July 2021 Advisor: Dr. Scott H. Holan
Dissertation: Bayesian Unit Level Modeling of
Non-Gaussian Survey Data Under Informative
Sampling with Application to Small Area Estimation
M.A., Statistics, December 2018

University of Idaho, Moscow, ID
B.S., Applied Mathematics, May 2014
Minor, Statistics

EXPERIENCE **Assistant Professor** University of California, Santa Cruz
July 2021 - Current
Department of Statistics

Research Mathematical Statistician U.S. Census Bureau
March 2022 - Current
Center for Statistical Research and Methodology

FUNDING 9/22-8/25 Collaborative Research: Randomization Based Machine Learning Methods
in a Bayesian Model Setting for Data from a Complex Survey or Census, NSF-NCSES.
Role: PI (PI at MU - S.H. Holan): \$708,796, UCSC Portion **\$337,271**.

9/22-8/23 Objective Bayes 2022 Methodology Conference, NSF. Role: PI (Li, Z., Kot-
tas, A., & Sanso, B. Co-PIs): **\$10,000**.

REFEREED PAPERS

- Parker, P.A.**, and Holan, S.H. (2023+) Computationally Efficient Bayesian Unit-Level Random Neural Network Modeling of Survey Data under Informative Sampling for Small Area Estimation. To Appear - *Journal of the Royal Statistical Society: Series A*.
- Parker, P.A.**, Holan, S.H., and Janicki, R. (2023+) Conjugate Modeling Approaches for Small Area Estimation with Heteroscedastic Structure. To Appear - *Journal of Survey Statistics and Methodology*.
- Vedensky, D., **Parker, P.A.**, and Holan, S.H. (2022) A Look Into the Problem of Preferential Sampling Through the Lens of Survey Statistics. *The American Statistician* 00, 1-10. DOI: 10.1080/00031305.2022.2143898 .
- Parker, P.A.**, and Holan, S.H. (2022) A Bayesian Functional Data Model for Surveys Collected under Informative Sampling with Application to Mortality Estimation using NHANES. *Biometrics* 00, 1-12.
 - Honorable mention - JSM GSS/SSS/SRMS 2021 Student Paper Competition
- Parker, P.A.**, Holan, S.H., and Janicki, R. (2022) Computationally Efficient Bayesian Unit-Level Models for Non-Gaussian Data Under Informative Sampling with Application to Estimation of Health Insurance Coverage. *The Annals of Applied Statistics*, 16(2), 887-904.
- Sun, A., **Parker, P.A.**, and Holan, S.H. (2022) Analysis of Household Pulse Survey Public-Use Microdata via Unit-Level Models for Informative Sampling. *Stats, Special Issue on "Small Area Estimation: Theories, Methods and Applications"*, 5(1), 139-153.

7. **Parker, P.A.**, Holan, S.H., and Wills, S.A. (2021) A General Bayesian Model for Heteroskedastic Data with Fully Conjugate Full-Conditional Distributions. *Journal of Statistical Computation and Simulation*, 91(15), 3207-3227.
8. Nunes, M.R., Veum, K.S., **Parker, P.A.**, Holan, S.H., Karlen, D.L., Amsili, J.P., van Es, H.M., Wills, S.A, Seybold, C.A., and Moorman, T.B. (2021) The Soil Health Assessment Protocol and Evaluation Applied to Soil Organic C. *Soil Science Society of America Journal*, 85, 1196– 1213.
9. **Parker, P.A.**, Holan, S.H., and Ravishanker, N. (2020) Nonlinear Time Series Classification Using Bispectrum-based Deep Convolutional Neural Networks. *Applied Stochastic Models in Business and Industry*, 36, 877– 890.
10. **Parker, P.A.**, Holan, S.H., Janicki, R. (2020) Conjugate Bayesian Unit-level Modelling of Count Data Under Informative Sampling Designs. *Stat*, 9(1): e267.
11. Veum, K.S., **Parker, P.A.**, Sudduth, K.A., and Holan, S.H., (2018) Predicting Profile Soil Properties with Reflectance Spectra via Bayesian Covariate Assisted External Parameter Orthogonalization. *Sensors*, 18, 3869, doi:10.3390/s18113869.

PAPERS UNDER REVIEW

1. **Parker, P.A.**, Janicki, R., and Holan, S.H. (2022+) A Comprehensive Overview of Unit Level Modeling of Survey Data for Small Area Estimation Under Informative Sampling. (Under Invited Revision - *Journal of Survey Statistics and Methodology*).
2. **Parker, P.A.**, Janicki, R., and Holan, S.H. (2022+) Extensions and Comparison of Unit Level Small Area Estimation Modeling Approaches for Survey Data Under Informative Sampling. (Under Invited Revision - *Journal of Survey Statistics and Methodology*).

BOOK CHAPTERS

1. **Parker, P.A.**, Janicki, R., and Holan, S.H. (2023) Bayesian Methods Applied to Small Area Estimation for Establishment Statistics. *Advances in Business Statistics, Methods and Data Collection*. John Wiley & Sons.

TALKS

1. “Conjugate Modeling Approaches for Heteroskedastic Structure with Application to Small Area Estimation,” Department of Mathematics and Statistics, University of Maryland Baltimore County, March 2023.
2. “Computationally Efficient Bayesian Heteroskedastic Modeling for Small Area Estimation,” University of Washington Space-Time Reading Group, October 2022.
3. “Computationally Efficient Bayesian Heteroskedastic Modeling for Small Area Estimation,” Joint Statistical Meetings, (Topic Contributed Session), Washington, D.C., August 2022.
4. “A General Bayesian Model for Heteroskedastic Data with Fully Conjugate Full-Conditional Distributions ,” University of California Santa Cruz, Santa Cruz, CA, May 2021.
5. “Computationally Efficient Bayesian Unit-Level Modeling of Non-Gaussian Survey Data under Informative Sampling,” University of Connecticut, Storrs, CT (held virtually), March 2022.
6. “Computationally Efficient Bayesian Unit-Level Modeling of Non-Gaussian and Complex Survey Data under Informative Sampling,” U.S. Census Bureau – Center for Statistical Research and Methodology (CSRM), October 2021.
7. “A Bayesian Functional Data Model for Surveys Collected under Informative Sampling with Application to Mortality Estimation using NHANES,” Joint Statistical Meetings, (Topic Contributed Session), Seattle, WA (held virtually), August 2021.
8. “A Bayesian Functional Data Model for Surveys Collected under Informative Sampling with Application to Mortality Estimation using NHANES,” Quality and Productivity Research Conference, (Invited Session), Tallahassee, FL (held virtually), July 2021.

9. “Computationally Efficient Bayesian Models for Non-Gaussian and Complex Survey Data under Informative Sampling,” Utah State University, Logan, UT (held virtually), March 2021.
10. “Computationally Efficient Bayesian Models for Non-Gaussian and Complex Survey Data under Informative Sampling,” University of California Santa Cruz, Santa Cruz, CA (held virtually), February 2021.
11. “Nonlinear Time Series Classification Using Bispectrum-based Deep Convolutional Neural Networks,” International Virtual Conference on Advanced Statistical Techniques in Business and Industry, (Invited Session), Cochin University of Science and Technology (CUSAT), India (held virtually), December 2020.
12. “Computationally Efficient Bayesian Models for Non-Gaussian and Complex Survey Data under Informative Sampling,” University of Texas at El Paso, El Paso, TX (held virtually), December 2020.
13. “Computationally Efficient Deep Bayesian Unit-Level Modeling of Survey Data Under Informative Sampling for Small Area Estimation,” Joint Statistical Meetings, (Topic Contributed Session), Philadelphia, PA (held virtually), August 2020.
14. “Conjugate Bayesian Unit-level Modeling of Count Data Under Informative Sampling Designs,” Truman State University, Kirksville, MO, October 2019.
15. “An Overview of Unit-level Models for Survey Data Under Informative Sampling with an Emphasis on Bayesian Methods,” University of Missouri Population, Education and Health Center Seminar Series, Columbia, MO, September 2019.
16. “Multivariate Unit-level Models for Non-Gaussian Survey Data Under Informative Sampling Designs,” Joint Statistical Meetings, (Topic Contributed Session), Denver, CO, July 2019.

AWARDS

International Conference on Establishment Statistics VI Student Competition	2021
First Prize	
Joint Statistical Meetings Student Travel Award	2021
Survey Research Methods Section	
Honorable Mention - JSM Student Paper Competition	2021
GSS/SSS/SRMS	
Census Bureau Dissertation Fellowship	August 2019 - July 2021
U.S. Census Bureau	
Interdisciplinary Doctoral Fellowship	August 2018 - May 2019
University of Missouri Population, Education, and Health Center and Research Data Center	

TEACHING

Stat 7: Statistical Methods for the Biological, Environmental, and Health Sciences	Winter 2023
University of California Santa Cruz	
Stat 204: Introduction to Statistical Data Analysis	Fall 2022
University of California Santa Cruz	
Stat 208: Linear Statistical Models	Spring 2022
University of California Santa Cruz	
Stat 205B: Intermediate Classical Inference	Winter 2022
University of California Santa Cruz	

	Stat 2500: Introduction to Prob. & Statistics I	Fall 2016
	University of Missouri	
SERVICE	Graduate Committee Member	Spring 2021, 2022-2023
	University of California Santa Cruz, Department of Statistics	
	Statistics Department Search Committee Member	2021-2022
	University of California Santa Cruz, Department of Statistics	
	Seminar Co-Coordinator	Winter 2022
	University of California Santa Cruz, Department of Statistics	
	MS Program Committee Member	2021 - 2022
	University of California Santa Cruz, Department of Statistics	
	Local Organizing Committee Member	2021 - 2022
	Objective Bayes 2022 Methodology Conference	
	Space Time Reading Group Coordinator	August 2020 - December 2020
	University of Missouri, Department of Statistics	
	DataFest Mid-Missouri (American Statistical Association)	
	Lead Graduate Student Coordinator	August 2018 - April 2021
	Workshop Instructor	August 2017 - April 2021
	VIP Consultant	August 2017 - April 2021
	Colloquium Committee	
	University of Missouri, Department of Statistics	December 2017 - August 2018
	Student Representative	
	Statistics Graduate Student Association	
	Interim Vice President	May 2017 - August 2017
	Secretary	August 2016 - August 2017
	Refereed Articles for:	
	<i>Biometrics</i>	
	<i>Biostatistics</i>	
	<i>Canadian Journal of Statistics</i>	
	<i>Environmental and Ecological Statistics (2)</i>	
	<i>International Statistical Review (2)</i>	
	<i>Journal of the American Statistical Association</i>	
	<i>Journal of Nonparametric Statistics</i>	
	<i>Journal of Survey Statistics and Methodology (3)</i>	
	<i>Spatial Statistics (2)</i>	
	<i>Stats</i>	
STUDENT SUPERVISION	Doctoral Students	
	Qi Wang, Statistics	Current
	Sho Kawano, Statistics (Joint with Richard Li)	Current
	Masters Students	
	Jacobo Pereira-Pacheco, Statistics, Advisor	Current
	Academic Advising	
	Qi Wang, Statistics	2021-2022
	Supervisory Committee Membership	

Zach Horton, Statistics
Nick Grunloh, Statistics
Xiaotian Zheng, Statistics

Current
Current
Summer 2022

**TECHNICAL
SKILLS**

Languages: R, SQL, SAS, Python, L^AT_EX.
Software: Stan, Keras, ggplot, dplyr.

**CONSULTING
EXPERIENCE**

Veterans United Home Loans

Septemeber 2018 - March 2019

**OTHER
RELEVANT
EXPERIENCE**

Guest lecturer, Stat 8710 - Intermediate Mathematical Statistics I, University of Missouri, August 2019

Guest lecturer, Stat 7870 - Time Series Analysis, University of Missouri, August 2019

Developed an R Shiny app to be used for soil health scoring in conjunction with the USDA Natural Resources Conservation Service
https://paparker.shinyapps.io/shape_app/

**SECURITY
CLEARANCE**

Special Sworn Status - Title 13, Title 26