Yuki Ohnishi

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Academic Appointments

Postdoctoral Associate

- Department of Biostatistics, Yale School of Public Health (YSPH)   Aug 2024 - Present
- Advisor: Fan Li

Graduate Teaching/Research Assistant

- Department of Statistics, Purdue University   Aug 2018 - May 2024

Education

Purdue University   West Lafayette, IN, USA

PhD in Statistics   Aug 2024

- Dissertation: Causal Inference in the Face of Assumption Violations
- Advisors: Jordan Awan and Arman Sabbaghi

Research Interests

Methodology: Causal inference, Bayesian nonparametrics, Differential privacy, Causal mediation analysis, Sequential treatment, Survival analysis, Post-treatment confounders, Unobserved confounders, Interference

Application: Clinical trials, Cluster randomized trials, Digital marketing

Publications

Referred Publications

1. **Ohnishi, Y.** and F. Li. (2025) "A Bayesian nonparametric approach to mediation and spillover effects with multiple mediators in cluster-randomized trials," *Journal of the American Statistical Association*, accepted.

2. **Ohnishi, Y.**, B. Karmakar and A. Sabbaghi. (2025). "Degree of Interference: A General Framework for Causal Inference under Interference," *Journal of Machine Learning Research* 26 (120): 1-37.

3. **Ohnishi, Y.**, B. Karmakar and W. Kar. (2025). "Inferring Causal Effect of a Digital Communication Strategy under a Latent Sequential Ignorability Assumption and Treatment Noncompliance," *Journal of the American Statistical Association* 120 (550): 685–97.

4. **Ohnishi, Y.** and J. Awan. (2025). "Locally Private Causal Inference for Randomized Experiments," *Journal of Machine Learning Research* 26 (14): 1-40.

5. **Ohnishi, Y.** and A. Sabbaghi. (2024). "A Bayesian Analysis of Two-Stage Randomized Experiments in the Presence of Interference, Treatment Nonadherence, and Missing Outcomes," *Bayesian Analysis* 19 (1): 205-234.

6. **Ohnishi, Y.** and J. Honorio. (2021). "Novel change of measure inequalities with applications to PAC-Bayesian bounds and Monte Carlo estimation," *International Conference on Artificial Intelligence and Statistics*, 1711-1719.

Other Publications

1. **Ohnishi, Y.** and S. Sugaya. 2019. "Applying Bayesian Hierarchical Probit Model to Interview Grade" Evaluation. KDD'19, International Workshop on Talent and Management Computing.

2. **Ohnishi, Y.** and S. Sugaya. 2018. "Bayesian Hierarchical Bernoulli-Weibull Mixture Model for Extremely Rare Events." INFORMS Conference on Business Analytics & Operations Research.

Submitted Papers & Preprints

1. **Ohnishi, Y.**, M. J. Daniels, L. Yang and F. Li. "Identification and estimation of causal mechanisms in cluster-randomized trials with post-treatment confounding using Bayesian nonparametrics," Submitted to *Journal of the Royal Statistical Society: Series B*.

2. Liu, R., J. L. Warren, **Y. Ohnishi**, D. Spiegelman, L. Hu, and F. Li. "Calibrated Bayes analysis of cluster-randomized trials." Submitted to Bayesian Analysis.

3. **Ohnishi, Y.**, M. O. Harhay and F. Li. "Principal stratification with recurrent events truncated by a terminal event: A nested Bayesian nonparametric approach," Submitted to *Journal of the Royal Statistical Society: Series B*, Link.

4. **Ohnishi, Y.** and J. Awan. "Differentially Private Covariate Balancing Causal Inference," Submitted to *Journal of Machine Learning Research*, Link.

In Preparation

1. **Ohnishi, Y.** and F. Li. "Bayesian change-plane analysis."

2. **Ohnishi, Y.**, M. J. Daniels and F. Li. "Sensitivity analysis for causal mediation analysis in cluster-randomized trials."

3. Liu, R., **Y. Ohnishi**, and F. Li. "Bayesian nonparametric causal hazard ratio esitmation."

4. **Ohnishi, Y.** and B. Karmakar. "Comprehensive Bayesian Toolbox for Regression Discontinuity Analysis for Disaggregated Data."

Presentations

2025 Joint Statistical Meetings (JSM 2025) — Nashville, TN
A Bayesian nonparametric approach to mediation and spillover effects with multiple mediators in cluster-randomized trials. — August 2025

The 38th New England Statistics Symposium (NESS 2025) — New Haven, CT
A Bayesian nonparametric approach to mediation and spillover effects with multiple mediators in cluster-randomized trials. — June 2025

Purdue University, Department of Statistics Student seminar — West Lafayette, IN
Causal inference in the face of assumption violations. — April 2024

The University of Tokyo Todai Bayes seminar — Tokyo, Japan
A Bayesian Analysis of Two-Stage Randomized Experiments in the Presence of Interference, Treatment Nonadherence, and Missing Outcomes. — July 2024

Midwest Machine Learning Symposium (MMLS 2023) — Chicago, IL
Locally Private Causal Inference. — May 2023

International Conference on Design of Experiments (ICODOE 2023) — Memphis, TN
A Bayesian Analysis of Two-Stage Randomized Experiments in the Presence of Interference, Treatment Nonadherence, and Missing Outcomes. — May 2023

INFORMS Workshop on Quality, Statistics, and Reliability — Indianapolis, IN
A Bayesian Analysis of Two-Stage Randomized Experiments in the Presence of Interference, Treatment Nonadherence, and Missing Outcomes. — 2022

The 24th International Conference on Artificial Intelligence and Statistics (AISTAT 2021)
Novel Change of Measure Inequalities with Applications to PAC-Bayesian Bounds and Monte Carlo Estimation. — April 2021

The 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD 2019), Workshop on Talent and Management Computing. — Anchorage, AK
Applying Bayesian Hierarchical Probit Model to Interview Grade Evaluation. — August 2019

INFORMS Business Analytics & Operations Research — Baltimore, MD
Bayesian Hierarchical Bernoulli-Weibull Mixture Model for Extremely Rare Events. — April 2018

Teaching Experiences

Big Data Summer Immersion at Yale (BDSY) program, Instructor — Summer 2025

STAT 598 Differential Privacy, Teaching Assistant — Fall 2022

STAT 538 Probability Theory I (Measure theoretic probability), Teaching Assistant — Spring 2021

STAT 539 Probability Theory II (Stochastic processes), Teaching Assistant — Fall 2021

STAT 350 Introduction to Statistics, Teaching Assistant	Spring 2020 - Fall 2021
STAT 190 Data Mine, Teaching Assistant	Fall 2018 - Fall 2020
STAT 113 Statistics and Society, Teaching Assistant	Fall 2018 - Fall 2020

Honors and Awards

JSM Early Career Award, Statistics in Epidemiology Section, American Statistical Association, 2025.

Research Recognition GRAD Award, Department of Statistics, Purdue University, 2024.

College of Science Graduate Student Travel Award, Purdue University, 2023.

Research and teaching fellowship, Purdue University, 2018-2024

Academic Services

Referee

Journal of the American Statistical Association (TM/ACS)	*Annals of Applied Statistics*
Journal of the Royal Statistical Society: Series C	*Statistics in Medicine*
Computational Statistics and Data Analysis	*Journal of Causal Inference*
International Journal of Biostatistics	*Journal of Applied Statistics*

Other services

The 38th New England Statistics Symposium, 2025

- Student Paper Award Committee, Reviewer
- Session Chair

Community memberships

American Statistical Association (ASA), 2023–present

International Society for Bayesian Analysis (ISBA), 2023–present

New England Statistical Society (NESS), 2025-present

Industrial Careers

Boehringer Ingelheim — Ridgefield, CT, USA
Data Scientist Summer Intern — May 2023 - Aug 2023

- Developed a meta-analysis tool for dynamic borrowing in clinical trials using R and Rstan.
- Designed and conducted simulation studies to assess the efficacy of our meta-analysis tools for correlated bivariate endpoints in the HPC environment (SLURM).

BizReach, Inc. — Tokyo, Japan
Data Scientist

- Developed job-search recommender system, improving efficiency by 25% by developing ETL pipelines and using ML and matching optimization algorithms.
- Enhanced user acquisition, boosting CTR by 15% and CVR by 10% through attribution and lifetime value analyses and ad budget optimization.
- KPI dashboard visualization with SQL and Tableau.
- Analytics for user retention and talent management, presenting findings at KDD and INFORMS conferences.

Reference

Dr. Fan Li
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