

Zixuan Zhao

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EDUCATION

Ph.D. in Statistics, George Washington University

Aug 2023 – Present

Advisor: Prof. Feifang Hu

GPA: 4.0 / 4.0

M.Sc. in Biostatistics, Queen's University

Aug 2023

Advisors: Prof. Yanglei Song, Prof. Wenyu Jiang

GPA: 4.2 / 4.3

B.Sc. in Mathematics, Queen's University

May 2021

Major GPA: 3.9 / 4.3

RESEARCH INTERESTS

Asymptotic Statistics, Sequential Decision-Making, Covariate-Adaptive Randomization, Causal Inference, Clinical Trial Design

PUBLICATIONS

Published

- [1] **Zhao, Z.**, Song, Y., Jiang, W., & Tu, D. (2024). Consistent covariance estimation for stratum imbalances under marginal design. *Scandinavian Journal of Statistics*, 51(2), 861–890. doi:10.1111/sjos.12703.
- [2] Ren, Z., **Zhao, Z.**, Cowan, A., Ma, W., Xie, E., & Shi, Q. Leveraging AI for modeling minimal residual disease and survival outcomes in multiple myeloma. Accepted, *Cancer Research Communications*.

Under Review

- [2] **Zhao, Z.**, Ren, Z., Zhai, G., Hu, F., Ma, W., Xie, E., & Shi, Q. SynthIPD: Assumption-lean synthetic individual patient data generation. Major Revision at *Journal of the American Statistical Association*.
- [3] **Zhao, Z.** & Hu, F. Discretization in covariate-adaptive clinical trials: gains and losses. Major revision at *Journal of the American Statistical Association*.
- [4] Ren, Z., **Zhao, Z.**, Li, Q., Wu, Y., Wang, L., Luo, R., Xu, Y., Guo, Q., Shi, J., Xie, E., Hu, F., & Shi, Q. Systematic literature review with two multi-agentic systems and human-in-the-loop Submitted to *Research evidence synthesis*.

WORK IN PROGRESS

- [1] Average treatment effect estimation under covariate-adaptive designs for time-to-event data
- [2] Hybrid adaptive designs

AWARDS

- Cornfield Award for Outstanding Qualifying Exam Achievement 2025
- Cornfield Student Travel Award 2025

INDUSTRY EXPERIENCE

HopeAI, Inc. — Statistician Lead

May–Aug 2024; May–Aug 2025

1. **Longitudinal biomarker analysis (Infectis – IFB-088)**. Conducted longitudinal data analysis for a Phase IIb amyotrophic lateral sclerosis trial; investigated covariate imbalance and addressed missingness via mixed models for repeated measures and multiple imputation.

2. **Evidence-based benchmarking (Debiopharm – Debio-0123, ovarian cancer).** Performed evidence synthesis and competitive landscape assessment for a selective WEE1 inhibitor (zedoresertib) in relapsed ovarian cancer; screened RCTs and conference data (2000–2025), digitized Kaplan–Meier curves, and extracted design-relevant parameters.
3. **Phase IIb trial design (Remiges Venture, biliary tract cancer).** Participated in protocol design through simulation studies, protocol synopsis drafting, and SAP preparation; the adopted design was a one-interim promising zone design with sample-size re-estimation.
4. **Project leadership: SynthIPD.** Proposed the SynthIPD algorithm for reconstructing individual patient data from published Kaplan–Meier curves; the project resulted in a paper submitted to JASA.
5. **Project leadership: Systematic literature review (Bristol Myers Squibb).** Led AI-assisted systematic reviews across four indications (NSCLC, CRC, TNBC, GBM), processing up to $\sim 5,000$ NCT IDs per indication within two-week cycles.
6. **Project leadership: Pure Evidence platform.** Co-developed agentic clinical-trial extraction workflows (retrieval, screening, data QC, structured endpoint capture) for the Pure Evidence platform.

PROFESSIONAL SERVICE

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| • Summer Research Mentor of two Bachelor students in Statistics | 2026.5–2026.9 |
| • Referee, <i>Journal of the American Statistical Association</i> ; <i>Statistica Sinica</i> | 2025–Present |
| • Ph.D. Student Committee Chair, George Washington University | 2024–Present |
| • Research Assistant, George Washington University | 2023–Present |
| • Teaching Assistant, George Washington University (STAT 1053) | 2023–Present |
| • Research Assistant, Queen’s University | 2021–2023 |
| • Teaching Assistant, Queen’s University (STAT 268, MATH 110, STAT 486) | 2021–2022 |

SELECTED PROJECTS

- **Optimal sepsis treatment via deep reinforcement learning.** Applied online deep RL to recommend sepsis treatments; used SHAP values for model interpretability.
- **Adaptive randomization from a contextual bandit perspective.** Proposed an offline RL framework to leverage historical trial data for guiding new clinical trial randomization.
- **Double/debiased machine learning for causal parameters.** Studied Neyman orthogonality and $\sqrt{n}$ -consistent estimation in high-dimensional causal inference.
- **Semiparametric methods in ovarian cancer treatment effectiveness.** Analyzed survival data using accelerated failure time and Cox proportional hazard models; assessed fit via residual diagnostics.

TECHNICAL SKILLS

Proficient in R, SAS, Python, and $\text{\LaTeX}$; experienced in statistical modeling, simulation, and computational methods.