

# Qijia He

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## RESEARCH INTERESTS

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Causal inference, Data-driven decision making, Machine learning, A/B testing

## EDUCATION

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**University of Washington**  
*Ph.D. in Statistics*

**Seattle, WA**  
2027 (expected)

**University of Washington**  
*M.S. in Statistics*

**Seattle, WA**  
2023

**Sun Yat-sen University**  
*B.S. in Statistics*

**Guangzhou, China**  
2021

## PUBLICATIONS

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### ◇ Journals:

- **Qijia He**, Fei Gao, Oliver Dukes, Sinead Delany-Moretlwe, and Bo Zhang. *Generalizing the Intention-to-Treat Effect of an Active Control from Historical Placebo-Controlled Trials: A Case Study of the Efficacy of Daily Oral TDF/FTC in the HPTN 084 Study*. **Journal of the American Statistical Association**, 2024. [\[PDF\]](#)
- **Qijia He**, Shixiao Zhang, Michael L LeBlanc, and Yingqi Zhao. *Estimating individualized treatment rules by optimizing the adjusted probability of a longer survival*. **Statistical Methods in Medical Research**, 2024. [\[PDF\]](#)
- Ting Ye, **Qijia He**, Shuxiao Chen, and Bo Zhang. *The role of placebo samples in observational studies*. Under review by **Journal of Causal Inference**.

### ◇ Book Chapters:

- **Qijia He**, and Yingqi Zhao. *Statistical Learning Methods for Estimating Optimal Individualized Treatment Rules from Observational Data*. In: Bibhas Chakraborty, Erica EM Moodie, Eric Laber, Tony Cai, Mark van der Laan, editors. **Handbook of Statistical Methods for Precision Medicine**. Under review.
- Yan Zeng, **Qijia He**, et al. **Research on the Development Trend and Social Effect of Digital Economy** (In Chinese). *China Social Sciences Press*, 2021. [\[Link\]](#)

## RESEARCH EXPERIENCE

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**University Of Washington**  
*Advised by Prof. Alex Luedtke*

**Seattle, WA**  
Sep. 2023-Present

### ◇ Variable importance for heterogeneous treatment effects under two-stage sampling design

- Created an inferential framework to assess variable importance in heterogeneous treatment effects under two-stage sampling design
- Leveraged semiparametric theory to ensure validity when applying machine learning algorithms

**Fred Hutchinson Cancer Research Center**

*Advised by Prof. Bo Zhang and Prof. Yingqi Zhao*

**Seattle, WA**  
Aug. 2021-Present

### ◇ Generalizability and transportability in causal inference

- Developed a novel causal inference framework to estimate treatment effects of the active control using historical placebo-controlled trial data
- Derived historical-data-driven estimates under point/partial identification, with strategies for sensitivity analysis

### ◇ Causal mediation analysis for surrogate endpoint evaluation

- Developed two weighted controlled risk parameters to address violations of the positivity assumption
- Derived efficient influence function estimators for the proposed weighted estimators, ensuring multiple robustness

### ◇ Validating individualized treatment rules (ITRs) using post-randomization events for HIV prevention

- Developed an individualized treatment recommendation system to optimize HIV acquisition outcome in resource-limited settings
- Developed a real-time drug recommendation score to support physicians' decisions based on patient risk factors

### ◇ Optimal adjusted probability learning for individualized treatment rules (ITRs) with censored data

- Proposed a new criterion to construct ITRs, enhancing clinical benefit interpretation for clinicians and patients
- Developed "optimal adjusted probability learning" method to construct optimal ITRs by maximizing a nonparametric estimator of the criterion.

**Sun Yat-sen University**

*Advised by Prof. Jia Li*

**Guangzhou, China**

*Mar. 2020-Aug. 2020*

◇ Semi-supervised learning with label noise

- Reformed KNN to build the regularization model with weighted quadratic loss function and gradient descent
- Designed a four-stage semi-supervised algorithm based on KNN and SVM that includes denoising, initialization, updating, and cross prediction

## PRESENTATIONS

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### **Generalizing the Intention-to-Treat Effect of an Active Control from Historical Placebo-Controlled Trials**

- The Translational Data Science Integrated Research Center Retreat, Poster Presentation. Kirkland, WA, 2023.
- 20th Annual STI & HIV Research Symposium, Poster Presentation. Seattle, WA, 2023.
- American Causal Inference Conference, Poster Presentation. Seattle, WA, 2024
- Joint Statistical Meetings, Poster Presentation. Portland, OR, 2024.

## TEACHING AND TUTORING EXPERIENCE

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### **Department of Statistics, University of Washington**

- Teaching Assistant in STAT 311 Elements of Statistical Methods (Winter 2024)

### **Academic tutoring center, School of Mathematics, Sun Yat-sen University**

- Tutor in Mathematical analysis (Fall 2018)

### **TAL Education Group**

- Teaching Assistant in primary-school Olympiad Mathematics (2017-2018)

## SKILLS

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Python, R, SQL, MATLAB, C++, Latex