# Yuzi Zhang

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## Research Interests

**Statistical Methodology**: environmental epidemiology, capture-recapture methods for disease surveillance, Bayesian methods, spatial-temporal modeling.

**Applications**: infectious disease, Alzheimer's disease, preterm birth.

## Education

**Emory University** — Atlanta, GA
*Ph.D., Biostatistics* — 08/2018 - 07/2023
- Advisors: Howard H. Chang and Robert H. Lyles
- Dissertation: Statistical Methods for Disease Surveillance Based on Multiple Data Streams

**Emory University** — Atlanta, GA
*MSPH, Biostatistics* — 08/2016 - 05/2018

**China Pharmaceutical University** — Nanjing, China
*B.E., Biopharmaceutical Technology* — 09/2012 - 06/2016

## Professional Experience

**Division of Biostatistics College of Public Health, The Ohio State University** — Columbus, OH
*Assistant Professor* — 08/2024 - Present

**Department of Biostatistics and Bioinformatics, Emory University** — Atlanta, GA
*Postdoctoral Research Fellow* — 08/2023 - 08/2024
- Advisors: Howard H. Chang and Robert H. Lyles
- High-dimensional mediation analysis, statistical methods for disease surveillance.

## Publications

### *Statistical Methodology*

1. **Zhang Y**, Warren JL, Hao H, Chang HH (2025). Time-to-event analysis of preterm birth accounting for gestational age uncertainties. *The Annals of Applied Statistics*, 19(3), 2155-2170, DOI: 10.1214/25-AOAS2040.
2. **Zhang Y**, Lyles RH (2025). New capture-recapture models of behavioral response for estimating the size of a closed animal population. *Journal of Agricultural, Biological and Environmental Statistics*, 1-18, DOI: 10.1007/s13253-025-00701-w
3. **Zhang Y**, Ge L, Waller LA, Shah S, Lyles RH (2024). A capture-recapture modeling framework emphasizing prior information in disease surveillance. *Statistical Methods in Medical Research*, 33(7), 1197-1210, DOI: 10.1177/09622802241254217.
   ★ This work was recognized with an ENAR Distinguished Student Paper Award for the 2024 Spring Meeting.
4. **Zhang Y**, Chang HH, Warren JL, Ebelt ST (2024). A scalar-on-quantile function approach for estimating short-term health effects of environmental exposures. *Biometrics*, 80(1), ujae008, DOI: 10.1093/biomtc/ujae008. (Associated R pacakge `nbRegQF` is available on GitHub)
   ★ This work was recognized with a Young Investigator Award from the Section on Statistics in Epidemiology at the JSM 2023.
5. Lu J*, **Zhang Y***, Cui Y, Peng L, Chen Z (2024). A novel phase II hybrid design to minimize trial duration and improve the success rate of follow-up phase III trial. *Journal of Applied Statistics*, 1–17, DOI: 10.1080/02664763.2024.2382135.
6. Ge L, **Zhang Y**, Waller LA, Lyles RH. Utilizing a capture-recapture strategy to accelerate infectious disease surveillance. *The Annals of Applied Statistics*, 18(4):3130-45, DOI: 10.1214/24-AOAS1927.
7. Lyles RH, **Zhang Y**, Ge L, Waller LA (2024). A design and analytic strategy for monitoring disease positivity and case characteristics in accessible closed populations. *American Journal of Epidemiology*, 193(1), 193-202, DOI: 10.1093/aje/kwad177.
8. Ge L, **Zhang Y**, Waller LA, Lyles RH (2024). Enhanced inference for finite population sampling-based prevalence estimation with misclassification errors. *The American Statistician*, 78(2), 192–198, DOI: 10.1080/00031305.2023.2250401.
9. **Zhang Y**, Ge L, Waller LA, Lyles RH (2023). On some pitfalls of log-linear modeling framework for capture-recapture studies in disease surveillance. *Epidemiologic Methods*, 12(1), 20230019, DOI: 10.1515/em-2023-0019.
10. **Zhang Y**, Chen J, Ge L, Williamson JM, Waller LA, Lyles RH (2023). Sensitivity and uncertainty analysis for capture-recapture methods in disease surveillance. *Epidemiology*, 34(4), 601-610, DOI: 10.1097/EDE.0000000000001614.

11. Ge L, **Zhang Y**, Lash TL, Ward KC, Waller LA, Lyles RH (2023). Tailoring capture-recapture methods to estimate registry-based case counts based on error-prone diagnostic signals. *Statistics in Medicine*, 42(17), 2928-2943, DOI: 10.1002/sim.9759.
12. **Zhang Y**, Chang HH, Cheng Q, Collender PA, Li T, He J, Remais JV (2023). A hierarchical model for analyzing multisite individual-level disease surveillance data from multiple systems. *Biometrics*, 79(2), 1507-1519, DOI: 10.1111/biom.13647.
13. Lyles RH, **Zhang Y**, Ge L, England C, Ward K, Lash TL, Waller LA (2022). Using Capture–Recapture Methodology to Enhance Precision of Representative Sampling-Based Case Count Estimates. *Journal of Survey Statistics and Methodology*, 10(5), 1292-1318, DOI: 10.1093/jssam/smab052.
14. **Zhang Y**, Kutner M, Chen Z (2021). Adaptive Bayesian phase I clinical trial designs for estimating the maximum tolerated doses for two drugs while fully utilizing all toxicity information. *Biometrical Journal*, 63(7), 1476-1492, DOI: 10.1002/bimj.202000142.

### *Applications*

1. **Zhang Y**, Chang HH, Iuliano AD, Reed C (2024). A Bayesian spatial-temporal varying coefficients model for estimating excess deaths associated with respiratory infections. *Journal of the Royal Statistical Society Series A: Statistics in Society*, 2024 Aug 19:qnae079, DOI: 10.1093/jrsssa/qnae079 (Associated R pacakge `NBRegAD` is available on GitHub)
2. Mehta P, Raymond J, **Zhang Y**, Punjani R, Han M, Larson T, Muravov O, Lyles RH, Horton DK (2023). Prevalence of amyotrophic lateral sclerosis in the United States, 2018. *Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration*, 24(7-8), 702-708, DOI: 10.1080/21678421.2023.2245858.
3. **Zhang Y**, Ebelt ST, Shi L, Scovronick NC, D'Souza RR, Steenland K, Chang HH (2023). Short-term associations between warm-season ambient temperature and emergency department visits for Alzheimer's disease and related dementia in five US states. *Environmental Research*, 220, 115176, DOI: 10.1016/j.envres.2022.115176.
4. **Zhang Y**, Chang HH, Iuliano AD, Reed C (2022). Application of Bayesian spatial-temporal models for estimating unrecognized COVID-19 deaths in the United States. *Spatial Statistics*, 50, 100584, DOI: 10.1016/j.spasta.2021.100584.
5. Cheng Q, Collender PA, Heaney AK, McLoughlin A, Yang Y, **Zhang Y**, Head JR, Dasan R, Liang S, Lv Q, Liu Y (2022). Optimizing laboratory-based surveillance networks for monitoring multi-genotype or multi-serotype infections. *PLoS computational biology*, 18(9):e1010575, DOI: 10.1371/journal.pcbi.1010575.
6. Bidot S, Monsrud A, Kline M, Speak A, Martini D, Bilen MA, Switchenko JM, **Zhang Y**, Gerges AG, Farhat GN, Dent EA, Viraj A, Tinsley ML, Harik LR (2022). Risk stratification of prostatic adenocarcinoma metastatic to the lymph nodes. *Archives of Pathology & Laboratory Medicine*, 146(11), 1345-1352, DOI: 10.5858/arpa.2021-0247-OA.
7. Robinson Jr WE, **Zhang Y**, Chen Z, Calzada O, Churnetski MC, Flowers C, Cohen JB (2017). An investigation of potential prognostic factors in late relapse diffuse large B-Cell lymphoma patients. *Blood*, 130, 5220, DOI: 10.1182/blood.V130.Suppl_1.5220.5220.

## Manuscripts under Review

- **Zhang Y**, Liang D, Tan Y, Dunlop AL, Chang HH. Bayesian high-dimensional biological pathway-guided mediation analysis with application to metabolomics. (Submitted)
- Ge L, **Zhang Y**, Waller LA, Lyles RH. A Capture-recapture approach to enhance treatment effect evaluation in an observational cohort. (Submitted).

## Manuscripts in Preparation

- Doerfler M, Mao W, Ge L, **Zhang Y**, Lash TL, Ward KC, Waller LA, Lyles RH. Refining capture-recapture methods to estimate case counts in a finite population setting. arXiv preprint arXiv:2510.27580. 2025 Oct 31.

## Honors and Awards

- **ENAR Distinguished Student Paper Award**, International Biometric Society Eastern North American Region, 2024
- **Statistics In Epidemiology Young Investigator Award**, Joint Statistical Meetings, 2023
- **The Livingston Fellow Award**, Emory University, 2022
  — Awarded to PhD candidates for strong leadership skills and academic contributions to public health

## Software Developed

- `nbRegQF`: Estimate health effects of environmental exposures accounting for expousre heterogeneity.
  Available on https://github.com/YZHA-yuzi/nbRegQF.
- `NBRegAD`: Estimate excess deaths associated with respiratory infections.
  Available on https://github.com/YZHA-yuzi/NBRegAD.

## Grant Support

**Present Support**

*Refined Capture-Recapture Methods for Surveilling Cancer Recurrence* 09/2024 - 08/2026

Role: **co-Investigator**
Source: NIH/NCI R01 CA266574
MPI: Lyles, Waller

## Presentations

- Oral presentation, Department of Statistics Seminar, Columbus, OH., October, 2025.
  — Bayesian mediation analysis selecting mediation pathways with application to metabolomics.
- Oral presentation, RUC IFS 2025, Beijing, China, July, 2025.
  — Time-to-event analysis of preterm birth accounting for gestational age uncertainties.
- Oral presentation, ICSA 2025, Zhuhai, China, June, 2025.
  — Time-to-event analysis of preterm birth accounting for gestational age uncertainties.
- Oral presentation, Health and Environment Modeling Co-Laboratory Workshop, Columbus, OH., October, 2024.
  — Bayesian mediation analysis selecting mediation pathways with application to metabolomics.
- Oral presentation, ENAR 2024, Baltimore, MD., March, 2024.
  — A capture-recapture modeling framework emphasizing prior information in disease surveillance.
- Oral presentation, JSM 2023, Toronto, Ontario, Canada, August, 2023.
  — A scalar-on-quantile function approach for estimating short-term health effects of environmental exposures.
- Oral presentation, ENAR 2023, Nashville, TN., March, 2023.
  — A scalar-on-quantile function approach for estimating short-term health effects of environmental exposures.
- Oral presentation, GEOMED 2022, Irvine, CA., October, 2022.
  — A scalar-on-quantile function approach for estimating short-term health effects of environmental exposures.
- Oral presentation, ENAR 2022 Spring Meeting, Houston, TX., March, 2022.
  — A hierarchical model for analyzing multisite individual-level disease surveillance data from multiple systems.
- Oral presentation, JSM 2021 Virtual Conference, Online, August, 2021.
  — Sensitivity and uncertainty analysis for capture-recapture methods in disease surveillance.
- Poster, ENAR 2018 Spring Meeting, Atlanta, GA., March, 2018.
  — Adaptive Bayesian phase I clinical trial designs for estimating the maximum tolerated doses for two drugs while fully utilizing all toxicity information.

## Teaching Experience

**Teaching Instructor**

- PUBHBIO 6211: Applied Biostatistics II. 2025 Spring, The Ohio State University.
- PUBHBIO 6250: Regression Methods for the Health Sciences. 2025 Fall, The Ohio State University.

**Teaching Assistant**

- BIOS 500: Biostatistics Methods I - Lecture, Lab. 2017 Fall, Emory University.
- BIOS 520: Clinical Trials. 2019 Spring and 2021 Spring, Emory University.
- BIOS 525: Longitudinal and Multilevel Data Analysis. 2019 Fall and 2020 Fall, Emory University.
- BIOS 544: Introduction to R programming for Non-BIOS students. 2020 Spring, Emory University.

## Editorial Activities

**Reviewer** for *Epidemiology*, *Biometrics*, *Statistics in Medicine*, *BMJ Open*, *Occupational and Environmental Medicine*, *PLOS Neglected Tropical Diseases*, *GeoHealth*, *Journal of Biopharmaceutical Statistics*.

## Skills and Certificates

- **Software Skills**: R, Python, SAS
- **Platform**: Linux-cluster
- **Certification**: SAS Certified Base Programmer