

PhD Candidate, Statistics  
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## EDUCATION

- Ph.D. in Statistics**, *North Carolina State University* 2022–  
• Dissertation:  
– Advisor: Prof. Shu Yang  
• Independent study supervisors: Roland A. Matsouaka, and Larry Han
- Master of Biostatistics**, *Duke University School of Medicine* 2020–2022  
• Thesis: Overlap, inverse probability, and matching weights: what are we weighting for?  
– Advisor: Prof. Roland A. Matsouaka  
– Committee members: Profs. Fan Li (Statistical Science), and Hwanhee Hong
- B.S. in Mathematics and Applied Mathematics**, *Southeast University (China)* 2016–2020

## APPOINTMENTS

- Graduate Consulting Trainee**, *Biodiversity Lab, NC Museum of Natural Sciences* Spring 2024  
**Teaching Assistant**, *Department of Statistics, North Carolina State University* 2022–2023

## RESEARCH AREAS

### Statistical Methodology

Causal inference; Conformal prediction; Missing data analysis; Data integration; Observational studies; Propensity score weighting; Positivity issue; Randomized trials; Covariate adjustment; High dimension issue; Semiparametric efficient estimation; Asymptotic statistics

### Statistical Applications

Ecological modelling; Biodiversity; Animal abundance estimation

## AWARDS & HONORS

2023

- **Student Poster Recognition Award**, ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop

2022

- **Student Poster Prize**, 3rd place of 47, Georgia Statistics Day
- **Outstanding Master's Project Award** (first place of methodology thesis project), Department of Biostatistics & Bioinformatics, Duke University School of Medicine
- **Overall Academic Excellence Award** (based on GPA), Department of Biostatistics & Bioinformatics, Duke University School of Medicine

## RESEARCH PUBLICATIONS

\*: Equal contribution; †: Corresponding author.

### Peer-reviewed Journal Articles

1. Matsouaka RA, **Liu Y**, and Zhou Y (2024). Overlap, matching, or entropy weights: what are we weighting for? *Communications in Statistics - Simulation and Computation*. Forthcoming.

\*Student Poster Recognition Award from ASA BIOP RISW 2023, Student Poster Prize from GSD 2022, and Outstanding Master's Project Award from Duke B&B

2. Matsouaka RA, **Liu Y**, and Zhou Y (2023). Variance estimation for the average treatment effects on the treated and on the controls. *Statistical Methods in Medical Research*, **32**(2):389-403.

### Technical Reports & In-preparation

1. **Liu Y**, Li H, Zhou Y, and Matsouaka RA (2024+). Average treatment effect on the treated, under lack of positivity. Revision submitted to *Statistical Methods in Medical Research*.
2. **Liu Y**, Levis A, Normand S-L, and Han L (2024+). Multi-source conformal inference under distribution shift. Submitted.
3. **Liu Y**<sup>†</sup>, Li H, Matsouaka RA, and Zhou Y (2024+). Locall improved augmented estimation for weighted average treatment effect. Submitted.
4. Liu J, **Liu Y**, Zhou Y, and Matsouaka RA (2024+). Valid and efficient estimation for racial disparity on health care expenditure.
5. Li H\*, **Liu Y**\*, Liu J, Zhou Y, and Matsouaka RA (2024+). Variance estimation for weighted average treatment effect estimators.

## CONFERENCES, SEMINARS & WORKSHOPS

2024

- *International Biometric Society, Eastern North American Region (ENAR) Spring Meeting, Baltimore, MD.* "Average treatment effect on the treated, under lack of positivity." Forthcoming.

2023

- *NCSU Poster Session of Statistics Seminar, Raleigh, NC.* "Overlap, matching, or entropy weights: what are we weighting for?"
- *NCSU CIMA Lab Group Meeting, Raleigh, NC.* "Propensity score weighting under lack of positivity."
- *ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop, Rockville, MD.* "Overlap, matching, or entropy weights: what are we weighting for?" \*Student Poster Recognition Award
- *New England Statistics Symposium (NESS), online.* "Variance estimation for weighted average treatment effect."
- *Duke Industry Statistics Symposium (DISS), online.* "Causal inference on the treated under lack of positivity."

2022

- *Georgia Statistics Day, Athens, GA.* "Overlap, matching, or entropy weights: what are we weighting for?" \*Student Poster Prize
- *New England Statistics Symposium (NESS), online.* "Overlap, matching, or entropy weights: what are we weighting for?"

## TEACHING, MENTORING & SERVICES

### Graduate Teaching Assistant

2023

- ST 370 Probability and Statistics for Engineers, NCSU (90+ enrolled)
- ST 512 Statistical Methods for Researchers II, NCSU (20+ enrolled)
- ST 311 Introduction to Statistics, NCSU (Fall: 150+ enrolled; Summer: 90+ enrolled)

2022

- ST 311 Introduction to Statistics, NCSU (110+ enrolled)

## Independent Study Supervision

2022–2023

- Jiajun Liu (co-supervise with Dr.Roland Matsouaka; first position: PhD student at Duke B&B)
- Dezhao Fu (co-supervise with Dr.Roland Matsouaka; first position: PhD student at GWU B&B)

## ADDITIONAL INFORMATION

### Current Professional Memberships

- Student member, American Statistical Association (ASA)
- Student member, International Biometric Society Eastern North American Region (ENAR)
- Student member, International Chinese Statistical Association (ICSA)
- Student member, New England Statistics Symposium (NESS)

### Skills

- Language: Chinese (Mandarin), English
- Computer: R, SAS, L<sup>A</sup>T<sub>E</sub>X

**Myers-Briggs type indicator:** *Introversion, INtuition, Thinking, and Judging* (INTJ), updated in 2023