

# Yu Gu

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## RESEARCH INTERESTS

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Survival analysis; Non- and semi-parametric inference; Machine learning; Alzheimer's disease; Infectious disease; Cancer.

## EMPLOYMENT

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### The University of Hong Kong

Assistant Professor, Department of Statistics and Actuarial Science

Pokfulam, Hong Kong

2023–

## EDUCATION

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### University of North Carolina at Chapel Hill

Ph.D. in Biostatistics, Gillings School of Global Public Health

Chapel Hill, NC, USA

2018–2023

- Thesis: Statistical Methods for Analyzing Interval-Censored Multi-State Data
- Advisors: Drs. Danyu Lin and Donglin Zeng

### University of Science and Technology of China

B.S. in Statistics, School of the Gifted Young

Hefei, Anhui, China

2014–2018

## HONORS AND AWARDS

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- Barry H. Margolin Dissertation Award, Department of Biostatistics at UNC 2024
- Travel award, ICSA 2023 China Conference 2023
- Harry A. Guess Scholarship, Department of Biostatistics at UNC 2021
- Special Commendation for Doctoral Qualifying Exams, Department of Biostatistics at UNC 2019
- Outstanding Graduate Award, University of Science and Technology of China 2018
- Outstanding Student Award, University of Science and Technology of China 2014–2017

## TEACHING EXPERIENCE

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- **Instructor** Spring 2024  
[STAT3655] Survival Analysis
- **Project Supervisor** Spring & Fall 2024  
[STAT3799] Directed Studies in Statistics

## RESEARCH GRANTS

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**RGC-ECS 27303624**

2025–2027

Joint analysis of interval-censored multi-state data, longitudinal data, and competing risks data

- Role: Principal Investigator
- Amount: HKD 831,657

## PUBLICATIONS

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[\*corresponding author] [#equal contribution] [student coauthor]

### Refereed Journal Publications

1. Shrestha, P., Graff, M., **Gu, Y.**, Wang, Y., Avery, C. L., Ginnis, J., Simancas-Pallares, M. A., Ferreira Zandoná, A. G., Alotaibi, R. N., Orlova, K., Ahn, H. S., Nguyen, K. N., Highland, H. M., Lin, D. Y., Preisser, J. S., Slade, G. D., Marazita, M. L., North, K. E., & Divaris, K. (2024+). Multi-ancestry Genome-Wide Association Study of Early Childhood Caries. *Journal of Dental Research*, accepted.
2. Lin, D. Y., Xu, Y., **Gu, Y.**, Sunny, S. K., Moore, Z., & Zeng, D. (2024). Impact of booster vaccination interval on SARS-CoV-2 infection, hospitalization, and death. *International Journal of Infectious Diseases*, 145, 107084.
3. Lin, D. Y., Wang, J., **Gu, Y.**, & Zeng, D. (2024). Evaluating treatment efficacy in hospitalized COVID-19 patients, with applications to Adaptive COVID-19 Treatment Trials. *Clinical Trials*, 21(4), 500-506.
4. **Gu, Y.**, Zeng, D., Heiss, G., & Lin, D. Y. (2024). Maximum Likelihood Estimation for Semiparametric Regression Models with Interval-Censored Multi-State Data. *Biometrika*, 111(3), 971-988.
5. Lin, D. Y.<sup>#</sup>, Xu, Y.<sup>#</sup>, **Gu, Y.**<sup>#</sup>, Zeng, D., Wheeler, B., Young, H., Moore, Z., & Sunny, S. K. (2023). Effects of COVID-19 vaccination and previous SARS-CoV-2 infection on omicron infection and severe outcomes in children under 12 years of age in the USA: an observational cohort study. *The Lancet Infectious Diseases*, 23(11), 1257-1265.
6. Lin, D. Y., Xu, Y., **Gu, Y.**, Zeng, D., Sunny, S. K., & Moore, Z. (2023). Durability of bivalent boosters against Omicron subvariants. *New England Journal of Medicine*, 388(19), 1818-1820.
7. Lin, D. Y., Xu, Y., **Gu, Y.**, Zeng, D., Wheeler, B., Young, H., Sunny, S. K., & Moore, Z. (2023). Effectiveness of bivalent boosters against severe Omicron infection. *New England Journal of Medicine*, 388(8), 764-766.
8. **Gu, Y.**<sup>\*</sup>, Preisser, J. S., Zeng, D., Shrestha, P., Shah, M., Simancas-Pallares, M. A., Ginnis, J., & Divaris, K. (2022). Partitioning around medoids clustering and random forest classification for GIS-informed imputation of fluoride concentration data. *The Annals of Applied Statistics*, 16(1), 551-572.
9. Lin, D. Y., **Gu, Y.**, Wheeler, B., Young, H., Holloway, S., Sunny, S. K., Moore, Z., & Zeng, D. (2022). Effectiveness of Covid-19 vaccines over a 9-month period in North Carolina. *New England Journal of Medicine*, 386(10), 933-941.
10. Lin, D. Y., **Gu, Y.**, Xu, Y., Wheeler, B., Young, H., Sunny, S. K., Moore, Z., & Zeng, D. (2022). Association of primary and booster vaccination and prior infection with SARS-CoV-2 infection and severe COVID-19 outcomes. *JAMA*, 328(14), 1415–1426.

11. Lin, D. Y., **Gu, Y.**, Xu, Y., Zeng, D., Wheeler, B., Young, H., Sunny, S. K., & Moore, Z. (2022). Effects of vaccination and previous infection on Omicron infections in children. *New England Journal of Medicine*, 387(12), 1141-1143.
12. Lin, D. Y., **Gu, Y.**, Zeng, D., Janes, H. E., & Gilbert, P. B. (2022). Evaluating vaccine efficacy against severe acute respiratory syndrome coronavirus 2 infection. *Clinical Infectious Diseases*, 74(3), 544-552.
13. Lin, D. Y., Zeng, D., **Gu, Y.**, Krause, P. R., & Fleming, T. R. (2022). Reliably Assessing duration of protection for coronavirus disease 2019 vaccines. *The Journal of Infectious Diseases*, 226(11), 1863-1866.
14. Divaris, K., Slade, G. D., Ferreira Zandoná, A. G., Preisser, J. S., Ginnis, J., Simancas-Pallares, M. A., Agler, C. S., Shrestha, P., Karhade, D. S., Ribeiro, A. de A., Cho, H., **Gu, Y.**, Meyer, B. D., Joshi, A. R., Azcarate-Peril, M. A., Basta, P. V., Wu, D., & North, K. E. (2020). Cohort profile: ZOE 2.0—a community-based genetic epidemiologic study of early childhood oral health. *International Journal of Environmental Research and Public Health*, 17(21), 8056.

## Book Chapters

1. **Gu, Y.\***, Divaris, K., & Gansky, S. (2024+). Imputation of Missing Data. In K. Divaris (Ed.). *Oral and Craniofacial Health Research: Principles, Methods and Applications*. Springer. In press.

## Papers Under Review or In Revision

1. **Gu, Y.\***, Zeng, D., & Lin, D. Y. (2024+). Semiparametric Regression Analysis of Interval-Censored Multi-State Data with An Absorbing State. Major revision requested by *Journal of the American Statistical Association*.
2. Simancas-Pallares, M. A., Gormley, A., Shrestha, P., **Gu, Y.**, Cho, H., Spangler, H. D., Burk, Z., Smith, M., Dashper, S., Burgner, D., Ferreira Zandoná, A. G., Ginnis, J., Vann, W. F., Esberg, A., Roach, J., Ribeiro, A. A., Wu, D., Silva, M. J., Holgerson, P. L., Haworth, S., Johansson, I., North, K. E., & Divaris, K. (2024+). Evidence for Clinical Subtypes of Early Childhood Caries.
3. Fang, J., **Gu, Y.**, & Yin, G. (2024+). Pseudo-death: A New Measure to Evaluate Composite Outcomes in Survival Analysis.

## PRESENTATIONS

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1. “Maximum Likelihood Estimation for Semiparametric Regression Models with Interval-Censored Multi-State Data”, EcoSta 2024, Beijing, China, July 2024.
2. “Evaluating Treatment Efficacy in Hospitalized COVID-19 Patients”, IMS-APRM 2024, Melbourne, Australia, January 2024.
3. “Semiparametric Regression Analysis of Interval-Censored Multi-State Data with An Absorbing State”, ICSA 2023 China Conference, Chengdu, China, July 2023.
4. “Maximum Likelihood Estimation for Semiparametric Regression Models with Interval-Censored Multi-State Data”, ENAR 2023 Spring Meeting, Nashville, TN, USA, March 2023.
5. “Semiparametric Regression Analysis of Interval-Censored Multi-State Data with An Absorbing State”, Department of Biostatistics, Columbia University, New York, NY, USA, February 2023.

6. “Semiparametric Regression Analysis of Interval-Censored Multi-State Data with An Absorbing State”, Department of Statistics, University of Pittsburgh, Pittsburgh, PA, USA, February 2023.
7. “Semiparametric Regression Analysis of Interval-Censored Multi-State Data with An Absorbing State”, Department of Biostatistics, University of Michigan, Ann Arbor, MI, USA, February 2023.
8. “Semiparametric Regression Analysis of Interval-Censored Multi-State Data with An Absorbing State”, Department of Statistics, Chinese University of Hong Kong, Hong Kong, December 2022.
9. “Maximum Likelihood Estimation for Semiparametric Regression Models with Interval-Censored Multi-State Data”, UNC Department of Biostatistics, Chapel Hill, NC, USA, November 2022.
10. “Durability of Covid-19 Vaccines”, ICSA Applied Statistics Symposium, Gainesville, FL, USA, June 2022.
11. “Development of a Novel Imputation Method for Missing Fluoride Measurements in a Community-Based Epidemiologic Study”, UNC Adams School of Dentistry, Chapel Hill, NC, USA, February 2019.

## SOFTWARE

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- **DOVE:** Durability of Vaccine Efficacy
  - R package: <https://cran.r-project.org/web/packages/DOVE/index.html>
- **iDOVE:** Durability of Vaccine Efficacy Against SARS-CoV-2 Infection
  - R package: <https://cran.r-project.org/web/packages/iDOVE/index.html>
- **DOVE3:** Durability of Effectiveness of Vaccination and Prior Infection
  - R package: <https://yugu-stat.github.io/software/dove3>
- **COVID:** Assessing Totality of Evidence for COVID-19 Treatment Effects
  - R package & SAS macro: <https://yugu-stat.github.io/software/covid>

## PROFESSIONAL MEMBERSHIPS

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- American Statistical Association (ASA)
- Eastern North American Region (ENAR) of International Biometric Society
- Institute of Mathematical Statistics (IMS)
- International Chinese Statistical Association (ICSA)

## PROFESSIONAL SERVICES

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- Journal referee: *Annals of Applied Statistics*, *Lifetime Data Analysis*, *Statistical Methods in Medical Research*
- Conference service: Organizer of an invited session at ENAR 2025 Spring Meeting
- Department/Faculty service:
  - Member of Organizing Committee, HKU Summer Workshop on Statistics and Data Science, 2024
  - Member of Staff-Student Consultative Committee, 2024
  - Member of Selection Panel, HKU Undergraduate Research Colloquium, 2023

### **Supervisor**

- Jingyi Hu (PhD student, 2024–)
- Chenrui Qi (PhD student, 2024–)
- Ruoxi Lyu (PhD student, 2024–)

### **Thesis Committee Member**

- Dr. Yaxian Chen (Supervisor: Prof. Eddy K.F. Lam)
- Dr. Anqi Wang (Supervisor: Prof. Yan Dora Zhang)