Yu Gu

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Research Interests

Survival analysis; Non- and semi-parametric inference; Missing data; Machine learning; Big data; High-dimensional statistics; Alzheimer's disease; Cancer.

Education

University of North Carolina at Chapel Hill — Chapel Hill, NC, USA
Ph.D. in Biostatistics, Gillings School of Global Public Health — Aug. 2018–Aug. 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 — Hefei, Anhui, China
B.S. in Statistics, School of the Gifted Young — Sep. 2014–July 2018

Honors and Awards

- 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

- **Lecturer** — 2021–2022
  [Study Group] Empirical Processes and Semiparametric Inference
- **Teaching Assistant** — Fall 2021
  [BIOS 780] Theory and Methods for Survival Analysis
- **Teaching Assistant** — Fall 2020
  [BIOS 600] Principles of Statistical Inference
- **Grader** — Spring 2020
  [BIOS 761] Advanced Probability and Statistical Inference II

Publications

[*corresponding author] [#equal contribution]

Refereed Journal Publications

1. Lin, D. Y.#, Xu, Y.#, **Gu, Y.#**, 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***. https://doi.org/10.1016/S1473-3099(23)00272-4.

2. 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.

3. 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.

4. **Gu, Y.***, 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.

5. 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.

6. 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.

7. 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.

8. 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.

9. 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.

10. Divaris, K., Slade, G. D., Ferreira Zandona, 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. (2023). Imputation of Missing Data. In K. Divaris (Ed.). *Oral and Craniofacial Health Research: Principles, Methods and Applications*. Springer. In press.

Papers Under Review

1. **Gu, Y.**, Zeng, D., & Lin, D. Y. (2023+). Semiparametric Regression Analysis of Interval-Censored Multi-State Data with An Absorbing State.

2. **Gu, Y.**, Zeng, D., Heiss, G., & Lin, D. Y. (2023+). Maximum Likelihood Estimation for Semiparametric Regression Models with Interval-Censored Multi-State Data. Major revision requested by *Biometrika*. http://arxiv.org/abs/2209.07708.

3. Lin, D. Y., Wang, J., **Gu, Y.**, & Zeng, D. (2023+). Evaluating Treatment Efficacy in Hospitalized Covid-19 Patients.

4. 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. (2023+). Evidence for Clinical Subtypes of Early Childhood Caries.

5. Shrestha, P., Divaris, K., Graff, M., **Gu, Y.**, Wang, Y., Avery, C. L., Ginnis, J., Simancas-Pallares, M. A., Ferreira Zandona, A. G., Ahn, H. S., Lin, D. Y., Preisser, J. S., Slade, G. D., Marazita, M. L., & North, K. E. (2023+). Multi-ancestry Genome-Wide Association Study of Early Childhood Caries.

6. Lin, D. Y., Xu, Y., **Gu, Y.**, et al. (2023+). Impact of Booster Vaccination Interval on SARS-CoV-2 Infection, Hospitalization, and Death. Major revision requested by *The Lancet Public Health*.

Presentations

1. "Semiparametric Regression Analysis of Interval-Censored Multi-State Data with An Absorbing State", ICSA 2023 China Conference, Chengdu, China, July 2023.

2. "Maximum Likelihood Estimation for Semiparametric Regression Models with Interval-Censored Multi-State Data", ENAR 2023 Spring Meeting, Nashville, TN, USA, March 2023.

3. "Semiparametric Regression Analysis of Interval-Censored Multi-State Data with An Absorbing State", Department of Biostatistics, Columbia University, New York, NY, USA, February 2023.

4. "Semiparametric Regression Analysis of Interval-Censored Multi-State Data with An Absorbing State", Department of Statistics, University of Pittsburgh, Pittsburgh, PA, USA, February 2023.

5. "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.

6. "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.

7. "Maximum Likelihood Estimation for Semiparametric Regression Models with Interval-Censored Multi-State Data", UNC Department of Biostatistics, Chapel Hill, NC, USA, November 2022.

8. "Durability of Covid-19 Vaccines", ICSA Applied Statistics Symposium, Gainesville, FL, USA, June 2022.

9. "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

- **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

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

Computing Skills

- Programming languages: C/C++
- Software: R, SAS, MATLAB, Python