

Lauren Diana Liao

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EDUCATION:

Ph.D., Biostatistics, School of Public Health, University of California, Berkeley, August 2021 – *expected* August 2024.

- Dissertation: Causal design and analysis of observational studies and randomized controlled trials.
- Dissertation Committee: Dr. Samuel D. Pimentel (Co-chair), Dr. Alejandro Schuler (Co-chair), Dr. Alan E. Hubbard, Dr. Yeyi Zhu.

M.A., Biostatistics, School of Public Health, University of California, Berkeley, May 2021.

- Thesis: Examining Machine Learning Performances and Interpretability on Gestational Diabetes Mellitus Treatment Modality Prediction
- Thesis Committee: Dr. Alan E. Hubbard (Chair), Dr. Patrick Bradshaw, Dr. Maya Petersen, Dr. Yeyi Zhu.

B.S., Probability and Statistics, Department of Mathematics, University of California, San Diego, June 2019.
Cognitive Science minor. Magna Cum Laude.

SELECTED AWARDS AND FELLOWSHIPS:

- NSF Graduate Research Fellowship (awarded in Biostatistics) 2021-2024
- International Conference of Health Policy Statistics Student Paper Travel Award 2023
- Berkeley Block Grant Award Biostatistics 2020-2021
- NSF Graduate Research Honorable Mention 2019
- Gilman Scholar 2019
- Reach the World Traveler (Wellington, New Zealand) 2019
- Halicioğlu Data Science Institute Undergraduate Fellowship 2018
- Chancellor's Research Excellence Scholarship Trainee (PI: Dr. Bradley Voytek) 2018
- Certificate of Writing Excellence in the Making of the Modern World Program 2018
- Best Poster Award at IEEE MIT Undergraduate Research Technology Conference 2017

RESEARCH PUBLICATIONS:

In Review

Liao, L.D., Zhu, Y., Ngo, A.L., Chehab, R.F., and Pimentel, S.D. (2023+). "Using Joint Variable Importance Plots to Prioritize Variables in Assessing the Impact of Glyburide on Adverse Birth Outcomes." arXiv:2301.09754.

Liao, L.D., Hubbard, A.E., Gutierrez, J.P., Juarez Flores, A., Kikkawa, K., Gupta, R., Yarmolich, Y., de Jesús Ascencio-Montiel, I., and Bertozzi, S.M. (2023+). "Who is most at risk of dying if infected with SARS-CoV-2? A mortality risk factor analysis using machine learning of COVID-19 patients over time in a large Mexican population." medRxiv:2023.01.17.23284684.

Liao, L.D., and Pimentel, S.D. (2023+). "jointVIP: Prioritizing variables in observational study design with joint variable importance plot in R." arXiv:2302.10367.

Peer Reviewed

Liao, L.D., Ferrara, A., Greenberg, M.B., Ngo, A.L., Feng, J., Zhang, Z., Bradshaw, P.T., Hubbard, A.E., and Zhu, Y. (2022). “Development and validation of prediction models for gestational diabetes treatment modality using supervised machine learning: a population-based cohort study.” *BMC medicine*, 20 (1), 307.

Zheng, S., Ngo, A. L., Forman, M. R., Barcellos, A. L., **Liao, L.**, Ferrara, A., and Zhu, Y. (2021). “Associations of household food insufficiency with childhood depression and anxiety: a nationwide cross-sectional study in the USA.” *BMJ open*, 11 (9), e054263.

Greenwald, H.D., Kennedy, L.C., Hinkle, A., Whitney, O.N., Fan, V.B., Crits-Christoph, A., Harris-Lovett, S., Flamholz, A.I., Al-Shayeb, B., **Liao, L.D.**, Beyers, M., Brown, D., Chakrabarti, A.R., Dow, J., Frost, D., Koekemoer, M., Lynch, C., Sarkar, P., White, E., Kantor, R., and Nelson K.L. (2021). “Tools for interpretation of wastewater SARS-CoV-2 temporal and spatial trends demonstrated with data collected in the San Francisco Bay Area.” *Water Research X*, 12, 100111.

Conference Papers

Gao, R., **Liao, L.**, and Voytek, B. (2018). “Spectral Power Variation Separates Oscillatory from Non-Oscillatory Stochastic Neural Dynamics.” *Cognitive Computational Neuroscience (CCN)*, Philadelphia, PA/USA.

Tsai, Y-T. and **Liao, L.D.** (2017). “Fully Convolutional Network (FCN) Model to Extract Clear Speech Signals on Non-stationary Noises of Human Conversations for Cochlear Implants.” *IEEE MIT Undergraduate Research Technology Conference (URTC)*, Cambridge, MA/USA, 1-4.

RESEARCH PRESENTATIONS:

“Transfer Learning with Efficient Estimators to Optimally Leverage Historical Data in Analysis of Randomized Trials.”
 With Hubbard, A.E., and Schuler, A.
 Poster presenter, Joint Statistical Meetings (JSM), Toronto, CDN, August 2023.
 Poster presenter, American Causal Inference Conference (ACIC), Austin, TX, May 2023.
 Lightning talk presenter, Biostatistics End of the Year Lightning Talk Session sponsored by Center for Targeted Machine Learning and Causal Inference (CTML), Berkeley, CA, April 2023.
 Poster presenter, Statistics in the Big Data Era Conference, Berkeley, CA, June 2022.

“Diabetes, Identification of Gestational Diabetes (GDM) Subtypes via Machine Learning and Associations with Perinatal Complications.”
 With Zhu, Y. (Poster presenter), Harvill, R., Greenberg, M.B., Ngo, A.L., Chehab, R.F., and Ferrara, A.
 American Diabetes Association’s 83rd Scientific Sessions, San Diego, CA, June 2023.

“Prioritize Variables with Joint Variable Importance Plots in Observational Study Design.”
 With Zhu, Y., Ngo, A.L., Chehab, R.F., and Pimentel, S.D.
 Presenter, International Conference on Health Policy Statistics (ICHPS), Scottsdale, AZ, January 2023.
 Pimentel, S.D. (Presenter), Royal Statistical Society Conference (RSS), Aberdeen, UK, September 2022.
 Speed session presenter, Joint Statistical Meetings (JSM), Washington D.C., August 2022.
 Poster presenter, American Causal Inference Conference (ACIC), Berkeley, CA, May 2022.
 Presenter, Eastern North American Region International Biometric Society (ENAR), Houston, TX, March 2022.
 Presenter, Causal Inference Reading Group, Berkeley, CA, March 2022.

“Prediction Models for Gestational Diabetes Treatment Modality using Supervised Machine Learning: a Population-based Cohort Study.”
 Presenter (virtual), Dr. Vincent Liu’s Systems Research Initiative research team at Kaiser Permanente Division of Research, September 2022.

“Causal Inference Inspired Variable Importance: a COVID-19 Application in Mexico.”

With Yarmolich, Y., Kikkawa K., Ascencio Montiel, I., Gupta A., Juárez Flores, A., Gutiérrez Reyes, J.P., Hubbard, A.E., and Bertozzi, S.M.

Poster presenter, C3.ai Digital Transformation Institute Annual Research Symposia, Miami Beach, FL, March 2022.

“Predicting Presence from Emotional Experience in Virtual Reality.”

With Grimshaw, G. M. (Poster presenter), Maymon, C., Meier, J., Robinson, K., Blackburne, K., Myles, N., Tooley, M., and Crawford, M.

Annual Meeting of the Association for the Scientific Study of Consciousness (ASSC), London, ON/CDN, June 2019.

“Data Cleaning, Analysis, and Visualization in Python.”

Presenter, Dr. Gina Grimshaw’s Cognitive and Affective Neuroscience Lab, Wellington, WGN/NZ, June 2019.

“Walk the Plank! Fear Induction in Virtual Reality.”

With Maymon, C. (Poster presenter), Meier, J., Robinson, K., Tooley, M., Murphy, J., Crawford, M., and Grimshaw, G. M.

Annual Australasian Society for Experimental Psychology Conference (EPC), Wellington, WGN/NZ, April 2019.

“Detecting Change Points in Electrocardiogram Signals.”

With Abbaspour, R., Hu, K., Kirillov, I., Xia, H., and Zhu, H.

Group presentation, Fields Undergraduate Summer Research Program (FUSRP) Mini Conference, Toronto, ON/CDN, August 2018.

Group presentation, Natural Sciences and Engineering Research Council Undergraduate Student Research Awards Symposium, Toronto, ON/CDN, August 2018.

“Differentiating Noise from Structure in Electrophysiological Power Spectra via the Spectral Coefficient of Variation.”

With Gao, R., and Voytek, B.

Poster presenter, Annual Meeting of the Society for Neuroscience (SfN), Washington D.C., November 2017.

“Preliminary Results in Fully Convolutional Network Model on Non-Stationary Noise.”

Presenter, Dr. Yu Tsao’s Bio-acoustic Signal Processing Lab, Taipei, TWN, September 2017.

“The Fourier Trial: Interim Decisions with a Surrogate Endpoint versus Interim Analysis of the Primary Trial End point.”

With Freed, L., Helman, J., Loucks, K., and Olson, R.

Group presentation, Colorado Summer Institute in Biostatistics (CoSIBS) Symposium, Denver, CO, August 2017.

“Deconstructing Perspectives of Gentrification: Data Analysis between the Relationship of Home Affordability and Crime Rates in Gentrified Neighborhoods.”

With Arevalo, R., Bonsu, A., and Chang, M.

Group presentation, Data Science in Practice Competition, La Jolla, CA, June 2017.

WORKING EXPERIENCE:

D-Lab Consultant, University of California, Berkeley, August 2022-Present.

- Provided coding, research design and analysis support to professors, staff, graduate, and undergraduate students.

Graduate Student Researcher, Center for Targeted Machine Learning and Causal Inference, University of California, Berkeley, August 2021-Present.

- Conducted research with Dr. Alan E. Hubbard and Dr. Alejandro Schuler to develop and apply semi-parametric

causal estimators on complex health problems.

Graduate Student Researcher, Kaiser Permanente Northern California, Division of Research, June 2020-Present.

- Conducted research in collaboration with Dr. Yeyi Zhu's group on multiple projects focusing on health issues impacting pregnant individuals.

TEACHING EXPERIENCE:

Reader, PSYCH 3 Introduction to How the Brain Works, Professor Robin Ball, University of California, Berkeley, Summer 2022.

- Graded and provided feedback on reading assignments.

Graduate student instructor, STAT 158 The Design and Analysis of Experiments, Professor Samuel D. Pimentel, University of California, Berkeley, Spring 2021.

- Virtual instruction upper-division undergraduate course with 38 students
- Facilitated discussion sections twice weekly to cement experimental design and statistical analysis concepts.

Graduate student instructor, STAT 131A Statistical Methods in Data Science, Professor Shobhana Murali Stoyanov, University of California, Berkeley, Fall 2020.

- Virtual instruction upper-division undergraduate course with 41 students
- Taught advance statistical techniques and provided conceptual and R coding support to students.

Graduate student instructor, DATA 8 The Foundations of Data Science, Instructors Philippe Boileau and Anna Nguyen, University of California, Berkeley, Summer 2020.

- Virtual instruction lower-division undergraduate course with over 450 students
- Taught introduction to coding in Python and basic probability and statistical inference.

Graduate student instructor, PBHLTH W241R Statistical Analysis of Categorical Data, Professor Alan Hubbard, University of California, Berkeley, Spring 2020.

- Hybrid instruction graduate course with over 120 students.
- Taught biostatistical concepts on multi-factor population-based cohort and case-control based studies.

Graduate student instructor, PBHLTH 142 Introduction to Probability and Statistics in Biology and Public Health, Professor Corinne Riddell, University of California, Berkeley, Fall 2019.

- In person instruction upper-division undergraduate course with over 250 students, including MPH students.
- Taught coding in R, statistical concepts with biomedical applications.

MENTORSHIP EXPERIENCE:

Statistics Departmental-wide Berkeley Research Mentoring Program, University of California, Berkeley.
Kendall Kikkawa, October 2021–Present.

Statistics Undergraduate Mentorship (SUM) Program, University of California, Berkeley.
Elaine Liang, October 2022–May 2023.
Hanwen Zhu, October 2022–May 2023.
Zixin Li, October 2022–December 2022.
Sharon Hui, October 2020–May 2021.

Biostatistics Peer Mentorship Program, University of California, Berkeley
Joy Nakato, September 2022–May 2023.
Noel Pimentel, September 2021–May 2022.

SERVICE:

Biostatistics Graduate Student Association (BSGSA), University of California, Berkeley.

President August 2022–May 2023.

Vice President August 2021–May 2022.

Biostatistics Diversity, Equity and Inclusion Committee, University of California, Berkeley

Active member June 2020–Present.

Graduate student panelist for high school student outreach event, May 2023.

Asian and Pacific Islander (API) Women’s Circle, University of California, Berkeley

Executive board member August 2022–May 2023.

Graduate Student Lead on the Biostatistics Faculty Search Committee, University of California, Berkeley.

November 2021–March 2022.

Bay Area Scientists in Schools (BASIS) Team Leader.

Visiting presenter (with Aidan McLoughlin) August 2021–March 2022.

Biostatistics Recruitment and Bootcamp Presenter, University of California, Berkeley.

October 2021.

Invited Alumni Panelist.

by University of California, San Diego to share student life experience with prospective students, June 2020.

by Fields Undergraduate Summer Research Program to provide prospective and advice to current program students, August 2021.