CURRICULUM VITAE

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RACHAEL VICTORIA PHILLIPS

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ABOUT

My research integrates causal inference, machine learning, and semiparametric statistics to realistically approximate answers to causal questions with statistical confidence. Motivated by issues arising in healthcare, the projects I have pursued include the development of clinical algorithm frameworks and guidelines; real-world data analysis methodologies for generating and evaluating real-world evidence; and biostatistics graduate-level courses and other educational material for targeted learning and causal inference. Related to this, I am also interested in study design, human-computer interaction, open-source software development, reproducibility, and statistical analysis pre-specification and automation.

EDUCATION

07/2023 **Doctor of Philosophy in Biostatistics**
University of California, Berkeley
Committee: Mark van der Laan, chair; Alan Hubbard, Ziad Obermeyer
Thesis: Targeted Learning in Healthcare: Applications and Guidelines for Real-World Evidence, Personalized Medicine, and Federated Learning

05/2018 **Master of Arts in Biostatistics**
University of California, Berkeley
Committee: Alan Hubbard, chair; Sandrine Dudoit, Martyn Smith, Mark van der Laan
Thesis: Data-adaptive evaluation of pre-processing using ensemble machine learning

12/2015 **Bachelor of Science in Biology, Cum Laude**
Texas Tech University
Minor in Chemistry

12/2015 **Bachelor of Arts in Mathematics, Cum Laude**
Texas Tech University
Minor in Spanish

PRIMARY APPOINTMENT

07/2023 – Present **Senior Data Analyst**
Center for Targeted Machine Learning and Causal Inference (CTML)
University of California, Berkeley

SELECTED EXPERIENCE

08/2022 – Present
Biostatistics Researcher and Software Developer
Center for Targeted Machine Learning and Causal Inference, Novo Nordisk Joint Initiative
Advisors: Maya Petersen and Mark van der Laan
- Designing algorithm for federated learning that integrates ensemble machine learning and semiparametric statistical estimation for causal inference.

01/2019 – Present
Biostatistics Researcher and Software Developer
Bill & Melinda Gates Foundation's Knowledge Integration (Ki) Initiative
Advisors: Alan Hubbard and Mark van der Laan
- Developer of the tlverse, a free and open-source suite for targeted learning, with active contributions to sl3, hal9001 and origami packages, and the tlverse book.

01/2019 – 05/2023
Graduate Student Researcher
University of California, San Francisco
Advisors: Alan Hubbard, Romain Pirracchio, and Mark van der Laan
- Designed online algorithm for real-time personalized blood pressure forecasting in critical care and another algorithm for predicting multiple perioperative events.

05/2022 – 05/2023
Graduate Student Researcher
Massachusetts Institute of Technology (MIT) Laboratory of Computational Physiology
Advisor: Leo Celi
- Investigated racial disparities in critical care management and outcomes for patients admitted to intensive care units with upper gastrointestinal bleeding.

01/2020 – 03/2022
Research and Software Development Consultant
Systems and Platforms R&D at Accenture Labs and University of California, Berkeley
Advisors: Mohamad Nasr-Azadani, Teresa Tung, and Mark van der Laan
- Designed a human-AI interaction suite to facilitate identifiability of causal parameters from data, and targeted machine learning estimation and inference.

10/2019 – 03/2022
Biostatistics and Data Analysis Consultant
United States Food and Drug Administration (FDA) and Putnam Data Sciences
Advisors: Susan Gruber, Hana Lee, and Mark van der Laan
- Conducted a series of data analyses (randomized control trials, real-world data, and simulations), where the challenge of estimating causal effects grows increasingly complex, and compared various estimation strategies, including matching, inverse probability weighting and targeted learning. Contract: 75F40119C10155.

09/2020
Biostatistics and Data Analysis Consultant
AI Therapeutics
- Diligence review of AI-driven drug discovery platform.

06/2017 – 12/2020
Graduate Student Researcher
Superfund Research Program, University of California, Berkeley
Advisors: Alan Hubbard and Martyn Smith
- Collaborated with molecular epidemiologists and physicians at the United States National Cancer Institute to analyze chemical exposure-epigenetic relationships.

AWARDS & HONORS

05/2023 **Chin Long Chiang Award for Excellence in Biostatistics Research**
"For exemplary dissertation research and scholarship"

08/2020 – 12/2021 **Pre-Doctoral Fellowship in Targeted Machine Learning and Causal Inference**
One of two recipients of this fellowship supported by Accenture Labs

05/2019 **Outstanding Graduate Student Instructor Award**
Awarded by UC Berkeley Public Health and GSI Teaching and Resource Center

08/2018 – 08/2019 **Biomedical Big Data Training Program Fellow**
Recipient of the NIH BD2K Training Grant (T32LM012417-03) at UC Berkeley

06/2018 **Bioconductor Conference (BioC) 2018 Travel Award**
Awarded funding from Bioconductor to attend the annual Bioconductor conference

06/2018 **San Francisco Chapter, American Statistical Association (SFASA) Student Travel Award**
Awarded funds to attend the annual Joint Statistical Meetings (JSM) in 2018 by the San Francisco Bay Area Chapter of the American Statistical Association (SFASA)

05/2018 **Conference Travel Scholarships**
Awarded travel funds to attend JSM and BioC in 2018 from UC Berkeley Biostatistics

08/2017 **Instructional Improvement Grant**
Awarded funding by UC Berkeley Center for Teaching and Learning for blended-classroom development project for Prof. Mark van der Laan

08/2016 – 05/2017 **Biostatistics Grant**
Awarded full coverage of the Non-Resident Supplemental Tuition for graduate students attending UC Berkeley

05/2015 **Earl Camp Award Nominee for Outstanding Biology Undergraduate**
One of five recommended by Department of Biology faculty at Texas Tech University

08/2013 – 12/2015 **President's List**
4.0 GPA, Texas Tech University

08/2013 **Study Abroad Competitive Scholarship**
Awarded funding to attend the Texas Tech University Center in Sevilla, Spain

08/2011 – 08/2012 **Dean's List**
Above 3.5 GPA, Texas Tech University

PATENTS

Nasr-Azadani MM, **Phillips RV**, Tung TS, Inventors; Accenture Global Solutions Ltd, Assignee. 2022. *Complex System for End-to-End Causal Inference*. U.S. Patent Application 17/350,840. [Pending]

PUBLICATIONS

Peer-Reviewed Publications

Phillips RV, van der Laan MJ, Lee H, Gruber S. "Practical considerations for specifying a super learner". *International Journal of Epidemiology*. 2023. DOI: 10.1093/ije/dyad023.

Smith MJ, **Phillips RV**, Luque-Fernandez MA, Maringe C. "Application of targeted maximum likelihood estimation in public health and epidemiological studies: a systematic review". *Annals of Epidemiology*. 2023. DOI: 10.1016/j.annepidem.2023.06.004.

Gruber S, **Phillips RV**, Lee H, Concato J, van der Laan MJ. "Evaluating and improving real-world evidence with Targeted Learning". *BMC Medical Research Methodology*. 2023. DOI: 10.1186/s12874-023-01998-2.

Gruber S, **Phillips RV**, Lee H, Ho M, Concato J, van der Laan MJ. "Targeted learning: Toward a Future Informed by Real-World Evidence". *Statistics in Biopharmaceutical Research*. 2023. DOI: 10.1080/19466315.2023.2182356.

Coyle JR & Hejazi NS & Malenica I & **Phillips RV (co-first author, alphabetical order)**, Arnold BF, Mertens A, Benjamin-Chung J, Cai W, Dayal S, Colford Jr JM, Hubbard AE, van der Laan MJ. "Targeting Learning". *Wiley StatsRef: Statistics Reference Online.* 2023. DOI: 10.1002/9781118445112.stat08414.

Malenica I & **Phillips RV (co-first author, alphabetical order)**, Pirracchio R, Chambaz A, Hubbard A, van der Laan MJ. "Personalized online ensemble machine learning with applications for dynamic data streams". *Statistics in Medicine*. 2023. DOI: 10.1002/sim.9655.

Luisa Vissat L, Horvitz N, **Phillips RV**, Miao Z, Mgbara W, You Y, Salter R, Hubbard AE, Getz WM. "A comparison of COVID-19 outbreaks across US Combined Statistical Areas using new methods for estimating R_0 and social distancing behaviour". *Epidemics*. 2022. DOI: 10.1016/j.epidem.2022.100640.

Gruber S, Lee H, **Phillips RV**, Ho M, van der Laan MJ. "Developing a Targeted Learning-Based Statistical Analysis Plan". *Statistics in Biopharmaceutical Research*. 2022. DOI: 10.1080/19466315.2022.2116104.

Phillips RV, Wei L, Cardenas A, Hubbard AE, McHale CM, Zhang L, Vermeulen R, Wei H, Smith MT, Lan Q & Rothman N. "Epigenome-Wide Association Studies of Occupational Exposure to Benzene and Formaldehyde". *Epigenetics*. 2022. DOI: 10.1080/15592294.2022.2115604.

Gruber S, **Phillips RV**, Lee H, van der Laan MJ. "Data-adaptive selection of the truncation level for inverse probability weighted and targeted maximum likelihood estimators of marginal point treatment effects". *American Journal of Epidemiology*. 2022. DOI: 10.1093/aje/kwac087.

Feng J, **Phillips RV**, Malenica I, Bishara A, Hubbard AE, Celi LA, Pirracchio R. "Clinical Artificial Intelligence Quality Improvement (AI-QI): Towards continual monitoring and improvement of artificial intelligence algorithms in healthcare". *npj Digital Medicine*. 2022. DOI: 10.1038/s41746-022-00611-y.

Phillips RV, van der Laan MJ. "Discussion on "Adaptive enrichment designs with a continuous biomarker" by Nigel Stallard". *Biometrics*. 2022. DOI: 10.1111/biom.13640.

Li H, Rosete S, Coyle J, **Phillips RV**, Hejazi NS, Malenica I, Arnold BF, Benjamin-Chung J, Mertens A, Colford Jr JM, van der Laan MJ. "Evaluating Robustness of Targeted Maximum Likelihood Estimators via Realistic Simulations in Nutrition Intervention Trials". *Statistics in Medicine*. 2022. DOI: 10.1002/sim.9348

Van der Laan L, Cardenas A, Vermeulen R, Fadadu RP, Hubbard AE, **Phillips RV**, Zhang L, Breeze C, Hu W, Wen C, Huang Y. "Epigenetic aging biomarkers and occupational exposure to benzene, trichloroethylene and formaldehyde". *Environment International*. 2022. DOI: 10.1016/j.envint.2021.106871.

Legrand M, **Phillips RV**, Malenica I, Eyler L, Fong N, Martinino A, Jimenez CN, Pereira JS, Lefevre B, Kimmoun A, LaFaye B, Bishara A, Hubbard AE, Mallet V & Pirracchio R. "Differences in clinical deterioration among three sub-phenotypes of COVID-19 patients at the time of first positive test: results from a clustering analysis". *Intensive Care Medicine*. 2021. DOI: 10.1007/s00134-020-06236-7.

Castriota F, Zushin PH, Sanchez SS, **Phillips RV**, Hubbard AE, Stahl A, Smith MT, Wang J, La Merrill MA. "Chronic Low-Dose Arsenic Exposure Impairs Adaptive Thermogenesis in Male C57BL/6J Mice". *American Journal of Physiology-Endocrinology and Metabolism*. 2020. DOI: 10.1152/ajpendo.00282.2019.

Phillips RV, Rieswijk L, Hubbard AE, Vermeulen R, Zhang J, Hu W, Li L, Bassig BA, Wong JY, Reiss B, Huang Y. "Human Exposure to Trichloroethylene is Associated with Increased Variability of Blood DNA Methylation that is Enriched in Genes and Pathways Related to Autoimmune Disease and Cancer". *Epigenetics*. 2019. DOI:10.1080/15592294.2019.1633866.

Hejazi NS, **Phillips RV**, Hubbard AE, and van der Laan, MJ. "methyvim: Targeted, Robust, and Model-Free Differential Methylation Analysis in R". *F1000Research*. 2018. DOI: 10.12688/f1000research.16047.1.

Pre-Print Publications

Malenica I & **Phillips RV**, Coyle JR, Pirracchio R, van der Laan MJ. "Multi-task Highly Adaptive Lasso". *arXiv preprint*. 2023. DOI: 10.48550/arXiv.2301.12029.

Butzin-Dozier Z, Ji Y, Li H, Coyle J, Shi J, **Philips RV**, Mertens A, Pirracchio R, van der Laan MJ, Patel R, Colford Jr JM. "Predicting Long COVID in the National COVID Cohort Collaborative Using Super Learner". *MedRxiv*. 2023. DOI: 10.1101/2023.07.27.23293272.

Books & Book Chapters

Gruber S, Lee H, **Phillips RV**, van der Laan MJ. "Causal inference with Targeted Learning for Producing and Evaluating Real-World Evidence" in *Practical Considerations for Translating Real-World Data into Real-World Evidence for Regulatory Decisions*, pp. 125–143. Springer International Publishing, 2023.

van der Laan NJ, Coyle JR, Hejazi NS, Malenica I, **Phillips RV**, Hubbard AE. *Targeted Learning in R: A Causal Data Science Handbook*. To be published by CRC Press. Available: https://tlverse.org/tlverse-handbook. [In preparation]

Phillips RV. "Super Learning" in *Targeted Learning in R: A Causal Data Science Handbook*. To be published by CRC Press. Available: https://tlverse.org/tlverse-handbook/sl3.html. [In preparation]

OPEN-SOURCE SOFTWARE

Coyle JR, **Phillips RV**, Hejazi NS, Malenica I, and Sofrygin O, van der Laan MJ. sl3: Super Machine Learning with pipelines, version 1.4.4, R package. DOI: 10.5281/zenodo.1342293. Available on GitHub: https://github.com/tlverse/sl3

Coyle JR, Hejazi NS, **Phillips RV**, van der Laan LW, van der Laan MJ. hal9001: The scalable highly adaptive lasso, version 0.4.3, R package. DOI: 10.5281/zenodo.3558313. Available on CRAN and GitHub: https://CRAN.R-project.org/package=hal9001 and https://github.com/tlverse/hal9001

Coyle JR, Hejazi NS, Malenica I, **Phillips RV**, van der Laan MJ. origami: Generalized framework for cross-validation, version 1.0.5, R package. DOI: 10.5281/zenodo.835602. Available on CRAN and GitHub: https://cran.r-project.org/package=origami and https://github.com/tlverse/origami

PRESENTATIONS

Invited Presentations

Phillips RV, Reluga K, van der Laan MJ. "Federated Targeted Learning". Joint Initiative for Causal Inference (JICI) Meeting in Copenhagen, DK. September 2023.

Phillips RV, Reluga K, van der Laan MJ. "Federated Targeted Learning and Causal Inference in Practice". Broad Institute Clinical Trial Lab Meeting. [Virtual]. July 2023.

Phillips RV, van der Laan MJ. "Advancing Regulatory Decision Making with Targeted Learning". Laboratory of Computational Physiology at Harvard-MIT Division of Health Sciences and Technology. [Virtual]. April 2022.

Phillips RV, van der Laan MJ. "Targeted Learning: the bridge from machine learning to statistical and causal inference". University of Pavoda Winter School. [Virtual]. January 2022.

Phillips RV, Gruber S, van der Laan MJ. "Practical Considerations for Specifying a Super Learner". The Putnam Data Sciences Targeted Learning Webinar Series. May 2021. Available on YouTube: https://www.youtube.com/watch?v=WYnjja8DKPg.

Phillips RV, van der Laan MJ. "Targeted Learning: Causal Inference with Real-World Data". ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop. [Virtual]. September 2020.

Phillips RV, Malenica I, van der Laan MJ. "Intelligence Augmentation in Critical Care with Personalized Online Super Learner". Joint Statistical Meetings (JSM). [Virtual]. August 2020.

Phillips RV, Chehab L, Araujo A, Sammann A. "Using Human-Centered Design and Predictive Analytics to Reduce No-Shows". UC San Francisco Sharecase in San Francisco, CA, USA. October 2019.

Contributed Conference Presentations & Posters

Phillips RV, van der Laan MJ. "Federated Targeted Learning". American Causal Inference Conference (ACIC) in Austin, TX, USA. May 2023.

Phillips RV, Smith MT, Lan Q, Vermeulen R, Zhang L, Yin SN, Li GL, Rothman N, Rappaport SM, Hubbard AE, Cardenas A. Benzene Exposure in Humans Associates with Blood DNA Hypermethylation of HOXA5 and NFIB. NIEHS Superfund Research Program (SRP) Meeting in Seattle, WA, USA. November 2019.

Phillips RV, Hubbard AE. "Data-Adaptive Evaluation of Preprocessing Methods using Machine Learning". Joint Statistical Meetings (JSM) in Vancouver, BC, CAN. August 2018.

Phillips RV, Hubbard AE. "Data-Adaptive Evaluation of Preprocessing Methods using Machine Learning". BioC 2018: Where Software and Biology Connect, Bioconductor in Toronto, ON, CAN. July 2018.

Phillips RV, Hubbard AE. Data-Adaptive Evaluation of Preprocessing Methods using Machine Learning. 2018 UC Berkeley Superfund Research Program (SRP) Meeting in Seattle, WA, USA. January 2018.

WORKSHOPS & SHORT COURSES

Targeted Learning Software (tlverse) Workshops & Short Courses

Jointly with Jeremy Coyle, Ivana Malenica, Nima Hejazi, Alan Hubbard, and Mark van der Laan:

- "Targeted Learning in the tlverse: Techniques and Tools for Causal Machine Learning". Full-day workshop at the Eastern North American Region of the International Biometric Society (ENAR) Meeting in Baltimore, MD, USA. [***Upcoming March 2024***]
- "Targeted Learning in the tlverse: Techniques and Tools for Causal Machine Learning". Full-day workshop at Joint Statistical Meetings (JSM) in Toronto, ON, CAN. August 2023. Materials: https://tlverse.org/jsm2023-workshop.
- "Targeted Learning: Advanced Methods for Causal Machine Learning". Full-day workshop at the Eastern North American Region of the International Biometric Society (ENAR) Meeting in Nashville, TN, USA. March 2023. Materials: https://tlverse.org/enar2023-workshop.
- "Targeted Learning I and II: Causal Inference Meets Machine Learning and Advanced Applications of Causal Inference". Full-day workshop at the Society for Epidemiologic Research (SER) Meeting in Chicago, IL, USA. June 2022. Materials: https://tlverse.org/ser2022-workshop.
- "Targeted Machine Learning of the Causal Effects of Dynamic and Shift Interventions with the tlverse R Packages". Full-day workshop at the American Causal Inference Conference (ACIC) in Berkeley, CA, USA. May 2022. Materials: https://tlverse.org/acic2022-adv-workshop.
- "Targeted Machine Learning with Big Data in the tlverse". Four-day short course for the Public Health and Epidemiology Program (PASPE) at the National Institute of Public Health in Mexico. [Virtual due to COVID-19]. August 2021. Materials: https://tlverse.org/tmlcimx2021-workshop.
- "Targeted Learning in the tlverse: Causal Inference Meets Machine Learning". Half-day short course at the Society for Epidemiologic Research (SER) Meeting in Philadelphia, PA, USA. [Virtual due to COVID-19]. June 2021. Materials: https://tlverse.org/ser2021-workshop.
- "Targeted Learning in the tlverse: Causal Inference Meets Machine Learning". Full-day workshop at the Eastern North American Region of the International Biometric Society (ENAR) Meeting in Baltimore, MD, USA. [Virtual]. March 2021. Materials: https://tlverse.org/enar2021-workshop.
- "Targeted Learning with the tlverse Software Ecosystem". Full-day workshop at the Conference on Statistical Practice (CSP) in Sacramento, CA, USA. February 2020. Materials: https://tlverse.org/csp2020-workshop.
- "Targeted Learning with the tlverse Software Ecosystem". Jointly with Jeremy R. Coyle, Ivana Malenica, Nima Hejazi, Alan E. Hubbard, and Mark van der Laan. Half-day short course at the Bill and Melinda Gates Foundation in Seattle, WA, USA. November 2019. Materials: https://tlverse.org/gates2019-workshop.
- "The tlverse Software Ecosystem for Causal Inference". Jointly with Jeremy R. Coyle, Ivana Malenica, Nima Hejazi, Alan E. Hubbard, and Mark van der Laan. Full-day workshop at the American Causal Inference Conference (ACIC) in Montreal, QC, CAN. May 2019. Materials: https://tlverse.org/acic2019-workshop.

Additional Workshops & Short Courses

- "Unlocking the Mysteries of Mixed Exposures: Targeted Learning for Robust Discovery and Causal Inference in Epidemiology". Jointly with Alan Hubbard, David McCoy, Alejandro Schuler, and Mark van der Laan. Half-day workshop at the Society for Epidemiologic Research (SER) Meeting in Austin, TX, USA. [***Upcoming June 2024***]
- "Large Language Models and Causal Inference". Jointly with Ahmed Aala. Working group at the Forum on the Integration of Observational and Randomized Data (FIORD) workshop in Washington, DC, USA. [***Upcoming November 2023***]
- "Federated Learning: Overview, Limitations and Next Steps". Working group at the Joint Initiative for Causal Inference (JICI) Meeting in Copenhagen, DK. September 2023.
- "Federated Targeted Learning". Jointly with Mark van der Laan. Working group at the Joint Initiative for Causal Inference (JICI) Meeting in Berkeley, CA, USA. September 2022.
- "Causal Machine Learning". Jointly with Karla Diaz-Ordaz, Stijn Vansteelandt, Oliver Dukes, and Mark van der Laan. Full-day masterclass at The Alan Turing Institute in collaboration with the Centre for Statistical Methodology and the London School of Hygiene and Tropical Medicine (LSHTM) in London, UK. March 2020.
- "Targeted Learning in Data Science: Causal Inference for Observational and Experimental Data". Jointly with Mark van der Laan. Half-day workshop and Two-day short course at the Deming Conference on Applied Statistics in Atlantic City, NJ, USA. December 2019. Materials: https://tlverse.org/deming2019-workshop.

United States Food and Drug Administration (FDA) Course

Week-long course on Targeted Learning for Causal Effect Estimation using Real-World Data. [Virtual]. March 2022. Jointly with Susan Gruber, Hana Lee, and Mark van der Laan:

- "Targeted Learning in Generating and Evaluating Real-World Evidence (RWE) - The central role of the Targeted Learning Roadmap"
- "Targeted Learning Perspective on Devising and Evaluating a Statistical Analysis Plan"
- "Practicum on causal effect estimation using TMLE and Super Learner"

GRADUATE COURSE DEVELOPMENT

03/2020 – 05/2020 **Targeted Learning Course Series**
School of Public Health, University of California, Berkeley
- Designed a two-course series, "Targeted Learning" and "Targeted Learning in Practice", which introduces targeted learning software and real-world applications.

05/2019 – 12/2020 **Statistical Analysis of Categorical Data**
School of Public Health, University of California, Berkeley
- Collaborated with digital pedagogy staff and administration to transition online.

06/2017 – 12/2018 **Biostatistical Methods Courses**
Division of Biostatistics and Department of Statistics, University of California, Berkeley
- Led video production and editing of lectures on targeted learning, and received grant to support blended-classroom transition for core biostatistical methods courses.

UNIVERSITY TEACHING ASSISTANTSHIPS

01/2022 – 05/2022 **Graduate Student Instructor – Targeted Learning in Practice**
School of Public Health, University of California, Berkeley
- Hosted labs and lectures on targeted learning software in R.

08/2021 – 12/2021 **Graduate Student Instructor – Targeted Learning**
School of Public Health, University of California, Berkeley
- Hosted discussions, labs and lectures to (i) provide students with an intuitive understanding of the practical advantages of targeted learning and (ii) introduce an student-selected applications, such as network analysis and optimal treatments.

08/2019 – 12/2020 **Graduate Student Instructor – Survival Analysis and Causality**
Division of Biostatistics and Department of Statistics, University of California, Berkeley
- Hosted discussion and computer labs to provide students with an understanding of, and computational tools for, time-to-event / survival time data analyses.

01/2019 – 05/2019 **Graduate Student Instructor – Targeted Learning with Biomedical Big Data**
Division of Biostatistics, University of California, Berkeley
- Hosted computer labs and an interview series that featured targeted learning practitioners to provide students with software and real-world insight.

08/2018 – 12/2018 **Graduate Student Instructor – Advanced Topics in Causal Inference**
School of Public Health, University of California, Berkeley
- Hosted computer labs and discussions covering longitudinal causal inference and statistical estimation, mediation, community-based and dynamic interventions.

08/2016 – 05/2017 **Graduate Student Instructor – Introduction to Probability and Statistics**
School of Public Health, University of California, Berkeley
- Hosted labs and discussions on statistical interpretation, probability models, and data analysis with Stata statistical software.

01/2015 – 12/2015 **Supplemental Instructor – Cell Biology**
Department of Biology, Texas Tech University
- Designed lectures and reviews for this flipped upper-level undergraduate course.

08/2012 – 12/2012 **Supplemental Instructor – General Chemistry I**
Department of Chemistry, Texas Tech University
- Hosted and designed material for twice-weekly lecture and test review sessions.

GRADUATE UNIVERSITY SERVICE

08/2021 – 03/2022 **Student Representative on Biostatistics Faculty Search Committee**
Faculty and student appointed voting member of tenure-track faculty search committee

08/2018 – 12/2020 **Superfund Research Program Trainee Chair**
Two-year leadership term supporting UC Berkeley Superfund Research Program trainees

08/2018 – 12/2020 **Chief Executive Officer**
Biostatistics Graduate Student Association (BSGSA), University of California, Berkeley

08/2017 – 12/2020 **Superfund Research Program Trainee Representative**
Prof. Alan Hubbard Lab, Core E, University of California, Berkeley

08/2017 – 05/2018 **Graduate Assembly Delegate**
Group in Biostatistics, University of California, Berkeley

04/2017 – 04/2018 **Secretary & Representative**
School of Public Health Student Government, University of California, Berkeley

OTHER SERVICE & AFFILIATIONS

Referee: *Nature Communications*, *American Journal of Epidemiology*, *Global Epidemiology*

Professional: Berkeley Institute for Data Science, American Statistical Association, Society for Causal Inference

COMPUTING

Languages: R, LaTeX

Systems: OS X, Linux

Software: Git, Microsoft Office, Camtasia