Catalina Medina

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Research Interests

- Bayesian statistics and epidemiological applications of statistics to better understand disease and infection, especially through collaborations with public health researchers.
- Statistics and data science education research promoting student engagement with open access materials.

Education

PhD, Statistics   Jun. 2025 (Expected)
Co-advised by: Volodymyr Minin and Mine Dogucu
University of California, Irvine

MS, Statistics   Jun. 2021
University of California, Irvine

BS, Mathematics with specialization in Statistics and Minor in Biology   May 2019
University of Nevada, Reno

Teaching Experience

Instructor of Record

UC Irvine - *Designed and taught an introductory five-week course with a teaching assistant.*

- Basic Statistics (Stats 7)   Summer 2022
  40 undergraduate students

University of Nevada, Reno - *Taught two remedial five-week courses without a teaching assistant.*

- Elementary Algebra (Math 95)   Summer 2019
  25 undergraduate students
- Intermediate Algebra (Math 96)   Summer 2019
  25 undergraduate students

Teaching Assistant

UC Irvine - *Responsibilities included preparing and running weekly hour-long discussion/lab sessions and holding office hours, for two sections per class.*

- Introduction to Probability and Statistics I (Stats 120A)   Fall 2022
  43 undergraduate students
- Statistical Methods for Data Analysis I (Stats 110)   Summer 2021
  77 undergraduate and graduate students
- Introduction to Probability and Statistics (Stats 120A)   Summer 2020
  77 undergraduate students
- Introduction to Probability and Statistics for Computer Science (Stats 67)   Spring 2020
  119 undergraduate students
- Statistical Methods for Data Analysis II (Stats 111)   Winter 2020
  99 undergraduate and graduate students
- Introduction to Biological Statistics (Stats 8)   Fall 2019
  88 undergraduate students

Teaching Preparation

- California State University Pre-Professor Program Fellow   Fall 2024
  Graduate Division, UC Irvine

- Preparing for Careers in Teaching Statistics and Data Science Workshop   Summer 2024
  Section on Statistics and Data Science Education, American Statistical Association

- Summer Teaching Apprenticeship Program Fellow   Summer 2022
  Division of Teaching Excellence and Innovation, UC Irvine

Manuscripts

Peer-Reviewed Publications

- Ricci, F., **Medina, C. M**, & Dogucu, M. (2024). Designing and implementing an automated grading workflow for providing personalized feedback to open-ended data science assignments. *Technology Innovations in Statistics Education*, 15(1).

- Parker, D.M., **Medina, C.**, Bohl, J., Lon, C., Chea, S., Lay, S., Kong, D., Nhek, S., Man, S., Doehl, J.S.P., Leang, R., Kry, H., Rekol, H., Oliveira, F., Minin, V.M., Manning, J.E. (2023). Determinants of exposure to Aedes mosquitoes: a comprehensive geospatial analysis in peri-urban Cambodia. *Acta Tropica*, 239, 106829.

- Parker, D.M., Bruckner, T., Vieira, V.M., **Medina, C.**, Minin, V.N., Felgner, P.L., Dratch, A., Zahn, M., Bartell, S.M. and Boden-Albala, B. (2021). Predictors of test positivity, mortality, and seropositivity during the early coronavirus disease epidemic, Orange County, California, USA. *Emerging infectious diseases*, 27(10), 2604.

Under Preparation / Pre-Prints

- **Medina, C. M.**, Palacios, J. A., Minin, V. M. (2024+). Accounting for reporting delays in real-time phylodynamic analyses with preferential sampling. (*Submitted*)

- Dogucu, M., Demirci, S., Bendekgey, H., Ricci F. Z.,& **Medina, C. M.** (2024+). Undergraduate data science education: Who has the microphone and what are they saying? (*In revisions*)

Awards

- Excellence in Research Award   2023
  Latino Excellence and Achievement, Donald Bren School of ICS, UC Irvine

- Conference Travel Award   2022 & 2018
  National Diversity in STEM Conference, Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)

- Outstanding Graduate Teaching Assistant Award   2020
  Department of Statistics, UC Irvine

- Undergraduate Research Award   2019
  University of Nevada, Reno

- Prize for Undergraduate Research in Quantitative Biology (Runner-up)   2018
  NSF-Simons Center for Quantitative Biology, Northwestern University

- Capstone Conference Travel Award   2018
  Mathematical Biosciences Institute, Ohio State University

Conference Presentations

Accounting for Reporting Delays in Real-Time Inference of Infectious Diseases Dynamics Using Pathogen Genetic Sequences

- *SACNAS National Diversity in STEM (NDiSTEM) Conference*   Oct. 2024
  Session: (Bio)statistics: Facilitating biomedical discoveries and public health decision making
  Talk & session organizer, Phoenix, AZ
- *Joint Statistical Meeting (JSM)*   Aug. 2024
  Speed talk & poster presentation, Portland, OR
- *Statistical and Machine Learning Applications in Biomedical Sciences Workshop*   Feb. 2024
  Poster, UC Irvine
- *SACNAS National Diversity in STEM (NDiSTEM) Conference*   Oct. 2022
  Poster, San Juan, Puerto Rico

Automate Your Grading Workflow With gradetools: A Grading Assistant in RStudio

- *Electronic Conference on Teaching Statistics (eCOTS) Regional*   Jun. 2024
  Flash talk, UC Irvine
- *United States Conference on Teaching Statistics (USCOTS)*   Jun. 2023
  Workshop, State College, PA
- *Researchers of Statistics Education (ROSE) Conference*   May 2023
  Invited presentation, online

Building Data Science Education Research Plan for Teacher-Scholars

- *Electronic Conference On Teaching Statistics (eCOTS)*   Jun. 2023
  Breakout session, selected as "hot topic of the day", online

Determinants of Exposure to Aedes Mosquitoes: A Comprehensive Geospatial Analysis in Peri-Urban Cambodia

- *GEOMED: Interdisciplinary Conference on Spatial Statistics, Spatial Epidemiology, and Geographical Aspects of Public Health*   Oct. 2022
  Poster, UC Irvine

Host-Pathogen Dynamics: Quantifying Process-Level Variation Using a System-Specific Dynamical Model in a Non-Linear Mixed Effects Modeling Framework

- *College of Science Poster Session*   Nov. 2018
  Poster, University of Nevada, Reno
- *Conference on Quantitative Approaches in Biology*   Nov. 2018
  Poster, Northwestern University
- *SACNAS National Diversity in STEM (NDiSTEM) Conference*   Oct. 2018
  Poster, San Antonio, TX
- *McNair Symposium*   Aug. 2018
  Talk, University of Nevada, Reno
- *Mathematical Biosciences Institute Capstone Conference*   Aug. 2018
  Poster, Ohio State University
- *National McNair Conference*   Jul. 2018
  Talk, University of California, Los Angeles

Service and Outreach

Departmental Service

- Graduate student representative, UC Irvine Statistics Department   Fall 2021 - Spring 2024
  - Organized and led visitation day for admitted PhD students
  - Founded, organized, and led orientation for first-year graduate students
  - Reported on graduate student matters at weekly faculty meetings

Professional Service

- Panel moderator: What's Next in Four-Year Institutions?   Jun. 2024
  Electronic Conference on Teaching Statistics Regional, UC Irvine
- Panelist: Societal and Ethical Issues in Computational and Informational Sciences   Apr. 2023
  Diverse Educational Community and Doctoral Experience, UC Irvine
- Creator of animated maps to visualize Orange County COVID-19 cases, tests, and percent positivity
  by zip code for the public   2021
  COVID-19 Trends by UC Irvine
- Panelist: Careers for Mathematics, Physics, and Atmospheric Science Majors   Nov. 2020
  First-year seminar, University of Nevada, Reno
- Panelist: Graduate School   Nov. 2020
  Association for Women in Mathematics, University of Nevada, Reno
- Invited presentation: My Early Graduate School Experience and Life at UC Irvine   Dec. 2020
  McNair Scholars University of Nevada, Reno

Mentoring

- Competitive Edge Summer Research Program mentor   Summer 2023
  Graduate Division, UC Irvine
- Mentoring Excellence Certificate   Summer 2023
  Graduate Division, UC Irvine
- First year statistics graduate student mentor   2021 - 2023
  Diverse Educational Community and Doctoral Experience, UC Irvine

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Programs and Professional Membership

- American Statistical Association
- Society for the Advancement of Chinanos/Hispanics and Native Americans in Science (SACNAS)
- 2018-2019 McNair Scholar at University of Nevada, Reno

Software Developed

- `phylodyn2` R package for viral phylodynamic inference with ability to account for reporting delays
  in real-time analyses with preferential sampling.
- `gradetools` R package to help automate grading workflows and facilitate in creating individualized
  assignment feedback for students. (*co-developer*)

Certifications

Summer Institute in Statistics and Modeling in Infectious Diseases, University of Washington

- Certification in Stochastic Epidemic Models with Inference   2021
- Certification in MCMC II for Infectious Diseases   2021
- Certification in Evolutionary Dynamics and Molecular Epidemiology of Viruses   2021