

Catalina Mari Medina

Statistics PhD Candidate
University of California, Irvine
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Education

PhD Statistics

Sep. 2019 - Jun. 2025 [Projected]

University of California, Irvine

Co-advisors: Volodymyr M. Minin and Mine Dogucu

MS Statistics

Sep. 2019 - Jun. 2021

University of California, Irvine

BS Mathematics (specialization in Statistics)

Aug. 2015 - May 2019

Minor in Biology

University of Nevada, Reno

Research Interests

Bayesian statistics and epidemiological applications of statistics to better understand disease and infection. Specifically, my thesis work is centered around improving real-time phylodynamic analysis to account for delays in reporting of sequence data.

Statistics and data science education promoting replicability, open source and open access materials.

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). <http://dx.doi.org/10.5070/T5.1886>

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. <https://doi.org/10.1016/j.actatropica.2023.106829>

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. <https://doi.org/10.3201/eid2710.210103>

Under preparation / Pre-prints

[Submitted] **Medina, C. M.**, Palacios, J. A., Minin, V. M. Accounting for reporting delays in real-time phylodynamic analyses with preferential sampling. <https://arxiv.org/abs/2407.18432>

[In revisions] Dogucu, M., Demirci, S., Bendekgey, H., Ricci F. Z., & **Medina, C. M.** Undergraduate data science education: Who has the microphone and what are they saying? <https://doi.org/10.48550/arXiv.2403.03387>

Teaching Experience

UCI Instructor of Record

Basic Statistics (Stats 7)

Summer 2022

UCI Teaching Assistant

Introduction to Probability and Statistics I (Stats 120A)	Fall 2022
Statistical Methods for Data Analysis I (Stats 110)	Summer 2021
Introduction to Probability and Statistics (Stats 120A)	Summer 2020
Introduction to Probability and Statistics for Computer Science (Stats 67)	Spring 2020
Statistical Methods for Data Analysis II (Stats 111)	Winter 2020
Introduction to Biological Statistics (Stats 8)	Fall 2019

UNR Instructor of Record

Elementary Algebra (Math 95)	Summer 2019
Intermediate Algebra (Math 96)	Summer 2019

Fellowships

2022 Summer Teaching Apprenticeship Program Fellow. UCI Division of Teaching Excellence and Innovation.

2019 UC Irvine Graduate Dean's Recruitment Fellow. UCI Graduate Division.

Awards

2023 Donald Bren School of Information and Computer Sciences Excellence in Research Award at the UCI Latino Excellence and Achievement Awards Dinner.

2022 SACNAS National Diversity in STEM Conference Travel Award.

2020 Outstanding Graduate Teaching Assistant Award. UCI Donald Bren School of Information and Computer Sciences, Department of Statistics.

2019 Nevada Undergraduate Research Award.

2018 Runner Up for the Prize for Undergraduate Research in Quantitative Biology. NSF-Simons Center for Quantitative Biology and Department of Molecular Biosciences, Northwestern University.

2018 SACNAS National Diversity in STEM Conference Travel Award.

2018 Mathematical Biosciences Institute Capstone Conference Travel Award. Ohio State University.

Certifications

2021 Certification in Stochastic Epidemic Models with Inference from University of Washington Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID).

2021 Certification in MCMC II for Infectious Diseases from SISMID.

2021 Certification in Evolutionary Dynamics and Molecular Epidemiology of Viruses from SISMID.

Programs and Professional Membership

American Statistical Association member

Society for the Advancement of Chicanos/Hispanics and Native Americans in Science member

2018-2019 McNair Scholar at University of Nevada, Reno

Conference Presentations

Sessions organized

SACNAS National Diversity in STEM (NDiSTEM) Pheonix, AZ Oct. 2024
(Bio)statistics: Facilitating biomedical discoveries and public health decision making.

Workshops

Electronic Conference On Teaching Statistics (eCOTS). Jun. 2023
Breakout session: Building data science education research plan for teacher-scholars.

United States Conference on Teaching Statistics (USCOTS). State College, PA Jun. 2023
Automate your grading workflow with gradetools: a grading assistant in RStudio.

Talks

Electronic Conference on Teaching Statistics Regional at UCI. Irvine, CA Jun. 2024
Flash talk: Automate your grading workflows for providing personalized feedback to open-ended data science assignments.

UNR McNair Symposium. University of Nevada, Reno Aug. 2018
Host-pathogen dynamics: Quantifying process-level variation using a system-specific dynamical model in a non-linear mixed effects modeling framework.

UCLA National McNair Conference. University of California, Los Angeles Jul. 2018
Host-pathogen dynamics: Quantifying process-level variation using a system-specific dynamical model in a non-linear mixed effects modeling framework.

Posters

Statistical and Machine Learning Applications in Biomedical Sciences Workshop. University of California, Irvine Feb. 2024
Accounting for reporting delays in real-time inference of infectious diseases dynamics using pathogen genetic sequences.

SACNAS National Diversity in STEM Conference. San Juan, Puerto Rico Oct. 2022
Accounting for reporting delays in real-time inference of infectious diseases dynamics using pathogen genetic sequences.

GEOMED: Interdisciplinary conference on spatial statistics, spatial epidemiology, and geographical aspects of public health. University of California, Irvine Oct. 2022
Determinants of exposure to Aedes mosquitoes: a comprehensive geospatial analysis in peri-urban Cambodia.

UNR College of Science Poster Competition. University of Nevada, Reno Nov. 2018
Host-pathogen dynamics: Quantifying process-level variation using a system-specific dynamical model in a non-linear mixed effects modeling framework.

Conference on Quantitative Approaches in Biology. Northwestern University, Evanston, IL Nov. 2018
Host-pathogen dynamics: Quantifying process-level variation using a system-specific dynamical model in a non-linear mixed effects modeling framework.

SACNAS National Diversity in STEM Conference. San Antonio, TX Oct. 2018
Host-pathogen dynamics: Quantifying process-level variation using a system-specific dynamical model in a non-linear mixed effects modeling framework.

MBI Capstone Conference. Mathematical Biosciences Institute, Columbus, OH Aug. 2018
Host-pathogen dynamics: Quantifying process-level variation using a system-specific dynamical model in a non-linear mixed effects modeling framework.

Software Developed

phyloodyn2 R package for viral phylodynamic inference with ability to account for reporting delays in real-time analyses with preferential sampling. <https://github.com/CatalinaMedina/phyloodyn2>

gradetools R package helps automate grading workflow and facilitates in creating individualized assignment feedback for students. (*co-developer*) <https://federicazoe.github.io/gradetools/>

Professional Service and Outreach

UCI Statistics Department student representative Fall 2021 - Spring 2024
(includes: attending department faculty meetings, facilitating communication between faculty and students, organizing and managing visitation day for admitted statistics PhD students)

Panel moderator for *What's Next in Four-Year Institutions?* Electronic Conference on Teaching Statistics Regional at UCI Jun. 2024

Mentor in DECADE mentoring program for UCI Statistics PhD students. 2021 - 2023

Panelist for Societal and Ethical Issues in Computational and Informational Sciences. Organized by UCI School of Information and Computer Science's Diverse Educational Community and Doctoral Experience (DECADE) team Apr. 2023

Created and maintain animated maps for COVID-19 Trends by UC Irvine website to visualize Orange County COVID-19 cases, tests, and percent positivity by zip code for the public.
<https://www.stat.uci.edu/covid19/index.html> 2021

Panelist for college career discussion for 1st year class of Mathematics, Physics, and Atmospheric Science majors at UNR. Nov. 2020

Panelist for graduate school panel for UNR students hosted by Association for Women in Mathematics (AWM). Nov. 2020

Presented on my early graduate school experience and life at UCI for the UNR 2020 cohort of McNair Scholars. Dec. 2020.
