

# Catalina Medina

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GitHub: <https://catalinamedina.github.io/>

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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.
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## Education

### PhD, Statistics

June 2025 (Expected)

Co-advised by: Volodymyr Minin and Mine Dogucu

University of California, Irvine

### MS, Statistics

June 2021

University of California, Irvine

### BS, Mathematics with specialization in Statistics and Minor in Biology

May 2019

University of Nevada, Reno

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## Manuscripts

### Peer-Reviewed Publications

- **Medina, C. M.**, Palacios J. A., Minin, V. M. (2025). Accounting for reporting delays in real-time phylodynamic analyses with preferential sampling. *PLoS Computational Biology*, 20(5): e1012970.
  - Dogucu, M., Demirci, S., Bendekgey, H., Ricci, F. Z., & **Medina, C. M.** (2025). A Systematic Literature Review of Undergraduate Data Science Education Research. *Journal of Statistics and Data Science Education*, 1–20.
  - 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., & 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.
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## Teaching Experience

### Instructor of Record

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

- Basic Statistics (Stats 7)  
40 undergraduate students

Summer 2022

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

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### Teaching Preparation

- ★ California State University Pre-Professor Program Fellow Fall 2024  
Graduate Division, UC Irvine and California State University, Long Beach
  - Guest lectured undergraduate-level Biostatistics (HSC 403) Nov. 19, 2024
  - Guest lectured graduate-level Regression Analysis (Stats 510) Nov. 12 & 14, 2024
- 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

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### 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
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## 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  
Talk, 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 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 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
  - Managed graduate student involvement in faculty hiring process
  - 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

- Session organizer: Facilitating Biomedical Discoveries and Public Health Decision Making Oct. 2024  
*SACNAS NDiSTEM Conference*, Phoenix, AZ
- Panel moderator: What's Next in Four-Year Institutions? Jun. 2024  
*eCOTS*, UC Irvine
- Panelist: Graduate School Nov. 2020  
Association for Women in Mathematics, University of Nevada, Reno

### Outreach

- Panel moderator: Biostatistics Career Panel Aug. 2022 & 2023  
ISI-BUDS, UC Irvine
- Panel moderator: Diversity Equity and Inclusion in Biostatistics Jul. 2023  
ISI-BUDS, UC Irvine
- Panelist: Societal and Ethical Issues in Computational and Informational Sciences Apr. 2023  
Diverse Educational Community and Doctoral Experience, UC Irvine
- Panelist: Graduate School Jul. 2020  
ISI-BUDS, 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
- 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 Chicanos/Hispanics and Native Americans in Science (SACNAS)
  - 2018-2019 McNair Scholar at University of Nevada, Reno
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**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.

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**Certifications**

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

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| • 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 |
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