Mayleen Cortez-Rodriguez

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CAREER OBJECTIVE

Applied math Ph.D. candidate interested in opportunities to apply math and stats to solve problems in public health, public policy, education, social good, etc. My technical skills paired with communication, presentation, teaching, collaboration, and leadership skills gained through teaching, collaborative research, and extracurriculars position me well for data science. Open to remote, hybrid, or in-person work where I can make a positive societal impact.

EDUCATION

CORNELL UNIVERSITY APPLIED MATHEMATICS

Ph.D Candidate (Present)
Masters in Science (August 2023)

CSU CHANNEL ISLANDS

B.S. in Mathematics (May 2020)
Minor in Computer Science

SELECTED PROJECTS

EXPERIMENTAL DESIGN & METHODOLODY FOR CAUSAL INFERENCE

Estimating causal effects with high accuracy & precision is important to many domains, from medicine to public policy and beyond.

- **Collaborated** to create novel estimators for causal effects with lower error than standard approaches in a variety of randomized experiment settings
- **Analyzed** the statistical properties of randomized experimental designs and causal effect estimators to provide theoretical guarantees on performance
- **Coded** extensive simulations in **Python**, using libraries such as `NumPy`, `SciPy`, `Networkx`, `Matplotlib`, and `Pandas` to analyze and visualize the experimental performance of proposed methods against baselines under different models
- **Published** in Journal of Causal Inference (2023) and NeurIPS (2022)

REINFORCEMENT LEARNING FOR VACCINE ALLOCATION

An important public health question at the start of a pandemic is, "How do we optimally distribute a limited number of vaccines?"

- **Formalized** the *vaccine allocation* problem as a reinforcement learning (RL) problem in collaboration with senior researchers
- **Simulated** the impact of vaccine allotment policies on disease spread through a population using **Python** tools for mathematical modeling and visualization
- **Contributed** to the development of the Python package (ORSuite), a tool for testing RL algorithms for various applications

DISEASE MODELING & SENSITIVITY ANALYSIS FOR DISEASE CONTROL

Despite best efforts, no country has been able to eradicate tuberculosis (TB).

- **Developed** differential equation (DE) models to represent the spread of TB throughout populations
- **Collaborated** with a team to show that conducting time-dependent sensitivity analysis via active subspaces on models of TB spread can help determine the most effective disease control strategies over the course of an epidemic
- **Assisted** the team by using **R** to numerically solve systems of DEs, run model simulations, conduct sensitivity analysis, and create visualizations of our results
- **Published** in Spora: A Journal of Biomathematics (2019)

PROFESSIONAL AND LEADERSHIP EXPERIENCE

DEPARTMENT OF STATISTICS AND DATA SCIENCE (CORNELL UNIVERSITY)

Visiting Lecturer for Causal Inference Course — Aug 2024 - Present

- **Prepared** and delivered weekly lectures for an interdisciplinary class of 160 students
- **Integrated** real-world examples into course content to ground topics in socioeconomic and public health-related research

Teaching Assistant for Causal Inference Course — Aug 2023 - Dec 2023

- **Led** weekly discussion sections in group activities, content review, and coding exercises in **R** that I helped design
- **Received** positive feedback from students for effectively explaining technically difficult concepts, answering student questions, and creating a welcoming classroom environment that led to student participation and collaboration

CENTER FOR APPLIED MATHEMATICS MENTORING PROGRAM (CORNELL UNIVERSITY)

Creator and Coordinator — July 2021 - July 2024

- **Established** a mentoring program for first-year PhDs in my department with input and support from peers and admin
- **Facilitated** mentor-mentee matching, **organized** departmental social events for community-building and professional development events for skill-building, and **solicited** feedback from participants to improve program from year-to-year
- **Awarded** the Robert Mozia Graduate Student Distinguished Service Award for creating and coordinating the program