

MANUEL A. QUINTERO CORONEL

manuelquinteroc.github.io

✉ mquint [at] mit [dot] edu • Ⓜ manuelquinteroc • ⓒ manuelquinteroc • +1 (617) 909.3926

EDUCATION

Massachusetts Institute of Technology (MIT), Cambridge, MA, USA

2023 - 2027

PhD in Social and Engineering Systems & Statistics

University of Cambridge, Cambridge, UK

2022 - 2023

Master's in Mathematical Statistics. Concentration: Statistics, Probability, and Optimization

Instituto Tecnológico Autónomo de México (ITAM), Mexico City, Mexico

2015 - 2020

Bachelor of Science in Applied Mathematics

Instituto Tecnológico Autónomo de México (ITAM), Mexico City, Mexico

2015 - 2020

Bachelor of Arts in Economics. Concentration: Econometrics and Economic Theory

SELECTED PUBLICATIONS (($\alpha-\beta$) INDICATES ALPHABETICAL AUTHORSHIP)

- Quintero, M., Stephenson, W., Shreekumar, A., & Broderick, T. (2025). "Why Reference Choice Matters: Sign Reversals in Oaxaca-Blinder Decomposition." In preparation.
- ($\alpha-\beta$) Broderick, T., Jadbabaie, A., Lin, V., Quintero, M., Sarker, A., & Sinclair, S. (2025). "Network and Risk Analysis of Surety Bonds." <https://arxiv.org/abs/2511.05691>.
- Quintero, M., Stephenson, W., Shreekumar, A., & Broderick, T. (2025). "Common Functional Decompositions Can Mis-attribute Differences in Outcomes Between Populations." Oral presentation at ATTRIB NeurIPS 2024. Also presented at ICLR 2025. <https://arxiv.org/abs/2504.16864>.
- ($\alpha-\beta$) Christia, F., Larreguy, H., Parker-Magyari, E., & Quintero, M. (2023). "Empowering Women Facing Gender-Based Violence Amid COVID-19 Through Media Campaigns." *Nature Human Behaviour*. <https://doi.org/10.1038/s41562-023-01665-y>.
- ($\alpha-\beta$) Bandiera, A., Larreguy, H., Parker-Magyari, E., & Quintero, M. (2023). "Can We Shield Citizens Against Misinformation Through Digital Literacy Training and Fact-checks?" Undergraduate thesis.

SELECTED HONORS AND AWARDS

- Fortunato and Catalina Brescia Fellowship, MIT (2025)
- Presidential Graduate Fellowship, MIT (2023-2024)
- FUNED Maestrías Scholarship (Aug 2022)
- Research Award: Honors Thesis in Applied Mathematics (July 2022)
- Research Award: Honors Thesis in Economics (June 2022)

WORK EXPERIENCE

PhD Researcher, MIT (IDSS, LIDS, SDSC)

Aug 2023 - Current

- Lead author on black-box decomposition methods for evaluating outcome differences across populations; compared to SHAP, ALE, and Sobol approaches; presented at NeurIPS 2024 (oral) and ICLR 2025.
- Developed and optimized a Bayesian migration model with MCMC on Supercloud, improving efficiency by 70% and reducing runtime from 60 to 18 days.

Research Assistant, Harvard and ITAM

Mar 2021 - Jan 2023

- Co-authored two research projects; led statistical analysis and implemented machine learning models in R and Python.
- Scrapped, cleaned, and integrated large datasets from multiple sources; built reproducible data pipelines.
- Applied variable selection and predictive modeling at scale (caret, glmnet), improving robustness and interpretability.

Research Assistant to Fotini Christia (MIT, IDSS Director)

Mar 2021 - Aug 2022

- Led statistical analysis for an RCT on gender violence in Egypt, published in *Nature Human Behavior*, using Linear mixed effect models, Difference-in-Differences and other causal inference methods.
- Applied Bayesian methods, variable selection, and cross-validation to ensure robust results and actionable policy insights.

TECHNICAL SKILLS

Programming: Python, R, MATLAB (Advanced); Stata (Intermediate), C++, Java (Basic); **ML/DL Frameworks:**

PyTorch, TensorFlow, scikit-learn. **Specialized:** Statistical Machine Learning, Causal Inference. **Tools:** Git, Supercloud HPC. **Collaboration:** Experienced with GitHub, reproducible pipelines, and open-source contributions.

Licenses and Certifications:

Neural Networks and Deep Learning (DeepLearning.AI); Improving Deep Neural Networks: Hyperparameter Tuning, Regularization, and Optimization (DeepLearning.AI); Python for Data Science and Machine Learning Bootcamp; Machine Learning (HarvardX); High-Dimensional Data Analysis (HarvardX); Using Python for Research (HarvardX);