

Ana Elisa Lopez-Miranda

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RESEARCH INTERESTS

Probabilistic modeling; survival analysis; high-dimensional inference; statistical machine learning; computational statistics; applications in social science.

EDUCATION

University of Toronto

Honours Bachelor of Science in Statistics, Economics, and Computer Science, GPA: 3.71.

Toronto, Canada

Expected June 2026

AWARDS

- UofT's President's Scholars of Excellence Program. 2022
- UofT's Entrance Award (Renewable). 2022, 2023, 2024, 2025
- UofT's Dean's List Scholar. 2023, 2024, 2025

RESEARCH EXPERIENCE

Research and Development Associate

May 2025–Aug. 2025

Project Title: Prompting the Professoriate

Supervisor: Prof. Rohan Alexander

- Conducted qualitative interviews and co-authored a research paper on the use of Large Language Models in data science for journal publication (under review at Harvard Data Science Review) while working at the Investigative Journalism Foundation.
- Developed and analyzed simulation studies in Python and R to evaluate survey design, sampling assumptions, and response bias; visualized results using ggplot2 and Matplotlib.
- Produced reproducible workflows, notebooks, and technical documentation to support transparent and long-term maintainable research.

Research Assistant

May 2025–Aug. 2025

Project Title: Estimation under Cox Model with Biased Sampling Data

Supervisor: Prof. Omidali Jazi

- Wrote a research paper comparing Composite Partial Likelihood (CPL) estimation method and Partial Likelihood (PL) estimation method under length-biased sampling, confirming results by Huang & Jin (2012).
- Designed and ran 40+ simulation conditions on biased sampling with left truncation and right censoring varying hazard shape (constant, increasing, U-shaped), censoring schemes (0–40%), and sample sizes (N=200, 400); evaluated estimator bias, empirical SE, MSE, and CI coverage, and applied methods to the Channing House dataset.

Data Scientist

Sept. 2025–Present

Project Title: A Study of Students' Perspectives on LLMs

Supervisor: Prof. Rohan Alexander

- Contributed to the ethics application and research protocol for a qualitative study on student perspectives toward LLMs in statistics courses while working at the Investigative Journalism Foundation.
- Conducted literature review on LLM usage, student learning behaviors, and AI-assisted education.
- Developed simulation workflows in R to test survey structure, ranking systems, and data-processing procedures.

Research Assistant

Sept. 2025–Present

Project Title: The Effect of Omitted Variable Bias on Empirical Papers

Supervisor: Prof. Roman Zarate

- Assisted in a project on omitted variable bias in applied econometrics, focusing on how it affects published empirical results.
- Conducted extensive literature reviews of empirical economics papers and documented key model specifications, variables, and results.
- Used Stata to replicate published results and began analyses to assess the sensitivity of estimates to alternative specifications.

PUBLICATIONS

Lopez-Miranda, A.E., R. Alexander, and T. Timbers (2025). "Prompting the Professoriate: A Qualitative Study of Instructor Perspectives on LLMs in Data Science Education." *Harvard Data Science Review* (under review).

RESEARCH PRESENTATIONS

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| Undergraduate Research Showcase <i>Estimation under Cox Model with Biased Sampling Data</i> | Sept. 2025 |
| Data Science Institute Talent Showcase (Accepted) <i>Prompting the Professoriate</i> | Jan. 2026 |

TEACHING EXPERIENCE

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| Teaching Assistant <i>University of Toronto</i> | Sept. 2024-Present |
| <ul style="list-style-type: none">• TA for macroeconomics (ECO102), microeconomics (ECO101), probability theory (STA256), and mathematical proofs (MAT102) to over 300 students, enhancing their understanding of foundational concepts.• Led tutorials, graded problem sets and tests, held office hours to provide additional support to reinforce learning and improve student outcomes; emphasized probabilistic reasoning and mathematical rigor. | |

PROJECTS

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| Machine Learning Model Development Python, PyTorch, NumPy |
| <ul style="list-style-type: none">• Collaborated on building K-Nearest Neighbors (KNN), Decision Tree, and Neural Network models from scratch, including data pre-processing with regex, train/validation/test splits, and model evaluation.• Led the neural network component using PyTorch, performing hyperparameter tuning, extracting weights, and implementing a manual forward pass without libraries. |

SERVICE

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| Academic Appeals Subcommittee <i>Student Member</i> | Sept. 2024-Present |
| <ul style="list-style-type: none">• Serve as the science student representative on the Academic Appeals Subcommittee, one of four divisional student members.• Review petitions and transcripts with faculty committee members and assess academic and procedural considerations. | |
| Mathematical and Computational Sciences Society (MCSS) <i>Events Director</i> | Sept. 2024-Present |
| <ul style="list-style-type: none">• Lead weekly meetings and coordinate tasks for a team of associates.• Organize mid- to large-scale academic events, evaluate performance, and implement process improvements. | |

TECHNICAL SKILLS

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| Languages: Java, Python, R, Stata. |
| Developer Tools: Git, PyCharm, IntelliJ, Quarto, Agile methodologies (Scrum), Excel, LaTeX, VSCode, Docker. |
| Methods: Simulation, survival analysis, reproducible workflows, ML model implementation. |