

# 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

*Project Title: Prompting the Professoriate*

May 2025–Aug. 2025

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

## TEACHING EXPERIENCE

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<b>Teaching Assistant</b>	Sept. 2024-Present
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*University of Toronto*

- 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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<b>Machine Learning Model Development</b>   <b>Python, PyTorch, NumPy</b>	
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- 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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<b>Academic Appeals Subcommittee</b>   <i>Student Member</i>	Sept. 2024-Present
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- 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.

<b>Mathematical and Computational Sciences Society (MCSS)</b>   <i>Events Director</i>	Sept. 2024-Present
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- 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.