Paolo Lambre

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Education

DePaul University, B.S. Mathematics and Computer Science, Minor in Data Science, 2022 – Expected June 2026

Awards: Presidential Scholarship, Dean's List, Merkes Family Scholarship

Extracurriculars: ASA-STATCOM, Computer Science Society, Math Club, Students Against Incarceration

Selected Coursework: Probability and Statistics (I, III), Advanced Statistical Computing, Time Series Analysis and Forecasting, Stochastic Processes, Optimization Theory, Advanced Data Analysis, Biostatistics, Machine Learning, Database Systems

Certifications: NIH Principles of Clinical Pharmacology (In Progress), NIH Introduction to the Principles and Practice of Clinical Research (In Progress)

Experience

Participant, DePaul DemonHacks Hackathon

March 2026

- Developed app for real-time identification of potholes using computer vision through convolution neural networks.
- Practiced iterative modular software development using Git, Turborepo, Docker, Node.js, and Python.

Undergraduate Bioinformatics Researcher, DePaul Applied and Computational Bioinformatics Lab

January 2025 – Present

- Conducted literature review to design statistical workflows for single-cell spatial transcriptomics analysis.
- Investigated spatial relationships between gene expression and neuroanatomical structure in the brainstem using imaging analysis and spatial statistics.
- Developed scalable Python and R pipelines using Git to streamline gene expression and imaging analysis.
- Applied PCA, multidimensional scaling, t-SNE, and UMAP for high-dimensional data exploration and visualization.
- Identified region-specific gene expression patterns using point pattern analysis, cluster detection, and spatially varying gene identification methods.
- Co-authored paper accepted to ICBCB 2026; presented findings at university research symposium.

Intern Statistical Epidemiology Researcher, Khomtchouk Lab, Indiana University Luddy School of Informatics

March 2025 – October 2025

- Designed and analyzed epidemiologic studies involving high-dimensional and incomplete survey, genomic, and longitudinal data.
- Implemented multiple imputation and pattern-mixture models to address missing data under high uncertainty.
- Estimated causal effects of risk factors on disease progression using DAG-based modeling, structural equation models, and Bayesian inference.
- Performed meta-analysis and stochastic simulation to synthesize literature-derived parameter estimates for risk modeling.
- Delivered technical reports and presentations under strict research timelines.

Volunteer, Midwest Books to Prisoners

February 2026

- Read requests for books and made personalized selections based on preferences and availability.
- Filled forms, packaged, and shipped books according to guidelines.

Professional Memberships

Statisticians Without Borders

Skills

Languages: R, SAS, SQL, MATLAB, Python, Scala, Java, C++

Tools: Apache Spark, Jupyter Notebook, Git, UNIX, Excel, PowerPoint, Word

Projects

Estimating Causal Effects of Lead Exposure on Kidney Related Death (2025-Present) [R]

Conducted a causal mediation analysis using the 2005–2006 NHANES linked to 2025 mortality outcomes to evaluate whether kidney dysfunction (measured through eGFR) mediates a relationship between blood lead levels and future mortality. Implemented survey-weighted interventional mediation analysis with multiple imputations for non-MCAR missing data. Estimated total, direct, and indirect effects using doubly robust estimation while adjusting for confounders specified through a DAG.

Negative Effects of Penicillamine in Cirrhosis Accounting for Competing Risks (2025-Present) [R]

Reanalyzed the Dickson et al. PBC cohort using competing risks methods to account for the potential for liver transplants as an informative competing event. Estimated treatment effects through Fine–Gray sub distribution hazard models and compared results to standard Cox models to evaluate bias under standard survival model assumptions.

Forecasting Leqembi Adoption (2025) [R]

Forecasted US utilization of Leqembi through end of the decade considering Medicare coverage expansion. Incorporated eligibility prevalence, amyloid plaque presence, and reimbursement assumptions to project adoption curves through bass diffusion models and potential budget impact. Conducted sensitivity analyses to evaluate how policy changes may affect projected utilization.