IDEV*6350

Applied Statistical Evaluation of Development Projects

Guelph Institute of Development Studies • University of Guelph

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OFFICE HOURS
Wednesday, 12:30–2:00 p.m., or by appointment on Zoom

Course description

This course covers the design and evaluation of development projects using experimental methods and the R programming language. Students learn the basics of causal inference, statistical methods for experiments, R, and project evaluation. Students complete the course able to conduct a basic experimental evaluation on their own, and in a position to have high-level conversations with professional statistical evaluators. By acquiring the skills necessary for evaluating the impact of development projects, students will be well-placed to identify and advocate for effective development practices and processes.

The course is cumulative. We begin with the counterfactual problem, the logic of experiments, and the practical tools needed to work with data. We then move through identification and point estimation, uncertainty and precision, evidence synthesis, credibility, and measurement. The final two weeks use the contested evidence on mass deworming to bring the full toolkit together. The aim is not merely to run models, but to make clear, defensible statements about what a project changed, for whom, with what uncertainty, and under which assumptions.

The course emphasizes experimental evaluation. It does not provide a general survey of every observational or quasi-experimental method, such as difference-in-differences, regression discontinuity, or matching.

Learning outcomes

By the end of this course, successful students will be able to:

1. Explain the counterfactual problem and the role of random assignment in causal inference.
2. Use R and Quarto to import, transform, visualize, and analyze experimental data.
3. Estimate and interpret average treatment effects, heterogeneous effects, instrumental-variable/LATE models, and spillover specifications.
4. Quantify uncertainty using standard errors, confidence intervals, clustered inference, and power or minimum-detectable-effect reasoning.
5. Evaluate claims about generalizability, publication selection, measurement error, robustness, and cost-effectiveness.
6. Conduct and clearly communicate a basic experimental project evaluation while stating its estimand, assumptions, uncertainty, and limits.