

Intro to experimental analysis

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Plan: Both tech companies and social scientists consider experiments to be the best tool for answering causal questions and improving policies/products. In this short (4 lectures) mini-course, we will discuss various econometric aspects of experimental analysis. To develop intuition, we will start with simple randomized trials (A/B tests) that constitute most experiments done in practice. We will then move to experiments with spillovers that are ubiquitous in applied empirical research (especially in the economics of education and development). We will then switch gears and discuss adaptive experiments (bandits) that are becoming increasingly popular at tech companies. Finally, we will end with a discussion of dynamic experiments that are only gaining popularity in economics. The material will range from some well-known results to recent papers. The target audience includes anyone interested in designing and analyzing experiments.

What do you need to know: I expect basic knowledge of the standard causal framework (potential outcomes), familiarity with ordinary least squares and some basic data analysis concepts (e.g., cross-validation, sample splitting, etc.). There is a list of references below (incomplete), I do not expect you to read them, but the material will be loosely based on them.

References

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- Miguel A Hernán and James M Robins. Causal inference: What if, 2020.
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- Alejandro Sánchez-Becerra. Spillovers, homophily, and selection into treatment: The network propensity score.
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