Experimental Methods I
Outline

1. What exactly do we mean by impact?
2. What can be learned from randomized experiments?
What do we mean by impact?

“An impact evaluation assesses changes in the well-being of individuals, households, communities or firms that can be attributed to a particular project, program or policy.”
How do we know that the program caused the observed effects?

What would have happened without the program?

The counterfactual
What would have happened without the program?

- Can never be observed
- Needs to be estimated
- Impact evaluations estimate the counterfactual
After-school reading program
Scores before program

Scores after program

Before-after comparisons
Before-after comparisons
There are many other things happening
Before-after comparisons
Comparing participants and non-participants
Comparing participants and non-participants
Pre-existing differences

Observable

Unobservable

- Motivation
- Willingness to try new things

Selection bias
Comparing participants and non-participants
\[ y = \alpha + \beta_1 \text{Program} + \beta_2 \text{Observable characteristics} + \varepsilon \]

\( \beta_1 \) will be biased if there are unobservable characteristics determining program participation that are also relevant for outcomes.

**Regressions**
Experiments can help
Experiments
- On average, identical observable and unobservable traits
- Anything that varies over time is common to both groups
Experiments
Experiments

Average treatment effect
Why should we do experiments?

• To know if a program is really working
• To find out how to improve a program
• To learn more about beneficiaries and service providers
Testing whether programs work
Teacher performance pay in India

Government primary schools in Andhra Pradesh

- Individual bonuses
- Group bonuses
- Unconditional block grants
- Comparison

Equal impacts in first year
Teacher performance pay in India

- Government primary schools in Andhra Pradesh
- Individual bonuses: + 0.28 SD
- Group bonuses: + 0.15 SD
- Unconditional block grants: + 0.08 SD
- Comparison
Improving pre-primary school quality in Ghana

Turnover: - 44%

Preschools

Teacher training

Teacher training + parental awareness

Comparison
Improving pre-primary school quality in Ghana

- Preschools
  - Teacher training
  - Teacher training + parental awareness
  - Comparison

Better emotional support and behavior management
Improving pre-primary school quality in Ghana

Preschools

- Teacher training
- Teacher training + parental awareness
- Comparison

Higher school readiness
Improving pre-primary school quality in Ghana

Turnover: - 44%

Driven by private schools

Preschools

- Teacher training
- Teacher training + parental awareness
- Comparison
There may be important heterogeneity in impact

- Wealth
- Area of residence
- Gender
- Scholastic ability
- School management

HETEROGENEOUS TREATMENT EFFECTS
Improving programs
Increasing college attendance in the US

Families visiting tax assistance offices in low-income neighborhoods

- Personalized information
- Personalized information + help with aid form
- Comparison: Brochure

25%
Increasing secondary school enrolment in Colombia

Households with school age children

- Standard conditional cash transfer
- Conditional cash transfer – savings variant
- Comparison

Increased attendance
Increasing secondary school enrolment in Colombia

Households with school age children

- Standard conditional cash transfer
- Conditional cash transfer – savings variant
- Comparison

Increased enrollment
Learning about beneficiaries and service providers
Improving interest in anti-poverty programs in the US

- Guests in a soup kitchen
- Self-affirmation
- Funny movie
- Control

300% increase in take-up of brochure
Decreasing antibiotic prescriptions in China

Physicians in hospitals visited by a standardized patient

Patient asks for antibiotic prescription

- Patient asks for any prescription, indicates purchase will be elsewhere
  - 85%

Patient asks for antibiotics, indicates purchase will be elsewhere

- 10%

Patient indicates antibiotics not appropriate for simple colds

- 14%

Comparison

- 55%
Decreasing antibiotic prescriptions in China

Physicians in hospitals visited by a standardized patient

- Patient asks for antibiotic prescription
- Patient asks for any prescription, indicates purchase will be elsewhere
- Patient asks for antibiotics, indicates purchase will be elsewhere
- Patient indicates antibiotics not appropriate for simple colds

Comparison

63%

43%
THANK YOU