

GEQ1000
Economics
(Social Science)

1.3 Randomized Trials

Randomized trials

Controlled experiments in social sciences?

Problem: We don't have identical persons

Randomized trials

But we can perform randomized controlled trials, or randomized trials in short.

Random Assignment

Randomly assign the units into two groups

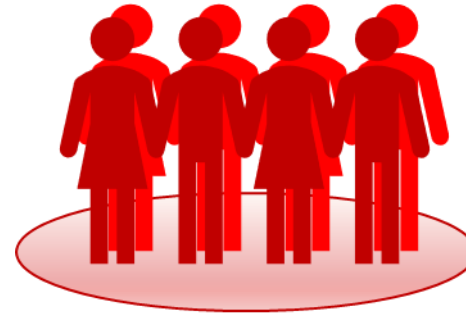
Treatment group

Receives treatment



Control group

Does not receive treatment



Compare the outcomes of the two groups.

The number of units must be large

With two people, one in each group? Won't work.

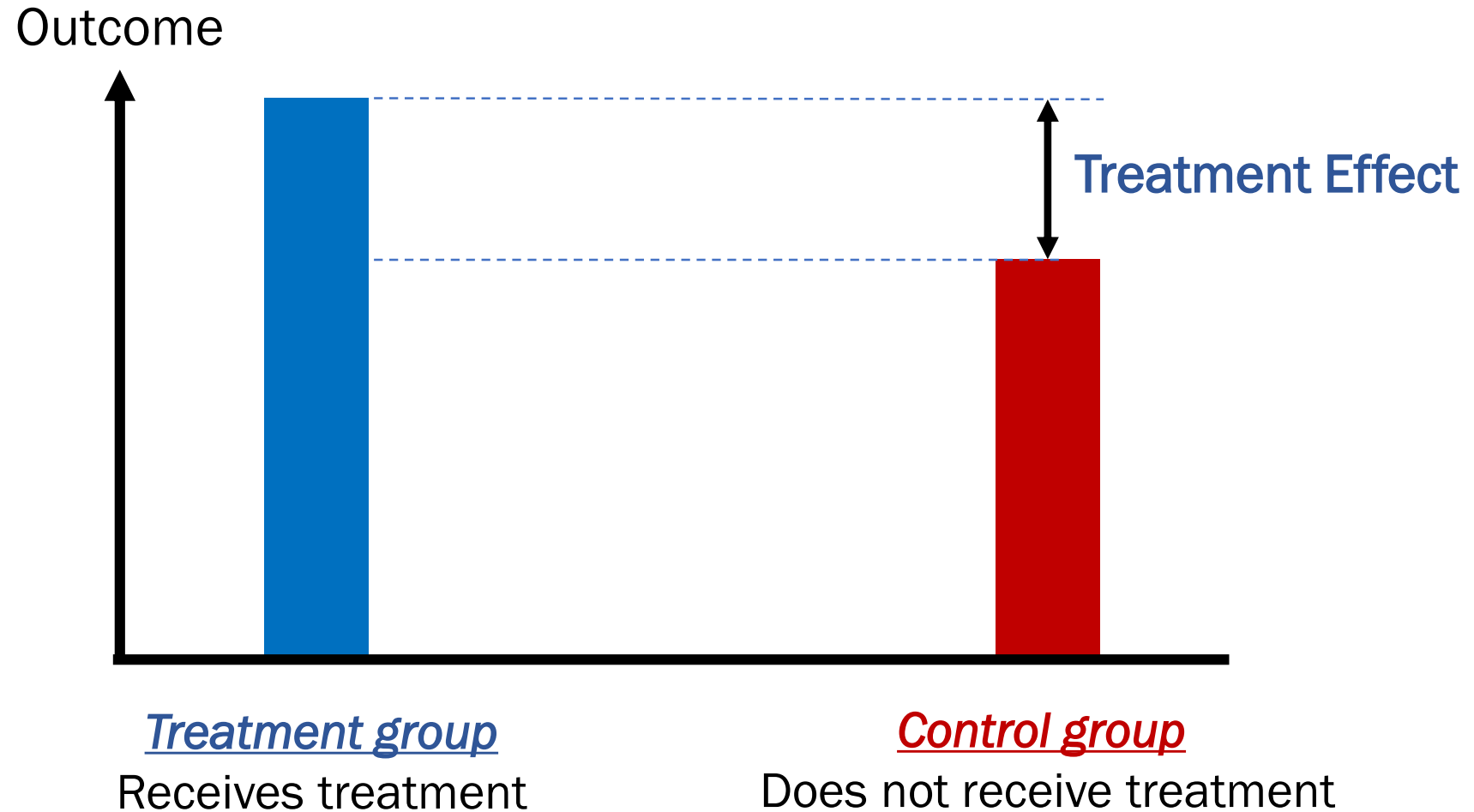
With many people, the average value of any confounding variable is the same across the two groups

Substituting for the Counterfactual

The only difference between the two groups is then the treatment status

The Control Group is acting as a substitute for the Counterfactual of the Treatment Group

Compare the outcomes



The identification assumption

The only difference between the two groups is that the Treatment group receives the treatment, while the Control group does not

Example: The Tennessee class size study

Example: The Tennessee class size study



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If



is reduced to



What happens to test scores?

Project Student Teacher Achievement Ratio (STAR)

6,500 students, 300 classes, 80 schools

Example: The Tennessee class size study

Randomly
assign

students into
two groups

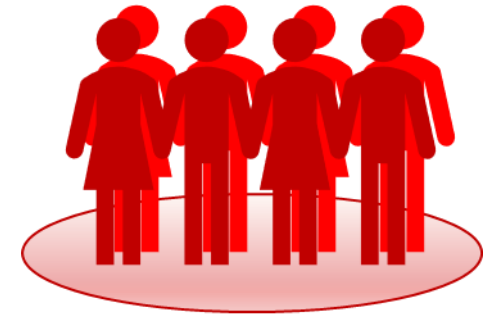
Treatment group

Small class



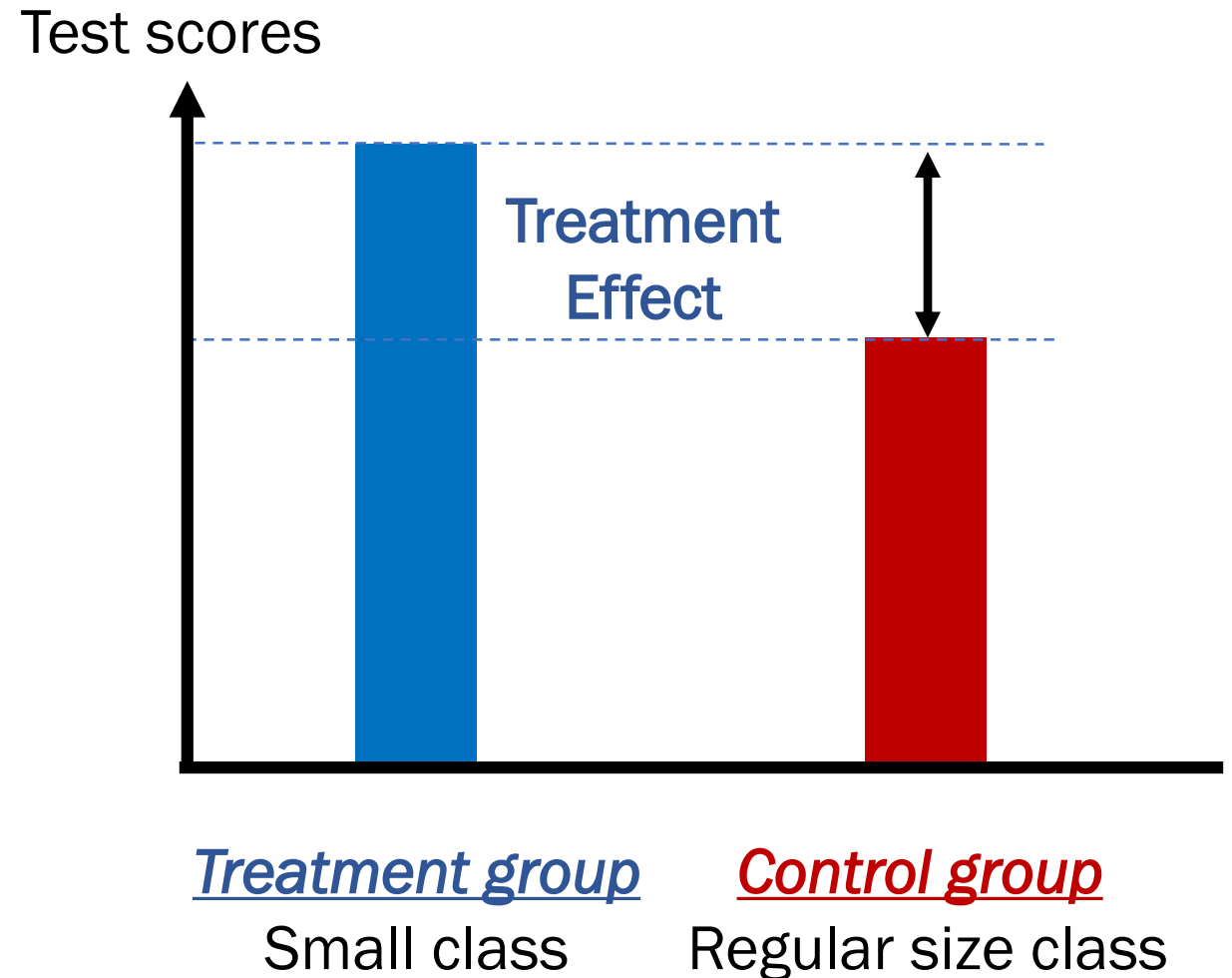
Control group

Regular size class



Example: The Tennessee class size study

Students in small classes were **five months ahead** of students in regular sized classes for test performance



Example: The Perry Preschool Project

Example: The Perry Preschool Project

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Perry Preschool Project

More than 50 years ago, the **Perry Preschool Project** forever changed the trajectory of early education.

Does High-Quality Preschool Education Make a Difference?

The Perry Project began as a research study seeking the answer to whether access to high-quality education could have a positive impact on preschool children and the communities where they live. Under the visionary research guidance of psychologist David Weikart, and with the extraordinary dedication of Perry Elementary School principal Charles Eugene Beatty, 123 preschool children with risk factors of failing in school were randomly divided into two groups. One group entered a high-quality preschool program based on HighScope's active learning approach, and a comparison group who received no preschool education.

The Perry Project was conducted from 1962–1967, but led to a longitudinal documentary as we continue to follow the Perry Preschool participants throughout their lives in this landmark study that forever changed the trajectory of early education. The Perry Preschool Project established the lasting human and financial value of early childhood education and led to the establishment of the HighScope Education Research Foundation and one of the first early childhood programs in the United States intentionally designed to increase school success for preschool children living in poverty.



From HighScope website: <https://highscope.org/perry-preschool-project/>

Example: The Perry Preschool Project

Randomly
assign

128
disadvantaged
children

Treatment group

Free preschool



Control group

No free preschool

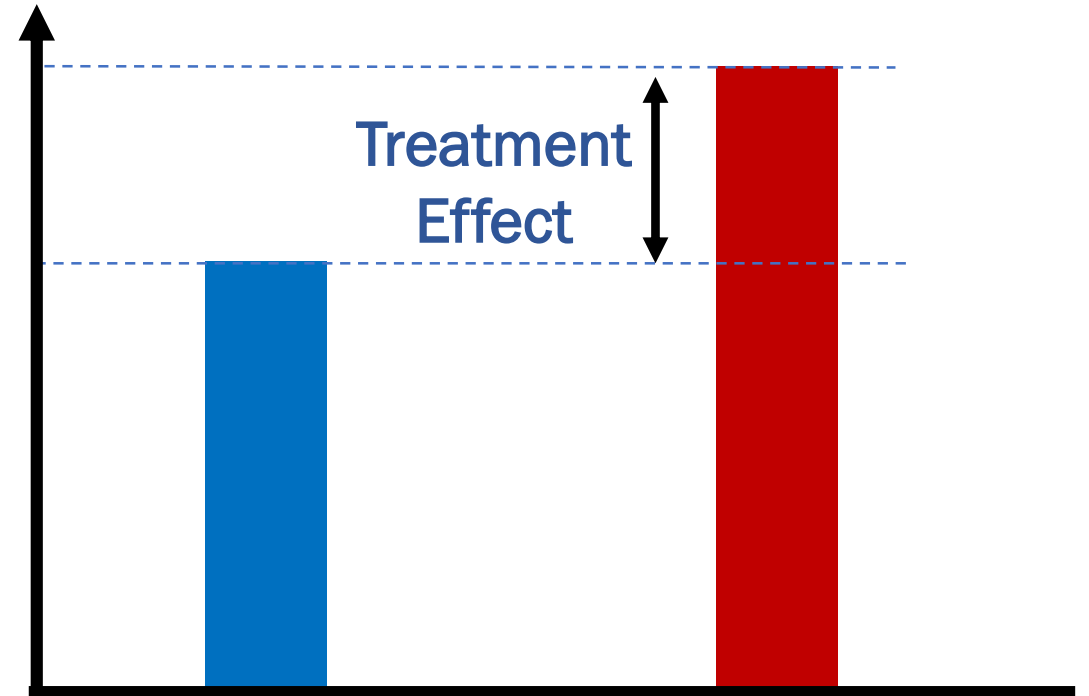


Example: The Perry Preschool Project

At age 27, women in treatment group were 26% less likely to have children out of wedlock

They also had fewer teen pregnancies.

Had children out
of wedlock



Treatment group

Free preschool

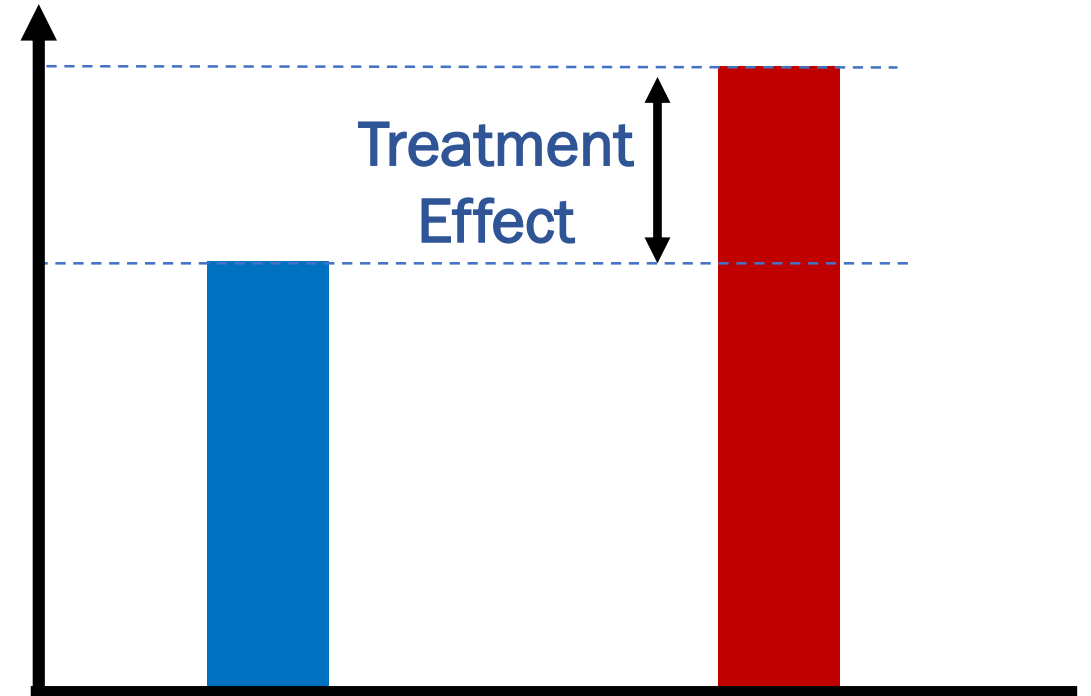
Control group

No free preschool

Example: The Perry Preschool Project

At age 40, men in treatment group were 46% less likely to have been in prison.

Incarceration rate



Treatment group

Control group

Free preschool

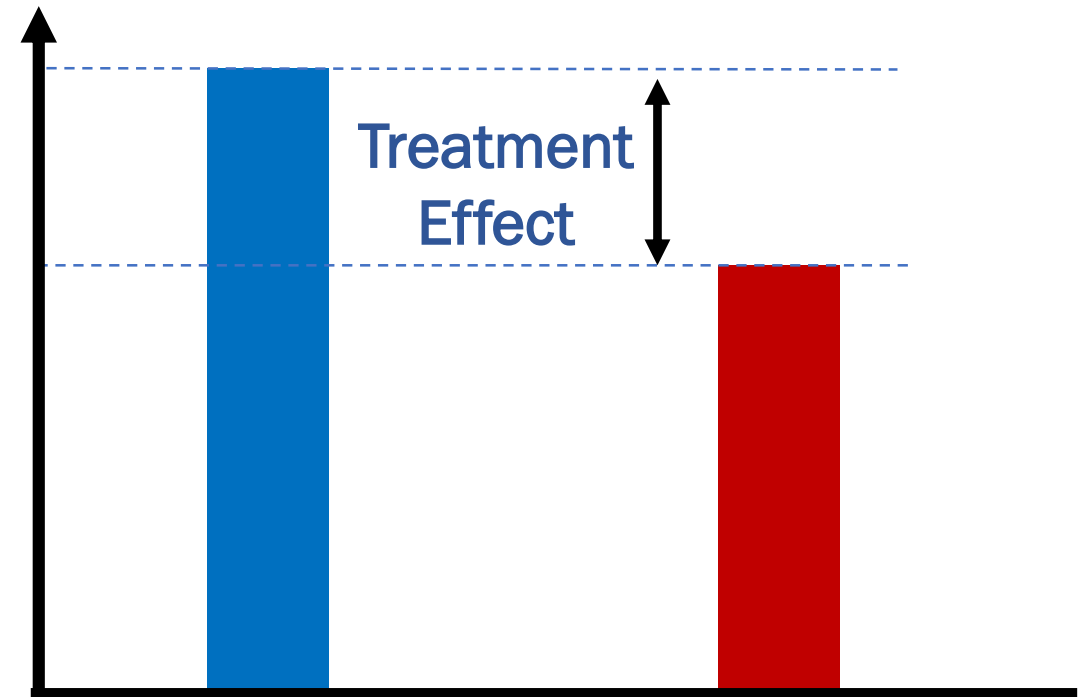
No free preschool

Example: The Perry Preschool Project

Those in treatment group
earned higher incomes

They were less likely to have
received government
poverty assistance

Monthly earnings



Treatment group

Control group

Free preschool

No free preschool

Examples: Randomized trials in Development Economics



Esther Duflo

Director, J-PAL

Scientific Director, J-PAL South Asia

Abdul Latif Jameel Professor of Poverty Alleviation and Development Economics

Massachusetts Institute of Technology (MIT)

Website

CV

eduflo@mit.edu

(617) 258-7013

Esther Duflo is the Abdul Latif Jameel Professor of Poverty Alleviation and Development Economics in the Department of Economics at the Massachusetts Institute of Technology and a co-founder and co-director of the Abdul Latif Jameel Poverty Action Lab (J-PAL). In her research, she seeks to understand the economic lives of the poor, with the aim to help design and evaluate social policies. She has worked on health, education, financial inclusion, environment and governance.

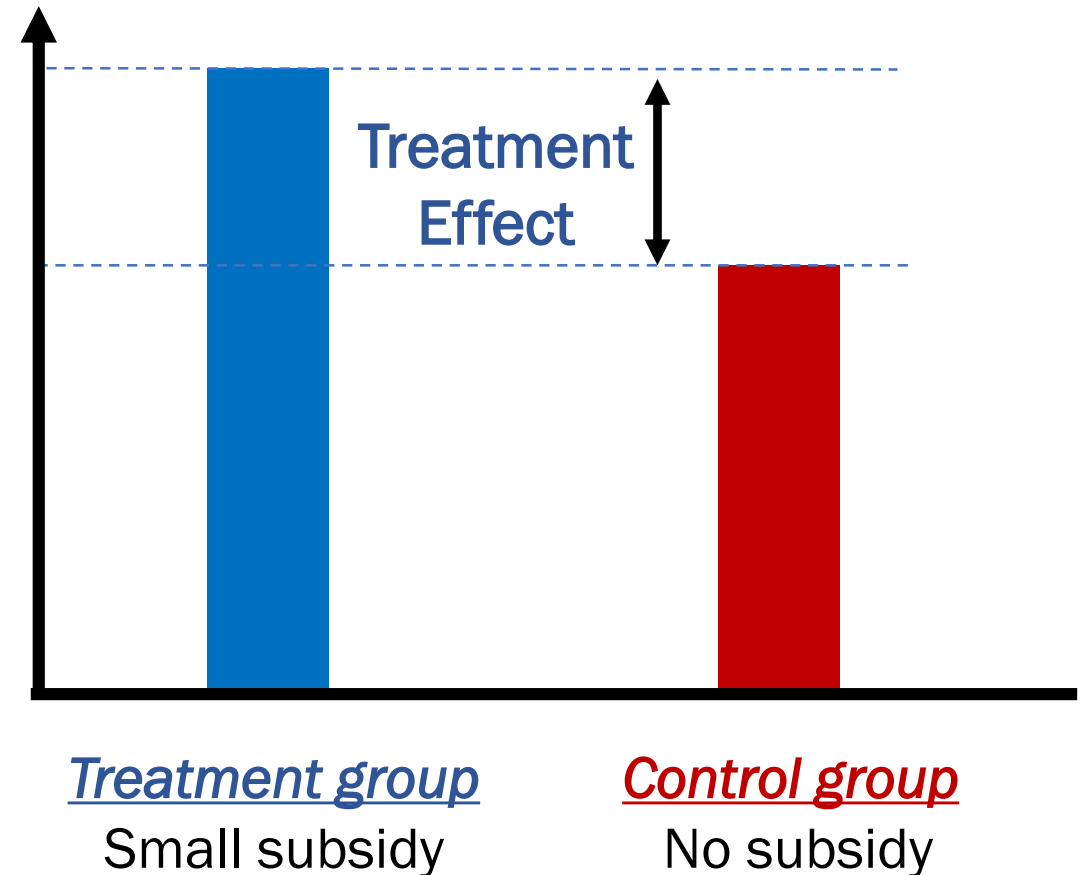
From J-PAL website: <https://www.povertyactionlab.org/duflo>

Example: Farmers' use of fertilizer in Kenya

Treatment: provide small subsidy to farmers just before harvest season

Effect: fertilizer use increased by 10% to 20%.

Use of fertilizer

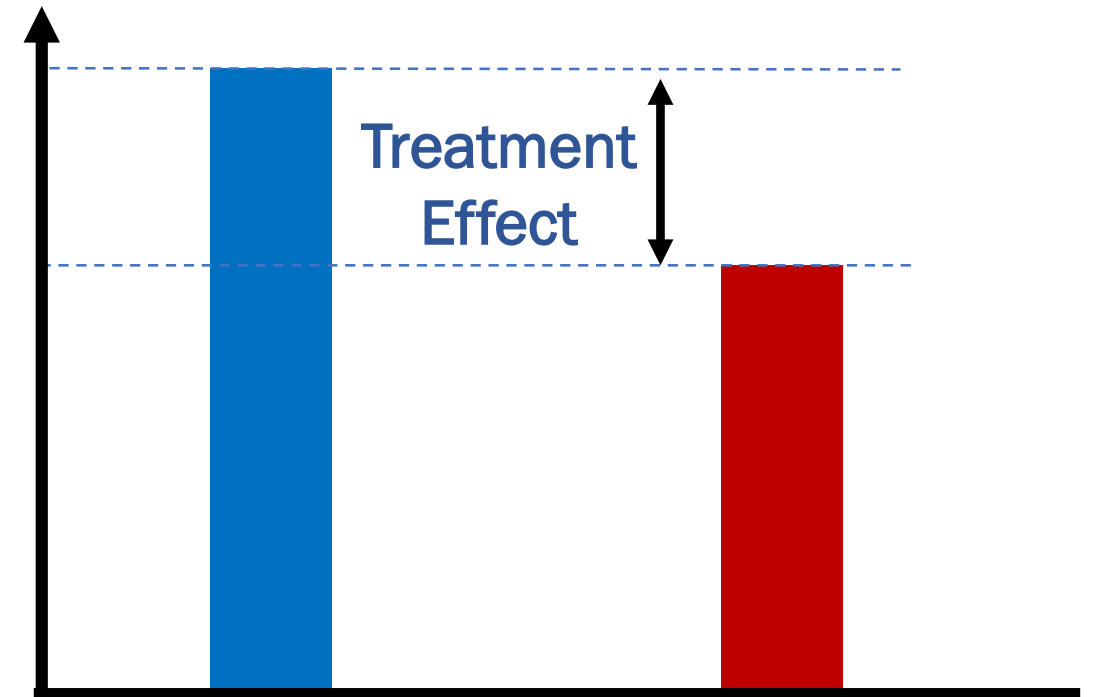


Example: Teacher absenteeism in rural India

Treatment: require teachers to take photos with students as proof against teacher absence

Effect: student test scores and graduation rates increased

Student test scores



Treatment group

Control group

Photo requirement No photo requirement

Poor Economics

Poor Economics

A Radical Rethinking of the Way to Fight Global Poverty

by **Abhijit V. Banerjee and Esther Duflo**

Why would a man in Morocco who doesn't have enough to eat buy a television?

Why is it so hard for children in poor areas to learn even when they attend school?

Why do the poorest people in the Indian state of Maharashtra spend 7 percent of their food budget on sugar?

Does having lots of children actually make you poorer?

For more than fifteen years Abhijit V. Banerjee and Esther Duflo have worked with the poor in dozens of countries spanning five continents, trying to understand the specific problems that come with poverty and to find proven solutions. Their book is radical in its rethinking of the economics of poverty, but also entirely practical in the suggestions it offers. Through a careful analysis of a very rich body of evidence, including the hundreds of randomized control trials that Banerjee and Duflo's lab has pioneered, they show why the poor, despite having the same desires and abilities as anyone else, end up with entirely different lives. Through their work, Banerjee and Duflo look at some of the most surprising facets of poverty: why the poor need to borrow in order to save, why they miss out on free life-saving immunizations but pay for drugs that they do not need, why they start many businesses but do not grow any of them, and many other puzzling facts about living with less than 99 cents per day. POOR ECONOMICS argues that so much of anti-poverty policy has failed over the years because of an inadequate understanding of poverty. The battle against poverty can be won, but it will take patience, careful thinking and a willingness to learn from evidence. Banerjee and Duflo are practical visionaries whose meticulous work offers transformative potential for poor people anywhere, and is a vital guide to policy makers, philanthropists, activists and anyone else who cares about building a world without poverty.

<https://economics.mit.edu/faculty/eduflo/pooreconomics>



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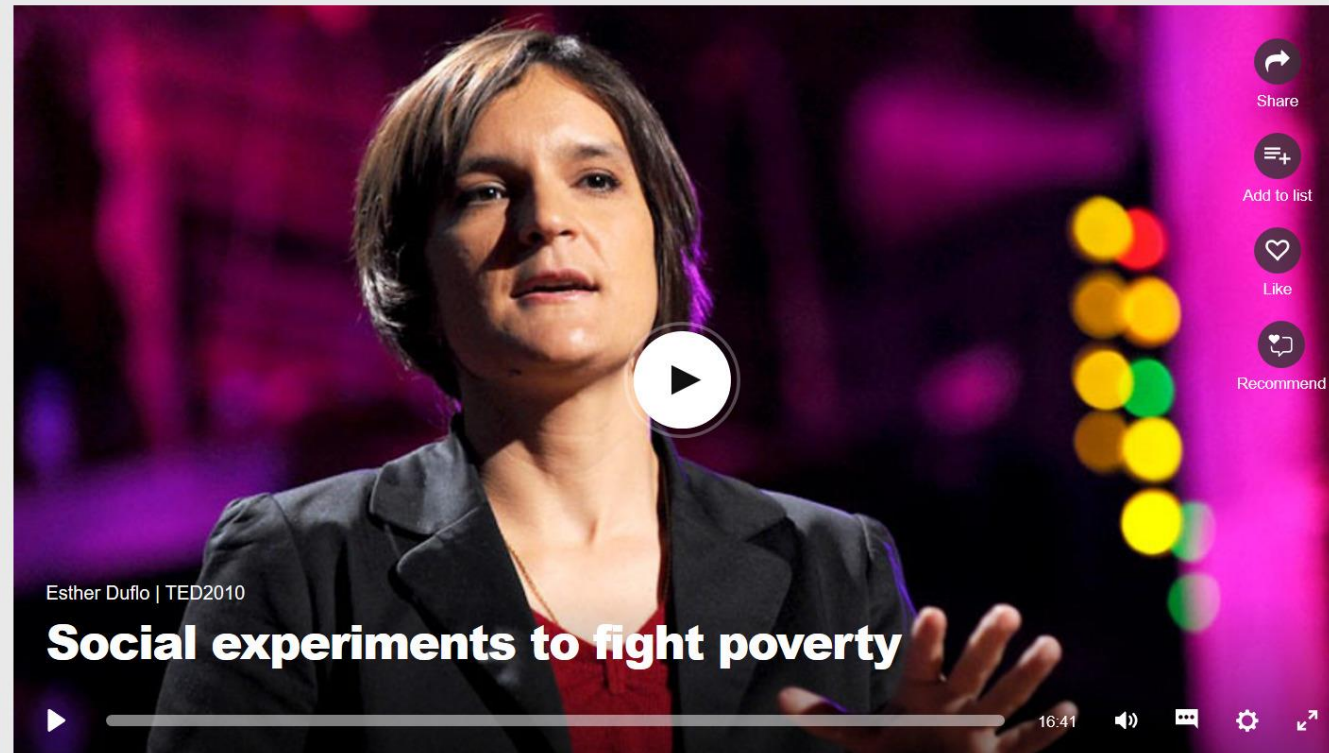
About us

The Abdul Latif Jameel Poverty Action Lab (J-PAL) is a global research center working to reduce poverty by ensuring that policy is informed by scientific evidence. Anchored by a network of 171 affiliated professors at universities around the world, J-PAL conducts randomized impact evaluations to answer critical questions in the fight against poverty.

Research

At J-PAL, we believe investing in rigorous research is essential to finding solutions to the world's greatest challenges. Working with implementing partners, J-PAL's affiliated professors conduct randomized impact evaluations to test and improve the effectiveness of social programs.

<https://www.povertyactionlab.org/about-j-pal>



Details **Transcript** **Comments (213)**
About the talk 28 languages Join the conversation

Alleviating poverty is more guesswork than science, and lack of data on aid's impact raises questions about how to provide it. But Clark Medal-winner Esther Duflo says it's possible to know which development efforts help and which hurt -- by testing solutions with randomized trials.

This talk was presented at an official TED conference, and was featured by our editors on the home page.

983,964 views

TED2010 | February 2010

Related tags

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TED Talk: https://www.ted.com/talks/esther_duflo_social_experiments_to_fight_poverty

Practical Problems for randomized trials

Assignment contamination

Units assigned to one group might sneak into the other group and contaminate the treatment assignment.

Ethical concerns

If the policy makers have enough money to provide the treatment to everybody and yet they don't, this seems unfair.

But if they don't have enough money, then random assignment is a fair way to decide who is treated

Drop-outs (attrition)

Drop-outs might be systematically different from those who don't drop out.

Treatment effect may be mismeasured.

Money, time, and feasibility



**You're
LATE!**

Questions concerning validity

Internal validity

Can the study successfully identify the treatment effect?

If executed properly, randomized controlled trials are internally valid.

External validity

Is the result generalizable?

Randomized trials do not have great external validity. One may need to run trials in a variety of different contexts.



**Next up:
Regression
Discontinuity**