



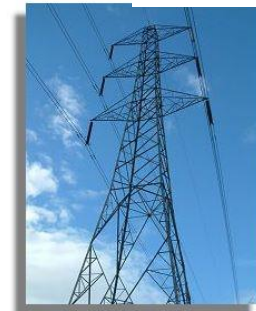
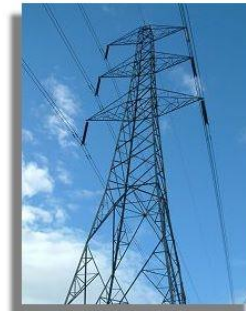
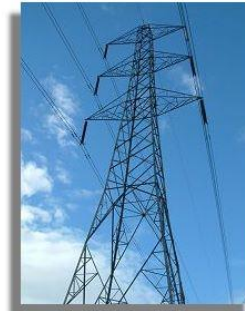
Asian Development Bank - International Initiative for Impact Evaluation

Video Lecture Series

Impact evaluations of infrastructure sector projects and programmes

Howard White

Is randomization possible?



Yes, for many interventions it is



Off-grid electricity, can randomize at the household level (e.g. solar home systems) or community level (e.g. micro-hydro)

Urban development: slum upgrading, can randomize at household level (improved housing) or settlement level (community-level services, e.g. street lighting)



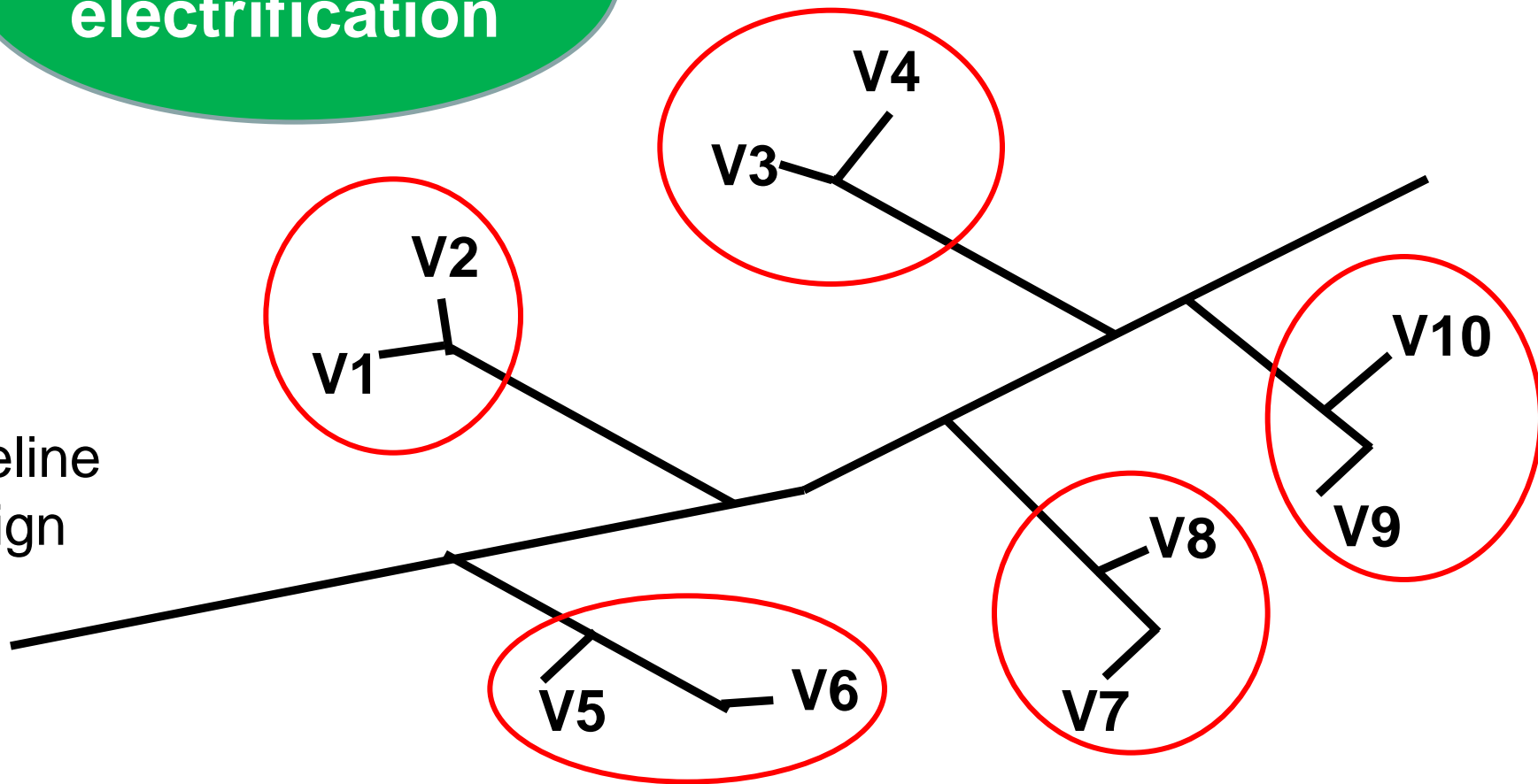
Water supply and sanitation: community (e.g. standpipes) or household (latrines, point of use water treatment)

Even large scale infrastructure

**Rural
electrification**

Matched pair randomization

Pipeline
design



Other possible random roll out



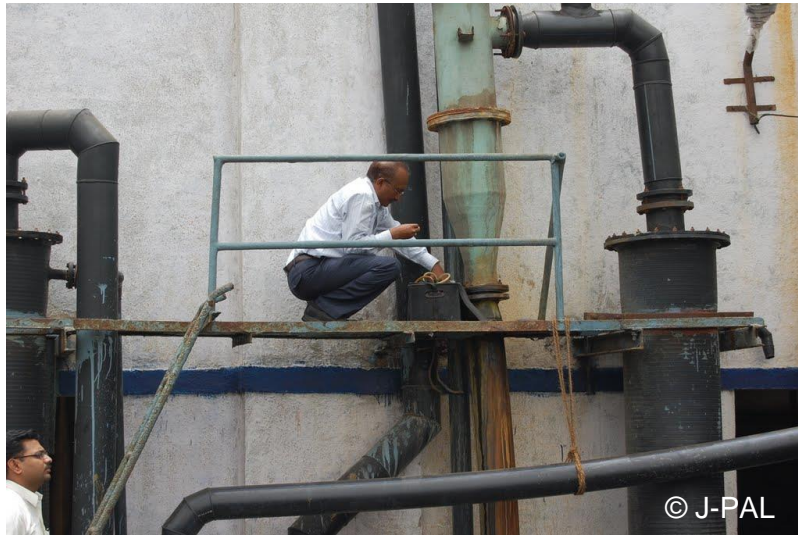
- Rural roads
- Rehabilitation (e.g. piped water system)
- Secondary or tertiary irrigation canals



Or can examine policy reform



New system of pollution auditing in Gujarat, India



Agricultural water pricing in West Bengal, India



And you can use an encouragement design

- Everyone is exposed to the treatment
- Random assignment is of encouragement, not the treatment
- But the encouragement must not affect the outcomes

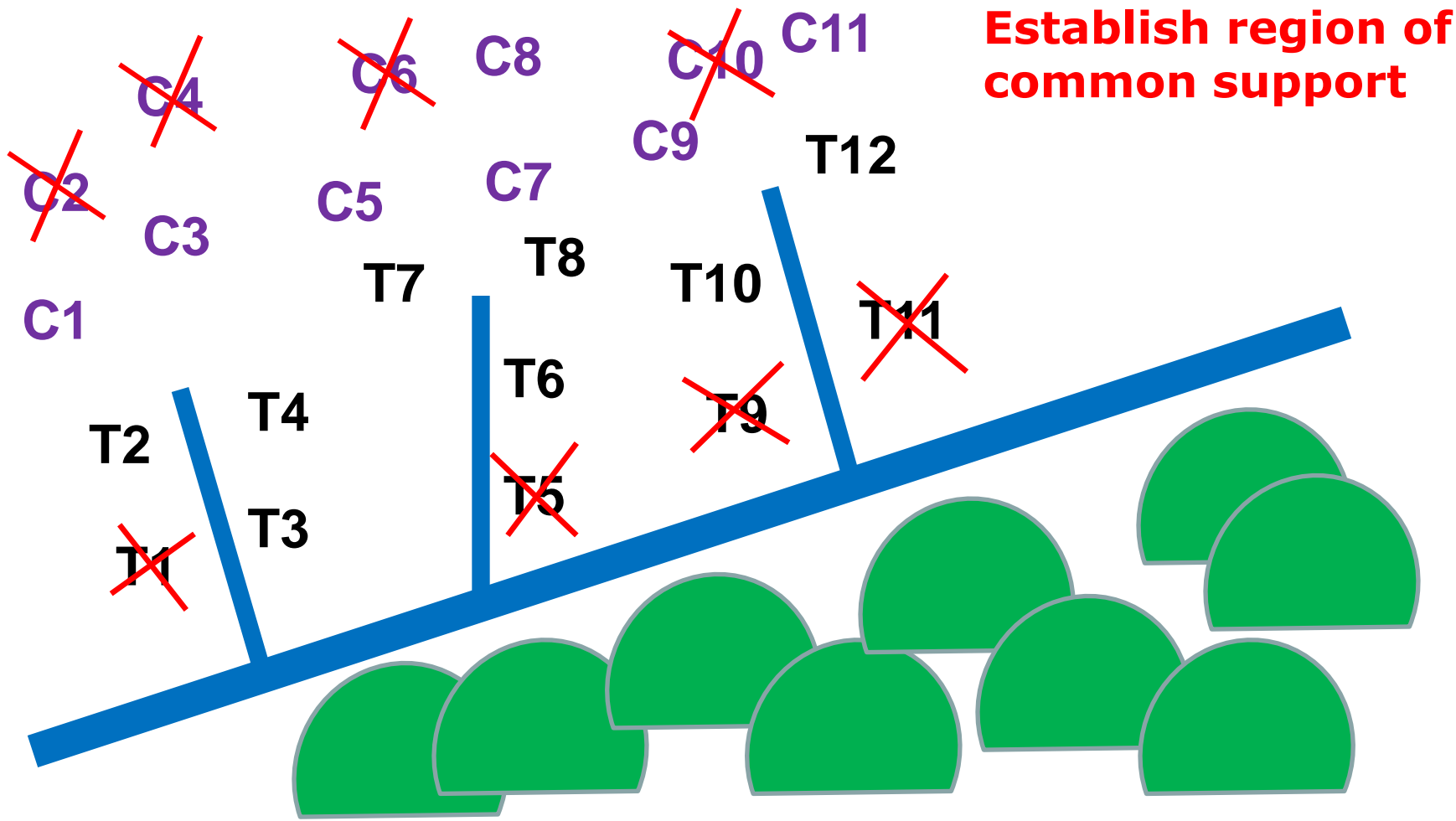
- Examples of possible encouragements are information or reducing transaction costs (randomized pricing is an encouragement design)

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- If randomization not possible because
 - Study is ex-post
 - Administrative or political difficulties
- Can use non-experimental design
 - E.g. Propensity score matching (PSM) at household or community level
 - Regression discontinuity of eligibility criteria for service subsidy
 - Preferably double difference

Example: irrigation



Balance achieved through PSM



Access to improved water source in Nepal

Variable	Before matching	After matching
Rural resident	Treatment: 29% Comparison: 78%	Treatment: 33% Comparison: 38%
Richest wealth quintile	Treatment: 46% Comparison: 2%	Treatment: 39% Comparison: 36%
H/h higher education	Treatment: 21% Comparison: 4%	Treatment: 17% Comparison: 17%
Outcome (diarrhea incidence children <2)	Treatment: 18% Comparison: 23% OR = 1.28	Treatment: 15% Comparison: 23% OR = 1.53

Strengthening weak designs



- Triangulate
 - Different impact estimates from different sources
 - Qualitative sources
- Use theory of change to think who benefits and how
- Check the causal chain



- Triangulation
 - Own survey double difference
 - Government data on irrigated and unirrigated *mandals* in treatment districts
 - Baseline report
 - Expert opinion
- Causal chain
 - Construction delays
 - Interrupted or insufficient water supply



And what about large scale single investments e.g. ports and major bridges?



- Is the impact question the most important one? (also quality of construction, cost-effectiveness etc.)
- Will have made benefit estimates for ex-ante cost-benefit analysis, can test these with 'best available double difference' (going beyond before versus after)
- May well need computable general equilibrium analysis



- Randomization is often possible
 - Of the intervention itself
 - Of a related policy issue
 - Or using an encouragement design
- Non-experimental methods will otherwise often serve
- If weak designs, buttress them
- And can apply these principles to large-scale infrastructure

Please visit: www.3ieimpact.org/

International Initiative for Impact Evaluation
Synthetic Review 001

Water, sanitation and hygiene intervention to combat childhood diarrhoea in developing countries
High Waddington, Birte Snijdevilt, Howard White and Lorn August 2009

International Initiative for Impact Evaluation
Synthetic Review 006

ONE WAY TO STOP AIDS IS TO USE CONDOMS WHILE HAVING SEX

Behaviour Change among Women Living with HIV
Sandra McCoy, R December 2009

International Initiative for Impact Evaluation
Systematic Review 005

International Initiative for Impact Evaluation
Systematic Review 006

International Initiative for Impact Evaluation
Systematic Review 007

International Initiative for Impact Evaluation
Annual report 2013
Evidence · Influence · Impact

Evidence review
Focus on Female Genital Mutilation
Highlights from the findings of a Systematic Review
February 2013

Female Genital Mutilation/Cutting (FGM/C) is practiced in more than 78 countries across Africa, affecting 92 per cent of women in Egypt, 59 per cent in Ghana and Somalia, and more than a quarter in Senegal and Kenya. FGM/C is also practiced in immigrant communities living in Europe and the United States. Prevalence of this practice varies across ethnicities and regions.

FGM/C results in increased health risks, including several obstetric difficulties, such as prolonged and obstructed labour, complications, and genital trauma. Women subjected to FGM/C are twice as likely not to experience sexual desire, and 1.5 times more likely to have painful intercourse.

Steps prohibiting the practice exist in across African countries, including Burkina Faso, Egypt, Ethiopia, Ghana, and Senegal. While in north Africa and Mali, existing criminal codes can be applied to criminalise FGM/C, yet, prevalence remains high and legal deterrents are not sufficient in abolishing the practice.

Key findings

- FGM/C has proven health risks, prevalence remains high in many countries.
- Interventions that were not fully comprehensive, or did not target religious leaders, suffered low attendance and drop out.
- Educational training for men and women, including sessions on reproductive health for female students, demonstrated an increased awareness of the risks of FGM/C.

Does marginal cost pricing of electricity affect groundwater pumping behaviour of farmers? Evidence from India
In Anandaram, Anand Kumar, Anand Kumar and Anand Kumar

Impact Evaluations

The Promise of Preschool in Africa: A Randomized Impact Evaluation of Early Childhood Development in Rural Mozambique
Sebastian Martinez, Sophie Naudou and Vitor Pereira 2012

www.3ieimpact.org