

More Examples of Randomized Experiments: Direct Interventions

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Outline

Projects designed to improve public goods through influencing the providers directly (training, gender composition).

1. Springs Project
2. Police Project

Tomorrow: monitoring projects.

Springs Project: Overview

Leino, Jessica (2007) “Gender and Community Management of Water Infrastructure: Evidence from a Randomized Evaluation in Kenya.” Working Paper

- ▶ **Central Development Objective:** Increasing gender equity and female participation in the management of public goods.
 1. How can we increase female participation in local governance?
 2. Given that females increasingly participate, are public goods outcomes any better?
- ▶ **Evidence:** An evaluation of a spring protection program in Kenya. Water management committees were randomly selected for a *female participation intervention*.

Springs Project: Overview

Participation intervention added to a larger study of rural water improvements (Kenya Rural Water Project).

- ▶ In Western Kenya, naturally occurring spring water seeps from the ground, especially vulnerable to contamination from runoff.
- ▶ Contaminated water is known to create severe health problems (e.g. diarrhea among young children).

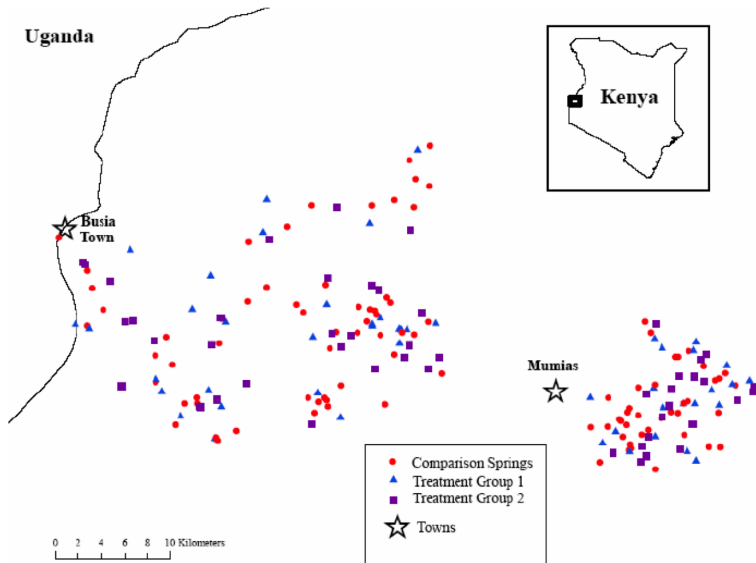
Springs Project: Design

Pre-intervention surveys and randomization:

1. Identified universe of springs; June-July 2004
2. Conducted initial site visits and water quality tests, Selection of sample; July-November 2004 ($N_s = 200$)
3. Spring user lists compiled; July 2004-January 2005 ($N_s = 200$)
4. **Randomization:**
 - ▶ Springs randomly selected for one of 3 treatment waves ($N_s = 200$)
 - ▶ Random selection of 7-8 households per spring (for surveys) ($N_h = 1500$)

Treatment Area

Figure 1: Rural Water Project (RWP) study region and sample springs



Springs Project: Roll Out

1. **Baseline Surveys:** Households surveyed, water quality tested
August 2004-February 2005
2. **Wave 1:** January-April 2005 ($N_s = 50$)
 - ▶ **Survey 1:** Households surveyed, water quality tested
April-August 2005 ($N_s = 184$, $N_h = 1384$)
3. **Wave 2:** August-November 2005 ($N_s = 50$)
 - ▶ **Survey 2:** Household surveys, water testing;
August-November 2006 ($N_s = 175$, $N_h = 1,250$)
4. **Survey 3:** January-April 2006 ($N_s = 100$)
 - ▶ Household surveys, water testing; January-March 2007
($N_s = 184$, $N_h = 1,231$)

Unprotected Spring



Protected Spring



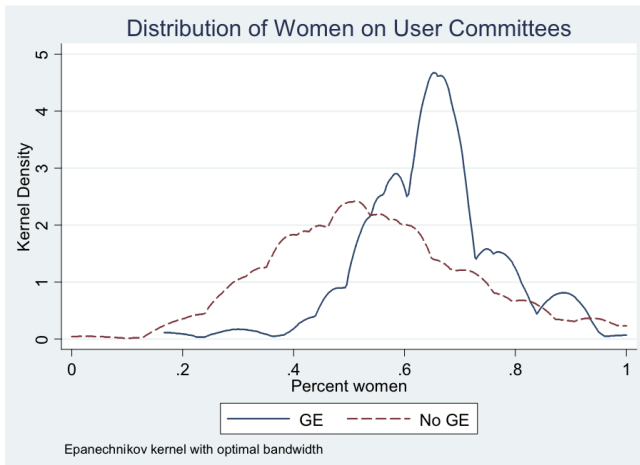
Water Maintenance

- ▶ After springs are protected, some maintenance activities are required, such as:
 1. Clearing the drainage ditches around the spring, so that the concrete encasement does not crack, or become waterlogged.
 2. Keeping the area clean and free of rubbish.
 3. Cutting back the grass around the spring, so that seepage contamination is minimized.
- ▶ Maintenance activities extend the life of the spring for up to 50 years.
- ▶ Poorly maintained springs: initial health benefits deteriorate in 5 to 10 years.

Participation Intervention

- ▶ 1/2 of communities that received spring upgrades were randomly assigned to receive a **female participation intervention**.
 1. NGO workers spoke to water management committees about the merits of female participation.
 2. Committee meetings held in the afternoons, so more women could attend.
 3. NGO informed local elders to encourage women to attend committee meetings.
- ▶ Very cost-effective treatment program.

Results: Female Participation



- ▶ Average increase on committee membership is approximately 1 woman (20% increase).
- ▶ Probability that a committee chair was a woman doubled.

Results: Public Goods Outcomes

- ▶ Outcome measures included:
 1. # of days since grass last slashed.
 2. # of days since trenches last cleared.
 3. # of days since storm drain cleared.
- ▶ **Central Finding:** No significant differences on maintenance outcomes for springs with the female participation intervention.
- ▶ Very preliminary results. Maintenance outcomes measured only 6-12 months after the treatment.

Police Project: Overview

Banerjee, A., R. Chattopadhyay, E. Duflo, and D. Keniston (2009)
“Rajasthan Police Performance and Perception Intervention.”
Working Paper.

- ▶ In many developing countries, police are widely viewed to be:
 1. Corrupt.
 2. Ineffective at fighting crime.
 3. Tools of political manipulation.
- ▶ **Question:** Can cost-effective training exercises and simple changes in operating procedure make a difference?
- ▶ **Evidence:** An evaluation of a series of performance interventions in police departments across Rajasthan, India.

Police Project: Design

1. **Baseline Surveys:** Survey used identify problem areas, but also as a benchmark for comparison (September, 2005).
 - ▶ Interviews with police officers of all ranks.
 - ▶ Surveys of police perception administered to members of the public.
2. **Design of Interventions:**
 - A *In-service training programs.*
 - B *Community observers.*
 - C *Weekly day off / Duty rosters.*
 - D *Freezing of transfers.*
3. **Pre-pilot:** Field testing of interventions ($N = 11$, Feb 2006).
4. **Scale up:** Full sample of $N = 150$ stations (Jan 2007).

Police Project: Interventions

A In-service training programs

- ▶ Technical training on how to better fight crime, use of scientific techniques.
- ▶ Improving public relations with soft-skills, such as communication, mediation.
- ▶ Stress management, team building, leadership improvements.

B Community observers

- ▶ Local volunteers chosen to sit in the police station.
- ▶ Observe activities and monitor police behavior.

Police Project: Interventions

C Weekly day off / Duty rosters

- ▶ Entire staff received one day off every week.
- ▶ All staff rotated tasks, given the opportunity to perform multiple tasks.

D Freezing of transfers

- ▶ All administrative transfers in the police stations were prohibited for 1.5 years.
- ▶ Frequent police transfers had adverse effects on personal, professional lives.

Police Project: Design

- ▶ Working paper does not mention how the randomization was actually implemented.
- ▶ **Question:** How would you do it?
 - ▶ Form groups and discuss.
 - ▶ Remember: we have 4 treatments, and want to separately identify the effects of each treatment.

Police Project: Simple Design Approach

- ▶ Simplest approach: take $N = 1000$ police stations, randomly assign them to one of five groups:
 1. **Control Group:** $p = 1/5$
 2. **Group A:** $p = 1/5$
 3. **Group B:** $p = 1/5$
 4. **Group C:** $p = 1/5$
 5. **Group D:** $p = 1/5$

Police Project: Cross-cutting Randomizations

- ▶ Another approach: take $N = 1000$ police stations, randomly assign them to one of 9 bins:

	Control	Treatment C	Treatment D
Control	$p = 1/9$	$p = 1/9$	$p = 1/9$
Treatment A	$p = 1/9$	$p = 1/9$	$p = 1/9$
Treatment B	$p = 1/9$	$p = 1/9$	$p = 1/9$

- ▶ Advantage of this approach: estimate combined effects of certain treatments (e.g. *A* and *C* vs. *B* and *D*) separately from the direct effects of any individual treatment.

Police Project: Public Opinion Results

A In-service training programs

- ▶ No effects on perceptions of police responsiveness.
- ▶ No effects on perceptions of corruption.
- ▶ No effects on fear of police.
- ▶ **31% increase in satisfaction of crime victims.**

B Community Observers

- ▶ No effects on perceptions of police responsiveness.
- ▶ No effects on perceptions of corruption.
- ▶ No effects on fear of police.
- ▶ No effects on satisfaction of crime victims.

Police Project: Public Opinion Results

C Weekly day off / Duty rosters

- ▶ **14% increase in perceptions of police responsiveness.**
- ▶ No effects on perceptions of corruption.
- ▶ No effects on fear of police.
- ▶ No effects on satisfaction of crime victims.

D Freezing of transfers

- ▶ No effects on perceptions of police responsiveness.
- ▶ No effects on perceptions of corruption.
- ▶ **20% decrease in fear of police.**
- ▶ **30% increase in satisfaction of crime victims.**

Police Project: Police Performance and Satisfaction Results

Note: Large attrition in the police satisfaction followup survey (40%).

1. Significant increases in police satisfaction from most interventions.
2. Staff complaints about certain aspects of policing decrease (especially those aspects that were treated).