Lessons from a ‘multi-arm’ cash transfer experiment in Malawi

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Zomba Cash Transfer Program

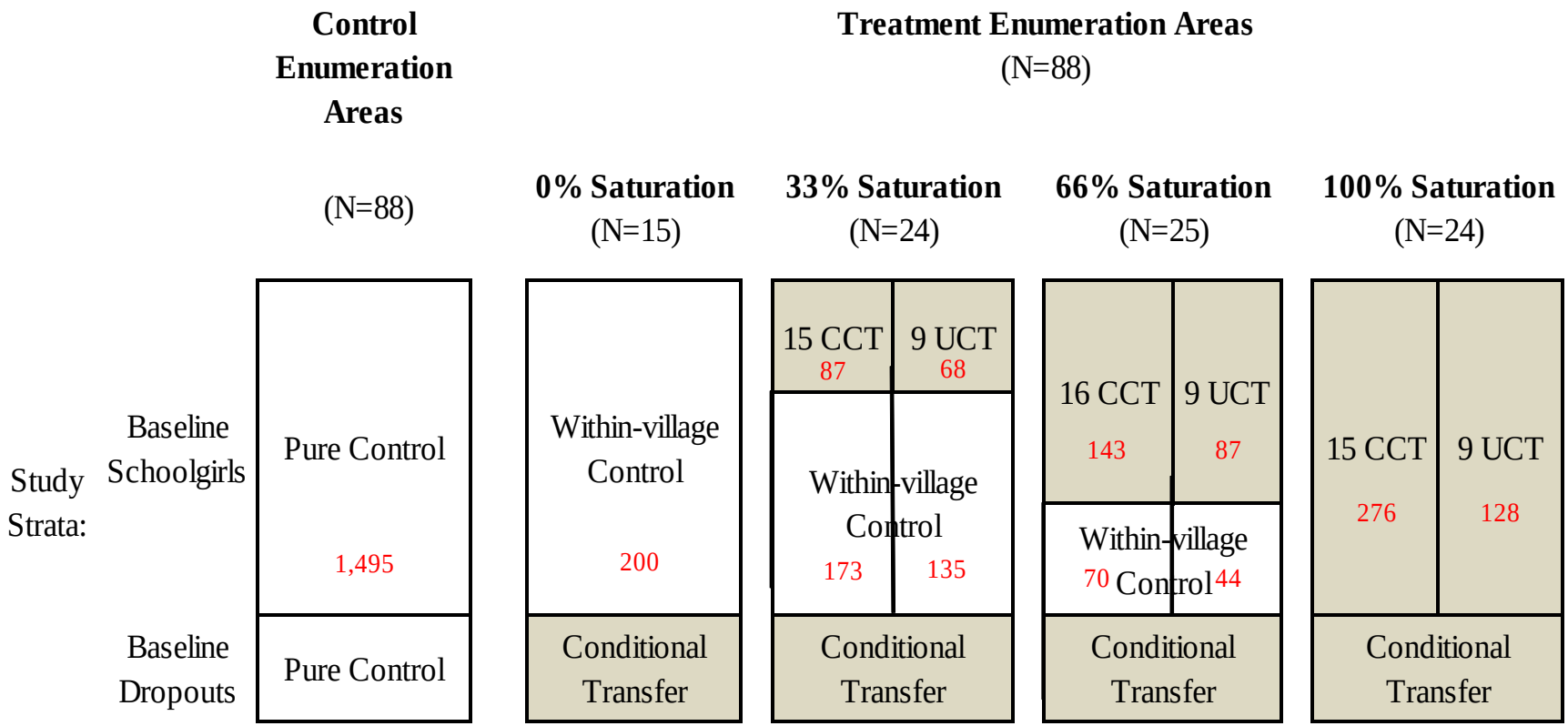
- Zomba Cash Transfer Program (*ZCTP*) is a *two-year* randomized intervention that provided cash transfers (and school fees) to young women to stay in or return to school in 2008 and 2009.

- Program has multifaceted research design with contract variation in various dimensions.

Experimental variation in key design aspects

- Three study arms: control, CCT, UCT
- Transfer amounts were split between parents/guardians and the girls.
  - Girls were randomly assigned US$1-5 per month
  - Parents/guardians randomly assigned US$4-10 per month
- Treatment saturation/intensity randomly varied in treatment areas.
- Extensive data collection (sexual behavior, health, biomarkers, school surveys, independent tests, qualitative surveys, etc.)

Zomba Cash Transfer Research Design



Shaded cells indicate treatments.

Red numbers give sample sizes at the individual level per cell.

Household transfer amounts randomized at the EA level, monthly values of $4, $6, $8, $10.

Participant transfer amounts randomized at the indvidual level, monthly values of $1, $2, $3, $4, $5.

So, what have we learned so far?

1. Cash or Condition?

1. While there was a modest decline in the dropout rate in the UCT arm in comparison to the control group, it was only 43% as large as the impact in the CCT arm.
2. Among those enrolled in school, there is some evidence of higher attendance in the CCT arm.
3. Finally, the CCT arm also outperformed the UCT arm in tests of English reading comprehension.

- → It is fair to conclude that CCTs not only outperformed UCTs in terms of improvements in schooling outcomes, but they were also much more cost-effective.

1. Cash or Condition?

- However, rates of marriage and pregnancy were substantially lower in the UCT than the CCT arm:
  - entirely due to the impact of UCTs among those who dropped out of school…

- By exploiting an experiment featuring a CCT and a UCT arm and by broadening the impact assessment beyond schooling, our study exposes a trade-off that is inherent in CCT programs.

Reference: Baird, McIntosh, and Özler (2011)

2. Measurement matters!

- The impact findings on schooling would have been substantially different had we only used self-reported data.

- The differential reporting by different study arms is interesting:
  - The evidence is consistent with the idea that monitoring produces more accurate self-reports.

Reference: Baird and Özler (forthcoming)

3. Elasticity of outcomes wrt transfer size

- Schooling, marriage, and pregnancy are unresponsive to transfer size when transfers are *conditional*.
  - This implies that the minimum transfer amounts ($5/month) are more or less sufficient to attain the average impacts.
  - Consistent with evidence from elsewhere, such as Cambodia
- However, these same outcomes improve with transfer size when transfers are made *unconditionally*.
- Mental health of the girl deteriorates significantly with each additional dollar transferred to her parents conditional on her school attendance.

References: Baird, McIntosh, and Özler (2011); Baird, de Hoop, and Özler (2011)

4. Cash transfers reduce risky behavior among adolescent girls

- 18 months after the start of the randomized controlled trial, HIV prevalence among baseline schoolgirls in the combined treatment group was 60% lower than the control group. HSV-2 prevalence was more than 75% lower.
- The program impact on HIV was not only due to a reduction in the number of lifetime sexual partners and unprotected sexual activity, but also owes in large part to a significant increase in partner's safety.
- We rule out increased school enrollment as the reason behind the reduction in STIs and suggest that the positive income shock empowered young women to make safer choices.

5. Spillover effects are important to measure!

- No enrollment spillovers detected among untreated girls in treated clusters.
  - However, each additional friend in the CCT arm increases the likelihood of being enrolled in school.
- No spillovers for marriage or pregnancy, either.
  - Here, the lack of spillovers is encouraging because of potential detrimental effects on untreated girls in treatment areas.
- Importantly, we find a large deterioration in the mental well-being of girls in untreated households *during the program*, while finding improvements among siblings.

Reference: Baird, de Hoop, and Özler (2011)

6. Identity of the transfer recipient within HH

- We find NO evidence that reallocating some of the transfers from the parents to the girls would improve program impacts on enrollment, achievement, early marriage, or pregnancy.
  - Exception: mental health in CCT programs (discussed earlier)

References: Baird, McIntosh, and Özler (2011); Baird, de Hoop, and Özler (2011)

Looking to the future…

Suggestions for future directions/studies

1. Non-compliers in CCTs programs:
   - Who are they? Why are they dropping out of school? What are the marginal effects of income and conditions on outcomes among compliers and non-compliers?
   - Answers to these questions and careful deliberation by policymakers about trade-offs should be key to deciding whether these large and popular SP programs should be conditional or not.
   - Baird, McIntosh, and Özler (2011) provides a framework to analyze this question that is externally valid.

2. What's the market failure that justifies the CCT?
   - For example, we did not find any evidence of incomplete altruism
   - It could be information about value of schooling, but, if so, are CCTs the first best approach? Think about combination programs…

Suggestions for future directions/studies

3. More studies explicitly designed to measure spillover effects are needed.
   - Policy relevance:
     - Cost effectiveness: is it better to treat 50% of 100 villages or 100% of 50?
     - Side effects, multipliers: benefits for untreated (Angelucci & de Giorgi 2009, Bobba & Gignoux 2011), dissipation of benefits for treated (Dupas & Robinson 2010)
     - Optimal intensity of treatment; e.g. at what level of saturation do public health treatments become minimally/universally effective? (Miguel & Kremer 2004, Barham & Maluccio 2009, Tarozzi et al 2011).
   - But, there is a cost to randomized saturation designs in terms of statistical power of the study.
4. Cost-benefit, **not** cost-effectiveness (Jere will talk about this…)
5. Finally, this experiment shows that it is possible to design ambitious, "multi-arm" cash transfer experiments to ask a number of interesting and policy-relevant questions.

THE END

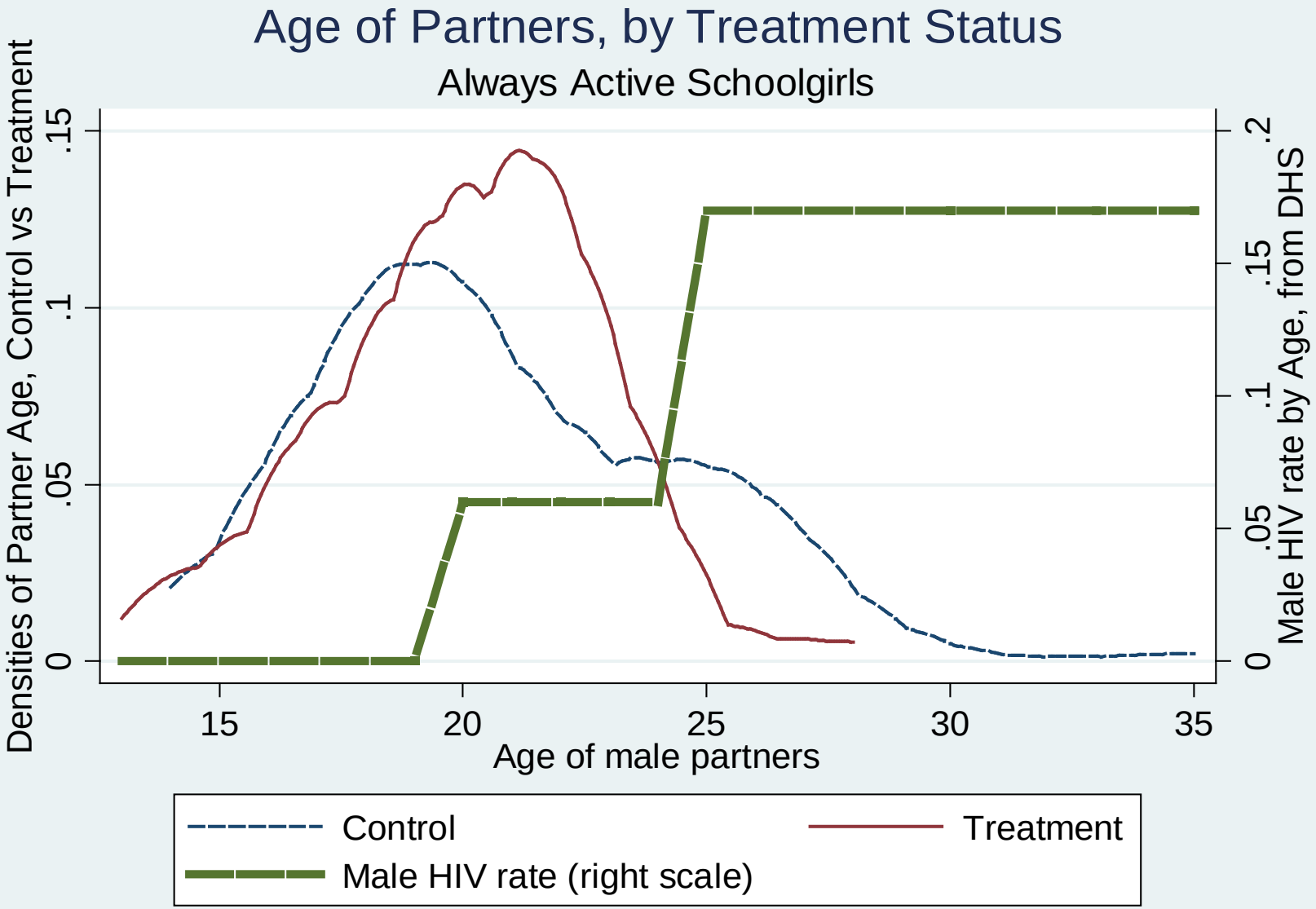
Behrman, Sengupta, and Todd (PROGRESA, EDCC 2005)

TABLE 1

OVERALL AVERAGE EFFECT OF PROGRAM ON PROBABILITY OF REPEATING A GRADE, DROPPING OUT, AND REENTERING SCHOOL

	Probability of Repeating among Those Enrolled in School			Probability of Dropping Out among Those Enrolled in School			Probability of Reentering among Those Dropped Out of School		
Age	T	C	Diff.	T	C	Diff.	T	C	Diff.
6	39.8	46	−6.2	.8	1.6	−.8	...	...	...
7	26.7	34	−7.1	1.0	1.0	.0	100.0	100.0	.0
8	26.9	32	−5.5	.3	.7	−.4	100.0	96.0	4.0
9	23.9	30	−6.5	1.0	1.4	−.4	97.2	94.7	2.5
10	24.2	25	−.8	1.6	2.9	−1.3	94.4	87.5	6.9
11	19.8	24.8	−5.0	6.3	12.2	−5.9	65.5	45.8	19.7
12	30.0	33.7	−3.7	10.4	16.8	−6.4	44.5	29.7	14.8
13	34.6	39.7	−5.1	12.2	22.7	−10.5	34.1	16.9	17.2
14	49.3	47.4	1.9	23.3	34.9	−11.6	16.9	15.5	1.4
15	57.8	61.9	−4.1	31.3	37.7	−6.4	14.2	10.8	3.4

Note. T = treatment, C = control, Diff. = difference.

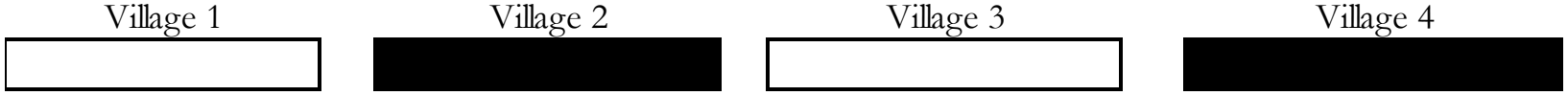


Motivating the Randomized Saturation Design:

The solution proposed here is to conduct a two-stage randomization, first varying the saturation of treatment in each cluster and then randomly assigning treatment to individuals given the cluster-level saturations chosen.

Blocked Design: 50% of each village is treated.

Clustered Design: Treatment is homogenous at the village level.



Randomized Saturation Design: Fraction of village treated is directly randomized.

Differential program effects on non-schooling outcomes

Latent Stratum	Intervention	Enrolled in school?	Receive monthly transfer?
UCT compliers	CCT	YES	YES
	UCT	YES	YES
CCT compliers	CCT	YES	YES
	UCT	NO	YES
Non-compliers	CCT	NO	NO
	UCT	NO	YES