Community Led Total Sanitation in Mali
Effects on health, sanitation behavior and possible pathways.




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One slide presentation

- Large RCT in rural Mali to measure the effects of a CLTS intervention carried out by Unicef and the Government of Mali.
- Effects on child growth and welfare.
- Since sanitation has important externalities, we make use of experimental games to measure cooperation & the willingness to contribute to a public good at the community level. Interaction between treatment and social structure

Intervention in Mali (1)

- Community Led Total Sanitation (*CLTS*).
  - Making the communities aware of their sanitation problems.
  - Make them take responsibility and commit to a plan to improve the sanitation situation.
  - Achieving “ODF” certification.
  - No subsidies are provided.

Intervention in Mali (2)

- Community Led Total Sanitation (*CLTS*) is being implemented in Mali by the Department of Sanitation and UNICEF.
  - Eligibility criteria: rural areas, 40-70 households per community, < 60% latrine coverage.
  - Triggering period + monitoring: weekly visits for 3-4 months.
  - No subsidies or sanitation marketing.
  - Check “open defecation free” (*ODF*) status, party and certification.

Achieving ODF status

- Each family has a latrine equipped with a cover that limits the proliferation of flies from the pits.
- All members of the family exclusively use such latrine to defecate.

- Each latrine is equipped with a hand washing device (water + soap / water + ash bucket).

Why is evaluation of CLTS important?

- Obtain the causal effect of the intervention on the intended outcomes: sanitation, health, etc. and other economic outcomes.
- Study the potential channels through which better sanitation practices can improve health outcomes.
- Cost effectiveness analysis, relevant before *scaling-up* costly interventions
- As it is, not possible to isolate the effect of different components (triggering, visits, certification, etc.)

Evaluation

- This project comprises a randomized controlled trial for studying the effect of CLTS in rural Mali.
  - Effects on sanitation, health, labor supply, schooling and women's safety
  - What is driving collective action in order to increase sanitation coverage and latrine adoption?
  - Shed some evidence on interaction between treatment and social structure

Outcomes of interest (I): Sanitary and Health outcomes

- Intermediary sanitary outcomes:
  - number of latrines, quality of latrines, use of latrines, building of hand washing stations, hand hygiene behavior, bacteriological content of drinking water.
- Final sanitary outcome:
  - community status towards becoming ODF ("open-defecation free");
- Health outcomes:
  - diarrheal illness for children under 2 and under 5, child anthropometrics, self-reported health status by household members, out-of-pocket health expenditures

Outcomes of interest (II): What drives adoption?

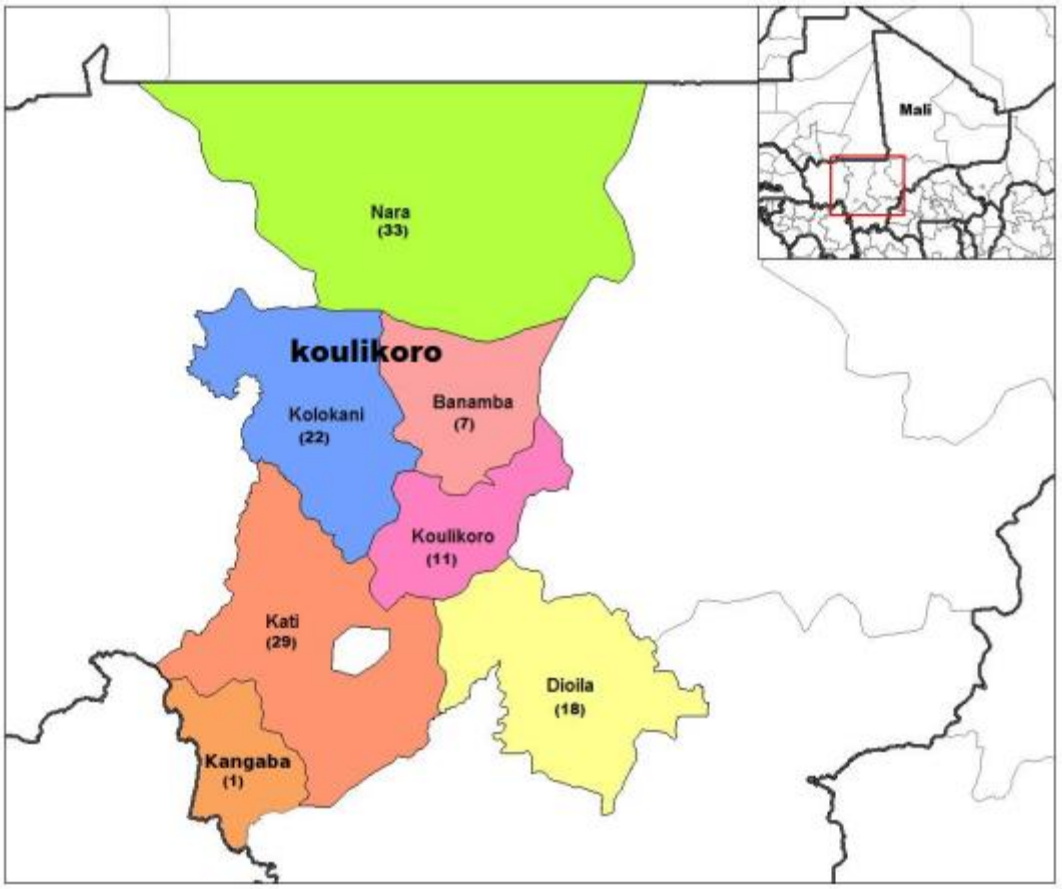
- Community outcomes: level of cooperation, level of trust, social cohesion, leadership, speed of diffusion of the new practice of latrine use within social networks
- Psychological outcomes: knowledge, risk perceptions, self efficacy;
- Non-health outcomes: school attendance, labor supply, women's safety.

Evaluation: Sample selection

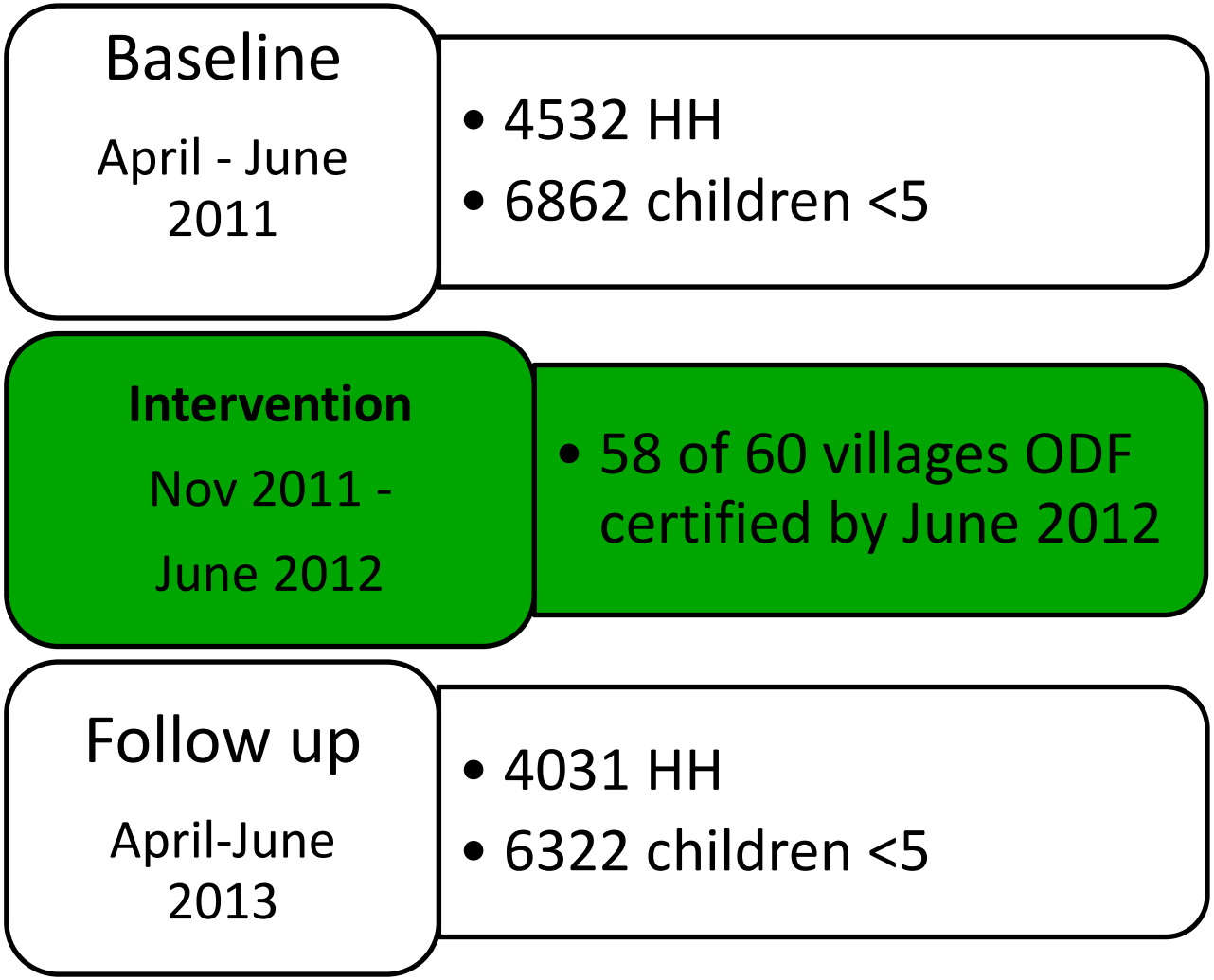
- Draw of 150 representative villages (meeting the eligibility criteria for CLTS) in the region of *Koulikoro*.
- Rural areas
  - Household size: 40/60 (avg. household size in rural Mali 14)
  - Latrine coverage: smaller than 60%
- In order to avoid contamination, villages are chosen so as to maintain a minimum of 10km distance between them.
- 121 selected, power calculations for diarrhea. (approximately 591 were eligible)

Sample selection

- Number of communities per "*cercle*" in Koulikoro



Enrolment and timeline



Concerns about Mali

- Coup in March 2012
- Conflicts with Islamic Extremist in the North
- French Occupation
- Threats:
  - Program delay
  - Migration or conflict in the zone of CLTS implementation

Household Questionnaire

- Basic demographic and socioeconomic characteristics
- Health Information (diarrhea and ARI), anthropometrics, health expenditures
- Social capital/social networks
- Hygiene and Sanitation module, time use module
- Women's safety

Observational Module

- Enumerators direct observation of:
  - Sanitation facilities:
    - availability
    - Location
    - quality of materials
    - usage
  - Hygiene practices:
    - hand-washing stations
    - presence of soap and water
    - hand hygiene

Water Quality - methods

- Water quality testing at baseline and endline
  - Stored drinking water
    - 7 per village
    - 1733 samples total collected
  - Drinking source water
    - 3 per village
    - 796 samples total collected
- Quantitative counts of *E. coli* (fecal indicator bacteria) by IDEXX most probable number method

Experimental Games

- Estimate the level of cooperation within communities:
  - level of public good provided in a public good experiment prior to the intervention.

- Explain the variation in CLTS impact using attributes of pre-existing social structures:
  - Correlating outcomes of experimental games with attributes of the groups may help to identify attributes that are relevant for explaining heterogeneity in impacts of CLTS.
  - Useful in the quantitative impact evaluation analysis in order to explain success or failure of the CLTS intervention.
  - Network Information

Random Assignment

- Randomly chose 60 communities assigned to treatment.
- All relevant pre-treatment covariates are balanced (original sample & sample with attrition).
- Migration due to conflict is less than 1%

Random Assignment

Baseline

Variable Name	Variable code	Treatment Mean	Control Mean	p-values	t statistics
% of households with latrine coverage*	latshr	32.445	35.626	0.416	0.816
Average cooperation in 2-3 round of games	avgcoop	74.788	70.543	0.235	-1.193
Children under 5	nr_children_5	63.900	59.213	0.282	-1.081
Average number of water source samples	nr_water_sources	4.241	3.934	0.422	-0.806
Distance to sources	d_water	8.270	7.081	0.670	-0.428
% fetching water from deep wells or piped	deep_well	31.937	32.771	0.897	0.130
% fetching water from shallow wells	shallow_well	63.471	63.690	0.973	0.034
Log e-coli contamination from water sources	ecoli_source	2.124	2.214	0.642	0.466
Log e-coli contamination from stored water	ecoli_stored	2.065	2.226	0.139	1.489
Average education of head of household	edu	0.825	0.886	0.585	0.548

(*) private latrines

Baseline: Households present also at follow up

Variable Name	Variable code	Treatment Mean	Control Mean	p-values	t statistics
% of households with latrine coverage*	latshr	33.688	35.783	0.601	0.524
Average cooperation in 2-3 round of games	avgcoop	76.070	69.281	0.057	-1.926
Children under 5	nr_children_5	57.700	52.721	0.210	-1.259
Average number of water source samples	nr_water_sources	4.241	3.934	0.422	-0.806
Distance to sources	d_water	8.303	7.013	0.638	-0.472
% fetching water from deep wells or piped	deep_well	32.800	32.832	0.996	0.005
% fetching water from shallow wells	shallow_well	62.653	63.662	0.878	0.154
Log e-coli contamination from water sources	ecoli_source	2.124	2.214	0.642	0.466
Log e-coli contamination from stored water	ecoli_stored	2.065	2.226	0.139	1.489
Average education of head of household	edu	0.814	0.883	0.546	0.605

(*) private latrines

Baseline: Descriptive Statistics

Baseline: All households

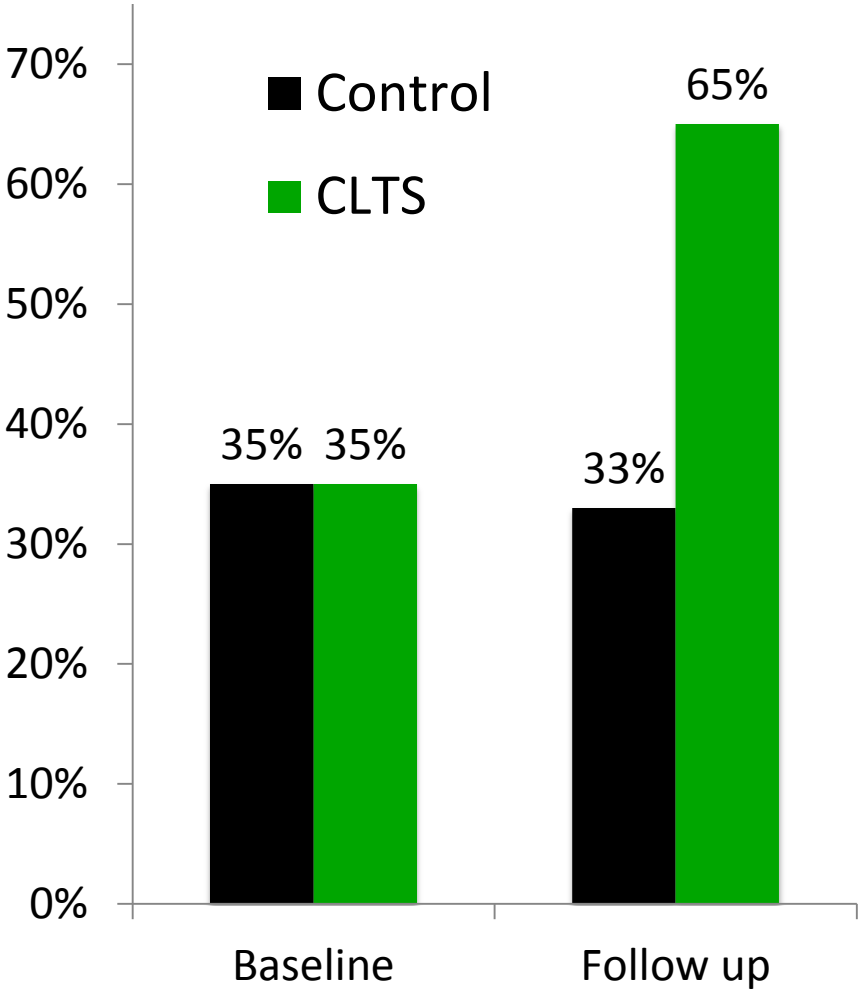
Variable name	N	Mean	Std. Dev.
1. Average number of households by village	121	37.54	13.36
2. Average number of households with children by village	121	37.39	13.34
3. Average children under five per community by village	121	61.54	23.87
4. Average number of water source samples by village	119	4.08	2.07
5. Minutes to water source	3971	7.87	22.00
6. % households fetching from deep well or using piped water	4542	0.32	0.47
7. % households fetching from shallow well	4542	0.64	0.48
8. Self reported Open Defecation Rates*			
Infants	4075	0.92	0.26
Girls (5-10)	2932	0.55	0.50
Boys (5-10)	2995	0.55	0.50
Elderly	1758	0.27	0.44
Men	4210	0.35	0.48
Women	4336	0.35	0.48
9. Head of household education	4171	1.56	8.48
10. Number of participants in each game by village	121	22.49	4.17
11. Average cooperation in 2-3 round of games by village	121	72.65	19.61
12. Average gain in cooperation from 1 round to 2-3 average by villag	121	7.75	18.10
13. % of population with private latrines	4541	0.34	0.47

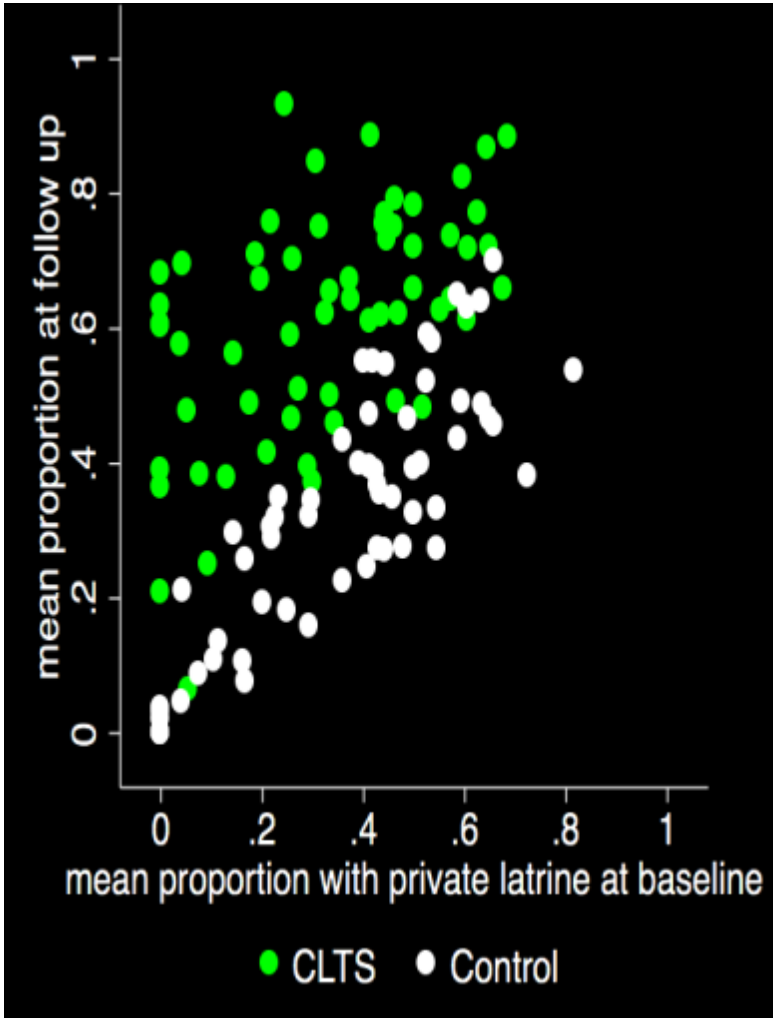
(*) main place of defecation of household members when they are at home

Results

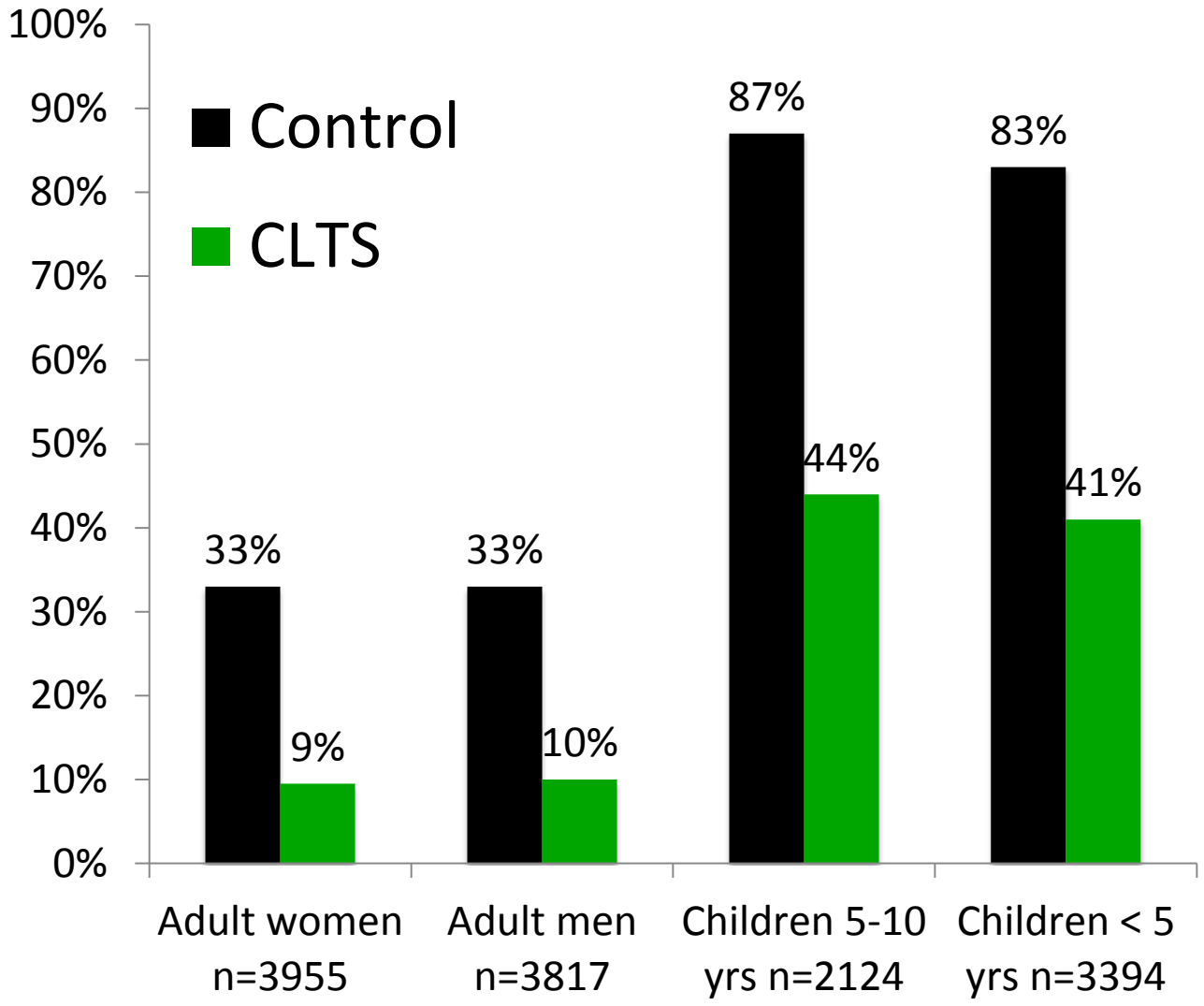
- Sanitation & Health results
- Other outcomes
- Pathways
- Experimental games

Results: Private Latrine Access is Doubled





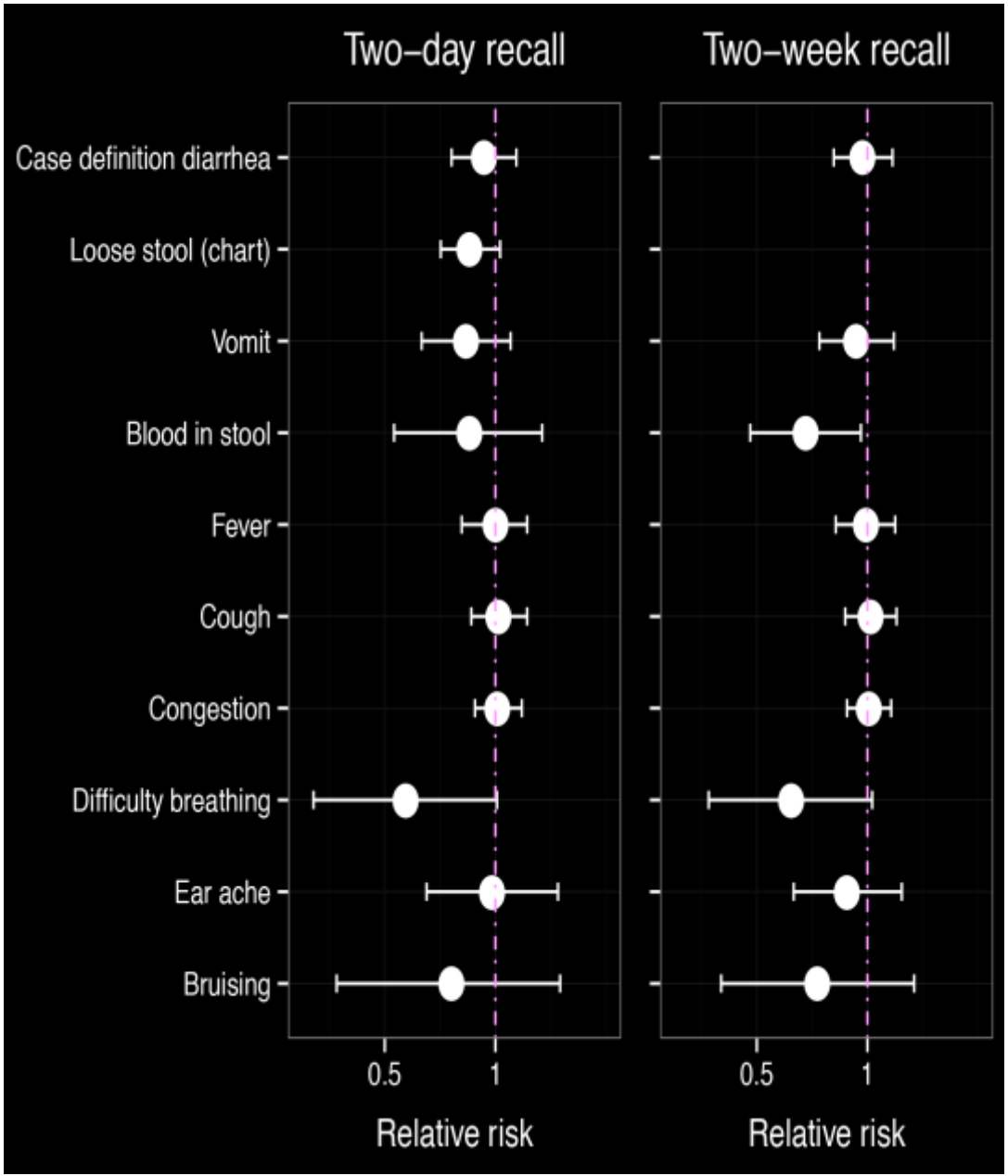
Results: Open defecation falls



Results: Indicators of behavior change

- Less visible feces in the environment
  - Human feces 46% less likely
  - Animal feces 11% less likely
- Latrines are cleaner
  - Soap (3X) and water (5X) more likely
  - Cover (3X) more likely
  - Flies 21% less likely
- More handwashing with soap

Results: child illness



Results: child growth & mortality

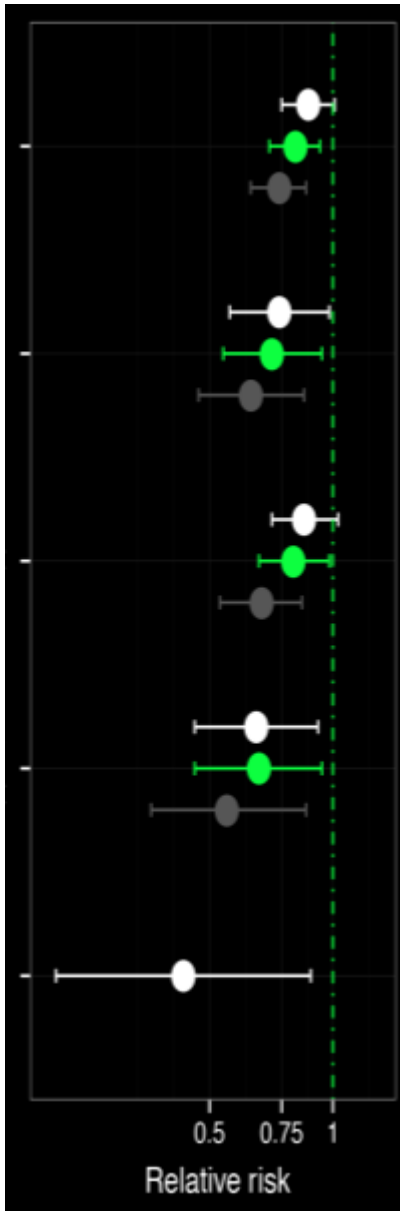
Stunted

Severely Stunted

Underweight

Severely underweight

Mortality (diarrhea)



↓13%

↓26%

↓15%

↓35%

↓57%

Child age at baseline:

- Under 3 years (n =2453)
- Under 2 years (n = 1548)
- Under 1 year (n = 769)

Height-for-age (HAZ)

↑ 0.16
↑ 0.28
↑ 0.40

Weight-for-age (WAZ)

↑ 0.09
↑ 0.18
↑ 0.29

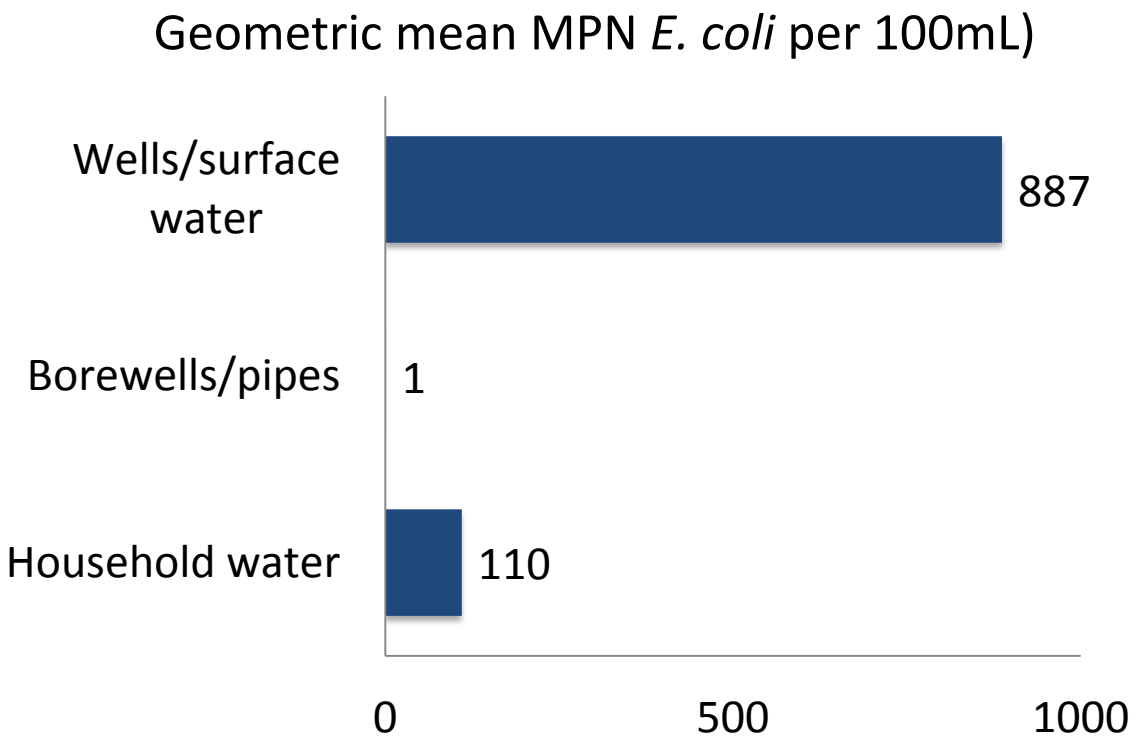
Results

- Improvement in HAZ, reduction in stunting and severe stunting.

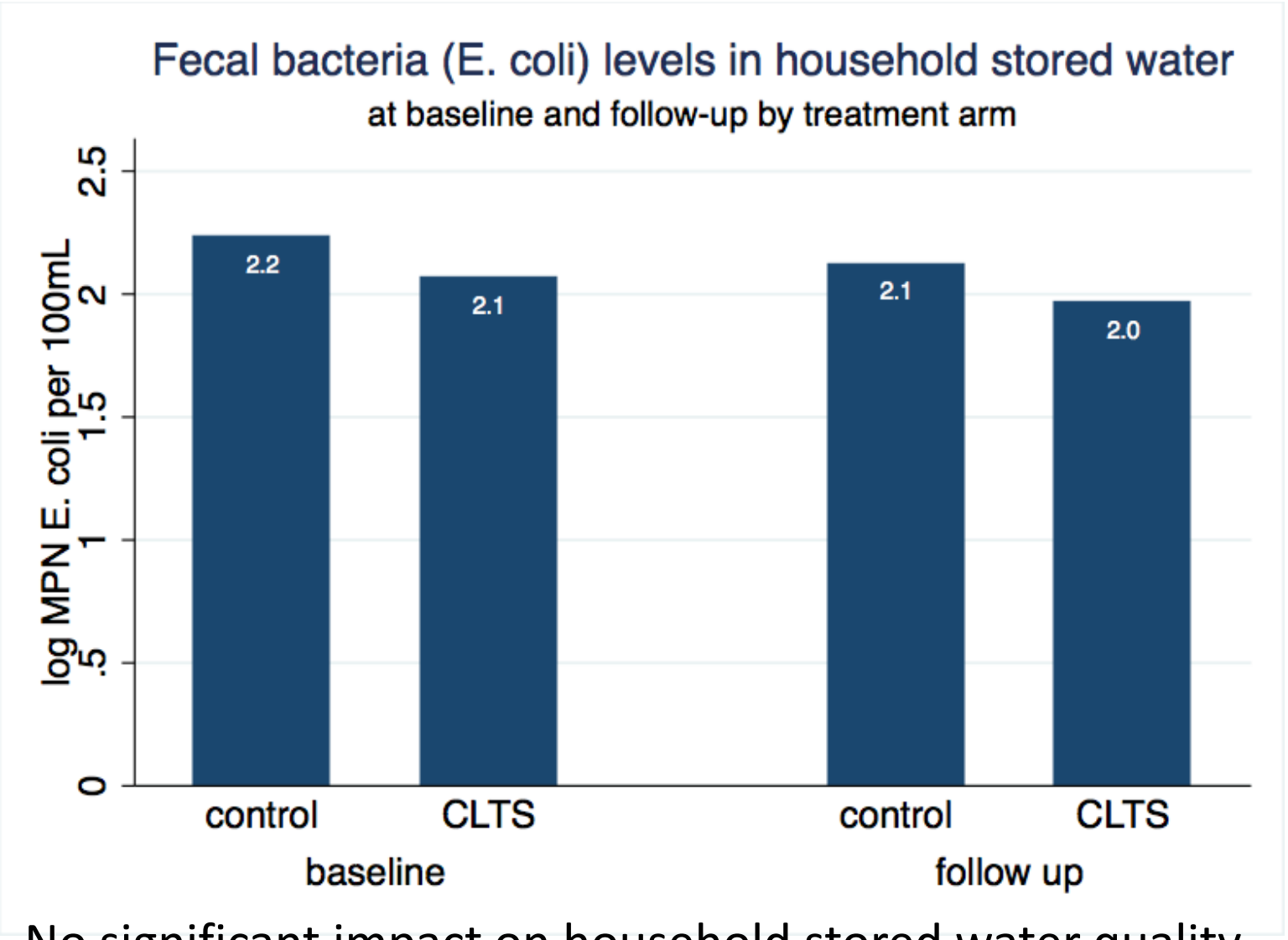
	Children < 5 years at baseline				Children < 2 years at baseline				Children < 1 year at baseline			
	N	β	95% CI	p-value	N	β	95% CI	p-value	N	β	95% CI	p-value
Height-for-age z-score	2418	0.16	0.00 - 0.32	0.047	1520	0.28	0.10 - 0.45	0.002	737	0.40	0.19 - 0.60	<0.001
Weight-for-age z-score	2453	0.09	-0.03 - 0.21	0.156	1548	0.18	0.03 - 0.33	0.020	769	0.29	0.10 - 0.49	0.003
	N	RR	95% CI	p-value	N	RR	95% CI	p-value	N	RR	95% CI	p-value
Stunted	2418	0.87	0.75 - 1.01	0.060	1520	0.81	0.70 - 0.93	0.003	737	0.74	0.63 - 0.86	<0.001
Severely stunted	2418	0.74	0.56 - 0.98	0.038	1520	0.71	0.54 - 0.94	0.015	737	0.63	0.47 - 0.85	0.003
Underweight	2453	0.85	0.71 - 1.03	0.101	1548	0.80	0.66 - 0.98	0.032	769	0.67	0.53 - 0.84	0.001
Severely underweight	2453	0.65	0.46 - 0.92	0.014	1548	0.66	0.46 - 0.94	0.021	769	0.55	0.36 - 0.86	0.008

Water Quality – baseline results

Improved sources very clean, but only one-third of households have access

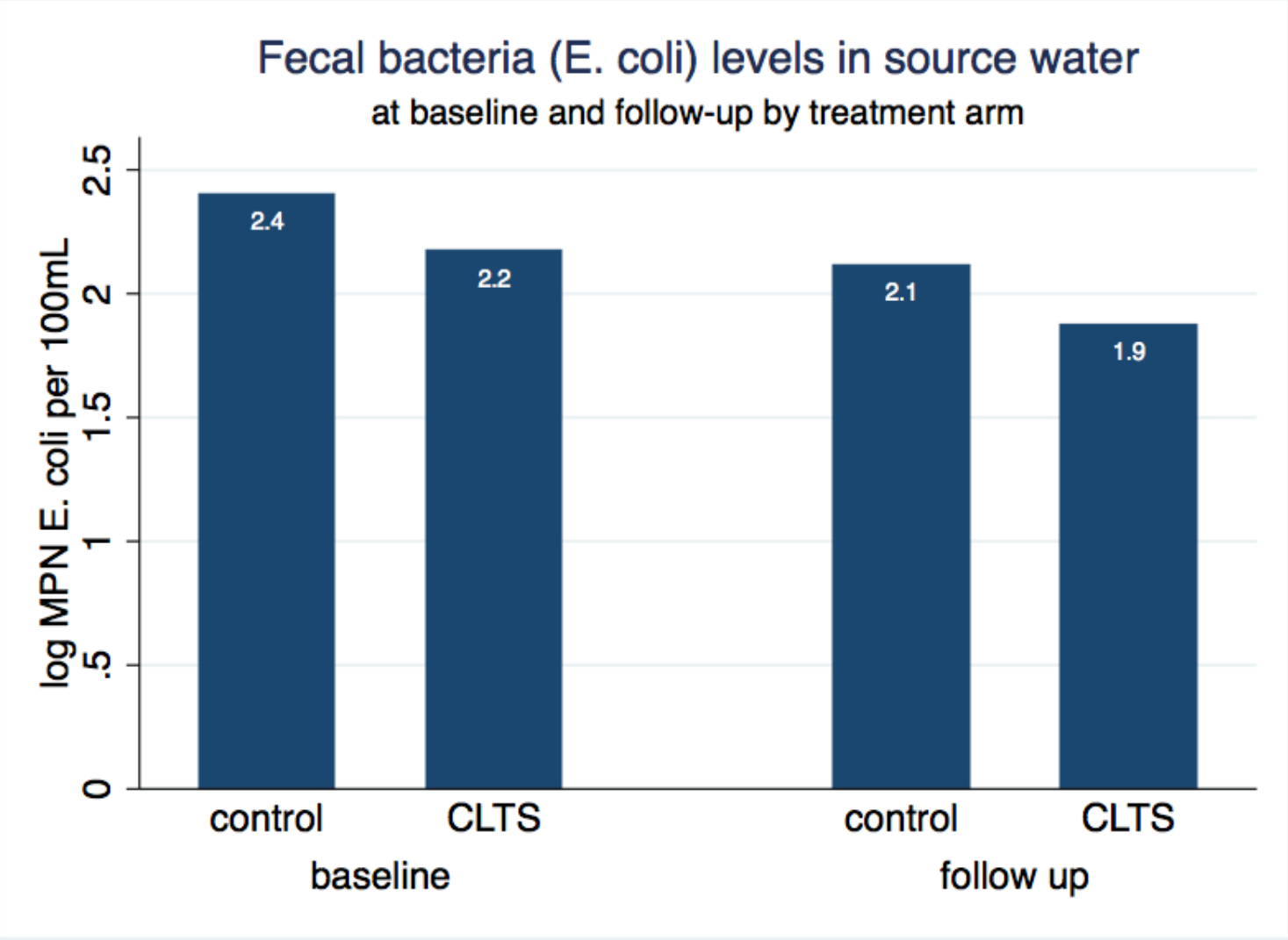


Water Quality – household results



No significant impact on household stored water quality

Water Quality - source water results



Reductions at follow up

but no statistically significant impact on source water quality

Women's safety

- CLTS improved the sense of security at night and intimacy

	Secure day	Secure night	Intimacy	Harrass	Women's safety
Treatment Status	0.0108	0.102	0.1044	-0.0004	0.054
	[0.0133]	[0.0357]***	[0.0430]**	[0.0126]	[0.0193]***
Constant	0.9622	0.8247	0.7386	0.0282	0.6386
	[0.0099]***	[0.0297]***	[0.0328]***	[0.0067]***	[0.0158]***
Observations	5118	5118	5118	5116	5116
R-squared	0.00	0.02	0.02	0.00	0.02

SE in brackets clustered at the village level

* significant at 10%; ** significant at 5%; *** significant at 1%

School Attendance & Labor Supply

- Effect on school attendance

	School	School days	Child labor	Child labor 1	Work	Work hours	Work hours
Treatment Status	0.0822	0.0621	0.0223	0.0241	-0.0158	0.1272	0.2673
	[0.0476]*	[0.0924]	[0.0270]	[0.0271]	[0.0121]	[1.2709]	[1.3575]
Constant	0.3588	0.2045	0.5114	0.5798	0.8601	35.5011	23.0764
	[0.0331]***	[0.0447]***	[0.0185]***	[0.0182]***	[0.0067]***	[0.8703]***	[0.8858]***
Observations	7231	2910	13747	16084	15832	13899	3936
R-squared	0.01	0.00	0.00	0.00	0.00	0.00	0.00

SE in brackets clustered at the village level

* significant at 10%; ** significant at 5%; *** significant at 1%

(1) Between 5 and 12 years old; (2) Between 5 and 12 years old; (3) Between 4 and 12 years old; (4) Between 4 and 15 years old; (5) More than 14 years old; (6) More than 14 years old; (7) Between 5 and 14 years old.

Interpretation of results

- Effect on child growth, no effect on diarrhea or weight-for-age
- Sanitation may affect child growth through other channels than diarrhea
  - Environmental Enteropathy: non-clinical condition of impaired gut function, hypothesized to be caused by exposure to contaminated environments
  - CLTS may reduce fecal contamination in the environment, thus reducing environmental enteropathy and stunting
- Reductions in open defecation for both children and adults

What may be working in CLTS?

Awareness?

- Not more knowledgeable on the causes of diarrhea and do not know any better how to prevent diarrhea:
  - Not more likely to recognize that personal hygiene, washing food, treating water, cleaning the house or using latrines are effective behaviors to prevent diarrhea among young children.
  - Not more likely to know when it is appropriate to wash hands, one exception: more hhs report that one should wash hands after using latrines.
    - Expected since CLTS specifically promote latrines with a hand-washing station (water and soap or bucket /ashes).

What may be working in CLTS?

- Hand hygiene
  - Observations by Field workers: hands are as dirty (palm, fingernails and fingertips of the primary care-giver)
  - Even if more likely to know when to wash hands, they do not act on it
- Water quality
  - More likely to filter water and use chlorine
  - But water is as dirty
  - Re-contamination is common when hhs do not use safe storage containers

What may be working with CLTS?

- External effects:
  - Focus is on hh who already had access to a latrine at baseline to test if their children's health improved as a result of CLTS.
    - If externalities are not large, we do not expect to find much improvement for these hhs.
  - We compare those with private latrine at baseline in T=1 and in T=0.
    - Main difference is that in T=1 hhs are surrounded with more people using latrines than in T=0.
  - We find no health impact for those who already had a latrine at baseline.
    - Indirect evidence that health externalities are not important.

    Consistent in an environment with low population density and dry climate.

Summary so far

1. CLTS resulted in a large increase in latrine coverage and latrine use (and a large reduction in OD)
2. But no effect on awareness, hand hygiene, water quality, or on how clean surroundings of the houses are: CLTS impact on children's health not through these pathways
   - Little evidence of positive external effects for those already equipped with a latrine no health benefits spilling over to others in the community
3. CLTS impact on children's growth can be exclusively attributed to (individual) latrine use
4. Next question: what drives latrine adoption?

Community mobilization for latrine adoption

- CLTS leads to higher cooperation, as measured in a series of public good games. Also higher beliefs over others' propensity to contribute to public good.
- Interpretation: CLTS works through improving communities' capacity for collective action.
- Gains in cooperation materialize in a public good experiment, outside the realm of sanitation.

Some ongoing work

-Role of networks

- Latrine adoption/ OD practices and geographical networks
- Latrine adoption / OD practices and social networks

-Look at secondary data (Unicef)

-Cost Benefit analysis

-Comparative paper using data from India, Indonesia, Tanzania and Mali

Final thoughts

- CLTS successful
  - Strong government leadership & resources
  - Embraced key
    - Disgust/dignity
    - Public commitments
    - Consequences of actions
    - Prestige/reward
- Did not reach universal coverage
- Did not increase improved latrines

Final thoughts

- Little to no impact on diarrhea, but improved child growth
- Potential explanations:
  - Parasitic infections
  - Environmental enteropathy

Final thoughts

- Growth benefits for children resulting from CLTS are due to increased latrine use.
- CLTS leads to increased cooperation through discussion and focus on collective action.
- Sustainability?
- Scaling up?

Final thoughts

- Two recent RCTs of rural sanitation interventions in India found no impact on diarrhea or child growth
  - Clasen (2014) Lancet Global Health
  - Patil (2014) PLoS Med

- Differences in Mali:
  - No subsidies, high uptake
  - Latrines built at no cost
  - Population density
  - Climate and hydrology

Project Team / Acknowledgements

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CEDLAS

Aix*Marseille université

unicef

Some extra slides

Baseline: Descriptive Statistics

Baseline: Households present also at folllow up

Variable name	N	Mean	Std. Dev.
1. Average number of households by village	121	33.42	12.43
2. Average number of households with children by village	121	33.29	12.41
3. Average children under five per community by village	121	55.19	21.80
4. Average number of water source samples by village	119	4.08	2.07
5. Minutes to water source	3548	7.94	22.01
6. % households fetching from deep well or using piped water	4044	0.32	0.47
7. % households fetching from shallow well	4044	0.64	0.48
8. Self reported Open Defecation Rates*			
Infants	3644	0.93	0.26
Girls (5-10)	2636	0.56	0.50
Boys (5-10)	2689	0.56	0.50
Elderly	1573	0.28	0.45
Men	3758	0.35	0.48
Women	3863	0.35	0.48
9. Head of household education	3735	1.55	8.49
10. Number of participants in each game by village	121	22.49	4.17
11. Average cooperation in 2-3 round of games by village	121	72.65	19.61
12. Average gain in cooperation from 1 round to 2-3 average by villag	121	7.75	18.10
13. % of population with private latrines	4043	0.35	0.48

(*) main place of defecation of household members when they are at home

Baseline & Follow-up data

Follow up	Total	Baseline & follow up	Only follow up
Number of menages	5195	4034	1161
Number of children <= 2	3718	2821	897
Number of children >2 & <=5	3368	2770	598
Number of children >5 & <=7	2304	1946	358
Menage size (average)	7.59	8.06	5.93

Sanitation promotion (I)

	Organizations came to the village to promote			
	Total	Treatment	Control	T-test
Mean	0.5388	0.9540	0.1011	117.5062***
SE	0.0070	0.0041	0.0061	-
N	5078	2606	2472	-

		Which Organization came to the village?			
		Total	Treatment	Control	T-test
ATPC	Mean	0.6502	0.6921	0.0978	17.188363***
	SE	0.0093	0.0094	0.0220	-
	N	2607	2423	184	-
The Goverment	Mean	0.0042	0.0041	0.0054	-0.26372051
	SE	0.0013	0.0013	0.0054	-
	N	2607	2423	184	-
UNICEF	Mean	0.3214	0.3459	0.0000	9.8593807***
	SE	0.0091	0.0097	0.0000	-
	N	2607	2423	184	-
Other Organizations	Mean	0.2332	0.1828	0.8967	-24.474648***
	SE	0.0083	0.0079	0.0225	-
	N	2607	2423	184	-

Sanitation promotion (II)

	Organizations came to the village to promote			
	Total	Treatment	Control	T-test
Mean	0.5551	0.9602	0.1048	105.8600***
SE	0.0079	0.0043	0.0071	-
N	3967	2088	1879	-

		Which Organization came to the village?			
		Total	Treatment	Control	T-test
ATPC	Mean	0.6575	0.6987	0.0972	15.4867***
	SE	0.0104	0.0104	0.0248	-
	N	2102	1958	144	-
The Goverment	Mean	0.0038	0.0041	0.0000	0.7682
	SE	0.0013	0.0014	0.0000	-
	N	2102	1958	144	-
UNICEF	Mean	0.3221	0.3458	0.0000	8.7196***
	SE	0.0102	0.0108	0.0000	-
	N	2102	1958	144	-
Other Organizations	Mean	0.2312	0.1818	0.9028	-21.9492***
	SE	0.0092	0.0087	0.0248	-
	N	2102	1958	144	-

Perceptions (I)

- Increase in disagreement about the statement about OD, “shame” feelings and decrease in the perception of high cost.

	Community Opinion		
	No Latr. Utiliz.	OD is a shame	Latr. expensive
Treatment Status	1.1358	-0.4038	0.4009
	[0.1464]***	[0.0773]***	[0.0896]***
Constant	2.7913	2.2099	3.2055
	[0.1145]***	[0.0562]***	[0.0672]***
Observations	5133	5132	5131
R-squared	0.17	0.04	0.03

1=Completely agree 2=Agree 3=Nor agree nor disagree 4=Do not agree 5= Completely disagree

SE in brackets clustered at the village level

* significant at 10%; ** significant at 5%; *** significant at 1%

Perceptions (II)

- Increase in disagreement about the statement about OD, “shame” feelings and decrease in the perception of high cost.

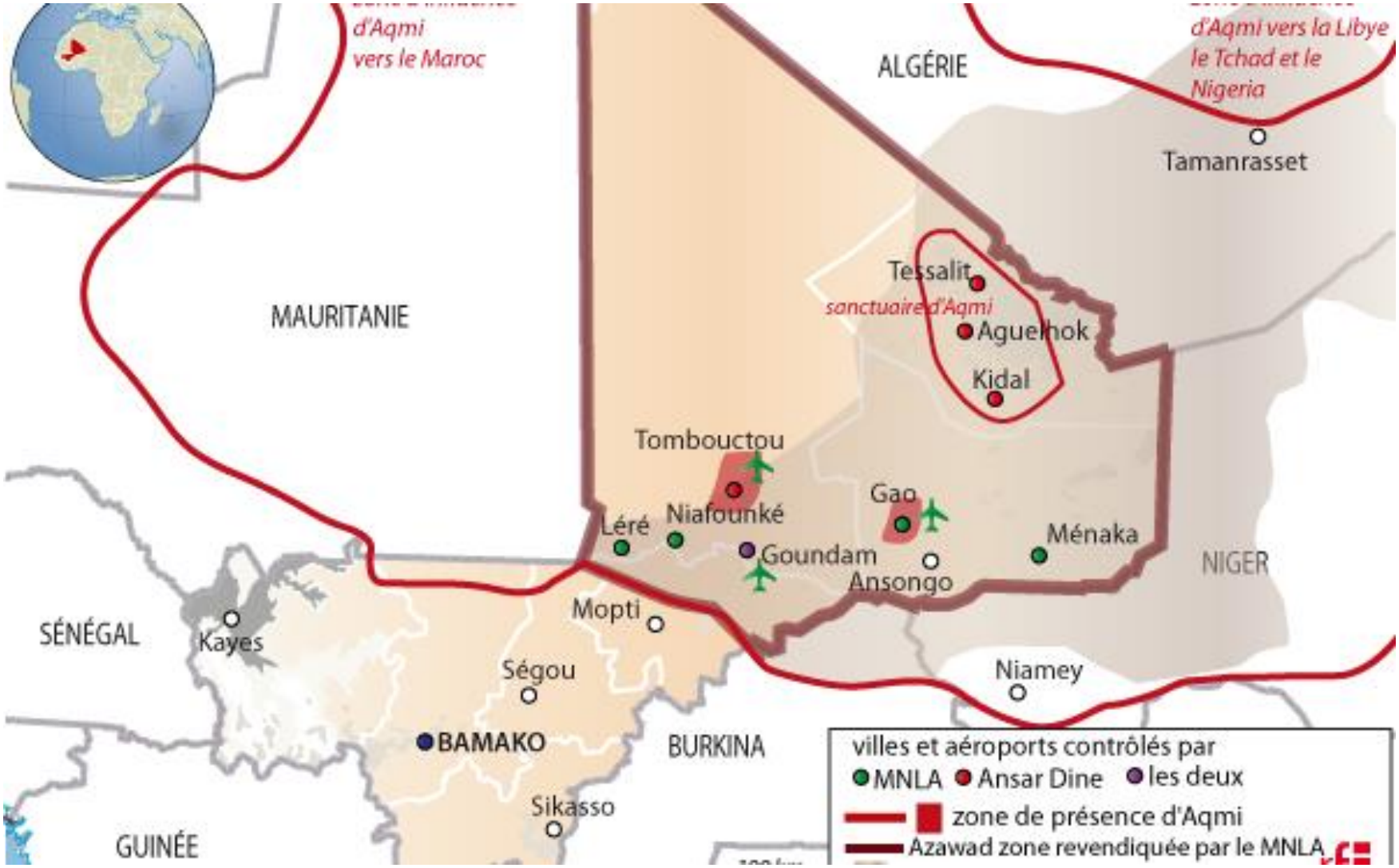
	Community Opinion		
	No Latr. Utiliz.	OD is a shame	Latr. expensive
Treatment Status	1.1362	-0.4013	0.4116
	[0.1543]***	[0.0808]***	[0.0934]***
Constant	2.7977	2.2071	3.2129
	[0.1220]***	[0.0578]***	[0.0711]***
Observations	3994	3994	3994
R-squared	0.17	0.03	0.03

1=Completely agree 2=Agree 3=Nor agree nor disagree 4=Do not agree 5= Completely disagree

SE in brackets clustered at the village level

* significant at 10%; ** significant at 5%; *** significant at 1%

Conflict in Mali



Experimental Games (I)

- After the household questionnaire, the respondent draws a number and he/she may be selected for participating in the games (25-30 participants)
  - Games are played on the last day in each community.
  - Only adults can participate from the game.

Experimental Games (II)

- Use of experiments to mimic the ways the program proceeds to produce its impacts
- To learn about why the program may succeed (or fail to succeed) to help communities solve their collective problem and live in a cleaner environment
- Our use of experimental approach based on 2 hypotheses:
    1. villagers play according to their past experiences and underlying social norms “what does this remind me of?”
    2. Experiments can be designed to mimic the essential features of the program.

Experimental Games (III)

- In addition to running experimental games on cooperation:
  - we elicit expectations on others' behavior within the games,
  - we identify attributes of the villages social structure.
- How much cooperation is there within communities in our study area, and how is it related to community attributes?
- Does communication -informal or led by a designated person - affects the level of cooperation?
- How does this change in cooperation depends on community attributes?
- Does communication affect cooperation through its effect on expectations (making them more accurate)?

Experimental Games (IV)

Triggering Behavioral Change

- Our experiments focus on reproducing essential features of Step 2 (triggering)
- Facilitated by 3 to 4 CLTS-trained staff who introduce sanitation as the discussion topic and invite community members to express their views.
- Discussion is then usually led by 3 to 4 community members who talk for the community (leaders)
- Discussion with intermissions led by facilitators
- tour of village to map OD areas, prompting community members to estimate quantity of feces produced per year and assess out-of-pocket health expenditures, asking them to list the main diseases affecting the community, showing how contamination to food and water occurs?

Game Structure

- Public good game with 3 treatments
    1. Base game: not allowed to communicate during the game.
    2. Informal discussion: participants hold a 5-min discussion before they make their decisions.
    3. Discussion led by a designated person: a designated person leads a 5-min discussion before participants make their decisions. She is explicitly told that when everyone contributes, the group maximizes its gain and when no one contribute the group minimizes its gain.
- Treatments with discussion come close to what happens under CLTS regarding the contributions of (building/use of latrines) by community members for a cleaner environment.

Some more details….

- Pool of participants randomly chosen in village population
  - We provide endowments to players and ask them to choose to contribute to a group project (so that each participant gets 1 point) or to keep the endowment (10 points).
- There are always more than 11 participants in each village.
- They are asked to fold one of 2 papers corresponding to their
- decision, all at the same time.
- Expectations about the actions of others are elicited after they make their decision
- Game is incentivized:
  - Participants know in advance they will be rewarded with prices according to the number of points cumulated during the session.
  - Prices are valuable items that are not related to sanitation (e.g.,batteries, pencils)

Some more details….

- 5 weeks training in the conduct of these games, including pilot sessions
- Instructions explained and questions answered until all participants fully understand.
- An experimental session lasts around 2 hours.
- We randomly manipulate order of discussion and leader games
- Gains are privately revealed at the end of the 3 rounds
- Experimental sessions held on the 5th day of visit in the village, once all other data collections are completed
- We conducted 121 experimental sessions between April and June 2011 and repeated them between April and June 2013.

Experimental Design

- Voluntary Contribution Mechanism (Marwell and Ames, 1979)
- Each player can either invest a token (*nijoro*) in a private account with private benefits ($x_i = 0$) and get a payoff ($p = 10$) or invest it in a group account (*foroba*) ($x_i = 1$), in which case each player (including the contributor) gets a payoff ($a = 1$).
- group comprises m players, $m > 10$
- payoff is $y_i = p(1-x_i) + a(\Sigma x_j)$
- Dominant strategy is not to contribute and group outcome is mp
- Social optimum is attained if all were to contribute:

$$m^2a > mp$$

Example of Investment Game (2)

- Suppose the contributions per round are 20, 21 and 21.

If player plays	Sum	Total points
0,0,0	10+20+10+21+10+2	92
1,0,0	.	82
1,1,0	.	72
0,1,0	.	82
0,1,1	.	72
1,1,0	.	72
0,0,1	.	82
0,1,1	.	72
1,1,1	0+20 +0+21+0+21	62

Invitation pour participer
JEU POUR ADULTES

Prénom Nom du participant

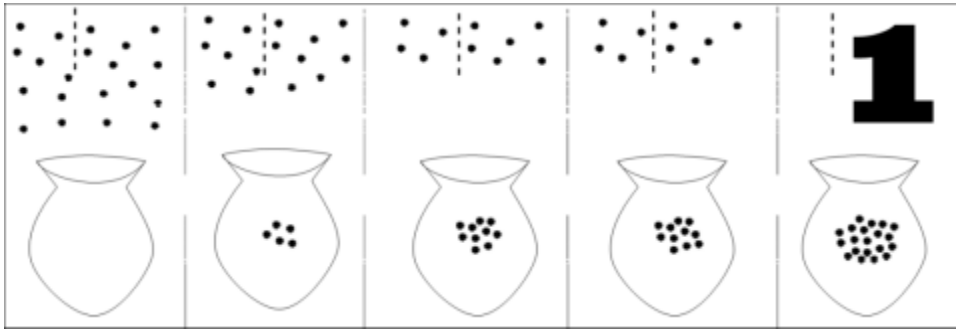
âge Sexe

No. identifiant du ménage

Investment Game

- 1st round: No communication between players is allowed.
- 2nd round: They can discuss among them and decide how to play
- 3rd round: One of the players gets randomly selected and has to explain the game to the rest.
- The order of the 2nd and 3rd rounds where randomly allocated.

- After each round players are asked predictions about how they think the rest of the players will behave.



The “Rankings” game

- Objective: identify leaders and influential individuals.
- First, the participants rank themselves forming a circle sorting themselves by height.
- After that, they have to rank the better dancers for a regional competition.
- In the third round, they have to decide on a ranking according to who would represent better the community.
- In the last rank, they have to decide who would best help them to resolve a conflict.
- Common problems faced by the villagers where used in order to motivate each round.
- We can relate the results of the ranking games to the leader randomly chosen in the investment game.
- Small prices are awarded according to the points each player wins.

Results

- No impact (of CLTS) in base treatment without communication
- Positive impact when discussion between participants is allowed
  - Interpretation
    - Framing effect (open discussion) reminds participants of how decisions are taken under CLTS.
    - Community members in CLTS villages are more able to use “cheap talk”.
    - CLTS villagers gets closer to the socially desirable outcome.

Results

- CLTS impact on cooperation is even higher in the leader treatment.
- Interpretation:
  - Stronger effect when information on how to solve the social dilemma is offered.
  - CLTS villagers more likely to use this focal point to coordinate actions.