



**ANNUAL CONFERENCE 2018:
CHILD HEALTH –
CHILDREN'S LIFE JOURNEYS OF AND CRITICAL INFLECTION POINTS**

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SESSION: PREVENTION AND MITIGATION OF CHILD HEALTH SHOCKS
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Background: Low Prevention Rates



In LMICs

- Latrines used as storage space; bed nets for fishing and wedding dresses
- “Improved cookstoves” left in non-working order
- Water treatment efforts minimal



In developed countries

- 50% of adults in US don't brush and floss daily
- <40% of adults get flu shots



Outline of Talk

1. A few conceptual thoughts on prevention
2. Some evidence on preventive behavior in the lab
3. Zambian experiment on cost subsidization
4. Zambian experiment on conditional cash transfers
5. Q&A



General Patterns of Adoption of Health Technologies

- Initial willingness to try health products offered for free but limited use (Grant and Mobarak 2012; Duflo et al 2012)
- Sustained use/investment in health prevention very low (Dupas 2011)
- Somewhat similar patterns for health insurance, but also fertilizer and high-yield crops in agriculture

Prevention Environment is Noisy

Noisy for learning due to stochastic nature of outcomes:

I may get malaria even though I use a bednet.

I might not get the flu the one year I decide not to bother with a flu shot.

Noisy in messaging:

Tons of public health messages aiming to

1. provide more information (rare?)
2. Persuade individuals to do the “right thing”



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Smoking kills

About 106,000 people in the UK die each year due to smoking

Brush Your Teeth!



Then Smile BIG!

DON'T GET THE FLU. DON'T SPREAD THE FLU.

GET VACCINATED.

cdc.gov/flu



EAT HEALTHY

Region of Peel TOGETHER for HEALTH

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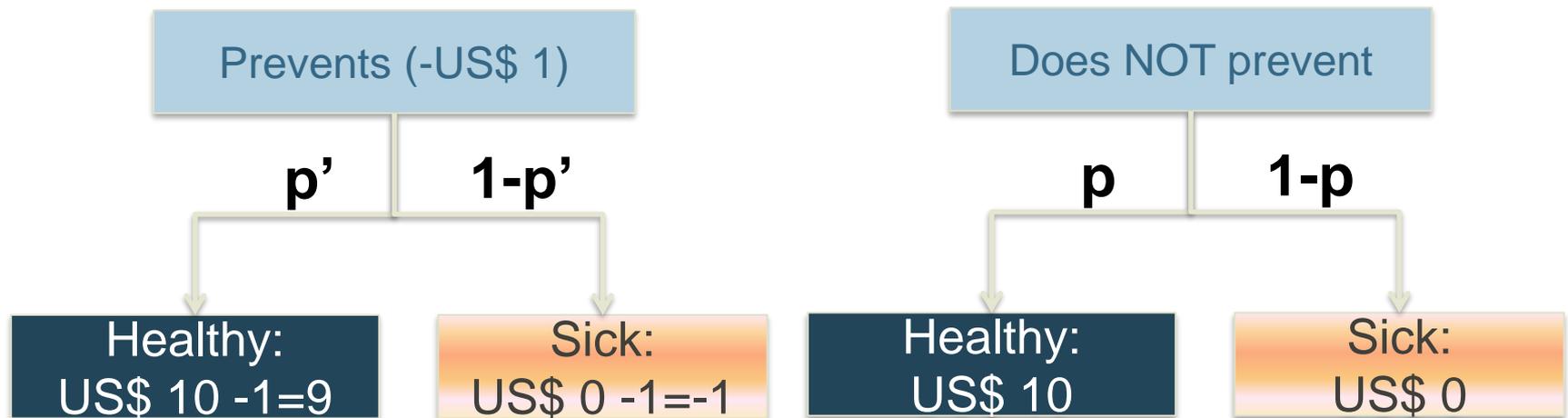


The “Noisy Learning” Experiment

- To understand individual decision making in the context of prevention, we invited 679 Bostonians to a laboratory experiment
- Subjects were offered a choice to invest into effective health technologies, and faced stochastically determined outcomes
- We monitored perceived effectiveness and uptake over time: each technology was experienced for 15 rounds

Game Setup: 1 Preventive Technology, 15 rounds

In each round, subjects need to decide whether they want to invest in the preventive health technology



Effectiveness of Technology

All preventive technologies were such that prevention paid in expected terms (should be true for most public health goods promoted)

Effective Technology:
12%pts reduction in risk of sickness

Cost: US\$ -1

Expected income increase:
 $0.12 * 10 = 1.2$

ROI: 20%

Highly Effective Technology:
20%pts reduction in risk of sickness

Cost: US\$ -1

Expected income increase:
 $0.20 * 10 = 2 \rightarrow$

ROI: 100%

Randomly Assigned Treatments

- Probability of being sick without prevention: 0.3, 0.5, 0.7
- Type of public health message

Experimental variation *within* sessions (*within* subjects)

- ✓ Effectiveness of the technology: 12%pts or 20%pts reduction in risk
- ✓ Stochastic results of actions taken (true random draw)



**You chose not to invest in prevention.
You did not fall sick. Your period income is 10.**

You spent 0 on prevention, and earned an income of 10.

Your net period income is 10.

..and not so lucky outcomes

**You chose not to invest in prevention.
You fell sick. Your period income is zero.**

You spent 0 on prevention, and earned an income of 0.

Your net total period income is 0.

Message Treatments

Each individually randomly assigned to a specific message (for the entire session)

Control: No message

Balanced:

“On average, prevention pays. There is still some risk to you that you will get sick even if you pay to prevent”

Strong:

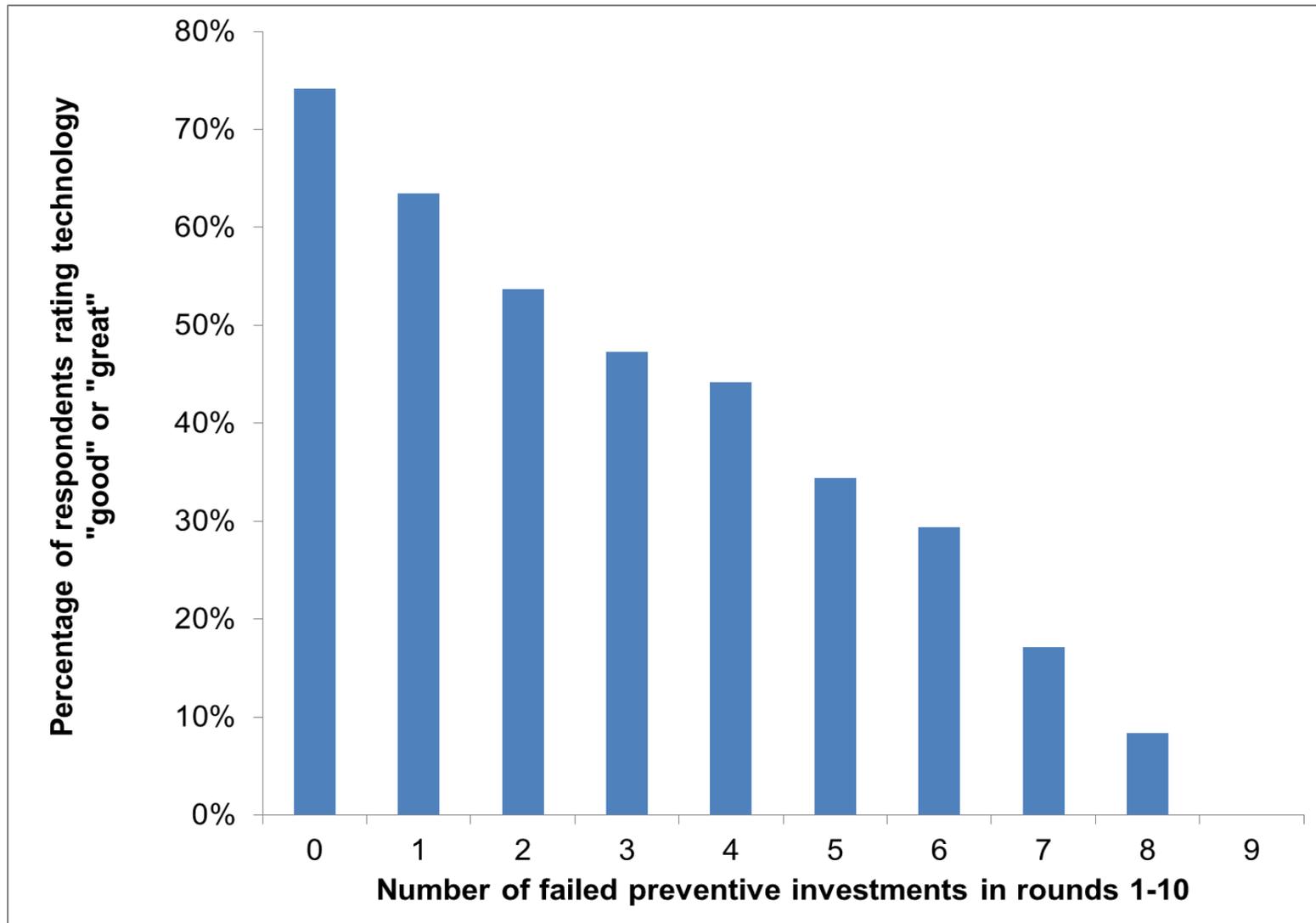
“On average, prevention pays. We strongly encourage you to buy this product.”



Main Results

- Even though both technologies were highly effective, less than 70% prevented on average
- Public health messaging increased uptake by 5-8%pts
- Uptake responded strongly to absolute risk initially (even if risk reduction is the same) – this effect dissipates relatively quickly
- Over time, subjects primarily reacted to their own (stochastic) experiences, even when full information was provided

Stochastic Distributions and Subjective Assessments





Policy Implications

- Prevention is challenging because negative outcomes are possible with investment (imperfect insurance)
- Strong response to preventive failure («this flu shot does not work for me») means that demand creation is particularly challenging for technologies with high residual risk
- Public health messaging can increase uptake, but effect size is generally not very large
- Stronger incentives (or legislation) may be needed to achieve high uptake

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Price Subsidization and Demand – Evidence from Zambia

- One key challenge with preventive technologies is that they require an upfront investment that may be hard to finance for poor households
- In 2010, Cohen and Dupas showed that demand for bed nets drops to zero for any price > 1 USD in Kenya
- We conducted an experiment with farmers to see how much uptake increases if nets can be purchased on a loan basis (by removing liquidity constraints).

Background Zambia

- Country size: 752,614 km² (twice as large as Germany)
- Population: 16.6 Million
- Income per capita: \$ 3,800 (PPP adjusted)
- Life expectancy at birth: 61 years
- TFR: 5.3



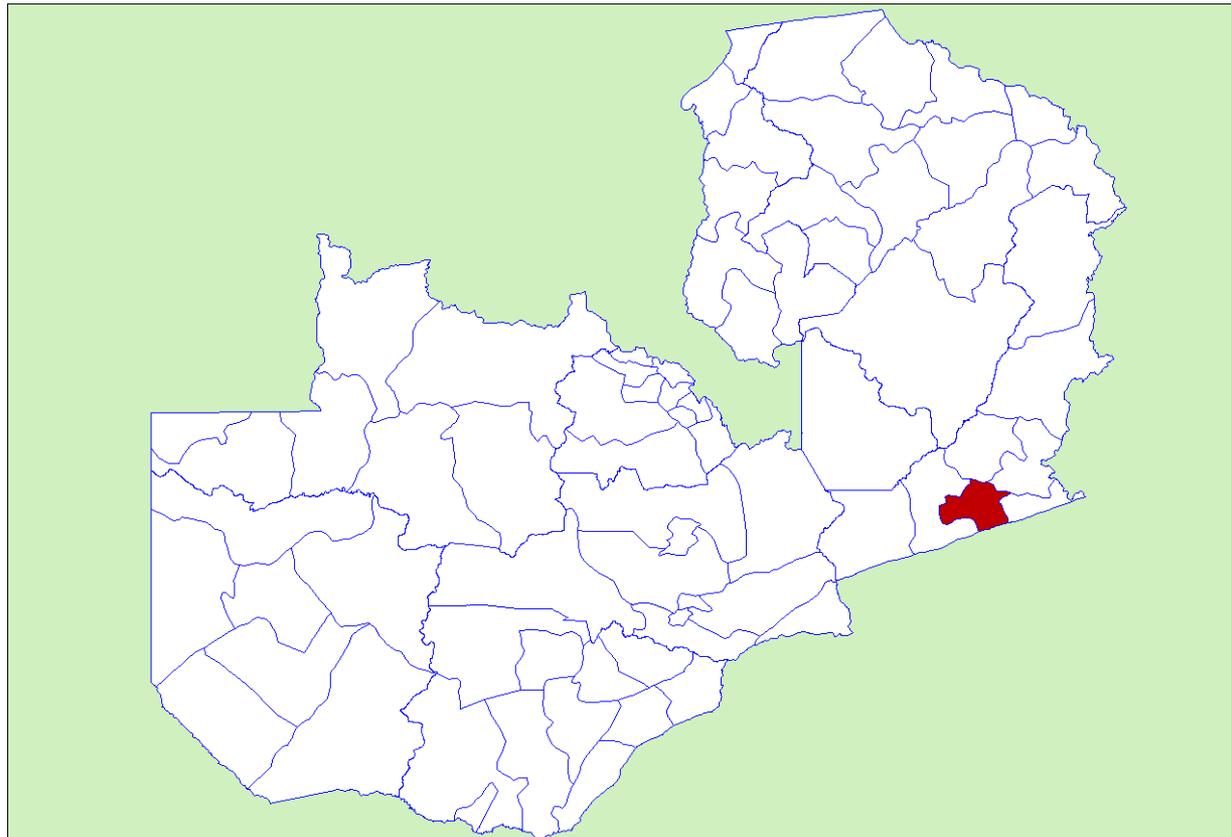
Productivity

The Regional Setting: Katete District

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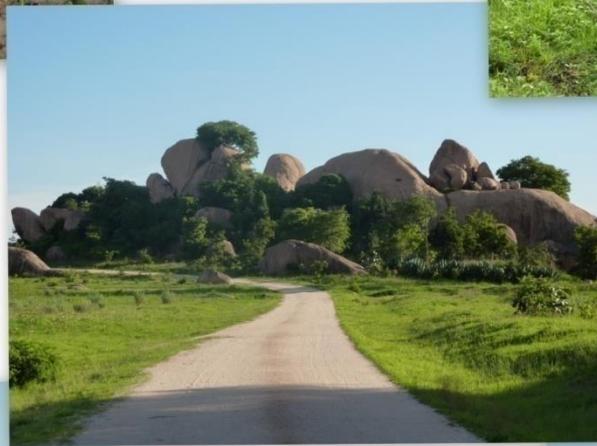


- Eastern province
- Estimated population: 250,000
- Capital Katete, population 35k
- Endemic malaria region



Productivity

Katete District



The Experiment

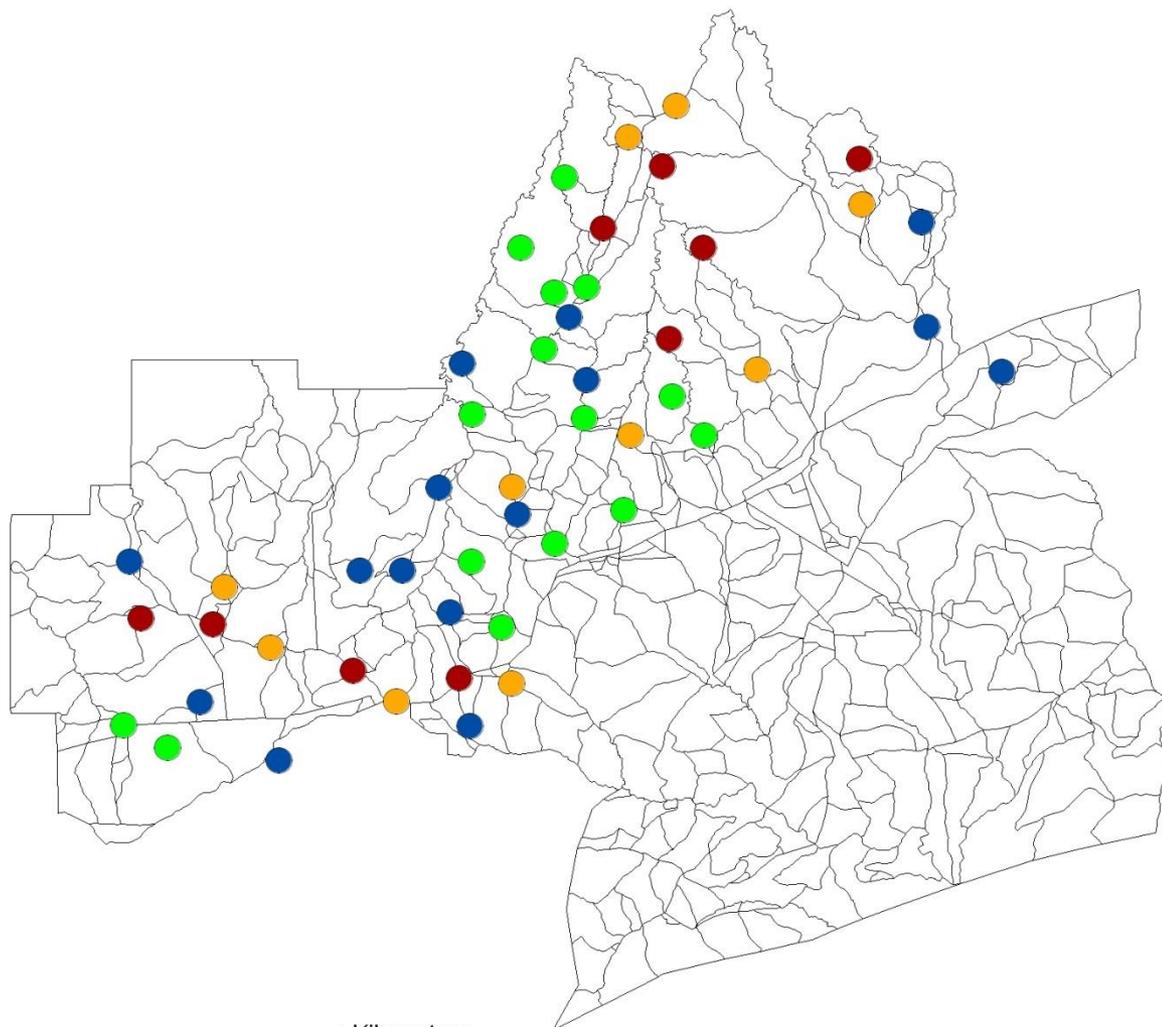
515 farmers (3000 individuals) in 49 villages with standing loan contract randomly assigned to one of four arms:

- **Free nets:** up to the number of sleeping places
 - **Loan + 50% discount:** US\$ 2.5 per net
 - **Loan without discount:** US\$ 5 per net
 - **Control group**
- ➔ Follow up throughout subsequent harvesting season



Legend

- Control
- Free nets
- Loan 12.5k
- Loan 25k

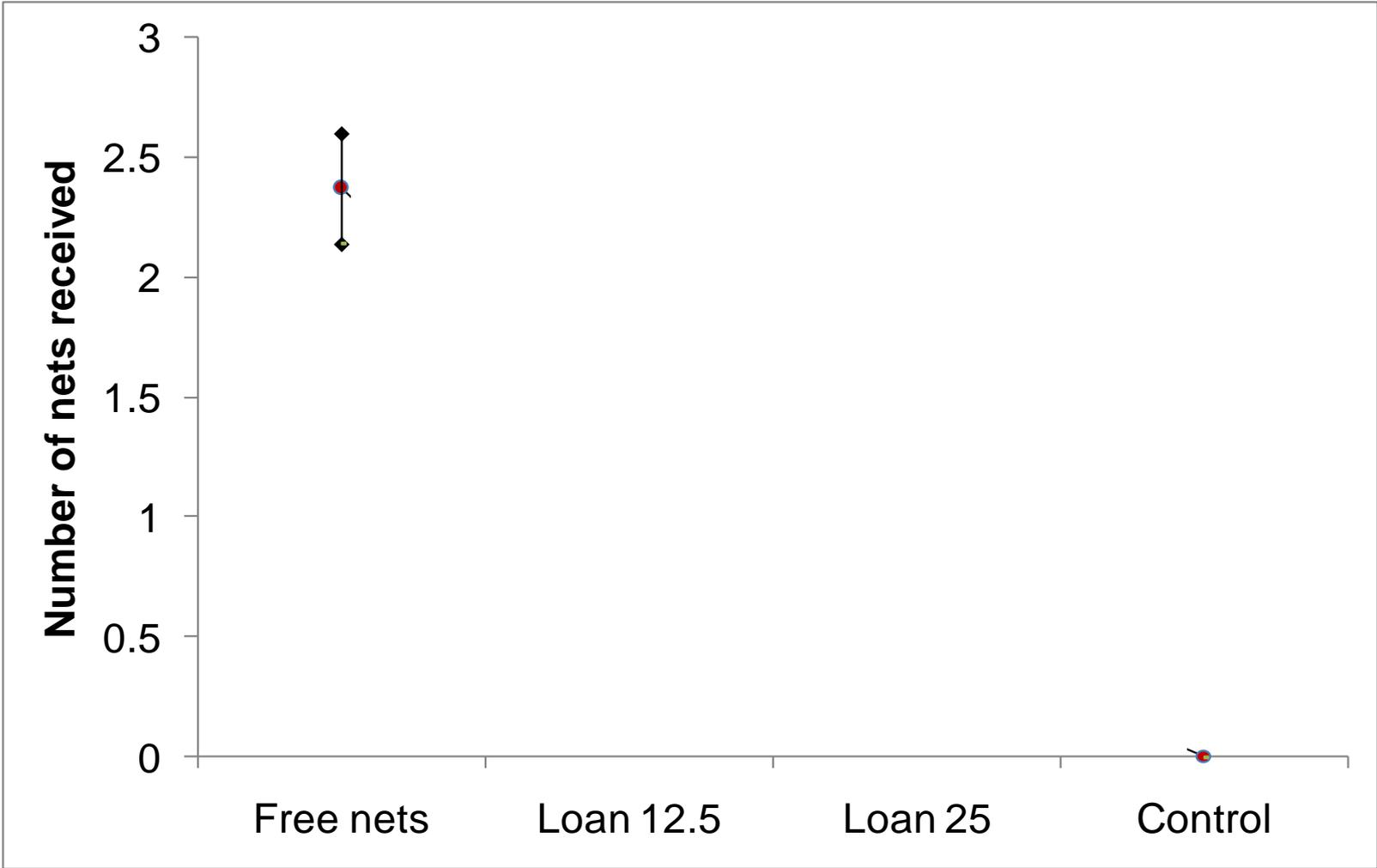


Project Timeline



← Main growing season → Harvest

Nets Requested by Study Arm



Summary of Bed Net Experiment

- Demand for bed nets can be increased substantially if nets can be purchased on a loan basis
- Even with pre-financing and subsidization net uptake is however rather limited; similar results were also found in Tarozzi (2014)
 - coverage levels targeted by public health programs in this area likely only possible with free distribution
- Low uptake not consistent with perceived high health returns
 - risk aversion or very high expected returns as explanations?

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Financial Incentives for Preventive Care

- Given that uptake of public health goods often remains low even with zero out-of-pocket payments, optimal financial contracts may require direct payments to users and patients
- In developing countries, this has happened quite a bit in recent years through conditional cash transfer programs such as PROGRESA/OPORTUNIDADES, which require parents to attend child health clinics in order to receive government support
- We conducted an experiment to assess behavior responses to such incentives in Zambia

Study Design

- 543 parents of 6-year old children across 31 clusters invited for a free health checkup
- Randomized into 4 incentive groups
 1. USD 0 (no incentive)
 2. USD 0.5
 3. USD 1.5
 4. USD 3.0
- All health services provided for free at public facilities – incentives could cover cost of transport/time
- Reward paid if parents came within one week window given

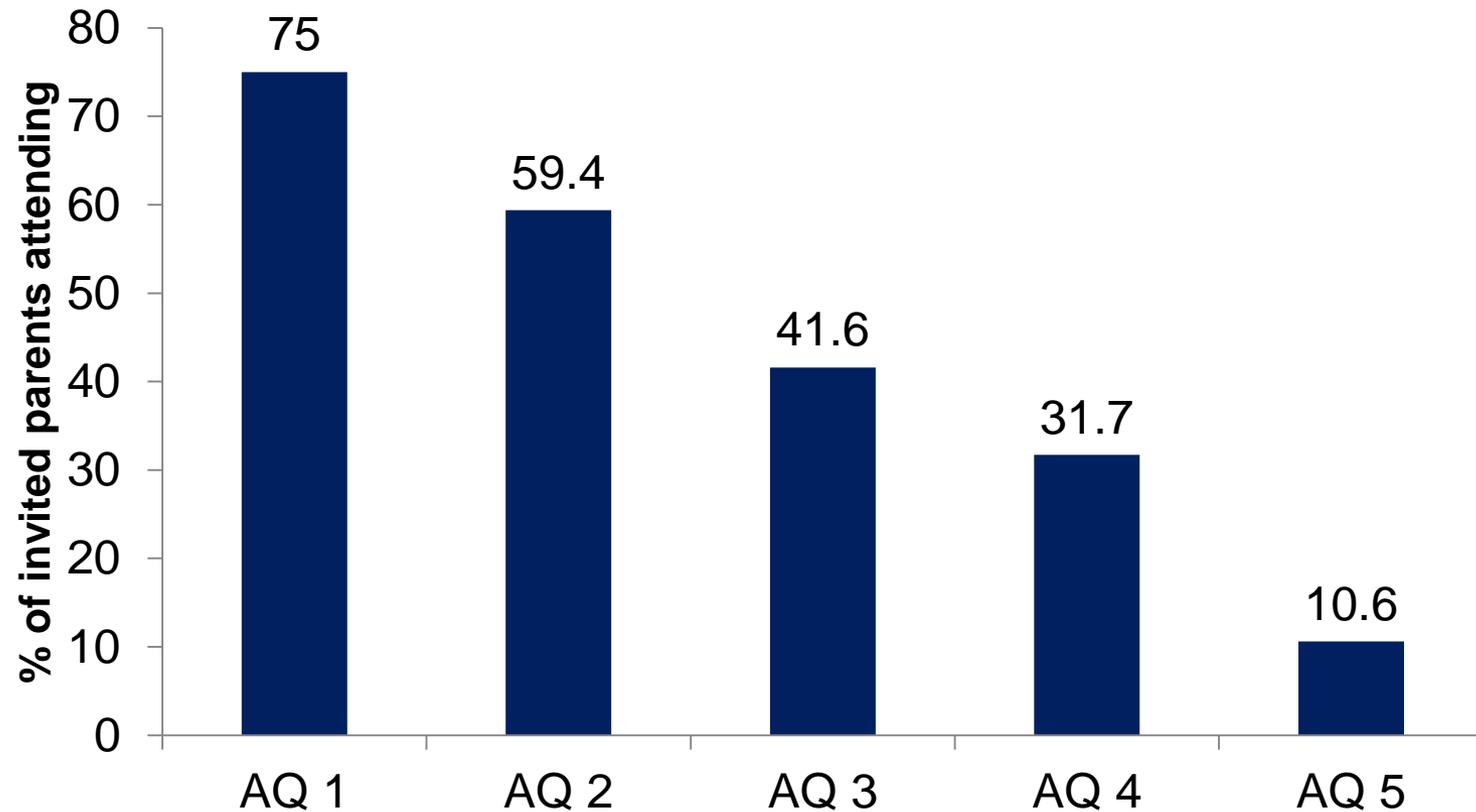
Study Location

- 31 clusters across 3 regions
- 543 families overall
- 60% rural

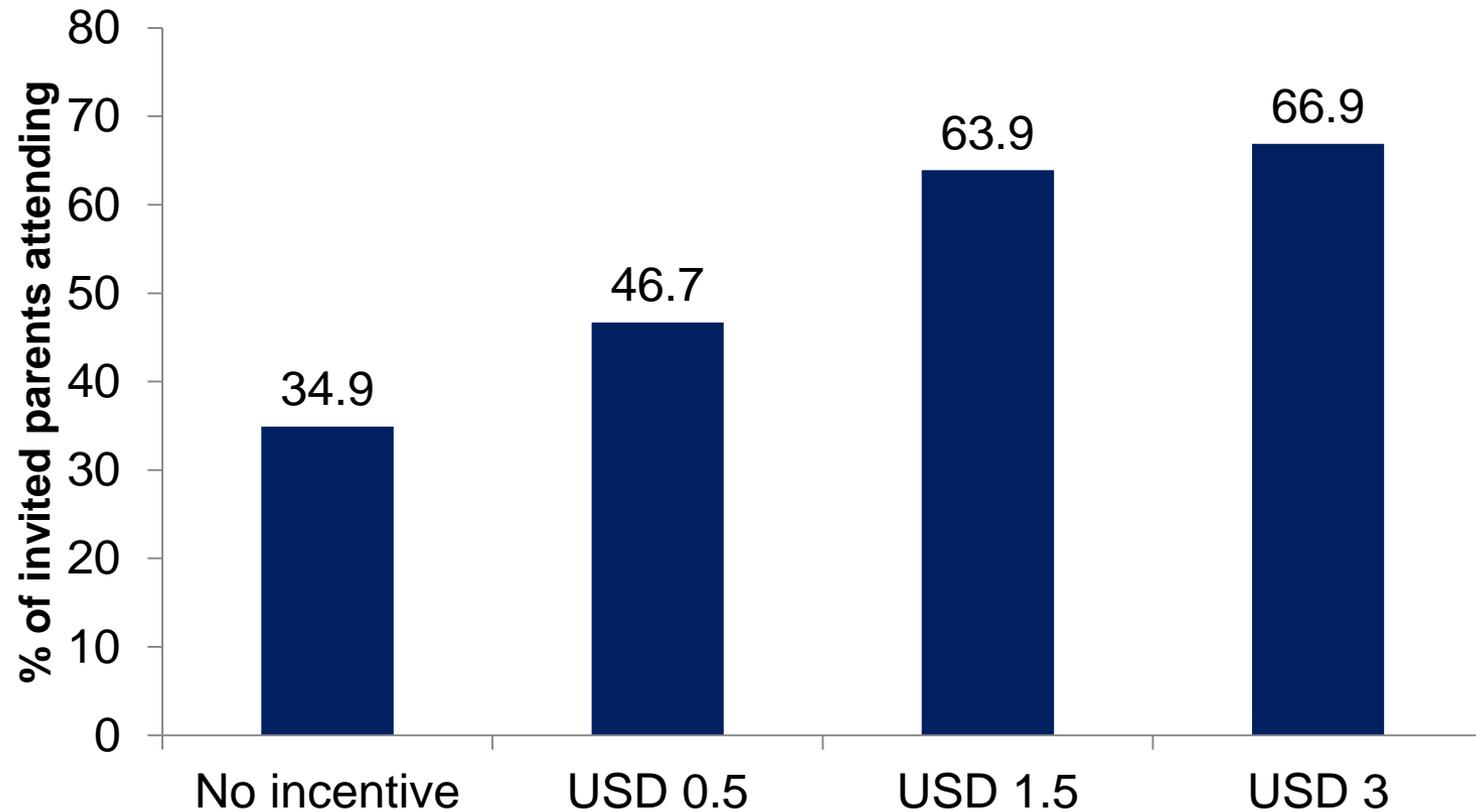


- Clusters included in experiment sample
- Lusaka: 14 clusters in experiment sample

Uptake by Wealth Quintile



Uptake by Incentive





Results Summary

- Uptake decreases strongly with household income – only partially explained by lower infection prevalence in this group
- Uptake of checkups increased by about 10%pts with each USD (~20% of daily income)
- Incentive response stronger among on-farmers and low income households
- Targeted of the poorest happens through self-selection into the program



Overall Summary

- Unsubsidized demand for preventive services is generally (very) low
- Our lab results suggest that «imperfect insurance» may be a critical factor in this decision process: «this does not work for me»
- Pre-financing may be a way to overcome liquidity shortages and present-biases in low income settings, but will likely not achieve high coverage
- Financial incentives can work, but behavioral response will depend strongly on income and opportunity cost.

Questions?

For further questions, please mail me at
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Thank You!