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# Health Impacts of a Schooling CCT Intervention

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# Outline

- This presentation looks at (side-) effects of a schooling conditional cash transfer project on (mental) health.
- Background & motivation
  - Conditional Cash Transfer Programs and Health
- The Zomba Cash Transfer Program (*ZCTP*)
  - Location and sampling
  - Research design
  - Balance and attrition

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# Outline

- The General Health Questionnaire 12
  
- Results
  - One-year impacts on (mental) health
  - Conditionality
  - Spillovers
  - Heterogeneity
  
- Conclusions

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# **BACKGROUND AND MOTIVATION**

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# CCTs and mental health

- Education:

- Changes outlook on life and future
- Changes social environment (classmates)
- Changes lifestyle

- Income:

- Increases influence within household
- Households become more sensitive to girls' needs
- Reduces stress within the household

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# CCTs and health in general

- Education:
  - Learn about hygiene and infectious diseases
  - Altered daily activities (fewer physically intense chores)
  - Access to school feeding and health programs
- Income:
  - Can increase expenditures on health related items (bed nets, nutrition, etc.)

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# Prior evidence

- Large relevant literature, e.g.:
  - Costello et al., *JAMA*, 2003.
  - Fernald et al., *Lancet*, 2008.
  - Gertler, *AER*, 2004.
  - Miguel and Kremer, *Econometrica*, 2004.
  - Ozer et al., *Pediatrics*, 2009.
  - Rivera et al., *JAMA*, 2004.
- Most of these studies find that CCTs, or other exogenous positive income shocks, have a positive impact on health.

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## This CCT:

- Contrary to most other CCTs this study does not include a health component. This allows us to directly measure the impact of education and income on health.
  - ‘Deworming’ examined the impact of a health intervention on education.
  - We’re examining the impact of an educational intervention on health.
- Whereas most prior evidence on the impact of CCTs on health comes from Latin America, this CCT is located in Sub-Saharan Africa.



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# Conclusions (preview)

- We find that the ZCTP has a substantial effect on (mental) health
- This effect appears to be heterogeneous and stronger among less-vulnerable groups
- Substantial (negative) spillover effects on non-participants in treatment areas are observed
- ‘Conditionality’ diminishes the positive impact of the ZCTP on mental health.

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# **ZCTP: LOCATION AND SAMPLING**

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# Location

- Zomba
  - Located in the south of Malawi
  - Combination of urban and rural areas
  - In Zomba, only **9.2% of females** have some secondary education or higher



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# Sampling

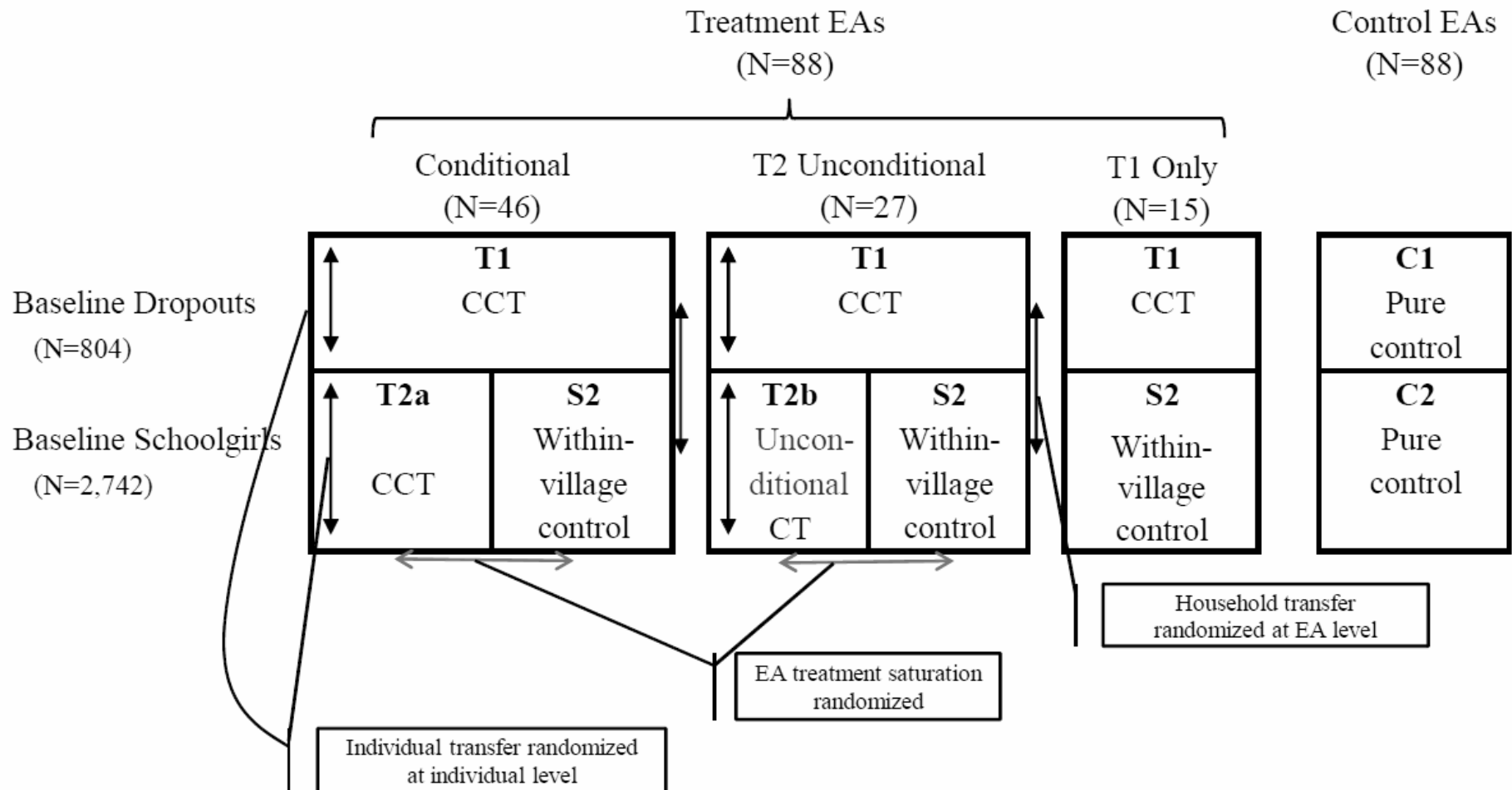
- 3,805 young women were sampled from 176 enumeration areas (EAs) in Zomba, a district in Southern Malawi.
- Eligibility into the program was defined as follows:
  - Eligible *dropouts*: unmarried girls, 13-22, already out of school at baseline, *and*
  - Eligible *schoolgirls*: unmarried girls, 13-22, who can return to Standard 7-Form 4, enrolled in school at the time of their first interview.
- Otherwise, there was ***no targeting*** of any kind.

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# **ZCTP: RESEARCH AND PROGRAM DESIGN**

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# Research design



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# Program Design

- Each transfer offer has two main components:
  - A transfer to the **parents/guardians** that varies **across** EAs,
  - A transfer to the **girl** that varies **within** each EA.
  - In addition, if the CCT recipient is attending **secondary school**, then a transfer equal to the school fee is made directly to the school each term.
- Transfer amounts for the parents range from \$4 to \$10 per month.
- Transfer amounts for the girls range from \$1 to \$5 per month.



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# **ZCTP: BALANCE AND ATTRITION**

# Balance

Equality of means at baseline

	Dropouts (N=889)		Schoolgirls (N=2285)	
	Control mean	Treatment difference	Control mean	Treatment difference
Age	17.434	-0.305	15.232	-0.097
Father alive	0.643	-0.002	0.690	0.035
Mother alive	0.784	-0.037	0.834	-0.027
Read English	0.469	-0.065	0.832	0.002
No qualification	0.667	0.011	0.656	-0.016
Ever pregnant	0.436	-0.020	0.020	0.008

Note: the entire sample was never married at baseline. Dropout and schoolgirl refer to schooling status at baseline. The sample was split into dropouts and schoolgirls at baseline, so the control and treatment means of schooling status were identical at baseline (dropouts 100% not in school and schoolgirls 100% in school).

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

# Attrition

Dependent variable:	Girl found in round 2					
	All	Dropouts	Schoolgirls	Schoolgirls	Unconditional schoolgirls	Conditional schoolgirls
Treatment indicator	0.00 (0.01)	0.01 (0.02)	0.00 (0.01)		0.01 (0.01)	-0.00 (0.01)
Conditional schoolgirl				0.01 (0.01)		
Unconditional schoolgirl				-0.00 (0.02)		
Constant	0.93*** (0.01)	0.90*** (0.01)	0.94*** (0.007)	0.94*** (0.007)	0.94*** (0.007)	0.93*** (0.01)
Observations	3805	890	2286	2286	2003	2893

Standard errors clustered at EA level

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

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# **THE GENERAL HEALTH QUESTIONNAIRE 12**

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# The General Health Questionnaire 12

- ❑ was designed as a screening instrument to identify psychological morbidity
- ❑ contains 12 questions related to mental health
- ❑ is often used to screen for psychological morbidity in non-clinical settings (e.g. Wiggins et al., 2004)
- ❑ has been used in many cultural and language contexts, and has been shown to have high sensitivity and specificity in a variety of cultural and language contexts (e.g. Ye, 2009)
- ❑ has been shown to be reliable among adolescents (e.g. French and Tate, 2004)

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# Threshold scores for elevated psychological morbidity:

- ❑ We follow the internationally established threshold, but this threshold has not been cross-validated in Malawi.
- ❑ Therefore, we also show some robustness results

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# **RESULTS: BASIC IMPACT**

# One-year impact on mental health

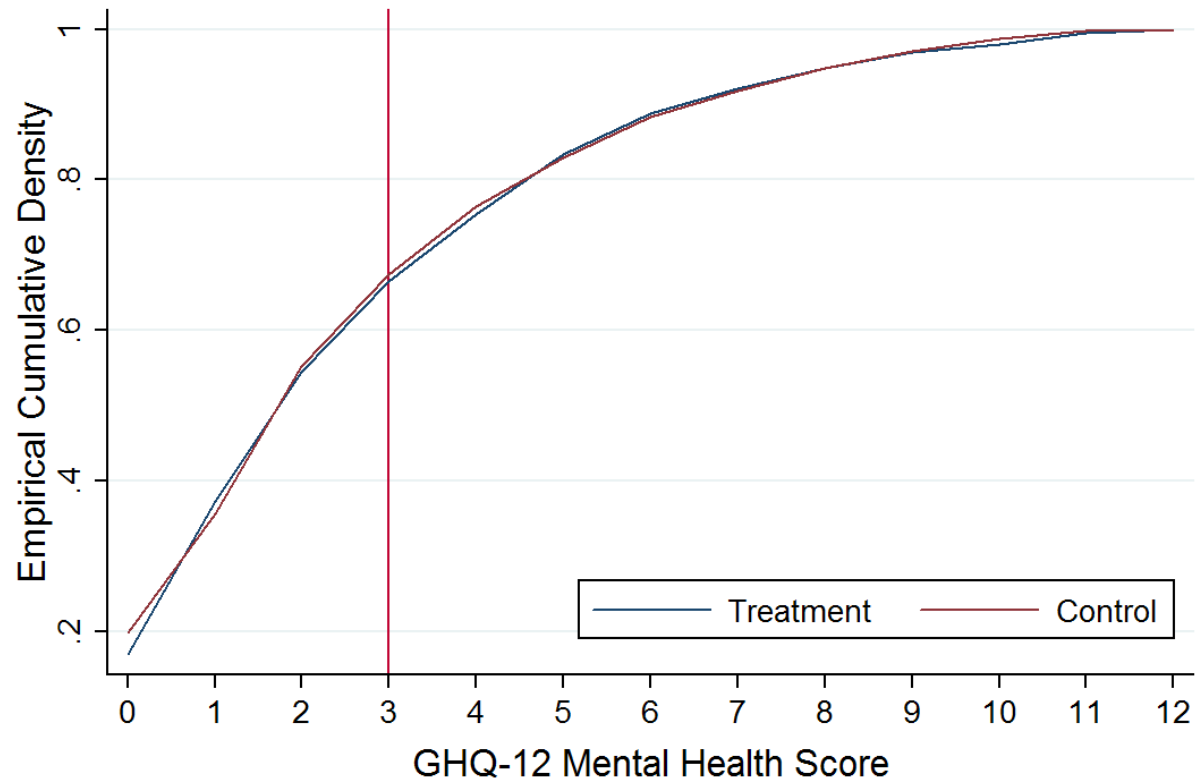
Dependent variable:	Mental Health (0-12)			= 1 if increased psych. morbidity		
	All	Dropouts	Schoolgirls	All	Dropouts	Schoolgirls
Treatment indicator	-0.42*** (0.15)	0.08 (0.22)	-0.52*** (0.17)	-0.06*** (0.02)	0.01 (0.04)	-0.07*** (0.02)
Schoolgirl at baseline	-0.29* (0.16)			-0.07** (0.03)		
Constant	2.99*** (0.29)	2.55*** (0.64)	2.72*** (0.37)	0.31*** (0.05)	0.26** (0.10)	0.23*** (0.07)
Observations	2909	784	2125	2909	784	2125

Note: standard errors clustered at the EA level and weighted to make results representative of all study EA s. Included baseline controls: age dummies, urban dummy, father's education, mother's education, father lives in household, mother lives in household, asset index, highest grade attended, sexually active.

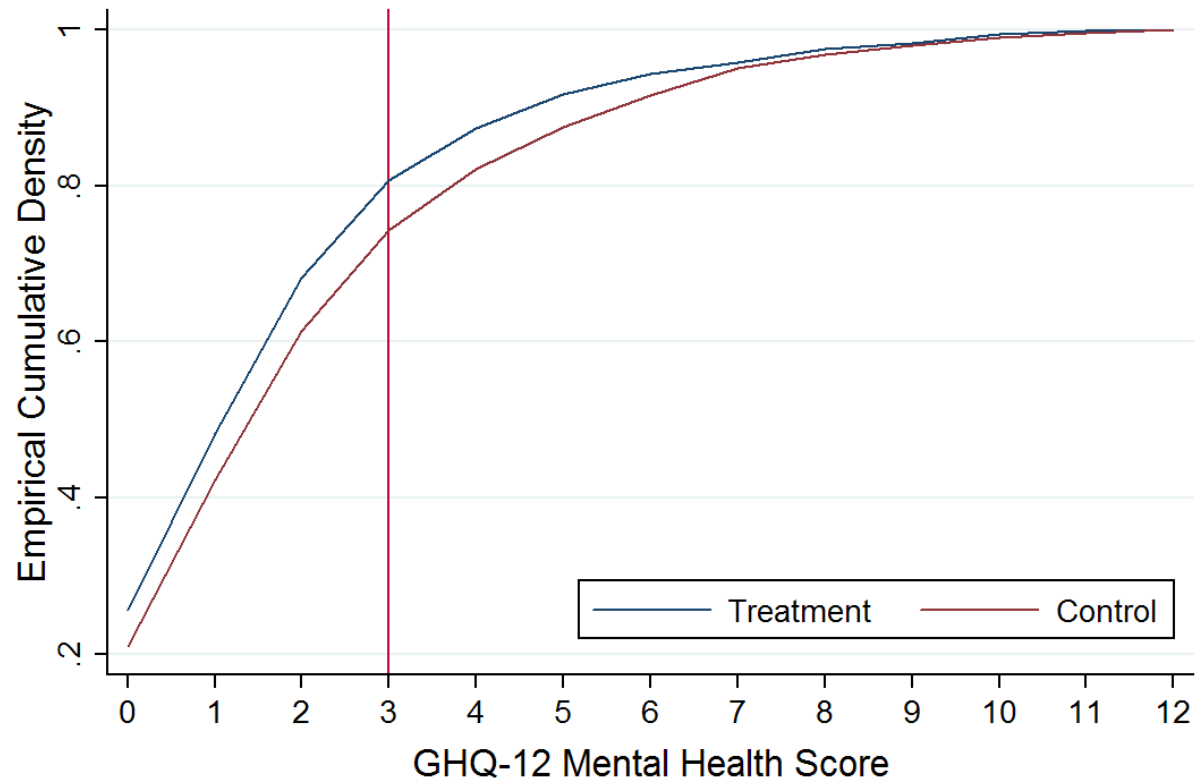
\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



# Dominance analysis: dropouts



# Dominance analysis: schoolgirls



# One-year impact on household care about the girls' schooling and health

Dependent variable:	= 1 if household now cares more about girls' health			= 1 if household now cares more about girls' education		
	All	Dropouts	Schoolgirls	All	Dropouts	Schoolgirls
Treatment indicator	0.15*** (0.03)	0.06* (0.03)	0.17*** (0.04)	0.15*** (0.02)	0.33*** (0.04)	0.11*** (0.03)
Schoolgirl at baseline	0.06** (0.03)			0.14*** (0.03)		
Constant	0.30*** (0.07)	0.10 (0.10)	0.37*** (0.08)	0.12** (0.06)	-0.01 (0.09)	0.29*** (0.09)
Observations	2883	769	2114	2886	769	2117

Note: standard errors clustered at the EA level and weighted to make results representative of all study EA s. Baseline controls included.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# One-year impact on girls' position in the household

Dependent variable:	Conflict/fighting in the household compared to 12 months ago			Influence of the girl in the household compared to 12 months ago		
	All	Dropouts	Schoolgirls	All	Dropouts	Schoolgirls
Treatment indicator	0.01 (0.03)	-0.03 (0.04)	0.02 (0.03)	0.02 (0.02)	-0.04 (0.03)	0.03 (0.03)
Schoolgirl at baseline	-0.00 (0.03)			-0.04 (0.03)		
Constant	0.38*** (0.08)	0.33*** (0.10)	0.41*** (0.11)	0.19*** (0.06)	0.34*** (0.10)	0.11 (0.10)
Observations	2879	764	2115	2892	773	2119

Note: standard errors clustered at the EA level and weighted to make results representative of all study EAs. Includes baseline controls

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

# One-year impact on sleep and leisure

Dependent variable:	Hours of sleep			Hours of leisure		
	All	Dropouts	Schoolgirls	All	Dropouts	Schoolgirls
Treatment indicator	-0.18* (0.10)	-0.37** (0.15)	-0.13 (0.11)	-0.06 (0.06)	-0.18** (0.07)	-0.03 (0.08)
Schoolgirl at baseline	-0.11 (0.09)	0.15 (0.24)	-0.05 (0.18)	-0.08 (0.06)	-0.65*** (0.17)	-0.18* (0.11)
Constant	10.06*** (0.25)	9.63*** (0.29)	10.22*** (0.29)	2.57*** (0.19)	2.54*** (0.24)	2.55*** (0.21)
Observations	2908	783	2125	2906	783	2123

Note: standard errors clustered at the EA level and weighted to make results representative of all study EA s. Includes baseline controls

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# One-year impact on nutrition and health training

Dependent variable:	Learned about nutrition			Learned about health and hygiene		
	All	Dropouts	Schoolgirls	All	Dropouts	Schoolgirls
Treatment indicator	-0.01 (0.03)	0.12*** (0.04)	-0.04 (0.03)	0.03 (0.03)	0.20*** (0.04)	-0.00 (0.03)
Schoolgirl at baseline	0.20*** (0.04)			0.20*** (0.03)		
Constant	0.27*** (0.08)	0.08 (0.08)	0.54*** (0.11)	0.29*** (0.07)	0.07 (0.10)	0.57*** (0.10)
Observations	2909	784	2125	2909	784	2125

Note: standard errors clustered at the EA level and weighted to make results representative of all study

EA s. Includes baseline controls

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# One-year impact on bed nets and nutrition

Dependent variable:	= 1 if girl sleeps under a bednet			Number of days girl ate meat over past week		
	All	Dropouts	Schoolgirls	All	Dropouts	Schoolgirls
Treatment indicator	0.04 (0.03)	-0.02 (0.04)	0.05 (0.04)	0.18*** (0.07)	0.06 (0.09)	0.21*** (0.08)
Schoolgirl at baseline	-0.11*** (0.03)			-0.09 (0.08)		
Constant	0.46*** (0.07)	0.47*** (0.10)	0.35*** (0.09)	0.76*** (0.20)	0.49** (0.24)	0.67** (0.27)
Observations	2899	780	2119	2909	784	2125

Note: standard errors clustered at the EA level and weighted to make results representative of all study EA s. Baseline controls included.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

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# **RESULTS: CONDITIONALITY**



# Conditionality and mental health

<b>Dependent variable:</b>	<b>Mental Health (0-12)</b>	<b>= 1 if increased psych. morbidity</b>
Treatment indicator	-0.93*** (0.23)	-0.13*** (0.03)
Conditional treatment	0.63*** (0.23)	0.08*** (0.03)
Constant	2.62*** (0.36)	0.22*** (0.07)
Observations	2125	2125

Note: standard errors clustered at the EA level and weighted to make results representative of all study EA s. Baseline controls included.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

# Percentage changes in mental health

Dependent variable:	Mental Health (0-12)			= 1 if increased psych. morbidity		
	Dropouts	Conditional	Unconditional	Dropouts	Conditional	Unconditional
Treatment indicator	3.1	-12.6 *	-35.2 ***	3.8	-25.0	-44.8 ***
Observations	784	1866	1651	784	1866	1651

Note: standard errors clustered at the EA level and weighted to make results representative of all study EAs. Includes baseline controls

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

# CT amounts and mental health

Dependent variable:	Mental Health (0-12)			= 1 if increased psych. morbidity		
	Conditional	Unconditional	Dropouts	Conditional	Unconditional	Dropouts
Treatment indicator	-0.93*** (0.29)	-0.54* (0.31)	-0.45 (0.38)	-0.13*** (0.05)	-0.12*** (0.04)	-0.10 (0.06)
Individual amount	0.04 (0.08)	-0.23* (0.11)	0.09 (0.13)	0.01 (0.01)	-0.01 (0.02)	0.02 (0.02)
Household amount	0.18*** (0.05)	0.02 (0.10)	0.12* (0.06)	0.02*** (0.01)	0.00 (0.01)	0.03** (0.01)
Constant	2.47*** (0.37)	2.64*** (0.39)	2.60*** (0.64)	0.20** (0.08)	0.29*** (0.08)	0.27*** (0.10)
Observations	1866	1651	784	1866	1651	784

Note: standard errors clustered at the EA level and weighted to make results representative of all study EA s. Included baseline controls: age dummies, urban dummy, father's education, mother's education, father

lives in household, mother lives in household, asset index, highest grade attended, sexually active.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

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# **RESULTS: SPILLOVERS**

# Spillover effects on mental health among non-siblings

<b>Dependent variable:</b>	<b>Mental health (0-12)</b>	<b>Psych. Morbidity</b>
Within village control	0.42** (0.18)	0.04 (0.03)
Constant	2.51*** (0.54)	0.30*** (0.09)
Observations	1974	1974

Note: standard errors clustered at the EA level and weighted to make results representative of all study EA s. Baseline controls included.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

# Spillover effects among siblings

Dependent variable:	Mental health binary	Psych. morbidity	Household care about health	Household care about education	Bed nets	Meat consumption
Sibling indicator	-0.23 (0.34)	-0.05 (0.05)	0.14** (0.06)	0.13* (0.07)	0.02 (0.06)	0.01 (0.18)
Constant	2.24*** (0.44)	0.25** (0.10)	0.28*** (0.08)	0.27*** (0.10)	0.33*** (0.11)	0.35 (0.29)
Observations	1458	1458	1449	1451	1453	1458

Note: standard errors clustered at the EA level and weighted to make results representative of all study EA s. Baseline controls included.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

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# **RESULTS: HETEROGENEITY (BY BASELINE WEALTH)**

# Heterogeneity by baseline wealth (using an asset index)

Dependent variable:	Mental Health (0-12)			= 1 if increased psych. morbidity		
	All	Dropouts	Schoolgirls	All	Dropouts	Schoolgirls
Baseline assets	0.01 (0.05)	-0.03 (0.08)	0.00 (0.06)	-0.00 (0.01)	-0.01 (0.01)	0.00 (0.01)
Treatment indicator	-0.36** (0.15)	-0.07 (0.23)	-0.47** (0.18)	-0.05** (0.02)	-0.01 (0.04)	-0.06** (0.03)
Interaction assets treatment	-0.11** (0.05)	-0.20** (0.09)	-0.07 (0.06)	-0.02** (0.01)	-0.03* (0.02)	-0.01 (0.01)
Schoolgirl at baseline	-0.30* (0.16)			-0.07** (0.03)		
Constant	2.96*** (0.29)	2.64*** (0.65)	2.70*** (0.37)	0.31*** (0.05)	0.27*** (0.10)	0.23*** (0.07)
Observations	2909	784	2125	2909	784	2125

Note: standard errors clustered at the EA level and weighted to make results representative of all study EA s. Baseline controls included.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



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# CONCLUSIONS

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# Conclusions

- This study looks at the impact of a CCT in Sub-Saharan Africa on (mental) health
- The ZCTP has a sizeable impact on mental health and several other health outcomes
- Conditionality diminishes the positive impact of the ZCTP on mental health. The detrimental impact of conditionality increases in the amount of money transferred to the household.

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# Conclusions

- There is evidence of substantial (and heterogeneous) spillovers on health of non-participants living in treatment EAs
- The impact of the ZCTP is heterogeneous and appears to be stronger among less vulnerable groups (e.g. schoolgirls and girls who live in households with more baseline assets)

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# **ADDITIONAL SLIDES**

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## Zomba Cash Transfer Program Implementation

- During December 2007 and January 2008, offers were made to the 1,193 randomly selected young women (*only one refused to participate and 24 were not found*).
- In February 2008, the first of 10 monthly cash transfers for the 2008 school year were made. The program continues in 2009.
- In its first year, the program disbursed US\$120,000, of which more than US\$100,000 were transferred directly to beneficiaries and their parents, with the rest of the funds going towards school fees.
  - The *average* total transfer of \$10 is approximately 15% of monthly household expenditures. Our *range* is 8%-24%.
  - The range in the ROW is 2-3% (Cambodia) to 22% (Mexico).

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# Offer Letters

## Conditional Transfers

- The Zomba Cash Transfer Program (ZCTP) with funding from the World Bank would like to offer you, \_\_\_\_\_, a cash transfer to help you and your family with the burdens of school attendance for the 2009 school year. By accepting this offer, in return for going to school you will be given:
- You are receiving this money in order to help you return to school or stay in school. In order to receive this money you **MUST** attend school at least **80% of the days for which your school is in session.**

## Unconditional transfers

- The Zomba Cash Transfer Program (ZCTP), with funding from the World Bank, would like to offer you, \_\_\_\_\_, a cash transfer to help you and your family. By accepting this offer you will be given:
- This monthly transfer amounts specified above are given to you as a result of a lottery. You **are not required to do anything** more to receive this money. You will receive this money for 10 months between February and November, 2009.

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# Zomba Cash Transfer Program Implementation

- For **CCT** recipients, attendance is checked monthly at each program school using a combination of physical checks and phone calls (*with random spot checks*).
  - Transfers for the first month are *free*.
- For **CCT** recipients, the payment for the next month is withheld if attendance is below 75%. However, the girl remains in the program.
- **CT** recipients receive their transfers by *only* showing up.

# The General Health Questionnaire 12

1.	During the past two weeks have you been able to concentrate on whatever you are doing? <b>(READ RESPONSES)</b>	Much more than usual More than usual Same as usual Less than usual Much less than usual	1 2 3 4 5
2.	During the past two weeks have you lost much sleep over worry? <b>(READ RESPONSES)</b>	Much more than usual More than usual Same as usual Less than usual Much less than usual	1 2 3 4 5
3.	During the past two weeks, have you felt that you were playing a useful part in things? <b>(READ RESPONSES)</b>	Much more than usual More than usual Same as usual Less than usual Much less than usual	1 2 3 4 5
4.	During the past two weeks, have you felt capable about making decisions about things? <b>(READ RESPONSES)</b>	Much more than usual More than usual Same as usual Less than usual Much less than usual	1 2 3 4 5



# The General Health Questionnaire 12

5.	During the past two weeks, have you felt constantly under strain? <b>(READ RESPONSES)</b>	Much more than usual More than usual Same as usual Less than usual Much less than usual	1 2 3 4 5
6.	During the past two weeks, have you felt that you couldn't overcome your difficulties? <b>(READ RESPONSES)</b>	Much more than usual More than usual Same as usual Less than usual Much less than usual	1 2 3 4 5
7.	During the past two weeks, have you been able to enjoy your normal day-to-day activities? <b>(READ RESPONSES)</b>	Much more than usual More than usual Same as usual Less than usual Much less than usual	1 2 3 4 5
8.	During the past two weeks, have you been able to face up to your problems? <b>(READ RESPONSES)</b>	Much more than usual More than usual Same as usual Less than usual Much less than usual	1 2 3 4 5

# The General Health Questionnaire 12

9.	During the past two weeks, have you been feeling unhappy and depressed? <b>(READ RESPONSES)</b>	Much more than usual	1
		More than usual	2
		Same as usual	3
		Less than usual	4
		Much less than usual	5
10.	During the past two weeks, have you been losing confidence in yourself? <b>(READ RESPONSES)</b>	Much more than usual	1
		More than usual	2
		Same as usual	3
		Less than usual	4
		Much less than usual	5
11.	During the past two weeks, have you been thinking of yourself as a worthless person? <b>(READ RESPONSES)</b>	Much more than usual	1
		More than usual	2
		Same as usual	3
		Less than usual	4
		Much less than usual	5
12.	During the past two weeks, have you been feeling reasonably happy, all things considered? <b>(READ RESPONSES)</b>	Much more than usual	1
		More than usual	2
		Same as usual	3
		Less than usual	4
		Much less than usual	5

# Conditionality and bed nets

Dependent variable:	Girl sleeps under a bednet	
	Conditional	Unconditional
Treatment indicator	0.08** (0.04)	-0.01 (0.06)
Constant	0.32*** (0.09)	0.36*** (0.10)
Observations	1860	1647

Note: standard errors clustered at the EA level and weighted to make results representative of all study EA s. Includes baseline controls

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$