Reducing Adolescent Risky Behaviors in a High-Risk Context: The Impact of Unconditional Cash Transfers in South Africa

Carolyn Heinrich, John Hoddinott and Michael Samson

Third annual Transfer Project workshop on evaluating the impact of cash transfer programs in sub Saharan Africa

April 23-25, 2013
Chaminuka Lodge, Zambia

1

Acknowledgements

2

"State of emergency" for South African adolescents

- Adolescents in South Africa, esp. those living in poverty, at significant risk for negative outcomes associated with risky behaviors (e.g., early sexual activity, alcohol and drug use)
  - Young people (15-25 years) at greatest risk of HIV; 10% HIV prevalence rate in population, with highest rates for South African females ages 18-24 years: 20.8% (Pettifor et al., 2011)
  - Highest volumes of per capita alcohol consumption in the world (Parry, 2005); alcohol use consistently associated with sexual risk taking, sexual coercion and elevated risk of HIV
  - Poverty increases youth risky behaviors, particularly involvement in transactional and intergenerational sex

Theoretical framework for role of cash transfer programs

- Growing evidence that risky behaviors vary with household consumption and income shocks (Yeh, 2006)
  - Perceptions of lack of economic opportunity/powerlessness in poverty leads young people to heavily discount costs of risky behavior (undervaluing the future, underestimating risks) (Medlin and de Walque, 2008)
    - Costs of engaging in risky behaviors not fully understood in short-term
  - Youth in adverse social environments put in "double jeopardy" (social environment risk, perceived environment risk)—more intense and prevalent risks that exacerbate risk in other domains, few protective factors (Jessor, 1992)

Theory on role of cash transfers (cont.)

- Direct cash transfers can offer a substitute (immediate cash benefits) or incentive (reward for declining risks) that alters adolescent valuations of benefits and costs (or tradeoffs) and their choices to engage in risky behaviors
  - Potential to address both risks for initiating risky behaviors and risks of health and life-compromising outcomes if they reach youth early enough
  - Comprehensive efforts that simultaneously reduce exposure to multiple, co-occurring risks more effective (Jessor, 1992)
  - Increases in household income shown to protect females from early sexual debut (while negative economic shocks increase probability of early debut) (Dinkelman et al., 2008)
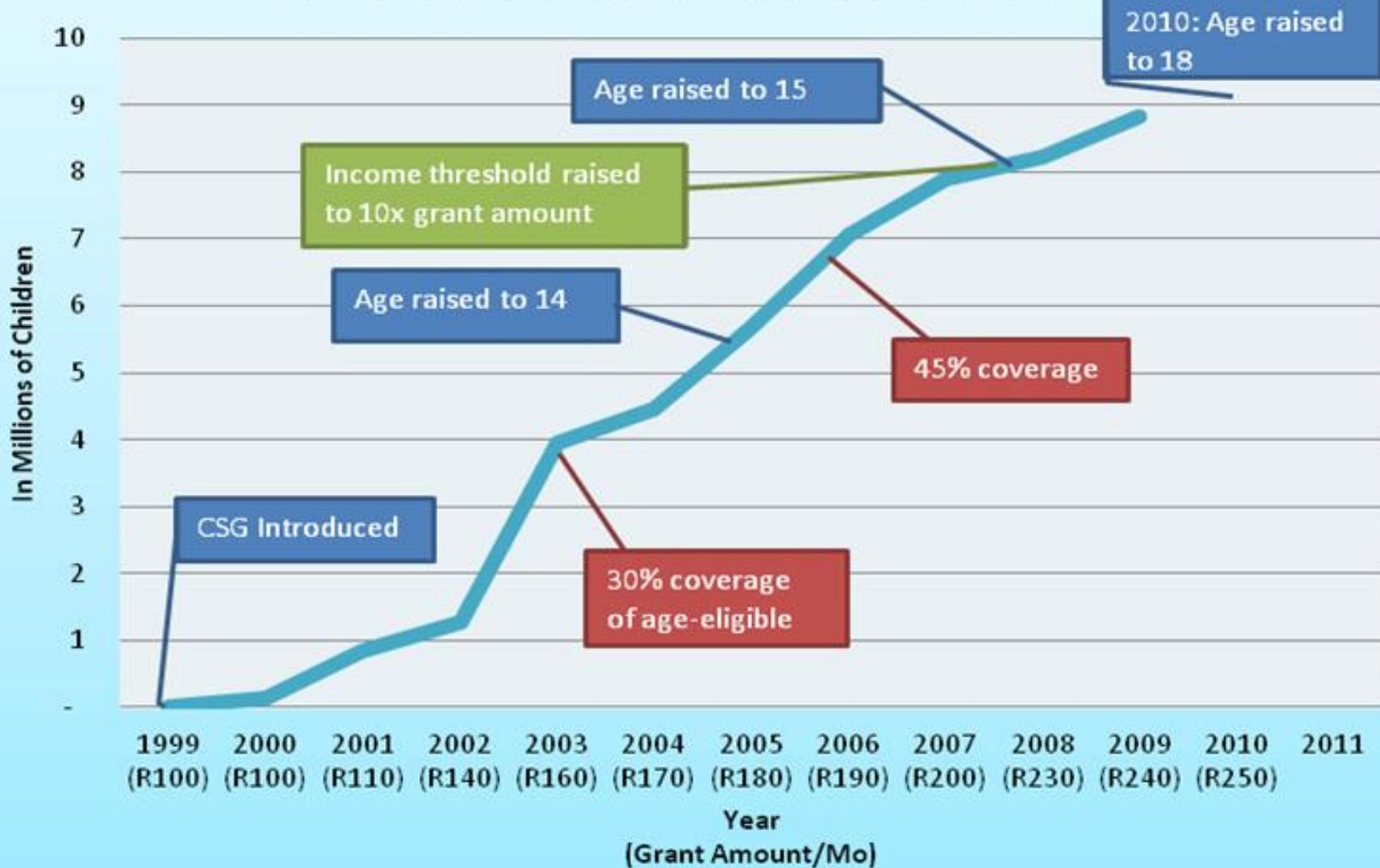
South Africa's Child Support Grant

- Social cash transfer program introduced in 1998
  - Means-tested benefit; caregiver applies on behalf of child
- Early take-up slower, with many program changes:
  - Transfer increased to R250 in April 2010 (from R100 per child for children under age 7 in 1998)†; means test changed (Feb. 2008) to account for inflation
  - Age of eligibility extended: in 2003 (to 8 years), 2004 (to 10 years), 2005 (to under 14), 2009 (to under 15); 2010 (to under 16) and to under 17 in 2011 (and under 18 years in 2012)
  - Unconditional cash transfer, but Dec. 2009 amendments added caregiver obligations (to enroll children in school)

†$32/month per child, with maximums per year of $3,887 for single caregivers and $7,552 for married couples

6

Recipients of the Child Support Grant

Prior research on South Africa's child support grant program

- Studies evaluating South Africa's CSG have examined targeting effectiveness, implementation and impacts
  - No opportunity for experimental impact evaluation given constitutional right of all to appropriate social assistance
  - Implementation studies document infrastructure and management challenges in CSG rollout
  - Targeting studies show higher take-up rates among very poor but lower take-up rates among youngest children
  - Quasi-/nonexperimental studies of CSG effects on school attendance, child hunger, weight and height z scores, fertility, adult and child labour force participation, household agricultural production, expenditures on food and other household goods, and others

DSD-EPRI-IDC-IFPRI-OPM-RDC-TNT impact evaluation of CSG

- Study objective: measure causal impacts of CSG
- Distinctive study features:
  - Tightly integrated qualitative-quantitative study for evaluating program process, pathways and mechanisms of change, and impacts
  - New data collection (late 2010, early 2011) to evaluate impacts on health, education, early child development, adult/child labor, consumption, social welfare, risky behavior, intra-household, unintended impacts
    - Impacts of early vs. late enrollment and impacts on adolescents (only recently able to enroll)

9

CSG evaluation samples

- 10 year old children who enrolled in CSG either: a) between 0 and 18 months or b) between 5 and 9 years
- Adolescents between ages 15 and 17 years
  - Including those who met other CSG eligibility criteria but turned 17 by Dec. 31, 2009 and will not receive CSG
- 5 provinces: Eastern Cape, Gauteng, KwaZulu-Natal, Limpopo, and the Western Cape
  - Variability in program rollout and eligibility criteria and timing and length of CSG enrolment among eligible children allow for analysis of child/household impacts associated with differing dosages of CSG receipt (and early vs. late enrolment) as well as no grant receipt (among adolescents)

Target sample structure and size

Sampled (index) children	Total
Children aged 10, enrolled after birth	800
Children aged 10, enrolled around age 5-6 years	800
Adolescents below age cut off point	1428
Adolescents above age cut off point	612
Total	**3640**

Adolescent sample structure

Age at sampling	Beneficiaries	Non-beneficiaries	Total
15	408	0	408
16	612	408	1020
17	0	612	612
Total	1020	1020	2040

Samples realized in data collection

Age Group	Young Children Questionnaire			Adolescent Questionnaire			
	9 yr-olds	10 yr-olds	11 yr-olds	14 yr-olds	15 yr-olds	16 yr-olds	17 yr-olds
Number of Participants Surveyed	21	1211	6	2	378	851	495
	1238			1726			
	2964 Households Surveyed						

Data sources

- SOCPEN grant administrative system

- Early focus groups and interviews (prior to baseline)

- Household, young child and adolescent questionnaires administered in 2010 and 2011, including:

  - Risky behaviors module for adolescents

  - Anthropometric tests and cognitive tests

- Data facilitate comparison of:

  - Early vs. late enrollees

  - Adolescents in households currently receiving CSG with those not receiving CSG; also measuring past receipt of CSG for adolescents and receipt for any child in household

Comparison groups for matching

- Children receiving CSG matched to others not receiving CSG (or receiving CSG at different ages) based on observable characteristics
  - Measured at time of application/enrollment into program (retrospectively in survey) and stable characteristics
  - Key assumption: conditional on observed characteristics, comparison group members have same mean outcomes as beneficiaries if they did not receive CSG or received it at a later time/for less time
  - Program impact estimated as average difference in outcomes for each "treatment" adolescent from weighted average of outcomes in similar comparison group of adolescents

14

Current vs. past receipt of CSG in households and for adolescents

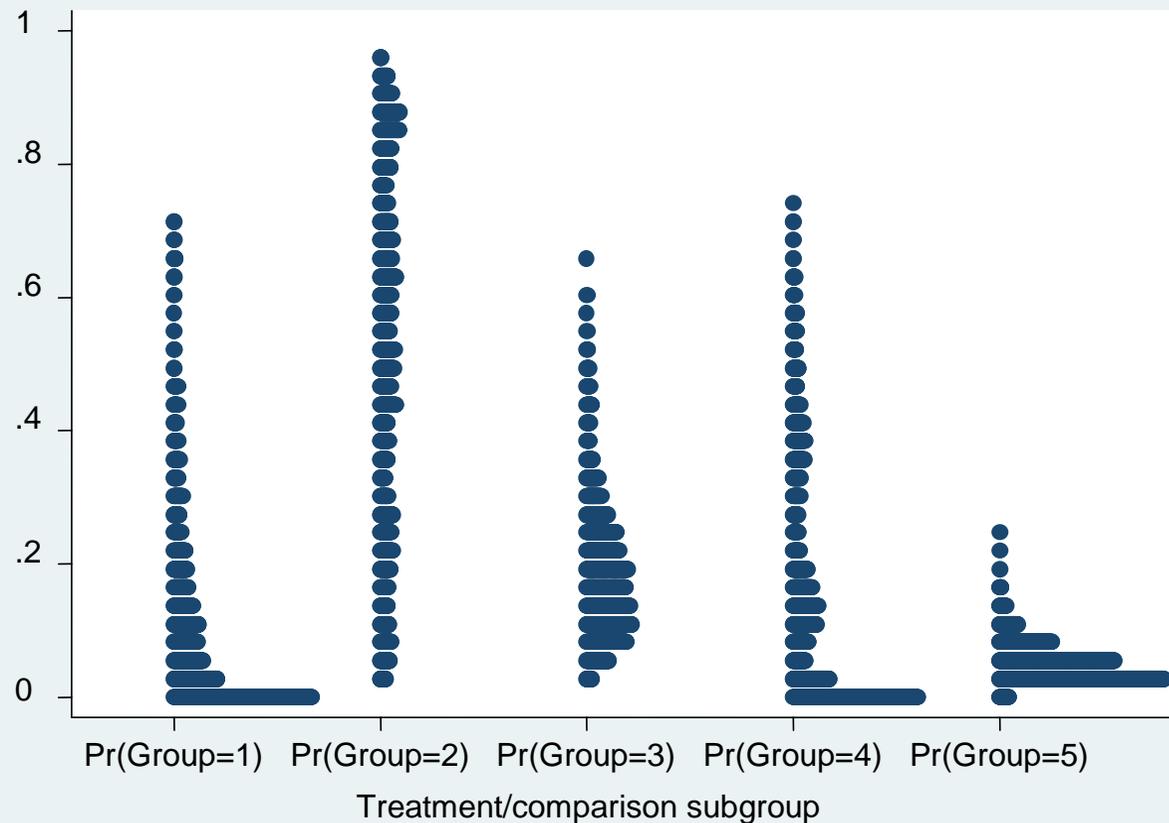CSG Receipt by Household and for Adolescent

- No current CSG in HH; never received for adolescent
- Current CSG in HH & receiving for adolescent
- Current CSG in HH; not for adolescent but received in past
- Current CSG in HH but never received for adolescent
- No current CSG in HH but received for adolescent in past

15
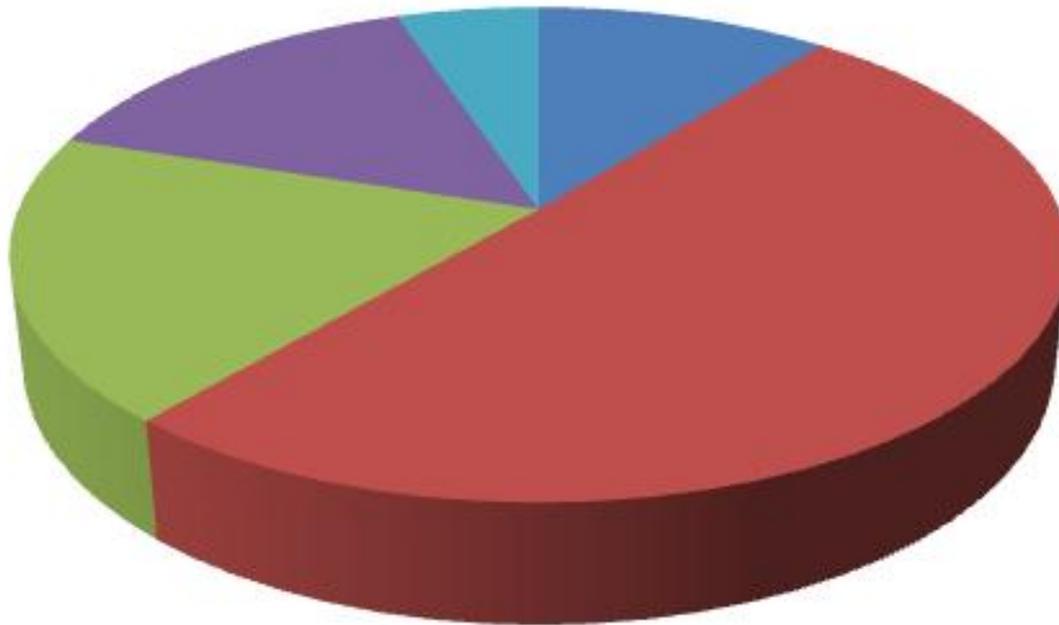
Propensity score matching approach

- Estimate probability of CSG benefit receipt or probability of early (vs. late) enrolment in CSG to reduce matching problem to single dimension (propensity score)
- Use propensity scores to match treatment and comparison group households and estimate impacts
  - Nearest neighbor: Randomly order CSG households and comparison households; select first CSG household and find comparison household with closest propensity score
  - Caliper: define a common-support region (e.g., .01), and randomly select comparison household that matches on propensity score with CSG recipient household
  - Exclude poor matches between treatment and comparison group households

Probability of selection into treatment and comparison groups

1=No current CSG in the household *and* the household never received CSG for adolescent
2=Current CSG in the household *and* the household is currently receiving the CSG for the adolescent
3= Current CSG in the household; not currently receiving it for the adolescent, but the household received the CSG in the past for the adolescent
4= Current CSG in the household but the household has never received the CSG for the adolescent
5= No current CSG in the household but the household received the CSG for the adolescent in the past
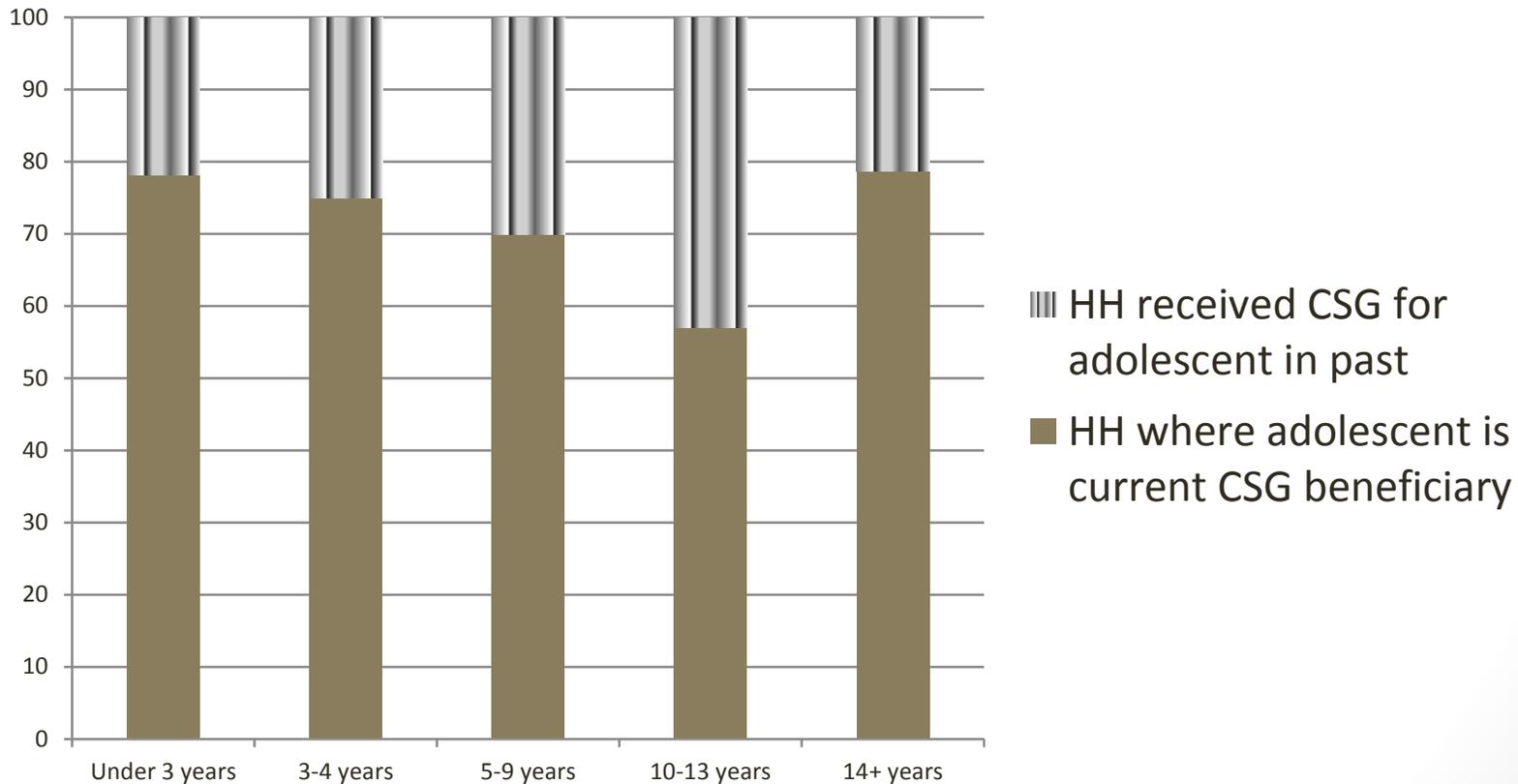
Generalized propensity score estimation

- Treatment (CSG receipt) measured as age at first receipt of CSG (rough approximation of dosage, but with some nonlinearities for adolescents)
- CSG impacts measured as dose-response effects along age continuum
  - Matching takes place within treatment intervals
  - Only adolescents with some CSG receipt included in analysis
  - Values of GPS estimated using maximum likelihood, assuming the treatment variable is normally distributed, conditional on the covariates X:

    $g(T) \mid X \sim N\{h(\gamma, X), \sigma^2\}$: $\check{R}_i = [2\pi\, \sigma^2]^{(-0.5)} \exp[\, (-(2\sigma^2)^{-1})[\, g(T_i) - h(\gamma, X)]]$.

Age at first receipt of CSG

Adolescent CSG Receipt by Age at CSG Start

Legend:
- HH received CSG for adolescent in past
- HH where adolescent is current CSG beneficiary

X-axis: Under 3 years, 3-4 years, 5-9 years, 10-13 years, 14+ years

Results from analyses of South African adolescents: schooling, work, sexual activity, alcohol and drug use, criminal and gang activity

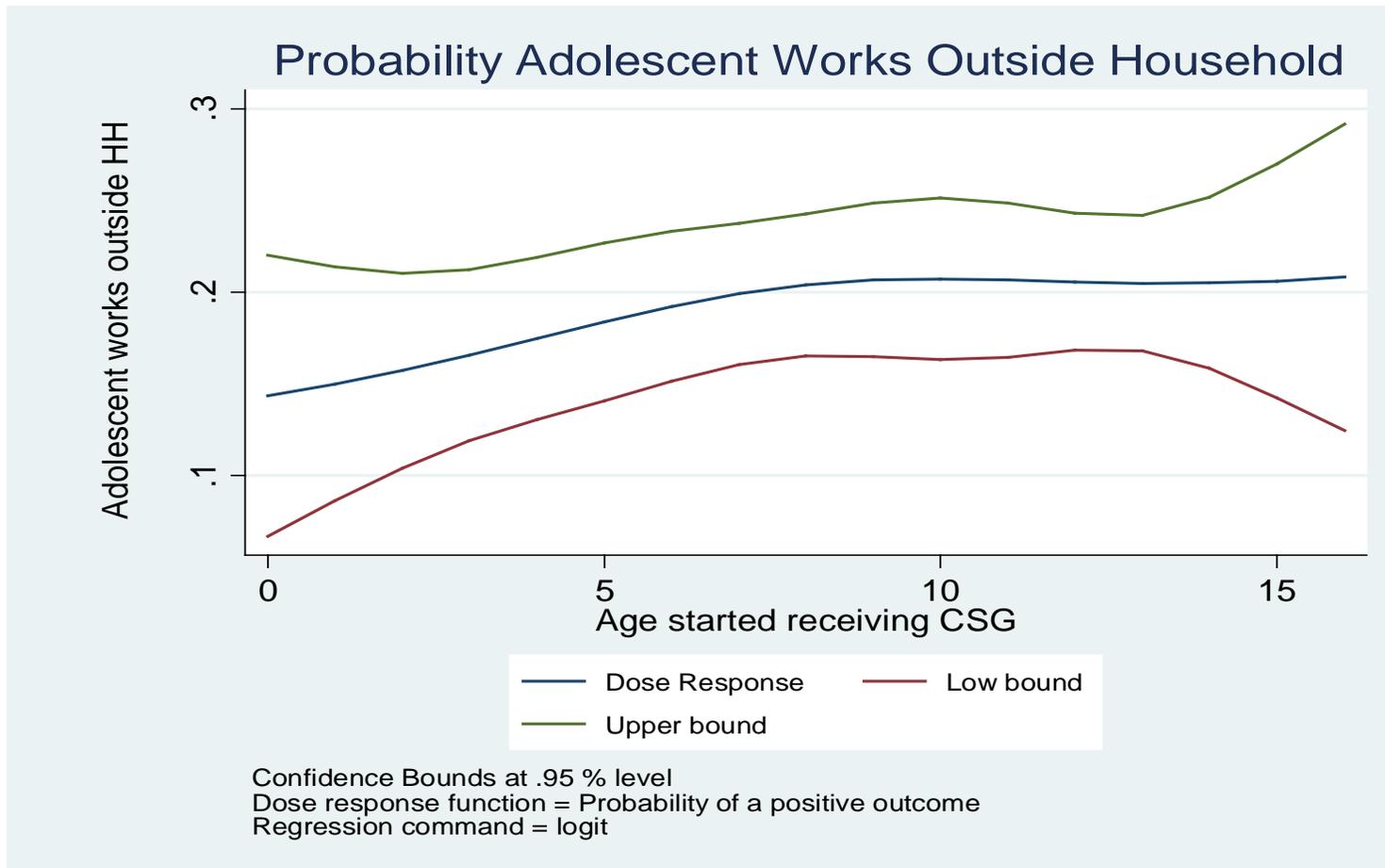# CSG impacts on adolescent school absences

PSM Estimation: Comparison of treatment subgroups	No. of obs.*	Average days absent from school in a 8-week period		T-C difference (impact)	Std. Error	T-ratio
		Treatment	Comparison			
Group 4 vs. 1: current vs. no CSG in household; never received for adolescent						
All adolescents	197	1.23	3.44	-2.22	1.05	-2.11
Males	89	1.45	5.29	-3.85	2.36	-1.63
Females	106	1.12	1.10	0.03	0.64	0.04
Groups 2, 3 & 4 vs. 1 & 5: current vs. no CSG in household, irrespective of past receipt or who receives CSG						
All adolescents	861	1.92	4.18	-2.26	1.42	-1.60
Males	387	2.29	9.34	-7.05[‡]	3.35	-2.10
Females†	398	1.72	2.54	-0.82	0.70	-1.08
On the common support						
†83 cases were excluded (not on common support)						

[‡]After-matching balancing tests show that the covariates were not fully balanced between the treatment and comparison groups.

Adolescent males absent ~4 days fewer if in a household currently receiving the CSG (even if grant was never received for the adolescent), compared to adolescent males in households with no CSG receipt ever

Males in households currently receiving the CSG absent approximately 7 days fewer than males in households not receiving the CSG
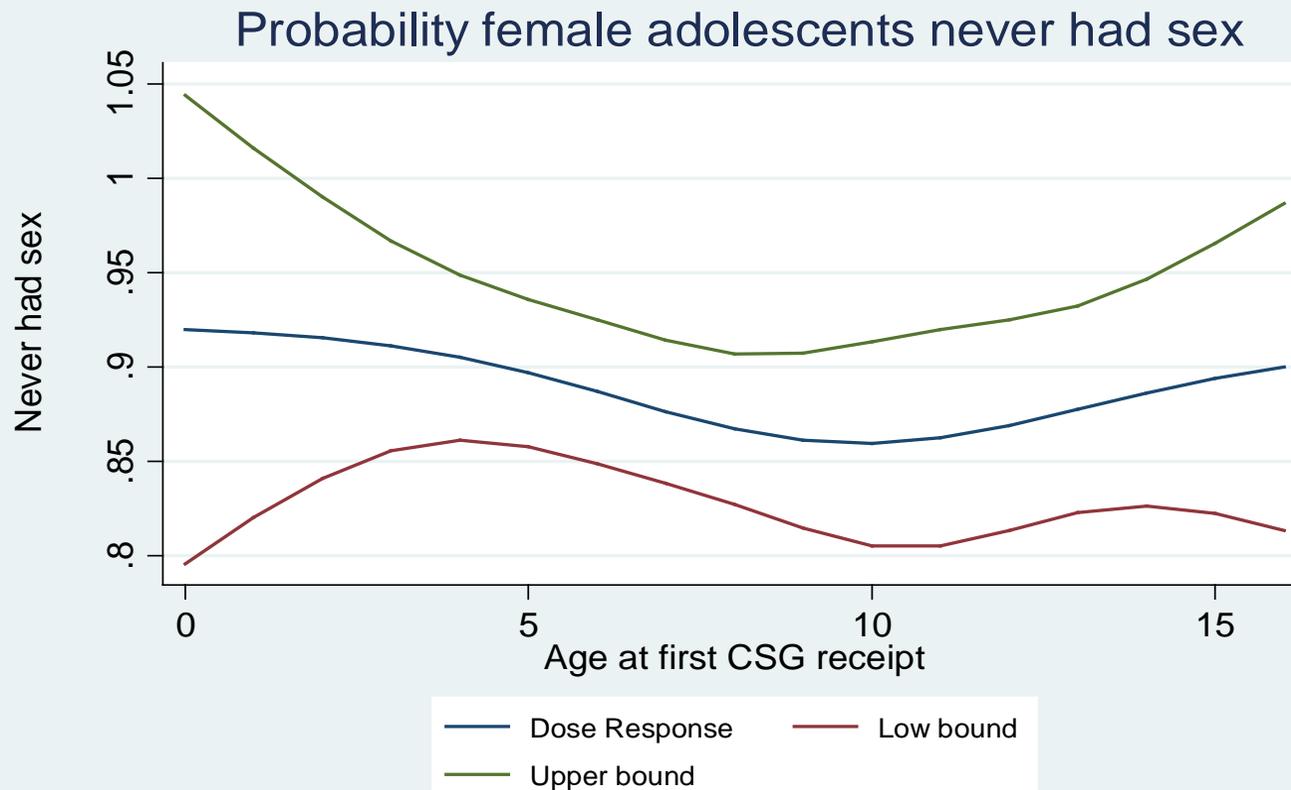
21

CSG impacts on adolescent work depend on age at first CSG receipt

Probability Adolescent Works Outside Household

Confidence Bounds at .95 % level
Dose response function = Probability of a positive outcome
Regression command = logit

22

Dose response effect estimates for adolescent work outside home

Dose-response effect results from GPS models of adolescent work outside the home						
	All adolescents (n=874)		Adolescent females (n=472)		Adolescent males (n=402)	
Age at first receipt of CSG	Dose-response effect	Bootstrapped standard errors	Dose-response effect	Bootstrapped standard errors	Dose-response effect	Bootstrapped standard errors
0	0.143	0.039	0.074	0.030	0.229	0.080
1	0.150	0.033	0.085	0.028	0.231	0.067
2	0.157	0.027	0.099	0.025	0.232	0.054
3	0.166	0.024	0.114	0.024	0.233	0.044
4	0.175	0.023	0.131	0.024	0.235	0.038
5	0.184	0.022	0.146	0.025	0.235	0.034
6	0.192	0.021	0.157	0.024	0.236	0.032
7	0.199	0.020	0.163	0.021	0.238	0.029
8	0.204	0.020	0.164	0.021	0.240	0.028
9	0.207	0.021	0.162	0.025	0.242	0.030
10	0.207	0.022	0.158	0.029	0.246	0.032
11	0.207	0.021	0.156	0.031	0.250	0.033
12	0.206	0.019	0.157	0.031	0.255	0.033
13	0.205	0.019	0.162	0.031	0.260	0.034
14	0.205	0.024	0.171	0.034	0.265	0.041
15	0.206	0.033	0.183	0.042	0.270	0.053
16	0.208	0.043	0.197	0.057	0.275	0.068

Relationship of age at first CSG receipt to probability females <u>never</u> had sex

Probability female adolescents never had sex

"complex pattern Matching"

Confidence Bounds at .95 % level
Dose response function = Probability of a positive outcome
Regression command = logit

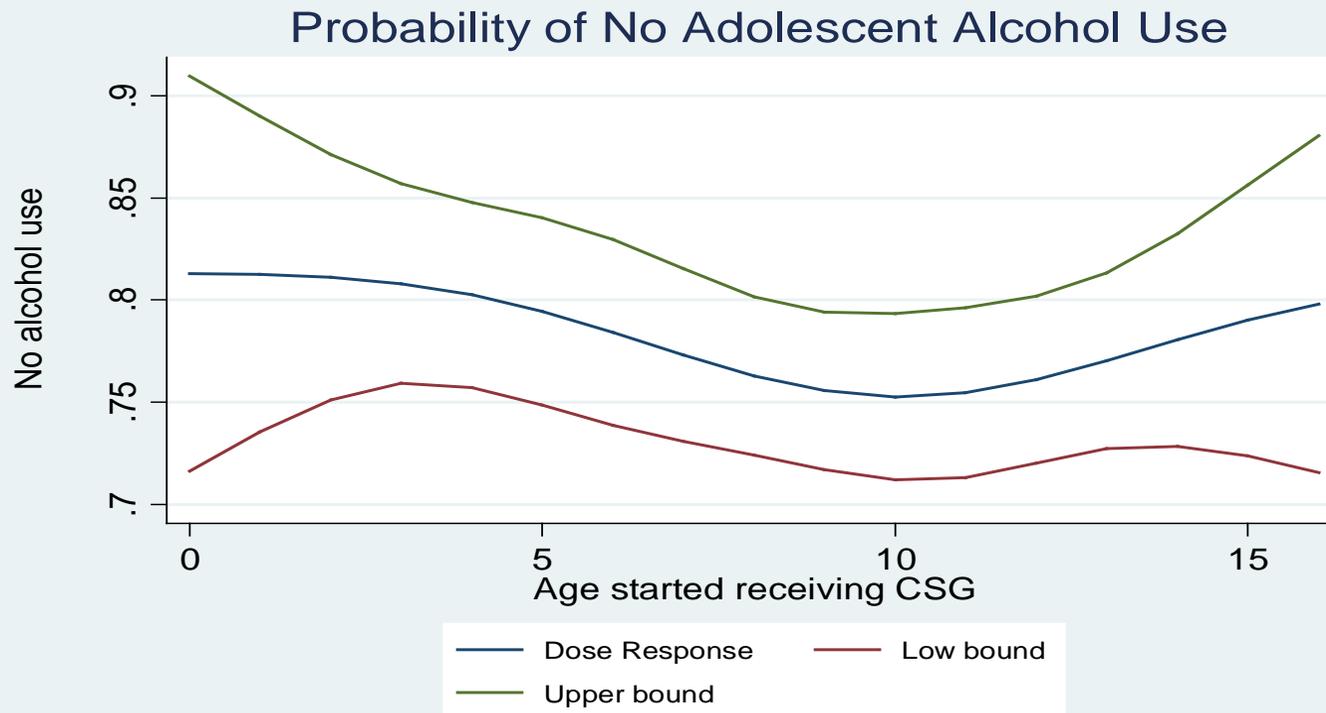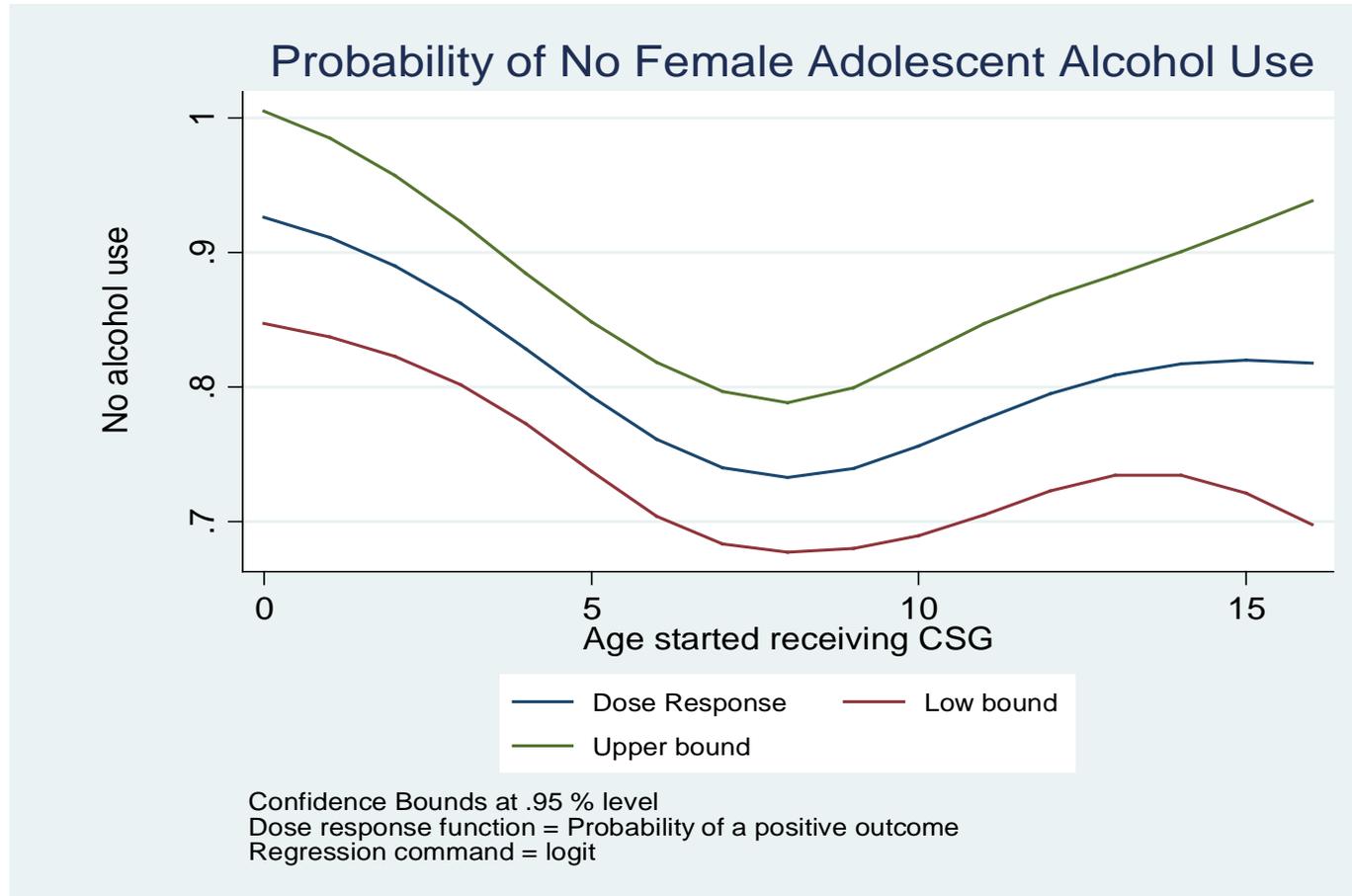# Relationship of age at first CSG receipt to probability females were ever pregnant
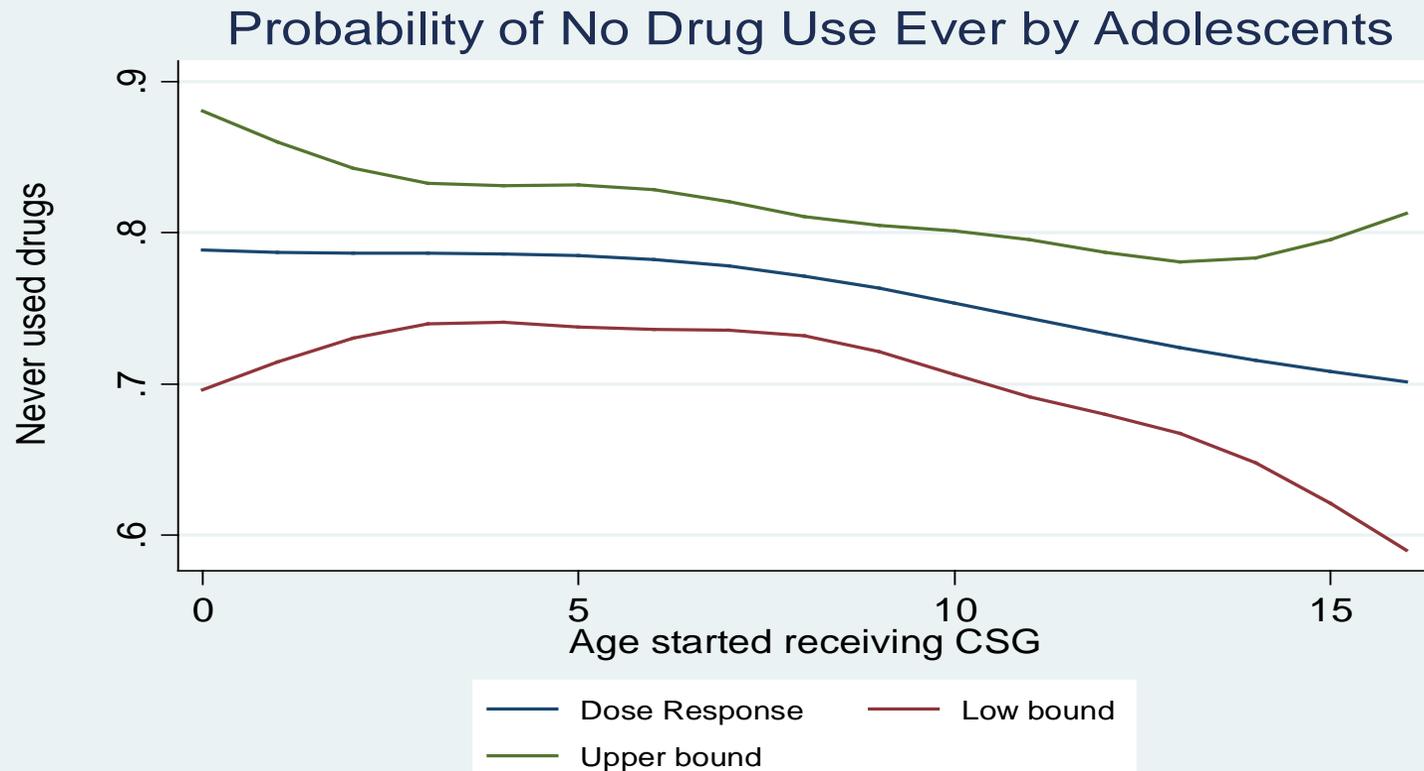

Probability ever pregnant for female adolescents

Confidence Bounds at .95 % level
Dose response function = Probability of a positive outcome
Regression command = logit

25

Relationship of age at first CSG receipt to probability of no adolescent alcohol use
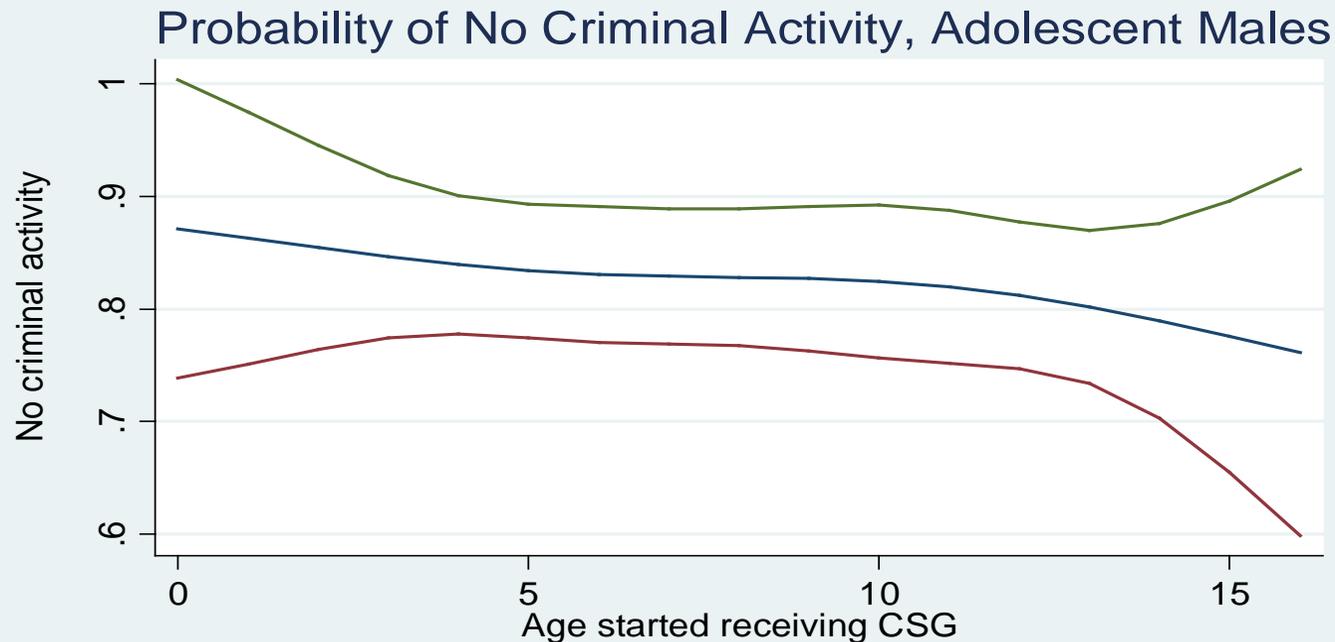
Relationship of age at first CSG receipt to probability of no female alcohol use

Relationship of age at first CSG receipt to probability of no adolescent drug use

Relationship of age at first CSG receipt to probability of no male criminal activity

Probability of No Criminal Activity, Adolescent Males

Confidence Bounds at .95 % level
Dose response function = Probability of a positive outcome
Regression command = logit

Summary of findings and implications

- Results point to the importance of both early receipt of the CSG by children and CSG receipt in the household at the time of adolescence (in support of South African policy changes to extend CSG to older children and to reach children at earlier ages)

  - Early CSG receipt important in protecting adolescents against initiating (or reducing engagement in) sexual intercourse, alcohol use, drug use and criminal activity and in reducing early pregnancy and work outside the home

  - Household CSG receipt in adolescents' teenage years important in reducing absences from school (particularly for males) as well as engagement in these risky behaviors

Summary of findings and implications (cont.)

- Cash transfer programs that do not impose conditions or target particular behaviors have potential to reduce exposure to multiple types of risks

- However, youth in poorer areas were not reached at an early age and did not stay connected with CSG through their teenage years
  - Household re-applications for CSG following eligibility were very important in predicting current grant receipt
  - Having a mother as household head and who applied for grant increased odds of grant receipt, as did youth own awareness of changes in age of eligibility
  - Potential benefits of cash transfer program not fully realized