



**HARVARD Kennedy School**

*Evidence for Policy Design*

# Cumulative Impacts of Conditional Cash Transfer Programs: Experimental Evidence from Indonesia

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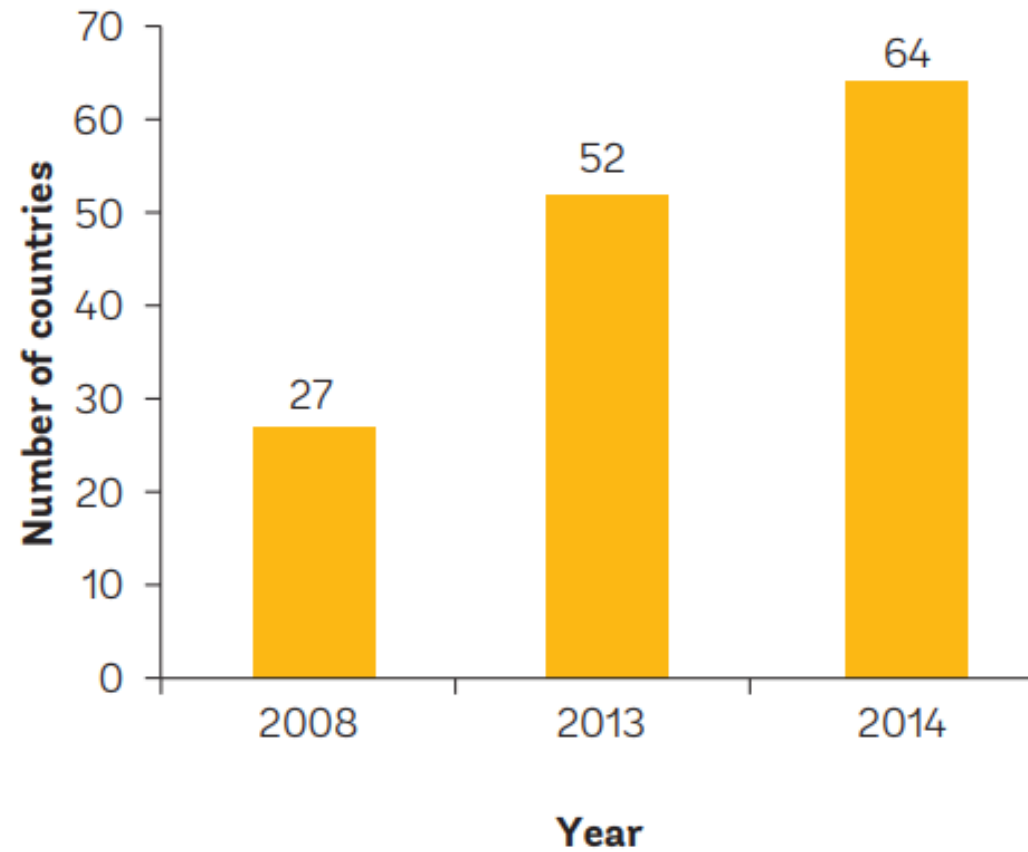
Joint with Nur Cahyadi, TNP2K; Benjamin A. Olken, MIT; Rizal Adi Prima, RMIT University Melbourne;  
Elan Satriawan, TNP2K & UGM; Ekki Syamsulhakim, TNP2K & Universitas Padjadjaran

# Conditional Cash Transfers (“CCTs”)

- Longer-term, regular cash transfers to poor, conditioned on human capital investments in children
  - Conditions begin before birth – e.g., pre-natal care and deliveries by trained midwives or doctors
  - Continue through early childhood health investments and enrollment in primary and junior secondary school
- Santiago Levy (2006): “clearly, achieving good health is a cumulative process, and temporary investments in nutrition are of little help. The same is true of education: children must be supported year after year.... [PROGRESA’s] central effects will gradually occur through the accumulation of human capital”



# Begun in the 1990s in Mexico, Bangladesh, Brazil....



Source: World Bank, *State of Social Safety Nets 2015*



# How to Measure Cumulative Impacts?

- Many CCTs, starting with PROGRESA, began with an RCT prior to scale-up (see Behrman and Todd 1999; Gertler 2004)
- Most extended the CCT to the control group shortly after pilot period – e.g. 18 months in the PROGRESA case
- This phase-in design is useful for studying a CCT's static impacts on the health and education behaviors they incentivize

.....but, the fact that the control group is treated soon afterward makes it harder to estimate cumulative effects from sustained program exposure



# Do Static Impacts Even Remain Over Time?

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- Some have argued that interventions are less effective when implemented by the government at-scale than in pilot stages, when researchers pay attention to the implementation (see Bold et al. 2015; Banerjee et al. 2017; Muralidharan and Niehaus 2017)
- Treatment effects could weaken after the program becomes more commonplace and people's initial excitement fades, or once people learn that the conditions are not always perfectly enforced by the government



# This Study

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- Study a large-scale policy experiment testing the impact of Indonesia's conditional cash transfer program, Program Keluarga Harapan (PKH)
- Experiment continued to run at-scale for over six years without researcher intervention:
  - By 2013, PKH had reached over 3,400 sub-districts, spread over 336 districts in all of Indonesia's provinces, and covered over 2.3 million households
  - Gol chose to expand to new provinces and districts to ensure that the program would be spread nationwide rather than a few small areas
  - 60% of the control group remained untreated



# Two Main Goals of 6-Year Follow-Up

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- Examine whether the static effects of the program on targeted indicators persist over time
- Measure whether these human capital investments began to accumulate over time as children grew up exposed to the program



# Outline

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- Setting, Experimental Design, and Data
- Results
  - Methods
  - Incentivized health behaviors and health outcomes
  - Incentivized education & child labor outcomes
  - High school education, labor, & early marriage
  - Household economic outcomes
- Conclusions





# SETTING, EXPERIMENTAL DESIGN, AND DATA



# “PKH” or “Hopeful Family Program”

- Launched in 2007
- Provides quarterly cash transfers to the poor, with a fraction of the payment conditional on health- and education-related obligations
- Aim: “(a) to reduce current poverty and (b) to improve the quality of human resources among poor households” (Alatas 2011)



# Targeted CCT

- Extremely poor households
- Proxy-means test
- Additional demographic requirement: households with a pregnant and/or lactating woman, households with children aged 0-15 years, and households with children aged 16-18 years who have not yet completed 9 years of basic education





- Eligible households receive quarterly cash payments (designed to be about 15% to 20% of annual income) through post office
- Transfer based on conditions: e.g. children aged 0 to 6 needed to complete childhood immunizations and take Vitamin A capsules a minimum of twice per year
- Trained facilitators verify conditions; verification did not begin until at least 2010, and even then, conditions were not always enforced

# Experimental Design

- Gol tested PKH across 6 provinces
- 360 sub-districts were randomly chosen for study

Province	Control	Treatment	Total
DKI Jakarta	1	1	2
West Java	41	41	82
East Java	87	87	174
East Nusa Tenggara	26	26	52
North Sulawesi	22	22	44
Gorontalo	3	3	6
Total	180	180	360

# 60% of Control Group Stayed Intact by 2013

	Baseline Randomization	
	Control ( $n = 180$ )	Treatment ( $n = 180$ )
Treated 2-Year	39 (21.7%)	178 (98.9%)
Treated 6-Year	70 (38.9%)	179 (99.4%)

# Data Collection

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- Gol and World Bank conducted baseline survey & 2-year follow-up (Alatas 2011)
- 14,326 HHs (73,578 individuals) surveyed at baseline



# 6-Year Follow-Up

- Follow-up survey in Sept.-Nov. 2013 to look at 6-year outcomes
- Found 95 percent of the original 14,326 HHs in the baseline survey and interviewed them
  - i.e. they had not moved, or only moved within sub-district
  - No differential attrition nor differences in baseline characteristics
- Not all HH members stayed at home:
  - Surveyed split households (if within sub-district)
  - Captured some information on reasons for migration if HH member was not within sub-district; no differential migration





# RESULTS



## IV Estimation Strategy

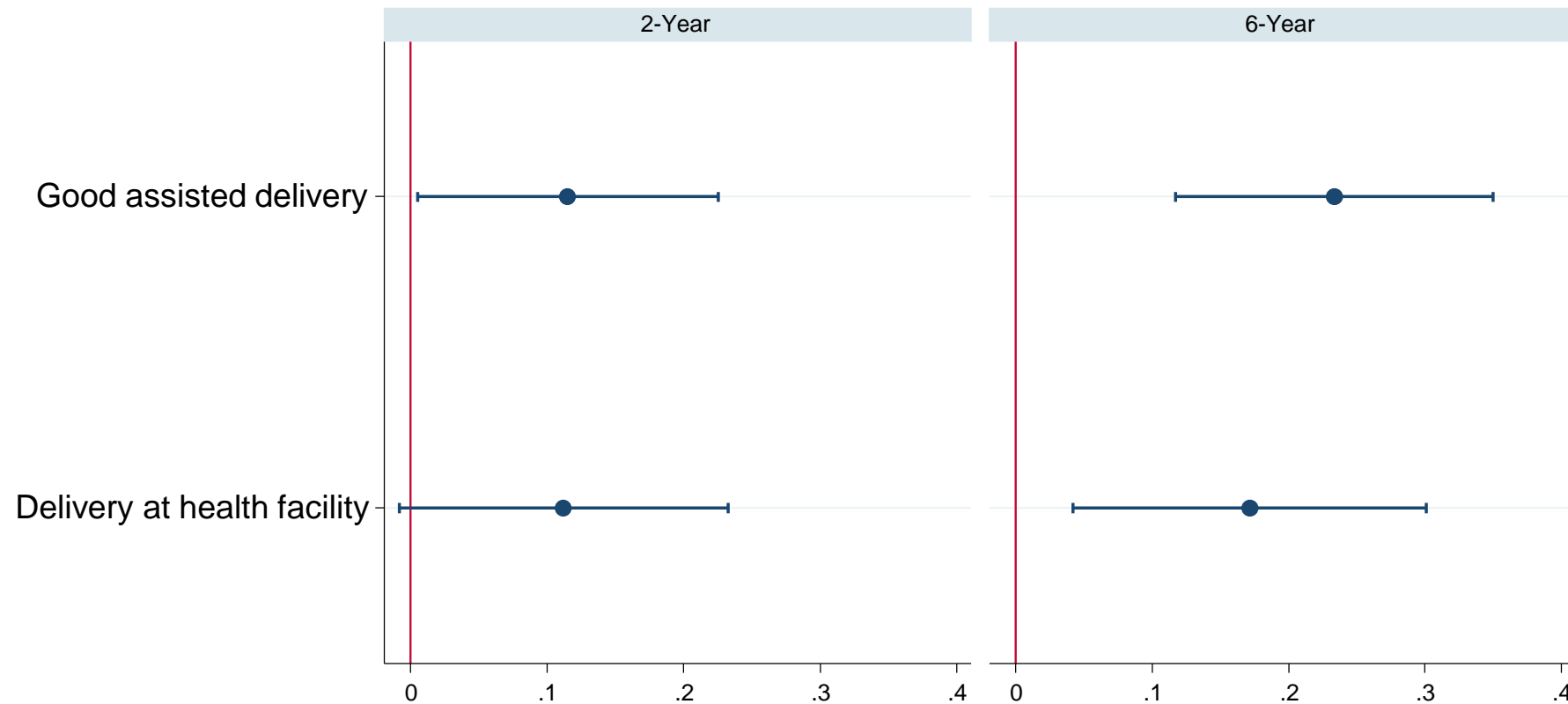
$$Y_{hsd} = \beta_0 + \beta_1 \text{ReceivedPKH}_{hsd} + \mathbf{X}'_{hsd} \boldsymbol{\gamma} + \alpha_d + \varepsilon_{hsd}$$

- Instrument “ever received PKH” with initial randomized treatment status
- Include district fixed effects (strata) and baseline household control variables
- Cluster standard errors at sub-district

# **INCENTIVIZED HEALTH BEHAVIORS AND HEALTH OUTCOMES**

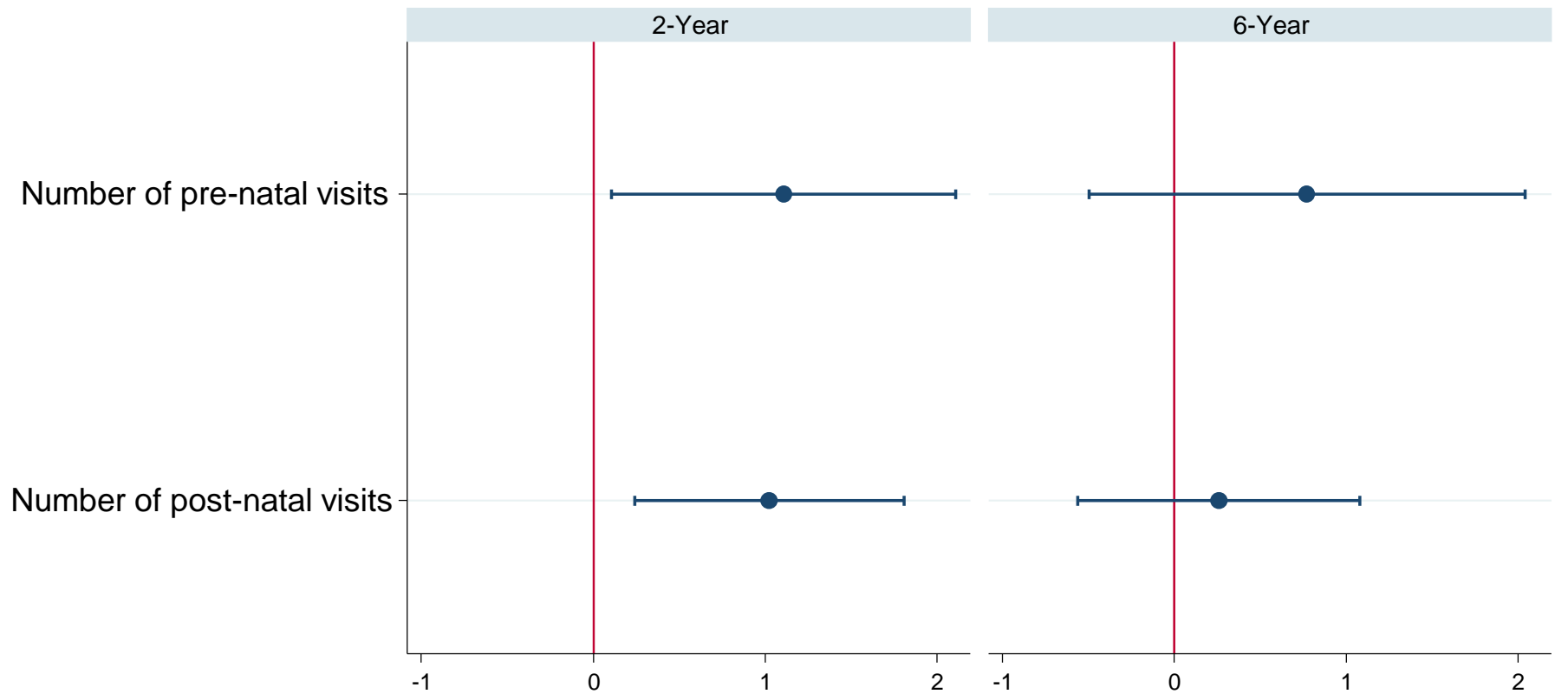


# Maternal Health-Seeking Behaviors



- Large improvements in delivery behaviors in both follow-up surveys
- At 6 years: PKH lead to a 17pp increase in delivery in a health facility

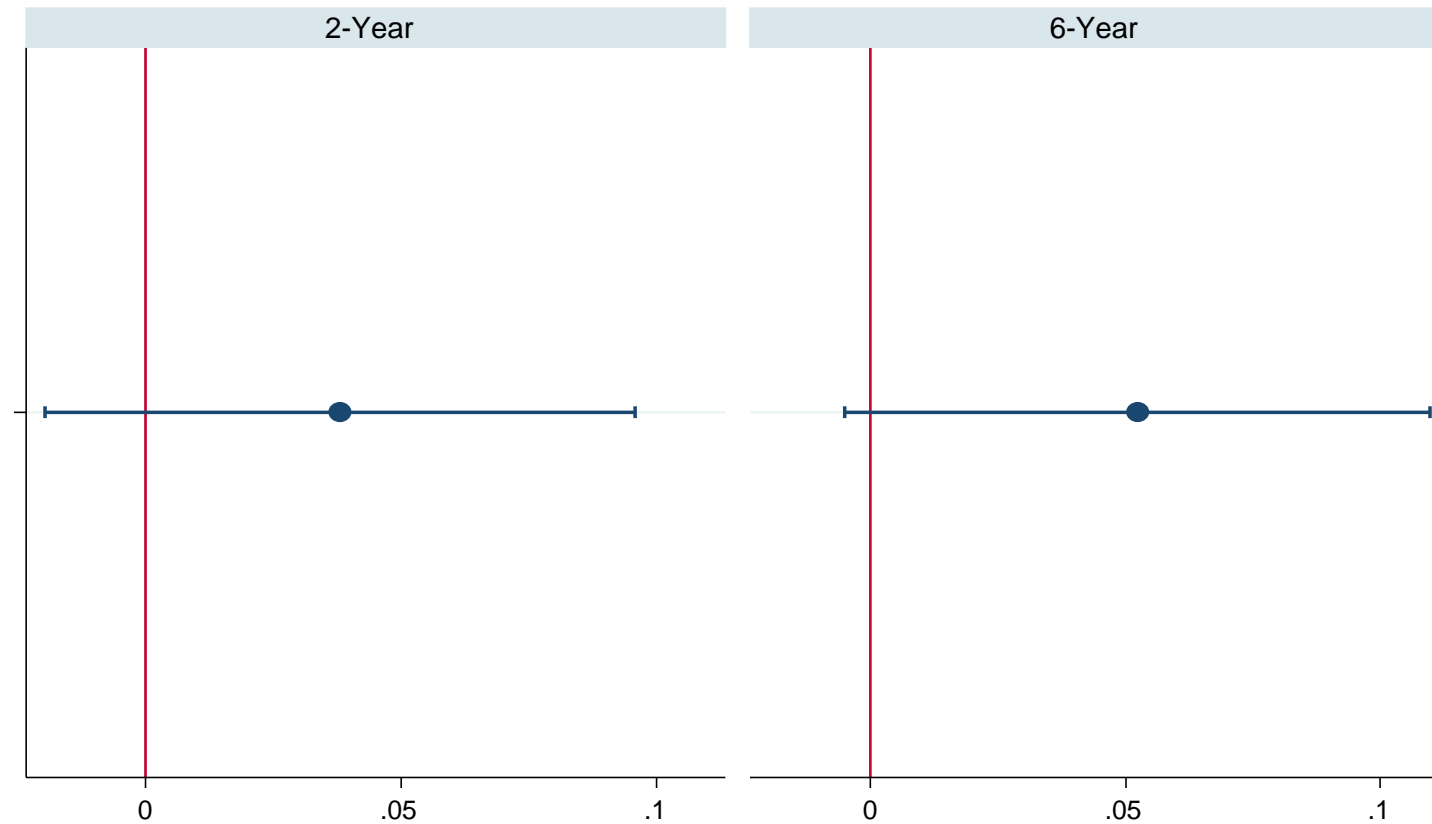
# Maternal Health-Seeking Behaviors



- No effects on pre- or post- natal visits in 6-year follow-up, but this appears largely due to the control group “catching up”



# Child Health-Seeking Behaviors: % of Immunizations for Age



- Positive but insignificant at 2-year
- 4.8pp increase (significant at 10% level) at 6-year

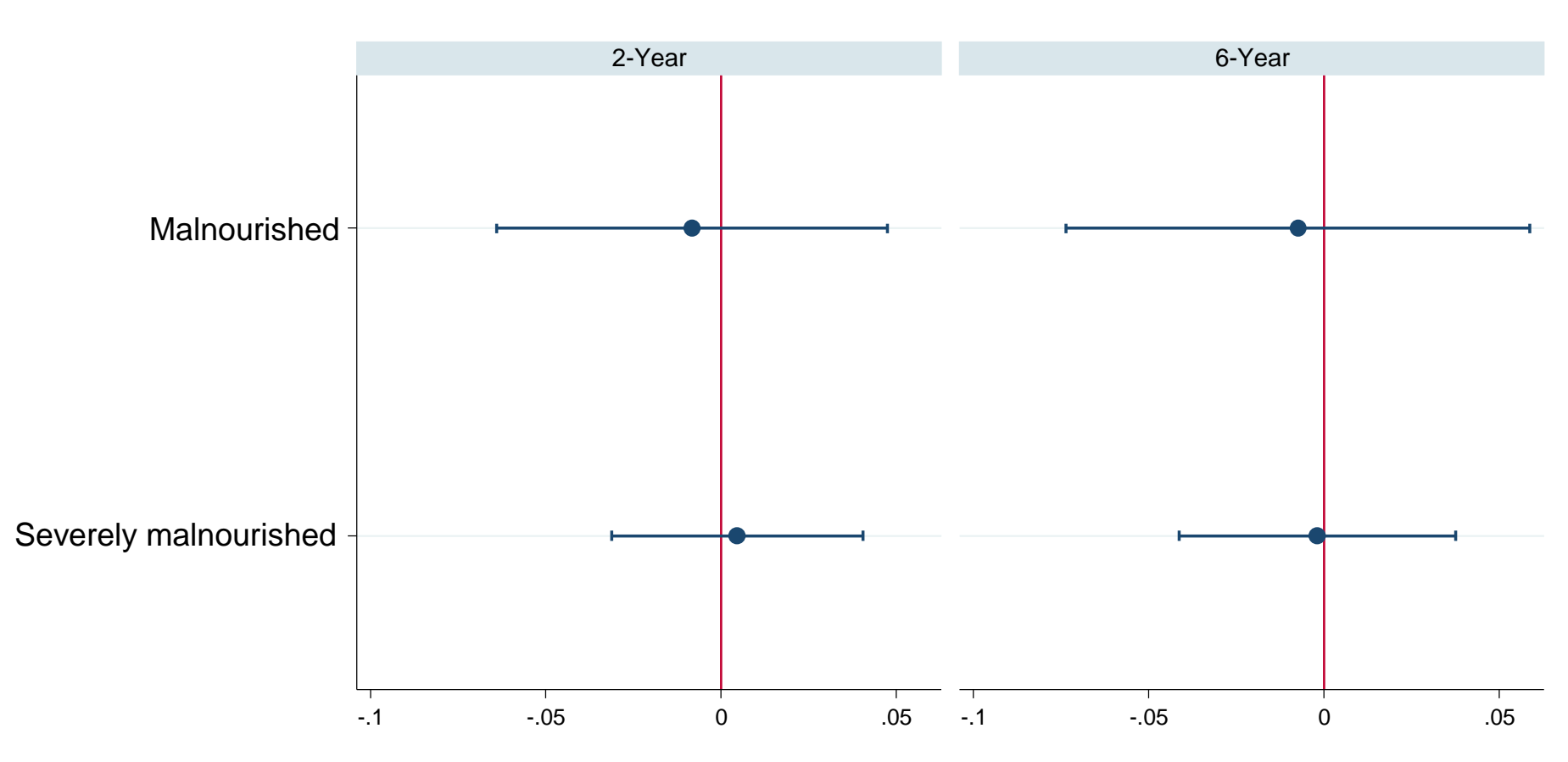


# Effects on Measured Child Health (0 – 60 months)

- Low weight-for-age:
  - more than 2 standard deviations below WHO standards
  - expect may respond more quickly to health investments
- Stunting (low height-for-age):
  - more than 2 standard deviations below the WHO-standardized height-for-age median
  - a measure of cumulative health investments during the first few years of life (Hoddinott et al. 2013; Jayachandran and Pande 2017)
  - correlated with worse cognitive and economic outcomes later in life (Case and Paxson 2008; Glewwe and Miguel 2008; Hoddinott, Maluccio, Behrman et al. 2011; Guven and Lee 2013)



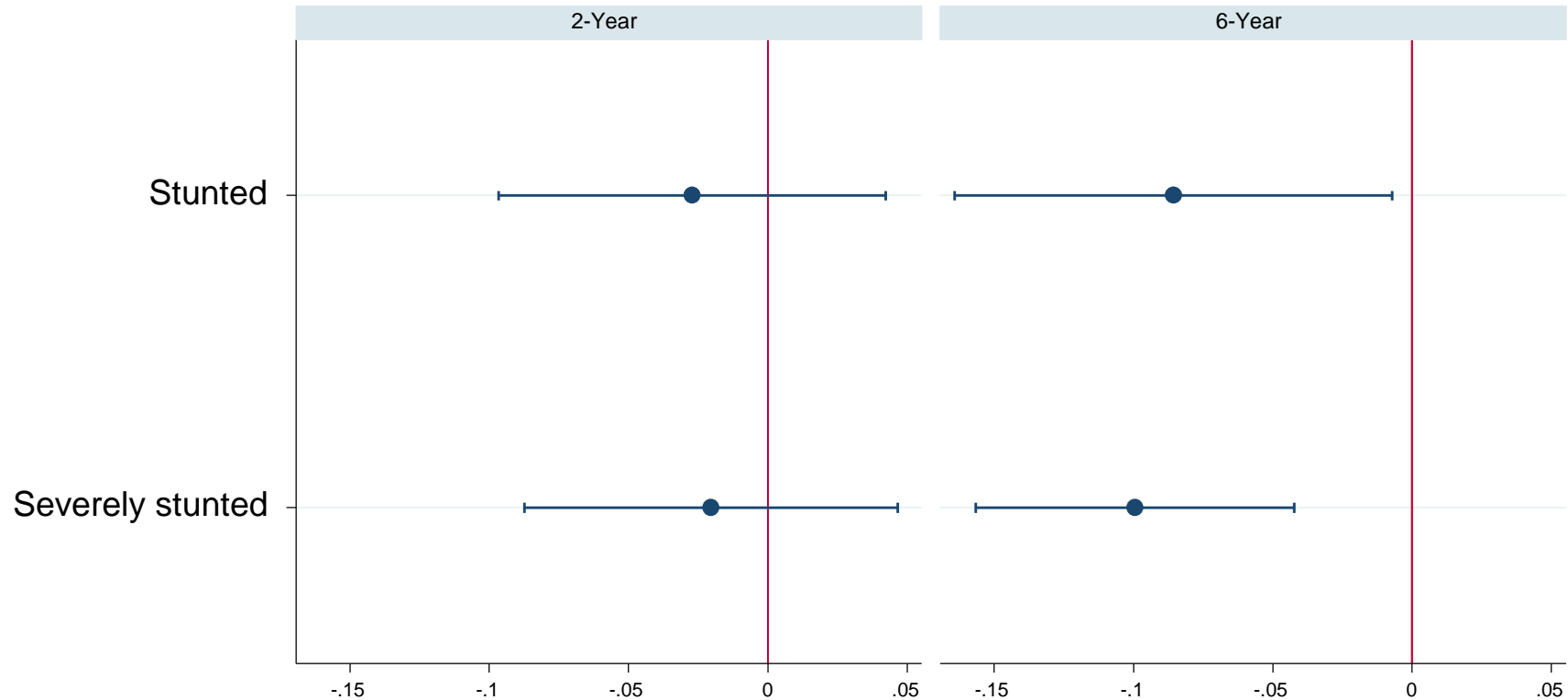
# Low Weight for age



- No effect on low weight for age in either 2- or 6-year
- Some effect for boys, no effect on girls in 6-year



# Stunting



- 2-year: no significant effect
- 6-year: Declined by roughly 9 to 11 percentage points, representing a 23 to 27 percent reduction in the probability of being stunted
- Effects for both boys and girls, but qualitatively larger for boys



# Mechanisms for Stunting Reductions

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- Given that PKH is a bundled intervention, it is hard to disentangle which specific channels account for the reductions in stunting
- However, we can explore a number of factors



# Mechanisms for Stunting Reductions

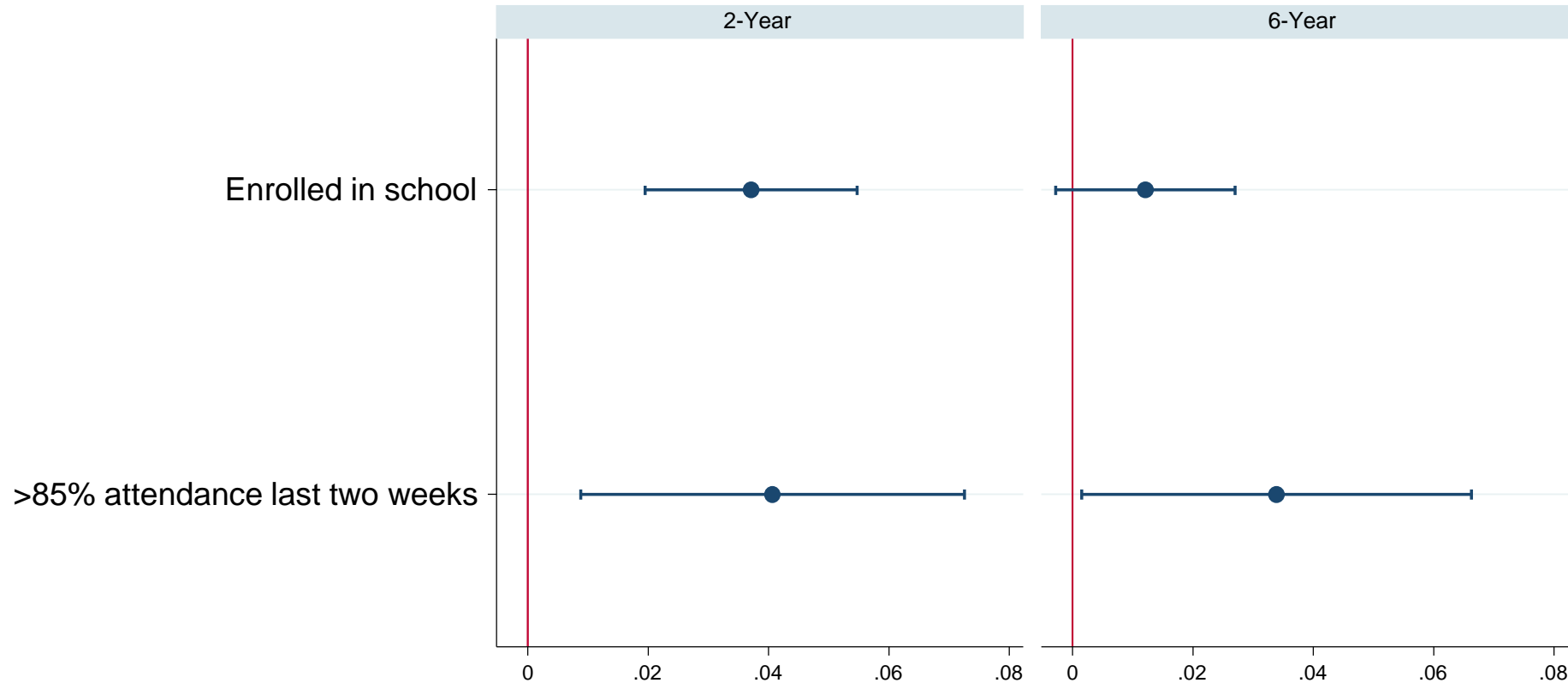
- No effects on childhood diarrhea or colds
- No changes in breastfeeding or investments in sanitation, or mother's knowledge of good behaviors
- Increased health-seeking behaviors—improved delivery and immunizations
- Increase in knowledge of child's birthweight in 2- and 6-year
- Changes in nutritional intake of kids—mothers report that kids were more likely to eat eggs or milk in last week (in 2-year; not significant in 6-year but can't rule out difference and lose more than half the sample)



# **INCENTIVIZED EDUCATION OUTCOMES & CHILD LABOR**



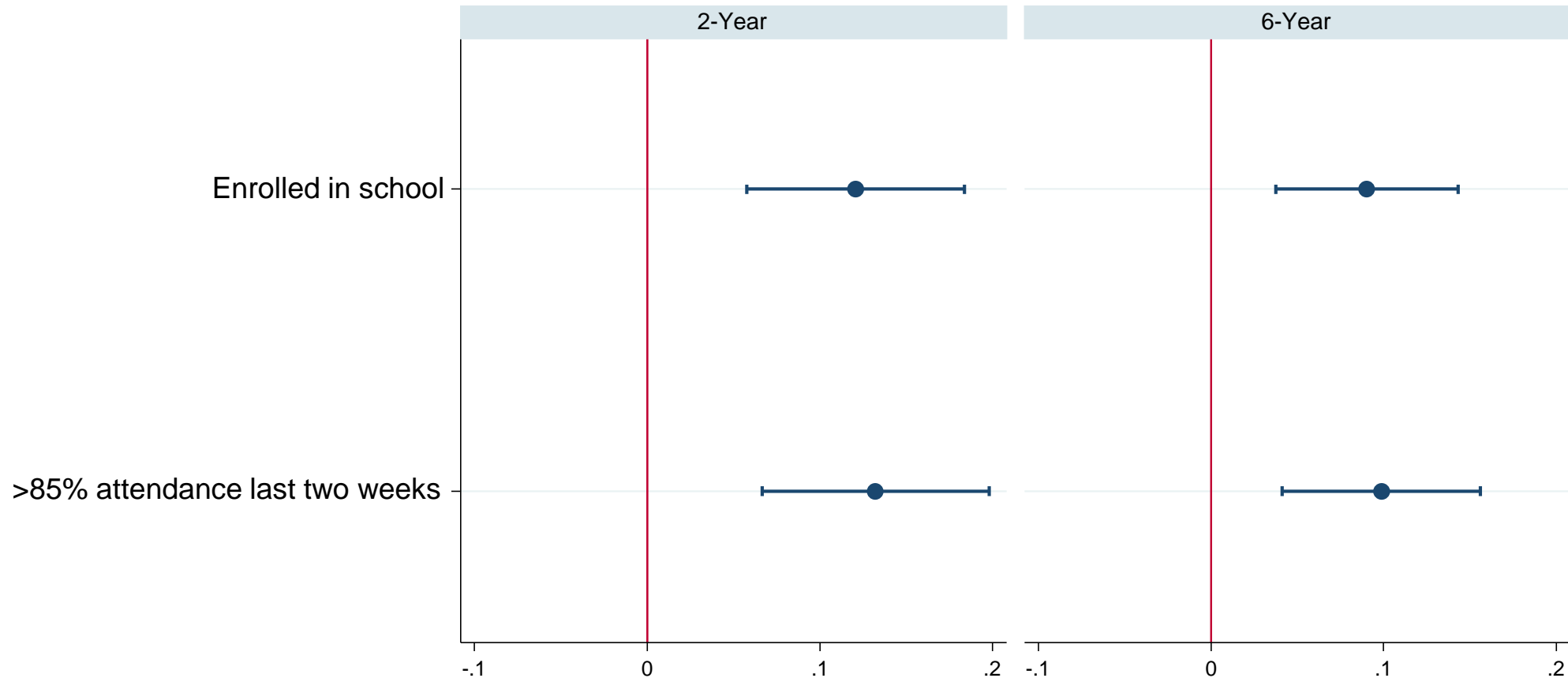
# Schooling, Age 7-12



- 6 year: Little effect for younger kids on enrollment
- But ~97% of kids are already enrolled and ~90 of kids having greater than 85% attendance in the last two weeks

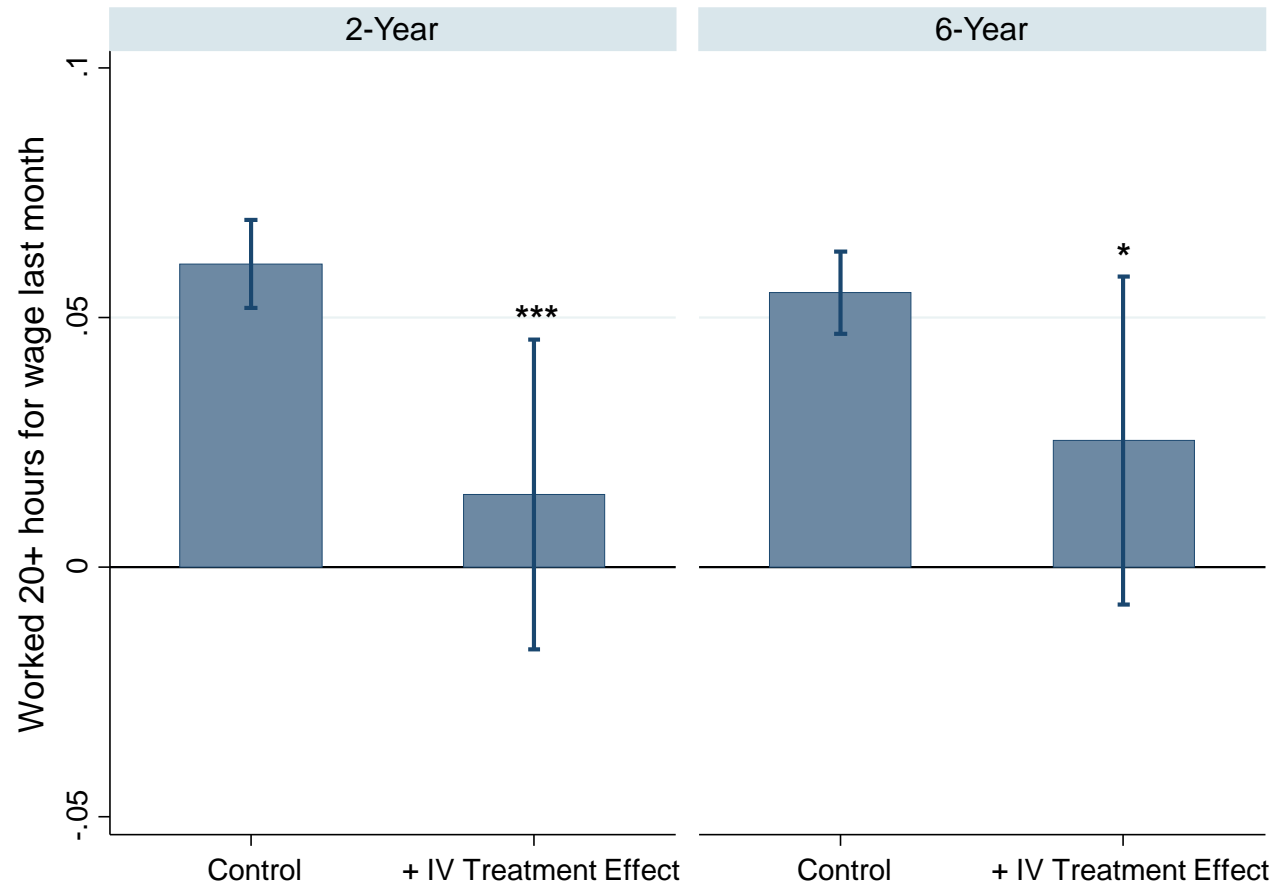


# Schooling, Age 13-15



- 12pp increase in school enrollment at 2-year and 9pp increase at 6-year (56% and 52% reduction in non-enrollment, respectively)
- 6-year effects slightly larger for boys (but their enrollment is lower than girls)

# Child Labor, Age 13-15



- PKH reduces wage work for those age 13-15
- Primarily for boys, who are more likely to be working for a wage
- No effect on housework (even for girls)



## In short

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- With PKH, older kids (particularly boys) more likely to stay enrolled in school for longer and less likely to be working
- Less of an effect of PKH on younger kids, who tend to be in school and not working already

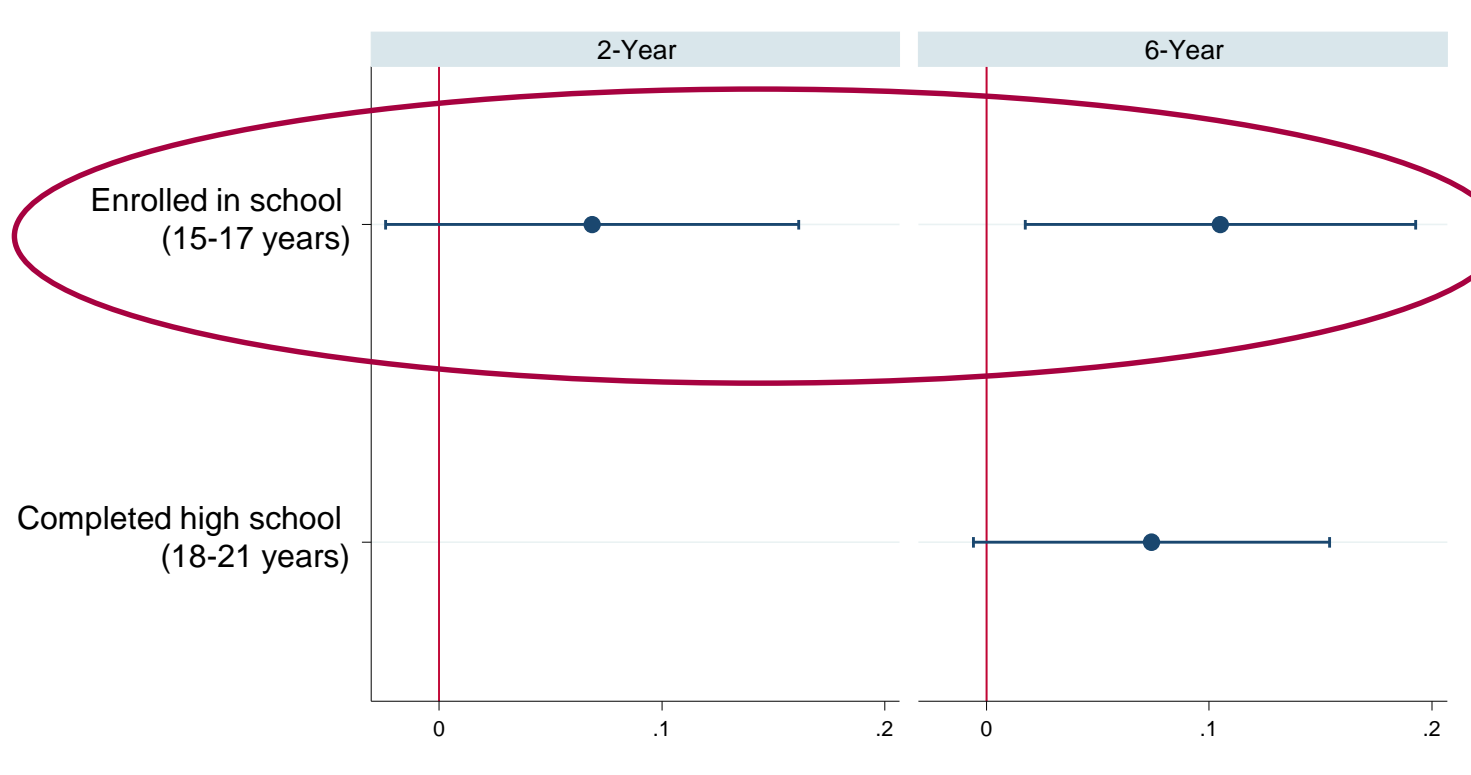




# **HIGH SCHOOL EDUCATION, LABOR, & EARLY MARRIAGE**

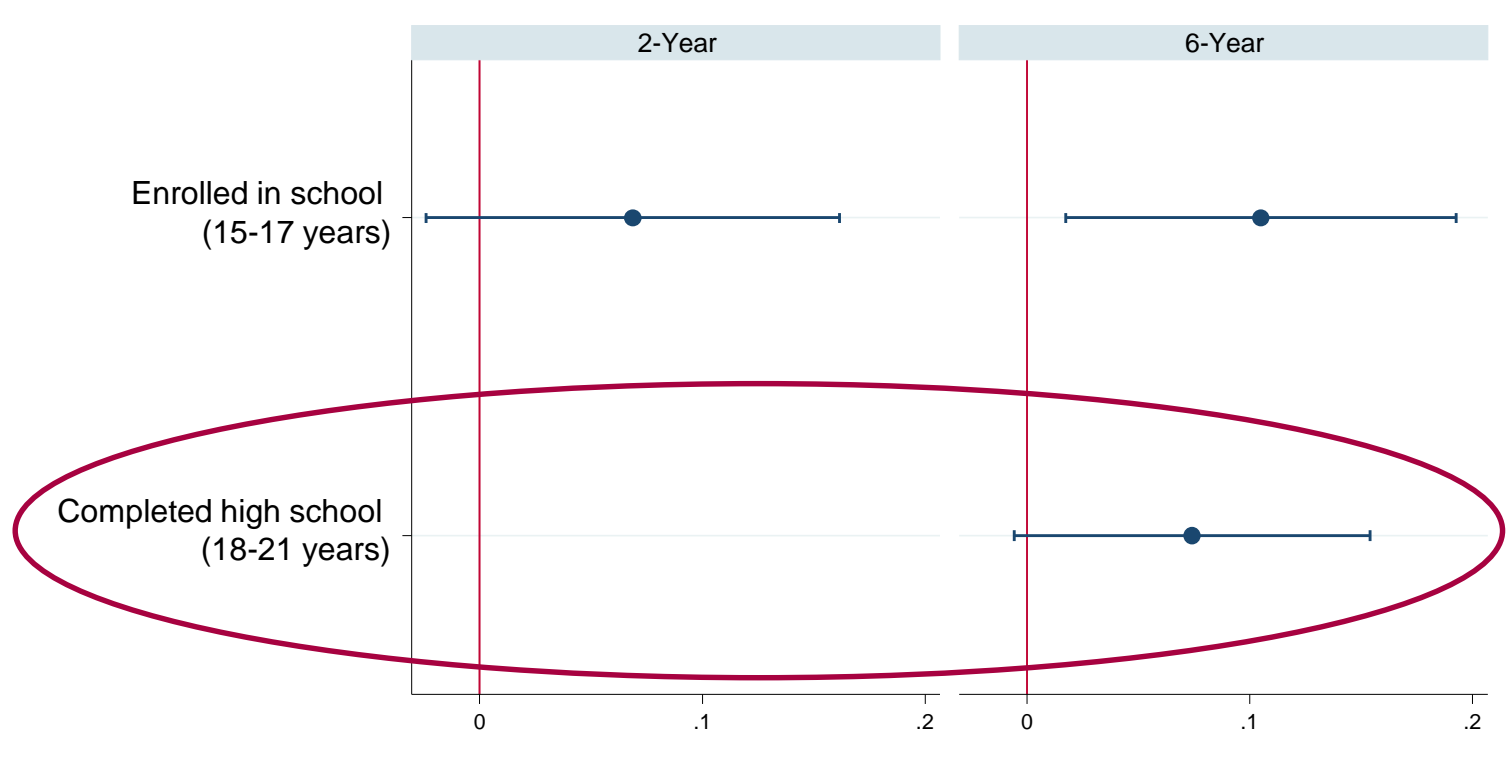


# Schooling, Age 15-21



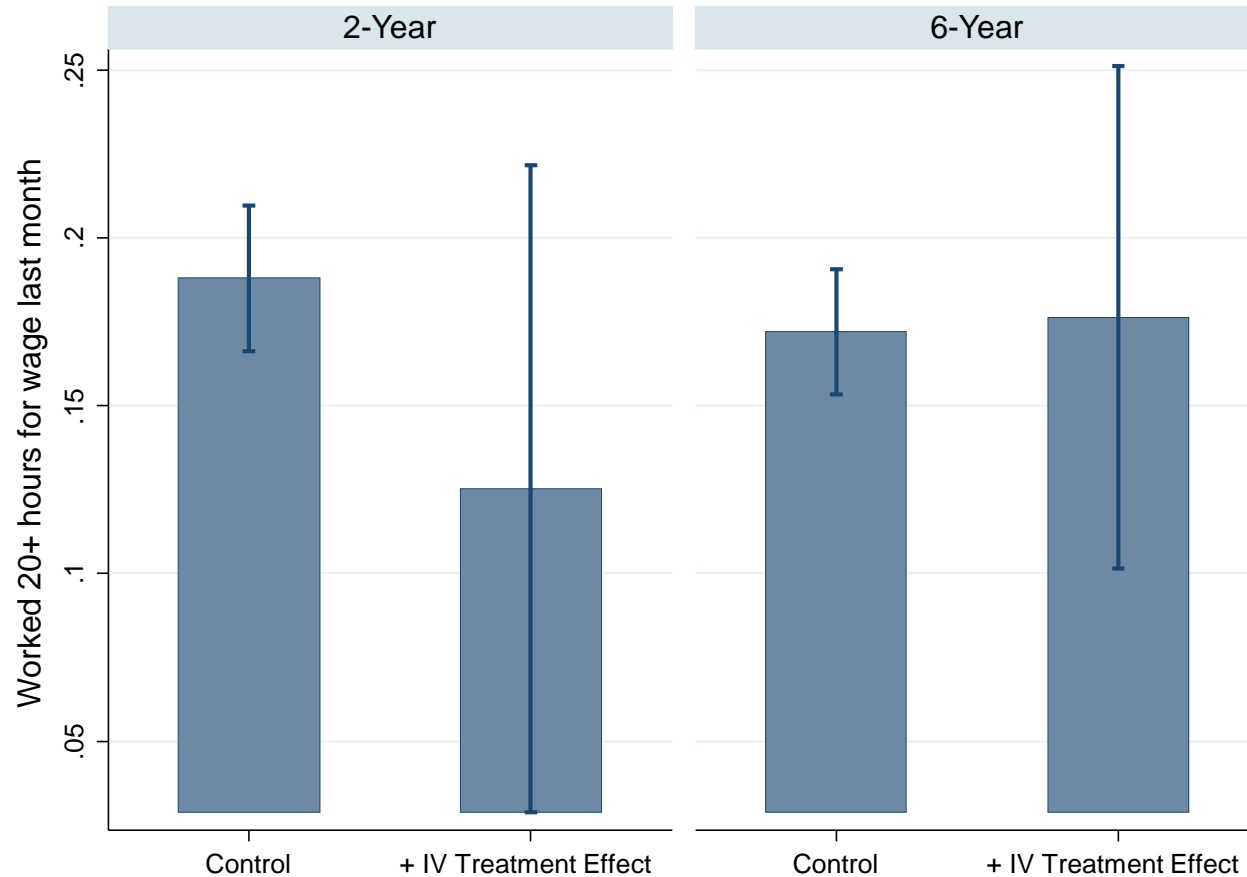
- 2-year: no significant effect on staying in school (but they were already “older” when PKH was introduced)
- 6-year: ~10pp increase in school enrollment for those age 15-17 (eliminated 27% of non-enrollment)
- Effect driven by boys, who had lower enrollment to begin with

# Schooling, Age 18-21



- Effects of CCT on high school completion for those aged 18-21 (i.e. those who were aged 12-15 when PKH started)
- Driven entirely by boys (who were less likely to complete high school to begin with)

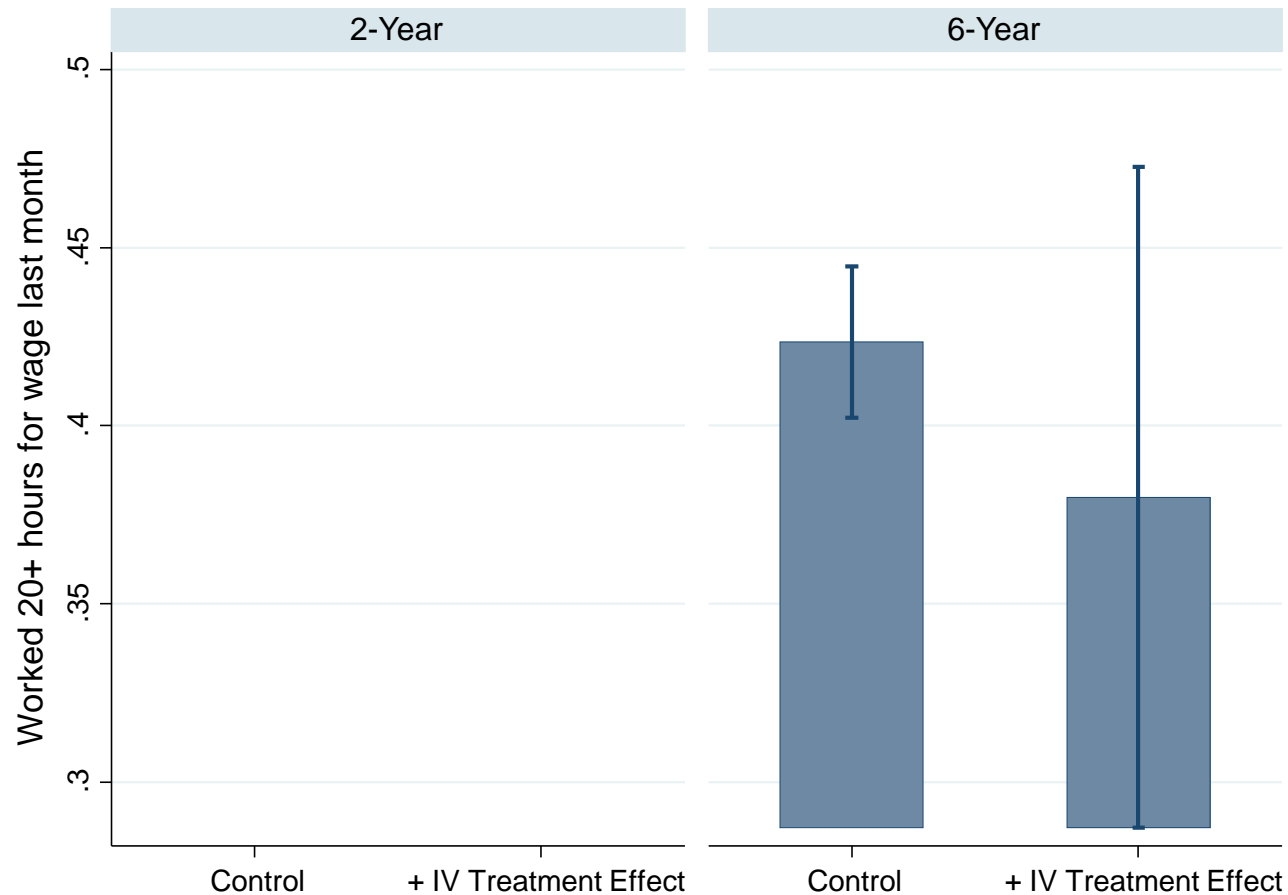
# Work, Age 16-17



- Less likely to work due to school effect?
- No effect on working for a wage for 16-17 yr olds
- Less likely to work for family business
- Girls less likely to be helping out with housework



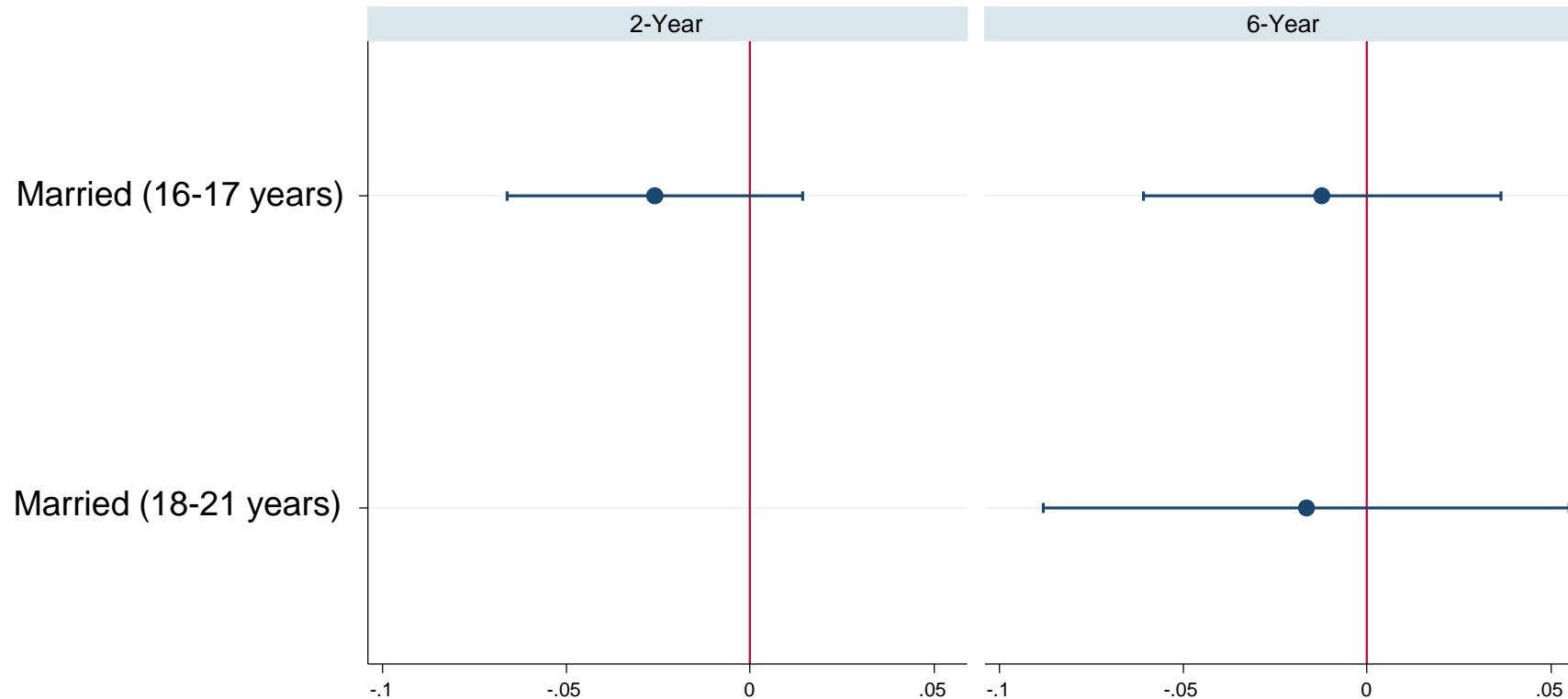
# Work, Age 18-21



- More likely to work?
  - No effect for boys or girls on wage work
  - Boys: more likely to help out with the family business
  - Remember: aged 12-15 when PKH started



# Marriage, Age 16-21



- No effect on child marriage
- No significant effects on teenage pregnancy



# In Short

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- Kids starting to stay in school longer (even after incentivized ages) and are somewhat more likely to graduate from high school
- Not yet translating to increased wage employment
  - Boys working more in family business
  - 18-21 year olds were older (12-15 years) when PKH first started and did not get the same investments in early childhood
- No observable effect on child marriage or fertility



# HOUSEHOLD ECONOMIC OUTCOMES





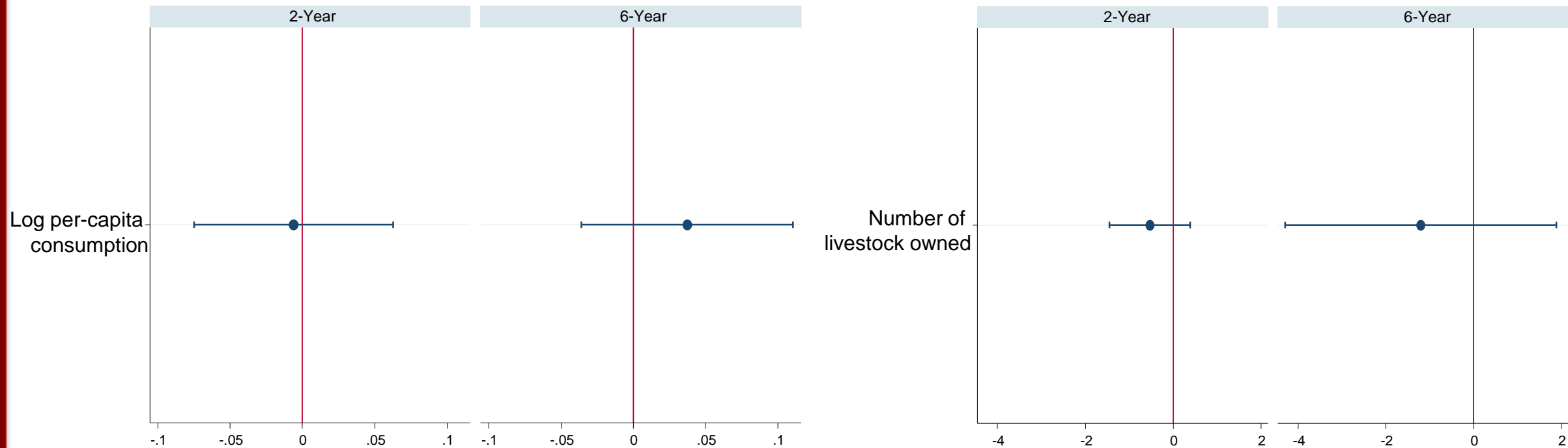
# Transformative Poverty Effects?

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- PKH provides a small amount of cash quarterly for around 6 years
- Payment was around 7 to 15 percent of total household consumption, cumulatively adding up to between \$360 and \$1320 per household
- Could households save it, and invest in productive assets that reduce current poverty or increase employment?



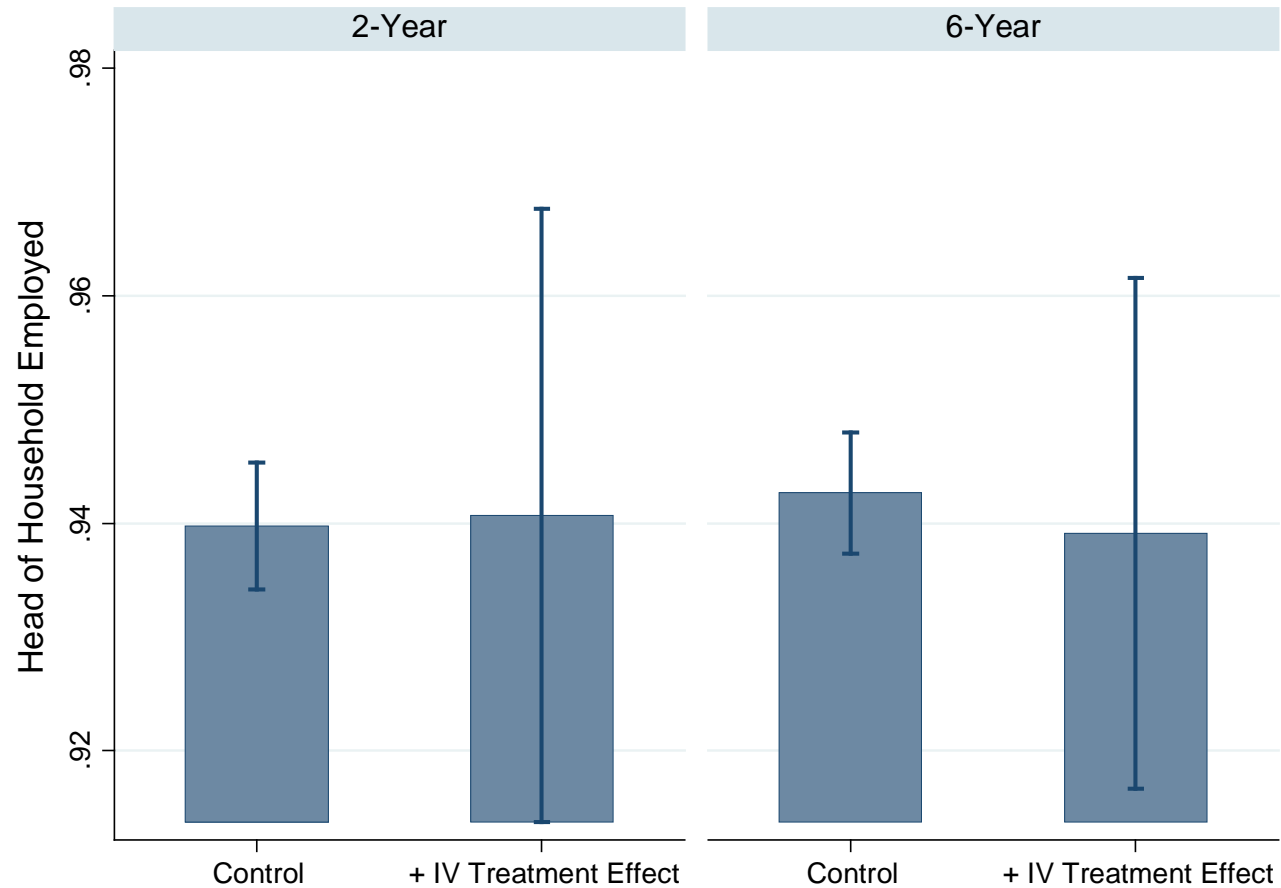
# HH Consumption and Livestock Ownership



- Confidence interval for household consumption effect at 6-year follow-up contains the amount of the transfer, but no observable impact
- No impact on number of livestock owned



# HH Head Employment



- No impact on household head employment... but about 95% are working



# CONCLUSIONS



# Our findings

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- No effects on asset accumulation or employment
- PKH continues to promote health and educational investments in targeted children (e.g. increases in births by trained professionals and in school enrollment)
- Begin to observe impacts on outcomes that require cumulative investment: large reductions in stunting and some evidence of increased high school completion



# Our findings

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- However, this does not yet translate to employment for those who have just started to age out of PKH
  - Were already teenagers when PKH started, and have spent fewer formative years in the program
  - If early childhood investments matter most, we may expect bigger effects in the very long-run (future research)



## Summing Up:

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- The additional help that CCTs provide does not transformatively reduce poverty for those currently on the program
- Rather, CCTs help poor households make significant investments in their children's early childhood health and education
- Depending on how early childhood health improvements translate to longer-run gains, economic gains of PKH may come from reductions in the intergenerational transmission of poverty

