

ONLINE APPENDIX**Workfare and Human Capital Investment: Evidence from India**

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Appendix A: Timing of NSS Surveys and NREGS Rollout

NREGS was rolled out in three waves. Wave 1 districts got access to the program in February 2006, Wave 2 districts got access in April 2007, and Wave 3 districts got access in April 2008. The National Sample Survey (NSS) Schedule 10, the main source of outcomes data for this paper, was administered four times between 2004 and 2010: Round 61 was administered between July 2004 and June 2005, round 62 was administered from July 2005 to June 2006, round 64 was administered from July 2007 to June 2008, and round 66 was administered from July 2009-June 2010. Rounds 61, 64 and 66 were “thick” rounds, meaning that they had a large sample size which included more districts and more households per district than the “thin” intervening rounds.

In the main analysis of this paper, we use only the thick rounds of NSS Schedule 10 to measure the impact of NREGS on educational outcomes and labor. Round 61 is completely before the rollout of NREGS to any district. For the majority of round 64, only districts in wave 1 and wave 2 have access to NREGS, and in round 66, all rural districts in India have access to the program. This strategy does not allow us to utilize any variation between waves 1 and 2, because both sets of districts received the program between round 61 and round 64. We do not include round 62, although it would allow us to use some of this variation, for two reasons. First, it is a thin round that mostly was surveyed before the rollout of NREGS, it has only 2,169 children aged 13-17 in wave 1 districts who were interviewed after February 2006, or about 10 children per district (by contrast, we have more than 22,000 kids aged 13-17 in waves 1 and 2 in the 2007-2008

thick round data). In addition, there is considerable evidence that while NREGS was officially rolled out in February 2006 in wave 1, it did not reach the majority of participants until later that year since this was the first time this program was rolled out.¹ It is likely that even those interviewed in wave 1 districts from February-June 2006 in the thin NSS round would likely not have been “treated” by NREGS.

However, one disadvantage to this strategy is that it does not allow us to test well visually for a deviation in the NREGS years in treated districts. In order to do this, we needed more outcome data from more years. Thus, to create Figure 1, we not only used round 62 data from 2005 and 2006, but we also used Schedule 1 data from rounds 57-59 (2001-2003) and Schedule 10 thin round 60 (2004). For the reasons stated above, most of the variation in this sample still stems from the difference between waves 1 and 2 and wave 3 districts, and thus in the figures we group waves 1 and 2 together as “early” districts and normalize 2006 to zero as a baseline year. To ensure that these choices are not meaningfully affecting our conclusions, however, we run our main regressions on the larger “Figure” sample (Table A2 in the Online Appendix) and make figures from the smaller “Regression” sample (Figure A1 in the Online Appendix) and the conclusions are basically unchanged.

The following table shows the timing of NSS Surveys and NREGS Rollout.

¹ <https://www.indiatoday.in/magazine/economy/story/20061016-nrega-scheme-changing-rural-life-in-some-states-782226-2006-10-16>

NREGS Rollout, Thin and Thick Rounds

<i>NREGS Rollout</i>	<i>NSS Thick Rounds</i>	<i>NSS Thin Rounds</i>
		57: Jan–Dec 2001
		58: Jan–Dec 2002
		59: Jan–Dec 2003
		60: Jan–Jun 2004
	61: Jul 2004–Jun 2005	
Wave 1 starts Feb 2006		62: Jul 2005–Jun 2006
Wave 2 starts Jan 2007	64: Jul 2007–Jun 2008	
Wave 3 starts Jan 2008		
	66: Jul 2009–Jun 2010	

Notes: This table shows the dates of the NREGS rollout and the corresponding thin and thick round dates of the NSS surveys used in the analysis.

Appendix B: Additional Figures and Tables

Table A1: Summary Statistics

NSS Sample (Ages 13-17)									
	Wave 1			Wave 2			Wave 3		
	Mean	SD	Obs.	Mean	SD	Obs.	Mean	SD	Obs.
Age	14.9	1.35	31,922	14.9	1.35	24,537	15.0	1.37	36,443
Female	0.47	0.50	31,922	0.47	0.50	24,537	0.47	0.50	36,443
<i>Primary Activity:</i>									
Attends School	0.67	0.47	31,922	0.70	0.46	24,537	0.76	0.42	36,443
Works at Home	0.09	0.29	31,922	0.08	0.26	24,537	0.06	0.24	36,443
Works outside Home	0.08	0.27	31,922	0.08	0.27	24,537	0.05	0.23	36,443
Domestic Work	0.11	0.31	31,922	0.10	0.30	24,537	0.09	0.28	36,443
NSS Sample (Ages 5-12)									
	Wave 1			Wave 2			Wave 3		
	Mean	SD	Obs.	Mean	SD	Obs.	Mean	SD	Obs.
Age	8.5	2.33	61,818	8.5	2.32	44,048	8.6	2.32	60,424
Female	0.47	0.50	61,818	0.47	0.50	44,048	0.47	0.50	60,424
<i>Primary Activity:</i>									
Attends School	0.82	0.38	61,818	0.84	0.36	44,048	0.89	0.31	60,424
Works at Home	0.009	0.094	61,818	0.006	0.08	44,048	0.007	0.08	60,424
Works outside Home	0.005	0.071	61,818	0.005	0.07	44,048	0.002	0.05	60,424
Domestic Work	0.02	0.14	61,818	0.01	0.12	44,048	0.01	0.11	60,424
NSS Sample (Female Spouse of Household Head, Ages 18-65)									
	Wave 1			Wave 2			Wave 3		
	Mean	SD	Obs.	Mean	SD	Obs.	Mean	SD	Obs.
Age	38.5	11.1	51,933	38.7	11.1	39,089	39.9	11.1	55,114
<i>Primary Activity:</i>									
Attends School	0.0005	0.023	51,933	0.0006	0.024	39,089	0.0007	0.027	55,114

Works at Home	0.23	0.42	51,933	0.19	0.39	39,089	0.22	0.41	55,114	
Works outside Home	0.15	0.35	51,933	0.15	0.35	39,089	0.12	0.33	55,114	
Domestic Work	0.61	0.49	51,933	0.65	0.48	39,089	0.65	0.48	55,114	
NSS Sample (Male Household Head, Ages 18-65)										
		Wave 1			Wave 2			Wave 3		
	Mean	SD	Obs.	Mean	SD	Obs.	Mean	SD	Obs.	
Age	41.1	11.6	54,618	41.1	11.5	40,665	42.0	11.5	57,787	
<i>Primary Activity:</i>										
Attends School	0.0009	0.031	54,618	0.0015	0.038	40,665	0.0016	0.039	57,787	
Works at Home	0.55	0.50	54,618	0.54	0.50	40,665	0.54	0.50	57,787	
Works outside Home	0.38	0.49	54,618	0.40	0.49	40,665	0.38	0.49	57,787	
Domestic Work	0.02	0.14	54,618	0.019	0.14	40,665	0.021	0.14	57,787	
ASER Sample (Ages 13-16)										
		Wave 1			Wave 2			Wave 3		
	Mean	SD	Obs.	Mean	SD	Obs.	Mean	SD	Obs.	
Age	14.3	1.07	248,217	14.3	1.1	167,357	14.3	1.09	326,523	
Female	0.45	0.50	248,217	0.45	0.50	167,357	0.45	0.50	326,523	
Currently Enrolled	0.84	0.37	248,217	0.87	0.34	167,357	0.89	0.31	326,523	
Math Score	3.3	1.1	231,348	3.4	0.99	158,405	3.5	0.90	306,538	
Reading Score	3.5	1.1	231,348	3.6	0.98	158,405	3.6	0.89	306,538	
ASER Sample (Ages 5-12)										
		Wave 1			Wave 2			Wave 3		
	Mean	SD	Obs.	Mean	SD	Obs.	Mean	SD	Obs.	
Age	8.8	2.1	692,844	8.8	2.2	450,61	8.9	2.1	806,039	
Female	0.46	0.50	692,844	0.45	0.50	450,61	0.45	0.50	806,039	
Currently Enrolled	0.95	0.22	692,844	0.96	0.20	450,61	0.97	0.17	806,039	
Math Score	2.2	1.3	668,893	2.3	1.3	438,457	2.4	1.3	778,005	
Reading Score	2.3	1.4	668,893	2.4	1.4	438,457	2.5	1.4	778,005	

Source: ASER (2005-2009) and NSS 2004-2010 (rounds 61, 64, and 66).

Notes: This table contains summary statistics for the outcome and control variables in this paper, separately for each NREGS rollout wave.

Table A2: Robustness: Effect of NREGS on School Attendance and Work, All Rounds

<i>Dependent Variable:</i>	Attends School	Works
Panel A: Full Sample		
NREGS	-0.0033 (0.00518)	0.00664 (0.00363)*
Observations	587,533	587,533
Mean DV	0.789	0.111
Panel B: Ages 13-17		
NREGS	-0.01795 (0.00764)**	0.01834 (0.0073)**
Observations	212,585	212,585
Mean of DV	0.699	0.257
Panel C: Ages 5-12		
NREGS	0.00528 (0.00575)	0.00041 (0.00288)
Observations	374,948	374,948
Mean of DV	0.840	0.028
District FEs	YES	YES
Year FEs	YES	YES
Age FEs	YES	YES

Source: NSS 2001-2010 (rounds 57, 58, 59, 60, 61, 62, 64, 66)

Notes: This table re-estimates Table 2 but uses both thick and thin rounds of the NSS data that are used to generate Figure 1. Standard errors clustered at the district are reported in parentheses. All regressions include district, year, age, and sex fixed effects. ***indicates significance at 1% level, ** at 5% level, * at 10% level.

Table A3: Robustness: Additional Controls

<i>Dependent Variable:</i>	Attends School	Works
Panel A: Age-by-Year and Age-by-District FE, Ages 13-17		
NREGS	-0.03559 (0.01018)***	0.04059 (0.00959)***
Observations	92,892	92,892
District FEs	YES	YES
Age FEs	YES	YES
Year FEs	YES	YES
Age X District FEs	YES	YES
Age X Year FEs	YES	YES
Panel B: With District-Cohort Trends, Ages 13-17		
NREGS	-0.04354 (0.01046)***	0.04915 (0.00995)***
Observations	92,892	92,892
District FEs	YES	YES
Age FEs	YES	YES
Year FEs	YES	YES
District X Cohort	YES	YES
Panel C: With District-Year Trends, Ages 13-17		
NREGS	-0.04054 (0.01043)***	0.0464 (0.00985)***
Observations	92,892	92,892
District FEs	YES	YES
Age FEs	YES	YES
Year FEs	YES	YES
District X Year	YES	YES
Panel D: With Baseline Outcome X Year, Ages 13-17		
NREGS	-0.03403 (0.01022)***	0.04115 (0.00955)***
Observations	92,892	92,892
District FEs	YES	YES
Age FEs	YES	YES
Year FEs	YES	YES
Baseline outcome X Year	YES	YES

Source: NSS 2004-2010 (rounds 61, 64, 66)

Notes: This table re-estimates Table 2 (Panel B) but with different control variables in each panel. Standard errors clustered at the district are reported in parentheses. All regressions include district, year, age, and sex fixed effects. ***indicates significance at 1% level, ** at 5% level, * at 10% level.

Table A4: NREGS and Returns to Schooling

<i>Dependent Variable:</i>	Log Wages	
	All Adults	Adults with > 5 Years of Education
Years of School	0.08507 (0.00136)***	0.1167 (0.00236)***
NREGS	0.09937 (0.0241)***	-0.04177 (0.04081)
NREGS X School	-0.01736 (0.00169)***	-0.00243 (0.00275)
Observations	118,531	53,329
Mean of DV	6.13	6.58
District FEs	YES	YES
Age FEs	YES	YES
Year FEs	YES	YES

Source: NSS 2004-2010 (rounds 61, 64, 66)

Notes: This table shows regressions of log wages on total years of school and NREGS. All regressions include year, age, sex, and district fixed effects and are estimated on adults aged 18-65. Standard errors clustered at the district level are reported in parentheses. ***indicates significance at 1% level, ** at 5% level, * at 10% level.

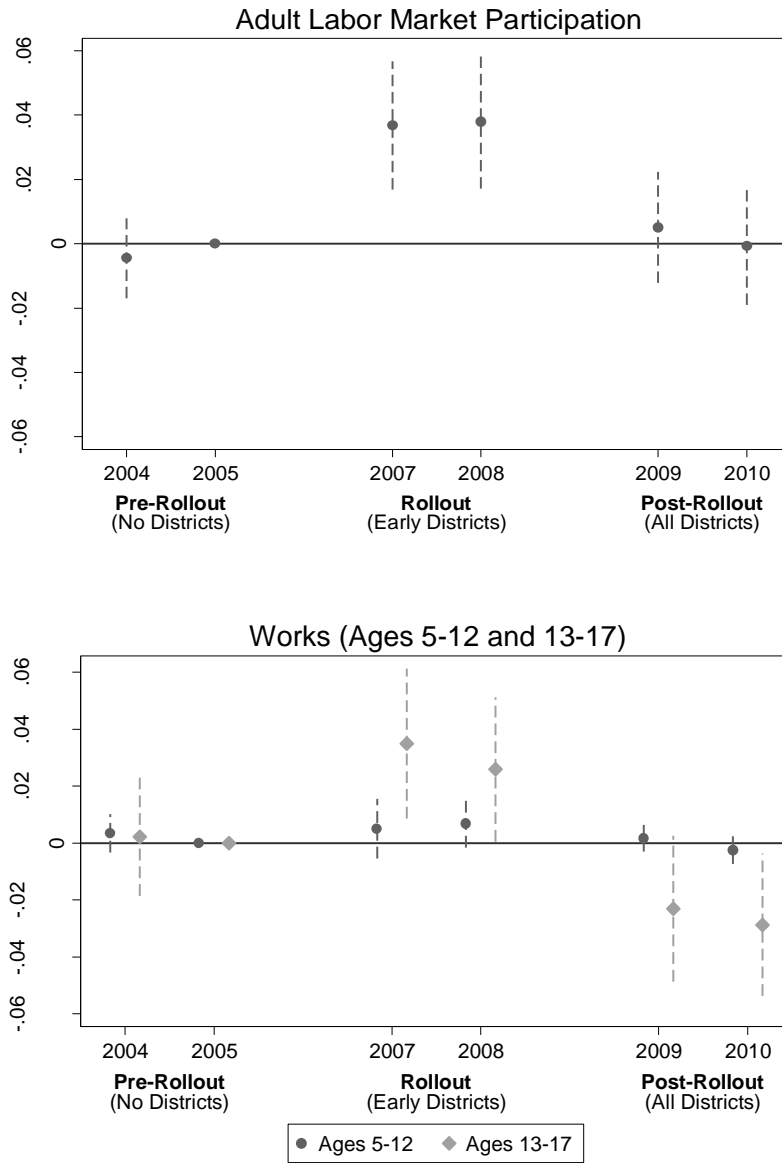
Table A5: NREGS and School Quality

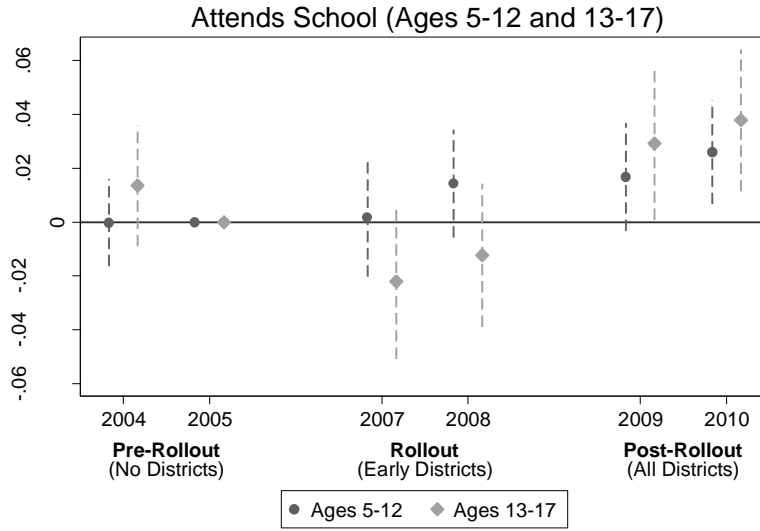
<i>Dependent Variable:</i>	Number of Classrooms	Mid-day Meal Provided	Toilet Available
NREGS	0.1994 (0.1109)*	0.0063 (0.0171)	0.0142 (0.0139)
Observations	1,604	1,604	1,604
Mean of DV	5.92	0.819	0.712
District FEs	YES	YES	YES
Year FEs	YES	YES	YES

Source: ASER School Data (2005, 2007, and 2009)

Notes: The dependent variables are district averages of school quality in years 2005, 2007, and 2009. All regressions include year and district fixed effects. Standard errors clustered at the district level are reported in parentheses. ***indicates significance at 1% level, ** at 5% level, * at 10% level.

Figure A1: Primary Activity of Parents and Adolescents in Early vs. Late Districts

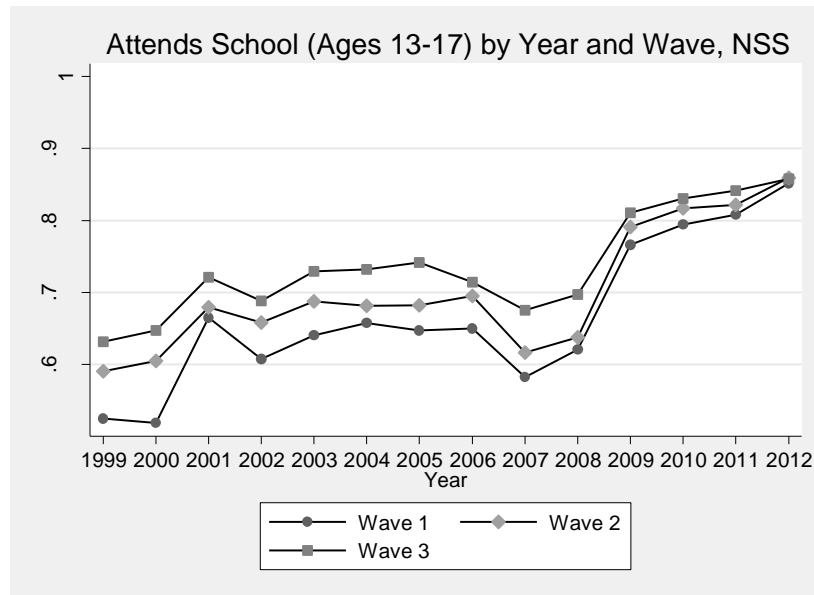




Source: NSS 2004-2009 (rounds 61, 64, 66)

Notes: This figure replicates Figure 1, but only uses NSS data from thick rounds 61, 64, and 66.

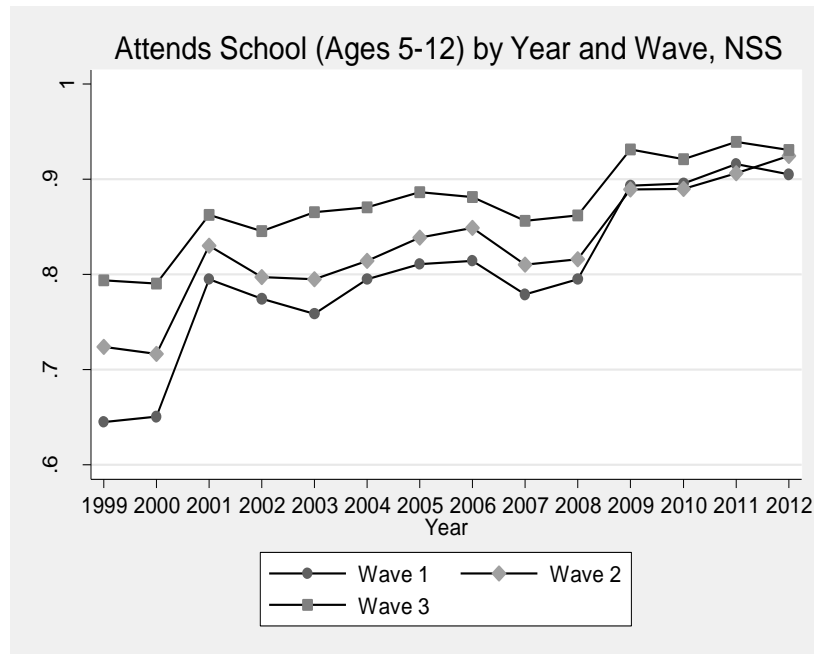
Figure A2: NSS Attends School by Year and Wave (Ages 13-17), Raw Data



Source: NSS 1999-2012, rounds 55, 57, 58, 59, 60, 61, 62, 64, 66, 68

Notes: This figure shows raw means of “Attends School” in the NSS by wave.

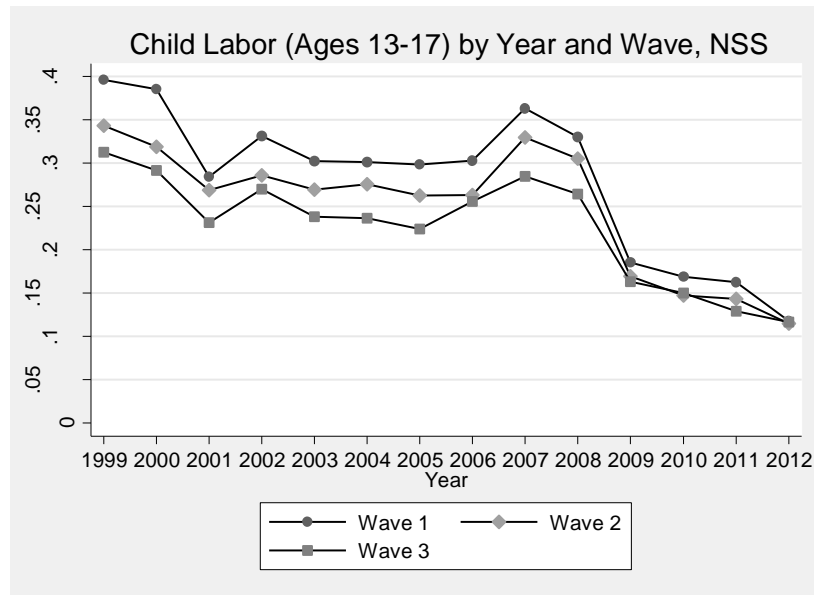
Figure A3: NSS Attends School by Year and Wave (Ages 5-12), Raw Data



Source: NSS 1999-2012, rounds 55, 57, 58, 59, 60, 61, 62, 64, 66, 68

Notes: This figure shows raw means of “Attends School” in the NSS by wave.

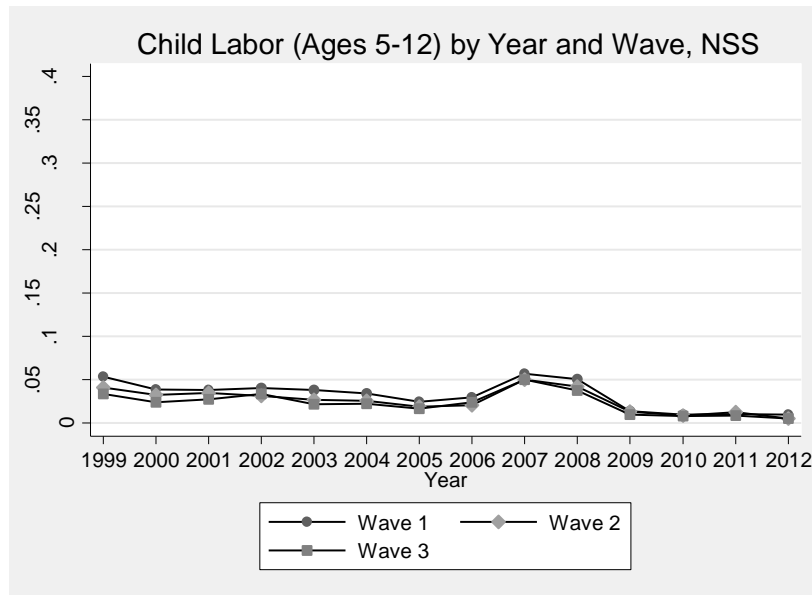
Figure A4: NSS Child Labor by Year and Wave (Ages 13-17), Raw Data



Source: NSS 1999-2012, rounds 55, 57, 58, 59, 60, 61, 62, 64, 66, 68

Notes: This figure shows raw means of “Child labor” in the NSS by wave.

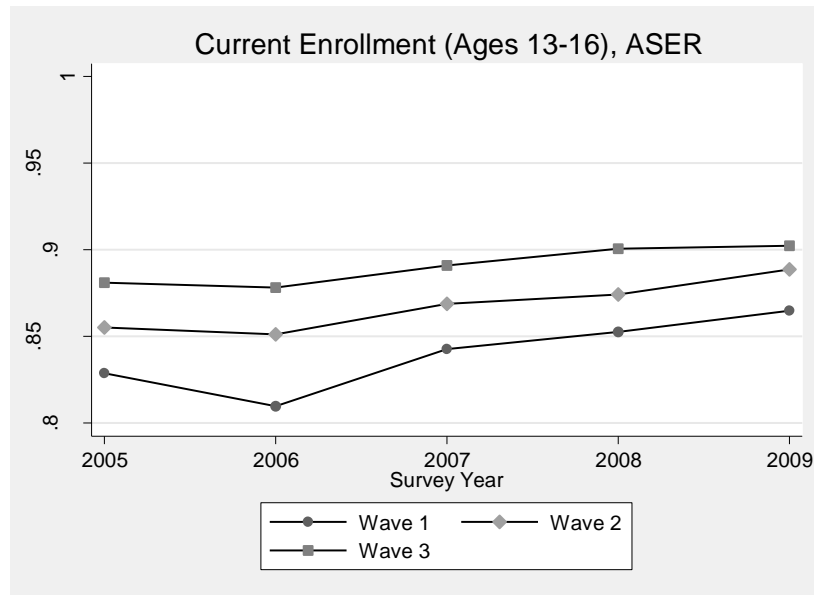
Figure A5: NSS Child Labor by Year and Wave (Ages 5-12), Raw Data



Source: NSS 1999-2012, rounds 55, 57, 58, 59, 60, 61, 62, 64, 66, 68

Notes: This figure shows raw means of “Child labor” in the NSS by wave.

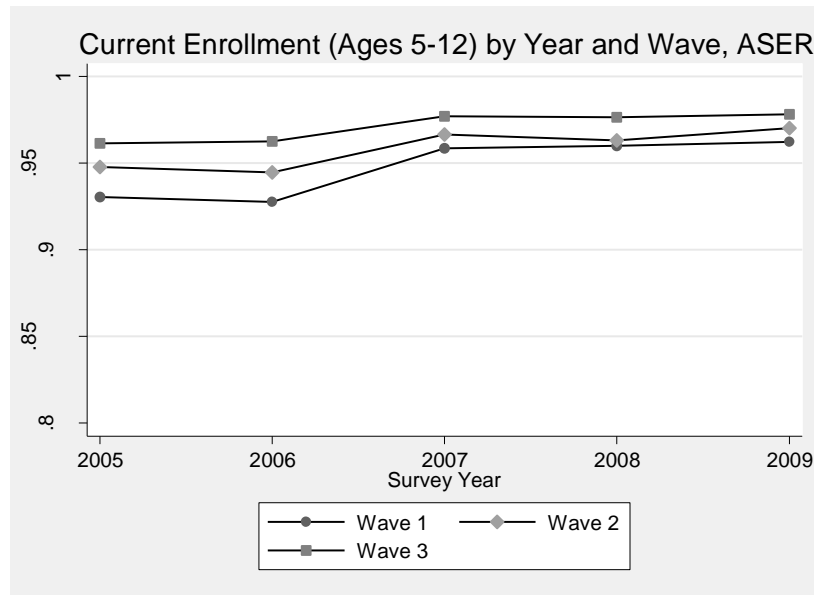
Figure A6: ASER Enrollment by Year and Wave (Ages 13-16), Raw Data



Source: ASER 2005-2009

Notes: This figure shows raw school enrollment in the ASER by wave.

Figure A7: ASER Enrollment by Year and Wave (Ages 5-12), Raw Data



Source: ASER 2005-2009

Notes: This figure shows raw school enrollment in the ASER by wave.