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"Cycling To School": Appendix Tables and Figures

Table A.1: Descriptive Statistics in Estimation Sample

	Bihar	Jharkhand
PANEL A: Dependent variable		
Enrolled in or completed grade 9 (Among 14-17 year olds)	0.31	0.34
	(0.46)	(0.47)
PANEL B: Key independent variables		
Treatment group = Child age 14 & 15 (Among 14-17 year olds)	0.54	0.59
	(0.50)	(0.49)
Female	0.49	0.47
	(0.50)	(0.50)
PANEL C: Demographic Characteristics		
Social group: Scheduled caste	0.19	0.14
	(0.39)	(0.34)
Social group: Scheduled tribes	0.02	0.36
	(0.15)	(0.48)
Social group: Other backward caste	0.59	0.42
	(0.49)	(0.49)
Social group: Hindu	0.85	0.65
	(0.36)	(0.48)
Social group: Muslim	0.15	0.12
	(0.36)	(0.32)
PANEL D: Household SEC Indicators		
Household head years of schooling	4.32	3.94
	(5.03)	(4.43)
Household head Male	0.86	0.95
	(0.35)	(0.21)
Land (<5 acres = marginal farmer)	0.95	0.93
	(0.22)	(0.25)
Below poverty line	0.29	0.40
	(0.45)	(0.49)
Household owns TV/Radio	0.272	0.31
	(0.45)	(0.46)
Household access to electricity	0.20	0.26
	(0.40)	(0.44)
PANEL E: Village Characteristics		
Primary school in village	0.88	0.89
	(0.32)	(0.31)
Middle school in village	0.47	0.54
	(0.50)	(0.50)
Secondary school in village	0.11	0.07
	(0.32)	(0.26)
Bank in village	0.10	0.06
	(0.30)	(0.24)
Post office in village	0.32	0.21
	(0.47)	(0.41)
Distance to bus station (km)	7.35	12.15
	(9.94)	(12.81)
Distance to nearest town (km)	14.00	17.65
	(13.94)	(15.46)
Distance to railway station (km)	18.21	33.96
	(42.12)	(30.64)
Distance to district headquarter (km)	32.94	39.39
	(37.26)	(24.51)
Log (Village current population)	7.79	6.87
	(1.17)	(0.83)
Observations	18,453	11,842

Notes: The data is from the Third Wave of the District-Level Health Survey (DLHS-3) in India which was conducted in the year 2007-08. The estimation sample is restricted to children aged 14 to 17 living in the states of Bihar and Jharkhand. Standard deviations of all variables are in parentheses.

Table A.2: Difference-in-Difference (DD) Estimate of the Impact of Being Exposed to the Cycle Program on Girl's Secondary School Enrollment

Dependent variable: Enrolled in or completed grade 9				
Treatment group = Age 14 and 15				
Control group = Age 16 and 17	(1)	(2)	(3)	(4)
Treat × Female	**0.123***	**0.114***	**0.090***	**0.090***
	(0.015)	**(0.014)**	**(0.013)**	**(0.013)**
Treat	-0.192***	-0.184***	-0.167***	-0.166***
	(0.011)	(0.011)	(0.010)	(0.010)
Female	-0.186***	-0.178***	-0.168***	-0.168***
	(0.012)	(0.011)	(0.010)	(0.010)
Social group: Scheduled caste		-0.337***	-0.163***	-0.161***
		(0.014)	(0.014)	(0.014)
Social group: Scheduled tribes		-0.340***	-0.157***	-0.153***
		(0.031)	(0.028)	(0.029)
Social group: Other backward caste		-0.223***	-0.108***	-0.107***
		(0.013)	(0.012)	(0.011)
Social group: Hindu		-0.115	-0.038	-0.041
		(0.082)	(0.058)	(0.058)
Social group: Muslim		-0.349***	-0.182***	-0.182***
		(0.083)	(0.060)	(0.059)
Household head years of schooling			0.025***	0.025***
			(0.002)	(0.002)
Household head male			-0.074***	-0.073***
			(0.012)	(0.012)
Land (<5 acres = marginal farmer)			-0.063***	-0.066***
			(0.020)	(0.019)
Below poverty line			-0.062***	-0.062***
			(0.009)	(0.009)
Household owns TV/Radio			0.104***	0.104***
			(0.010)	(0.010)
Household access to electricity			0.102***	0.095***
			(0.011)	(0.011)
Middle school in village				-0.007
				(0.010)
Bank in village				0.030**
				(0.015)
Post office in village				0.014
				(0.011)
Log (Village current population)				-0.003
				(0.004)
Distance to bus station				-0.001
				(0.000)
Distance to nearest town				-0.001***
				(0.000)
Distance to railway station				0.000
				(0.000)
Distance to district headquarter				-0.000
				(0.000)
Constant	0.475***	0.823***	0.604***	0.641***
	(0.010)	(0.083)	(0.064)	(0.071)
Demographic controls	No	Yes	Yes	Yes
HH socio-economic controls	No	No	Yes	Yes
Village level controls	No	No	No	Yes
Distance controls	No	No	No	Yes
Observations	18,453	18,453	18,353	18,331
R-squared	0.038	0.106	0.222	0.223

Notes: Standard errors, clustered by village ID, are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

Table A.3: Do Socioeconomic Characteristics of the Estimation Sample Change Significantly across Treatment and Control Groups?

Treatment group = Age 14 and 15	Household head years of schooling	Household head male	Land (<5 acres = marginal farmer)	Below poverty line	Household owns TV/Radio	Household access to electricity
Control group = Age 16 and 17	(1)	(2)	(3)	(4)	(5)	(6)
Treat × Female × Bihar	**1.285***	**0.021**	**-0.032****	**-0.058****	**0.042**	**0.009**
	(0.301)	**(0.015)**	**(0.015)**	**(0.026)**	**(0.027)**	**(0.023)**
Treat × Female	-0.554**	-0.004	0.016	0.028	-0.013	0.012
	(0.249)	(0.010)	(0.014)	(0.021)	(0.023)	(0.019)
Treat × Bihar	-0.500***	-0.013	0.016**	0.025	-0.006	0.020
	(0.162)	(0.010)	(0.008)	(0.015)	(0.016)	(0.014)
Female × Bihar	-0.797***	-0.019	0.020*	0.024	-0.019	0.009
	(0.233)	(0.012)	(0.012)	(0.020)	(0.021)	(0.018)
Treat	-0.018	0.000	-0.000	-0.014	-0.036***	-0.036***
	(0.125)	(0.007)	(0.006)	(0.012)	(0.013)	(0.012)
Female	0.425**	0.003	-0.013	-0.011	-0.001	-0.010
	(0.194)	(0.008)	(0.011)	(0.017)	(0.018)	(0.015)
Bihar	0.656***	-0.088***	0.008	-0.124***	-0.037**	-0.060***
	(0.143)	(0.009)	(0.007)	(0.016)	(0.015)	(0.019)
Constant	3.949***	0.953***	0.933***	0.403***	0.332***	0.268***
	(0.104)	(0.006)	(0.006)	(0.013)	(0.012)	(0.016)
Observations	30,294	30,295	30,295	30,148	30,295	30,295
R-squared	0.003	0.025	0.002	0.014	0.003	0.003

Notes: Standard errors, clustered by village ID, are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

Table A.4: Do Socioeconomic Characteristics of the Estimation Sample Change Significantly across Treatment and Control Groups?

Treatment group = Age 14 and 15	Household head years of schooling	Household head male	Land (<5 acres = marginal farmer)	Below poverty line	Household owns TV/Radio	Household access to electricity
Control group = Age 16 and 17	(1)	(2)	(3)	(4)	(5)	(6)
Treat×Female×Bihar×Long distance indicator	**-0.050**	**0.023**	**-0.022**	**-0.031**	**0.038**	**0.026**
	(0.559)	**(0.029)**	**(0.027)**	**(0.051)**	**(0.053)**	**(0.049)**
Treat×Female×Long distance indicator	-0.162	-0.007	0.018	0.009	-0.011	0.005
	(0.446)	(0.018)	(0.024)	(0.042)	(0.045)	(0.041)
Treat×Female×Bihar	1.279***	0.009	-0.018	-0.042	0.021	-0.003
	(0.363)	(0.021)	(0.017)	(0.038)	(0.038)	(0.040)
Female×Bihar×Long distance indicator	-0.051	-0.034	0.017	0.002	-0.071*	-0.019
	(0.443)	(0.023)	(0.022)	(0.039)	(0.040)	(0.039)
Treat×Bihar×Long distance indicator	-0.536*	-0.043**	0.015	0.041	-0.025	-0.029
	(0.321)	(0.020)	(0.015)	(0.032)	(0.033)	(0.031)
Treat×Female	-0.445	0.001	0.004	0.023	-0.005	0.009
	(0.277)	(0.013)	(0.014)	(0.031)	(0.032)	(0.035)
Treat×Long distance indicator	0.284	0.021	-0.009	-0.008	-0.006	0.012
	(0.247)	(0.014)	(0.011)	(0.025)	(0.027)	(0.026)
Treat×Bihar	-0.186	0.011	0.007	0.003	0.005	0.036
	(0.237)	(0.014)	(0.010)	(0.025)	(0.024)	(0.025)
Female×Long distance indicator	0.045	-0.000	0.001	-0.003	0.037	0.008
	(0.359)	(0.015)	(0.019)	(0.032)	(0.034)	(0.034)
Female×Bihar	-0.762***	-0.003	0.012	0.023	0.022	0.020
	(0.293)	(0.015)	(0.014)	(0.027)	(0.027)	(0.032)
Bihar×Long distance indicator	0.128	0.025	0.012	-0.041	0.032	0.073*
	(0.297)	(0.018)	(0.015)	(0.031)	(0.032)	(0.040)
Treat	-0.204	-0.014	0.006	-0.009	-0.032	-0.043*
	(0.187)	(0.010)	(0.007)	(0.020)	(0.021)	(0.022)
Female	0.397*	0.003	-0.013	-0.009	-0.025	-0.015
	(0.239)	(0.010)	(0.012)	(0.022)	(0.023)	(0.029)
Bihar	0.512**	-0.101***	-0.001	-0.098***	-0.058**	-0.121***
	(0.232)	(0.012)	(0.010)	(0.023)	(0.025)	(0.034)
Long distance indicator	-0.464**	-0.004	-0.022*	0.032	-0.033	-0.142***
	(0.223)	(0.011)	(0.011)	(0.026)	(0.026)	(0.035)
Constant	4.256***	0.955***	0.947***	0.382***	0.353***	0.362***
	(0.185)	(0.007)	(0.009)	(0.019)	(0.023)	(0.030)
Observations	30,294	30,295	30,295	30,148	30,295	30,295
R-squared	0.005	0.025	0.003	0.015	0.004	0.017

Notes: Standard errors, clustered by village ID, are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

Table A.5: Heterogeneous Effects of Exposure to the Cycle Program on Girls' Enrollment in Secondary School

Covariates	Asset Index		SES Index		OBC vs. General		SC vs. General		ST vs. General		Muslim vs. General	
Treatment group = Age 14 and 15												
Control group = Age 16 and 17	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Treat × Female × Bihar × Covariate	**0.007**	**0.041**	**0.022**	**0.022**	**0.050**	**-0.024**	**-0.038**	**-0.088**	**-0.052**	**-0.171**	**0.059**	**0.023**
	(0.022)	**(0.032)**	**(0.018)**	**(0.024)**	**(0.082)**	**(0.103)**	**(0.094)**	**(0.120)**	**(0.114)**	**(0.132)**	**(0.106)**	**(0.137)**
Treat × Female × Covariate	0.013	-0.008	0.004	0.006	-0.050	0.008	0.032	0.080	-0.037	0.005	-0.032	0.002
	(0.018)	(0.027)	(0.014)	(0.020)	(0.073)	(0.091)	(0.084)	(0.107)	(0.075)	(0.094)	(0.094)	(0.120)
Treat × Female × Bihar	0.083***	0.111***	0.071**	0.105***	0.026	0.118	0.029	0.116	0.028	0.115	-0.023	0.085
	(0.027)	(0.035)	(0.029)	(0.040)	(0.077)	(0.098)	(0.077)	(0.099)	(0.077)	(0.099)	(0.087)	(0.111)
Female × Bihar × Covariate	-0.003	-0.025	-0.020	-0.016	0.015	0.096	0.054	0.115	-0.018	0.084	0.078	0.083
	(0.016)	(0.023)	(0.014)	(0.019)	(0.079)	(0.108)	(0.088)	(0.119)	(0.099)	(0.129)	(0.100)	(0.137)
Treat × Bihar × Covariate	-0.006	-0.027	-0.020*	-0.022	-0.067	0.031	0.013	0.070	0.028	0.146	-0.041	0.042
	(0.014)	(0.020)	(0.011)	(0.015)	(0.050)	(0.065)	(0.059)	(0.077)	(0.081)	(0.095)	(0.065)	(0.083)
Constant	0.442***	0.427***	0.497***	0.477***	0.543***	0.449***	0.528***	0.425***	0.458***	0.316***	0.563***	0.442***
	(0.012)	(0.015)	(0.012)	(0.015)	(0.056)	(0.076)	(0.065)	(0.092)	(0.070)	(0.092)	(0.069)	(0.092)
HH & socio-economic controls	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Village level controls	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Distance controsl	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Full Sample	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Only Includes Villages => 3km from Nearest School	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	30,148	17,037	30,147	17,036	20,327	10,844	9,677	5,181	9,223	5,786	7,435	4,024
R-squared	0.119	0.110	0.109	0.105	0.207	0.191	0.256	0.246	0.230	0.218	0.298	0.300

Notes: The summary statistics for the demographic, and socio-economic are shown in Table A.1. The Asset and SES (Socio-Economic Status) Indices are created using the predictions based on the first principal component of the variables corresponding to household assets and SES levels respectively. The odd columns reports the regression from the full sample, while the even numbered column reports the regressions from the sub-sample when the secondary school is at or above the median distance to a secondary school (equal to or greater than 3 km away). Standard errors, clustered by village ID, are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

Table A.6: Testing the Parallel Trends Assumption Using Exam Data

Dependent variable:	Log (Number of Candidates who Appeared for the 10th Grade Exam)	Log (Number of Candidates who Passed the 10th Grade Exam)
PANEL A: Testing Parallel Trends for the Difference-in-Difference (DD)		
Female × Year	0.103***	0.055***
	(0.012)	(0.013)
Female	-1.283***	-1.182***
	(0.032)	(0.034)
Year (coded as 1 to 4)	-0.031*	-0.120***
	(0.017)	(0.019)
Constant	4.546***	4.599***
	(0.020)	(0.021)
Observations	19,458	19,371
R-squared	0.261	0.227
PANEL B: Testing Parallel Trends for the Triple Difference (DDD)		
Female × Year × Bihar	0.023	-0.053
	(0.036)	(0.038)
Female × Year	0.080**	0.108***
	(0.034)	(0.035)
Female × Bihar	-0.243**	0.010
	(0.113)	(0.118)
Bihar × Year	-0.049	-0.184***
	(0.054)	(0.056)
Female	-1.040***	-1.192***
	(0.108)	(0.113)
Year (coded as 1 to 4)	0.018	0.064
	(0.051)	(0.053)
Bihar	0.340***	0.868***
	(0.073)	(0.076)
Constant	4.206***	3.731***
	(0.070)	(0.073)
Observations	25,287	25,176
R-squared	0.230	0.210

Notes: The analysis uses data on the secondary school certificate (SSC) examination (10th standard board exam records) from the State Examination Board Authorities in Bihar and Jharkhand for the years 2004 - 2007. The data on the number of students who appeared in and passed the exams are at the school level, with each observation representing the school-level figures for the number of students appearing/passing in these exams by gender in a given year (with the 4 years of data being as Years 1 to 4). Panel A uses only data from Bihar and tests for parallel trends in boys' and girls' 10th standard board exam results in Bihar for the 4-year period prior to the Cycle program. Panel B includes data from both Bihar and Jharkhand, and tests for parallel trends in the double difference across the two states in the same four-year period. The sample is restricted to schools where both pre and post data exist for a given gender. We calculate standard errors both with and without clustering, but find that clustering lowers the standard errors. We therefore report the more conservative unclustered standard errors. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

Table A.7: Triple Difference (DDD) Estimate of the Impact of Being Exposed to the Cycle Program on Girl's Enrollment in Eighth Grade (Placebo Test)

Dependent variable: Enrolled in or completed grade 8				
Treatment group = Age 13 and 14				
Control group = Age 15 and 16	(1)	(2)	(3)	(4)
Panel A: No Middle School in the Village				
Treat × Female × Bihar	0.013	-0.009	-0.015	-0.016
	(0.033)	(0.032)	(0.031)	(0.031)
Observations	16,635	16,635	16,543	16,515
Panel B: Middle School in the Village				
Treat × Female × Bihar	0.012	0.005	0.016	0.016
	(0.033)	(0.032)	(0.030)	(0.030)
Observations	16,544	16,544	16,469	16,457
Demographic controls	No	Yes	Yes	Yes
HH socio-economic controls	No	No	Yes	Yes
Village level controls	No	No	No	Yes

Notes: Unlike Table 2 that uses an estimation sample of household residents aged 14-17, this table uses household residents aged 13-16 as the estimation sample. In Panel A, the sample is restricted to villages with no middle schools, while in Panel B, the sample is restricted to villages with middle schools. The demographic, socio-economic, and village controls are the same as those shown in Table 2 and Table A.1. Standard errors, clustered by village ID, are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

Table A.8: Further Robustness (Border Districts and Clustering)

	(1)	(2)	(3)	(4)
Dependent variable: Enrolled in or completed grade 9				
Panel A: Impact of Being Exposed to the Cycle Program on Girl's Secondary School Enrollment (Border Districts Only)				
Treat × Female × Bihar	0.099**	0.095**	0.058	0.057
	(0.041)	(0.039)	(0.036)	(0.036)
Observations	9,939	9,939	9,899	9,886
Panel B: Clustering at District Level (instead of village-level)				
Treat × Female × Bihar	0.103***	0.091**	0.052*	0.052*
	(0.037)	(0.035)	(0.028)	(0.028)
Observations	30,295	30,295	30,147	30,112
Demographic controls	No	Yes	Yes	Yes
HH socio-economic controls	No	No	Yes	Yes
Village level controls	No	No	No	Yes

Notes: The coefficient in each panel presents the triple difference coefficients analogous to the first row in Table 2. In Panel A, the sample is restricted to the border districts in BH and JH. BH border districts include Katihar, Bhagalpur, Banka, Rohtas, Aurangabad, Gaya, Nawada, and Jamui, while JH border districts include Garawah, Palamu, Chatra, Hazaribagh, Kodarma, Giridih, Deoghar, Godda, Sahibganj, and Dumka. The controls in the four columns (in both panels) are identical to those in Tables 2 and 3. Standard errors, clustered by village ID (for Panel A), are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

Figure A.1: Distribution of Villages by Distance to Nearest Secondary School
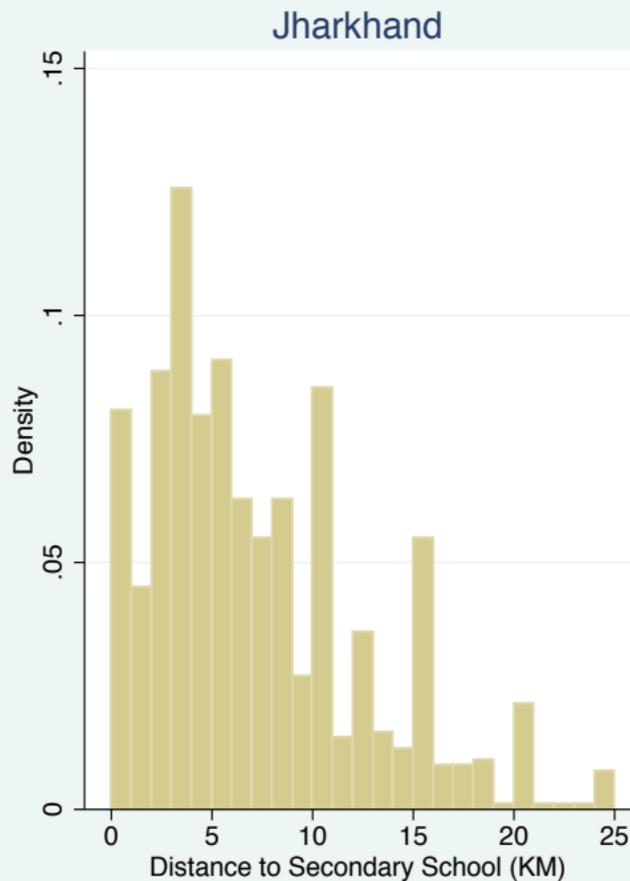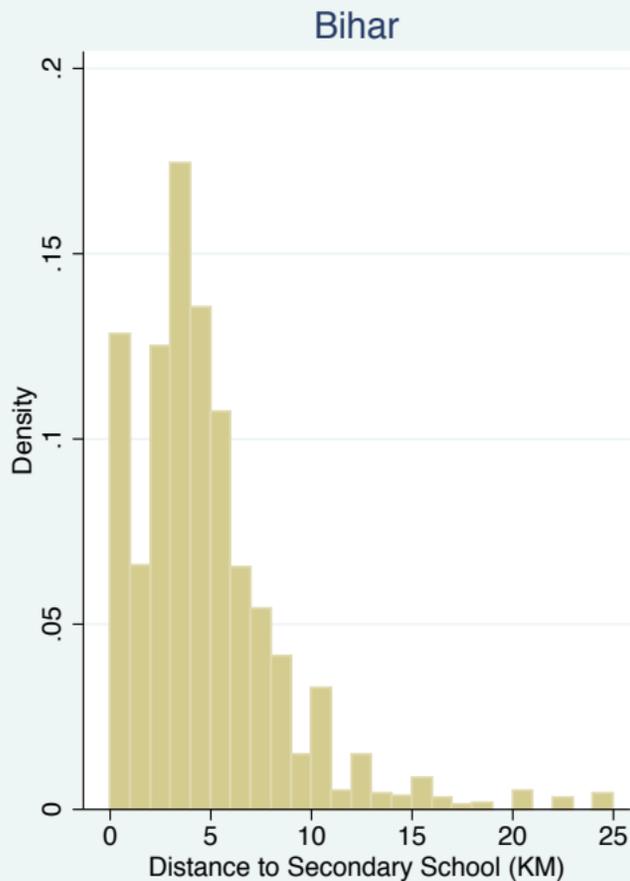
Figure A.2: Simple Sketch of Mechanism of Impact of Cycle Program

Cost/Benefit of Going
to Secondary School

Cost of Going to School
(Prior to Cycle Program)

Cost of Going to School
(After Cycle Program)

Benefit of Going
to School

Distance to
Secondary School