



Findings from the Impact Evaluation of Jamaica's PATH Programme

**Presentation for The World Bank
Washington DC, February 2007**

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PATH

- ***Conditional cash transfer program***: Families receive cash assistance conditional on *regular* attendance to school and health centers
- Two types of grants: child assistance and social assistance
- ***Key objective***: Link social assistance with human capital accumulation
- ***Key feature***: Use of ***scoring formula*** to improve targeting to the poor



PATH Implementation

- **Timeline:**

- Pilot started in one parish in 2001
- Island-wide implementation started in 2002

- **Number of beneficiaries:**

- Registered ~ 245,000 individuals
- Paid ~ 180,000 individuals

- **Cash transfer amount:**

- About J\$400 per month per eligible person
- Average amount received per household: J\$1,800



PATH Requirements

Beneficiary	Prevalence	PATH Requirement
Children, 7-17 years old	63%	At least 85% <i>school</i> attendance per period
Children, 0-6 years old	18%	Children 0-1: 5 visits to Health Center (HC) per year Children 1-6: 2 visits to HC per year
Elderly	15%	2 visits to HC per year

Source: PATH Project Management Report (June 2006)

Excludes PAD/Poor Relief



Agenda

- I. Evaluation Design
- II. Characteristics of Impact Evaluation Sample
- III. Impacts of PATH on School Attendance
- IV. Impacts of PATH on Health Care Usage
- V. Sensitivity Analysis
- VI. Impacts on Other Outcomes
- VII. Conclusions

I. Evaluation Design



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3 Key Questions on PATH

- What is the **impact** of the program on the key outcomes of interest?
- How has the program been **implemented**?
- Is the program successfully **targeting** the poor?



Methodology

- **Impact (Q1):** Compared eligibles with near-eligibles on key outcomes (school attendance and visits to health centers)
- **Implementation (Q2):** Two qualitative assessments, each consisting of visits to 5 sites
- **Targeting (Q3):** Used data on representative sample of PATH participants to assess poverty status



Targeting of PATH

Program	Quintile				
	First (Poorest)	Second	Third	Fourth	Fifth (Most Affluent)
Food Stamp	37	26	20	12	6
School Fee Assistance	20	21	25	23	11
Public Assistance	60	17	14	5	4
Poor Relief	35	23	22	16	4
SESP Programme	35	39	7	17	2
JaDEP	9	19	42	13	17
PATH	58	22	14	5	1

Source: PATH Targeting Report, Mathematica Policy Research, 2003.



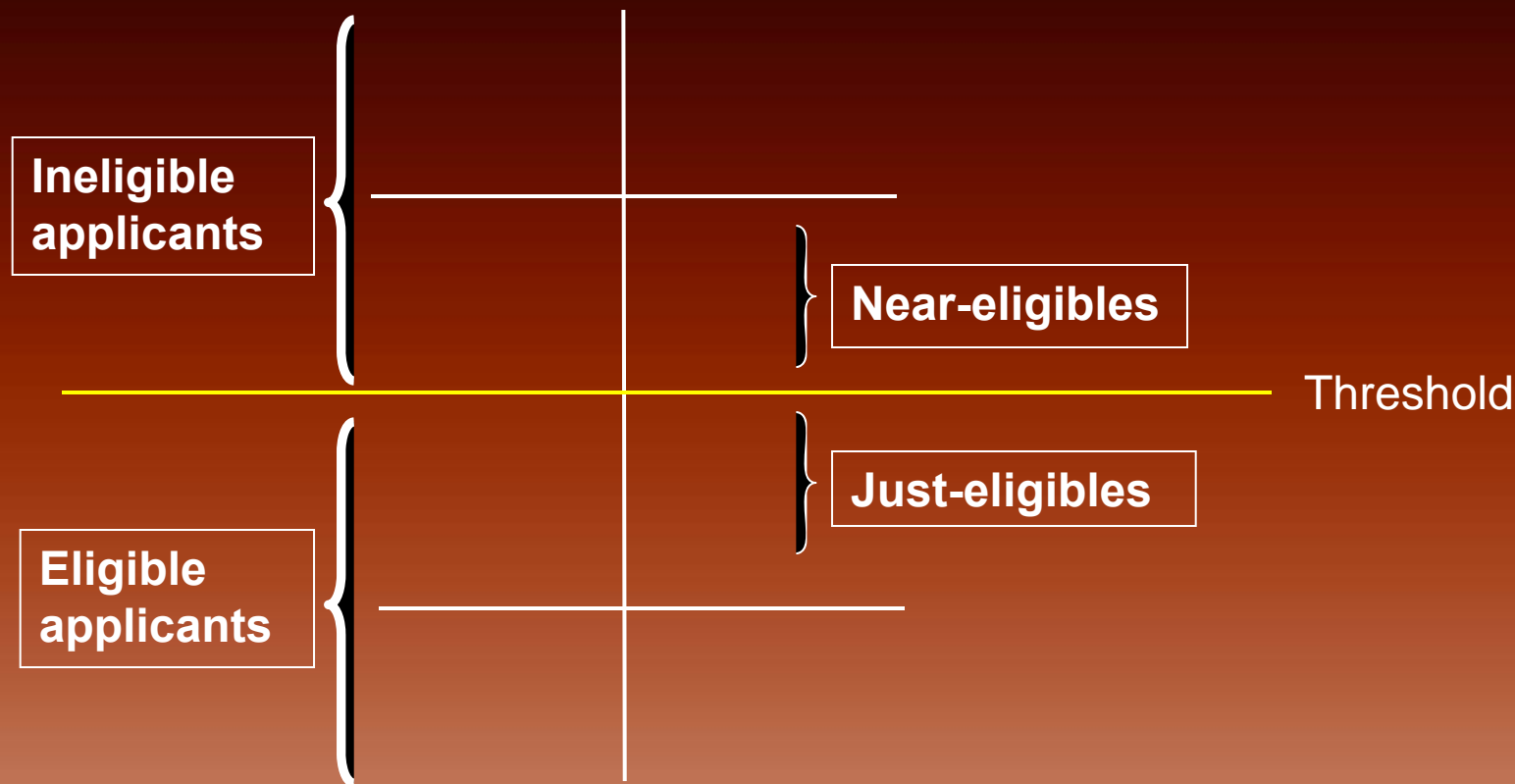
Data Sources

Data Source	Period
Management Information System (MIS)	Throughout evaluation
SLC 2002	Summer 2002
Participant Survey	First half 2003
Focus groups and executive interviews	Fourth Quarter 2003 and Summer 2005
Baseline Survey	First Quarter 2004
Follow-up Survey	Summer 2005

Impact Evaluation Design

- Exploits the use of **scoring formula**
 - PATH Applicants fill in an **application form** with information on socio-economic and demographic characteristics
 - Information is entered into a computer which calculates an **eligibility score**
 - If $\text{score} \leq \text{threshold}$, applicant is *eligible*
 - If $\text{score} > \text{threshold}$, applicant is *not eligible*

Impact Evaluation Design (Cont)

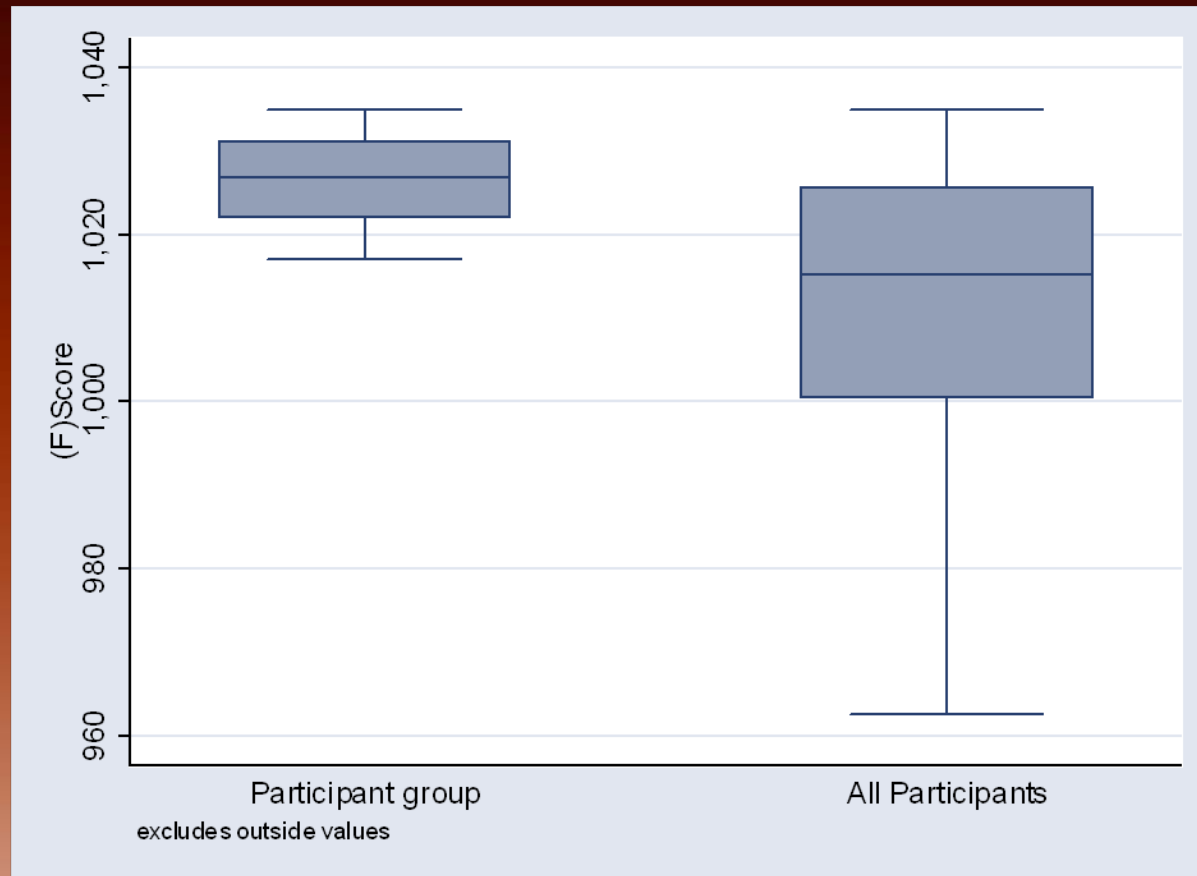




Impact Evaluation Design (Cont)

- Basic idea of design is to compare:
 - Households just **below the threshold** (participant group) with
 - households just **above it** (comparison group),
 - and statistically **account for the eligibility score**
- *Interpretation* of Impact Estimates: **Marginal Participant**

Distributions of Eligibility Scores for Participants Group and All Participants



Impact Estimation Method

- **Regression Discontinuity (RD):** Compare outcomes between participant and comparison groups, statistically accounting for the PATH eligibility score and other background characteristics
- More specifically, estimate the following regression equation:

$$\begin{aligned} Outcome_{ij}^{FU} = & \beta_0 + \beta_1 PART_j + \beta_2 f(Score_j) + \beta_3 Outcome_{ij}^B \\ & + \beta_4 X_{ij} + \beta_5 APPDATE_j + u_{ij} \end{aligned}$$

where β_1 represents the impact of PATH

- Regressions were run at the individual level. Huber-White standard errors were used to account for within-family correlations

II. Evaluation Sample



Impact Evaluation Sample

- **Restricted to families who had children at time of application to PATH**
- **Sample sizes:**
 - Participant group: 2,500 households, ~12,000 individuals
 - Comparison group: 2,500 households, ~12,000 individuals
- **Response rates:**
 - Baseline Survey: 91%; similar for both groups
 - Follow-up Survey: 82%; similar for both groups
 - Responders and non-responders tended to be similar in key dimensions
- **Enrollment in PATH:**
 - Participant group: 82.3%
 - Comparison group: 9.6%



Demographic Characteristics

Number of HH members (%)

1	0
2	7
3-5	65
6 and over	28

Age (%)

< 3 years	9
3-5 years	10
6-17 years	40
18-59 years	34
> 59 years	6

Location (%)

Kingston	9
Other towns	16
Rural	75

Source: MIS Sample: Respondents to follow-up survey



Socio-Economic Characteristics

Weekly Spending (J\$)

Average	361
Median	300

Telephone (%)

Yes	11
No	53
Cellular	36

Household Items (%)

Gas stove(s)	60
Electric stove(s)	0
Refrigerator(s) or freezer(s)	35
Fan(s)	24
Stereo Equipment	16
Video Equipment	8
Washing Machine(s)	0
TV set(s)	59
Motor bike(s)	1
Car(s) and/or other vehicle(s)	0

Source: MIS Sample: Respondents to follow-up survey



Key Outcomes

	Number of Observations	Average	Standard Deviation
Attendance to school in specific 20-day reference period [number of days]	7,704	17.47	2.77
Attendance to school in 20-day typical period [number of days]	7,700	18.37	2.63
Attendance to health center for preventive reasons in past 6 months			
Children 0-6	3,062	1.06	1.19
Elderly	1,379	1.17	1.64



Program-Related Characteristics of Participant and Comparison Groups

Characteristics	Participant Group	Comparison Group
Eligibility score		
[threshold-25, threshold-15]	13	0
[threshold-15,threshold-5]	55	0
[threshold-5,threshold]	32	0
[threshold, threshold+5]	0	100
PATH Application Date (%)		
April 2002 – June 2002	63	85
July 2002 – September 2002	6	10
October 2002 – December 2002	7	1
After December 2002	24	3
Sample Size	2,500	2,500



Placebo Tests

- Use **baseline data** to assess regression specifications used in impact estimations
- **Basic Idea: Regress *baseline* version of the outcome on participant dummy and a function of eligibility score**

- $Outcome_{ij}^B = \alpha_0 + \alpha_1 PART_j + \alpha_2 f(Score_j) + \alpha_3 X_{ij} + \alpha_4 APPDATE_j + u_{ij}$

- **Should not expect coefficient on participation dummy (α_1) to be statistically significant**



Placebo Tests (*continued*)

- **Ran above regression for following outcomes:**
 - **Attendance to school in reference period**
 - **Attendance to school in typical period**
 - **Attendance to health centers for children 0-6**
 - **Attendance to health centers for elderly**

Placebo Tests (*continued*)

- For every outcome, ran 4 versions of above regression

- **Spec 1 - Score enters linearly**

$$Outcome_{ij}^B = \beta_0 + \beta_1 PART_j + \beta_2 Score_j + \beta_3 APPDATE_j + u_{ij}$$

- **Spec 2 - Score enters in quadratic form**

$$Outcome_{ij}^B = \beta_0 + \beta_1 PART_j + \beta_2 Score_j + \beta_3 Score_j^2 + \beta_4 APPDATE_j + u_{ij}$$

- **Spec 3 - Score enters in cubic form**

$$Outcome_{ij}^B = \beta_0 + \beta_1 PART_j + \beta_2 Score_j + \beta_3 Score_j^2 + \beta_4 Score_j^3 + \beta_5 APPDATE_j + u_{ij}$$

- **Spec 4 - Score enters linearly and include household characteristics**

$$Outcome_{ij}^B = \beta_0 + \beta_1 PART_j + \beta_2 Score_j + \beta_3 Score_j^2 + \beta_4 Score_j^3 + \beta_5 APPDATE_j + u_{ij}$$



Placebo Tests for School Attendance in Reference Period

	Specification			
	(1)	(2)	(3)	(4)
Participant group	-0.081 (0.208)	-0.113 (0.302)	-0.113 (0.302)	-0.171 (0.211)
Eligibility score	-0.008 (0.016)	0.948 (6.402)	0.000 (0.000)	-0.015 (0.018)
Eligibility score squared		0.000 (0.003)	0.000 (0.003)	
Eligibility score cubed			0.000 (0.003)	
Controls for household characteristics	No	No	No	Yes
No. of observations	7,145	7,145	7,145	7,112

Standard errors in parentheses.

Regressions were run at the individual level. Huber-White standard errors were used to account for within-family correlations.

***Coefficient statistically significant at the 10%/5%/1% significance level.

Conclusions from Placebo Tests

- 16 regression specifications
- Coefficient in participant group variable was statistically significant:
 - Zero times at the 1% level
 - Zero times at the 5% level
 - Two times at the 10% level
- Results from placebo tests support choice of impact design and regression specification

III. Impacts of PATH on School Attendance

Impact Estimation Method

- Estimate the following regression equation:

$$Outcome_{ij}^{FU} = \beta_0 + \beta_1 PART_j + \beta_2 Score_j + \beta_3 Outcome_{ij}^B + \beta_4 X_{ij} + \beta_5 APPDATE_j + u_{ij}$$

where β_1 represents the impact of PATH

- **Outcomes:**
 - Attendance to school in 20-day **reference** period [Number of days]
 - Attendance to school in 20-day **typical** period [Number of days]



Impact Estimates for Attendance to School in Reference Period

Variable	Reg1	Reg2	Reg3	Reg4	Reg5	Reg6	Reg7
Participant Group Indicator	0.544 (0.104)	0.459 (0.180)	0.450 (0.196)	0.487 (0.200)	0.454 (0.196)	0.443 (0.185)	0.451 (0.182)
Eligibility Score		0.009 (0.013)	-0.013 (0.014)	-0.010 (0.014)	-0.012 (0.014)	-0.012 (0.013)	-0.015 (0.014)
School Attendance at Baseline			0.212 (0.019)	0.211 (0.020)	0.211 (0.019)		0.200 (0.019)
Household Characteristics	N	N	N	N	N	N	Y
Merging Quality Index	NA	NA	N	N	Y	N	N
Only High Quality Merges	NA	NA	N	Y	N	N	N

Standard errors reported in parentheses. Bold denotes statistically significant at 5% level

Y=Yes, N=No, NA=Not Applicable



Impact Estimates for Attendance to School in Typical Period

Variable	Reg1	Reg2	Reg3	Reg4	Reg5	Reg6	Reg7
Participant Group Indicator	0.643 (0.111)	0.695 (0.156)	0.633 (0.165)	0.638 (0.160)	0.636 (0.165)	0.634 (0.157)	0.549 (0.170)
Eligibility Score		0.005 (0.012)	0.001 (0.013)	0.003 (0.013)	0.001 (0.013)	-0.000 (0.012)	-0.002 (0.014)
School Attendance at Baseline			0.160 (0.026)	0.153 (0.023)	0.160 (0.026)		0.148 (0.022)
Household Characteristics	N	N	N	N	N	N	Y
Merging Quality Index	NA	NA	N	N	Y	N	N
Only High Quality Merges	NA	NA	N	Y	N	N	N

Standard errors reported in parentheses. Bold denotes statistically significant at 5% level

Y=Yes, N=No, NA=Not Applicable



Impacts on School Attendance: Results

	Participant Group	Comparison Group	Impact Estimate
Attendance to school in specific 20-day <i>reference</i> period (number of days)	17.75	17.30	0.45**
Attendance to school in specific 20-day <i>typical</i> period (number of days)	18.70	18.15	0.55**

Comparison group numbers are regression-adjusted.

*/**/**Coefficient statistically significant at the 10%/5%/1% significance level.



Results

- Positive and statistically significant **impact** of PATH **on school attendance**
- **Magnitude** of impact estimate:
 - *Reference* period: about 0.45 days
 - *Typical* period: about 0.55 days
- These represent impacts of about **2.5 percentage points** in school attendance rate (going from about 85% to about 87.5%)



Estimates for Various Sub-Groups

Subgroup	Impact Estimate	
	Attendance in Reference Period	Attendance in Typical Period
Boys	0.46	0.69
Girls	0.40	0.42
KMA	1.26	2.07
Other	0.72	0.72
Rural	0.43	0.38
Age 6-9	0.47	0.56
Age 10-12	0.26	0.18
Age 13-17	0.51	0.81

IV. Impacts of PATH on Health Care Usage



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Impacts on Preventive Health Care Usage: Methods

- Same method as the one used with school attendance

Outcome:

- Attendance to health centers for preventive reasons [Number of visits in past 6 months]:
 - For children 0 – 6 years old
 - For elderly



Impact Estimates for Attendance to Health Centers for Children 0-6 Years

Variable	Reg1	Reg2	Reg3	Reg4	Reg5	Reg6	Reg7
Participant Group Indicator	0.181 (0.054)	0.292 (0.084)	0.315 (0.092)	0.309 (0.097)	0.319 (0.092)	0.305 (0.092)	0.299 (0.099)
Eligibility Score		0.011 (0.007)	0.011 (0.007)	0.010 (0.008)	0.011 (0.007)	0.012 (0.008)	0.006 (0.008)
Health Care Usage at Baseline			0.171 (0.028)	0.173 (0.030)	0.173 (0.028)		0.174 (0.028)
Household Characteristics	N	N	N	N	N	N	Y
Merging Quality Index	NA	NA	N	N	Y	N	N
Only High Quality Merges	NA	NA	N	Y	N	N	N

Standard errors reported in parentheses. Bold denotes statistically significant at 5% level

Y=Yes, N=No, NA=Not Applicable



Impact Estimates for Attendance to Health Centers for **Elderly**

Variable	Reg1	Reg2	Reg3	Reg4	Reg5	Reg6	Reg7
Participant Group Indicator	0.048 (0.111)	0.002 (0.178)	-0.014 (0.200)	0.045 (0.242)	-0.021 (0.201)	-0.081 (0.189)	0.009 (0.216)
Eligibility Score		-0.005 (0.014)	-0.011 (0.017)	-0.002 (0.020)	-0.012 (0.017)	-0.015 (0.016)	-0.011 (0.020)
Health Care Usage at Baseline			0.271 (0.059)	0.206 (0.071)	0.272 (0.059)		0.250 (0.058)
Household Characteristics	N	N	N	N	N	N	Y
Merging Quality Index	NA	NA	N	N	Y	N	N
Only High Quality Merges	NA	NA	N	Y	N	N	N

Standard errors reported in parentheses. Bold denotes statistically significant at 5% level

Y=Yes, N=No, NA=Not Applicable

Impacts on Preventive Health Care Usage: Results

	Participant Group	Comparison Group	Impact Estimate
Children	1.12	0.82	0.30**
Elderly	1.20	1.19	0.01

Comparison group numbers are regression-adjusted

** : Statistically significant at the 5% level



Impacts on Health Care Usage for Preventive Reasons

- Statistically significant and **positive impact for children**
- **No** statistically significant **impact for elderly**
- For children, magnitude of impact estimate of PATH is about **0.3 visits** in past 6 months. Equivalent to:
 - About 30% increase in the mean number of visits
 - About 0.3 standard deviations increase in the mean number of visits



Estimates for Various Sub-Groups

Subgroup	Impact Estimate	
	Children 0 – 6 years	Elderly
Boys	0.10	-0.18
Girls	0.51	-0.05
KMA	1.18	1.37
Other	-0.30	-0.68
Rural	0.30	-0.04
Age 0-1	0.84	NA
Age 2-6	0.31	NA

V. Sensitivity Analysis

- A. Restricting Participant Group Scores**
- B. Restricting Application Dates**
- C. Quality of Matches**

A. Restricting Participant Group Scores



Impact Estimates Restricting Participant Group to Households with Score Greater than 1,025

	School Attendance		Attendance to Health Centres	
	Reference Period	Typical Period	Children 0 – 6 Years	Elderly
Participant group	0.736*** 0.282	1.064*** (0.277)	0.309*** 0.111	-0.134 0.325
Eligibility score	0.046 0.036	0.090 (0.039)	0.006 0.015	-0.020 0.051
No. of observations	5,346	5,343	2,156	882

Standard errors in parenthesis.

Regressions were run at the individual level. Huber-White standard errors were used to account for within-family correlations.

*/**/***Coefficient statistically significant at the 10%/5%/1% significance level.

Impact Estimates Restricting Participant Group to Households with Score Greater than 1,030

	School Attendance		Attendance to Health Centres	
	Reference Period	Typical Period	Children 0 – 6 Years	Elderly
Participant group	1.036*** (0.348)	1.313*** (0.337)	0.249*** 0.145	-0.122 0.423
Eligibility score	0.148 (0.077)	0.175 (0.076)	-0.013 0.036	-0.027 0.094
No. of observations	4,382	4,373	1,707	724

Standard errors in parenthesis.

Regressions were run at the individual level. Huber-White standard errors were used to account for within-family correlations.

*/**/***Coefficient statistically significant at the 10%/5%/1% significance level.

B. Restricting Application Dates



Impact Estimates Restricting to Applicants who Applied in 2002

	School Attendance		Attendance to Health Centres	
	Reference Period	Typical Period	Children 0 – 6 Years	Elderly
Participant group	0.482** 0.241	0.717*** 0.232	0.353*** 0.093	-0.067 0.218
Eligibility score	0.002 0.020	0.026 0.020	0.014 0.008	-0.017 0.021
No. of observations	5,858	5,850	2,333	975

Standard errors in parenthesis.

Regressions were run at the individual level. Huber-White standard errors were used to account for within-family correlations.

*/**/***Coefficient statistically significant at the 10%/5%/1% significance level.

C. Quality of Matches



Quality of matches

- **Impact estimation required matching individuals across surveys (baseline and follow-up)**
- **It was easy to match households**
- **It was sometimes difficult to match individuals**
- **For each observation, we created a measure of the quality of the match**



Quality of matches

- **Sensitivity Analysis**
 - **Assuming all matches were correct**
 - **Controlling for the quality of the matches**
 - **Restricting to matches of high quality**

Other Evidence Consistent with Impacts

Other Evidence Consistent with Impacts

- **PATH beneficiaries seem to have a reasonably clear understanding about the program and the conditionality requirement [IA]**
- **Parents reported sending children to school more often than in the previous year [IA, S]**
- **Teachers reported some parents were sending children to school more often and were checking attendance was properly recorded [IA]**
- **When asked about reason for school absence, participant group was less likely to cite “Money Problems” or “Household could not provide lunch” as an issue [S]**

IA= Implementation Analysis; S= Survey

Other Evidence Consistent with Impacts (*continued*)

- About a quarter of households reported their payment had been reduced at some point in the past year
 - Of these, 37% attributed the reduction to failure to meet education requirement and 22% to failure to meet attendance requirement
- ⑩ Participant group slightly more likely than comparison group to report they were attending health centers for preventive reasons more often than last year [S]
- Participant group slightly less likely to cite “Don’t think it’s necessary” as a reason for not making preventive care visits [S]

IA= Implementation Analysis; S= Survey

VI. Impacts on Other Outcomes

Impact Estimates on Other Education Outcomes

Outcomes	Impact Estimate
Proportion who reported advancing to the next grade	0.004 (0.010)
Proportion who reported grades better or much better than previous year	-0.024 (0.031)
Proportion who reported grades worse or much worse than previous year	-0.023 (0.155)
Proportion of children performing work activities towards household maintenance	-0.001 (0.007)

Standard errors in parentheses. Regressions were run at the individual level. Huber-White standard errors were used to account for within-family correlations. */**/** Coefficient statistically significant at the 10%/5%/1% significance level.

Impact Estimates on Other Health Outcomes: For children 0-6 years old

Outcomes	Impact Estimate
Proportion who went to preventive visits more frequently than in the previous year	0.032 (0.021)
Proportion reporting worse or much worse health status than that of previous year	0.023 (0.032)
Proportion reporting better or much better health status than that of previous year	-0.002 (0.014)

Standard errors in parentheses. Regressions were run at the individual level. Huber-White standard errors were used to account for within-family correlations. */**/**Coefficient statistically significant at the 10%/5%/1% significance level.

Possible Explanations

- On average, PATH participants had only received benefits for about a year
- Not enough statistical power to detect long-term effects
 - If they exist, these effects are probably small
 - Outcome variables used for long-term analysis were particularly prone to measurement error
- Increase in attendance to schools and health centers is simply not enough to substantially affect long-term outcomes

VII. Conclusions

Conclusions

- PATH has had a **positive impact** on:
 - school attendance
 - preventive health care usage for children
- PATH has had **no** statistically significant **impact** on preventive health care usage for elderly

Conclusions

- **There is no evidence that impact on school attendance and health care usage has translated into improvement in other related outcomes (such as graduation, grades, child labor, and health status)**

The End

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