

The Impact of Distributing School Uniforms on Children's Education in Kenya

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Abstract: We evaluate the impact of an educational intervention, in which a Kenyan non-governmental organization distributes school uniforms to children in poor communities. The NGO used a lottery to determine who would receive uniforms. Although compliance with the lottery was not perfect, we use winning the lottery as an instrumental variable to identify the impact of receiving a uniform. We find that giving a school uniform significantly reduces school absenteeism by 38%. Effects are much larger for poorer students who did not previously own a uniform: a 64% reduction in school absenteeism. Preliminary data suggest positive impacts of uniform distribution on test scores in core subjects.

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1. Introduction

Advocates consistently lobby for making schooling more accessible in the developing world through the reduction of school fees and the elimination of other costs. The World Bank (2004) argues that user fees are a major obstacle to universal education in developing countries. Several countries in sub-Saharan Africa have eliminated school fees, but other significant costs remain, including the cost of providing a school uniform for a child. Government and non-government organizations may intervene in any number of ways to encourage children to attend school, providing free uniforms (as documented in this paper), free meals (Vermeersch and Kremer 2004), free medications (Miguel and Kremer 2004), providing uniforms, textbooks and classroom construction (Kremer et al. 2002) or the promise of a chance to win a scholarship (Kremer et al. 2004). This paper contributes to the discussion of the most effective ways to enable African children to attend school. While some interventions, such as providing meals or medications, increase the benefits of schooling, uniform provision and elimination of school fees reduce the cash outlay required. Uniform provision may be a worthwhile intervention to reduce the costs of schooling for Kenyan families.

We worked with ICS-Africa, a non-governmental organization that sponsored certain schoolchildren to receive free school uniforms in order to evaluate the impact of this aid on school participation and other outcomes. ICS used a lottery to determine which children would receive uniforms; we should therefore be able to get unbiased estimates of the impact of uniform distribution. Even though not all winners of the lottery ended up receiving uniforms, winning the lottery serves as an effective instrumental variable (IV) for receiving a school uniform, allowing a credible IV approach. We find positive impacts of receiving a school uniform on student school participation. Giving a uniform reduces school absenteeism by 7 percentage points (39%) from a base of 18% school absenteeism. For poorer students, that reduction rises to 12 percentage points. While this is not the

first study that has been conducted that examines the effect of reducing the cost of schooling by providing uniforms (Kremer et al, 2002b; Dupas, 2007), this is the first study to our knowledge that randomizes uniform provision alone among primary school students.

2. Context

A. The project

The Kenyan system of education is divided into primary, secondary and tertiary levels. Primary school includes standards (grades) 1 through 8 and also includes an Early Childhood Development (ECD) program for students too young for standard 1. The school year matches the calendar year and is divided into three terms, Term 1 runs from January to March, Term 2 from May to July and Term 3 from September to November. Primary school pupils typically range in age from six to seventeen years. There are two main reasons for this wide age range. First, there is no prescribed age to start school. A pupil typically begins standard 1 around age seven, however the age varies widely among children. Additionally since the introduction of free primary education, students who had previously dropped out years earlier due to a lack of school fees returned to school at the grade at which they left. A second reason for the wide age range is the frequency with which pupils repeat standards. Pupils who struggle to complete the standardized national curriculum are held back to repeat the year. Rural pupils from poorer households and with little educational background at home often have difficulty grasping the curriculum and so are held back regularly. It is not uncommon for a pupil to repeat a standard two or more times.

ICS-Africa has been operating in western Kenya since 1996. Its principal program has been the Child Sponsorship Program (CSP), in which children are sponsored by donors in the Netherlands and elsewhere and as a result receive school fees and school uniforms. ICS-Africa planned to phase its CSP

into several new schools in 2002 and agreed to submit the aspects of the program directed at individual children to evaluation. ICS used a lottery to distribute some of the child sponsorships within each of twelve primary schools in western Kenya.

In fall 2001, ICS-Africa selected twelve primary schools in western Kenya to participate in the Child Sponsorship Program. The twelve primary schools are all in Busia district, the westernmost district of Kenya's Western province. When compared to children in 75 other schools in the same province,² children in CSP schools do not appear systematically different from children in these other schools, suggesting that these schools are not exceptional. 86% of children in CSP schools had a toilet at home, as compared with 79% of children of comparable age in these 75 other schools. Alternatively, children in CSP schools were slightly less likely to be in uniform (63% vs. 83%) or to be wearing shoes (6% vs. 9%). Busia district borders Uganda and is located just north of Lake Victoria.

In mid-January 2002, ICS organized a census of children in standards one through four of the twelve selected schools. Based on that census, ICS selected all children who had experienced one or both parent deaths (orphans) to receive sponsorships.³ It then used a lottery to randomly select the remaining beneficiaries. In the end of January, a field representative from ICS went to the twelve schools and attempted to enroll those children selected for sponsorship into the program. For enrollment in the program, a child had to be present for a photograph to be taken and a small information card to be filled, which would then be sent to the Dutch sponsor (with some basic information about the child, such as her preferred pastimes). ICS made efforts to ensure that sponsored children were in attendance on the day of enrollment: letters were sent to the schools to encourage that these children be present. Schools and parents varied in their compliance. If a child intended for

² The 75 schools were all involved in another intervention, providing medications to eliminate intestinal helminths, which is described in detail in Miguel and Kremer (2004). The summary statistics were calculated by the current authors.

³ In Africa and in the literature dealing with parent death, children are referred to as "orphans" if they have either experienced one parent death or both parent deaths.

treatment was not present, then a replacement was randomly selected from a list. If that replacement was not present, another was chosen. Because of that, some children initially assigned to the treatment group were ultimately assigned to the comparison group and vice-versa. As a result, we use treatment assignment as an instrumental variable to estimate the effect of Treatment on the Treated (TOT). The TOT parameter measures the average effect of treatment on those in the treatment group who actually receive the treatment (i.e. those students who were randomized into the program and went on to receive uniform in 2002).

Schools immediately received some basic benefits from being sponsored. A pair of ICS nurses visited each school several times a year and provided basic first aid to any child or local adult who requested it. An agricultural representative organized student clubs to grow crops on the school grounds. In fall 2002, each school received a sizeable grant for classroom construction, for desks, and for books. The only standard individual benefit that sponsored children received was a school uniform; in June 2002, uniforms were distributed to all sponsored children who were still in school.

Students would sometimes also receive idiosyncratic gifts or letters from their sponsor. These were infrequent and of little monetary value. From the program's inception in 2002 to mid 2004, only 5% of sponsored children had received anything from their sponsors, and 85% of those children received something only once (usually just a letter).⁴ The relative infrequency of these gifts suggests to us that the bulk of the impact of this program stems from the uniform provision. However, an increase in school attendance for some students could stem from their feeling encouraged by wealthy patrons in the Western world, either through their letters or through school-related gifts.

⁴ The most common items sent were cards or letters (45% of children who received anything received only a letter, card, photograph, or drawing), and only a handful of children received anything larger than a pencil set or some exercise books (e.g., six children received a mattress, seven children received a lantern). Letters, when received, commonly inquire about the child's school progress and other pleasantries.

In June, when field officers returned to the schools to measure the children for uniforms, they fitted all those sponsored children who had not dropped out of school and later returned with uniforms for them. For children who were absent on the day of measurement, other sponsored children of similar build were measured in their place. Sponsored children received a new uniform each year in June or July.

If a sponsored child dropped out of school, the non-government organization selected a child to replace her, usually a child who had experienced the death of one or both parents but had not been sponsored previously (either because they transferred to the school after the initiation of the program, or because they lost a parent subsequent to the school census).

B. Costs of schooling

In many countries, parents face many private costs of education such as school fees and provision of uniforms. In Kenya, students were required to pay school fees to attend school through 2002. In January 2003, the new government policy provided not only fees but also basic textbooks and notebooks. This led to dramatic increases in school participation. However, schools still required students to wear uniforms. Historically, students who did not pay their school fees or those who did not wear uniforms could be sent away from school. Whether they were sent away and for how long varied greatly at the discretion of the school's headmaster. Students would often not pay full fees at the beginning of the year and would fulfill these obligations as the year progressed. In recent years, several prominent officials in the Kenyan government have voiced that head schoolteachers should not dismiss children who fail to wear a school uniform. However, it is difficult to find a clear expression of the official school policy. Anecdotal evidence suggests that students are less likely to be sent away from school for failure to wear a uniform than previously, but that students feel stigmatized by the failure to

wear a uniform and may be reprimanded by teachers. We have some evidence that reducing the cost of schooling by providing uniforms among other inputs increases school participation. Kremer et al. (2002) evaluate a program in which ICS provided uniforms, textbooks and classroom construction to seven schools selected randomly from a pool of 14 poorly performing schools in Western Kenya. In the treatment school, dropout rates fell dramatically and after five years pupils had completed 15% more schooling.

The school uniforms provided by ICS in 2002 cost between 325 and 550 Kenyan shillings (US\$4.33 to \$7.33) for girls and between 405 and 550 (US\$5.40 to \$7.33) for boys. The variation in prices is because uniforms for each school require different materials and also because tailors local to each school were contracted to sew that school's uniforms.

3. Data and Empirical strategy

The dataset we use is a composite of 5 different datasets with information about pupil attendance, students who won the sponsorship lottery, students who were present in school on the date of enrollment, students who received uniforms in 2002 and a pupil questionnaire administered in 2002. We have attendance information at each of the twelve schools from 2002 through the end of 2005. Attendance was gathered as field officers made unannounced visits to each school multiple times each year and recorded whether each child was present. From these multiple visits, an annual per-child attendance average is collected. The 2002 Pupil Questionnaire was carried out in mid-January 2002 before uniforms were distributed, and socioeconomic data was gathered on all children who were present at school that day.

The Attendance dataset has uniquely defined pupil identification numbers, and the 2002 Pupil Questionnaire uses those same numbers. However, the datasets with information about the students who won the lottery, those who were present on the day of the lottery and those who received uniforms do not include those pupil identification numbers. Therefore, names were matched manually and with the aid of a computer program.⁵ Some pupils in the various other datasets did not match with any pupil in the Attendance dataset. This may stem from the fact that sometimes children have several names and may only give a subset of those in one data gathering exercise and a distinct subset in another exercise. Figure 1 shows the relationship between the Attendance dataset and the other datasets.

ICS had about 950 sponsorships to allocate, and 339 were assigned to orphans after the initial census. The result was 612 non-orphans chosen for sponsorship and 693 non-orphans not chosen for sponsorship. Since sponsorships were not randomly allocated to the orphans, the effects of those sponsorships are not included in this analysis. Thus, the 612 non-orphans chosen were the group intended for treatment; and the 693 not chosen were intended as a comparison group.

Upon returning to the schools in late January 2002, ICS registered 868 children into the program. Then, in June 2002, 932 uniforms were distributed; this number is higher because some children were added to the program. Sponsored children went on to receive a uniform in June-July of 2003 and 2004 as well. In this analysis, we examine the impact of initial uniform receipt.

Our principal regression sample consists of 1,146 children who are identified in the initial Randomization dataset, the Recipient 2002 dataset, and the Attendance dataset. Table 1 Panel A compares children who won the lottery to children who did not win the lottery for the 768 children in school on the day of the 2002 Pupil Questionnaire. We observe few significant differences and certainly no patterns (winners were slightly more likely to have breathing trouble but less likely to cook regularly at home). Table 1 Panel B compares children who received uniforms in June 2002 to

⁵ Thanks to Rachel Podolsky who wrote this computer program in Perl.

those who did not, again for the 768 children in school on the day of the questionnaire. We see no significant differences. 88% of children registered in the program received uniforms; 74% of children who received uniforms had initially won the lottery.

In our main identification strategy we use randomization into the treatment group (intent-to-treat, or ITT) as an instrument for treatment (or receiving a sponsorship). Given some crossover from the comparison to the treatment group, this may be more appropriate than an intent-to-treat strategy, in which groups are analyzed purely based on their assignment to treatment or comparison, regardless of their ultimate receipt of treatment or not. The ITT serves as an ideal instrument since it was randomly determined, thereby giving us no reason to expect it would impact the outcome except through the treatment. Also, since the majority children who were chosen for treatment actually received uniforms, the ITT and the actual treatment are highly correlated.

Although we sometimes refer to the impact of sponsorship as the impact of receiving a uniform, sponsorship could work through another mechanism. Sponsored children had their picture taken and were singled out, and that kind of attention could conceivably have self-esteem impacts that could affect school attendance. This could work together with the aforementioned moral support offered by sponsors to a few students. Our current estimates cannot differentiate between these effects.

5. Results

First, we examine the first-stage regressions: what is the probability that a child, having been randomized into the project, actually was registered or went on to receive a uniform? Table 2 indicates that 77% of children who won the lottery were actually randomized into the project. 75% of children who won the lottery received uniforms in June of that year. In both regressions, about 20% of children who did not win the lottery went on to join the program. This is because, if a lottery-winner were

absent on the day of program enrollment, another child was randomly selected to take her place. Being randomized into the program thus acts as an appropriate instrumental variable for actual enrollment and later uniform receipt.

Table 3 gives some of these instrumental variables estimates. In Regression 1, we examine whether initial registration into the program had any effect on children's school attendance in the six months previous to distribution of uniforms. We see a marginally significant positive impact on attendance; however, that effect is imprecisely specified such that – with 95% significance – the impact could be anywhere from zero to 10%. (Part of the low precision of this estimate is because it is based on few observations of school attendance.) In Regression 2, we provide the intent-to-treat regression, measuring the impact of being randomized into the project on attendance after uniform distribution, and see an effect of 3.9%. In Regressions 3 and 4, we give IV estimates of the impact of sponsorship on attendance after uniform distribution. This impact is much more precisely estimated: the measured impact of program enrollment is a 6% increase in attendance (standard error 0.015 – Table 3 Col 2), and that of receiving a uniform is 7.0% (standard error 0.021 – Table 3 Col 4). This is a sizeable effect off a baseline school attendance level of 82%.

In Regression 5, we estimate the OLS estimate of receiving a uniform on school attendance. This impact is slightly larger (5.3% increase, standard error 0.012 – Table 3 Col 5), implying that selection indeed positively biases the OLS estimates, as children present in school on the day of initial enrollment were more likely to receive uniforms.

These results could be positively biased if unsponsored students who transfer from CSP schools to non-program schools are listed in the attendance data as having dropped out. This kind of misclassification does not seem to be a significant problem given that students in CSP schools come from nearby villages, so the pupils seem very certain of their classmates' (and neighbors')

whereabouts. The enumerators, upon encountering a child who was absent on the date of the namelist visit, would ask her classmates where the child was and whether or not she had dropped out.

Of course, these impacts might be expected to differ across genders and ages. Regression 1 of Table 4 shows a coefficient of 0.053 (standard error 0.029 – Table 4 Col 1) for boys and a significant larger effect of 0.087 (standard error 0.029 – Table 4 Col 1) for girls. Table 4, Regression 2 examines the effects for younger children (aged 5-9) versus older children (aged 10-14). We observe a coefficient of 0.111 (standard error 0.051 – Table 4 Col 2) for younger children and an insignificantly smaller coefficient of 0.045 (standard error 0.023 – Table 4 Col 2) for older children.

We would expect receiving a uniform to be more important to children who do not already have one. Accordingly, if we run our regression including an interaction term for students who both receive a uniform and were wearing a uniform at baseline, we find that students who did not already have a uniform experience a much larger increase in attendance: 13 percentage points (standard error 0.05), almost twice the average effect (Table 4 Regression 3). For students who already had a uniform, the estimated impact is small and insignificantly different from zero.

We also examine what effect a student's inclusion in the sponsorship program has on the attendance of her siblings. We matched sibling information from the baseline questionnaire with their attendance information. We ran regressions including whether or not the student had a sibling who received a uniform or whether the sibling had a sibling of the same gender who received a uniform. We found no significant effects of uniform provision on the attendance of the student's siblings. We also examine the effect of the program on grade progression and find no significant effect (results not reported).

We also examine the effect of inclusion in the program on test scores. The test score data was collected after the conclusion of the program and is not complete for all years and for all schools.

There is also significant attrition in the test score data – largely due to imperfect matching which we will improve in later revisions of this paper.

Table 5 shows that there are no significant differences between the students missing test score data and those for whom test scores are available with the exception of inclusion in the uniforms program. Uniform provision reduces the likelihood of having missing test score data by 8%, a difference that is significant at the 95% level. We would expect that inclusion in the program would reduce the likelihood that students would attrit. Since the missing data are related whether or not the student is included in the program, later revisions of this paper will calculate bounds on the plausible range of average treatment effects (Lee 2005).

Table 6 gives IV estimates of program enrollment on average annual test scores in Mathematics, English and Kiswahili for 2002 (the year the program began), 2003 and 2004. We show average effects as well as effects separated by students who had uniforms before the program and those who did not. Note that, of nine average effects (the three subjects for each of the three years), all are estimated to be positive and four are statistically significant from zero. For students with no uniform at baseline, most estimates are positive (and only positive estimates are statistically significant). Students who already had uniforms have small and insignificant but positive test score estimates. This pattern suggests a positive impact of uniform distribution on student test scores across subjects.

6. Discussion

Given that headmasters have historically had considerable discretion with respect to the enforcement of school uniform norms, an important question is why Kenyan schools (and African schools more generally) require school uniforms at all. Several possible rationales have been suggested for maintaining uniform norms. For example, uniforms make students easy to identify and therefore

less likely to engage in bad behavior or be co-opted into helping some village resident into helping with farm work. Also, in some areas school uniforms qualify children for privileges such as reduced fees on public transport. Uniforms also may enhance a sense of visual equality and decrease distractions from schoolwork when at school (BBC 2003). Another hypothesis is that, although head teachers face few incentives in general, they may be transferred to undesirable locations if the average exam scores in their school are low. By enforcing school uniform norms, they may exclude the poorest (and probably the lowest performing) children and thus raise average exam scores (Kremer et al. 2002 a).

Two of these reasons (special privileges within the village and visual equality) could be achieved by considerably cheaper alternatives to current school uniform policy. Standard clothing color schemes and an identity badge, for example, would probably achieve the same goals. The other reasons, however, are more challenging, either because the head teacher specifically wishes to exclude poor families and therefore is unlikely to replace uniforms with a cheap alternative, or because clear identification to exclude truancy or bad behavior outside of school means that children should not simply be able to obscure their identity badge. Which of these reasons plays a more important role informs the appropriate policy intervention regarding uniforms, whether our positive results imply that governments may wish to provide uniforms or whether they should be eliminated in favor of a cheaper alternative. These initial regressions indicate that uniform distribution has a positive impact on children's school attendance. Giving a school uniform (along with other aspects of program participation) reduces school absenteeism by more than a third, and the effect is even larger for poorer children (those without uniforms to begin with).

The average effect of the program is an increase in school participation of 0.070 years per treated child (standard error 0.020 – Table 3 Col 4). The average cost of a school uniform is 436.86

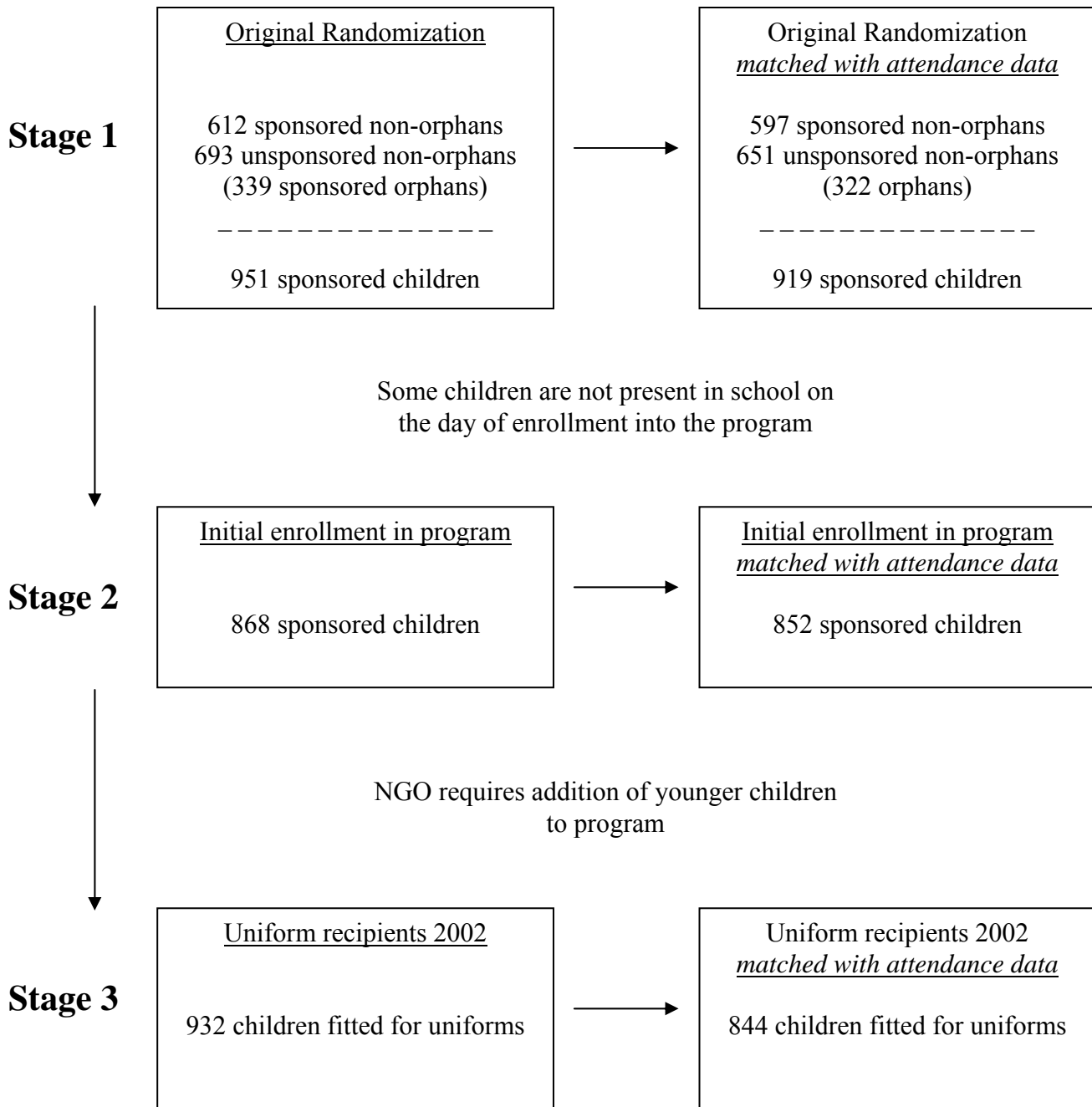
Kenyan shillings (US\$5.82). Thus, the cost of increasing school by one year is $\$5.82 / 0.070$, or US\$83.14.⁶ However, for children without uniforms at baseline, the cost is considerably lower, at $\$5.82 / 0.120$, or US\$48.50. This is still considerably more than the cost of an additional year of schooling through providing deworming medication (US\$3.50), an intervention also carried out in the same geographic area (Miguel and Kremer 2004). However, deworming may be particularly relevant in Busia, Kenya, and places like it, with high worm burdens. Uniform provision is a challenge that children across the African continent face, and so this intervention may be more generalizable.

⁶ The marginal cost of labor associated with providing an additional uniform is very small. Field officers for the non-government organization in Kenya make approximately US\$350 per month, but the fraction of that time required for distributing uniforms (one day per school for measuring, one day per school for distributing) is very low if one imagines a program that distributes uniforms annually.

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Figure 1: Relationship of various datasets to the attendance data



**Table 1: Pre-treatment comparison of groups
(all characteristics measured in Jan 2002, before initiation of program)**

	Lottery winners versus losers				Uniform recipients versus non-recipients			
	<u>Winners</u>	<u>Losers</u>	<u>Difference (W-L)</u>	<u>std error for diff</u>	<u>Received</u>	<u>Didn't</u>	<u>Difference (R-D)</u>	<u>std error for diff</u>
Female	0.48	0.47	0.01	0.03	0.45	0.5	-0.05	0.04
Age	9.59	9.74	-0.15	0.09	9.63	9.71	-0.09	0.13
School attendance (Jan - June '02)	0.87	0.85	0.02	0.02	0.87	0.85	0.02	0.01
Iron roof	0.39	0.41	-0.02	0.04	0.38	0.42	-0.04	0.05
Toilet	0.85	0.86	-0.01	0.03	0.87	0.83	0.04	0.03
Books	0.22	0.23	-0.01	0.04	0.2	0.25	-0.05	0.09
Uniform shirts	0.77	0.79	-0.03	0.07	0.77	0.79	-0.02	0.06
Uniform dresses	0.8	0.73	0.07	0.08	0.77	0.76	0.01	0.07
Headache in last week	0.3	0.27	0.02	0.04	0.28	0.29	-0.01	0.04
Breathing trouble in last week	0.06	0.03	0.03	0.01	0.04	0.04	0	0.02
Diarrhea in last week	0.07	0.05	0.01	0.01	0.06	0.06	0	0.01
Usually cook at home	0.56	0.63	-0.07	0.02	0.58	0.61	-0.02	0.03
Usually fetch water at home	0.94	0.95	0	0.01	0.94	0.95	-0.02	0.02
Usually wash clothes at home	0.74	0.78	-0.04	0.03	0.75	0.77	-0.03	0.03
Currently wearing shoes	0.04	0.04	0.01	0.02	0.04	0.04	0.01	0.01
Currently wearing uniform	0.66	0.67	-0.01	0.04	0.68	0.65	0.03	0.04
Received uniform from ICS in 2002	0.8	0.22	0.58	0.08				

Notes: 768 children are included in these summary statistics, all who were present on the day of the survey out of the general sample of 1,206 children.

Table 2: First stage regressions

	<u>Dependent variable:</u>	
	<u>Initially registered in program</u>	<u>Received uniform 2002</u>
Randomized into program	(1) 0.580*** (0.073)	(2) 0.561*** (0.079)
Constant	0.194*** (0.043)	0.186*** (0.035)
Observations	1146	1146
R-squared	0.34	0.32

Notes: All regressions are clustered by school. * significant with 90% confidence, ** 95%, *** 99%.

Table 3: IV regressions (using randomization into the program as an IV for initial enrollment or uniform receipt)

	<u>Dependent variable:</u>				
	<u>Attendance</u>	<u>Attendance - June '02 – Nov '05</u>			
	<u>Jan '02 – June '02</u>	OLS	IV	IV	OLS
	(1)	(2)	(3)	(4)	(5)
Initially registered in program	0.049*		0.060***		
Randomized into program		0.039***			
Std 1 * Female	-0.005	0.006	0.005	0.009	0.008
Std 2 * Male	-0.001	0.001	0.000	0.001	0.001
Std 2 * Female	-0.017	0.008	0.008	0.01	0.009
Std 3 * Male	0.012	0.015	0.013	0.016	0.015
Std 3 * Female	0.007	0.012	0.012	0.016	0.014
Std 4 * Male	0.008	0.022	0.028	0.026	0.023
Std 4 * Female	0.022	0.029	0.031	0.030	0.029
Received uniform 2002				0.070***	0.053***
Had uniform at baseline	0.063***	0.053**	0.051**	0.047**	0.049***
Constant	0.825***	0.832***	0.823***	0.818***	0.820***
Observations	1146	1146	1146	1146	1146
R-squared	0.13	0.06	0.07	0.06	0.07

Notes: All regressions include a full set of gender-standard interactions, controls for whether or not the child had a uniform previous to uniform distribution and are clustered by school. * significant with 90% confidence, ** 95%, *** 99%.

Table 4: IV regressions by gender and age (using randomization into the program as an IV for initial enrollment or uniform receipt)

	<u>Dependent Variable</u>		
	<u>Attendance June '02 – Nov 05</u>		
	IV (1)	IV (2)	IV (3)
Received uniform 2002	0.053* (0.029)	0.045** (0.023)	0.130** (0.05)
Female and Received Uniform in 2002	0.034 (0.036)		
Young and Received Uniform in 2002		0.066 (0.058)	
Young		0.004 (0.028)	
Had uniform at baseline and received uniform in 2002			-0.108* (0.057)
Had uniform at baseline	0.046** (0.017)	0.032* (0.018)	0.098*** (0.024)
Std 1 * Female	-0.002 (0.025)	0.028 (0.035)	0.001 (0.021)
Std 2 * Male	0.007 (0.027)	0.043 (0.027)	0.001 (0.024)
Std 2 * Female	-0.000 (0.022)	0.052 (0.029)	0.009 (0.014)
Std 3 * Male	0.022 (0.024)	0.065 (0.039)	0.016 (0.023)
Std 3 * Female	0.006 (0.034)	0.06 (0.037)	0.015 (0.028)
Std 4 * Male	0.031 (0.024)	0.077** (0.033)	0.022 (0.021)
Std 4 * Female	0.019 (0.037)	0.086** (0.04)	0.026 (0.033)
Constant	0.821*** (0.031)	0.805*** (0.031)	0.798*** (0.03)
Observations	1121	976	1146
R-squared	0.06	0.06	0.07

Notes: All regressions include a full set of gender-standard interactions and are clustered by school. * significant with 90% confidence, ** 95%, *** 99%. * significant with 90% confidence, ** 95%, *** 99%.

Table 5: Differences between Students Who Attrited and Those Who Didn't in the Test Score Data

	<u>Attrited</u>	<u>Didn't Attrit</u>	<u>Difference (std error)</u>
Female	0.48	0.47	0.01 (0.04)
Age	9.69	9.65	0.04 (0.19)
School attendance Jan – June '02	0.86	0.85	0.01 (0.04)
Iron roof	0.37	0.42	-0.05 (0.06)
Toilet	0.84	0.87	-0.03 (0.03)
Books	0.27	0.14	0.13 (0.07)
Diarrhea	0.07	0.06	0.01 (0.02)
Fetch water	0.94	0.95	-0.01 (0.03)
Had uniform at baseline	0.66	0.66	0.00 (0.09)
Uniform Recipient	0.48	0.56	-0.08 (0.04)**

Table 6: IV Regressions of Std Deviations of Test Scores (using randomization into the program as an IV uniform receipt)

<u>Dependent Var: Test Scores</u>	<u>2002</u>			<u>2003</u>			<u>2004</u>		
	<u>Math</u>	<u>English</u>	<u>Kiswahili</u>	<u>Math</u>	<u>English</u>	<u>Kiswahili</u>	<u>Math</u>	<u>English</u>	<u>Kiswahili</u>
Average Treatment Effect	0.03 (0.11)	0.15 (0.11)	0.02 (0.17)	0.25** (0.07)	0.19* (0.08)	0.18* (0.09)	0.16 (0.14)	0.16** (0.06)	0.09 (0.06)
No uniform at baseline	-0.16 (0.24)	0.27* (0.13)	-0.21 (0.47)	0.34 (0.25)	0.32* (0.15)	0.38** (0.15)	0.14 (0.22)	0.27 (0.17)	-0.03 (0.27)
Had uniform at baseline	0.13 (0.06)	0.08 (0.10)	0.16* (0.12)	0.16 (0.12)	0.07 (0.14)	0.00 (0.08)	0.17 (0.15)	0.08 (0.16)	0.18 (0.11)
Observations	434	433	431	508	486	514	307	309	310