

Provider Absence in Schools and Health Clinics

Nazmul Chaudhury¹
Jeffrey Hammer¹
Michael Kremer²
Karthik Muralidharan²
F. Halsey Rogers³

Northeast Universities Development Consortium Conference
HEC Montreal
October 1-3, 2004

Abstract: This paper presents comparable national estimates of provider absence at primary schools and primary health centers in six countries. It relies on new data drawn from nationally representative samples of facilities using a common survey instrument and methodology, with providers counted as absent when they were not present in the facility at the time of an unannounced visit. Absence ranges from 11 to 27 percent among primary-school teachers, and from 23 to 40 percent among medical personnel. Absence rates are generally higher in poorer countries and states, with an additional \$1000 in per-capita income (PPP-adjusted) reducing predicted absence by 2.7 percentage points. Absence generally does not appear to be concentrated among a small number of frequently absent providers, but instead is spread out over most providers, suggesting a general culture of tolerance for absence. Correlates of teacher absence include poor school infrastructure, which suggests that working conditions matter for absence, and distance from the nearest Ministry of Education office, which suggests that administrative monitoring may also be important. By contrast, proxies for salary levels, intensity of community monitoring, and intrinsic motivation levels are not robust predictors of absence.

¹ World Bank, South Asia Region

² Harvard University, Department of Economics

³ World Bank, Development Research Group; corresponding author (hrogers@worldbank.org)

Acknowledgements: We are grateful to the many researchers, survey experts, and enumerators who collaborated with us on the country studies that made this global country possible. We thank Sanya Carleyolsen, Julie Gluck, Anjali Oza, and Mona Steffen for their invaluable research assistance on this paper and the underlying country studies. We are especially grateful to the UK Department for International Development, whose generous support to the *World Development Report 2004* made this research project possible, and specifically to Laure Beaufils and Jane Haycock of DFID for their support and comments. We thank the Global Development Network for additional financial assistance, as well as the participants at our January 2004 GDN provider absence workshop in New Delhi, who offered many helpful suggestions. We thank our colleagues for their encouragement and comments; special recognition should go to Jishnu Das for allowing us to replicate his student assessments, to Jean Dreze and Deon Filmer for sharing with us their survey instruments, and to Shanta Devarajan and Ritva Rennikka for their consistent support. Finally, we are grateful to the governments of the survey countries, and especially to the providers and facility directors themselves. Without their cooperation, this project would not have been possible.

1. Introduction

This paper reports on the results of a survey in which enumerators recorded whether teachers and health workers were absent or present during unannounced visits to a nationally representative sample of primary schools and primary health care clinics (PHCs) in Bangladesh, Ecuador, India, Indonesia, Peru, and Uganda. We base our absence calculations on direct physical verification of employees' presence, rather than relying on logbooks or interviews with supervisors.

We present summary statistics on absence for both health and education, including statistics on the level of provider absence, its relation to income levels, the reported reasons for absence, and the distribution of absences among providers. In the case of the education sector, we then analyze the correlates of absence and explore their implications for the hypotheses about absence. We consider several broad sets of hypotheses on determinants of teacher absence rates. The first is that teachers are absent because they are poorly paid—that is, their underlying compensation package is too low. The second hypothesis is that teachers are absent because working conditions are poor, for instance because schools have poor infrastructure⁴ and often practice multi-grade teaching (in which one teacher has to teach multiple grades at the same time). The third hypothesis is that employees are absent because they do not have sufficient daily incentives for attending work, due to inadequate supervision and monitoring, whether through administrative oversight or by the community (De, Noronha, and Samson 2000; King and Ozler 2001; Majumdar 2001; PROBE Team 1999). The fourth hypothesis is that teachers lack the intrinsic motivation necessary to keep them going. A fifth hypothesis is that as civil servants, regular teachers are too insulated from pressures for better performance, and that better contracting might reduce the absence problem. In addition to these five main hypotheses, teachers and union representatives in some countries (most notably India) report in conversations that they are expected to do significant amounts of non-teaching government administrative duties outside the classroom; we assess this claim as well.

Until recently, there has been little quantitative research on absence using nationally representative data. While some past studies have cited the problem of medical personnel absence (Begum and Sen 1997; Sen 1997), virtually none have used spot checks to measure it, even on a subnational level. One recent exception is Chaudhury and Hammer's study of Bangladesh's public and community health centers, which used a nationally representative facility survey and calculated an overall absence rate of 35 percent for all medical providers and 42 percent for doctors (Chaudhury and Hammer 2003).

A few previous studies examine teacher absence rates for sub-national samples based on direct observation. Glewwe, Kremer, and Moulin (1999) found that teachers in two districts of Kenya were absent from school 28.4 percent of the time, and physically present in school but absent from the classroom an additional 12.4 percent of the time. The 1999 Public Report on Basic Education (PROBE Team 1999) noted that one-third of the head teachers in surveyed districts in 5 Indian states were absent from school. In the North West Frontier Province of Pakistan (NWFP),

⁴ At a provider absence workshop in New Delhi, a senior official in the government of Bihar said that many of the schools in Bihar don't even have functioning buildings. The data show that Bihar does have poorer school infrastructure, with only 2.7 percent of the government schools having an electricity connection relative to a national average of 40 percent in government schools.

the absence rate was reportedly 20 percent in a sample of 257 public and private schools (King, Orazem, and Paterno 1999). In that study, enumerators conducted two spot checks on teacher and student absence, and also collected data on teacher attendance from official school records—which revealed an official absence rate of just 5 percent, or only a quarter of the measured rate. More recently, two World Bank-led studies have calculated average teacher absence rates on the basis of nationally representative surveys; these studies calculated absence rates of 15 percent in Papua New Guinea (World Bank 2004) and 17 percent in Zambia (Habyarimana et al. 2004).

Our study differs from other studies on teacher absence in two ways. First, it measures absence rates using new data that are as close as possible to being nationally representative and are also internationally comparable. Second, it examines the correlation of service provider absence with a wide range of potential determinants.

The rest of the paper is organized as follows: Section 2 describes the survey methodology and Section 3 describes basic correlations and trends in absence of teachers and medical personnel. Section 4 then focuses specifically on teacher absence, and uses regression analysis to identify correlates at the individual, school, and district level. Section 5 summarizes and draws tentative policy conclusions.

2. Survey Methodology

The survey covered provider absence at a nationally representative sample of primary schools and primary health centers in each country.⁵ The survey focused on public primary schools and primary health centers, although in some cases additional facilities were included (for example, in rural India and in Indonesia, enumerators also visited private schools located in the same village as public schools). The Indian sample is by far the largest in this study, since we aimed to collect a representative sample at the level of each state in India.

For each country, a provider was counted as absent if, at the time of the random facility visit during school hours, he or she could not be located anywhere in the facility. The enumerator required physical verification of an employee's presence or absence and did not simply rely on logbooks. We restricted our attendance/absence calculations to employees listed on the facility roster. The list of employees used for checking attendance was created at the facility (school or health center) itself, based on staff lists and schedule information provided by the facility director or whoever was acting for him. Enumerators then checked the attendance only of those who were ordinarily supposed to be on duty at the time of the visit. Employees were counted only if they were also on the current shift. We omitted from the calculations all employees who were reported by the director as being "on another shift," whether or not this could be verified. Finally, only full-time employees were part of the survey. We took this step so that shift workers would not be counted as absent when they were not supposed to be on duty.⁶

⁵ The exception was Ecuador, where the survey covered only schools and not health centers.

⁶ While the methodologies and survey instruments used across countries were as uniform as possible, there were some variations. For example, the treatment of facilities that were closed at the time of the enumerators' first visit varied. In India, we used information collected on subsequent visits to assess whether the closure was justified (in which case the absence variable for that visit was treated as a missing observation) or unjustified (in which case the teachers were counted as absent). In Bangladesh, that first visit was not counted, so the teacher absence variable for that visit was

These definitions lead to conservative estimates of absence in two key respects. First, employees who were idle but at the facility are recorded as present, even though they are not delivering services. For example, a teacher who was absent from the classroom is counted as present if she is found elsewhere in the school. In India, enumerators found that only 45 percent of teachers on the roster were actually teaching, but we still count them as present. Second, certain “ghost workers”—those who are listed on Ministry rosters as being assigned to the facility, but are not listed on the facility roster—will be missed by this analysis. This conservative definition was applied across all the countries in our sample, as uniformly as possible.⁷

In primary health centers, one concern is that some employees might be performing work away from the facility. To deal with this issue, we took steps to minimize measurement error at the primary health centers. In the early stages of the interview, the medical officer in charge (or someone answering in his or her stead) was asked to show the enumerator the schedule of all medical providers on the staff. Only providers whose normal schedule had them working at the clinic on the day of the interview (as opposed, for example, to being assigned to a sub-clinic for that day) were included in the sample of providers. Health workers were treated as absent for the purposes of our analysis only if the providers were not initially listed as being away at other work but the enumerator could not find them in the clinic. Of course, in some of these cases, when we later asked the respondent why they were gone, we were told that they were working outside the clinic.

For several reasons, we do not think that the possibility of medical employees working elsewhere leads to an overstatement of the absence rate. First, we found no evidence that types of health workers who were less likely to do outreach or field work—such as pharmacists—are more often present than other workers. Second, we asked whether workers had outreach duties in general, aside from the question of whether they were supposed to be doing outreach on that particular day. Only in Bangladesh do we find that workers who were supposed to be involved in outreach activities have significantly higher absence rates; in Uganda, the reverse was true. Finally, in a recent study in Rajasthan (Banerjee, Deaton, and Duflo 2003), an effort was made to find nurses who were absent from health subcenters. The authors conclude that the “high rates of absences were not due to staff attending patients . . . Only in 12 percent of the cases was she to be found in one of the villages served by her subcenter.” Absence rates in that study were similar to those that we find.

3. Summary Statistics

Absence rates are presented in Table 1. Teacher absence rates range from 11 to 27 percent, while medical provider absence rates are much higher: On average, absence rates in primary health care centers are 18 percentage points higher than in primary schools.

implicitly counted as missing. On another point of variation is the difference in sampling frame for schools in Uganda, which is described in the note to Table 1.

⁷ In Bangladesh, facilities that were closed on the first visit were treated as missing observations. We are currently developing an adjustment process to put surveys on a comparable basis.

Table 1
Provider Absence Rates by Country and Sector

	Absence rates (%) in:	
	Primary schools	Primary health centers
Bangladesh	16	35
Ecuador	14	--
India	25	40
Indonesia	19	40
<i>Papua New Guinea</i>	<i>15</i>	--
Peru	11	23
Uganda	27	37
<i>Zambia</i>	<i>17</i>	--

Notes: (1) Providers were counted as absent if they could not be found in the facility for any reason at the time of a random unannounced spot check (see text for further detail).

(2) In Uganda, the sampled districts were divided into sub-counties, and schools in sub-counties with level III health centers comprise the school sampling frame.

Source: Authors' calculations from new facility surveys, except for Papua New Guinea World Bank 2004) and Zambia (Habyarimana et al. 2003).

Per-capita income and absence

Higher-income countries typically have lower absence rates. Figure 1 graphs absence against per-capita gross national income (GNI), and includes a simple regression line calculated based on the assumption that the same marginal relationship between income and absence holds in both the health and education sectors (albeit starting from different levels).⁸ In this pooled two-sector regression, an additional US\$1000 in per-capita income (PPP-adjusted) in this range is associated with an average decline in absence of 2.7 percentage points.⁹

The relationship is stronger in education (lower regression line) than in health (upper line). In health, with this small sample of countries, the negative relationship is driven entirely by Peru's relatively high income and low medical-provider absence rate.¹⁰

⁸ An OLS regression of absence on GNP per-capita (in PPP terms) and a PHC dummy has an adjusted R² of 0.75. The coefficient on per-capita income is significant at the 5 percent level.

⁹ The coefficient is measured less precisely (with a p-value of 0.13) if we enter the income in logs, but the point estimate is such that a doubling of per-capita income is associated with a reduction in absence of an estimated 5 percentage points.

¹⁰ For the education sector without Peru, the estimated slope on income drops only slightly, to -2.1 percentage points in absence per \$1000 in additional income. It does lose statistical significance, but this is unsurprising with a sample of 7 countries.

Figure 1: Wealthier countries have lower absence rates, at least among teachers

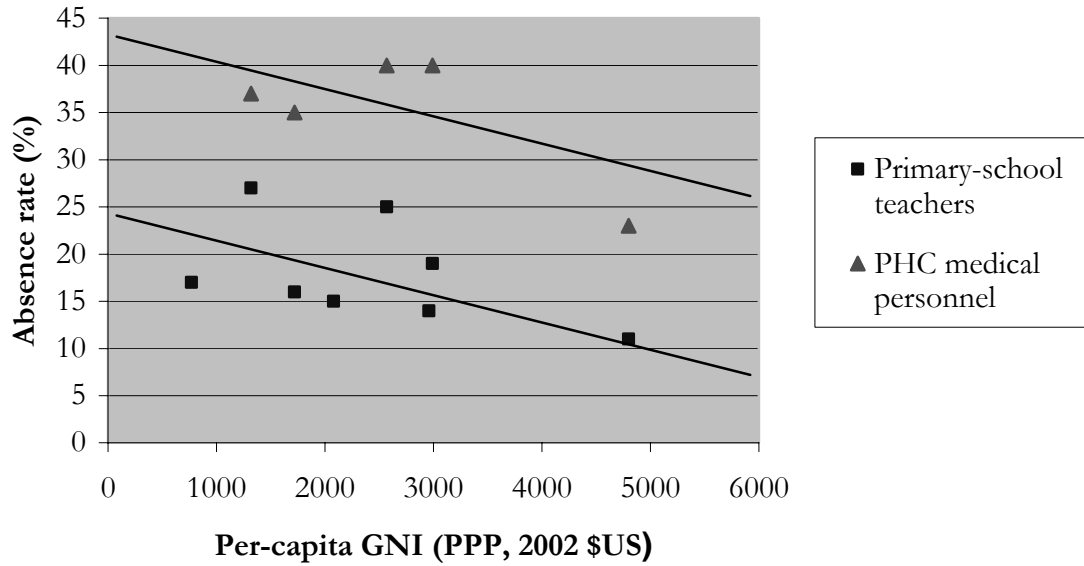
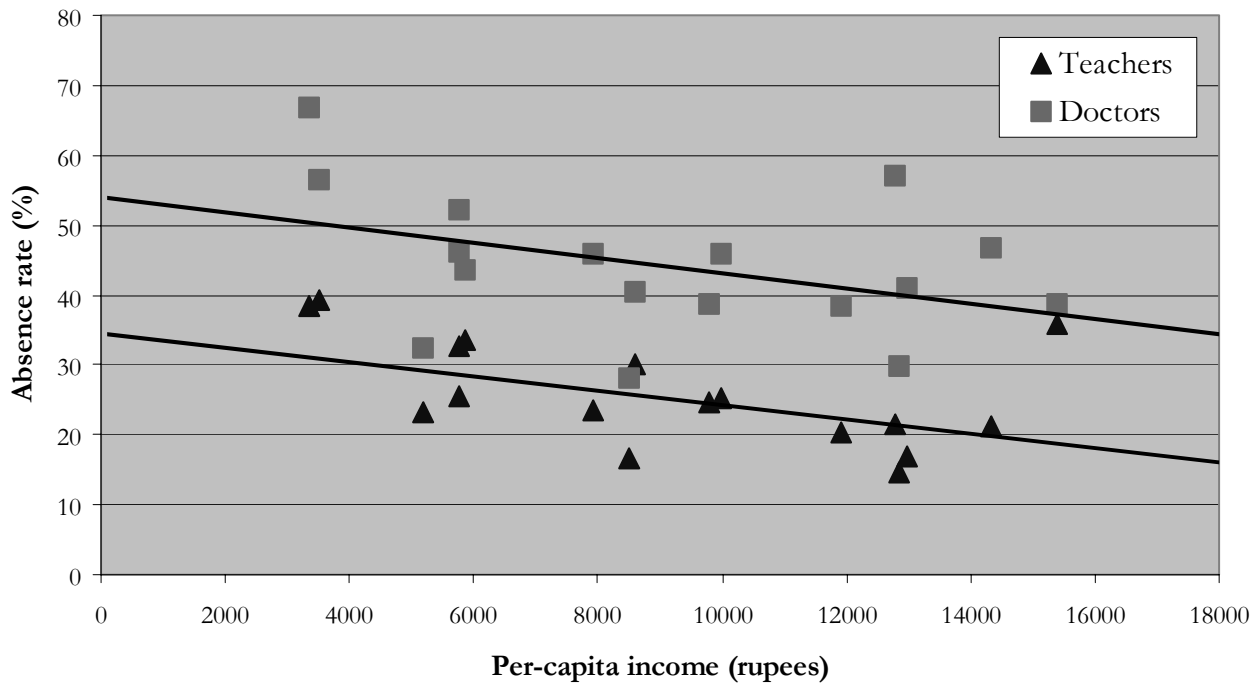


Figure 2
India: Teacher and doctor absence by state per-capita income

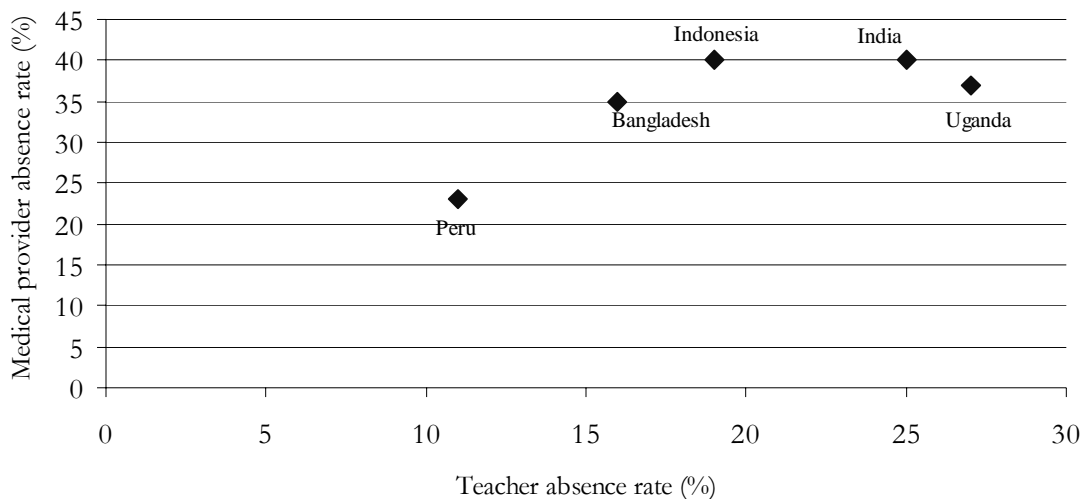


Within India, we see a similar relationship: higher-income states have lower absence rates among both teachers and doctors (see Figure 2).¹¹ Within both the education and health sectors, the point value is roughly -0.001 , meaning that an increase of 1000 rupees in state per-capita income is associated with a reduction in absence of 1 percentage point. (The p-values on the coefficients on income in education and health are 0.03 and 0.13, respectively.) We do not have sufficient data in other countries to be confident of the relationship between income and absence rates at the sub-national level, but in general, district that are poorer and more remote seem to have higher absence rates.

Correlations between absence in the education and health sectors

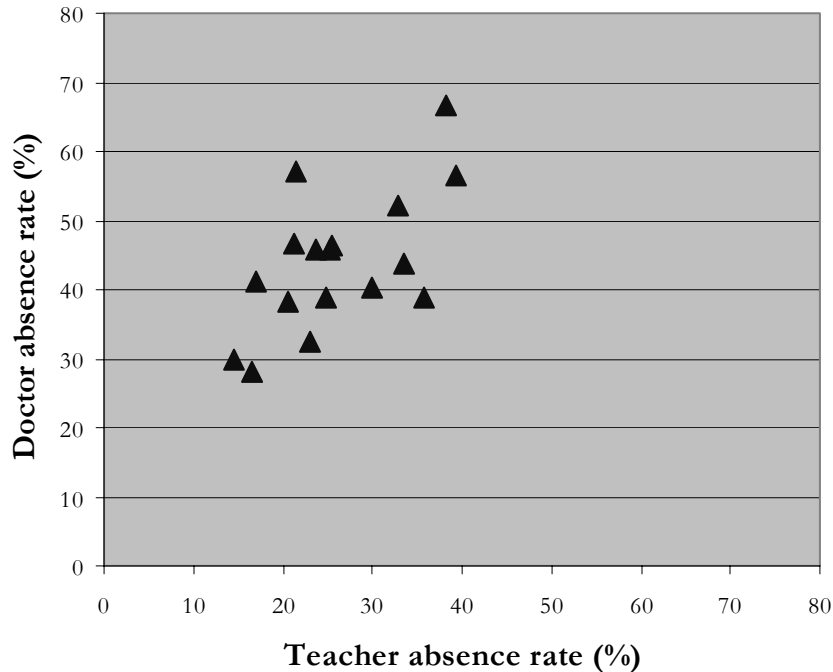
Countries with higher levels of absence in education have higher levels of absence in health (Figure 3). This relationship holds even more clearly among Indian states (Figure 4). In part, this is due to the income-absence relationship, since wealthier states tend to have lower absence in both the education and health sectors. But there is more to it than this: at the state level, the residuals from the two sectoral absence-income regressions are highly correlated, with a correlation coefficient of 0.53. This means that even conditional on income level, other state-level variables—which are likely to include such factors as state administrative capacity and social norms—have common effects on absence across sectors.

Figure 3: Correlation of teacher and medical provider absence rates across countries



¹¹ Note that the India-specific figures (Figures 2 and 4) focus on doctors rather than all medical personnel, because it is typically doctors that are the focus of discussion about incentives and performance in the sector. In the cross-country analyses presented in this report, however, use the broader class of medical providers.

Figure 4
Correlation between teacher and doctor absence
across Indian states



Stated reasons for absence

When teachers or medical personnel were absent, we asked the facility director, or whoever was responding to the survey, for the reason (Tables 2 and 3). There are a number of obvious problems with taking this data at face value, but it still yields some useful insights. Unexplained and unauthorized absences account for much of the absence, even if we accept the respondents' information. The combined "unauthorized absences" (including those for which no explanation was given, sometimes because the absence was not acknowledged) and "left early/arriving late" categories typically account for at least 30 percent of absences, and sometimes over 50 percent (with the sole exceptions being medical personnel in India and teachers in Bangladesh).

One explanation sometimes offered for teacher absence, especially in South Asia, is that the government pulls teachers away from school to carry out duties unrelated to primary education. In India, these tasks include voter registration, human and cattle censuses, outreach for public health campaigns such as polio immunization drives, and supervision of election stations. Tables 2 and 3 show that official duties reportedly (though unverifiably) account for a significant share of absences, but duties unrelated to core missions do not appear common. In most cases, between a fifth and a half of absent providers are reported to be carrying out some type of official duty (or administrative tasks) that take them away from the facility at the time of the survey visit. But in India, where we

have done the most detailed analysis of the data on reasons for absence, only about 4 percent of absences are reported as being attributable to non-education-related official duties (Kremer et al. 2004).

Consider the example of Indian primary schools, where the two most commonly stated reasons for absence are “authorized/informed leave” and “official teaching related duty.” Given the long school vacations in the Indian school calendar, most states permit 5 to 10 days of personal leave during the school year, which gives an “expected rate” of authorized leave of 3-5 percent,¹² which is considerably less than the 6.7 percent reported in the data. Only 50 percent of the absences claimed to be “authorized” were supported by documentation.¹³ Sixty percent of the cases where the stated reason for absence was “official teaching-related duty” are attributed to meetings and training. There was no way to verify whether teachers were actually away on such duties. Absences stated as occurring due to sickness account for 1.5 percent of the total observations. This translates into about 3 working days in a year, which does not seem implausible.¹⁴ Official non-teaching duties account for less than 1 percent of the total observations, which is probably an upper bound, since head teachers should have no reason to underreport this reason for absence. Unauthorized absences account for around 10 percent of the observations. After adding the fraction of the “authorized leave” category that is likely to be overstated, and the times when the “official work” reason was not valid, the range of unauthorized absences in government-run public schools is likely to be between 10 and 15 percent of teachers.

In all surveyed countries, illness explains only a small fraction of absence. Less than 15 percent of absence is reportedly due to provider illness. HIV/AIDS could affect teacher presence through many channels other than absence due to illness; for example, teachers could miss school to care for sick relatives or to attend funerals. However, a detailed study of absences in Uganda suggests that while HIV/AIDS may account for a significant share of absence, it may not be the major cause. Habyarimana (2004) looks at the age profile of HIV prevalence rates and its correlation with absence rates in general; he also correlates the age-specific prevalence with absences due to sickness. HIV/AIDS prevalence rates are highest between 25 and 39 for women and 30-50 for men. An examination of corresponding absence rates does not reveal a clear pattern: while absence rates are higher amongst women in the 20- to 24-year-old category, they are not significantly different for the 25-39 age group. Similarly absence rates amongst men in older age groups are not consistently greater than women in the same groups. An examination of the share of absence due to sickness by district show no patterns consistent with the geography of HIV prevalence in Uganda.

¹² This is based on the average school year being 150-200 days long.

¹³ Even the “letters of authorization” are not conclusive, because interviews with school inspectors as well as personal field work by the authors suggest that teachers sometimes deposit letters requesting leave with the head teacher, to be produced in case an inspector shows up on a particular day.

¹⁴ We also compare the sickness rates across public and private schools and cannot reject the null that the rate is the same across both types of schools.

Table 2
Stated Reasons for Absence of Medical Personnel

	<i>(% of those absent)</i>			
	Uganda	Bangladesh	India	Indonesia
Medical outreach	10.7	3.6	37.6	30.2
Other official duties	15.2	29.1	14.8	12.0
Sick	5.5	--	3.0	6.5
Authorized leave	35.1	34.5	24.4	18.2
Left early/arriving late	22.7	1.8	9.8	12.8
Other reasons	2.6	--	3.1	--
Unauthorized absence	8.3	31.0	7.4	20.2
<i>Total Absence</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

Note: Table gives the share of total absences for which each of the listed reasons was given by the facility director or other respondent

Table 3
Stated Reasons for Teacher Absence

	<i>(% of those absent)</i>					
	Uganda	Bangladesh	India	Indonesia	Ecuador	Peru
Official work	21.3	53.5	33.5	18.7	24.5	12.7
Sick	14.5	9.5	6.1	13.0	12.9	9.3
Authorized leave	19.3	32.8	27.3	23.6	9.9	13.9
Collect salary	--	--	1.2	--	--	2.3
Left early/arriving late	19.3	2.2	4.9	12.7	9.3	2.3
Other reasons	4.0	--	--	3.7	1.1	8.1
Unauthorized absence	21.7	1.5	27.3	28.2	42.3	51.7
<i>Total Absence</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

Note: Table gives the share of total absences for which each of the listed reasons was given by the facility director or other respondent.

Concentration of absence

The choice of policies to address absence may depend on whether or not absence is concentrated among a small number of providers. With few exceptions, absences seem fairly spread out among providers in the countries examined here (Table 4). That is, in most countries the distribution of absences appears consistent with an underlying distribution in which each provider

has the same probability of absence. Ecuador is the one glaring exception: there, contrary to the uniform-probability model, the number of teachers with two absences exceeds the number with one absence, suggesting a substantial concentration of absence in certain teachers.

Table 4
Distribution of absences among providers (in %)

(% of providers in each category)

	Number of times absent in 2 visits			
	0	1	2	
Primary-school teachers:				
Bangladesh	73.4	23.5	3.2	
Ecuador	82.8	6.9	10.4	
Indonesia	67.7	27.5	4.8	
Peru	81.0	17.3	1.7	
Uganda	63.0	29.6	7.4	
PHC medical workers				
Indonesia	46.1	41.0	12.9	
Peru	56.4	33.5	10.1	
Uganda	52.0	38.0	10.0	
	Number of times absent in 3 visits			
	0	1	2	3
Primary-school teachers				
India	49.1	32.7	13.5	4.8
PHC medical workers				
India	35.7	31.9	20.8	11.6

Note: The table gives the distribution of absences for each type of provider in each country. For example, it shows that during 2 survey visits, 73.4% of teachers in Bangladesh primary schools were never absent; 23.5% were absent once; and 3.2% were absent during both visits.

But these inferences are informal, rather than being based on rigorous modeling of the underlying distributions. Glewwe, Ilias, and Kremer (2004) offer a more formal treatment of this issue in their examination of the distribution of absences among primary school teachers in Kenya. The authors consider the empirical distribution of absences, and also calibrate two structural models of absences to correct for the additional dispersion in absence rates across teachers that is created by sampling error.¹⁵ Both models yield similar results: although a few teachers are rarely present, the majority of absences appear to be due to those who attend between 50 percent and 80 percent of

¹⁵ For technical details on calibration of these models, see Glewwe, Ilias, and Kremer (2004).

the time, and the median teacher is absent 14 to 19 percent of the time (Glewwe, Ilias, and Kremer 2004). In Kenya, the widespread nature of absences therefore suggests that teachers who are absent frequently may not be violating a social norm. It appears from Table 4 that the same is true of other countries in this survey, with the exception of Ecuador.¹⁶

4. Regression Results: Correlates of Teacher Absence

In this section, we move from analyzing the patterns and characteristics of absence into identifying the individual, school, and district correlates of absence. Given the marked differences between the education and health sectors, we restrict the focus of this analysis to teachers. Table 5 summarizes the findings of five multivariate absence regressions, one for each of the countries listed there.¹⁷ The dependent variable is absence, with the variable being coded as 1 if the provider was absent on a particular visit, and 0 if he or she was present. Therefore a negative coefficient indicates that the independent variable is associated with reduced absence, and indicates the predicted fall in the provider's probability of absence associated with a one-unit increase in the variable (or with an increase from 0 to 1 if it is an indicator variable). All regressions are random-effects OLS regressions, which makes interpretation of the coefficients more straightforward. (Note, however, that probit results are highly consistent with these OLS results.)

Reflecting differences among countries in survey instruments and empirical distributions of variables, there are also minor variations in the definition of variables across countries (for example, a "recent" inspection may be defined as having come in the past two months in one country but in the past six months in another). The regressors in Table 5 are restricted to variables that are relatively likely to be exogenous to the school's absence rate. However, the text below occasionally also discusses results from other regressions, not reported here, that include regressors that could be thought to be partially endogenous.¹⁸

Salaries

One hypothesis for absence is that teachers are paid too little to motivate them to perform well. Because of the potential sensitivity of the issue, our survey did not directly collect information on *salaries* from individual teachers. In the rigid civil-service pay structures of the public education sector, however, salary levels are positively related to the provider's age, experience, and educational background. When these factors are correlated with absence, Table 5 shows that the correlation is a positive one: older and more highly educated teachers actually have higher absence rates. Given that absence is correlated with these variables, it is very likely that better-paid teachers are actually more often absent, suggesting that the root cause of absence may not be low salaries.

¹⁶ It appears that absence may also be somewhat concentrated in India, but it is difficult to compare India with other countries because of the three-visit structure of the Indian survey (see Table 4).

¹⁷ Bangladesh will be included in the next draft of this paper. Preliminary regressions, not completely comparable, do not provide evidence against any of the main conclusions drawn from this section, however.

¹⁸ Reported results are all from regressions that include state, region, or district effects. (These variables are generally significant and are not reported.) Controlling for regional effects captures a wide variety of institutional structures, administrative, and political constraints, cultural differences, and sometimes even policy effects, as well as a host of other possible unobservable factors.

Table 5
Correlates of Teacher Absence (Random-effects OLS)

Dependent variable = 1 if teacher is absent, 0 if teacher is present

	Ecuador	India	Indonesia	Peru	Uganda
<i>Individual factors</i>					
Male	-0.0042 (0.0166)	0.0254 (0.0055)***	0.0035 (0.0206)	0.0251 (0.0198)	-0.018 (0.021)
Age	-0.0049 (0.0063)	0.0044 (0.0023)*	0.0237** (0.0111)	-0.0004 (0.0087)	0.006 (0.01)
Age squared	0.0001 (0.0001)	-0.0001 (0.0000)*	-0.0003** (0.0001)	-0.0000 (0.0001)	0.000 (0.00)
Tenure at school	0.0009 (0.0028)	-0.0013 (0.0010)	0.0018 (0.0042)	0.0026 (0.0038)	-0.007 (0.006)
Tenure at school squared	-0.0000 (0.0001)	0.0000 (0.0000)	-0.0001 (0.0002)	-0.0000 (0.0002)	0.000 (0.00)
Married	0.0060 (0.0188)	-0.0032 (0.0081)	0.0284 (0.0431)	0.0048 (0.0241)	0.063 (0.031)**
Parent	0.0020 (0.0236)	-0.0205 (0.0058)	-0.0175 (0.0420)	0.0035 (0.0298)	-0.037 (0.034)
High school graduate	0.0349 (0.0306)	-0.0009 (0.0068)	0.1779*** (0.0429)	0.0000 (0.0000)	0.355 (0.092)***
University (post-secondary) graduate	0.0004 (0.0244)	0.0099 (0.0068)	0.1514*** (0.0502)	0.0018 (0.0317)	0.435 (0.087)***
Graduate of teacher-training school or college	0.0442 (0.0251)	0.0073 (0.0086)	-0.0633 (0.0662)	-0.0740 (0.0412)*	-0.190 (0.025)***
Teacher is head teacher	0.0563 (0.0458)	0.0499 (0.0068)***	0.0372 (0.0405)	0.0907 (0.0492)*	0.037 (0.048)
Teacher born in the district of the school	-0.0209 (0.0168)	-0.0084 (0.0059)	-0.0246 (0.0204)	0.0060 (0.0195)	-0.009 (0.023)
Contract teacher (i.e., non-civil servant)	0.0782** (0.0355)	-0.0033 (0.0122)	0.1298** (0.0506)	0.0381 (0.0316)	<i>na</i>
Union: Teacher is union member	0.0280 (0.0191)	0.0089 (0.0062)	0.0036 (0.0442)	0.0034 (0.0195)	-0.006 (0.028)
Training: Teacher has received recent training (past 12 months)	0.0905 (0.0575)	0.0040 (0.0060)	-0.0073 (0.0338)	0.1357 (0.1188)	-0.063 (0.023)***
Training: Teacher received earlier training (before past 12 months)	0.1149* (0.0602)	0.0002 (0.0079)	-0.0368 (0.0322)	0.1092 (0.1198)	-0.056 (0.033)*
<i>School, community, and district factors</i>					
Inspections: Share of schools in district with recent inspections	-0.0115 (0.0768)	0.0049 (0.0162)	0.1654 (0.1474)	0.0063 (0.0415)	0.207 (0.195)
Inspections: School is near Ministry of Education office	-0.1634*** (0.0325)	-0.0169 (0.0056)***	-0.0445* (0.0275)	0.0114 (0.0265)	-0.019 (0.038)
PTA: Share of schools in district with recent PTA meetings	-0.3505*** (0.1302)	-0.0123 (0.0160)	0.3611** (0.1469)	0.0708 (0.0520)	0.010 (0.227)

Table 5: Correlates of Teacher Absence (CONTINUED)

	Ecuador	India	Indonesia	Peru	Uganda
<i>School, community, and district factors (continued)</i>					
Literacy rate of fathers of 4th-grade students (school-level)	0.3542** (0.1536)	0.0000 (0.0121)	-0.3485*** (0.1268)	0.0319 (0.0848)	-0.103 (0.178)
Literacy rate of mothers of 4th-grade students (school-level)	-0.4044*** (0.1240)	-0.0537 (0.0125)***	0.1176 (0.0952)	-0.0163 (0.0674)	0.234 (0.138)*
Literacy rate of fathers of 4th-grade students (district-level)	-0.5422** (0.2473)	0.0563 (0.0319)*	-0.1898 (2.0274)	-0.1092 (0.2401)	-1.475 (1.425)
Literacy rate of mothers of 4th-grade students (district-level)	0.6950*** (0.1887)	-0.1241 (0.0388)***	-0.4245 (0.5968)	0.0270 (0.1454)	2.205 (1.378)
Infrastructure: School has toilet	-0.1446* (0.0755)	-0.0095 (0.0055)*	-0.0387 (0.0470)	-0.2360*** (0.0773)	0.262 (0.106)**
Infrastructure: School has drinkable water	0.0020 (0.0408)	-0.0384 (0.0055)***	-0.0887** (0.0414)	-0.0127 (0.0370)	0.047 (0.025)*
Infrastructure: Index of other infrastructure	-0.0110 (0.0135)	-0.0174 (0.0031)***	-0.0011 (0.0080)	-0.0101 (0.0084)	-0.025 (0.023)
Union: Unionization rate of teachers in district	0.5748** (0.2313)	0.0135 (0.0183)	0.0183 (0.4861)	0.0178 (0.0795)	0.405 (0.503)
School practices multigrade teaching	-0.0869** (0.0401)	-0.0059 (0.0056)	0.1590* (0.0937)	0.0617 (0.0395)	-0.137 (0.097)
School is near paved road	0.1145** (0.0545)	-0.0094 (0.0057)*	-0.0143 (0.0499)	-0.0376 (0.0456)	0.003 (0.029)
Urban school	0.0814** (0.0352)	-0.0015 (0.0062)	0.0225 (0.0277)	0.0119 (0.0364)	-0.050 (0.030)*
Pupil-teacher ratio of the school	-0.0033** (0.0016)	-0.0003 (0.0001)**	0.0002 (0.0014)	-0.0002 (0.0009)	0.001 (0.001)**
<i>Survey factors</i>					
Dummy for second round of observations	-0.0707*** (0.0112)	-0.0241 (0.0055)***	0.0113 (0.0183)	-0.0183 (0.0180)	-0.047 (0.024)*
Dummy for third round of observations	<i>na</i>	-0.0225 (0.0055)***	<i>na</i>	<i>na</i>	<i>na</i>
Constant	0.0704 (0.3249)	0.4182 (0.0540)***	0.2920 (1.7162)	0.3181 (0.2806)	-0.458 (1.182)
Observations	1160	32187	1764	1166	1621
Number of teacher_ID	593	11160	934	661	884

Notes:

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors in parentheses

na = Not applicable

Regional, provincial, or state dummies were also included; other variables in some of the regressions include a school-lunch-program dummy, a variable for the number of days since the start of the survey round, and an indicator for missing data.

Monitoring and discipline

One reason that salaries are not negatively correlated with absence may be that absent teachers face almost no consequences.¹⁹ For instance, we found that in nearly 3000 Indian government-run schools, only one head-teacher had ever fired a teacher for repeated absence. If their presence and performance are not monitored, then they will receive the same salary whether or not they attend school. And in fact, country case studies suggest that inspections are often infrequent and are viewed as toothless by education experts (Alcázar et al. 2004; Kremer et al. 2004; Rogers et al. 2004).

Nevertheless, the regression results show that monitoring may be associated with reduced absence. One type of monitoring is *administrative oversight* by Ministry of Education officials. We examine two measures of this administrative monitoring: the frequency of inspection visits in the district, and the proximity to the nearest office of the relevant ministry controlling for other measures of remoteness. Facility-specific inspections variable is likely to be somewhat endogenous, because “bad” schools are probably more likely to get inspected. To reduce the likelihood of endogeneity problems, we replace the school-level inspection dummy variable with the average number of schools inspected in recent months (excluding the school itself).²⁰ This measure is not significant in any of the countries, but the second proxy—proximity to the ministry office—turns out to be a relatively robust correlate. In three of the six countries, schools that are closer to a Ministry of Education have lower teacher absence, even after controlling for proximity to a paved road; in no country is the reverse true. Of course, proximity to the ministry could proxy for other types of contract with the ministry, beyond inspections. For this reason, it is probably more justifiable to think of this variable as capturing broader administrative oversight and contact with the ministry, which might improve performance through various channels.

An alternative to administrative monitoring is informal monitoring by the community around the school. An active local *parent-teacher association* or school committee may provide a vehicle for this. Because earlier regressions show that the mere existence of a PTA does not predict absence, the regressions in Table 5 include a proxy for the activity level of the PTA: the share of sample schools in the district whose PTA has met recently. But this variable is not robustly significant with either a positive or negative sign.

Another variable reflecting the community’s ability to monitor teachers may be the average *level of education in the community*. More educated parents may be better informed about the quality of schooling and teacher performance, and may also have more power to force quality improvements. Using data collected from a random sample of fourth-graders in each school, we are able to compute a parental literacy rate for the school. We include both school- and district-level measures of fathers’ and mothers’ literacy, and find ambiguous results. Literacy appears to be an important

¹⁹ The level of the salary would matter if an efficiency wage model applied here, because the possibility of losing a job with a ‘premium’ salary would induce attendance.

²⁰ The definition of “recent” varies by country, as noted above, but is generally within the past two to six months.

predictor, but the direction of the effects is not consistent across countries, nor even across fathers and mothers.²¹

The regression results are consistent with a monitoring and discipline story in another respect. To the extent that individual characteristics matter, it appears that *more powerful teachers*—those who are least likely to be monitored and disciplined effectively—are the most absent. Not only are older and better-educated teachers more absent in several countries, but head teachers are also more absent: in all six countries the point estimate on the head-teacher dummy is positive, and in two it is statistically significant and large in magnitude (5 to 9 percentage points). And while the coefficient on gender is significant only in India, the direction is consistent with a power story: male teachers are more likely to be absent.

Working conditions

Teachers may also be motivated by the working conditions at the school. Unlike salary (at least without monitoring), working conditions provide a daily incentive or disincentive for attendance. One element of working conditions is the quality of the school's *infrastructure*. Table 5 includes three variables measuring infrastructure quality: dummies measuring the availability of a toilet (or teachers' toilet, in India) and availability of drinkable water, and a country-specific index capturing some other elements of infrastructure. In four of the six countries, at least one of these variables is significantly negatively correlated with absence, suggesting that poor infrastructure may be a disincentive to attending work.

A second potential element of working conditions is the *remoteness* of the schools: teachers often view remote rural areas as undesirable, so much so that governments often feel compelled to provide a rural salary premium. And indeed, in several countries, rural schools have higher mean absence rates than do urban ones. But after controlling for specific characteristics of rural schools, such as poor infrastructure, there is no general positive correlation between remoteness and absence. In Ecuador, rural schools and those farther from a paved road actually have much lower absence rates than more remote schools, and only in India is there a (very small) correlation between remoteness from a road and absence rates.²²

A third element of working conditions is *multigrade teaching*—that is, when teachers have children from multiple grades in the same classroom. Unless teachers are well trained to cope with it, the challenge of multigrade teaching can be frustrating for them (Little 1995; UNESCO/APEID 1989). Rather than simply relying on the school director's report of whether the school engages in multigrade teaching—which may be endogenous to teacher absence—we define an “actual multigrade teaching” dummy that takes a value of 1 if the number of teachers is less than the

²¹ This lack of a consistent result may stem from the collinearity of the various literacy measures. To avoid this problem, the next revision of this paper will use a combined school-level parental education variable. When we have done this in country-level analyses, the results suggest that higher parental education may be associated with lower absence, as hypothesized.

²² While proximity to a road may make the school a more desirable posting, roads could have an offsetting effect, if they make it easier for providers to leave for at least part of the day or to travel to urban areas (Chaudhury and Hammer 2003).

number of grades at the school. Although bivariate calculations tends to show multigrade teaching as being correlated with absence, in a multivariate setting there is no robust relationship.

Finally, having too many pupils might deter teachers from attending. But higher *pupil-teacher ratios* are associated with higher absence only in Uganda; in Ecuador and India, the reverse is true.

In short, the major element of working conditions that appears to be robustly correlated with absence is the quality of the school's infrastructure.

Intrinsic motivation

The focus on extrinsic incentives, whether pecuniary or non-pecuniary, may be incomplete. Particularly given the lack of monitoring, a teacher's internal motivation might be more important in determining his or her attendance. One possible source (or signal) of professional motivation is whether the teacher has a *degree in education or teacher training*. Table 5 shows that this variable is negatively associated with absence in Peru and Uganda, but positively associated in Ecuador, so it is hard to draw any general conclusions about this variable.

A second possible intrinsic source of motivation is a desire to serve the community. It is sometimes hypothesized that *locally recruited* teachers will be more likely to show up for work, because they feel a connection to the community. Table 5 provides no clear evidence for this hypothesis: although point estimates are generally negative, the coefficient on the dummy variable denoting a teacher "born in the district of the school" is never significant. Similarly, longer tenure at a given school might be thought to improve motivation by deepening the teacher's connection to the community; again, this variable does not enter the regression significantly.

A third factor that could increase intrinsic motivation is *in-service training*. One goal of training is to strengthen teachers' professional motivation—to recharge their batteries—and another is to provide skills that should make teaching more effective and thus more enjoyable. But while having received training is negatively associated with absence in Uganda, the opposite is true in Ecuador, and the variable is not significant in other countries.

These results suggest that, although these proxies are imperfect, it might be difficult to reduce teacher absence by relying heavily on measures to select for or reinforce intrinsic motivation. This is not to say that intrinsic motivation is not important. Indeed, given the absence of effective formal incentives for performance in most educational systems, it is striking that the great majority of primary-school teachers—89 percent of teachers in Peru, for example—do show up for work each day. While pressure from peers within and outside the school may contribute to this diligence, it is reasonable to suspect that intrinsic motivation also matters. Nevertheless, some plausible channels for strengthening that motivation fail to find confirmation in our data.

Contract status

We consider the contract status of the teacher separately, because of the diversity of possible channels through which it may work. Four of the five countries considered in Table 5 make some use of contract teachers in their primary school systems. It has been hypothesized that these contract teachers, whose tenure in the teaching corps is not guaranteed, may be more vulnerable to

discipline and may thus feel a stronger incentive to perform well than do civil-servant teachers. However, contract teachers are much more likely to be absent than other teachers in two of the four countries, and in a third the coefficient is significant in magnitude but is not statistically significant. What might account for this perverse association with contract status? One possibility is that when the salary range is wide enough, salaries do matter: contract teachers are typically paid much less than civil servants, which could reduce their motivation. A second possibility is that contract teachers have lower non-pecuniary motivation: if they feel that the school and the ministry have not made a commitment to them, in the form of guaranteed tenure, then they will reciprocate with lower effort.

Survey observation effects

Finally, Table 5 includes dummies for the second- and (in India) third-round survey visits to schools. The first round might have a warning effect, so that when the survey teams returned to a district for a second round of visits, schools recognized that they were being monitored. If so, they may have taken steps to ensure that teachers were present while surveys continued in the district. There is some evidence for this hypothesis, in both the raw data and the regression results. For example, in Peru, the average teacher absence rate was 12.5 percent in the first round of surveys but just 8.7 percent in the second round. And in the regression results in Table 5, the only significant coefficients on the second- and third-round dummies are negative. Three of the five countries show a significant negative second-round dummy, with the size of the effect ranging from 2.4 to 7.1 percentage points. While not proof, this result suggests that the absence rates reported in Table 1 may be too conservative, if the act of observation by enumerators has artificially lowered the absence rate.

5. Conclusion

This paper has drawn on new nationally representative data to present comparable national estimates of provider absence at primary schools and primary health centers in six countries. National average absence ranges from 11 to 27 percent among primary-school teachers, and from 23 to 40 percent among medical personnel. Moreover, these estimates are conservative in key respects. Most importantly, providers are counted as present if they are found anywhere in the school or clinic, even if they are not delivering services. In India, where the absence rate is 25 percent, enumerators found that fewer than half of the teachers were actually teaching at the time of the teacher observation. Given that absence rates are negatively correlated with rates of teaching activity at the state level, teacher absence is likely to be a symptom of much wider service delivery problems (Kremer et al. 2004). Additionally, there is some evidence that a survey-observation effect could have reduced measured absence rates during the second visits to each school, again leading to an underestimate of absence rates.

Absence rates are generally higher in poorer countries and states, with an additional \$1000 in per-capita income (PPP-adjusted) reducing predicted absence by 2.7 percentage points. Absence generally does not appear to be concentrated among a small number of frequently absent providers, but instead is spread out over most providers, suggesting a general culture of tolerance for absence. Correlates of teacher absence include poor school infrastructure, which suggests that working conditions matter for absence, and distance from the nearest Ministry of Education office, which suggests that administrative monitoring may also be important. There is also some evidence that

education levels in the community matter. By contrast, proxies for intrinsic motivation, community monitoring, and salary levels are not robust predictors of absence.

Especially given the largely cross-sectional nature of this observational study, we could hope only to identify correlates of absence. To firmly establish causality, policymakers and development researchers will need to experiment with alternative approaches. Specific policies, such as improving school infrastructure (for example, by adding teachers' toilets) should be examined through randomized evaluations of their effects. Other interventions that seem worth testing include empowering local institutions like school committees, through training or through granting new powers to them, and implementing demand-side policies, such as merit scholarships or school choice.

It may also be useful to collect data on provider absence on a regular basis. Collecting and disseminating this information may induce various stakeholders at either the national or the community level to address the problem. Collecting such data regularly would not only provide a continuous picture of the state of schools but also provide data that can be used to evaluate various policy interventions.

References

- Alcázar, Lorena, F. Halsey Rogers, Nazmul Chaudhury, Jeffrey Hammer, Michael Kremer, and Karthik Muralidharan. 2004. "Why Are Teachers Absent? Probing Service Delivery in Peruvian Primary Schools." *World Bank and GRADE*.
- Banerjee, Abhijit, Angus Deaton, and Esther Duflo. 2003. "Wealth, Health, and Health Services in Rural Rajasthan." Massachusetts Institute of Technology.
- Begum, Sharifa and Binayak Sen. 1997. "Not Quite Enough: Financial Allocation and the Distribution of Resources in the Health Sector." *Working Paper No. 2, Health/Poverty Interface Study, BIDS/WHO*.
- Chaudhury, Nazmul and Jeffrey S. Hammer. 2003. "Ghost Doctors: Doctor Absenteeism in Bangladeshi Health Centers." *World Bank Policy Research Working Paper 3065*.
- De, A., C. Noronha, and M. Samson. 2000. *Primary Education in Himachal Pradesh: Examining a Success Story*. New Delhi: National Institute of Educational Planning and Administration and Ministry of Human Resource Development, Government of India: *Year 2000 Assessment: Education for All*.
- Glewwe, Paul, Naumann Ilias, and Michael Kremer. 2004. "Teacher Incentives." National Bureau of Economic Research Working Paper 9671.
- Habyarimana, James, Jishnu Das, Stefan Dercon, and Pramila Krishnan. 2004. "Sense and Absence: Absenteeism and Learning in Zambian Schools." World Bank: Washington, DC.
- King, Elizabeth M. and Berk Ozler. 2001. "What's Decentralization Got To Do With Learning? Endogenous School Quality and Student Performance in Nicaragua." World Bank.
- King, Elizabeth M., Peter F. Orazem, and Elizabeth M. Paterno. 1999. "Promotion with and without Learning: Effects on Student Dropout." World Bank: Washington, DC.
- Kremer, Michael, Karthik Muralidharan, Nazmul Chaudhury, Jeffrey Hammer, and F. Halsey Rogers. 2004. "Teacher Absence in India."
- Little, A. 1995. *Multigrade Teaching: A Review of Practice and Research, Serial No. 12*. London: Overseas Development Administration.
- Majumdar, Manabi. 2001. "Educational Opportunities in Rajasthan and Tamilnadu: Despair and Hope.," in *Elementary Education in India: A Grassroots View*. A. Vaidyanathan and P. R. Gopinathan Nair eds, pp. 320-94.
- PROBE Team. 1999. *Public Report on Basic Education in India*. New Delhi: Oxford University Press.

- Rogers, F. Halsey, Jose Roberto Lopez-Calix, Nancy Cordoba, Nazmul Chaudhury, Jeffrey Hammer, Michael Kremer, and Karthik Muralidharan. 2004. "Teacher Absence, Incentives, and Service Delivery in Ecuadorian Primary Education: Results from a New National Survey." World Bank: Washington, DC.
- Sen, Binayak. 1997. "Poverty and Policy," in *Growth or Stagnation: A Review of Bangladesh's Development 1996*. Rehman Shoban ed: Center for Policy Dialogue and the University of Dhaka Press Ltd., pp. 115-60.
- UNESCO/APEID. 1989. *Multigrade Teaching in Single Teacher Primary Schools*. Bangkok: UNESCO Principal Regional Office for Asia and the Pacific.
- World Bank. 2004. *Papua New Guinea: Public Expenditure and Service Delivery (Discussion Draft)*. Washington, DC: World Bank.