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How to Measure Student Absenteeism in Low- and Middle-Income Countries

 David Evans and Amina Mendez Acosta

Abstract

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How to measure student absenteeism in low- and middle-income countries

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Student attendance at school is a necessary condition for learning and for other schooling benefits, yet absenteeism is a significant issue for students in many countries. Policies, programs, and research seeking to reduce absenteeism need to measure it accurately. This article describes seven different methods to measure student absenteeism, all used in at least one of 27 recently published studies in low- and middle-income countries. It also synthesizes evidence on the advantages and disadvantages of different methods, drawing on 17 studies that compare methods. We find that official school attendance records—a relatively cheap, nonintrusive method—often result in similar statistics as unannounced spot checks, but there are enough exceptions that policymakers and researchers may initially need to complement school records with spot checks. Student reports often understate absenteeism, and caregiver reports even more so. We discuss implications for researchers and for policymakers to improve measurement in education systems.

1. Introduction

Education yields a wide range of benefits, from individual returns such as higher earnings and better health to broader societal improvements like economic growth and increased civic engagement (Glewwe et al., 2014; Hanushek & Woessmann, 2008; World Bank, 2018). But students cannot learn or reap other benefits of school participation unless they attend consistently. This review provides guidance on how education systems and researchers can effectively measure student absenteeism to gauge improvement on this important educational outcome.

Specifically, we characterize current practices in the measurement of student absenteeism in low- and middle-income countries by reviewing 27 recent studies in highly cited economics, education, and international development journals. We focus on practices in low- and middle-income countries because strong administrative data systems are less consistently in place in those contexts (Dang et al., 2021). We then present advantages and disadvantages across methods, drawing on 17 studies (some of which are among the 27 above, and some from other journals or with earlier publication dates) that compare multiple methods of measuring absenteeism. Although we draw on the measures of absenteeism from research studies, we discuss implications for policymakers and education systems more broadly in the discussion section.

We identify seven different methods that studies use to measure student absenteeism and discuss implementation details of each method.

The student absenteeism rate is most often defined across the studies as either the share of students missing from the classroom on a given day or as the number of school days a student misses during a given time period. Based on studies that compare methods, we find that school records—a relatively cheap and nonintrusive approach to gather student attendance data—provide comparable estimates to unannounced spot checks (i.e., when inspectors or enumerators arrive at a school without advance notice to check student attendance) in Ghana, Pakistan, and Uganda, slightly different estimates (3 percentage points) in India and Malawi, and a greater discrepancy in Kenya (8 percentage points). Using spot checks to verify the accuracy of school records early in a project may inform the best course. For example, inspectors or enumerators may visit schools unannounced two or three times and compare actual student attendance to what is recorded in the school records. If these are comparable, then school records may be sufficient. If not, then additional training on recordkeeping or realigning incentives so that schools are oriented toward accuracy rather than inflating student attendance numbers may be needed, complemented with occasional unannounced spot checks.

We also find that students tend to understate their absenteeism. Parent-reported absenteeism rates, in turn, are lower than those from either student reports or school records. We discuss additional considerations for measuring student absenteeism, including costs, formulation of questions, seasonality, and chronic absenteeism.

This review focuses on the demand side of education. It complements

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literature on the supply side, documenting levels of teacher absenteeism and providing guidance on how to measure it effectively (Bold et al., 2017; Chaudhury et al., 2006; Gatti et al., 2021; Rogers & Koziol, 2011). This paper also complements the literature focused on measuring absenteeism from specific causes (e.g., Benschaul-Tolonen et al. 2020 on menstruation-related absenteeism) and efforts to better measure absenteeism in high-income countries (Keppens et al. 2019).

2. Motivation¹

2.1. The relationship between student absenteeism and educational outcomes

The inverse association between student absenteeism and measures of student learning is well documented (Arbour et al., 2016; Balakrishnan & Tsaneva, 2021; Kumar & Choudhury, 2021; Mejia & Filus, 2018; Miguel & Kremer, 2004).² While this relationship is common across many studies, it is not universal (Banerji & Mathur, 2021), suggesting that the link between absenteeism and academic performance may be at least partly dependent on other factors such as instructional quality. In some cases, student absenteeism may be a response to low-quality instruction or other negative aspects of the school environment (like school violence). We focus on academic learning outcomes above because they are commonly measured, but other benefits of schooling (e.g., socioemotional skills) likely also require regular attendance.³

It is intuitive that an association between absenteeism and student outcomes such as learning could be causal (i.e., students attend school and subsequently learn while there), but it is also easy to see how other factors—like household poverty, under-resourced schools, teacher absenteeism, or generally low teaching quality—could affect both student absenteeism and student learning. For example, students from richer households may be more likely to attend school and at the same time have better access to complementary educational inputs, like tutoring; in this case, the access to tutoring may drive better learning outcomes, not the school attendance. In Kenya, higher school attendance is associated with substantively higher test scores, but a randomly allocated intervention that boosted school attendance did not boost student test scores (Miguel & Kremer, 2004). While attendance may not be a sufficient condition to accrue the benefits of education, it is likely a necessary one.

2.2. The challenge of student absenteeism in low- and middle-income countries

Despite its importance, student absenteeism continues to be a challenge in many countries.⁴ Our analysis of survey data from eight African countries shows that student absenteeism rates (as reported by teachers during enumerator visits to classrooms) range from 5% in Morocco to

56% in Mozambique (Fig. 1). These measures are taken during visits that were announced in advance, so they may be underestimates. A study in one district of Kenya (Busia) found student absenteeism of almost 20% (Evans & Ngatia, 2021). A study in rural India identified student absenteeism of 28% across states, with Bihar state—for example—reporting absenteeism of 43% (ASER Centre, 2019). A recent study in urban India (Delhi) found student absenteeism of 26% (Singh, 2022).

With students in many settings missing one out of every two, four, or five days of school—per our analysis in Fig. 1—low levels of learning are unsurprising. With such high levels of student absenteeism, there may well be limits on how large an impact other, currently popular interventions—such as improving the quality of pedagogy (Angrist et al., 2020)—are able to have.⁵ Student absenteeism, especially chronic absenteeism, may also be an early warning for students who are at risk of dropping out (UNICEF, 2016). High average absenteeism at the school level may likewise be a warning to education officials that those schools face distinct challenges, including low instructional quality, transportation challenges, or competing demands on children's time. Thus, the accurate measurement of and effective action in response to student absenteeism are urgent priorities for education systems seeking to improve the quality of learning. Yet many systems do not centrally gather data on student absenteeism: for example, our analysis of a sample of 27 Education Management Information Systems (EMIS) in low- and middle-income countries, only eight included data on student attendance (Appendix Table A1).⁶

3. Methods

3.1. Search strategy for Sample 1—recent studies that measure absenteeism

For this review, we constructed two samples. Sample 1 includes recent studies that measure student absenteeism. The purpose of this sample is to characterize the range of methods currently in use to measure student absenteeism. To construct Sample 1, we searched for studies that were published in 2015 or later in 20 highly cited economics, education, or development journals and that measure and report absenteeism rates for students in low and middle income countries.⁷ We used the search terms “(student OR pupil OR school) AND (absenteeism OR attendance OR participation)” restricted to the title, keywords, and abstract of the papers in each journal's database. We first screened based on the title and the abstract and eliminated papers that either do not mention student absenteeism, attendance or participation, or are not situated in low- and middle-income countries. We then used the full text to identify papers that do report student absenteeism, and encoded each paper's details (authors, year, country of interest), the methods used in measuring student absenteeism, whether the paper cross-validates across different methods, and the result of the

¹ In this section, we draw on a wider array of literature than that captured in our formal review in order to motivate and characterize the challenge of absenteeism. We do this because our review focuses on the measurement of absenteeism specifically. In the cases that this section includes our own analysis, we state this explicitly

² While this review focuses on low- and middle-income countries, the link between student absenteeism and school performance is also documented in high-income countries (Arulampalam et al., 2012; Elsayed et al., 2022; García & Weiss, 2018; Klein et al., 2022; Liu et al., 2021).

³ Gottfried & Ansari (2022) show a negative association between student absences and the development of executive function.

⁴ Student absenteeism is also a concern in some high-income countries. In the wake of a major education reform in the United States in 2015, states had to choose five measures of school performance, four on academic achievement and one other measure of school success. Seventy-two percent of states used chronic student absenteeism as their fifth indicator (Jordan & Miller, 2017).

⁵ Improved pedagogy and student attendance are likely not independent, so investments in improved pedagogy may increase student attendance, increasing the potential impact of pedagogical innovations.

⁶ Most schools likely do mark student attendance each day. Others may aggregate data but not in the EMIS; the availability of the data in the EMIS is just one suggestive indicator as to whether the data are available for use at the system level.

⁷ In alphabetical order, these journals are *American Economic Journal: Applied Economics*, *American Economic Review*, *Comparative Education Review*, *Compare: A Journal of Comparative and International Education*, *Econometrica*, *Economics of Education Review*, *Economic Development and Cultural Change*, *Education Economics*, *Education Finance and Policy*, *Educational Evaluation and Policy Analysis*, *International Journal of Educational Development*, *International Journal of Educational Research*, *Journal of Development Economics*, *Journal of Human Resources*, *Journal of Political Economy*, *Journal of Public Economics*, *Quarterly Journal of Economics*, *Review of Economic Studies*, *The World Bank Economic Review*, and *World Development*.

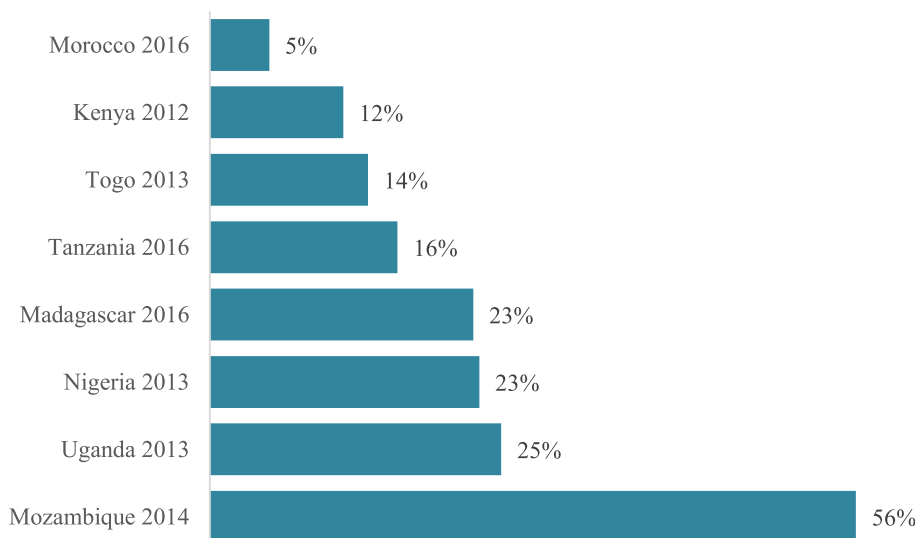


Fig. 1. Student absenteeism rates in several countries in Africa, as recorded during scheduled visits. *Source:* Authors’ construction based on the Service Delivery Indicators data (World Bank Microdata Library, 2021). *Note:* The Service Delivery Indicators are nationally representative cross-sectional surveys on service delivery performance in education and health facilities across several countries in Africa (Gatti et al., 2021). The absenteeism rate is computed by the number of absent students at the time of enumerator visit (as reported by the teacher) divided by the number of enrolled students in the class. Rates are aggregated at the country level using school-level weights.

comparison if it does. We also searched for existing reviews on this topic.⁸

We include both studies that directly measure student absenteeism (i.e., researchers were directly involved in the data gathering process) and studies that analyze existing surveys, so long as those studies identify the method used for measuring absenteeism. We also limited our sample to studies that report absenteeism measures for primary or secondary schooling and dropped studies on students in post-secondary and beyond, since attendance expectations may be different at higher levels of education. In total, we reviewed 674 papers that came up in the search, screened the full text of 81 papers that mentioned absenteeism, attendance, or participation in their title and abstract, and identified 27 studies that measure and report student absenteeism. Table 1 characterizes our search process, and Appendix Table A2 lists the studies in

Table 1
Sample of studies and their description.

Description	Number of studies
SEARCH FOR SAMPLE 1: RECENT, PUBLISHED STUDIES THAT MEASURE ABSENTEEISM	
Total studies identified in search	674 studies
Subset of studies that mention absenteeism, attendance, or participation in title or abstract	81 studies
Subset of total recent studies that measure absenteeism	27 studies
SEARCH FOR SAMPLE 2: STUDIES THAT COMPARE METHODS TO MEASURE ABSENTEEISM	
Anchor studies known to the authors that cross-validate different methods of measuring absenteeism	5 studies
Studies that cite or are cited by those anchor studies	7 studies
Studies from Sample 1 that also compare methods of measuring absenteeism	5 studies
Total studies that compare methods	17 studies
Total number of distinct studies from Sample 1 and Sample 2	39 studies

Notes: The search for Sample 1 was carried out in 20 economics, education, or development journals (listed in Footnote 7 of the paper). Appendix Table A2 includes the full list of studies in Sample 1. Appendix Table A3 includes the full list of studies in Sample 2 and identifies the five anchor studies.

⁸ J-PAL (2017) examines how to boost school participation, which is a measure of student attendance unconditional on enrollment (i.e., a composite measure of enrollment and attendance). Our focus in this review is on student attendance conditional on enrollment.

Sample 1 together with details on how they captured student absenteeism.

3.2. Search for Sample 2—studies that compare methods of measuring absenteeism

The purpose of Sample 2 is to review evidence on the relative performance of different measures of absenteeism. Thus, Sample 2 includes studies that explicitly compare multiple methods. Sample 2 has three components. First, we drew on five anchor studies known to the authors that cross-validate different methods of measuring absenteeism (Appendix Table A3). Second, we reviewed studies that are cited in those anchor studies and studies that cite those anchor studies. We allowed a longer timeframe for these papers, as Sample 1 (studies that measure absenteeism—see Section 3.1 above) seeks to characterize current practice, whereas comparing differences across methods (this section) may be less time sensitive. As such, we limited this search to papers published in 2000 or later. That citation crawl yielded seven relevant papers. Third, while we were conducting the search for studies for Sample 1 (described in Section 3.1), we found five studies that compare methods of measuring absenteeism, so we included them in Sample 2. (Those are already included in the total for Sample 1.) Taking all these together, for Sample 2 we identified five anchor papers, plus the seven papers either cited by those papers or that cite those papers, plus the five qualifying papers that were identified in the Search for Sample 1, for a total of 17 studies that cross-validate absenteeism across different methods. We list each of these studies and summarize their findings in Appendix Table A3.

To summarize, we identify 27 studies that report student absenteeism in recently published articles (Sample 1), and we identify 17 studies that compare methods of measuring absenteeism (Sample 2). Because there is overlap between these two samples, our total sample includes 39 studies (see Table 1 for the summary of the search methods and the resulting sample). In our narrative discussion of our findings, we occasionally complement that sample with other relevant studies that provide insight.

4. Results

In this section, we first outline the ways of measuring student absenteeism employed in the studies in our sample (Section 4.1). We provide examples of how different studies in different contexts have applied these measures. We then review studies that explicitly compare measurement methods and use that to summarize advantages and

disadvantages across methods (Section 4.2) and discuss costs associated with different methods (Section 4.3). We discuss methods that studies have used to provide context to simple measures of student absenteeism, including the reasons for absenteeism (Section 4.4), and other issues in measuring absenteeism (Section 4.5).

4.1. How to measure student absenteeism

Among the methods reported in the 27 recently published studies we found, we identified 7 ways of measuring absenteeism. These include (i) using school records (8 studies), (ii) caregiver or parent-reported attendance collected through surveys (8 studies), (iii) student-reported attendance collected through surveys (6 studies), (iv) unannounced spot checks in schools (7 studies), (v) scheduled visits to check attendance (3 studies), (vi) biometric records (e.g., fingerprint scanners) (1 study), and (vii) qualitative perceptions from teachers, principals or parents (8 studies).⁹ We discuss each method below, along with the studies that employ them.

4.1.1. Existing school records

School attendance records are often manually collected by teachers as part of their regular classroom routine. Many schools maintain an attendance record for their own monitoring purposes and to fulfill reporting requirements to regional or national government agencies. Using these existing records is one of the cheapest and least intrusive ways to obtain attendance records for a large sample of students and schools over time. One study in Jamaica made use of average annual attendance rates by region and parish provided by the Ministry of Education to evaluate the impact of providing different types of school lunches in primary schools (Jennings-Craig, 2016).¹⁰ Some papers supplement existing school attendance records with unannounced spot checks (King et al., 2016; Kudo et al., 2019; Visaria et al., 2016) or scheduled visits by enumerators or researchers (Humphreys et al., 2015).

4.1.2. Caregiver/parent-reported attendance

Many interventions delivered through the household measure children's school attendance as one of their outcomes, and these studies often rely on parents' or caregivers' reports. For example, an evaluation of a cash transfer program in Malawi defined regular school attendance as a child not missing more than two consecutive weeks of school during the previous 12 months, and a similar evaluation in Zambia defined regular attendance as a child attending five days of school during the week before the interview in their version of the program in Zambia, both as reported by an adult household member (de Hoop et al., 2020). A child fostering program in Jamaica monitors "the number of days a child is sent to school within a four-week period" as reported by the parent or caregiver during an interview (Bose-Duker et al., 2021). Another program, this time a shoe donation drive in El Salvador, requested that mothers fill out a time use survey on behalf of their children for the past 24 hours (or those of the previous Friday if the interview falls on a Monday). The time diary captured whether children attended school or not on that day (Wyduck et al., 2018).

Several studies draw on existing national household surveys—which commonly rely on parent reports—such as the Jamaican Survey of Living Conditions (Bose-Duker et al., 2021), the India Human

Development Survey (Kumar & Choudhury, 2021) or a household-level panel survey collected in Kenya for households with livestock (Mburu, 2017). A sample of other household surveys with absenteeism measures—and what those measures are—is reported in Appendix Table A4.

4.1.3. Student-reported attendance

Another common method is asking students directly about their school attendance during a survey. Some studies ask students to recall the number of days they were absent in a particular time frame—for example, in the past two weeks (Taniguchi, 2015), whether they attended school yesterday, or how many days they attended in the past week (Psaki et al., 2017). Some studies also ask students to describe the frequency of their attendance more generally, such as if they attended all days, missed a day, missed a few days, or missed all days in the previous weeks, asked during an interview conducted at home (Banerji & Mathur, 2021).

4.1.4. Unannounced spot checks

A method used often in studies that focus on absenteeism as a primary outcome is unannounced school visits by enumerators (who are generally not a part of the school system). The existence of the study and the fact that data collection will include a visit is usually communicated beforehand to school authorities, but the precise schedule of the visit is intended as a surprise to avoid teachers and students changing their attendance behavior in anticipation of the visit. Several of the studies we identified collect student attendance during unannounced visits to the schools, including studies on air pollution and academic performance in India (measured with an unspecified number of visits) (Balakrishnan & Tsaneva, 2021), automatic grade promotion in Pakistan (two visits in a year) (King et al., 2016), solar lanterns and academic performance in Bangladesh (three visits in seven months) (Kudo et al., 2019), a reward scheme to boost attendance in non-formal schools in India (six visits over 11 months) (Visaria et al., 2016), and absenteeism and under-participation of school boys in Kenya (one visit) (Muyaka et al., 2021).

4.1.5. Scheduled visits

A smaller number of studies collect and report attendance data through scheduled visits. These tend to be studies where measuring absenteeism rates is not the primary goal. One study in China evaluated the impact of vocational schooling on math and computing skills; it marks students as present, absent, transferred, on leave or dropped-out at the time of the baseline survey (Loyalka et al., 2016). A qualitative study in Nigeria looked at fluctuations in classroom attendance and explored challenges to education access in general. Data were collected through researchers' observations of what students and teachers were doing in a day, in addition to semi-structured interviews with students, teachers, parents or caregivers, and other community respondents (Humphreys et al., 2015).

An analysis of teacher absenteeism demonstrates the risk of measuring absenteeism using scheduled visits: schools may be on their best behavior when expecting a visit. Unsurprisingly, a comparison of teacher absenteeism in scheduled visits versus unscheduled visits shows lower observed absenteeism in scheduled visits in six of eight countries; the difference is significant in five of those six countries (Fig. 2).

4.1.6. Biometric records

Just one study—in India—measured absenteeism by installing fingerprint scanners in tablets that biometrically record and validate students' attendance over several months (Ben Amor et al., 2020). The software aggregated attendance rates and reported students who were chronically absent to education extension workers who would then visit the students at home as part of an intervention to improve attendance. The proportion of chronically absent students fell by 0.02 for each month of exposure to the software, despite initial problems in syncing tablets during registration, scanners not recognizing dirty or injured

⁹ Studies in the economics journals in our sample are most likely to employ caregiver reported attendance (4 studies) or unannounced spot checks (3 studies); studies in the education journals in our sample are most likely to report on perceptions of absenteeism (7 studies) or to use school attendance records (6 studies).

¹⁰ Over a ten-year period, the average attendance in the remote rural regions in the sample ranged from 64 percent to 74 percent. Providing different types of school lunches did not significantly change absenteeism rates on average.

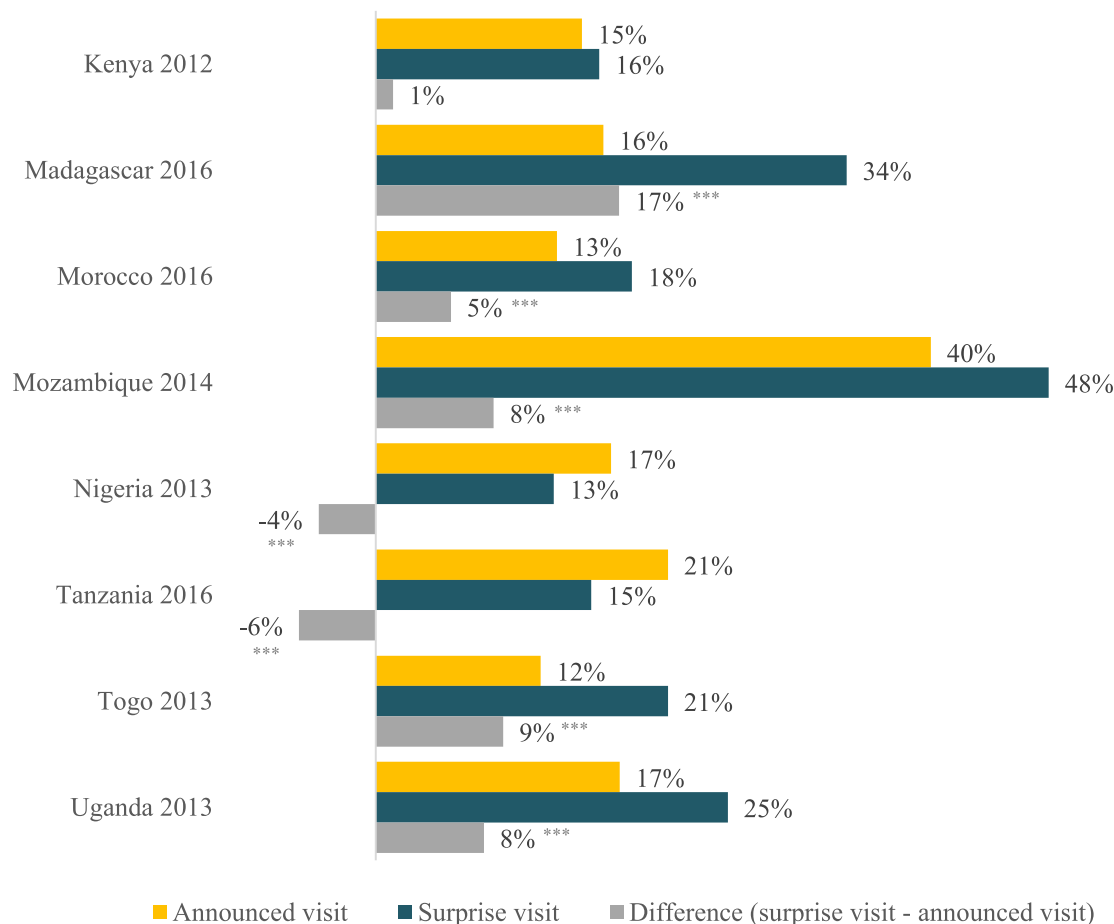


Fig. 2. Teacher absenteeism rates measured during announced and surprise visits in several countries in Africa. *Source:* Authors’ construction based on the Service Delivery Indicators data (World Bank Microdata Library, 2021). Note: The Service Delivery Indicators are nationally representative cross-sectional surveys on service delivery performance in education and health facilities across several countries in Africa (Gatti et al., 2021). The teacher absenteeism rate is the share of sampled teachers absent from the school premises at the time of enumerator visit (World Bank, 2021). Teachers who are in the classroom and teaching, in the classroom and not teaching, and in school even if not in the classroom are all marked as present. The first visit is announced, and the second visit is a surprise spot check. Rates are first computed at the school-level and then aggregated at the country level using school-level weights. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

fingerprints, and students leaving school after signing in.¹¹

4.1.7. Perceptions of absenteeism

Some studies also report qualitative perceptions of school staff and parents. In South Africa for example, teachers and principals report that absenteeism “had improved” because of the school breakfast program (Hochfeld et al., 2016). A study in Mexico looks at the impact of a drug-related turf war on school outcomes and reports the share of principals who feel student absenteeism and tardiness is a frequent or very frequent issue in their school (Jarillo et al., 2016). Some studies report perceptions as a complement to quantitative measures of absenteeism. For example, a study in Kenya on boys’ low participation in schools reports an absenteeism rate of 21% in Kirinyaga and Busia as measured during an unannounced visit, and an interview with teachers confirmed that “the counties had irregular pupils’ school attendance” (Muyaka et al., 2021).

4.2. Relative performance across methods

We identify seven studies that compare school records with

¹¹ This impact is only suggestive since the study does not report statistical significance between the treatment and comparison groups.

enumerator observations, six studies that compare student reports with either enumerator visits or school records, three studies that compare parent reports with either student reports or school records, and one study that compare school records and biometric records. (Fig. 3 summarizes the quantitative results graphically; Appendix Table A3 provides additional detail on the studies, including those that make qualitative comparisons.)

4.2.1. Enumerator observations versus school records

For studies that compare school records with enumerator observations, we observe consistency across the methods in studies in Ghana, Pakistan, and Uganda, modest differences (3 percentage points) in Malawi and India, and a larger difference (8 percentage points) in Kenya.¹² A study in Nigeria reports a substantive but unquantified difference.

To be specific, 75% of sampled students in India were present for the first unannounced spot check conducted six weeks after the school year started, which is close to administrative records that show attendance rates of 78% the first two months of the school year (Visaria et al., 2016).

¹² We report significance tests for all studies that compare methods in Appendix Table A3. Because not all studies test for significance, we focus our discussion here on magnitudes.

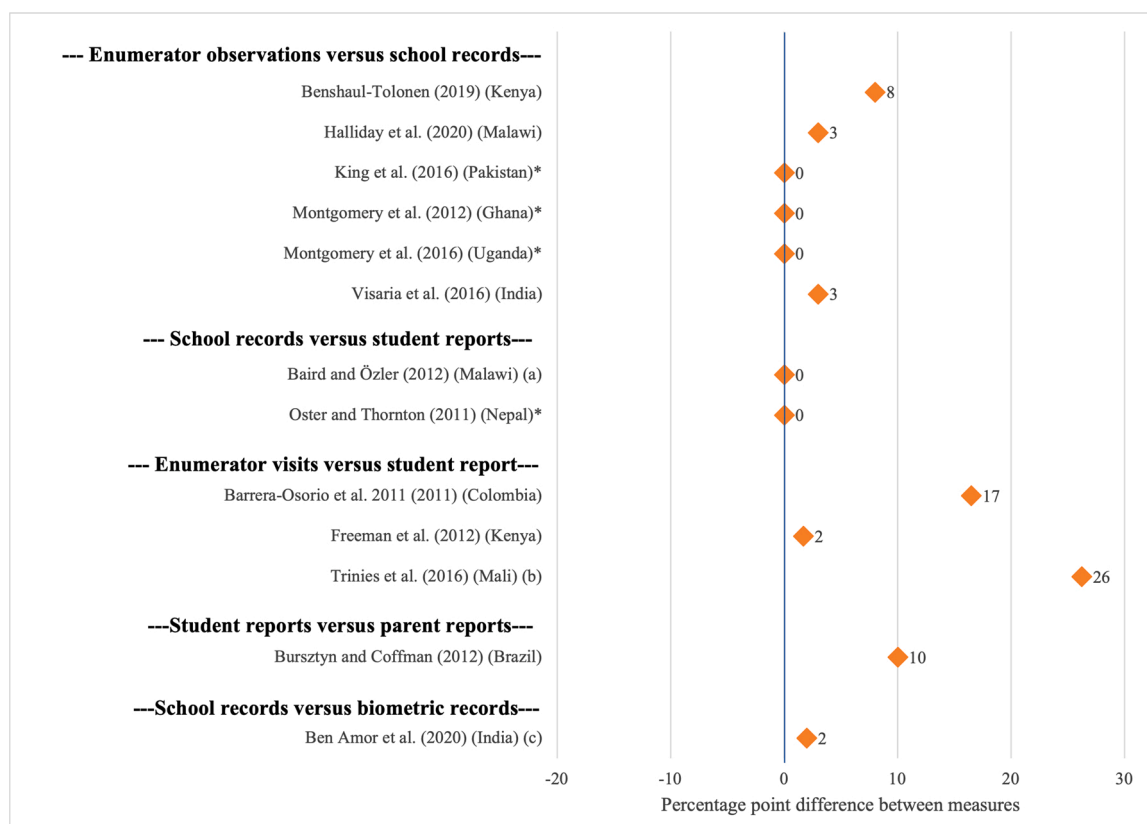


Fig. 3. Gap in measure of student absenteeism across methods (in percentage points).

Source: Authors' construction based on the fourteen studies that compare methods of measuring absenteeism and report point estimates for different methods. **Notes:** We compute the gap between the two estimates for all studies that report quantifiably comparable measures using the percentage point difference in estimates. For example, the difference in point estimates on the first row is 8 percentage points: that is, enumerators observe 8 percentage points higher absenteeism than school records. Studies that report that different measures are consistent are reflected in this figure with a difference of zero between the two measures. These studies are marked with an asterisk (*). Several studies which do not report point estimates but do report qualitative assessments or those that report point estimates but in a way that does not allow for computing percentage point differences, are not included in the figure (all studies that compare methods are listed in Appendix Table A3). They are the following: [Humphreys et al. \(2015\)](#) in Nigeria, [Berlinski et al. \(2016\)](#) in Chile, [Bettinger et al. \(2021\)](#) in Brazil, and [Muyaka et al. \(2021\)](#) in Kenya. (a) Of all students that report being present at least 80% of the time, only 87% have that level of attendance according to school records. We graph this as the absenteeism rate reported by school records being 13% higher than student reported absenteeism (100–87%). (b) Student-reported absence for any day in the last 7 days is 18%. Absenteeism noted in a one-day unannounced visit by enumerator is 8%. To make these numbers comparable, we compute for the absenteeism rate for any day in the last 7 days given the one-day absenteeism rate reported by enumerator visit. Probability (absent at least once in 7 days) = $1 - (1 - 0.08)^7 = 44\%$. We then map the percentage point difference between the two measures in the figure: $44 - 18\% = 26\%$ points. (c) The average difference in days between the two methods is 0.45 days. We divide this by 22 days—the typical number of school days in a month—to yield an estimated difference of 0.02 (or 2 percentage points).

In Malawi, absenteeism rates are slightly higher during spot checks than in daily teacher-recorded attendance, but only in intervention schools in the context of a school-based malaria testing and treatment intervention: 22% vs 21% in control schools and 24% vs 19% in intervention schools ([Halliday et al., 2020](#)).

In Kenya, alternatively, the spot check data show an absenteeism rate of 13% versus the school records' absenteeism rate of 5%. Attendance data for a quarter of the students in the school records is missing in Kenya, but discrepancies between the two methods remained even after excluding missing data ([Benshaul-Tolonen et al., 2019](#)).¹³ In Nigeria, enumerators observed “very low” attendance rates on some days even though the official records show an average absenteeism of one day per student per year. The school records also do not reflect the seasonal fluctuations in absenteeism that researchers observed ([Humphreys et al., 2015](#)).

The reliability of school records may vary for various reasons. One is

¹³ In addition, missing entries in the school records correlate with absences as measured by the spot check, which suggests that school records, at least in this case, systematically understate absenteeism.

technical flaws in record keeping, such as an inability to capture attendance records of transferred students or school registers that are simply missing ([Benshaul-Tolonen et al., 2019](#)). Relatedly, teachers may simply not fill out the full record if there is no incentive to do so ([Humphreys et al., 2015](#)). A second is incentives that may encourage distortions, either when attendance records affect government funding allocations—as is reported in the Nigeria study ([Humphreys et al., 2015](#))—or social desirability bias, wherein schools receiving an intervention inflate attendance—as in the Malawi study ([Halliday et al., 2020](#)). Across the studies in our sample with disparities, financial incentives do not seem to be the principal driver. Beyond the Nigeria study, Malawi and Kenya both have school financing driven by student enrollment rather than attendance ([Githinji, 2021](#); [Nampota & Chiwaula, 2013](#)).¹⁴

¹⁴ We also do not find evidence of attendance feeding into school financing in countries where results are consistent across methods, such as in Ghana and Uganda ([Dawuda, 2011](#); [Nalumansi, 2022](#)). The India program was implemented in schools run by a non-government organization, and evidence there also suggests that financing is not linked to attendance.

On the other hand, interventions may boost the quality of school records, as was the case with a conditional transfer program that included regularly auditing school records and led to increased accuracy (Baird & Özler, 2012). In the context of the Uganda study, a non-government organization provided training to teachers to improve the quality of school records, although the impact of that training was not evaluated (Montgomery et al., 2016). Finally, school records are often collected by teachers as part of their regular classroom routine, and in contexts where teacher absenteeism is an issue (Bold et al., 2017), the quality of school records might suffer.

Because researchers may not know in advance whether school records are accurate or not, it may make sense to compare school records to spot checks in a pilot or in the initial phase of the evaluation (King et al., 2016; Trinies et al., 2016; Visaria et al., 2016). Then, if school records prove accurate, then they may represent a significant cost saving over spot checks. This strategy, however, presumes that school records do not become less accurate over time due to incentives related to the interventions being evaluated.

4.2.2. Student reports versus school records or enumerator visits

For studies that compare student reports with either school records or enumerator visits, we find that student reports—perhaps unsurprisingly—may overstate attendance. Comparing student reports to school records in Malawi shows that five percent of girls who report attending school regularly are identified as not attending school at all over the course of a term in project records (Baird & Özler, 2012). We find a bigger gap in Colombia, where student reported attendance is around 96% while school attendance as measured by enumerators is only 79% (Barrera-Orsorio et al., 2011). In that case, using student reports to estimate results of the intervention would lead to estimates of impact on absenteeism that are up to 50% smaller than if using enumerator reports.¹⁵

In Mali, 18% of the students report being absent at least once in the past seven days, compared to a 7% absenteeism rate during a one-day roll-call (which would translate to an absenteeism of 44%) (Trinies et al., 2016).¹⁶ Similarly, in Kenya, students in some regions reported lower rates of absenteeism than that measured by an enumerator-administered roll call at school (Freeman et al., 2012). However, the student-reported absenteeism is from being asked to recall the number of their absences over the past two weeks, whereas the roll call is just one day, so it is difficult to distinguish whether the reason is social desirability bias (students believe that interviewers want to hear lower rates of absenteeism), recall bias (students forget about absences), or some combination.

The exception to our pattern of student underestimates of absenteeism comes from Nepal, where a study finds comparable measures of attendance based on student time diaries (which may be less subject to recall bias) and school records, although it presents a cautionary tale on the importance of constructing comparisons carefully. Student absenteeism seems higher in the time diaries at first glance because the diaries include school holidays: once adjusted for those, the rates are similar

¹⁵ For example, the treatment that provides incentive upon matriculation at a university (in addition to the existing cash transfer) had an impact of 0.055 percentage points (significant at 99 percent) on attendance when the enumerator-verified attendance is used, but only 0.022 percentage points (significant at 90 percent) when the student-reported attendance is used. Although student-reports tend to over-estimate attendance, because attendance rates are capped at 100 percent, the difference between the treatment and control groups is compressed, resulting to a lower estimate of impact.

¹⁶ If we convert this one-day absenteeism rate of 7 percent to a rate comparable for 7 days, we get 44 percent: Probability of being absent at least once in 7 days = $1 - \text{Probability of perfect attendance} = 1 - (\text{Probability of being present in one day})^7 = 1 - (1 - 0.08)^7$. Thus, the student-reported absenteeism for 7 days of 18 percent is substantially lower than the equivalent absenteeism of 44 percent based on an enumerator visit.

across methods (Oster & Thornton, 2011).

4.2.3. Parent reports versus school records or student reports

Another set of studies compare absenteeism rates as reported by parents against either school records or student-reported rates. All three studies find evidence of gaps in parents' knowledge of their children's attendance behavior. In Chile, 70% of parents of children with low attendance rates report not knowing how many school days their child missed in the past two weeks (Berlinski et al., 2016). Similarly, in Brazil, the correlation between parents' reports of their children's attendance rates and school record attendance rates is only 0.21 (Bettinger et al., 2021). Finally, in another study in Brazil, parents are 10 percentage points less likely than their child to report that the child missed any day in the current school year (Bursztyrn & Coffman, 2012).

4.2.4. Biometric records versus school records

Finally, one study found that manually recorded absenteeism is higher than biometrically recorded absenteeism for all seven months of the intervention by less than a day (the monthly average difference between the two measures is between 0.12 to 0.88 days; the difference is statistically significant for six of the seven months) (Ben Amor et al., 2020). However, some students attended morning sessions but went home after lunch, which meant they were recorded as present by the biometric record even when they did not complete the school day. This could have led to biometric records underestimating absenteeism, although there are no data on how many students skip classes later in the day.

4.3. Cost of measuring absenteeism

None of the papers we reviewed quantify costs associated with the different methods of measuring absenteeism.¹⁷ However, for some of the papers that do comment on relative costs, enumerators' visits, either through unannounced spot checks or scheduled visits, are deemed the most expensive because of the level of monitoring and effort involved (Baird & Özler, 2012; Benschaul-Tolonen et al., 2019). The cost would be even higher if we consider that these visits are best conducted multiple times and across different seasons to avoid seasonality-induced variations in absenteeism. Relying on existing school records and using available national household surveys—whether parent, teacher, or student surveys—would potentially be among the cheapest options. However, in the context of evaluating the impact of a student-level intervention, school records may need to be merged with individual-level information from household surveys, which introduces additional costs, especially when names are reported inconsistently across sources. For policymakers, occasional spot checks may help to boost the quality of school records at a reasonable cost.

The cost of conducting primary data collection with parents, teachers and students would likely fall somewhere between the costs of enumerator visits and pre-existing data, depending on the frequency and scope of the interviews. Biometric records would likely have large set-up costs and so might make the most sense if they are already being implemented as an innovation in the school system, rather than as part of a research project.

One way to cost-effectively employ spot checks is to implement them at the beginning of the data collection to gauge accuracy of existing records and determine the need for continued validation. Baird and

¹⁷ Comparing costs across methods is complicated by the fact that collecting data on student attendance is often combined with the collection of other data. School visits to carry out spot checks may also include head teacher interviews, teacher observation, or student academic assessments. Household surveys that gather data on student attendance usually gather data on many other topics. As such, even if we had total data collection costs, measuring the cost of collecting student attendance data specifically would be complicated.

Özler (2012) initially conducted spot checks to validate teacher-recorded school records in Malawi, found them to be accurate, and discontinued the spot checks because of cost considerations. On the other hand, Benshaul-Tolonen et al. (2019) found significant discrepancies including missing student records when validating school attendance registers in Kenya, and noted the need for ongoing spot checks despite the costs associated.

4.4. Reasons for absenteeism

Beyond measuring rates of absenteeism, several studies employ additional methods to collect data on reasons for absenteeism either from the students, their teachers, or their parents. Some existing national surveys do this. One study conducted follow-up home visits to chronically absent students and interviewed the students about the reasons for their absenteeism (Ben Amor et al., 2020). Several studies take advantage of the methods they are already employing in getting absenteeism rates to gather the reason for absenteeism. One study that collects qualitative perception of teachers on their students' absenteeism also asks a follow-up question for the most common reasons for absenteeism (Ahmadi, 2021). Two studies draw on interviews with adult household members on their children's absenteeism rates and also collect information on the reasons for those absences (Bose-Duker et al., 2021; Mburu, 2017).

Collecting information on reasons for absenteeism face potentially worse reporting biases than levels of absenteeism. Researchers can conduct spot checks to validate absenteeism rates, but it is more challenging to validate the reasons for absenteeism. For example, illness is one of the most often cited reason for students missing classes, but medical or hospital records demonstrating illness will often not be available (or will not exist, in the case of minor illnesses). Asking parents to validate reasons for absences may also not be reliable: in one study in Brazil, parents are much more likely than children to report that the child missed any day in the current school year because of sickness (by 10 percentage points), and they are less likely than their child to report missing any day in the current school year because the child did not want to go (by 7 percentage points), suggesting either a parental information gap on children's reason for absences or different reporting biases between parents and children (Bursztyn & Coffman, 2012).

4.5. Other considerations in measuring absenteeism

4.5.1. Formulation of questions

While the focus of this review to this point has been on different processes to collect data on student absenteeism, the formulation of questions about student absenteeism is also important. This mostly applies to questions posed to caregivers, parents, or students, summarized in Appendix Table A2 and Appendix Table A4.

One design consideration is the recall period: are caregivers or students asked to report their school attendance over the previous five days (Aurino et al., 2020), the previous four weeks (Bose-Duker et al., 2021; Davis, 2018), or a "regular week" (Mejia and Filus, 2018)? While we lack data on this question specific to student absenteeism, other survey literature demonstrates that the recall period has significant impacts (Das et al., 2012; Deaton, 2005), and that the optimal recall period will depend on the frequency of the event (Stull et al., 2009).¹⁸ Asking about a specific week as opposed to a typical or regular week involves less abstraction on the part of the respondent. It may present problems if the previous week were atypical, but if the atypicality is idiosyncratic to individual students, then this may not be a major problem across a large

sample. Surveys can gauge the magnitude of this problem by asking about a specific week and then asking if that week was typical. Likewise, if asking about absence over a longer period of time, then linking it to a highly salient event ("since the beginning of the term") may result in more accurate recall than a calendar period ("the last three months"), particularly if calendar periods run the risk of overlapping with school holidays (Gaskell et al., 2000).

A second design question is the fineness of the measure. Most surveys ask about the number of days attended or absent. A survey that asks for a coarser measure, such as whether a pupil attended at least four days in the last week—if that were the condition for a conditional cash transfer program, for example—would be unable to capture finer variation. If capturing finer detail—e.g., daily attendance—is not costly, one can always reconstruct the coarser measures using the data later.

For policymakers and researchers, school records may be able to record attendance by half-days (i.e., whether a student attended part or all of the day), which may be particularly informative if student attendance for partial days—for example, not returning after a lunch break—is a major issue.¹⁹ For example, in one study in northern Nigeria, "five of the six schools reported pupil numbers dropping off after break when pupils leave in search of food and/or water and some do not return" (Humphreys et al., 2015). At the same time, education systems and researchers will need to be realistic about what teachers will actually do; in the same study, teachers had a second register for the second part of the day, which often remained unmarked.

A third design question involves the framing: does the survey ask about attendance or about absence? Survey research in other areas shows that positive and negative framing can lead to significantly different responses (Dunsch et al., 2018). While our sample includes some surveys that use positive framing (attendance) and others that use negative framing (absence), the majority ask about attendance (Appendix Table A2). There is some evidence from other sectors that more salient events are remembered with greater accuracy (Beegle et al., 2012; Smith & Thomas, 2003), and since school absence is rarer than presence in most cases, it may be easier for respondents to recall. This hypothesis remains to be tested in education.

4.5.2. Seasonality

Several studies note seasonal variation in rates of absenteeism and variation across days of the week. In Afghanistan, teachers report that the student absence rate is usually higher in the summer in rural areas because students miss school to help their parents in harvesting (Ahmadi, 2021). In addition, absenteeism rates are also usually higher during market days (Humphreys et al., 2015). In an impact evaluation with a treatment and a comparison group, one may believe this is not a concern, as the difference would be captured in both groups. But depending on the seasonal timing of surveys of the treatment versus the comparison group, this could result in mismeasured treatment effects across groups. For example, an evaluation of a conditional cash transfer program in Honduras included impacts on student absenteeism. However, during the baseline survey, beneficiary communities were interviewed in a period with low demand for agricultural labor and therefore low student absences, whereas non-beneficiary communities were interviewed in a period with high demand for agricultural labor and high absences. Without correction, this would obviously bias impact estimates (Glewwe & Olinto, 2004). Similarly, it can be tricky to compare absenteeism rates between different geographic locations if they have different agricultural contexts, religious or cultural practices, or school calendars.

Depending on the goal of the survey, it might be necessary to spread

¹⁸ Remarkably, the Indian government once reduced measured poverty by almost 200 million people by shortening the recall period in a national consumption survey from 30 days to 7 days (Deaton 2005). In health, the size of the recall bias was higher among poorer households in India (Das et al., 2012).

¹⁹ Consistent with this, a study on the measurement of student absenteeism in a high-income environment (Belgium) asserts that "in most countries, teachers register school attendance for all students per lesson or per (half) school day" (Keppens et al., 2019).

out data collection considering seasonal variation and religious or cultural observances or, alternatively, consistently measure absenteeism at the same time of the school year. Spreading out visits may also make sense if, for example, district educational administrators use attendance at a certain point in the year to determine school budgets. [Visaria et al. \(2016\)](#) conducted six unannounced visits across the school year. [King et al. \(2016\)](#) scheduled the first surprise visit within the first two months of the school year, and the second within the last two months of the school year. In contexts where school records are reliable, an analysis of school records from the past may provide an indication of how much absenteeism varies across seasons.

4.5.3. Tardiness

Students may be present in the classroom at the time of attendance-taking, but they might have arrived a few hours after school starts or they might leave before classes end. This could contribute to differences between spot checks and school records if they are collected at different points in the school day. One qualitative study in Nigeria observed students throughout the day to record students who were tardy or who left school after the initial attendance checking ([Humphreys et al., 2015](#)). The study reports tardiness due to household chores (a more common problem for girls), income-generating activities (boys might be asked to help in the farm, tend to livestock or open their parents' business before going to school), or attending religious school in the morning.²⁰

4.5.4. Chronic absenteeism

Absenteeism rates captured in a one-time data collection effort—or any effort that gathers classroom level averages rather than student-level data—may mask problems of chronic absenteeism by particular students. The appropriate intervention to reduce absenteeism may be different if a handful of specific students are absent all the time versus if different students are absent each day.

Tracking absenteeism by student—rather than simply relying on classroom or school averages—is one way to evaluate frequent absenteeism by the same group of students. One study in India defined chronic absenteeism as absence of three or more days in a month and recorded daily attendance over seven months to capture students who were particularly vulnerable ([Ben Amor et al., 2020](#)).

In some contexts, it may be difficult to distinguish between chronic absenteeism and dropout or undocumented transfer across schools. There is often no set definition of when a student has dropped out—e.g., after missing one month of school or six months of school or only when they do not enroll the subsequent year. As a result, some studies focus on a composite measure called “school participation,” which merely measures if a student is present at school, without defining whether the student is merely absent or has dropped out ([Evans & Ngatia, 2021](#); [J-PAL Policy Bulletin, 2017](#); [Miguel & Kremer, 2004](#)). If researchers rely on school attendance records, then they should ascertain at what point students are removed from the rolls, as aggressive removal of chronically absent students from the rolls may result in inflated class-level attendance measures.

5. Discussion

Student attendance at school is a necessary condition to achieve many of education's desired benefits. The documented learning losses resulting from school closures during the COVID-19 crisis, even in contexts where virtual learning was available, demonstrate the value of students' physical presence at school ([Lichand et al., 2021](#); [Moscovitz &](#)

[Evans, 2022](#); [Tomasik et al., 2021](#)). As education systems—and the studies and programs that support them—seek to improve a range of educational outcomes, from learning to completion, they will do well to measure attendance to better understand why interventions succeed and why they fail. Researchers and policymakers have a range of potential tools to draw on for measuring student attendance, from existing school records to unannounced spot checks to biometric records.

The consequences of errors in the measurement of student absenteeism depend on its purposes. For education policymakers, class- and school-level averages will be sufficient for evaluating which schools are struggling, but individual accuracy is crucial for reaching out to struggling students and reducing dropout rates. For programs or research projects, individual accuracy will be more important for a cash transfer program conditional on student attendance than for the overall evaluation of an intervention, in which biases may be less of a concern if those biases are equal across intervention and comparison groups. The balance between managing evaluation costs and maintaining accuracy of the data will depend on the quality of existing data, the objectives of the data, and the available budget. But for students to gain both academic and socioemotional skills from school, consistent attendance is essential, and systems will not know if they are achieving it without measuring it.

Our analysis has implications for researchers and for policymakers. For researchers, we highlight that school records are a cheaper source of information than spot checks, and validating the accuracy of existing school records with spot checks at the beginning of a study may help implementers save on costs over time. For parent-, teacher-, or student-reported data, careful choice of the recall period (e.g., absences in the last week versus in the last month), the framing of the question (collecting information on when students are absent versus when they are present) and the granularity of the measure (the exact number of days absent in the past week versus an indicator for whether a student missed any day in the past week) may improve the accuracy and usefulness of the data collected. Similarly, spreading data collection across the year may help counter the seasonality of absences because of agricultural or cultural activities (e.g., harvest months may have higher absences in general). Finally, tracking absenteeism by student rather than by school or classroom averages and varying the time in the day of attendance taking can help measure chronic absenteeism and tardiness.

For policymakers, these findings have a range of implications. We find that in several countries, school records seem to underestimate student absences significantly. Policymakers can complement their school-level recordkeeping with occasional spot checks from school inspectors or other parties to verify the accuracy of school-level attendance data. When researchers approach policymakers to carry out research in schools, policymakers can use spot checks by researchers to verify their own school attendance data. In some cases, as in a study in Uganda, researchers or a non-government organization gathering attendance data may be motivated to provide training in schools to improve recordkeeping ([Montgomery et al., 2016](#)). Policymakers can also take into account that incentives based on attendance may skew local recordkeeping—as documented in Malawi ([Halliday et al., 2020](#)), increasing the need for external verification. For systems to receive accurate data from teachers, those systems would need to incentivize full, regular reporting, rather than the achievement of particular levels of attendance.²¹

Gathering accurate attendance data is only the first step: measurement is a tool to facilitate action. For schools and education systems to act on attendance data, additional steps need to be in place. For example, some schools aggregate daily classroom attendance records to generate profiles for each learner, so they know which are chronically absent and therefore at greater risk of dropout and learning loss. But this

²⁰ While the authors do not report the exact rate of tardiness, they indicate that “many pupils came later to school” and that “in most cases,” it was due to chores, income-generating activities, or attendance at alternative religious schools in the morning ([Humphreys et al., 2015](#)).

²¹ [Neal \(2013\)](#) makes this point in the context of measuring student achievement: efforts to use “one assessment system to pursue two objectives” are likely to generate adverse behavioral consequences on the part of teachers.

does not always take place: a 2007 report (not necessarily reflecting current practice) in a small sample of schools in South Africa documents that just two in three schools use their daily attendance registers to generate profiles for individual pupils, with the goal of tracking attendance systematically (Weideman et al., 2007).

An increasing number of education systems are using electronic systems to track attendance, which facilitates both the generation of pupil profiles and reporting to district and national offices, so that struggling schools can receive additional support. For example, the government of Delhi in India provides teachers in government schools with tablets so that they can mark student attendance each day. That information is updated daily to a central server (Singh, 2022). Other systems have used less costly technology: the South Sudan Schools Attendance Monitoring System had schools send regular attendance reports via mobile phone text messages, along with the submission of paper registers (Crawford, 2016).²² Technological reporting may facilitate aggregation of data, but it will not inherently increase accuracy, so spot checks and other accuracy enhancing interventions will be essential to complement basic attendance reporting. As with any technological intervention, these innovations will likely only work if teachers and school leaders see their value, if resources are in place to maintain the systems, and if the systems are actually used (Evans, 2021). All this data gathering and aggregation is only valuable insofar as systems then use it to facilitate action in support of students, so investment in data gathering should be made together with investment in processes to use those data.

Student attendance at school is the fundamental precondition for the benefits of education. Policymakers can use attendance data to identify children who are struggling (at the school level) and schools that are struggling (at the system level). Researchers can provide support in improving the accuracy of attendance data and in measuring the impact of interventions intended to reduce student absenteeism.

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Declaration of Competing Interest

Authors have no competing interests to declare.

Data availability

This is a review article, so no original data analysis is included.

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²² For details about exactly what information the South Sudan system gathered and how it was able to be reported by text message, see *Girls' Education South Sudan* (2020).

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.econedurev.2023.102454](https://doi.org/10.1016/j.econedurev.2023.102454).

References

- Ahmadi, M. J. (2021). The use of instructional time in early grade reading classrooms: A study in Herat Province of Afghanistan. *International Journal of Educational Development*, 84, Article 102435. <https://doi.org/10.1016/j.ijedudev.2021.102435>
- Angrist, N., Evans, D., Filmer, D., Glennerster, R., Rogers, H., & Sabarwal, S. (2020). *How to improve education outcomes most efficiently? A comparison of 150 interventions using the new learning-adjusted years of schooling metric* [Center for Global Development Working Paper]. <https://www.cgdev.org/publication/how-improve-education-outcomes-most-efficiently-comparison-150-interventions-using-new>.
- Arbour, M., Yoshikawa, H., Willett, J., Weiland, C., Snow, C., Mendive, S., Barata, M. C., & Treviño, E. (2016). Experimental impacts of a preschool intervention in Chile on children's language outcomes: Moderation by student absenteeism. *Journal of Research on Educational Effectiveness*, 9(sup1), 117–149. <https://doi.org/10.1080/19345747.2015.1109013>
- Arulampalam, W., Naylor, R. A., & Smith, J. (2012). Am I missing something? The effects of absence from class on student performance. *Economics of Education Review*, 31(4), 363–375. <https://doi.org/10.1016/j.econedurev.2011.12.002>
- ASER Centre. (2019). *Annual Status of Education Report (Rural) 2018*. ASER Centre.
- Aurino, E., Gelli, A., Adamba, C., Osei-Akoto, L., & Alderman, H. (2020). Food for thought? Experimental evidence on the learning impacts of a large-scale school feeding program. *Journal of Human Resources*, 1019. <https://doi.org/10.3368/jhr.58.3.1019-10515R1>
- Baird, S., & Özler, B. (2012). Examining the reliability of self-reported data on school participation. *Journal of Development Economics*, 98(1), 89–93. <https://doi.org/10.1016/j.jdeveco.2011.05.006>
- Balakrishnan, U., & Tsaneva, M. (2021). Air pollution and academic performance: Evidence from India. *World Development*, 146, Article 105553. <https://doi.org/10.1016/j.worlddev.2021.105553>
- Banerji, M., & Mathur, K. (2021). Understanding school attendance: The missing link in "Schooling for All". *International Journal of Educational Development*, 87, Article 102481. <https://doi.org/10.1016/j.ijedudev.2021.102481>
- Barrera-Osorio, F., Bertrand, M., Linden, L. L., & Perez-Calle, F. (2011). Improving the design of conditional transfer programs: Evidence from a randomized education experiment in Colombia. *American Economic Journal: Applied Economics*, 3(2), 167–195. <https://doi.org/10.1257/app.3.2.167>
- Beegle, K., Carletto, C., & Himelein, K. (2012). Reliability of recall in agricultural data. *Journal of Development Economics*, 98(1), 34–41. <https://doi.org/10.1016/j.jdeveco.2011.09.005>
- Ben Amor, Y., Dowden, J., Borh, K. J., Castro, E., & Goel, N. (2020). The chronic absenteeism assessment project: Using biometrics to evaluate the magnitude of and reasons for student chronic absenteeism in rural India. *International Journal of Educational Development*, 72, Article 102140. <https://doi.org/10.1016/j.ijedudev.2019.102140>
- Benshaul-Tolonen, A., Zulaika, G., Nyothach, E., Oduor, C., Mason, L., Obor, D., Alexander, K. T., Laserson, K. F., & Phillips-Howard, P. (2019). *Pupil absenteeism, menstruation, and mensturation: Evidence from Western Kenya* [CDEP-CGEG Working Paper Series No. 74]. https://anajatolonen.files.wordpress.com/2019/03/cdep_absenteeism.pdf.
- Benshaul-Tolonen, A., Zulaika, G., Sommer, M., & Phillips-Howard, P. A. (2020). Measuring menstruation-related absenteeism among adolescents in low-income countries. In C. Bobel, I. T. Winkler, B. Fahs, K. A. Hasson, E. A. Kissling, & T. A. Roberts (Eds.), *The Palgrave Handbook of Critical Menstruation Studies* (pp. 705–723). Springer. https://doi.org/10.1007/978-981-15-0614-7_52
- Berlinski, S., Busso, M., Dinkelmann, T., & Martinez, C. (2016). *Reducing parent-school information gaps and improving education outcomes: Evidence from high frequency text messaging in Chile*. https://assets.publishing.service.gov.uk/media/58778bfa40f0b60e4c000135/726_Reducing-Parent-School-information-gap_BBDM-Dec2016.pdf.
- Bettinger, E., Cunha, N., Lichand, G., & Madeira, R. (2021). *Are the effects of informational interventions driven by salience?* University of Zurich Working Paper. <https://www.econ.uzh.ch/static/wp/econwp350.pdf>.
- Bold, T., Filmer, D., Martin, G., Molina, E., Stacy, B., Rockmore, C., Svensson, J., & Wane, W. (2017). Enrollment without learning: Teacher effort, knowledge, and skill in primary schools in Africa. *Journal of Economic Perspectives*, 31(4), 185–204. <https://doi.org/10.1257/jep.31.4.185>
- Bose-Duker, T., Henry, M., & Strobl, E. (2021). Child fostering and the educational outcomes of Jamaican children. *International Journal of Educational Development*, 87. <https://doi.org/10.1016/j.ijedudev.2021.102483>
- Bursztyn, L., & Coffman, L. C. (2012). The schooling decision: Family preferences, intergenerational conflict, and moral hazard in the Brazilian Favelas. *Journal of Political Economy*, 120(3), 359–397. <https://doi.org/10.1086/666746>
- Chaudhury, N., Hammer, J., Kremer, M., Muralidharan, K., & Rogers, F. H. (2006). Missing in action: Teacher and health worker absence in developing countries. *Journal of Economic Perspectives*, 20(1), 91–116. <https://doi.org/10.1257/089533006776526058>
- Crawford, L. (2016). *Cash grants for schools and pupils can increase enrolment & attendance despite ongoing conflict: Findings from South Sudan*. Girls' Education South Sudan. <https://www.calpnetwork.org/wp-content/uploads/2020/03/1512717579.Cash-Grants-Impact-on-Enrolment-and-Attendance-1.pdf>.

- Dang, H.-A. H., Pullinger, J., Serajuddin, U., & Stacy, B. (2021). *Statistical performance indicators and index: A new tool to measure country statistical capacity*. World Bank. <https://doi.org/10.1596/1813-9450-9570> [Working Paper].
- Das, J., Hammer, J., & Sánchez-Paramo, C. (2012). The impact of recall periods on reported morbidity and health seeking behavior. *Journal of Development Economics*, 98(1), 76–88. <https://doi.org/10.1016/j.jdeveco.2011.07.001>
- Davis, J. (2018). School enrollment effects in a South-South migration context. *International Journal of Educational Development*, 62, 157–164. <https://doi.org/10.1016/j.ijedudev.2018.03.006>
- Dawuda, M. A. (2011). *The impact of capitation grants on access to primary education in Ghana*. Brandeis University. https://www.researchgate.net/publication/245542624_The_Impact_of_Capitation_Grants_on_Access_to_Primary_Education_in_Ghana.
- de Hoop, J., Groppo, V., Handa, S., & on behalf of the Malawi Social Cash Transfer Program and the Zambia Multiple Category Targeted Program study teams. (2020). Cash transfers, microentrepreneurial activity, and child work: Evidence from Malawi and Zambia. *The World Bank Economic Review*, 34(3), 670–697. <https://doi.org/10.1093/wber/lhz004>
- Deaton, A. (2005). Measuring poverty in a growing world (Or Measuring Growth in a Poor World). *The Review of Economics and Statistics*, 87(1), 1–19.
- Dunsch, F., Evans, D. K., Macis, M., & Wang, Q. (2018). Bias in patient satisfaction surveys: A threat to measuring healthcare quality. *BMJ Global Health*, 3(2), Article e000694. <https://doi.org/10.1136/bmjgh-2017-000694>
- Elsayed, M. A. A., Clerkin, A., Pitsia, V., Aljabri, N., & Al-Harbi, K. (2022). *What explains boys' educational underachievement in the kingdom of Saudi Arabia? [Working Paper]*. World Bank. <https://doi.org/10.1596/1813-9450-9896>
- Evans, D. K. (2021). *Education technology for effective teachers [Brief]*. World Bank. <https://openknowledge.worldbank.org/handle/10986/35079>.
- Evans, D. K., & Ngatia, M. (2021). School uniforms, short-run participation, and long-run outcomes: Evidence from Kenya. *The World Bank Economic Review*, 35(3), 705–719. <https://doi.org/10.1093/wber/lhaa004>
- Freeman, M. C., Greene, L. E., Dreibeilbis, R., Saboori, S., Muga, R., Brumback, B., & Rheingans, R. (2012). Assessing the impact of a school-based water treatment, hygiene and sanitation programme on pupil absence in Nyanza Province, Kenya: A cluster-randomized trial. *Tropical Medicine & International Health*, 17(3), 380–391. <https://doi.org/10.1111/j.1365-3156.2011.02927.x>
- García, E., & Weiss, E. (2018). *Student absenteeism: Who misses school and how missing school matters for performance*. Economic Policy Institute. <https://eric.ed.gov/?id=ED593361>.
- Gaskell, G. D., Wright, D. B., & O'Muircheartaigh, C. A. (2000). Telescoping of landmark events: Implications for survey research. *The Public Opinion Quarterly*, 64(1), 77–89.
- Gatti, R., Andrews, K., Avitabile, C., Conner, R., Sharma, J., & Yi Chang, A. (2021). *The quality of health and education systems across Africa: Evidence from a decade of service delivery indicators surveys*. World Bank. <https://doi.org/10.1596/978-1-4648-1675-8>
- Girls' Education South Sudan. (2020). *How to design and implement a real-time disaggregate data system for education managers in fragile and conflict affected states: Lessons from girls' education south Sudan (GESS)*. <https://girlseducationsouthsudan.org/wp-content/uploads/2020/05/How-To-SSSAMS-PRESENT-1.pdf>.
- Githinji, I. (2021). State releases rules on learner capitation grants, school funds. *People Daily*. <https://www.pd.co.ke/news/state-releases-rules-on-learner-capitation-grants-school-funds-105484/>.
- Glewwe, P., Maiga, E., & Zheng, H. (2014). The contribution of education to economic growth: A review of the evidence, with special attention and an application to sub-Saharan Africa. *World Development*, 59(C), 379–393.
- Glewwe, P., & Olinto, P. (2004). *Final Report for USAID*. https://pdf.usaid.gov/pdf_docs/Pnadt588.pdf.
- Gottfried, M., & Ansari, A. (2022). Classrooms with high rates of absenteeism and individual success: Exploring students' achievement, executive function, and socio-behavioral outcomes. *Early Childhood Research Quarterly*, 59, 215–227. <https://doi.org/10.1016/j.ecresq.2021.11.008>
- Halliday, K. E., Witek-McManus, S. S., Opondo, C., Mtali, A., Allen, E., Bauleni, A., Ndaou, S., Phondiwa, E., Ali, D., Kachigunda, V., Sande, J. H., Jawati, M., Verney, A., Chimuna, T., Melody, D., Moestue, H., Roschnik, N., Brooker, S. J., & Mathanga, D. P. (2020). Impact of school-based malaria case management on school attendance, health and education outcomes: A cluster randomised trial in southern Malawi. *BMJ Global Health*, 5(1), Article e001666. <https://doi.org/10.1136/bmjgh-2019-001666>
- Hanushek, E. A., & Woessmann, L. (2008). The role of cognitive skills in economic development. *Journal of Economic Literature*, 46(3), 607–668. <https://doi.org/10.1257/jel.46.3.607>
- Hochfeld, T., Graham, L., Patel, L., Moodley, J., & Ross, E. (2016). Does school breakfast make a difference? An evaluation of an in-school breakfast programme in South Africa. *International Journal of Educational Development*, 51, 1–9. <https://doi.org/10.1016/j.ijedudev.2016.07.005>
- Humphreys, S., Moses, D., Kaibo, J., & Dunne, M. (2015). Counted in and being out: Fluctuations in primary school and classroom attendance in northern Nigeria. *International Journal of Educational Development*, 44, 134–143. <https://doi.org/10.1016/j.ijedudev.2015.08.004>
- Jarillo, B., Magaloni, B., Franco, E., & Robles, G. (2016). How the Mexican drug war affects kids and schools? Evidence on effects and mechanisms. *International Journal of Educational Development*, 51, 135–146. <https://doi.org/10.1016/j.ijedudev.2016.05.008>
- Jennings-Craig, Z. (2016). Impact of the provision of school lunch on attendance in remote rural Jamaican primary schools. *International Journal of Educational Development*, 46, 74–81. <https://doi.org/10.1016/j.ijedudev.2015.09.006>
- Jordan, P. W., & Miller, R. (2017). *Who's in: Chronic absenteeism under the Every Student Succeeds Act*. FutureEd Georgetown University. https://www.future-ed.org/wp-content/uploads/2017/09/REPORT_Chronic_Absenteeism_final_v5.pdf.
- J-PAL Policy Bulletin. (2017). *Roll call: Getting children into school*. Abdul Latif Jameel Poverty Action Lab. <https://www.povertyactionlab.org/publication/roll-call-getting-children-school>.
- Keppens, G., Spruyt, B., & Dockx, J. (2019). Measuring school absenteeism: Administrative attendance data collected by schools differ from self-reports in systematic ways. *Frontiers in Psychology*, 10, 2623. <https://doi.org/10.3389/fpsyg.2019.02623>
- Keppens, G., Spruyt, B., & Dockx, J. (2019). Measuring School Absenteeism: Administrative Attendance Data Collected by Schools Differ From Self-Reports in Systematic Ways. *Frontiers in Psychology*, 10, 2623. <https://doi.org/10.3389/fpsyg.2019.02623>.
- King, E. M., Orazem, P. F., & Paterno, E. M. (2016). Promotion with and without Learning: Effects on student enrollment and dropout behavior. *The World Bank Economic Review*, 30(3), 580–602. <https://doi.org/10.1093/wber/lhw049>
- Klein, M., Sosu, E. M., & Dare, S. (2022). School absenteeism and academic achievement: Does the reason for absence matter? *AERA Open*, 8. <https://doi.org/10.1177/23328584211071115>, 23328584211071116.
- Kudo, Y., Shonchoy, A. S., & Takahashi, K. (2019). Can solar lanterns improve youth academic performance? Experimental evidence from Bangladesh. *The World Bank Economic Review*, 33(2), 436–460. <https://doi.org/10.1093/wber/lhw073>
- Kumar, D., & Choudhury, P. K. (2021). Do private schools really produce more learning than public schools in India? Accounting for student's school absenteeism and the time spent on homework. *International Journal of Educational Development*, 83, Article 102395. <https://doi.org/10.1016/j.ijedudev.2021.102395>
- Lichand, G., Alberto Doria, C., Leal Neto, O., & Cossi, J. (2021). *The impacts of remote learning in secondary education: Evidence from Brazil during the pandemic (SSRN Scholarly Paper ID 3841775)*. Social Science Research Network. <https://doi.org/10.2139/ssrn.3841775>
- Liu, J., Lee, M., & Gershenson, S. (2021). The short- and long-run impacts of secondary school absences. *Journal of Public Economics*, 199, Article 104441. <https://doi.org/10.1016/j.jpubeco.2021.104441>
- Loyalka, P., Huang, X., Zhang, L., Wei, J., Yi, H., Song, Y., Shi, Y., & Chu, J. (2016). The impact of vocational schooling on human capital development in developing countries: Evidence from China. *The World Bank Economic Review*, 30(1), 143–170. <https://doi.org/10.1093/wber/lhv050>
- Mburu, S. (2017). Effects of livestock herd migration on child schooling in Marsabit District, Kenya. *Compare: A Journal of Comparative and International Education*, 47(4), 545–560. <https://doi.org/10.1080/03057925.2016.1257352>
- Mejía, A., & Filus, A. (2018). Exploring predictors of impact of school-based management in rural Mexico: Do student engagement, teacher attitudes and parent involvement predict better academic outcomes? *International Journal of Educational Research*, 88, 95–108. <https://doi.org/10.1016/j.ijer.2018.01.010>
- Miguel, E., & Kremer, M. (2004). Worms: Identifying impacts on education and health in the presence of treatment externalities. *Econometrica*, 72(1), 159–217. <https://doi.org/10.1111/j.1468-0262.2004.00481.x>
- Montgomery, P., Hennehan, J., Dolan, C., Wu, M., Steinfield, L., & Scott, L. (2016). Menstruation and the cycle of poverty: A cluster quasi-randomised control trial of sanitary pad and puberty education provision in Uganda. *PLOS ONE*, 11(12), Article e0166122. <https://doi.org/10.1371/journal.pone.0166122>
- Moscoviz, L., & Evans, D. K. (2022). *Learning loss and student dropouts during the COVID-19 pandemic: A review of the evidence two years after schools shut down*. <https://www.cgdev.org/publication/learning-loss-and-student-dropouts-during-covid-19-pandemic-review-evidence-two-years>.
- Muyaka, J., Omuse, D. E., & Malenya, F. L. (2021). Manifestations of boys' under participation in education in Kenya: The case of Busia and Kirinyaga counties. *Compare: A Journal of Comparative and International Education*, 0(0), 1–16. <https://doi.org/10.1080/03057925.2021.1877113>
- Nalumansi, D. (2022). Gov't increases school capitation grants, injects more cash in inspection. *News*, 247. <https://news247.co.ug/2022/05/05/govt-increases-school-capitation-grants-injects-more-cash-in-inspection/>.
- Nampota, D. C., & Chiwaula, L. (2013). Exploring the processes and outputs of school grants: The case for direct support to schools in Malawi. *Journal of International Cooperation in Education*, 15(3), 205–220.
- Neal, D. (2013). The consequences of using one assessment system to pursue two objectives. *The Journal of Economic Education*, 44(4), 339–352. <https://doi.org/10.1080/00220485.2013.825112>
- Oster, E., & Thornton, R. (2011). Menstruation, sanitary products, and school attendance: Evidence from a randomized evaluation. *American Economic Journal: Applied Economics*, 3(1), 91–100. <https://doi.org/10.1257/app.3.1.91>
- Psaki, S. R., Mensch, B. S., & Soler-Hampejsek, E. (2017). Associations between violence in school and at home and education outcomes in rural Malawi: A longitudinal analysis. *Comparative Education Review*, 61(2), 354–390. <https://doi.org/10.1086/691117>
- Rogers, H., & Koziol, M. (2011). *Provider absence surveys in education and health: A guidance note*. World Bank. https://olc.worldbank.org/sites/default/files/Provider_Absence_Surveys_in_Education_and_Health_0.pdf.
- Singh, T. P. (2022). *Beyond the haze: Air pollution and student absenteeism - Evidence from India*. <https://doi.org/10.2139/ssrn.3680588> (SSRN Scholarly Paper No. 3680588).
- Smith, J. P., & Thomas, D. (2003). Remembrances of things past: Test-retest reliability of retrospective migration histories. *Journal of the Royal Statistical Society. Series A (Statistics in Society)*, 166(1), 23–49.
- Stull, D. E., Leidy, N. K., Parasuraman, B., & Chassany, O. (2009). Optimal recall periods for patient-reported outcomes: Challenges and potential solutions. *Current Medical*

- Research and Opinion, 25(4), 929–942. <https://doi.org/10.1185/03007990902774765>
- Taniguchi, K. (2015). Determinants of grade repetition in primary school in sub-Saharan Africa: An event history analysis for rural Malawi. *International Journal of Educational Development*, 45, 98–111. <https://doi.org/10.1016/j.ijedudev.2015.09.014>
- Tomasik, M. J., Helbling, L. A., & Moser, U. (2021). Educational gains of in-person vs. distance learning in primary and secondary schools: A natural experiment during the COVID-19 pandemic school closures in Switzerland. *International Journal of Psychology*, 56(4), 566–576. <https://doi.org/10.1002/ijop.12728>
- Trinies, V., Garn, J. V., Chang, H. H., & Freeman, M. C. (2016). The impact of a school-based water, sanitation, and hygiene program on absenteeism, diarrhea, and respiratory infection: A matched-control trial in Mali. *The American Journal of Tropical Medicine and Hygiene*, 94(6), 1418–1425. <https://doi.org/10.4269/ajtmh.15-0757>
- UNICEF. (2016). *Monitoring education participation: framework for monitoring children and adolescents who are out of school or at risk of dropping out*. <http://uis.unesco.org/sites/default/files/documents/monitoring-education-participation.pdf>.
- Visaria, S., Dehejia, R., Chao, M. M., & Mukhopadhyay, A. (2016). Unintended consequences of rewards for student attendance: Results from a field experiment in Indian classrooms. *Economics of Education Review*, 54, 173–184. <https://doi.org/10.1016/j.econedurev.2016.08.001>
- Weideman, M., Goga, S., Lopez, D., Mayet, M., Macun, I., & Barry, D. (2007). *Learner absenteeism in the South African schooling system*. Community Agency for Social Enquiry (CASE). https://www.gov.za/sites/default/files/gcis_document/201409/leernerabsenteeism0.pdf.
- World Bank. (2018). *World development report 2018: Learning to realize education's promise*. <https://www.worldbank.org/en/publication/wdr2018>.
- World Bank. (2021). *Service delivery indicators: Methodology—Definition of core indicators*. <https://www.sdindicators.org/methodology>.
- World Bank Microdata Library. (2021). *Service delivery indicators*. <https://microdata.worldbank.org/index.php/catalog/sdi>.
- Wydick, B., Katz, E., Calvo, F., Gutierrez, F., & Janet, B. (2018). Shoeing the Children: The impact of the TOMS shoe donation program in rural El Salvador. *The World Bank Economic Review*, 32(3), 727–751. <https://doi.org/10.1093/wber/lhw042>

**Online appendix for
How to Measure Student Absenteeism in Low- and Middle-Income Countries**

by David K. Evans and Amina Mendez Acosta

This online appendix includes the following content:

- Appendix Table A1: Availability of student absenteeism data in EMIS of select countries
- Appendix Table A2: Full list of papers reviewed with absenteeism measures
- Appendix Table A3: Findings from seventeen studies that compare methods of measuring absenteeism
- Appendix Table A4: The presence or absence of absenteeism measures in a sample of large-scale household surveys

Appendix Table A1. Availability of student absenteeism data in Education Management Information System of select countries

Country and year	Region	Is student absenteeism data collected?	What type of data is collected?
Bangladesh (2015)	South Asia	Yes	Table 2.22 Average Student Absenteeism by Gender 2005-2016
Cambodia (2012)	East Asia and the Pacific	None that we can find.	
Colombia (2017)	Latin America and the Caribbean	None that we can find.	
Djibouti (2021)	Sub-Saharan Africa	None that we can find.	
Eswatini (2019)	Sub-Saharan Africa	Yes	Questionnaire on "Information pertaining. to the previous school year (2018)" asks for "Total number of absences for 2018" and "Total possible number of attendances for 2018" by gender and age.
Ethiopia (2010)	Sub-Saharan Africa	None that we can find.	
Fiji (2018)	East Asia and the Pacific	Yes	A report highlights a case study of Fiji's integrated EMIS that captures student's daily attendance (UNESCO, 2018).
Ghana (2019)	Sub-Saharan Africa	Yes	Questionnaire "2018-19 Basic School Quest..xls" asks "(10.4) What was the total pupil attendance for the month of ? (Refer to your class registers)"
India (2019)	South Asia	Yes	"10.2 Whether the school has in place a system to capture student attendance electronically [Yes =1 No = 2]" but does not ask about actual absenteeism rates.
Kenya (2019)	Sub-Saharan Africa	None that we can find.	
Liberia (2022)	Sub-Saharan Africa	None that we can find.	
Malawi (2017)	Sub-Saharan Africa	None that we can find.	
Maldives (2020)	South Asia	Yes	Maldives' EMIS track student attendance: the system automatically flags "students who have been absent for three consecutive days to their teacher" (UNESCO, 2020)
Mozambique (2017)	Sub-Saharan Africa	None that we can find.	
Namibia (2019)	Sub-Saharan Africa	None that we can find.	
Nigeria (2014)	Sub-Saharan Africa	Yes	Number of attendees defined as "A child who has attended School at least one day during the last three (3) weeks before the census exercise."
Pakistan (2018),	South Asia	None that we can find.	

Pakistan (Khyber Pakhtunkhwa province) (2020)			
Papua New Guinea (2018)	East Asia and the Pacific	None that we can find.	
Philippines (2021)	East Asia and the Pacific	None that we can find.	
Rwanda (2018)	Sub-Saharan Africa	Yes	III.5: Average class attendance by enrolled pupils during 2017
Sierra Leone (2015)	Sub-Saharan Africa	None that we can find.	
Somalia (2015)	Sub-Saharan Africa	None that we can find.	
South Africa (2015)	Sub-Saharan Africa	None that we can find.	
South Sudan (2015)	Sub-Saharan Africa	None that we can find.	
Togo (2020)	Sub-Saharan Africa	None that we can find.	
Zambia (2019)	Sub-Saharan Africa	None that we can find.	
Zimbabwe (2019)	Sub-Saharan Africa	None that we can find.	

Source: Lee (2022); Walter (2020).

Notes: Walter (2020) collected EMIS from 91 countries by either publicly downloading the documents or, if the documents are not available online, directly requesting from government agencies. He conducted the search between 2016 and 2019. We used the list of publicly available EMIS in his paper and downloaded those that we could find. Lee (2022) also compiled the questionnaires for the EMIS of 21 countries which he shared with the authors. The EMIS compiled by Walter (2020 and Lee (2022) are 31 percent more likely to be in Sub-Saharan Africa relative to all low- and middle-income countries. Conditional on that, there is no association with per capita income or population. We reviewed these documents for mention of any data on student absenteeism or attendance collected and reported as part of the countries' EMIS. We also conducted a search of reports on quality of EMIS and whether they report attendance or not using search terms “EMIS”, “student attendance” and “low and middle income countries” or the name of specific countries and variations of these search terms.

Appendix Table A2. List of 27 recent papers reviewed with absenteeism measures (Sample 1)

Study	Country	Method of measuring absenteeism	Further details on the measure of absenteeism
Ahmadi (2021)	Afghanistan	Existing school records and perception of absenteeism	Teachers "reported student absenteeism as a factor behind instructional time loss." "A review of classroom attendance sheets showed that one-third of the students were absent from the visited classes, on average."
Ahmed and Mihiretie (2015)	Ethiopia	Perception	"A parent stated that automatic promotion helps keep students in schools but was concerned that it has affected students' attendance, learning and commitment, as they know they will be promoted regardless."
Aurino et al. (2020)	Ghana	Student-reported or caregiver-reported for young children	"number of days the child attended school out of [the recent] five-day week"
Balakrishnan and Tsaneva (2021)*	India	Unannounced spot-check	"the number of children in attendance on a random [unannounced] day divided by the total enrollment in that grade" <i>Data are from Annual Status of Education Report (ASER)</i>
Banerji and Mathur (2021)*	India	Student-reported	"Today is ___; Between previous _____ and yesterday did you attend all days? If no, did you miss just a day, few days or all days?" <i>Data are from UDAYA (Understanding Adults and Young Adolescents) collected by Population Council.</i>
Ben Amor et al. (2020)	India	Fingerprint scanner in treatment schools and manual attendance in control schools	"Any three days or more within a calendar month equaled one episode of chronic absenteeism."
Borish et al. (2017)	Kenya	Perception	"Some households (21.9%) mentioned that their children would not willingly attend school without being fed through the feeding program."
Bose-Duker et al. (2021)*	Jamaica	Parent or caregiver-reported	"the number of days a child is sent to school within a four-week period" <i>Data are from Jamaican Survey of Living Conditions.</i>
Davis (2018)*	Nicaragua, Costa Rica	Parent or caregiver-reported	"School attendance variable is a count of the number of days a child has been absent from school in the previous month" <i>Data are from "a nationally representative panel dataset from Nicaragua's Encuesta Nacional de Hogares Sobre Medición de Nivel de Vida"</i>
de Hoop et al. (2020)	Malawi, Zambia	Parent or caregiver-reported	"Malawi: the child did not miss more than two consecutive weeks of school during the 12 months before the interview. Zambia: the child attended five days of school during the week before the interview (lower number of observations, due to children in boarding schools or children who were on holidays during the week before the interview)."
Hochfeld (2016)	South Africa	Perception	"Educators and principals at all schools reported that absenteeism had improved and attributed this to the breakfast programme."

Humphreys et al. (2015)	Nigeria	Scheduled visits by researchers and school attendance records	Researchers' daily timetables of activities and observed number of absent students in the classroom. School records: "number of pupil absences for each term over a three-year period (2007–8 to 2010–11) for each grade and according to gender and religion"
Jarillo et al. (2016)	Mexico	Perception	"Principals reported student and teacher absenteeism and tardiness, and students' frequent propensity to leave school early as [either] frequent and very frequent issues within the school academic year"
Jennings-Craig (2016)	Jamaica	Existing school records	Annual attendance rates are computed based on "the frequency with which children are sent to school over 190 school days in the academic year."
Kim and Rhee (2019)*	Kenya	Existing school records	Attendance rate is defined as the "ratio of the sum of lower [and upper] primary girls' [and boys'] attendance to the sum of corresponding values in enrollment" <i>Data are from school-level surveys from Uwezo.</i>
King et al. (2016)	Pakistan	Unannounced spot check and existing school records	"During the course of the school year, the enumerators conducted two unannounced or spot checks of teacher and student absenteeism [first and final two months of the school year]. Data on monthly student and teacher attendance over the school year were also obtained from the school's attendance register."
Kudo et al. (2019)	Bangladesh	Unannounced spot check and existing school records	"The research team made surprise visits to catchment schools in February, April, and August 2014, and checked on the children's school attendance." School-aggregated records: "potential participants were also excluded if their school attendance rate was lower than 80% over the previous four months."
Kumar and Choudhury (2021)*	India	Parent or caregiver-reported	"How many days [NAME] was absent from school in the last 30 days?" <i>Data are from second round of the India Human Development Survey (IHDS).</i>
Loyalka et al. (2016)	China	Scheduled visits by enumerators	Students at the baseline survey were marked as present, absent, transferred, on leave or dropped out.
Mburu (2017)*	Kenya	Parent or caregiver-reported	Average days absent from school in a year <i>Data are from a household-level panel data collected by the International Livestock Research Institute's Index-Based Livestock Insurance project.</i>
Meija and Filus (2018)	Mexico	Student-reported	"In a regular week, how many days do you attend school?, Have you ever missed school for 2 or more months in a row?, During your last week at school how many times did you attend Math/Spanish/Science class?"
Muyaka et al. (2021)	Kenya	Unannounced spot check and perception of school officials	"School attendance is used to refer to the actual headcount... that were present during the day researchers visited the selected schools." "Interviews with the informants showed that the counties had irregular pupils' school attendance."

Psaki et al. (2017)*	Malawi	Student-reported	"Student reports of whether they attend school regularly, student reports of whether they attended school yesterday/the last day school was in session, and student reports of how many days of school they attended in the previous week." <i>Data from the Malawi Schooling and Adolescent Study.</i>
Santos (2018)*	Colombia	Parent or caregiver-reported	"Attended school last week" <i>Data are from Integrated Public Use Microdata Series (IPUMS)</i>
Taniguchi (2015)	Malawi	Student-reported and perception of school officials	"Days absent during the last two weeks." "During data collection, the head teacher in School 7 told the researcher that approximately 10 out of 60 students in Grade 5 were absent from school on that day."
Visaria et al. (2016)	India	Unannounced spot check and existing school records	"Investigators made six unannounced visits to the classrooms."
Wydick et al. (2018)	El Salvador	Parent or caregiver-reported	Time use survey for the past 24-hours (or Friday's 24 hours for Monday interviews)

Note: This sample is described in Section 3.1. * Nine studies use existing datasets to report absenteeism rates. They also provide a description of how the primary sources collected the information.

Appendix Table A3: Findings from seventeen studies that compare methods of measuring absenteeism (Sample 2)

Study	Setting	Comparison	Narrative Summary of Results
<i>School records vs enumerator observations</i>			
Benshaul-Tolonen (2019) †	Kenya (secondary school students)	Existing school records vs. unannounced spot checks	<p>Spot check data shows an absenteeism rate of 13 percent (95% C.I.: 12%-14%) while school records show an absenteeism rate of 5 percent with a quarter of students marked as “attendance not captured.” “A large share of the discrepancies stems from missing entry in the school register data, but the discrepancies remain after excluding missing entries.”</p> <p>The inconsistencies between the spot-check and school records is considered below acceptable standards: Cohen’s kappa is between 0.26-0.38 which shows a substantial level of disagreement between the two methods (McHugh, 2012).</p>
Halliday et al. (2020)	Malawi (primary school students)	Existing school records vs. unannounced spot checks	<p>Absenteeism rates are higher during spot checks than daily teacher-recorded attendance (22 percent vs 21 percent in control schools and 24 percent vs 19 percent in intervention schools).</p> <p>The study does not test for significance between the two methods.</p>
Humphreys et al. (2015)*	Nigeria (primary school students)	Existing school records vs. scheduled visits	<p>The school attendance registers underestimate absenteeism and do not account for seasonal variation such as the rainy season compared to researcher-observed absenteeism rates. The school attendance registers “scarcely averaged out at more than one day absent per pupil per year” while researcher observations “indicated very low class numbers on some days.” High levels of reported and observed teacher absenteeism in this context add to doubts to the validity of school registers.</p> <p>The study does not test for significance between the two methods.</p>
King et al. (2016)*	Pakistan (rural primary school students)	Existing school records vs. unannounced spot checks	<p>“Student attendance registers were validated by spot checks of student attendance” and “spot checks of student attendance confirmed that the official student attendance records were accurate.”</p> <p>The study does not test for significance between the two methods.</p>
Montgomery et al. (2012)	Ghana (girls 12 to 18 years old)	Teacher-collected school attendance record vs. enumerator-conducted	<p>“Researchers compared official attendance data with actual student attendance at every site visit (planned and unplanned) and found negligible differences indicating strong reliability of the school attendance data.”</p>

Study	Setting	Comparison	Narrative Summary of Results
		attendance check (planned and unplanned visits)	The study does not test for significance between the two methods.
Montgomery et al. (2016)	Uganda (primary school girls in rural areas)	Teacher-collected school attendance record at baseline vs. enumerator-conducted attendance roll-call at follow-up	<p>Suggestive evidence that the methods are consistent. There was no drop in attendance before and after in control schools among girls who had not reached menarche, but a significant drop in attendance in control schools compared to intervention schools among girls who had reached menarche, suggesting that the change in attendance is because of the intervention and arrival of menarche, instead of the change in the measurement method.</p> <p>The study does not test for significance between the two methods.</p>
Visaria et al. (2016)*	India (3 rd graders in non-formal schools in slums)	Existing school records vs. unannounced spot checks	<p>Enumerators found 75 percent (95% C.I.: 71%-79%) of sample students present in class 6 weeks after the school year started which is "in line with the administrative attendance records" of 78 percent (95% C.I.: 76%-80%) attendance rate during the first two months of the school year.</p> <p>The study does not test for significance between the two methods.</p>
<i>Student reports vs school records or enumerator visits</i>			
Baird and Özler (2012) †	Malawi (girls between 13 to 22 years old participating in an evaluation of a cash transfer conditional on attendance)	Student-reported vs. administrative records of cash transfer pay-out conditional on attendance vs. existing school records	<p>Student-reported attendance rates are higher than program administrative records (which “for the most part...came directly from the ledgers kept by the schools” and were audited and shown to be comparable to the result of spot check roll call conducted in the first year of the program, thus yielding “an accurate reflection of real attendance”) and school records. Five percent of girls in the cash transfer group “who reported attending school regularly... is recorded as having never attended school during that term” based on administrative records from the cash transfer program. Additionally, only 87 percent of students who report that they have an attendance rate greater than 80 percent (which is 86 percent of the respondents) actually have that attendance rate according to administrative records.</p> <p>Percent of students who self-report attendance rates greater than 80 percent and who actually has met that criteria according to records:</p> <ul style="list-style-type: none"> • From existing school records: 84 percent • From administrative program data: 87 percent

Study	Setting	Comparison	Narrative Summary of Results
			<p>The study does not test for significance between self-reported enrollment and administrative records; however, they test if treatment status has an impact on rates of over-reporting attendance. Students in the control group are 11.5 percentage points less likely to over-report attendance (significant at 90 percent) — “perhaps because these students have their attendance monitored every month, they are more likely to accurately report their school participation.”</p>
Barrera-Osorio et al. 2011 (2011)	Colombia (secondary students in Bogota)	Student-reported vs. enumerator visit	<p>Students over-report attendance (i.e., under-report absenteeism) compared to attendance from direct observation. “The team assembled a group of assistants who randomly visited schools and classes. The assistants directly called the roll of all students, and students were marked absent if they were not physically present in the classroom.” On the other hand, students were asked “How many days did you miss school in the last two weeks?” during a survey. The positive bias in self-reporting attendance led to smaller estimates of impact of the program (compared to impact estimates using monitored attendance) since attendance rates are capped at 100 percent and therefore differences between control and treatment group is compressed.</p> <p>Self-reported attendance for control groups: 95.7 percent Impact of treatment on self-reported attendance: between -.003 to 0.022 Monitored school attendance rate for control groups: 79.2 percent Impact of treatment on monitored attendance: between 0.025 to 0.055</p> <p>The study does not test for significance between the two methods.</p>
Freeman et al. (2012)	Kenya (primary schools in Nyanza province)	Student-reported vs. enumerator visit	<p>Students underreport absenteeism rates compared to a roll-call attendance check in some regions. “As [the enumerator administered] roll-call is for 1 day only, and [student-reported] recall is for 2 weeks, we expect smaller numbers for roll-call, yet roll-call absence was higher than reported 2-week absence for Nyando/Kisumu.”</p> <p>Absenteeism aggregated for all regions show the expected higher student-reported rates than roll-call attendance.</p> <p>Percent absent during the one-day scheduled visit Treatment arm 1: 12 percent (95% C.I.: 10%-14%) Treatment arm 2: 11 percent (95% C.I.: 9%-13%) Control: 14 percent (95% C.I.: 12%-16%)</p>

Study	Setting	Comparison	Narrative Summary of Results
			<p>Percent absent from the two-weeks student-reported survey Treatment arm 1: 12 percent (95% C.I.: 10%-15%) Treatment arm 2: 14 percent (95% C.I.: 10%-17%) Control: 16 percent (95% C.I.: 13%-20%)</p> <p>The study does not test for significance between the two methods.</p>
Oster and Thornton (2011) †	Nepal (7 th and 8 th grader girls from four schools in Chitwan District)	Official school records vs. student-reported through time diaries	<p>“Attendance is lower in the time diaries largely because some days included in these diaries are holidays; the results are very similar if we exclude days with low attendance overall.”</p> <p>Percent of school days attended School record: 86 percent (95% C.I.: 66%-106%) Student-reported through time diaries: 56 percent (95% C.I.: 31%-81%)</p> <p>The study does not test for significance between the two methods.</p>
Trinies et al. (2016)	Mali (200 primary schools from a water and sanitation hygiene trial)	Student-reported vs. unannounced enumerator visit vs school records	<p>The paper reports two methods with data: unannounced visits (8 percent absenteeism (95% C.I.: -3%-19%) during a roll call in treatment schools and 7 percent (95% C.I.: -4%-18%) in control schools) and 7-day student self-reported absence—i.e., any absence in the last 7 days (18 percent (95% C.I.: 0%-35%) in treatment schools and 18 percent (95% C.I.: 1%-35%) in control schools). The impact of the intervention differed between the roll call (higher absenteeism in treatment group compared to control) and student-reported measures (decreased absenteeism due to diarrhea in treatment group, but no significant difference in overall absenteeism between treatment and control), and the study notes that the roll call was “the only outcome that was objective and not self-reported.”</p> <p>School ledgers were deemed unreliable. (“school records were deemed unreliable based on piloting and were not used.”)</p> <p>The study does not test for significance across the three methods.</p>
<i>Parent reports vs student reports or school records</i>			

Study	Setting	Comparison	Narrative Summary of Results
Berlinski et al. (2016) ‡	Chile (low-income primary schools)	Parent-reported vs school records	<p>"70 percent of parents of students with an attendance rate of lower than 85 percent, did not know how many days their children had missed school in the previous two weeks."</p> <p>The study does not test for significance between the two methods.</p>
Bettinger et al. (2021)	Brazil (9 th graders in 287 schools in São Paulo)	Parent-reported vs school records	<p>At baseline, "parents were quite inaccurate [and over-optimistic] about their children's school effort: the correlation between beliefs about absences and actual absences in math classes, reported in children's scorecards, was only 0.21." After the information intervention, "the correlation between beliefs and absences reported by teachers through the platform was up to 0.39 in the information group – a 45% increase in accuracy relative to control parents within each classroom."</p> <p>These correlations are statistically significant at 95 percent.</p>
Bursztyrn and Coffman (2012) ‡	Brazil (adolescent children in poor urban slums)	Parent-reported vs student-reported	<p>"Parents report on average lower school absences by the child than their child does."</p> <p>Parents are 10 percentage points less likely (76 percent vs. 86 percent, significant at 99 percent) than their child to report that the child missed any day in the current school year, 5 percentage points less likely (51 percent vs. 56 percent, not significant) to report the child missed any day in the past two months, and 7 percentage points less likely (9 percent vs. 16 percent, significant at 99 percent) to report that the child missed a day because the child did not want to go, but 11 percentage points more likely (44 percent vs. 33 percent, significant at 99 percent) to report that the child missed a day because of sickness. Compared to their children, parents also report fewer number of days the child missed school in the past year (4.8 days vs. 5.16 days, not significant) and in the last two months (1.4 days vs. 2.0 days, significant at 90 percent).</p> <p>The statistical significance of the differences are listed inside parentheses in the above paragraph.</p>
<i>School records vs. biometric records</i>			

Study	Setting	Comparison	Narrative Summary of Results
Ben Amor et al. (2020)*	India (students in grade 6 to 10 in rural schools)	Manually recorded by school staff vs. biometric records	<p>Manually recorded absenteeism is higher than biometrically recorded absenteeism for all seven months of the intervention by less than a day (average difference is between 0.12 to 0.88).</p> <p>Average difference of number of missed days (eAttendance - Manual attendance)</p> <p>Aug-16 -0.59, 95% CI: (-0.84, -0.35)</p> <p>Sep-16 -0.12, 95% CI: (-0.28, 0.03)</p> <p>Oct-16 -0.53, 95% CI: (-0.68, -0.37)</p> <p>Nov-16 -0.38, 95% CI: (-0.53, -0.23)</p> <p>Dec-16 -0.43, 95% CI: (-0.57, -0.29)</p> <p>Jan-17 -0.23, 95% CI: (-0.37, -0.10)</p> <p>Feb-17 -0.88, 95% CI: (-1.04, -0.72)</p> <p>All differences are statistically significant except for the month of September.</p>
<i>Qualitative perception of school staff and enumerator visit</i>			
Muyaka et al. (2021)*	Kenya (primary schools in Busia and Kirinyaga counties)	Unannounced enumerator visit vs. qualitative perception of teachers	<p>In Kirinyaga and Busia, “twenty-one per cent of the pupils were absent on the day the researchers visited the schools. Absenteeism in Busia County was chronic with 32% of the boys absent on the day of the school visit.”</p> <p>“Interviews with the informants showed that the counties had irregular pupils’ school attendance.”</p> <p>The study does not test for significance between the two methods.</p>

Note: ‡ indicates the five anchor studies described in section 3.2. * indicates the five studies are from the journal search described in section 3.1. The remaining seven studies are from the citation crawl based on the five anchor studies and described in Section 3.2. Confidence intervals (C.I.) are computed from data provided in the source studies where available.

Appendix Table A4. The presence or absence of absenteeism measures in a sample of large-scale household surveys

Survey	Absenteeism-related measures	Type of measures available
Demographic and Health Surveys	No.	
Living Standards Measurement Study	Yes, but only in some surveys. Ghana Living Standards Survey 6 2012/2013 has absenteeism rates, but not the Nigeria Living Standards Survey 2018-2019.	Reported by an adult household member or student. <i>Ghana LSS6, Section 2, Part A</i> Question 9: How many hours of class did (NAME) attend last week? Question 10: How many hours of class did (NAME) miss last week? Question 10a: Why did (NAME) miss class last week? <i>Malawi Fifth Integrated Household Survey, Education section</i> C20 At any time in the past 12 months, did you ever temporarily withdraw from school, so that you missed more than two consecutive weeks of instruction? C21 What was the main reason you temporarily withdrew from school?
Multiple Indicator Cluster Surveys	Yes, but only absenteeism due to school closures or teacher absence.	Reported by an adult household member <i>MICS6, Questionnaire for Children Age 5-17</i> PR12. In the last 12 months, has (name)'s school been closed on a school day due to any of the following reasons [lists reasons]. PR13. In the last 12 months, was (name) unable to attend class due to (his/her) teacher being absent?
Performance Monitoring and Accountability (PMA)	Yes, absenteeism due to menstruation	Reported by the student <i>Questionnaire for female respondents</i> 607b. Due to your menstrual period, were there any school days in the past 12 months that you did not attend?
Service Delivery Indicators	Yes.	Reported by a teacher during an announced visit by enumerators M4 How many students are absent from this class? M4 How many pupils are registered in this class currently?
Young Lives	Yes.	Reported by the student or the parent (depending on the round) <i>Round 5, OC Child Questionnaire (age 22), Funding and Absenteeism Section</i> Q.9 During the last academic year, did you ever miss school, educational institute/ university for a continuous week or more? (excluding school holidays, vacations, national holidays, etc) Q.10 How long was the longest period of time you were absent from school in the last academic year? Q.11 Which of the following best describes your attendance overall in the last academic year? [Lists alternatives] <i>Round 3, Household Questionnaire for all children (Younger and Older Cohorts), Section 2B: Child Education for Younger Cohort Only</i> Q.2.8. During the last 12 months, has NAME ever missed school for a week or more? (excluding school holidays, national holidays, etc).
Violence Against Children Surveys (VACS)	No.	

References

- Ahmadi, M. J. (2021). The use of instructional time in early grade reading classrooms: A study in Herat Province of Afghanistan. *International Journal of Educational Development*, 84, 102435. <https://doi.org/10.1016/j.ijedudev.2021.102435>
- Ahmed, A. Y., & Mihiretie, D. M. (2015). Primary school teachers and parents' views on automatic promotion practices and its implications for education quality. *International Journal of Educational Development*, 43, 90–99. <https://doi.org/10.1016/j.ijedudev.2015.05.003>
- Aurino, E., Gelli, A., Adamba, C., Osei-Akoto, I., & Alderman, H. (2020). Food for thought? Experimental evidence on the learning impacts of a large-scale school feeding program. *Journal of Human Resources*, 1019. <https://doi.org/10.3368/jhr.58.3.1019-10515R1>
- Baird, S., & Özler, B. (2012). Examining the reliability of self-reported data on school participation. *Journal of Development Economics*, 98(1), 89–93. <https://doi.org/10.1016/j.jdeveco.2011.05.006>
- Balakrishnan, U., & Tsaneva, M. (2021). Air pollution and academic performance: Evidence from India. *World Development*, 146, 105553. <https://doi.org/10.1016/j.worlddev.2021.105553>
- Banerji, M., & Mathur, K. (2021). Understanding school attendance: The missing link in “Schooling for All.” *International Journal of Educational Development*, 87, 102481. <https://doi.org/10.1016/j.ijedudev.2021.102481>
- Barrera-Osorio, F., Bertrand, M., Linden, L. L., & Perez-Calle, F. (2011). Improving the Design of Conditional Transfer Programs: Evidence from a Randomized Education Experiment in Colombia. *American Economic Journal: Applied Economics*, 3(2), 167–195. <https://doi.org/10.1257/app.3.2.167>
- Ben Amor, Y., Dowden, J., Borh, K. J., Castro, E., & Goel, N. (2020). The chronic absenteeism assessment project: Using biometrics to evaluate the magnitude of and reasons for student chronic absenteeism in rural India. *International Journal of Educational Development*, 72, 102140. <https://doi.org/10.1016/j.ijedudev.2019.102140>

- Benshaul-Tolonen, A., Zulaika, G., Nyothach, E., Oduor, C., Mason, L., Obor, D., Alexander, K. T., Laserson, K. F., & Phillips-Howard, P. (2019). *Pupil Absenteeism, Measurement, and Menstruation: Evidence from Western Kenya* [CDEP-CGEG Working Paper Series No. 74]. https://anajatolonen.files.wordpress.com/2019/03/cdep_absenteeism.pdf
- Berlinski, S., Busso, M., Dinkelman, T., & Martinez, C. (2016). *Reducing Parent-School Information Gaps and Improving Education Outcomes: Evidence from High Frequency Text Messaging in Chile*. https://assets.publishing.service.gov.uk/media/58778bfa40f0b60e4c000135/726__Reducing-Parent-School-information-gap_BBDM-Dec2016.pdf
- Bettinger, E., Cunha, N., Lichand, G., & Madeira, R. (2021). *Are the Effects of Informational Interventions Driven by Salience?* University of Zurich Working Paper No. 350. <https://www.econ.uzh.ch/static/wp/econwp350.pdf>
- Borish, D., King, N., & Dewey, C. (2017). Enhanced community capital from primary school feeding and agroforestry program in Kenya. *International Journal of Educational Development*, 52, 10–18. <https://doi.org/10.1016/j.ijedudev.2016.10.005>
- Bose-Duker, T., Henry, M., & Strobl, E. (2021). Child fostering and the educational outcomes of Jamaican children. *International Journal of Educational Development*, 87. <https://doi.org/10.1016/j.ijedudev.2021.102483>
- Bursztyn, L., & Coffman, L. C. (2012). The Schooling Decision: Family Preferences, Intergenerational Conflict, and Moral Hazard in the Brazilian Favelas. *Journal of Political Economy*, 120(3), 359–397. <https://doi.org/10.1086/666746>
- Davis, J. (2018). School enrollment effects in a South-South migration context. *International Journal of Educational Development*, 62, 157–164. <https://doi.org/10.1016/j.ijedudev.2018.03.006>
- de Hoop, J., Groppo, V., Handa, S., & on behalf of the Malawi Social Cash Transfer Program and the Zambia Multiple Category Targeted Program study teams. (2020). Cash Transfers,

- Microentrepreneurial Activity, and Child Work: Evidence from Malawi and Zambia. *The World Bank Economic Review*, 34(3), 670–697. <https://doi.org/10.1093/wber/lhz004>
- Freeman, M. C., Greene, L. E., Dreibelbis, R., Saboori, S., Muga, R., Brumback, B., & Rheingans, R. (2012). Assessing the impact of a school-based water treatment, hygiene and sanitation programme on pupil absence in Nyanza Province, Kenya: A cluster-randomized trial. *Tropical Medicine & International Health*, 17(3), 380–391. <https://doi.org/10.1111/j.1365-3156.2011.02927.x>
- Halliday, K. E., Witek-McManus, S. S., Opondo, C., Mtali, A., Allen, E., Bauleni, A., Ndau, S., Phondiwa, E., Ali, D., Kachigunda, V., Sande, J. H., Jawati, M., Verney, A., Chimuna, T., Melody, D., Moestue, H., Roschnik, N., Brooker, S. J., & Mathanga, D. P. (2020). Impact of school-based malaria case management on school attendance, health and education outcomes: A cluster randomised trial in southern Malawi. *BMJ Global Health*, 5(1), e001666. <https://doi.org/10.1136/bmjgh-2019-001666>
- Hochfeld, T., Graham, L., Patel, L., Moodley, J., & Ross, E. (2016). Does school breakfast make a difference? An evaluation of an in-school breakfast programme in South Africa. *International Journal of Educational Development*, 51, 1–9. <https://doi.org/10.1016/j.ijedudev.2016.07.005>
- Humphreys, S., Moses, D., Kaibo, J., & Dunne, M. (2015). Counted in and being out: Fluctuations in primary school and classroom attendance in northern Nigeria. *International Journal of Educational Development*, 44, 134–143. <https://doi.org/10.1016/j.ijedudev.2015.08.004>
- Jarillo, B., Magaloni, B., Franco, E., & Robles, G. (2016). How the Mexican drug war affects kids and schools? Evidence on effects and mechanisms. *International Journal of Educational Development*, 51, 135–146. <https://doi.org/10.1016/j.ijedudev.2016.05.008>
- Jennings-Craig, Z. (2016). Impact of the provision of school lunch on attendance in remote rural Jamaican primary schools. *International Journal of Educational Development*, 46, 74–81. <https://doi.org/10.1016/j.ijedudev.2015.09.006>

- Kim, H., & Rhee, D.-E. (2019). Toilets for education: Evidence from Kenya's primary school-level data. *International Journal of Educational Development, 70*, 102090.
<https://doi.org/10.1016/j.ijedudev.2019.102090>
- King, E. M., Orazem, P. F., & Paterno, E. M. (2016). Promotion with and without Learning: Effects on Student Enrollment and Dropout Behavior. *The World Bank Economic Review, 30*(3), 580–602.
<https://doi.org/10.1093/wber/lhv049>
- Kudo, Y., Shonchoy, A. S., & Takahashi, K. (2019). Can Solar Lanterns Improve Youth Academic Performance? Experimental Evidence from Bangladesh. *The World Bank Economic Review, 33*(2), 436–460. <https://doi.org/10.1093/wber/lhw073>
- Kumar, D., & Choudhury, P. K. (2021). Do private schools really produce more learning than public schools in India? Accounting for student's school absenteeism and the time spent on homework. *International Journal of Educational Development, 83*, 102395.
<https://doi.org/10.1016/j.ijedudev.2021.102395>
- Lee, C. (2022). *Global Experience with EMIS* [Unpublished Manuscript].
- Loyalka, P., Huang, X., Zhang, L., Wei, J., Yi, H., Song, Y., Shi, Y., & Chu, J. (2016). The Impact of Vocational Schooling on Human Capital Development in Developing Countries: Evidence from China. *The World Bank Economic Review, 30*(1), 143–170. <https://doi.org/10.1093/wber/lhv050>
- Mburu, S. (2017). Effects of livestock herd migration on child schooling in Marsabit District, Kenya. *Compare: A Journal of Comparative and International Education, 47*(4), 545–560.
<https://doi.org/10.1080/03057925.2016.1257352>
- McHugh, M. L. (2012). Interrater reliability: The kappa statistic. *Biochemia Medica, 22*(3), 276–282.
- Mejia, A., & Filus, A. (2018). Exploring predictors of impact of school-based management in rural Mexico: Do student engagement, teacher attitudes and parent involvement predict better academic outcomes? *International Journal of Educational Research, 88*, 95–108.
<https://doi.org/10.1016/j.ijer.2018.01.010>

- Montgomery, P., Hennegan, J., Dolan, C., Wu, M., Steinfield, L., & Scott, L. (2016). Menstruation and the Cycle of Poverty: A Cluster Quasi-Randomised Control Trial of Sanitary Pad and Puberty Education Provision in Uganda. *PLOS ONE*, *11*(12), e0166122.
<https://doi.org/10.1371/journal.pone.0166122>
- Montgomery, P., Ryus, C. R., Dolan, C. S., Dopson, S., & Scott, L. M. (2012). Sanitary Pad Interventions for Girls' Education in Ghana: A Pilot Study. *PLOS ONE*, *7*(10), e48274.
<https://doi.org/10.1371/journal.pone.0048274>
- Muyaka, J., Omuse, D. E., & Malenya, F. L. (2021). Manifestations of boys' under participation in education in Kenya: The case of Busia and Kirinyaga counties. *Compare: A Journal of Comparative and International Education*, *0*(0), 1–16.
<https://doi.org/10.1080/03057925.2021.1877113>
- Oster, E., & Thornton, R. (2011). Menstruation, Sanitary Products, and School Attendance: Evidence from a Randomized Evaluation. *American Economic Journal: Applied Economics*, *3*(1), 91–100.
<https://doi.org/10.1257/app.3.1.91>
- Psaki, S. R., Mensch, B. S., & Soler-Hampejsek, E. (2017). Associations between Violence in School and at Home and Education Outcomes in Rural Malawi: A Longitudinal Analysis. *Comparative Education Review*, *61*(2), 354–390. <https://doi.org/10.1086/691117>
- Santos, R. J. (2018). Blessing and curse. The gold boom and local development in Colombia. *World Development*, *106*, 337–355. <https://doi.org/10.1016/j.worlddev.2018.02.016>
- Taniguchi, K. (2015). Determinants of grade repetition in primary school in sub-Saharan Africa: An event history analysis for rural Malawi. *International Journal of Educational Development*, *45*, 98–111.
<https://doi.org/10.1016/j.ijedudev.2015.09.014>
- Trinies, V., Garn, J. V., Chang, H. H., & Freeman, M. C. (2016). The Impact of a School-Based Water, Sanitation, and Hygiene Program on Absenteeism, Diarrhea, and Respiratory Infection: A Matched–Control Trial in Mali. *The American Journal of Tropical Medicine and Hygiene*, *94*(6), 1418–1425. <https://doi.org/10.4269/ajtmh.15-0757>

- UNESCO. (2018). *Module 3: Improving Education Management Information Systems (EMIS)*.
<https://bangkok.unesco.org/sites/default/files/assets/article/Education/files/module-3.pdf>
- UNESCO. (2020). *The role of education management information systems in supporting progress towards SDG 4: Recent trends and international experiences—UNESCO Digital Library*.
<https://unesdoc.unesco.org/ark:/48223/pf0000374542?posInSet=41&queryId=bebd8d3c-f3fa-4a57-9c93-9925036a5145>
- Visaria, S., Dehejia, R., Chao, M. M., & Mukhopadhyay, A. (2016). Unintended consequences of rewards for student attendance: Results from a field experiment in Indian classrooms. *Economics of Education Review*, 54, 173–184. <https://doi.org/10.1016/j.econedurev.2016.08.001>
- Walter, T. F. (2020). *Misallocation in the Public Sector? Cross-Country Evidence from Two Million Primary Schools*. <https://sticerd.lse.ac.uk/dps/eopp/eopp70.pdf>
- Wydick, B., Katz, E., Calvo, F., Gutierrez, F., & Janet, B. (2018). Shoeing the Children: The Impact of the TOMS Shoe Donation Program in Rural El Salvador. *The World Bank Economic Review*, 32(3), 727–751. <https://doi.org/10.1093/wber/lhw042>