

Repetition of Primary 1 and Pre-primary Education in Uganda

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International Development Working Paper

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ABBREVIATIONS AND ACRONYMS

CI	confidence interval
DRASPAC	Development Research and Social Policy Analysis Center
EMIS	Education Management Information System
GOU	Government of Uganda
MOES	Ministry of Education and Sports
P1	primary grade 1
TV	television
UGX	Uganda shilling
UPE	Universal Primary Education

ABSTRACT

This paper describes a 2016 pilot study undertaken in Uganda to document the real repetition rate in Primary 1 classes and to examine the relationship between repetition in Primary 1 and attendance in pre-primary education. The study explored knowledge and practice about the age of entry for children into pre-primary education and Primary 1. It also documented parents' knowledge and expectations about participation in pre-primary education. The study was conducted in two purposefully selected districts in Uganda (a "high-risk" district—with higher rates of poverty and reported repetition—and a "low-risk" district—with lower rates of poverty and reported repetition) by RTI International, with support from the Development Research and Social Policy Analysis Center, a Ugandan data collection firm. In addition to answering research questions about early primary repetition and pre-primary attendance, the pilot aimed to test a methodology of triangulating information from the Education Management Information System, school records, and parents' reports. The study confirmed that it is possible to compare data from teacher and classroom records with data from parent and teacher interviews; parents or caregivers were invited to come to school for an interview, and a large percentage did. The study also showed that according to teachers and parents, repetition rates in Primary 1 are much higher than perceived by the system. Repetition rates in Primary 1, as perceived by parents and teachers, are quite high—roughly 30% to 40%, depending on source and location. In addition, parents reported that early entry into Primary 1 (and the possible resulting repetition) is being used as a substitute for pre-primary education due to the lack of pre-primary schooling options. Some parents send their children to school at an early age because they cannot afford pre-primary schooling, even though they realize the child might have to repeat the year or will learn less the first time through Primary 1. For children who attended pre-primary, the data demonstrate a strong "protective" effect on their chances of repeating Primary 1 (i.e., the children who attended pre-primary were less likely to repeat in Primary 1). Gender was not found to affect these issues to any significant degree.

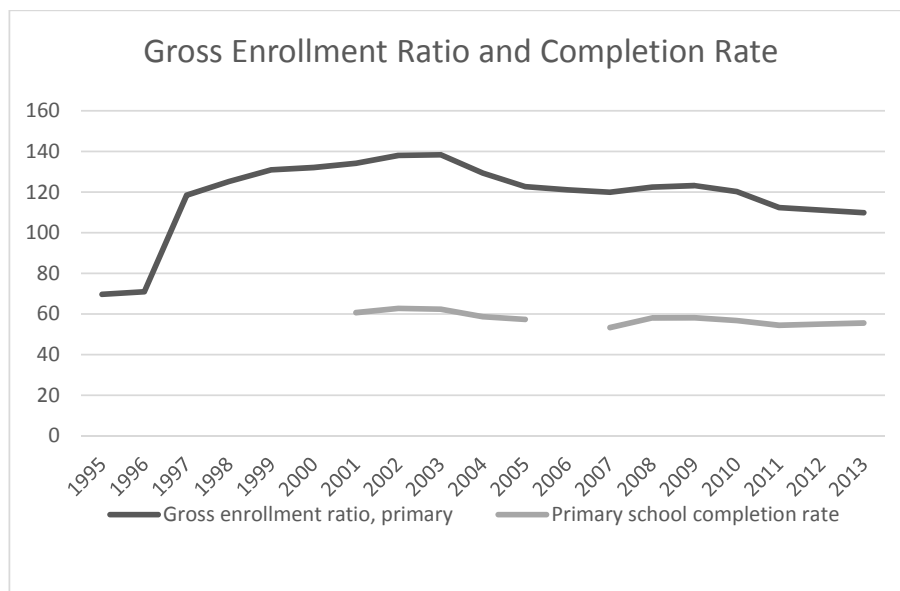
Key words: early grade repetition, pre-primary education, pre-primary access, age of enrollment, early learning

1. BACKGROUND AND SIGNIFICANCE

Recognizing the importance of providing equitable education opportunities for all children, the Government of Uganda (GOU) adopted a policy of Universal Primary Education (UPE) in 1997. Under the UPE policy, the GOU instituted several educational reforms, including abolishing school fees for government primary schools and introducing extensive infrastructure development through school facility grants (National Planning Authority 2015 Ministry of Education and Sports [MOES] 2004). As a result of the UPE policy and reform efforts, primary school enrollment doubled from 2.9 million students in 1995 to 5.8 million by 1998. By 2015, primary school enrollment in Uganda had reached 8.3 million students.¹

As can be seen in Exhibit 1, the effect of the UPE policy on primary school enrollment was dramatic. However, the primary school completion rate has stalled for at least a decade at around 60%. This paper argues that the inconsistency between very high enrollment and very low completion is due to problems that begin in the first few grades.

Exhibit 1. Gross enrollment ratio and completion rate over time since the introduction of UPE in Uganda



2006 primary completion rate shows a gap in available data.

2012 interpolated by the authors.

Source: <http://datatopics.worldbank.org/education/wDataQuery/QFull.aspx>

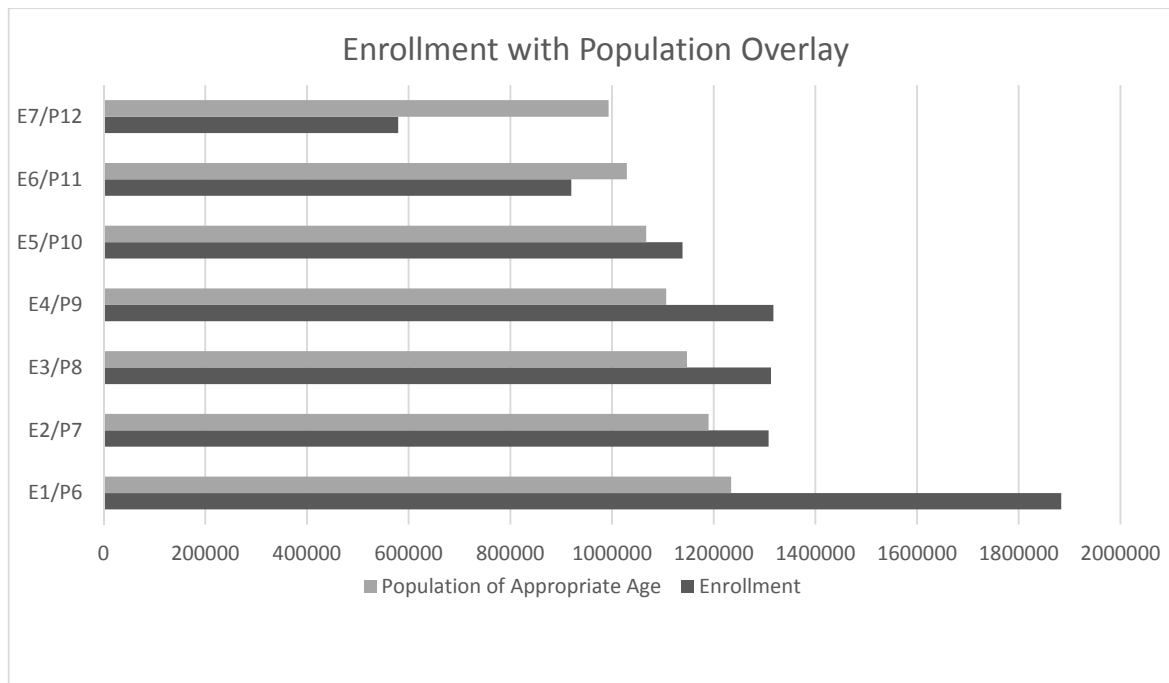
Data from international education system databases suggest the existence of an enrollment “bulge” in Primary 1 and 2 (P1 and P2) in some lower income countries, including Uganda. For example, more children are enrolled in P1 than there are children in the population of the appropriate age, suggesting that some enrolled children must be under- or over-age for the grade. Although enrollment declines from P1 to P2, the over-enrollment trend persists. This decline as children progress from P1 to P2 is commonly attributed to students dropping out, but in fact it may be caused in part by unreported P1 repetition. Higher-than-reported repetition rates have potentially large

¹ UNESCO Institute for Statistics data download. <http://data.uis.unesco.org/#>.

implications for efficient use of scarce education sector resources and students' likelihood to successfully complete primary school.

This enrollment “bulge” phenomenon in Uganda is illustrated in Exhibit 2 using data from a recent, typical year (MOES 2013). Until P5, the number of students enrolled in primary school is greater than the number of children of the appropriate age for that grade in the population. The most dramatic difference can be seen in P1 and suggests that students are either enrolling at an inappropriate age, are repeating grades, or both.

Exhibit 2. Student enrollment versus number of appropriate-age students for grade in the population in 2013



Graphed by the authors from enrollment data sourced from the Education Management System (EMIS) 2013 (MOES 2013) and, for population, from a direct download of the World Bank's EdStats system data: <http://datatopics.worldbank.org/education/wDataQuery/QFull.aspx>

Another factor to consider is the gross intake ratio, which, in primary school, is the number of new entrants in P1, of any age, as a percentage of the population of official age. A review of data across countries shows enrollment rates that are greater than anticipated in the first few grades of primary school, and that then drop off, indicating a lot of repetition, acknowledged or not, as reflected by Bernard et al. (2007) in a report focusing on Africa. A similar trend occurred in Latin America in the 1980s, as documented by Schiefelbein and Wolff (1993) and others. Gross intake into P1 is very high in Uganda. High gross intake ratios are sometimes ascribed to late or early enrollment (MOES 2011, p. 49; Federal Democratic Republic of Ethiopia 2010, p. 31). However, in Uganda the gross intake ratio² has remained more than 140%, on average, since 2000. This high intake cannot be primarily caused by *new* under- or over-age enrollment, as a child can technically only enter school for the first time once. Therefore, such a high gross intake ratio and a bloated ratio of P1 enrollment to

² Gross intake ratio is the official intake ratio as measured and reported by the EMIS. It does not assume automatic promotion. It is the number of children reported as “new to P1” by the EMIS, divided by the population of entry age.

the appropriate-age population might reflect “catch-up entry” in an education system that previously had low enrollment.

Catch-up entry can occur for various reasons, including a country emerging from conflict, having just instituted free education, or beginning to build schools in previously under-served areas. Any of these reasons could explain the inflated intake in the lower grades for the first few years after one of the situations described above. However, the ratios reviewed in some countries have persisted for many years. For Uganda, the median gross intake ratio was already 1.31 in the five years’ prior (i.e., 2003–2007) to the 2008–2012 data reviewed.³ This might be expected if the ratio of enrollment to population had been very low, whereby children were enrolling in school to make up for the time they had not been in school (i.e., “catch-up”). Yet, the ratio of P1 enrollment to the appropriate-age population was already extremely high (e.g., 1.67) in 2003–2007.⁴ Looking back further from 1999–2003, the ratio of P1 enrollment to the appropriate-age population and the gross intake ratio were 1.53 and 1.31, respectively.⁵ Thus, the increased intake ratio and P1 over-enrollment has persisted for at least 15 years—the bloated ratios cannot be attributed to catch-up because catch-up cannot be a permanent phenomenon. Rather, this continuous over-enrollment suggests that under-reported repetition may be occurring. Similar trends have been observed in several countries, including Malawi, Ethiopia, Mozambique, and Rwanda. Although inaccurate and incomplete EMIS or census data may also be a factor, the inflated ratio pattern is too large and persistent, and occurs too consistently across countries to be explained by miscounting. Significantly, continuous over-enrollment has been confirmed by household surveys.

Inconsistency between P1 enrollment and the age-appropriate population is not unique to Uganda. In Mozambique, official repetition rates for P1 students are reported between 5% to 10% (Mozambique Ministry of Education 2012, p. 57), although the ratio of enrollment in P1 to the population of appropriate-age children is as high as 177%. Additionally, Mozambique’s Ministry of Education reported a reduction in repetition rates due to automatic promotion of students. However, the ratio of P1 enrollment to the appropriate-age population simultaneously increased, suggesting that the automatic promotion policy was ignored.⁶

Crouch and Merseth (2017) suggest that the inflation in early primary grades may be related to issues around provision of pre-primary education or early childhood development and education. They further argue that in many countries, due to the early primary grade bulge in attendance, the cost of pre-primary is essentially already being paid for by ministries. They also show, using cross-national evidence, that spending per child explains only 9% of the variance in completion rates, but that factors related to the early-grades bulge, such as lack of access to pre-primary education and high repetition in P1, explain 34% of the variance in completion rates.

It is likely that Uganda’s inability to increase the completion rate past approximately 60% is due, at least in part, to problems in the foundational years. If that is a possibility, then investigating the determinants of the inefficiencies in the foundational grades is critical. This work aims to explore

³ United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics data download. <http://data.uis.unesco.org/#>.

⁴ UNESCO Institute for Statistics data download. <http://data.uis.unesco.org/#>.

⁵ UNESCO Institute for Statistics data download. <http://data.uis.unesco.org/#>.

⁶ Dynamic trend data for a long-term (1999–2012) trend downloaded from the UNESCO Institute for Statistics database (<http://data.uis.unesco.org/>). When *trends* are noted in the paper, the data were taken from this database.

the circumstances of pre-primary enrollment and early primary repetition at a micro-level, including parent attitudes, knowledge, and beliefs about foundational grades in a higher and lower performing district in Uganda.

2. PURPOSE OF STUDY

Considering the background described in Section 1, the purpose of this research is two-fold:

1. **To document** the real repetition rate in P1 and explore its relationship with pre-primary enrollment, including parent perspectives on these issues; and
2. **To develop** a simple research methodology to investigate the above—a methodology that can be replicated elsewhere.

This study will contribute knowledge on the magnitude of repetition in selected primary schools and could be a basis for a national study to further explore the intensity of the problem. This research will serve as a valuable resource for dialogue with the Ugandan MOES and other stakeholders around the quality and delivery of UPE. Findings on parents' knowledge and attitudes of pre-primary education should be useful to the GOU while planning for provision of early childhood education—a sector that is currently largely supplied by private providers. It will further contribute to the field of education research by piloting a simple research methodology, which can be replicated in other countries (such as Malawi, Rwanda, Ethiopia, and Mozambique, as discussed above) that face similar challenges with quality and efficiency in the foundational grades.

3. RESEARCH QUESTIONS

To document the real repetition rate in early primary grades and explore its relationship with pre-primary enrollment, including parent perspectives on these issues, we developed the following research questions:

- ◆ **Research Question 1:** What is the enrollment pattern and the age distribution of students enrolled in P1, according to school records, teachers, and parents?
- ◆ **Research Question 2:** What is the real repetition rate in P1, according to school records, teachers, and parents?
- ◆ **Research Question 3:** What is the relationship between repetition rate and age of enrollment in P1?
- ◆ **Research Question 4:** What is the enrollment rate in pre-primary education and its correlation (if any) with P1 repetition?
- ◆ **Research Question 5:** What are parents' attitudes and expectations about pre-primary education and repetition in P1?

4. SUMMARY OF METHODOLOGY

To see whether our research questions could be answered using a simple, low-cost research design, the study purposefully selected a “high-risk” and a “low-risk” district in Uganda. The high-risk district was designated as such using three criteria: (1) high reported repetition; (2) low pre-primary access; and (3) high, apparent P1 dropout. The low-risk district presented the opposite characteristics: (1) low reported repetition; (2) high pre-primary access; and (3) low, apparent P1 dropout. We reviewed available EMIS data to determine districts that met these criteria and ultimately chose Mbale District (low risk) and Kumi District (high risk) because they fit the criteria well and were also districts in which RTI International had ongoing projects, which facilitated our study. The sampling methodology called for a two-stage sample of schools (stratified by grade) and P1 students (stratified by class and gender) within these districts. For each district, 40 schools were sampled with equal probability. Within each sampled school, the assessment team sampled 12 boys and 12 girls equally across the total number of streams with equal probability. To triangulate information about age of enrollment and repetition in P1, we interviewed the parents and teachers of the sampled students. A particularly innovative, and relatively costly, approach was to interview both teachers and parents by asking parents of the randomly selected children to come to the schools the day after the teachers were interviewed. We also reviewed school records (from the teacher and/or the head teacher, as available) to determine the current enrollment rate, the ages of enrolled children (if indicated), and the number of repeaters. The interviews and records reviews were conducted during two visits on consecutive days to each school. Pre-pilot and pilot studies were conducted to practice and test the protocol and instruments developed for data collection. The methodology is further described in Section 6 and may be useful to others interested in replicating the study.

Number of Data Points. Although our sample was for 80 schools total, not all schools were able to provide certain records. Exhibit 3 shows the classroom-level data source and number of schools from which data from each source were collected.

Exhibit 3. Number of schools with classroom-level data

Source	N
Head teacher records (unofficial) ⁷	64
Teacher records	72

Source: Calculated from survey.

Student-level data were gathered from parent and teacher interviews. Exhibit 4 shows the number of parent and teacher interviews completed.

⁷ “Unofficial” means that these records were not necessarily reported to the MOES. Head teachers also keep “official records,” which are reported to the Ministry, but only six head teachers would share those records with us, likely because they are adjusted throughout the academic year.

Exhibit 4. Number of parent and teacher interviews completed

Source	N
Parent interviews	1,772
Teacher interviews	1,909

Source: Calculated from survey.

Calculation of Age. We found that, often, only the child's age was reported in the teacher and head teacher records, rather than a specific date of birth. When the date of birth was included in the records, we calculated the student's age based on the year only, rather than month and day, to ensure consistency of our data.

5. FINDINGS

The findings of this study will be presented in response to the research questions outlined above, drawing on all the data sources available to present a complete depiction.

5.1 Enrollment and Age Distribution in P1

Research Question 1: What is the enrollment pattern and the age distribution of students enrolled in P1, according to school records, teachers, and parents?

This section compiles our findings of the number of children enrolled in P1 and the reported ages of the children enrolled, as collected from school records and through parent and teacher interviews.

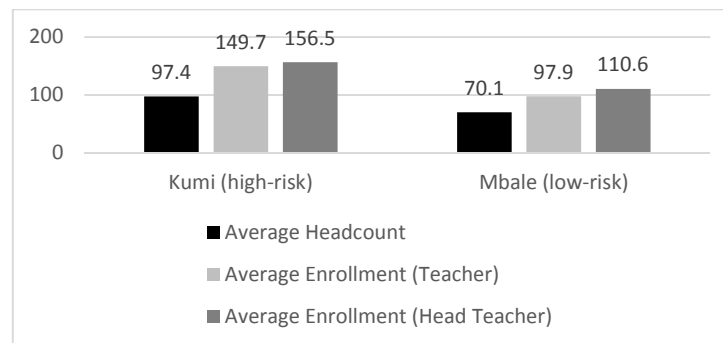
5.1.1 Enrollment Pattern and Age Distribution, According to School Records

Unless otherwise noted, the data reported reflect only the schools in which *both* teacher and head teacher records were collected (N = 55).

Enrollment. Enrollment records were reviewed for the current number of children registered in P1. Records from the head teachers reflect information taken when parents first enrolled their child at the school, while records from P1 teachers reflect information taken from the daily attendance notebook. The research teams also took a headcount of boys and girls in P1 on the days they were at the schools.

Exhibit 5 shows that headcount attendance on the day of the survey was much lower than the enrollment rate in school records in both districts, notably about a third lower than the head teacher enrollment records. The discrepancy between the number enrolled and the number present on the day of data collection could be due to absence or withdrawal. Given that the survey took place in the middle of the school year, some students might have withdrawn, or simply not have been present the day of the survey. Given that both parents and teachers attribute repetition to lack of attendance, the fact that approximately 30% of students were not present the day of the survey is a concern.

Exhibit 5. Comparison of number of students present in school and number of students enrolled from school records (N = 55)



Source: Calculated from survey data.

Distribution of Student Age. In addition to collecting the number of children enrolled, we also reviewed teacher and head teacher records for ages or student dates of birth. Exhibit 6 presents the mean percentage of students enrolled by age from the records, by district.

The GOU passed legislation in 2008 that nationally governs the provision of public education. The Education (Pre-Primary, Primary and Post-Primary) Act of 2008, §13, 3 states,

- a. “primary education shall be universal and compulsory for all students aged 6 (six) years and above which shall last seven years;” [and]
- b. “all children of school going age shall enter and complete the primary education cycle of seven years” (GOU 2008).

This policy means that in a P1 class, we should have found children 6 years of age, and some 7 years of age if they turned 7 during the P1 school year. In fact, our data in Exhibit 6 confirm this and show that the bulk of children in P1 were 6 or 7 years old, as would be expected according to the Act. Note that we collected data in July, which was midway through Uganda’s academic year. Therefore, we expected about half of the children in P1 to have already turned 7 by the time data were collected.

Exhibit 6. Mean percentage of students at each age level in P1 class from teacher records (N = 55) and head teacher records (N = 55) by district

Mean percentage of students enrolled in P1 by age						
Age (in Years)	Kumi (high risk)		Mbale (low risk)		Total	
	Head teacher	Teacher	Head teacher	Teacher	Head teacher	Teacher
3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
5	0.8%	0.6%	3.2%	1.3%	1.6%	0.9%
6	35.4%	42.3%	32.5%	34.2%	34.4%	39.5%
7	31.9%	30.1%	33.8%	36.4%	32.6%	32.3%
8	20.5%	6.9%	20.1%	11.3%	20.4%	8.4%
9	7.1%	1.3%	4.8%	2.7%	6.3%	1.8%
10	3.3%	0.5%	1.5%	1.2%	2.7%	0.8%
11	0.6%	0.0%	0.3%	0.1%	0.5%	0.0%
12	0.2%	0.0%	0.1%	0.0%	0.2%	0.0%
Unknown	0.1%	18.2%	3.5%	12.8%	1.3%	16.3%

Source: Calculated from survey. Note that columns do not add up to 100.0% because each percent is actually an average across teachers.

According to the Education Act of 2008's legislation, we also know that *if* there were no true repetition, there would be no children 8 years old or older in P1 (unless there was "catch-up entry" as discussed above). This legislation also means that there should be no children 5 years old or younger in P1. Therefore, for the purposes of this study, for P1, we considered children 8 years old and older to be "over-age," and children 5 years old and younger to be "underage." Exhibit 6 shows almost no underage children, which was an unexpected finding.⁸ Of course, this could be due to a reluctance on the part of school authorities to record children's real ages, especially if they are underage.

Exhibit 7 shows that across districts and data sources, there are more children who are over-age for grade than underage, which is an issue. Although school officials may be unwilling to record children's true ages if they are underage, this is not the case for children who are over-age.

⁸ EMIS data show small numbers of underage students—usually around 4% or so. This could also be due to under-reporting.

Exhibit 7. Mean percentage of P1 students who are under- and over-age for grade from head teacher records (N = 55) and teacher records (N = 55)

Mean percentage of students under- and over-age for grade						
	Kumi		Mbale		Total	
	Head teacher	Teacher	Head teacher	Teacher	Head teacher	Teacher
% Underage	0.8%	0.6%	3.2%	1.4%	1.6%	0.9%
% Over-age	31.7%	8.7%	35.5%	15.3%	30.1%	11.0%

Source: Calculated from survey.

5.1.2 Enrollment and Age Distribution, According to Parents

In addition to investigating school records to better understand enrollment and age of entry, we asked the parents of the randomly selected students a series of questions about their child's age.

Exhibit 8 shows the number of children in P1 at each parent-reported age. There was no statistically significant difference between districts in children's ages. Only 25% of children were 6 years old—we expected that number to be closer to 50% (as discussed above, the other 50% should have turned 7 by the middle of the school year). According to the data obtained from parents, there are considerably more children who are over-age for P1 than underage, which aligns with the data obtained from school records. Going by parent reports, approximately 31% of children were over-age (i.e., 8 years old or older).

Exhibit 8. Parent-reported ages of students in P1

Student's age (in years)	Percent
4 or younger	1%
5	6%
6	25%
7	34%
8	20%
9	7%
10 or older	4%

Source: Calculated from survey. May not add up to 100.0% because of rounding error or unknowns.

5.1.3 Discussion of Findings: Enrollment and Age Distribution

On enrollment: Our data suggest that head teacher records have the highest numbers of listed students, while teacher records are close but have slightly less numbers than the head teacher records. As expected, we found that attendance on the day of the data collection was much lower than the enrollment records of both the head teacher and the teachers.

On age distribution: Our hypothesis confirmed that there were children both above and below the appropriate age attending P1. Our data suggest that the bulk of these children are over-age (with a much smaller percentage underage), suggesting hidden repetition or late enrollment in P1. Other elements of our data will further investigate the cause of this over-age enrollment.

5.2 Real Repetition Rates in Primary 1

Research Question 2: What is the real repetition rate in P1, according to school records, teachers, and parents? This section aims to report and contrast repetition data in P1 from EMIS, school records, teachers, and parents. The purpose of this analysis is to determine if there are discrepancies between the official EMIS data and what we found during our field research.

5.2.1 Repetition Rates: EMIS, records, and interviews

According to Uganda's 2015 EMIS data, the repetition rate in Kumi (the high-risk district) was 9.8%, and the repetition rate in Mbale (the low-risk district) was 2.2%. We compared those statistics with the repetition data from head teacher and teacher records in the schools where we were able to access both (N = 55). We also investigated P1 repetition rates through interviews with parents and teachers of the randomly selected children and compared these results with the rates found in school records.

Given that repetition could be considered formal or informal, and parents may mistakenly not report their child as repeating, the following two questions were asked of parents, and their responses were compared to determine consistency:

1. Is the child repeating?
2. What grade is the child attending this year, and what grade did the child attend last year? (This question was asked with the intent that children in the same grade both years would be considered repeaters).

Surprisingly, only 10 parents (0.02%) gave answers to those two questions that were inconsistent, suggesting that, in general, the parents understood the repetition question well. The children of those 10 parents who gave inconsistent answers were considered repeaters for all analysis. We also examined the level of agreement between parents and teachers on whether a child had repeated the grade—parents and teachers agreed 90.2% of the time when providing a definitive response to the question regarding whether the child had repeated (i.e., “yes” or “no”).

Exhibit 9 presents repetition rates from all sources, for both districts, and shows the following:

1. Regardless of source, repetition rates are higher in Kumi than Mbale, which aligns with the EMIS data.
2. Teacher records show much higher repetition rates than school records or EMIS data.
3. Teacher interviews suggest much higher repetition rates than school records or EMIS data.
4. Parent interviews show the highest repetition rates of any source, although only somewhat higher than teacher interviews.
5. This “hierarchy” or pattern is the same in both districts, suggesting that the pattern is universal, affecting both high-risk and low-risk districts.

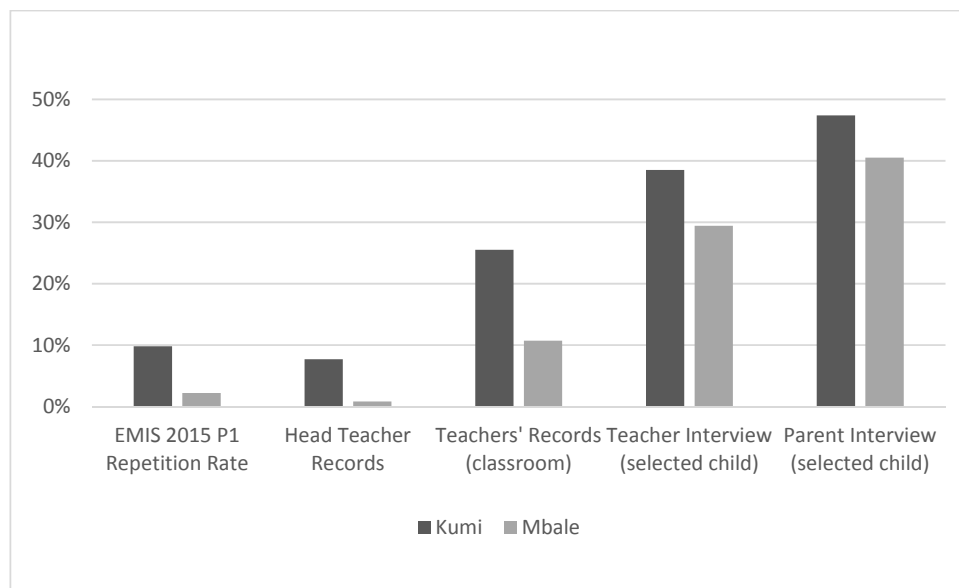
Not shown in Exhibit 9 is the fact that for the parent and teacher interviews, the differences between the two districts were, at best, only weakly statistically significant, which suggests that even Mbale District had repetition problems that were about as serious as the high-risk district, Kumi.

Exhibit 9. Comparison of repetition rates by source and district

Source	Kumi	Mbale	Both districts
EMIS 2015 P1 repetition rate	9.8%	2.2%	5.6%
Head teacher records	7.7%	0.8%	4.8%
Teacher records (classroom)	25.5%	10.7%	18.0%
Teacher interview (selected child)	38.5%	29.4%	33.8%
Parent interview (selected child)	47.4%	40.5%	43.8%

Source for head teacher and teacher records: Calculated from survey.

The same data are represented graphically in Exhibit 10.

Exhibit 10. Comparison of repetition rates by source and district

Source: Calculated from survey data.

From a gender perspective, it is important to note that there is no statistically significant difference between the estimated repetition rate of boys and girls: they both repeat at about 44%.

5.2.3 Discussion of Findings: Repetition Rates

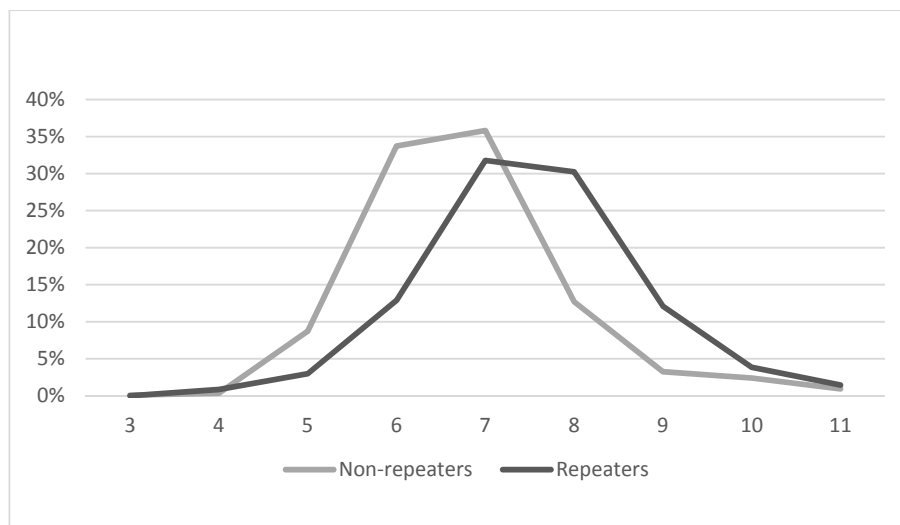
- ◆ Head teacher records align closely with the national EMIS data, but do not align with teacher records, with what teachers report about randomly selected children, or with what the parents of those children report.
- ◆ Our data suggest that the closer the information source is to the child, the higher the repetition rate is reported to be (i.e., a parent is more likely to say a child has repeated than a head teacher).
- ◆ Parents have a clear understanding of the concept of repetition (being in the same grade this year as last year).
- ◆ Parents and teachers agree quite closely on which children are repeating.
- ◆ As expected, the repetition rates are higher in Kumi (the high-risk district) than in Mbale (the low-risk district), suggesting that in a national version of this study, the repetition rates estimated using these methods is likely also to be much higher than the national estimates coming from EMIS.
- ◆ Gender makes no difference to repetition.

5.3 Relationship between Repetition and Age of Enrollment

Research Question 3: What is the relationship between repetition rate and age of enrollment in P1? This section presents differences between repeaters and non-repeaters when examined in relation to parent-reported age of students and the official age of enrollment.

We approached this research question by first calculating the mean age of repeaters and non-repeaters. Exhibit 11 shows the age distribution of non-repeaters and repeaters. We found that the non-repeaters are younger than the repeaters (6.8 years old versus 7.5 years old, respectively) by 0.7 years. Since repeaters have stayed in school at least one year more than non-repeaters (all other things being equal), one would expect that they would be precisely one year older than the non-repeaters (or more, since some may be repeating more than once). That would be the case unless repeaters were also enrolling early, which we explore below. Note that the difference in ages is statistically significant.

Exhibit 11. Age by repeater status



Source: Calculated from survey data.

Exhibit 12 reports a cross-tabulation of repeater status and whether a child is over-age for P1. A child who is a repeater has the same chance of being over-age as not being over-age for P1, while a

child who is not a repeater is much more likely to not be over-age for P1. The exhibit shows a clear relationship between being over-age and being a repeater. The relationship is highly statistically significant.

Exhibit 12. Age by repetition (parent report)

Is student over-age for grade?	Not a repeater	Repeater
No	80.3%	50.4%
Yes	19.7%	49.6%
Total	100%	100%

Source: Calculated from survey data.

Other data gathered during the survey, pertaining to the relationship between age, repetition, and early enrollment, are important and detailed below.

- ◆ Repeaters in P1 are older than non-repeaters but are not a year older, as one would expect. Indeed, repeaters in P1 were 7.5 years old at the time of the study, whereas non-repeaters were 6.8 years old. Two issues stand out. First, given that 40% of students do repeat (according to their parents), substantial “active” aging occurs in P1 as opposed to students simply being over-age at school entry. Second, it appears that repeaters enter earlier than non-repeaters because, in P1, they are only 0.7 years older than non-repeaters. This suggests that P1 is being used as a substitute for pre-primary schooling.
- ◆ More direct evidence of P1 substituting for pre-primary education is provided by the fact that 28% of parents said that they sent their children “early” to P1 instead of to pre-primary. Note that “early” is left purposefully vague. It does not necessarily refer to “earlier than per policy.” Rather, it simply refers to whatever parents understood as “early.”
- ◆ Importantly, among parents who sent their children to P1 early, 56% expected that their children might have to repeat P1 and 67% expected that their children would likely learn less the first time through P1. This is the first specific confirmation we know of, in a developing country, of parents expecting their children to repeat or learn less when they send their children to school “early.”
- ◆ Because so many students who enter P1 do repeat, “aging in place” or “active aging” occurs in the school, starting in P1.
- ◆ Finally, one more piece of evidence comes from comparing the ages of repeaters versus non-repeaters, but separating out those who were enrolled early from those who were not. This strategy revealed that the repeaters are only 0.9 years (i.e., almost a full year) older than the non-repeaters. That is, if children are separated out into those who enrolled early and those who did not enroll early, the repeaters in each group are approximately 0.9 years older than non-repeaters, whereas repeaters are only 0.7 years older than non-repeaters when those who enrolled early are combined with those who did not. Thus, taking all children together, we find that there is considerably less than a full year of difference between the ages of non-repeaters versus repeaters because repeaters enroll early (i.e., in lieu of pre-primary). This aligns with our finding that parents who enroll their children early do so with the expectation that their children will repeat, learn less, or both.

5.3.1 Discussion of Findings: Relationship between Repetition and Age of Enrollment

From the data presented above, we conclude that children who begin P1 younger than age 6 are more likely to repeat the grade. This aligns with developmental expectations about children's ability to adapt to and succeed in school (e.g., less-mature children will have more difficulty than more-mature children). Alternatively, it could be that parents simply send some children to school early with the expectation that they may repeat. It turns out that quite a few parents send their children to school early, with the expectation that they might repeat, or would learn less the first time they go through P1.

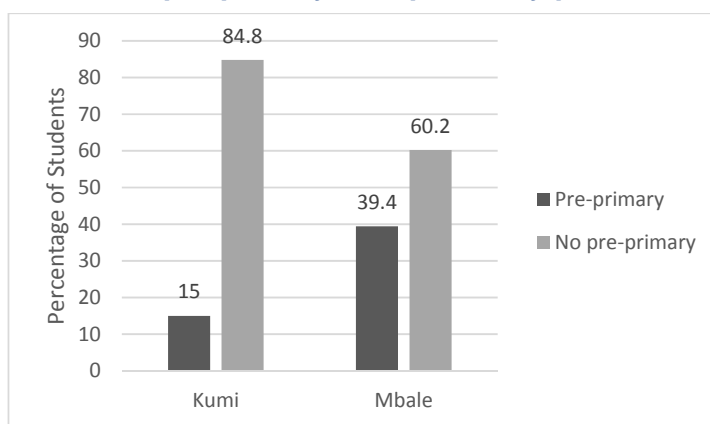
5.4 Pre-primary Enrollment and Correlation with P1 Repetition

Research Question 4: What is the enrollment rate in pre-primary education, and its correlation (if any) with P1 repetition? An important aim of this study was to investigate students' pre-primary exposure and the relationship to P1 repetition. We wanted to investigate this question because experience in quality early learning settings has been proven to prepare children for success in primary school and, thus, reduce repetition rates. The sections below describe the findings related to pre-primary enrollment, age in P1, and repetition in P1.

5.4.1 Pre-primary Enrollment

Parents of the sampled P1 students reported whether their child attended pre-primary school (Exhibit 13). As expected, the rate of enrollment in pre-primary in the low-risk district, Mbale, is nearly three times the rate of attendance in the high-risk district, Kumi. Only 15% of parents in Kumi reported that their child attended pre-primary school, as opposed to Mbale, where almost 40% did. This aligns with EMIS data about pre-primary provision, and the socioeconomic features of the two selected districts. Note that regarding gender, boys attend pre-primary at a slightly lower rate (about 4 percentage points less) than girls, but the difference is not statistically significant.

Exhibit 13. Enrollment in pre-primary as reported by parents



Source: Calculated from survey.

5.4.2 Pre-primary Enrollment and Repetition

By examining pre-primary exposure and repetition in P1, we explored the relationship between pre-primary enrollment and repetition in P1. The findings, as shown in Exhibit 14, indicate that attending pre-primary is a helpful, but not sufficient, condition for controlling repetition.

Exhibit 14. Number of students by pre-primary enrollment and repetition status

	Both districts		Kumi		Mbale	
	Pre-primary attendance		Pre-primary attendance		Pre-primary attendance	
Repetition status	No pre-primary	Pre-primary	No pre-primary	Pre-primary	No pre-primary	Pre-primary
Not repeating	48.0%	77.4%	47.8%	79.5%	48.3%	76.7%
Repeating	52.0%	22.6%	52.2%	20.5%	51.7%	23.3%

Source: Calculated from survey.

Children who did not go to pre-primary have a 52% chance of repeating P1; however, that chance of repeating decreases to 23% if they attended pre-primary. The protective effect appears to be almost the same in both districts. The differences are not of any substantive interest. Thus, non-repeaters are more likely to have attended pre-primary and did some of their aging there, whereas repeaters are partly using P1 as their pre-primary, which means they are somewhat younger upon enrollment than non-repeaters.

This is an important finding because of the efficiency implications for the education system as a whole. If current P1 repetition rates can be reduced by as much as 50% by expanding access to pre-primary, the savings to the GOU would be significant. According to EMIS enrollment data and World Bank population data, the enrollment inflation in P1 has averaged around 70% in the recent past (that is, there have been some 70% more children in P1 than in the appropriate age cohort in the population). To the extent that repetition is a significant component of the over-enrollment (and, at the reported levels, it would be), reducing repetition by half could also decrease over-enrollment by about half, and would considerably increase internal efficiency.

It should be noted that the protective effect of pre-primary attendance on repetition is the same for boys as for girls: 23% for either.

5.4.3 Pre-primary Exposure and P1 Repetition

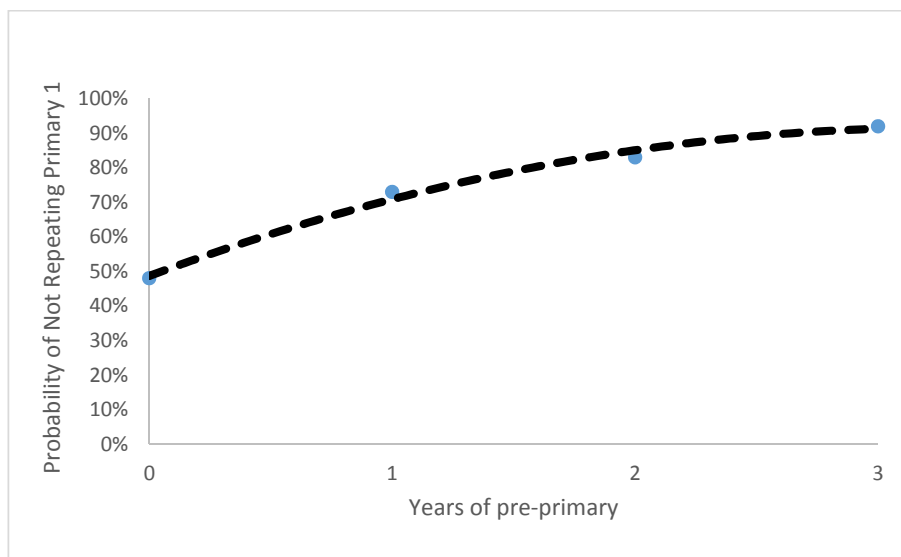
We were also interested whether the length of time spent in pre-primary (i.e., exposure to treatment) affected later P1 repetition rates. Parents were asked how many years of pre-primary school their child attended. We examined this data along with repetition data to determine whether more time spent in pre-primary resulted in a child being less likely to repeat P1. Exhibit 15 shows that as the number of years a child attends pre-primary increases, their probability of not repeating increases. There is, in other words, a “dose response curve” to the protective effect of pre-primary attendance—a point that, lacking experimental evidence, can help establish a presumption of causality.

Exhibit 15. Probability of not repeating P1 by years of pre-primary attended

Years of pre-primary	Probability of not repeating
0	48%
1	73%
2	83%
3	92%

Source: Calculated from survey.

The same data as above are displayed graphically in Exhibit 16.

Exhibit 16. Pre-primary attendance impact on not repeating

Source: Calculated from survey data.

5.4.4 Discussion of Findings: Relationship between Pre-primary Enrollment and P1 Repetition

In this section, we confirmed that children in the low-risk district had much higher enrollment rates in pre-primary, compared with the high-risk district. We also confirmed that children who attend pre-primary have less of a tendency to repeat P1. Further, we determined that attending pre-primary for two years has a stronger effect on reducing the odds of repeating P1 than attending for just one year and that there is a “dose response curve” to pre-primary attendance. Finally, boys and girls are equally well protected from repetition by pre-primary attendance.

5.5 Putting Everything Together: Some Determinants of Repetition and Pre-primary Attendance

Although it was not the purpose of the study to test a whole theory or empirical model of the causes of repetition and attendance, when considering the relationships between repetition, pre-primary attendance, and other factors, it is helpful to try to see how everything fits together. To do this, we carried out logistical regressions to calculate the effect of attending pre-primary on repetition, while controlling for other factors, and then to also calculate the effect of various factors on the

probability of attending pre-primary. This was done using a logistical regression, and the results are presented as odds ratios, signaling the impact of the various factors on the odds of either repeating or attending pre-primary (Exhibit 17).

Exhibit 17. Odds ratio for factors of repetition and pre-primary attendance

Determining factor	Odds ratio for repetition ⁹	Odds ratio for attendance in pre-primary
Attendance in pre-primary	0.28***	Not applicable
Being a girl	1.1	1.24†
Caregiver's education	0.93***	1.1***
Living in Mbale (low-risk district)	1.01	3.67***

*** = statistically significant at the 0.001 level

† = statistically significant at the 0.1 level

Source: Calculated from survey.

Creating an index of socioeconomic status using factors such as the type of water used in the household, possession of a cell phone, or the type of fuel used in cooking, was not useful, so none of those variables, including a combined index, were used. In the end, the only variables that had an important effect are those listed. Being a girl had no statistically significant effect on the probability of repetition, while having an educated caregiver slightly lowered the odds of repeating, in a statistically significant effect. Notably, attendance in pre-primary had a very large and statistically significant effect on repetition, even while controlling for other factors such as socioeconomic status and gender. Living in Mbale had no effect on repetition, but living in Mbale had both a very strong and statistically significant effect on the probability of accessing pre-primary schooling, even while controlling for caregiver education. Finally, the caregiver's education had a small effect on the probability of attending pre-primary schooling. Being a girl also had a positive effect on the probability of attending pre-primary schooling, but the effect was only marginally statistically reliable.

In summary: availability of pre-primary in the district and education of caregivers helps determine pre-primary attendance, and pre-primary, in turn, affects the probability of repetition in a strong way. Caregiver education affects the probability of attending pre-primary education in a slight manner. Being a girl has a very slight effect on pre-primary attendance but, controlling for that, no effect on repetition.

5.6 Parent Expectations of Pre-primary and Primary Education

Research Question 5: What are parents' attitudes and expectations about pre-primary education and repetition in PI? We wanted to investigate parents' attitudes and expectations in pre-

⁹ An odds ratio is the ratio of two probabilities. For instance, if the probabilities of repeating and non-repeating for those who have had pre-primary education are 0.25 and 0.75, respectively, then the odds ratio for repeating is 0.33 for those who have had pre-primary education. The values shown in the exhibit are the impact on the dependent variable (i.e., repetition or attendance in pre-primary) of a change in the "determining" factor of 1. Thus, attending pre-primary lowers the odds ratio of repeating to 0.28. To interpret the exhibit, it is useful to know some benchmark odds ratios from the medical field as they underpin well-known medical recommendations. For example, the impact on odds ratios for certain public health recommendations, such as effective vaccinations and the protective effect of not smoking on lung cancer, are in the range of about 0.1 to 0.3. Therefore, when comparing the public health odds ratios with those of attendance at pre-primary, we determine that attending pre-primary has a protective effect to repetition prevention (as per this study) because the ratios are within the range of effective public health recommendations.

primary to better understand the decision-making process about enrolling children in pre-primary versus sending them directly to P1.

This is an important issue to investigate because parental knowledge and attitudes about pre-primary education are critical to the successful implementation and uptake of policies and programming to support the future provision of pre-primary. Overall, many parents interviewed perceived access to pre-primary as a means for children to get a head start in gaining foundational academic knowledge. Given the importance of pre-primary education for reducing repetition in P1, as shown in the previous sections, but also given the low rates of enrollment in pre-primary, it is sensible to investigate the influencing demand-side factors. This section looks at parental expectations and motivations, and, where relevant, links those expectations to actual pre-primary enrollment and repetition patterns.

Given the differences in pre-primary options in the two districts, Exhibits 18–21 show the data by district, noting when the differences between districts are statistically significant.

In each exhibit, the results are shown from most common (i.e., highest percentage) to least common. The differences between districts that are statistically significant at least at the 5% level are noted with an asterisk.

5.6.1 Parent Expectations of Learning in Pre-primary

As Exhibit 18 shows, the most prominent responses given regarding parents' expectations for pre-primary school are that children will learn how to read (46.1%), learn English (42.6%), and practice writing (38.7%). Less than 25% of parents interviewed listed more socially focused expectations, such as learning manners (20.5%) or making friends (6.4%).

Exhibit 18. Parent expectations of learning in pre-primary

What do you expect a child to learn or do in pre-primary?	Kumi	Mbale	Both districts
How to read*	34.4%	56.8%	46.1%
Learn English*	51.3%	34.6%	42.6%
Practice writing	36.9%	40.4%	38.7%
Learn numbers	24.2%	19.1%	21.5%
Learn letters*	15.0%	25.5%	20.5%
How to behave/learn manners/grow up	20.8%	20.2%	20.5%
Play games	18.0%	18.3%	18.1%
Sing songs	11.4%	11.7%	11.6%
Speak	9.9%	9.7%	9.8%
Make friends/be with friends	6.0%	6.8%	6.4%
Draw pictures	6.3%	6.5%	6.4%

Source: Calculated from survey.

We found that parents across the two districts were quite consistent in their learning expectations for pre-primary education. Only three of the above skills showed statistically significant differences between the high- and low-risk districts: (1) learning to read, (2) learning letters, and (3)

learning English. In Mbale (the low-risk district), which has lower repetition rates and higher pre-primary enrollment, significantly more parents listed learning to read and learning letters as an expectation for pre-primary school compared with high-risk district, Kumi. This may reflect the urban location and socioeconomic status of wealthier households in Mbale, which have more ambitious academic expectations for their children (e.g., learning to read is not a typical expectation for pre-primary school). In Kumi, significantly more parents expected that children would learn English than in Mbale, which may reflect a lack of exposure to English in Kumi's local environment, whereas children in Mbale may be exposed to English in their daily lives outside the classroom. In both districts, few parents cited social and play-based learning activities (which are developmentally appropriate) as an expectation for pre-primary school—playing games, singing songs, and making friends were mentioned by 18%, 12%, and 6% of parents, respectively, in Kumi and Mbale. The relatively heavy emphasis of parents' expectations of academic skills for pre-primary may contribute to a misconception that P1 is a suitable substitute for pre-primary.

As Exhibit 19 shows, parents' expectations for pre-primary learning are based on their observations of others (36% of respondents in Mbale and 31% in Kumi). Parents also form their expectations of pre-primary education from reflecting on their own experience attending pre-primary school (37% in Mbale compared with 12% in Kumi). In Kumi, many parents also received information from schools and neighbors, and more parents in Kumi reported hearing about pre-primary school from the radio or television (TV) than parents in Mbale (7% in Kumi and 2% in Mbale); however, the frequency of TV and radio as a source of information in both districts was low. These findings make sense given the higher level of pre-primary enrollment reported for Mbale District. In a low-risk district, with more enrollment, it is expected that parents may have older children who also attended pre-primary and, thus, derived their expectations from that experience. In Kumi, it is logical that more of the information would have come from school or from neighbors. Very few parents derived information from radio or TV in either district. The implications of these results are that parents set their expectations about pre-primary education based on what is in their immediate environment, i.e., their own experience, their neighbors' experience, and information from their own school. It further suggests that marketing efforts through health workers, radio, or TV are not likely to be effective in changing parents' beliefs about pre-primary education.

Exhibit 19. Source of information about expectations for pre-primary school

Where do you get information about what children learn in pre-primary school?	Kumi	Mbale	Both districts
Observing others	31.2%	36.3%	33.8%
My experience*	12.0%	36.5%	24.8%
From school*	29.4%	17.3%	23.1%
From neighbors*	20.2%	8.2%	13.9%
From radio/TV*	7.1%	1.7%	4.3%
From health workers	0.1%	0.0%	0.0%

Source: Calculated from survey. Some columns do not add up to exactly 100.0% due to rounding error or non-response.

5.6.2 Parent Decision Making About Pre-primary Education

Given the problem of hidden repetition in P1 and its relationship with a lack of access to pre-primary education described above, it is important to understand parents' decision making about whether to send their child to pre-primary. It is essential to note here that the GOU does not offer free pre-primary education, so families must seek a non-state provider, usually at their own expense.

We asked parents who had sent their child to pre-primary why they made that choice. The results (Exhibit 20) provided a consistent and overwhelming answer from both Kumi and Mbale: to learn.

Exhibit 20. Reasons for sending child to pre-primary school

Why did you decide to send your child to pre-primary school?	Kumi	Mbale	Both districts
To learn	77.1%	74.8%	75.4%
Child was ready	10.7%	6.9%	7.9%
Child was the right age	6.2%	7.7%	7.3%
It is expected	7.7%	7.0%	7.2%
Suggestion from others	8.6%	3.2%	4.6%
So that I could work*	0.0%	3.9%	2.9%
Child wanted to	0.6%	3.8%	2.9%
I went to pre-primary	0.7%	0.0%	0.2%

Source: Calculated from survey. Some columns do not add up to exactly 100.0% due to rounding errors or non-response.

For the parents who did not send their child to pre-primary, we asked why not (Exhibit 21). This is important information about the demand for pre-primary education; if parents mostly agree that the purpose of pre-primary education is to learn (rather than a childcare necessity) then what are the barriers to enrollment?

Virtually all parents who did not send their children to pre-primary school cited the inability to pay for it as the key reason for their decision—93% in Kumi, the high-risk district, and 73% in Mbale, the low-risk district. Additionally, about a quarter of parents in Mbale noted that not having a pre-primary school nearby was the reason they did not send their child to pre-primary. One possible explanation for this is that because Mbale is wealthier, access is a more immediate barrier having to do with proximity and convenience, while parents in Kumi believe that even if a pre-primary school was geographically accessible, they would not have the funds to pay for it. We would recommend that this question be explored in a nationally representative study, along with analysis of non-state pre-primary provision, to inform policy decisions about government investment in pre-primary. This study gives us a snapshot into the problem and identifies two critical levers for intervention: school fees and (a distant second) proximity of access. When administering this question, parents were asked to name only one reason, so we do not have information about interaction between reasons. For example, perhaps inability to afford transport for a child to attend a distant pre-primary was a factor (both access and financial limitations).

Exhibit 21. Reason for not sending child to pre-primary

Why did you decide that the child should not attend pre-primary school?	Kumi	Mbale	Both districts
Financial reasons *	92.6%	72.8%	84.2%
No school nearby *	6.4%	25.4%	14.5%
Child did not want to go	0.3%	0.5%	0.4%
Child did not need it	0.2%	0.6%	0.4%
Nursery school not good enough for the child	0.3%	0.2%	0.3%
School not good enough *	0.0%	0.5%	0.2%
School did not accept the child	0.2%	0.0%	0.1%

Source: Calculated from survey.

5.6.3 Parent Knowledge of Age of Enrollment in Pre-primary

Due to the important findings discussed above about age of entry into P1 and repetition rates, it is important to understand parents' knowledge about the appropriate ages of entry. Parents were asked what age they thought children should be ready to join pre-primary. Approximately 70% of parents (when accounting for both districts) believed that children 3–4 years of age are ready to start pre-primary (mean age of 3.7 in Kumi and 3.8 in Mbale). In both Kumi and Mbale, parents again reported getting information about appropriate start-age primarily from observing others and their own experience. It is interesting to also note that only 2% of parents reported that they did not know the right age for children to begin pre-primary education. That suggests a high degree of familiarity with the concept across both districts.

When asked about factors other than age that would indicate a child's readiness for pre-primary school, the top three responses were (1) a child being able to speak well (36.54%), (2) a child being able to follow directions (20.89%), and (3) a child being big in size (9.77%). These indicators seem somewhat more aligned with reasonable expectations for pre-primary education than the parents' expectations about learning in pre-primary education as shown in Exhibit 18. We further asked parents where they get information about the right age for their child to start pre-primary school. Their answers were very similar to the learning expectations question (Exhibit 18). They get information from their own experience, by observing others, from the school, and from neighbors.

5.6.4 Parent Knowledge about Age of Enrollment in P1

In addition to inquiring about the age of enrollment in pre-primary education, we wanted to ascertain parents' knowledge about the appropriate age of enrollment for P1. This is particularly important since we have documented a significant over-age population in the sampled classrooms, as discussed above. We found agreement among 77% of parents in Kumi and Mbale that the appropriate age of enrollment is between ages 6 and 7 (mean years in Kumi were 6.7 and in Mbale were 6.6; see Exhibit 22). This tells us that parents in either district do not have different understandings of the age of entry into P1. It is also important to note that 18% of parents believe children should start P1 at age 5 or younger (which is below the national policy guidelines), whereas we found only 6% of children in P1 age 5 or younger in our sample. Even fewer parents (about 4.4%) believe that children should start P1 at age 8 or older (i.e., over-age per national policy). This suggests that the increased numbers

in over-age children in the P1 classroom are not caused by late entry. It also further reinforces our hypothesis about high rates of hidden repetition.

Exhibit 22. At what age should a child start P1?

Age	District		
	Kumi	Mbale	Both
3	0.9%	2.1%	1.5%
4	3.3%	4.7%	4.0%
5	12.2%	12.6%	12.4%
6 and 7	78.6%	75.4%	76.9%
8	3.8%	3.0%	3.4%
Later	0.2%	1.8%	1.0%

Source: Calculated from survey. Columns may not add up to exactly 100.0% due to rounding errors or non-response.

Finally, we found similar data to those reported in Section 5.6.3, when we asked parents (1) how they knew the correct age for entry into P1, (2) where they got this information, and (3) what indicators, other than age, would signal a child's readiness for school.

5.5.5 Discussion of Findings: Parents' Knowledge and Attitudes

- ◆ Regarding parents' expectations of learning in pre-primary, we found a slight orientation toward more academic-type skills (e.g., learning to read) than is considered developmentally appropriate (globally) for children 4 and 5 years old.
- ◆ Regarding parents' decision making about sending their children to pre-primary, we found that parents who did send their children overwhelmingly did so with the objective in mind that their child would learn (primarily to read). Parents who did not send their children to pre-primary mainly cited financial constraints as the reason. Access to a pre-primary school nearby was a notable secondary reason for not attending pre-primary.
- ◆ Parents stated that children should begin pre-primary at various ages, primarily ranging between 3 and 5 years old, with the most responses at age 3. The fact that 18% of parents believe children should start P1 at age 5 or younger, but only 6% of children in our sample were reported to be age 5 or younger, suggests a discrepancy between what parents believe and what they report regarding their child's age; this also hints at the possibility of misreporting.
- ◆ Parents also demonstrated fairly accurate knowledge of the appropriate age of entry into P1 (e.g., between ages 6 and 7), but a notable percentage suggested that children could begin as early as age 5.

These findings suggest that a lack of information among parents is not the main cause of the over-age problem in P1 or low pre-primary enrollment. Rather the primary barriers are affordability and access.

6. DISCUSSION OF RESEARCH METHODS

As discussed in **Section 2**, in addition to the substantive findings presented above, a secondary objective of this study was to pilot a simple research methodology that could be replicated in other countries that may face circumstances similar to Uganda. Our hope is that by documenting our methodology, including the successes and challenges we faced, this study will contribute to the field of education research on this topic.

To our knowledge, a similar study, focusing on repetition and early childhood opportunities, and triangulated between school records, teacher reports, and parent reports, had not been conducted

prior to ours, although there are studies on repetition that have compared school records with family information. Therefore, no tested approaches were available to us. The study's aim was methodological as a point of departure—i.e., determine the degree to which one can triangulate data between sources and overcome logistical problems, such as systematically sampling parents of randomly selected children on the day directly following the day during which the children were sampled. Overall, because the study succeeded methodologically and the sample sizes were large enough, we derived many substantive conclusions.

6.1 Process of Field Data Collection

We collected information through teacher interviews, parent interviews, and school records during two visits to each school conducted on consecutive days. The method and tools were pre-piloted and then piloted again one month later to ensure the protocol and tools worked well in the school settings. The approach for the school visits was carefully planned and practiced during the pilot phase and included the following research activities:

1. Meeting with the head teacher: Upon arrival at the school, the data collection team oriented the head teacher to the purpose of the study and study activities. District education officials and project staff had previously notified the head teacher about the study.
2. Identification of the number of P1 and “P1X” streams: Data collectors determined the number of P1 classrooms at the schools and planned selection of students accordingly. For example, if a school had two P1 classrooms, the data collectors split the number of sampled students across the two classrooms (12 students from each). Data collectors also asked the head teacher about the existence of P1X classrooms, i.e., special P1 streams in which younger students were assigned to attend.
3. Random selection of students from P1 classrooms: Data collectors followed the RTI protocol for randomly selecting students from classrooms to participate in the study. The RTI protocol involves lining up students in no particular order, counting the number of students, dividing that number by the number to sample, and then skip-counting down the row of students.
4. Collection of sampled student information: The names of selected children were recorded manually on a paper that was destroyed at the conclusion of the two-day visit.
5. Preparation of parent communication: After students were identified to take part in the study, letters were prepared for them to take home to their parents, which provided information about the time for the parent interview on the subsequent day. If parent mobile numbers were available, the parents were also called. Parent consent forms were completed.
6. Review of classroom-level records: Data collectors asked the head teacher for permission to review records kept at the school on the P1 class(es). The sources of the records could be the head teacher's enrollment records, official MOES records, or the teacher's classroom records. Data collectors reviewed all records available and recorded the number of students at each age (ranging from 3 to 9 years old), as well as the number of repeaters, if marked.
7. Classroom headcounts: Other information collected on the first day's visit to the school included the classroom headcount, which simply tallied the number of boys and girls in attendance that day. During the pre-pilot, we found this was easiest to do during randomization.

8. **Parent interviews:** A small transport stipend was paid (7,000 UGX, approximately US\$2) per selected child (only one transport was paid, even if two parents attended). The person attending the interview had to be knowledgeable about decisions made with respect to the child's pre-primary attendance. Therefore, older siblings were determined to not have sufficient knowledge of the schooling decisions and were not interviewed. During the pre-pilot and pilot data collection, the research team attempted to reach parents by phone who did not come to the school for the interview. However, this approach did not yield any additional interviews. Finally, the research team spent extra time at some of the schools so parents could visit on the first day if that was more convenient. Otherwise, the parent interviews occurred on the subsequent day. The letters sent to parents indicated a specific interview time for all parents. Occasionally, some parents had to wait for their time to participate in the interviews, but the waiting time was usually less than an hour.
9. **Teacher interviews:** During the team's school visit on the first day, teachers were interviewed about their understanding of the selected students' pre-primary experience and if the students were P1 repeaters.

All data were recorded using Tangerine[®] on Android tablets. Data were synched daily with RTI servers and reviewed for quality by statisticians during the data collection. Data were cleaned and analyzed by RTI statisticians.

6.2 Pre-pilot and Pilot Experience

Pre-pilot training and data collection were conducted during one week in June 2016 in the Katakwi and Wakiso districts of Uganda. EMIS data showed that Katakwi was a district in Uganda with higher repetition rates, while Wakiso was a district with lower repetition rates. Two RTI home office staff members traveled to Uganda to meet with the Uganda team, which included RTI project staff and the data collection firm Development Research and Social Policy Analysis Center (DRASPAC). DRASPAC and RTI project staff were integral to obtaining necessary letters from the Ministry to conduct the study in the schools. DRASPAC hired data collectors, who were trained by RTI staff on the data collection protocol and on how to use the tablets. The one-and-a-half-day training included a review of the study purpose, data collection protocol, practice using the tablets (which had the survey questions loaded in Tangerine[®]), and a review of the translation of the tools. Data collection occurred immediately following the training.

Two schools in each district were visited on Day 1 of pre-pilot data collection. Students at one school were given a letter noting that parent interviews would be the next day, and students at the second school were given a letter noting that parent interviews would be in two days. We tried these two approaches to test which method generated the best parent response rates. Data collection for the pre-pilot included a selection of 12 students in each P1 and P2 from two schools (selected for convenience) in each of the two districts. Based on the experience in the pre-pilot, we decided on the next-day approach for parent interviews. In addition, we made refinements to our questionnaires and corrected minor translation issues based on the pre-pilot experience.

For the pilot in July 2016, we selected two districts in Mbale and Teso regions with similar characteristics regarding reported repetition rates and socioeconomic status to the districts selected for the main study. Training of data collectors consisted of two days reviewing and practicing the protocol and interviews. The assessors recruited for this project spoke either Ateso or Lumasaaba, the languages used in the regions where both the pilot and main data collection occurred. The 20

assessors divided into two language groups (10 assessors per group) for the pilot field visit and then divided further into two teams of five, with each team visiting one school (total of four schools). Two days were spent at each school to allow for the parents to come in for the interview. Data collection for the pilot included selection of 24 students in P1 classrooms. Based on the pilot experience, we again made refinements to our questionnaires and corrected minor translation issues before proceeding to the full data collection.

6.3 Sampling Approach

As noted above, we decided to pointedly select two districts that had distinctly different pre-primary attendance and P1 repetition rates according to EMIS data. For logistical purposes, we decided to select districts where RTI had current project work and staff. Ultimately, Mbale and Kumi districts were chosen because RTI had project work in both districts and their reported pre-primary enrollment rates and repetition rates were nearly the opposite of each other, making them perfect districts for this study.

To select the representative districts, we used an indicator of pre-primary attendance, an indicator of P2 to P1 enrollment (signifying either over-enrollment in P1 or, much less likely, dropping out), and the reported repetition rate in P1. Exhibit 23 shows that Mbale has (1) a much higher pre-primary enrollment rate (21.9% versus 2.0%), (2) lower P1 repeater rate (4.4% versus 19.7%), and (3) lower P2 to P1 enrollment ratio than Kumi. Kumi ranked 7th from the bottom in terms of these indicators, whereas Mbale ranked 104th: a very good contrast.

Exhibit 23. 2014 EMIS figures for pre-primary attendance, ratio of P2 to P1 enrollment, and percentage of P1 repeaters

District	Percentage pre-primary attendance*	P2 to P1 enrollment ratio	Percentage of P1 repeaters
Mbale	21.9	0.82	4.4
Kumi	2.0	0.73	19.7

* Percent of pre-primary is actually a ratio of the 2014 pre-primary enrollment over the 2014 P1 enrollment.

Source: Calculated from survey.

6.3.1 Population

The population of interest for the study included all P1 students attending non-special needs Uganda Government schools in Kumi District (Teso) and Mbale District (Elgon). The 2014 Uganda EMIS census list of schools was used as the sampling frame. After excluding all private schools (N = 6,094) and all schools not located in Kumi and Mbale districts (N = 12,008), there were a total of 226 schools left in the specified population.

6.3.2 Sampling Methodology

The sampling methodology called for a two-stage sample of schools (stratified by grade) and P1 students (stratified by class stream and gender). For each district, 40 schools were sampled with equal probability. Within each of the sampled schools, the assessment team would sample approximately 12 boys and 12 girls equally across the total number of streams with equal probability. Exhibit 24 provides the sample methodology breakdown.

Exhibit 24. Summary of sample methodology

Stage	Item sampled	Stratification	Probability of selection	Sample weights
Stage 1	Schools (80)	District (2)	Equal	Scaled to the total schools in each district
Stage 2	P1 students (~24 in each school)	Stream-gender (~12 boys/12 girls)	Equal	Scaled to the total P1 boy/girl enrollment in each district

Source: Calculated from survey.

A final count of 88 P1 teachers from 80 schools completed 1,909 teacher-student questionnaires. School and student sample weights were scaled to the population counts at the district level. The population sizes and the final sample counts can be found in Exhibit 25.

Exhibit 25. Population counts and the final sample size of schools and P1 students

District	Population school	Estimated population P1 students	Sampled schools	Sampled P1 students
Kumi	94	15,116	40	958
Mbale	132	17,371	40	951
Total	226	32,487	80	1,909

Source: Calculated from survey.

6.3.3 Sample Representations and Precision

Sample weights were calculated as the inverse of the probability of selection for each stage in the complex sample. School and student final weights were scaled to the presumed population. All analyses, unless otherwise stated, were conducted using the appropriately applied sample weights to guarantee a proper representation of the defined population.

The final sample size of schools and P1 students was derived to provide a sufficiently precise estimate of the percentage of P1 repeaters (according to parent/guardian reports) in each district. It was determined that a 95% confidence interval (CI) of $\pm 5.0\%$ would be sufficiently precise. As seen in Exhibit 26, the final precision of $\pm 4.0\%$ and $\pm 4.0\%$ was more precise (i.e., tighter) than the expected $\pm 5.0\%$. The high precision is largely due to the high response rates (92.4%) from the parents.

Exhibit 26. Estimated percent of parents who reported their child is currently repeating P1 in 2016

Region	Estimate	95% CI	95% CI band
Kumi	47.4%	[43.4%, 51.5%]	$\pm 4.0\%$
Mbale	40.5%	[36.8%, 44.4%]	$\pm 4.0\%$

Source: Calculated from survey.

To better understand the results of the study, some other general social characteristics are noted, as follows. According to the most recent data, Kumi is 96% rural, whereas Mbale is only 75% rural, compared with a national average of 80% rural (Uganda Bureau of Statistics 2014). District-wide poverty statistics are, unfortunately, a little outdated, but the relative ratios among districts

would not change very fast. Kumi is poorer, with a poverty headcount of 57% in 2002, whereas Mbale's was 33% against a national average of 39%—Kumi is considerably poorer than the national average, while Mbale is closer to the national average (Emwanu, Okwi, Hoogeveen, Kristjanson, and Henninger 2007). Secondary school enrollment ratios are a good proxy for the presence of skilled labor, including the population base that can serve as teachers. This ratio, in 2013, was 18% for Kumi and a distant 67% in Mbale, against a national average of 29%. Mbale, by this proxy, is far better educated than the national average, whereas Kumi is considerably below the average. According to Wikipedia, there are four university campuses in Mbale District and only one in Kumi (Wikipedia entries 2017), a good proxy for the urbanicity level in Mbale. In sum, Mbale is more urban, richer, and much better-educated than Kumi. These background characteristics will help the reader understand the results.

7. CONCLUSIONS

The paper's aim was two-fold: to generate substantive information about education in the foundational years in Uganda and to develop a sound methodology for researching interrelated issues.

The methodological aim was to test a method for better estimating repetition and pre-primary education phenomena by triangulating information from school records, teacher reports, and parent reports. The methodology was successful in obtaining a satisfactory participation rate and responses from parents. Although the logistical efforts involved were enormous, the approach was feasible. Furthermore, although there were some disagreements between parents and teachers, the rate of contradictory findings on major topics, such as whether children were repeating, was low. The achieved sample size allowed an estimate of parents' knowledge of repetition rates with a very narrow confidence interval, which was much narrower than needed to sustain the hypothesis that repetition was under-reported.

Thus, we may conclude that the methodological experiment was a success, and we believe the study can be replicated at a national scale, as well as in other contexts. It would be useful for Uganda to replicate this study on a national scale to confirm that the findings in the purposefully selected districts reflect real national trends, and to explore any regional or geographic patterns as well. Replicating the study on a national scale would also provide an opportunity to strengthen our methodology for identifying underage students, since the present study has documented apparent discrepancies in the reporting of student age data.

Substantively, we found the following key results in Mbale and Kumi districts:

1. Repetition rates seemed to be much higher, when measured in the field, than what was reported to the Ministry, by a factor of at least 5 or 10 to 1. What seemed to be reported to the Ministry was approximately between 2% and 10% repetition in P1, whereas parents and teachers reported repetition rates ranging from 30% to 45%. This is a large gap; the issue deserves to be explored in depth and discussed.
2. Repetition rates, as measured by the survey, were lower in Mbale, the low-risk district, as expected, and in a manner that gives confidence in the results. The repetition rates for Kumi (the high-risk district) versus Mbale were consistent with the fact that the EMIS data move in the same direction, but at a much smaller scale. Thus, the bias in the EMIS data is downward in both districts.

3. Repetition is associated with lack of pre-primary education. Exposure to pre-primary schooling reduced the risk of repetition by approximately 50%.
4. The data suggest that repetition is also a substitute for pre-primary education. In cases where there were few pre-primary education options available, some parents said they enrolled their children in P1 at an earlier age. Parents also responded that they do this with the expectation that their children might have to repeat P1 or that they would learn less.
5. Underage enrollment did not appear to be as much of a problem as over-age enrollment, although this could be due to the stigma attached to reporting underage enrollment. Indeed, the discrepancy between what parents believe is the right age and the actual reported age of sampled children suggests that parents are not reporting accurately (namely, that children are actually younger than parents report). Those children who did not have a chance to attend pre-primary were enrolled in P1 about one-quarter of a year younger than those who had attended pre-primary.
6. Parents' expectations about what their children would or should learn to do in pre-primary were oriented toward academic skills (e.g., learning how to read). Parents had fairly accurate knowledge of policy guidelines regarding the correct age for a child to enroll in pre-primary education and P1; however, their expectations for learning academic skills in pre-primary were not developmentally appropriate (e.g., most children do not learn to read in pre-primary). This finding raises the question about whether parents' expectations should be shaped toward what is more developmentally appropriate for a pre-primary-age child. If non-academic aspects of early childhood development, such as social interaction and self-regulation, were emphasized, parents might realize that P1 is not a suitable substitute for pre-primary.
7. Finally, financial constraints were overwhelmingly the reason that parents did not enroll their children in pre-primary, including in Mbale District. In Mbale, some parents also noted that the proximity to a pre-primary school was a barrier to enrollment. Parents' primary reason for sending children to pre-primary was for the child to learn. These parents are making an implicit value-for-money judgment that is presumably oriented toward the children being better-prepared for primary. The results regarding parents' knowledge about pre-primary education and the access barriers present a rich entry point for policy dialogue.

This research has broader implications for other low- and middle-income countries that face similar interrelated challenges of lack of access to pre-primary education, high hidden repetition rates, and poor learning outcomes. The findings suggest that expanding access to pre-primary education may reduce early primary repetition and improve the efficiency of the basic education cycle overall. Furthermore, other countries may consider replicating this research methodology to better understand the interrelation of these variables in the foundational years, and the implications for national education policy.

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ANNEX A. PROTOCOL REVISIONS

The pre-pilot data collection contributed to several adjustments to improve the approach for the pilot data collection. We detail some of the challenges encountered, and actions taken to remedy them, below.

- ◆ Interestingly, some parents had multiple students selected randomly for the study. For such cases, the research team determined that if the same parent name showed up for two or more randomly selected children, then it was assumed that the children were siblings and an alternative child would be selected at random from the same stream.
- ◆ The research team occasionally encountered “imposter” parents—adults claiming to be the parent of the sampled child who were not actually related (because a small stipend was provided for participating in the study). The research team used three strategies to identify “imposters”: (1) closely monitoring the physiological reaction of the adult when asked about the child; (2) asking the child, when at a distance, “is that person your parent/caregiver?”; and (3) asking the parent for the letter that was sent home to them.
- ◆ Sometimes parents experienced delays waiting for their interview, which prompted the team to consider adding more interviewers on the second day of the school visit. However, approaches to include additional team members for Day 2 were complicated and not cost-efficient, therefore, no additional team members were added. Note that the longest parents waited for an interview was approximately one hour.
- ◆ The research team identified the need to carefully maintain the sheet with the student names/identifications because this was the only record of the student identifications that connected the parent interview with the teacher interview.
- ◆ The study team realized that it needed to take into account the provision of a transport allowance for the head teacher or deputy head teacher who visited the school outside of normal school days/hours (e.g., on a holiday or Saturday). During the normal work week, head teachers would already be at the school, but facilitating the support of the school representative on the holiday or weekend was important. It was determined that the same transport allowance would be paid to one school representative on holidays or weekends when the parent interviews fell on those days.
- ◆ Although a revision was not needed, we confirmed that the timing of the data collection is extremely important. For example, during the pre-pilot, less students were in attendance because it was the first week of the term. Therefore, we determined that data collection in the middle of the term is most appropriate. Additionally, parent survey questions about their child’s attendance during the year (e.g., “all terms”) must be revised and reviewed in the context of the time of year the survey is conducted.
- ◆ Several parents were unable to write their names to provide consent, so the team agreed that providing an ink pad for these individuals to provide consent with a fingerprint was appropriate for the pilot data collection.

- ◆ Perhaps the largest update to the protocol was to focus on Primary 1 (P1) students, rather than both P1 and P2 students. During the pre-pilot, most of the P2 teachers were not able to provide information about the selected students' pre-primary experience. Therefore, we determined that the study should only focus on P1 students.

Survey revisions

In addition to the protocol revisions, several updates were also made to the research tools, as explained below.

- ◆ Perhaps the most important piece of the study was ensuring that a knowledgeable caregiver was identified and was the one interviewed. During the pre-pilot, some of the assessors (and parents) were confused about who constituted a caregiver, despite a focus on this in the training. Instead of asking if a person is a primary caregiver, the team considered asking a series of questions to clarify. Ultimately, the questions were updated to, "What is your relationship to this child?" and "Are you the primary caregiver for this child?" Assessors would also specify if the parent was knowledgeable about the decisions made regarding the child's schooling.
- ◆ We were not very surprised to find that during the pre-piloting, many parents did not know their child's birthdate and would ask for confirmation of what was in the school records. As a result, we kept the question in the interview, but added an opportunity for the enumerator to note if the parent asked what the school records showed for the child's birthdate.
- ◆ Improvements were needed in how the survey queried teachers and parents about early P1 attendance. Specifically, the RTI-implemented US Agency for International Development/Uganda School Health and Reading Program suggested asking teachers, "Do you expect your students to go to P2 next year?" If their response was, "no," assessors would ask why, with one of the possible answers being that the students were too young.
- ◆ Enumerators noted that several teachers had not worked at the school for very long, and, therefore, had less knowledge about student repetition. For the full pilot, questions were added for the teacher interview to ask about the duration of their posting at the school. Similarly, for the parent interviews, questions were added about the duration the child had attended that school because students seemed to change schools with some frequency.
- ◆ To streamline the teacher questions, questions regarding background information about the teacher were asked only once, rather than before each set of student questions. This reduced the amount of interview time for each teacher and ensured that they did not have to repeat their responses several times.
- ◆ Finally, additional socioeconomic questions were included to provide a more appropriate and nuanced understanding of household wealth in the Uganda context.