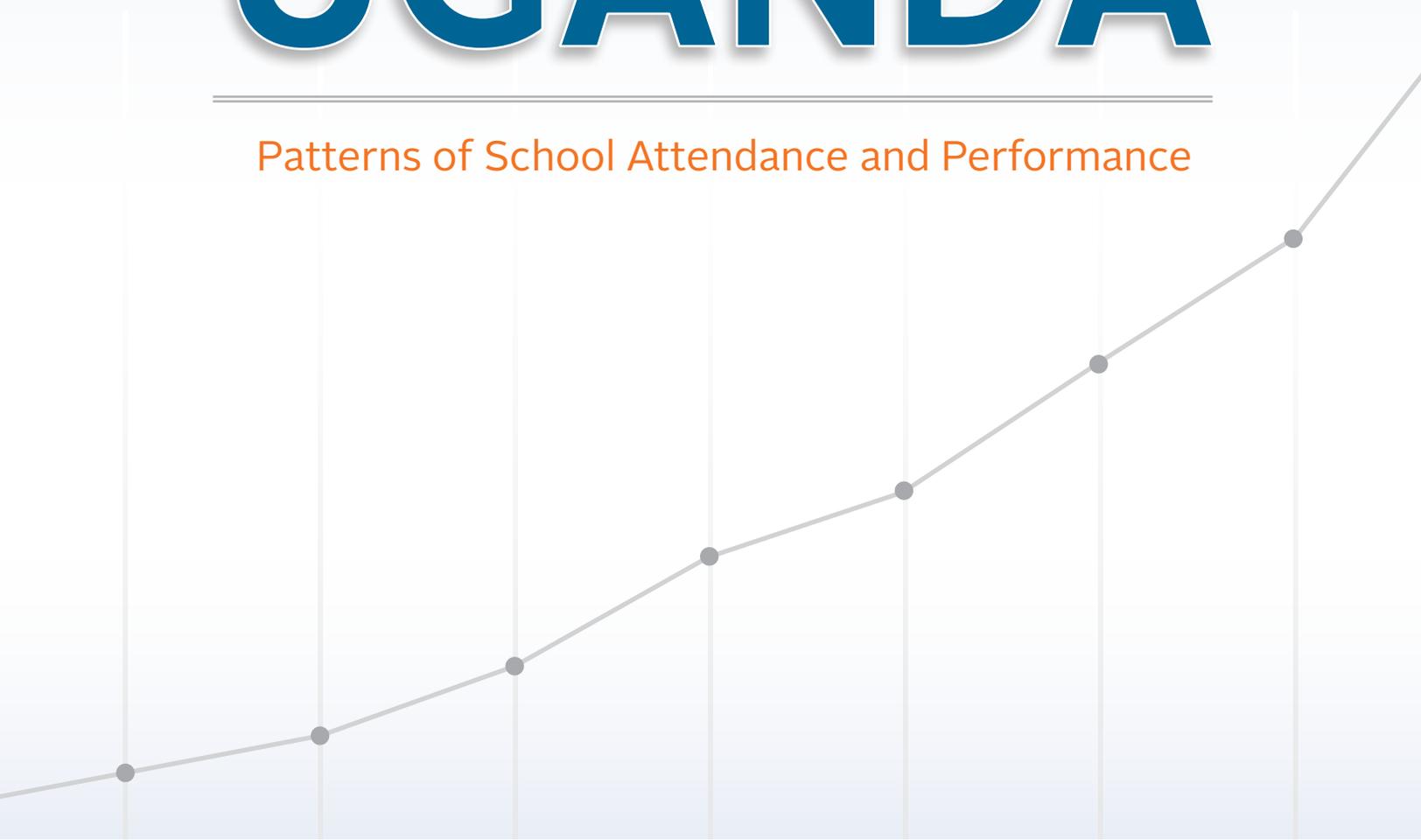


CHILD VULNERABILITY
AND EDUCATIONAL DISADVANTAGE IN

UGANDA

Patterns of School Attendance and Performance



Benjamin Sylla
Carina Omoeva
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EXECUTIVE SUMMARY

In nations with high HIV/AIDS prevalence, how can policymakers identify and direct services towards the children most at risk of educational disadvantage? Previous research published by the FHI 360 Education Policy and Data Center (Smiley, Omoeva, Sylla, & Chaluda, 2012) demonstrated that orphanhood is not necessarily a good predictor of low school enrollment in Lesotho, Malawi, Tanzania, Uganda, and Zambia, but that poverty and lack of adult care are associated with lower levels of educational access. This paper builds off of these findings by focusing in on Uganda and analyzing the extent to which official government “child vulnerability” indicators are associated with two important components of educational disadvantage: school attendance and sixth grade learning outcomes.

In order to measure educational disadvantage, this analysis uses data from two sources: the 2006 Demographic and Health Survey (DHS) in Uganda and the 2007 Southern African Consortium on Monitoring Educational Quality (SACMEQ) assessment of sixth graders in Uganda. For both metrics, the statistical significance of findings is determined through a test of difference in means (at the 95 percent confidence level) between groups.

Our findings show that it is difficult to draw blanket conclusions about a child's susceptibility to educational disadvantage based solely on their particular “vulnerability” categorization.

The interaction between child vulnerability and educational disadvantage varies according to factors such as age and gender, and certain subgroups experience educational disadvantage in one measure but not the other. Through a deeper understanding of the nuances of the interaction among particular vulnerabilities and education outcomes, policymakers may be better able to target interventions towards those in greatest need.

Across many of the subgroups, age and gender have emerged as important determinants of educational disadvantage for vulnerable children. For example, **orphans** below the age of 10 are no more likely to be out of school than non-orphans, but a widening attendance gap emerges for orphans aged 10 and above. Regardless of age or sex, orphans and non-orphans attending grade six perform equally well on reading assessments. However, older children (14-17 year-olds) are shown to be sensitive to vulnerabilities having to do with **family structure and family obligations**. In particular, 14-17 year-olds who live in **child-headed households** (with a head under age 20) are more than twice as likely to be out of school than those living in households headed by adults (aged 20-59), but surprisingly, those who live in **elderly-headed households** (with a head over age 59) are more than twice as likely to be in school than those living in households headed by adults. Among 14-17 year-olds who play an **adult role in their household** (household heads or parents), the effect on attendance is especially great for girls, 92 percent of whom are out of school, as compared with 51 percent of boys in an adult role, and only 21 percent of boys and girls in a non-adult role.

Some other dimensions of vulnerability appear to have equal effect on children of all ages and both genders. For example, **children with chronically ill family members** perform lower than their classmates on the 6th grade reading assessment, but do not appear to be at heightened risk of permanently leaving school. Similarly, all **children with disabilities** are roughly two to four times more likely to be out of school than non-disabled children, and children living in households where they are **not considered family members** are up to seven times more likely to be out of school than other children. An approximation of **children in urban slums** suggests that, although this group may be no less likely to attend school, they do appear to perform lower on reading assessments relative to their peers living in better urban conditions.

INTRODUCTION

In nations with high HIV/AIDS prevalence, how can policymakers identify and direct services towards the children most at risk of educational disadvantage? Previous research published by the Education Policy and Data Center (Smiley, et al., 2012) demonstrated that orphanhood is not necessarily a good predictor of low school enrollment in Lesotho, Malawi, Tanzania, Uganda, and Zambia, but that poverty and lack of adult care are associated with lower levels of educational access. This paper builds off of these findings by focusing in on Uganda and analyzing the extent to which official government “child vulnerability” indicators are associated with two important components of educational disadvantage: school enrollment and sixth grade learning outcomes. In addition to examining the government vulnerability categories, we explore the attendance and performance patterns for children and youth living in the urban slums.

LITERATURE REVIEW:

“Child Vulnerability” and Educational Disadvantage in Uganda

In 2003, it was estimated that 43 million children in sub-Saharan Africa had lost either one or both parents to death, and 12 million of these children were orphaned by AIDS (USAID, UNAIDS, & UNICEF, 2004). However, research demonstrates that the HIV/AIDS pandemic impacts children in myriad ways, and orphanhood is often an inadequate measure of child marginalization in the African context. In particular, orphanhood was not found to be associated with educational disadvantage after controlling for socio-economic status (Ainsworth & Filmer, 2006; Campbell, Handa, Moroni, Odongo, & Palermo, 2010; Lloyd, Blanc, & . 1996), though other factors, such as an orphan's relationship to the household head, have been found to be significant (Case, Paxson, & Ableidinger, 2004).

These findings led to a policy shift across sub-Saharan Africa towards child vulnerability as a category of analysis rather than orphanhood (USAID, 2000; World Bank, 2004). “Vulnerable” children have come to be defined as those whose safety, well-being and development are threatened, with major dangers including “lack of care and affection, adequate shelter, education, nutrition, and psychological support” (World Bank, 2004, p. 1). However, the term has proven difficult to operationalize in practice. Appendix 1 presents a range of definitions of child vulnerability used by international development agencies over the last decade.

Uganda was one of the first countries in the world to be severely impacted by the HIV/AIDS crisis, and also one of the first to effectively mitigate it through a comprehensive public prevention campaign (AVERT, 2012). HIV incidence among adults (ages 15-45) in Uganda is estimated to have declined from 11 percent in 1991 to 6.5 percent in 2009 (UNAIDS, 2012). However, Uganda's children face distinct challenges that go beyond the HIV/AIDS crisis. The long-lasting civil war in the north of the country has left physical and psychological scars on thousands, including former child soldiers (Ager et al., 2011; Pfeiffer & Elbert, 2011; Vindevogel et al., 2011). Many urban children are working and living on the streets (Young, 2004) and there is increasing recognition that children in urban slums face unique educational challenges (Mugisha, 2006). Across the country, a majority of children live in conditions that range from moderate to severe poverty (Samuel Kalibala & Elson, 2009)

In 2011, Kalibala et al (2011) conducted a population-based survey in Uganda among a nationally representative sample of households in order to assess multiple dimensions of child vulnerability. The results demonstrated that the most vulnerable children had

experienced maternal death, disability, child labor, or pregnancy before age 17. Among the orphans in the sample, 93 percent of 6-12 year-olds were going to school, compared to 90 percent of non-orphans, though among 13-17 year-olds, 78 percent of orphans were attending school compared to 87 percent of non-orphans (Samuel Kalibala & Elson, 2009). Children heading households have also been shown to be particularly vulnerable to educational disadvantage –in Rakai District in Uganda, Dalen et. al (2009) found that 15 of 37 child household heads had stopped school, mostly as a result of inability to pay school fees, and even those who were attending were often sent home from school because of inability to pay.

In 2004, in response to the clear need for services for vulnerable children, Uganda's Ministry of Gender, Labor and Social Development developed a National Orphans and Other Vulnerable Children Policy (NOP) (2004a). The National Strategic Program of Interventions for Orphaned and other Vulnerable Children (NSPPI) (2004b) was aimed at implementing the NOP, and outlined 10 categories of children considered to be critically vulnerable, and six categories of children considered to be moderately vulnerable (see Table 1). This official government categorization reflects the range of challenges facing children in Uganda, both related to the HIV/AIDS epidemic and to other challenges such as poverty and civil war.

TABLE 1. Categories of critical and moderate child vulnerability outlined in the 2009 Uganda National Strategic Program of Interventions for Orphaned and other Vulnerable Children

Degree of Vulnerability	Category of Vulnerability
Critical	Orphans whose rights are not fulfilled
Critical	Children infected and affected by HIV and AIDS
Critical	Children with disabilities
Critical	Children in the worst forms of child labor (sexual exploitation, illicit activities, paid domestic work, work that interferes with school attendance)
Critical	Children who have experienced violence (including sexual violence and domestic abuse)
Critical	Abandoned/neglected/street children
Critical	Children in contact with the law
Critical	Children in child-headed households
Critical	Children affected by conflict (captives, child soldiers, IDP's, child mothers)
Critical	Children in need of immediate care and protection
Moderate	Children out of school
Moderate	Child Mothers
Moderate	Children in poverty-stricken households
Moderate	Children involved in hazardous work (domestic service, informal sector, commercial agriculture, trafficking)
Moderate	Children living with the elderly, or with parents with severe disabilities
Moderate	Children in remote areas (fishing communities, mountain areas, nomadic communities)

Methodology

This paper measures the extent to which the categories of child vulnerability identified as priorities by the Government of Uganda are useful for identifying children who are more likely to experience educational disadvantage. Educational disadvantage is measured as an increased likelihood of being absent from school according to the 2006 Demographic and Health Survey in Uganda, and lower average test scores on the 2007 learning assessment by the Southern African Consortium on Monitoring Educational Quality (SAQMEC). For both metrics, the statistical significance of findings is determined through a test of difference in means (at the 95 percent confidence level).

Categories of vulnerable children investigated

Because some vulnerability indicators prioritized in the NSPPI were not measured through the DHS and SACMEQ datasets, not all could be investigated, and others could only be investigated by proxy. Although children living in urban slum-like conditions were not explicitly identified as a priority group in the NSPPI report, they have increasingly been recognized (Mugisha, 2006) as facing educational disadvantage, leading the authors to add a proxy variable for children of urban slums. The following are the categories of child vulnerability investigated for correlation with negative school attendance or

learning outcomes (Appendix 2 presents greater detail on the proxies selected for measuring these categories):

1. **Investigated for non-attendance and performance patterns (DHS and SACMEQ data)**
 - Orphans whose rights are not fulfilled
 - Children infected and affected by HIV and AIDS
 - Children living in urban-slum like conditions (not an NSPPI indicator)
2. **Investigated for non-attendance patterns only (DHS data)**
 - Children with disabilities
 - Children in child-headed households
 - Child mothers
 - Children in poverty-stricken households
 - Children involved in domestic service
 - Children living with the elderly

DHS school participation analysis

In order to measure the relationship between categories of critical and moderate child vulnerability and out-of-school children, data from the 2006 Uganda DHS were used. The survey was enumerated between May and October of 2006

TABLE 2. Sample sizes for the 2006 Uganda DHS and 2007 Uganda SACMEQ datasets and estimated 2006 population, per age group

Age Group	2006 DHS # Observations	2007 SACMEQ # Observations	2006 est. Population
6–9	6,423		3.7 million (13% of population)
10–13	5,896	2,541	3.3 million (11%)
14–17	4,091	2,535	2.8 million (9%)
18–25		231	4.4 million (15%)

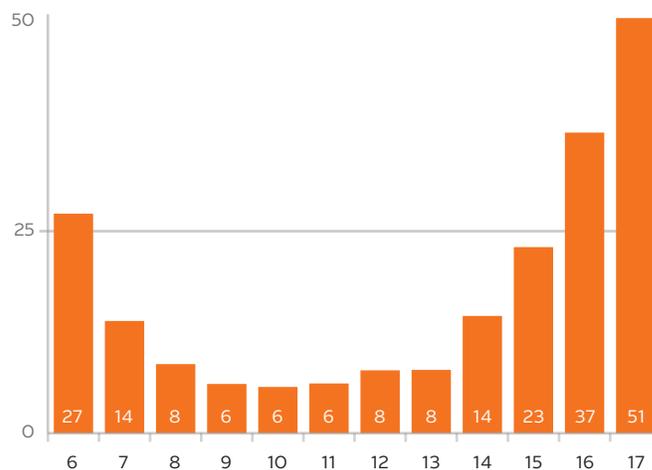
in order to provide population-representative results for urban and rural households nationally and across nine regions. Calculations for children aged 6-17, the focus group of the study, took into account population weights and the survey sampling structure and were based on a sample of 16,410 observations. Because of the nature of household surveys, findings are representative of children living in formal households, but not of children living in institutions, on the street, or in nomadic settings. Also, because informal and peri-urban settlements may not be properly represented in the sample, it is likely that proxy calculations for children living in “urban slum-like” conditions may not fully capture the experience of this group.

Children are identified as “out of school” if, according to the survey response, they did not attend school at any time during the 2006 school year. This is a conservative estimate of educational disadvantage — a child who attended for only a week during the school year would be considered “in school.”

SACMEQ learning outcomes analysis

For the analysis of student performance, we use achievement data from the reading assessment administered to a nationally representative sample of 5,307 6th grade students in Uganda by SACMEQ in 2007. Even in this single-grade sample, the age distribution is quite wide: while most students are aged around 14 years, roughly equal proportions of the sample are either in the 10-13 or 14-17 age brackets, and a small number (4.3 percent) are between 17 and 25 years old. Given that the official school entry age for primary school is six, the official age group corresponding to grade six is 12 years old. Sample sizes for each age group are given in Table 2. Although both reading and math achievement data were analyzed for the purposes of this report, findings for math scores are not presented because math and reading scores were found to be very similar throughout the analysis. Scores on the reading test ranged from 245 to 834, with a national mean of 478. Greater detail on the SACMEQ dataset is available at www.sacmeq.org.

FIGURE 1. % Children who did not attend school at any time during the 2006 school year, by age and according to age sub-groups



Analysis by age sub-groups

The official school attendance ages are 6-12 for primary and 13-16 for secondary, although many students are over 16 years old. Although DHS collects school attendance data for household members aged 5-24, data on most child vulnerability indicators is only collected for those aged 0-17. Because of these age constraints, we examine school attendance only for those between the ages of 6-17. As Figure 1 demonstrates, the DHS data revealed that children are much more likely to be out-of school in certain age groups, with the greatest participation between the ages of nine and 13. Based on this, we chose to look at overall school attendance rates for children in three age categories of four years each: 6-9; 10-13, and 14-17. For SACMEQ analysis, the age groups are 10-13, 14-17, and 17-25, which reflects the age distribution of Uganda’s 6th grade students.

Research Findings

General patterns of educational disadvantage

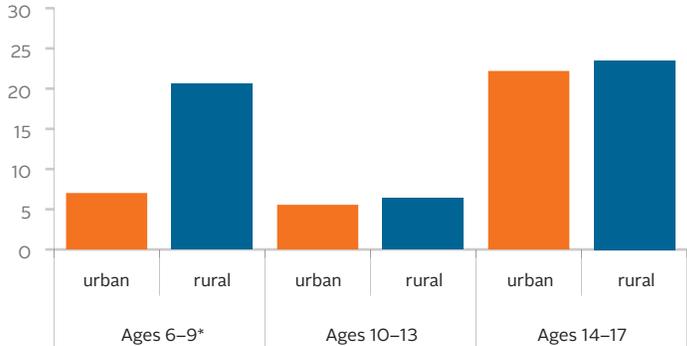
The proportion of out-of-school children varies significantly among the three age groups. Between the ages of 6 and 9, when children are still entering school for the first time, nearly 20 percent of children are out of school. Between the ages of 10 and 13, when school attendance is highest, the percentage of out of school children rests at a low of 6 percent. For older children who are beginning to exit the school system, 23 percent are out of school.

Among children in the 6-9 and 10-13 age groups, out-of-school rates for **boys and girls** are within one percentage point of each other. For 14-17 year olds, girls become slightly more likely to be out of school than boys, but even at this level, the difference is not statistically significant. Overall, the 2006 DHS dataset does not provide evidence of a gender gap in school attendance.

For the youngest group of children (6-9 year olds) there is a large **urban-rural** disparity in school attendance, with rural children three times as likely to be out of school as their urban peers. The urban-rural disparity is not observed for older groups.

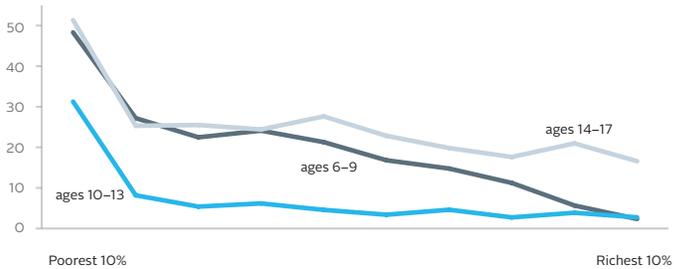
Not surprisingly, children living in **poorer households** are more likely to be out of school than children living in richer households. As Figure 3 illustrates, children living in the poorest 10 percent of households are dramatically more likely to be out of school than children in any other income grouping, regardless of age. Beyond the poorest 10 percent, non-attendance rates for children between the ages of 6-9 are more sensitive to relative income while those of the older age groups appear to be less so.

FIGURE 2. Percent of Children out of school by urban/rural location



* Indicates statistical significance at 95% confidence level.

FIGURE 3. Children out of school, according to the relative wealth of the household they live in.



School participation and performance of vulnerable groups

Orphans whose rights are not fulfilled

The NSPPI identifies ‘orphans whose rights are not fulfilled’ as a critically vulnerable group. With the DHS and SACMEQ datasets, it is possible to identify children who are orphans, but not to gauge the extent to which their rights remain unfulfilled. As a result, our findings are representative of orphans as a whole. Orphans are identified as children with at least one parent who has died, regardless of the cause of death. The proportion of Ugandan children who meet this definition in 2006 increases from 15 percent among 6-9 year olds to 29 percent among 14-17 year olds.

Our previous study showed that primary aged (ages 6-12) orphans are no more likely to be out of school than primary aged non-orphans (Smiley, et al., 2012). In Uganda, this is only true of children aged 6-9. Among children aged 10-13 and 14-17 in Uganda, orphans are 50 percent more likely to be out of school than non-orphans, and differences are statistically significant.

Although older orphans to appear to be disadvantaged in terms of school attendance, those who do attend school do not appear to perform any better or worse than non-orphans on the SACMEQ learning assessment. As Figure 6 illustrates, for sixth grade students of all ages, orphanhood is not a strong predictor of learning achievement. In fact, the average and the median values on both tests are slightly higher, though this difference is not statistically significant. This finding remains unchanged when the clustered nature of the sample is taken into account (through fixed effects regression), and when controlling for location of residence (urban or rural) household wealth.

Thus, although it is not possible to identify orphans whose rights are unfulfilled, DHS and SACMEQ data indicate that orphanhood in general is correlated with lower school attendance for children above the age of 10, but not for younger children. Among those orphans who are in school, there is no evidence that orphans learn less than their classmates.

FIGURE 4. % Children who are orphans in Uganda, by age

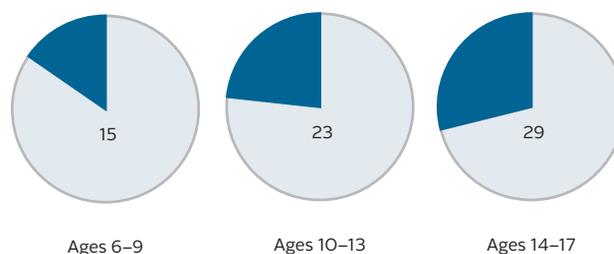
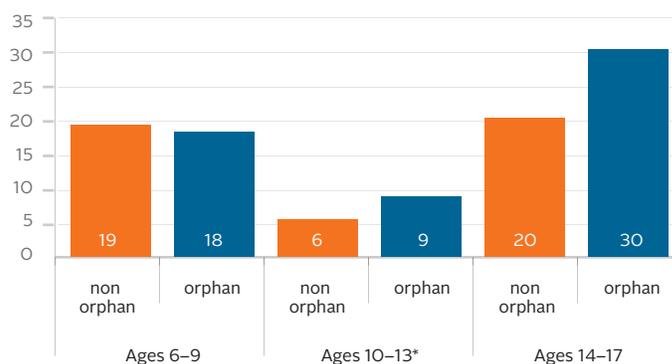
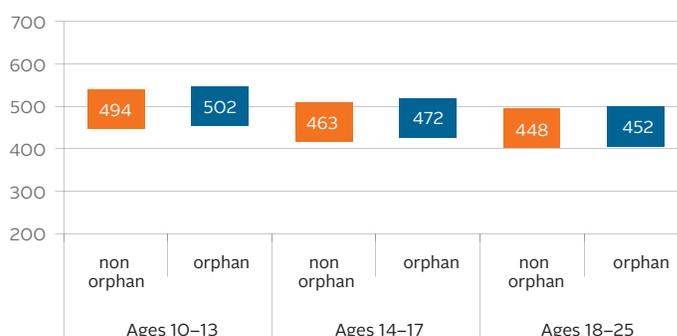


FIGURE 5. Orphans are more likely to be out of school for ages 10-13 and 14-17, but not 6-9.



* Indicates statistical significance at 95% confidence level.

FIGURE 6. For grade 6 students of all ages, average reading (shown) and math scores are statistically indistinguishable. (Note: Age groupings differs from above.)



* Indicates statistical significance at 95% confidence level.

Children infected and affected by HIV and AIDS

Children infected and affected by HIV and AIDS is another category of children prioritized as critically vulnerable by the NSPPI. Because it was not possible to identify children with HIV/AIDS or family members with HIV/AIDS using DHS and SACMEQ data, proxy variables were used to identify children with family members who had been ill in the recent past.

In the DHS dataset, these children include those with at least one parent who was too sick to work for three of the past twelve months, or with a non-parent adult in the household who was too sick to work for three of the past twelve months.

At all age levels, 13 to 14 percent of children meet this definition of vulnerability. Although these groups have marginally higher out-of-school rates than children whose lives are not affected by illness, these differences are small and not statistically significant. When sex, orphanhood, or household wealth are controlled for, the lack of a statistically significant relationship between family illness and out-of-school children remains. It should be noted that the DHS measure of out-of-school children identifies only those who **did not attend school at all** during the previous year, and children who missed only a portion of the school year would be overlooked by this metric.

Because the SACMEQ survey does not gather information regarding the specific type of sickness of family or household members, our measure captures children affected by any illness of a family member through a proxy built around reasons that pupils missed school. Students were asked first how many days they missed in the preceding month of school, and then asked to give a reason for their absence, selecting from a multiple choice menu that included “sick relative”, “was ill”, “visited doctor”, “cared for siblings”, “attended a funeral”, and “other reason”. Approximately 65 percent of the students in the sample missed at least one day in the month in question, and were therefore asked to provide a reason for their absence. Among these students, 25.4 percent had missed school because of a sick relative, and 21.7 percent had stayed home to care for their brothers or sisters.

FIGURE 7. % Children made vulnerable by illness in Uganda

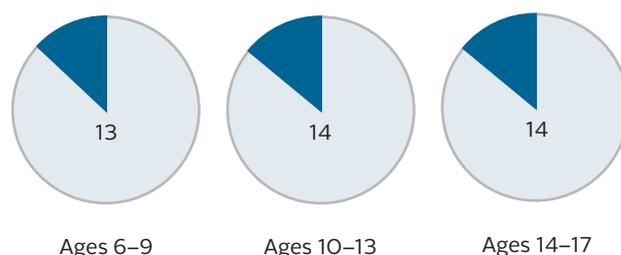
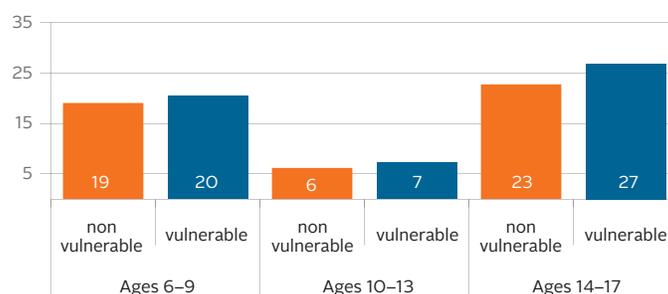


FIGURE 8. % Children out of school, according to status as having been made vulnerable by disease



* Indicates statistical significance at 95% confidence level.

FIGURE 9. Grade 6 students who missed school in order to care for a family member had lower average reading scores than grade 6 students who missed school for other reasons. The difference in means is statistically significant for 6th graders age 10-13 and 14-17, but not 18-25. (Note: Age groupings differs from above.)



* Indicates statistical significance at 95% confidence level.

These two causes of absence are associated with significantly lower performance in both math and reading, with the most striking gap in the youngest age group. Furthermore, while these students are more likely to be absent from school for longer periods than other students (3.99 vs 3.47 days reported absence, on average), the effect of absence due to family member illness persists over and above the length of absence. In other words, it is not simply that students with sick family members are missing school more, it is precisely **the reason of their absence** that seems to be reflected in their scores – at least, for the two younger age cohorts in Uganda’s 6th grade. Figure 12 shows that the difference in reading scores associated with this factor ranges from 15 to 20 points on test metric. In the context of Uganda, this gap roughly corresponds to a difference of 10-15 percentile ranks – a fairly substantial gap. In sum, these results show that having ill family members does not necessarily predict being out-of-school for the entire year, but children who have missed school for this reason show substantively lower learning outcomes.

Children with disabilities

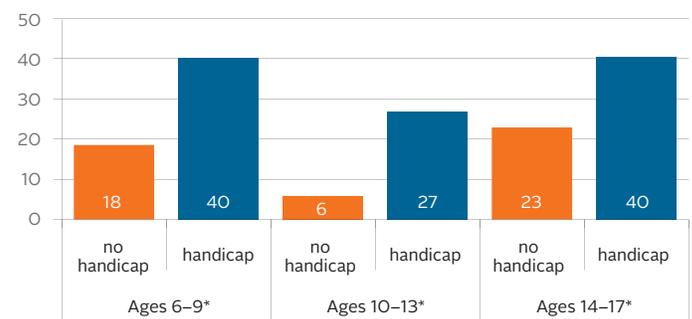
Children with disabilities are prioritized by the NSPPI as a critically vulnerable group. Though there is no measure of physical or mental handicap in the SACMEQ dataset, the DHS dataset gathers information on disability through a set of questions that gather the observations of an adult household member (reports of child disability are not tested or measured).

The DHS questionnaire asks respondents to report, on a scale of 1-4, whether household members have difficulty seeing (even when using glasses), hearing (even with a hearing aid), walking or climbing stairs, remembering or concentrating, caring for themselves, or communicating. Building on this subjective reporting of handicap, we classified a child as perceived to be handicapped if they are reported to experience ‘a lot of difficulty’ in any one category, or ‘some difficulty’ in two or more

FIGURE 10. % Children perceived to be handicapped



FIGURE 11. %Children out of school, according to whether or not they are perceived to be handicapped.



* Indicates statistical significance at 95% confidence level.

categories. Overall, three percent of children in every age group meet this measure of disability.

At every age level, children identified as handicapped through the DHS measure are three to four times more likely to be out of school than children who did not meet the measure. This pattern is statistically significant and persists when urbanicity and household income are controlled for.

Children in child-headed households

According to the NSPPI, children living in child-headed households are a critically vulnerable group. Child-headed households could be identified using DHS data (operationalized as households without adults aged 20 or older), but not with SACMEQ data.

Overall, the proportion of children living in a household headed by a child is very low, from less

than 0.5 percent for 6-9 year olds, to approximately two percent for 14-17 year olds.

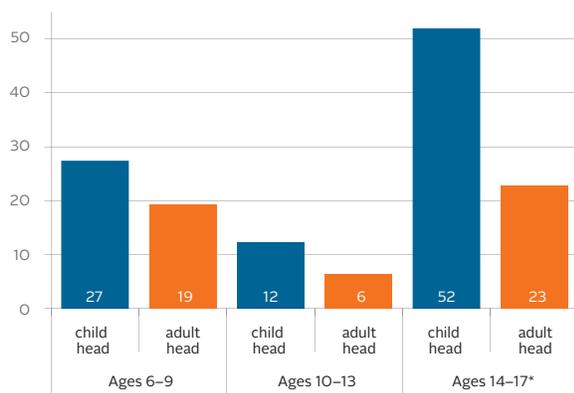
For children at every age level, those living in a child-headed household are more likely to be out of school than those living in a household where one or more adult aged 20-59 is present. However, for children aged 6-9 and 10-13, the difference in school attendance is not statistically significant.

Among children aged 14-17, for whom the difference is statistically significant, the size of the attendance gap is very large. More than 50 percent of children in child-headed households are out of school, as opposed to only 23 percent of children in adult-headed households.

FIGURE 12. % Children living in a household headed by a child (no adults aged 20 or older are present in the household)



FIGURE 13. % Children out of school, according to whether they live in a household headed by a child



Children in elderly-headed households

Children in elderly-headed households are identified by the NSPPI as a moderately at-risk demographic.

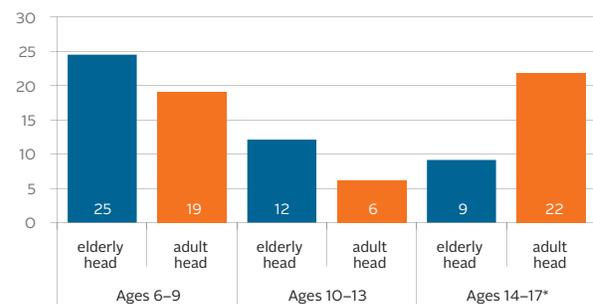
This group could be identified using DHS data (children in households headed by someone above the age of 60, with no other adults present) but not SACMEQ data. Two percent or fewer children fall into this category.

Among children aged 6-9 and 10-13, out-of-school rates are six percentage points higher for those who live in an elderly-headed household than for those whose household is headed by a non-elderly adult. While the magnitude of this difference is fairly large, it is not statistically significant, perhaps because of the small number of elderly-headed households available for analysis. In a larger sample, these results may turn out to be statistically significant. It is interesting to note that among 14-17 year olds, the trend observed in younger children is **reversed**. For this group, children in an elderly headed household much **less** likely to be out of school than children in an adult-headed household. Unlike that of the younger group, the finding for this age group is statistically significant.

FIGURE 14. % Children living in a household headed by a single elderly person (household head is 60+ and no other adult present)



FIGURE 15. % Children out of school, according to whether they live in a household by an elderly person



* Indicates statistical significance at 95% confidence level.

Child mothers

NSPPI identifies child-mothers as a moderately vulnerable population. Using DHS data, it was possible to identify child mothers as children who are the parent of another household member. In addition to biological parenthood, we expanded the definition of a parent to include child heads of household, based on the rationale that heads of household have parent-like responsibilities even if they are not biological parents. Although these categories were applied to males and females in all age ranges, no 6-13 year old parents were identified. Among 14-17 year olds who fit the criteria, nearly all females turned out to be are parents but not heads of household and virtually all males are heads of household but not parents.

In the 14-17 age category, approximately 4 percent of children were identified as being parents or heads of household. Compared with children who have a non-adult role in their household, children in this group are considerably more likely to be out of school. Among 14-17 year old males and females who have not assumed an adult role, 21 percent are out of school. Among those who do, 51 percent of males and fully 92 percent of females are out of school.

FIGURE 16. % Children with an adult role in their household (as a household head or parent)

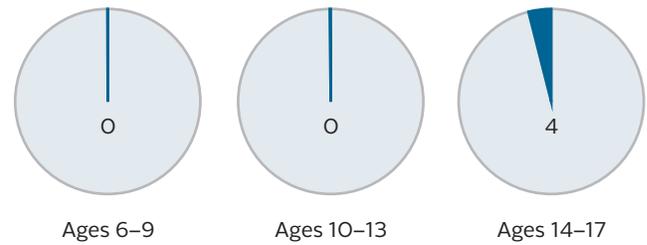
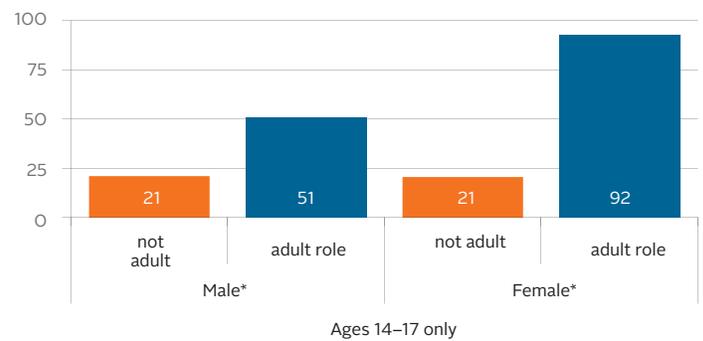


FIGURE 17. % Children out of school, according to whether they have an adult role in the household



* Indicates statistical significance at 95% confidence level.

Children involved in domestic service

Child domestic servants are listed as moderately vulnerable by the NSPPI. Although it is not possible to directly identify child-servants using DHS or SACMEQ data, a proxy variable is used in the DHS dataset.

DHS questionnaires document the relationship between each individual and the nominal 'head' of their household. Response options include typical categories such as 'spouse,' 'son/daughter,' 'grandchild,' and 'niece/nephew,' as well as broader categories including 'other relative,' 'adopted/foster/step child,' and 'not related.' Among children who fall into these categories, there was no statistically significant difference in school attendance within each age category. This is true both of children with blood ties to the household head and for adopted or foster children who are considered part of the family.

Children who live in the household but are listed as 'not related' to the household head, however, make a prominent exception to this rule – they are up to seven times more likely to be out of school than in-family housemates. It is not entirely clear how these children relate to the rest of their household. Children in this 'not related' category are reported to be usual members of the household, and are no more likely to be orphaned than other children. In some cases, the child lives in the household with a parent who is also not related to the household. Although the household role of these children is not known, it seems possible that the child (or the parent) may be a boarder or servant living in the household.

Overall, the proportion of children who fall into this category is quite small, ranging from less than 0.5 percent of 6-9 year olds to approximately 2.5 percent of 14-17 year olds. Nonetheless, out-of-school rates for this group are three to five times higher than they are for children who are considered to be family members of the household head.

FIGURE 18. % Children who are members of households where they are not related to the household head

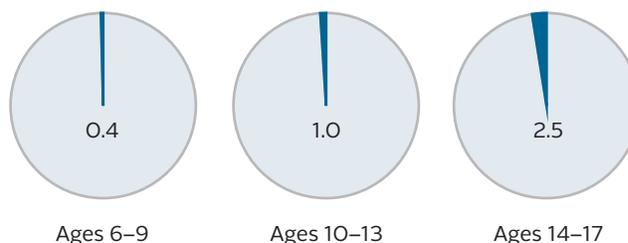
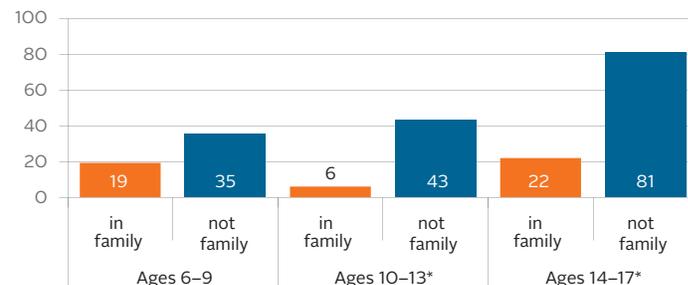


FIGURE 19. % Children out of school, according to relation to household head



Urban children living in “slum-like” conditions

Although the NSPPI does not specifically identify children in slum areas as a priority group, recent publications highlighting the challenges faced by the urban poor indicate that an effort to look at this group is justified. Our findings with regards to slum children must be interpreted with caution because our DHS and SACMEQ data sources were not specifically designed to target children living or attending school in informal settlements. Children from these groups are, at best, only partially represented in our findings. Moreover, the criteria used to identify ‘slum-like living conditions’ allow only the very roughest approximation of sub-par urban living conditions for those households that are included in the DHS and SACMEQ samples.

In both the DHS and SACMEQ datasets, children are considered to be living in “slum-like conditions” if they live in an urban area and their home is made of non-permanent materials such as an earthen or sand floor; thatched walls; or a thatch or mud roof. Children in homes that meet this criteria account for approximately three percent of children overall and 30 percent of children living in urban areas.

Based on the DHS survey sample, there is no statistical evidence of a relationship between student non-attendance and the proxy for slum-like living conditions. Although the percentage of out-of-school children is larger in “slums” than in other urban areas, the difference between these rates is not statistically significant. Among 6-9 year olds, the magnitude of the difference in out-of-school children is large at ten percentage points, but is not significant for this sample.

However, the SACMEQ learning assessment data show that children who meet our proxy criteria for “slum-like” living conditions consistently achieve lower scores than their non-slum urban neighbors. This difference persists when household income is controlled for, suggesting that living conditions affect student learning over and above household wealth. Despite this apparent learning gap among urban children, children aged 10-13 and 14-17 living in “slum-like” urban households score higher than rural children of all housing types. Differences in average reading

scores are statistically significant for children in the two younger age groups. For the older group, average reading scores for children in slum-like conditions, while starkly lower than those in urban non-slum dwellers, are not statistically significant at the 95 percent confidence level due to greater error variance. The differences in scores between urban slum and non-slum students corresponds roughly to about 15-22 percentile ranks (the two younger age groups).

FIGURE 20. % Children living in sub-par urban housing as a proportion of children in urban and rural areas

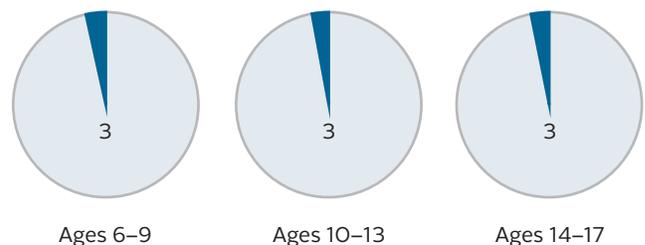
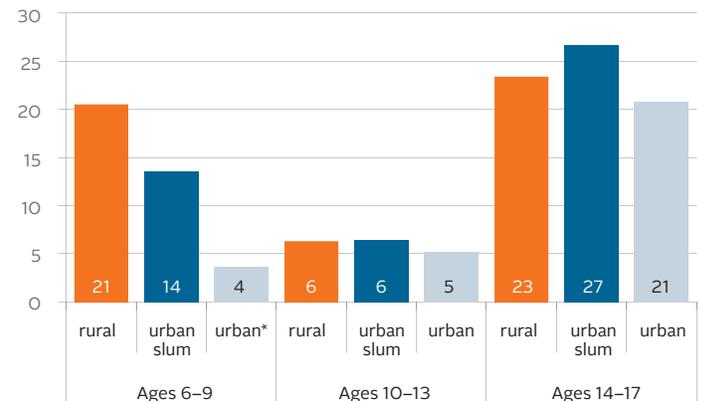
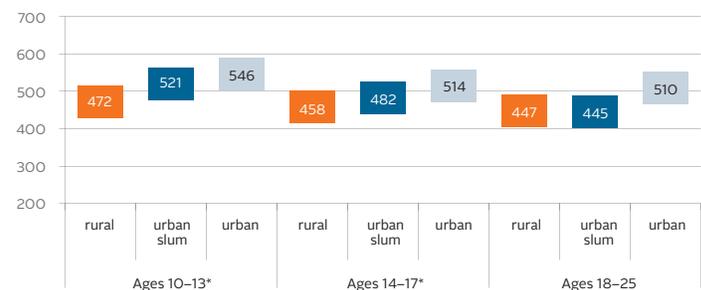


FIGURE 21. % Children out of school, according to whether they live in a rural area, sub-par housing in an urban area, or on-par housing in an urban area



* Indicates statistical significance at 95% confidence level.

FIGURE 22. % Average SACMEQ reading scores for Grade 6 students, according to whether they live in rural, urban “slum-like”, or urban “non slum-like” households. (Note: Age grouping differs from above.)



* Indicates statistical significance at 95% confidence level.

Conclusion

In the case of Uganda, the relationship between child vulnerability and educational disadvantage is not particularly straightforward. Although some categories of vulnerability, such as disability or having a chronically ill family member, do appear to result in educational disadvantage for a broad population of children, other categories such as orphanhood, having an elderly caretaker, or taking on adult responsibilities at a young age, appear to impact children differently based on factors such as age and sex. Moreover, some categories of vulnerability seem to affect school attendance but not learning outcomes or vice versa.

These findings demonstrate that a nuanced understanding of the relationship between child vulnerability and educational disadvantage is essential to the design of effective educational interventions. With a sophisticated understanding of these interactions, policymakers may be able to design highly-targeted programs to address the needs of specific vulnerable populations.

Although this study reveals some interesting trends in the interaction between child vulnerability and educational disadvantage, several opportunities for refinement and further exploration remain. The DHS and SACMEQ datasets make it possible to explore under attendance for only eight of the sixteen categories of vulnerability prioritized by the government of Uganda, and learning outcomes for only two. Moreover, the imperfect proxies used for some of these categories mean that findings should be treated as tentative at best. Further studies using alternative sources of information will be crucial to building our understanding of how child vulnerability and educational disadvantage interact in Uganda, and elsewhere in East Africa.

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APPENDIX 1: INTERNATIONAL AGENCY DEFINITIONS OF OVC

Definition	Source
<p>“those whose safety, well-being and development are, for various reasons, threatened. Of the many factors that accentuate children's vulnerabilities, the most important are lack of care and affection, adequate shelter, education, nutrition, and psychological support. While children exposed to many facets of deprivation and poverty are vulnerable, children who lost their parents may be particularly vulnerable because they do not have the emotional and physical maturity to adequately address and bear the psychological trauma associated with parental loss” (p. 1)</p> <p>“those children who are most at risk of facing increased negative outcomes compared to the “average” child in their society. Main negative outcomes include, among other things, severe malnutrition, above average rates of morbidity and mortality and lower than average rates of school attendance and completion at primary level, and in all probability, increased work burden (both paid and unpaid child labor)” (p. 2)</p>	World Bank, 2004
“children whose survival, well-being, or development is threatened by HIV/AIDS” (p. 6)	USAID, et al., 2004
“children living in households with HIV positive members; children at risk of becoming orphans (i.e. children living with HIV positive primary caregivers); and children orphaned after their biological parents have passed away” (p. 1)	Adato, Kadiyala, Roopnaraine, Biermayr-Jenzano, & Norman, 2005
“all children who community members and organizations determine to be in the greatest need of assistance” (p. 7)	Firelight Foundation, American Jewish World Service, Bernard van Leer Foundation, & Pan African Children's Fund, 2005
A child that is “intrinsically vulnerable (e.g. a young child) + at risk + in need...At risk means that there is an increased likelihood that the child will be damaged. In need means that some intervention is required in order to prevent the child from being damaged” (p. 9).	Partnership for Child Development, 2005
“those who are living with HIV/AIDS, those whose parents are sick with HIV/AIDS, and, more generally, children who are especially vulnerable because of poverty, discrimination or exclusion, whether as a consequence of HIV/AIDS or not” (p. 13)	UNICEF, 2006
“those who are in poor health, out of school, burdened with excessive labor, extremely poor or stigmatized—regardless of their orphan or HIV status” (p. 25)	UNAIDS, UNICEF, & WHO, 2008
<p>A child, 0-17 years old, who is either orphaned or made more vulnerable because of HIV/AIDS.</p> <p>Orphan: Has lost one or both parents.</p> <p>Vulnerable: Is more vulnerable because of any or all of the following factors that result from HIV/AIDS:</p> <ul style="list-style-type: none"> Is HIV positive; Lives without adequate adult support (e.g., in a household with chronically ill parents, a household that has experienced a recent death from chronic illness, a household headed by a grandparent, and/or a household headed by a child); Lives outside of family care (e.g., in residential care or on the streets); or Is marginalized, stigmatized, or discriminated against. (p. 4) 	PEPFAR, 2006

APPENDIX 2: CATEGORIES OF CRITICAL AND MODERATE CHILD VULNERABILITY TESTED FOR ASSOCIATION WITH EDUCATIONAL VULNERABILITY.

Degree of vulnerability	Categories of Critically Vulnerable Children Technical specification or proxy variable used in DHS or SACMEQ dataset	DHS (attendance)	SACMEQ (learning outcomes)
Critical	Orphans whose rights are not fulfilled DHS proxy: Individuals aged 6-17 with one or both parents deceased. SACMEQ proxy: Individuals aged 10-25 with one or both parents deceased.	Yes	Yes
Critical	Children infected and affected by HIV and AIDS DHS proxy: Individuals aged 6-17 with a parent or other household adult who was too ill to work for three of the past twelve months SACMEQ proxy: Individuals aged 10-25 who missed school in the past month because of a sick family member or to care for a sick sibling	Yes	Yes
Critical	Children with disabilities DHS specification: Individuals aged 6-17 reported to experience “a lot of difficulty with”, or be “unable to”: see, hear, walk, remember, communicate, or feed oneself. Or children reported to experience “some difficulty” on two or more of these activities.	Yes	
Critical	Children in child-headed households DHS specification: Individuals aged 6-17 living in a household in which all household members are below the age of 20.	Yes	
Moderate	Child Mothers DHS specification: Females aged 6-17 reported to be the mother of another household member.	Yes	
Moderate	Children in poverty-stricken households DHS proxy: Individuals aged 6-17 living in households in the lowest income quintile	Yes	
Moderate	Children involved in domestic service DHS proxy: Individuals aged 6-17 living in households where they are not considered to be a family member	Yes	
Moderate	Children living with the elderly DHS specification: Individuals aged 6-17 living in households where the household head is 60 or older and no other adults are present.	Yes	
Non-NSPPI variable	Children living in urban-slum like conditions DHS proxy: Individuals aged 6-17 living in urban households in which one or more of the following is true: floor is composed mainly of earth or sand, walls are composed mainly of thatch, roof is composed mainly of thatch or mud. SACMEQ proxy: Individuals aged 10-25 living in households that meet the above conditions.	Yes	Yes



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