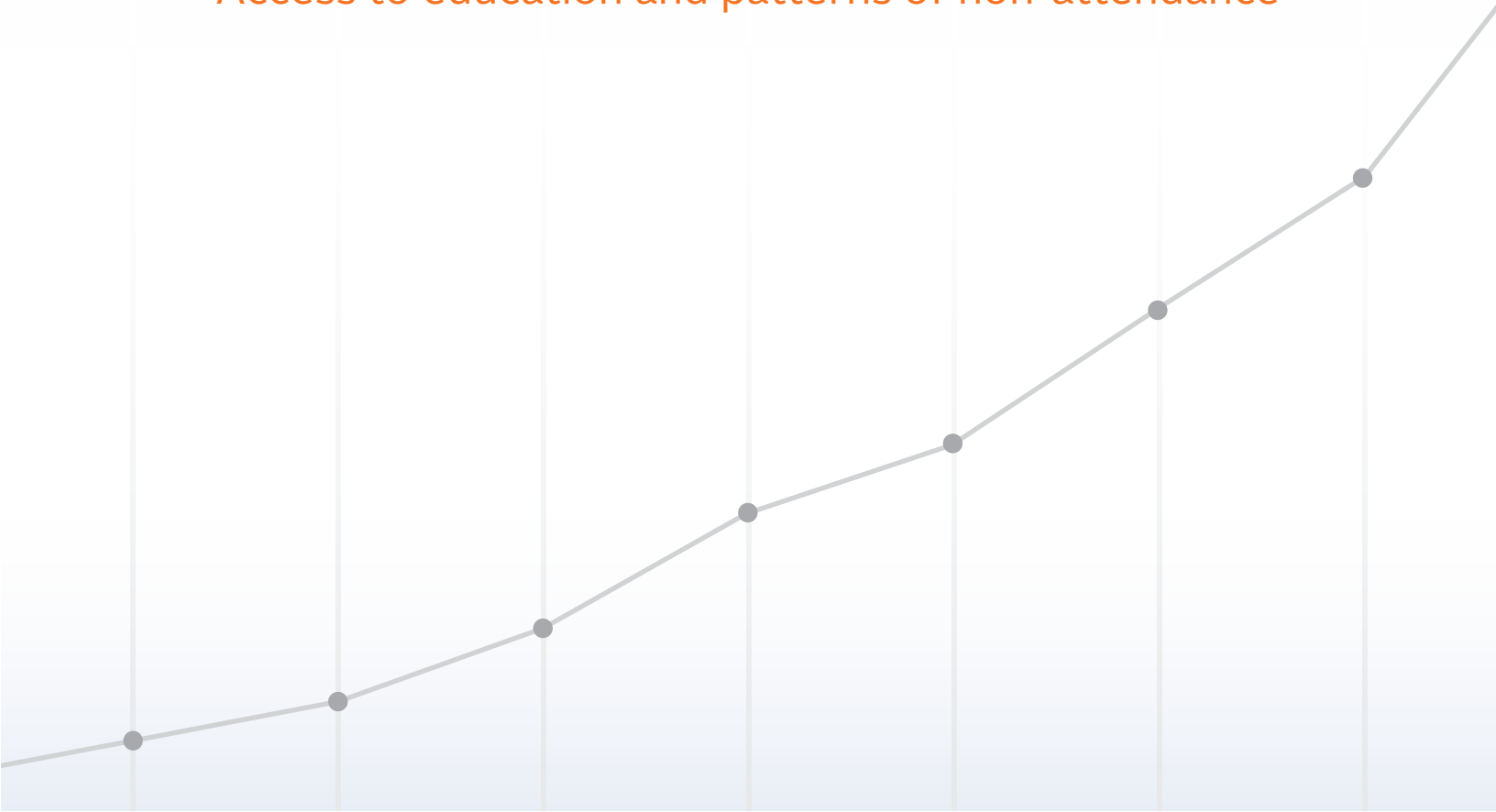


MOST VULNERABLE CHILDREN IN  
**TANZANIA**

Access to education and patterns of non-attendance



Arushi Terway  
Brian Dooley  
Anne Smiley

## ACKNOWLEDGEMENTS

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MOST VULNERABLE CHILDREN IN  
**TANZANIA**

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Access to education and patterns of non-attendance

EDUCATION POLICY AND DATA CENTER | FHI 360

Arushi Terway, with Brian Dooley and Anne Smiley



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## EXECUTIVE SUMMARY

This paper analyzes the extent to which, in Tanzania, “child vulnerability” indicators identified by the government of Tanzania are associated with lower educational access, and what additional indicators predict educational vulnerability.

We use the following indicators available in the Tanzania Demographic and Health Survey 2010 to examine school participation of the most vulnerable children (MVC)<sup>1</sup> in Tanzania as compared to other children:

- Child-headed household: the head of the household is 18 years or younger.
- Elderly-headed household with no other adult: the head of the household is 60 years or older and there is no other adult between the ages of 20-59 living in the household.
- Orphaned: the child has one (single orphan) or both (double orphan) parents deceased.
- Orphans living in a rural area in a home with a roof made of grass, thatch or mud.
- Orphans living in an urban area in a home with one of the following conditions: 1) a roof made of grass, thatch or mud, 2) a wall made of grass or poles and mud<sup>2</sup> or 3) there are no toilet facilities
- The child's relationship to the head of the household.
- The child's marital history (marriage before the age of 18)
- The child's pregnancy—whether the girl child was pregnant at the time of data collection

The primary finding of this study is that after accounting for gender, household wealth, location, and child's relationship to the head of the household into consideration, orphans do not have lower levels of school participation than children whose parents are alive. Poverty remains a major barrier to school attendance for all school age children in Tanzania. A parent figure as the household head is an important factor in educational access: children living with adult household heads with whom they had a parental relationship (parents, grandparents or adopted/foster parents) were much more likely to be attending school than children not living in such households. Moreover, for children between the ages of 15 and 18, marriage, and for girls, pregnancy, were also strong predictors of lower school participation.

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<sup>1</sup> Children ages 7 to 18

<sup>2</sup> Specification for poor quality wall material was not provided in the NCPA, grass and pole or mud was derived by the authors based on options available in DHS 2010 dataset.





## INTRODUCTION

What does child vulnerability mean in practice? Previous research published by the FHI 360 Education Policy and Data Center (Smiley, Omoeva, Sylla, & Chaluda, 2012) demonstrated that orphanhood on its own is not necessarily a good predictor of educational disadvantage in Lesotho, Malawi, Tanzania, Uganda, and Zambia.

However, poverty and lack of adult care were associated with lower levels of educational access. This paper expands on these findings by conducting an in depth analysis of a specific country context, Tanzania. It examines the extent to which “child vulnerability” factors identified by the government of Tanzania are associated with lower educational access, and what additional factors predict educational vulnerability.

## LITERATURE REVIEW

### Child “Vulnerability” in Tanzania

Around 2000, in recognition of the complex ways that HIV and AIDS affects children and communities, development agencies began to shift away from the term “AIDS orphans” to a more inclusive category: “orphans and vulnerable children,” or OVC (USAID, 2000; World Bank, 2004). The term “vulnerable” was introduced as a category in its own right to describe children who were, for various reasons not limited to orphanhood, at risk of harm.

The World Bank argued that a vulnerable child is one whose safety, well-being and development are threatened, with major dangers including “lack of care and affection, adequate shelter, education, nutrition, and psychological support” (2004, p. 1). In fact, there is no common definition of the term “vulnerable,” and the concept has proven difficult to operationalize in practice. Some development agencies focus on child well-being, the likelihood of being harmed, and survival. Others focus on more easily measurable indicators: children who have sick parents, who are infected with AIDS, or who are working for money. Table 1 in the Appendix presents a variety of definitions of vulnerability used by international development agencies over the last decade.

In the case of Tanzania, poverty is widespread and is overall a major vulnerability factor in preventing many children from accessing education, though free primary education has greatly increased school participation. A comparison of school attendance data from the 1996 and 2007 Demographic and Health Surveys revealed that, in both years, the proportion of children in the poorest households who were out of school was higher than those in the richest households (Lewin & Sabates, 2011). Moreover, in 2007, children in the poorest households who did attend school were more likely to be overage than children from the middle and highest wealth quintiles.

Over the past two decades, international agencies and policymakers have posited that due to the lack of parental care, orphans in sub-Saharan African countries face numerous disadvantages, especially in terms of educational access (UNICEF, 2006a). However, in Tanzania, very few have found conclusive evidence that orphanhood alone is associated with lower educational access (Smiley, et al., 2012), a finding that is often explained by the existence of a strong extended family safety net as well as a plethora of services provided to orphans.

A comparative study of 10 sub-Saharan countries, including Tanzania, found that orphans systematically have lower school participation than non-orphans (Case, Paxson, & Ableidinger, 2004). Within the DHS 1999 Tanzania dataset, Case et al. (2004) found that after controlling for age and gender of the child between the ages of 6-14 years, orphans had 8.4 percentage points lower school enrollment than non-orphans. The study also found that all children living in households headed by non-parental relatives or non-relatives are less likely to attend school but orphans living in these households were worse off than non-orphans.

Kürzinger, et al. (2008) analyzed 2001-2002 baseline data from OVC programs in Tanzania and found that, after controlling for confounding variables such

as age, gender, religion, relationship to the head of the household, and the household child/adult ratio, no difference remained between orphans and non-orphans in terms of school enrollment. Smiley et al. (2012), analyzing 2004 and 2010 DHS datasets for Tanzania, also did not find any significant difference between the primary net attendance of orphans and non-orphans. Ainsworth, Beegle, & Koda (2005), examining household surveys from Northwestern Tanzania, a region hard-hit by the AIDS crisis, found that children spend significantly fewer hours in school during the months prior to an adult death in the household. Following the death, the school attendance of new orphans returned to normal.

Beyond poverty and orphanhood, traditional cultural practices like early marriage (marriage before the age of 18) and early pregnancy can also put particularly female children at an educational disadvantage (UNICEF, 2001). Community level studies of youth have revealed that marriage is one of the major reasons for dropping out of school for both girls and boys in sub-Saharan Africa (Bastien, 2008; Colclough, Rose, & Tembon, 2000).

Tanzania has a high prevalence of early marriage for girls with 9 percent of females on mainland Tanzania and 6 percent of females in Zanzibar reporting being married before the age of 18. Twenty-nine percent of these females were married when they were 14 to 15 years old, and 65.3 percent were married when they were 16 to 17 years old (CDC & UNICEF, 2011).

With a substantial population of children who were married before the age of 18, it is worth exploring if these children are at an educational disadvantage.

It is likely that Tanzania's extended family safety net, combined with government and donor support to orphans, maybe the reason behind relatively equal levels of school enrollment and attendance among orphans and non-orphans. However, "vulnerability" goes beyond orphanhood, and it is important to examine other factors that may lead to educational disadvantage. In line with the international trends, Tanzania's Ministry of Health and Social Welfare (MoHSW) uses a working definition of Most Vulnerable Children (MVC) to provide social protection to orphans and other vulnerable children.

MVC is defined as those children who are adversely affected by the AIDS crisis as well as all children who are at risk of not receiving basic social services including education. MVC are protected under the National Social Protection Framework (MoFEA, 2008), which outlines policies and guidelines for support from government, development agencies, civil society, and the private sector.

Towards this end, the MoHSW created a general classification of MVC in the National Costed Plan of Action (NCPA) for Most Vulnerable Children that includes any child under the age of 18 living in the following conditions:

- those living in child-headed households

### **THE NATIONAL ACTION PLAN ON CARE, SERVICES, TRAINING AND PROTECTION OF VULNERABLE CHILDREN**

In 2008/09 Tanzania provided a total of 561,823 vulnerable children with basic services including health care, food, shelter, psychological and legal services, and education (Guidelines for the Preparation of Medium Term Plan and Budget Framework for 2010/11 – 2012/13).

- those living in elderly-headed households with no adult from 20–59 years-old present
- those with one or both parents deceased
- those with disabilities
- those in rural areas: children with one surviving parent living in a house with poor quality roofing (grass and/or mud) and those with a disability living in similar poor conditions
- those in urban areas: children with one surviving parent living in a house with poor quality roofing (grass and/or mud) or with poor wall materials or without toilet facilities; and
- those with a disability living in similar poor conditions (MoHSW, 2008).

Beyond this general guidance, the MoHSW allows flexibility at the local level to include categories of children that community stakeholders have identified as vulnerable. In 2006, the MoHSW estimated that the MVC population on Tanzania's mainland was close to 930,000, equivalent to 5 percent of the child population. Through the NCPA for Most Vulnerable Children (MoHSW, 2008), the Government of Tanzania designed a multisectoral policy to deliver support to these children, including improved access to primary and secondary education. The guidance documents argue that MVC face serious challenges in entering and remaining in the formal school system, especially those in child-headed households or in households where the head is elderly or critically ill.

## METHODOLOGY

This study uses Demographic and Health Survey (DHS) data for Tanzania (2010) to examine the relationship between access to schooling and indicators of child vulnerability, as defined in the Tanzanian NCPA in addition to several indicators identified by the researchers.

The data captures a representative sample of all school-age children living in households, but does not include children living in institutions, informal settlements or the streets. Accordingly, the findings of this study cannot be generalized to children living outside of formal households.

School-aged children were defined as those aged 7-18, with children from 7-14 being considered of primary school age and children from 15-18 of secondary school age. We recognize that children of secondary school age may not necessarily be attending secondary school, as almost 20 percent of the children in this age group were attending primary; the primary-secondary nomenclature in this paper is simply meant to refer to the different age groups. The sample included a total of 15,270 children, out of which 11,218 were of primary school age and 4,052 were of secondary school age.

School attendance within the last year was the outcome variable measuring educational access. School attendance in this study is measured by the head of the household's response to whether the child attended school at any time during the year. It does not measure the official enrollment in school or the number of days attended by the child.

The following proxy vulnerability indicators were used as explanatory variables:

### Variables identified by the Tanzania NCPA<sup>1</sup>

- Child-headed household: the head of the household is 18 years or younger.
- Elderly-headed household with no other adult: the head of the household is 60 years or older and

there is no other adult between the ages of 20-59 living in the household.

- Orphaned: the child has one (single orphan) or both (double orphan) parents deceased.
- Orphans living in a rural area in a home with a roof made of grass, thatch or mud.
- Orphans living in an urban area in a home with one of the following conditions: 1) a roof made of grass, thatch or mud, 2) a wall made of grass or poles and mud<sup>2</sup> or 3) there are no toilet facilities

### Additional variables identified by the authors

- The child's relationship to the head of the household.
- The child's marital history (marriage before the age of 18)
- The child's pregnancy—whether the girl child was pregnant at the time of data collection

Bivariate data analysis was conducted using one-way analysis of variance (ANOVA) to determine the variation in school attendance based on the vulnerability indicators above. For multiple regression analysis, probit models were used to determine the combined effect of multiple indicators on school attendance. The results of this analysis were generalized to the larger population at 95 percent confidence interval.

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<sup>1</sup> Indicators on disability were not included in the analysis because no data on household member disabilities was available in DHS 2010 dataset.

<sup>2</sup> Specification for poor quality wall material was not provided in the NCPA, grass and pole or mud was derived by the authors based on options available in DHS 2010 dataset.

## FINDINGS

### 1.1 Access to Education: Who is out of school?

In the past decade, Tanzania has made great progress in improving primary school access, with gross enrollment rates increasing from 68 percent in 2000 to 102 percent in 2010. However, approximately 650 thousand children – 16 percent of the primary school age population (ages 7-14) – were still not enrolled in primary school in 2010. Secondary access was even more problematic, with 52 percent of the relevant age group (15-18) out of school in 2010.<sup>1</sup>

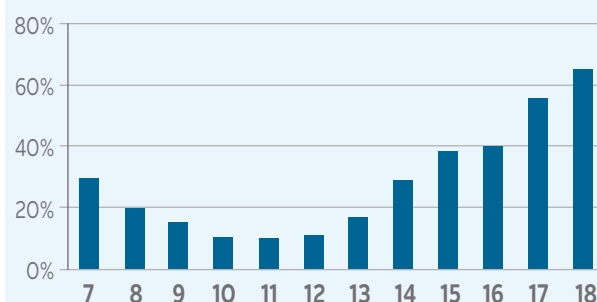
The 2010 DHS data revealed that school attendance was associated with region of residence, urban/rural residence, age, and household wealth; however, girls and boys had almost equal attendance rates.

The number of children out of school ranges from 39 percent in Tabora to 10 percent in Town West (Zanzibar) and Kilimanjaro. At the same time, 10 percent more children were out of school in rural areas than in urban areas. Another important factor appears to be age: younger children (7-9 years) and older children (13-18 years) are much more likely to be out of school than children within ages 10-12 (see Figure 1). Finally, poverty remains a major factor; in 2010 the highest proportion of out-of-school children was from the lowest wealth quintile. This was true for both girls and boys, with 38 percent and 35 percent out of school rate respectively for the poorest wealth quintile<sup>2</sup> (see Figure 2).

<sup>1</sup> World Development Indicators, <http://data.worldbank.org/data-catalog/world-development-indicators>

<sup>2</sup> Wealth quintiles were calculated by TDHS using a principle component analysis based on household asset data on number of variables like household ownership of a number of characteristics,

**FIGURE 1. PERCENTAGE OF CHILDREN WHO DID NOT ATTEND SCHOOL AT ANY TIME DURING THE 2010 SCHOOL YEAR, BY AGE**



### 1.2 Educational Access for MVC: Examining Tanzania's Indicators

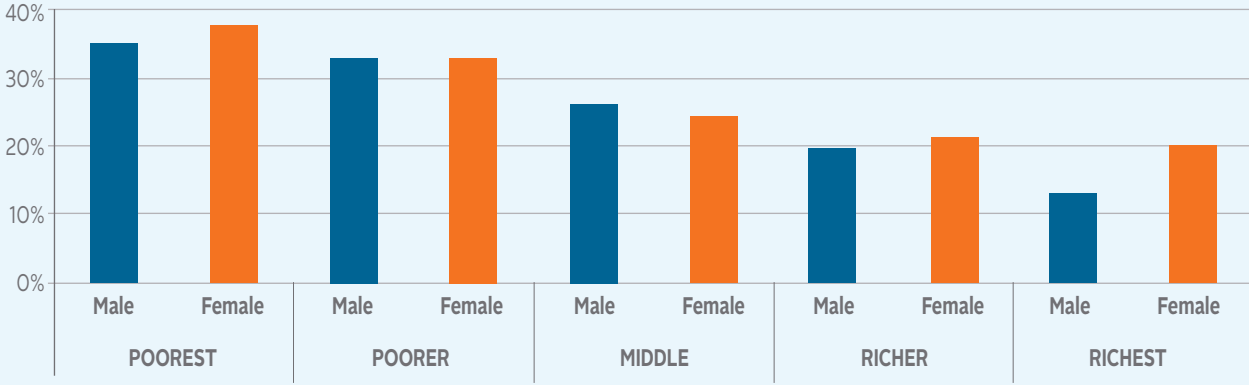
The Government of Tanzania identifies MVC as particularly disadvantaged in primary and secondary school access (MoHSW, 2008). However, ANOVA findings demonstrate that, in most cases, Tanzania's MVC indicators are strong predictors of low school attendance only for specific subpopulations.

#### Children living in child-headed and elderly-headed households

The first two indicators of vulnerability in the NCPA are defined by the age of the head of the household. Children are considered vulnerable if they are living in a household that is either headed by a child under the age of 19, or headed by an elderly adult over the age of 59 with no other adults living in the household.

such as source of drinking water, type of sanitation facilities, and type of materials used in dwelling construction.

**FIGURE 2. PERCENTAGE OF CHILDREN OUT OF SCHOOL BY HOUSEHOLD WEALTH**



In our sample, the majority of the households had adult household heads between the ages of 19 and 59, and very few lived in child-headed households. However, a substantial number of children lived in elderly-headed households (see Table 1).

**TABLE 1. CHILDREN LIVING IN HOUSEHOLDS HEADED BY CHILDREN, ADULTS AND THE ELDERLY**

| Age of Household Head | Number of Children |
|-----------------------|--------------------|
| under 19              | 42                 |
| 19 to 59              | 12,076             |
| over 59               | 2,902              |

In urban areas, the percentage of children out of school did not differ significantly among children living in child-headed, adult-headed or elderly-headed households. However, in rural areas, 31 percent of out-of-school children lived in elderly-headed households with no other adults present in the household, a number that was significantly higher than both children living in adult-headed and child-headed households.

A very small number of children (32) in this sample lived in rural households headed by children under

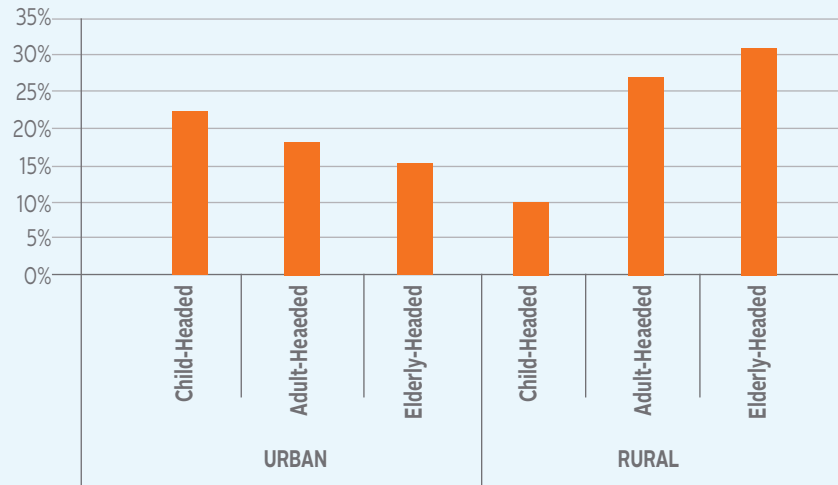
the age of 19, and they were less likely to be out of school than children living in adult headed households. However, this difference in school attendance was not statistically significant and could not be generalized to all rural households.

**Single and double orphans**

In this sample, 12 percent of the children were single orphans, with either the mother or the father deceased, and 2 percent double orphans, with both parents deceased. In the primary school age group (7-14 years), more single and double orphans were out of school than non-orphans, but this difference was not statistically significant. However, for secondary school aged children (15-18 years), there was a significant difference in the proportion of single orphans who were out of school as compared to non-orphans. The out-of-school rate was high for secondary school age children in general, but in this age group, 55 percent of single orphans were out of school compared with a significantly lower percentage of non-orphans (45 percent). We did not find a statistically significant difference in children being out of school between double orphans and non-orphans or between double orphans and single orphans.

In urban areas, within the secondary school age population, single orphans were approximately one and half times more likely to be out of school than non-orphans, and double orphans were almost twice

**FIGURE 3. PERCENTAGE OF CHILDREN OUT OF SCHOOL IN AGE OF HOUSEHOLD HEAD**

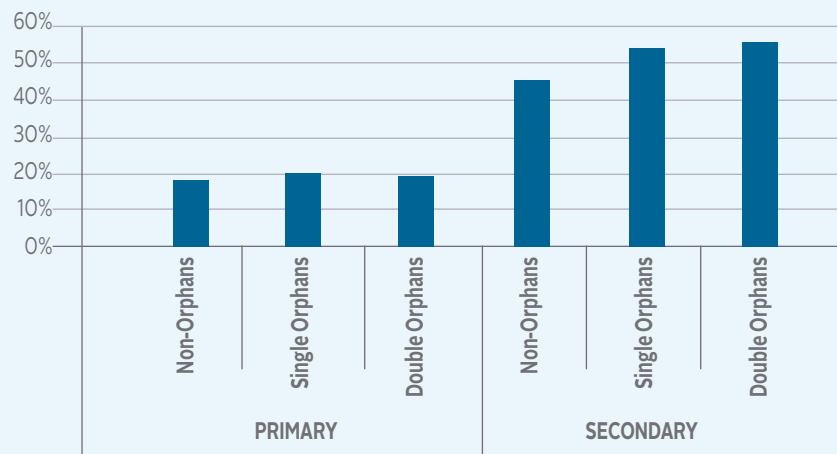


as likely to be out of school as non-orphans. Thus, orphanhood appears to be a determinant of lower school attendance for older children, though not for younger children. Due to the abolition of school fees at the primary level, it may be that all primary-aged children gained improved access to schooling, while older orphans have a more difficult time than non-orphans in paying fees for secondary school or have other opportunity costs like earning a living.

**Orphans living in poor housing conditions**

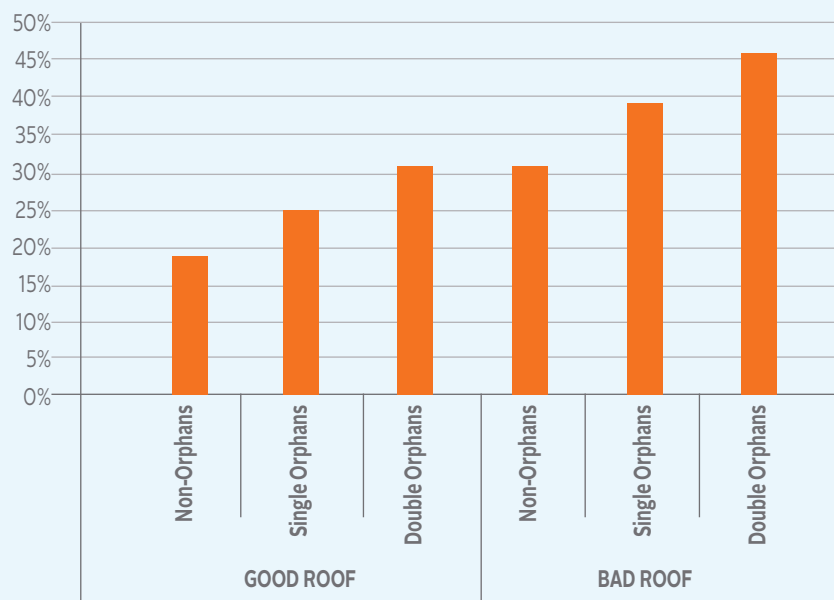
The Tanzanian government classifies single orphans living in poor housing conditions as vulnerable. In fact, almost 45 percent of the rural children in the dataset lived in houses with roofs made of grass, thatch, or mud, which according to the official definition would be classified as poor housing. In rural areas, children with only one living parent who reside in poor quality houses were significantly more likely to be out of

**FIGURE 4. PERCENTAGE OF CHILDREN OUT OF SCHOOL BY ORPHAN STATUS**





**FIGURE 5. PERCENTAGE OF CHILDREN OUT OF SCHOOL IN RURAL AREAS WITH POOR HOUSING**



school, compared to single orphans living in better quality homes. However, as we can see in Figure 5, this difference was significant for non-orphans as well, who had 12 percentage point higher rate of non-attendance than non-orphans in better quality housing. We found a significant difference in school attendance based on quality of housing regardless of orphanhood status: 35 percent of all rural children, orphans and non-orphans combined, living in houses with poor quality roofing were out of school, compared to 23 percent of rural children with better quality roofing. Further, even when the analysis is restricted to children (orphans and non-orphans) in the poorest two wealth quintiles, the differences in school attendance based on the quality of housing remain, which indicates that the effect of the living conditions is not entirely explained by household wealth. In sum, it appears that the differences in school attendance in rural areas are explained to a greater extent by socioeconomic factors, and in particular, living conditions, rather than orphanhood.

In urban areas, the definition of poor quality housing used by MoHSW was expanded to three conditions: poor quality roof (made of grass, thatch, or mud),

poor quality walls (made of grass, poles, or mud<sup>3</sup>) and the absence of a toilet. Compared to rural areas, very few urban children lived in poor quality households: 8 percent had a poor quality roof, 12 percent had poor quality walls, and 4 percent did not have a toilet. Only 26 out of the 3,019 children living in urban areas reported having all three conditions, and four of these were orphans. Thus, the number of urban orphans with the worst housing conditions was too small to generalize any results to the larger population.

However, when we examine urban households with at least one poor quality housing characteristic, 18 percent of urban children qualified, and 12 percent of these were orphans. However, we did not find any significant difference in school attendance for orphans living in poor quality housing as compared to orphans living in better quality housing. We also did not find any significant differences in school attendance between urban orphans living in poor quality housing and urban children in the poorest two wealth quintiles.

<sup>3</sup> Defined by the authors as no specific definition was available in the NCPA.

This analysis of group means shows that Tanzania's official MVC populations are not always educationally disadvantaged. In fact, primary school age orphans show no evidence of being significantly disadvantaged than non-orphans in the same age group. However, disaggregating these populations to smaller groups does, in some instances, reveal inequities.

Orphan status is a major factor for identifying MVC in Tanzania as it is included in three out of the six categories in the MVC definition. We find that the effect of orphanhood differs by the age group of the children: while orphan status did not reveal any disadvantage in school attendance for primary age children, at the secondary level, a higher proportion of both single and double orphans were out of school when compared to non-orphans. This finding is supported by previous research that suggests that orphan status on its own does not predict low levels of school attendance, though other factors may play a major role.

### 1.3. Educational Access for MVC: Examining Additional Factors of Vulnerability

In exploring more groups who may be educationally disadvantaged in Tanzania, we identified three more possible indicators of child vulnerability and tested them using the DHS 2011 data: 1) relationship to the head of the household, 2) whether the child was married before the age of 18, and 3) whether the female child was pregnant at the time of the survey.

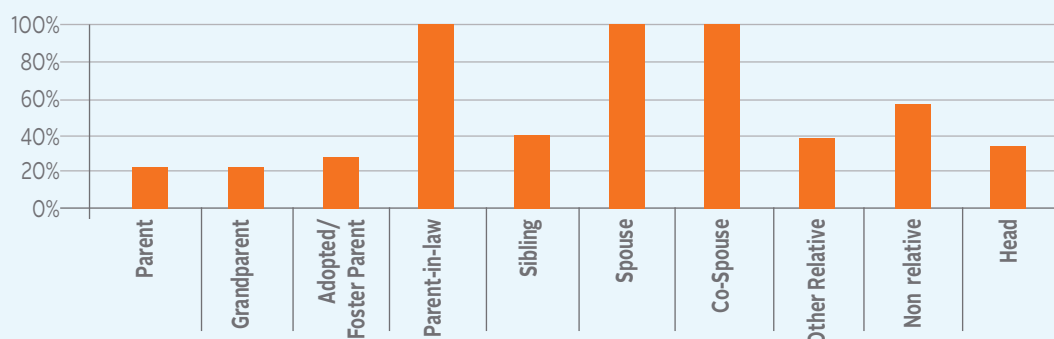
#### Relationship to the head of the household

When children are living in a household where the head is not their parent, grandparent or adopted/foster parent, one-way ANOVA clearly shows that they are much more likely to be out of school. In the sample, all children who were living in households where the head was their parent-in-law or spouse, were out of school. In fact, we found no statistically significant difference in school attendance for children that were living in households with their grand-parent

**FIGURE 6. PERCENTAGE OF CHILDREN OUT OF SCHOOL IN URBAN AREAS BY QUALITY OF HOUSE**



**FIGURE 7. PERCENTAGE OF CHILDREN OUT OF SCHOOL BY THE RELATIONSHIP TO THE HEAD OF THE HOUSEHOLD**



or adopted/foster parent as oppose to children living with their parent as the head of the household. However, when children were living with their parent-in-laws, spouses, siblings, other relative or non-relative, they had significantly higher out of school rates than children living with their parents.

#### Early marriage

Children who were married before the age of 18 were also significantly more likely to be out of school than unmarried children, and the difference is much larger for females than for males. Ninety-seven percent of married girls of secondary school age were out of school, compared to 50 percent of unmarried girls. For boys, the difference was smaller but also significant; 73 percent of married boys were out of school compared to 46 percent of the unmarried boys. This data indicates that early marriage, especially for girls, is a major barrier to school attendance in Tanzania.

#### Pregnancy

For girls between 15 and 18 years old, another major factor contributing to lower school attendance was pregnancy. Of the girls who knew about their pregnancy and responded to the survey question<sup>4</sup>, 5

percent were pregnant. However, less than 1 percent of pregnant girls were attending school, as opposed to 46 percent of the girls who reported not being pregnant.

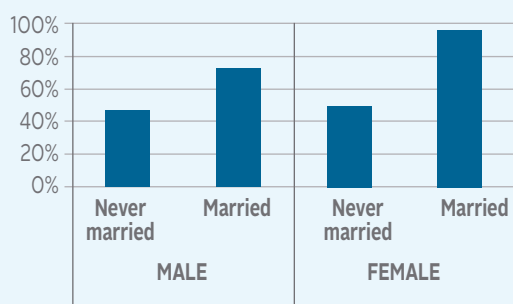
### 1.4. Examining the effects of multiple MVC indicators on school attendance

Based on the indicators described above, multiple regression probit models were created to analyze the probability of school attendance for orphans in Tanzania. The dependent variable in the analyses was school attendance (yes or no) and the primary independent variable was orphan status (non-orphan, single orphan and double orphan). Depending on whether the children in the sample were of primary or secondary age, the following additional independent variables were included: 1) gender 2) location 3) wealth quintile 4) relationship to the head of household 5) marital status 6) pregnancy. The results of the probit regression analysis, along with the marginal effects of each variable on school attendance probability, are presented in Tables 3-10 in the Appendix.

<sup>4</sup> A subset of women of age 15-49, who were residing or visiting the household were selected to respond to a separate Women's

Questionnaire that included questions on fertility and woman's health.

**FIGURE 8. PERCENTAGE OF CHILDREN OUT OF SCHOOL BY MARITAL STATUS**



In the full sample of all school age children, between ages 6 to 18, (Table 3), when we control for gender, location, household wealth quintile and relationship to the head of the household, we find that single orphans have slightly lower school attendance rate than non-orphans (a 3 percent difference). This difference is statistically significant ( $p > .05$ ), though the standard error ( $SE = .047$  for  $\beta = -.99$ ) for this variable coefficient is fairly large. Both household wealth quintile and certain relationships to the head of the household have fairly large and significant effects on school attendance. Holding all other variables at their mean, children living in the richest quintile are 20 percentage point more likely to be attending school than children in the poorest quintile.

As foreshadowed by the analysis of group means, we find no significant difference in school attendance between children living in households with their parents as the head versus children living with grandparents or adopted/foster parents. *On the other hand, children living with a household head who is a sibling, other relative or non-relative* have significantly lower levels of school attendance. Child living with a non-relative as the head of the household had 47 percentage point lower probability of attending school than a child who lives with the parent as the head of the household. Children from child-headed households also appear to have slightly higher probability of being out of school though this effect is not statistically significant. This could be due the small number of child-headed household in this sample.

When we examine the data for *primary* school age children, between the ages of 7-14, only (as presented in Model B in Table 4), we find that orphan status does not have a significant effect in this group. However, wealth quintile and relationship to the head of the household have much larger and significant effects on school attendance than orphan status, gender and location of the child. The model for *secondary* school age children, between the ages of 15-18, (Table 5 in Appendix) had *similar* direction and significance of the effects as the *primary* school age model, though the effect size for some of the variables is considerably larger. For example, secondary school age children in the *richest quintile* are 31 percentage points more likely to attend school compared to the *poorest quintile*.

A major difference for secondary school age children as compared to primary age children is that the effect size of gender and location were significant for this age group. Controlling for all other factors, girls were 6 percentage points less likely to attend school than boys. Similarly children residing in rural areas were 8 percentage points less likely to attend school than children in urban areas. The secondary school age population included a small sample of children as the head of the household and these children were 23 percentage points more likely to be attending school than children with parent as the head. However, this difference was not statistically significant.

In all three models we found that the type of the relationship to the head of the household was a very strong predictor for school attendance, where a child living with a household head that is not in a parental role (i.e. parent, grandparent, adopted/foster parent) was much more likely to be out of school. Since orphans are much more likely to be living with non-parental heads, it is possible that the combined effect of orphanhood and non-parent household head puts them at a higher disadvantage than non-orphans. In the DHS 2010 sample 26 percent of single orphans and 56 percent of the double orphans lived in households where the head was not related to them

in a parental role. When we included the interaction variable between orphanhood and non-parental relationship to the head of the household in the full sample of children between ages 7-18 and found that orphans, whether single or double, were 5 percentage points more likely to be out of school as compared to non-orphans (Model A-1). All, orphans and non-orphans, living in households that were not headed by their parent, grandparent or adopted/foster parent, were 29 percentage points more likely to be out of school. However, we found that orphans, who were living in households where the head was not a parent or parent like figure, were 6 percentage point more likely to attend school than non-orphans.

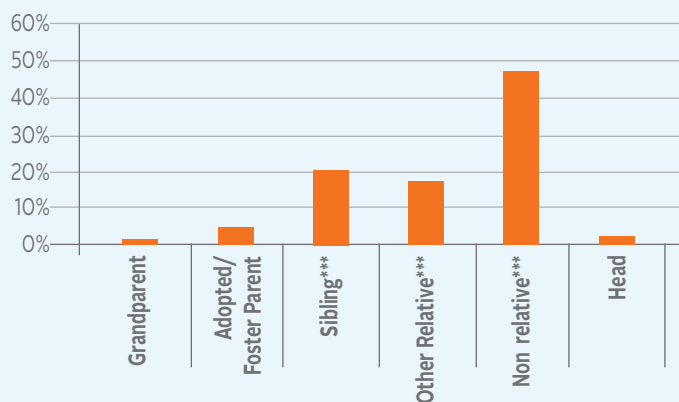
When we split the sample for primary school age children and secondary school age children, this trend of orphans in non-parental households having better school attendance than non-orphans remained (Model B-1 and C-1). For primary school age children the difference in school attendance between orphans and non-orphans, holding all other factors equal, is negligible and not significant. Within this group children staying in households with non-parental head were 19 percentage points more likely to be out of school; but orphans in these households were 5 percentage points more likely to attend school than non-orphans and this relationship was significant

at 90 percent confidence interval. In the secondary school age group (Model C-1) we found similar direction and effect size for the interaction between orphanhood and non-parental household head, however this effect was not significant.

Since we found that 6 percent of secondary school aged children were married in our sample and that their level of school attendance, especially girls was considerably low, we included marital status in the probit model (Table 6). When controlling for marital status along with other independent variables, the effect of orphanhood for secondary school age children was no longer significant. Marital status in this model had largest effect size; children who were married in this group were almost 20 percentage points more likely to be out of school than unmarried children. Given the already low levels of secondary school enrollment in Tanzania, this indicates that children who get married early are extremely disadvantaged in educational access. As with other models, wealth quintile and relationship to the head of the household were significant factors in predicting school attendance.

Controlling for all other variables, children in the *richest quintile* were 30 percentage points more likely to attend school than children in the *poorest quintile*.

**FIGURE 9. PROBABILITY OF CHILDREN BEING OUT OF SCHOOL BY HEAD OF HOUSEHOLD AS COMPARED TO CHILDREN LIVING WITH PARENT HEAD OF HOUSEHOLD, WHEN CONTROLLING FOR ALL OTHER FACTORS**

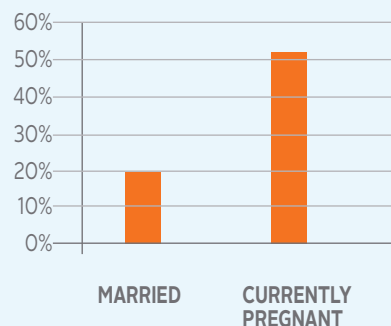


Secondary school age children who were living in households where the head was the *sibling, other relative* or *non-relative* had 16 percentage points, 20 percentage points and 45 percentage points lower probabilities of being in school, respectively. In this model as well we found that children who were the head of the household were more likely to be in school in this sample than children living with their parents, however this difference was not significant.

As revealed in the previous model for secondary school aged children, girls were more likely to be out of school than boys. Another factor that reduced the chances of girls attending school is pregnancy. When controlling for all other factors (Table 7), we found that a *pregnant* girl is 52 percentage points less likely to attend school than a *non-pregnant* girl. In this sample, and probably in the larger population, pregnant girls only make up 5 percent of secondary school age children. However, with already low levels of school access for girls in this age group, pregnancy adds another barrier to accessing education.

Even though bivariate analysis showed that orphans in at least some subpopulations were more likely to be out of school than non-orphans, multiple regression probit models that control for other life and household factors revealed that the statistical significance of this effect is either diminished or inconclusive. Once again, we find that poverty is a significant predictor of low educational access, to a greater extent than either orphan status or the urban/rural divide.

**FIGURE 10. PROBABILITY OF CHILDREN BEING OUT OF SCHOOL BY MARITAL STATUS AND PREGNANCY, WHEN CONTROLLING FOR ALL OTHER FACTORS**



The relationship to the head of the household is the other major factor that affects school attendance for both primary and secondary school age children. Children who were living with adult household heads with whom they had a close relationship (including grandparents) were much more likely to be attending school than children not living in such households. It appears that having an adult caregiver in the household who has a close relationship with the child is more influential in school attendance than having living parents. This is probably part of the traditional extended family safety net present in Tanzania.

## CONCLUSION

This bivariate and multiple regression analysis of the most recent DHS household data from 2010 supports the finding that orphan status is not necessarily a strong predictor of educational disadvantage for children in Tanzania. Among secondary school age children, where orphans do have lower levels of school attendance, other factors like household wealth and marital status are contributing to lower attendance. Some of the official MVC indicators, including age of the household head or poor housing conditions do not necessarily predict lower educational access in all sub-populations.

Overall, poverty still remains a strong predictor of educational disadvantage for all children. Among school aged children, the relationship to the head of the household is also a strong predictor for whether they attend school or not. Children whose parents are the head of the household are most likely to attend school, but children still have high rates of school attendance in households headed by grandparents and foster parents. School attendance declines for children who live in households headed by siblings, spouses, other relatives, and non-relatives. For secondary school aged children, marriage and pregnancy significantly lower the likelihood of school attendance.

Given these results, the Government of Tanzania, beyond supporting orphans, could further target smaller groups of MVC for additional support in

accessing primary and secondary education. These groups would include children living in households headed by the elderly, siblings, spouses, other relatives or non-relatives. For secondary school aged children, additional educational services should be provided to married and pregnant girls. And throughout the nation, more effort needs to go into improving access for children living in the poorest households.

Given that the 2010 DHS dataset only includes data for children living in households, this analysis does not reflect the situation children living on the street, in institutions, or in informal settlements, who are likely even more marginalized than those described in this paper and may have even lower educational access. The Tanzanian government is currently in the process of collecting data on MVC with support from communities, which may allow a larger sample size and a deeper analysis revealing more specific indicators of educational disadvantage.

Finally, more research should be conducted on the quality of education for MVC who are enrolled and attending school. Given the barriers that these children face in accessing education, there is every possibility that there are also disadvantages within the schools themselves. An analysis of the quality of educational services and student performance for MVC may reveal further areas of support necessary to promote true educational equity.

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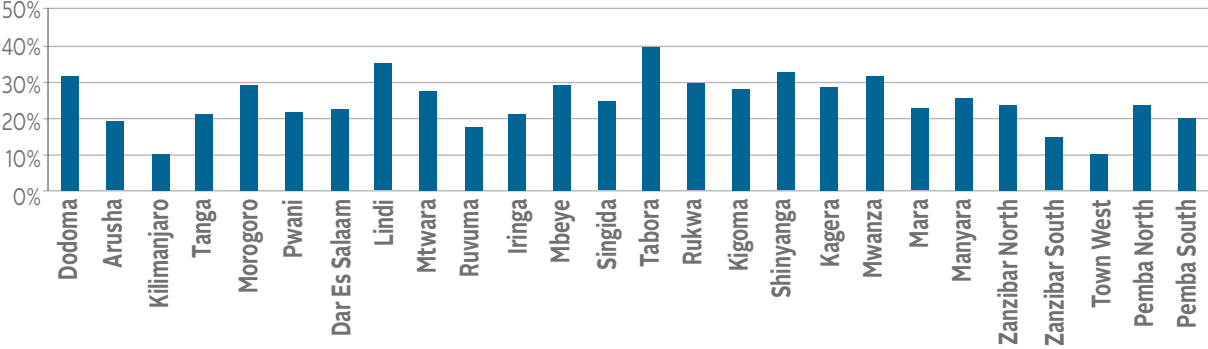


## APPENDIX

TABLE 2. INTERNATIONAL AGENCY DEFINITION FOR OVC

|   | 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, UNAIDS, & UNICEF, 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 “intrinsicly vulnerable (e.g. a young child) + <i>at risk</i> + <i>in need</i> ... <i>At risk</i> means that there is an increased likelihood that the child will be damaged. <i>In need</i> 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, 2006b)   |
| “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"> <li>Is HIV positive;</li> <li>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);</li> <li>Lives outside of family care (e.g., in residential care or on the streets); or</li> <li>Is marginalized, stigmatized, or discriminated against. (p. 4)</li> </ul>   | (PEPFAR, 2006)  |

FIGURE 11. % CHILDREN WHO DID NOT ATTEND SCHOOL AT ANY TIME DURING 2010 SCHOOL YEAR, BY REGION



**TABLE 3. MODEL A: ALL SCHOOL AGE CHILDREN**

| N = 14112                          | $\beta$    | Standard Error | Marginal Effect |
|------------------------------------|------------|----------------|-----------------|
| Orphan status                      |            |                |                 |
| Non-Orphan                         |            |                | Referent        |
| Single                             | -0.0978*   | (0.0475)       | -2.97%          |
| Double                             | -0.1915    | (0.1170)       | -6.05%          |
| Gender                             |            |                |                 |
| Male                               |            |                | Referent        |
| Female                             | 0.0171     | (0.0308)       | 0.51%           |
| Location                           |            |                |                 |
| Urban                              |            |                | Referent        |
| Rural                              | -0.0715    | (0.0742)       | -2.08%          |
| Wealth quintile                    |            |                |                 |
| Poorest                            |            |                | Referent        |
| Poorer                             | 0.1141*    | (0.0455)       | 3.29%           |
| Middle                             | 0.3791***  | (0.0551)       | 10.27%          |
| Richer                             | 0.5888***  | (0.0544)       | 14.92%          |
| Richest                            | 0.8762***  | (0.0878)       | 19.90%          |
| Relationship to the Household Head |            |                |                 |
| Parent                             |            |                | Referent        |
| Grandparent                        | -0.0289    | (0.0506)       | -0.86%          |
| Adopted/Foster Parent              | -0.1464    | (0.0904)       | -4.55%          |
| Sibling                            | -0.5993*** | (0.1099)       | -21.03%         |
| Other relative                     | -0.5221*** | (0.0669)       | -17.74%         |
| Non relative                       | -1.3066*** | (0.1130)       | -48.18%         |
| Head                               | -0.0513    | (0.4789)       | -1.55%          |

**TABLE 4. MODEL B: PRIMARY SCHOOL AGE CHILDREN**

| <b>N = 11073</b>                          | $\beta$    | Standard Error | Marginal Effect |
|---|------------|----------------|-----------------|
| <b>Orphan status</b>                      |            |                |                 |
| Non-Orphan                                |            |                | Referent        |
| Single                                    | 0.0081*    | (0.0628)       | 0.19%           |
| Double                                    | 0.1296     | (0.1658)       | 2.92%           |
| <b>Gender</b>                             |            |                |                 |
| Male                                      |            |                | Referent        |
| Female                                    | 0.0368     | (0.0331)       | 0.88%           |
| <b>Location</b>                           |            |                |                 |
| Urban                                     |            |                | Referent        |
| Rural                                     | -0.0400    | (0.1204)       | -0.95%          |
| <b>Wealth quintile</b>                    |            |                |                 |
| Poorest                                   |            |                | Referent        |
| Poorer                                    | 0.1763**   | (0.0548)       | 4.02%           |
| Middle                                    | 0.4676***  | (0.0655)       | 9.80%           |
| Richer                                    | 0.7649***  | (0.0683)       | 14.36%          |
| Richest                                   | 1.0741***  | (0.1247)       | 17.62%          |
| <b>Relationship to the Household Head</b> |            |                |                 |
| Parent                                    |            |                | Referent        |
| Grandparent                               | -0.0840    | (0.0631)       | -2.08%          |
| Adopted/Foster Parent                     | -0.0924    | (0.1133)       | -2.31%          |
| Sibling                                   | -0.5986*** | (0.1483)       | -18.30%         |
| Other relative                            | -0.4856*** | (0.0837)       | -13.98%         |
| Non relative                              | -1.0395*** | (0.1352)       | -35.19%         |
| Head                                      |            |                |                 |

**TABLE 5. MODEL C: SECONDARY AGE CHILDREN**

| N =3039                            | $\beta$   | Standard Error | Marginal Effect |
|------------------------------------|-----------|----------------|-----------------|
| Orphan status                      |           |                |                 |
| Non-Orphan                         |           |                | Referent        |
| Single                             | -0.0864   | (0.0881)       | -3.43%          |
| Double                             | -0.1862   | (0.1749)       | -7.42%          |
| Gender                             |           |                |                 |
| Male                               |           |                | Referent        |
| Female                             | -0.1470*  | (0.0638)       | -5.82%          |
| Location                           |           |                |                 |
| Urban                              |           |                | Referent        |
| Rural                              | -0.1928*  | (0.0930)       | -7.57%          |
| Wealth quintile                    |           |                |                 |
| Poorest                            |           |                | Referent        |
| Poorer                             | -0.0190   | (0.0845)       | -0.76%          |
| Middle                             | 0.2687**  | (0.0903)       | 10.50%          |
| Richer                             | 0.4629*** | (0.0979)       | 17.73%          |
| Richest                            | 0.8579*** | (0.1250)       | 30.81%          |
| Relationship to the Household Head |           |                |                 |
| Parent                             |           |                | Referent        |
| Grandparent                        | 0.1553    | (0.1094)       | -6.18%          |
| Adopted/Foster Parent              | 0.2073    | (0.1672)       | -8.25%          |
| Sibling                            | 0.3801*   | (0.1809)       | -15.04%         |
| Other relative                     | 0.5482*** | (0.1076)       | -21.45%         |
| Non relative                       | 1.4276*** | (0.1774)       | -45.78%         |
| Head                               | 0.6288    | (0.4910)       | 22.59%          |

**TABLE 6. MODEL D: SECONDARY AGE CHILDREN, MARRIAGE**

| N = 2964                           | $\beta$    | Standard Error | Marginal Effect |
|------------------------------------|------------|----------------|-----------------|
| Orphan status                      |            |                |                 |
| Non-Orphan                         |            |                | Referent        |
| Single                             | -0.0845    | (0.0916)       | -3.36%          |
| Double                             | -0.1927    | (0.1759)       | -7.67%          |
| Gender                             |            |                |                 |
| Male                               |            |                | Referent        |
| Female                             | -0.1440*   | (0.0649)       | -5.70%          |
| Location                           |            |                |                 |
| Urban                              |            |                | Referent        |
| Rural                              | -0.2079*   | (0.0908)       | -8.15%          |
| Wealth quintile                    |            |                |                 |
| Poorest                            |            |                | Referent        |
| Poorer                             | -0.0280    | (0.0882)       | -1.11%          |
| Middle                             | 0.2402*    | (0.0928)       | 9.40%           |
| Richer                             | 0.4480***  | (0.1001)       | 17.19%          |
| Richest                            | 0.8292***  | (0.1249)       | 29.93%          |
| Relationship to the Household Head |            |                |                 |
| Parent                             |            |                | Referent        |
| Grandparent                        | -0.1460    | (0.1106)       | -5.81%          |
| Adopted/Foster Parent              | -0.2333    | (0.1687)       | -9.29%          |
| Sibling                            | -0.3971*   | (0.1868)       | -15.69%         |
| Other relative                     | -0.5226*** | (0.1104)       | -20.50%         |
| Non relative                       | -1.4011*** | (0.1774)       | -45.31%         |
| Head                               | 0.5768     | (0.4984)       | 20.98%          |
| Married                            |            |                |                 |
| Never                              |            |                | Referent        |
| Married                            | -0.5109*   | (0.2403)       | -19.99%         |

**TABLE 7. MODEL E: SECONDARY AGE GIRLS, MARRIAGE AND PREGNANCY**

| N =1395                            | $\beta$   | Standard Error | Marginal Effect |
|------------------------------------|-----------|----------------|-----------------|
| Orphan status                      |           |                |                 |
| Non-Orphan                         |           |                | Referent        |
| Single                             | 0.0557    | (0.1359)       | -2.22%          |
| Double                             | 0.4602    | (0.2409)       | -17.77%         |
| Location                           |           |                |                 |
| Urban                              |           |                | Referent        |
| Rural                              | 0.2262    | (0.1325)       | -8.98%          |
| Wealth quintile                    |           |                |                 |
| Poorest                            |           |                | Referent        |
| Poorer                             | 0.0947    | (0.1446)       | 3.78%           |
| Middle                             | 0.3405*   | (0.1397)       | 13.46%          |
| Richer                             | 0.5515*** | .1458215       | 21.43%          |
| Richest                            | 0.8862*** | (0.1769)       | 32.83%          |
| Relationship to the Household Head |           |                |                 |
| Parent                             |           |                | Referent        |
| Grandparent                        | 0.1027    | (0.1714)       | 4.09%           |
| Adopted/Foster Parent              | 0.2177    | (0.2372)       | -8.62%          |
| Sibling                            | 0.2170    | (0.2422)       | -8.59%          |
| Other relative                     | 0.4696**  | (0.1425)       | -18.20%         |
| Non relative                       | 1.3683*** | (0.2461)       | -42.10%         |
| Head                               | 0.7179    | (0.5520)       | 26.36%          |
| Married                            |           |                |                 |
| Never                              |           |                | Referent        |
| Married                            | 0.6610*   | (0.2816)       | -24.73%         |
| Pregnant                           |           |                |                 |
| Not Pregnant                       |           |                | Referent        |
| Currently Pregnant                 | 2.7564*** | (0.3449)       | -52.56%         |

**TABLE 8. MODEL A-1: ALL SCHOOL AGE CHILDREN WITH INTERACTION EFFECTS**

| N = 14113                          | $\beta$    | Standard Error | Marginal Effect |
|------------------------------------|------------|----------------|-----------------|
| Orphan status                      |            |                |                 |
| Non-Orphan                         |            |                | Referent        |
| Single or Double Orphan            | -0.1690**  | (0.0512)       | -5.29%          |
| Gender                             |            |                |                 |
| Male                               |            |                | Referent        |
| Female                             | -0.0081    | (0.0306)       | -0.24%          |
| Location                           |            |                |                 |
| Urban                              |            |                | Referent        |
| Rural                              | -0.0717    | (0.0742)       | -2.12%          |
| Wealth quintile                    |            |                |                 |
| Poorest                            |            |                | Referent        |
| Poorer                             | 0.1140*    | (0.0449)       | 3.34%           |
| Middle                             | 0.3786***  | (0.0545)       | 10.43%          |
| Richer                             | 0.5872***  | (0.0540)       | 15.15%          |
| Richest                            | 0.8386***  | (0.0857)       | 19.64%          |
| Relationship to the Household Head |            |                |                 |
| Parent like relationship           |            |                | Referent        |
| Non-parent relationship            | -0.8292*** | (0.0574)       | -29.34%         |
| Interaction                        |            |                |                 |
| Orphan * Non-parent                | 0.2319*    | (0.0995)       | 6.39%           |



**TABLE 9. MODEL B-1: PRIMARY SCHOOL AGE CHILDREN WITH INTERACTION EFFECTS**

| <b>N = 11074</b>                   | $\beta$    | Standard Error | Marginal Effect |
|------------------------------------|------------|----------------|-----------------|
| Orphan status                      |            |                |                 |
| Non-Orphan                         |            |                | Referent        |
| Single or Double Orphan            | -0.0456    | (0.0656)       | -1.13%          |
| Gender                             |            |                |                 |
| Male                               |            |                | Referent        |
| Female                             | 0.0363     | (0.0328)       | 0.88%           |
| Location                           |            |                |                 |
| Urban                              |            |                | Referent        |
| Rural                              | -0.0394    | (0.1197)       | -0.95%          |
| Wealth quintile                    |            |                |                 |
| Poorest                            |            |                | Referent        |
| Poorer                             | 0.1699**   | (0.0541)       | 3.93%           |
| Middle                             | 0.4645***  | (0.0664)       | 9.89%           |
| Richer                             | 0.7628***  | (0.0681)       | 14.55%          |
| Richest                            | 1.0366***  | (0.1230)       | 17.50%          |
| Relationship to the Household Head |            |                |                 |
| Parent like relationship           |            |                | Referent        |
| Non-parent relationship            | -0.6324*** | (0.0757)       | -18.69%         |
| Interaction                        |            |                |                 |
| Orphan * Non-parent                | 0.2453     | (0.1439)       | 5.31%           |

**TABLE 10. MODEL C-1: SECONDARY SCHOOL AGE CHILDREN WITH INTERACTION EFFECTS**

| N = 3039                           | $\beta$    | Standard Error | Marginal Effect |
|------------------------------------|------------|----------------|-----------------|
| Orphan status                      |            |                |                 |
| Non-Orphan                         |            |                | Referent        |
| Single or Double Orphan            | -0.1798    | (0.0918)       | -7.16%          |
| Gender                             |            |                |                 |
| Male                               |            |                | Referent        |
| Female                             | -0.2006**  | (0.0619)       | -7.95%          |
| Location                           |            |                |                 |
| Urban                              |            |                | Referent        |
| Rural                              | -0.1996    | (0.0835)       | -7.85%          |
| Wealth quintile                    |            |                |                 |
| Poorest                            |            |                | Referent        |
| Poorer                             | -0.0071    | (0.0835)       | -0.28%          |
| Middle                             | 0.2932**   | (0.0872)       | 11.47%          |
| Richer                             | 0.4833***  | (0.0993)       | 18.55%          |
| Richest                            | 0.8071***  | (0.1153)       | 29.42%          |
| Relationship to the Household Head |            |                |                 |
| Parent like relationship           |            |                | Referent        |
| Non-parent relationship            | -0.8233*** | (0.1028)       | -31.26%         |
| Interaction                        |            |                |                 |
| Orphan * Non-parent                | 0.2352     | (0.1435)       | 9.17%           |





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