Sub-National Distribution and Situation of Orphans:

An Analysis of the President's Emergency Plan for AIDS Relief Focus Countries

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USAID, Bureau for Africa,
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Sub-National Distribution and Situation of Orphans

An Analysis of the President's Emergency Plan for AIDS Relief Focus Countries

In January 2003, President Bush announced his Emergency Plan for AIDS Relief, renewing the United States' commitment to provide $15 billion over the next five years to assist 15 countries (14 in sub-Saharan Africa and the Caribbean) severely afflicted by HIV/AIDS. Prevalence rates of HIV infection in the 14 African and Caribbean countries (Botswana, Cote d'Ivoire, Ethiopia, Guyana, Haiti, Kenya, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia) are among the highest in the world. The Emergency Plan will focus a significant amount of new resources on these countries, which were also the focus of the President's previously annoounced International Mother and Child HIV Prevention Initiative. The Plan's comprehensive program has the potential to prevent 7 million new HIV infections, provide life-extending drugs to at least 2 million infected people, and give humane care to 10 million HIV/AIDS sufferers and AIDS orphans in this decade.

Executive Summary

This study utilized available Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) household survey data to analyze the sub-national geographical distribution and living situations of orphans in the African and Caribbean countries identified for special assistance by President Bush's Emergency Plan for AIDS Relief. The analysis provides information about the communities where orphaned children reside within countries and these children's living situations, which is necessary for national and targeted policies to care for orphans and other vulnerable children. Some of the important findings follow below.

Foremost, there is no doubt that adverse effects of orphan status on school enrollment exist in most countries, even after controlling for other confounding factors. Double orphans in Ethiopia, Kenya, Mozambique, and Tanzania were less likely to be enrolled in school than non-orphans. Similarly, maternal orphans in Ethiopia, Haiti, and Rwanda, and paternal orphans in four countries (Ethiopia, Haiti, Kenya, and Nigeria) were less likely to enroll in school than non-orphans. However, there were some unexpected significant results showing that paternal orphans in Namibia and maternal orphans in Mozambique and Nigeria were more likely to enroll in school than non-orphans.

The analysis revealed that for countries with two household surveys, a trend emerged showing that the dependency burden for working-age adults has increased nationally (excessively in rural areas, while remaining constant or declining in urban areas) in Haiti, Namibia, Rwanda, Tanzania, Uganda, and Zambia, despite significant fertility declines in these countries. This suggests that one of the broad problems that high HIV/AIDS-prevalence countries face in supporting their young and elderly populations is the shift of the economic and social burdens from urban to rural areas that may increase the vulnerability of children in these areas.

In Africa "non-relative" child fostering, which was once an uncommon practice, is increasing in most countries. The proportion of double orphans under the care of non-relatives increased in four out of six African countries between the two periods of surveys. It significantly increased from 3.1% to 8.7% in Kenya, from 2.1% to 4.2% in Tanzania, from 4.9% to 9.3% in Namibia and from 2.2% to 3.5% in Zambia. These results are an indication that in sub-Saharan African countries, as the number of relatives who can care for orphaned children declines or becomes saturated and over-burdened, a growing number of double orphans are being taken over by non-relatives, a practice that was once uncommon in the region. In Haiti, the proportion of orphaned children living with unrelated heads of households continues to be higher than in Africa, and it slightly increased between 1994 and 2000.

Consistent with previous studies, there was a significant relationship between children's school enrollment and their relationship to head of household. Controlling for other factors, in all countries, children living in households headed by non-relatives had a significantly lower likelihood of being enrolled in school than those in households headed by a surviving parent. Similarly, children in households headed by "other relatives" (relatives other than grandparents or siblings) were less likely to be enrolled in school in most countries (Cote d'Ivoire, Ethiopia, Haiti, Kenya, Mozambique, Rwanda, Tanzania, Uganda, and Zambia) compared with those in households headed by a surviving parent. Other findings show that children in households headed by grandparents in Kenya, Rwanda, and Namibia, and those in households headed by siblings in Cote d'Ivoire, Haiti, Kenya, Mozambique, and Tanzania were significantly at risk of low enrollment compared with those living with a parent.

As expected, the degree of the orphan problem varies within sub-regions and across countries. The percentage of orphans in the under-15 child population ranged from a low of 4.4% in Guyana to a high of about 28% in Rwanda. This study also identified the sub-regions within each country that have higher orphan rates than national averages ("hot spots"). Most of these sub-regions were also the same ones with high HIV/AIDS prevalence rates. For countries with two surveys, the total percentage of orphans significantly increased in Kenya, Namibia, Rwanda, Tanzania, and Zambia, and similar trends were observed within the sub-regions of these countries between the surveys. The rates were stable in Haiti and Uganda.

Household socioeconomic status and the sub-region of residence are major determinants of school enrollment. As expected, the analysis also provided evidence that there are marked socioeconomic differences in enrolling in school across all countries. Consistent with previous studies, children from poorer households were less likely to be enrolled in school than those from higher socioeconomic status. In addition, children from some sub-regions had a significantly lower or higher likelihood of enrolling in school compared with the reference sub-region in each country. Indeed, the variability in school enrollment was to a large extent explained by household socioeconomic status and sub-region of residence and only to a small extent by parental survival status.

An interesting pattern emerged in the relationship between the sex of the household head and school enrollment. After controlling for other variables, children living in female-headed households had a higher likelihood of enrolling in school than those in male-headed households. In most countries, a higher percentage of orphans live in female-headed households. This finding suggests that in most countries orphans may be more likely to be enrolled in school if they live in a female-headed household.

Everything else being equal, children living with non-working age (elderly and young) heads of households were less likely to be enrolled in school than those living with working-age heads of households in most countries. Other significant results also showed that those children living in large families have a higher likelihood to enroll in school than those in smaller households. In addition, rural children were less likely to be enrolled than urban children.

Overall these findings suggest that an understanding of the relationships between orphan status, household socioeconomic levels, sub-region of residence, relationship to household head, other living conditions, and child schooling would help practitioners and policymakers identify opportunities to help orphaned children. This study has also identified "hot spot" communities with disproportionately higher orphan rates and higher dependency burdens than others. Basic assumptions about households, communities, and their caring practices may not be transferred from one country to another. Governments and development agencies need to support and strengthen these communities and households in caring for orphans and vulnerable children.

Introduction

The HIV/AIDS pandemic has lasting multidimensional effects that pose unique challenges to development efforts in many nations. One such effect is the rapid increase in the number of orphans and vulnerable children as parents fall victim to AIDS. Indeed, recent studies have indicated a strong correlation between the national adult HIV prevalence rate and the percentage of orphans in the population (Bicego, et al., 2003).

In 2001, the U.S. Census Bureau estimated that more than 21.8 million people worldwide had died from AIDS, most of them adults of reproductive age, and that an estimated 13 million children under age 15 had lost either one or both parents to AIDS. This figure is projected to increase to about 25 million by 2010. More than 90% of these orphaned children live in sub-Saharan Africa. Combined with the prolonged effects of AIDS, the unprecedented burgeoning of orphan populations in countries already struggling with extreme poverty is further reducing resources within households and communities. As a result, orphans are made vulnerable to a variety of risks, including poverty, school dropout, malnutrition, and other forms of child deprivation. Furthermore, the decreasing number of productive adults puts pressure on the remaining working-age population to assume a greater responsibility in supporting children and elderly family members.

The U.S. Agency for International Development (USAID) and other development agencies have responded by helping governments create and implement programs to lessen the burdens on households and communities assisting orphans and other children made vulnerable by HIV/AIDS. For these programs to succeed, it is necessary to determine where orphans and other vulnerable children live within countries (their sub-national distribution), what living circumstances compromise their welfare, and what impact these circumstances have on their overall well-being. Furthermore, according to Hunter and Williamson (2000) better estimates of orphan and vulnerable children populations and inventories of their status and needs are required so that policies can be adjusted to keep pace with changes.

This study was commissioned to address specific policy questions regarding the sub-national geographic distribution of orphans, their living arrangements, circumstances, and overall welfare in 12 sub-Saharan African and two Caribbean focus countries. It presents a discussion on how conditions differ between orphans and non-orphans. All 14 countries (Botswana, Cote d'Ivoire, Ethiopia, Kenya, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia in Africa, and Guyana and Haiti in the Caribbean) have high HIV prevalence rates and have been identified for assistance, including support for orphans and other children affected by HIV/AIDS, under President Bush's Emergency Plan for AIDS Relief *(table 1)*. However, Botswana was not included in the analysis due to lack of recent household data. This analysis will provide useful information for national and targeted policies to care for orphans and other vulnerable children.

Table 1: Relevant Country Characteristics, 2003

Country	Life Expectancy at Birth (Both Sexes) 2003*			HIV/AIDS Prevalence Rate (15-49 Years) (%) ***	Number of Children Aged 0-14 Years, 2003*	Estimated Total Number of Orphans (0-14 Years), 2001**	Projected Number of Orphans in 2010**
	1990	2000	2003				
Botswana	63.8	37.2	32.3	38.8	621,788	98,000	136,000
Cote d'Ivoire	47.0	43.1	42.7	9.7	7,698,603	905,000	931,000
Ethiopia	45.7	42.3	41.2	6.4	29,815,332	3,839,000	5,029,000
Guyana	64.5	64.7	63.1	2.7	189,852	20,000	23,000
Haiti	49.5	51.1	51.6	6.1	3,213,746	462,000	404,000
Kenya	53.1	46.0	45.2	15.0	13,071,849	1,659,000	2,099,000
Mozambique	45.2	41.2	38.2	13.0	8,136,879	1,274,000	1,820,000
Namibia	60.6	49.2	42.8	22.5	818,905	97,000	156,000
Nigeria	52.7	52.3	51.0	5.8	58,313,476	5,421,000	6,686,000
Rwanda	46.2	39.7	39.3	8.9	3,318,550	613,000	687,000
South Africa	62.8	53.0	46.6	20.1	12,837,363	1,528,000	2,303,000
Tanzania	49.9	45.0	44.6	7.8	15,927,877	1,928,000	2,152,000
Uganda	45.4	43.7	44.9	5.0	13,015,460	1,731,000	1,554,000
Zambia	39.4	35.5	35.3	21.5	4,774,880	874,000	1,083,000

Data Source: *UNAIDS, 2003; **Children on the Brink, 2002; ***US Census Bureau, 2003.

USAID Program Responses to the Orphan Crisis

As summarized in *Children on the Brink, 2002*, a joint report of USAID, the U.N. Joint Programme on HIV/AIDS (UNAIDS), and the United Nations Children's Fund (UNICEF), the orphan crisis affects the orphans themselves, other children in the household, communities, and nations. There is general acknowledgment among these agencies and practitioners that institutional care in orphanages does not meet the psychological and emotional needs of children and that providing such care to large numbers of children for a long time is not financially feasible. Furthermore, as has been observed in Haiti and other countries, increasing the number of spaces in orphanages in poor communities sometimes prompts families to place non-orphan children in them because material conditions are seen as better than at home (FHI/Impact, 2000). This increases the scale of the problem and consumes resources that could be better used for strengthening the capacity of families and communities to care for and support vulnerable children (*Principles to Guide Programming for Orphans and Vulnerable Children*, UNICEF and UNAIDS, 2000).

In a collaborative effort with other international donors and governments, USAID is presently setting priorities and outlining the steps necessary to develop programs to support and care for orphans and other vulnerable children. As part of the President's Emergency Plan for AIDS Relief, USAID is providing support to 14 countries in Africa and the Caribbean to address problems caused by HIV/AIDS, including those of

orphaned and other vulnerable children. Given the rapidly growing number of orphans, the overwhelming burden placed on relatives and communities, and the high costs and ineffectiveness of placing children in orphanages, USAID and its partners recognize that the best option is to empower communities and extended families to take in orphans and together provide for their nutritional, educational, health, and psychological needs.

Rationale

Previous studies have shown that children who have lost one or both biological parents are significantly disadvantaged in school enrollment and in maintaining an appropriate grade level for age, compared with their counterparts whose biological parents are both alive (Case, Paxson, and Ableidinger, 2003; Bicego, et al, 2003). In addition, there is evidence that orphans are disadvantaged in nutritional status compared with non-orphans (World Bank, 1999a). However, there is also some research showing no significant difference in child well-being between orphans and non-orphans (Ainsworth and Filmer, 2002; Filmer and Pritchett, 1999). Despite the inconsistencies in these findings, there are compelling reasons to hypothesize that children whose parents are deceased face unique vulnerabilities, including fear, trauma, instability, insecurity, and other negative effects (see "Background Review" in Additional Notes).

While the existing research has examined the situations of orphans and vulnerable children in households, few studies have examined their geographical distribution within countries and welfare differentials. Assessing the proportion of orphans by sub-region and the influence of social institutions on their well-being can help determine which children in which households and communities are most at risk. Identifying communities with large orphan populations is therefore key to better-informed policy- and decision-making.

Furthermore, interregional differences in orphan prevalence rates and cultural diversity among communities in child-fostering practices may require locally suitable assessments and intervention programs. Even though experience suggests that relatives provide better care for orphans compared with non-relatives, it is also evident that orphans living with older relatives such as grandparents or other orphaned siblings in child-headed households may remain disadvantaged in school enrollment and attendance, living conditions, and other child welfare indicators. Thus, programs must be re-examined and modeled to meet the growing and diverse needs of these children.

Study Objectives

The overall goal of this study is to examine the geographical distribution of orphans within countries, their living arrangements and circumstances, and their school enrollment status compared with non-orphans. Such an understanding is important for targeting resources to these needy children, households, and communities.

The specific objectives of the study are to:

1. Provide information on the increasing dependency burdens on the working-age populations (dependency ratios) in communities and the changes in household age composition that have occurred over time within and across the HIV-burdened countries
2. Examine the sub-national geographic prevalence rates (province, state, or other division) of orphans (maternal, paternal, and double) in each country, determine changes over time, and identify sub-regions with higher rates than the national rates ("hot spots")
3. Describe the trends and differences in living arrangements (relationship to the household head) for single orphans and for double orphans

4. Determine the extent to which children's living circumstances compromise their welfare, considering the sex and age of child, sex and age of household head, socioeconomic status, and other living conditions within countries, and determine how they differ for orphans and non-orphans
5. Investigate the factors that have the greatest effect on orphan well-being (measured in terms of school attendance for 6- to 14-year-olds) compared with non-orphans
6. Discuss the programmatic implications of the assessment findings

Data Sources

This study uses available data from household surveys conducted between 1990 and 2000, mainly the Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Surveys (MICS), to investigate the orphan situation in the 13 countries.[1] In general, using the DHS and MICS surveys is convenient because these surveys provide large nationally representative samples from which subsets of children under 15 years of age can be created. These surveys are also similar in structure, which allows for comparisons among countries and between surveys. In addition, the DHS surveys are conducted periodically, thus providing information for analyzing changes over time for some countries (for details see "Methodology" in Additional Notes).

Operational Definitions

Orphan rates are calculated using all children under 15 years whose parents' (mother or father) survival status is known (alive or deceased). Thus, children whose one or both parents' survival status is missing or unknown are eliminated from the analysis. Orphans are classified into three mutually exclusive categories – maternal, paternal, and double.

Maternal orphan: Child under age 15 whose natural mother has died

Paternal orphan: Child under age 15 whose natural father has died

Double orphan: Child under age 15 whose mother and father have both died

Total orphans: The total number of all children under age 15, whose natural mothers, fathers, or both, have died

Household:[2] A person or group of persons who live within the same dwelling and share a common source of food

Dependency Ratio (DR):[3] The proportion of dependents (number of children aged 0 to 14 years + number of elderly persons aged 60 years and over) to the working-age population (number of persons aged 15 to 59 years) X 100. This formula is employed for less-developed countries because the proportion of those aged 65 and over is very small.

School Enrollment Status: Children still in school at the time of the survey

[1] Cote d'Ivoire – DHS 1994 & 1999; Ethiopia – DHS 2000; Guyana – MICS 2000; Haiti – DHS 1994 & 2000; Kenya – DHS 1993 &1998; Mozambique – DHS 1997; Namibia – DHS 1992 & 2000; Nigeria – DHS 1990 & 1999; Rwanda – DHS 1992 & 2000; South Africa – DHS 1998;Tanzania – DHS 1992/96 & 1999; Uganda – DHS 1995 & 2000; Zambia – DHS 1992/96 & MICS 2000. The 1999 DHS for Cote d'Ivoire was used for some but not all analyses because information on parental survival status was not collected in this survey.

[2] DHS definition.

[3] DHS definition.

Study Limitations

Despite the many advantages of DHS and MICS household surveys, they have some limitations. For the purpose of this study, the most important limitation is that for children under 15 years of age, the surveys do not collect standard health information on their parents (i.e. frequently sick, very sick, or dying), thus making it impossible to include other vulnerable children who have limited parental care in the analysis. Another limitation is that the surveys provide data only for children in households and not for those who are living on the streets or in institutions, thus underestimating the total number of orphans. In addition, orphan data are for children whose parent or parents have died from all causes, thus posing problems in identifying the number of children orphaned by HIV/AIDS. Most of the DHS surveys do not contain information on the migration, nutritional, immunization, and psychological status of children or on child labor and child abuse, making it difficult to analyze such indicators. Although all children aged 0 to 17 years were included in the household survey, information on parental survival status for those aged 15 to 17 years was not collected. Hence, it was also not possible to analyze the relationship between orphan status and school enrollment for these children. Finally, the surveys are cross-sectional, thus providing a one-time measure of the orphan situations. They may not cover changes over time and thus may give an incorrect impression of the underlying causes of orphan rates.

Findings

Changes in Household Composition and Increasing Dependency Burden on Working-Age Population in Communities Affected by HIV/AIDS

Sociologists have established that families are the most fundamental socioeconomic institutions in society. It is also widely acknowledged that child well-being is greatly influenced by the social institutions of household and community. For instance, the household takes care of its children until they can support themselves. Therefore, community and household factors influence the vulnerabilities or potential resiliency of orphaned children.

Some of the broad problems that communities and households in high HIV/AIDS-prevalence countries face in supporting their young and old populations are reflected in high dependency ratios. Depen-dency ratios indicate the ratio of the number of household members who are elderly or young (not of working age) to the number of working-age adults in the household. The dependency ratios may be used as a proxy to suggest the economic and social dependency burden that persons of working age (the productive population) must bear.

Table 2 shows that most of the sub-Saharan African countries analyzed exhibit high dependency ratios (exceeding 100). Nearly all of the high dependency ratios observed in Africa can be attributed to the high fertility rates in the region and a correspondingly large population of children under age 15 (Ayad et al., 1994). The results also show that the dependency ratios are smaller in urban areas than in rural areas, which is consistent with the higher fertility rates in rural areas than in urban areas. However, after taking the fertility rates into consideration in each country, the high dependency ratios do not correspond to the fertility levels, indicating that other demographic factors, including high adult mortality rates, might be responsible for some of the excess dependency ratios. In addition, as expected, households with orphans have a higher dependency ratio than those with non-orphaned children, further suggesting that there is a greater economic and social dependency burden for working adults in households caring for orphans than those without orphans and that children living in these households face increased vulnerability (see *table 10* in Appendix).

Changes in Dependency Burdens on Working-Age Population

In HIV/AIDS prevalence countries, the rising number of orphans will create more dependents who will tax not only the economic but also the social support systems.

The results show that for most countries with two household surveys (Haiti, Namibia, Rwanda, Tanzania, Uganda, and Zambia), the dependency burden for working adults increased excessively in rural areas while declining or remaining constant in urban areas. The increases occurred despite reported declines in total fertility rates. This suggests that fertility trends alone cannot explain the large changes and disparities between rural and urban areas in household composition. Hence, other demographic factors such as high AIDS-related mortality among the population of adults aged 15 to 59 years or their increased migration for jobs may be affecting household compositions and significantly contributing to the observed differences in the dependency ratios (Haworth, 1991).

In addition, children whose parents have become victims of AIDS have changed living arrangements if they are sent to rural areas to be cared for by extended family members or go to the streets – hence, the lower percentage of orphans in urban areas than in rural areas. Further, the increased dependency ratios between the two surveys in rural areas suggest a shift in the economic burden from urban to rural areas and further imply that rural areas in these countries might be bearing the orphan burden disproportionately to their capacity to provide care. It is also worthwhile to note that in Rwanda the household dependency ratio increased in both rural and urban areas, indicating an overall increase of the proportion of children to productive adults aged 15 to 59 years. These findings may be explained by the increased deaths of adult men during the civil war, which left behind a large number of orphans across the country (UNICEF, 1994).

In Cote d'Ivoire, Kenya, and Nigeria, a trend emerges showing that the dependency ratios decreased in both rural and urban areas and at the national level between the two surveys. This can be largely attributed to the observed fertility transition in these countries. However, after adjusting for total fertility rates for each country, the magnitude of the increase within rural and urban dependency ratios are disproportionately larger than the changes in the fertility rates, further suggesting that fertility trends alone cannot explain the large changes and differences in household composition. Note that other contradictory suggestions have been raised before that reverse urban-rural migration following the "going-home-to-die" phenomena might also occur for adults with AIDS, which might to a small degree reduce dependency ratios in rural areas.

Despite many researchers postulating that the proportion of orphans in urban areas is high because of higher HIV/AIDS prevalence rates, the analysis shows that higher proportions of children living in rural areas have fewer adults supporting them compared with those in urban areas. This observation may indicate that many urban orphaned children may have migrated to rural areas or are more likely to be in the streets or in orphanages than in households and thus are missed during the surveys, as suggested earlier. Regardless of the reasons for the dependency ratio trends, these results reflect changes in household economic and social responsibilities across and within these countries that might place children at greater risk, especially orphans.

Sub-National Distribution and Trends in Orphan Prevalence Rates Within Countries

(I) Sub-National Orphan Prevalence Levels by Country

Orphan rates are usually high where deaths among adults of reproductive age are high, and in many countries with high AIDS-related mortality among these adults, the proportion of orphaned children has dramatically increased to exceed 10% *(table 3)*. Death of either parent increases children's vulnerability to many life risks. The determination of the geographical distribution of orphans within countries will enable

policymakers to identify communities with a high proportion of orphans – "hot spots" – where children and households are most at risk.

The most recent household survey data presented in *table 3* show the distribution of orphans by sub-national region in each country and the percentage of people who live in households with at least one orphan. Note that the number of maternal or paternal orphans may have been under-enumerated by respondents if the parental survival status was unknown.

This study's findings reveal that the degree of the orphan problem is varied across the countries and within sub-regions. The percentages of children under age 15 who have lost at least one natural parent range from 4.4% in Guyana to about 28% in Rwanda. About 6% of children under age 15 in Nigeria and Cote d'Ivoire are orphans; while in Uganda, Zambia, Mozambique, Ethiopia, Namibia, and Haiti, more than 10% of the under-15 population are orphans. Consistent with previous studies, male mortality rates have exceeded female mortality rates in high HIV-prevalence countries (Bicego et al., 2003; UNAIDS, 2001), and paternal orphans accounted for the majority of orphans. This reverses the common pattern of higher female mortality rates observed in developing countries due to more maternal deaths during the reproductive period.

The results also show sub-regional differences in the prevalence rates of total orphans and maternal, paternal, and double orphans within all countries presented in the study. Some communities in countries where AIDS has claimed the lives of many adults of reproductive age have substantially higher concentrations of children who have one or two deceased parents than other communities. Consequently, in most of these regions, more people are living in households caring for orphans. Although some demographic changes such as migration may explain some of the observed differences in orphan distribution, the trend seems to follow the HIV/AIDS prevalence rates. Therefore, some communities may have high orphan percentages compared with others because there is more orphan migration to these communities or these communities have higher adult mortality rates due to AIDS than other communities.

Table 3 shows that the proportion of people who live in the same households as orphans ranges from 9.4% in Nigeria to 33.3% in Rwanda. Rwanda has the highest percentage of orphans of all the countries shown. At least one in four children under 15 years of age is an orphan. Indeed, about one out of three people in Rwanda lives in a household with an orphan. In each sub-region in Rwanda, the percentage of orphans is very high, ranging from 20.5% to 31.2%. The worst-hit provinces are Kigali, Northwest, and Central-South, in which almost one-third of the children are orphans. The civil wars that took place in Rwanda left many children without parents in different parts of the country, and these children may have moved around and settled in some areas more than others. In addition, some of those who lost their parents due to other causes (including AIDS) may be concentrated in some particular geographical regions, thus contributing to interregional variations in orphan prevalence rates.

In most instances, national orphan rates conceal substantial differences among communities. The identification of "hot spot" sub-regions with higher orphan burdens is important for decision-making regarding the allocation of scarce program resources. Each country presented has sub-regions with a disproportionately higher proportion of orphans than the national average. In all countries with recent (1997-2002) data except Guyana, the percentage of orphans in the under-15 populations in the most burdened "hot spots" ranged from 9.3 % to 31%.

Table 2: Total Household Age Composition and Dependency Ratios (DR), Urban/Rural Residence by Country over Two Time Periods (1990-1995 and 1997-2002)

Country/Age/DR	Household Surveys, 1990-1995			Household Surveys, 1997-2002		
Cote d'Ivoire 1994-1999	N=38,794			N=13,679		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	2.4	5.8	4.5	2.9	6.2	5.0
Adults (15-59) %	54.8	46.1	49.3	57.8	47.3	51.2
Children (0-14) %	42.9	48.1	46.1	39.3	46.5	43.8
Dependency Ratio	82.6	116.9	102.7	73.0	111.3	95.4
Total Fertility Rates	4.4	6.0	5.3	4.0	6.0	5.2
Ethiopia 2000				N=70,680		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	-	-	-	5.1	5.7	5.6
Adults (15-59) %	-	-	-	59.0	48.2	49.7
Children (0-14) %	-	-	-	35.9	46.1	44.6
Dependency Ratio	-	-	-	69.5	107.6	101.1
Total Fertility Rates				3.0	6.0	5.5
Guyana 2000*				N=18,953		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	-	-	-	7.3	6.7	6.8
Adults (15-59) %	-	-	-	60.2	53.4	54.8
Children (0-14) %	-	-	-	32.6	39.9	38.4
Dependency Ratio	-	-	-	66.2	87.4	82.6
Total Fertility Rates						2.1
Haiti 1994/95-2000	N=24,619			N=45,586		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	5.6	8.9	7.7	5.6	9.2	7.9
Adults (15-59) %	57.2	46.9	50.6	58.3	46.3	50.6
Children (0-14) %	37.2	44.2	41.7	36.2	44.5	41.5
Dependency Ratio	75.0	113.3	97.6	71.6	115.9	97.4
Total Fertility Rates	3.3	5.9	4.8	3.4	5.8	4.7
Kenya 1993-1998	N=38,966			N=36,739		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	2.3	6.6	6.0	2.0	6.5	5.7
Adults (15-59) %	61.9	42.9	45.5	63.0	45.8	49.0
Children (0-14) %	35.8	50.5	48.5	35.0	47.6	45.3
Dependency Ratio	61.7	133.3	120.0	58.8	118.3	104.0
Total Fertility Rates	3.4	5.8	5.4	3.1	5.2	4.7
Mozambique 1997				N=43,682		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	-	-	-	5.2	6.7	6.4
Adults (15-59) %	-	-	-	52.1	47.3	48.4
Children (0-14) %	-	-	-	42.7	46.0	45.2
Dependency Ratio	-	-	-	91.8	111.3	106.4
Total Fertility Rates				4.6	5.3	5.2

Table 2 *(continued)*: Total Household Age Composition and Dependency Ratios (DR), Urban/Rural Residence by Country over Two Time Periods (1990-1995 and 1997-2002)

Country/Age/DR	Household Surveys, 1990-1995			Household Surveys, 1997-2002		
Namibia 1992-2000	N=25,557			N=33,084		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	6.3	10.3	9.1	4.3	9.7	7.9
Adults (15-59) %	59.7	44.2	49.0	61.5	41.2	47.9
Children (0-14) %	34.0	45.5	42.0	34.2	49.1	44.2
Dependency Ratio	67.4	126.1	104.1	62.6	142.7	108.6
Total Fertility Rates	4.0	6.3	5.4	3.1	5.1	4.2
Nigeria 1990-1999	N=48,863			N=48,863		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	6.0	7.1	6.9	4.5	6.3	5.8
Adults (15-59) %	48.7	45.2	46.0	53.0	48.4	49.8
Children (0-14) %	45.3	47.7	47.1	42.5	45.3	44.5
Dependency Ratio	105.5	121.2	117.3	88.7	106.6	101.0
Total Fertility Rates	5.0	6.3	6.0	4.2	4.9	4.7
Rwanda 1992-2000	N=32,071			N=44,791		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	3.4	6.1	5.9	3.4	5.2	4.9
Adults (15-59) %	56.1	46.0	46.6	53.8	45.6	46.8
Children (0-14) %	40.5	47.9	47.5	42.8	49.3	48.3
Dependency Ratio	78.3	117.2	114.7	85.8	119.5	113.5
Total Fertility Rates	4.5	6.3	6.2	5.2	5.9	5.8
South Africa 1998				N=52,433		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	-	-	-	8.1	9.6	8.8
Adults (15-59) %	-	-	-	60.2	45.3	53.5
Children (0-14) %	-	-	-	31.6	45.1	37.8
Dependency Ratio	-	-	-	66.1	120.7	87.1
Total Fertility Rates	-	-	-	2.3	3.9	2.9
Tanzania 1992-1999	N=45,808			N=18,830		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	4.6	6.7	6.3	4.4	6.9	6.4
Adults (15-59) %	53.9	46.4	48.1	56.6	45.7	48.1
Children (0-14) %	41.5	46.8	45.7	39.0	47.4	45.5
Dependency Ratio	85.5	115.4	108.1	76.7	119.0	107.8
Total Fertility Rates	5.1	6.6	6.2	3.2	6.5	5.6
Uganda 1995-2000	N=36,917			N=39,077		
	Urban	**Rural**	**National**	**Urban**	**Rural**	**National**
Elderly (60+) %	2.3	5.5	5.1	2.2	5.1	4.8
Adults (15-59) %	51.9	42.9	44.0	54.3	42.3	43.9
Children (0-14) %	45.8	51.6	50.9	43.4	52.5	51.3
Dependency Ratio	92.6	133.1	127.3	84.0	136.1	127.7
Total Fertility Rates	5.0	7.2	6.9	4.0	7.4	6.9

Table 2 *(continued)*: Total Household Age Composition and Dependency Ratios (DR), Urban/Rural Residence by Country over Two Time Periods (1990-1995 and 1997-2002)

Country/Age/DR	Household Surveys, 1990-1995			Household Surveys, 1997-2002		
Zambia 1992-2002	N=35,900			N=38,211		
	Urban	Rural	National	Urban	Rural	National
Elderly (60+) %	2.1	6.4	4.3	2.6	5.7	4.6
Adults (15-59) %	52.3	46.8	49.4	52.4	45.6	48.1
Children (0-14) %	45.6	46.8	46.2	45.1	48.6	47.3
Dependency Ratio	91.3	113.6	102.3	91.0	119.1	108.1
Total Fertility Rates	5.8	7.1	6.5	4.3	6.9	5.9

Data Source: Demographic and Health Surveys (DHS) or (*) for Multiple Indicator Cluster Surveys (MICS).
– No data available; N= Weighted number of cases for each survey

For each country (ranked by national orphan rates), the "hot spot" sub-regions with the highest rates of orphans are as follows:

1. *Rwanda 2000* – National (27.6%), Northwest (31.2%), Central-South (28.5%), Kigali (28.4%)
2. *Zambia 2002* – National (15.0%), Central (18.3%), Lusaka (17.3%), Southern (16.0%)
3. *Uganda 2000* – National (12.6%), Central (16.9%), Western (13.4%)
4. *Mozambique 1997* – National (12.2%), Inhambane (15.0%), Gaza (14.9%), Tete (14.3%), Zamb'zia (13.6%), Manica (13.1%), Cabo Delgado (13%)
5. *Namibia 2000* – National (11.3%), Northwest (13.7%), Northeast (13.4%)
6. *Ethiopia 2000* – National (10.7%), Addis (15.7%), Other Small States (15.4%) including Affar (20.7%) and Somali (14.4%)
7. *South Africa 1998* – National (10.3%), Eastern Cape (12.5%), Kwazulu (11.7%), Free State (10.5%)
8. *Haiti 2000* – National (10.2%), South (11.6%)
9. *Kenya 1998* – National (9.5%), Nyanza (14%), Coast (10.3%), Eastern (9.7%)
10. *Tanzania 1999* – National (8.8%), Southern Highland (14.3%), Central (9.3%)
11. *Cote d'Ivoire 1994* – National (6.1%), North (6.7%), South (6.7%), West (6.6%)
12. *Nigeria 1999* – National (6.0%), South East region (11%)
13. *Guyana 2000* – National (4.4%), Demerara-Mahaica (5.9%), Upper Demerara (5.4%), Essequibo Isl-W. Demerara (5.1%)

These results show a correlation between HIV prevalence and sub-regional orphan prevalence rates. For instance in Kenya, Nyanza province has the highest HIV/AIDS prevalence rates among pregnant women in urban areas, 35%, and the highest percentage of orphans (14%), compared with Northeast province whose urban areas had the lowest HIV prevalence, 8%, and relatively lower percentage of orphans (9.7%). Similar patterns are observed in other countries including Uganda, where the Central and Western regions have relatively high proportions of orphans and high HIV prevalence rates. In Zambia, Lusaka and Southern provinces show high levels of HIV infection (ranging from 40% to about 71% among female attendees of sexually transmitted disease clinics), as well as high orphan rates (17.3% and 16.0%, respectively). In South Africa, KwaZulu/Natal province has the highest HIV infection level among pregnant women (33%) and also has a high orphan rate (11.7%) (U.S. Census Bureau, 2000).

Table 3: Sub-National Prevalence Rates (%) of Maternal, Paternal, Double, and Total Orphans Among Children Under 15 and Percent of Persons in Households with Orphans, by Country, 1994-2002

Country/ Survey/Year	Sample Size (Weighted)	Maternal Orphans	Paternal Orphans	Double Orphans	Total Orphans	% Persons Living with Orphans
Cote d'Ivoire DHS 1994	**17,707**	**1.6**	**4.1**	**0.4**	**6.1**	**17.6**
- Center	6,038	1.6	3.3	0.2	5.1	15.4
- North	2,943	1.9	4.2	0.5	6.7	19.1
- West	2,970	1.0	5.3	0.3	6.6	16.7
- South	5,755	1.9	4.2	0.6	6.7	19.3
Ethiopia DHS 2000	**31,353**	**3.3**	**6.6**	**0.8**	**10.7**	**16.1**
- Tigray	2,084	2.4	7.5	0.9	10.8	15.4
- Amhara	8,441	2.8	6.6	0.8	10.1	14.8
- Oromiya	11,998	3.4	6.1	0.8	10.3	16.2
- SNNP	6,870	3.3	6.6	0.7	10.6	16.5
- Addis	645	3.9	10.1	1.6	15.7	17.3
- Other States***	1,315	5.2	8.5	1.7	15.4	21.9
Guyana MICS 2000*	**6,612**	**1.7**	**3.3**	**0.6**	**4.4**	**20.7**
- Barima-Waini	239	1.4	2.2	0.2	3.8	16.1
- Pomeroon-Supernaam	502	1.7	1.9	0.0	3.6	18.3
- Essequibo Isl-W. Demerara	746	0.5	3.6	1.0	5.1	24.5
- Demerara-Mahaica	2,737	1.4	3.8	0.9	5.9	23.9
- Mahaica-Berbice	404	0.0	3.0	0.5	3.5	18.9
- East Berbice-Corentyne	1,100	1.1	2.4	0.5	4.0	18.5
- Cuyuni-Mazaruni	175	0.6	2.1	0.3	3.1	20.5
- Potaro-Siparuni	62	0.0	3.1	0.3	3.4	16.8
- Upper Takutu-U. Essequibo	211	1.3	1.2	0.6	3.0	16.0
- Upper Demerara	436	1.7	3.3	0.4	5.4	23.8
Haiti DHS 2000	**18,762**	**3.0**	**6.4**	**0.8**	**10.2**	**16.4**
- Metropolitan Area	4,077	1.9	7.2	1.0	10.1	15.6
- North	7,279	2.6	5.5	0.8	8.8	15.4
- South	7,406	4.0	6.8	0.8	11.6	18.0
Kenya DHS 1998	**16,140**	**1.8**	**6.8**	**0.9**	**9.5**	**12.2**
- Nairobi	798	3.5	5.0	0.6	9.1	8.2
- Central	1,728	1.1	3.8	0.5	5.3	4.3
- Coast	1,174	1.8	7.4	1.2	10.3	14.5
- Eastern	2,709	2.1	7.2	0.5	9.7	13.1
- Nyanza	3,360	2.1	10.4	1.5	14.0	18.0
- Rift Valley	4,200	1.1	5.9	0.7	7.7	10.2
- Western	2,171	2.4	5.3	1.1	8.8	13.5

Table 3 *(continued)*: Sub-National Prevalence Rates (%) of Maternal, Paternal, Double, and Total Orphans Among Children Under 15 and Percent of Persons in Households with Orphans, by Country, 1994-2002

Country/ Survey/Year	Sample Size (Weighted)	Maternal Orphans	Paternal Orphans	Double Orphans	Total Orphans	% Persons Living with Orphans
Mozambique DHS 1997	**19,342**	**4.3**	**6.9**	**1.0**	**12.2**	**20.1**
- Niassa	1,029	6.6	4.6	0.4	11.6	16.5
- Cabo Delgado	1,181	7.5	4.5	0.9	13.0	17.4
- Nampula	3,191	2.3	5.7	0.7	8.7	13.9
- Zamb'zia	3,202	4.9	7.7	1.0	13.6	18.4
- Tete	916	5.5	7.8	1.1	14.3	20.3
- Manica	1,229	3.3	8.8	1.1	13.1	22.2
- Sofala	2,607	5.6	4.9	1.6	12.1	18.0
- Inhambane	1,738	6.0	7.8	1.1	15.0	27.3
- Gaza	1,988	3.5	10.1	1.4	14.9	31.8
- Maputo	1,268	1.1	7.7	1.1	9.9	20.5
- Cidade de Maputo	993	2.5	5.9	0.5	9.0	19.1
Namibia DHS 2000	**13,497**	**2.4**	**7.7**	**1.2**	**11.3**	**21.4**
- Northwest	6,715	2.9	9.8	1.0	13.7	30.5
- Northeast	2,072	2.6	8.0	2.8	13.4	22.7
- Central	1,956	1.6	4.8	0.9	7.3	11.7
- South	2,752	1.7	4.5	0.5	6.7	11.3
Nigeria DHS 1999	**16,039**	**2.0**	**3.2**	**0.9**	**6.0**	**9.4**
- North East	3,127	1.8	1.8	0.6	4.1	8.7
- North West	2,396	2.1	1.8	0.4	4.3	7.1
- South East	3,297	2.5	7.4	1.1	11.0	13.9
- South West	3,690	1.7	2.6	0.4	4.7	7.0
- Central	3,528	1.6	2.1	1.9	5.6	9.8
Rwanda DHS 2000	**20,898**	**4.0**	**18.4**	**5.2**	**27.6**	**33.3**
- Kigali	3,234	3.2	19.2	5.9	28.4	37.4
- Northwest	6,913	4.4	20.5	6.2	31.2	35.4
- Southwest	2,870	2.9	13.9	3.7	20.5	26.2
- Central-South	3,630	4.0	19.9	4.6	28.5	32.3
- Northeast	4,252	4.6	16.2	4.2	25.0	32.4
South Africa DHS 1998	**18,865**	**1.5**	**8.0**	**0.8**	**10.3**	**13.6**
- Western Cape	1,453	2.1	6.5	0.8	9.4	10.7
- Eastern Cape	3,427	1.5	9.8	1.1	12.5	18.1
- Northern Cape	366	1.9	7.1	0.5	9.6	13.3
- Free State	1,114	2.2	7.6	0.7	10.5	11.0
- KwaZulu Natal	4,243	1.8	8.9	1.0	11.7	17.2
- North West	1,452	0.9	6.4	1.0	8.3	9.9
- Gauteng	2,736	1.3	7.1	0.3	8.6	9.3
- Mpumalanga	1,348	2.1	4.7	0.8	7.6	12.5
- Northern Province	2,726	0.6	8.6	0.6	9.8	14.8

Table 3 *(continued)*: Sub-National Prevalence Rates (%) of Maternal, Paternal, Double, and Total Orphans Among Children Under 15 and Percent of Persons in Households with Orphans, by Country, 1994-2002

Country/ Survey/Year	Sample Size (Weighted)	Maternal Orphans	Paternal Orphans	Double Orphans	Total Orphans	% Persons Living with Orphans
Tanzania DHS 1999	**8,465**	**2.4**	**5.4**	**1.1**	**8.8**	**16.4**
- Coastal	1,691	3.4	4.0	0.6	*8.0*	16.1
- Northern Highlands	1,420	1.1	4.2	0.9	*6.1*	7.3
- Lake	2,915	2.2	5.6	0.9	*8.6*	19.5
- Central	687	2.3	6.4	0.6	*9.3*	13.7
- Southern Highlands	1,066	3.5	8.0	2.8	*14.3*	24.3
- Southern	686	1.9	5.1	1.5	*8.3*	14.1
Uganda DHS 2000	**19,848**	**2.9**	**7.4**	**2.3**	**12.6**	**22.3**
- Central	5,963	4.4	9.1	3.4	16.9	29.3
- Eastern	5,789	1.3	5.0	1.9	8.2	16.9
- Northern	3,139	1.9	7.4	1.8	11.2	18.9
- Western	4,956	3.5	8.1	1.8	13.4	21.8
Zambia DHS 2002	**17,938**	**3.0**	**9.1**	**2.9**	**15.0**	**26.7**
- Central	1,386	3.8	10.8	3.7	18.3	34.7
- Copperbelt	3,236	2.3	10.4	3.3	15.9	29.9
- Eastern	2,375	2.8	5.9	2.5	11.2	17.7
- Luapula	1,395	3.3	8.6	1.8	13.6	22.6
- Lusaka	2,357	2.8	10.9	3.5	17.3	30.4
- Northern	2,579	2.9	8.3	3.0	14.2	23.0
- North-western	978	2.5	8.4	1.9	12.8	22.1
- Southern	2,093	3.0	9.5	3.5	16.0	31.2
- Western	1,541	4.8	8.4	2.1	15.3	27.0

Data Source: DHS and * MICS; ** UNAIDS, 2001. *** "Other States" in Ethiopia include Affar, Ben-Gumz, Dire Dawa, Gambela, Harari, and Somali

(II) Sub-National Trends in Total Orphans and Double Orphans Within Countries in Past Decade: Is HIV/AIDS Contributing to the Orphan Problem?

Previous research suggests that the observed dramatic growth of orphans in countries with high HIV/AIDS prevalence rates is partly explained by increased adult mortality due to the AIDS pandemic. Similar trends are expected in countries included in the current study. However, because of other demographic changes beyond the scope of this study, the orphan distribution may not follow these changes in HIV/AIDS prevalence. For example, some communities (sub-regions) may have high percentages of orphans compared with others because there is more orphan migration to these communities or high adult mortality. If children are moved to different parts of the country to be taken care of by other relatives after their parents die, it is difficult to establish the link between HIV/AIDS prevalence and orphan rates.

Total Orphans: In *table 4*, the results for countries with two surveys show that the total percentage of orphans has significantly increased in Rwanda (9.5% to 27.6%), Zambia (7.7% to 15.0%), Tanzania (7.0% to 8.8%), Namibia (7.2% to 11.3%), and Kenya (6.9% to 9.5%). Meanwhile the percentages remained almost the same in Uganda at about 13% and somewhat declined in Haiti from 11.1% to 10.1% between the two survey periods. The leveling-off of Uganda's orphan population reflects the decline in HIV preva-

lence rates during the last decade, which is generally attributed to the government's effective campaign to combat the disease. Thus, the percentage of orphans in the surveyed countries seems to follow trends in HIV prevalence, suggesting that HIV/AIDS is indeed contributing to the increasing orphan numbers. Consequently, the increasing HIV prevalence in countries like Kenya, Namibia, Tanzania, and Zambia will likely include continuing increases in the number of orphaned children. In Haiti, unlike sub-Saharan Africa, orphans tend to be institutionalized, which could explain the observed decline in proportion of orphans in households, as surveys would fail to capture those in orphanages (FHI/Impact, 2000). However, this finding may also mirror declines in HIV prevalence suggested by small increases in life expectancy in Haiti (see *table 1*).

Double Orphans: *Figure 1* shows that in all the countries analyzed the proportions of double orphans increased, except in Haiti, where it declined slightly. *Table 4* also shows that the proportion of double orphans has increased at a different pace for each sub-region/community. The communities in each country with the greatest orphan problem are those with the highest HIV/AIDS prevalence rates. The percentage point increase of double orphans has been accepted as a good proxy to assess the contribution of HIV/AIDS prevalence rates to the orphan problem within and across countries. In Kenya, the number of double orphans decreased for Nairobi province, suggesting that after both urban parents die, children are perhaps relocated to rural areas to be cared for by relatives. Tanzania and Nigeria have a disproportionately higher percentage of double orphans relative to the proportion of the overall total of all orphans.

Table 4 also reveals that the highest increase (more than 3 percentage points) in double orphans occurred in Rwanda, with Kigali and Northwest having more than 5 percentage point increases. In Uganda, although the total percentage of all orphans was lowest in Eastern for both surveys, it had the highest percentage point increase. Meanwhile in Kenya, Nyanza, Coast, and Western provinces had the highest percentage point increases of double orphans. These results were not surprising for Kenya, given that these provinces also have high HIV prevalence rates (Western more than 20%, Coast around 20%, and Nyanza 30% to 39%). In Zambia, all regions experienced a large increase in double orphans, with Central and Lusaka having the largest of more than 3 percentage points. In Tanzania, the Southern Highlands and Southern region provinces had significant increases of double orphans (2.5 and 1.2 percentage points, respectively). There was a decline of double orphans in Haiti following the HIV/AIDS epidemic. As stated previously, this finding may also be explained by the recently observed declines in HIV prevalence in Haiti.

The Living Situation of Orphans and Other Household Children

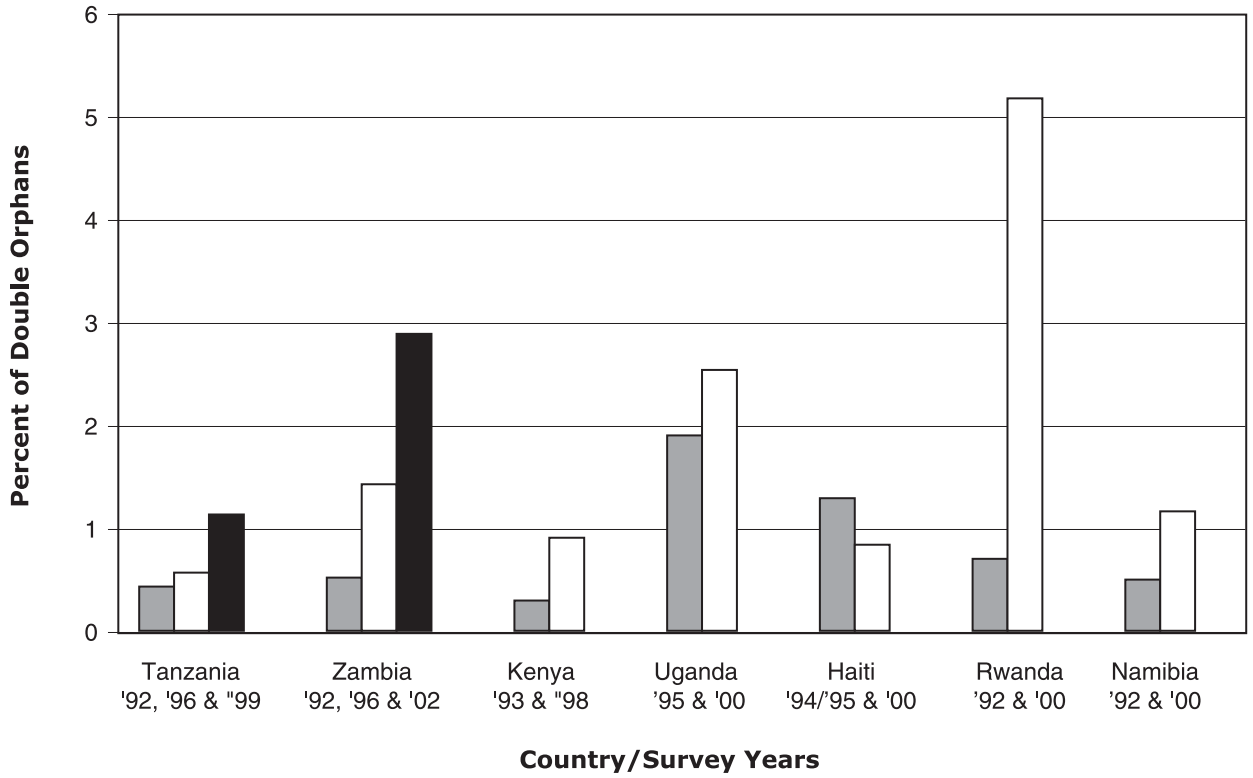
(I) Household and Individual Factors Influencing the Well-Being of Orphans and Other Children Aged 0 to 14 Years

The detailed financial and psychological data that are required to identify children who lack community and family support and to answer many pressing questions on the effects of parental deaths on children are not currently available. However, the welfare of children is greatly affected by the household and community environments in which they live.

Different household structures and living arrangements, household socioeconomic status, and school attendance status provide some measure of orphan well-being when compared with their counterparts who are non-orphans. This is based on the premise that the place of residence is a proxy for the wider culture and local development, including access to public amenities such as piped water, adequate sanitation, schools, and other development indicators that in turn impact child welfare. *Table* 5 presents the distribution of all children aged 0 to 14 years (orphans and non-orphans) in the 13 African and Caribbean countries.

Sex of Household Head: The results show that significantly large proportions of orphans live in female-headed households compared with non-orphans. For example, in South Africa about 75% of the orphans live in female-headed households and about 70% in Rwanda, compared with only 45% and 19% of non-orphans

Figure 1: Trends of Double Orphans in Countries with at Least Two Household Surveys, 1992-2002



Data Source: DHS

in the respective countries *(table 5)*. In these societies an adult male is often designated as the head even if a female member is the main provider. Thus, these results showing many female-headed households suggest that in these high HIV/AIDS-prevalence countries there are fewer adult males in households, possibly due to higher mortality rates for males than for females (Bicego et al., 2003). Sex of household head was considered in the analysis because it is closely associated with access and control of household economic resources in Africa. This is because in most African countries women own property through marriage, and when they are widowed or single they may have limited sources of economic support.

Age of Household Head: Overall, the proportion of child-headed households appeared to be small (less than 1% in most countries and about 2% in Rwanda), but complete information on caregivers under age 18 was not collected in many countries, making underestimates possible. As expected, a higher percentage of orphans live in households headed by children compared with non-orphans. For example, in Rwanda 1.7% of orphans were in child-headed households as compared with only 0.1% of non-orphans. Similarly, a higher proportion of orphans live in households headed by elderly persons (mostly grandparents) across all countries. Orphans under the care of a young or older caregiver (sibling or grandparent) are less likely to receive adequate care because young and elderly caregivers are less likely to work and provide the support the children need. The children may therefore become more vulnerable to risks such as insufficient food and lack of school fees and other basic necessities (Nampanya-Serpell, 1998).

Household Socioeconomic Status: The differences in orphan versus non-orphan status by socioeconomic status are not consistent across countries *(table 5)*. In seven countries (Kenya, Mozambique, Namibia, Rwanda, South Africa, Tanzania, and Uganda), a relatively higher proportion of orphaned children live in poorer households compared with non-orphans. On the other hand, in Ethiopia and Zambia more orphans

live in richer households than non-orphans. However, there was no significant difference between the two groups in Cote d'Ivoire, Haiti, and Nigeria. These results contradict the expectation that many orphans would be found to live in poor households. Logical explanations might be that most deaths occur in richer households or orphans are placed with the more well-to-do extended family members in most countries. Nonetheless, further analysis (not presented here) shows that there is a significant correlation between the sex of household head and household socioeconomic status. In all countries except Ethiopia, Haiti, and Nigeria, male-headed households are richer than female headed-households.

Rural/Urban: *Table* 5 shows that large proportions of children (orphans and non-orphans) live in rural areas, which is consistent with the high rural population compared with urban areas. However, the distribution picture of orphans within the urban and rural areas is mixed. In urban areas, the percentage of orphans is significantly high compared with that of non-orphans in a number of countries, including Cote d'Ivoire, Ethiopia, Guyana, Haiti, Uganda, and Zambia. A different scenario is observed in Kenya, Namibia, and Nigeria, where the percentage of orphaned children in rural areas is higher than that of non-orphans.

Average Number of Household Members: The relationship between the number of household members and orphan status varies among countries. Most countries, including Ethiopia, Haiti, Kenya, Namibia, Nigeria, Rwanda, Tanzania, and Uganda, have a lower percentage of orphans than non-orphans living in households with more than six members. The reverse is true for Cote d'Ivoire, Namibia, and South Africa. Placement of orphans with well-to-do relatives may help explain the unexpected finding of a higher percentage of orphans in smaller households, because these families generally have fewer children than less well-to-do families.

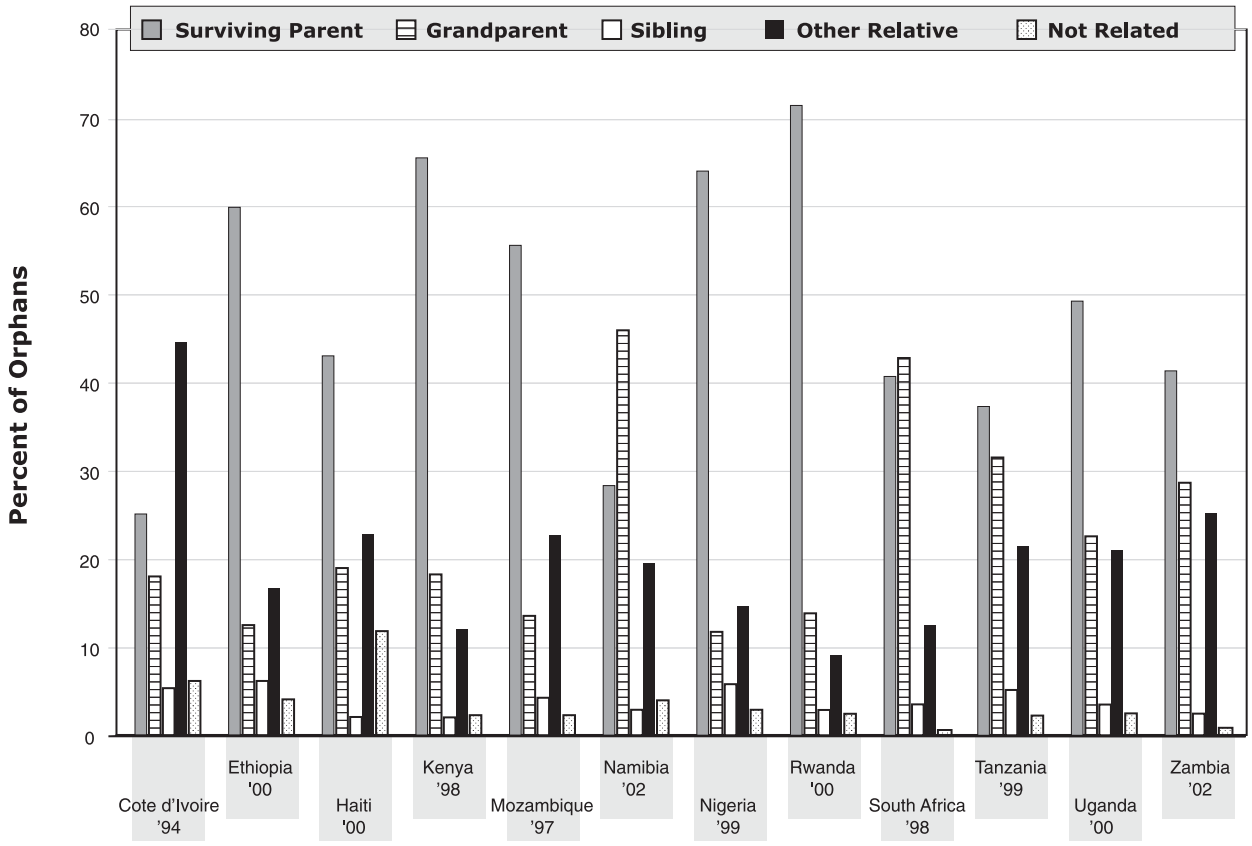
Age of Child: There is a significant correlation between the age of a child and orphan status. These results are consistent with previous findings showing that a higher percentage of older children than younger children have lost one or both of their biological parents during the 1990s in the HIV/AIDS-impacted countries (Bicego et al., 2003).

(II) Living Arrangements for Orphaned Children

The impact of the relationship between the orphaned child and the head of household is important for the child's welfare, especially for his or her emotional well-being. This is because the relationship between parent and child usually provides a sense of security and psychological well-being for the child, which is also expected of all other caregivers playing that role.

Single Orphans: Single orphans most frequently live in households headed by one of their surviving parents, mostly mothers, in most countries: Ethiopia 60%, Haiti 43%, Kenya 66%, Mozambique 56%, Nigeria 64%, Rwanda 72%, Tanzania 38%, Uganda 50%, and Zambia 41% (*figure 2*). Surprisingly, however, single orphans in Namibia and South Africa (about 46% and 42%, respectively) are most often under the care of grandparents, as are more than a quarter in Tanzania, Uganda, and Zambia. In Cote d'Ivoire, other relatives are the most frequent caregivers for single orphans (about 45%). These results are consistent with previous findings indicating that in Africa, family relatives normally absorb orphans and that indeed, caring for children of other members of the family is widely accepted in Africa even when the parents are still alive (Hunter and Williamson, 2000; Urassa et al., 1997). This cultural practice might partly help explain why a large percentage of orphans with one parent still alive would go to live in other households headed by grandparents, siblings, and "other relatives" in all countries. As expected, the latest surveys (1997-2002) also show that fewer than 5% of orphans with one surviving parent in sub-Saharan Africa live in households headed by non-relatives. By comparison, about 13% of the orphans in Haiti are living in households headed by non-relatives. The high proportion of orphans under the care of non-relatives in Haiti might be explained by the widespread practice of using children as domestic workers (*restavek*) by many families.

Figure 2: Living Arrangements of Single Orphans by Country



Data Source: DHS

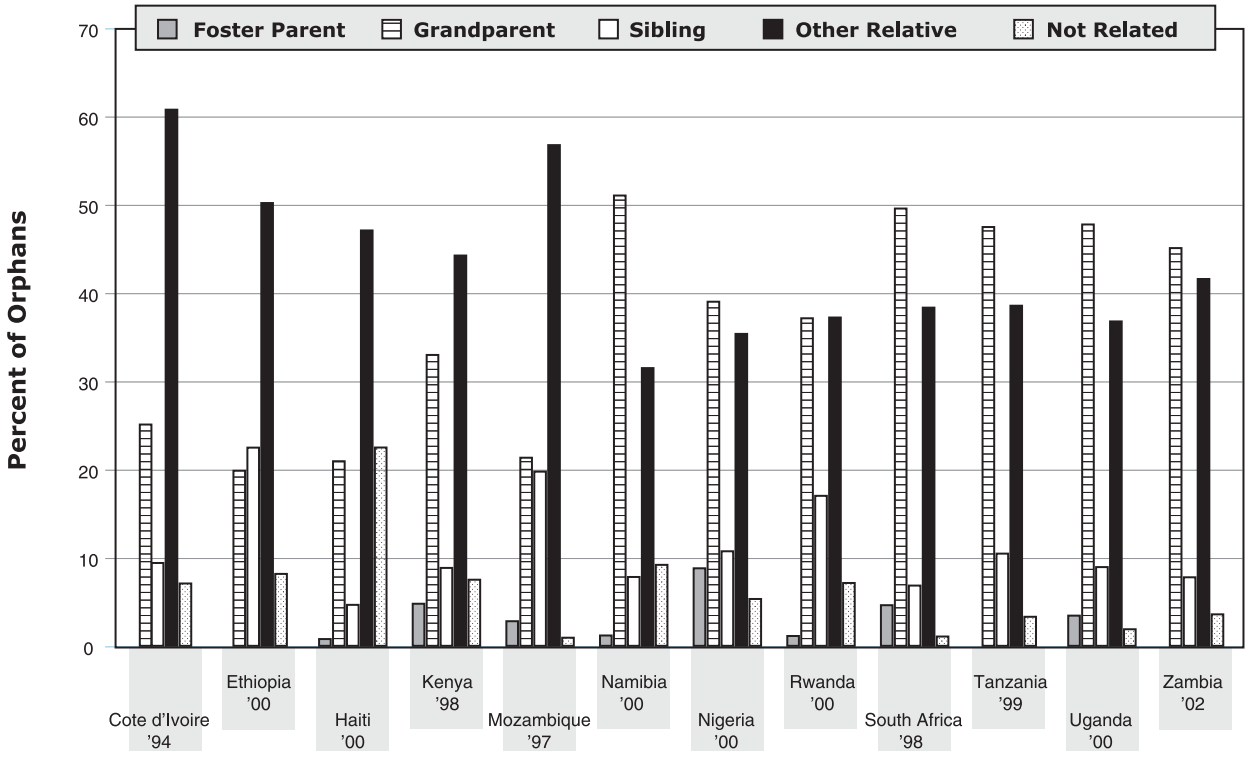
*Guyana – No data on relationship to household head

Double Orphans: In contrast, *figure* 3 shows the living arrangements of double orphans only. Unlike single orphans, the majority of double orphans live with relatives or non-relatives who are willing to absorb them. Very few double orphans in some African countries are adopted or fostered. In most countries, including Namibia, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia, grandparents are the main caregivers to double orphans. However, in five countries (Cote d'Ivoire, Ethiopia, Haiti, Kenya, and Mozambique) "other relatives" (relatives other than grandparents and siblings) are the main caregivers. Overall these findings are a reflection of the cultural child-fostering practices in each country and region.

(III) Shifting of the Living Arrangements for Single Orphans and Double Orphans Between Two Household Surveys

Single Orphans: For countries that have two surveys with complete information on children's relationship to head of household, the results show that child-caring practices are changing somewhat in most countries, with more orphans being cared for by grandparents and siblings in some countries and by non-relatives in others (*figure 4*). The results show that between the two survey periods there was a significant increase of the percentage of single orphans under the care of grandparents in Kenya, Namibia, Tanzania, and Zambia. In Namibia and Zambia, as grandparent caregivers increased, the percentage of single orphans living with other relatives declined substantially. In Rwanda, the proportion of orphans cared for by siblings increased significantly between 1992 and 2000, while it declined in all other countries. Although not statistically significant, the proportion of children living in households headed by non-relatives and relatives other than grandparents and siblings have increased slightly in both Kenya and Uganda. In Haiti, the proportion of orphans cared for by non-relatives changed significantly from about 9.9% in

Figure 3: Living Arrangements of Double Orphans by Country



Data Source: DHS

1994 to 12.4% in 2000. According to Foster (2000), the increasing proportion of orphans in households headed by elderly caregivers or siblings is an indication of the saturation of the extended family safety net to care for these children.

Double Orphans: *Figures 5.1-5.7* show the shifts in type of caregivers to double orphans in each country with more than one household survey. The results show that the majority of double orphans continue to live with grandparents and other relatives in all countries. For specific trends in each country, interesting results are observed. In Namibia, Tanzania, Uganda, and Zambia, the percent of double orphans living in households headed by grandparents increased significantly between the surveys. In Namibia, the percent of double orphans under the care of grandparents almost doubled, increasing from 30% to 51%. It increased from 42% to 47% in Tanzania, from 43% to 47% in Uganda, and from about 30% to 45% in Zambia. On the other hand, the proportion of double orphans living in households headed by grandparents decreased between the two periods for Haiti (30% to 22%), Kenya (41% to 33%), and Rwanda (44% to 37%). An interesting pattern also emerged indicating a correlation between the changes in grandparent caregivers and "other relatives" as caregivers in all countries presented. For example, in Haiti, Kenya, and Rwanda, where the proportion of grandparents as caregivers for double orphans decreased, the proportion of those under the care of "other relatives" increased within the same periods. In Haiti, "other relatives" caring for double orphans increased from about 42% to 48%, in Kenya from about 39% to 45%, and in Rwanda from about 26% to 37%.

Surprisingly, the proportion of double orphans under the care of non-relatives also increased in Haiti and in most African countries with two surveys. In Kenya, it significantly increased from 3.1% to 8.7%, in Tanzania from 2.1% to 4.2%, in Namibia from 4.9% to 9.3, and in Zambia from 2.2% to 3.5%. These

Table 4: Trends of Double Orphans and Total Orphans as a Percentage of All Children Under 15 by Sub-National Region of Residence, 1990-2002

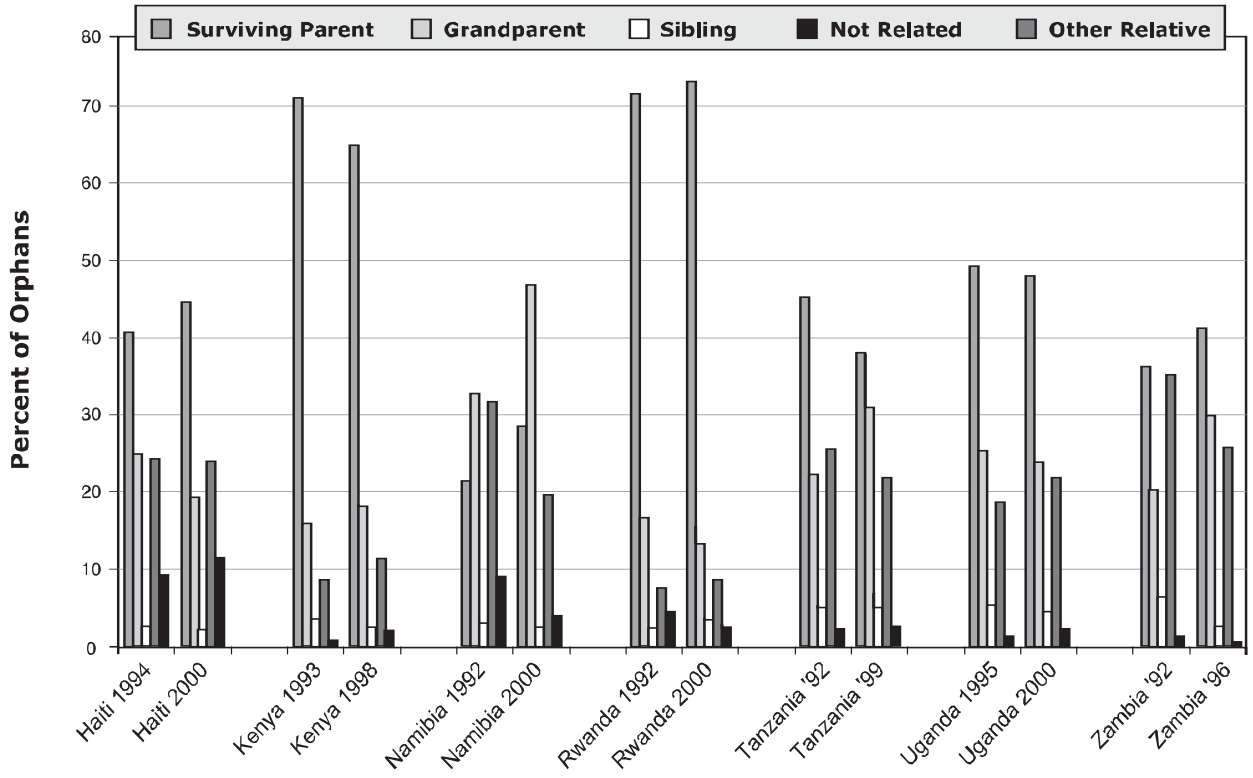
Country/Period/ Sub-Regions	Period 1992-1995		Period 1997-2002		% Point Change of Double Orphans
	Double Orphans	Total Orphans	Double Orphans	Total Orphans	
Sample Size (0-14 Years)	**N = 10,166**		**N = 18,762**		
Haiti 1994/95-2000	**1.3**	**11.1**	**0.8**	**10.2**	**-0.5**
- Metropolitan Area	1.9	14.8	1.0	10.1	-0.9
- North	1.3	10.7	0.8	8.8	-0.5
- South	1.2	10.0	0.8	11.6	-0.4
Sample Size (0-14 Years)	**N = 18,345**		**N = 16,140**		
Kenya 1993-1998	**0.3**	**6.9**	**0.9**	**9.5**	**0.6**
- Nairobi	0.7	6.0	0.6	9.1	-0.1
- Central	0.2	6.4	0.5	5.3	0.3
- Coast	0.3	7.2	1.2	10.3	0.9
- Eastern	0.2	7.6	0.5	9.7	0.3
- Nyanza	0.4	9.3	1.5	14.0	1.1
- Rift Valley	0.3	6.2	0.7	7.7	0.4
- Western	0.1	6.3	1.1	8.8	1.0
Sample Size (0-14 Years)	**N = 10,444**		**N = 13,497**		
Namibia 1992-2000	**0.4**	**7.2**	**1.2**	**11.3**	**0.8**
- Northwest	0.3	7.8	1.0	13.7	0.7
- Northeast	0.8	8.8	2.8	13.4	2.0
- Central	0.1	4.0	0.9	7.3	0.8
- South	0.6	6.1	0.5	6.7	-0.1
Sample Size (0-14 Years)	**N = 15,068**		**N = 20,899**		
Rwanda 1992-2000	**0.7**	**9.5**	**5.2**	**27.6**	**4.5**
- Kigali	0.9	10.7	5.9	28.4	5.0
- Northwest	0.5	7.8	6.2	31.2	5.7
- Southwest	0.5	8.6	3.7	20.5	3.2
- Central-South	0.9	12.3	4.6	28.5	3.7
- Northeast	0.7	9.1	4.2	25.0	3.5
Sample Size (0-14 Years)	**N = 20,299**		**N = 8,465**		
Tanzania 1992-1999	**0.5**	**7.0**	**1.1**	**8.8**	**0.6**
- Coastal	0.5	7.5	0.6	8.0	0.1
- Northern Highlands	0.5	7.3	0.9	6.1	0.4
- Lake	0.6	7.8	0.9	8.6	0.3
- Central	0.3	6.0	0.6	9.3	0.3
- Southern Highlands	0.3	6.5	2.8	14.3	2.5
- Southern	0.3	6.6	1.5	8.3	1.2
Sample Size (0-14 Years)	**N = 18,495**		**N = 19,848**		
Uganda 1995-2000	**1.9**	**12.9**	**2.3**	**12.6**	**0.5**
- Central	3.0	16.6	3.4	16.9	0.4
- Eastern	1.2	8.9	1.9	8.2	0.7
- Northern	1.3	12.9	1.8	11.2	0.5
- Western	1.9	13.5	1.8	13.4	-0.1

Table 4 *(continued)*: Trends of Double Orphans and Total Orphans as a Percentage of All Children Under 15 by Sub-National Region of Residence, 1990-2002

Country/Period/ Sub-Regions	Period 1992-1995		Period 1997-2002		% Point Change of Double Orphans
	Double Orphans	Total Orphans	Double Orphans	Total Orphans	
Sample Size (0-14 Years)	**N = 16,481**		**N = 17,938**		
Zambia 1992-2002	**0.6**	**7.7**	**2.9**	**15.0**	**2.3**
- Central	0.0	5.7	3.7	18.3	3.7
- Copperbelt	0.6	6.1	3.3	15.9	2.7
- Eastern	1.1	10.5	2.5	11.2	1.4
- Luapula	0.8	7.8	1.8	13.6	1.0
- Lusaka	0.4	8.3	3.5	17.3	3.1
- Northern	0.2	7.0	3.0	14.2	2.8
- North-western	0.4	5.8	1.9	12.8	1.5
- Southern	0.6	8.4	3.5	16.0	2.9
- Western	1.1	12.8	2.1	15.3	1.0

Data Source: DHS

Figure 4: Changes in Living Arrangements for Single Orphans in Countries with Two Household Surveys Between 1992 and 2002



Data Source: DHS

Table 5: Descriptive Statistics for All Children 0 to 14 years in 13 Countries (11 in Africa and 2 in the Caribbean)

Variables/Country/ Weighted N	Cote d'Ivoire 1994 N=17,707		Ethiopia 2000 N=31,353		Guyana 1999 N=6,612		Haiti 2000 N=18,762		Kenya 1998 N=16,140		Mozambique 1997 N=19,342		Namibia 2000 N=13,497		Nigeria 1999 N=16,039		Rwanda 2000 N=20,898		South Africa 1998 N=18,865		Tanzania 1999 N=8,455		Uganda 2000 N=19,848		Zambia 2002 N=17,938	
	No	O	No	O	No	O	No	O	No	O	No	O	No	O	No	O	No	O	No	O	No	O	No	O	No	O
Sex of HH																										
Male	88.8	73.0***	86.4	53.6***	-	-	61.3	39.5***	74.3	30.2***	81.7	55.2***	55.0	36.3***	91.7	58.0***	80.6	29.6***	54.8	24.6***	83.9	53.1***	80.6	45.3***	86.4	53.7***
Female	11.2	27.0	13.6	46.4	-	-	38.7	60.5	25.7	69.8	18.3	44.8	45.0	63.7	8.3	42.0	19.4	70.4	45.2	75.4	16.1	46.9	19.4	54.7	13.6	46.3
Age of HH																										
Under 18	0.1	0.7***	0.2	0.7***	-	-	0.2	0.2***	0.1	0.8***	0.1	0.0***	0.2	0.1***	0.0	0.0*	0.1	1.7***	0.4	0.7***	0.0	0.0***	0.1	0.2***	0.0	0.0***
18-59	78.5	74.3	87.8	83.5	-	-	83.9	75.4	89.0	84.4	88.0	82.7	68.0	54.4	83.5	76.2	90.6	81.2	73.6	64.8	81.8	71.8	89.2	74.7	89.7	74.5
60 and Over	21.4	25.0	12.0	15.7	-	-	15.9	24.4	10.9	14.9	11.9	17.2	31.8	45.5	16.5	23.8	9.3	17.2	26.0	34.5	18.2	28.2	10.7	25.0	10.3	25.5
Socioeconomic Status																										
Low	33.0	33.1	88.7	87.7**	47.5	47.3	48.9	33.1	36.3	44.4***	69.5	75.8***	53.6	65.2***	30.7	33.4	55.9	67.0***	13.3	16.9***	53.1	61.8***	44.9	45.6***	49.1	48.8*
Medium	35.7	34.7	8.1	8.2	36.7	34.9	27.6	34.7	50.9	42.5	22.8	18.4	20.1	18.0	37.9	38.4	38.8	27.6	29.0	30.3	41.4	34.1	47.1	43.9	29.2	27.7
High	31.3	32.2	3.1	4.1	15.8	17.8	23.5	32.2	12.7	13.2	7.7	5.9	26.3	16.8	31.4	28.2	5.3	5.3	57.7	52.8	5.5	4.1	8.0	10.5	21.7	23.7
Residence Type																										
Urban	34.7	37.9*	11.0	15.9***	27.1	37.3***	31.1	35.6***	14.8	11.6***	22.0	20.2	26.6	17.4***	28.2	24.6*	13.5	14.3	45.5	45.0	19.1	20.7	10.7	14.1***	33.3	38.9***
Rural	65.3	62.1	89.0	84.1	72.9	62.7	68.9	64.4	85.2	88.4	78.0	79.8	73.4	82.6	71.8	75.4	86.5	85.7	54.5	55.0	80.9	79.3	89.3	85.9	66.7	61.1
# of HH Members																										
0-6	23.9	21.4	52.5	66.1***	68.6	71.3	50.9	57.2***	54.2	66.3***	53.4	55.3	39.6	42.2*	43.8	57.1***	56.8	70.5***	58.6	55.7*	45.0	52.3***	46.7	53.7***	45.2	47.1
7 and Over	76.1	78.6	47.5	33.9	31.4	28.7	49.1	42.8	45.8	33.7	46.6	44.7	60.4	57.8	56.2	42.9	43.2	29.5	41.4	44.3	55.0	47.7	53.3	46.3	54.8	52.9

Data Source: DHS /MICS; 1992-2002. * (p <=0.05); **(p <=0.01); and ***(p <=0.001) significance levels. - No data; NO = Non-Orphans & O=Orphans.

results are an indication that in sub-Saharan African countries, as the number of relatives that can care for orphaned children declines or becomes saturated and over-burdened, a growing number of double orphans are being cared for by non-relatives, a practice that was once uncommon in the region.

Other important findings include a significant decline from about 17% to 9% of double orphans cared for by siblings in Zambia and increases in this practice from 4.3% to 6.6% in Haiti and from 3.8% to 7% in Namibia. In addition, child adoption/fostering that was not recorded in 1994 has started in Haiti, with about 0.6% of double orphans living with a foster parent in 2000. However, in all African countries except Uganda, the proportion of double orphans who were adopted or in foster care significantly decreased between the two periods.

These results indicate that as parents die, countries are responding differently in the way they care for orphans. The responsibilities may be shifting according to cultural child-fostering practices and the general economic situation within households in every country. The findings suggest that in Africa, as more children lose both parents, other relatives are stepping in to care for them and, unexpectedly, more non-relatives as well, a practice that was not common in the region. These findings tally with the hypothesis that as the number of orphans continues to increase dramatically, various communities will try to cope in different ways. Hence, it is generally clear that many orphans in Africa, especially double orphans, are being taken care of by relatives other than grandparents and siblings and increasingly by non-relatives. Overall, the data suggest a change of caregivers for orphaned children, which may mean change of residence from the communities where the parents died, causing instability to the children.

(IV) School Enrollment Overview by Country for Children Aged 6 to 17 Years

Although current school enrollment status does not actually measure psychosocial effects on children, it provides an indication on whether the children are doing what they should be doing at their age, and what they would probably be doing if their parents were alive. Education for children provides opportunities for them to develop and explore ways of achieving economic success and improve their quality of life. Thus, information on whether children are currently in school not only shows the percentage of children receiving education but also indicates the proportion of vulnerable children who are out of school and may be at risk for other unwanted social behaviors.

It is also widely acknowledged that the inequalities children are exposed to are related to the characteristics of the communities in which they live (social context) such as the different cultural child-fostering practices and education systems. Cross-country analysis provides a comparison overview on the overall children's school enrollment within each social context, which influences the relationship between orphan status and school enrollment. The available DHS/MICS data contained information on all household members, including children, and their current school enrollment status.

Figure 6 presents an overview of the percent distribution of children aged 6 to 17 years currently enrolled in school for the 13 African and Caribbean countries. As a basis of comparison, in most countries children in this age group should be enrolled in school for eight years of primary education and four years of secondary education. The enrollment distribution by age for all school-aged children (6 to 17 years) revealed that in two countries, Ethiopia and Rwanda, enrollment is very low (less than 50%) in all ages for these children. Late start of schooling in these countries helps to partly explain the overall low enrollment. However, when compared to Tanzania, which has a similar pattern in starting school, the results suggest that there are other countrywide problems with the education systems that are specifically hindering school-aged children from enrolling. The results further suggest that the significant differences among countries in age distribution by school enrollment conceal the reasons why school-aged children are not currently enrolled.

Another important observation is that the greatest proportion of children enrolled in school occurs between ages 10 and 12 years for all countries shown. For all countries shown, the percentage of children currently enrolled in school starts to drop after age 14. These results are consistent with previous studies, which have suggested that in most developing countries school enrollment starts late and starts to drop early at around age 14, because of school fees and other reasons. However, the drops in Cote d'Ivoire, Guyana, Kenya, Mozambique, Rwanda, and Tanzania were more drastic compared with those of other countries. In Ethiopia, Namibia, Nigeria, and South Africa, only minimal drops occurred in the percentage of children aged between 12 and 14 and those aged 15 still enrolled in schools.

As mentioned above, the reasons for low school enrollment vary by country and are beyond the scope of this paper. Most countries, including Uganda and Kenya, have free or subsidized primary education, but not free or subsidized secondary education. This leads many children to drop out of school at the secondary level because of lack of school fees. School drop-out at age 14 might also be explained by the fact that some countries have national qualifying examinations after which those who fail drop out of the schooling system. Other reasons may also include the need for children to stay home to work on the farm or in child care, or they may get married. Regardless of the reasons for dropping out of school, children under 18 need to be enrolled in school.

Table 6 shows that the overall national enrollment rates ranged from 31.1% in Ethiopia to 93.1% in South Africa. Rwanda, Ethiopia, Tanzania, and Cote d'Ivoire have fewer than 50% of children aged 6 to 17 years in school, while Guyana, Kenya, Namibia, South Africa, and Uganda have the highest enrollment rates (more than 80%) of children aged 6 to 17 years. The differences among the age groups (6-10; 11-14; 15-17 years) are substantial. As expected, a relatively lower percentage of younger (6 to 10) and older (15 to 17) children are currently enrolled in school across all countries. Although the education systems differ from country to country, the substantial differences in the national rates among different age groups also suggest that a variety of other reasons affect school enrollment.

Table 6 also shows the percentage of children aged 6 to 17 years who are currently enrolled in school by selected variables. Noteworthy is the relationship between socioeconomic level and school enrollment, which indicates that the percentage of children in rich households currently enrolled in school is significantly higher than that of those in poor households. In addition, urban children are much more likely to be enrolled in school than rural children. For this age group, male children are also more likely to be enrolled in school than female children, except in Namibia where the reverse is true. Age and sex of household head, and the total number of household members are associated with school enrollment in some countries.

(V) Sub-National Differentials in School Enrollment by Orphan Status for Children Aged 6 to 14 Years

To find out if orphan status of a child makes a difference in his or her education, orphans and non-orphans were compared for school enrollment status. The bivariate analysis indicate that across most countries, a lower percentage of orphaned children are enrolled in school than non-orphans, particularly double orphans, except in Namibia, Nigeria, and Zambia *(table 7)*. In Kenya, 83.3% of orphans are still enrolled in school compared with 88.1% of non-orphans. Among orphans only 73% of double orphans, 83.2% of maternal orphans, and 84.7% of paternal orphans were enrolled in school. Consistent with previous findings, there are inconsistencies in the relationship between orphanhood and school enrollment. However, these studies have also strongly argued that when parents fall sick and eventually die, household resources decline significantly, forcing children to drop out of school because school fees and other expenses are no longer affordable. Other studies have also suggested that some children drop out of school because they lack guidance or may be needed to contribute to the household labor pool.

Figure 5.1: Changes in Living Arrangements for Double Orphans in Haiti, 1994-2000

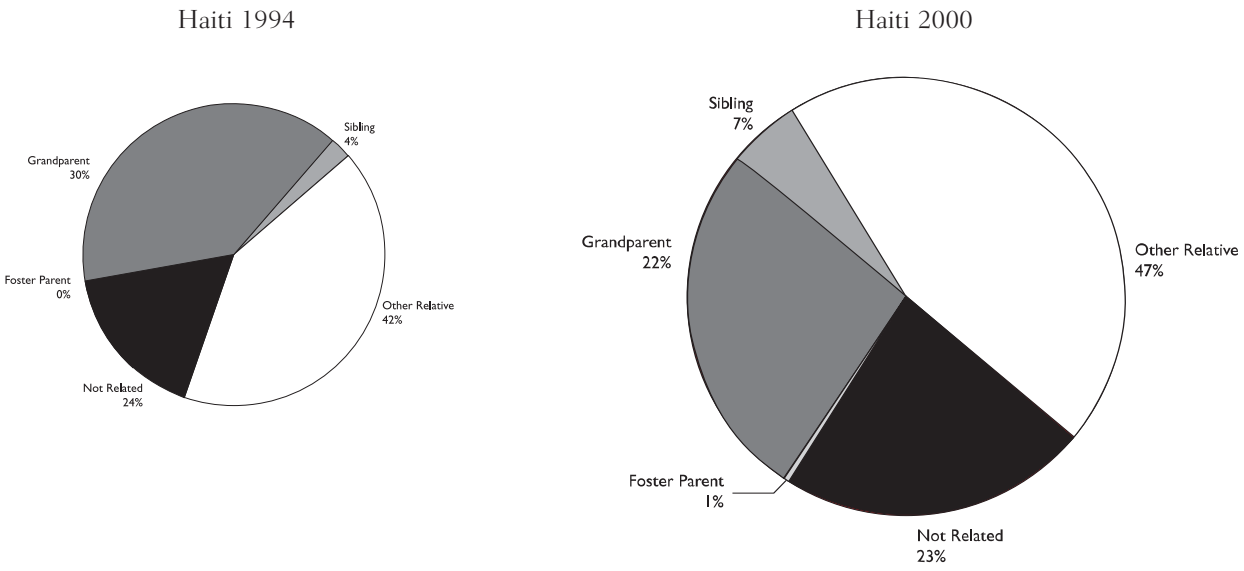


Figure 5.2: Changes in Living Arrangements for Double Orphans in Kenya, 1993-1998

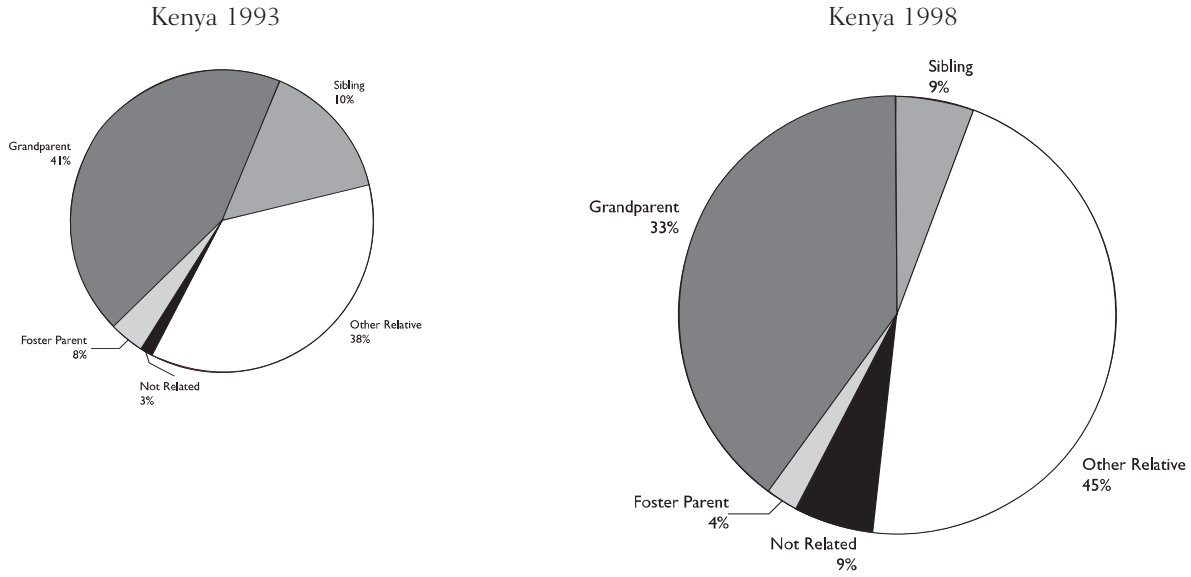


Table 8 shows the percentage of children enrolled in school by orphan status according to the sub-region of residence in each country. The analysis indicates that there are large differences in children's school enrollment across sub-regions within each country that are also different for orphans and non-orphans. For instance, in Tanzania at the national level the results were not significantly different – 49.9% of non-orphans were enrolled compared with 48.7% of orphans. However, there were large differences between orphans and non-orphans at the regional level, including Northern Highlands province in Tanzania where only 22.4% of orphans were enrolled compared with about 58% of non-orphans.

Figure 5.3: Changes in Living Arrangements for Double Orphans in Namibia, 1992-2000

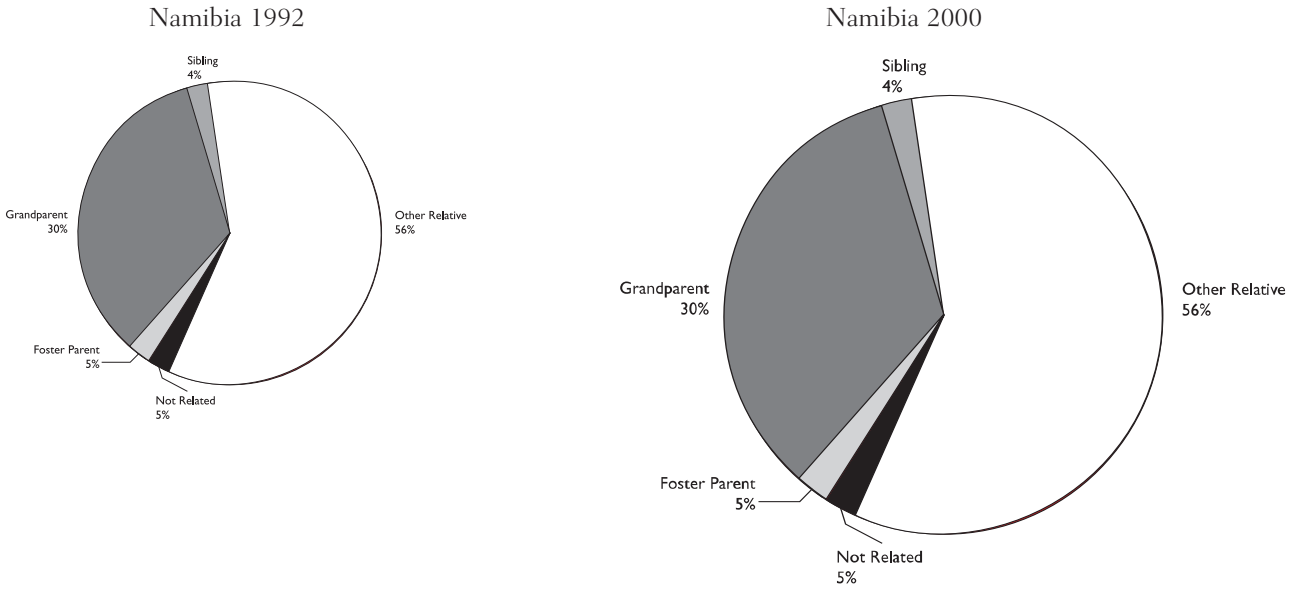
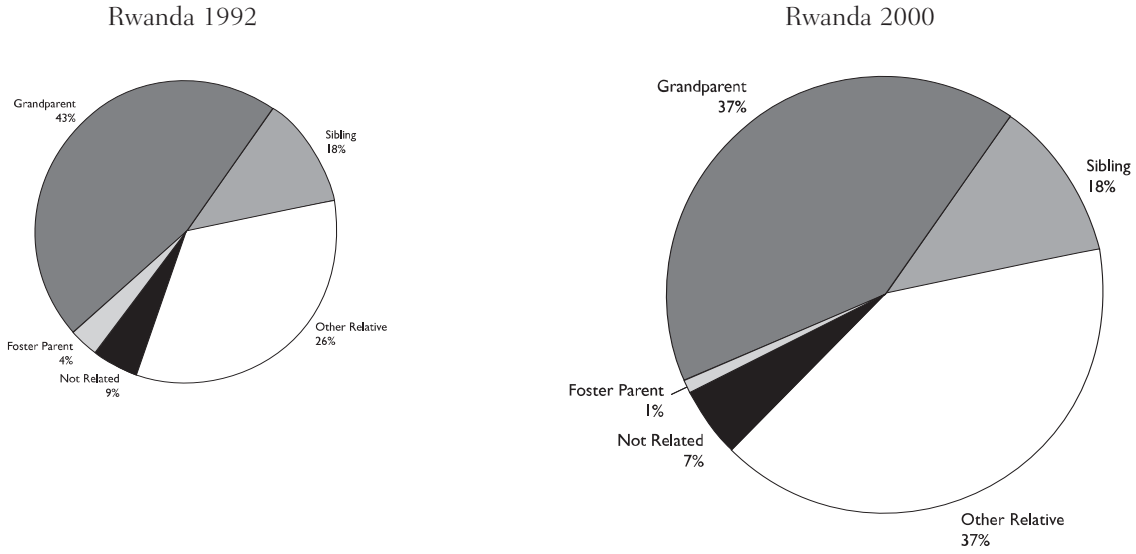


Figure 5.4: Changes in Living Arrangements for Double Orphans in Rwanda, 1992-2000



Overall, these results suggest that in addition to the orphan status of a child, his or her region of residence within the country is also an important determinant of school enrollment. Hence, further analysis controlling for region of residence and other factors is required to assess the effects of children's orphan status and determine if it continues to play a major role in children's school enrollment. There were no significant regional differences or differences between orphans and non-orphans in school enrollment in Guyana, perhaps because the national school enrollment rate is very high (about 98%), suggesting that when education is accessible for all, there are no significant regional or group differences in school enrollment. As a result Guyana was not included in the multivariate analysis.

Figure 5.5: Changes in Living Arrangements for Double Orphans in Tanzania, 1992-1999

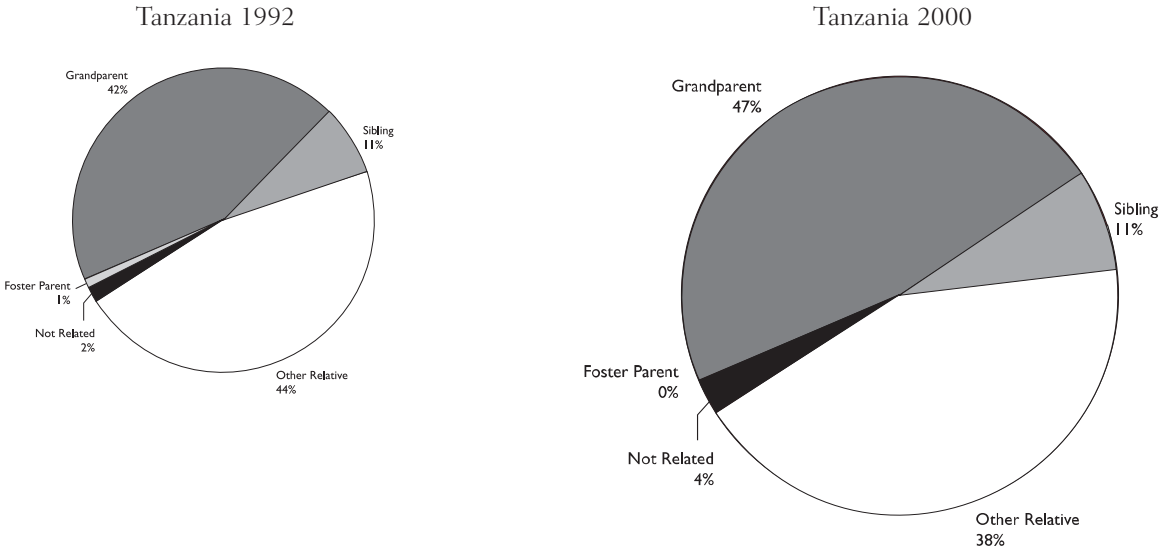
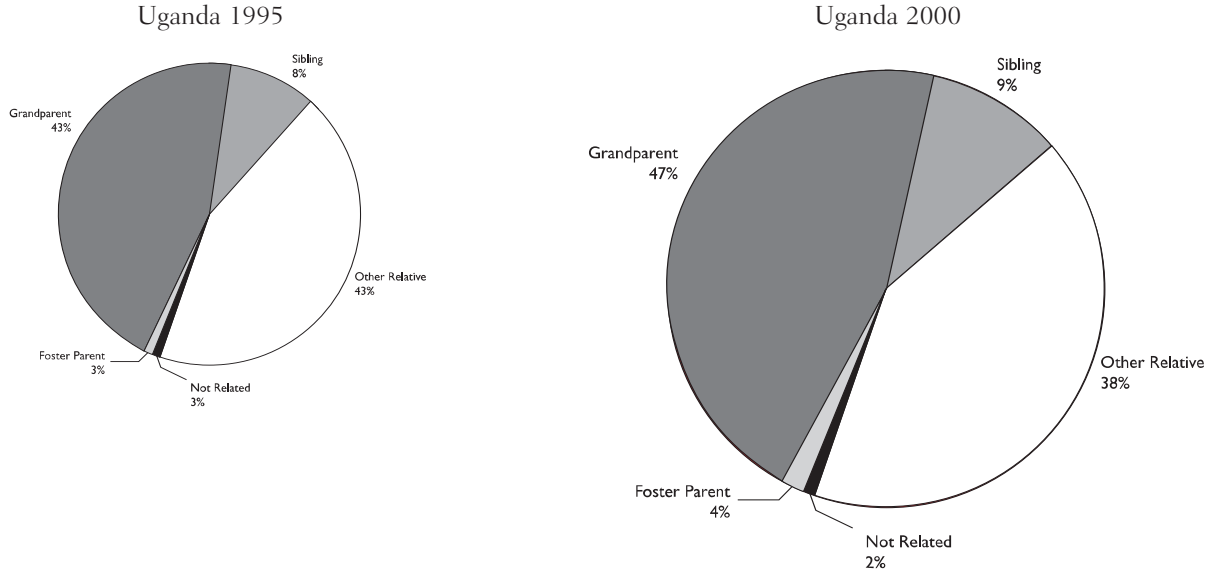


Figure 5.6: Changes in Living Arrangements for Double Orphans in Uganda, 1995-2000

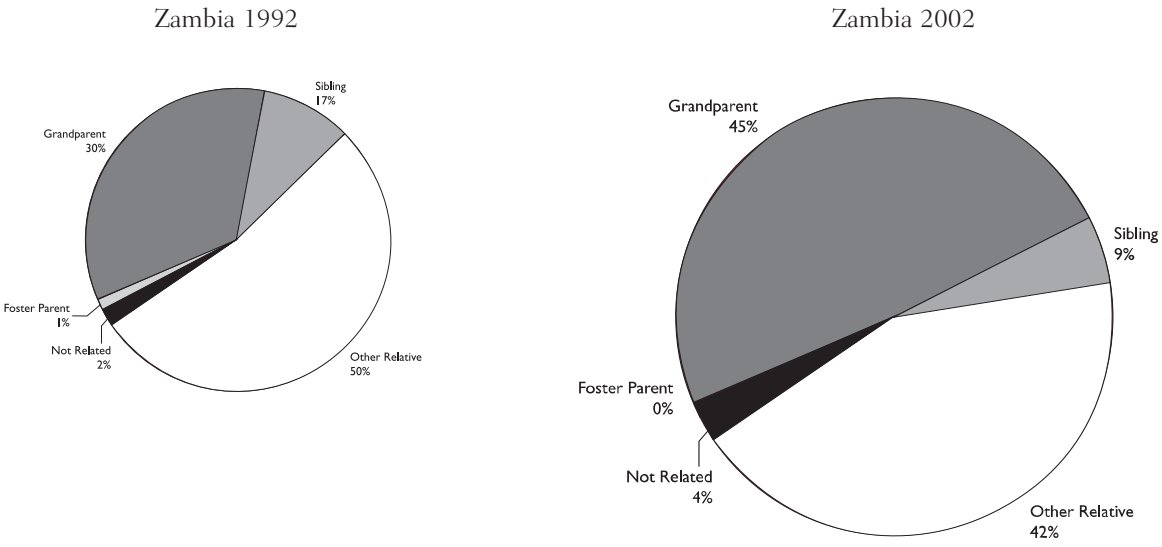


Multivariate Analysis

The Effects of Orphan Status and Region of Residence on School Enrollment for Children Aged 6 to 14 Years

The bivariate analyses in *table* 7 were used to investigate the relationship between orphan status and school enrollment, without controlling for potential confounding variables. The multivariate analysis was conducted to further evaluate the relationship between orphan status, region of residence, and the probability of a child being currently enrolled in school, taking into account the effects of other explanatory vari-

Figure 5.7: Changes in Living Arrangements for Double Orphans in Zambia, 1992-2002



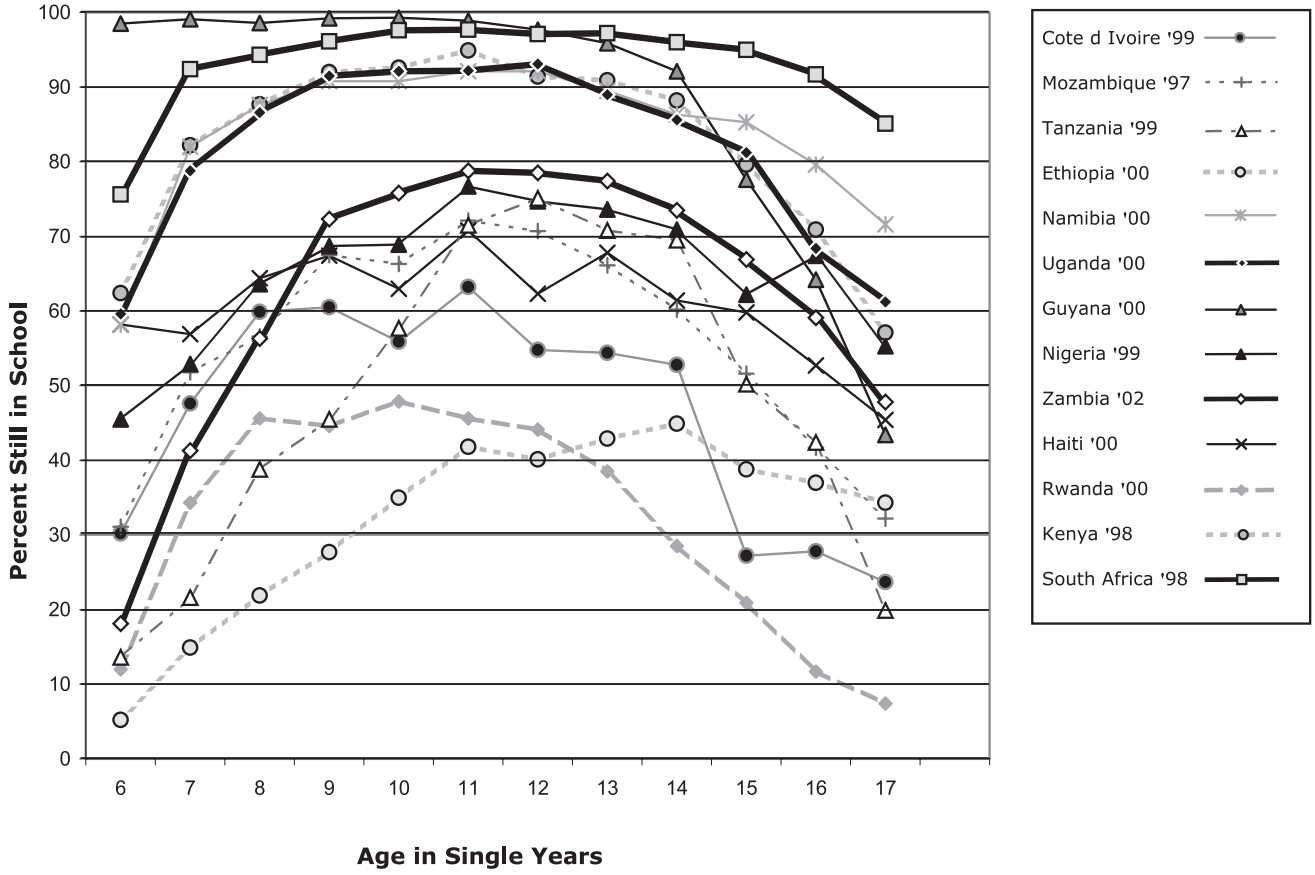
ables. The main focus was on the significant outcomes, which represent different dimensions of children's vulnerability in addition to orphanhood. *Table 9* provides a summary of the effects of orphan status, region of residence, and other factors on the likelihood of a child being currently enrolled in school after controlling for other factors in each country.

The results of the logistic regression models in *table 9* present odds ratios (likelihood of being currently enrolled in school), significance level (p), and number of cases included in the analysis. An odds ratio greater than 1 means that the child with that particular characteristic is more likely to be still in school than those in the reference group. An odds ratio less than 1 means that the variable reduces the likelihood of being in school for the child compared to the reference group. To simplify the discussion of the results, we will emphasize the effects of orphan status, socioeconomic status, caregivers, and region of residence, and only mention surprising findings for the other variables in the models.

Orphan status: As expected, orphan status is an important factor for child schooling in eight out of 12 countries (Ethiopia, Haiti, Kenya, Mozambique, Nigeria, Rwanda, Tanzania, and Zambia), even after controlling for several confounding factors such as household socioeconomic status, sub-region of residence, rural/urban, and relationship to head of household. Consistently, double orphans in four of these countries (Ethiopia, Kenya, Mozambique, and Tanzania) were significantly less likely (odds ratio less than 1) to be enrolled than non-orphans. In addition, maternal orphans in Ethiopia, Haiti, and Rwanda were less likely to be enrolled than non-orphans. Paternal orphans were significantly less likely to enroll in school than non-orphans in four countries (Ethiopia, Haiti, Kenya, and Nigeria). Nonetheless, the results show some inconsistencies in the association between orphan status and school enrollment, finding that orphans were more likely to be in school than non-orphans in a few countries. For example, contrary to expectations, paternal orphans in Namibia and maternal orphans in Mozambique and Nigeria were significantly more likely to enroll in school than non-orphans.

Sub-Regional Differentials: *Table 9* also shows the influence of the sub-region of residence within country on school enrollment status, controlling for orphan status and other explanatory factors. The results show that there are significant regional differences in school enrollment in all countries except Haiti. Sub-regions where children are less likely to be currently enrolled in school than the reference group are as fol-

Figure 6: Percent Children Aged 6 to 17 Years Currently Enrolled in School by Age by Country



Data Source: DHS/MICS

lows: Cote d'Ivoire (North); Ethiopia (all small states); Kenya (Coast); Mozambique (Cabo Delgado, Nampula, Tete, and Manica); Namibia (Northeast, Central, and South); Rwanda (Kigali), South Africa (Northern Cape, KwaZulu Natal, North West, and Mpumalanga); Uganda (Northern and Western); Zambia (Copperbelt, Eastern, Luapula, Lusaka, Northern and North-western). Surprisingly, in Rwanda – with low national enrollment – children living in Northwest, Southwest, Central-South, and Northeast were more likely to enroll in school than those residing in Kigali, which is urban. Nonetheless, region of residence explained more of the variability in school enrollment for most countries than any other factor including the household socioeconomic status. These findings suggest that the sub-regional differences in school enrollment reflect the cultural diversities in child-caring practices among communities within a country, the different levels of development, and the different ages for starting school.

Household Socioeconomic Status: Household socioeconomic level had a strong, significant, and consistent effect on school enrollment status in all countries analyzed. As expected, *table 9* shows that after controlling for other factors, household socioeconomic level increases the odds of a child being enrolled in school. Indeed, a child from high socioeconomic status has a higher likelihood (more than double) to be enrolled in school than a child from a low socioeconomic status in most countries and a 12 times higher likelihood in Tanzania.

Relationship to Head of Household (Caregiver): Consistent with previous studies, there was a significant relationship between children's school enrollment and their relationship to household head (Case, et

Table 6: Percent Children 6 to 17 Years Currently Enrolled in School by Selected Variables in 13 Countries (11 in Africa and 2 in the Caribbean)

Variables	Cote d'Ivoire 1994 N=12,645	Ethiopia 2000 N=23,300	Guyana 1999 N=5,341	Haiti 2000 N=13,341	Kenya 1998 N=12,758	Mozambique 1997 N=14,293	Namibia 2000 N=10,542	Nigeria 1999 N=11,675	Rwanda 2000 N=16,497	South Africa 1998 N=15,753	Tanzania 1999 N=6,023	Uganda 2000 N=13,506	Zambia 2002 N=12,699
Total Enrolled (6-17)	46.8	31.1	90.7	61.1	83.8	56.7	83.9	64.1	32.8	93.1	47.3	81.5	61.4
Age of Child													
6-10 Yrs	48.1***	20.7***	98.9***	61.8***	83.6***	54.8***	81.8***	59.7***	36.4***	91.0***	34.6***	79.3***	52.0***
11-14	52.6	42.3	96.3	65.3	91.2	67.1	89.9	73.8	39.5	96.9	72.0	90.4	77.1
15-17	34.1	37.0	62.2	52.7	70.3	41.9	78.8	61.7	13.5	90.6	38.4	70.6	58.2
Sex of Child													
Male	54.6***	34.7***	90.1	64.2***	84.5*	62.9***	82.6***	67.0***	32.7	92.8	46.2	82.4**	63.2***
Female	39.2	27.1	91.2	58.1	83.2	50.4	85.0	60.9	32.9	93.5	48.4	80.5	59.6
Sex of HH													
Male	46.7	30.0***	N/A	65.0***	83.9	57.1	81.1***	61.8***	33.2	93.1	48.2**	81.5	61.7
Female	47.3	35.3		56.1	83.6	55.4	86.9	79.0	32.2	93.2	43.8	81.4	60.3
Age of HH													
Working Age	48.7***	31.1	N/A	59.4***	84.6***	57.5***	82.9***	63.3***	33.1	93.1	48.7***	81.2	62.3***
Non-working Age	40.4	31.0		68.7	79.3	52.4	85.7	66.8	31.3	93.1	42.6	82.7	56.7
Socioeconomic Status													
Low	34.3***	27.0***	89.7***	76.7***	82.9***	50.5***	80.8***	46.7***	32.1***	88.8***	43.0***	79.6***	52.4***
Medium	50.8	78.0	90.8	55.0	87.4	78.9	85.7	72.2	36.2	93.5	69.2	88.7	72.8
High	65.5	78.7	94.6	16.8	84.6	87.6	92.2	86.0	36.0	95.6	78.7	89.1	84.4
Residence Type													
Urban	56.4*	71.6***	93.7*	27.6***	78.6***	73.1***	88.5***	76.9***	37.4***	94.8***	59.8***	84.4***	71.5***
Rural	39.1	24.5	89.9	79.8	84.5	50.4	82.3	58.8	32.1	91.7	44.1	81.1	55.7
# of HH Members													
Fewer than 6	39.7***	29.6***	90.7	57.8***	83.2*	51.7***	82.2***	65.4**	32.2	93.5*	49.2**	78.3***	56.1***
7 and More	48.7	32.5	90.5	64.3	84.5	61.6	84.9	63.1	33.5	92.6	45.9	83.7	64.9

Data Source: DHS /MICS; 1994-2002. * Sign. 0.05; **Sign. 0.01; ***Sign. 0.001. N/A - No data available; HH - Household Head.

Table 7: Percent Children 6 to 14 Years Currently Enrolled in School by Orphan Status in 13 Countries (11 in Africa and 2 in the Caribbean)

Variables	Cote d'Ivoire 1994 N=9,947	Ethiopia 2000 N=17,978	Guyana 1999 N=3,822	Haiti 2000 N=10,513	Kenya 1998 N=9,837	Mozambique 1997 N=10,972	Namibia 2000 N=8,133	Nigeria 1999 N=8,869	Rwanda 2000 N=12,573	South Africa 1998 N=11,997	Tanzania 1999 N=4,739	Uganda 2000 N=11,061	Zambia 2002 N=10,179
Orphan Status**													
Non-orphans	50.4***	29.8**	97.8**	63.8	88.0***	56.9***	85.2**	64.8**	38.6ns	93.8ns	49.9*	83.7ns	61.6*
Maternal	42.9 (240)	28.1 (844)	100(62)	62.6(479)	83.2(238)	62.9(727)	86.7(271)	71.5(246)	34.8(692)	92.1(227)	51.4(175)	83.2(494)	59.9(446)
Paternal	43.5 (577)	26.9(1,725)	95.5(178)	60.8(920)	84.7(872)	56.1(1,044)	89.7(832)	72.2(388)	38.3(3,060)	94.3(1,169)	50.8(370)	83.4(1,174)	65.1(1,274)
Double	36.7 (60)	22.9 (240)	91.2 (34)	56.1(139)	73.0(122)	31.8(170)	85.4(137)	66.0(106)	35.6(1,006)	94.4(125)	33.7(86)	86.8(409)	64.7(485)
Non-orphans	50.4***	29.8**	97.8ns	63.8*	88.0***	56.9ns	85.2**	64.8***	38.6ns	93.8ns	49.9ns	83.7ns	61.6*
All Orphans	42.9 (878)	26.9(2,809)	96.0(274)	60.9(1,538	83.3(1,233	56.5(1,942)	88.6(1,239)	71.0(741)	37.2(4,758)	94.0(1,521	48.7 (631)	84.0(2,077	64.0(2,205)

Data Source: DHS /MICS; 1992-2002. * (p<= 0.05); ** (p<= 0.01); *** (p <= 0.001). N/A - Not used in multivariate analysis ** Orphan Status - Data available for children 6-14 years only. Figures in parentheses are weighted cases of children aged 6-14 years in each group.

al., 2003). A close relationship between a child and the head of household increases the likelihood of a child being enrolled in school. Controlling for other factors, in all countries, children living in households headed by non-relatives had a significantly lower likelihood of being enrolled in school than children in households headed by a surviving parent. This suggests that children of school age living with non-relatives may be child workers and not foster children. Hence, children under the care of non-relatives are likely not to be enrolled in school and thus vulnerable to exploitation.

A similar trend was observed with children living in households headed by "other relatives." These children were also less likely to be enrolled in school than those in households headed by a surviving parent in all countries except Namibia, Nigeria, and South Africa. Further, the findings show that in Kenya, Rwanda, and Namibia, children in households headed by grandparents were significantly at risk of low enrollment compared with those living with a parent. Children living in households headed by siblings in Cote d'Ivoire, Haiti, Kenya, Mozambique, and Tanzania were less likely to enroll in school than those living in households headed by one of their own parents. It is noteworthy that the number of children living with siblings was small in most countries. Thus, overall, children living in households headed by a surviving parent were better off than those living in households headed by any other relatives and with non-relatives.

Rural/Urban Residence: Other factors being equal, this analysis shows that, as expected, children who live in rural households have a lower likelihood of being currently enrolled in school than children living in urban areas. These findings were significant in most countries (Ethiopia, Mozambique, Namibia, Rwanda, Tanzania, and Zambia). This signifies that in most countries access to education is still a problem in the rural areas.

Sex of Head of Household: The sex of the head of household was a major determinant for child enrollment in some countries. Controlling for other factors, the results show that in countries such as Cote d'Ivoire, Haiti, Namibia, and Nigeria, children in female-headed households had a significantly higher likelihood of being in school than those in male-head-

ed households. This is contrary to previous findings that children in these households are at risk for non-enrollment in school because female-headed households tend to be poorer and have less access to economic resources, especially in Africa. However, these previous findings are upheld in the case of Tanzania, where children in female-headed households had a significantly lower likelihood of being in school than those in male-headed households.

Age of Head of Household: *Table 9* also shows that the age of the head of the household is also an important predictor of children's school enrollment. The odds of a child being in school were less for children living in households headed by non-working persons (aged under 18 and above 60 years) than for those living in households headed by adults of working age (18 to 59 years) in Cote d'Ivoire, Kenya, Mozambique, and Tanzania. However, the reverse was true in Nigeria, where children living in households headed by non-working persons were more likely to enroll in school than those living with working adults.

Average Household Size: The logistic regression results show that household size affects a child's likelihood of being in school. Contrary to expectations that in large families resources are depleted and children less likely to enroll in school, the results show positive effects in five countries (Cote d'Ivoire, Mozambique, Nigeria, Uganda, and Zambia). On the other hand, in Tanzania, children in large households were less likely to be enrolled in school compared with those in smaller households.

Sex of Child: The results suggest that sex differences in school enrollment rates still exist in most countries. The sex of the child is a significant factor in the likelihood of a child being in school. Males were more likely to be enrolled in school than females in countries such as Cote d'Ivoire, Ethiopia, Mozambique, and Nigeria. However, in Namibia, Tanzania, and South Africa, female children had a significantly higher likelihood of being enrolled in school than male children. No sex differences in school enrollment were shown in Haiti, Kenya, Rwanda, Uganda, and Zambia.

Age of Child: The age of a child was an important determinant of school enrollment in all the countries analyzed here. Consistent with previous findings, children aged 11 to14 were more likely to be enrolled in school than those aged 6 to10. These findings imply that younger school-aged children may not be in school because their guardians believe they are not yet of age to go to school or because some countries do not have strict regulations as to what age children should enroll in school. Sometimes, due to scarce schooling resources, the younger children may be held at home to enable older siblings go to school.

Conclusion

While communities and households are refuges for children, they can also be sources of risks. Throughout the world, a substantial number of children fall victim to one or more of these risks. Adequately addressing these concerns requires designing national policies that attack children's problems from the base. In general, this analysis has generated useful information about the communities where orphaned children reside and has provided an understanding of the linkage between orphan status and school enrollment in 13 of the 14 countries identified for special assistance by President Bush's Emergency Plan for AIDS Relief. The identification of "hot spots" in orphan prevalence is of particular importance for decision-making regarding the allocation of scarce program resources towards focused and scaled-up responses in the sub-regions with high proportions of orphans.

The study reveals considerable variations across countries and within countries in the living circumstances of orphans. Specifically, the study has highlighted where high proportions of orphans live within each country and how their living circumstances (in terms of orphan status, sex and age of head of household, household socioeconomic status, sex and age of child, household size, child's relationship to household head, type of residence, and sub-region of residence) may influence their schooling.

Table 8: Percent Children Currently Enrolled in School by Orphan Status According to Sub-Region of Residence in Each Country

Country/Survey/Year	Percent Non-Orphans (Total N)	Percent Orphans (Total N)	% of All Children in School	Significance Levels
Cote d'Ivoire DHS 1994*	**50.4** (9,066)	**42.9** (877)	**49.5**	P<=0.001
- Center	50.1	44.9	49.5	
- North	31.5	12.2	29.8	
- West	53.0	44.7	52.2	
- South	59.2	55.6	58.4	
Ethiopia DHS 2000	**29.8** (15,166)	**26.9** (2,811)	**29.4**	P<=0.001
- Tigray	31.7	28.3	31.4	
- Affar	19.9	16.1	18.8	
- Amhara	29.2	25.1	28.8	
- Oromiya	27.7	25.5	27.2	
- Somali	11.3	15.7	12.0	
- SNNP	29.0	23.7	28.1	
- Addis	79.4	78.8	79.1	
- Other States	41.3	47.7	42.7	
Guyana MICS 2000	**97.8** (3,548)	**96.0** (273)	**97.6**	Not Statistically Significant
- Barima-Waini	97.3	100.0	96.7	
- Pomeroon-Supernaam	97.3	100.0	97.5	
- Essequibo Isl-W. Demerara	98.1	94.7	97.8	
- Demerara-Mahaica	97.5	95.0	97.2	
- Mahaica-Berbice	97.2	100.0	97.4	
- East Berbice Corentyne	98.0	97.1	98.0	
- Cuyuni-Mazaruni	97.8	100.0	97.9	
- Potaro-Siparuni	96.9	100.0	97.1	
- Upper Takutu Essequibo	100.0	100.0	100.0	
- Upper Demerara	99.0	100.0	99.6	
Haiti DHS 2000	**64.8** (9,324)	**71.0** (1,563)	**65.4**	P<=0.001
- Metropolitan Area	74.2	77.2	74.8	
- North	44.0	47.5	44.5	
- South	44.2	48.2	44.9	
Kenya DHS 1998	**88.1** (8,604)	**83.3** (1,233)	**87.4**	P<=0.001
- Nairobi	90.4	85.0	89.9	
- Central	95.0	89.5	94.3	
- Coast	74.3	67.0	72.8	
- Eastern	87.9	82.5	87.0	
- Nyanza	92.0	90.4	91.7	
- Rift Valley	85.7	79.9	85.0	
- Western	86.3	80.3	85.5	

Table 8 (*continued*): Percent Children Currently Enrolled in School by Orphan Status According to Sub-Region of Residence in Each Country

Country/Survey/Year	Percent Non-Orphans (Total N)	Percent Orphans (Total N)	% of All Children in School	Significance Levels
Mozambique DHS 1997	**56.9** (9,030)	**56.5** (1,942)	**56.1**	P<=0.001
- Niassa	51.6	50.5	50.8	
- Cabo Delgado	38.1	28.4	34.8	
- Nampula	45.6	44.3	44.9	
- Zamb'zia	60.4	68.0	61.0	
- Tete	53.7	53.3	54.0	
- Manica	47.0	53.5	48.6	
- Sofala	45.4	57.6	46.9	
- Inhambane	73.4	62.9	70.6	
- Gaza	60.6	55.0	59.4	
- Maputo	75.6	58.2	71.6	
- Cidade de Maputo	83.8	83.3	82.6	
Namibia DHS 2000	**85.2** (6,926)	**88.6** (1,251)	**85.1**	P<=0.001
- Northwest	89.4	92.9	89.5	
- Northeast	80.4	78.2	79.5	
- Central	74.7	77.1	74.1	
- South	86.0	91.4	85.7	
Nigeria DHS 1999	**64.8** (8,129)	**71.0** (741)	**65.4**	P<=0.001
- Northeast	31.4	45.7	32.2	
- Northwest	28.6	29.1	28.6	
- Southeast	88.0	83.9	87.4	
- Southwest	87.0	83.5	86.8	
- Central	69.9	73.2	68.3	
Rwanda DHS 2000	**38.6** (7,814)	**37.2** (4,758)	**37.8**	P<=0.001
- Kigali	5.9	8.0	6.8	
- Northwest	70.2	61.8	66.5	
- Southwest	44.3	45.9	44.6	
- Central-South	33.1	32.7	32.3	
- Northeast	12.6	14.5	13.4	
South Africa DHS 1998	**93.8** (10,476)	**94.0** (1,521)	**93.8**	P<=0.001
- Western Cape	97.3	97.0	97.1	
- Eastern Cape	93.5	93.7	93.5	
- Northern Cape	93.0	96.6	93.7	
- Free State	96.1	97.9	96.5	
- KwaZulu Natal	90.1	90.7	90.0	
- North West	92.0	94.7	92.2	
- Gauteng	95.9	96.0	96.1	
- Mpumalanga	94.2	95.0	94.4	
- Northern Province	96.0	93.7	95.4	

Table 8 (*continued*): Percent Children Currently Enrolled in School by Orphan Status According to Sub-Region of Residence in Each Country

Country/Survey/Year	Percent Non-Orphans (Total N)	Percent Orphans (Total N)	% of All Children in School	Significance Levels
Tanzania DHS 1999	**49.9** (4,108)	**48.7** (631)	**49.5**	P<=0.001
- Coastal	52.4	57.5	52.7	
- Northern Highlands	57.9	22.4	54.8	
- Lake	42.0	53.6	43.7	
- Central	45.6	47.3	45.4	
- Southern Highlands	61.7	48.0	58.4	
- Southern	44.2	45.3	44.0	
Uganda DHS 2000	**84.0** (8,998)	**83.1** (2,078)	**83.7**	P<=0.001
- Central	88.6	86.9	88.0	
- Eastern	88.0	84.4	87.3	
- Northern	72.4	73.4	72.4	
- Western	81.4	81.5	81.5	
Zambia DHS 2002	**61.6** (7,987)	**64.0** (2,211)	**61.4**	P<=0.001
- Central	62.5	66.8	64.4	
- Copperbelt	71.9	67.4	68.5	
- Eastern	51.0	47.9	50.3	
- Luapula	52.8	49.4	52.2	
- Lusaka	69.8	71.5	68.4	
- Northern	54.6	67.5	58.3	
- Northwest	71.2	77.5	72.4	
- Southern	64.0	61.1	62.4	
- Western	51.7	63.1	52.5	

Data Source: : DHS and MICS; *Cote d'Ivoire DHS 1999 not used — no data on parental survival status.()=Total number of children aged 6-14 Years in each group (Orphan and Non-orphans). P-values are significant levels for relationship between orphan status and school enrollment at National level

There is no doubt that orphaned children are more vulnerable than non-orphans to several risks in life that compromise their welfare. As shown in this study, double-orphaned children aged 6 to 14 years in Ethiopia, Kenya, Mozambique, and Tanzania were less likely to be enrolled in school than non-orphans. Similar results were found with maternal orphans in Ethiopia, Haiti, and Rwanda, and paternal orphans in Ethiopia, Haiti, Kenya, and Nigeria. The results also show some unexpected associations between orphan status and school enrollment, such as those showing that maternal orphans were more likely to be in school than non-orphans in Mozambique and Nigeria, and paternal orphans were significantly more likely to enroll in school than non-orphans in Namibia.

The analysis shows that the size of the dependent non-productive population is increasing relative to the size of the working population in the high HIV-prevalence countries and sub-regions. One of the key findings emerging from this study shows that in countries with two surveys, the expected decline of the dependency ratio (dependents to working populations) occurred only in a few countries. Despite fertility declines in sub-Saharan Africa, these ratios significantly increased or stayed constant in most countries in the region during the years of the HIV/AIDS epidemic. This could be due to the increased number of

adult deaths and orphaned children in these countries. Furthermore, despite the significant differences among these countries in their demographic conditions (such as fertility rates and economic development), the dependency ratio varied modestly among them. The rural and urban dependency burden gaps were quite large in many of these countries, with rural areas bearing the highest orphan burden disproportionately to their capacity to provide care. The findings also show that orphan prevalence rates differed for each sub-region and that sub-region was a major determinant for child school enrollment, which is again indicative of the orphan burden being disproportionately distributed among communities where the capacity to provide care is overstretched.

As HIV/AIDS drains resources from households to cover family medical expenses, more families and children are sliding into poverty, and it is becoming increasingly difficult to disentangle the connection between poverty and orphan status. However, this analysis observed that children in poor households were less likely to be enrolled in school compared with those in richer households. The negative effects of orphanhood were more apparent for double orphans in most countries. When differences in household socioeconomic status, region of residence, relationship of child to caregiver, and sex and age of both child and caregiver were taken into account, double orphans, children living with other relatives and non-relatives, and children in particular sub-regions had a lower likelihood of being enrolled in school. Thus, orphanhood, household's relationships, and household and sub-regional characteristics are important determinants of child well-being as observed in the analysis. Hence, it appears that improving household and community environments could generate numerous benefits for orphans and other children in the household.

Responding to these trends and improving the welfare of orphans and other vulnerable children require a combination of creative program approaches. Researchers, policymakers, practitioners, and donor agencies thus concur that community and household interventions offer the most promise for reducing the risks of unwanted outcomes (*Children on the Brink, 2002*).

Recommendations

The findings reveal some of the vulnerabilities that children face in different communities and households. These vulnerabilities have policy implications. There is a need to design and implement program strategies that are effective in addressing children's needs and improving the welfare of children of all ages, regardless of their parental survival status. The findings of this study suggest that the following considerations are important:

1. No single policy can be suitable for all countries given the different patterns among countries of the effects of orphan status on children's welfare.
2. This study has identified communities in each country with high proportions of orphans – "hot spots" – and greater dependency burdens than other communities in the country. Governments and development agencies need to support and strengthen these communities and households in caring for vulnerable children. Although many programs are focusing on providing school fees for education and other school supplies at the household level, we suggest other interventions at the community level. These may include establishing "rescue centers" where needy or vulnerable children can be brought by schoolteachers or other adults for further assistance.
3. In addition to designing a national strategy to deal with AIDS and its impact on children, there is an urgent need to target sub-regions with high HIV/AIDS burdens to reach out more quickly to communities with large orphan and vulnerable children populations, as identified in this study.
4. There are regional differentials in school enrollment that may be suggested by differences in child-fostering practices. Thus, sub-regional studies within each country are needed to determine the cultural and social factors that are affecting children's welfare, including health and psychological outcomes, and how they can be addressed.

Table 9: Summary of Odds Ratios for Logistic Regressions Results from Models Testing the Effects of Orphan Status on School Enrollment in Selected Countries for Children Aged 6 to 14 Years

Variables/Country	Cote d'Ivoire 1994	Ethiopia 2000	Haiti 2000	Kenya 1998	Mozambique 1997	Namibia 2000	Nigeria 1999	Rwanda 2000	South Africa 1998	Tanzania 1999	Uganda 2000	Zambia 2002
Orphan Status												
Non-orphans®	–	–	–	–	–	–	–	–	–	–	–	–
Maternal	0.803	0.825*	0.513***	0.715	1.472***	1.047	1.442*	0.840*	0.655	0.875	0.830	1.037
Paternal	0.838	0.718***	0.717***	0.776*	0.979	1.237	0.637**	1.025	0.998	1.115	0.964	1.168*
Double	0.617	0.602**	0.682	0.559*	0.342***	0.993	0.634	0.984	0.940	0.411***	1.055	1.150
Relationship to HH												
Parent®	–	–	–	–	–	–	–	–	–	–	–	–
Grandparent	1.061	1.142	0.993	0.781*	1.066	1.209	1.234	0.674***	1.092	1.243	1.007	0.746***
Sibling	0.664*	0.960	0.503*	0.453**	0.693**	0.917	1.128	0.815	1.085	0.485**	0.874	0.927
Other Relatives	0.675***	0.537***	0.764**	0.559***	0.566***	0.863	0.792	0.686***	0.983	0.708***	0.795**	0.588***
Non-relatives	0.252***	0.097***	0.587***	0.015***	0.074***	0.448***	0.421***	0.117***	0.251***	0.032***	0.228***	0.308***
Residence Type												
Urban®	–	–	–	–	–	–	–	–	–	–	–	–
Rural	0.949	0.157***	0.979	1.266	0.363***	0.537***	0.876	0.479***	0.819	0.716***	0.997	0.835**
Sex of Child												
Male®	–	–	–	–	–	–	–	–	–	–	–	–
Female	0.523***	0.663***	1.063	0.960	0.615***	1.147*	0.768***	0.981	1.325***	1.173*	1.028	0.994
Age of Child (Yrs)												
6-10®*	–	–	–	–	–	–	–	–	–	–	–	–
11-14	1.162***	3.299***	1.716***	2.602***	2.145***	2.100***	1.737***	1.339***	3.173***	6.396***	2.635***	3.450***
Sex of HH												
Male®	–	–	–	–	–	–	–	–	–	–	–	–
Female	1.284***	1.042	1.226**	1.145	1.028	1.723***	1.725***	0.995	1.009	0.682***	1.025	1.124
Age of HH												
Working Age®	–	–	–	–	–	–	–	–	–	–	–	–
Non-working Age	0.833***	0.964	0.905	0.797*	0.701***	1.115	1.203**	1.128	1.106	0.727***	1.203	1.081
Number of HH Members												
Fewer than 6®	–	–	–	–	–	–	–	–	–	–	–	–
7 and More	1.299***	1.025	1.041	1.041	1.115*	1.146	1.128*	0.982	0.894	0.740***	1.165**	1.206***

Table 9 *(continued)*: Summary of Odds Ratios for Logistic Regressions Results from Models Testing the Effects of Orphan Status on School Enrollment in Selected Countries for Children Aged 6 to 14 Years

Variables/Country	Cote d'Ivoire 1994	Ethiopia 2000	Haiti 2000	Kenya 1998	Mozambique 1997	Namibia 2000	Nigeria 1999	Rwanda 2000	South Africa 1998	Tanzania 1999	Uganda 2000	Zambia 2002
Socioeconomic Status												
Low®	–	–	–	–	–	–	–	–	–	–	–	–
Medium	2.063***	3.069***	3.431***	2.360***	2.191***	2.993***	3.393***	1.895***	1.753***	4.999***	2.153***	2.794***
High	4.582***	4.094***	2.254***	5.086***	4.547***	5.613***	8.169***	1.766***	2.529***	12.325***	2.491***	6.191***
Sub-Region[P]												
Region-1®	Center	Tigray	Metro	Nairobi	Niassa	Northwest	North East	Kigali	Western Cape	Coastal	Central	Central
Region-2	.395***	1.310***	0.0001	2.866***	0.550***	0.470***	1.174*	39.605***	0.660	1.315*	1.179*	0.698***
Region-3	1.317***	1.112	0.00	0.481***	0.737**	0.153***	10.047***	16.122***	0.439*	0.970	0.413***	0.634***
Region-4	1.181**	1.276**		0.179	1.508***	0.269***	7.793***	9.214***	0.787	0.836	0.720***	0.802*
Region-5		1.278		2.079***	1.003			2.925***	0.365***	1.515***		0.687***
Region-6		0.774*		0.997	0.770*				0.408***	0.980		0.814*
Region-7				1.068	0.545***				0.619			1.875***
Region-8					2.087***				0.550*			1.117
Region-9					1.270*				0.871			0.839
Region-10					1.566***							
Region-11					1.109							
-2 (log Likelihood)	12,145.259	18,147.553	7,462.729	6,490.346	12,764.156	5,830.423	7,713.604	12,744.711	5,004.244	5,308.533	9,075.011	11,548.133
Chi-square	1,556.47***	3,556.88***	6,305.57***	865.47***	1,888.32***	797.12***	2,817.19***	3,607.74***	427.54***	1,260.50***	670.33***	1,717.70***
Weighted N	9,980	17,141	11,281	10,018	11,151	7,363	8,007	12,005	12,382	4,860	10,449	9,975

Data Source: DHS (1994-2002). ® Reference category; * (p <=0.05); **(p <=0.01); & ***(p <=0.001) significance levels. HH - Household head. N/B: Guyana MICS not included. P=Names of Sub-regions/States/Provinces by Country

Cote d'Ivoire	Ethiopia	Haiti	Kenya	Mozambique	Namibia	Nigeria	Rwanda	South Africa	Tanzania	Uganda	Zambia
1.Center	1.Tigray	1.Metropolitan Area	1.Nairobi	1.Niassa	1.Northwest	1.North East	1.Kigali	1.Western Cape	1.Coastal	1.Central	1.Central
2.North	2.Amhara	2.North	2.Central	2.Cabo Delgado	2.Northeast	2.North West	2.Northwest	2.Eastern Cape	2.Northern Highlands	2.Eastern	2.Copperbelt
3.West	3.Oromiya	3.South	3.Coast	3.Nampula	3.Central	3.South East	3.Southwest	3.Northern Cape	3.Lake	3.Northern	3.Eastern
4.South	4.SNNP		4.Eastern	4.Zamb'zia	4.South	4.South West	4.Central-South	4.Free State	4.Central	4.Western	4.Luapula
	5.Addis		5.Nyanza	5.Tete		5.Central	5.Northeast	5.KwaZulu Natal	5.Southern Highlands		5.Lusaka
	6.Other States*		6.Rift Valley	6.Manica				6.North West	6.Southern		6.Northern
			7.Western	7.Sofala				7.Gauteng			7.North-western
				8.Inhambane				8.Mpumalanga			8.Southern
				9.Gaza				9.Northern Province			9.Western
				10.Maputo							
				11.Cidade de Maputo							

5. Further research is needed to study the factors related to broader outcomes among not only orphans but also those children living with severely ill parents in high-prevalence areas and at sub-national levels to facilitate development of appropriate interventions. These studies should not exclude children 15 to 17 years old.
6. Migration is an important aspect for research to address in order to determine how the HIV/AIDS pandemic is affecting the mobility of children and to better understand changes in orphan and vulnerable children status in different communities.
7. Children living with extended relatives and non-relatives may be disadvantaged and are in need of protection from exploitation. National policies should be designed to protect these children from exploitation as child workers and also to provide subsidized or free primary education for children affected by HIV/AIDS.
8. Programs should be scaled up to provide medical, psychological, and socioeconomic care and support to improve accessibility of orphans and other vulnerable children to means of meeting their basic needs and improving their quality of life.
9. Community-based training and education programs are needed to prepare non-parental caregivers (such as grandparents) for orphan care, including protecting children from HIV infection.
10. Interventions and information, education, and communication strategies should be targeted toward women, because most orphans live in female-headed households.

Additional Notes

Background Review

Although complete data are not available for a systematic examination of the living conditions of orphans in developing countries, a number of isolated situation analysis studies have provided some information about their situation. For example, studies in Africa have found that children who lose one or both parents are traditionally incorporated into families of relatives who support and protect them (Hunter & Williamson, 1998). A study conducted by Ayieko (1997) in Kisumu, Kenya, indicated that orphaned children reared in familiar surroundings with relatives develop better socially, mentally, and emotionally than those who do not remain with relatives, and that they should be cared for in such situations for as long as possible. Increasingly, however, the combination of the rapid escalation in the number of orphans and the reduced number of adult relatives to absorb them, compounded by poverty, puts orphaned children at increased risk of abandonment with no one to care for them.

Furthermore, the effects of AIDS on children are even more traumatizing, because the vulnerability begins when the parents fall sick. In some cases, the children are forced to care for the parents until they die. By the time the parent(s) die, most of the available resources have been used for medical treatment and funerals, thus reducing the resources left for the children. As a result, the experiences both before and after the actual orphaning of these children have potential severe consequences, including poor health and malnutrition, poverty, and psychological effects.

Health and Nutritional Effects

Only a few studies have examined the impact of orphan status on child health. A recent study in Malawi examined the survival and physical well-being of children under 5 years of age by maternal HIV status and parental mortality. The findings showed that mortality was much higher for children of HIV-positive mothers than those of HIV-negative mothers (Crampin et al., 2003). Children under age 5 are particularly more vulnerable to the effects of HIV/AIDS because they are undergoing rapid development and require nurturing, proper care, and adequate access to food and health care services. Other studies have noted that orphaned children are more likely to have stunted growth and overall poor health, mainly because of unmet nutritional needs (World Bank, 1999a). In Uganda, studies showed that orphans' health and nutrition status was worse than that of non-orphans (Deininger et al., 2001; Wakhawenya et al., 2002).

Socioeconomic Effects

Several studies conducted to analyze the effects of HIV/AIDS on children have focused on socioeconomic aspects, especially schooling, because data are available. Poverty is an important factor that increases children's vulnerabilities because poor children lack the means for meeting basic survival needs. Any parental death increases children's vulnerability to socioeconomic problems, such as lack of education, which have other long-term effects including poor human development, intergenerational poverty, and overall poor quality of life (Filmer and Pritchett, 1999). Parental deaths from AIDS may cause prolonged economic problems for children because before parents die, they fall sick, stop working, and spend most of the family resources for medical and funeral expenses. Funeral ceremonies in some communities are very expensive (Nyambedha et al., 2001). Furthermore, according to Williamson (1998), it is not uncommon to find relatives who seize key assets from orphaned children, thus leaving them more vulnerable to further exploitation.

Psychological Effects

The data for assessing the psychological effects of parental loss on orphans are currently insufficient. However, some trends, including changes in household living arrangements, reveal the forces that shape the experiences of these children. Parental illness and death, as well as the effects of separation from siblings after being dispersed among different relatives for care, cause psychological effects that may include anxiety, depression, and fear for these children (Nampanya-Serpell, 1998). Sometimes the caregivers of these children are young or very old and may not be equipped with the necessary information and resources to provide care and to help orphans and children made vulnerable by HIV/AIDS cope with their traumatizing situation. Furthermore, some relatives or non-relatives may exploit these children as laborers and baby-sitters, forcing them to drop out of school. Indeed, in a study in Addis Ababa, Ethiopia, orphans were more likely to be exploited as child domestic workers than non-orphans (Kifle, 2002).

Methodology

This study uses data from DHS and MICS surveys that provided lists of all usual members living in the household. Dependency ratios were analyzed using data from all household members. The analysis of child situations looked at children aged less than 15 years, while analysis of school enrollment looked at ages 6 to 17 years, with some further analysis on children aged 6 to 14 only. The surveys provided data on orphans through household schedules in which information on the parental survival status for each member under age 15 was collected. The surveys also provide information on other independent variables for all household members, including age, sex, education, type of residence, region of residence, total number of household members and their relationships to the household head, and household socioeconomic status.

While most of these variables are fairly straightforward, household socioeconomic status deserves further explanation. Socioeconomic status is a composite variable created using six household items: ownership of radio, television set, car, modern floor, modern toilet facility (pit latrine or flush system), and whether a household uses electricity. Each of these variables was recoded into binary variables with the value zero indicating the household did not own the item and 1 to indicate that the household did own the item. A single scaled variable measuring socioeconomic status was then computed from the recoded variables by adding all the binary variables with values ranging from zero for households with none of the items to six for households with all six. The socioeconomic index was further recoded into three categories of socioeconomic status: (1) low, indicating a value of 0-1; (2) medium, indicating a value of 2-3; and (3) high, indicating a value of 4-6. For comparison purposes, the wealth quintiles for Guyana were recoded further into three categories (low, medium, and high). The wealth quintiles were already calculated using the principal component analysis methodology, which has been used extensively by the World Bank, by aggregating assets owned and housing quality variables for some countries (Gwatkin et al., 1999; Filmer and Pritchett, 1998a).

Because of the small proportion of orphans in some geographical divisions within some countries, the distribution of orphans by sub-region in each country was carefully analyzed. Sometimes divisions were combined to make larger divisions. For example, in Haiti, regions were used instead of provinces, and in Ethiopia, small states with under-15 populations totaling about 1% of the national under-15 population were combined to a category called "Other States."

In this study, the dependent variable – child well-being – is measured in terms of percentage living with immediate family members or other relatives, age of head of household (productive adult), household socioeconomic status, and school enrollment status. This paper presents the distribution of all children (orphans and non-orphans) aged 0 to 14. Chi-square was used to investigate the relationship between orphan status and selected child well-being factors. However, the multivariate analysis was restricted to school enrollment for children aged 6 to 14 years because it is the only variable for which data are system-

atically available. Logistic regression analysis was used to evaluate the relationship between orphan status and the likelihood of enrolling in school while controlling for other explanatory variables. The explanatory factors include orphan status (mother or father or both deceased), age and sex of head of household, sex and age of child, region of residence, residence type (rural/urban), household wealth/socioeconomic status, relationship of child to head of household, and total number of household members.

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Appendix

Table 10: Total Household Age Composition and Dependency Ratios (DR), Orphan and Non-Orphan Households by Country over Two Time Periods (1990-1995 and 1997-2002)

Country/Age/DR	Household Surveys, 1990-1995			Household Surveys, 1997-2002		
Cote d'Ivoire 1994-1999	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	4.0	4.7	4.5	-	-	5.0
Adults (15-59) %	46.0	44.5	49.3	-	-	51.2
Children (0-14) %	50.0	50.8	46.1	-	-	43.8
Dependency Ratio	117.6	124.8	102.7	-	-	95.4
Ethiopia 2000	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	-	-	-	4.4	5.5	5.6
Adults (15-59) %	-	-	-	46.6	46.2	49.7
Children (0-14) %	-	-	-	49.0	48.3	44.6
Dependency Ratio	-	-	-	114.6	116.4	101.1
Guyana 2000*	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	-	-	-	6.0	7.1	6.8
Adults (15-59) %	-	-	-	56.0	54.5	54.8
Children (0-14) %	-	-	-	38.1	38.5	38.4
Dependency Ratio	-	-	-	83.6	78.7	82.6
Haiti 1994/95-2000	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	5.5	7.2	7.7	5.2	7.7	7.9
Adults (15-59) %	46.8	45.6	50.6	46.4	43.5	50.6
Children (0-14) %	47.7	47.2	41.7	48.4	48.8	41.5
Dependency Ratio	113.5	119.2	97.6	115.5	130.0	97.4
Kenya 1993-1998	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	4.0	4.4	6.0	3.4	4.1	5.7
Adults (15-59) %	41.8	39.4	45.5	44.5	42.8	49.0
Children (0-14) %	54.2	56.2	48.5	52.1	53.1	45.3
Dependency Ratio	139.2	154.1	120.00	124.7	133.6	104.0
Mozambique 1997	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	-	-	-	4.2	4.9	6.4
Adults (15-59) %	-	-	-	45.7	42.3	48.4
Children (0-14) %	-	-	-	50.1	52.8	45.2
Dependency Ratio	-	-	-	118.7	136.4	106.4
Namibia 1992-2000	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	7.7	8.4	9.1	6.9	9.7	7.9
Adults (15-59) %	45.8	42.1	49.0	45.3	36.2	47.9
Children (0-14) %	46.6	49.6	42.0	47.8	54.2	44.2
Dependency Ratio	118.6	137.7	104.1	120.8	176.5	108.6

Table 10 (*continued*): Total Household Age Composition and Dependency Ratios (DR), Orphan and Non-Orphan Households by Country over Two Time Periods (1990-1995 and 1997-2002)

Country/Age/DR	Household Surveys, 1990-1995			Household Surveys, 1997-2002		
Nigeria 1990-1999	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	-	-	6.9	4.3	5.6	5.8
Adults (15-59) %	-	-	46.0	45.6	43.3	49.8
Children (0-14) %	-	-	47.1	50.1	51.1	44.5
Dependency Ratio	-	-	117.3	119.5	130.8	101.0
Rwanda 1992-2000	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	4.6	6.1	5.9	2.9	4.9	4.9
Adults (15-59) %	43.8	43.6	46.6	44.3	41.6	46.8
Children (0-14) %	51.6	50.3	47.5	52.7	53.5	48.3
Dependency Ratio	128.1	129.4	114.7	125.5	140.4	113.5
South Africa 1998	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	-	-	-	6.3	7.7	8.8
Adults (15-59) %	-	-	-	47.5	43.4	53.5
Children (0-14) %	-	-	-	46.2	48.9	37.8
Dependency Ratio	-	-	-	110.6	130.5	87.1
Tanzania 1992-1999	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	4.8	5.8	6.3	5.1	7.5	6.4
Adults (15-59) %	45.5	43.8	48.1	45.4	41.3	48.1
Children (0-14) %	49.6	50.5	45.7	49.5	51.1	45.5
Dependency Ratio	119.6	128.5	108.1	120.4	141.8	107.8
Uganda 1995-2000	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	3.5	5.6	5.1	3.2	5.8	4.8
Adults (15-59) %	41.0	36.8	44.0	41.1	38.2	43.9
Children (0-14) %	55.6	57.6	50.9	55.7	56.1	51.3
Dependency Ratio	144.2	171.6	127.3	143.4	161.8	127.7
Zambia 1992-2002	**Non-Orphan**	**Orphan**	**All Households**	**Non-Orphan**	**Orphan**	**All Households**
Elderly (60+) %	3.0	4.2	4.3	3.1	5.2	4.6
Adults (15-59) %	46.9	43.6	49.4	45.8	43.4	48.1
Children (0-14) %	50.1	52.2	46.2	51.1	51.4	47.3
Dependency Ratio	113.4	129.2	102.3	118.2	130.4	108.1

Data Source: : Demographic and Health Surveys (DHS) or (*) for Multiple Indicator Cluster Surveys (MICS).- No household survey or parental survival status data available

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