

UNIVERSITY OF MINNESOTA



## The Whole Village Project

Village Reports for Siuyu, Masweya, and Mtunduru  
in Singida Rural District

October, 2010

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## ACRONYMS

COSTECH	Tanzania Commission for Science and Technology
FGD	Focus Group Discussion
HH	Household(s)
IYCF	Infant and Young Child Feeding
KAP	Knowledge, Attitude and Practices
NGO	Non-Governmental Organization
NIMR	National Institute of Medical Research
SFTZ	Savannas Forever Tanzania
STD	Sexually Transmitted Disease
TAWIRI	Tanzanian Wildlife Research Institute
TDHS	Tanzania Demographic and Health Survey
TFR	Total Fertility Rate
THIS	Tanzania HIV Indicator Survey
TSH	Tanzania Shillings
UMN	University of Minnesota
USAID	U.S. Agency for International Development
WHO	World Health Organization
WVP	Whole Village Project

## 1 INTRODUCTION

The purpose of this report is to present district officials and local leaders with multi-sectoral data across several villages in this district. We hope these data may be useful in seeing the strengths and weaknesses of different sectors and the variation across villages. These data may be useful in prioritizing future development projects. The villages represented here were selected by our donors for their project purposes and therefore they cannot be seen as representatives of the district. The data however, illustrate the diversity of economic and social development activities occurring across villages in the district.

The Whole Village Project (WVP) is collecting and analyzing comprehensive data at village level over an extended period of time. A collaborative project between Savannas Forever Tanzania (SFTZ), a Tanzanian NGO, and the University of Minnesota, USA, the Whole Village Project has a **vision** to work with people in rural Tanzanian villages to acquire and use knowledge for improving long-term health and well-being while sustaining natural resources. To achieve this goal, quantitative and qualitative data are systematically collected in villages across northern Tanzania by the Savannas Forever team in partnership with staff from the National Institutes of Medical Research (NIMR) and the Tanzanian Wildlife Research Institute (TAWIRI). The data are sent to the University of Minnesota for analysis and then returned to Tanzania. The SFTZ team returns to each village to present the data to villagers for their own use and decision-making. WVP intends to return to each village every two to three years in order to assess the sustainability of development projects over time and identify best practices.

In this report, we present a summary of data collected within a single district. Village-level surveys were conducted in Singida Rural District in Siuyu, Masweya, and Mtunduru from May to June 2010.

## 2 METHODOLOGY

The Whole Village Project's survey tools and methodology has been reviewed and approved by multiple Tanzanian research authorities (COSTECH, NIMR and TAWIRI) and the University of Minnesota institutional review board for the ethical conduct of human subjects research. Further, permissions are sought by the respective regional, district and village leadership before beginning data collection.

Village selection is based on the funding agency priorities and permission of government leaders. After permissions are received the Savannas Forever Tanzania (SFTZ) staff arrange dates for data collection with district officials and village leaders. A Tanzanian survey team of 6-7 personnel work in each village for 5-6 days. The team begins with a sensitization session with leaders and community members to introduce the project and staff. Village leaders provide a roster list of heads of households and the research team uses a computer generated randomization program to select 60-70 households from this list. A standardized quantitative survey is conducted in each selected household.

Data collection tools include both quantitative and qualitative instruments. All interviews and focus groups are conducted in Kiswahili whenever possible. If respondents are not fluent in Kiswahili, a bi-lingual villager is identified by the leadership to translate from the local language to Kiswahili. The core household survey asks questions about livelihood, earnings, educational status of all household members, assets, health and natural resource use. From the household members, two brief individual level surveys are conducted: (1) an HIV/AIDS knowledge, attitude and practice (KAP) survey and (2) an anthropometric assessment of children under-five and nutrition questions. For the KAP survey, up to 4 adults (15 years or older) within the household are asked to complete the survey. All interviews are conducted in a private space where no one else may listen. All children in the household under five are weighed and measured and the primary caretaker is asked to answer the accompanying survey.

In order to obtain more contextual data about each village, a number of focus group and key informant interview tools are used. Focus groups are conducted with men and women, village leaders, and a special group of agriculturalists and livestock holders. Village leaders invite villagers to participate and try to obtain diversity of representation by sub-village, age and gender. The research team also conducts an institutional assessment of village organizations with a mixed group of 10-15 villagers to identify the different NGOs, religious organizations, and government services working in the village and their respective strengths, weaknesses and contributions to the community. In addition, key informant interviews are conducted with school headmasters and clinic officers. A detailed list of survey instruments and focus group guides can be found in Appendix A.

### **3 KEY FINDINGS**

The research captured a broad range of information among the three villages surveyed in Singida Rural District. Overarching district strengths, gaps, and opportunities were pulled from the abundance of data collected and analyzed and are presented below. Detailed results and discussion are presented in Section 4.

#### **3.1 District Strengths**

The number of educational buildings indicates a relatively high level of opportunity for children. Overall, there are 5 primary schools and 3 secondary schools among the three villages with Siuyu having 2 primary schools and 2 secondary schools. Moreover, there are a large number of institutions, local and external, that provide assistance to the schools in the form of buildings, food, and fees. The high level of support for schools will likely have a positive impact on those who attend.

Some environmental health indicators appeared to be relatively high in Singida Rural District. Among the three villages surveyed, Masweya, Mtunduru, and Siuyu, there was a high percent of households with latrines. Nearly all households (over 95%) in Mtunduru and Siuyu have access to a latrine. Masweya has the lowest percentage of latrines for households at 80%. Access to latrines and appropriate waste disposal reduce opportunities for communicable disease transmission and water borne diseases.

The number of households with mosquito nets is also very high. Over 90% of households in Masweya have mosquito nets and the village with the lowest number, Mtunduru, still has over three-fourths of households with mosquito nets. The figures show that at least one-third of all mosquito nets in the district are treated with insecticide. Such high proportion of mosquito net ownership further prevents the spread of illness and disease.

#### **3.2 District Gaps**

A lack of access to clean water is an area of concern for each of the villages. The majority of households in Masweya, Mtunduru, and Siuyu rely on unprotected wells and surface water as their primary water source. Tap water and protected wells and springs constitute less than 10% of the water source in any of the villages. Generally, access to water is further constrained by the distance to the nearest water source. It takes an average of nearly 30 minutes for households in the surveyed villages to collect and bring back water. Moreover, there are relatively few households



that take measures to treat water, often described as muddy, prior to drinking. Preventable diseases, such as typhoid, have been attributed to the poor water quality by focus groups and clinic staff.

Disease among children is also an area of concern. Cough and flu among the under five age group has afflicted over half of the children in the Singida Rural villages. Although rate of documentation for pneumonia was relatively low, an under diagnosis as cough and flu may contribute to that low number. The possibility of misdiagnoses may be further exacerbated by focus group's opinion of generally poor quality clinic services. Due to understaffing and high demand, many villagers find health services to be inadequate; Masweya villagers are particularly challenged as they must travel to Mtunduru for their first line of treatment.

The distance to receive health service is another critical problem according to qualitative data particularly in Masweya. This problem has been compounded by the poor road quality that often prevents medical officers and supplies from reaching the villages and dispensaries. However, the inadequate road system also severely impacts access to markets and living costs as higher fees are charged that result from increased transportation costs.

Despite high rates of latrine ownership, the methods of waste disposal are generally unsanitary. Indiscriminate disposal, burning and burying are the primary methods of disposal. Such practices have adverse effects on health, particularly for children as worms have been and can continue to be an issue.

### **3.3 Opportunities**

Within the strengths and weaknesses, there are a number of opportunities that district and village leaders can undertake. The already high percentage of mosquito net coverage has established conditions that can make 100% coverage possible. Moreover, the villages can move toward significantly increasing the number of nets treated with insecticide.

The relatively large number of school buildings and groups devoted to education could be expanded. Many focus groups were often satisfied with the schools and quality of education but would also like to see improvements. As there are already a large number of village, government and NGO institutions devoted to enhancing education opportunities, conditions for improving school conditions and quality of teachers may already exist within the villages. Cultivating and

continuing relationships with governmental and non-governmental organizations with respect to education would help to further improve facilities and tools necessary for a high quality education.

Vaccination rates for children under five years old are very high in Singida Rural District. The encouraging figures can be seen as an opportunity to achieve a 100% vaccination rate. Vaccinations for measles and intakes of Vitamin A have been shown to be the least frequent and should be targeted.

Increasing vaccination rates for goats and chickens and maintaining them for cattle will reduce the rate of livestock loss to disease, which is very high for chickens. Veterinarians and community animal health workers in the villages should provide information on Newcastle disease.

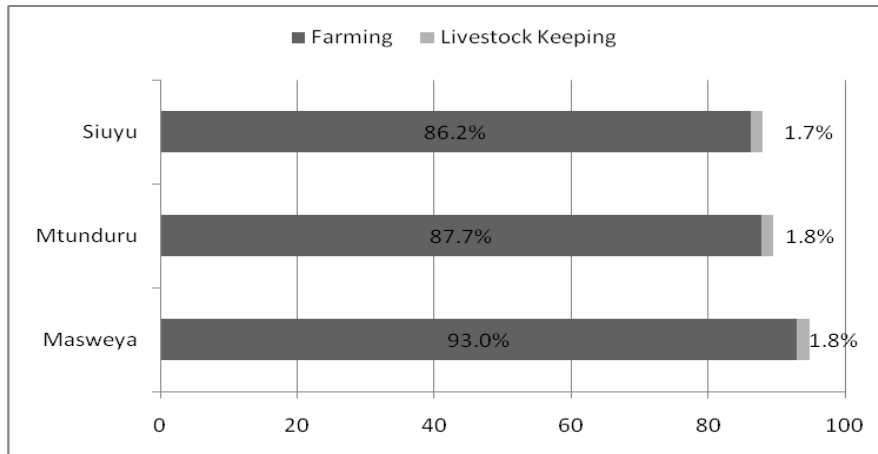
Households with kitchen gardens tend to have less serious food insecurity problems. Specifically, villages with higher coverage of kitchen gardens tend to have a lower percentage of households that went to bed hungry, ate limited variety of food, and fewer underweight children. However, kitchen garden training remains very limited in the villages surveyed in Singida Rural district. Village leaders have the opportunity to convey knowledge about kitchen gardens as a means to alleviate food insecurity.

## **4 RESULTS AND DISCUSSION**

### **4.1 Household Livelihood and Assets**

The majority (85%) of household heads surveyed in Singida Rural District report either farming or livestock keeping as their main occupation (see Figure 1). With less than 2% of household heads in Siuyu, Mtunduru and Masweya reporting livestock keeping as their primary occupation, the vast majority in Singida Rural District are involved in agricultural work. Siuyu has the largest number of household heads who listed small business as their primary occupation at 6.9% compared to Masweya (0%) and Mtunduru (1.8%).

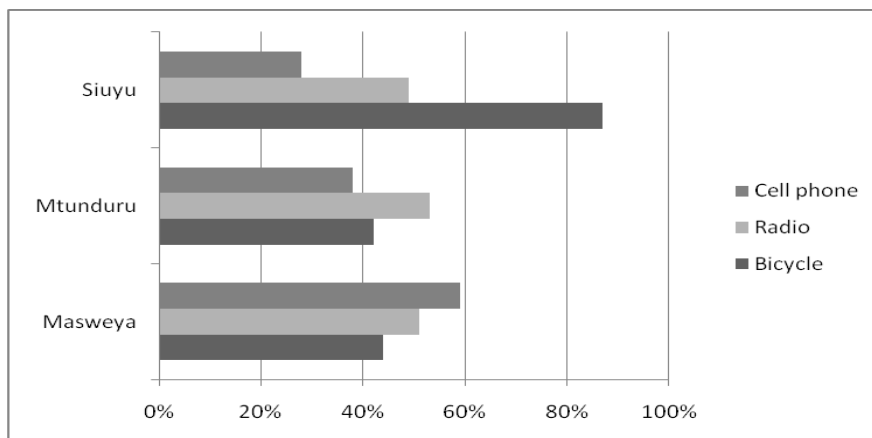
**Figure 1. Main Occupation of Household Head**



Overall, more households are headed by a man than a woman in all three villages surveyed although a surprising number of households are headed by women. The largest percentage of female headed households is in Mtunduru where 24.6% of households surveyed are headed by a woman. Female headed households are lower in Siuyu (20.7%) and Masweya (10.5%).

The number of durable goods, or assets, is used as a proxy indicator of a household's socioeconomic status. Of the goods mentioned in the survey, including radios, bicycles and cell phones, radios are generally the most common item to own among the three villages as shown in Figure 2.

**Figure 2. Average Household Ownership of Durable Goods by Village**



Approximately half of respondents own a radio in Masweya (50.9%), Mtunduru (53.3%) and Siuyu (49.2%). Bicycles are the second most common item in Masweya (44.1%) and Mtunduru (41.7%)

whereas Siuyu households own nearly twice as many (87%). Masweya has more than double (59%) the cell phone ownership of Siuyu (28%).

Cash income is most commonly generated through the sale of cash crops in the three villages. Masweya, Mtunduru and Siuyu all list farming and production and sale of cash crops as a primary source of income, whether in terms of cash or goods. In Siuyu and Masweya, alcohol sales are also an important activity. Mtunduru has the highest percentage of households that engage in cash crop sales at 90%, significantly higher than that of Masweya at 30% of households and 10% of households in Siuyu. The crops grown in the villages tend to vary, although sunflowers and their prices (20,000 Tsh per sack) are a common crop among the three villages.

Focus group discussion (FGDs) facilitated with men, women, and village leaders investigated activities that could improve the livelihoods of village members. The highest ranked recommendations by participant type are listed in Table 1.

**Table 1. Village Recommended Activities to Improve Local Livelihoods**

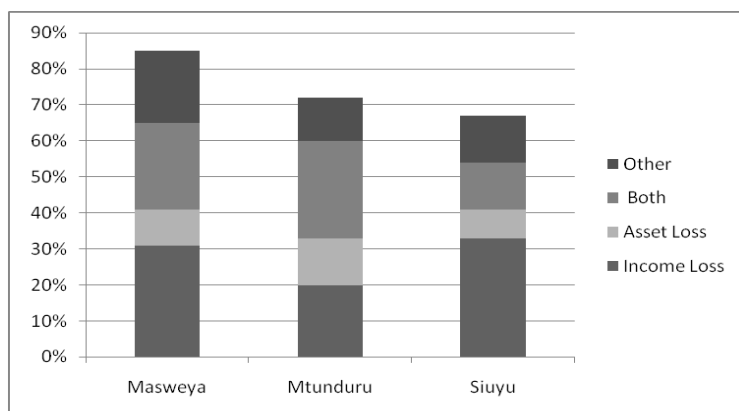
Village	Male	Female	Village Leader
Masweya	Borehole Microfinance Sewing Machine	Microfinance Borehole Sewing machine	Subsistence Farming Cash crops
Mtunduru	Borehole Poultry production Vegetable farming	Vegetable Farming Microfinance Sewing machine	Farming Cash crops Livestock
Siuyu	Borehole Beekeeping Vegetable farming	Microfinance Borehole Vegetable farming	Subsistence Farming Cash crops Small Business

Across the three villages, male focus groups ranked drilling a borehole for water as their top priority. Village leaders tended to focus on agricultural production and subsistence farming to improve local livelihoods. The female focus groups in Masweya and Siuyu were more interested in developing small businesses through microfinance while the Mtunduru group wanted more vegetable farming.

In a given year, a household may experience unanticipated crises such as the death of a family member, the loss of a job or the loss of crops or livestock. Some families or households are able to

cope with these losses better than others. When we asked households in Singida Rural District about unanticipated income or asset losses it became apparent that the villages as a whole were coping with significant economic losses this year: 90% in Masweya, 77% in Mtunduru and 80% in Siuyu. The unexpected loss of income, assets, both or other cause are captured in Figure 3.

**Figure 3. Unexpected Loss of Income or Assets by Village**



For the majority of households in Masweya and Mtunduru they identified the death of someone in the household or a relative outside the household as the primary cause of income or asset loss. In Siuyu, they reported that the loss of crops due to weather as the primary cause of unexpected income.

## 4.2 Village Institutions

In each village, the research team meets with a cross section of village members and asks them to name and assess the different government, village and non-governmental organizations (NGOs) and committees functioning in their village. Table 2 provides a summary of the institutional analysis conducted in Singida Rural district.

**Table 2. Institutional Resources by Village**

Institution	Masweya	Mtunduru	Siuyu	Sector
<b>Government or private sector (based in village)</b>				
Education	x	x	x	education
Health Service		x	60%	health
Religious Institution (church, mosque, etc.)	x	x	x	faith-based
Veterinary Services			x	animal health

<b>Institution</b>	<b>Masweya</b>	<b>Mtunduru</b>	<b>Siuyu</b>	<b>Sector</b>
Village Council /Government	x	70%	65%	politics/government
NSSF (National Social Security Fund)			40%	Social welfare [provide pension to members – often late in payment]
PSPF (Public Service Pensions Fund)			80%	Social welfare [provide pensions]
TANESCO			60%	energy
Village Market	x	x	x	
TASAF (Tanzania Social Action Fund)	80%	100%		Social Welfare [helped build primary school classrooms]
<i>Sub-total</i>	<b>5</b>	<b>6</b>	<b>9</b>	
<b>Village Committee/Group</b>				
Environment/Natural Resources Cmte	x	x	x	environment, farming/agriculture
Education Committee	x	x	x	education
Water Committee		x	x	water, civil service
Ag & Livestock Cmte			x	farming/agriculture
Land Cmte		x	x	environment, farming/agriculture
Hazards/Disaster Cmte	x	x	x	aid/development, social welfare
Farmers Coop/Ag Assn		x	x	farming/agriculture
Security Cmte	x		x	legal/law enforcement, social welfare
Community Development/ Planning/ Financial Cmte	x	x	x	business development, financial/socioeconomic, politics/government, social welfare
Health, HIV/AIDS Cmte		x		health, HIV/AIDS
Social Services/ Social Welfare Cmte	x		x	social welfare
<i>sub-total village committee/group</i>	<b>6</b>	<b>8</b>	<b>10</b>	
<b>NGO</b>				
mobile clinic	80%			Health [provide vitamin A drops; support to pregnant mothers]
UNICEF			x	Social welfare [provide food and school supplies to orphans]
St. Paul organization			x	Social welfare [provided school uniforms for orphans]
MVC (Most Vulnerable Children)- no agency named	60%			Social welfare [contributed money for food for 119 children; bought school uniforms for 17]
Action Aid	30%	100%		Aid/development [promised to build nursery school & sponsor children education – no action in Masweya; built secondary school buildings in Mtunduru]
Faida Mali			40%	Farming/Agriculture, Business

Institution	Masweya	Mtunduru	Siuyu	Sector
				Development [support jatropha production]
Partners for Development project JANI		30%		Farming/Agriculture [support jatropha production]
MEDA (Mennonite Economic Development Association)			x	Health [provided mosquito nets]
MEM/School	90%			Education [helped build & renovate school buildings]
PRIDE			50%	Financial/socioeconomic [provide loans]
SACCOS		x	50%	Financial/ Socioeconomic
SEMA (Sustainable Environment Management Action)				Health [provide training in mosquito net usage and malaria control]
TCRS (Tanzania Christian Refugee Service)		X		Social welfare [Helped dig wells]
Wind Power			10%	energy, environment [provide education on the use of wind power for electricity]
World Food Program	75%	70%		Food/Hunger [provided food in schools]
<i>Sub-total NGOs</i>	<b>5</b>	<b>5</b>	<b>7</b>	
	<i>16</i>	<i>19</i>	<i>26</i>	

Village institutions and services are categorized according to the following types: government or private sector institution providing services within the village, a village committee or group, and NGOs or third party. The sector column indicates the type of service or resource that the institution provides. The sector of an institution provides a general description of services provided; however, such descriptions are not exhaustive nor do organizations necessarily provide the same services to different villages. The list of organizations named is not exhaustive and reflects the knowledge and experience of those individuals who participated in the focus group. For example in Siuyu, most of the participants were over 60 years of age and so agencies involved with pensions were raised while some NGOs working locally went unnamed.

Siuyu had the most institutions at the government, village committee/group, and NGO levels while Masweya had the fewest. Institutions that focus on health and education were the most common in all three villages. Although this support has made a significant difference in the quality and quantity of services available, the deficits in education and health or so great that more assistance in these sectors is still needed.

## 4.3 Education

### 4.3.1 Household-Head Education

Among household heads in Masweya, Mtunduru, and Siuyu, primary school completion rates vary significantly. 59.7% of household heads in Masweya completed at least primary school compared to 64.9% in Mtunduru and 77.6% in Siuyu. Fewer numbers of household heads listed themselves as having no education in Masweya (17.5%), Mtunduru (21.1%) and Siuyu (10.3%). According to the household surveys, there are no secondary school graduates and few obtained other types of education such as adult education and vocational training. Masweya and Siuyu each had one household head who received adult education.

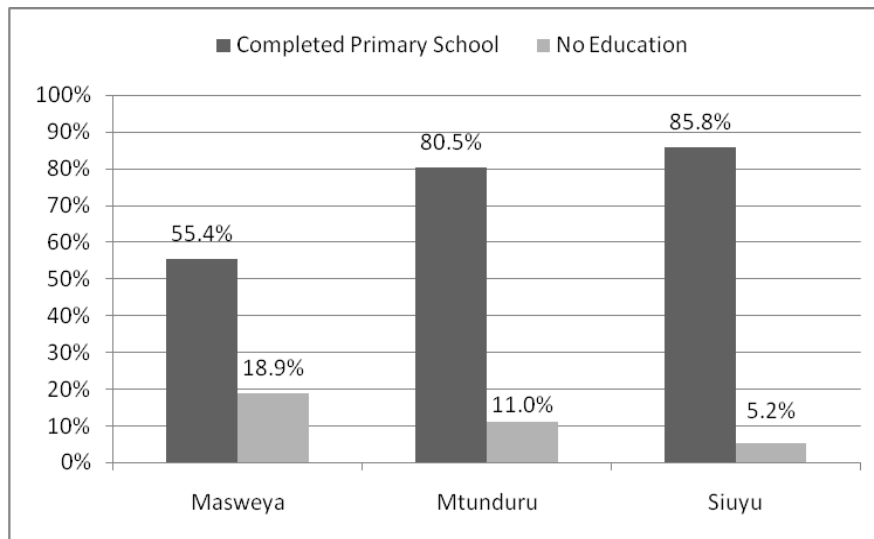
In Masweya and Siuyu, a higher percentage of female household heads had completed primary school compared to men. 66.7% of women household heads in Masweya and 83.3% in Siuyu finished primary school compared to 58.9% of male household heads in Masweya and 73.9% in Siuyu. Male household heads in Mtunduru were more likely to have completed primary school with a 70.1% completion rate compared to 42.9% of female household heads. Mtunduru also had the highest number of female household heads with no education as 50% of those surveyed did not receive any education. Among the male household heads, 11% to 18% did not receive any education in the surveyed villages.

### 4.3.2 Primary School Completion

Figure 4 presents data for primary education completion rates among all adults (15 years and older) in Masweya, Mtunduru, and Siuyu.



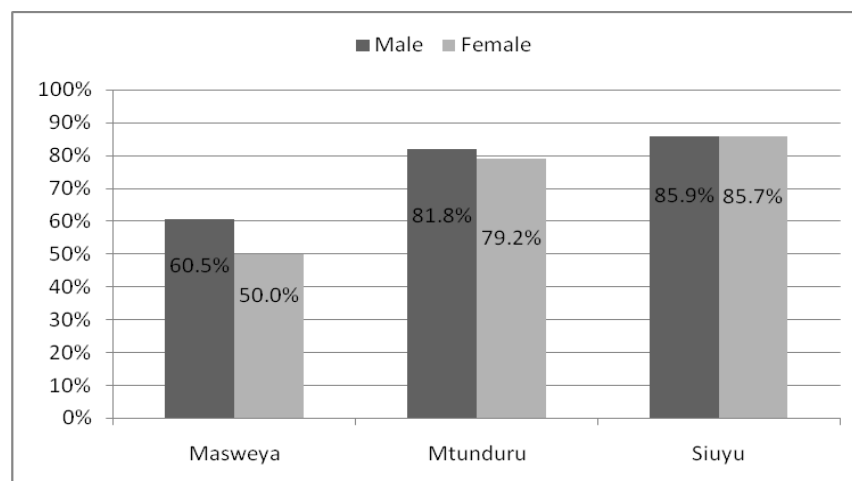
**Figure 4. Percent Adults Completed Primary School versus No Education**



Adults in all three villages had more primary school graduates than those with no education. Siuyu had the highest percentage of adults who completed primary school at 85.8% and the lowest percentage of adults with no education at 5.2%. Mtunduru was fairly comparable as 80.5% of adults completed primary school and 11% had no education. Masweya had both the lowest percentage of adults who completed primary school with a 55.4% completion rate and the highest percentage of adults with no education at 18.9%.

Figure 5 presents the data regarding primary school completion rates disaggregated by gender in Masweya, Mtunduru, and Siuyu.

**Figure 5. Adult Primary School Completion Rates, Disaggregated by Sex**



In the surveyed villages, men tended to have higher primary school completion rates. The education disparity was the highest in Masweya as 60.5% of males finished primary school compared to 50% of females. There was no significant difference in primary school completion rates between men and women in the other two villages. Siuyu had the highest percentage of primary school graduates for both males and females among the three villages. Masweya had the lowest percentage of primary school graduates for both males and females.

Attending and completing secondary school was much less likely in the surveyed villages. Siuyu had the highest percentage of adults who attended secondary school with 19.4% compared to Mtunduru (14.3%) and Masweya (1.3%). Siuyu also had the highest number of secondary school completions as 2.6% had finished while both Masweya and Mtunduru had no secondary school completions.

#### 4.3.3 Access to Primary Education

Interviews were conducted with school headmasters to determine school assets and environment. Table 3 provides a general overview of school conditions as reported by the headmasters for students in Masweya, Mtunduru, and Siuyu.

**Table 3. Primary School Environment**

Village/School	Students Enrolled	Teacher to Student Ratio	Classroom to Student Ratio	Textbook to Student Ratio	% Teachers completed Form IV
Masweya	542	1 : 99	1 : 84	1 : 8	100%
Mtunduru	811	1 : 68	1 : 81	1 : 5	100%
Siuyu	454	1 : 51	1 : 57	N/A	100%

Masweya and Siuyu have two primary schools each within the village and Mtunduru has one. Table 3 provides the approximate average number of students enrolled per school, of which Mtunduru has the highest with 811 students. Mtunduru also has the highest number of teachers per primary school with 12. All primary school teachers in the surveyed villages completed Form IV although none have received a diploma. The teacher to student ratio ranges from 1:51 to 1:99. The classroom to student ratio was similar as it ranged from 1:57 to 1:84. There were relatively few textbooks per student in Masweya as there was one textbook for every 8 students. In Mtunduru, there was approximately 1 textbook for every 5 students.

School headmaster and male and female focus groups identified several weaknesses of the primary schools in their village. Absenteeism was reported as a problem in Siuyu Primary School. Teacher and book shortages, inadequate school and teacher living facilities, in particular a shortage of latrines, and no water and electricity in some of the schools. Despite the weaknesses determined by the focus groups, there was a generally positive view of the education provided by the schools and its teachers.

A challenge for most primary school teachers is on-going training and teacher education opportunities. Headmasters noted that few teachers had a strong command of English and almost none had any exposure to computers. Further, a shortage of teachers in some schools limits the quality of education they are able to deliver.

A student's ability to focus and pay attention in school is in part related to their energy and hunger level. According to headmasters, the majority of students arrive at school without having eaten any food or only having tea. Each school provided some form of food to students. In Masweya and Mtunduru primary schools, meals were provided at no cost; however, in Siuyu students had to pay a fee.

**Table 4. Percent of Students Attending Primary School Hungry**

Village	% Students Attending School Without Eating Food or Having Tea Only	School Meals Provided
Masweya	87%	Breakfast of porridge at no cost and lunch of stiff porridge with beans/peas, mixture of maize and beans at no cost
Mtunduru	97%	Breakfast at no cost
Siuyu	100%	Breakfast of maize and beans at a cost of TSH 1000; lunch at a cost of TSH 1000

Providing students with meals (generally porridge or *uji*, maize, and beans) has been labeled a strength by both male and female focus groups.

#### 4.3.4 Access to Secondary School

There are secondary schools in Mtunduru, a government school, and two in Siuyu, one government and one private. Both schools in Siuyu are reported to have had good examination results although parents complain about the high fees for the private school. In Mtunduru, the headmaster reported

that students' examination scores have increased and that there has been a significant improvement in student discipline. Headmasters at all secondary schools noted the value of improved resource needs (books, training in computers, laboratory equipment) and on-going teacher training opportunities.

## **4.4 Health**

### **4.4.1 Access to Health Services**

Access to health services is central to the delivery of prevention and care services and health outcomes. Here we consider service availability and service quality as a measure of "access." Service availability can include distance or time required to reach the facility (or trained health providers), hours of operation, appropriate personnel on-staff, and necessary equipment to run laboratory tests; service quality may address proper staff training and appropriate treatment (and availability of commodities) according to established guidelines.

Both Siuyu and Mtunduru have dispensaries in the village while residents of Masweya travel to the dispensary at Mtunduru. Mtunduru focus groups noted that the local dispensary is overstretched and lacks quality. Both dispensaries in Siuyu and Mtunduru are staffed by medical officers and one nurse in Siuyu and two nurses in Mtunduru. The dispensaries also provide reproductive and child health services and vaccinations for children however; since the dispensary in Siuyu is run by a Catholic organization they do not offer any family planning services. The Siuyu clinic also reports assistance from two NGOs, MEDA and SEMA in the provision of mosquito nets, particularly for pregnant women.

### **4.4.2 Malaria and Other Illnesses**

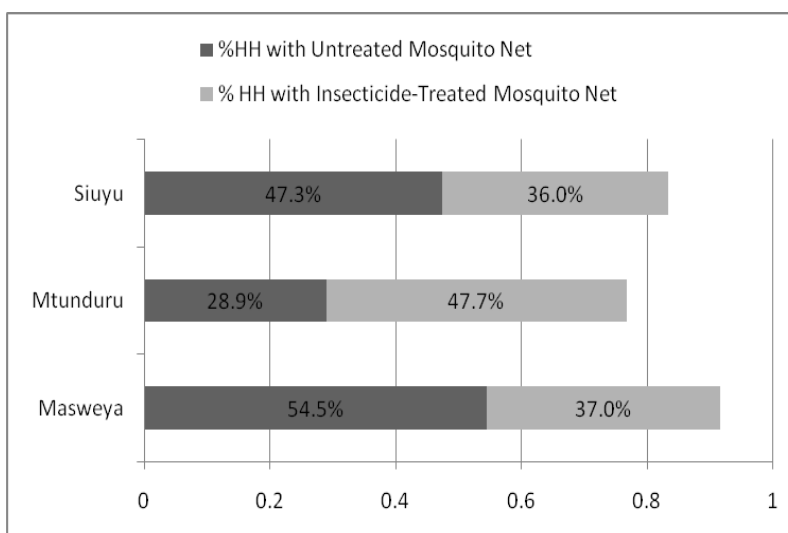
Through focus group discussions with men, women and village leaders, and clinic staff we asked each group what the primary health problems are in their village for men, women and children. The most commonly reported illnesses for each population are reported in Table 5 with malaria occurring most frequently. For children, pneumonia, diarrhea and worms were frequently mentioned as leading diseases. Women and men both suffer from various reproductive health problems including sexually transmitted diseases (STDs); women also complain of problems associated with pregnancy and pre/post-natal health. The clinic officers in Siuyu and Mtunduru also noted that adults come in with symptoms of diarrhea and typhoid. In Masweya, typhoid was mentioned by focus group participants as a major concern given the poor quality of water in their village.

**Table 5. Common Illnesses by Population Group and by Village**

Village	Men	Women	Children
Masweya	Malaria Reproductive health Infectious disease (typhoid, diarrhea)	Malaria Reproductive health Infectious disease (typhoid, diarrhea)	Malaria Pneumonia Diarrhea
Mtunduru	Malaria STDs Hernias	Malaria Reproductive health including STDs	Malaria Pneumonia Diarrhea/worms
Siuyu	Malaria STDs Diarrhea Typhoid	Malaria Reproductive health Diarrhea	Malaria Pneumonia Diarrhea/worms

Given the prevalence of malaria, we ask each household head if they own at least one mosquito bed net, and if so, if it has been treated with insecticide repellent. Figure 3 presents data by village on percentage of households owning a mosquito net that has ever been treated with an insecticide and percentage of households owning an untreated mosquito net. Overall mosquito net ownership is high, however with the exception of Mtunduru, less than half of mosquito nets per household have been treated.

**Figure 6. Households with Mosquito Nets, Treated and Untreated**



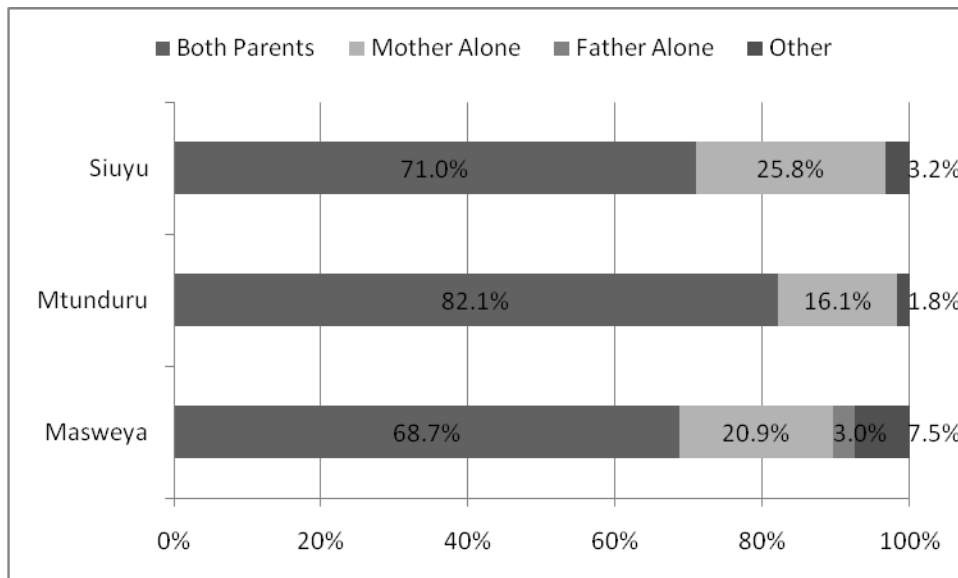
In Masweya and Siuyu, only 36-37% of households own treated mosquito nets although net ownership is quite high at 90% and 83% respectively. Mtunduru has the highest proportion of treated mosquito nets as 62% of all mosquito nets are treated with insecticide.

### 4.4.3 Under-Five Health Status

The health status of children under five is critical to their future physical, mental and emotional quality of life as well as expected mortality. In order to assess the quality of children’s health at this age we inquire about primary caretakers, exclusive breastfeeding as an infant, primary food eaten, vaccines, and experience with disease. In addition, the field team weighs and measures the height of each child to determine how close they are to a normal growth curve given their age. (We use World Health Organization age, height and weight measure standards.)

The health status of children under five can be correlated to the presence or absence of biological parents, especially the biological mother. Figure 7 shows that the majority of children under five are cared for by both parents. Of those surveyed, nearly all natural mothers are currently alive with the exception of one observation in Mtunduru. Most children live with their natural mothers in Masweya (94%), Mtunduru (96.4%) and Siuyu (100%). The majority of natural fathers are alive and live in the household. Mtunduru has the lowest rate of natural fathers living with the under five child at 83% while 86 to 87% live with the child in Masweya and Siuyu. Data regarding the status and location of the natural father was far less complete. A higher percentage of fathers live outside the household, from 6 to 17% compared to mothers living outside the household, from 0 to 6 %.

**Figure 7. Primary Caretaker of Children Under-Five**



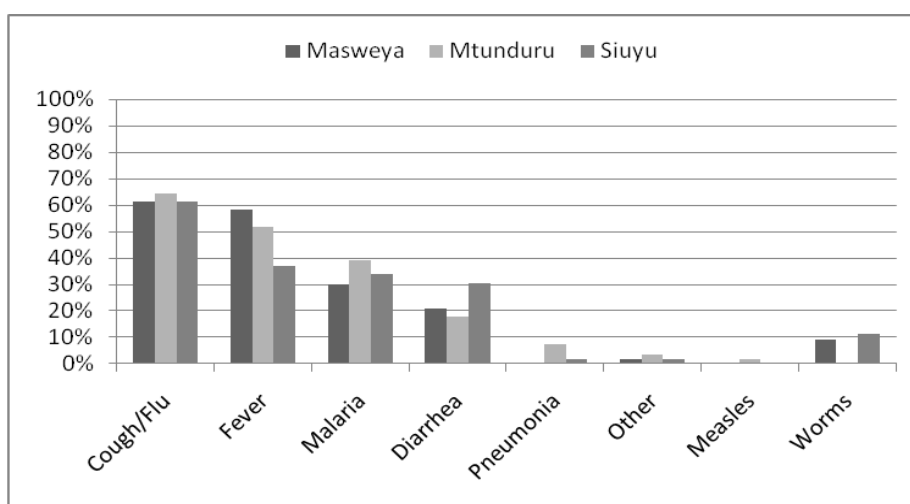
In households surveyed where the primary caretaker is someone other than the mother and/or father, the primary caretaker tends to be a grandparent in Masweya (4.5%), Mtunduru (1.8%), and

Siuyu (1.6%). Among the villages, there was 1 recorded case of a child under five whose primary guardian is a step-parent.

In the villages surveyed in Singida Rural District, approximately 12% of children under five are considered frequently sick and several households (no more than 2 to 3 per village) indicated that they had lost a child under five within the past two years.

Figure 8 provides a picture of the disease burden for children under five in Singida Rural District.

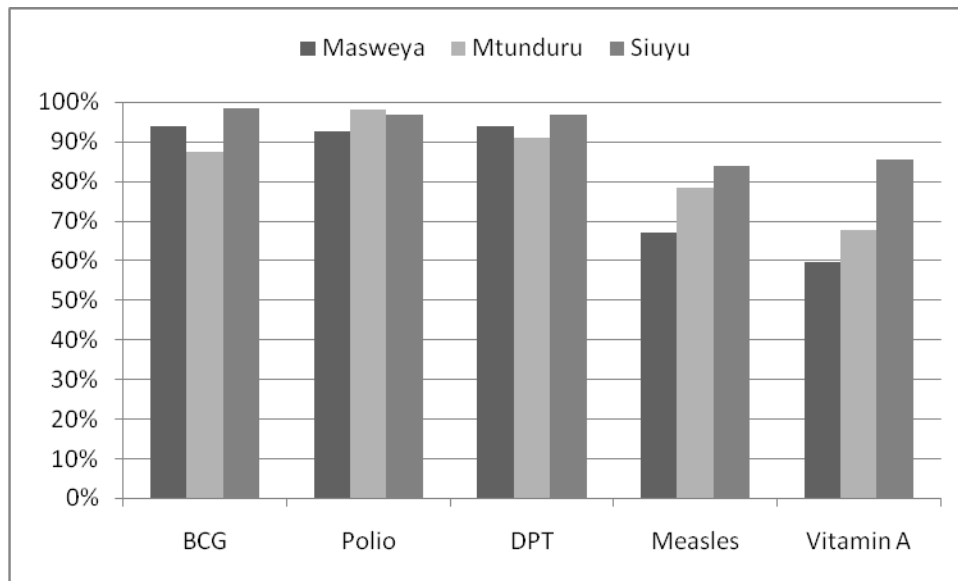
**Figure 8. Percent Children Under-5 Who Have Had a Disease in the Past 3 Months**



The most common diseases for children under five years old are cough and flu, fever, diarrhea, and malaria. Many of the cases of cough and flu may also be under-diagnosed cases of pneumonia. Over 60% of children suffered from cough or flu in all three villages. Fever was also a frequent affliction in which approximately half, except for Siuyu, had fevers in recent months. Occurrences of malaria and diarrhea were less commonplace but still numerous. Nearly 30 to 40 percent of children under five were afflicted by malaria and between 20 and 30 percent had diarrhea. Other diseases such as measles, pneumonia and worms were less frequent. No children under five had any documented case of measles in Masweya and Siuyu and only 2% were afflicted in Mtunduru.

According to World Health Organization (WHO) guidelines, children are considered fully vaccinated when they have received a vaccination against tuberculosis (BCG), three doses each of the DPT and polio vaccines, and a measles vaccination by the age of 12 months. Figure 9 lists the percentage of children under five who have been vaccinated by village; data were also collected on percentage of children under five who had received a vitamin A supplement.

**Figure 9. Percent Children Under-5 Vaccinated and Vitamin A Supplement**



Over 90% of under five children were vaccinated for polio and DPT in all surveyed villages in Singida. Tuberculosis vaccinations were also over 90% in Masweya and Siuyu while Mtunduru had the lowest vaccination rate at 87.5%. Measles vaccine was the least addressed in the three villages as children under five in Masweya (67.2%), Mtunduru (78.6%), and Siuyu (85.5%) were vaccinated. Fewer children received vitamin A supplements in Masweya (59.7%) and Mtunduru (67.9%) than children in Siuyu (85.5%). It should be noted that the data shown in Figure 9 do not take into account age at vaccination or number of doses, so a determination of whether or not children are fully vaccinated is not possible.

#### 4.4.4 Environmental Health

Many infectious diseases, especially diarrheal diseases, can be a result of poor hygiene and contaminated water and food sources. Waste disposal is generally a problem. In focus groups, most villagers indicated that there was 'indiscriminate disposal' of waste followed by burning or burying refuse within a compound. Only Mtunduru reported a formal refuse collection system but this was not the most common form of disposal.

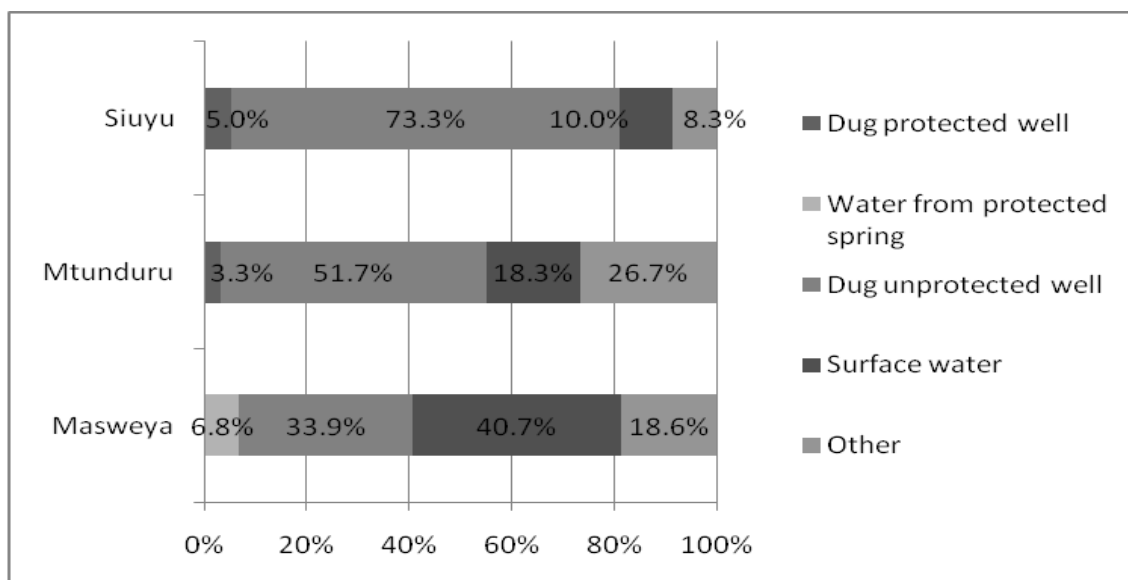
The majority of respondents in the three villages had access to latrine (personal or shared). Latrine access was nearly 100% in Mtunduru followed by 97% in Siuyu and 80% in Masweya.

In Singida Rural District, access to protected drinking water is a serious problem in all surveyed villages. The percentage of households with access to any protected drinking water source is as low



as 7% in Masweya, 3% in Mtunduru, and 8% in Siuyu. Unprotected well and surface water are the most common sources of water which account for approximately 74% in Masweya, 70% in Mtunduru, and 83% in Siuyu. Figure 10 below shows the primary sources of drinking water.

**Figure 10. Primary Sources of Drinking Water**



In the qualitative data, focus group participants noted that the water source was often muddy and of poor quality with relatively frequent cases of typhoid. Given the poor water quality, it is surprising that less than a third to a quarter of households treat their water prior to drinking it (28.8% of households in Masweya, 36.7% in Mtunduru, and 25% in Siuyu). In Mtunduru, an NGO, TCRS had built 10 wells but they all dried up. The necessity for drilling deep wells was noted in all villages given this tendency.

Most households spend on average 30 minutes to collect water including time walking to the source, collecting the water and returning home. Table 7 shows the variation in travel time between villages. The actual distances for most villagers range from 1 km to 3 km.

**Table 6. Average Time to Collect Water**

Village	Minutes to Collect
Masweya	31.1
Mtunduru	35.6
Siuyu	27.5

Cooking fuel type and primary cooking location affect respiratory health, primarily of women and children. In addition, accidents around fires lead to more burns for women and children. The villages almost exclusively use firewood for cooking (97 to 98% of all households surveyed). Between 2 to 3% of households cooked with charcoal.

#### 4.4.5 HIV/AIDS

In addition to the household survey, up to four adults were interviewed in each household on their Knowledge, Attitude and Practice (KAP) regarding HIV/AIDS. This section focuses exclusively on correct knowledge of HIV prevention data as collected through these KAP surveys. A more detailed report that includes additional data and analysis on HIV/AIDS knowledge, attitudes, and practices is available from Savannas Forever Tanzania (refer to Acknowledgements section for contact information).

This discussion on HIV knowledge examines the differences in knowledge level between men and women. Therefore, a comment on the survey sample is necessary, specifically that the male sub-sample is unlikely to be representative of all adult males in the village surveyed. In aggregate, there is a wide divergence in response rates between eligible males and females. (Eligibility is defined as anyone 15 years or older living in the household.) The main reason for this variance in response rate is that men were less likely to be present when the KAP survey was conducted.

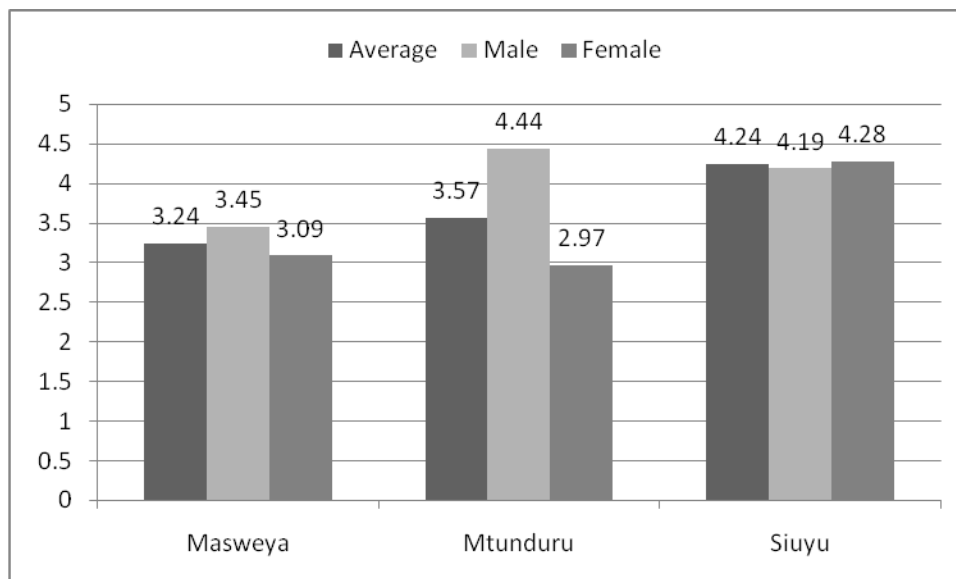
To assess an individual's correct knowledge of HIV/AIDS, the KAP survey asks six questions:

1. Can people reduce their chances of getting the HIV/AIDS virus by having just one sex partner who has no other partners?
2. Can people get the HIV/AIDS virus from mosquito bites?
3. Can people reduce their chances of getting HIV/AIDS by using a condom every time they have sex?
4. Can people get the HIV/AIDS virus by sharing food with a person who has HIV/AIDS?
5. Is it possible for a healthy looking person to have HIV/AIDS?
6. Can HIV/AIDS be transmitted from mother to child?

Correct responses to the six questions are added together to compute a composite HIV/AIDS knowledge score, which can range from 0 (no correct answers) to 6 (all correct answers). Village and sex differences in average HIV/AIDS knowledge scores are summarized in Figure 11. All but

four respondents (one man and three women) across the villages knew that there was at least one way to prevent HIV.

**Figure 11. Village HIV/AIDS Knowledge Scores, Disaggregated by Sex**



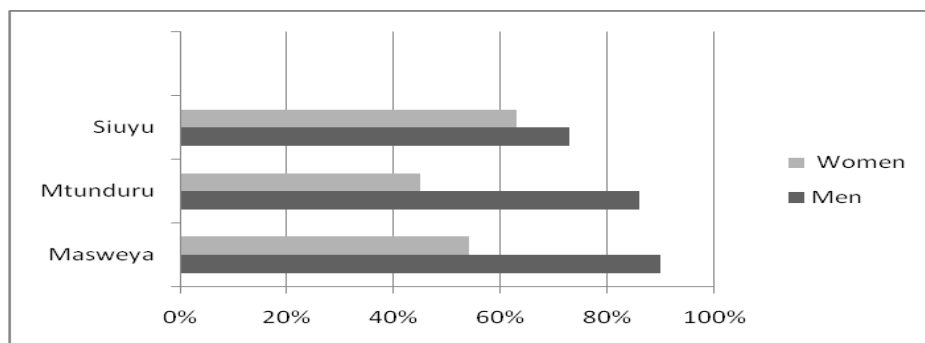
Siuyu has the highest average score of 4.24 compared to Mtunduru of 3.57 and Masweya of 3.24. Men's HIV/AIDS scores were higher than women's in Masweya and Mtunduru but women scored slightly higher than men in Siuyu although the difference is not statistically significant. Mtunduru had the highest score for men with an average of 4.44. The women's score in Siuyu (4.28) was significantly higher than the women's scores in the other villages. In general, the higher one's level of education the higher one tends to score on HIV knowledge surveys; this association holds true here where Siuyu had the highest rates of primary school completion followed by Mtunduru and Masweya.

There are no reported NGO or government education programs on HIV/AIDS described by any of the villagers in focus groups or key informant interviews. However, in Siuyu, the clinic does offer HIV testing for pregnant women.

In individual interviews, men and women are asked if they have talked with their primary partner about HIV. The differences between the sexes is quite significant; less than half of women in Mtunduru say they have talked to their partners compared to more than 80% of men. A similar pattern can be seen Masweya. Only in Siuyu is the sex difference relatively of 63% of women compared to 73% of men saying they have spoken to their partner about HIV (See Figure 12). These

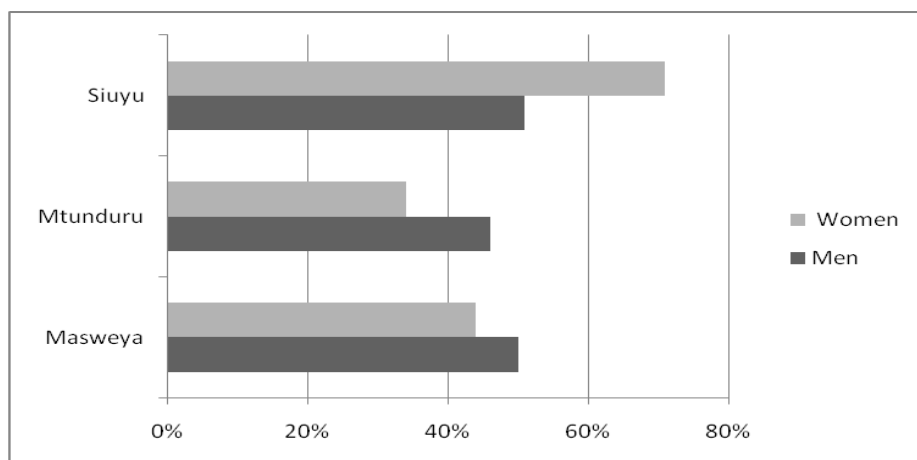
differences may in part be explained by gender role differences in which women do not feel it is appropriate to publicly (in an interview) admit to these conversations or they feel it is not appropriate to raise them with their partner. Men may also be over-reporting because they feel it is the socially correct response.

**Figure 12. Percent Men and Women Who Have Talked to their Partner about HIV**



Respondents were also asked if they had ever been tested for HIV. There were significant differences by sex in who had been tested within each village but no patterns overall. Women in Siuyu had tested more than any other sub-sample at 71% (see Figure 13.) More men in Mtunduru and Masweya had tested for HIV.

**Figure 13. Percent Men and Women Who Have Ever Tested for HIV**



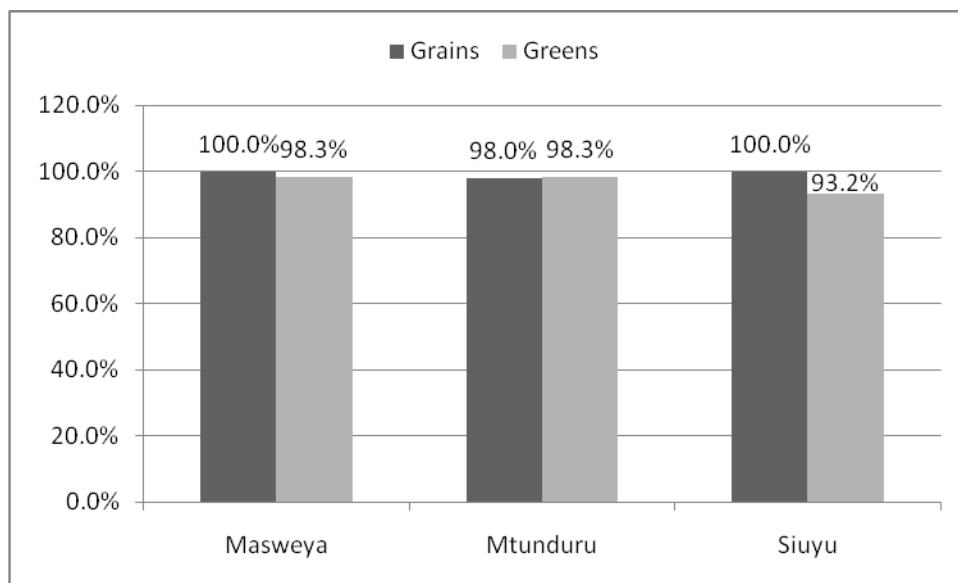
The HIV prevalence in these communities is unknown but it is encouraging to see relatively high rates of HIV awareness although both Mtunduru and Masweya could use additional educational training around prevention and care.

## 4.5 Nutrition and Food Security

### 4.5.1 Household Nutrition

There appears to be a diversity of daily diets and consistent intake of recommended vitamins and nutrients among the households surveyed. The vast majority of households regularly consume both grains and green vegetables every day. In Masweya and Siuyu, 100% of households surveyed reported that they eat grains while 98% in Mtunduru do the same. 98.3% of households in Masweya and Mtunduru regularly eat green vegetables while Siuyu has the lowest percentage of regular consumption at 93.2%.

**Figure 14. Households Eating Grains & Green Vegetables All (or More) of Last 7 Days**



Households in Singida Rural District consume many other types of food such as meats, legumes, and red vegetables with the average number of different food types eaten in a week varying from three to 12. The three villages had relatively close averages but Masweya had the least variation at 5.8 food types per week followed by Siuyu at 6.2 and Mtunduru at 6.6. On average, households in Siuyu have the highest intake of meat protein, about 1.63 times per week whereas Mtunduru households consume 1.55 per week and Masweya 1.47 per week.

### 4.5.2 Infant and Young Child Feeding

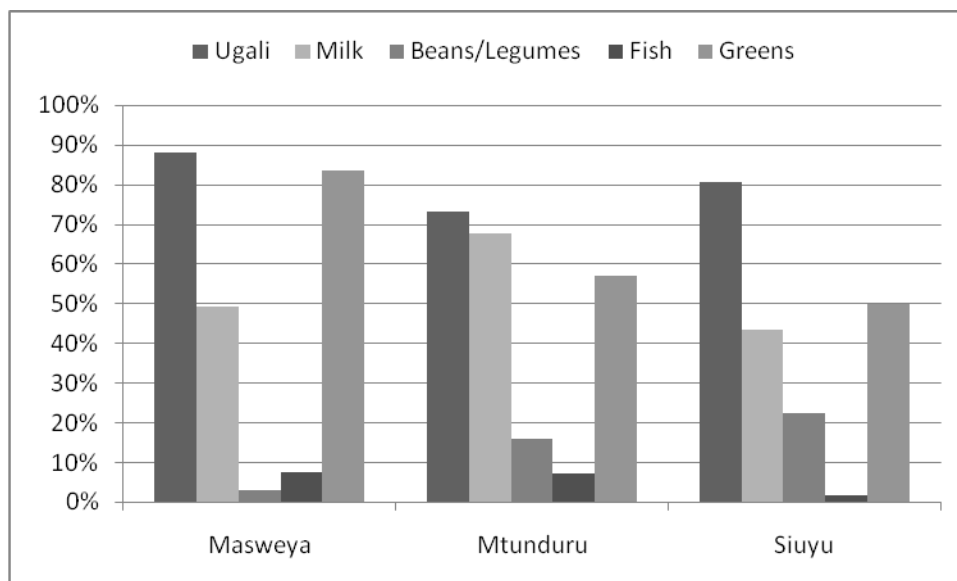
Optimal infant and young child (age 6-23 months) feeding practices (IYCF) include: early initiation of breastfeeding, exclusive breastfeeding during the first 6 months, continued breastfeeding for up to two years and beyond, timely introduction of complementary feeding at 6 months, frequency of feeding solid/semisolid foods, and the diversity of food groups fed to children 6-23 months. Few

infants in any village were exclusively breastfed up to the recommended age of 6 months. On average, most mothers introduced complementary feeding at 5 months.

#### 4.5.3 Under-Five Nutrition

The most commonly eaten foods by children under five in the last 24 hours in households surveyed are listed in Figure 15. (Percentages labeled in Figure 14 indicate the most commonly eaten food by children under five in that village.)

**Figure 15. Percent Children Under-5 Eating Food Item in Last 24 Hours**



The most common food eaten by children under five in the last 24 hours is ugali, ranging from 73.2% of children in Mtunduru to 88.1% in Masweya. Green vegetables and milk were the second most common food according to respondents. Children under five in Masweya generally had more green vegetables (83.6%) while about 50% children in both Mtunduru and Siuyu ate greens within the past day. Milk was the most common source of protein for young children in all villages although Mtunduru had the highest percentage (67.9%) of milk consumption by that age group. Other sources of protein, such as fish, eggs, and beans or legumes, were very limited. 4 children in Mtunduru and 1 child in Siuyu has eaten eggs in the last 24 hours. Fish was also scarcely consumed, ranging from 1 child in Siuyu to 5 children in Masweya. Although children in Siuyu generally had less meat protein, Siuyu had the highest proportion of children eating beans or legumes in the last 24 hours of 22.6% with Masweya having the lowest at 3%.

The weight-for-height z-score describes current nutritional status and is based on a child’s height and weight compared to international averages established by the World Health Organization

(WHO). Children whose Z-scores are below two standard deviations (-2 SD) from the norm are considered moderately underweight, and those below three standard deviations (-3 SD) are considered severely underweight. Very few children were identified as malnourished. Mtunduru has the highest total percentage of moderately underweight children as 5.4% (3 children); in Masweya, one child (1.5%) was identified as severely underweight and one (1.5%) as moderately underweight; encouragingly, no children in Siuyu were identified.

#### 4.5.4 Food Security

A series of nine questions are used to create a food security scale. Sample questions include, have you gone a day and night without food in the past month; or have you had to eat a limited number of foods in the previous week or reduced how much you eat. The higher the food security score, the greater the average food insecurity experienced. Of the three villages surveyed in Iramba District, households in Masweya were the most food secure with a mean index score of 2.1 followed by Mtunduru at 2.3 and Siuyu with the greatest food insecurity at 4.0. This statistic correlates with the fact that 55% of households in Siuyu who experienced an unexpected income or asset loss in their home attributed it to substantial loss of crops due to the weather.

Responses to some of the specific questions in the food security index illustrate this disparity further. In Siuyu, 67.8% of households worried about a lack of food compared to Masweya at 36.2% and Mtunduru at 30%. Siuyu had the highest percentage of all food insecurity questions and households had higher rates of hunger before going to bed (20.3% of households) and having no food for a 24 hour period (13.6% of households). Masweya and Mtunduru were more closely related to each other in terms of worrying and limited access to food. However, no respondents from Masweya reported a full day and night without food.

**Table 7. Percent of Households that Experienced a Food Insecurity in Last 4 Weeks**

	Masweya	Mtunduru	Siuyu
Worried not enough food	36.2%	30%	67.8%
Ate fewer meals	22.4%	23.3%	54.2%
No food in house	13.8%	13.3%	27.1%
Went to sleep hungry	1.8%	10%	20.3%
One day and night without food	0%	1.7%	13.6%

#### 4.5.5 Kitchen Gardens

Kitchen gardens can be a small but efficient means of assuring some household access to easy to grow basic crops such as greens or tomatoes that can be an excellent source of food security even in

times of drought. Very few households in any village had received any kitchen garden training. Siuyu and Mtunduru each had 3 households (5%) that reported having had some training and Masweya had the fewest with 2 households (3.5%). The lack of training may be reflected in the relatively low number of households that grow kitchen gardens in which Siuyu and Mtunduru had 9 households (15%) growing and Masweya had 3 households (5%).

#### 4.6 Agriculture

Farmers in Singida Rural District often cite limited farmland and inadequate equipment, seeds or soil quality as persistent problems. Many farmers engage in intercropping to mitigate the problems associated with erosion and lack of irrigation systems.

There is quite a variation in the average farmland owned or rented per household and acres cultivated among the three villages (see Table 8).

**Table 8. Average Acres Owned and Cultivated by Village**

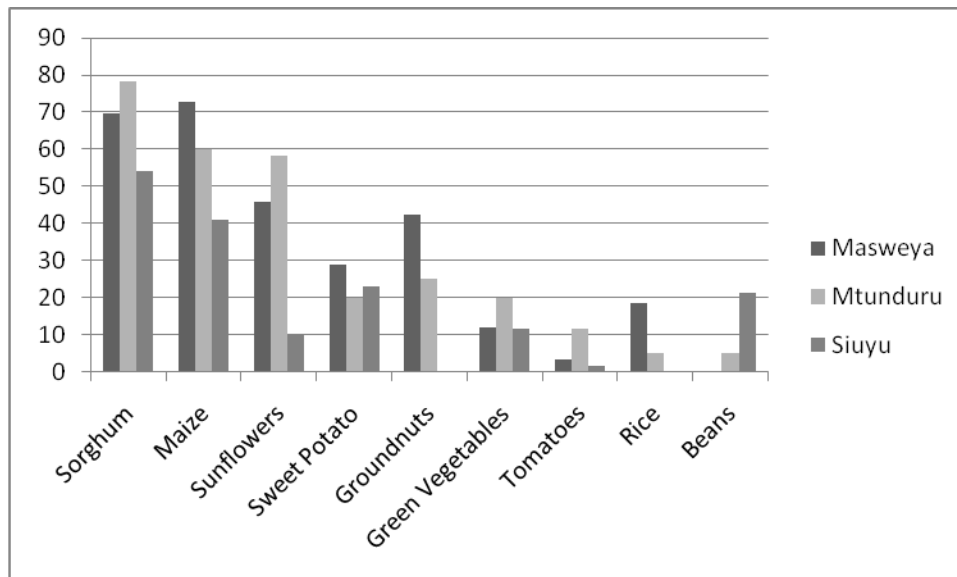
	Average Acres Owned or rented	Average acres cultivated
Masweya	12.4	7.5
Mtunduru	8.7	5.1
Siuyu	5.6	2.1

In keeping with the food security scores, a greater percent of households in Masweya are cultivating crops, averaging 7.5 acres, followed by 5.1 acres in Mtunduru, and 2.1 acres in Siuyu.

A variety of crops are grown for both subsistence and cash crop production. Figure 16 highlights the mostly commonly grown crops and the average percent of households growing each crop per village.



**Figure 16. Percent Households Cultivating by Number of Crops Cultivated**



Sorghum, maize, and sunflowers are the most commonly grown crops. Most farmers grow sorghum in Mtunduru (78%) and Siuyu (54%). Masweya farmers primarily focus on maize (72%). Other crops such as sunflowers, sweet potatoes, green vegetables and tomatoes are grown by some households in all the villages, though generally more sparsely. Based on the surveys, 90% of farmers in Mtunduru rely heavily on sales of cash crops, significantly higher than that of Masweya farmers (30%) and Siuyu farmers (10%). Sunflowers are the most commonly mentioned cash crop. In Table 9 below for the three most commonly grown crops, we illustrate the average unit of crops harvested, sold and percent sold by household within each village.

**Table 9. Average Household Units of Crops Harvested, Sold and Percent Sold by Village**

	Sorghum			Maize			Sunflowers		
	Avg. # Units Harvested	Avg. # of Units Sold	% Sold	Avg. # Units Harvested	Avg. # of Units Sold	% Sold	Avg. # Units Harvested	Avg. # of Units Sold	% Sold
Masweya	10.8	4.8	44%	6.7	2.2	33%	24.6	23.6	96%
Mtunduru	4.5	0.5	11%	7	0.9	13%	25.6	24.6	96%
Siuyu	1	0.02	2%	0.7	0	0	3.2	3.1	97%

Focus group discussions (FGDs) were facilitated with top farmers (typically 4-6 farmers per village), as defined by village leaders, and agricultural extension officers (if applicable) to further

assess the agricultural environment in each village. Qualitative data collected and analyzed from these FGDs are presented in Table 10.

**Table 10. Qualitative Data on District Agricultural Environment**

Village	% HH that Irrigate Plot	% HH using Fertilizer		% HH with Soil Erosion as Serious Problem
		Inorganic	Organic	
Masweya	10%	2%	80%	70%
Mtunduru	0%	0%	80%	50%
Siuyu	0%	0%	50%	25%

Inorganic fertilizer use (2% of farmers) and irrigation techniques (10% of farmers) are only found in Masweya, though very limited in scope. The vast majority, 80% of farmers, in Masweya and Mtunduru and half of the farmers in Siuyu use organic fertilizers (manure) from livestock. General views on soil erosion differed among the villages. Farmers in Masweya identified soil erosion as a “very serious” problem, Mtunduru farmers listed it as a “slightly serious” problem, and Siuyu farmers described soil erosion as a “not serious” problem. Techniques such as terracing, planting elephant grass and trees, and growing sisal are being applied.

#### 4.7 Livestock

Livestock ownership is an important source of supplemental income and food security. The majority of households own some type of livestock. Table 11 below illustrates the average household livestock ownership. Overall, Mtunduru farmers own more livestock by all types than households in the other villages.

**Table 11 . Mean Number of Livestock Owned per Household by Village**

	Cattle	Goats/sheep	Chickens
Masweya	4.9	4.5	7.2
Mtunduru	8	7.5	5.8
Siuyu	1.5	3.6	4.9

In some villages, livestock loss to disease, drought, theft or wildlife can be quite significant. For villages included here, they have been fortunate to experience relatively small percentages due to drought or theft; however disease played a significant factor in the loss of chickens (37% to 53%) and some goats as represented in Table 12. Chickens were also more vulnerable to wild animals.

**Table 12. Livestock Lost to Disease, Drought, Theft and Wildlife**

Village	Livestock	% lost to disease	% lost to drought	% lost to theft	% lost to wild animals
Masweya	Cows	6.2%	0.0%	0.0%	0.0%
	goats	14.0%	0.0%	0.3%	3.4%
	chickens	36.6%	0.0%	0.3%	22.2%
Mtunduru	Cows	3.5%	0.4%	0.7%	0.2%
	goats	9.4%	0.0%	0.7%	3.4%
	chickens	53.4%	0.1%	0.0%	9.0%
Siuyu	Cows	10.6%	0.0%	0.0%	0.0%
	Goats	12.1%	1.3%	0.0%	4.7%
	chickens	44.2%	0.0%	0.2%	13.4%

The few cattle losses due to disease may be attributed to the high level of vaccinations for cows in the villages. Mtunduru had the lowest vaccination rate at 95% while both Siuyu and Masweya vaccinated 100% of their herd. This high level was motivated by past outbreaks of contagious bovine pleural pneumonia (CBPP).

Other livestock such as goats, sheep or chickens have not been vaccinated for any type of disease. Masweya lost the most goats and sheep to disease, 14% of the herd, and Mtunduru and Siuyu lost 9% and 12% respectively. Mtunduru lost over half of its chickens (53%) to disease while Masweya lost 37% and Siuyu lost 44%. Newcastle Disease is the number one cause of chicken mortality in Tanzania yet despite this; the failure to vaccinate against this disease is likely a major cause chicken mortality.

Masweya and Siuyu both have a community animal health worker and Siuyu also has veterinary services in the village. From the data, Mtunduru has no animal health services available in the village.

#### 4.8 Human-Wildlife Conflict

There is little evidence of human-wildlife conflict in these villages although the loss of some chickens and goats due to wild animals was noted by some villagers. Masweya is the only village that mentioned a conflict with wildlife and crops as elephants had destroyed some of their crops in

the past. The focus group suggested that wild animal specialists visit the village to control the animals that destroy crops.

Further, there was little evidence of bushmeat consumption or poaching. Ninety-seven percent of respondents in Masweya, 95% in Mtunduru, and 95% in Siuyu state that they never consume bushmeat. Only 2% of households in Mtunduru identified themselves as having consumed bushmeat “very often.” Poaching by outsiders is not mentioned to be an issue in any of the three villages.

## **5 CONCLUSIONS**

### **5.1 Recommendations**

As district and village leaders review these results, it would be meaningful for them to consider how best to increase access to government services in villages such as Masweya as well as encourage wider participation by relevant NGOs in all villages. Specific recommendations we leave to district and village leaders and other local government authorities who understand the local context and can better apply these results. Our general recommendations include the following:

- District leaders share these results with other appropriate leaders and use these data to inform the design of future interventions at the village and district level.
- District leaders work closely with village leaders and water experts to determine the best means to establish a reliable, clean drinking water service in all villages.
- Build on existing strengths within these villages such high mosquito net coverage; child vaccination rates for BCG, DPT and polio and widespread latrine ownership. Villages should be encouraged to strive for 100% coverage in each of these areas.
- On-going infrastructure support is needed for roads, schools and clinics in order to improve the quality of services they are able to deliver and villagers access to transportation and markets.
- Food security issues need to be addressed in Siuyu and kitchen garden promotion should be encouraged across the villages.
- There is a need to expand access to agricultural services, the coverage of extension workers to rural villages and access to vaccinations for livestock. In addition, community level training on the value of Newcastle disease vaccinations could also significantly improve food security.

## 5.2 Next Steps

The data and analysis presented in this report will be compiled with similar data gathered and analyzed from other districts participating in the Whole Village Project (WVP). WVP will eventually conduct a big picture analysis of all compiled data to achieve its long-term project objectives, which are to:

- Identify interdisciplinary strategies that improve public health, nutrition, education, conservation and food security to help alleviate poverty and sustain natural resources, villages and wildlife in rural Tanzania;
- Establish a long-term monitoring and evaluation system to measure the effectiveness of foreign assistance programs and aid over 10-20 years in purposefully selected rural villages using validated survey methodologies;
- Provide data in a meaningful way for village self-empowerment and capacity building that leads to greater civic engagement and community capacity; and to
- Create a model for translational research and application in multiple settings.

WVP intends to return to each village surveyed in Singida Rural District in 2-3 years to re-assess the current status of each village. In the immediate future, the Savannas Forever Tanzania (SFTZ) team will return to each village to present the data collected and to discuss the results and conclusions of this report. Data and reports will also be shared with government officials and policy makers in Tanzania, and non-governmental and local government partners working on the ground in the villages surveyed.

## 5.3 How You Can Help

The purpose of this report is to provide data to district and local leaders in order to inform your decision-making for future social and economic development activities. Please communicate with the Whole Village Project staff and leaders to discuss the usefulness of these data, whether or not there are other indicators that would be useful to you, and if we have missed anything in our assessment and analysis of your village and/or district.

## **APPENDIX A – SURVEY INSTRUMENTS**

### Household level:

- Household survey
- Food security, nutrition and jatropha

### Individual surveys:

- HIV/AIDS knowledge, attitude and practice
- Under-five child anthropometric measures and health

### Focus group and key informant interview questionnaires:

- Village Resources
- Agriculture & livestock focus group
- Village leadership
- Village institutional analysis
- Women's focus group
- Men's focus group
- Headmaster questionnaire
- Health Officer questionnaire

## APPENDIX B – TABLE OF SELECTED INDICATORS BY VILLAGE

		Singida Rural District		
		Masweya	Mtunduru	Siuyu
<b>THE HOUSEHOLD AND HOUSING</b>				
	Number of households surveyed	59	60	61
	Average household size	5.97	5.57	5.56
	% households in polygamous marriage (more than 1 wife)	31%	22%	7%
	% of households headed by women	11%	25%	21%
	% of households with modern roof	25%	40%	43%
	% of households using a toilet	80%	98%	97%
	Avg time (minutes) required to collect water	31	36	28
	% households use firewood as primary energy source for cooking	98%	97%	97%
<b>EDUCATION</b>				
	% of all adults without education	19%	11%	5%
	% of household heads completed primary school	60%	65%	78%
	% of adult men completed primary school	60%	82%	86%
	% of adult women completed primary school	50%	79%	86%
	Average primary school teacher to student ratio	1 : 99	1 : 68	1 : 51
	Average primary school textbook to student ratio	1 : 8	1 : 5	Not available
	Average secondary school teacher to student ratio	Not applicable	1:53	1:74; 1:12
	Average # of years teachers stay at primary school	3.5	8	5
	Average # of years teachers stay at secondary school	Not applicable	5	3
	Ratio of female to male gross enrollment rates (primary school)	1.02	1.02	.94
	Ratio of female to male gross enrollment rates (secondary school)	Not applicable	.73	.89
<b>HEALTH</b>				
	% of households with at least one mosquito net	92%	77%	83%
	% of households with access to protected drinking water	6.7%	3.3%	8.2%
	% of households that take measures to make the water safe	29%	37%	25%
	# of hospital/dispensary/clinic in the village	0	1	1
<b>CHILDREN UNDER 5</b>				
	% of infants exclusively breast fed through 6 months of age	Not available	Not available	Not available

	Singida Rural District		
	Masweya	Mtunduru	Siuyu
Average age in months at introduction of complementary feeding	5.2	5.5	5.3
% of children whose birth mother is still alive and inside the hh	94%	96%	100%
% of children moderately to severely underweight	3%	5%	0
% of children who are vaccinated for BCG	94%	87.5%	98%
% of children who are vaccinated for polio	93%	98%	97%
% of children who are vaccinated for DPT	94%	91%	97%
% of children who are vaccinated for measles	67%	79%	84%
% of children received Vitamin A supplement	60%	68%	85%
% children with fever in past 3 months	58%	52%	37%
<b>AIDS KNOWLEDGE</b>			
% of men with high AIDS knowledge score (5-6 points)	79%	89%	88%
% of women with high AIDS knowledge score (5-6 points)	86%	82%	89%
% of women who know that a person can protect themselves from HIV	97%	93%	94%
% of men who know that a person can protect themselves from HIV	100%	100%	100%
% of men who have talked with their wife/primary partner about ways to prevent AIDS	90%	86%	73%
% of women who have talked with their husband/primary partner about ways to prevent HIV/ AIDS	54%	45%	62%
<b>FOOD SECURITY AND NUTRITION</b>			
% of households worried about food in the past 4 weeks	36%	30%	68%
% of households ate limited variety of food in the past 4 weeks	55%	75%	85%
% of hhs went one day and night with no food in the past 4 weeks	0	2%	14%
% of households that are currently growing kitchen garden	5%	15%	15%
Avg # of days/times hhs ate meat protein in past week	1.5	1.5	1.6
Avg # of days/times hhs ate legumes in past week	3	2.5	.9
Avg # of days/times in last week hh ate foods with Vitamin A	1.6	2.7	2.8
# of different types of food eaten in last week	5.9	6.7	6.2
Food Security Index (ranges from 0 to 9 with low scores indicating better security)	2.1	2.3	4.1
<b>ECONOMIC ACTIVITY, AGRICULTURE AND INCOME</b>			
% households own any agricultural land	88%	97%	93%
Average acres cultivated per household	7.5	5.1	2.1
Average # of cattle owned per household	4.9	8	4.5



	Singida Rural District		
	Masweya	Mtunduru	Siuyu
Average # of goats/sheep owned per household	4.5	7.5	2.9
Average # of chickens owned per household	7.2	5.8	4.8
% of hhs whose chicken are vaccinated for Newcastle disease	0	0	0
% of cattle lost to disease in the past 12 months	12.1%	4.3%	8.8%
% of cattle lost to drought in the past 12 months	0	0.7%	0
% of cattle lost to wildlife in the past 12 months	0	0.1	0
% of chickens lost to disease in the past 12 months	23%	36%	37%
% of chickens lost to drought in the past 12 months	0	0	0
% of chickens lost to wildlife in the past 12 months	15%	10%	10%
% of goats/sheep lost to disease in the past 12 months	12%	12%	10%
% of goats/sheep lost to drought in the past 12 months	0	0	2%
% of goats/sheep lost to wildlife in the past 12 months	3%	2%	1%
% of household heads with the main occupation of farming	93%	88%	86%
% of hh heads with the main occupation of livestock keeping	2%	2%	2%
% of HHs that irrigate the plots in village (from focus group data)	10%	0	0
% households with bicycle	44%	42%	13%
% households with radio	51%	53%	49%
% households with cell phone	22%	38%	28%
<b>KEY INSTITUTIONS</b>			
Distance to major weekly market	2 km	5 km	5 km
# of village committees/groups	6	8	10
# of NGOs	5	4	7
# of credit, banking services or VICOBA	0	1	1
<b>DEMOGRAPHICS</b>			
Religion (% Christian; % Muslim; % Traditional)	18%; 68%; 0	8%; 92%; 0	92%; 8%;0
Dependency Ratio (# of child (0-14 years) and aged (65+) population per 100 intermediate age (15-64 years)	1.17	1.19	1.14
Child-Woman Ratio (# of children aged 0-4 years per 1,000 women in the age group 15-44 years)	1.08	0.87	1.01
Sex Ratio (# of males per 100 females)	1.2	1	1.04