



Malawi Baseline Survey

Report of Findings



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In collaboration with the C-SAFE M&E team¹

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Executive Summary

C-SAFE is a jointly planned and implemented response by World Vision, CARE and CRS to the current food security problems plaguing the three southern Africa countries of Malawi, Zambia and Zimbabwe, with World Vision serving as the lead. The C-SAFE Consortium represents the most significant collaborative initiative to date (both in scale and profile) embarked upon by these three largest American PVOs. The program itself is unique, in that it is neither exclusively emergency nor development oriented. Instead, C-SAFE works along the entire relief to development continuum, addressing the immediate nutritional needs of targeted vulnerable groups; as well as building productive assets and working with communities to increase their resilience to future food security shocks.

The development of the baseline survey began in March 2003. The baseline survey collected data on all outcome indicators listed in the M&E plan, as well as others, anticipating the need to measure the outcomes from future activities planned for Years 2 and 3. The main objectives of the baseline survey were 1) to establish baseline values of logframe indicators against which future measurements of goal-related changes (e.g., practices and/or systemic changes) can be made and 2) to increase understanding of livelihood security factors impacting the lives of rural households. Other secondary objectives were 1) to identify groups and geographic areas where food and livelihood security may be low and 2) to gather and analyze information that will assist project staff in designing or modifying appropriate interventions or generate information for further refining the project logframe.

Six survey zones were delineated based on a modification of food economy zones. Each zone represented areas where C-SAFE is currently operational and will be operational in years two and three.

The Malawi survey includes a final sample on a total of 2030 households. Nearly 30% of households are headed by a female member. The percentage of female-headed households is significantly higher in the southern region and highest in the Shire Highlands. The Middle Shire zone also has a very high percentage of female-headed households. The lowest percentage of female-headed households was found in the Kasungu/Lilongwe survey zone in the central region of Malawi.

The survey included 6,903 children and youth up to the age of 18 years old. Of this total, 1,505 are orphans, or 21%. In all, 8.6% of all children less than 18 years of age included in the study are orphans with one parent deceased and the other living in the household. Another 424 children (6.1%) are orphans with one parent deceased and the other living outside of the household. Just over 7% of the survey population of children under 18 is a double orphan.

Some specific results of the survey were as follows:

1. Rural households have very few assets. In this survey, about 80% of households were classified as asset poor or very poor. Households with limited assets are vulnerable, not only because of their relative poverty, but also because they have few items to divest should they be forced to spend money on food or emergencies.

2. The percentage of vulnerable households in the C-SAFE project areas is very high. Sixty percent of households surveyed fall into one or more vulnerability categories. Almost one-third of rural households surveyed are hosting at least one orphan, and almost 12.5% of households are hosting double orphans. Female-headed households bear much of the burden in caring for orphans, with almost half of their households hosting at least one orphan child.
3. Chronically ill individuals were present in 30% of households surveyed, and only a small but significant difference exists between the percentage of chronically ill found in male versus female-headed households. Chronic illness is having a severe impact on household food security. Although they have, on average, access to more land they have the largest gap between what they have access to and what they cultivate. This signals a labor shortage in these households, and more land is left fallow.
4. Deaths rates in chronically ill households are higher, and the data reconfirms the notion that chronic illnesses are not diseases of the “poor.” Only small and statistically non-significant differences are found among the four asset categories.
5. Dependency ratios are very high, about 20% higher than the classical dependency ratios and much higher when compared to international norms. The overall mean dependency ratio is 174.6, reflecting the large number of dependents with respect to workers in rural Malawian households.
6. Over 10% of school-aged children have dropped out of school and dropout rates are significantly higher for orphans.
7. Female-headed households, high dependency households, and asset very poor households all averaged less than 230 kgs of cereal production. This is more than 65% less than the production of cereals by male-headed households and is a direct contributor to the high vulnerability of these households, especially given their other options for generating income to pay for food and other basic needs.
8. The most commonly sold cereal crop was sorghum, with just over 11% of households growing sorghum engaged in sales.
9. Households in rural Malawi are very food insecure. Households in general expect that the current harvest will be about one-half of what they normally obtain through cropping activities. This trend is similar for every household type analyzed, and demonstrates that food security problems in Malawi are widespread and impact on many livelihoods.
10. Almost 40% of asset poor households spend 75% or more of their household income on food, which leaves little to spend on other items such as health care, school fees, etc.
11. The majority of households have relied very importantly on food aid to provide for part of their food requirements, and food aid is an important source of calories for many rural Malawi households. One-half of surveyed households have relied on food aid for meeting part of their nutritional needs, and the majority have received these

benefits through general feeding. Targeting of vulnerable households through other food aid programs may need refining.

12. There were large and significant differences in protein consumption among the four asset categories, with asset poor households consuming significantly less protein in all four categories. Consumption was highest in asset rich households, with the exception of egg consumption which was highest in asset intermediate households.

13. During the previous year, almost one in five households experienced at least one death, and the average age of death was 23 years old. In over half of all deaths the individual was ill for more than three months.

Acronyms and Abbreviations

ANOVA	analysis of variance
CARE	Cooperative Assistance and Relief Everywhere (NGO)
C-SAFE	Consortium for Southern Africa Food Security Emergency
CRS	Catholic Relief Services
CSI	Coping Strategies Index
DfID	Department for International Development
FEZ	Food Economy Zone
GOM	Government of the Malawi
M&E	monitoring and evaluation
NGO	Non Governmental Organizations
PPS	probability proportional to size
PVO	Private Voluntary Organization
TA	Traditional Authority
TANGO	Technical Assistance to Non-Government Organizations
VAM	Vulnerability Analysis and Mapping
WFP	(United Nations) World Food Programme

Glossary of Terms

Chronically Ill	A person who has had persistent and recurring illness during the last three months that has reduced his/her productivity.
Disabled	A person who has a mental and/or physical handicap that prevents him/her from full-productivity.
FEZ	A relatively homogenous geographic area, unique to other zones on the basis of primary subsistence activities, income strategies, cultural practices and hazards, as they affect food security
Head of the Household	The primary decision-maker in terms of allocating the natural, human, and financial resources available to the household.
Orphan	A child with one or both parents that have died.

I. Background and Objectives

C-SAFE

C-SAFE is a jointly planned and implemented response by World Vision, CARE and CRS to the current food security problems plaguing the three southern Africa countries of Malawi, Zambia and Zimbabwe, with World Vision serving as the lead. The C-SAFE Consortium represents the most significant collaborative initiative to date (both in scale and profile) embarked upon by these three largest American PVOs. The program itself is unique, in that it is neither exclusively emergency nor development oriented. Instead, C-SAFE works along the entire relief to development continuum, addressing the immediate nutritional needs of targeted vulnerable groups; as well as building productive assets and working with communities to increase their resilience to future food security shocks.

Baseline Survey

The development of the baseline survey began in March 2003. TANGO International was contracted to design and manage the baseline survey process at a regional level, with C-SAFE M&E officers in the three countries to implement the survey in their respective countries. A Training of Trainers for country-based M&E officers was held in Johannesburg in early April, and subsequent training of in-country survey supervisors and enumerators was held prior to surveys being implemented in each of the three countries. C-SAFE's M&E advisor, based in Johannesburg, attended each of the in-country trainings. All three countries completed data collection by mid-May. Data entry was completed in-country using CSIRO2.3² software. Subsequent data cleaning and analysis was performed by a TANGO consultant in collaboration with the M&E Advisor and the three M&E country officers.

While it was envisioned that there would be a common baseline questionnaire applied in all three countries, circumstances led to a compromise in Zimbabwe. Also, the sampling strata and data collection methodology were adapted to the unique circumstances of each country. In Malawi, the survey had to accommodate the needs of all nine C-SAFE cooperating sponsors (six in addition to the C-SAFE core PVOs).

The baseline survey collected data on all outcome indicators listed in the M&E plan, as well as others, anticipating the need to measure the outcomes from future activities planned for Years 2 and 3. A Final Evaluation will take place in May 2005, with quarterly or semi-annual (still to be determined) monitoring to measure trends throughout the project. It should be noted that all recently conducted surveys (PVO and UN) in the three countries were reviewed and considered for their relevance to C-SAFE information needs (i.e., overlap in indicators and geographic area). Where possible, existing data was used in lieu of collecting new data. In all three countries, for example, C-SAFE intends to rely on UNICEF's most recent nutritional data for the nutrition component of the baseline.

² CSIRO2.3 software was developed by the U.S. Census Bureau, Macro International and Serpro S.A. It can be downloaded for free by visiting www.census.gov/ipc/www/cspro.

Objectives

The main objectives of the C-SAFE Baseline Survey in Malawi were:

- To establish baseline values of logframe indicators against which future measurements of goal-related changes (e.g., practices and/or systemic changes) can be made.
- To increase understanding of livelihood security factors impacting the lives of rural households.

The secondary objectives of the survey were:

- To identify groups and geographic areas where food and livelihood security may be low.
- To gather and analyze information that will assist project staff in designing or modifying appropriate interventions or generate information for further refining the project logframe.

II. Sampling Methods

Several challenges were faced in designing and implementing the baseline survey in Malawi. First, the geographic coverage of the survey had to extend from the extreme north to the extreme south, and also cover the country from east to west. There are nine cooperating C-SAFE sponsors in Malawi, and they literally work throughout the entire country. Designing a representative sample that could inform each sponsor, and at the same time provide for a reasonable sample within the limitations of budgets and timeframes, presented perhaps the largest challenge. Also, the survey was conducted in rural Malawi towards the end of a busy but difficult cropping season and respondents were often difficult to locate. Community members were quite busy with their economic activities and personal matters such as festivals and funerals.

The sampling methods employed for the Malawi baseline survey had to ensure that an adequate sample would be obtained in order to estimate indicators with sufficient precision. It also had to draw a meaningful sample such that valid and relevant comparisons could be made across geographic regions and household types.

II.A. Sampling Frame

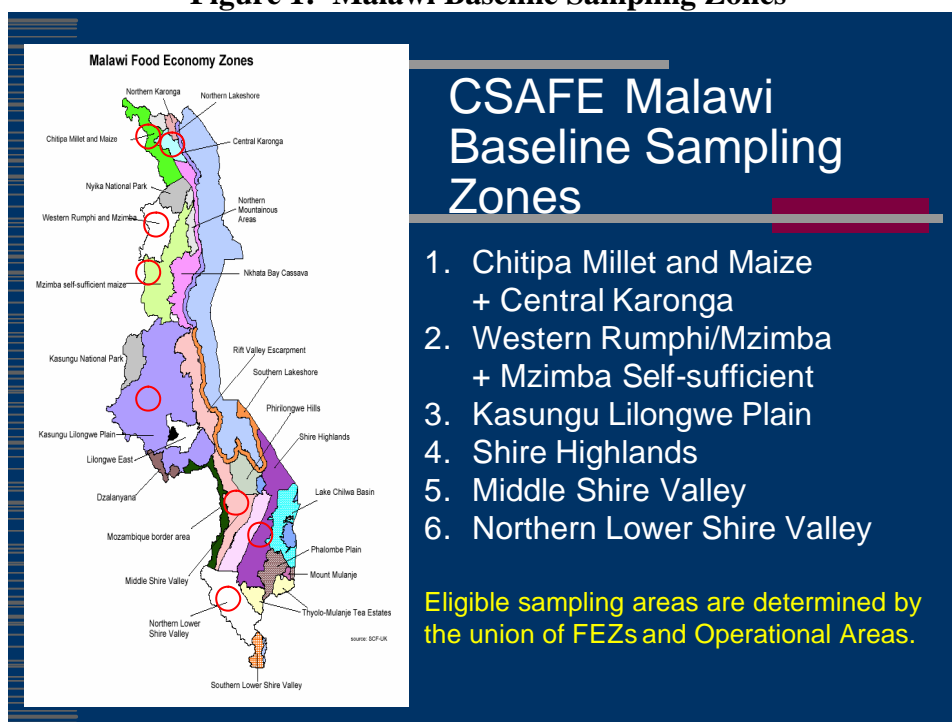
The intent of the survey was to sample rural households within the current and future geographic intervention areas of C-SAFE. Several strata were considered, including administrative boundaries (districts), geographic intervention area of the nine operational C-SAFE partners, and food economy zones (FEZ). Administrative boundaries were ruled out since they, in and of themselves, have no meaning to the C-SAFE project nor do they have a direct influence on defining livelihood characteristics of households. The operational areas of C-SAFE partners would have been valid strata, since it would facilitate analysis of baseline data and data from future surveys by partner. This would allow comparisons across operational areas. However, with nine operational partners the sample size would have been too large.

Food economy zones are ideal strata since they have meaning in terms of household livelihoods. Each food economy zone characterizes a primary livelihood strategy followed

by the majority of households within the zone. The difficulty in using food economy zones as sampling zones in the baseline survey was that there are 27 zones in Malawi, almost all of which intersect with operational areas of C-SAFE. Despite this obstacle, it was decided that the baseline survey would be based on food economy zones, albeit on a modified basis.

In order to derive sampling zones, the operational areas of C-SAFE were overlaid with the FEZs. Seven survey zones were extracted from this overlay, using criteria of size and relevancy to C-SAFE programming areas (Figure 1).

Figure 1: Malawi Baseline Sampling Zones



A brief description of each survey zone follows. For a more complete description of Malawi’s Food Economy Zones, see unpublished reports by Save the Children UK in Malawi.

Chitipa Millet/Central Karonga – This zone is based on two FEZs – the Central Karonga Maize and Livestock Food Economy Zone and the Chitipa Millet and Maize Zone. This area is relatively fertile with normally good maize production and significant livestock holdings. The primary crops in this area are maize, sorghum, millet, cassava, rice and sweet potatoes. The wealthier households gain the majority of their income through livestock sales, while poor households have more diversified strategies which include cash crop sales, handicraft sales and labor. This zone is less densely populated than zones to the south and there is less pressure on the land.

Rumphu/Mzimba – The zone is fairly diversified, and in normal years is relatively food self-sufficient. The major food crops include maize, millet, beans and ground nuts. Wild food consumption is a small but significant source of food for many households and its proximity to several parks allows for above average wild food collection. Tobacco and maize can be important cash crops and non-food production (beer brewing, craft and firewood sales) can be important for the poor and to a lesser extent the modal families.

Kasungu/Lilongwe – This area is the most densely populated of the six zones and normally quite productive. The most important aspects of this food economy are food crops, cash crops and trade, with the principle crop being maize. Tobacco is the largest cash crop and can account for a significant proportion of household income. Some studies have noted that households in this area tend to be some of the most food secure in Malawi.

Shire Highlands – This is a fairly large zone covering a very densely populated part of Malawi and it includes both Blantyre and Zomba. Average households do not produce enough food to be self-sufficient in a normal year and many rely on cash crop sales to make up the difference. The most significant source of income for the poor is labor, which provides income for food purchases. Generally speaking, more tobacco, sunflower and pigeon peas are grown in the southwestern part of this zone. There are no crops grown on the Zomba plateau, as it is mostly forest reserve. Main food crops include maize and cassava, often inter-cropped together. The most significant cash crop in the area is tobacco. Land holding size has been noted as a significant constraint to livelihoods and livestock holdings in this area are relatively low.

Middle Shire Valley – This is a wide, low-lying valley floor lying in a rain shadow with poor soils and a relatively sparse population. It is primarily a maize-producing zone, which is typically in deficit. Cassava and rice can also major food crops and dambo lands along the Shire River can be important. The principle cash crops are cotton and tobacco. Fishing is a small, but consistent source of income for some households. Livestock holdings are reported as low compared to the rest of Malawi.

Lower Shire – The most important aspects of this food economy are food crops, employment, cash crops and livestock. The majority of families are not self-sufficient in grain production. Agricultural lands include uplands, where the main crops grown are maize and sorghum, and dimba, where the main crops are maize, rice, tomatoes, vegetables, cowpeas and pigeon peas. The poor do not typically have access to dimba fields. The most important cash crops are (in order of importance): cotton, rice, sugar, tobacco and spices. Relatively large livestock holding are a significant feature of this zone.

II.B. Sample Design and Sample Size

The survey utilized a three-stage random sampling methodology in an effort to provide an unbiased and representative estimation of the information obtained. The first stage was the selection of eligible Traditional Authorities (TAs) within the survey zones. TAs were selected with probability proportional to their size (population), or PPS. In each zone, seven TAs were selected using this methodology.

The second stage was a random selection of villages within each of the selected TAs. A total of six villages were selected within each TA, again using PPS. The most recent census data was used to determine village size, and from the DfID Targeted Inputs Program database. The third and final stage was the random selection of eligible households to be included in the sampling frame. Sampling frames were also derived from the DfID database.

The sample size was calculated using standard methods based on key dichotomous variables from the household questionnaire. To determine the sample size to be selected, the following formula was used:

$$n = \frac{z^2 pq}{d^2}$$

where n = sample size
 z = statistical certainty desired
 p = estimated prevalence rate
 q = $1 - p$ (proportion without the attribute of interest)
 d = degree of precision.

The desired precision (d) was set at 8% (0.08) and the statistical certainty at 95% ($z = 1.96$). Since the general prevalence rate of key variables was not known, the value of p was set at 50% (0.5) in order to maximize the impact of this variable on sample size (thus any error in estimation would be negated). The resulting sample size per sampling zone was 400. The resulting projected total sample size was 2000 households.

The quantitative household survey was designed to collect the following types of information from the interviewed households:

1. **Household demographic information:** including age, sex, relation to household head, status of parents, physical status of individuals, level of education, and primary/secondary activities of individuals;
2. **Household access to resources:** including ownership and value of household assets such as agricultural tools and equipment, radios, modes of transport, etc., access to rainfed land for farming, and ownership of livestock;
3. **Livelihood activities:** that household members were engaged in during the previous year, including agricultural production and sales, other sources of cash income, borrowing, etc.; and,
4. **Household livelihood outcomes:** estimates of food consumption per family member, sources of household water, and coping strategies for addressing food shortages.

III. Survey Findings

III.A. Household Demographics

The Malawi survey includes a final sample of a total of 2030 households. A number of control variables will be used throughout this report to disaggregate the data. Table 1 provides sample size for these various strata. All analyses apply appropriate weightings to account for unequal sample sizes among strata.

Table 1: Sample sizes for selected strata.

Strata/Category	Sub-strata	Sample Size (number of HHs)
Overall Population		2,030
Gender of HH Head	Male	1,447
	Female	583
Geographic Region	North	675
	Central	690
	South	665
Survey Zones	Chitipa Millet/Central Karonga	318
	Rumphi/Mzimba	357
	Kasungu/Lilongwe	334
	Shire Highlands	356
	Middle Shire	337
	Lower Shire	328

Figure 2 provides age strata for the survey population. Over 45% of the rural population sampled is 14 years of age or under.

The majority of household heads are between 20 years and 64 years of age, with about an even number in the 20 to 39 year range and 40 to 65 year range (Figure 3). The average age of the head of household is 45 years, with the youngest reported as 12 years old and the oldest as 99 years old. Male household heads are slightly younger than female household heads, 44 and 48 years old, respectively.

Figure 2: Age Strata of Sample Size

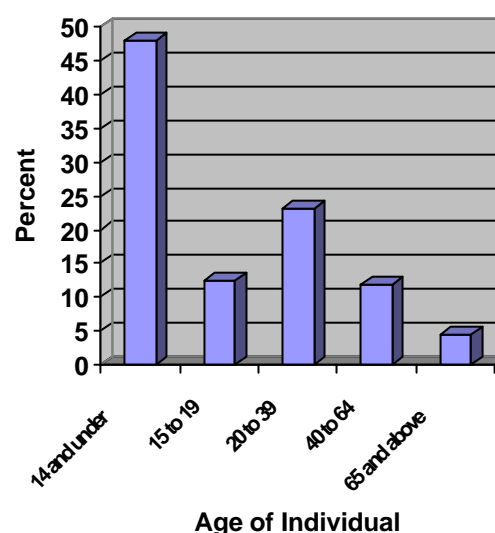
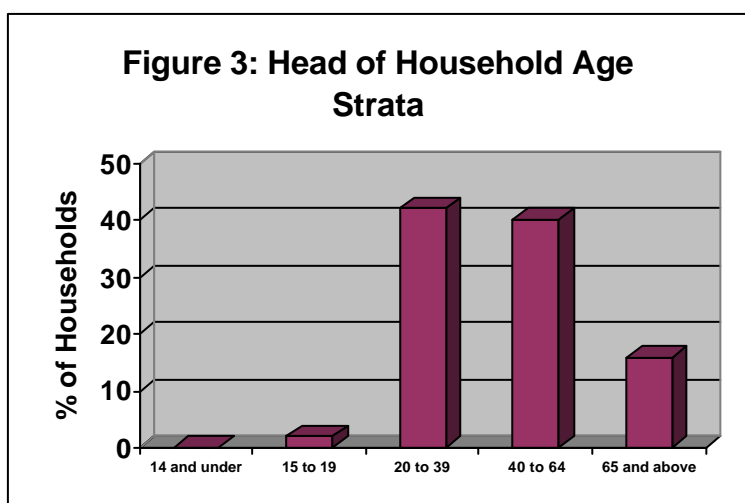


Figure 3: Head of Household Age Strata



Overall, 71.3% of households are headed by a male member of the family and 28.7 percent are headed by a female member.

Table 2 shows the percentage of female-headed households by region and survey zone. The percentage of female-headed households is significantly higher in the southern region ($p < .001$) and highest in the Shire Highlands. The Middle Shire zone also has a very high percentage of female-headed households. The lowest

percentage of female-headed households was found in the Kasungu/Lilongwe survey zone in the central region of Malawi.

Table 2: Selected demographic characteristics of the survey population.

Strata/Category	Sub-strata	Average Age HHH	Female-headed Households (%)
Overall Population		45.4	28.7
Gender of HH Head	Male	44.3	
	Female	48.0	
Geographic Region	North	46.6	22.4
	Central	44.8	29.9
	South	44.8	34.0
Survey Zones	Chitipa Millet/Central Karonga	46.1	23.9
	Rumphi/Mzimba	46.7	21.0
	Kasungu/Lilongwe	43.1	13.5
	Shire Highlands	46.4	45.2
	Middle Shire	46.1	38.3
	Lower Shire	43.5	29.6

About half of the heads of household (52.7%) are able to read and write, while 43% are not. A small percentage can either read or write but not both. There is a significant difference in literacy among the survey zones, with literacy being much higher in the three northern zones as opposed to the three southern survey zones (Table 3).

Table 3: Literacy rates among the survey zones.

Survey Zone	Literacy (% able to read and write)
Chitipa Millet/Central Karonga	61.6
Rumphi/Mzimba	65.8
Kasungu/Lilongwe	54.8
Shire Highlands	43.3
Middle Shire	47.8
Lower Shire	42.7

Table 4 summarizes the marital status of the study population. The majority (74.5%) of households are married and 16% are widowed. Only a small fraction of the households are divorced or single. In the two most southern survey zones (Middle and lower Shire), a significantly higher percentage ($p < .001$) of households are widowed when compared to the other survey zones.

Table 4: Marital status of HHH.

		Frequency	Percent
Valid	Married	1513	74.5
	Divorced	138	6.8
	Widowed	325	16.0
	Single	54	2.7
	Total	2030	100.0

Household sizes in Malawi tend to be quite large, and in the survey population averaged 5.8 with a range from 1 to 17 individuals. The median value was also six, meaning that 50% of households have six or more members. Household size does not vary significantly among the six survey zones, but does vary by gender of the head of household. Male-head households average 6.1 members, whereas female-headed households average 5.2, almost one person less.

III.B. C-SAFE Vulnerable Groups

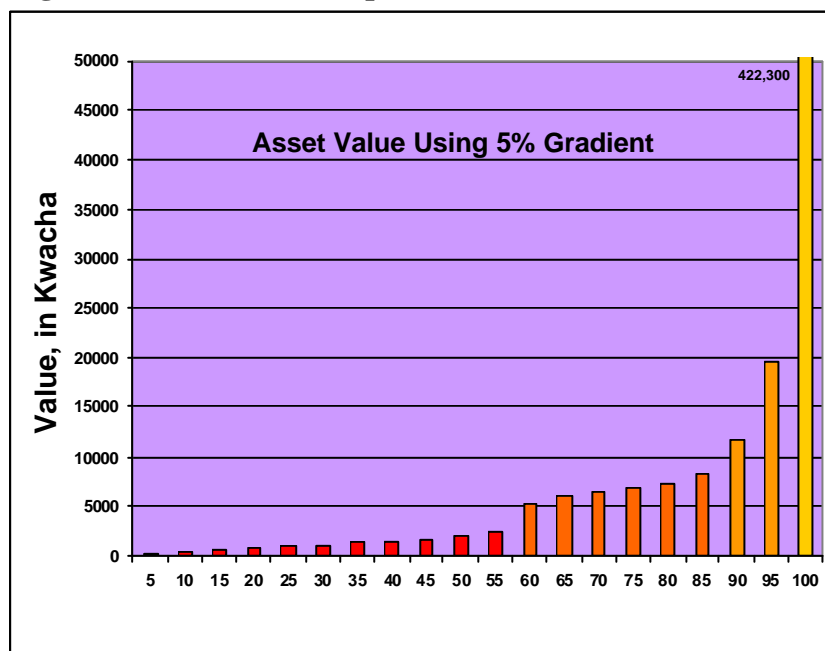
The following section defines various vulnerable groups important to C-SAFE and used as variables to disaggregate survey data. These groups include economically disadvantaged households, households hosting orphans, households with chronically ill members, female-headed households, elderly-headed households with no productive-age members, and households headed by youth. C-SAFE interventions target these households, so it is important to understand their current status vis-à-vis baseline indicators.

Although youth-headed households are important, they are too rare in the survey population (only 7 households out of 2030) to include as a strata.

Using Asset Ownership as a Wealth Category

Assets can be used to create wealth groups, which are useful for defining relative levels poverty and for analyzing baseline indicators. The resultant groups can then be monitored over time to track changes in livelihood status of project households. The difficult part of creating wealth groups is to decide what percentage of the population should be placed in each category. Four equal groups, representing 25% of the population each, is not useful in the C-SAFE context because, in general, rural households are quite asset-poor. Figure 4 shows the frequency distribution of asset value using 5% gradients with each bar represents 5% of the population. The first bar represents the poorest 5% of the sample population and the last bar represents the wealthiest 5%. Note that for the Malawi baseline population there is a distinct change in asset value at the 55th bar. There are other distinct changes at the 85th and 95th percentiles.

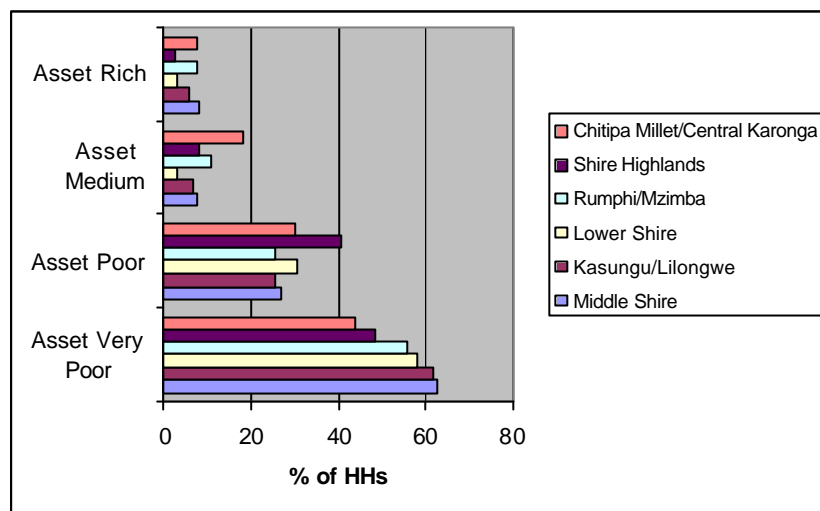
Figure 4. Asset Ownership Gradients.



Using the data in Figure 4, four asset categories were created: asset very poor (55% of the sample population); asset poor (35% of the population); asset medium (10%); and asset rich (5%). These categories are used for selected analyses of the baseline data. Figure 5 shows the distribution of these four categories among the six survey zones. It shows that Middle Shire and Kasungu/Lilongwe have the highest percentage of households that are “asset very

poor.” According to this classification, Chitipa millet/Central Karonga households have, on average, the highest value of assets. A detailed analysis of household assets is provided in Section III.C.

Figure 5: Asset Categories by Survey Zone.



Orphans

Orphans make up a significant percent of the rural population in Malawi, and C-SAFE emergency and development interventions target households with orphans. Orphans, for the purpose of the study, are defined as children 18 years of age or younger who have one or more parents deceased. Orphans have been further classified as those who have one parent deceased and the remaining parent lives in the same household, those who have one parent deceased and the remaining parent lives outside of the same household, and those who have both parents deceased (double orphans).

Table 5 summarizes orphan data for a number of strata. Almost one-third of rural households surveyed are hosting at least one orphan, and almost 12.5% of households are hosting double orphans. Female-headed households bear much of the burden in caring for orphans, with almost half of their households hosting at least one orphan child. Another explanation is that about one-quarter of female-headed households is widowed. About one-quarter of male households are doing the same.

Table 5 also shows some important geographic differences. Lower Shire hosts orphans at the highest rate, followed by Middle Shire and then Rumphi/Mzimba. All survey zones, however, have at least 25% of households hosting an orphan. Double orphans are especially prevalent in lower Shire, Middle Shire and Rumphi/Mzimba. One parent deceased and the other living outside of the household is most common in Middle Shire. One parent deceased and the other living inside of the household is most common in Lower Shire.

Table 5: Percent of orphans by selected strata.

Household Category	One parent deceased, one living in HH	One parent deceased, one living out of HH	Both parents deceased (double orphans)	Households with at least one orphan
	% of households			
General Population (% , mean)	10.4 (2.8)	12.0 (1.7)	12.4 (2.0)	31.3
Male-headed households	4.8	10.9	10.6	24.5
Female-headed households	24.4	14.8	16.8	48.2
Chitipa Millet/Central Karonga	11.6	6.6	9.4	25.5
Rumphi/Mzimba	9.5	14.8	13.2	32.2
Kasungu/Lilongwe	7.8	11.1	9.0	25.7
Shire Highlands	7.6	9.8	9.6	24.7
Middle Shire	11.3	17.5	13.4	38.0
Lower Shire	15.2	11.6	21.1	42.1
Asset Very Poor	12.8	12.0	12.2	33.1
Asset Poor	6.9	11.7	13.0	28.7
Asset Middle	8.9	12.9	10.9	29.2
Asset Rich	7.9	11.9	13.9	31.7
HHH 60 years or older	12.6	13.9	14.7	39.2

Asset category of the household makes less difference for hosting an orphan, although asset very poor households host orphans at a significantly higher rate ($p < .05$).

The survey included 6,903 children and youth up to the age of 18 years old. Of this total, 1,505 are orphans, or 21%. In all, 8.6% (591) of all children less than 18 years of age included in the study are orphans with one parent deceased and the other living in the household. Another 424 children (6.1%) are orphans with one parent deceased and the other living outside of the household. Just over 7% (493) of the survey population of children under 18 is a double orphan.

Just over 5% (85) of orphans are under five years of age (Table 6), while 8.4% (215) are between 5 and 10 years of age and 10.7% (290) are between 10 and 18 years of age.

Table 6: Percent of orphans by selected strata.

Age Category	One parent deceased, one living in HH	One parent deceased, one living out of HH	Both parents deceased (double orphans)
	% , (#)		
Under 5 years of age	5.2 (85)	2.6 (42)	2.7 (44)
5-9 years of age	8.4 (215)	7.4 (189)	7.6 (195)
10-18 years of age	10.7 (290)	7.1 (192)	9.3 (253)

Chronically Ill

Another vulnerable group that C-SAFE addresses is chronically ill and permanently disabled persons. Chronically ill individuals, for the purposes of the study, are those who have been ill for three months or longer prior to the study (recurring illness which results in loss of productive labor). This would include individuals with HIV/AIDS, and other long-term illnesses

Chronically ill individuals were present in 30.1% of households surveyed. More detailed figures are presented in Table 7 for several strata. Chronically ill individuals comprise the majority of the vulnerable in this category. Almost 30% of households include at least one chronically ill individual, while 11% include at least one disabled person. As the data suggests, many households that include a disabled individual also include one or more individuals who are chronically ill, and in 1.7% of the cases this is the same individual.

There is a small but significant difference ($p < .05$) between the percentage of chronically ill found in male- and female-headed households. There is no difference, however, in the number of disabled individuals between the two household types. Also, a higher percentage of female-headed households have a chronically ill or disabled individual.

Table 7: Percent of households with chronically ill and/or disabled individuals.

Category	Chronically Ill Individuals	Disabled Individuals	Chronically Ill Individuals	Households with at least one chronically ill member
	% of households			
General Population	29.1	11.1	1.7	30.1
Male-headed households	28.4	11.2	1.2	29.2
Female-headed households	30.7	11.3	2.7	32.4
Chitipa Millet/Central Karonga	36.2	8.8	1.9	37.1
Rumphi/Mzimba	30.0	11.8	0.6	30.0
Kasungu/Lilongwe	21.6	10.5	1.5	22.5
Shire Highlands	38.5	9.6	2.2	40.7
Middle Shire	24.3	15.1	2.1	25.5
Lower Shire	23.5	11.0	1.8	24.7
Asset Very Poor	28.6	11.8	2.1	29.9
Asset Poor	30.2	9.7	1.2	31.2
Asset Middle	29.2	11.9	1.5	30.2
Asset Rich	26.7	10.9	0.0	26.7

There are significant differences among the survey zones, with the Shire Highlands and Chitipa Millet/Central Karonga having significantly more ($p < .001$) chronically ill individuals. While these two zones have the highest percentages of chronically ill, they have the lowest rates of disabled. Middle Shire, on the other hand, has a higher percentage of disabled individuals. The large differences in individual categories of chronically ill and disabled individuals are also mimicked in the frequency with which these individuals are found in households (Table 7). In Middle Shire, for example, the chronically ill or disabled reside in four out of five households.

The data reconfirms the notion that chronic illnesses are not diseases of the “poor.” Only small and statistically non-significant differences are found among the four asset categories.

Vulnerable Households

C-SAFE works to improve the food security of vulnerable households. There are a number of types of vulnerable households in Malawi, including female-headed households, households with chronically ill members, households with orphans, resource-poor

households, and elderly households. Table 8 below shows the percentage of households in each of these vulnerability categories, with the exception of resource-poor households, which are presented in Section III.C, Assets. Data is provided for the general population as a whole and by survey zone. The percentage of vulnerable households in the C-SAFE project areas is very high. Sixty percent of households surveyed fall into one or more types of vulnerable household as defined by C-SAFE.

Table 8: Percent of vulnerable households by category.

	Female HHH	Elderly HHH	Chronically Ill Member	Hosting Orphans
% of households				
General Population	28.7	7.3	30.7	31.3
Chitipa Millet/Central Karonga	23.9	6.3	37.1	25.5
Rumphi/Mzimba	21.0	3.6	30.0	32.2
Kasungu/Lilongwe	13.5	6.3	22.5	25.7
Shire Highlands	45.2	6.2	41.7	24.7
Middle Shire	38.3	12.2	25.5	38.0
Lower Shire	29.6	9.8	24.7	42.1

Any particular household can be in from none to all four of the vulnerable household categories above. For example, an elderly female head of household with chronically ill household members and hosting orphans would be in all four categories. Likewise, a 45-year-old male-headed household with no orphans or chronically ill members would not appear in any of the vulnerable categories. Households whose head is younger, for example below 16 years of age, are also considered vulnerable. In this survey there were eight household heads ranging in age from 9 to 17. Due to the low frequency found in the sample, they will not be used in this analysis as a vulnerable group.

Table 9: Number of vulnerability categories per household.

	Frequency	Percent
0	758	37.3
1	710	35.0
2	429	21.1
3	120	5.9
4	13	.6
Total	2030	100.0

Table 9 shows the percentage of households found in no vulnerability category, and the number of households found in 1-4 vulnerability categories. Overall, 63.7% of all households surveyed were found to be in at least one of the four vulnerability categories, and almost 28% of households are in at least two vulnerability categories. This same information is shown by survey zone in Table 7. Note

that Kasungu/Lilongwe has the fewest households in a vulnerable category, and Shire Highlands has the most. All six survey zones have at least 30% of households in one vulnerability category, and nearly all have at least 20% of households in two vulnerability categories.

Table 10: Number of vulnerability categories per household by survey zone.

Survey Zone		Number of vulnerability categories					Total
		0	1	2	3	4	
Chitipa Millet/Central Karonga	Frequency	127	110	59	21	1	318
	Percent	39.9	34.6	18.6	6.6	.3	100.0
Rumphi/Mzimba	Frequency	140	137	67	13		357
	Percent	39.2	38.4	18.8	3.6		100.0
Kasungu/Lilongwe	Frequency	172	106	48	7	1	334
	Percent	51.5	31.7	14.4	2.1	.3	100.0
Shire Highlands	Frequency	95	133	101	27		356
	Percent	26.7	37.4	28.4	7.6		100.0
Middle Shire	Frequency	110	115	74	31	7	337
	Percent	32.6	34.1	22.0	9.2	2.1	100.0
Lower Shire	Frequency	114	109	80	21	4	328
	Percent	34.8	33.2	24.4	6.4	1.2	100.0

Dependency ratio

Dependency ratios are useful parameters for defining vulnerable households, as they describe the ratio of non-productive to productive members of a household. Dependency ratios are often calculated by the following formula:

$$(\text{population} < \text{age } 15 \text{ and } > \text{age } 65 / \text{working-age population (15-64)}) * 100$$

For C-SAFE, which focuses on vulnerable households many of which have non-working members in the 15-64 year age category, the following formula is used:

$$((\text{total number in the household} - \text{productive members}) / \text{productive members}) * 100$$

A dependency ratio of 90 means there are 9 dependants for every 10 working members. It indicates the economic responsibility of those economically active in providing for those that are not able to be economically active (due to age or illness, for example). C-SAFE uses this modified definition of dependency to capture the reality of rural life in Malawi – there are children under age 15 who are economically active either working on the land or in the informal sector of the economy, and there are many households members who would normally be economically active but who are suffering from long-term illness. Thus, C-SAFE's dependency ratio is a measure of the dependence that non-working people have on working people. In general, the larger the dependency ratio, the greater the vulnerability of the household to provide basic consumption needs for those people who are dependent.

Table 11: Mean dependency ratios.

Using the survey population, the mean dependency ratio was calculated using the above to methods. As Table 11 shows, the C-SAFE dependency ratio is 174.6, about 20% higher than the classical dependency ratio.

		CSAFE Dependency Ratio	Classical Dependen cy Ratio
N	Valid	2006	1949
	Missing	24	81
Mean		174.563	141.84

Non-working members in the productive age group are an important factor in calculating dependency ratios. Table 12 shows the percent of working and non-working individuals by three age classes and sex. Just over three percent of non-working age children (under 15 years of age) are employed, with no statistical difference between male and female children. Over one-quarter of productive-age males (ages 15-64) are not working and the majority of these are students. Under one-quarter of females in this same age group are not working, and again the majority are students. Of those who are over 64 years of age, a large majority of males (86.0%) report that they are still employed, mostly in agriculture (81%). Only 14 percent of males over 64 years of age claims to be unemployed. For females in this age group, about 30% are non-working. Nearly all of those that claim employment cite their work as agricultural.

Table 12: Employment/unemployment status of working and non-working age classes.

Work Status		Age Class					
		Under 15		15-64		64 and above	
		Male	Female	Male	Female	Male	Female
Non-working	Unemployed			3.9	5.4	9.8	22.9
	Student			24.7	16.0	0.4	0.0
	Physically unable			0.3	0.6	3.8	7.4
	Total			28.9	22.0	14.0	30.3
Working		3.1	3.3	71.1	78.0	86.0	69.7

Table 13: Dependency ratio categories.

	Frequency	Percent
Low	716	35.3
Medium	735	36.2
High	579	28.5
Total	2030	100.0

Using the dependency ratio, three categories were created and assigned to each household, corresponding to low, medium and high dependency ratios. The resultant groups are shown in Table 13.

Table 14 provides C-SAFE dependency ratios for selected strata. The overall mean dependency ratio is 174.6, reflecting the large number of dependents with respect to workers in rural Malawian households. The highest dependency ratio is for households hosting orphans at 228.8, followed by female-headed households at 213.8. Male-headed households have the lowest dependency ratio, 159.0. There are some differences among survey zones with the highest dependency ratio found in Middle Shire and the lowest found in Kasungu/Lilongwe. No clear relationship exists between dependency ratio and asset category.

Table 14: Dependency ratios for selected strata.

Category	C-SAFE Dependency Ratio
General Population	174.6
Male-headed households	159.0
Female-headed households	213.8
Chitipa Millet/Central Karonga	178.8
Rumphi/Mzimba	181.7
Kasungu/Lilongwe	162.9
Shire Highlands	164.4
Middle Shire	186.9
Lower Shire	173.3
HHs w/ chronically ill members	187.4
HHs w/ orphans	228.8
Asset Very Poor	176.8
Asset Poor	171.2
Asset Middle	178.3
Asset Rich	162.7

III.B. Education

Out of 5,056 children aged 5 to 14 years old in the survey, 468, or 9.3%, have never been to school (Table 15). Just over 82% of school-aged children are currently attending school, while only 3% have completed primary school. Encouragingly, the attendance rate for male and female school-aged children does not significantly vary, however, the attendance rates for orphans, both males and females, are lower. In the general survey population of school-aged children, 11% have dropped out – 10.3% of males and 11.8% of females. Dropout rates are significantly higher for orphans, with 13.5% of male orphans and 14.7% of female orphans leaving school versus 9.1% and 10.8% for male and female non-orphans, respectively.

Table 15: School Attendance for School-Aged Children (6-18 years old)

Children 6-19	Never been to school	Primary uncomplete d	Primary completed	Secondary	Above Secondary	Total aged 6-18
Number of children (% of total)	468 (9.3%)	4172 (82.5%)	151 (3.0%)	262 (5.2%)	3 (0.1%)	5056
Number of male children (% of total)	229 (9.1%)	2075 (82.1%)	72 (2.8%)	150 (5.9%)	2 (0.1%)	2528
Number of female children (% of total)	238 (9.4%)	2091 (82.9%)	79 (3.1%)	112 (4.4%)	1 (0%)	2521
Number of male orphan children (% of total)	53 (8.0%)	560 (84.6%)	17 (2.6%)	34 (2.8%)	0 (0%)	664
Number of female orphan children (% of total)	46 (7.8%)	491 (83.6%)	23 (3.9%)	26 (4.4%)	1 (0.2%)	587

The primary reason cited by households for dropping out of school is provided in Table 16. About 25% of dropouts have left school because the household could not afford the fees. Many households cited “other” reasons, such as low motivation, distance to school, and dissatisfaction with the school system. Reasons do not vary by orphan status, but 53 girls under 18 were dropped out of school to get married and only 5 boys.

Table 16: Reasons for School Drop

	School Fees too high	Household needed labor	Chronically ill or disabled	Marriage	Other	Total
Male children	56	19	17	5	98	195
Female children	46	18	16	53	89	222
Total	102	37	33	58	187	417

School attendance varies considerably by survey zone (Table 17). In the three southern zones, 10-15% of school-aged children have never attended school, significantly higher than the 4-5% non-attendance found in the north. Dropout rates are highest in Lower Shire at 13.4% and lowest in Rumphi/Muzimba at 4.7%. Only 69% of school-aged children attend in the two most southern survey zones as opposed to 80% and higher in the north. In general, school attendance statistics are much more favorable for northern survey zones and least favorable for the southern survey zones. Statistics from the middle two zones tend to be intermediate. School attendance data, combined with household literacy rates, suggests that the northern two survey zones are more highly educated, and that as one proceeds south both literacy and current schooling decline.

Table 17: School attendance data by survey zone.

Survey Zone		Frequency	Percent
Chitipa Millet/Central Karonga	Never been to school	39	5.1
	Dropout	65	9.4
	Attending	620	80.7
Rumphi/Mzimba	Never been to school	43	4.3
	Dropout	47	4.7
	Attending	839	84.2
Kasungu/Lilongwe	Never been to school	75	9.4
	Dropout	75	9.4
	Attending	593	74.0
Shire Highlands	Never been to school	139	15.5
	Dropout	85	9.5
	Attending	629	70.1
Middle Shire	Never been to school	83	10.5
	Dropout	93	11.6
	Attending	558	69.3
Lower Shire	Never been to school	89	10.9
	Dropout	110	13.4
	Attending	573	69.3

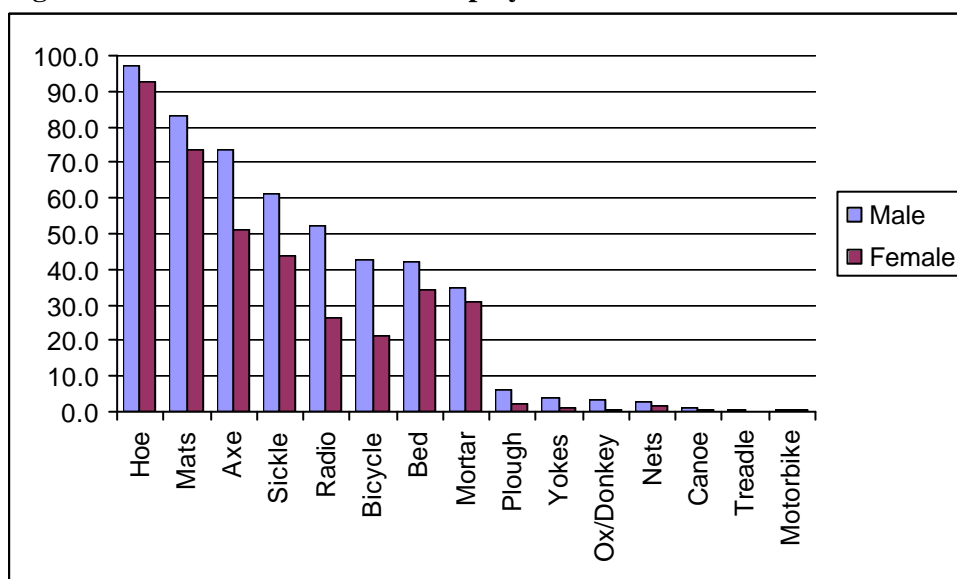
III.C. Assets

Asset ownership is an important indicator of wealth and is a useful proxy for characterizing livelihood security of households. In Malawi, the value of assets owned by rural households has been shown to correlate highly with other livelihood indicators, and to closely mimic qualitative wealth rankings.

Figure 6 shows asset ownership by gender of the head of household. Overall there is an inequitable ownership of assets between male and female-headed households. In every asset category measured, male ownership is higher than female ownership. Some key assets with the largest gap between the two genders includes sickles, axes, radios and bicycles, impacting the extent to which female households can perform key agricultural labor tasks, listen to radio broadcasts, and transport themselves and goods.

Asset ownership also varies considerably among the six survey zones. In general, productive assets used primarily for agriculture are owned at a higher rate in the northern survey zones as opposed to the southern zones (Table 18). With the exception of hoes, owned by the majority of households everywhere, key assets such as ploughs, sickles, oxcarts, axes and yokes are all owned by significantly higher percentages of households in the Chitipa Millet/Central Karonga and Rumphu/Mzimba survey zones than in Kasungu/Lilongwe or the three Shire zones.

Figure 6: Percent of Asset Ownership by Gender of Household Head

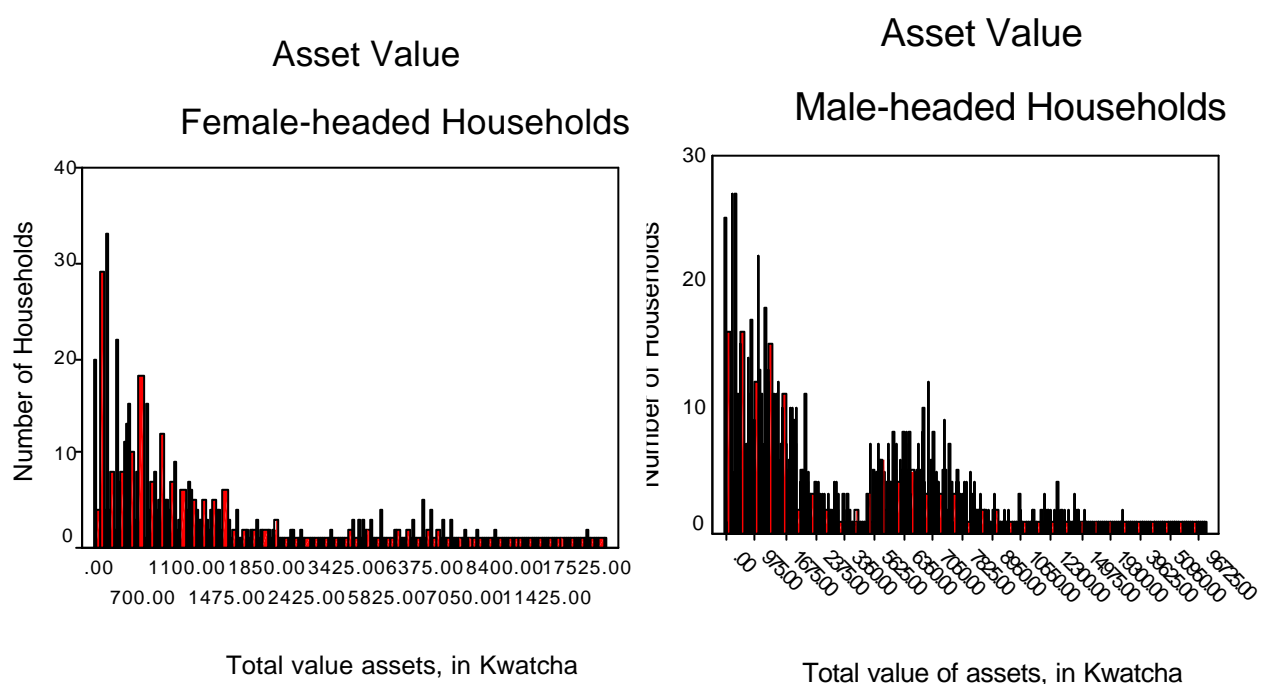


The value of the assets owned by a household averages 6,457 Kwacha (about US\$69.50), but ranges from 0 to 422,300 (US\$4,540). There is significant difference ($p < .001$) in asset ownership between male and female headed households, averaging 7,749 Kwacha and 3,229, respectively. Male-headed household asset ownership is more than double that of female-headed households. In Figure 7, the frequency distribution of asset ownership is shown by gender. Note that although there are some relatively asset-rich female-headed households, but the majority of female-headed households are skewed to the poor end of asset ownership. Only 7.7% of female-headed households are classified as asset intermediate or asset rich, compared to 17.8% for male-headed households, and there is a distinct “middle class” of asset ownership for male-headed households

Table 18: Percent of HHs owning assets by survey zone.

Asset	Survey Zone					
	Chitipa Millet/Central Karonga	Rumphi/Mzimba	Kasungu/Lilongwe	Shire Highlands	Middle Shire	Lower Shire
Hoe	96.8	88.8	97.3	96.4	97.0	99.1
Sickle	64.8	67.2	56.6	54.3	50.4	44.1
Plough	11.0	9.8	6.3	0.3	1.5	0.0
Axe	87.7	77.9	64.4	58.0	56.7	59.6
Ox/Donkey Cart	4.4	5.6	4.5	0.6	0.3	0.9
Yokes	7.5	5.9	3.6	0.3	0.0	0.6
Treadle Pump	0.3	0.3	0.0	0.0	0.9	1.8
Mortar	45.0	37.3	28.4	27.7	21.4	42.6
Nets	6.6	1.7	0.9	1.7	1.2	2.1
Radio	44.3	45.9	42.8	44.0	44.8	47.7
Bed	69.5	46.5	23.4	47.3	37.1	15.5
Mats	79.9	72.3	89.8	75.1	81.0	86.0
Bike	39.9	29.1	29.6	46.2	34.4	40.4
Motorbike	0.6	0.6	0.3	0.6	0.9	0.3
Canoe	1.3	0.6	0.3	1.1	1.2	1.5

Figure 7: Asset Ownership by Gender.



There are also important differences in asset ownership by region and survey zone (Table 19). Asset ownership in Chitipa Millet/Central Karonga is significantly higher than in all other zones ($p < .001$), while asset ownership in Rumphi/Mzimba and the Shire Highlands is statistically the same ($p = .301$). Middle Shire asset ownership is the lowest and is significantly lower than the other zones.

Table 19: Mean and median asset ownership by survey zone.

Chitipa Millet/Central Karonga	N	318
	Mean	8883.25
	Median	3512.50
Rumphi/Mzimba	N	357
	Mean	7320.24
	Median	2100.00
Kasungu/Lilongwe	N	334
	Mean	5941.02
	Median	1650.00
Shire Highlands	N	356
	Mean	7029.35
	Median	2600.00
Middle Shire	N	337
	Mean	4509.50
	Median	1425.00
Lower Shire	N	328
	Mean	5069.13
	Median	1625.00

Asset ownership is related to a household's ability to recover from shock, as assets can be used as security or collateral when a household needs income. Also, if asset poor households are forced to sell their productive assets, as is common in prolonged crises or when a household experiences multiple shocks (e.g. – deaths of household members during a drought period), they have a difficult time fully recovering, and their food and livelihood security can spiral downward.

Table 20: Mean asset ownership, in kwacha, by selected vulnerable groups.

Category	N	Asset Value (in Kwacha)
	General Population	2030
Low Dependency Ratio	735	7,256
Medium Dependency Ratio	716	6,187
High Dependency Ratio	579	5,766
Chronically Ill HHs	612	6,037
Households with Orphans	636	6,328
0 Vulnerable Categories	791	7,407
1 Vulnerable Category	729	7,189
2 Vulnerable Categories	428	3,876
3 Vulnerable Categories	82	4,255

Asset ownership by vulnerable group is shown in Table 20 above. As expected, vulnerable households are less able to accumulate assets for a number of reasons. For example, households with a higher dependency ratio must spend more of their income on providing food for household members, diverting resources away from capital investment. Here we see that the asset value of high-dependency households is about 30% less than for low

dependency households. Also, the more vulnerable a household is, the fewer assets it is able to accumulate, as evidenced by the asset levels of those households that are in two or more vulnerable categories (Table 20).

Assets Sales

In all, 6.7% of households sold at least one of the twenty-one assets included in the questionnaire (Table 21). Most of these assets are “productive” assets, meaning that they play a role in generating household income. The sale of a productive asset is often a coping strategy to mitigate a household crisis. When asked why they sold an asset, 62% of households responded that they sold the asset to meet household food needs. Another 17% sold an asset to meet normal expenses. Only 8% of those who sold assets did so to pay for medical expenses and only 5% to pay for school fees and 4% to pay social fees.

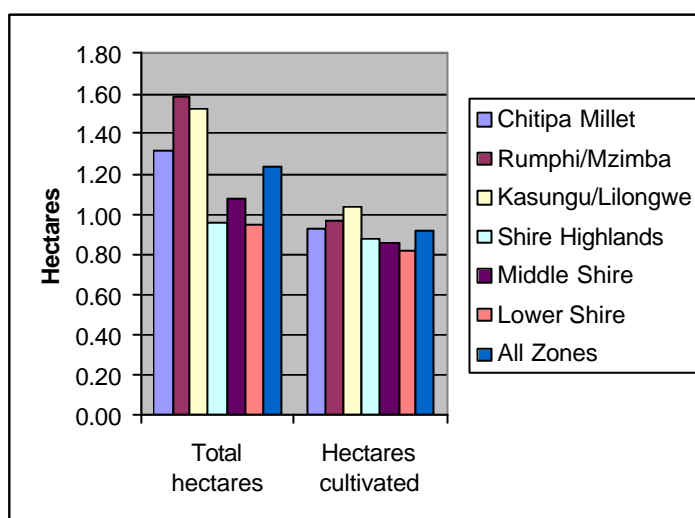
Table 21: Number of assets sold.

	Frequency	Percent
0	1551	93.3
1	93	5.6
2	11	.7
3	5	.3
4	2	.1
5	1	.1
Total	1663	100.0

III.D. Land Use and Production

Figure 8: Cultivation Trends.

The majority of households that were included in the study are engaged in agricultural activities. Only 12 households, or 0.6% of the sample, did not have access to land for the 2002-2003 cropping season. The average number of hectares available was 1.24, while the average number of hectares actually cultivated was 26% less, or 0.92 hectares per household. Area cultivated ranged from one-tenth hectare to 24 hectares. Male-headed households cultivated, on average, 30% more land than female-headed households (1.32 versus 1.01 hectares, respectively).



Access to land varies by survey zone (Figure 8). There is again a distinct pattern from north to south, with access to land declining from north to south. Households with access to the most land are found in Rumphi/Mzimba, averaging 1.32 hectares each. Access is lowest in the Shire Highlands and Lower Shire, where each household has, on average, access to 0.95 hectares. This difference of approximately .4 hectares per household is significant, and adds to the vulnerability of those with smaller land holdings.

Table 22: Cultivation trends by asset category.

Asset Category		Number of hectares	Hectares cultivated
Asset Very poor	N	1118	1111
	Mean	1.14	.83
Asset Poor	N	604	604
	Mean	1.21	.94
Asset Medium	N	201	200
	Mean	1.57	1.12
Asset Rich	N	101	100
	Mean	1.75	1.33

Cultivation trends for each of the four asset categories are shown in Table 22. As expected, those households with the fewest assets also had access to the least land and cultivated the least land. The lowest two asset categories each have access to about 1.1 hectares per household, compared to almost 1.8

hectares for the wealthier households. Asset very poor households cultivated 72% of their available land ((hectares cultivated/ number of hectares) * 100) while poor asset households cultivated 77% of their available land. These are nearly identical to asset medium and asset rich households, who cultivated 71% and 75% of their land, respectively.

The differences in cultivation trends are significant for asset category. Asset very poor and asset poor households have access and cultivate significantly less land than the wealthier asset households (p<.001).

Table 23 highlights differences in access and use of land by vulnerable category. With the exception of female-headed households, most household types have about the same access to land, on average. Households with chronically ill members, though, have access to significantly more land (1.39 hectares). Despite this advantage, they have the largest gap between what they have access to and what they cultivate (0.43 hectares). This is similar to those households in three vulnerability categories. There is likely a shortage of labor available in these households, and more land is left fallow.

Table 23: Cultivation trends by selected vulnerable categories.

Category	N	Number of Hectares Accessible	Hectares Cultivated	Per Capita Hectares Cultivated
General Population	2015	1.24	0.92	0.18
Male-headed Households	1441	1.33	0.96	0.18
Female-headed Households	580	1.01	0.80	0.18
Low Dependency Ratio	712	1.18	0.88	0.20
Medium Dependency Ratio	734	1.34	0.97	0.16
High Dependency Ratio	578	1.19	0.87	0.16
Chronically Ill HHs	609	1.39	0.96	0.18
Households with Orphans	634	1.23	0.87	0.16
0 Vulnerable Categories	787	1.24	0.94	0.20
1 Vulnerable Category	721	1.28	0.96	0.19
2 Vulnerable Categories	426	1.18	0.86	0.17
3 Vulnerable Categories	82	1.18	0.76	0.13

When households were asked to provide reasons for leaving land uncultivated, the following frequencies resulted:

Lack of Labor	44.5%	Lack of Rainfall	5.0%
Lack of Seed	21.1%	Left Land as Fallow	2.6%
Lack of Other Inputs	62.7%	Other	13.5%

The most common reason for not cultivating all of the land a household has access to was a lack of inputs such as fertilizer and pesticides. Over 60% of households cited this as a reason. Almost half of farm households cite a shortage of labor as another reason for leaving land fallow, and one in five say that they do not have enough seed. Very few households (5%) claim they left land uncultivated due to drought. Also, few households apparently leave land fallow as a cropping strategy to rest land and conserve soil fertility.

Figure 9: % of households citing lack of labor, by vulnerability categories.

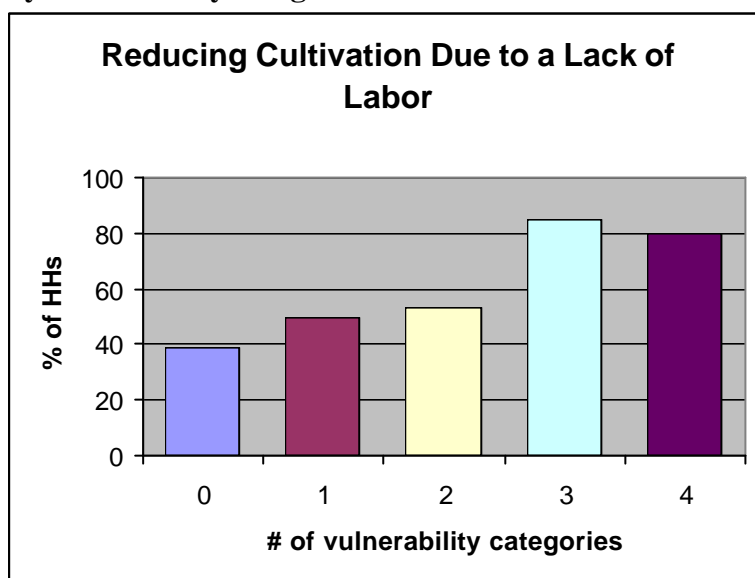


Figure 9 shows the % of households citing lack of labor as a main reason for not cultivating all of their land. The x-axis is the number of vulnerability categories that a household fits (recall that there are four classes of household vulnerability defined by C-SAFE). As the graph clearly shows, the more vulnerable a household, the more labor becomes a constraint to farming all available land.

Table 24 shows reasons for leaving some land uncultivated by survey zone. From this table, it appears that labor shortages are more acute in Shire Highlands and Middle Shire, as over 80% of respondents cited it as a reason. Labor is less of a problem in Rumphi/Mzimba and Kasungu/Lilongwe. In all zones except Chitipa Millet/Central Karonga, about 20-30% of households cannot access enough seed. In Rumphi/Mzimba and Kasungu/Lilongwe, a large majority of farmers cite the lack of other inputs such as fertilizer and pesticide as an impediment to cultivating more land. Also, lack of water seems to be a slightly larger problem in the southern zones as opposed to the northern zones.

Table 24: Reasons for leaving land uncultivated.

Survey Zone							
		Not enough labor	Not enough seed	Not enough other input	Not enough water	Left fallow land	Other
Chitipa Millet/Central Karonga	Frequency	80	13	52	14	3	11
	Percent	52.6	8.6	34.2	9.3	2.0	7.2
Rumphi/Mzimba	Frequency	59	48	182	13	6	18
	Percent	28.5	23.2	87.9	6.3	2.9	8.7
Kasungu/Lilongwe	Frequency	47	45	112	1	3	9
	Percent	32.0	30.6	76.2	.7	2.0	6.1
Shire Highlands	Frequency	33	8	10	1	3	13
	Percent	70.2	17.0	21.3	2.1	6.4	27.2
Middle Shire	Frequency	72	23	34	14	2	14
	Percent	72.0	23.0	34.0	14.0	2.0	14.0
Lower Shire	Frequency	30	15	13	8	0	8
	Percent	44.1	22.1	19.1	11.8	.0	11.8

As Table 25.1 shows, relatively few households were engaged in selling crops during the current growing season. This is likely due to the low production gained from the crop along with satisfying the food needs of the household. The most commonly sold food crop was sorghum, with just over 11% of households growing sorghum engaged in sales. Maize sales accounted for the highest volume, however, with 40 households (under 6% of those growing maize) selling and average of 227.6 kilograms.

Table 25: Cereal cultivation among sampled households.

Crop	Survey Zone					
	Chitipa Millet/Central Karonga	Rumphi/Mzimba	Kasungu/Lilongwe	Shire Highlands	Middle Shire	Lower Shire
Maize (n)	311	355	327	349	330	319
Area	0.64	0.76	0.72	0.76	0.72	0.80
Dominant seed sources	Last harvest	Last harvest	Purchased	Government	Government	Purchased
	Government	Purchased	Last harvest	Purchased	Last harvest	Government
Production (kgs)	185.1	326.0	358.4	283.6	330.5	163.0
Value (Kwacha)	2348	4862	5264	4170	4855	2370
Households selling (%)	4.2	2.9	1.5	2.4	3.4	3.1
Sorghum (n)	10	1	0	5	12	5
Area	0.48	0.40	0.00	1.52	1.90	1.28
Dominant seed sources	Last harvest	Last harvest	n/a	Last harvest	Last harvest	Last harvest
	Borrowed			NGO	Seed bank	Purchased
Production (kgs)	178.3	300	0.0	250	206.25	160.0
Value (Kwacha)	2560	4800		4000	3300	2560
Households selling (%)	10.0	0.0	0.0	0.0	0.0	0.0
Millet	40	44	6	28	5	55
Area	0.31	0.37	0.44	0.48	0.40	0.60
Dominant seed sources	Last harvest	Last harvest	Purchased	Last harvest	Last harvest	Last harvest
	Purchased	Purchased	Gift	Purchased	Purchased	Purchased
Production (kgs)	62.8	72.8	109.3	46.0	134.0	115.4
Value (Kwacha)	942	1092	1640	690	2010	1730
Households selling (%)	16.2	13.6	66.7	7.4	20.0	3.8
	Survey Zone					

Crop	Survey Zone					
	Chitipa Millet/Central Karonga	Rumphi/ Mzimba	Kasungu/ Lilongwe	Shire Highlands	Lower Shire	Lower Shire
Barley	0.30	0.40	0.00	0.00	0.00	0.00
Area	0.30	0.40	0.00	0.00	0.00	0.00
Dominant seed sources	Purchased	Last harvest	n/a	n/a	n/a	n/a
	Borrowed	Purchased				
Production (kgs)	135.0	300.0	0.0	0.0	0.0	0.0
Value (Kwacha)	5130	11400	0.0	0.0	0.0	0.0
Households selling (%)	70.0	100.0	0.0	0.0	0.0	0.0
Wheat	0	0	0	0	1	1
Area	0.0	0.0	0.0	0.0	0.40	0.80
Dominant seed sources	n/a	n/a	n/a	n/a	Last harvest	Purchased
Production (kgs)	0.0	0.0	0.0	0.0	100.0	100.0
Value (Kwacha)	0.0	0.0	0.0	0.0	1158	1128
Households selling (%)	0.0	0.0	0.0	0.0	0.0	0.0
Rice	38	4	4	20	0	11
Area	0.59	0.40	0.40	0.38	0.0	0.56
Dominant seed sources	Last harvest	Last harvest	Last harvest	Purchased		Last harvest
	Purchased	Purchased	Purchased	Last harvest		Seed bank
Production (kgs)	142.9	1080.0	250.0	210.0		227.4
Value (Kwacha)	4605	37800	8750	7350		7955
Households selling (%)	28.0	25.0	0.0	20.0		27.0
Other cereals	4	12	0	1	2	13
Area	0.25	0.36	0.0	1.60	0.52	1.36
Dominant seed sources	Last harvest	Last harvest	n/a	Last harvest	Last harvest	Last harvest
	Purchased	Govt.				Purchased
Production (kgs)	26.2	90.0	0.0	400.0	50.0	107.0
Value (Kwacha)	535	1800	0.0	8000	1000	2138
Households selling (%)	100.0	27.0	0.0	100.0	50.0	8.3

Production averages for vulnerable households are quite varied. Female-headed households, high dependency households, and asset very poor households all averaged less than 230 kgs of cereal production (Table 26). This is more than 65% less than the production of cereals by male-headed households. The table also shows the decreased cereals production experienced by households with chronically ill members. There is not a significant difference for households with orphans versus those without. There are, however, significant regional differences. Chitipa Millet/Central Karonga and Lower Shire both average only 200 kgs of cereal, far below the overall mean production. In contrast, Rumphi/Mzimba and Kasungu/Lilongwe both averaged over 400 kgs.

Table 26: Agricultural production for HHs producing cereal crops, by selected strata.

Category	Total Cereal Production (kgs)
Male-headed households	352.4
Female-headed households	229.3
HHs hosting orphans	311.4
HHs not hosting orphans	328.3
HHs with chronically ill	270.0
HHs with no chronically ill	346.7
Low Dependency	342.8
Medium Dependency	337.1
High Dependency	227.6
Chitipa Millet/C. Karonga	197.3
Rumphi/Mzimba	401.4
Kasungu/Lilongwe	427.1
Shire Highlands	346.4
Middle Shire	370.4
Lower Shire	200.1
Asset Very Poor	225.2
Asset Poor	319.3
Asset Middle	380.0
Asset Rich	521.5

E. Improved Techniques

Farm households were asked the following question; “Do you currently use one of the following techniques for any of your crops”? Results by survey zones are provided in Table 27.

Table 27: Cropping techniques currently known or used, by survey zone.

Cropping Technique	Survey Zone					
	Chitipa Millet/Central Karonga	Rumphi/Mzimba	Kasungu/Lilongwe	Shire Highlands	Middle Shire	Lower Shire
Agroforestry	19.8	26.6	31.5	8.9	23.6	4.9
Water Harvesting	17.9	16.9	7.2	10.9	8.8	0.6
Food Storage	46.5	61.4	43.5	60.0	34.1	32.7
Winter Plowing	36.1	26.2	27.0	36.3	13.9	16.7
Conservation Tillage	51.6	59.4	55.6	56.3	43.5	19.4
Urea Treatment	16.4	0.9	18.3	2.9	3.9	0.9
Use of Legumes	46.2	58.0	25.8	32.0	26.3	27.5
Fodder Production	14.2	5.4	5.1	1.7	2.7	1.5
Compost/manure	43.7	36.9	52.3	53.4	55.9	29.6
Crop Rotation	40.9	65.1	65.1	10.9	48.5	7.7
Overall Average	33.3	35.7	33.1	27.3	26.1	14.1

The most commonly practiced techniques are food storage, conservation tillage, use of legumes, crop rotation and composting. Each of these is practiced by at least 40% of households in most of the survey zones. However, there is no information on the frequency or quality of these practices. Based on the above responses, Lower Shire has the overall lowest adoption rate of agricultural techniques while Rumphi/Mzimba has the highest.

Figure 10: Number of Techniques Employed

As household assets increase, so does the adoption of new or varied agricultural techniques. In Figure 10, the number of techniques adopted per household is shown. Asset poor households are currently using, on average, 2.5 techniques while asset rich households are currently employing 3.75 techniques. The regional data mimics those results shown in Table 24, with Lower Shire lagging far behind in its use of improved agricultural techniques and Rumphi/Mzimba households employing the greatest number of techniques

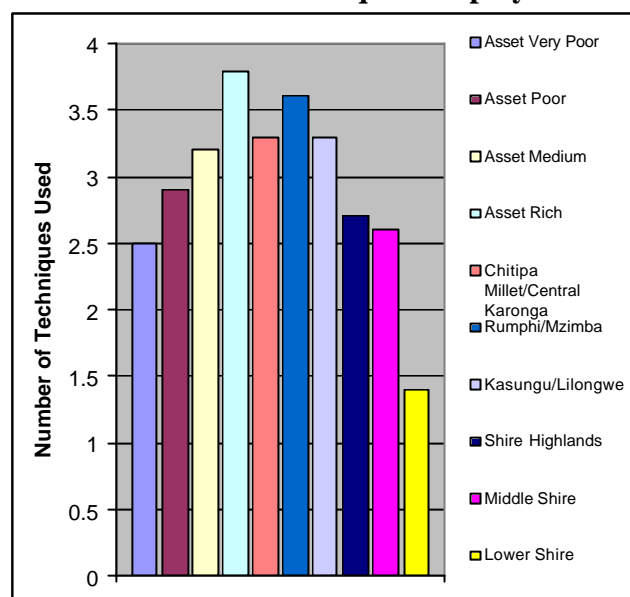


Table 28 summarizes similar information for other vulnerable household categories. On average, about 30% of households employ at least one cropping technique, and the average household uses 2.6-3.1 techniques. Data in Table 25 serves as baseline data against which to measure progress and promoting agricultural techniques.

Table 28: Cropping techniques currently known or used, by survey zone.

Cropping Technique	Vulnerable Category				
	Female-headed households	HHs hosting orphans	High Dependency	HHs with chronically ill	HHs in 2 or more categories
Agroforestry	16.5	18.1	23.2	22.2	17.1
Water Harvesting	8.7	8.3	9.3	12.8	8.5
Food Storage	50.1	45.1	49.5	47.1	48.3
Winter Plowing	27.7	26.0	24.0	27.5	27.4
Conservation Tillage	44.0	45.6	51.5	47.1	45.3
Urea Treatment	6.0	8.3	9.5	8.8	6.2
Use of Legumes	34.0	40.8	40.3	44.9	39.2
Fodder Production	3.6	5.7	8.8	7.6	4.6
Compost/manure	47.9	46.9	51.6	50.6	46.6
Crop Rotation	43.9	38.4	39.7	44.4	34.7
Overall Average	27.9	28.3	30.7	31.3	27.8
Number of techniques	2.6	2.8	3.1	3.1	2.7

F. Livestock

71 percent of households surveyed own livestock (1,441 out of 2030 households). Data for livestock by zone are presented in Table 29. Ownership of draught cattle overall is low, reaching its highest in Rumphi/Mzimba where 9.0% of households own an average of 4.3 animals each. Only seven households in the three most southern zones own draught cows.

Table 28: Livestock ownership among sampled households, by survey zone.

Livestock Type	Survey Zone					
	Chitipa Millet/Central Karonga	Rumphi/ Mzimba	Kasungu/ Lilongwe	Shire Highlands	Middle Shire	Lower Shire
Draught Cows (% owning)	6.6 (21)	9.0 (32)	5.1 (17)	0.3 (1)	0.0 (0)	1.8 (6)
Number owned	2.3	4.3	2.8	2.0		6.5
Number Sold	0.0	0.1	0.2	0.0		0.0
Number Died	0.1	0.2	0.0	0.0		0.7
Number Lost	0.0	0.1	0.0	0.0		0.0
Number Consumed	0.0	0.0	0.1	0.0		0.0
Other Cattle (% owning)	34.0 (108)	7.0 (25)	8.1 (27)	1.4 (5)	2.7 (9)	4.3 (14)
Number owned	4.2	2.8	5.9	5.8	9.0	10.6
Number Sold	0.2	0.2	0.7	0.2	0.8	1.3
Number Died	0.4	0.2	0.5	0.0	0.9	0.6
Number Lost	0.0	0.0	0.5	0.0	0.0	0.2
Number Consumed	0.1	0.0	0.2	0.0	0.6	0.1
Goats (% owning)	19.8 (63)	18.5 (66)	25.7 (86)	30.1 (107)	30.0 (101)	25.6 (84)
Number owned	3.3	5.1	4.9	5.0	4.2	5.7
Number Sold	0.4	0.4	0.7	1.2	0.7	1.1
Number Died	0.3	0.3	0.6	1.0	0.5	0.7
Number Lost	0.1	0.1	0.3	0.3	0.2	0.6
Number Consumed	0.2	0.3	0.4	0.5	0.2	0.2
Pigs (% owning)	16 (51)	11.5 (41)	5.7 (19)	2.5 (9)	2.1 (7)	5.8 (19)
Number owned	2.5	2.7	4.2	3.1	3.0	4.9
Number Sold	0.2	0.3	0.6	0.7	0.1	0.8
Number Died	0.2	0.3	1.5	0.3	0.0	1.0
Number Lost	0.0	0.0	0.0	0.1	0.0	0.0
Number Consumed	0.1	0.2	0.0	0.3	0.0	0.0
Donkeys/Horses (% owning)	0.9 (3)	0.0 (0)	0.0 (0)	0.3 (1)	0.3 (1)	0.6 (2)
Number owned	8.7			5.0	5.0	17
Number Sold	0.0			0.0	0.0	0.0
Number Died	3.0			25.0	2.0	12.0
Number Lost	1.0			0.0	0.0	0.0
Number Consumed	2.7			0.0	2.0	0.0
Poultry (% owning)	81.1 (258)	63.3 (226)	56.9 (190)	63.5 (226)	52.2 (176)	53.0 (174)
Number owned	10.2	9.1	9.7	8.7	9.0	10.0
Number Sold	0.9	1.0	1.3	1.0	0.9	0.8
Number Died	3.3	2.1	1.8	2.6	2.7	2.6
Number Lost	1.4	1.0	0.8	0.6	0.9	1.0
Number Consumed	2.1	2.2	1.9	1.4	1.8	1.1
Rabbits (% owning)	3.1 (10)	2.2 (8)	0.6 (2)	1.4 (5)	2.1 (7)	0.0 (0)
Number owned	6.7	4.4	11.5	4.0	7.6	
Number Sold	0.5	0.4	2.0	0.0	0.0	
Number Died	0.8	0.2	1.0	1.2	1.9	
Number Lost	0.2	0.1	0.5	0.0	0.7	
Number Consumed	1.7	0.2	1.0	0.2	0.9	

Other cattle ownership is highest in Chitipa Millet/Central Karonga zone, where one-third of households own an average of four animals. Again, ownership is lowest in the southern zones. Loss of animals due to death, theft, or other reasons was rare for draught and other cattle.

Overall, about one-third of households own goats. Ownership ranges from 25-30% of households in the south to about 20% of households in the north. The average number of goats owned ranges from 3.3 per household in Chitipa Millet/Central Karonga to 5.7 per household Lower Shire. Pig ownership is more common in the north, while very few households in throughout the study area own donkeys/horses or rabbits.

Over half of all households in each zone own poultry, and it is highest in the north where in Chitipa Millet/Central Karonga over 80% of households raise poultry. Average numbers of poultry are around 10 per household throughout the study area. Poultry are also the most common form of animal to sell and consume.

Value of Livestock

The value of livestock was estimated by using median values, in Kwacha, for each animal type obtained from various points throughout Malawi. Recalling that 71% of households own livestock, the average value of livestock assets for these households is worth about 11,400 Kwacha (US125.00). The standard deviation is over K31000, highlighting the large range of value found in livestock ownership. Figure 11 provides the average value by survey zone for livestock, crops and assets. This figure highlights the discrepancy in livestock value between Chitipa Millet/Central Karonga and the other five survey zones. Households in this survey zone own significantly more cattle than in other zones, which alone accounts for the large difference in value noted here.

Figure 11: Value of Livestock, Crops and Assets by Survey Zone.

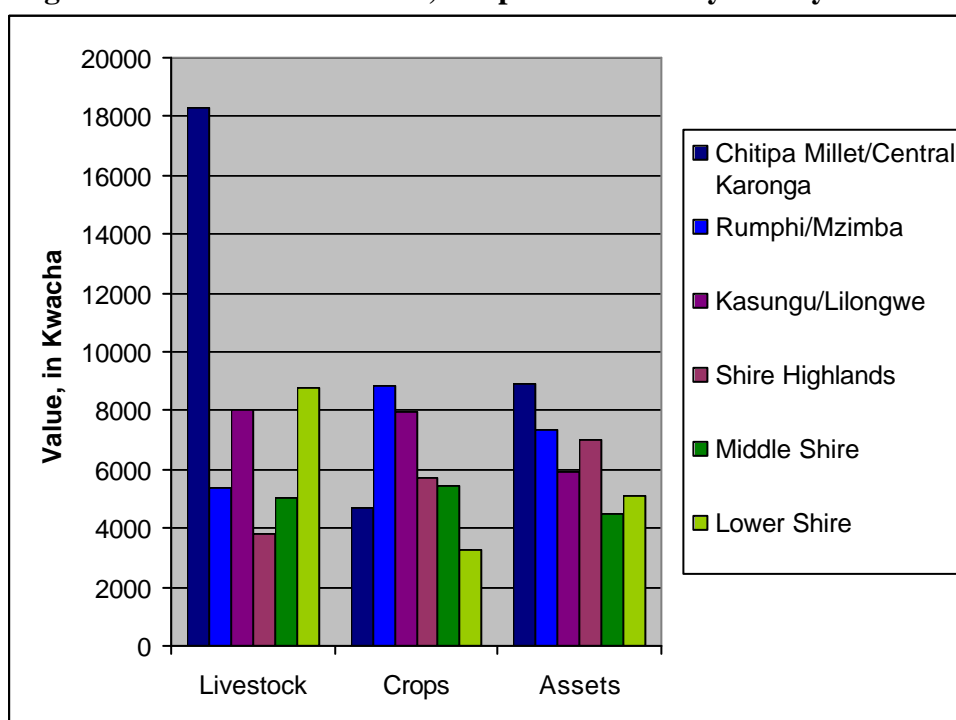


Figure 11 also highlights the fact that different survey zones have different “strengths” in where household income is derived from and how it translates to assets. In Lower Shire, for example, most household value is in livestock, and very little is in crops. Combining the two together results in a current value for households derived from crops and livestock. When this is correlated with asset ownership the relationship is highly significant ($r = .368$, $p < .001$), suggesting that a significant amount of household income that can eventually be converted to assets is derived from crops and livestock, and that assets are a strong proxy for wealth in the Malawi survey population.

Fish

Households were also asked about their access to fishing. In the survey population, 10.5% of households engaged in fishing during the previous 12 months. A total of 61% of these households consumed all of the fish they caught. Another 10% sold their entire catches, and the remaining 29% consumed a portion and sold a portion of their catch. The percent of households fishing ranged from a high of 13.3% in Shire Highlands to a low of 9.0% in Kasungu/Lilongwe. Over 20% of asset rich households engaged in fishing while only 7.7% of the asset poor did the same.

III.G. Household Food Economy

Months of current food stocks’ is a good proxy indicator for food security, especially for rural households that primarily depend on their own production to satisfy a significant percentage of their food needs. In Malawi, the difference between what households perceive as the number of months they “normally” have sufficient food stocks from their own production and the number of months they expect to have from their current harvest is large. Figure 12 and Table 30 show this discrepancy for a number of strata. For the general population, the expectancy is that the current harvest only about one-half of what households normally obtain through cropping activities. This trend is similar for every category analyzed. The shortfall is nearly the same for male- and female-headed households. There is no significant difference in the shortfall, however, among any of the categories featured in Figure 12, meaning that every household everywhere has been hit by significant food shortfalls.

Figure 12: Months of Normal and Current Food Stocks

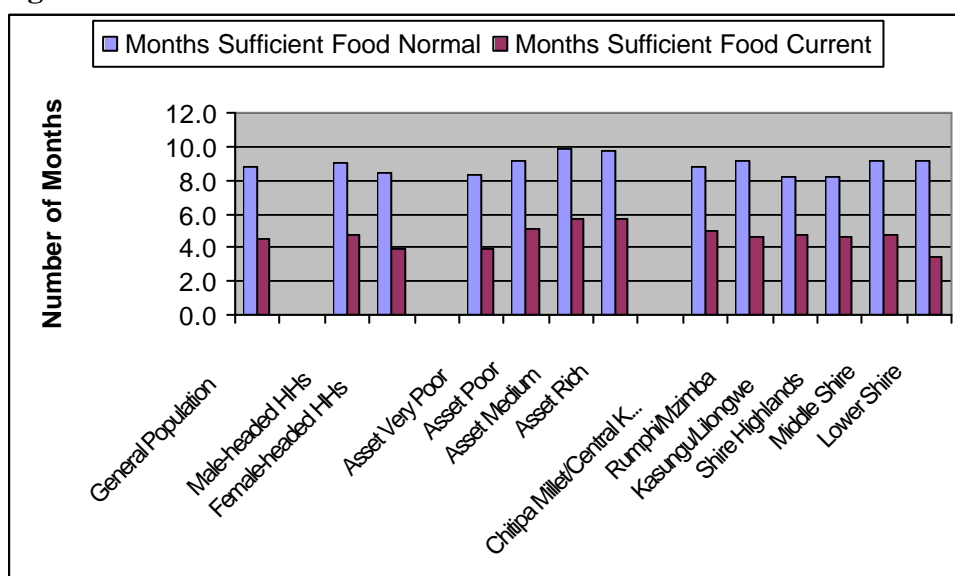


Table 30: Normal and present food stocks, by strata.

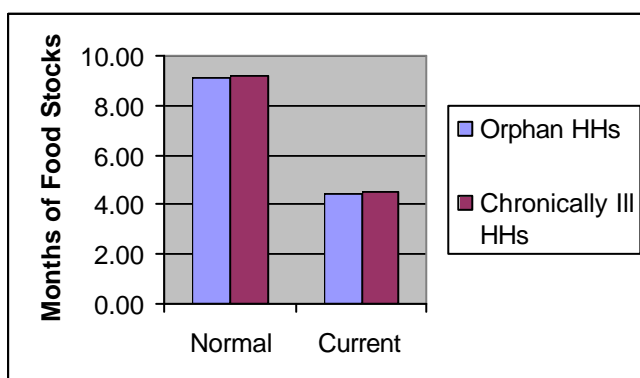
Strata/Category	Sub-strata	Months Sufficient Food Normal	Months Sufficient Food Current
Overall Population		9.1	4.5
Gender of HH Head	Male	8.8 a	4.5 a
	Female	9.0 b	4.8 b
Survey Zones	Chitipa Millet/Central Karonga	8.8 a	5.0 b
	Rumphi/Mzimba	9.2 c	4.6 a
	Kasungu/Lilongwe	8.2 b	4.7 a
	Shire Highlands	8.2 b	4.6 a
	Middle Shire	9.2 c	4.8 a
	Lower Shire	8.8 a	5.0 b
Asset Rankings	Asset Very Poor	8.3 a	3.9 a
	Asset Poor	9.2 b	5.1 b
	Asset Medium	9.9 c	5.7 c
	Asset Rich	9.8 c	5.7 d

Note: Within a strata, means with different letters are significantly different at $p < .05$. For example, male and female-headed households have significantly different months of normal food stocks.

There is a significant linear and negative correlation between the coping strategy index and the number of months of food stocks anticipated from the current harvest ($r = -.280$, $p < .001$). In other words, as a household's coping index increases, the number of months it expects to be self-sufficient from the current harvest decreases.

Households hosting orphans and households with chronically ill members have been seen their expectations of current food stocks decline with the same magnitude. Figure 13 shows current and expected food stocks for these two vulnerable groups. Normal food stocks last approximately nine months out of a year, but stocks from the current harvest are expected to last, on average, just over four months.

Figure 13: Food stock projections for households with orphans and with chronically ill members.



When households were asked why their food stock expectations were lower for the current harvest than for normal harvests they provided a variety of reasons (Table 31). Most responded that the primary reason was due to a lack of inputs. Rural farm households in Malawi have historically enjoyed broad government financial and political support for inputs

such as fertilizer. Most subsidies for inputs have been dropped, and farmers are finding it difficult to wean themselves off of cropping without these inputs.

Male-headed households were one of the groups that ranked the lack of inputs as a reason for decreased production and food stocks. They also cited drought as a primary reason. Labor, seed and land were less of a concern to this group.

Female-headed households shared many of the same views as their male counterparts, with the only difference being their ranking of soils and land. Viewpoints were also similar among the six survey zones, with the only obvious difference being the view in Lower Shire that drought was the number one reason.

Inputs were relatively minor to these households, and instead focused on the drought and poor soils. There was wide agreement among asset categories and among vulnerable households on the reasons for insufficient food.

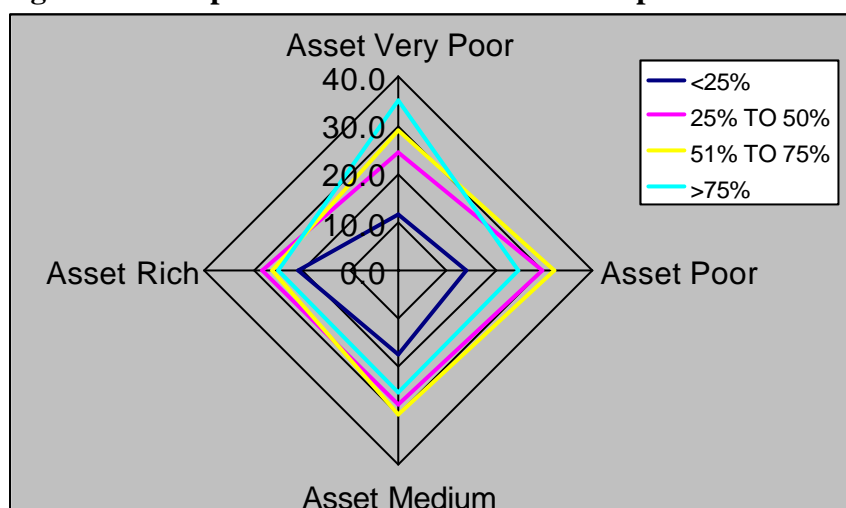
Table 31: Rankings of reasons for insufficient food.

	Not enough land	Drought	Poor soils	Not enough labor	Not enough seed	Lack of inputs	Draught power	Other
Rankings (highest = 1)								
Male HHs	7	2	5	4	8	1	6	3
Female HHs	5	2	7	4	8	1	6	3
Chitipa Millet/Central Karonga	5	1	8	3	7	2	6	4
Rumphi/Mzimba	8	2	7	4	6	1	5	3
Kasungu/Lilongwe	2	7	8	4	5	1	6	3
Shire Highlands	6	2	5	4	8	1	7	3
Middle Shire	6	4	5	3	8	1	7	2
Lower Shire	7	1	3	5	8	6	4	2
Asset Very Poor	7	2	4	3	8	1	5	3
Asset Poor	7	2	6	4	8	1	5	3
Asset Medium	5	2	6	4	8	1	7	3
Asset Rich	7	2	6	4	8	1	5	3

Household budgets go primarily to procuring food. Figure 14 shows the proportion of the household budget spent on food.

Almost 40% of asset poor households spend 75% or more of their household income on food, which leaves little to spend on other items such as health care, school fees, etc. This is significantly more than asset intermediate households and asset rich households who spend respectively, 25 % to 50 % and less than 25 % of the HH income on food.

Figure 14: Proportion of Household Income Spent on Food



III.H. Consumption and Food Aid

Survey participants were asked which food types were consumed in their households the day before the survey. Maize was the most significant food source with 93.0% of households eating maize, or maize meal, the previous day (Table 32). Over 67% of households also consumed green vegetables and 86% consumed salt. Beans, other tubers and nuts were all consumed by 25-30% of households. Sugar or sugar products were used in just under one-quarter of all the households. Other foods were less used, including sorghum, millet, rice, other cereals, and cassava, all used in less than 10% of households. A small minority of households consumed other food items. For example, meat and chicken were consumed in only about 3% of households. Fish, however, was consumed by about 17% of households. Dairy and eggs were rarely consumed, as were coffee, tea and beer.

The following table shows the percent of households consuming various food groups during the 24-hours prior to the survey.

Table 32: Percent of households consuming various foods in the previous 24 hours.

Food Item	Percent	Food Item	Percent
Maize	93.0	Vegetables	20.7
Sorghum	0.8	Green veggies	67.5
Millet	2.3	Fruit	17.5
Rice	3.5	Fats/Oil	15.4
Other cereals	3.2	Dairy	3.6
Beans	30.2	Sugar	22.6
Cassava/potatoes	8.3	Salt	86.3
Other tubers	30.1	Tea	15.5
Meat	3.0	Coffee	0.5
Fish	17.4	Beer	4.0
Chicken	3.3	Other beverages	1.7
Eggs	4.1	Other Foods	10.3
Nuts	25.2		

Table 33 shows differences in the consumption of protein by various household classifications. Fish was consumed by more households than other protein sources. However, a significantly lower percentage of female-headed households, high dependency households, and households in two or more vulnerability categories ate fish compared to other household types. Households with chronically ill members ate significantly less meat and chicken than other household types, but the same amount of eggs as the general population. Households in two or more vulnerability categories had the lowest overall protein consumption.

Table 33: Consumption of protein within 24 hours of the survey, by household type.

Protein Category	Vulnerable Category					
	General survey	Female-headed households	HHs hosting orphans	High Dependency	HHs with chronically ill	HHs in 2 or more categories
Fish	14.7	11.5	13.1	11.9	14.5	11.0
Meat	2.5	2.9	3.0	3.4	2.0	1.6
Chickens	2.5	3.1	3.1	3.0	2.1	0.0
Eggs	3.3	3.3	4.1	2.8	2.9	1.2

Table 34 shows protein consumption by asset category. There were large and significant differences in protein consumption among the four asset categories, with asset poor households consuming significantly less protein in all four categories. Consumption was highest in asset rich households, with the exception of egg consumption, which was highest in asset intermediate households.

Table 34: Consumption of protein within 24 hours according to asset category.

Protein Category	Vulnerable Category				
	General survey	Asset Very Poor	Asset Poor	Asset Intermediate	Asset Rich
Fish	14.7	10.7	17.2	22.8	28.7
FishMeat	2.5	1.9	2.1	5.0	5.4
Chickens	2.5	1.2	3.3	5.0	6.9
Eggs	3.3	2.0	4.5	6.9	5.0

Several indicators can be used in tandem to understand current food security in households. Two such indicators include the number of meals consumed the previous day and the number of items in the diet consumed in the previous day. These two indicators are provided in Table 34 below.

There is no significant difference between male-and female-headed households in the number of meals eaten, but male-headed households have significantly more items in the diet ($p < .05$, Table 35). Dependency ratio does not have a significant impact on the number of meals eaten, but high dependency households have significantly fewer items in the diet ($p < .05$). Having chronically ill members in the household or hosting orphans does not significantly change the number of meals or diet diversity.

Both vulnerability category and asset category have a significant impact on both the number of meals eaten and the number of items in the diet. Higher dependency households and households with fewer assets both eat fewer meals per day and have fewer items in their diet.

In terms of survey zone, households in Rumphi/Mzimba eat significantly more meals per day, while households in Chitipa Millet/Central Karonga and Rumphi/Mzimba eat a more diverse diet than in the other survey zones.

Table 35: Number of meals and items in the diet by strata.

Category	N	Number of Meals	Number of Items in the Diet
General Population	2026	2.08	4.7
Male-headed Households	1444	2.13	4.8
Female-headed Households	582	1.97	4.4
Low Dependency Ratio	643	2.08	4.7
Medium Dependency Ratio	773	2.17	4.8
High Dependency Ratio	469	2.01	4.5
Chronically Ill HHs	610	2.00	4.5
Households with Orphans	634	2.02	4.6
0 Vulnerable Categories	791	2.17	4.9
1 Vulnerable Category	726	2.08	4.6
2 Vulnerable Categories	427	1.97	4.5
3 Vulnerable Categories	82	1.84	4.1
Asset Very Poor	1119	1.95	4.2
Asset Poor	605	2.15	4.9
Asset Intermediate	202	2.39	5.7
Asset Rich	100	2.51	6.0
Chitipa Millet/Central Karonga	318	2.16	5.1
Rumphi/Mzimba	356	2.34	5.2
Kasungu/Lilongwe	334	2.04	4.6
Shire Highlands	355	2.01	4.3
Middle Shire	336	1.93	4.4
Lower Shire	327	2.01	4.4

Drinking water comes from a variety of sources, but half of all households receive their water from a pump. Just over 14% of households have access to tap water. Surface water and open wells are the source for 13% and 18% of households, respectively. Source of water varies considerably by survey zone, as shown in Table 36.

Table 36: Source of water by survey zone.

Survey Zone		Source of Water						Total
		Open well	Covered well	Pump	Tap water	Surface water	Other	
Chitipa Millet/Central Karonga	Frequency	29	6	136	60	85	1	317
	Percent	9.1	1.9	42.9	18.9	26.8	.3	100.0
Rumphi/Mzimba	Frequency	63	6	178	43	60	7	357
	Percent	17.6	1.7	49.9	12.0	16.8	2.0	100.0
Kasungu/Lilongwe	Frequency	130	46	99	36	23		334
	Percent	38.9	13.8	29.6	10.8	6.9		100.0
Shire Highlands	Frequency	71	8	226	36	13	2	356
	Percent	19.9	2.2	63.5	10.1	3.7	.6	100.0
Middle Shire	Frequency	32	5	226	45	29		337
	Percent	9.5	1.5	67.1	13.4	8.6		100.0
Lower Shire	Frequency	38	5	150	76	58	1	328
	Percent	11.6	1.5	45.7	23.2	17.7	.3	100.0

Food Aid

Food aid is an important source of calories for many rural Malawi households. Respondents were asked whether or not their family had benefited from food aid during the previous six months. Of the survey population, half (49.5%) of households had benefited. Of those households receiving food aid, 88% received it from general feeding (Table 36). Only six households reported benefiting from pregnant/lactating women feeding programs and food-for-work programs.

Table 37: Type of food aid for the general survey population

		Frequency	Valid Percent
Valid	General feeding	860	87.8
	Prenant/lactating women	6	.1
	Malnutrition	83	8.5
	Orphans	96	9.8
	Chronically ill	30	3.1
	FFW	9	.1
	Other	143	14.6
Total		2030	

Food aid was received by about the same percentage of vulnerable households irrespective of their vulnerability category. For reference, 43% of non-vulnerable households received food aid. As Table 38 shows, about 57% of households received food aid in female-headed households and households with orphans. Slightly lower percentages of households with chronically ill members and high dependency households received food aid. The average number of months food aid has been received was fairly uniform at about 3.5 months per household. The reasons households did not receive food aid, however, varied markedly by vulnerability category. The most frequent reason cited for female-headed households and for households in at least two vulnerability categories was discrimination. Orphan households and households with chronically ill members most felt they did not meet the criteria. High dependency households most frequently cited a lack of knowledge about the programs.

In general, about half of all households report they have given food to neighbors in the last 6 months, and overall about 10% would expect repayment.

Table 38 also provides a breakdown of the percentage of households that receive food aid in each food aid category. Totals here can exceed 100% because a small percentage of households receive food aid in more than one category.

Table 38: Food aid by vulnerable category.

Type of Food Aid	Vulnerable Category					
	Non-vulnerable HHs	Female-headed HHs	HHs hosting orphans	High Dependency	HHs with chronically ill	HHs in 2 or more categories
% receiving food aid	43.2	57.1	57.2	54.8	53.6	60.1
Number of months	3.5	3.5	3.5	3.7	3.6	3.5
Main reason not receiving	Did not know (29%)	Discriminated against (27%)	Did not meet criteria (29%)	Did not know (34%)	Did not meet criteria (28%)	Discriminated against (30%)
Give food to neighbors	53.8	48.7	50.4	47.5	53.0	51.1
Expect repayment?	7.3	10.2	8.4	9.4	9.5	10.0
Food Aid Type	(% of those receiving food aid)					
General feeding	91.0	87.3	83.9	85.3	84.4	84.5
Pregnant/lactating women	0.9	0.0	0.0	0.1	0.0	0.0
Malnutrition	1.8	6.2	9.9	10.2	8.4	7.3
Orphans	2.7	13.3	19.2	14.3	12.1	17.8
Chronically Ill	0.9	2.2	3.7	3.3	5.0	3.6
FFW	1.5	0.2	0.1	0.0	0.1	0.2
Other	1.2	3.7	2.5	3.7	2.2	3.3

Mortality

During the previous year, 17.7% of survey households (n=360) experienced at least one death. The average age of death was 23 years old. In over half of all deaths the individual was ill for more than three months. Table 39 provides mortality statistics for several survey strata. Vulnerable households had at least one death at a significantly higher rate than the general survey population, averaging about one in four, or 25%, for most vulnerable groups. Chitipa Millet/Central Karonga, Middle Shire and Shire Highlands had the highest percentages of households with deaths. Average age was generally in the mid to upper 20s.

Table 39: Mortality statistics for selected strata.

Strata/Category	Sub-strata	HHs with Death in Last Year (%)	Average Age (yrs)	% Ill More Than 3 Months
Overall Population		17.7	23	58
Gender of HH Head	Male	15.1	25	61
	Female	24.2	29	65
Chronically Ill HHs		24.3	25	65
Orphan-hosting HHs		23.6	22	60
Survey Zones	Chitipa Millet/Central Karonga	23.0	27	54
	Rumphi/Mzimba	11.8	24	55
	Kasungu/Lilongwe	10.8	21	61
	Shire Highlands	22.2	28	75
	Middle Shire	21.7	29	67
	Lower Shire	17.4	29	56
Asset Rankings	Asset Very Poor	17.5	24	62
	Asset Poor	17.3	27	60
	Asset Medium	20.3	32	66
	Asset Rich	17.8	40	67

The statistics according to asset ranking suggest that mortality is not influenced by household wealth, as all asset categories had about the same percentage of households with at least one death in the previous year (Table 39). A slightly higher percentage of individuals who died in asset rich households had been ill for the previous three months compared with other asset categories. In general, about 60% of deaths were among individuals that had a prolonged illness.

III.I. Coping Strategies

The Coping Strategies Index (CSI) is a relatively simple and efficient indicator of household food security that corresponds well with other more complex measures of food insecurity. Developed by CARE, and field tested by WFP and CARE, the CSI has been used for early warning and food security assessments in eight African countries. The CSI gives a quantitative score for each household that is a cumulative measure of the level of coping - and therefore the measure of food insecurity. In similar studies in 6 countries in the Greater Horn of Africa region, this has been found to be a robust indicator of household food security, and one which is straight forward to measure and analyze, and can be used to track both household food security in emergencies, and the impact of interventions such as food aid.

The CSI measures the *frequency* and *severity* of a household's coping strategies for dealing with shortfalls in food supply. Information on the frequency and severity is combined into a single CSI score. Comparing scores and averages gives a good comparison of overall household food security and establishes the baseline for monitoring drought trends and the impact of interventions (food aid). The measure includes only those short-term consumption strategies that are most important in a particular context.

C-SAFE recognizes the CSI as a useful monitoring tool to measure changes in household food security status and provide program managers with timely information. To be effective, the CSI must be adapted to the local context and should be developed as part of a more time

and resource intensive assessment. Developing the index from the raw data requires background knowledge of the indicator, or several days of training.

To develop the CSI, a short list of the most applicable coping strategies is developed. Examples of short term consumption coping strategies include:

1. **Dietary change**: from a more expensive preferred food to a less preferred option;
2. **Increase non-sustainable strategies to increase food supply**: such as credit or consuming seed stocks;
3. **Reduce the number of consumers**: send children elsewhere at mealtime; and,
4. **Rationing**: reducing portions, skipping meals or whole days, feeding some, but not all members of the family.

Through focus group work and field testing, a list of 14 questions on coping strategies was developed during the assessment training, provided in Table 40.

This list of strategies was incorporated into the survey questionnaire with five relative frequency categories ranging between every day per week to ‘never’ (see Appendix C, Section I). Through focus group work, the assessment collected contextual information on the relevance of coping strategies among sample communities and determined the relative severity of each coping strategy by assigning a value between one and four to each strategy – or severity score.

To analyze the data, the frequency score recorded during the household surveys is multiplied by the severity score. This produces a single score for each strategy, setting a baseline from which food security status can be monitored in a timely way.

III.I.1. Consumption Strategies

The household survey indicated which coping strategies the household used during the last 30 days. Consumption strategies included borrowing food, borrowing money to buy food, buying food on credit, relying on less preferred foods as substitutes for maize, regularly reducing the number of meals eaten per day, regularly skipping entire days without eating due to lack of money or food, eating unusual types of wild food that are not normally eaten, restricting consumption of adults so children can eat normally, feeding working members at the expense of nonworking members, eating all green maize fresh from the field, and slaughtering more animals than normal for food. Over the last 30 days, the respondents were asked if they participated in these coping strategies every day, 3-6 times per week, 1-2 times per week, less than one day per week, or never.

Through several focus group sessions, the assessment collected contextual information on the relevance of coping strategies and determined the relative severity of each coping strategy by assigning a value between one and four to each strategy – or severity score. A severity score of four, for example, means that the coping strategy is considered extreme by community members, i.e. a more drastic behavior by the household to meet food needs. Severity scores were averaged from all focus groups and the mean score was used to compute the coping index. Severity scores for each coping strategy are provided in Table 40.

Table 40: Consumption strategies.

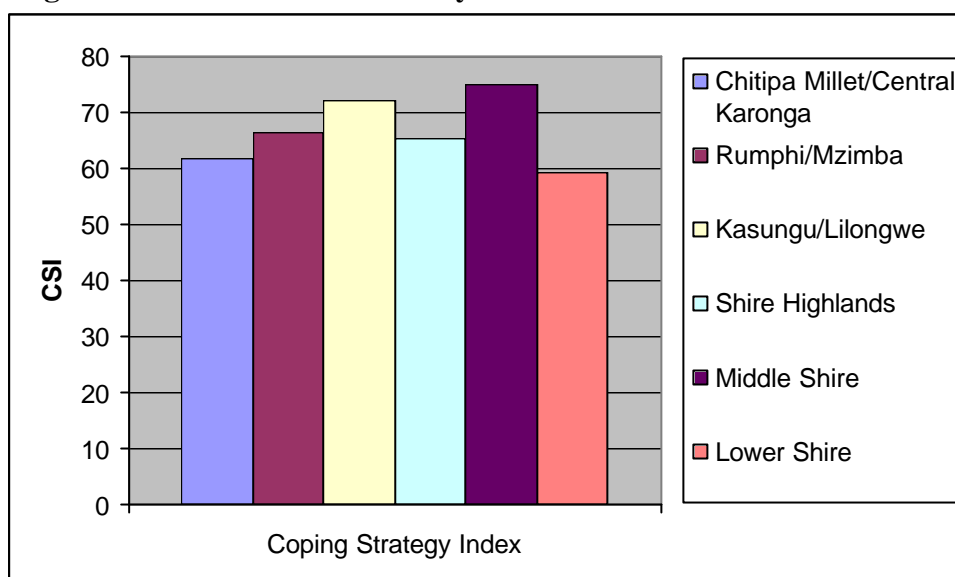
Consumption Strategies (Severity Score)	Every Day	3-6 Times per Week	1-2 Times per Week	<1 Time per Week	Never
Rely on less preferred food or less expensive food? (1.75)	12.5	17.5	16.5	14.6	38.9
Borrow food, or rely on help from friends and/or relatives? (2.75)	0.6	4.2	12.7	14.5	68.0
Purchase food on credit? (3.25)	0.2	2.4	7.0	8.7	81.7
Gather wild food or hunt? (2.5)	0.8	3.6	4.4	5.8	85.3
Harvest immature crops? (3.50)	6.2	13.8	16.7	11.9	51.4
Send HH members to eat elsewhere? (3.25)	0.4	2.0	4.3	4.6	88.8
Send HH members to beg? (3.50)	0.4	1.7	3.9	5.1	88.8
Limit portion sizes at mealtime? (3.25)	24.3	15.0	15.2	10.1	35.3
Restrict consumption by adults so children can eat? (2.75)	2.8	8.8	15.3	12.4	60.7
Restrict consumption of non-working members in favor of working members? (2.25)	0.4	0.9	1.7	2.3	94.6
Reduce the number of meals eaten in a day? (2.75)	17.2	18.0	20.5	14.4	29.8
Skip entire days without eating? (4.00)	1.0	5.8	15.7	19.0	58.5
Rely on piecework? (1.75)	6.9	16.0	16.9	14.0	46.1

Over half the households (54%) responded that they relied on less preferred foods, limited their portions at meal times, reduced the number of meals per day, or relied on piece work at least one time per week during the last 30 days. Households relied on less preferred food (food other than maize) 61.1% of the time, but 30.0% of households ate less preferred food more than 1-2 times per week. More importantly, 70.2% of households reduce the number of meals they eat at least once per week, with 17% of the households reducing the number of meals they eat every day. A large percent of households, almost 22%, skipped entire days of eating at least 1-2 times per week. Over half of households rely on piecework to satisfy their food needs, although they view this as a mildly severe coping strategy.

Almost half the surveyed households harvested immature crops for food needs. Many households regularly reduce the amount of food for adults so that children can eat normally (39.3% of households), but only 6.4% of households feed working members in preference to nonworking members.

The coping strategy index averaged 66.7 for all households, with a range of 37 to 128. Coping index values for the six-survey zone are depicted in Figure 15. Middle Shire and Kasungu/Lilongwe had the highest coping strategy indices, averaging 75.1 and 72.2, respectively. Lower Shire had the lowest value at 59.4, statistically the same as Chitipa Millet/Central Karonga. This low value may be attributable to these households having “institutionalized” coping mechanisms, since they face food and crop deficits repeatedly.

Figure 15: CSI for the six survey zones.



The index is significantly correlated with several key food security variables, including asset/crop ownership (Table 41), number of food items in the diet, and total cereal production ($r=-.121$; $p<.001$).

The CSI is provided in Table 40 for other key vulnerability categories.

Table 41: Number of meals and items in the diet by strata.

Category	# of Meals	CSI
General Population	2026	66.7
Male-headed Households	1444	66.3
Female-headed Households	582	67.9
Low Dependency Ratio	643	65.2
Medium Dependency Ratio	773	66.9
High Dependency Ratio	469	68.4
Chronically Ill HHs	610	68.0
Households with Orphans	634	68.9
0 Vulnerable Categories	791	65.1
1 Vulnerable Category	726	66.9
2 Vulnerable Categories	427	68.5
3 Vulnerable Categories	82	71.6
Asset Very Poor	1119	69.9
Asset Poor	605	64.6
Asset Intermediate	202	61.4
Asset Rich	100	58.3

Households with chronically ill members and households hosting orphans have a significantly higher index (68.0 and 68.9, respectively) than non-vulnerable households (65.1; $p<.05$). Male and female-headed households have no significant difference in their CSI score. Asset very poor households have significantly higher CSIs than other asset categories.

V. Summary

The following main points summarize the findings from the Malawi Baseline Survey:

1. Rural households have very few assets. In this survey, about 80% of households were classified as asset poor or very poor. Households with limited assets are vulnerable, not only because of their relative poverty, but also because they have few items to divest should they be forced to spend money on food or emergencies.
2. The percentage of vulnerable households in the C-SAFE project areas is very high. Sixty percent of households surveyed fall into one or more vulnerability categories. Almost one-third of rural households surveyed are hosting at least one orphan, and almost 12.5% of households are hosting double orphans. Female-headed households bear much of the burden in caring for orphans, with almost half of their households hosting at least one orphan child.
3. Chronically ill individuals were present in 30% of households surveyed, and only a small but significant difference exists between the percentage of chronically ill found in male versus female-headed households. Chronic illness is having a severe impact on household food security. Although they have, on average, access to more land they have the largest gap between what they have access to and what they cultivate. This signals a labor shortage in these households, and more land is left fallow.
4. Deaths rates in chronically ill households are higher, and the data reconfirms the notion that chronic illnesses are not diseases of the “poor.” Only small and statistically non-significant differences are found among the four asset categories.
5. Dependency ratios are very high, about 20% higher than the classical dependency ratios and much higher when compared to international norms. The overall mean dependency ratio is 174.6, reflecting the large number of dependents with respect to workers in rural Malawian households.
6. Over 10% of school-aged children have dropped out of school and dropout rates are significantly higher for orphans.
7. Female-headed households, high dependency households, and asset very poor households all averaged less than 230 kgs of cereal production. This is more than 65% less than the production of cereals by male-headed households and is a direct contributor to the high vulnerability of these households, especially given their other options for generating income to pay for food and other basic needs.
8. The most commonly sold food crop was sorghum, with just over 11% of households growing sorghum engaged in sales.
9. Households in rural Malawi are very food insecure. Households in general expect that the current harvest will be about one-half of what they normally obtain through cropping activities. This trend is similar for every household type analyzed, and demonstrates that food security problems in Malawi are widespread and impact on many livelihoods.
10. Almost 40% of asset poor households spend 75% or more of their household income on food, which leaves little to spend on other items such as health care, school fees, etc.

11. The majority of households have relied very importantly on food aid to provide for part of their food requirements, and food aid is an important source of calories for many rural Malawi households. One-half of surveyed households have relied on food aid for meeting part of their nutritional needs, and the majority has received these benefits through general feeding. Targeting of vulnerable households through other food aid programs may need refining.

12. There were large and significant differences in protein consumption among the four asset categories, with asset poor households consuming significantly less protein in all four categories. Consumption was highest in asset rich households, with the exception of egg consumption, which was highest in asset intermediate households.

13. During the previous year, almost one in five households experienced at least one death, and the average age of death was 23 years old. In over half of all deaths the individual was ill for more than three months.

Appendix A. Household Survey Questionnaire

BASELINE SURVEY – APRIL 2003 HOUSEHOLD QUESTIONNAIRE

IDENTIFICATION (see code sheets)	
+-+ District Name +-+	+-----+ +-----+ Village Name
+----+ Traditional Authority/Ward +----+	
+-+ Household number +-+	+-----+-----+ +-----+-----+ Date of interview D D M M Y Y
Name of Respondent: _____	
Name of Enumerator: _____	
Name of Supervisor: _____	Checked: _____

Basic Household information	Codes
Result	Complete1 Did not reply2 Partially replied3 Others.....4
Literacy level of Head of HH	Able to read1 Able to write2 Able to read and write3 Unable to read or write4
Marital Status	Married1 Divorced.....2 Widowed3 Single.....4
TOTAL NUMBER OF PEOPLE IN THE HOUSEHOLD	+----+ +----+

Section A. Demographic Background of Household Members (do not include members absent for 3 months or more)

A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
ID	Name of Household members	Relationship to Head of HH	Sex	Age	Mother status	Father status	Physical Status	Level of Education	Current School Attendance	Main Drop-out Reason	Primary and Secondary Activity
		HHH..... 1 Spouse 2 Son/daughter..... 3 Father/mother..... 4 Brother/sister..... 5 Grandchildren 6 Other relative 7 Foster child 8 No relationship 9	Male 1 Female 2		IF AGE (A5) IS 18 OR MORE, SKIP A6 AND A7, GO TO A8 Mother in HH.....1 Mother alive, not in same HH...2 Mother dead.....3	Father in HH.....1 Father alive, not in same HH.....2 Father dead.....3	Long term Illness 1 Disabled 2 Both 3 No 4	IF UNDER 6, SKIP TO A12 Never been to school 1 SKIP TO A12 Primary uncompleted..2 Primary completed.....3 Secondary.....4 Above secondary.....5	ASK ONLY FOR AGES 6 TO 18. IF OLDER THAN 18, SKIP TO A12 Attending 1 SKIP TO A12 Drop-out2 School completed ..3 SKIP TO A12	School fees too high....1 HH needed labor.....2 Child chronically ill or disabled.....3 Marriage4 Other.....5 (Specify)	None.....1 Agriculture.....2 Cattle Farming3 Casual Labor.....4 Self-employed5 Skilled labor6 Fishing7 Student.....8 Salaried employment9 Petty Commerce10 Physically unable to work11 Other.....12
1.											1 st 2 nd
2.											1 st 2 nd
3.											1 st 2 nd
4.											1 st 2 nd
5.											1 st 2 nd
6.											1 st 2 nd
7.											1 st 2 nd
8.											1 st 2 nd
9.											1 st 2 nd
10.											1 st 2 nd
11.											1 st 2 nd
12.											1 st 2 nd
13.											1 st 2 nd
14.											1 st 2 nd

Section B: Household Livelihoods

N°	QUESTIONS	ANSWERS	SKIP TO
B1	What is your main source of drinking water?	Open Well.....1 Covered Well2 Pump3 Tap Water.....4 Surface Water5 Other _____6 (Specify)	
B2	Has your household benefited from any food aid/distribution during the last 6 months?	Yes1 No2	→ B5
B3	Which of the following types of food aid have you received? CIRCLE ALL THAT APPLY	General Feeding1 Pregnant/Lactating Women.....2 Malnutrition3 Orphans4 Chronically Ill5 FFW6 Other: _____..7 (specify)	
B4	For how many months during the last six months has your household received food aid?	+- + +- +	→ B6
B5	In your opinion, what is the main reason your household did not receive food?	Need, but did not meet criteria1 Discriminated against2 Wasn't present at time of enrollment3 Do not need4 Do not know5 Other _____6 (Specify) No food aid in this community 7	
B6	Did you give any food to your neighbors in need in the last 6 months?	Yes1 No2	→ B8
B7	Did you expect any form of repayment from them?	Yes1 No2	
B8	In your opinion, has the food aid program entirely met the needs of your community, partially met the needs of your community or not at all met the needs of your community?	Entirely1 Partially2 Not at all3 No food aid in this community 4	
B9	Are any of your HH members part of a community organization or association?	Yes1 No2	→ B11
B10	Which organizations is your household a member of? CIRCLE ALL THAT APPLY	Farmers Association / Coops1 Livestock Association2 Savings Group/Club3 Irrigation/Water Mgmt Group4 NGO5 Health and nutrition groups6 Religious / faith groups7 Other _____8 (Specify)	
B11	Have any household members died in the last 12 months?	Yes1 No2	→ C1

	I would need more information about the members of your household who died in the last 12 months.		
	B12 SEX Male = 1 ; Female = 2	B13 AGE AT DEATH IF LESS THAN 1 YEAR, CODE 00	B14 Was this person continuously sick during the 3 months prior to death ? Yes = 1 ; No = 2
1			
2			
3			
4			

Section C: Crops and Production

N°	QUESTIONS	ANSWERS	SKIP TO
C1	How many acres did you have access to in 2002-2003 season? 1 HECTARE = 2.5 ACRES	+ - - - - + ACRES + - - - - + IF 000	→ D1
C2	How many acres did you cultivate in 2002-2003 season? 1 HECTARE = 2.5 ACRES	+ - - - - + ACRES + - - - - + IF C2 EQUAL TO C1, GO TO C4	
C3	Why did you not cultivate all your land? CIRCLE ALL THAT APPLY	Not enough labor 1 Not enough seed 2 Not enough other input 3 Not enough water 4 Left fallow land 5 Other _____ 6 (SPECIFY)	

PRODUCTION OF 2002 – 2003 PLANTING SEASON

C4	C5	C6	C7	C8	C9	C10	C11	C12	C13
Commodity	Number of acres planted 1HA = 2.5 Acres	Sources of seeds Previous harvest = 1 Seeds banks =2 NGO =3 GOV =4 Purchased =5 Borrowed = 6 Gift =7 Other (Specify) = 8 CIRCLE ALL THAT APPLY	Production	Unit	Have you used (do you intend to use) part of your production of (COMMODITY) to pay debt or land lease? Yes =1; No = 2 IF NO, SKIP TO C11	How much of your production of (COMMODITY) have you used (do you intend to use) to pay debt or land lease? < 25% =1 25 –50% = 2 51 – 75 % = 3 > 75 % = 4 DK = 5 Nothing = 6	Have you sold (do you intend to sale) part of your production of (COMMODITY)? Yes =1; No = 2 IF NO, SKIP TO C 13	How much of your production of (COMMODITY) have you sold (do you intend to sale)? < 25% =1 25 –50% = 2 51 – 75 % = 3 > 75 % = 4 DK = 5 Nothing = 6	How much of your production of (COMMODITY) have you kept (do you intend to keep) for your own HH consumption? < 25% =1 25 –50% = 2 51 – 75 % = 3 > 75 % = 4 DK = 5 Nothing = 6
Maize									
Wheat									
Sorghum									
Barley									
Millet									
Other Cereals									
Beans									
Peanut									
Rice									
Cotton									
Potato									
Sweet Potato									
Cassava									
Onions									
Bananas									
Papaya									
Tobacco									
Tea									
Coffee									
Groundnuts									

Improved Techniques

C14	C15
Improved productive and water management techniques	Do you currently use one of the following techniques for any of your crops? Yes = 1 ; No = 2
Agroforestry	
Water harvesting	
Improved food storage (cribs, granaries)	
Winter plowing	
Conservation tillage (potholing, tied ridges, contour ridging,)	
Urea treatment of stover	
Incorporation of legumes	
Fodder production and storage	
Compost / Manure	
Crop Rotation	

Section D: Livestock and main Assets

N°	QUESTIONS	ANSWERS	SKIP TO
D1	Over the last 6 months, has anyone in your household owned any livestock / poultry?	Yes 1 No 2	→ D14

D1.1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13
Type of Livestock	Over the last 6 months, has anyone in your household owned (LIVESTOCK) Yes = 1; No = 2	How many are owned by:				In the last 6 months how many were sold? IF 0 GO TO D9	Reasons for sale? Normal daily expenses = 1 To fill Household food shortage = 2 School fees = 3 Health/ Medical emergency = 4 Other emergencies = 5 Social events = 6 Normal herd maintenance = 7 Threat to herd = 8 Loan repayment = 9 Other (specify) = 10 WRITE ALL THAT APPLY	In the last 6 months how many livestock died? IF 0 GO TO D11	Reasons of death? Insufficient water = 1 Insufficient pasture = 2 Illness = 3 Witchcraft = 4 Other (specify) = 5 WRITE ALL THAT APPLY	In the last 6 months how many were lost? IF 0 GO TO D13	Reasons of loss? Wandered off = 1 Stolen = 2 Dispossessed by death of HHH = 3 Other (specify) = 4 WRITE ALL THAT APPLY	In the last 6 months how many were used for your own consumption ?
		Men	Women	Joint ownership	Total							
Draught Cattle	1 GO TO NEXT	2 ↕										
Other cattle	1 GO TO NEXT	2 ↕										
Goat / Sheep	1 GO TO NEXT	2 ↕										
Pigs	1 GO TO NEXT	2 ↕										
Donkeys /Horses	1 GO TO NEXT	2 ↕										
Poultry	1 GO TO NEXT	2 ↕										
Rabbit	1 GO TO NEXT	2 ↕										

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N°	QUESTIONS	ANSWERS	SKIP TO
D14	Has anyone in your HH caught fish during the last months?	Yes 1 No..... 2	→ D16
D15	What did you do with the fish you caught?	Consumed in the home 1 Sold at market 2 Consumed some and sold some 3 Other..... 4 (Specify)	

ASSETS

List of Assets	Over the last 6 months, has anyone in your household owned any of the following: Yes = 1; No = 2	How many (ASSETS) are owned by				In the last 6 months, has anyone in your HH sold (ASSET)? Yes = 1; No = 2	Reasons for sale? Normal daily expenses = 1 To fill Household food shortage = 2 School fees = 3 Health/ Medical emergency = 4 Other emergencies = 5 Social events = 6 Loan repayment = 7 Other (specify) = 8 WRITE ALL THAT APPLY
		Men	Women	Joint ownership ?	Total		
D16	D17	D18	D19	D20	D21	D22	D23
Hoe	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Bicycle	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Motorbike	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Ox or donkey Cart	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Plough	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Sickle	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Mortar	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Bed	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Radio	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Yoke chain	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Treadle pump	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Fish nets	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Canoe	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Mats	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	
Axe	1 2 GO TO NEXT ↵					1 2 GO TO NEXT ↵	

Section E: HH Food economy

N°	QUESTIONS	ANSWERS	SKIP TO
E1	In a normal year, how many months out of 12 do you have sufficient food from your own household production to meet your household needs?	+ - - - + NUMBER OF MONTHS+ - - - +	
E2	How many months do you expect to have food from your <i>current</i> harvest?	+ - - - + NUMBER OF MONTHS+ - - - +	
E3	IF E1 EQUAL OR GREATER THAN E2 THEN, SKIP TO E4 If production is not sufficient year-round, please specify the <i>main</i> reason.	Not enough land 1 Drought 2 Poor soils 3 Not enough labor 4 Not enough seed 5 Lack of input/Fertilizer 6 Draught power 7 Other 8 (Specify)	
E4	In the last 12 months, what was the proportion of your total household income spent on food?	< 25% 1 25% to 50% 2 51% to 75% 3 > 75% 4	
E5	Besides your own production, what are the other sources of food for your household? CIRCLE ALL THAT APPLY	Food aid 1 Gift from family and relatives 2 Market purchases 3 Lease of land 4 Hunting and gathering wild food 5 Grain Bank 6 Credit 7 Other 8 (Specify)	

Section F: Coping Strategies

In the past 30 days, how frequently did your household have to rely on the following in order to access food:						
SN	COPING STRATEGIES	Every day	3-6 times per week	1-2 times per week	Less than once/week	Never
		1	2	3	4	5
F1	Rely on less preferred food or less expensive food?	1	2	3	4	5
F2	Borrow food, or rely on help from friends and/or relatives?	1	2	3	4	5
F3	Purchase food on credit?	1	2	3	4	5
F4	Gather wild food or hunt?	1	2	3	4	5
F5	Harvest immature crops?	1	2	3	4	5
F6	Send HH members to eat elsewhere?	1	2	3	4	5
F7	Send HH members to beg?	1	2	3	4	5
F8	Limit portion sizes at mealtime?	1	2	3	4	5
F9	Restrict consumption by adults so children can eat?	1	2	3	4	5
F10	Restrict consumption of non-working members in favor of working members?	1	2	3	4	5
F11	Reduce the number of meals eaten in a day?	1	2	3	4	5
F12	Skip entire days without eating?	1	2	3	4	5
F13	Rely on piecework?	1	2	3	4	5
F14	Other: Specify: _____	1	2	3	4	5

Section G: Dietary Diversity

N°	QUESTIONS	ANSWERS		SKIP TO
G1	How many meals did your household members eat in the last 24 hours?	+ - +		
		NUMBER OF MEALS+ - +		
I2	In the last 24 hours, which of the following items did your household consume as part of a meal or snack?	YES	NO	
	- Maize	1	2	
	- Sorghum	1	2	
	- Millet	1	2	
	- Rice	1	2	
	- Other Cereals	1	2	
	- Beans	1	2	
	- Cassava	1	2	
	- Other tubers (Yam, Sweet potato...)	1	2	
	- Meat (beef, pork, lamb, game)	1	2	
	- Fish	1	2	
	- Chicken	1	2	
	- Eggs	1	2	
	- Nuts	1	2	
	- Green leafy vegetables	1	2	
	- Other vegetables	1	2	
	- Fruits	1	2	
	- Fat /oil	1	2	
	- Milk, Cheese, Yogurt	1	2	
	- Sugar	1	2	
	- Salt	1	2	
	- Tea	1	2	
	- Coffee	1	2	
	- Beer	1	2	
- Other Beverages	1	2		
- Other food	1	2		
-				
	FOR EACH ITEM, CIRCLE YES OR NO			

Appendix B. Survey Sites and Survey Team Members

Malawi Baseline Sampling

District	TA/SC	Villages
Chitipa Millet and Central Karonga – Chitipa		
Chitipa	TA Kameme	Amoni 1, Budonga, Ipenza 4, James 3, Muniyimbo 2, Nang'ambi, Solomon 1, Syumbi, Ipenza 2, Iyanga 2, Kosamu, Simkonda, Tauzen Mwangamba
	TA Mwabulambya	Ansayile, Mwenecheni, Mwakalomba, Masangulania, Mwezimupya, Tondola, Lodge Ng'ambi, John, Masyesye, Namayanga, Kasisi 1, Mwantende, Telatela, Masangano, Musitu, Amosi Ngambi Titi, Mwenechendo
Karonga	TA Kyungu	Mwanyongo 1, Mwanasapa 1 Swebe, Mwambuli 1A, Mwakasungula, Kilindi VH Ngosi, Mweneluphembe 2, Mwanegha, T Mwangonde Mwanya, Mwenyesha 1, Kwiwula, Mwenenguwe, Mwangwabila
Western Rumphi/Mzimba + Mzimba Self-sufficient		
Rumphi	TA Chikulamayembe (W)	Munkhowo, Wantulire, Chimukwayaya, Chimduwe, Yawona, Salimu
Mzimba	TA Chindi	Kamchocho, Mpeyama Gondwe, Bulala, Kaponda Kamanga, Chiganga Mbulo, Kajembe, Thembaukali, Jumbambo, Nkhosana Longwe, Kambombo Kumwenda, Chikyanga, Robert Tembo
	SC Kampingo Sibande	Kachelanga, Kavyelemuka Beza, Davide Mumba, Yesaki Lungu, Mbonga 2
	TA Mtwalu	Jalanthowa Mkandawire 1, Zonolema Khonje, Mkonyo Tembo, Mpherepi Kumwenda, Kamundavwa, Daniel Chima, Sambamo Chiumia, Mgomphola Singini, Chisenga Sakala, Chidongo Nyirongo, Mgubani Mbeye GVH
	TA Mzikubola	Magega Sezi, James Kumwenda, Chikhola 2, Hannock, Mubozo, Chisusu Nyirenda
Kasungu Lilongwe Plain		
Mzimba	TA Mabulabo	Kayuni Kamanga, Kabalamula Nyirenda, Nkhongwa Kamanga, Duka Mhluli, Myeleka Mkweu
Kasungu	TA Wimbe	Chota, Chimtumbira, Kasiya, Chimdidi, Kavivila, Kawayula
Mchinji	SC Mduwa	Chikondwa, Jonas, Lombo, Mlambuzi, Mtenje, Thanila
Lilongwe	TA Kalolo	Laudani, Pitolisi, Chikunga, Chisikwa 1, Ndevu, Mwelengana
	TA Chitukula	Ngomani, Siyeni Mchewa, Chilombo2, Chidabe1, Chidakwa, Kuwani
Ntchisi	TA Kalumo	Kamadza, Gongowa, Kanyenda, Khwesi, Jetelo, Khwamba
Shire Highlands		
Mongochi	TA Jalasi	Chiumbampasuka, Mdoka Mandimba, Kandulu, Ngawo, Chimwala, Mdimba
	SC Chowe	Chilemba, Mtonda, Makumba, Steven Sindo, M'madi Msosa, Misolo
	TA Katuli	Katembo, Mpwakata, Maletam Chikoja, Luwalika, Namalweso
Machinga	TA Liwonde	Chilwemba, Mikonga, Sayindi, Mangame, Mponda, Walani
Zomba	TA Mwambo	Bongwe, Ronald1, Magalasi, Kasambwe, Chidothe, Kapenuka
	TA Malemia	Masambuka, Nyamuka, Mukundi, Chopi, Mbelo, Simion
	TA Mbiza	<i>List incomplete</i>

Middle Shire Valley

Mongochi	TA Chimwala	Bwanali, Sinedi, Mpita, Chisawa, Msamu, Malenga
Balaka	TA Nsamala	Mchenga, Chapita 2, Mpirisi, Jana, Ngonga, Chikamela, Nkhande, Pilato Martin, Njenje, Chimpakati, Kusita, Ngwalo
	TA Kalembo	Nsaliwa, Namwera, Chikolongo, Ligwang'wa, Maselema, Ndembwe, Mapiko, Chingwalungwalu, Kunena, Matukuta, Msuwo, Ngombe
Ntcheu	TA Phambala	Kanama, Bwese3, Gawani, Kanzinda, Mbweza, Zidana
	SC Makwangwala	Chibalala1, Saiwa, Chikafa, Maligwa, Alasala2, Kauwa

Northern Lower Shire Valley

Chikwawa	TA Chapananga	Mchingula, Mwantchipitsa, Mindanti, Chaphata, Kuwani2, Zuze
	TA Chikwawa Boma	<i>List incomplete</i>
	TA Lundu	Chipakuza1, Dzilonzo2, Mafale1, Robert, Sekeni, Mangulenje, Chapepa, Nyamphoto, Sekeni2, Namatchuwa
Nsanje	TA Mlolo	Aroni, Ngombe, Gande, Mbodzo, Mwanabvumbe, Namandoto

Survey Team Members

Alinafe Kafwamba	Alick C. Chikanga
Charity Simtowe	Atipatsa Chiwanda Kamanga
Patrick Msukwa	Gogho Chinkhumba
Robert Msukwa	Phyllis Phiri
Austrida Gondwe	Eveness Chiipanthenga
Racheal Gondwe	Barnett Gawani
Timothy Harawa	Dalitso Ngwalu
Ndema Longwe	Getrude Chiputula
Ngabaghila Mwakisulu	Emmie Magaleta
Esther Saka	Ntholonga Mpembeka
Tukupina Msukwa	Patrick Malunga
Ishmael Nkhosi	Sanderson Kuyeli
Lutamy Mwamlima	Linda Kapezi
Mapopa Nyirongo	Effie Tambala
Thula Saka	Kingsley Nalivata

Charity Mzongwe	Mayamiko Kafwamba
Joel Chawawa	Lucy Kalonga
Jonathan Chautsi	Charity Simtowe
Joseph Kandiesa	Kennedy Chinguwo
Flora Kalungwe	Khama Chibwana
George Makina	Michael Chikadula Banda

Appendix C. Procedures for Constructing Coping Strategies Index (CSI)

The coping strategies index is calculated using measures of the frequency and severity of coping strategies that households adopt. The frequency measure was collected from individual households in the quantitative survey. The severity weights for all the possible coping strategies were obtained through focus group interviews, in which the groups were asked to give their own perceptions of the severity of each of the coping strategies, and rank them on a scale of 1 to 4.

During the survey design phase, 13 possible coping strategies were identified and incorporated into the household survey instrument and the topical outlines for the focus groups. The strategies identified are:

1. Rely on less preferred and less expensive foods
2. Borrow food or rely on help from friends and relatives
3. Purchase food on credit
4. Gather wild food
5. Consume seed stock held for next season
6. Send household members to live elsewhere
7. Limit portion sizes at mealtimes
8. Restrict consumption of adults so children can eat
9. Reduce number of meals eaten in a day
10. Skip entire days without eating
11. Sell jewelry or household items
12. Sell livestock
13. Sell farm implements

Focus group interviews were conducted in several locations. The information collected from the household surveys and the focus group interviews is combined to calculate the CSI value for each household. Two decisions must be made to arrive at the final definition of the CSI:

- i. Which strategies to include in the index. As described in the Coping Strategies Index Field Methods Manual, one aspect of adopting the CSI to the local context is identifying the appropriate coping strategies that are appropriate within a given study area. Furthermore, the Manual suggests that the appropriate strategies to include in the index are immediate and short term alteration of consumption patterns, but not longer term or less reversible strategies. The survey included several longer term strategies: sell jewelry or household items; sell livestock; and sell farm implements. Another strategy; send household members to live elsewhere could also be considered as a longer term strategy. Three different sets of coping strategies were considered for inclusion in the CSI:
 - a. Include all 13 coping strategies identified in the survey instrument
 - b. Exclude sale of jewelry or household items, sale of livestock and sale of farm implements
 - c. Exclude sale of jewelry or household items, sale of livestock and sale of farm implements and send family members to live elsewhere
- ii. Which severity weights to use in the CSI calculations. Two options are to:

- a. use separate weights for each survey zone
- b. use the sample average weights, taking the average across the survey zones.

Selection of the definition of the appropriate CSI definition from the six possible alternatives was made on the basis of comparison of the correlation of the alternative definitions with the following household characteristics associated with household livelihood security.

	Alternative Definitions of CSI					
	A	B	C	D	E	F
Food Consumption ^a	-.173	-.192	-.180	-.197	-.179	-.197
Value of livestock	-.070	-.077	-.076	-.083	-.080	-.087
Value of HH assets	-.106	-.125	-.106	-.125	-.109	-.129
Rainfed land farmed	.076	.043	.070	.034	.073	.036
Irrigated land farmed	-.102	-.105	-.103	-.107	-.103	-.107

A. All strategies included, Zoba-level severity weights

B. All strategies included, National average severity weights

C. Strategies 1-10, Zoba-level severity weights

D. Strategies 1-10, National average severity weights

E. Strategies 1-5, 7-10, Zoba-level severity weights

F. Strategies 1-5, 7-10, National average severity weights

Definition F, which excludes sale of jewelry or household items, sale of livestock and sale of farm implements and send family members to live elsewhere and uses the national average severity weights has the strongest negative correlation with the measures of household livelihood security. On the basis of this calculation, definition F was chosen as the CSI

Appendix D. Market prices form
MARKET PRICES FORM - MALAWI

DISTRICT NAME	TA NAME	VILLAGE MARKET	DATE	NAME OF SUPERVISOR

MAIN PRODUCTS	QUANTITY / UNIT	PRICE IN KWACHA (for one unit)	AVAILABILITY IN THE LAST 3 MONTHS		
			ALWAYS	MOST OF THE TIME	NEVER
Maize					
Wheat					
Sorghum					
Barley					
Millet					
Beans					
Peanuts					
Rice					
Cotton					
Potato					
Sweet Potato					
Cassava					
Onions					
Bananas					
Papayas					
Tea					
Coffee					
Tobacco					
Groundnuts					
Chicken					
Draught cow					
Other cows					
Goat					
Sheep					
Pig					
Donkey					
Rabbit					
Hoe					
Bicycle					
Motorbike					
Ox or Donkey Cart					
Plough					
Sickle					
Mortar					
Bed					
Radio					
Yoke chain					
Treadle Pump					
Fish nets					
Canoe					
Mats					
Axe					