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**The Impact of HIV and AIDS on Rural Agricultural Producers
in
Three Regions of Namibia**

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Executive Summary

Using the basic household survey tool of the NHIES 2003/04,¹ a total of 143 HIV affected households were surveyed in three regions of Northern Namibia during November 2004. Data was collected on basic household demographics, income and expenses. The expectation that the NHIES report would be available for this analysis has not materialized. Recent publication of the 2001 Census with Regional analyses has enabled a deeper examination of the data from this survey, as has the publication of the 2004 HIV Prevalence Sentinel Survey results.

While the lack of the NHIES as a basis for comparison is a concern, four key points emerge from the analysis. First, as we examine historical patterns from the Sentinel Survey data in each region, a sense of dynamism is evident. While national results show an overall decline in HIV prevalence, specific sites associated with the regions surveyed indicate a mixed pattern of results with some sites in decline, others on the rise and still others showing little change. These fluctuations could be the result of mortality, actual change in behavior, failure to change behavior, migration, or statistical issues in the Sentinel Survey itself.

Second, our data may indicate that households are adopting coping strategies that vary from region to region. Households appear to be consolidating as adults, particularly male adults, die off. Evidence for this practice was found in the Kavango and Oshana samples. In Oshikoto there was little evidence of this practice. Given that households in Oshikoto were on average economically better off than the other two regions, it is not clear if this difference results from the possibility that the epidemic is not as advanced in Oshikoto as in the other two regions, or if factors specific to that Region are involved.

¹The NHIES 2003/04 is a comprehensive survey of over 10,000 households in Namibia. A number of different instruments are used to collect data. In this survey, the base questionnaire (Form 1) was used.

Third, in addition to household consolidation, the epidemic appears to have affected households differently in terms of agricultural production. Three patterns emerge:

- There are those households where production is in collapse. These households cannot meet basic subsistence needs in terms of crop production. They have either very low livestock numbers, or have seen a dramatic decline in livestock numbers over the past year.
- There are those where collapse is imminent. These households are also unable to produce crops for subsistence needs, have moderate numbers of livestock, but have been able to maintain their herds over at least the past year.
- There are those households that are producing enough crops for subsistence, and are maintaining their livestock herds.

Fourth we conclude that responses to assist these different categories need to be tailored to the needs of each group. For those households where communal production has collapsed, we have to ask the hard question of whether or not it is best to assist them by improving production. These households may benefit more from direct transfers of cash, either in terms of support for orphans (approximately 60% of all households surveyed had an orphan), HIV disability, or a basic income grant.

An understanding of various response patterns in the epidemic would be useful. For example, if there are phases of further deterioration in the ability to produce, additional cash interventions might be required. If this phase represents a low point in a household's productive capacities, then assistance required to restart agricultural production would be appropriate. Households

that are near collapse will also require direct transfers of cash, though efforts to maintain their productive capacities may be required. Households that are still able to maintain agricultural production will also need attention. With these latter two categories, it may be best to consider long-term interventions in agriculture. There has been some discussion about substituting less labor-intensive crops for households that are affected by HIV. Changes in agricultural practices can take some years to accomplish and may require additional labor.

If anything, this report shows the need for deeper research into the effects and dynamics of the HIV epidemic in Namibia. This survey highlights the potential for regional differences in the epidemic, and of possible differences in the response of communal farming households to its consequences. This would have an impact on policy as it would require greater knowledge of the trajectory of the epidemic in a given region. It is possible, perhaps advisable, to carry out studies such as this in conjunction with other national level surveys. The NEPRU team found that both HIV support groups, as well as their clients were willing to discuss their situations openly. By carrying out this kind of targeted study, much could be learned about the impacts of the disease.

Acknowledgments

The Food and Nutrition Policy Research Network (FANRPAN) and Futures Group both provided funds for this effort. Their assistance and patience as we sought to harmonize our work with the as yet unpublished National Household and Income Survey is greatly appreciated.

Appreciation is given to the Central Bureau of Statistics in the National Planning Commission for use of one of the survey instruments of the 2003/04 National Household Income and Expenditure Survey.

The authors also thank Catholic Aids Action and Lironga Eparu for their valuable assistance in carrying out the field work for this project.

Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
HIV	Human Immunodeficiency Virus
NHIES	National Household and Income Survey
VCF	Veterinary Cordon Fence

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1. Introduction

1.1 Background to the Study

This project came about via a request by the Food and Natural Resources Policy Analysis Network (FANRPAN) to investigate the impacts of the HIV and AIDS pandemic on rural agricultural producers. The Namibian component is part of a seven-country study throughout SADC.² The intended aim of the study was to conduct national level surveys in each country and to combine them into a wide-ranging report of the impacts across the region. In addition to funds provided by FANRPAN, Futures Group expressed interest in, and ultimately provided additional monies for the project.

At the time of the request by FANRPAN, the Namibian government was engaged in the 2003/2004 National Household and Income Survey (NHIES 03/04). This survey provides national benchmarks in areas such as income and expenditure, poverty measures, income distribution, consumption patterns and the like. Permission was obtained to use the basic survey instrument from the NHIES 03/04 for this survey.³ Doing so allowed for a more robust comparison of the results against national and regional level samples.

In Namibia the identification of households affected by HIV and AIDS can be a problem. There are legal constraints about privacy, and in some areas there has been social discrimination against Households where a member is identified as infected. To address this issue, HIV-related support groups were approached and their cooperation sought in obtaining access to their clients. Using established mechanisms of communication was seen as crucial to the

²The other countries are: Botswana, Lesotho, South Africa, Swaziland, Zambia and Zimbabwe.

³Modifications were made to the questionnaire to protect the privacy of interviewees.

efficient identification of HIV affected households as well as a means of establishing trust with affected families.

1.2 This study

The research carried out here focused on three of Namibia's political regions: Kavango, Oshana and Oshikoto. They are characterized by high rates of HIV infection and large numbers of people involved in agricultural production. The farmers studied in this survey all lived on communal lands and are usually considered as subsistence farmers. Together with the Ohangwena and Omusati Regions, they are home to almost 70% of Namibia's population.

It was hoped that the data presented here could be compared with the NHIES 03/04, thus, providing a comprehensive review of the economic situation of households in the sample. That document is not yet completed. Recently, however, the Government of Namibia has published the *2001 Population and Housing Census* broken down by Regions. This has provided the platform for a more in-depth analysis of the data collected by this study. In the pages that follow data from the survey and the Census is presented and analyzed by region.

1.3 Organization

This paper is organized into four sections, Basic Demographics, Income, Expenses and a Conclusion. Basic Demographics provides an overview of the three regions. In this section a number of comparisons are drawn between the sample collected in this survey, Census data and HIV Prevalence Sentinel Survey data for each region. Differences between the

national results of the Sentinel Survey and those of the regions are highlighted with associated hypotheses. Family Structure also comes under review. Family structure in the survey sample shows major differences across the regions. An attempt at explanation is offered. The presence of orphans is also considered. Our sample found higher percentages of orphans in families, with higher numbers of children orphaned by their fathers. The implications of this imbalance are explored.

The section on Income focuses on data from the sample. Very little in the way either formal or informal employment was found. The NHIES questionnaire used for this survey collected data on agricultural production and inputs. This analysis forms the bulk of the chapter. Generally, the vast number of households surveyed had extremely low incomes. The following section focuses on expenditures. The households do not spend much. Their focus is on basics such as clothing, education and health care. These two sections can be enhanced once the NHIES 2003/04 is released and direct comparisons with this data are possible. At the end of the expenditure chapter is an analysis of what appears to be different levels of impact by the epidemic on households and of some possible courses for intervention.

Section four begins with a simple income and expenditure analysis which leads to a discussion of possible mediation efforts as well as ways in which this type of analysis can be brought more into the mainstream of national data collection.

1.4 Other Studies

A number of studies have been undertaken in Namibia focusing on food security. In 1990 Hay, Pell and Tanner completed a report for the International

Development Centre Food Studies Group and UNICEF titled *Household Food Security in Northern Namibia*. They examined food security in the Kavango and Caprivi. A number of policy recommendations were made, but as can be expected no reference was made to HIV since the first case in Namibia was only recorded on four years prior. In the same year Tool also published for UNICEF under the title *Food Security Issues in Southern Namibia*. The *Namibia Household Food Security Report* compiled by the Namibian Institute for Social and Economic Research (NISER) for the Food and Agricultural Organization (FAO) published in 1992, also made no mention of HIV. The same was the case for the 1993 report. In a report titled *Food Security or Food Self-Sufficiency for Namibia? The Background and a Review of the Economic Policy Implications*, the Division of Agricultural Planning of the then Ministry of Agriculture, Water and Rural Development (MAWRD) too made no mention of the possible impact of the disease on agricultural production.

The first serious study of the impact of HIV on agriculture in Namibia was published in 1999 by the FAO under the title *The Impact of HIV/AIDS on Farming Communities in Namibia*. It was based upon data collected from the Oshana and Caprivi regions. Extension personnel conducted questionnaire-based interviews with groups and households living in rural farming communities. More than 50% of the sample reported selling livestock in order to pay for costs associated with illness and death. It also addressed the impact of lost labour on crop production. Whereas the 1999 study placed emphasis on communal farming, the methodology employed was expanded to include commercial farming operations in a follow-up study conducted by the FAO in cooperation with the University Central Consulting Bureau of the University of Namibia. It was titled *The Impact of HIV/AIDS on the Different Farming Sectors in Namibia* and published in 2001. One conclusion stood out: "Parent's deaths interrupt the socialization of younger children and their

formal and non-formal education. Interrupted education will create less able farmers for the future”.⁴

⁴ Food and Agricultural Organization (2001) *The Impact of HIV/AIDS on the Different Farming Sectors in Namibia*. FAO: Windhoek.

2. Basic Demographics

2.1 Brief Regional Descriptions

The three Regions from which data were collected are the Kavango, Oshana, and Oshikoto Regions. These political units are located in the Northern and most populous parts of Namibia. This is also the area of the country with the highest overall rate of HIV infections (see Table 3 below). Kavango and Oshana are communal farming areas. Both are north of the Veterinary Cordon Fence (VCF), with Oshikoto straddling the VCF.

The Kavango River largely defines the Kavango Region. The Kavango River is one of Namibia's few perennial rivers and it defines the border with Angola. Most of the population of the region lives within 20 km of the riverbank. The region has high potential for both agriculture and tourism, but due to very low levels of development, this potential remains largely untapped. Over eighty percent of Kavango's residents live in rural areas, practicing a mix of dry land agriculture (pearl millet⁵, sorghum and maize) and livestock herding.

The Oshana Region includes three rapidly growing towns in Namibia, Oshakati, Ongwediva and Ondangwa. From the mid 1990s onward there has been a spurt of growth in these towns as businesses (Namibian, South African and International) have moved into the area to take advantage the large market on the Namibian side of the border as well as that of Southern and Central Angola (particularly after peace came to Angola in 2002/2003). This development has been spurred on by a major upgrade to the telecommunications infrastructure,⁶ and the rehabilitation of the North --

⁵In Namibia pearl millet is referred to by its local name "omahangu" or "mahangu."

⁶The all Regional capitals are now connected to the national fiber optic backbone, and the flat landscape has meant that cellular towers generally reach their maximum range. Hence,

South Highway. Currently, an extension of the rail system from Tsumeb to Ondangwa, Oshikango⁷ and Oshakati is underway.

As mentioned, the Oshikoto Region straddles the VCF. That part of Oshikoto South of the VCF includes the town of Tsumeb as well as a portion of the commercial farming areas. This area is divided into the Guinas and Tsumeb Constituencies. The population of these two constituencies is fifteen percent (23,940) of the Region's population. The other eighty-five per cent of the Population lives north of the VCF in communal farming areas. Residents of this portion of the Region practice the standard mix of dryland crops and livestock. The Northern portion of Oshikoto is extremely rural. The only settlement of significance in this part is Omuthiya, just North of Etosha Park. Omuthiya has been designated as a "settlement area" -- the first step on the way to declaration as a municipal area. Since the tarred North – South highway runs through this portion of Oshikoto, access to towns such as Oshakati and Tsumeb is not a problem. If one leaves the main road, however, the number of developed gravel roads is small with dirt tracks common. The table below provides some basic statistics for each Region.

Table 1: Demographic Characteristics of Study Regions (2001 Census)

	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>	<i>Namibia</i>
Population	202,694	161,916	161,007	1,830,330
Percent Rural	82	69	91	67

large parts of Northern Namibia are within reach of cell phones.

⁷Oshikango is a major port of entry for goods and people traveling from Southern Angola to and from the rest of Southern Africa.

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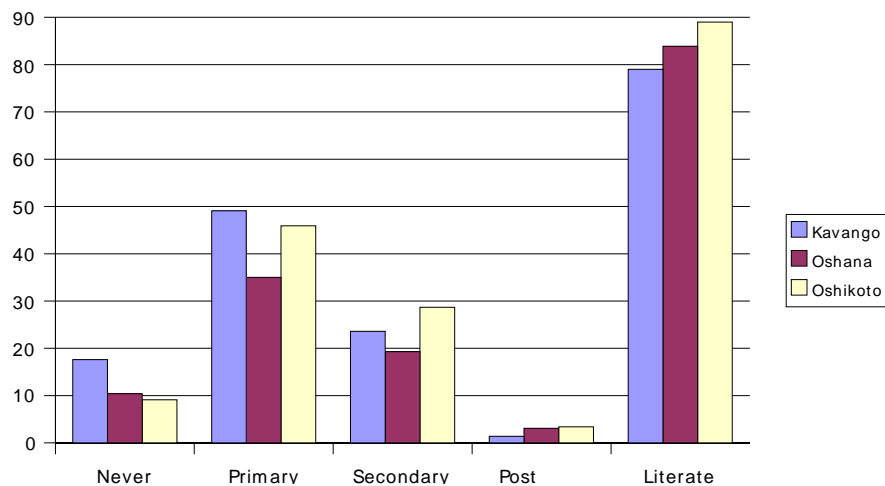
	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>	<i>Namibia</i>
Square Km.	48,463	8,653	38,653	824,116
Number Households	30,467	29,557	28,419	346,455
Ave. HH. Size	6.5	5.4	5.6	5.1
Female headed households (%)	41	54	50	45
Economically Active (%)	50	51	40	54
Employed (%)	80	60	55	69

2.2 Education

Namibia has made great strides in education over the past fifteen years. Prior to 1990, access to education was determined largely by skin color. The number of schools and qualified teachers in the study area was extremely limited. Namibia has spent roughly 25% of its annual budget on education. As a result national school enrollment rates for school aged children in the 2001 Census (aged 6 to 24) are at 65%. For younger children aged six to fourteen the rate increases to 90%. Literacy in the country has also been high. The national literacy rate, based on the ability to read and write in a language, is 81% of the population six years and above, with Kavango, Oshana and Oshikoto having rates of 72%, 91% and 84% respectively.

Questions on education as asked in the survey were slightly different from those in the Census. However, as can be seen in Illustration 1 below, levels of basic education and literacy were high. Very few respondents, however, had post secondary education, which is a crucial factor in obtaining employment. The unemployment rates for Namibians with post-secondary qualifications decreases significantly.⁸

Illustration 1: Level of Education in Sample (%)



2.3 Mortality and Life Expectancy

The HIV epidemic has caused a dramatic drop in life expectancy in Namibia. In Table 2 below, statistics are provided. Data from the 1991 Census on life expectancy is given to show the impact of HIV. The Kavango Region has a worse profile than either the other two regions sampled, or Namibia as a whole.

⁸Ministry of Labour, *The Namibia Labour force Survey, 2000*. Windhoek.

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Table 2: Mortality and Life Expectancy (2001 Census)

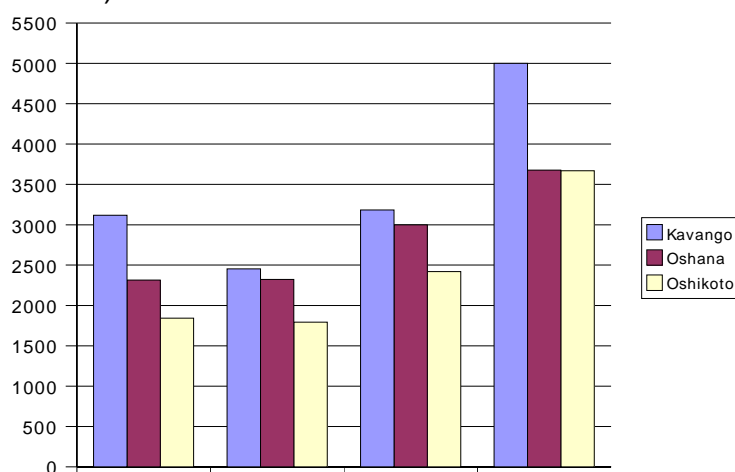
	Kavango	Oshana	Oshikoto	Namibia
Infant Mortality (per 1000 live births)				
Female	65	42	57	49
Male	75	43	60	55
Under 5 Mortality (per 1000 children of same age group)				
Female	92	55	79	64
Male	101	53	78	78
Life Expectancy (1991)				
Female	59	64	59	63
Male	55	60	63	59
Life Expectancy (2001)				
Female	41	48	51	50

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	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>	<i>Namibia</i>
Male	42	46	50	48

A telling statistic on the impact of AIDS is provided in the 2001 Census. Since 1991 Namibia has seen an 80% increase in the death rate. In urban areas the rate increased by 101% and in rural areas by 73%. Illustration 2 below shows the increase of reported deaths in each of the three regions under study.

Illustration 2: Reported Deaths 1998 - 2001 in Study Area (2001 Census)



2.4 Results Returned by HIV Sentinel Sites

In Namibia the measure of HIV prevalence is the Sentinel Survey. The most recent results of the survey for the study area appear in Table 3 below. Sites that may not fall within a sampled Region are indicated because their catchment areas may include part of one or more regions. For Example, Onandjokwe Hospital is located in Oshana, but it is the nearest hospital to many residents of Oshikoto. Similarly Oshikuku Hospital is listed for Oshana even though it is located in the Omusati Region.

Most sites in the study area returned results above the National average for prevalence. The hospital in Tsumeb returned data below the average, as did two sites listed in the Eastern Kavango Region. Tsumeb is a developed town. The Ongopolo copper mine is the main employer in the town, and has an active HIV prevention program. Tsumeb is also the capitol of the Oshikoto

Region, and is a center for basic services and ministries. The lower results in the Kavango, will be discussed on page 21.

Data from all sentinel surveys is included in Table 3. Three distinct patterns emerge. Four sites show declines in prevalence from 2002 to 2004, Andara (3.1%), Nyangana (7.1 %) (Oshakati (3.1%) and Tsumeb (7.3%). Two sites, Onandjokwe (22/23%) and Rundu (21/22%) are steady. Two sites report increases, Nankudu (3%) and Oshikuku (6%). Exploring possible causes of this variation might lead to some interesting hypotheses.

Table 3: HIV Sentinel Survey Results (1992 - 2004)

Sentinel Site	HIV Prevalence ratio (%)						
	1992	1994	1996	1998	2000	2002	2004
Kavango							
Rundu	-	8	8	14	14	22	21
Nankudu	-	-	-	13	18	16	19
Andara	-	2	11	16	15	21	17.9
Nyangana	-	6	5	10	16	22	14.9
Oshana							
Oshakati	4	14	22	34	28	28	24.9
Onandjokwe	-	8	17	21	23	23	22

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	HIV Prevalence ratio (%)						
Oshikuku	-	-	-	-	-	21	27
Oshikoto							
Onandjokwe	-	8	17	21	23	23	22
Tsumeb	-	-	-	-	-	25	17.7
Namibia	4.2	8.4	15.4	17.4	19.3	22	19.9

This variation at specific sites raises some interesting questions. In those sites where declines have taken place, the following can be raised. The epidemic may itself cause a short-term drop in infected women becoming pregnant and hence entering the Sentinel Survey. As will be shown below, data from the survey sample indicates that men are dying before women.⁹ If one assumes that the female spouses/partners of these men are also HIV positive, then they are less likely to become pregnant after their male spouse/partner has died. A rapid die off in men in the catchment of a Sentinel Survey site might cause a temporary decline in the numbers of infected women attending antenatal clinics. Should these women find new partners, then they may once again become pregnant causing the prevalence rate to rise. Another factor may be simple behavior change. Women and men may be using condoms, having fewer partners, perhaps knowing their status. This would result in lower numbers of infected women at a Sentinel Survey site. A final consideration is statistical. Some samples are small. In Tsumeb, which

⁹See the discussion on orphans beginning on Page 28.

recorded the largest decrease, a difference of nine more HIV positive women entering the antenatal program would have erased decline because the sample size was 127.

For those sites where there has been little or no change, the obvious first question to ask is why has there been no discernible change in behavior. Both sites Rundu and Onandjokwe are close to large urban centers, Rundu and Ondangwa. Here access to media campaigns, testing and condoms is probably easier than in rural areas. Perhaps ante natal clinics could administer a behavioral and knowledge questionnaire as part of the Sentinel Survey. A point to consider is that both Rundu and Ondangwa have seen immigration over the past decade. One relevant factor could be that women become infected, move to these towns, become pregnant and then appear at the ante natal clinic. In this way behavioral changes among a population of women with longer residence in these towns could be negated.

Those sites that have experienced an increase in prevalence may be in areas where the epidemic is still in an early phase. Oshakati and Onandjokwe provide examples. Oshakati had a long phase of increase from 1992 to 1998. For Onandjokwe the increase is from 1994 through a plateau beginning in 2000. A similar pattern may be at work at the two sites, Nankudu and Oshikuku, where prevalence is on the increase. Another factor to consider is that anti-HIV campaigns may not be effective in these areas. Once more, statistical issues could be at work. Nankudu, which had a sample of 184 women, only needed five fewer HIV positive women to show no increase. In a similar vein, Oshikuku which had a sample of 174, only needed 10 fewer HIV positive women to show no increase in prevalence. Issues raised above will be revisited in the conclusion.

2.5 Basic characteristics of the Sample

Household Size

If one refers back to Table 1 on Page **Error! Bookmark not defined.** above, two characteristics of the sample are readily apparent. First, the households sampled here are larger than either their regional or national counterparts. According to the 2001 Census, Kavango, Oshana and Oshikoto Regions have average household sizes of 6.7, 5.4 and 5.6 respectively. Namibia has an average household size of 5.1.

The second major difference is the number of female-headed households. The average for the sample was 58%, for both Kavango and Oshana it was 54% and 54% respectively. In Oshikoto the number is 67%. Basic data on households in the sample appears in Table 4.

Table 4: Basic Household Demographics, Sample

	Kavango	Oshana	Oshikoto
Number HH	42	51	50
Number People	431	370	316
Ave. HH Size	10	7.2	6.3
Per cent Female Headed HH	54	54.	67.0

Household Structure

There is a divergence between regional samples in terms of household structure. The difference derives from the number of children present in a household as compared to adults. Kavango has the lowest number of children in the household, while the Oshikoto sample has 143% more. In terms of “other relatives,” the Kavango sample by far had the highest number. This question will be discussed on page 31.

Table 5: Household Composition, Sample

	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
Head	42	51	50
Partner/Spouse	21	34	13
Child	164	209	235
Father/Mother of HH	6	7	10
Other Relative	189	57	9
Other Non-related Person	7	5	-
Missing	1	6	-

Access to Water and Health Care

Generally, Namibia has been successful in providing access to safe water. It has already met the 2006 Millennium Development Goal of providing safe water to 80% of the population. Yet, according the MDG report of 2004, the Kavango Region has the lowest overall percentage of access to safe water.¹⁰ This is reflected in the sample as over half of the respondents drew their water from a stream or river. This water is of varying degrees of quality, depending on what happens upstream, and it could be a factor in the high levels of mortality found in the Kavango by the 2001 Census. Information about access to water is below in Tables 6 and 7.

Table 6: Household Main Source of Water, Sample (% HH)

	Kavango	Oshana	Oshikoto
Piped in yard	7	8	20
Neighbor's Tap	7	14	22
Public Tap	26	64	48
Private Borehole	2	2	-

¹⁰Office of the President, National Planning Commission, Namibia 2004 Millennium Development Goals. Windhoek. 2004. P. 34

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	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
Stream, River	58	6	2
Protected Well	-	4	4
Unprotected Well	-	2	-
Dam	-	-	4

Table 7: Walking Distance to Water, Sample (% HH)

Kilometers	Kavango	Oshana	Oshikoto
1 or less	79	47	54
2	9	10	24
3	9	20	12
4		6	2
5	2	6	6
8		2	
10		6	
Missing	1	3	2

While access to water was least favorable in the Kavango, access to health care was least problematic. The fact that so many Kavango households obtained water from a river or stream could be a cause for higher mortality for those with AIDS. Almost all those surveyed in the Kavango lived within 5

kilometers of a clinic. In Oshikoto participants generally had the longest distance to travel. The majority of Oshana residents stayed within 5 kilometers of a clinic. Table 8 provides a breakdown of distance to the nearest clinic.

Table 8: Walking Distance to Clinic, (% HH)

<i>Kilometers</i>	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
1 or less	28	2	4
2	14	-	6
3 to 5	56	10	8
6 to 10	2	67	36
11 to 15	-	10	14
15 to 20	-	2	28
20 plus	-	4	4
missing	-	5	-

2.6 Age Structure

A general pattern of the study area is the high percentage of young between the ages of 0 – 14 and 15 to 29. Above 29 years proportion falls below the national pattern for the three Regions. Two explanations are possible. The first is increased mortality due to HIV. Given the increase of deaths in these regions from 1998 to 2001¹¹ this is a reasonable hypothesis. A second (and just as reasonable) hypothesis is that young people have left these areas to seek work. Levels of unemployment for young people show a dramatic drop after age 30.¹² Either of these explanations is probable, though the most likely is a combination of both processes. Illustrations 3, 4 and 5 on the following pages provide a picture of age distributions.

With rates of mortality having increased, and household composition undergoing shifts due to the epidemic, the full NHIES data set will provide insight into population changes that may have occurred since 2001. In lieu of that data set not being available, age distributions from the sample are provided as a means of illustration. Without the NHIES data it will be difficult to assess the full significance of the sample data. This will also apply to the following section on HIV and Susceptible Age Groups.

¹¹See Illustration 2 above.

¹²Ministry of Labour, *The Namibia Labour Force Survey, 2000*. Windhoek.

Illustration 3: Age Distribution, Kavango Region

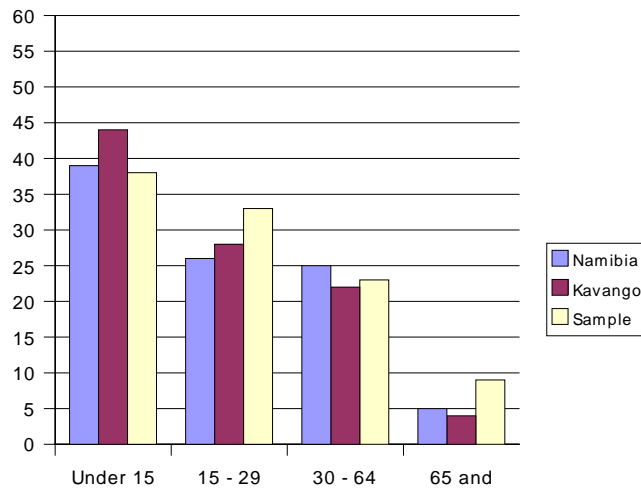


Illustration 4: Age Distribution, Oshana Region

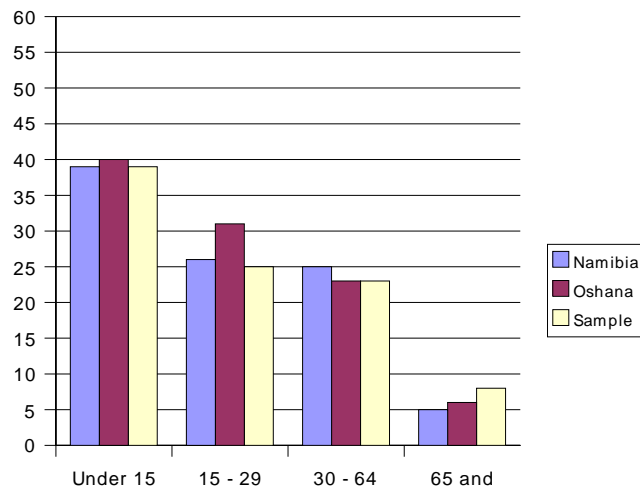
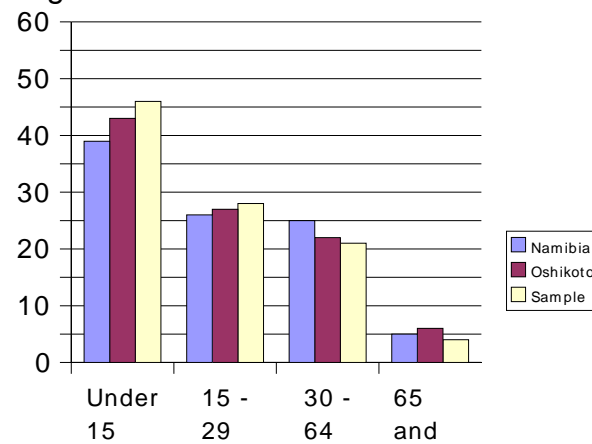


Illustration 5: Age Distribution Oshikoto Region

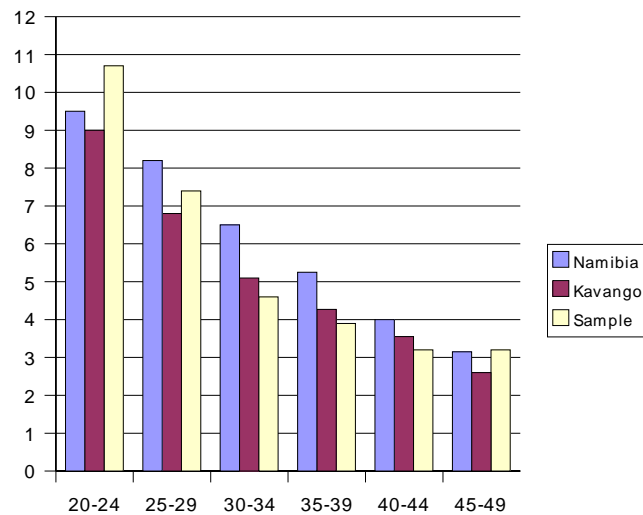


2.7 HIV and Susceptible Age Groups

While the above age breakdowns provide some insight into population distributions, a reasonable question to ask is what the impact of HIV might be on those groups that are prone to infection. In the illustrations below, population cohorts between 20 to 49 in this survey are compared to the national pattern from the 2001 Census. With noted exceptions, there is a general decrease from the national average to the regional average. Data from the survey does not follow a similar pattern. Given the small sample size

and that this survey inadvertently targeted specific socio-economic groups, this outcome is not surprising. A region-by-region discussion follows.

Illustration 6: Per Cent of HIV Prone Age Groups Relative to Their Population, Kavango



The Kavango Region shows the steepest decline in population cohorts. According to Sentinel Survey results two sites in this region have the lowest rates recorded for the areas covered by the survey. This raises an intriguing question of where these people may have gone. The 2001 Census asked a question on place of usual residence versus place of birth.¹³ Of those who responded to this question, 90% of those who stated they were born in the Kavango Region considered the region as their usual residence. For the Oshana and Oshikoto Regions where the percentages were 75% and 79% respectively. Clearly, those borne in the Kavango tend to remain.

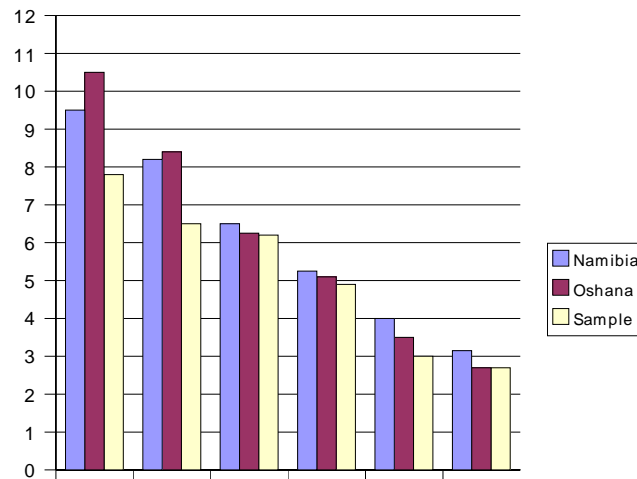
¹³Government of Namibia, , National Planning Commission. *2001 Population and Housing Census, Basic Analysis with Highlights*. Windhoek. Table 12.6

Illustration 1 above (Page 11) shows that the Kavango has the highest (in terms of actual numbers) increase of recorded deaths. If people are not moving as much from the Kavango Region but are dying in higher numbers, then the source of this mortality needs to be understood. Malaria and tuberculosis are possible candidates. One potential answer may be that another form, or forms, of mortality are at work. A second explanation may be that there has been a change in behavior in the Kavango, and that women attending ante natal clinics over the past year indeed have lower rates of HIV infection. Table 2 on Page 13 above shows how rates for three of the four Sentinel Survey sites in the Kavango Region have dropped, but in the 2000 and 2002 Sentinel Surveys the rates in Kavango were generally on the increase. Given that Kavango residents have lower access to safe water it may be that those who became ill due to AIDS are more prone to die from water borne infections.¹⁴ This may have caused a spike in mortality as seen in Table 2.

Interestingly, data from the 2004 survey shows that the two youngest cohorts (ages 20 – 24 and 25 – 29) have higher representation when compared to the 2001 data. Again, this could be indicative of a drop in the rate of infection and subsequent illness, particularly among younger residents of the Kavango. Given the small sample size of this survey, this positive notion must be tempered, but once the 2003/04 NHIES is released, a larger sample will be available to verify or reject this apparent trend.

¹⁴See also the discussion on food production beginning on Page 55 below.

Illustration 7: Per Cent of HIV Prone Age Groups Relative to Their Population, Oshana

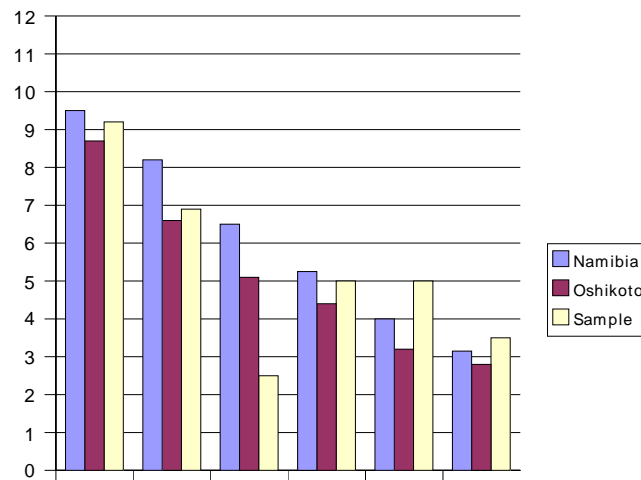


For the Oshana Region, there is a reversal of the trend for the ages 20 to 29. This may be due to high rates of immigration into the area. Over fifteen years of Independence, the towns of Ondangwa, Ongwediva and Oshikati have grown dramatically. They have gone from rural outposts to major urban centers. In this transformation economic activity in these towns has increased dramatically. The outbreak of peace in neighboring Angola has also fueled growth. Many shops and companies have moved to these three towns to take advantage of the opportunities offered through reconstruction of Angola's shattered infrastructure. This local economic boom is obviously a magnet for younger Namibians to move from rural areas into urban places that are not as distant as traditional destinations of economic emigration such as Windhoek or Walvis Bay.

Another factor is education. It is well known that urban schools tend to be better resourced than rural schools. The University of Namibia has opened a campus in Oshakati, as have a number of private educational colleges and training schools. These too, are probably drawing young people to Oshana to look for better qualifications as they begin their working lives. When data from

the survey is examined, one sees that a percentage of people between 20 to 29 is much lower. This data was collected in rural areas. As such the influx of young people to major towns is not represented.

Illustration 8: Per Cent of HIV Prone Age Groups Relative to Their Population, Oshikoto



The Oshikoto Region follows what should be the expected pattern. Across the board the regional percentage of people in these cohorts is lower than the national average. Again, the sample shows wide variation from the norm.

2.8 Orphans

Various definitions of what constitutes an orphan are in use. In developmental circles an orphan is generally considered to be a child younger than age 15 who has lost one or both parents. This approach differs from the one that emphasizes age of majority. In Namibia one reaches age of majority when

one turns 21. Before that one cannot sign legally binding contracts without the assistance of a guardian. In analyzing the data collected on orphans during this survey, consideration has been given to both approaches. The definition of an orphan who has lost one or both parents was retained in both instances.

Considering children aged below 15 who had lost a parent or parents, some 56% of households surveyed in the Kavango were home to an orphan. If one expands the age category to below 21, this percentage increases to 65%. For the Oshana region the respective figures are 47% and 51%, and that for Oshikoto 56% and 58%. Given the small sample size averages escalate rapidly with every additional case added. Assuming a standard error of 8% on a sample of 43 cases, anything between 49% to 64% of households in the Kavango have orphans in them aged less than 15. The percentages for Oshana would be 40% to 54%, and for Oshikoto 49% to 63% assuming a 7% statistical error.

Comparing this data to that gathered by the 2001 Census the average number of orphans per household is significantly higher than the averages recorded for the respective regions during 2001. In 2001, 26.4% of households surveyed in the Kavango were home to children younger than 15 who had lost one parent, and 4,6% to some who had lost both. The figures for Oshana respectively were 30% and 3,9%. Those for Oshikoto were 28,5% and 3,8%.

When controlling for the effect of age on the number of orphans present in the households surveyed, it becomes clear that the bulk of the orphans are younger than age 15, with a very small percentage being close to legal age. In Kavango some 86% of orphans in the sample were younger than 15, in Oshana 92%, and Oshikoto 96%. Tables 9 and 10 below show the breakdown of households with orphans as found in the survey.

Table 9: Households with orphans younger than 15, Sample

Region	Both Parents	Mother Alive	Father Alive	Total HH affected	Sample size	% of HH's
Kavango	7	17	7	24	43	56%
Oshana	5	18	8	24	51	47%
Oshikoto	3	21	6	28	50	56%

Table 10: Households with orphans younger than 21

Region	Both Parents	Mother Alive	Father Alive	Total HH affected	Sample size	% of HH's
Kavango	12	23	8	28	43	65%
Oshana	6	21	9	26	51	51%
Oshikoto	3	23	6	29	50	58%

2.9 Explaining Household Composition

Kavango

What is most striking about household composition of the sample drawn in Kavango is the large number of other relatives (not direct family of spouse) living in the households. Some 42% of women and 47% of men were categorized as such. Combined, this category made up close to 45% of household composition.

Table 11: Relation to Head of Household by Gender, Sample

	Females	%	Males	%
Head of Household	23	9	20	11
Husband/wife/partner	19	8	2	1
Son/daughter/stepchild	96	40	68	36
Father/mother	3	1	3	1
Other relative	101	42	88	47
Other non-related person	-	-	7	4
Total*	242	100	188	100

* 1 case missing.

Age Structure of Kavango Households

The 2001 Census indicated that Kavango has a very young population. Both the age categories younger than 15 and 30 exceeded the national average, with the other age categories falling below said average (see Illustration 3 on page 19 above). The sample returned for Kavango may be skewed in that it delivered an average less than the regional and national average for the region for children younger than 15, but exceeded that for the age categories older than 14 and younger than 30, and 65 plus. However, one may begin to suspect that there is more than the common bond shared between these households of having at least one HIV positive person in the household, and receiving service from an HIV-support organization. If one considers that in some 40% of households sampled the mother was the only living parent, one could anticipate a decline in birth rate within these households.

When examining gender breakdown within households by age structure, one sees that the proportion of males to females in the household appears relatively normal below age 30, as well as above age 65. The 2001 Census indicates that there were roughly 100 females in Kavango for every 91 males at the time of that survey. As such our sample may be over-representative of males aged below 30. However, the pattern of more females to males is confirmed for the age group 30 to 64, but extremely so. Some 28% of females were aged 30 to 64, with only some 17% of males. See Table 12 for more information.

Table 12: Age Composition of Household by Age and Gender, Kavango Sample

	Females	%	Males	%
Younger than 15	83	35	79	43

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Older than 15, younger than 30	74	31	62	34
Older than 29, younger than 65	67	28	32	17
65 Plus	15	6	11	6
Total	239	100	184	100

In Table 13 data on other relatives is presented. Of other relatives living in the households sampled other than direct family (father, mother, son, daughter), and whom reported their age, some 56% were younger than 15. Only 12% were 30 and older.

Table 13: Other relatives in Household by Age and Gender, Kavango Sample

	Females	%	Males	%
Younger than 15	49	54	50	59
Older than 15, younger than 30	30	33	25	30
Older than 29, younger than 65	12	13	8	10
65 Plus	-	-	1	1

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Total*	91	100	84	100
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*Missing values (14) not included.

Marital Status of Kavango Household Members

Only 34% of women were married, with another 8% being part of what they described as a consensual union. Of the remainder 28% were divorced and 21% widowed, with some 9% never married. From these statistics it is clear to see why there are so many female-headed households in the sample. The 2001 Census set the number of female-headed households at the time of that survey for Kavango at 41%. This survey returned an average of 53.5% of households being female-headed. See Tables 14 and 15.

Table 14: Marital Status Persons Older than 29, Younger than 65 by Gender, Kavango Sample

	Female	%	Male	%
Married with certificate	7	10	7	22
Traditional marriage	16	24	14	44
Consensual union	5	8	5	16
Widow/er	19	28	-	-
Divorced	14	21	3	9

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Never married	6	9	3	9
Total	67	100	32	100

Some 36% of other relatives older than 29 and younger than 65, either lost a partner to death or were divorced. However, one should not lose sight of the fact that this category (other relative) and age group (30 to 64) only make up less than 5% of total household composition.

Table 15: Marital Status Other Relatives Older than 29, Younger than 65, Kavango Sample

	Nr	%
Married with certificate	1	5
Traditional marriage	6	30
Consensual union	4	20
Widow/Widower	2	10
Divorced	6	30
Never married	1	5
Total	20	100

Kavango, a different phase of the epidemic?

The 2001 Census indicated that other relatives on average made up 16% of household composition in rural Kavango. This contrasts sharply with the data returned by the survey, which places the percentage at 44%. A number of hypotheses can be entertained at this point. Some 56% of other relatives are children younger than 14 and 31% are youth aged 15 to 29. The high percentage of children and young people could be related to cultural practices. "Child swapping," the practice of sending a child to live with extended family is common in Namibia. The HIV epidemic may either be exacerbating this practice, or creating a new phenomenon.

Kavango has had high rates of mortality, which means higher numbers of orphans. Tables 9 and 10 on page 30 above show that Kavango has the highest rate of households with orphans regardless of the definition. There is also a steep increase in the number of orphans when one goes from defining an orphan as under 15 to defining an orphan as under 21. Using the broader definition, almost two thirds of Kavango households sampled are home to an orphan, while the vast number of orphans has lost at least their father. In effect, the sample in the Kavango region suggests a die-off of men. (One would expect that should this study be repeated in three years, that there would be an increase in the number of orphans who have lost both parents as mortality among mothers increases.) Given this, three alternative explanations for the high number of "other relatives" can be entertained:

1. Female-headed households might be banding together. This could particularly be the case if the "widow" is under 29 years old, but also has children. In rural society a woman in this situation might not be seen as mature enough to run a household, and encouraged to move in with other relatives. There are also inheritance practices at work, where widows are sometimes driven from their matrimonial household by

relatives of the husband, who then claim the land. This would increase the process of a widow and her children joining with another household.

2. An alternative process is that when a woman loses her spouse to AIDS, she too is probably infected with HIV. She may have either developed AIDS, or fears that she will. She realizes the loss of income and labor to produce on the farm due to the death of her husband and her own impending illness, and may consider herself unable to care for some or all of her children. Women in these situations would be more likely to engage in one-way child swapping and to send children off to sisters, mothers, or aunts. By doing so they reduce their burdens in maintaining a household.
3. The sample may simply be unique. This would require further investigation.

Oshana

Some 57% of household members surveyed in Oshana were children. In contrast to Kavango, only 16% of household members were classified as *other relatives*. The 2001 Census set the ratio of males per 100 females for the region at 84. This survey returned a ratio of 78 males per 100 females.

Table 16: Relation to Head of Household by Gender, Oshana

	Females	%	Males	%
Head of Household	28	14	24	15
Husband/wife/partner	28	14	6	3
Son/daughter/stepchild/orphan	109	53	100	63
Father/mother	3	1	4	2
Other relative	32	16	25	16
Other non-related person	4	2	1	1
Total*	204	100	160	100

* 6 cases missing.

Age Structure of Oshana Households

Oshana has a very young population. Both the age categories younger than 15 and younger than 30 exceeded the national average in 2001. At the other end of the spectrum the population aged 65 and above also exceeded the national average. Except for the category 65 plus, this survey returned averages for the age categories mentioned less than the regional averages (see illustration 4 on page 19).

The number of children younger than 15 in this survey are very close to number one would expect given the data provided by the 2001 Census. However, the number of young people below age 30 was less than expected. There were also more elderly aged 65 and above than anticipated.

There were significantly more young male children below the age of 15 in the households surveyed, than female children. Some 47% of males in the households were boys below the age of 15, compared to only 33% of women. The trend reverses sharply for the age group 15 and older, but younger than 30. Here some 26% of women, compared to 22% of men, fell into this age category.

For the category older than 29 younger than 65 the number of women in the household exceeded that of men. Some 28% of women fell into this age category, with 22% of men. The ratio of men to 100 women in this age category was 53.

Table 17: Age Composition of Household by Age and Gender, Oshana

	Females	%	Males	%
Younger than 15	68	33	76	47
Older than 15, younger than 30	52	26	35	22
Older than 29, younger than 65	57	28	30	18
65 Plus	27	13	21	13

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Total	204	100	162	100
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As can be seen in Table 18 below, some 90% of other relatives living in these households were younger than thirty. Sixty-five percent were below 15. This is a pattern similar to the Kavango though the Oshana sample has roughly one-third the total number of other relatives as the Kavango sample. This issue will be dealt with shortly.

Table 18: Other Relatives in Household by Age and Gender, Oshana

	Females	%	Males	%
Younger than 15	18	64	16	67
Older than 15, younger than 30	8	29	5	21
Older than 29, younger than 65	2	7	2	8
65 Plus	-	-	1	4
Total*	28	100	24	100

*Missing values (5) not included.

Marital Status of Oshana Household Members

Only 30% of women older than 29, younger than 65 were married compared to 40% (9/22) men. Some 15% of women were widowed, compared to 5% of men being widowers. No analysis was conducted for the marital status of other relatives older than 29, younger than 65 due to the small number of cases.

Table 19: Marital Status Persons Older than 29, Younger than 65 by Gender, Oshana

	Female	%	Male	%
Married with certificate	6	13	3	13
Traditional marriage	8	17	6	27
Consensual union	-	-	1	5
Widow/er	7	15	1	5
Divorced	-	-	-	-
Never married	26	55	11	50
Total*	47	100	22	100

* 13 cases missing.

Oshana, Mirroring Kavango?

Sentinel Survey data indicates that Oshana has had high levels of prevalence over a long period of time. From 1996 to 2004 samples from Oshakati Hospital have returned higher levels of infection than any site in Kavango.¹⁵ Onandjokwe Hospital shows a similar pattern from 2000 to 2004. This makes it unclear if the epidemic in Oshana is similar to that of Kavango.

When one examines data on orphans, the orphans encountered are slightly younger than those of Kavango. To refer back to Tables 9 and 10 on page 30, expanding the definition to age 21 generates a much larger percentage of households with an orphan for the Kavango than Oshana. Overall Oshana has the lowest percentage of households with orphans. It too has roughly one-third the number of other relatives living in the households surveyed than Kavango.

In both regions far more men are dying than women as evidenced by the low numbers of orphans with fathers alive versus mothers alive. Again, the issue of what will happen to these children when the mothers start dying off is not clear. One issue of concern is the absorption of orphans. They do not appear to be moving into other households, as may be the case in Kavango. A possible explanation could be that families in Oshana do not engage as much in “child swapping.” Perhaps children are “swapped” along well-established links of labor migration to other parts of the country. Alternatively, given the lower number of other relatives, there may be cultural differences pertaining to the accommodation of other relatives in the household. A more ominous possibility may be that families in the area are saturated with the numbers of

¹⁵Oshakati Hospital is a national referring hospital, and as such will entertain patients from a wide geographical part of the country. Onandjokwe, though not a national referring hospital gets patients from both Oshikoto and Ohangwena Regions. Unfortunately there are not enough resources to include a deeper analysis of the Sentinel Survey data in this effort.

orphaned children they can absorb, and are not able to take on more mouths to feed.

Oshikoto

In Oshikoto some 74% of household members were classified as children. In sharp contrast to the other two regions, the number of other relatives within the households was less than 3% of household composition. The ratio of males per 100 females was set at 90 by the 2001 Census. The ratio for this survey was 58.

Table 20: Relation to Head of Household by Gender, Oshikoto

	Females	%	Males	%
Head of Household	33	17	16	14
Husband/wife/partner	13	6	-	-
Son/daughter/stepchild/orphan	138	69	97	84
Father/mother	10	5	-	-
Other relative	6	3	3	2
Total	200	100	116	100

Age Structure of Oshikoto Households

As with the other two regions, Oshikoto also has a very young population. The age categories younger than 15 and 30 exceeded the national average in 2001, as did the population aged 65 and above. An average less than the nation average was returned for the age category older than 29, younger than 65. This survey reported averages larger than both the national and regional averages for the age groups below 30. It also reported values below both the national and regional averages for the age groups above 29 (see illustration 5 on page 20).

Some 54% of male children and 43% of female children were aged below 15. In this case, the number of female children exceeded the number of male children. This remains the same for the age group below 30. Some 30% of males and 26% of females were older than 14 and younger than 30. There were more than 3 times the number of women than men in the age category older than 29, younger than 65. Some 26% of women and 13% of men were of this age. Combined, they made up some 21% of household composition. Some 5% of women and 3% of men were older than 65. Given the small number of other relatives present within household in Oshikoto, analysis according to age was excluded.

Table 21: Age Composition of Household by Age and Gender, Oshikoto

	Females	%	Males	%
Younger than 15	85	43	62	54
Older than 15, younger than 30	52	26	35	30
Older than 29, younger than 65	52	26	15	13
65 Plus	11	5	4	3
Total	200	100	116	100

Marital Status of Oshikoto Household Members

In contrast to the other regions a high percentage of persons older than 29 but younger than 65 were married. Some 67% of women and men were married. This said, one should consider the fact the sample for males is especially tiny and may not be representative of the broader population. Some 27% of women had never married compared to 20% of men (with the caution of the small sample size kept in mind). No analysis was conducted for the marital status of other relatives older than 29, younger than 65 due to the small number of cases.

Table 22: Marital Status Persons Older than 29, Younger than 65 by Gender, Oshikoto

	Female	%	Male	%
Married with certificate	28	53	9	60
Traditional marriage	4	8	1	7
Consensual union	-	-	1	6
Widow/er	2	4	1	7
Divorced	4	8	-	-
Never married	14	27	3	20
Total	52	100	15	100

Oshikoto, Orphans Yes, Other Relatives No

Households in Oshikoto appear to have a greater amount of cohesion than in other regions. The distinctive feature of Oshikoto households is the lack of other relatives. Households in our sample for Oshikoto are also the smallest. Aside from these two factors the similarities emerge. Though, men have died more quickly than women, as in the other two regions, the number of households with orphans is second only to Kavango. One possible set of factors for household cohesion (as will be seen in the following two sections) is that Oshikoto households have much better living standards than those of Kavango or Oshana. The stronger economic and productive position of Oshikoto households may be a factor in their staying together. Also, as mentioned for the other two regions, in Oshikoto widowed women are frequently driven from their matrimonial homes, and they may not be readily accepted back into their own families.

3. Income

In this section different sources of household income are examined. Most of the data presented comes from the survey. Here, it would be useful to have the NHIES because it would allow comparisons, particularly with matching income deciles. Main sources of household income and formal income are discussed. Since, the target of this study is agricultural producers, most of what is presented deals with agricultural production and agricultural income.

A general pattern, which is repeated pertaining to expenses, is that households in the Kavango sample had far fewer resources than those from the other two regions. Possible reasons for this state have already been discussed above. Another pattern that appears in the data is that a few households are far better off than the rest. Given the small sizes of the sample, this skews the data.

3.1 Employment

All respondents aged 18 and above were asked if they had worked for financial or family gain during the previous week. The most prominent categories of employment are “self employed” or “subsistence farmer.” Self-employed probably means running a *cuca* shop (*shebeen*), a small shop¹⁶ or selling roasted meat, called “*okapana*.” These are all informal enterprises. The numbers for subsistence farming may be low, because the survey was carried out in November, well after harvest and just prior to the plowing season. Had the survey been carried out between January to June these results might have been different, as more persons might have responded that they were working as subsistence farmers. Those who are employed by

¹⁶Often a *cuca* shop and a small store are the same operation.

a private employer are likely to be working in one of these informal businesses. In Table 23 below, there are 10 workers employed by the government. This group of workers, as formal sector workers, would have some form of medical aid and a pension scheme. Medical aid would, of course, be crucial if either the worker or his/her dependent is infected with HIV or ill due to AIDS.

Table 23: Employment, Sample (Number of Responses)

	Kavango	Oshana	Oshikoto
Private Employer	2	12	2
Government	3	5	1
Self Employed	4	6	2
Subsistence Farmer	6	20	2
Number employed	15	45	7

When respondents were asked to provide their income from employment, sixteen responded.¹⁷ Responses ranged from N\$ 300 to N\$ 4,500 per month with an average of N\$ 1,143. Two persons in the sample made N\$ 4,500

¹⁷This was not a national survey, and respondents were not required to provide this data.

each, or just under half the total, leaving the other 15 respondents to average N\$ 630. Here, data from the NHIES would be helpful to ascertain how income ranges found in the survey relate to the broader population.

Respondents aged 18 and above were also asked the reason for not working during the past week. These results are reflected in Table 24. Being a student was the most common reason for not working. This reflects a common attitude that young Namibians should attend school. The inability to find work was the second most frequent response, and again this may have something to do with the timing of the study as agricultural activity was at its low point. Illness or disability was either the third or fourth most frequent reason for not being able to work depending on the region in question.

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Table 24: Reason for Not Working in the Past Week, Sample (% respondents)

Reason for not Working	Kavango	Oshana	Oshikoto
Income recipient	0.30%	1.20%	10.80%
Retired, too old	9.70%	10.80%	3.70%
Student	46.40%	45.60%	54.40%
Housewife	4.20%	15.40%	11.60%
Illness, disabled	14.50%	11.20%	5.00%
Unable to find work	22.70%	14.30%	13.70%
Too young	0.60%	0	0.40%
Other	0.30%	0.40%	0.00%
No response	1.20%	1.20%	0.40%
Number of Responses	330	259	241

Table 25: Availability for work in Past Week, Sample

	Kavango	Oshana	Oshikoto
Ready to Work			
Yes	91	70	31
No	236	85	208
Number responses	331	259	239
Looking for Work			
Yes	86	39	14
No	5	31	12
Number responses	91	70	26*

* Five cases missing

3.2 Pensions

Out of the total sample, only sixty-two household members reported receiving old age pensions. Namibia, unlike many countries in the region, provides old age pensions to people sixty years and older. It is well known that old age pensions are a major source of income for low-income households. The pensions pay N\$ 300 monthly.

3.3 Household Assets

Respondents were asked about ownership or access to common household assets. Tables 26 and 27 below provide results. Those in the sample from the Kavango fare worst. The most common household asset is a radio, followed by a telephone or cell phone. Of assets used for agricultural production, a plough is the most common, followed by a wheelbarrow.

Table 28: Own or Have Access to Common Household Assets, Sample(% HH)

	Kavango	Oshana	Oshikoto
Radio	65	90	94
Television	0	0	2
Telephone/ Cellphone	9	8	20
Motor vehicle	2	0	2

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	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
Sewing machine	2	6	6
Donkey Cart	0	12	14

Table 27: Own or Have Access to Agricultural Assets, Sample(% HH)

	Kavango	Oshana	Oshikoto
Plough	30	29	56
Tractor	0	0	2
Wheelbarrow	5	4	18
Grinding Mill	0	0	0

3.4 Farming Income and Production

In low-income households, which are clearly the majority of the sample, agriculture plays an important role in livelihoods. Next, the role of staple grains, other grains and crops, as well as livestock will be examined.

Staple Grains

With formal and informal income limited, the households in the sample clearly rely on agricultural production for subsistence. Yet, here too, there are major deficits. It is well known that pearl millet (known locally as *omahangu*) is the main crop in the study area, and that it is a staple food. If one assumes that the staple provides half of the daily caloric requirements for an individual it

would mean that each adult female requires roughly 1,000 calories and each adult male requires 1,250 calories from pearl millet.¹⁸ It is estimated that 100 grams of pearl millet has 363 calories.¹⁹ Each adult female would require 275 grams and each adult male would require 344 grams of pearl millet per day. Hence, on an annual basis each woman would require 100 kg of pearl millet, while each man would require 125 kg.

With this information a rough calculation of the kilograms of pearl millet required for household sustenance can be calculated. For purposes of this analysis, any household member aged above 15 will be considered as an adult. A further assumption is that the ratio between females and males is equal. Those between the ages of 0 to 14 will be assumed to need half the adult annual requirement. Hence the kilograms required for each household member over 15 is 112 kg and for each household member under 15 is 56 kg. This results in the following annual household requirements for pearl millet production:

Table 28: Annual Pearl Millet Production Requirements per Household, Sample

	Kavango	Oshana	Oshikoto	Sample
Ave. HH. Size	10	7	6	8
Ave. under 15	4	3	3	3

¹⁸Based on 2,000 calories per day for females and 2,500 per day for males. It is also assumed that daily caloric requirements are met from other sources.

¹⁹ *Sorghum and millets in human nutrition*. FAO Food and Nutrition Series, No. 27. FAO, Rome, Also available at <http://www.fao.org/documents>

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	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>	<i>Sample</i>
Ave. over 15	6	4	3	5
Kg. of pearl millet to meet half of caloric requirements	896	616	504	728

With the above figures it is possible to examine crop production to ascertain if agriculture compensates for the shortfall in other forms of income. In terms of pearl millet, it does not, as can be seen in Table 29.

Table 29: Annual Pearl Millet Production Requirements per Household, Sample

<i>Households</i>	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>	<i>Sample</i>
No. HH Below caloric requirements (Produced a crop)	28	35	29	92
Did not produce a crop	6	5	0	11
No. HH above caloric requirements	9	11	21	41

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Households	Kavango	Oshana	Oshikoto	Sample
Percent below caloric requirements	79%	78%	58%	72%
Percent above caloric requirements	21%	22%	42%	28%

The picture would be even bleaker if households in the sample had to use pearl millet for more than 50% of caloric requirements. This may be the case for some households. As can be seen above, there is regional variation. The Kavango and Oshana regions are worse off than Oshikoto. Parts of Oshikoto are known as very good areas for millet production. It must also be noted that since fieldwork was carried out with case workers from different agencies, the data collected is localized, and different results might be obtained with a more comprehensive sampling protocol. Still, from the numbers obtained, Oshikoto residents fare better than those of either Kavango or Oshana. The reader should recall illustration 2 on page 11, where the levels of reported deaths mirror the situation presented here with staple crop production, except in reverse. Kavango had the highest levels of mortality, Oshikoto the least, with Oshana in between. As previous studies in Namibia have noted, as the epidemic increases mortality households lose available labor and as a result, plant smaller fields.²⁰

²⁰Matanyaire, E. 1999. *The Impact of HIV/AIDS on Farming Communities in Namibia*. FAO. Windhoek. P. 13, University of Namibia/FAO *The Impact of HIV/AIDS on the Different Farming Sectors in Namibia*, FAO, Windhoek. ms. Published document available from FAO in Windhoek. P. 34.

Other Crops

In addition to pearl millet, maize and sorghum are the most common crops. These are grown in lesser volumes than millet. The next three illustrations show regional breakdowns of production. An interesting observation is that fewer farmers in the Kavango sample produce other crops. Only three farmers produced sorghum while seventeen produced maize. Sorghum is a component of a traditional beverage made with millet (*oshikundu*), which is very nutritious. The reasons behind not producing sorghum need to be better understood. Illustrations 9, 10 and 11 below show the picture of other crop production.

Illustration 9: Number of Households by kg. of Other Crop Production, Kavango Sample

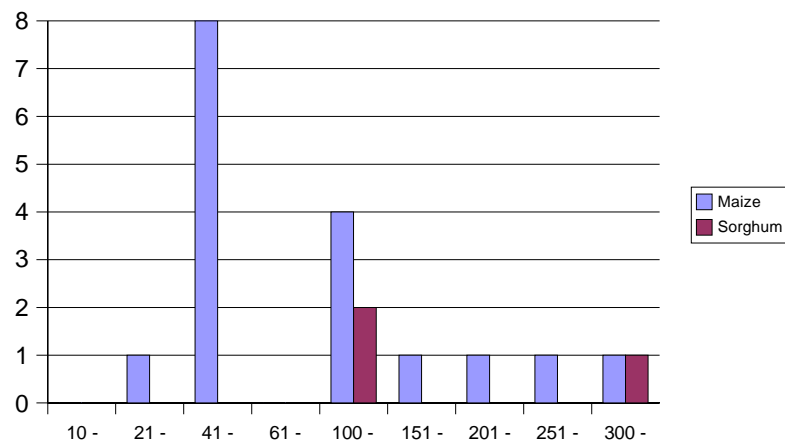


Illustration 10: Number of Households by kg. of Other Crop Production, Oshana Sample

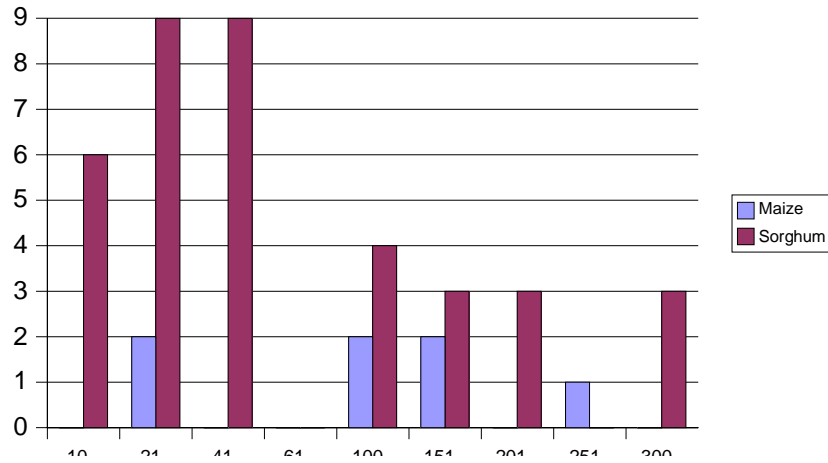
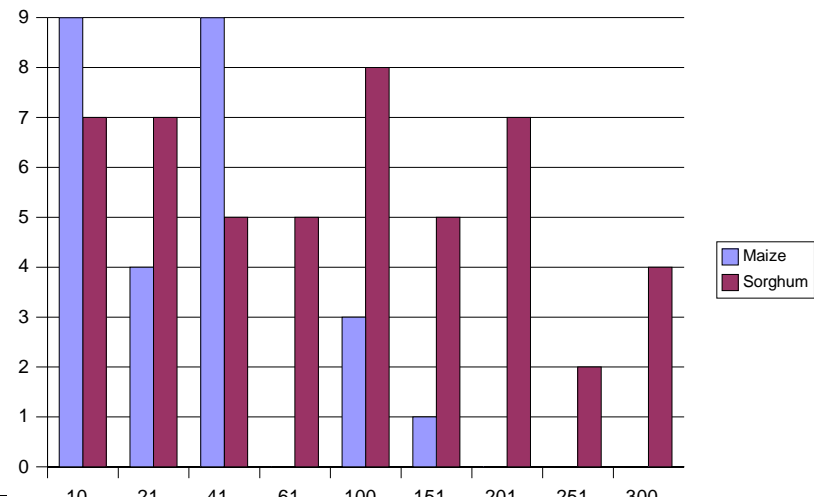


Illustration 11: Number of Households by kg. of Other Crop Production, Oshikoto Sample



Sale of Crops

Oshikoto showed the highest level of food production followed by Oshana and then Kavango. Given the low levels of income from employment and other sources, the sale of crops could be an important source of financial support. In the Kavango sample, no grain was sold. Even the highest producing households kept their crops. Excess was probably kept as a buffer against drought, or perhaps to barter for other goods and services. In Oshana and Oshikoto crops were sold. The table below provides a breakdown. On average a household that sold crops earned between N\$ 160 and N\$ 350 for the year. Still, very few households were able to sell. In Oshana only 2 households sold, while in Oshikoto, 18 households sold sorghum with 6 selling either maize or pearl millet. Table 30 below provides a summary of crop sales.

Table 30: Sale of Crops, Oshana and Oshikoto Samples

	Oshana	Oshikoto
Millet		
No. HH. Sold	2	6
No. Kg. Sold	140	770
Total Value (N\$)	700.00	1,480.00
Ave. Price per kg (N\$)	5.00	1.91

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	<i>Oshana</i>	<i>Oshikoto</i>
Ave income per HH (N\$)	350.00	246.47
Maize		
No. HH. Sold	2	6
No. Kg. Sold	34	83
Total Value (N\$)	450.00	715.00
Ave. Price per kg (N\$)	13.24	8.61
Ave income per HH (N\$)	225.00	119.17
Sorghum		
No. HH. Sold	1	18
No. Kg. Sold	48	1,201
Total Value (N\$)	160.00	3,859.00
Ave. Price per kg (N\$)	3.50	3.21

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	<i>Oshana</i>	<i>Oshikoto</i>
Ave income per HH (N\$)	160.00	214.39

The production and sale of non-staple crops was investigated. Only one household in the Kavango mentioned producing other crops, at a very meager level, 25 kg. In Oshana one or two households grew other crops, fruits and vegetables. One household reported growing 1,250 kg of another grain (not specified) and another grew 250 kg of fruit. In Oshikoto no households produced another grain. Five households produced almost 500 kg of fruit, while two households produced a total of 55 kg of vegetables.

Livestock

In Kavango 33 households kept livestock, Oshana, 24, and Oshikoto 40. The questionnaire asked about the number of livestock owned now and the number owned a year ago. A key point of concern is whether or not ownership of livestock is lower in 2004 than in 2003. This could be an indication of a deterioration of household wealth, particularly in response to the HIV epidemic as livestock are sold to cover medical costs. Here, the pattern was mixed. The following two figures plot household ownership of cattle from 2003 to 2004. As can be seen, owners of medium sized herds in the Kavango show a drop in livestock numbers over the previous year, while those in Oshikoto show a mixed pattern. This could be due to the different stages of the epidemic on the two regions, and is a question that requires more investigation.

In general, data showed that households with middle-sized herds tend to have fewer livestock in 2004 than 2003. Those with very few livestock have either maintained their herd size – not necessarily a good sign because it means no increase in wealth – or had a mixed record. Those with larger herds tended to maintain or increase their assets.

Illustration 12: Cattle ownership by Household (x axis) 2003 to 2004, Kavango Sample

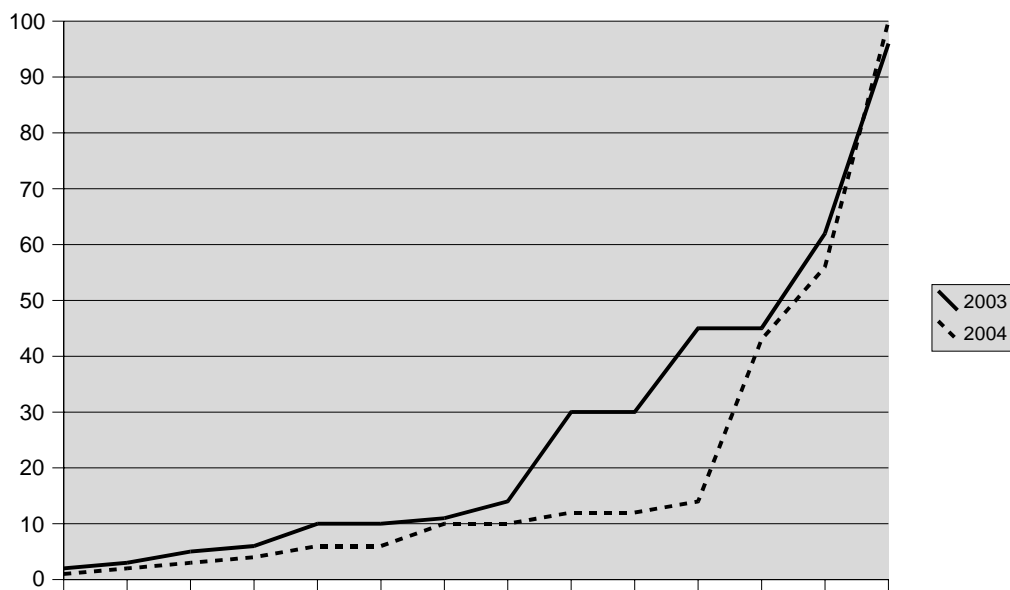
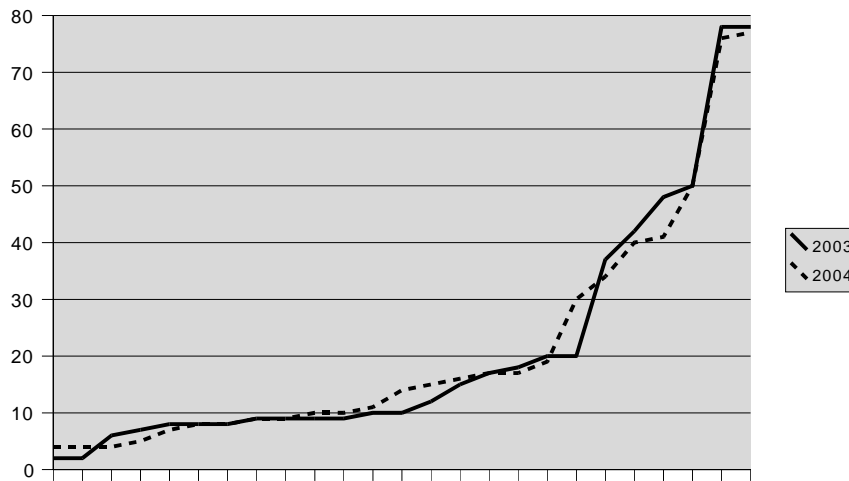


Illustration 13: Cattle Ownership by Household (x axis) 2003 to 2004, Oshikoto Sample



In Kavango households kept either cattle or goats. One household kept six pigs. The range of herd size goes from one or two head up to 100. As with employment and crop production, here too this region displayed the worst results. Both low and medium sized herd owners have seen a decline in numbers. One household with less than ten goats managed to increase their herd slightly, the rest stayed the same. Households with medium sized herds all showed a decrease from 2003 to 2004. Only those with the largest herds were able to increase their stock numbers.

Most households keep chickens. Thirty-three, or 76%, of Kavango households have chickens. The range was from one to seventy. No household gave an estimate of the number of eggs produced. Four households reported selling chickens for a combined total of N\$ 400.

In Oshana a more complicated pattern of ownership by year emerged. In terms of cattle, only a very small number of households with medium sized herds had less in 2004 than in 2003. Some even managed to increase their numbers, as did those who owned the least number of cattle. The pattern for

goat ownership showed that all middle-sized herd owners had a decrease in numbers.

There were seven owners of sheep in Oshana. The most owned were twelve in 2003, but across the board numbers declined. Thirteen households owned pigs. One household had thirty, while others had between one and six. Numbers of pigs remained constant. Three quarters of households had chickens. The range was from one to one hundred. Eighteen households reported selling chickens during the year, but none placed a value on the sale. Ten households reported that they received a total of 216 dozen eggs from their chickens with a range of two to one hundred dozen. One household sold eggs for a value of N\$ 360.

Livestock ownership in Oshikoto is much more complex. Twenty-five households had cattle, with a range of two to seventy-eight. Those with the least cattle as well as many intermediate owners of cattle were able to increase their numbers from 2003 to 2004. More households had goats, thirty-five, with a range of two to eighty-two. Those toward the higher end of the middle levels of ownership were able to increase their numbers while for those below, the pattern was mixed.

Only one household in Oshikoto kept sheep with a slight increase from three to five between 2003 to 2004. Thirty-five households kept pigs. Twenty-eight had only one pig, though eighteen of the households had two in 2003. Seventeen of the households that sold a pig did so for N\$ 35 and N\$ 600 per animal. Another four households sold two pigs. The average price per pig sold was N\$ 295.

Thirty-nine households had chickens. The range was broad from three to one hundred and seventy. Eighteen households sold chickens for between N\$ 20 and N\$ 700. Egg production ranged from one dozen to two hundred dozens

produced in the year from 2003 to 2004. Six households sold a total of one hundred sixty-eight dozen eggs for a total of N\$ 434.

Table 31 below provides a summary of livestock sold in the three regions. Two factors stand out. First, very few households are selling livestock. Consumption and/or barter are the main means of disposing of animals. Second, the pattern holds true of those in the Kavango sample being the least economically active (or agriculturally productive) while those in Oshikoto are the most.

Table 31: Sale of Livestock in 2004, Kavango, Oshana and Oshikoto Samples

	Kavango	Oshana	Oshikoto
Cattle			
No. HH Sold	2	1	3
No. Sold	2	6	9
Total Value (N\$)	3,400	N/A ²¹	28,530
Range (N\$)	1,000 – 2,400	N/A	1,800 – 9,000
Ave. Income per HH (N\$)	1,700	N/A	9,510

²¹This was a refusal to provide information.

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	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
Pigs			
No. HH Sold	N/A	6	3
No. Sold	N/A	9	19
Total Value (N\$)	N/A	N/A	5,616.00
Range (N\$)	N/A	N/A	35 - 600
Ave. Income per HH (N\$)	N/A	N/A	1,872.00
Goats			
No. HH Sold	2	2	10
No. Sold	13	6	18
Total Value (N\$)	2,550.00	N/A	4,405.00
Range (N\$)	N/A ²²	N/A	120 - 650
Ave. Income per HH (N\$)	1275.00	N/A	440.50

²²Respondent gave total of all sales and not a breakdown of price per animal.

4. Expenses

In this section expenses of the households surveyed will be examined. It will begin with a look at agricultural expenses followed by household expenses. Most were only able to spend very little. This situation creates a wide range of responses which when coupled with the small sample size can introduce inflated averages. Hence, where relevant the median value in addition to the average value of expenses will be shown so the reader can have an appreciation for way in which a few better off households skew the results.

4.1 Expenses on Agriculture

It is generally accepted that to achieve good agricultural yields, a certain level of input is required. Some, but not all of the households interviewed were able to purchase inputs for their farming operations. The following three tables provide information on the levels of input for the regions sampled. The Kavango sample, where yields were the lowest shows almost no expense on inputs. Even those households with high levels of production did not provide inputs into farming. The reasons for this deficiency are not clear. Factors could include a lack of extension services, the powerlessness of poverty, or other factors. The Oshikoto sample showed the highest level of input which tallies with the highest levels of production from the three regions sampled. Tables 32a and 32b show a breakdown of expenses on agricultural inputs.

Table 32a: Expenses on Agriculture, (Seed, Fertilizer, Water) Sample Three Regions

	Kavango	Oshana	Oshikoto

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	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
Seed and Feed			
No. HH	-	11	38
Range (N\$)	-	20 -- 120	8 -- 250
Total Cost (N\$)	-	583	1,533
Ave. per HH. (N\$)	-	53.00	40.34
Fertilizer			
No. HH	-	1	7
Range (N\$)	-	40	30 -- 200
Total Cost (N\$)	-	40	780
Ave. per HH. (N\$)	-	40	111.42
Water			
No. HH	2	11	19

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	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
Range (N\$)	120 -780	6 -- 120	50 -- 700
Total Cost (N\$)	900	331	3,549
Ave. per HH (N\$)	450	30.09	186.78

Table 32b: Expenses on Agriculture, (Farming Services, Crop Processing, Veterinary Services) Sample Three Regions

	Kavango	Oshana	Oshikoto
Farming Services			
No. HH	-	18	12
Range (N\$)	-	60 -- 450	50 -- 1500
Total Cost (N\$)	-	2,520	4,605
Ave. per HH. (N\$)	-	140	383.75
Crop Processing			
No. HH	-	5	3
Range (N\$)	-	180 -- 280	20 -- 100
Total Cost (N\$)	-	1,140	160
Ave. per HH. (N\$)	-	228	53.33

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	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
Veterinary Services			
No. HH	-	-	15
Range (N\$)	-	-	20 -- 705
Total Cost (N\$)	-	-	2,735
Ave. per HH. (N\$)	-	-	182.33

Aside from questions on specific inputs into agriculture, the questionnaire asked respondents for an estimation of their total inputs. This was designed to capture any inputs not specifically mentioned. Results were mixed and they appear in Table 33 on the next page. In Oshikoto, a larger number of people responded to this question than to the specific questions, which provided a total figure that was larger than the sum of the specific inputs. In Oshana two fewer people responded to the general question than to the specific questions, and the total they provided was lower. As an estimate of total farming input, in Oshana the sum of specific questions is deemed to be more robust than that of the general question. For Oshana, the total spent by all 18 households is N\$ 4,614 or N\$ 256.33 per household.

Table 33: Total Estimated Costs of Farming Inputs, Sample Three Regions

	Kavango	Oshana	Oshikoto
No. HH	2	16	42
Range (N\$)	120 - 780	34 -- 560	15 -- 2725
Total Cost (N\$)	900	3,438	14,544
Ave. per HH. (N\$)	450	214.88	346.62
Median (N\$)	-	-	

4.2 Household Expenses

As mentioned in the Introduction, data on food purchases were not collected with this survey tool. That data was part of another protocol in the NHIES and will only be available once that survey is complete. Here, expenses such as clothing, footwear, education, and medical costs are examined. These categories had the most frequent responses. There were many other categories where a few responses were obtained, and once the NHIES report is completed, they will be dealt with in another version of this effort. In cases where one region had a high number of responses yet another region did not, data from all three regions is presented, the one exception appears in the next paragraph.

As can be expected from the previous sections, the Kavango sample has the least to spend. This pattern is clear in all but one category, education. Oshikoto respondents have the highest level of expenses. They stood out in one category, gifts. Thirty-four households gave gifts to non-household members. These ranged from N\$ 25 to N\$ 1,500 with an average of N\$ 242 and a median of N\$ 135.

Clothing and footwear are the first major expense categories considered. Roughly 10% of Kavango households, 50% of Oshana households, and 95% of Oshikoto households were able to purchase these goods in 2003 – 2004. Tables 34 and 35 below provide a breakdown.

Table 34: Total Estimated Costs of Clothing, Sample Three Regions

	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
No. HH	4	24	48
Range (N\$)	46 - 1000	7 -- 1001	50 - 2391
Total Cost (N\$)	2,046	7,106	28,488
Ave. per HH. (N\$)	512	296	593
Median (N\$)	-	160	462

Table 35: Total Estimated Costs of Footwear, Sample Three Regions

	Kavango	Oshana	Oshikoto
No. HH	3	23	48
Range (N\$)	40 - 419	18 -- 642	20 - 1530
Total Cost (N\$)	508	6,418	18,326
Ave. per HH. (N\$)	169	279	382
Median (N\$)	-	240	249

Costs for fees and remittances were frequently reported. Fees included tribal and religious fees as well as money sent to other households as remittances. Table 36 below shows the results.

Table 36: Total Estimated Costs of Remittances, Religious, Tribal Fees, Sample Three Regions

	Kavango	Oshana	Oshikoto
No. HH	-	15	31

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	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
Range (N\$)	-	20 -- 1050	12 – 2,810
Total Cost (N\$)	-	2,920	9,536
Ave. per HH. (N\$)	-	194	308
Median (N\$)	-	100	155

Education

Table 37 shows results of expenses on education. Here, a major break in the regional pattern occurs. Households in the Kavango sample may not have much, may not spend much, but they do spend on education. Thirty-eight out of the forty-three households spent money on education. Some households spent a great deal as the top four spent 70% of the total cost at a rate of N\$ 5,721 per household. If top spending households are removed from the analysis, then the other thirty-four households spent an average of N\$ 286.

Just about half of households in Oshana spent on education. This is a much lower proportion than the other two regions. In terms of amounts spent, Oshana households are close to Kavango, if one removes the outliers from the Kavango calculations.

In Oshikoto a similar pattern follows. Forty-five out of fifty households spent money on education. The top five households spent 55% of total educational

expenses (N\$ 10,317 or N\$ 2063 per household). The other forty households spent a total amount of N\$ 8,140 or N\$ 204 apiece.

Table 37: Total Estimated Costs of Education, Sample Three Regions

	Kavango	Oshana	Oshikoto
No. HH	38	26	45
Range (N\$)	18 – 12,519	15 -- 1170	14 – 5,440
Total Cost (N\$)	32,614	5,843	18,457
Ave. per HH. (N\$)	858	225	410
Median (N\$)	180	175	171

Medical

Medical expenses were another category in which the pattern of the Kavango sample spending very little was broken. Table 38 below shows results for medical expenditures. A large number of Kavango households report medical costs. A crucial aspect of this expenditure is that all expenses reported are for those who do not have any form of medical aid, meaning that there is no form of outside assistance for household members who are ill. Another point about the Kavango sample is that even though there is a high rate of

payments by households, the overall amount spent is lower than the samples from the other two regions.

The Oshana and Oshikoto samples occupy the middle and higher end of expenditures respectively. In both of the samples some household members have medical aid. In Oshikoto 18% of households reported expenditures on medical aid. This is obviously a major assist to a household where members are either HIV positive, or ill with AIDS.

Table 38: Total Estimated Costs Medical Expenses, Sample Three Regions

	Kavango	Oshana	Oshikoto
Annual Expenditure Medical Care for Non-aid Members			
No. HH	35	30	27
Range (N\$)	4 - 1550	8 -- 2247	28 - 2000
Total Cost (N\$)	8,584	10,134	11,492
Ave. per HH. (N\$)	245	338	426
Median (N\$)	120	185	200
Annual Expenditure Medical Care for Aid Members			
No. HH	-	3	9
Range (N\$)	-	80 -- 540	5 - 2100
Total Cost (N\$)	-	720	2498
Ave. per HH. (N\$)	-	240	277

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	<i>Kavango</i>	<i>Oshana</i>	<i>Oshikoto</i>
Median (N\$)	-	-	55

5. The insecurity of HIV

In the previous two sections both income and expenses have been examined. Formal and informal income among the households studied is low, leaving farm production as the main source of livelihood support. Here, a basic analysis of different classes of farmers is presented. On page 55 above, the low productivity of households with regard to staple crops was discussed. Using that discussion as a basis, three categories of household in response to the epidemic are described. What follows is by no means exhaustive as there may be categories of response. The three pointed out below are: collapsed communal farming, near collapse communal farming, and coping communal farming. To determine these categories the main criteria was the ability to produce enough *mahangu* to satisfy basic caloric requirements. The levels were set at 0 – 750 kg. For collapsed communal farming, 751 – 1,500 kg for

near collapse communal farming and 1,501 kg and above for coping communal farming.²³

5.1 Collapsed communal farming

Description: These households have been unable to provide subsistence through crop production. In the sample this group represents 113 out of 144, or 78%, of all households in the survey.²⁴ In addition to not producing crops, very few the households have livestock. Of the 113 households in this category, only 29, or 26%, have cattle. The size of herds ranges from 2 to 77. Half of the cattle owners have 11 head or less. Eleven cattle owners had between 12 and 43 head, while three have between 50 and 77 head. A larger number of households, 43 out of 113, or 38%, have goats though it is still far less than half of this category. The range of herds is from 2 to 110 head, but half of those who own goats have less than 15. Fifteen households own between 16 and 35 head, while five have between 37 and 110 head.

For most of the livestock owners in this category, their herds cannot be considered a major source of food. Half of cattle owners have less than 11 head and half of goat owners have less than 15 head. Reasonable off-take ratios for cattle can be set at 28% per year and for goats at 64% per year.²⁵ Hence, half of cattle owners in this category can expect no more than three cattle per year for sale or consumption (even less if their numbers are below 5 head). Half of goat owners can expect 9 goats per year or less. Neither of these rates is sustainable if a household needs to consume livestock and increase their herds. A common phenomenon of collapsed households is that

²³Please refer to the Tables on pages 56 and 57 above.

²⁴Note, this figure does not agree with that presented in Table 29 on Page 57 because the upper limit for inclusion in this category has been increased.

²⁵Ministry of Agriculture, Water and Forestry, Department of Planning, personal communication.

they have lost males who could provide labor. There is a strong possibility that the households in this category are not able to supply the labor necessary to watch after their livestock and may thus see higher rates of loss due to theft and predators.

It is not known if these households were in poverty before they were affected by the HIV epidemic, or if they have become poor as a result of the epidemic. The FAO study highlights the manner in which households sell livestock to cover medical costs associated with HIV, as well as the manner in which widows in some parts of the country lose their livestock after their husband passes away. This loss means both reductions in wealth and in the tools (draft animals) required for increased production.²⁶ Regardless of the pathway they took, it is clear that these households are in regular hunger with few resources to allow them to emerge from poverty by their own efforts.

Intervention Strategies: With this group of households a hard question must be asked. Is it best to rehabilitate these households in terms of agricultural production, or should they be supported in other ways?

This question must be asked because there is still no clarity on whether this phase is the last phase before there is a recovery within the household. There could be yet other phases of deterioration. As was mentioned above, many of the households studied have seen a die-off of men. Their female partners are caring for children. Many of these women are likely to be HIV positive if not already ill due to AIDS. The fate of these women, and the impact of their potential deaths over the coming 2 to 5 years could signal a new phase even worse than the situation where communal farming has

²⁶Matanyaire, E. 1999. *The Impact of HIV/AIDS on Farming Communities in Namibia*. FAO. Windhoek. P. iii

collapsed. Already there is anecdotal evidence of child headed households in Namibia, though none were encountered in this survey.²⁷

Assisting these households might best be achieved through cash transfers such as support for orphans, HIV disability or a basic income grant. This will allow these households to keep their young in school and eventually be better able to provide for the family, whether they chose to be farmers or not. As such households begin to recover, then interventions geared toward boosting agricultural production can be considered. This might be some years into the future.

5.2 Near collapse communal farming

Description: This group of households produces just above their caloric needs. For purposes of this analysis those households that produce from 751 kg. to 1,500 kg. of *mahangu* are included. There are 22 out of 144 households in this category, or 15% of the sample. In addition to providing for subsistence, a few of these households might be able to sell some surplus. Over half of these households, 13 or 59%, have cattle. The range of herds was from 1 to 56 with half of cattle owners having less than 12. A similar number of households, 14 or 60%, have goats. The range of animals owned was from 5 to 70 with half of owners having 12 or fewer animals. As with their counterparts in the previous category, rates of off-take for most livestock owners will be low. Sustainable production for most livestock owners will be low, and they will be susceptible to loss of animals if they have burdensome medical expenses.

Demographically, these households have also seen a die off of men. A die off of women can be expected over the next few years. As to why these households are not as bad off as those collapsed, one possible answer might

²⁷The youngest head of household encountered in this survey was 28 years old.

be that they have not been affected by the epidemic for as long as those where collapse is more total.

Intervention Strategies: These households will require transfers to maintain. Again, a key objective should be to keep children in school so they can become long term solutions to the overall causes of collapse. Interventions to assist this group of households in rehabilitating their agricultural production can also be considered. Prior to agricultural interventions, there should be an assessment of the household's productive capacity in order that appropriate assistance is given. If these households are on a declining slide in terms of their ability to produce, they need to be given assistance which they can sustain as their capacities diminish. If they are not yet declining, then more ambitious interventions can be considered.

5.3 Maintaining communal farming

Description: This group produces more than 1,500 kg. of *mahangu* per year.²⁸ Eight households, 6% of the total sample, fit into this category. All of these households owned cattle and goats. The range of herds was 6 to 40 for cattle and 9 to 63 for goats. This group produces surpluses of which its members are able to sell. It is also the group most likely to have the wherewithal to invest in their own agricultural enterprises.

It is not clear if this group is newly affected by the HIV epidemic, or if they have simply been able, for other socio-economic reasons, to maintain their status. It is unlikely that any of these households were in poverty before they were affected.

²⁸The top producing household grew 5,000 kg of pearl millet in the previous year.

Intervention Strategies: With this group, intervention strategies can be more broad. The key would be to provide support that prevents deterioration into the other two groups. These households have both labor and income that they can invest in agriculture. Interventions should be geared towards assistance that maintains the current productive regime, and which anticipates the possible loss of labor as other household members become ill. This category of households may benefit from proposed strategies to change farming systems to less labor-intensive crops. Changing farming practices can take a number of years, and this group would seem to have the ability to make this transition.

6. Conclusions

The HIV epidemic has had an impact throughout Namibia. In rural settings, where communities are often bound by extended kinship and close social relations, one can expect that even those households not directly affected by illness or the loss of a relative, have in some way been asked to support a family or neighbor.²⁹ Here, the focus is on three main elements that this study has highlighted:

- Dynamism in terms of both the epidemic and that of the response by people affected by HIV,

²⁹ A Zimbabwean researcher (Dr. Renneth Mano) in the FANRPAN study wondered if being impacted by HIV is not now the normal situation in rural areas because the disease has been widespread for so long. Personal Communication.

- Different levels of impact of the epidemic on households' ability to produce, and different levels of intervention required to meet the needs of these households, and
- Identifiable gaps in our knowledge about the pace of the disease and the response to it by Namibians.

6.1 Dynamism

Fluctuation in Sentinel Survey results presents a challenge to our understanding. As is reported above, there have been decreases, level results and increases across individual Sentinel Survey sites in the areas of this study. On a site-by-site basis it is not clear if these results indicate once-off patterns or are part of a larger pattern. What we can learn from this drop is that the epidemic appears to have different phases, as does the response to it by ordinary Namibians.

In Kavango results show that female-headed households may be merging in response to the disease, a phenomenon linked to the higher rate of deaths among males. Here, the treatment of widows who in parts of the study area are often removed or forced from their marital land, and sent back to their own families, may be contributing to this. Clearly defining national and social responses to this kind of process will, given the cultural and productive variation in Namibia, require additional work to understand the matter in both

its broader and localized contexts. Other processes of response, as yet uncovered, may also be underway.

6.2 Different Levels of Impact and Support

Poverty has long been viewed as widespread among communal farmers in Northern Namibia. It is not surprising that most of the households interviewed were poor, and it would not be too rash an assumption to assume that the majority of the households interviewed would have been poor if unaffected by the HIV epidemic. Rather, a more crucial factor is the extent to which the condition of poor households has worsened due to HIV. If communal farmers in Northern Namibia are considered “subsistence” farmers, then the majority of the households surveyed are not subsisting. This survey found that almost 80% of households are not producing enough food. The AIMS survey found that 43% of the households they surveyed had times during the previous month when they experienced hunger, and that HIV affected households were more likely to experience times without food. While there may be issues of comparability between the two measures, the fact that Namibians are going hungry because of the epidemic is an undeniable reality.

Those households, which have been defined previously as “collapsed communal farming,” require immediate intervention. The status of these households has to be considered critical. Those households which are defined as “near collapse” may not be in a critical phase at the moment, but they are one “shock,” -- a death of a productive adult, or a bad farming year brought on by drought – from disaster. It is only those households, which are defined as “maintaining” where there is a buffer, but these households were a mere 6% of the sample.

Intervention strategies need to take account of different levels of response. The first two categories require immediate assistance. With households where farming has collapsed, the strategy must be for immediate food security and long-term maintenance. With adults dying as a result of the epidemic, the period of intervention may span decades, as younger household members require support to obtain an education and employment. Near collapse households too, require both immediate and long-term assistance. They will require assessment of their vulnerability in order to pace interventions with their capacities. Households that are maintaining may not require immediate attention. They may require longer-term interventions into changing farming systems, and introducing less labor-intensive crops. Vulnerability assessments for these households are recommended. Households that are able to maintain their farming operations might require shorter periods of intervention, but longer periods of monitoring.

6.3 Gaps in Our Knowledge of the Epidemic

Issues of time and issues of geography feature in the gaps of our understanding. In terms of time we are not clear on all phases of the epidemic and of people's response. This study identifies three phases, the AIMS Survey identifies four.³⁰ Clearly there is overlap between the typology identified here and that of the AIMS Survey as both studies have approached a similar question from different directions. There may be other dimensions to the epidemic as well. A question that must be asked is; are there different phases to the epidemic that have yet to be experienced? Identifying these phases will be crucial toward developing policies and interventions.

³⁰The AIMS categories are: Widow Affected, Orphan Fostering, Youth headed and Other Affected.

The second issue of geography is also important. The Regions studied all fall in the Northern communal farming areas. This area is notable for the ability to produce crops and livestock. Other parts of the country have different farming systems. Large and small stock farming dominates in the Erongo, Hardap, Karas, Kunene and Otjozondjupa Regions. Large stock farming is also prominent in parts of Otjozondjupa Region and almost all of the Omaheke Region. Some communal farming areas in these other parts of Namibia have longer histories of inclusion into and interaction with both colonial and post colonial market economies. Thus, strategies of response and intervention may differ greatly from those found in the Northern areas.

One underlying aim of this study was to show how national surveys could be used to expand knowledge about the epidemic. A notable fact encountered during the survey was that resistance to discussing the epidemic appears to be weakening. There was only one refusal to participate in the survey in all three regions. Using local case workers provided a crucial point of entry. In the future, the possibilities of this kind of multi-agency cooperation should be ignored.

Understanding the impact of the epidemic on the regions and communities throughout the country requires data that is harmonized with national level surveys. In cases such as the NHIES using the same instruments and analysis on a targeted population will yield crucial data for policy formulation, though we recommend that modifications be made to such instruments to include questions of relevance on the impacts of HIV. Ways to incorporate this type of data into national surveys need to be brought into the mainstream of development planning.

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