AIDS in Africa During the Nineties Zimbabwe

A review and analysis of survey and research results

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National AIDS Council
Ministry of Health and Child Welfare
The MEASURE Project
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INTRODUCTION

The first cases of AIDS in Zimbabwe were identified in 1985. The AIDS epidemic has grown since then to become one of the most serious public health challenges to ever face the nation (Sibanda, 2000). The UNAIDS estimate of HIV prevalence in Zimbabwe in 2000 among adults aged 15-49 was 25 percent (UNAIDS, 2000a; UNAIDS, 2000b). More recent information suggests that the epidemic has not yet peaked and that current prevalence may be even higher (MOHCW, 2001). At least 1.5 million of Zimbabwe's population of 13.5 million individuals are currently infected with HIV, most of these in ages of prime economic activity, 15-49. The social impact of AIDS-related mortality is felt acutely in the rapidly escalating orphan crisis in the country, as parents infected in the earlier years of the epidemic are now becoming part of the tremendous death toll (Bicego et al., 2002).

The AIDS epidemic in Zimbabwe is driven largely by heterosexual transmission of HIV. Effective initiatives to curb the spread of HIV should therefore focus on changing long-standing patterns of sexual activity. Although response to the epidemic has been slow, public health experts have long understood the potential severity of the problem. Public information campaigns have been launched, emphasizing monogamy, condom use, and abstinence among young persons. Embodied in the Strategic Framework for a National Response to HIV/AIDS (2000-2004) is an understanding that the causes and consequences of the epidemic cut across Zimbabwe's health, social, and economic sectors and that successful responses will thus be multi-sectoral in nature. An important component of the country's response is the District Initiative, spearheaded by the National AIDS Council (NAC), which aims to coordinate effective and locally designed and implemented action plans for HIV prevention and mitigation of AIDS impact.

The design of programs and monitoring of interventions require systematic assessment of key dimensions of the epidemic. It is now understood that the collection and analysis of epidemiological, behavioral, social, economic and demographic data are essential elements of the effective response framework. The principal objective of this report is to present and discuss available information in Zimbabwe on AIDS-related knowledge, attitudes, behaviors, and practices. To provide an epidemiological context to the report, a summary of Zimbabwe's national HIV surveillance data is presented.

1. DATA

The principal data sources used in this report are the three national Zimbabwe Demographic and Health Surveys (ZDHS) fielded in 1988, 1994, and 1999. Findings obtained from other studies are also introduced to provide a broader aspect to the monitoring of responses to the AIDS epidemic in Zimbabwe. Chapter 2 will briefly describe the scope of the epidemic using HIV prevalence data collected by the Ministry of Health and Child Welfare (MOHCW) sentinel surveillance system based on pregnant women attending antenatal clinics. Analysis of the relationship between condom use and condom distribution is based on routine statistics compiled by Population Services International (PSI) on condoms distributed and population figures produced by the Central Statistical Office (CSO).

Characteristics of the three DHS surveys are given in Table 1.1. Descriptive statistics of the survey respondents can be found in Appendix A. The 1988 ZDHS was a limited survey insofar as it did not collect male data and did not include a detailed questionnaire module on AIDS-related issues. As such, most of the analysis was limited to trends between the 1994 and 1999 surveys. The 1988 survey data are used to examine trends in certain indicators of sexual activity among women. All three surveys used a weighted sample design to produce national and provincial results. The sample designs of the 1994 and 1999 surveys are essentially the same: both are based on the same 395 clusters or enumeration areas sampled from the 1992 Zimbabwe Master Sample, developed by the Central Statistical Office from the 1992 Census. Further details on the DHS surveys can be obtained from the respective survey reports (CSO and IRD/Macro, 1989; CSO and Macro, 1995; CSO and ORC Macro, 2000).

A national survey on sexual behavior and condom use was conducted in 1997 by Target Research, Ltd for Population Services International (PSI). The limited documentation available (Target Research, Ltd, 1997) indicates problems in sample implementation of the survey. Reported age distributions indicate under-sampling of young and older age groups. Without sufficient documentation of the methods, sample probabilities (weights), or a data file that would allow secondary analysis of the data, it was decided that findings from this and similar survey in 2000 could not readily be made comparable to the DHS surveys. As such, they are not included in this report.

Table 1.1. National data sources for estimates of AIDS-related knowledge, attitudes, and behavior indicators.

Year	*Data source*	*AIDS KABP module?*	*Number of men interviewed*	*Number of women interviewed*
1988	ZDHS	No	No male sample	4201
1994	ZDHS	Yes	2141	6128
1999	ZDHS	Yes	2609	5907

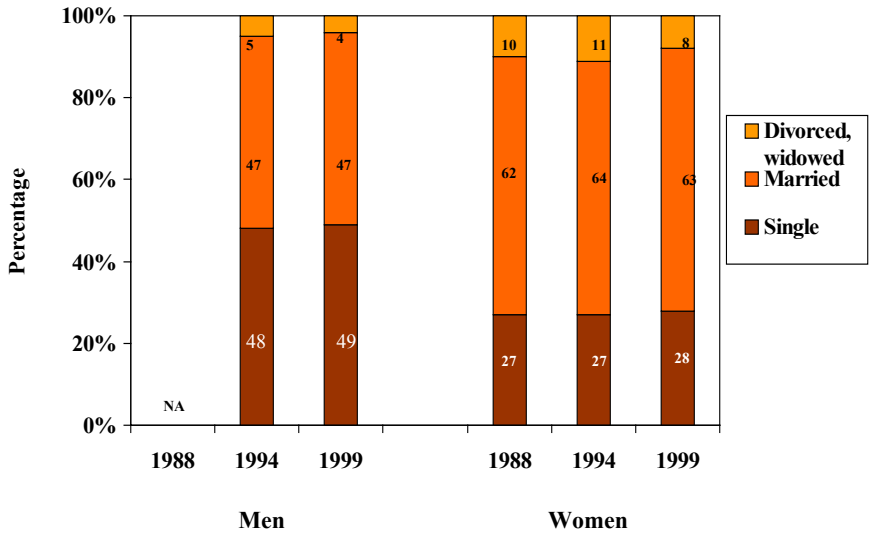
Survey Respondents

In all three ZDHS surveys, most respondents were rural residents. However, the percentage of rural residents declined from 67-68 percent of women in the late 1980s and early 1990s to 61 percent in the late 1990s. The trend during the 1990s towards urbanization is similar among men. Presumably this trend is the result of migration to areas with more employment opportunities. High mobility and a relatively large proportion of the population living in urban environments is a characteristic of Zimbabwe which sets it apart from most countries of sub-Saharan Africa. This is a significant fact that may be associated with the rapid spread of HIV there during the 1990s.

The age structure of the female and male populations have changed little in the 1990s. Education levels have risen sharply. Just 31 percent of women aged 15-49 had attended at least secondary school in 1988 compared to 53 percent in the 1999 survey. The proportion of men who completed secondary school also increased from 1994 to 1999.

Marital status is strongly associated with patterns of sexual behavior and changes over time can influence the AIDS epidemic. Figure 1.1. shows the percent distribution of the adult male and female population by marital status. Close to two-thirds of women were in a marriage or cohabiting union in each of the surveys, as compared to less than one-half of men. About 1 in 20 men were divorced, separated or widowed at the time of the surveys. Between the 1994 and 1999 surveys, the percentage of women who were divorced, separated, or widowed fell from 11 to 8 percent, which may be due to increasing adult mortality (i.e., fewer women survive to experience marital dissolution or death of a spouse).

Figure 1.1.
Trends in the distribution of men (aged 15-54) and women (15-49) by current marital status, Zimbabwe 1988-1999



2. THE SPREAD OF THE AIDS EPIDEMIC IN ZIMBABWE

- The sentinel surveillance system in Zimbabwe is currently based on blood samples obtained from women attending antenatal clinics at 19 sentinel sites throughout the country. After standardizing year 2000 sentinel data by age and urban-rural residence, the HIV prevalence in pregnant women was 34 percent. It is recognized that this figure does not take into account the non-representative nature of the sample of sentinel sites or individuals attending antenatal care at these sites versus the general population. Despite this, in a comparison of sites common to both the 1997 and 2000 surveillance rounds, HIV prevalence rose from 27 to 36 percent, indicating that the epidemic has not yet peaked.

- Among pregnant women aged 15-19, HIV prevalence was 28 percent; among women 20-24, it was 35 percent.

- Estimates based on ANC clinic location show that prevalence is especially high in commercial settings and border posts – around 50 percent of pregnant women tested HIV positive in 2000.

- Two upcoming data sources should strengthen efforts to monitor the AIDS epidemic in Zimbabwe: the 2001 sentinel surveillance data, and population-based estimates of HIV prevalence among young women and men, based on the 2001 Young Adult Survey.

A reliable HIV/AIDS surveillance system is recognized as a fundamental component of programs to combat the spread of HIV and mitigate AIDS impact. Understanding levels and trends in HIV infection provides information to galvanize political energies for action and helps guide the design of interventions. The HIV surveillance approach most widely used in AIDS-affected countries of the world involves the collection and analysis of blood specimens taken from a sample of pregnant women attending antenatal clinics (ANC) at "sentinel sites" throughout the country. In Zimbabwe, the current system uses 19 sites (MOHCW, 2001). While the resulting sample of women is not based on probability sampling methods, the approach allows assessment of trends over time in a normal population – women who seek antenatal care As of this report's production, the 2001 ANC-based estimates of HIV prevalence had not yet been released; thus, this section provides a concise summary of results drawn from the 2000 sentinel data.

Ten of the 19 sentinel clinic sites included as part of the 2000 surveillance round were also included in the 1997 round. Figure 2.1 shows that HIV sero-prevalence was 36 percent in 2000 compared with 27 percent in 1997. Comparing all participating 1997 clinics (28) with those participating in 2000 (19), prevalence increased from 29 to 35 percent. Using the 1999 ZDHS female age structure by urban/rural residence to standardize the 2000 data, the adjusted sero-prevalence rate is 34 percent. It is important to recognize that this adjustment procedure does not remove or take account of potential biases associated with the non-representative nature of the clinic populations.

Figure 2.2 presents the percentage of women who were HIV-positive by 5-year age group. Prevalence was highest at ages 30-34 (44 percent) and lowest at ages 40-44 (16 percent). HIV sero-prevalence among the youngest women was 28 percent, which is an indicator of the rate of new infections.

There was substantial variation in HIV seroprevalence based on the location of the sentinel clinic. Figure 2.3 shows that seroprevalence among women attending antenatal clinics in commercial farming and mining areas was highest (54 percent) followed by border post areas (49 percent), growth points (42 percent), other urban areas (32 percent), and other rural areas (27 percent).

As of this report's production, the results of the 2001 Young Adult Survey (YAS) had not been completed. The YAS will be the first of its kind in Zimbabwe, providing population-based estimates of HIV prevalence for the key age group 15-29. These data will provide an additional approach to HIV surveillance in Zimbabwe, and will strengthen the country's ability to track the epidemic.

Figure 2.1.
HIV prevalence in ANC clinics that conducted the survey in both 1997 and 2000 and in all clinics, Zimbabwe, 1997 and 2000

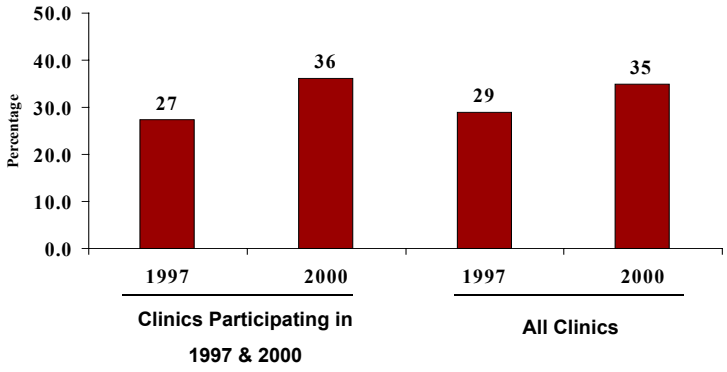
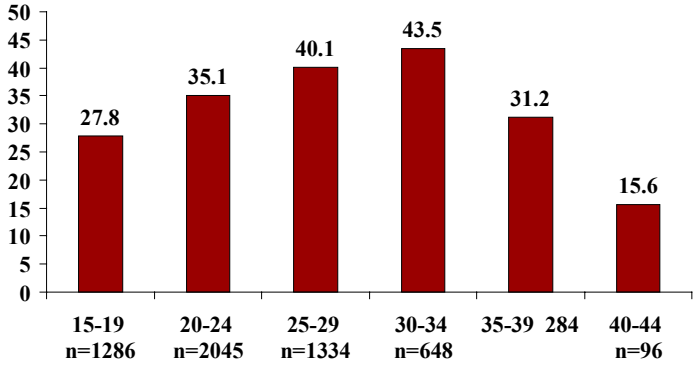
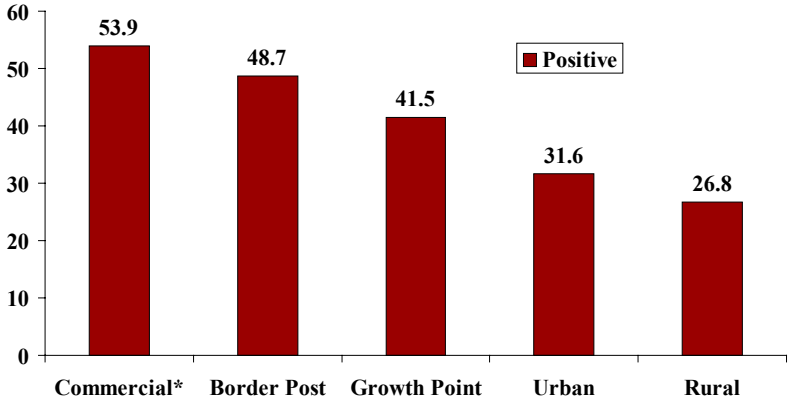


Figure 2.2.
HIV prevalence by age among ANC attendees, Zimbabwe 2000



p<0.001

Figure 2.3.
HIV prevalence by clinic setting among ANC attendees aged 15-44, Zimbabwe 2000



*Includes farming & mining
p<0.001

3. AIDS-RELATED KNOWLEDGE AND ATTITUDES

- While general awareness about AIDS has been nearly universal since the early 1990s, understanding about specific AIDS-related issues has become widespread only in the late 1990s. The percentage of women and men who reported condom use as a means to prevent getting HIV/AIDS has risen from 57 and 66 percent, respectively, in 1994 to 66 and 76 percent in 1999.
- Women, especially those living in rural areas, are still at marked disadvantage with respect to understanding key issues about AIDS and HIV transmission. In 1999, more than a quarter of rural women still did not understand that a healthy-looking person can carry the virus that causes AIDS.
- While condom use was the means of HIV prevention most frequently cited in the 1994 survey, both condom use and monogamy had become much more widely known by 1999.
- In all population subgroups, important fundamental gaps remain in knowledge about HIV/AIDS. While adequate knowledge about AIDS does not necessarily translate into safer patterns of sexual behaviour, it is clear that without a basic understanding of HIV transmission and AIDS, behaviour change programs have little chance of success. A more open, free, and public exchange of information about the epidemic is crucial in the struggle to effect healthier lifestyle patterns.

General awareness of HIV/AIDS was already nearly universal by the early 1990s in both urban and rural areas of Zimbabwe. In the 1994 DHS, 99-100 percent of men and women had heard of AIDS. To obtain more in-depth data on respondents' understanding of AIDS-related issues, DHS surveys in 1994 and 1999 asked further questions on HIV transmission and prevention. The details on trends in HIV/AIDS-related knowledge indicators are provided in Appendix Tables B.1 at the national level and B.4 for urban and rural areas.

Can HIV/AIDS be avoided? A question of knowledge or perceived control?

Women and men who were interviewed in the 1994 and 1999 surveys and who had heard of AIDS were asked whether HIV/AIDS could be avoided. The data presented in Figure 3.1 indicate that, even as of 1994, the large majority of both women and men knew that HIV/AIDS can be avoided. There was little in the way of change in this indicator between 1994 and 1999, with women remaining consistently less aware about the possibility of HIV/AIDS prevention (85-87 percent) than men (94 percent). It is important to understand that this sex-differential may be due less to a difference in knowledge than to a sense among some women that effective prevention measures may be realistically outside their control. This interpretation is bolstered by the fact that the sex differential is especially pronounced in the rural setting, where women are less

educated and thus presumably feel less empowered. In 1999, 1 in 6 rural women in Zimbabwe did not think that HIV/AIDS was avoidable.

Knowledge of ways to reduce the risk of HIV infection: need to further educate both women and men

In the 1994 and 1999 surveys, if respondents reported that HIV/AIDS could be avoided, they were asked to report how "a person could avoid getting the AIDS virus." In the 1999 survey, two types of questions were asked regarding means to avoid getting HIV/AIDS. First, and as in the 1994 survey, an open-ended question was asked and respondents provided answers without prompting. Next, women and men were asked specific questions (prompting) on whether condom use and then whether limiting their sexual activity to just one partner could reduce their chances of getting AIDS.

Apart from total abstinence, AIDS prevention efforts focus on promoting condom use and sticking to one partner. Figures 3.2 and 3.3 look at the trends between surveys in the percentage of men and women who spontaneously reported each of these two prevention means. In 1994, condom use was the more frequently reported prevention means, and, while the same remains true in the 1999 data, the gap has narrowed considerably. Reported knowledge of "sticking to one partner" has risen more quickly than reported knowledge of condom use. Women were some 50 percent more likely to report monogamy as a means of preventing HIV/AIDS in 1999 than in 1994. Again, it is possible that this positive trend reflects less an increase in knowledge per se than an improvement in women's perception of what may realistically be expected in their lives.

Figure 3.4 examines trends in (combined) knowledge of both primary prevention means. The percentage of women who spontaneously reported both condom use and monogamy as a means of preventing HIV/AIDS rose from 22 to 48 percent between the 1994 and 1999 surveys, as compared to a rise from 32 to 56 percent among men. These findings, while showing a very encouraging trend towards improved understanding, remind us that a large proportion of Zimbabwean men and women still lack important knowledge about the most important public health problem facing the nation.

Based on UNAIDS recommendations, the 1999 DHS asked probing questions on prevention means, the results of which are shown in Figure 3.5 for women. Probing has the expected effect of increasing the percentage of respondents who "know" of condom use and "sticking to one partner" to avoid HIV/AIDS. The percentage of women that reported both primary prevention means rose from 48 percent (not probed) to 65 percent (probed). Because of the inevitably leading nature of the probes, these may cause an overstatement of knowledge. The truth may well fall between results obtained with and without the probes.

Figure 3.1.
Percentage of women and men who know that HIV can be avoided, 1994 and 1999

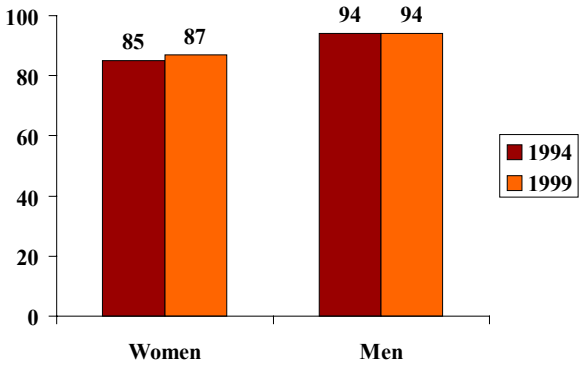


Figure 3.2.
Percentage of women and men who think that a person can avoid getting HIV/AIDS by using a condom, 1994 and 1999

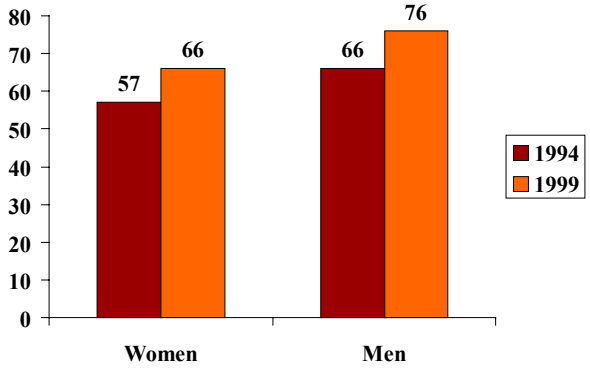


Figure 3.3.
Percentage of women and men who think that a person can avoid getting HIV/AIDS by sticking to one partner/limiting number of partners, 1994 and 1999

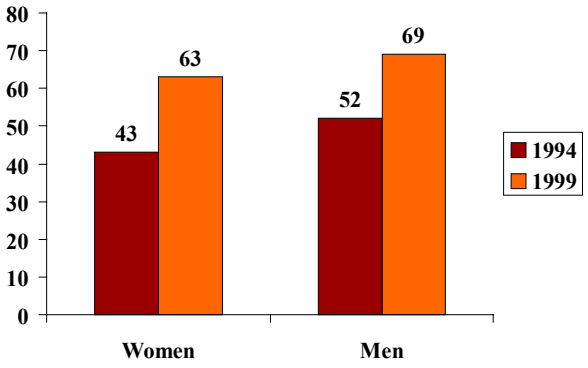
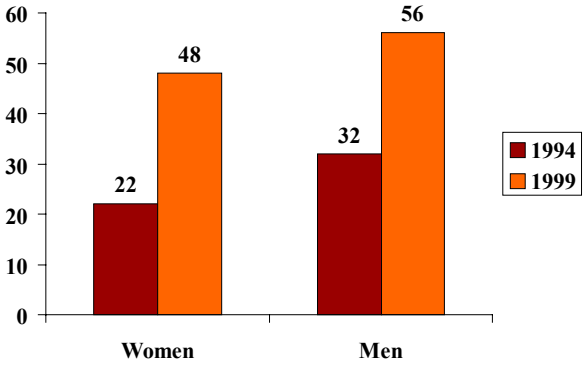


Figure 3.4.
Percentage of women and men who think that a person can avoid getting HIV/AIDS 1) by using condoms and 2) by sticking to one partner/limiting number of partners, 1994 and 1999



Infected persons can appear healthy: rural men and women are less informed

An understanding that HIV infection is not always associated with overt illness is fundamental to personal risk assessment and decision-making about higher risk sexual behavior. Figure 3.6 shows that 86 percent of men and 79 percent of women were aware of this basic fact in 1999. Slight rises in this indicator were observed since the 1994 survey. Differentials by urban-rural residence are substantial, especially among women. Even after a small improvement since 1994, in 1999, still more than a quarter of rural women believed that a healthy-looking person could not be HIV-infected.

Mother-to-child transmission (MTCT): most men and women know about it

In the 1994 and 1999 surveys, respondents were asked whether they thought HIV could be transmitted from a mother to her child. The results shown in Figure 3.7 suggest a small *decline* in this type of knowledge since 1994, among both men and women. However, there was a change between the surveys in how the question was put to respondents. In 1994, respondents were asked whether transmission could occur "during pregnancy or childbirth." In 1999, the question was more general, not referring to a period or event, thus presumably including breastfeeding. This would therefore suggest that the apparent small decline in knowledge would need to be explained by something other than the survey question per se. A more plausible explanation is that knowledge of MTCT is generally superficial and that more men and women, having developed an experience base with the uncertainty of transmission (i.e. "only" around 30 percent chance of HIV transmission without intervention) will increasingly respond "depends" or "unsure" in a survey. Indeed, 7 percent of women and 10 percent of men responded this way to the question in 1999, compared to 3 and 4 percent in the 1994 survey.

Personally knowing someone with HIV or someone who has died with AIDS: the personal impact of the epidemic continues to spread across Zimbabwe's social landscape.

A person's perception of their risk of getting HIV/AIDS or even already being HIV infected may be affected by the extent to which an individual has been personally exposed to the epidemic's worst consequences, the illness and death of close friends and relatives. Personally knowing someone who is HIV positive, or who has died of AIDS, may be an important factor leading to positive behavioral changes. Figure 3.8 indicates a significant upward trend in this indicator of social impact. In 1994, about one-half of women and men had had experience with a person with HIV/AIDS, compared to nearly two-thirds in 1999. This also indicates the extent to which the epidemic is overtly affecting the general population in Zimbabwe. Men and women living in urban settings are much more likely than their rural counterparts to be touched by the epidemic in this way.

Figure 3.5. Percentage of women aged 15-49 who think that a person can avoid getting HIV/AIDS A) by using condoms and B) by sticking to one partner, and both A & B. Spontaneous and prompted, 1999

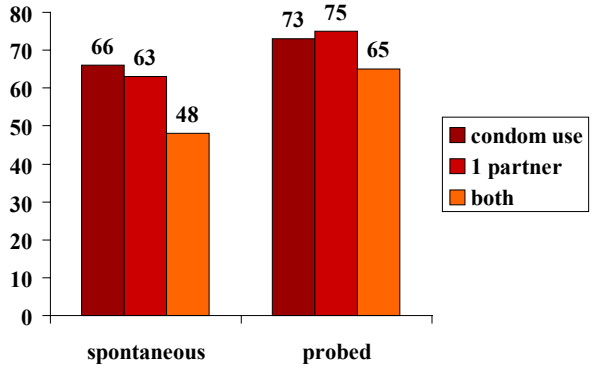


Figure 3.6. Percentage of women and men who know that an HIV-infected person can appear healthy, 1994 and 1999

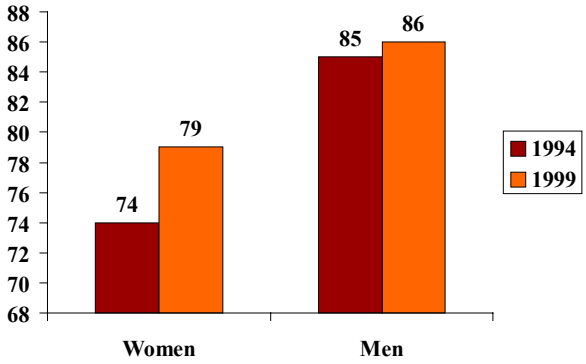


Figure 3.7. Percentage of women and men who know that HIV can be transmitted from a mother to her child, 1994 and 1999

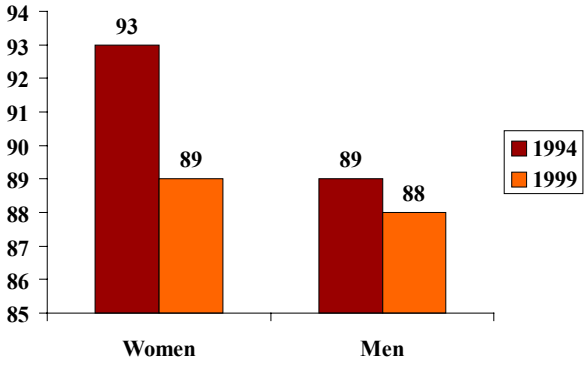
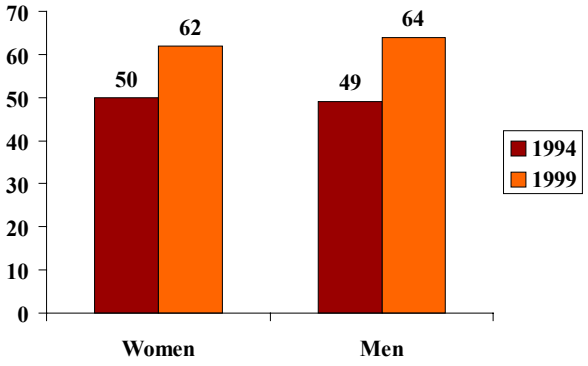


Figure 3.8. Percentage of women and men who know someone with HIV/AIDS or someone who died from AIDS, 1994 and 1999



4. SEXUAL BEHAVIOR

- Despite messages to discourage teenage sexual activity, very little change was observed during the 1990s in the median age at first sex, which stands at 19 years of age for both women and men.

- The prevalence of premarital sexual activity has remained roughly unchanged during the 1990s. In 1999, 15 and 34 percent of never married females and males, respectively, aged 15-24 had sex in the year before the survey.

- Survey data indicate that men are much more likely than women to engage in extramarital sex and to have multiple partners. Part of this differential may however relate to underreporting of sexual activity by women. The finding that men are more likely than women to engage in higher risk sexual activity provides justification for emphasizing men in future behaviour change interventions.

- The present study gives no evidence of a reduction in the level of higher-risk sexual activity during the 1990s. However, trends in the percentage of men and women involved in multiple partnerships and extramarital sex are difficult to establish since the structure of the survey questions and the reference period for data collection underwent change between the surveys. Still, the most recent (1999) survey shows that 38 percent of men aged 15-54 had one or more non-regular partners in the year before the survey.

Analysis of patterns of sexual activity among women and men is key to understanding the past and future course of the AIDS epidemic in Zimbabwe. The sexual behavior of young people is especially important to understand since most new HIV infections occur in this group. The details on trends in sexual behavior are provided in Appendix Tables B.2 at the national level and B.5 for urban and rural areas.

POSTPONEMENT OF SEXUAL DEBUT AND SEXUAL ABSTINENCE BEFORE MARRIAGE

Postponement of sexual debut and abstinence before marriage are two important means reducing the spread of HIV. A detailed assessment of sexual activity among young people will be undertaken in an upcoming report using data from the 2001 Zimbabwe Young Adult Survey (YAS). However, trends in two important UNAIDS indicators on adolescent sexual activity can be evaluated using the DHS data: median age at first sex and premarital sexual activity.

Median age at first sex: little change during the 1990s

By tabulating the percentage of people who report having ever had sex by single year of age, the 50th percentile (or median age at first sex) can be estimated. Among women, median age at first

sex was 18.5 years based on the 1988 DHS and 1994 DHS, and about 19.0 years based on the 1999 survey, suggesting a small postponement in sexual debut. The 1988 survey did not collect male data; however, between the 1994 and 1999 median age at first sex among men remained roughly constant at about 19 years of age. It is important to recall that, in Zimbabwe, age at marriage is about 4-5 years higher among men than women (CSO and ORC Macro, 2000), implying a much longer period of premarital sexual activity. This period is typically characterized by serial monogamy (Mbizvo et al., 1997).

Premarital sex: little evidence of a decline in recent years

The DHS surveys asked men and women when they last had sex. If they said that they never had sex or that they had sex more than 12 months ago, they were considered to have not had sex in the last 12 months or 1 year. Figure 4.1 shows that between 1988 and 1999 there was no change or perhaps a small rise in the percentage of never married women and men aged 15-24 reporting abstinence in the previous year. A similarly unimpressive pattern is observed when looking at the more recent, 4-week reference period (Figure 4.2).

Sexual abstinence is far more commonly reported for young women than young men. Given prevailing social norms and pressures, it seems possibly that these patterns may be in part due to underreporting of sex by young women and possibly overreporting by young men.

HIGHER-RISK SEXUAL ACTIVITY

Based on UNAIDS guidelines for monitoring and evaluating HIV/AIDS programs, higher-risk sex is defined as sex outside the context of a marital or cohabiting relationship. In practical terms, this means extramarital sex for married individuals and all sex for the unmarried (UNAIDS, 2000c). In this report, and according to DHS standards in Zimbabwe, informal marriages (i.e. living together without formal marriage ceremony) are considered together with formalized marriages as "married." To simplify presentation, non-marital, non-cohabiting partners will be referred to as *non-regular* partners. In Zimbabwe, this definition works fairly well to capture the distinction between fairly stable relationships and unstable ones. The difficulty may arise in the potential misclassification of long-term premarital or extramarital relationships as non-regular based on this definition.

Since the 1988 DHS did not collect partner type–specific information on sexual activity, the following analysis is limited to the 1994 and 1999 surveys. Also, the 1994 survey used a 4-week reference period for partner type–specific questions while the 1999 survey used the current standard reference period of 12 months. This precludes use of a single standard definition to evaluate trends between the surveys. Since the probability of having had a non-regular partner will be affected by the duration of observation (before the survey), it is expected that even with no change in sexual activity patterns, the 1999 survey based estimate of non-regular sex (using 12-month definition) will be greater than the 1994 survey based estimate (using the 4-week definition). The difference is not simply an arithmetic matter, as it will depend on the frequency of non-regular sex and any differences in frequency due to the time of year, which cannot be ascertained with these data.

Figure 4.1. Premarital Sex
Percentage of never married women and men aged 15-24 who did not have sex in the 12 months before the survey, 1994 and 1999

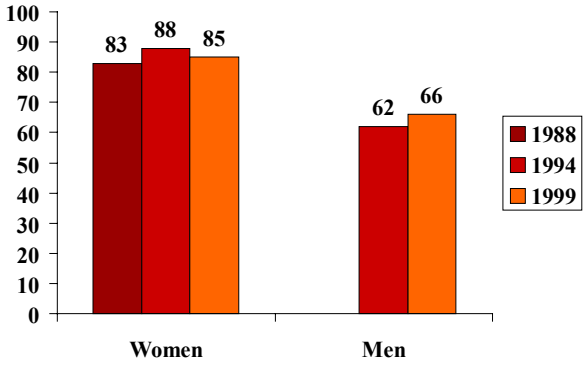


Figure 4.2. Premarital Sex
Percentage of never married women and men aged 15-24 who did not have sex in the 4 weeks before the survey, 1988, 1994 and 1999

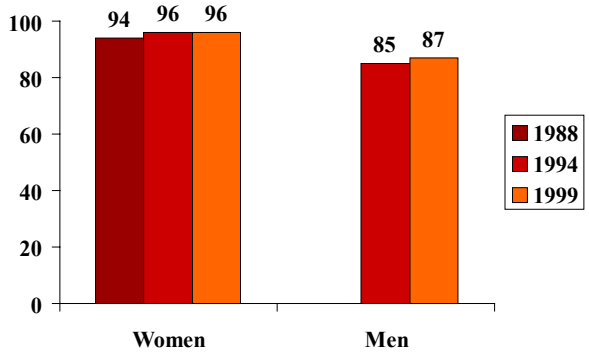


Figure 4.3. Non-regular Sex
Percentage of women aged 15-49 and men aged 15-54 who had one or more non-marital, non-cohabiting partner in the last 4 weeks (1994 survey) or last 12 months (1999 survey)

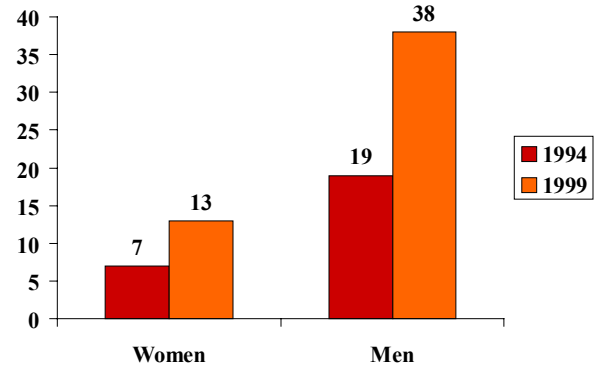
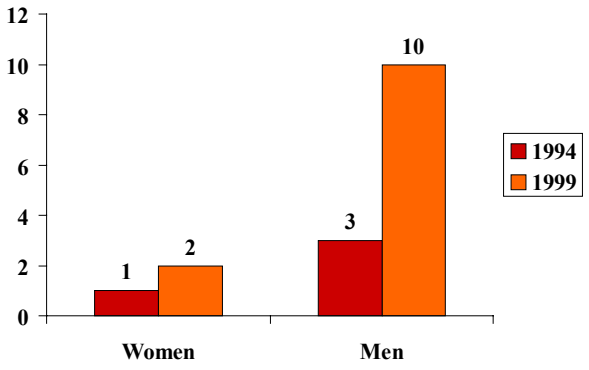


Figure 4.4. Non-regular Sex
Percentage of women aged 15-49 and men aged 15-54 who had two or more non-marital, non-cohabiting partners in the last 4 weeks (1994 survey) or last 12 months (1999 survey)



There is another reason why the 1999 survey approach may produce higher estimates of non-regular sex, *ceteris paribus*. In the 1994 survey, questioning began with queries about whether the respondent had had sex with someone "other than her husband," which is perhaps rather too direct to elicit frank responses. In 1999, the respondent was asked about the last time he/she had sex, followed by specific questions on the nature of the partnership (relationship, residential situation, duration of relationship, etc.) and condom use during that sexual encounter. Then the respondent was asked to report about the partner before that last partner, and so on to cover up to three partners in the 12-month period before the survey. This newer approach, i.e. a truncated sexual history, which represents a more indirect way to get the respondent to talk about behavior that is not socially sanctioned, is thought to produce a more complete picture of sexual activity (NACP-Tanzania et al., 2001).

Non-regular sexual activity: many men continue to engage in high-risk activity

Figure 4.3 shows the distribution of women and men by whether they had *one or more* non-regular partners in the past 4 weeks based on the 1994 data and past 12 months based on the 1999 data. Figure 4.4 is a similar presentation but looks at men and women who have had *two or more* non-regular partners. Again trends between the two surveys cannot be reliably determined from these data; however, some other useful observations can be made. First, non-regular sex is much more common among men than women, regardless of reference period or survey. In 1999, more than one-third of men reported sex with a non-marital, non-cohabiting partner in the previous year, compared to about one-eighth of women.

The sex differential is especially pronounced regarding multiple non-regular partners. One in 10 men had 2 or more higher-risk partners in the last year, as compared to just 1 in 50 women. These patterns remained unchanged during the 1990s.

Sexual activity is influenced by social context. There exists a marked difference between the percentage of urban women and rural women engaged in high-risk sex in both 1994 and 1999 surveys. Among men, there is little or no difference by residence in high-risk sexual activity. That rural women are much less likely than rural men to have a non-regular partner may in part be due to their more limited mobility and therefore their diminished opportunity to establish and maintain extramarital and premarital liaisons. While a sex differential also exists in urban areas, the difference is much less striking. Women living in towns are potentially more mobile, both physically and socially, providing opportunities for sexual experimentation and reducing the social cost of unsanctioned behavior.

It may also be considered that rural women, precisely because of these social pressures imposed by village life and fear of disclosure, are more likely than urban women to underreport sex in a survey.

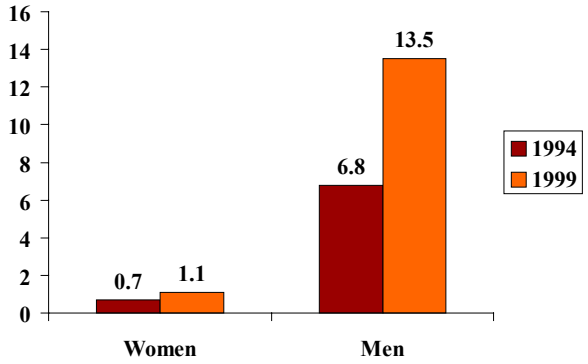
Extramarital sex: still a fairly common occurrence among men.

Any successful effort to stem the rising tide of new HIV infections in Zimbabwe will need to address the issue of transmission within the context of marriage. In particular, our current (if very incomplete) understanding of transmission dynamics suggests that sex between older married men and younger unmarried women, and then younger, now married women with their new husbands are two important dimensions to sexual networking that drives HIV-infection rates to the high levels observed in settings like Zimbabwe. Understanding the extent to which men and women engage in sex outside of marriage is key to monitoring the course of the epidemic.

Figure 4.5 shows that, despite nearly universal awareness about AIDS and high levels of personalized impact of the epidemic, the 1999 DHS data indicates that 1 in 7 married men engaged in extramarital sex during the past year. Just 1 percent of married women reported the same. Whether this represents an underestimate of illicit sex by married women is an important question that more in-depth study may be able to address.

Like non-regular sex, urban-rural differences in extramarital sex reported by men are negligible.

Figure 4.5. Extramarital Sex
Percentage of married women and men who had had any extramarital sex in the last 4 weeks (1994 survey) or last 12 months (1999 survey)



5. CONDOM KNOWLEDGE AND USE

- Most men and women in Zimbabwe have heard of male condoms. The available data show that, during the 1990s, *knowledge* of a source to obtain a condom increased to 78 percent (women) and 90 percent (men). However, when asked if they could actually get one when needed, many fewer women (63 percent) and men (76 percent) reported that they could.

- Although knowledge about condoms is essential, the findings clearly indicate that knowledge alone is not sufficient to produce substantial shifts in levels and patterns of use.

- Just one-quarter of sexually experienced women have ever used a condom, compared to two-thirds of men. This figure has not changed much during the 1990s. Among rural women, the data indicate that ever use of condoms has actually decreased.

- Use of a condom *at last sex* is a better indicator of current levels of protection against HIV. Using this indicator, current use of condoms has remained consistently low among both women (6-7 percent) and men (19-20 percent) during the 1994-1999 period.

- Condom use in the context of marriage remains very uncommon in Zimbabwe and may be decreasing. Despite methodological differences in the surveys which encumber interpretation of the data, a significant decline was estimated in condom use during sex with marital or cohabiting partners. As of the 1999 survey, just 4 percent of sex in marriage involved condom use (as reported by women).

- Condom use in the context of sex with non-marital, non-cohabiting partners, on the other hand, appears to have improved a little during the 1994-1999 period. As of 1999, 43 percent of women and 71 percent of men reported a condom was used at last sex with this partner type. Of course, this means that more than one-half of women's recently reported high-risk sexual activity involves potential exposure to HIV and other STIs.

- Analysis of the relationship between the number of condoms distributed in Zimbabwe and those used finds a discrepancy Just 20 percent (11.3 million) of the 55 million condoms estimated to have been distributed in 1999 can be accounted for based on rates of use based on survey data.

The promotion of condom use has been a pivotal element of Zimbabwe's HIV prevention strategy over the last decade. Most condoms in Zimbabwe are distributed for free at public sector outlets, largely government-run health facilities. During the early stages of the epidemic, social marketing activity was limited, but starting in 1997, the revitalized *Protector* brand now called *Protector Plus* was launched with updated packaging and a more vigorous product positioning campaign coordinated by Population Services International (PSI/Zimbabwe), which has stimulated sharply increased sales. To target high-risk groups, the *Protector Plus* brand condom is sold out of vending machines in bars, nightclubs, as well as in various workplace settings.

Figure 5.1 shows the number of male condoms distributed through the public and private sector, the latter comprised mostly of the socially marketed *Protector Plus* brand. Total availability of condoms through the public sector has been erratic through the 1990s, due mostly to fluctuations in the distribution of condoms by the government. The total number of condoms distributed has remained roughly constant at about 50-60 million condoms per year from 1998-present, although the social market share of the total has risen from virtually nil in 1993 to about 29 percent in 2001. The increasing social market share may, optimistically, be considered a sign of higher levels of actual use, since *Protector Plus* condoms are thought more likely to be used than condoms distributed for free.

Awareness of male condoms became nearly universal in the 1990s

In the late 1980s, about one-quarter of women aged 15-49 were not aware of the male condom (Figure 5.2). By the 1994 survey, condom awareness had become nearly universal with about 19 of every 20 men and women aware of the male condom. In the 1994-1999 inter-survey period there was little or no change in these figures. Rural men and women are slightly less knowledgeable about the condom than their urban counterparts.[1]

Knowledge of a source to get condoms, generally high but still over one-quarter of rural women couldn't cite a source.

Women and men were asked in the DHS to report a place where they could obtain a (male) condom.[2] The percentage of women able to cite a source for condoms rose only slightly from 71 to 78 percent between 1988 and 1994, and from there remained constant up to 1999 (Figure 5.3). As expected, men are more knowledgeable about places to get condoms, with about 9 in 10 able to cite a source in 1999, virtually unchanged since 1994.

Urban men and women are more likely to know of a source for condoms. As of 1999, 27 percent of rural women could not cite a source for a condom, compared to 14 percent of their urban counterparts.

The 1999 DHS asked an additional question: "If you wanted to, could you yourself easily get a condom?" This question was intended to explore real, as opposed to hypothetical, access to condoms. Figure 5.4 show that considerably fewer women and men are actually able to obtain a

[1] The details on trends in condom use are provided in Appendix Tables B.3 at the national level and B.6 for urban and rural areas.

[2] In the 1994 survey, the question on source for condom was asked only of men and women who had ever had sex. To avoid problems in interpreting trends, the reported percentages for all three surveys were calculated based on women and men who had ever had sex.

condom when they need one than is represented in the simple data on "knowledge" of a source for condoms. The data indicate that just 63 percent of all women and 76 percent of all men could easily get a condom if they wanted to.

The prevalence of ever use of condoms did not increase between 1994 and 1999

While 75 percent of women and 81 percent of men cited condom use as a means to prevent HIV transmission, this knowledge is generally not translated to actual behavior. Among women who have ever had sex who were interviewed in the 1999 DHS, just one-quarter (24 percent) had ever used a condom (Figure 5.5). This represents essentially the same level as was found in the 1994 survey (26 percent), but is significantly higher than the 16 percent estimated from the 1988 survey. Among men, there has also been no change during the 1990s in ever use of condoms (66-67 percent).

Between 1994 and 1999, ever use of condoms has remained essentially the same among urban and rural men and among urban women; however, ever use reported by rural women has declined from 24 percent in 1994 to just 17 percent in 1999.

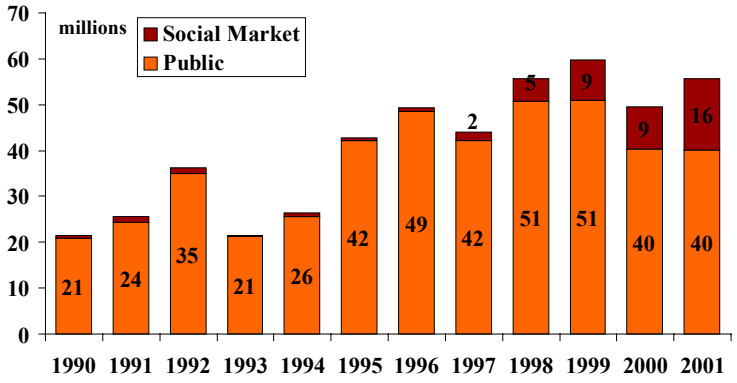
Condom use during last sex: little or no improvement in the 1990s

As mentioned above, the 1994 and 1999 surveys differed with respect to the reference period used for estimation of recent sexual activity and associated condom use: the previous 4 weeks was used in the 1994 survey, the previous 12 months in the 1999 survey. This introduces serious problems with regard to measurement of the number of sexual partners of different presumed risk profiles. However, it does not follow from this that estimation of condom use in a recent reference period will suffer similar problems. Indeed, it can be argued that last sex, whether in last 4 weeks or last 12 months, will capture the same profile of partner type on average. This can be evaluated by examining the condom-use pattern as it varies by duration of reference period, using <u>any</u> partner type (which can be done with both 1994 and 1999 data). If the profile or type of "last partner" differed very much depending on the duration of the reference period, one would expect different condom-use levels since most studies show that condom use is very much higher in higher-risk situations. Condom use among men and women at last sex (any partner type) in both 1994 and 1999 is shown in Figure 5.6 (last 12 months reference period) and Figure 5.7 (last 4 weeks). The data show that

1. Condom use is low and essentially unchanged between 1994 and 1999.
2. Condom use at last sex is much higher among men than women.
3. The 4-week reference period produces, in both surveys, uniformly lower, but not much lower, condom-use rates than when using the 12-month reference period.

This last finding suggests that last sex using the shorter reference period involves a lower percentage of high-risk sex (higher condom use) than last sex using a 12-month reference period. This is consistent with the fact that higher-risk (non-marital, non-cohabiting) sex is more frequent among those individuals who have sex less frequently (i.e. more likely to be excluded from the 4-week "window" but included in the 12-month "window" before the survey). The obvious example would be young men and women 15-24 years old, since lower proportions of these individuals are married.

Figure 5.1.
Number of condoms distributed in Zimbabwe by sector, 1990-2001



Source: PSI/Zimbabwe

Figure 5.2.
Percentage of all women and men who are aware of the male condom, 1988, 1994 and 1999

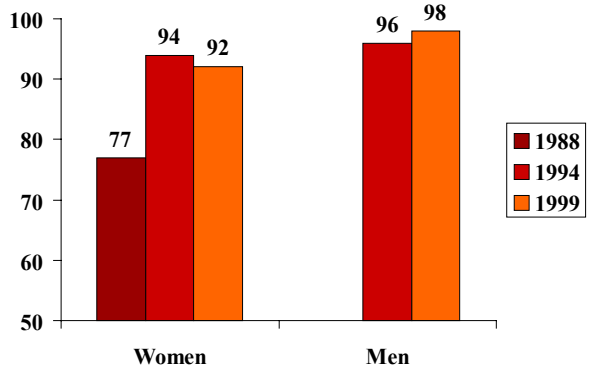


Figure 5.3.
Percentage of women and men who know of a source for condoms, 1988, 1994 and 1999

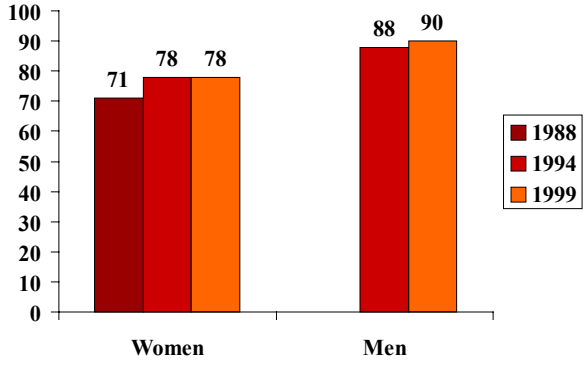


Figure 5.4
Comparing the percentages of women and men who know of a source for condoms with the percentage who "could easily get a condom if wanted," 1999

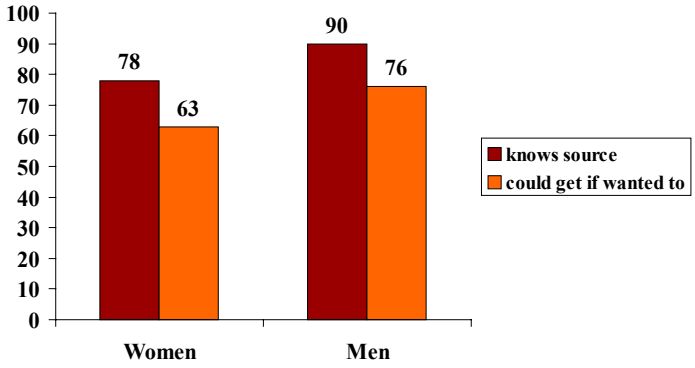


Figure 5.5.
Ever used a condom
Women, 1988, 1994 and 1999;
Men, 1994 and 1999.

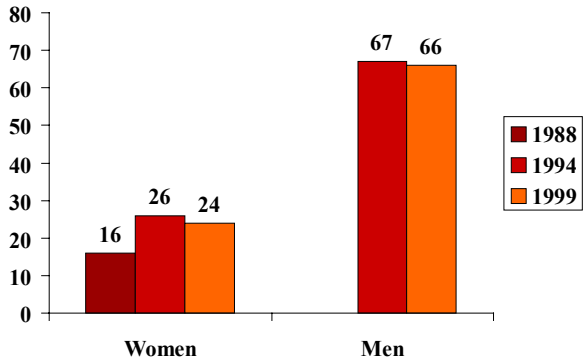


Figure 5.6.
Percentage of women and men who use a condom at last sex (any partner type in last 12 months), 1994 and 1999

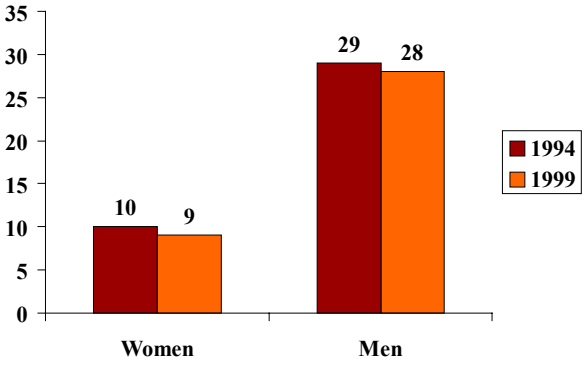
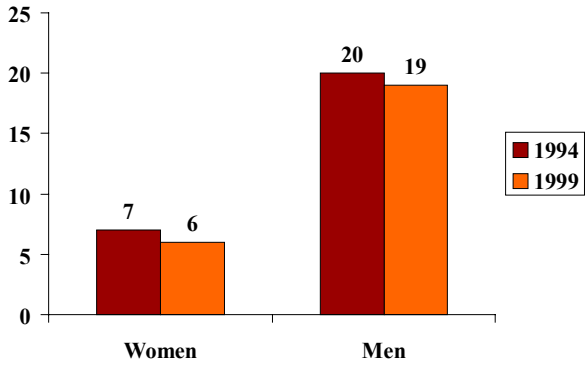


Figure 5.7.
Percentage of women and men who used a condom at last sex (any partner type in last 4 weeks), 1994 and 1999



Condom use by partner type: use within marriage declining

Figure 5.8 shows the percentage of men and women who reported using a condom at last sex with their marital or cohabiting partner, based on the 1994 survey (last 4 weeks) and the 1999 survey (last 12 months). Since we are looking at a single partner type, the potential for any bias in comparing data using reference periods of different length is minimal. The data show that a significant decline in the use of condoms within marriage has occurred in the latter half of the 1990s. This may be explained by the increasing levels of stigma associated with condoms in Zimbabwe, and the resulting difficulty, by both men and women, in negotiating use within the context of marital relations. With prevalence at such high levels in the country, an emphasis needs to be placed on reversing this troubling trend.

A principle UNAIDS indicator used to track changes in high-risk sexual behavior is the percentage of men and women reporting condom use at last sex with a non-marital, non-cohabiting partner. Figure 5.9 shows a small rise in the use of condoms during high-risk sex. Among men, "current" use has risen from 60 to 71 percent; among women from 38 to 43 percent. Looking at the trends within urban and rural populations, the largest improvements occurred among urban men, 8 in 10 of whom used a condom at last "non-regular" sex in 1999. Compare this to about 3 in 10 rural women. Clearly, individuals in rural areas who are perhaps less educated and with fewer resources are not able to negotiate safer sex practices as well as their urban counterparts (Table B.6).

Figure 5.8.
Percentage of women and men who used a condom at last sex with a marital or cohabiting partner, 1994 (last 4 weeks) and 1999 (last 12 months)

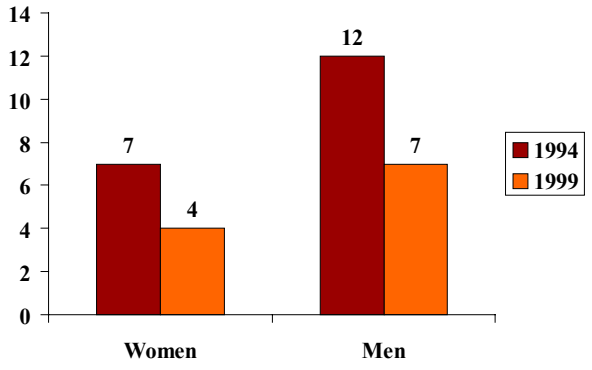
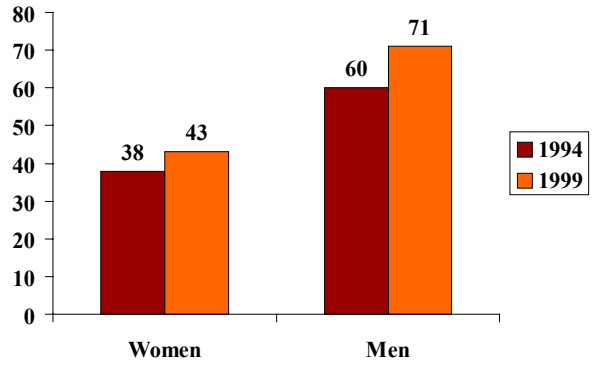


Figure 5.9.
Percentage of women and men who used a condom at last sex with a non-marital, non-cohabiting partner, 1994 (last 4 weeks) and 1999 (last 12 months)



The relationship between the number of condoms distributed and reported condom use in surveys

Survey data on recent sexual activity and use of condoms can be used to evaluate the association between the number of condoms distributed and sold and those actually used. The 1999 ZDHS male data on date of last sex, type of last partner, and condom use (by partner type) are used here to estimate the number of condoms used per year. The simplest approach is to first consider reported sex on the day (including night) before the survey, which was found to be 8.4 percent among men aged 15-54. This includes men who are not sexually active at all. If reporting among men is complete and the reports refer to a typical night, then the average Zimbabwean man would have 31 sexual acts per year. However, this is only one method of estimation.

Using data on partner type at last sex, it was found that 91 percent of reported sexual acts in the last night was with the man's wife. This equates to about 28 marital sex acts and 3 non-marital sex acts per year, on average. The ZDHS data indicate that 7 percent of sex with a wife involves condom use as compared with 71 percent with women other than wives. This leads to the finding that 4 condoms are used per man per year in Zimbabwe, 2.0 condoms in marital sex and 2.0 in non-marital sex. This estimate assumes that just one condom is used per last night's reported use.

Using population figures and estimates of growth from the 1997 Intercensal Demographic Survey (IDS), and age distributions from the 1999 ZDHS, it is estimated that about 2.83 million men aged 15-54 lived in Zimbabwe in 1999. Should ZDHS condom use figures be realistic, condoms are used at an annual rate of 11.3 million pear year, referenced to a calendar period centered on late 1999 (when the ZDHS was implemented).

Using an average of 1999 and 2000 condom distribution figures (Figure 5.1), about 55 million condoms would have been in distribution around the time of the 1999 ZDHS, about one in six distributed through the "Protector" social marketing initiative. This total far exceeds the 11.3 million estimate of those used. Possible explanations for the apparent discrepancy include:

1. The numbers of condoms distributed is overstated.

2. Inventories were building up at the facility level.

3. "Inventories" among men and women (e.g. at home, work, etc.) were building up.

4. Wastage and loss. The large majority of condoms distributed in Zimbabwe are done so free of charge, and are thus thought more likely to go unused or wasted.

5. The ZDHS behavioral data understates actual use:
   - more than one condom is used per last night's reported use
   - non-marital sex (i.e., with high condom use) is underreported
   - condom use in marriage (i.e., high percentage of all last sex) is underreported

This is a simple attempt at reconciling condom distribution and condom use. More in-depth studies are needed to understand the apparent discrepancy.

6. THE DEMOGRAPHIC IMPACT OF THE HIV/AIDS EPIDEMIC: MORTALITY AND ORPHANHOOD

- Empirical estimates of adult mortality based on 1994 and 1999 ZDHS data demonstrate a massive increase in adult mortality risks in the 1990s. In some age groups, the mortality rate has tripled. The *age-pattern* of the increases in mortality points to AIDS as the principle cause.

- Childhood mortality is more indirectly related to the impact of AIDS. Despite this, years of steady improvements in child survival prospects have been reversed during the 1990s and the under-five mortality rate is now on the rise. This may be due, in part, to increased levels of orphanhood.

- The evidence shows clearly that orphan prevalence has risen sharply and that the welfare of surviving orphans has deteriorated during the 1990s, signaling an emerging social crisis in Zimbabwe. Analysis of orphan welfare is complicated by the fact that many orphans will not survive to be observed in studies of a cross-sectional nature.

Sharply rising adult mortality rates

Zimbabwe is one of just a handful of countries in the world that possess more than one application of the DHS sibling histories in a large nationally representative survey. These histories have been used successfully to capture trends in adult mortality with a degree of reliability unmatched using other data types which are usually incomplete in developed country settings (e.g., enumeration of households deaths in censuses, registration systems) (Bicego, 1997; Timaeus et al., 2001). These sibling history data were collected in both the 1994 ZDHS and 1999 ZDHS, and were used to estimate rates of male and female adult mortality. As with all mortality data, they are sensitive to problems of age misreporting and event omission. When substantial measurement errors do occur in mortality data, they tend to bias estimates downwards. Since the sample designs, instruments, and field protocols used in the 1994 and 1999 studies were identical, any biases introduced by reporting errors are unlikely to effect assessment of mortality *trends.*

Figures 6.1a and 6.1b show the pattern of male and female adult mortality by 5-year age groups based on the 1994 survey (1985-1994) and 1999 survey (1995-1999). Detailed estimates are provided in Appendix Table B.7. The DHS data demonstrate a massive upward trend in both male and female mortality. The summary measure of mortality (aged 15-49) has risen by a factor of 2.2 in women and 2.6 in men. But this masks important sex-related differences in trends within age groups. For males, the largest increase in mortality is observed at ages 30 and above;

Figure 6.1a.
Trend in age-specific mortality (men aged 15-49)

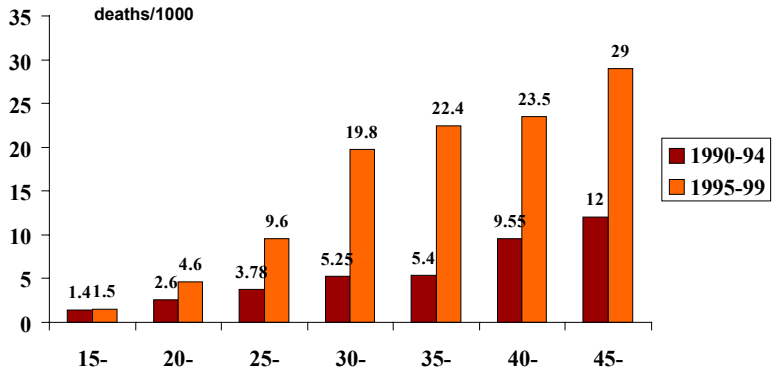
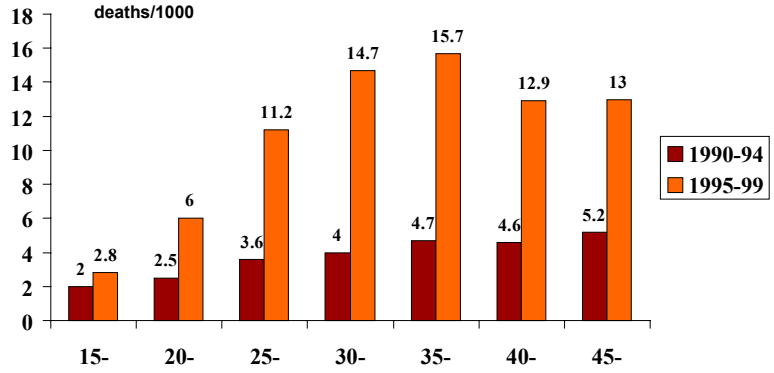


Figure 6.1b.
Trend in age-specific mortality (women aged 15-49)



for women, the steep rise and peak in mortality is seen at ages 5-10 years earlier. This pattern is consistent the age-sex pattern of HIV infection and age-mixing of sexual activity in Zimbabwe and elsewhere in the region (i.e. older men with younger women). These findings strongly implicate AIDS as the cause of the upward trend in mortality rates.

It should be borne in mind that these data will capture only part of the AIDS impact since rapidly rising HIV prevalence during the mid- and late 1990s will be manifest in mortality impact only during later *retrospective* surveys. Most individuals ever infected with HIV are still alive. The trends documented here therefore underestimate the mortality impact of the epidemic.

These findings are broadly consistent with the modeling results of international groups that are tracking the impact of AIDS epidemic in different countries. According to the International HIV/AIDS Surveillance Database of the US Census Bureau, average Zimbabwean life expectancy has dropped from 70 years (expected without AIDS) to 38 years (US Census Bureau, 2000).

Data needed on the emerging orphan crisis

One of many understudied dimensions of the epidemic is the steep rise in the number of orphans, as parents infected with HIV during the late 1980s and early 1990s are now succumbing to AIDS. Understanding the scope of the orphan problem in individual countries is crucial to efforts to design appropriate country-level policies and programs to mitigate the impact of the epidemic. With limited available resources, programs to assist AIDS-impacted communities need to target efforts based on vulnerability of orphans. It is thus crucial to develop an understanding of how and to what extent orphans are at a disadvantage, relative to other children in country settings. Provision of educational opportunities is considered one of the key components of current safety-net programs for orphans and vulnerable children in AIDS-impacted communities in sub-Saharan Africa (Hunter and Williamson, 2000).

ZDHS data on orphan prevalence were collected in the household schedule where, for each child under age 15, the household head was asked: "Is [NAME]'s mother still alive?" and, "Is [NAME]'s father still alive?" If still living, the household head was asked whether the parent is currently residing in the household. Orphan prevalence was calculated as the proportion of children by age group for which the mother, father, both parents, or either parent were reported to be dead. Some notes of caution about these data are in order. First, all household survey-based estimates of orphan prevalence are likely to be low since some orphans do not live in households and will not be listed in the household schedule. These include children living in institutional settings (hospitals, orphanages, etc.), and street children. The proportion of all orphans who fall into these categories is relatively small; most orphaned children will be absorbed into existing households (Hunter and Williamson, 2000). Next, orphan children who do reside in households may still not be reported in surveys and censuses as "residents," such as those in residential transition and those employed as live-in domestic servants. Lastly, even when orphan children are reported in a household, they may be misclassified as non-orphans, having been claimed by adults in the household as their own (the adoption effect). This may be more common for maternal orphans since men are more likely to remarry after death of a spouse, with the stepmother reported as the child's biological mother.

Trends in orphan prevalence: 1 in 5 children aged 12-14 have no father

Figure 6.2 shows the change in the percentage of children under age 15 who are maternal, paternal, and double orphans between the 1994 and 1999 surveys. Maternal orphanhood (only mother has died) has nearly doubled from 2.8 percent to 5.1, and paternal orphanhood (only father has died) from 7.5 to 12.1 percent in the 1994-1999 period. Note that these figures includes children who have lost both parents. Both parents of 2.3 percent of children had died by 1999, which represents nearly a tripling of double orphanhood since 1994. Figure 6.3 compares Zimbabwe's orphan situation compared with other countries in sub-Saharan Africa.

Table 6.1 shows the percentage of children under age 15 who were orphaned, by 3-year age groups. As expected, a much higher percentage of older children than younger children have lost one or both parents. By early adolescence (aged 12-14), when there exists special needs for emotional and material support, 1 in 20 children have lost both parents, 1 in 11 have lost their mother, and nearly 1 in 5 have lost their father. Given expected rises in adult mortality since 1999, this situation is likely to have become worse since then.

Table 6.1 Percentage of children under age 15 who have lost their mother, their father, or both parents, by three- year age group.

Year of survey	Mother died[1]						Father died[1]						Both parents died					
	Age group (yrs.)						Age group (yrs.)						Age group (yrs.)					
	0-2	3-5	6-8	9-11	12-14	0-14	0-2	3-5	6-8	9-11	12-14	0-14	0-2	3-5	6-8	9-11	12-14	0-14
1994	0.7	1.6	2.6	4.1	4.7	2.8	2.2	5.1	7.5	10.2	12.2	7.5	0.2	0.4	0.7	1.4	1.3	0.8
1999	1.2	2.5	5.5	6.6	9.2	5.1	3.5	8.0	13.1	15.4	19.6	12.1	0.2	1.1	2.3	2.7	4.8	2.3

[1]**Includes children who have lost both parents**

Percentages however do not tell the whole story. Using census-based estimates of Zimbabwe's under-15 population, the number of additional maternal orphans and paternal orphans living in Zimbabwean households has increased by 94,000 and 169,000 respectively since 1994. Most of these added orphans are probably the direct or indirect results of AIDS-related adult mortality, and represent part of the enormous challenge facing efforts to mitigate the impact of AIDS at the community and household levels. Double orphans are of particular concern since they presumably face the most severe social and physical dislocation: a minimum estimate of 61,000 children without either parent have been added to Zimbabwean households in the 1994-1999 period. Double orphans are most likely to be underreported in surveys for several reasons, including their relocation and adoption by relatives. They are also expected to experience much higher mortality rates (Bicego et al., 1996). As such, these figures represent minimum estimates.

Assessing orphans' situation in households

An important aspect of the calamity experienced by orphans following the loss of parents is a disruption in the pattern of mentoring, care and support provided by the household head (usually the father or mother). Data are not available that allow assessment of the process through which households may be dissolved, reconstituted, or re-ordered after the catastrophe of a parent's death. A rise in the percentage of children living in child-headed households would be an important indicator of AIDS impact and a useful advocacy finding. However, the DHS procedures require that an adult is available for interviewing and therefore child-headed households will be largely undercounted in these surveys.

Two aspects of household structure that are expected to be affected by the AIDS epidemic and can be estimated with the DHS data are the percentages of households headed by children's grandparents and by a woman. Both are also expected to be associated with diminished economic health of the family. The analysis of associations between orphanhood and household characteristics will focus on double orphans.

Figure 6.2.
Trends in orphan prevalence by orphan type, 1994-1999

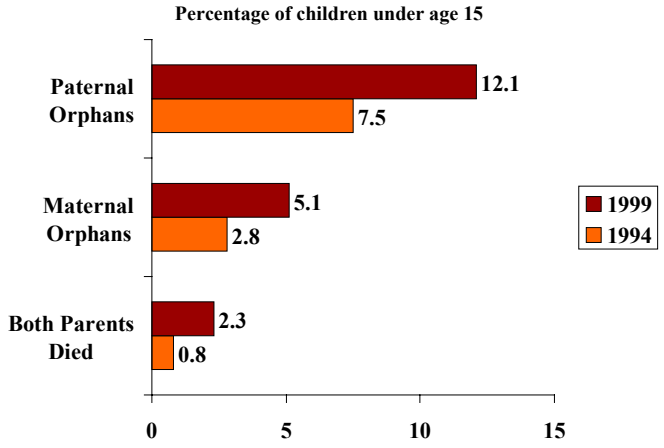
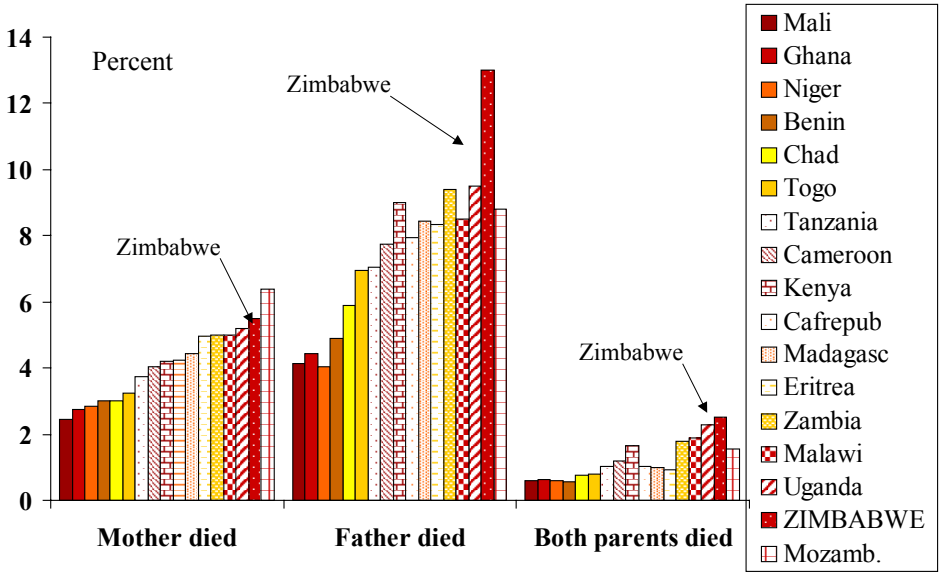


Figure 6.3. Percentage of children under age 15 who lost their mother, their father, or both parents. DHS, Sub-Saharan Africa (1995-2000)



Grandparent-headed households. Figure 6.4 shows the changes between 1994 and 1999 in the percentages of double orphans and non-orphans under age 15 who live in households headed by grandparents of the child. Orphans are nearly three times more likely to be headed by a grandparent than non-orphans. The differential widens slightly during the period 1994-1999. In 1999, 55 percent of orphans lived in a household headed by a grandparent, usually the child's grandmother.

Woman-headed Households. Trends in the percentage of orphans and non-orphans who live in woman-headed households are also shown in Figure 6.4. In 1994, roughly one-third of both orphan and non-orphans lived in households headed by a woman. By 1999, over one-half of orphans were in households that were woman-headed, while there was no change among non-orphans. These findings suggest that rising mortality of parents is forcing a significant change in the household context where orphans are raised.

Economic context of households. Recent advances in the use of survey-based household assets data allow researchers to better evaluate the distribution of poverty in populations (Filmer and Pritchett, 1998). The poverty index used here is one recently developed and tested in a large number of countries in relation to inequities in household income, use of health services, and health outcomes (Rutstein et al., 2000). It is an indicator of poverty that is consistent with expenditure and income measures. The poverty index was constructed using ZDHS household assets data and principle components analysis. Each asset was assigned a weight (factor score) generated through principle components analysis, and the resulting asset scores were standardized in relation to a standard normal distribution with a mean of zero and a standard deviation of one (Gwatkin et al., 2000). Each household was then assigned a score for each asset, and the scores were summed by household; individuals were ranked according to the total score of the household in which they resided. The sample was then divided into population quintiles; each quintile was designated a rank, from one (poorest) to five (wealthiest).

Figure 6.4 shows the percentage of orphans and non-orphans who fall into the lowest two quintiles of the poverty index (i.e., living in the poorest 40 percent of households). Two points emerge. First, because children generally tend to live in poorer households (fertility is higher among women of lower socio-economic status), 44 percent of all children live in the poorest 40 percent of households. Second, in the 1994 survey, orphans were only slightly worse off than non-orphans; in the 1999 survey, the orphan/non-orphan differential became larger. Still, the observed trend is not very dramatic given the sharp rise in the number of orphans. It should be recalled that orphan mortality will tend to mask the strength of this relationship.

Gains in child survival have been reversed during the 1990s

As in much of the developing world, the principle causes of under-five mortality in Zimbabwe are diarrheal disease, acute respiratory infection (ARI), malaria, and conditions associated with nutritional deficits. Against this background of poverty-induced patterns of childhood illness, HIV/AIDS is expected to have a direct impact (i.e. vertical transmission of HIV) on child mortality far less pronounced than observed with regard to adult mortality. Indirect consequences of the epidemic however can be considerable, through the loss of parents as described above or through effects operating at the community level, such as depletion of the labor force and consequent depression of food production and household incomes. A health system, overburdened by AIDS-related illnesses, may also deteriorate and become less capable of providing effective child health services. The interpretation of trends in childhood mortality in the context of the HIV/AIDS epidemic is thus not straightforward.

Figure 6.5 shows trends in under-five, infant, and child mortality in Zimbabwe since the early 1980s, using DHS data from 1994 and 1999. The findings are clear. Improvements in under-five mortality experienced during the 1980s have been reversed by rises in the 1990s. This pattern is observed for both the infant and child (1-4 years) age segments. Under-five mortality now stands at about the same level as in the 1980-84 period. It should be understood that these are minimum estimates of current mortality since child mortality will be increasingly underestimated (i.e. biased downwards) as adult female mortality rises. This is because births to women who have died are not represented in survey (interview) data, and these children are certain to have a greater risk of dying. What this means is that the under-five mortality rate is probably well in excess of 102 per 1000 live births.

Figure 6.4.
Trends in the percentage of orphans and non-orphans living in grandparent-headed households, woman-headed households, and poor households (poorest 40%)

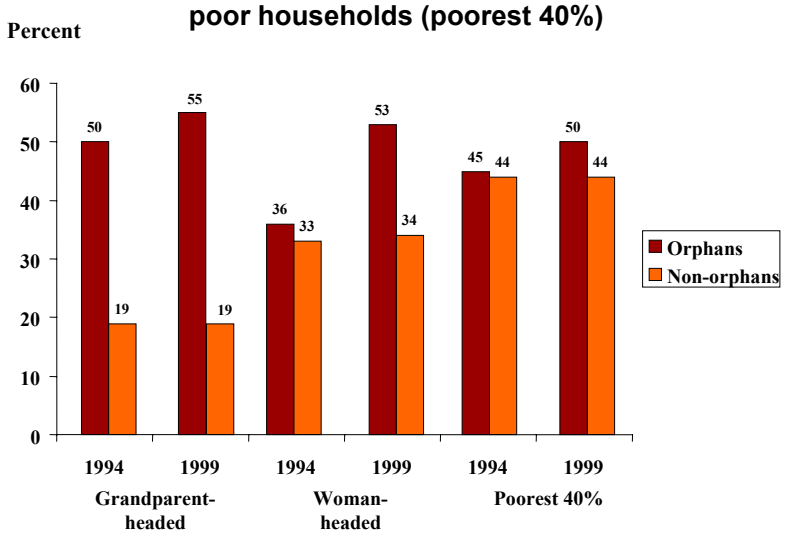
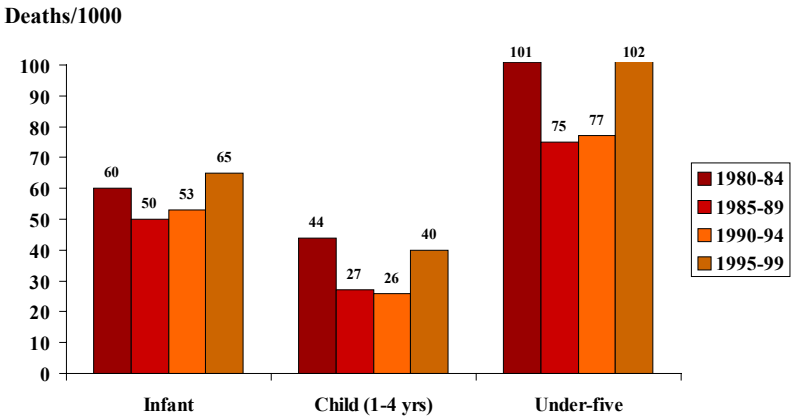


Figure 6.5
Trends in under-five, infant and child (1-4 yrs) mortality since the early 1980s



Source: 1994 ZDHS and 1999 ZDHS

REFERENCES

Bicego, G, S. Curtis, H. Raggers, S. Kapiga, and S. Ngallaba. 1996. Sumve Survey on adult and childhood mortality, Tanzania: In depth study on estimating adult and childhood mortality in settings of high adult mortality. Calverton, Maryland: Macro International Inc.

Bicego, G., 1997, Estimating adult mortality rates in the context of the AIDS epidemic in sub-Saharan Africa: analysis of DHS sibling histories, *Health Transition Review*, Supplement 2 to Vol. 7: 7-22.

Bicego, G., S. Rutstein, & K. Johnson. 2002. Dimensions of the Emerging Orphan Crisis in Sub-Saharan Africa. Upcoming in *Social Science and Medicine.*

CSO and Macro International. 1989. Demographic and Health Survey, 1988, *Zimbabwe Final Report*, Macro International, Calverton, MD.

CSO and Macro International. 1995. Demographic and Health Survey, 1994, *Zimbabwe Final Report*, Macro International, Calverton, MD.

CSO and ORC Macro International. 2000. Demographic and Health Survey, 1999, *Zimbabwe Final Report*, Macro International, Calverton, MD.

Filmer, D. and L. Pritchett. 1998. "Estimating wealth effects without expenditure data – or tears: An application to educational enrollments in states of India." *World Bank Policy Research Working Paper* No. 1994. Washington, D.C: Development Economics Research Group.

Gwatkin, D., S. Rutstein, K. Johnson, R. Pande and A. Wagstaff. 2000. Socio-economic differences in health, nutrition and population. Washington, D.C: Poverty Thematic Group of the World Bank.

Hunter, S. and J. Williamson. 2000. *Children on the brink: Strategies to support a generation isolated by HIV/AIDS*. USAID. Washington, D.C.

Mbizvo, M. T., Siziya, S., Olayinka, J. & Adamchak, S., 1997, Knowledge of STIs and AIDS, Risk Awareness and Condom Use. *Zimbabwe Further Analysis***,** Macro International, Calverton, MD.

Ministry of Health and Child Welfare (MOHCW, Health Information and Surveillance Unit). 2001. National Survey of HIV and Syphilis Prevalence Among Women Attending Antenatal Clinics in Zimbabwe, 2000.

National AIDS Control Programme (NACP-Tanzania), MEASURE Project, and Bureau of Statistics (Tanzania). 2001. AIDS in Africa during the 1990s: Tanzania: a review and analysis of surveys and research studies. Carolina Population Center, University of North Carolina at Chapel Hill.

Rutstein, Shea, Davidson Gwatkin and Kiersten Johnson. 2000. "Poverty, Wealth Inequality and its Health and Demographic Effects." Paper presented at the Population Association of America Annual Meeting, March 23-25, 2000, Los Angeles, California.

Sibanda, A., 2000, A Nation in pain: why the HIV/AIDS epidemic is out of control in Zimbabwe, *International Journal of Health Services*, Vol. 30:
717-788.

Target Research, Ltd. 1997. Research Report: Zimbabwe Sexual Behaviour and Condom Use Survey 1997. Prepared for Population Services International.

Timaeus, I., B. Zaba, and M. Ali. 2001. "Estimation of adult mortality from data on adult siblings" in *Brass Tacks*. B. Zaba and J. Blacker (eds.) Athlone Press.

UNAIDS. 2000a. *UNAIDS Report on the global HIV/AIDS epidemic*, June.

UNAIDS 2000b. *UNAIDS Epidemiological Fact Sheet on HIV/AIDS and sexually transmitted infections*, Zimbabwe. 2000 Update.

UNAIDS 2000c. National AIDS Programmes. A guide to Monitoring and Evaluation (English Version). Geneva.

US Census Bureau, The International Programs Center, Population Division, *HIV/AIDS Surveillance Data Base*, June 2000.

APPENDIX A: SURVEY PARTICIPANTS

Table A.1 Percent distribution of women by selected background characteristics, Zimbabwe: 1988, 1994 and 1999

	1988 DHS	1994 DHS	1999 DHS
Total sample	4201	6,128	5,907
Age			
15-19	24	24	25
20-29	36	35	38
30-39	25	25	22
40-49	15	15	15
Education			
None	13	11	7
Primary	56	47	40
Secondary or more	31	42	53
Marital status			
Single	27	27	28
In union	63	62	64
Divorced/Widowed/Separated	10	11	08
Residence			
Urban	33	32	39
Rural	67	68	61

Table A.2: Percent distribution of men by selected background characteristics, Zimbabwe: 1994 and 1999

	1994 DHS	*1999 DHS*
Total sample	2,141	2,609
Age		
15-19	29	27
20-29	32	36
30-39	20	19
40-49	14	14
50-54	05	04
Education		
None	4	3
Primary	40	32
Secondary or more	56	66
Marital status		
Single	48	49
In union	47	47
Divorced/Widowed/Separated	05	04
Residence		
Urban	37	42
Rural	63	58

APPENDIX B: OTHER TABLES

Table B.1 Trends in knowledge about AIDS among women and men, Zimbabwe: 1994 and 1999

	1994 DHS	1999 DHS
Have heard of AIDS		
Women	98.7	96.5
Men	99.6	99.1
Know HIV can be avoided[1]		
Women	85.1	86.7
Men	93.7	93.6
Know infected person can appear healthy[1]		
Women	74.4	78.5
Men	85.4	86.1
Know HIV can be transmitted from mother to child[1]		
Women	93.2	88.7
Men	92.4	88.0
Think HIV can be transmitted by mosquitoes[1]		
Women	0.6	0.1
Men	0.8	0.1
Know AIDS can be avoided by sticking to one partner[1,2]		
Women	42.5	63.2 (74.5)
Men	52.1	69.0 (81.4)
Know AIDS can be avoided by using a condom[1,2]		
Women	56.5	65.6 (73.2)
Men	65.8	76.0 (80.7)
Know of both ways to avoid HIV transmission[1,2]		
Women	21.8	48.1 (65.0)
Men	31.6	56.2 (71.0)
Know someone with AIDS or who has died of AIDS[1]		
Women	49.6	62.1
Men	49.1	64.3

1:Includes all respondents, including those who have not heard of AIDS
2: For 1999 survey, in parentheses are given the percentage when probing questions are used in follow-up.

Table B.2 Percentage of women and men who engaged in recent sexual activity, Zimbabwe: 1994 and 1999

	1988 DHS	1994 DHS	1999 DHS
SEXUAL ABSTINENCE (%)[1]			
No sex during the past month			
Women	45.3	47.1	48.3
Men		49.7	50.6
No sex during the past year			
Women	31.1	31.0	30.1
Men		28.5	30.9
NO PREMARITAL SEX (%):last 4 wks[2]			
Women	93.9	96.0	96.0
Men		85.4	86.7
NO PREMARITAL SEX (%):last 12 mos.[2]			
Women	83.3	88.3	85.1
Men		62.3	65.7
EXTRAMARITAL SEX: NON-SPOUSAL PARTNER (%)[3, 5]			
One or more non-marital/ non-cohabiting partner			
Women		0.7	1.1
Men		6.8	13.5
NON-REGULAR SEX (EXTRAMARITAL SEX AMONG MARRIED PERSONS & ALL PARTNERS AMONG UNMARRIED RESPONDENTS(%)[4,5]			
One or more non-regular partner			
Women		7.1	12.6
Men		18.7	37.7
Two or more non-regular partners			
Women		0.4	1.6
Men		3.2	9.8

1:Includes all individuals.
2:Includes never-married individuals aged 15-24.
3:Includes currently married or cohabiting individuals
4:Includes individuals who have ever had sex
5: For 1994, based on last sex in 4 weeks before the survey; for 1999 survey, based on last sex in the 12 months before survey.

Table B.3 Percentage of women and men reporting knowledge and use of condoms, Zimbabwe: 1988, 1994 and 1999

	1988 DHS	1994 DHS	1999 DHS
Aware of condoms			
Women	76.7	93.7	92.2
Men		96.2	97.8
Know a source for condoms[1]			
Women	71.4	78.2	78.1
Men		87.7	89.7
Could get a condom if wanted[1]			
Women		..	62.9
Men		..	75.8
Have ever used condoms[1]			
Women	15.9	26.1	23.5
Men		67.1	66.6
Used condom with marital or cohabiting partner[2]			
Women		7.3	4.3
Men		11.8	6.6
Used condom with a non-marital or non-cohabiting partner[2]			
Women		37.9	43.0
Men		59.5	71.0
Used condom at last sex in last 12 months (any partner)			
Women		9.6	9.1
Men		29.0	27.6
Used condom at last sex in last 4 weeks (any partner)			
Women		7.9	6.2
Men		19.5	19.0

1:Includes ever sexually active individuals.
2: For 1994, based on last sex in 4 weeks before the survey; for 1999 survey, based on last sex in the 12 months before survey.

Table B.4: Trends in knowledge about AIDS among women and men by residence, Zimbabwe: 1994 and 1999

	1994 DHS		1999 DHS	
	Urban	*Rural*	*Urban*	*Rural*
Have heard of AIDS				
Women	99.8	98.3	98.1	95.5
Men	100.0	99.4	99.5	98.8
Know HIV can be avoided[1]				
Women	94.7	80.5	92.5	83.0
Men	96.6	91.9	96.3	91.6
Know infected person can appear healthy[1]				
Women	84.6	69.4	88.2	72.3
Men	93. 3	80.5	93.5	80.7
Know HIV can be transmitted from mother to child[1]				
Women	97.3	91.2	91.3	87.0
Men	97.0	89.6	90.3	86.3
Think HIV can be transmitted by mosquitoes[1]				
Women	0.3	0.7	0.0	0.1
Men	1.0	0.6	0.0	0.2
Know AIDS can be avoided by sticking to one partner[1,2]				
Women	48.4	39.6	70.4 (82.1)	57.7 (69.7)
Men	62.6	45.9	75.3 (88.4)	64.4 (76.3)
Know AIDS can be avoided by using a condom[1,2]				
Women	67.7	51.2	75.7 (81.9)	59.3 (67.6)
Men	67.7	64.7	77.8 (83.2)	74.7 (79.0)
Know of both ways to avoid HIV transmission[1,2]				
Women	28.7	18.6	57.8 (74.0)	42.0 (59.3)
Men	39.9	26.6	60.8 (76.4)	52.9 (67.0)
Know someone with AIDS or who has died of AIDS[1]				
Women	58.2	44.6	66.4	55.8
Men	61.0	41.7	72.5	57.6

1:Includes all respondents, including those who have not heard of AIDS
2: For 1999 survey, in parentheses are given the percentage when probing questions are used in follow-up.

Table B.5: Percentage of women and men who engaged in recent sexual activity by residence, Zimbabwe: 1988, 1994 and 1999

	1988 DHS		1994 DHS		1999 DHS	
	Urban	***Rural***	***Urban***	***Rural***	***Urban***	***Rural***
SEXUAL ABSTINENCE (%)[1]						
No sex during the past month						
Women	44.3	45.8	43.7	48.7	45.3	50.1
Men			43.2	54.5	46.6	53.4
No sex during the past year						
Women	31.0	31.1	31.9	30.5	30.4	29.8
Men			20.7	33.2	25.8	34.6
NO PREMARITAL SEX (LAST 4 WKS) (%)[2]						
Women	91.6	95.3	94.7	96.6	96.0	95.9
Men			85.6	85.4	84.2	88.1
NO PREMARITAL SEX (PAST YEAR) (%)[2]						
Women	80.0	85.3	87.9	88.6	83.1	86.6
Men			56.0	64.8	59.7	69.2
EXTRAMARITAL SEX: NON-MARITAL PARTNER (%)[3,5]						
One or more non-marital/ non-cohabiting partner						
Women			0.6	0.8	1.4	0.9
Men			6.8	6.9	14.2	13.0
NON-REGULAR SEX (EXTRAMARITAL AMONG MARRIED; ALL PARTNERS AMONG UNMARRIED RESPONDENTS(%) [4,5]						
One or more non-regular partner						
Women			9.9	5.8	17.0	9.9
Men			16.3	20.3	39.3	36.5
Two or more non-regular partners						
Women			0.8	0.3	1.8	1.4
Men			2.0	4.0	11.0	8.8

1:Includes all individuals.
2:Includes never-married individuals aged 15-24.
3:Includes currently married or cohabiting individuals
4:Includes individuals who have ever had sex
5: For 1994, based on last sex in 4 weeks before the survey; for 1999 survey, based on last sex in the 12 months before survey.

Table B.6: Percentage of women and men reporting knowledge and use of condoms by residence, Zimbabwe: 1988, 1994 and 1999

	1988 DHS		1994 DHS		1999 DHS	
	Urban	*Rural*	*Urban*	*Rural*	*Urban*	*Rural*
Aware of condoms						
Women	86.4	71.8	97.4	92.0	95.3	90.2
Men			98.3	95.0	98.2	97.5
Know a source for condoms[1]						
Women	83.3	65.8	86.5	74.5	86.0	73.0
Men			91.8	84.4	92.4	87.5
Could easily get a condom if wanted[1]						
Women					71.9	57.5
Men					83.4	69.8
Have ever used condoms[1]						
Women	21.9	13.0	30.4	24.2	30.1	17.2
Men			69.1	64.4	69.4	62.7
Used condom with marital or cohabiting partner[2]						
Women			7.9	7.1	4.7	4.1
Men			12.1	11.5	5.8	7.1
Used condom with a non-marital or non-cohabiting partner[2]						
Women			47.3	30.9	51.4	34.5
Men			68.5	54.6	80.6	62.5
Used condom at last sex in last 12 months (any partner)						
Women			12.0	8.5	12.4	7.1
Men			30.5	25.7	32.0	23.9
Used condom at last sex in last 4 weeks (any partner)						
Women			10.2	6.7	8.1	5.0
Men			22.5	17.3	23.2	15.5

1:Includes ever sexually active individuals.
2: For 1994, based on last sex in 4 weeks before the survey; for 1999 survey, based on last sex in the 12 months before survey.

Table B.7: Adult mortality rates, by sex, age group, and period before survey. Zimbabwe: 1999 and 1994

Age Group	Mortality rates (\1000) 1999 ZDHS: 0-4 years before survey (1995-1999)	1999 ZDHS: 5-9 years before survey (1990-1994	1994 ZDHS: 0-9 years before survey (1985-94)
WOMEN			
15-19	2.82	1.75	1.87
20-24	6.01	3.26	2.51
25-29	11.17	5.34	3.63
30-34	14.72	5.31	3.99
35-39	15.73	5.13	4.75
40-44	12.85	6.73	4.62
45-49	13.16	5.97	5.18
15-49	9.14	4.13	3.34
MEN			
15-19	1.49	1.05	1.44
20-24	4.63	1.74	2.59
25-29	9.63	5.38	3.78
30-34	19.81	7.09	5.26
35-39	22.36	7.34	5.41
40-44	23.50	7.19	9.56
45-49	29.05	11.13	11.90
15-49	11.35	4.42	4.17