REVIEW, UPDATE AND DEFINITION OF INDICATORS TO MONITOR THE SOCIAL IMPACTS AND OTHER ASPECTS OF HIV AND AIDS IN SOUTH AFRICA

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ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ARI	AIDS Research Institute
ART	Antiretroviral Treatment
ASSA	Actuarial Society of South Africa
CADRE	Centre for AIDS Development and Research Evaluation
CARe	Centre for Actuarial Research
CCP	Centre for Communication Programs
CDG	Child Dependency Grant
CICSSS	Committee of Inquiry into a Comprehensive Social Security System
CSG	Child Support Grant
(D)	Number of deaths
DHA	Department of Home Affairs
DHSS	Demographic and Health Surveillance System
DOH	Department of Health
DPRU	Development Policy Research Unit
DSD	Department of Social Development
EPRI	Economic Policy Research Institute
FCG	Foster Care Grant
GDP	Gross Domestic Product
HAART	Highly Active Antiretroviral Treatment
HDR	Human Development Report
HEARD	Health Economics and AIDS Research Division
HIV	Human Immunodeficiency Virus
HSL	Household Subsistence Level
HSRC	Human Sciences Research Council
ICD-10	International Classification of Diseases code 10
IDASA	Institute for Democratic Alternative in South Africa
IEC	Information, Education and Communication

IMR	Infant Mortality Rate
IES	Income and Expenditure Survey
LEB	Life Expectancy at Birth
LFS	Labour Force Survey
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MLL	Minimum Living Level
MRC	Medical Research Council
(N)	Size of the mid-year population
NALEDI	National Labour and Economic Development Institute
NIMSS	National Injury Mortality Surveillance System
OHS	October Household Survey
PHRU	Perinatal HIV Research Unit
PMTCT	Prevention of Mother To Child Transmission
PPP	Purchasing Parity Price
RHRU	Reproductive Health Research Unit
SALDRU	South African Labour and Development Research Unit
SABCOHA	South African Business Coalition on HIV/AIDS
SASSA	South African Social Security Agency
StatsSA	Statistics South Africa
STI	Sexually Transmitted Infection
TV	Television
U5MR	Under Five Mortality Rate
UNAIDS	Joint United Nations AIDS Programme
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
US$	United States Dollar
WHO	World Health Organisation

EXECUTIVE SUMMARY

The Department of Social Development (DSD) requested the Human Sciences Research Council (HSRC) in 2003 to identify a set of indicators to monitor the social and other impacts of HIV/AIDS in South Africa. However, the department requires up-to-date information on these indicators, so that they can monitor the epidemic in general. As a follow-up to the 2003 project, the HSRC was again commissioned to review, update and define these indicators in 2006. This report provides a review, update and description of indicators to monitor the social and other aspects of HIV/AIDS in South Africa.

The methods used for reviewing, updating and defining indicators to monitor the social and other aspects of HIV and AIDS in South Africa included a systematic search for the most recent data for monitoring indicators, reviewing the indicators using the most recent data, and updating and defining indicators through a validation process with key informants from selected government departments and parastatal organisations.

HIV and AIDS have had a serious impact on mortality and other demographic variables in South Africa. By using the death rate of the age group 15-49 it is possible to identify changes in mortality levels in the population. The death rate in this age group was used to reflect the mortality implications of HIV/AIDS. However, the relative ease of obtaining information to review and update this indicator has helped to understand its usefulness. The death rate in the economically active and reproductive age group of 15-49 was at 46.1% or 230,300 people per annum in 2002. The actuaries estimated the under-five mortality rate at 100 per 1,000 live births in 2002 while the SADHS 2003 estimated it at 58 per 1,000 live births. U5MR is an important indicator for monitoring both the demographic and health impacts of HIV/AIDS. The U5MR provides a robust measure of the health of children and reflects the probability of a newborn baby dying before reaching age five. The U5MR is an important indicator for monitoring both the demographic and health impacts of HIV/AIDS. U5MR declined rapidly from 1950 to the early 1990s. In 1975 it was 90 per 1 000 live births. By 1990, it was 55 per 1 000. In the 1998 SADHS, it was 59 per 1,000, compared with 58 per 1000 live births in the 2003 SADHS.

Falling life expectancy has been one of the most visible impacts of HIV/AIDS on the human development. Correctly calculated, this indicator provides the most accurate index of the demographic impact of the HIV/AIDS epidemic. However, data issues and the need to produce life tables annually is a disadvantage. The SADHS 2003 and the Dorrington et al (2004) both estimated the life expectancy at birth to be 50.7 years. There are slight disparities in the IMR – with Stats SA 2006 and Dorrington et al 2004 estimating it at 56 per 1,000 live births, Bradshaw and Nannan, (2004) had a higher estimate of 59 per 1,000 live births while the SADHS 2003 had a far lower estimate of 43 per 1,000 live births. Less visible has been the feminization of the disease and the consequences for gender equity.

Indicators measuring the transmission of HIV have not shown any significant reduction. In fact, population-based surveys have showed relatively high HIV prevalence among young people aged 15–24 years, corroborating the antenatal care-based sentinel surveillance data. Results from population-based surveys show that women are more HIV-infected than men and that the differences were more marked in the young age group of 15–24 years. Between 15.5% (RHRU, 2003) and 16.9% (HSRC, 2005) of women aged 15-24 were infected by HIV, while the prevalence for males aged 15 to 49 was between 11.7% (HSRC, 2005) and 16.6% (Dorrington, Bradshaw et al., 2004).

The three indicators measuring the socio-economic conditions that contribute to vulnerability and susceptibility to HIV have shown different levels of progress and have provided a good indication of the location of the poorest households in a country. About 10.5% of households (4.7 million) in South Africa are in the bottom 20% of income distribution (UNDP, 2003). Approximately 18% of households in South Africa's rural areas are without clean water, while 25% (192,450) households

in urban areas are without electricity (Parnel, 2004). There are different statistics on the proportion of the population defined as migrant workers. One of the sources estimates that there are 2,5 million migrant workers in South Africa.

Two of the three indicators measuring knowledge of the transmission of HIV/AIDS showed some encouraging progress. Between 24.8% and 27.8% of South Africans have completed a Grade 12 education (Census, 2001; Lehohla, 2004). This is very low as education provides a person with the ability to read, hear and see HIV/AIDS-related messages and information. Knowledge is paramount in order for people to change their behaviour. Being literate improves a person's ability to receive knowledge through the written media. Knowledge of the transmission of HIV has improved significantly. Approximately 85.6% of South Africans aged 15 and older can both correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission. About 67.3% of South Africans have access to television. This indicator was used by the HSRC, (2005) survey as a proxy to measure access to the mass media and has proven to be a significant factor in the dissemination of information on HIV/AIDS.

There have been positive changes in human behaviour patterns which have a bearing on the transmission of HIV. Consistent and correct use of condoms within non-regular sexual partnerships substantially reduces the risk of sexual HIV transmission. Between 51.95% (SADHS, 2003) and 64.3% (HSRC, 2003) of young South Africans aged 15-24 reported using a condom during sexual intercourse with a non-regular sex partner. HSRC (2005) showed 57.1% (72.8%) of men and 46.1% (55.7%) of women reported using a condom at last sexual intercourse in 2002 and 2005 respectively.

Socio-cultural attitudes towards people living with HIV and AIDS have changed significantly. Most South Africans have accepting attitudes towards those living with HIV/AIDS. An overwhelming 90.7% of respondents in the HSRC, (2005) survey indicated that they would be willing to care for a family member sick with AIDS. The combined efforts of many AIDS communication campaigns in South Africa showed positive impacts on HIV prevention behaviours, increased positive attitudes towards people living with HIV and AIDS, and increased community involvement in response to the epidemic. The SA AIDS Communication survey also found that one in five (20.8%) of people aged 25-49 have cared for a person sick with AIDS.

The indicator reflecting the social impact of HIV and AIDS has shown an increase in the number of children, up to the age of 18 years, who have lost a mother due to HIV/AIDS. The maternal orphan rate was estimated at 2.6% of all orphans in Census, (2001) and at approximately 455,970 (2,7%) in the HSRC (2005) survey. This indicator remains a useful and policy-relevant indicator.

HIV/AIDS has a serious impact on the South African economy. In one case study, approximately 34% of working days were lost due to illness in major business organisations (Johnson et al., 2002). There were serious limitations in obtaining data to review and update this indicator. Attempts to collect sick leave data from employers was met with resistance due to confidentiality and other reasons. No empirical data are available at present. A survey of a sample of large enterprises/organisations should provide the required information.

The indicator measuring the number of persons receiving government social grants, serves as a programmatic indicator in the social field to address poverty, vulnerability and HIV and AIDS. This indicator, addressing the social impact of HIV/AIDS, has yielded positive impacts on poverty. The EPRI in 2004, showed that South Africa's social assistance programme is helping to reduce poverty, contributing to social cohesion and having a positive impact on the economic opportunities of households. Approximately 10 million (16%) of the population were receiving government social grants in 2003 (SADHS, 2003) - 4.2 million were receiving Child Support Grant (CSG), 75,000 Care Dependency Grant (CDG), 190,000 Foster Care Grant (FCG), 2 million Old Age Grant and 1.3 million were receiving Disability Grant in April 2004. The Taylor Committee noted that social security programmes reduced the average poverty gap by 23 percent.
Appendix A provides a broad summary of the review and update of the selected indicators.

1. INTRODUCTION

The HIV/AIDS epidemic is one of South Africa's most pressing development challenges. The rate of HIV/AIDS prevalence in South Africa is one of the highest in the world. Although the pace of the epidemic's progress in South Africa may be slowing, the number of people living with HIV/AIDS is significant. In 2005 an estimated 5.3 million South Africans (or 11.6% of the total population) were living with HIV/AIDS. The high prevalence of HIV/AIDS in South Africa is closely related to economic and social factors[1].

A UNDP report identified several social and economic factors that have led to the very high HIV prevalence in South Africa. These include:

- Established epidemics of other sexually transmitted diseases. These act to increase the likelihood of transmission of HIV.
- Disrupted family and communal life, due in part to apartheid, migrant labour patterns and high levels of poverty in the region.
- Good transport infrastructure and high mobility.
- Resistance to use of condoms based on cultural and social norms.
- The low status of women in society and within relationships makes it difficult for women to protect themselves from infection.
- Social norms that accept or encourage high numbers of sexual partners, especially among men.
- Parallel norms that frown on open discussion of sexual matters, including sex education for children and teenagers[2].

HIV and AIDS indicators were developed over time for use in different settings or for different purposes. The Department of Social Development (DSD) requested the Human Sciences Research Council (HSRC) in 2003 to identify a set of indicators to monitor the social and other impacts of HIV/AIDS in South Africa. However, the department requires up-to-date information on these indicators, so that they can monitor the epidemic in general. As a follow-up to the 2003 project, the HSRC was again asked to review, update and define these indicators in 2006. This report provides a review, update and description of indicators to monitor the social and other aspects of HIV/AIDS in South Africa.

In the context of this report, an indicator is defined as a single measure representing a well-defined concept. The value of this measure is calculated by using a precise formula and specific data. Its meaning can be interpreted, and the level of measurement can be compared with other similar measurements over time, or between areas at the same point in time. The indicator can be used to merely gain understanding of a specific situation or to monitor progress achieved in a broad area or even an activity[3].

In this report, the set of 16 identified indicators were reviewed and updated with the most recent data and also validated by key informants in government and other key health, development and AIDS research sectors. The set of indicators that were reviewed and updated covered areas of prevention, knowledge, human behaviour, the vulnerability and susceptibility of certain segments of the population, stigma, programmes and services, care of those infected and affected by the epidemic and its demographic, social and economic impact.

Data for reviewing, updating and defining HIV/AIDS indicators were sourced from the most recent literature. Further information to validate the indicators was obtained during a series of interviews with officials in government departments and other institutions. From the series of validation interviews it became apparent that there was a strong demand for accurate information relating to

[1] UNAIDS/WHO (2006) *Report on the global AIDS epidemic.* Geneva: UNAIDS
[2] UNDP (2004). *Millennium development indicators for South Africa, 2004.*
[3] van Zyl JA (2003) *An overview of HIV/AIDS and related indicators.* Pretoria: HSRC

HIV/AIDS to assist in forecasting the impact of HIV/AIDS and to plan for addressing the potential impact of the epidemic.

Data sources that were used in this report are outlined at the end of each page and in the reference section. Where possible data from multiple years are presented to show trends and to explain trends observed.

The structure of the report allows each indicator to be critically reviewed as follows:

- *definition* and description of the indicator including the numerator and denominator;
- a *review* of the indicator by indicating the rationale for use as indicator, a discussion of the advantages and limitations of the indicator;
- *update* on the indicator critically looks at the level of analysis and use of the indicator, data sources consulted and a comment on the availability of data
- a critical summary is provided on each of the 17 indicators providing a short review and update with a short statement on its usefulness or otherwise an indicator.

The definition or description of indicators uses numerators and denominators to calculate the percentages that measure the current state of the national response. Numerators and denominators are used in describing almost all the indicators and include precise definitions for each of them. Each of the numerators and denominators in this report have equally detailed definitions and supporting instructions to ensure that we understand exactly what information is needed to calculate a core indicator and how it should be used.

Many of the points raised in the review and update of indicators are designed to improve the accuracy and consistency of the data used by Stats SA and other sources in the progress reports. Other points in the review and update section provide additional information on the value of each indicator. Points also acknowledge the variations that may occur from one part of the country to another on issues as diverse as the income gap in rural versus rural areas, standards for quality and variations in quality of care provided. *Table 1* shows selected indicators to monitor the social and other aspects of HIV/AIDS in South Africa that were reviewed, updated and defined in this report.

Table 1: Selected indicators to monitor the social and other impacts of HIV and AIDS in South Africa

Measuring	Selected indicators
1. Impact of AIDS-related mortality on the population and other demographic variables	1.1. Death rate in the age group 15-49 1.2. Under-5 mortality rate 1.3. Life expectancy at birth 1.4. Infant mortality rate
2. A reduction in the transmission of HIV	2.1. Percentage women aged 15-24 infected by HIV 2.2. HIV prevalence rates for males aged 15-49
3. Socio-economic conditions that contribute to vulnerability and susceptibility to HIV/AIDS	3.1. The number of households falling in the bottom 20 percent of the income distribution 3.2. Access to key resources–% households without clean water (rural areas) or electricity (urban areas) 3.3. Proportion of the population defined as migrant workers
4. Knowledge of the transmission of HIV	4.1. Proportion of the population who completed Grade 12 4.2. Percentage of the population aged 15 and older who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions 4.3. Proportion of the population who have access to television
5. Human behaviour patterns with a bearing on the transmission of HIV	5.1. Percentage of young people aged 15-24 reporting the use of a condom during sexual intercourse with a non-regular sex partner
6. Socio-cultural attitudes towards persons living with HIV/AIDS	Accepting attitudes towards those living with HIV/AIDS: Willing to care for a family member sick with AIDS
7. The social impact of HIV/AIDS	Maternal orphan rate (under 18 years)
8. The economic impact of HIV/AIDS	Proportion of working days lost due to illness
9. Addressing the social impact of HIV/AIDS	Number of persons receiving government social grants

2. RESEARCH METHODS

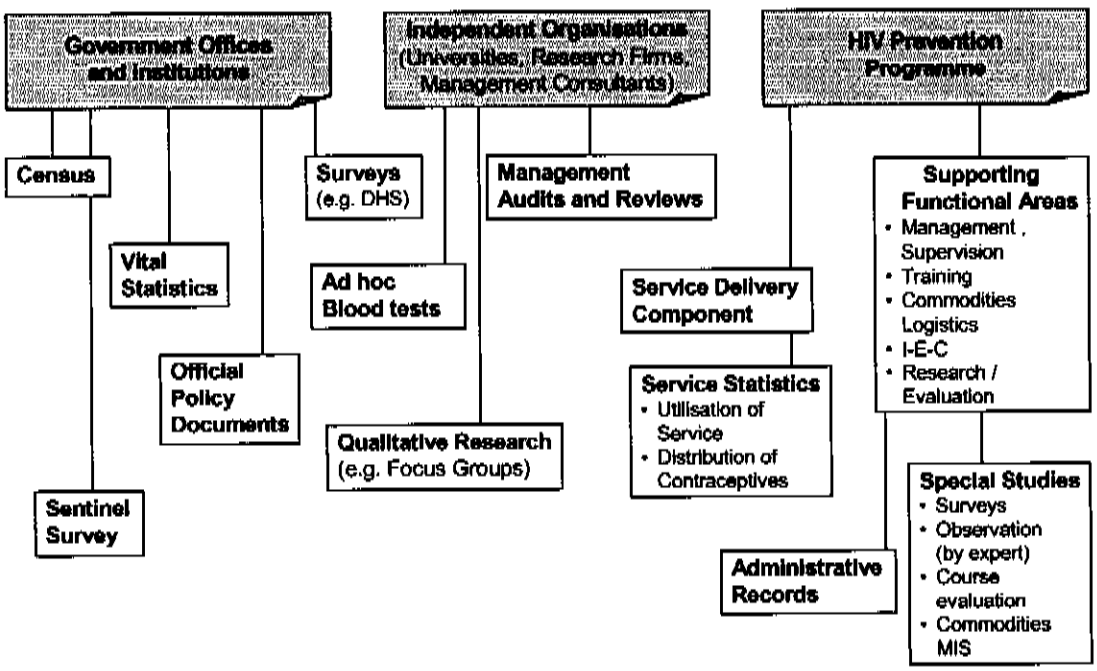
The methods used for reviewing, updating and defining indicators to monitor the social and other aspects of HIV and AIDS in South Africa included:

1. a systematic search for the most recent data for monitoring indicators,
2. reviewing the indicators using the most recent data
3. updating and defining indicators through a validation process with key informants from selected government departments and parastatal organisations.

Without the most recent data, indicators cannot be reviewed, updated or defined. A systematic online literature search was conducted on the most recent data on indicators to monitor the social and other aspects of HIV and AIDS in South Africa. *Figure 1* summarises the order in which data for this report were obtained. The first port of call was official data produced by government offices and institutions such as Stats SA, national and provincial government departments such as Social Development, Health, Treasury, Home Affairs, etc. This data included the 2001 census, the latest sentinel surveys, vital statistics, surveys and official policy documents. As the official agency for the collection of national statistics, Statistics South Africa (Stats SA) has provided valuable information for describing, reviewing and updating the indicators.

The second port of call was data produced by independent organisations such as universities, research institutions and management consultants. These include the HSRC, Medical Research Council (MRC) and university-linked research units such as Health Economics and AIDS Research Division (HEARD), Reproductive Health Research Unit (RHRU), Perinatal HIV Research Unit (PHRU) and the Centre for AIDS Development and Research Evaluation (CADRE). Independent health and/or AIDS research units such as the Wits AIDS Research Institute (ARI), Centre for Actuarial Research (CARe), the Actuarial Society of South Africa (ASSA) and the Institute for Democratic Alternative in South Africa (IDASA).

Figure 1: Data sources for reviewing, updating and defining HIV/AIDS indicators[4]



[4] Source: van Zyl JA (2003) *An overview of HIV/AIDS and related indicators*. Pretoria: HSRC

The last port of call for data on indicators was the supporting functional areas in the HIV prevention programme and international HIV/AIDS organisations such as the Joint United Nations AIDS Organisation (UNAIDS), World Health Organisation (WHO), the World Bank and MEASURE Evaluation.

The most recent data for reviewing and updating the selected indicators were obtained from the websites, HSRC library, public presentations and through contacts in each of the government departments and organisations mentioned above. The search was fairly extensive and covered a number of potential data sources that only became available in the last three years.

The validation process was conducted with key informants in strategic positions in government and other organisations to either obtain the necessary documents or collateral information to validate documented information on specific indicators for monitoring the social and other aspects of HIV and AIDS in South Africa. A draft report with definitions, reviews and updates on the 16 indicators was sent to the following key informants and experts to validate the content:

- Department of Social Development (Mr. Jacques van Zuydum, Mr. Leon Swartz and Ms. Dikeledi Nkau)
- Department of Health, Research and Evaluation Unit (Ms. Pakiso Netshitshivhani)
- Human Sciences Research Council (Dr. Eric Udjo, Dr Khangelani Zuma, Dr Monde Makiwane, Prof Leickness Simbayi and Mr. Sean Jooste)
- University of Limpopo (Prof Sulaiman Bah).
- University of the Witwatersrand (Dr. Clifford Odimegwu)

The validation process also included telephonic, verbal and written feedback on the report. The feedback was on the latest data related to indicators, new developments in defining these indicators and any collateral information to help us understand the indicators for monitoring the social and other impacts of HIV and AIDS in South Africa. A symposium about adult mortality based on death notification data in South Africa: 1997-2004, which was held on the 16 August 2006 at Statistics South Africa helped the researcher to communicate with key stakeholders to validate some of the data currently available. A parliamentary presentation on the status of HIV/AIDS research in South Africa by the President of the MRC, Professor Anthony Mbeu was also helpful in updating and reviewing current data.

3. INDICATORS REFLECTING THE IMPACT OF AIDS-RELATED MORTALITY ON THE POPULATION AND OTHER DEMOGRAPHIC VARIABLES

The Department of Social Development is the custodian of the population policy of South Africa. Hence, matters that affect the size and composition of the population are of major concern to it. The impact of the epidemic on the functions of this department as a social service delivery agent is another major concern.

Stats SA (2006) report on mortality and causes of death in SA[5], provides several definitions of death or mortality. A *death* is defined as a principal event and is the disappearance of life at any time after birth has taken place.

- *Causes of death* are all those diseases, morbid conditions, or injuries that either resulted in or contributed to death, and the circumstances of the accident or violence which produced any such injuries. *Immediate cause* is the disease or condition directly leading to death while *contributing causes* are morbid conditions, if any, giving rise to the immediate cause of death.
- An *underlying cause of death* (previously known as primary cause) is defined as the disease or injury that initiated the train of events leading to death, or the circumstances of the accident or violence that produced the fatal injury.
- *Multiple causes of death* are defined in ICD-10 as: All morbid conditions, diseases and injuries entered on the death certificate. These include those involved in the morbid train of events leading to the death which were classified as either the underlying cause, the intermediate cause, or any intervening cause and those conditions which contributed to death but were not related to the disease or condition causing death.
- *Leading underlying causes of death* are the most frequent underlying causes of death in any given population; in this release the underlying causes of death are ranked according to frequency.

The indicators that were reviewed, updated and defined in this section are:

- death rate among the population aged 15-49,
- under-5 mortality rate and
- life expectancy at birth.

Other possible indicators that were reviewed, updated and defined included the:

- annual number of AIDS cases,
- cause-specific mortality rates,
- infant mortality rate, and
- dependency ratio.

[5] Stats SA (2006). *Mortality and causes of death in SA 2003, 2004: Findings from death notification.* Pretoria: Statistics South Africa.

3.1 Death rate in the age group 15 - 49

Indicator description/definition

The crude death rate of the population 15-49 is defined as the number of deaths (D) occurring within that age group in a specific year, expressed as a proportion (per 1 000) of the size of the mid-year population (N).

CD = D/N x 1 000
Numerator
The number of persons aged 15-49 dying in a given year.
Denominator
The mid-year population of the age group 15-49.

$$\text{Death Rate in Age Group 15-49} = \frac{\text{The number of persons aged 15-49 dying in a given year}}{\text{The mid-year population of the age group 15-49}} \text{ X 1,000 population}$$

A review of death in age group 15-49 as an indicator to monitor the impact of HIV/AIDS

Rationale/discussion

AIDS-related deaths are concentrated in the reproductive age groups. This coincides with higher sexual activity rates in these age groups. In a population experiencing a "normal regime" of mortality, moderately low mortality levels are found in the age group 15-49. Unnatural deaths are one of the major causes of death affecting this age group. Any rapid rise in mortality levels in this age group is probably attributable to unnatural causes or AIDS. Although the death rate in a specific age group is not strictly speaking an HIV/AIDS indicator, it highlights the mortality impact of AIDS in those ages most affected by AIDS-related deaths. This indicator could serve as a rapid surveillance instrument in tracking deaths due to AIDS-related illnesses. The relative ease of obtaining information to calculate this indicator has influenced the decision to select it.

Before using the published information on deaths to calculate the crude death rate, incomplete registration of deaths has to be taken into account. The processing of death information has been speeded up to allow for the more rapid dissemination of data on deaths and it is now possible to obtain data on deaths up to about one year before the current date. Stats SA is the source of mid-year population estimates for the country, which are also needed to calculate the crude death rate. Stats SA completed a comprehensive study on the causes of death in South Africa[6]. The results of this study pointed to the need to use a less complicated indicator (e.g. causes of death) as a rapid measure to estimate the impact of AIDS on mortality.

Advantages/limitations of the indicator

AIDS-related deaths are expected to have a marked impact on the number of people dying in South Africa. To monitor the situation, a robust indicator is needed to provide timeous information with comparative ease. Yet such an indicator has to be sensitive enough to indicate changes in levels of mortality in the South African population.

[6] Stats SA, (2006) *Mortality and causes of death in South Africa, 2003 and 2004: Findings from death notification*. Pretoria: Statistics South Africa.

Crude death rates have certain limitations, e.g. the influence of the age and sex composition of a population. For instance, a youthful population with the same age-specific death rates as an older population will have a lower crude death rate than the older population simply because older persons have a higher probability of dying. In a more mature population there are proportionately more persons in the older ages. To compensate for this limitation, use is made of life table indices, e.g. life expectancy at birth (see later) or even standardised death rates. However, by using the population aged 15-49 as a reference point, the influence of sex and age distribution is considerably reduced. A crude death rate is suitable for year-to-year comparisons, as changes in the age structure from one year to another will make little or no impact on the calculated values of the crude death rate.

Update on death in age group 15-49 as an Indicator to monitor the impact of HIV/AIDS

Level of analysis/use

This indicator can be calculated and used at the national, provincial and smaller geographical level. The head of the MRC stated that AIDS killed around 336,000 South Africans between mid-2005 and mid-2006.[7] The Centre for Actuarial Research used the ASSA2002 model and calculated that 311,000 people died because of AIDS in 2004 - comprising 44% of all deaths. Among adults aged 15-49 years, it estimated that 70% of all deaths were due to AIDS.[8] These mortality rates were almost similar.

In May 2006, Statistics South Africa published a report[9] which contained lists of how many people died from each cause over an eight year period, according to death notification forms. The report revealed that the annual number of registered deaths rose by a massive 79% between 1997 and 2004. Among those aged 25-49 years, the rise was 161% in the same eight year period. Part of the overall increase was due to population growth. However, this does not explain the disproportionate rise in deaths among people aged 25 to 49 years. In 1997, this age group accounted for 30% of all deaths, but in 2004 it accounted for 43%. Table 2 shows trends in the number of adult deaths from 15 years and above for a six year period: 1998-2003.

UNAIDS/WHO estimated that AIDS claimed 320,000 lives in South Africa in 2005. This translated to more than 800 people every day.[10] In 2004, HIV was recorded as a cause of death in only 13,590 cases. However, according to researchers from the Medical Research Council (MRC), this figure was a massive underestimate, because the majority of deaths due to HIV were misclassified.

People whose deaths were caused by HIV were not killed by the virus alone, but HIV should have been recorded as an underlying cause if it initiated the chain of events leading directly to death. In other words, if someone contracts tuberculosis and dies from it because their immune system has been weakened by HIV then HIV should be included among the underlying causes. The MRC researchers claimed that in many cases, this does not happen; instead, the doctor records only the immediate cause of death such as tuberculosis or respiratory infection. This could be because the doctor does not know the deceased person's HIV status. Alternatively, they may seek to conceal HIV infection to spare stigmatisation of relatives or to avoid invalidating life insurance claims[11].

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[7] Bradshaw D, Nannan N, Laubscher R, Groenewald P, Joubert J, Nojilana B, Norman R, Pieterse D and Schneider M (2006) *Estimates of provincial mortality.*

[8] Centre for Actuarial Research (2004) *The Demographic impact of HIV/AIDS in South Africa, National Indicators for 2004.* South African Medical Research Council and Actuarial Society of South Africa, 2004

[9] Stats SA (2006). *Mortality and causes of death in South Africa, 2003 and 2004.* Pretoria: Statistics South Africa.

[10] UNAIDS/WHO (2006) *Report on the global AIDS epidemic.* Geneva: UNAIDS

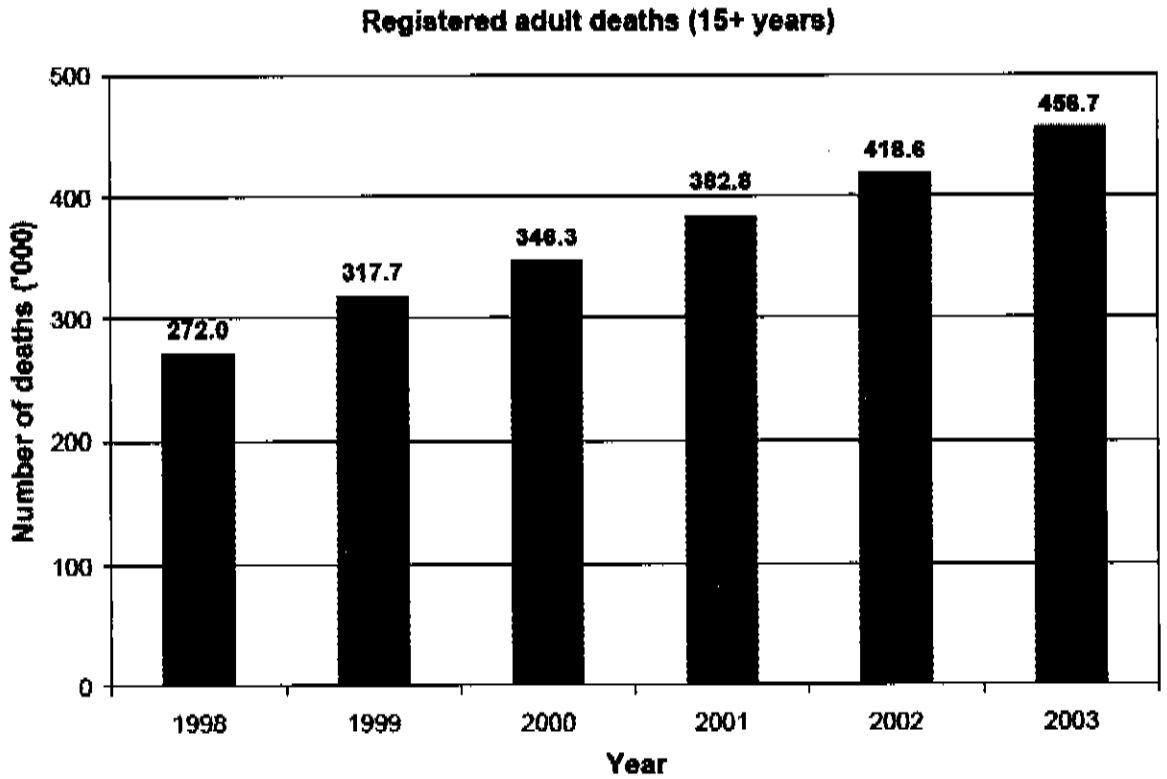
[11] South Africa needs to face the truth about HIV mortality, *The Lancet,* 365 (9459): 12-18, February 2005.

The MRC team[12] analysed a 12% sample of death certificate data from the year 2000-2001 and compared it to all the data from 1996. When they looked at deaths for which HIV was a reported cause, they saw that rates (deaths per thousand) had increased according to a distinctive age-specific pattern. The greatest increases were in the age groups 0-4 and 25-49 years, while death rates among teenagers and older people remained more or less unchanged.

The researchers observed that nine other causes of death had increased substantially according to the same distinct age pattern as HIV. They then estimated how much of the increases were likely to be caused by HIV, and concluded that 61% of deaths related to HIV had been wrongly attributed to other causes in 2000-2001. In adults, tuberculosis accounted for 43% of misclassified deaths, and lower respiratory infections for another 32%. Among infants, most of the excess deaths had been misclassified as lower respiratory diseases or diarrhoeal diseases. According to the MRC results, HIV caused the deaths of 53,185 men aged 15-59 years, 59,445 women aged 15-59 years, and 40,727 children under 5 years old in the year 2000-2001.

The MRC estimates came very close to those made by a computer model of the Actuarial Society of South Africa, called ASSA2000[13]. According to ASSA2000 calculations, HIV caused 165,859 deaths in 2000 - 30% of their estimated total of 556,585 deaths. In the age ranges they looked at, the MRC's estimates fell just 7% short of those from ASSA2000. Statistics South Africa analysed the MRC study and found that its methods and conclusions were generally sound.

Table 2: Trends in the number of adult deaths from 15 years and above, 1998-2003[14].



[12] Bradshaw D, Nannan N, Laubscher R, Groenewald P, Joubert J, Nojilana B, Norman R, Pieterse D and Schneider M (2006) *Estimates of provincial mortality*. South African National Burden of Disease Study 2000

[13] ASSA2000 is a statistical modelling software package developed by the Centre for Actuarial Research with the Actuarial Society of South Africa

[14] Source: Statistics South Africa (2006) *Mortality and causes of death in South Africa, 1997–2003: Findings from death notification*. Pretoria: Statistics South Africa.

Data sources and data availability

Data were obtained from the annual death statistics published by Stats SA. Efforts made by Stats SA and the Department of Home Affairs to improve the coverage of death registrations have been successful, and an estimated 90% of deaths were registered in 2005. Some of the latest data sources consulted include:

Stats SA (2006) *Mortality and causes of death in South Africa, 2003 and 2004: Findings from death notification.* This large document contains lists of how many people died from each cause over an eight year period, according to death notification forms. This release was based on all death notification forms received from the Department of Home Affairs. Mortality data were provided in numbers and in percentages. Basic information on the causes of death was presented.

Stats SA, (2006) *Adult mortality (age 15-64) based on death notification data in South Africa.* This report was published in 2006 and analysed data for people aged 15-64. Data on deaths by age, sex, and year of death were adjusted to take into account incompleteness of death registration. The report found that death rates rose for every five year age group between 1997 and 2004. Mortality from unnatural causes of death changed little over this period.

Statistics SA (2005). *Mortality and causes of death in South Africa, 1997–2003: Findings from death notification.*

Statistics SA (2003). *Identifying deaths from AIDS in South Africa.* This article analysed a large sample of death certificates and attempted to estimate how many deaths caused by HIV had been misclassified.

Stats SA, (2002). *Causes of death in South Africa, 1997-2001*: Advance release of recorded causes of death report was published in 2002. This release was the first Stats SA publication to report on the causes of death as well as giving basic mortality data. It is based on an analysis of a 12% sample of death notification forms received from the Department of Home Affairs for the each of the five years given.

UNAIDS data is widely considered to be the most authoritative source of HIV/AIDS data. However, its estimates should be read with some caution[15].

Some figures were derived from the ASSA2000 and ASSA2002 models. The authors warn that model estimates should be treated with circumspection since there is always a degree of uncertainty surrounding such estimates[16].

Improving cause of death information:

The study conducted by Bradshaw et al (2006)[17] signified an important milestone in generating burden of disease information at provincial level by providing mortality estimates for the provinces. However, these estimates are based on extrapolations from a variety of data sources. The authors recommended that there is an urgent need for further improvement to the cause of death data system to provide timely and accurate cause of death statistics. Based on the analysis of the cause of death data, the authors recommended that the following issues be addressed:

[15] Dummett H (2003). *A study of HIV/AIDS in South Africa.* World Markets Research Centre.

[16] Dorrington R E, Bradshaw D and Budlender D. *HIV/AIDS profile of the provinces of South Africa: Indicators for 2002.* Centre for Actuarial Research, Medical Research Council and the Actuarial Society of South Africa.

[17] Bradshaw D, Nannan N, Laubscher R, Groenewald P, Joubert J, Nojilana B, Norman R, Pieterse D and Schneider M (2006) *Estimates of provincial mortality.* South African National Burden of Disease Study 2000.

- The lack of details about the manner of death in the case of fatal injuries needs urgent attention. A mechanism to build the mortuary surveillance system (NIMSS) in all provinces and link the information to the vital registration system should be put in place.
- The quality of information on the underlying cause of death needs to be improved so as to reduce the number of deaths certified with insufficient information, which results in a high proportion of deaths being classified as 'ill-defined'. This will require investigating how reliable cause of death details for the cases certified by traditional headmen can be obtained as well as improvements in the quality of medical certification. It is essential to increase the awareness about the public health importance of such information through continued professional education programmes and basic training.
- Systems to ensure timely access to information at health district level need to be developed. The viability of the method of collecting death data used for Cape Town needs to be considered together with alternative models for collecting cause of death statistics for health districts.

Timely and accurate cause of death statistics are an essential component of the information needed for planning and monitoring health services and responding to the health needs of the population. Several aspects still need to be addressed to improve the quality of the data collected in South Africa: the poor registration of child deaths, the quality of medical certification of the cause of death, and information regarding the manner of death in the case of injuries. In addition, a mechanism to provide district level cause of death statistics must be established[18].

[18] García-Calleja JM, Gouws E and Ghys P D (2006). National population based HIV prevalence surveys in sub-Saharan Africa: Results and implications for HIV and AIDS estimates. *Sexually Transmitted Infections*, (82) supplement III, June 2006.

3.2. Under-5 mortality rate (U5MR)

Indicator description/definition

The under-five mortality rate (U5MR) is the probability (expressed as a rate per 1,000 live births) of a child born in a specified year dying before reaching the age of five subject to current age-specific mortality rates. Under 5 mortality estimates the overall health and well being of a society.

Numerator
The number of children under 5 years of age, dying in a specific year.
Denominator
The mid-year population of children under 5 years of age in a specific year.

$$\textbf{Under-5 Mortality Rate} = \frac{\text{No. of children under 5 years of age dying in a specific year}}{\text{Midyear population of children under 5 years of age in a specific year}} \times 1{,}000 \text{ live births}$$

Review of under-5 mortality as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

The U5MR provides a robust measure of the health of children and reflects the probability of a newborn baby dying before reaching age five. In addition to monitoring the number of deaths to childhood illness, the U5MR may also reflect other social conditions, such as gender discrimination. For example, if female mortality is higher, it may highlight girls' unequal access to food and health care.

In a heterosexually driven HIV epidemic, infant deaths occur as a result of babies being infected by their HIV-positive mothers. Although a significant proportion (estimated at about 30%) of babies born with HIV will die within their first year of life, the majority of the others will die before reaching age 5. HIV/AIDS will therefore result in increases in the child mortality rate. As an indicator, the under-5 mortality rate will provide an estimate of changes in the pattern and level of deaths among young children. In addition, this indicator can be used as a measure to monitor the eventual success of mother-to-child transmission (MTCT) intervention programmes. Deaths in the first years of life have a major impact on the life expectancy of a given population. As infant and child deaths increase, life expectancy at birth decreases.

Utilisation and historical patterns of this indicator in South Africa

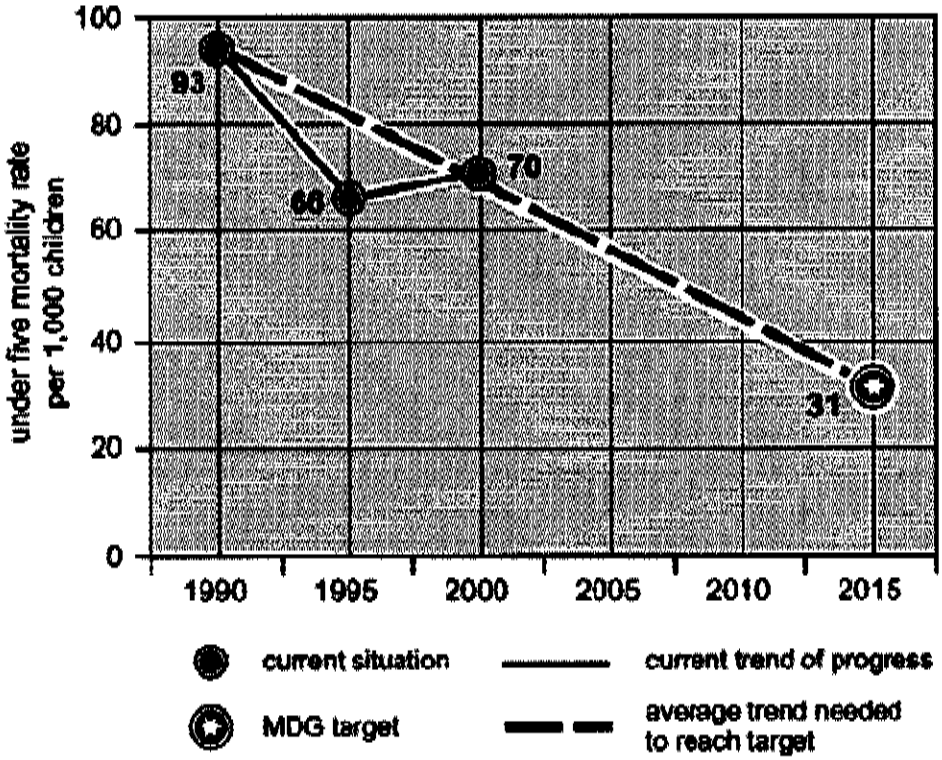
The U5MR is calculated using methodologies that depend on the type of data available. In practice, data can be obtained from registration of births and deaths via vital registration systems, data from national population census and/or data collected via household surveys. When data collected via vital registration systems is of good quality, the U5MR can be easily estimated by observing the survival status of different cohorts along time and to specific ages since the moment of birth.

The U5MR of the South African population has declined rapidly from 1950 to the early 1990s. To indicate the long-term trend, the U5MR was 115 in 1970 and in 1998, the U5MR was much higher in non-urban areas (71.2 per 1,000 live births) compared to urban areas (43.2 per 1,000 live

births). By 1975 the U5MR was estimated at about 90/1 000. By 1990 this rate had declined to approximately 55 per 1 000[19].

Table 3 shows that U5MR decreased from 93 to 70 per 1,000 live births between 1990 and 2000. This decrease is in line with the MDG target of a two-thirds (67%) reduction in U5MR from 93 per 1,000 live births in 1990 to 31 per 1,000 live births in 2015.

Table 3: Trends in U5MR in South Africa and progress towards the MDG, 1990-2015



Advantages/limitations of the under five mortality rate

The U5MR is sensitive to changes in the health condition of a population and will provide an early indication of any changes. In countries with a mature HIV epidemic the number of deaths among infants and children rose rapidly in the wake of the epidemic.

U5MR estimates were obtained from household surveys and therefore have attached confidence intervals that were considered when comparing values along time or across countries. Similarly, these estimates are often affected by no-sampling errors that may affect equally recent levels and trends of U5MR[20].

Update on Under Five Mortality as an indicator to monitor the impact of HIV/AIDS

Level of analysis/use

This indicator is usually calculated at a national level. Depending on data sources, provincial and smaller geographic estimates are possible.

The U5MR decreased to 58 deaths per 1,000 live births during the five-year period before the SADHS of 2003, implying that 1 in every 17 children born in South Africa during the period died

[19] Department of Health (2004). SA Demographic Health Survey 2003. Pretoria: Department of Health.
[20] UNDP. Millenium Development Goals Indicators. Accessed on 27/10/2006 at http://mdgs.un.org/unsd/mdg/Metadata.aspx?IndicatorId=13

before reaching their fifth birthday. The Health Systems Trust estimated the U5MR to be 100 per 1,000 live births in 2002[21]. Comparison of mortality rates recorded in the 2003 SADHS with those from the 1998 SADHS survey shows no significant change at the national level. Under-five mortality has remained stable (59 per 1,000 from the 1998 SADHS, compared with 58 for the 2003 SADHS).

There were great disparities between the provinces with the highest U5MR in the Eastern Cape (80 per 1,000 live births) and the lowest in the Western Cape (13 per 1,000 live births). There were also significant differences between population groups in South Africa. The U5MR for Africans was 63.6, more than double the rate for Coloureds, which was 28.2 per 1,000 live births in 1998. The official figure from the Department of Health was 61 per 1000 live births in the SADHS of 1998. As expected, under-five mortality rates are higher for boys than girls.

Data sources and data availability

Data to calculate the U5MR were obtained from demographic cross-sectional surveys, vital statistics and census data. Recent improvements in the coverage of reported deaths in South Africa made it possible to use vital statistics as reported by Stats SA. The 2003 Demographic and Health Survey was another source of accurate information.

Data for reviewing and updating the U5MR is derived from household survey data using direct or indirect methods. The direct method uses data collected on birth histories of women of childbearing age and produces the probability of dying before age five from children born alive, among women of childbearing age, during five year periods before the survey (0-4, 5-9, etc.). The indirect method uses the Brass method which converts the proportion dead of children ever born reported by women in age groups 15-19, 20-24,...., 45-49 into estimates of probability of dying before attaining certain exact childhood ages[22]. Due to mother-to-child transmission (MTCT), a substantial proportion of babies born to mothers with HIV are themselves infected. The majority of these children will die before reaching age 5 if the PMTCT programme is not implemented aggressively. HIV/AIDS might thus impact on child mortality rates.

Vital registration data is available on a yearly basis. Population censuses are regularly conducted every ten years and results are published within 1-3 years after the population count. Household surveys, such as DHS and MICS, are implemented every 3-5 years with results published within a year of field data collection. It is important to mention that in average, the most recent U5MR estimates from household surveys refer to 2.5 years before the time of the survey or 3.5 years at the moment of publication of findings[23].

[21] UNDP Human Development Report (1993), 1998, 2002, Department of Health (1998)
[22] UNDP. Millennium Development Goals Indicators. Accessed on 27/10/2006 at http://mdgs.un.org/unsd/mdg/Metadata.aspx?IndicatorId=13
[23] UNDP. Millennium Development Goals Indicators. Accessed on 27/10/2006 at http://mdgs.un.org/unsd/mdg/Metadata.aspx?IndicatorId=13

3.3. Life expectancy at birth (LEB)

Indicator description/definition

Life expectancy at birth (LEB) - a statistical measurement of the years a newborn child can expect to live, barring accidents and unnatural events. It is an index reflecting the average number of years a person born in a specific population can expect to survive should prevailing mortality patterns continue throughout the life span of this individual. It is also defined as the average number of years to be lived by a group of people born in the same year, if mortality at each age remains constant in the future. It includes total population as well as the male and female components. It is calculated by means of a life table, and is not sensitive to the age structure of the population.

Numerator: Number of years a newborn child can expect to live
Denominator: Midyear population in a specific year

$$\textbf{Life expectancy at birth} = \frac{\text{No. of years a newborn child can expect to live}}{\text{Midyear population in a specific year}} \times 100{,}000$$

Review of life expectancy at birth as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

LEB is a measure of overall quality of life in a country and summarizes the mortality at all ages. It can also be thought of as indicating the potential return on investment in human capital and is necessary for the calculation of various actuarial measures. It is based on any number of factors, from incidence of disease to personal lifestyle choices to environmental conditions. Life expectancy statistics are used for many reasons. Sociologists and other scientists may want to know if a particular race or population is living longer or losing ground in comparison to other groups.

The sharp decline in LEB due to a rapid rise in the number of HIV infections and concomitant increases in AIDS-related deaths has been noted. This decline was documented in a number of countries with a mature HIV epidemic. The decline eradicated the gains in life expectancy over many years. As a result of the HIV epidemic in South Africa, life expectancy at birth is expected to decline sharply as mortality rates increase.

LEB reflects the overall mortality level of a population. It summarizes the mortality pattern that prevails across all age groups - children and adolescents, adults and the elderly[24].

Utilisation and historical patterns

In South Africa, life tables calculated from actual statistics used to be only available for the White, Coloured and Asian components of the population due to incomplete vital statistics coverage for the African population. Nevertheless, model life tables provide an opportunity to estimate life table values for this component of the South African population.

[24] WHO (2006) Definitions and metadata. Accessed on 15 October at http://www.who.int/whosis/whostat2006DefinitionsAndMetadata.pdf

Estimated values of LEB in South Africa differ from source to source, but in general a similar trend is discernable among all these sources. Since the second half of the twentieth century a steady rise in life expectancy at birth occurred among all components of the South African population. Although the white component had the highest life expectancy at birth, annual increases in their life expectancy slowed down as higher levels were reached. Among the African, coloured and Asian segments, life expectancy at birth was at much lower levels in the mid-1950s, but increased significantly thereafter.

Advantages/limitations of the indicator

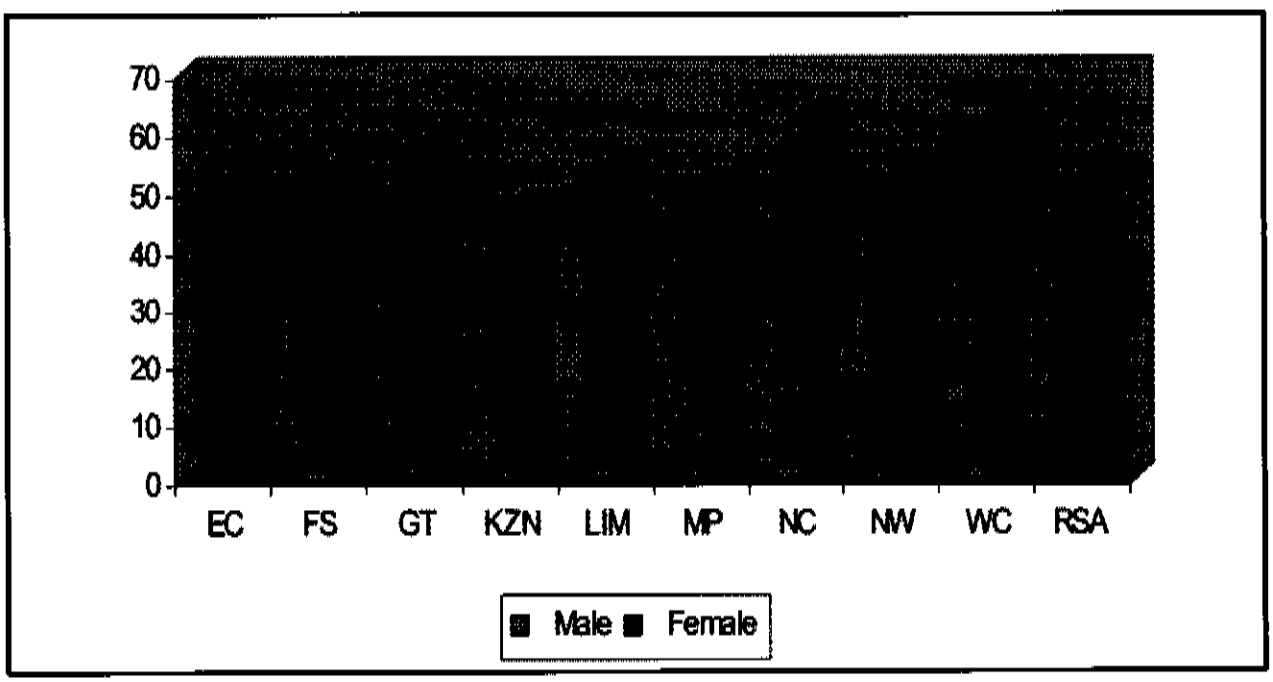
Life expectancy at birth is a refined index providing an accurate benchmark for comparison over time. The major disadvantage of using life expectancy at birth as an indicator to assess the demographic impact of the epidemic is related to the lack of sound information to compile a reasonably accurate life table. However, recent improvements in the coverage of vital registrations will aid the construction of a life table. The exact mid-year population remains an issue as well. Another source of life expectancy at birth values is the models used to estimate the future demographic impact of HIV/AIDS.

Update on life expectancy at birth as an indicator to monitor the impact of HIV/AIDS

Level of analysis/use

The Human Development Report 2006[25] indicates that falling life expectancy is one of the most visible effects of HIV/AIDS in many nations and has reversed human development across a large part of southern Africa. Stats SA's mid-year population estimates for South Africa, indicated that for 2006, life expectancy at birth was estimated at 49,0 years for males and 52,5 years for females. The life expectancy for both sexes is estimated at 50,7 years. In his presentation to the Health portfolio committee in Parliament this year, the President of the MRC, Professor Anthony Mbeu indicated that the LEB may have increased in past year due to 220,000 on antiretroviral treatment.

Figure 2: Trends in provincial expectation of life at birth in South Africa, 2001–2006[26]



[25] UNDP (2006). *Human Development Report 2006.* Geneva: United Nations Development Programme.
[26] Stats SA (2006). *Mid-year population estimates, South Africa: 2006.* Pretoria: Statistics South Africa.

Figure 2 shows the average provincial life expectancies at birth for males and females for the period 2001-2006. Life expectancy at birth for females is the highest in the Western Cape (67 years) and lowest in Kwazulu Natal (less than 50 years). For Gauteng, life expectancy at birth is estimated at 54 years for males and 57 years for females. For both sexes, life expectancy is estimates at 50,7 years (49,0 years for males and 52,5 years for females).

The 2006 midyear report assumed a mother-to-child transmission rate (the proportion of babies born to HIV-positive mothers who will also become HIV-positive) of 32% if no HIV treatment programme is followed and 11% if such a program is in place. Mother-to-child transmissions occurred primarily during the perinatal period and largely through breastfeeding. The model assumes a median duration of breastfeeding consistent with data from the Department of Health. The mother-to-child transmissions can be reduced through antiretroviral treatment to mothers and their babies or through replacement feeding options. The estimates took the administration of nevirapine treatment to pregnant HIV-positive women and the promotion of alternative infant feeding options into account. The PMTCT program was assumed to be phased-in and assumptions about the levels were based on information from the Department of Health.

LEB for females was the highest in the Western Cape (67 years) and lowest in Kwazulu Natal (less than 50 years). For Gauteng, life expectancy at birth was estimated at 54 years for males and 57 years for females. For both sexes, life expectancy is estimates at 50,7 years (49,0 years for males and 52,5 years for females). Life expectancy in KwaZulu-Natal and Mpumalanga was 11 years lower than in the Western Cape, which had the lowest mortality rate and where life expectancy was 63 years[27].

The evidence is mixed on whether gender bias skew prevention and treatment. Unequal power relationships can disadvantage women and young girls in prevention because they are able to exercise less control over decision-making. Educational disadvantage is also a factor. Because school is an important site for education on HIV/AIDS, gender disparities in school attendance disadvantage girls. Current evidence does not point to systematic bias in treatment. In South Africa, they account for a larger share of treatment than predicted on the basis of infection rates[28].

The state of the world population report for 2004[29] suggested that life expectancy at birth for South African males in 2004 was 45.1 years while the life expectancy for females was reported as 50.7 years. The official figure released by Stats SA on life expectancy in July 2004 estimated male life expectancy in South Africa for 2004 as 50 years and female life expectancy at 53 years. The difference between the estimates provided in the state of the world population, (2004) report and the official estimates by Stats SA in 2004 and 2006 may be largely explained by differences in the base populations used to derive these estimates. The use of the wrong base population in the state of the world report, then often leads to incorrect and often implausible estimates.

Data sources and data availability

- Stats SA (2006). Mid-year population estimates, South Africa 2006.
- Lehohla P (2004). Perceived health and other health indicators in South Africa. Pretoria: Statistics South Africa, 2004.

Stats SA, (2003). *South African population census.* The results of the 2001 census were released during the first half of 2003. Accurate population figures are indispensable for measuring the impact of the HIV/AIDS epidemic. At the macro level, accurate baseline population figures are required to calculate the economic impact on South Africa.Stats SA has carried out an annual October household survey (OHS) since 1993. Although the first of these series in 1993, the sample size ranged between 12 000 and 30 000 households. The OHS is an omnibus survey and thus, a rich source of data for various development indicators including poverty, social development, gender equality, infant and child mortality, fertility and access to services. The OHS is also a valuable tool in monitoring transformation in South Africa.

[27] Stats SA (2006). *Mid-year population estimates, South Africa 2006.* Pretoria: Statistics South Africa
[28] UNDP. Human Development Report 2006
[29] The state of the world population, (2004)

3. OTHER INDICATORS REFLECTING THE IMPACT OF AIDS-RELATED MORTALITY ON THE POPULATION

The systematic collection of mortality data in South Africa is a recent phenomenon. It is widely acknowledged that the vital registration system for Africans was virtually non-existent under the apartheid government[30].

The democratic government of post-apartheid South Africa recognised the importance of mortality and causes of death statistics and prioritized the collection of reliable mortality data. Initiatives to improve the quality of data have resulted in a dramatic improvement of the death registration system in South Africa over the last decade. Accurate mortality statistics are needed for policy and planning, implementation and the monitoring of health interventions aimed at increasing life expectancy and improvements in health. The level of mortality is one of the indicators of the well-being and health status of a population hence its inclusion, among others, in the construction of human development indices, the Millennium development goals and in the multi-dimensional approach to the measurement of poverty[31].

3.4.2. Annual number of AIDS cases

Indicator definition and update

This refers to the number of new AIDS cases reported on an annual basis.

Dorrington et al (2004)[32] estimated that over 1,2 million people have already died as a result of AIDS, just over 5 million are infected with HIV, and over 500 000 are AIDS sick. They further estimate that the number of people sick with AIDS in the middle of each year continues to rise over the period, and is estimated to reach nearly 743 000 in 2015.

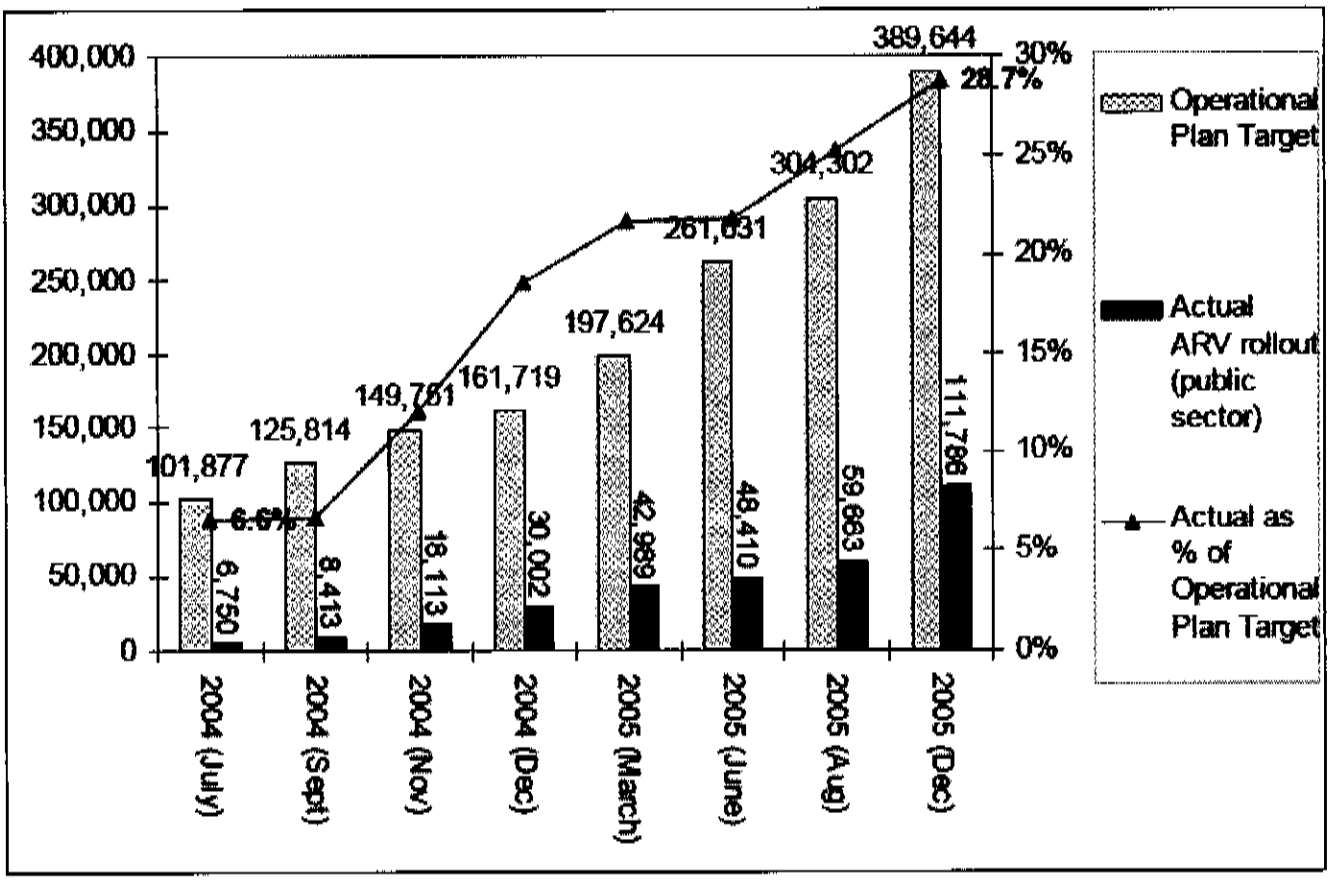
Review and brief discussion

The number of new AIDS cases is an important epidemiological tool to monitor the epidemic. However, notification of new AIDS cases in South Africa was suspended during the mid 1990s. Medical practitioners, for a variety of reasons were not enthusiastic to report such cases. It is unclear if the notification new AIDS cases will ever be re-instituted.

Table 4 shows trends in the provision of antiretroviral treatment for people who are sick with AIDS in South Africa in 2004 and 2005. The target of the operational plan[33] was to get 389,644 (28.7%) people on ARVs but only 111,786 (8%) of people who qualify were on the programme by the end of 2005. When the operational plan was approved in 2006, only 6.6% of people who qualified and needed ARVs could get them in the public sector. Of the total number of public sector patients on Highly Active Antiretroviral Treatment - HAART (111,786), 54% were part funded by external donors (the largest being PEPFAR) working in partnership with the public sector[34].

[30] Botha J and Bradshaw D (1985) African vital statistics – a black hole? *SA Medical Journal*, 67:977-981.
[31] Stats SA (2006). *Mortality and causes of death in South Africa, 2003 and 2004: Findings from death notification.*
[32] Dorrington RE, Bradshaw D, Johnson L, Budlender D. *The demographic impact of HIV/AIDS in South Africa: National indicators for 2004.* Cape Town.
[33] Department of Health (2004). *Operational plan for comprehensive HIV and AIDS care, management and treatment for South Africa.* 19 November 2003. Available on: http://www.hst.org.za/uploads/files/aidsplan.pdf
[34] Natrass N (2006) Antiretroviral Treatment and the Problem of Political Will in South Africa. *Southern African HIV Clinicians Journal*, July 2006

Table 4: Trends in the provision of ARVs in South Africa, 2004 and 2005[35]



3.4.3. Cause-specific mortality rate

Indicator definition

The cause-specific mortality rate is the mortality rate in a population attributed to a specific cause, such as pneumonia or TB during a given time period (usually 1 year). It is calculated by dividing all the deaths from a specific cause in a given population by the total population (and then multiplying by 100,000 to give a rate per 100,000 persons)[36].

Numerator: Deaths attributed to a specific cause
Denominator: Total midyear population.

$$\textbf{Cause-Specific Death Rate} = \frac{\text{Deaths attributed to a specific cause in a year}}{\text{Total midyear population}} \times 100{,}000$$

[35] Sources: ASSA2003 demographic model and Natrass N (2006) Antiretroviral Treatment and the Problem of Political Will in South Africa. *Southern African HIV Clinicians Journal*, July 2006
[36] Source: http://www.cdc.gov/descd/MiniModules/Comparing_Pop/page03.htm

Update and brief discussion

Cause-specific mortality rate data are useful in the planning and evaluation of strategies designed to address high infant mortality rate (IMR). This is because the starting point of a sequence of events leading to death is known and death can be avoided or postponed by preventing the initiating cause. Cause-specific infant mortality rate is determined by using information obtained from the birth and death registers and birth and death certificates.

In the absence of AIDS-related death statistics, mortality by broad causes of death may possibly give an indication of the proportion of deaths due to immune related diseases. Stats SA (2002) released an analysis of cause of death information using death certificates.

AIDS killed around 336,000 South Africans between mid-2005 and mid-2006[37]. In the MRC report on estimates of provincial mortality,[38] HIV/AIDS in Gauteng accounted for 33 percent of all deaths in 2000 - one in three - compared with 30 percent of all deaths nationwide. Compiled by the MRC's Burden of Disease Research Unit, the report shows that overall mortality rates and causes of death differ in the provinces, but that HIV/AIDS is the leading killer across the board. The report's key findings are:

- HIV/AIDS is the leading cause of death and premature or early death for all provinces.
- Deaths from diarrhoeal disease, TB and nutritional deficiencies are more likely in the poorer, more rural provinces.
- Deaths from non-communicable disease is similar across all the provinces, although the causes differ.
- Death rates from injuries are particularly high in the Western Cape, Gauteng and Mpumalanga, with men having twice the rate of women.

3.4.3. Infant mortality rate (IMR)

Infant Mortality Rate is the probability of dying between birth and exactly one year of age expressed per 1,000 live births.

Numerator: Number of children under 1 year dying in a specific year
Denominator: Midyear population of children under 1 year in a specific year.

$$\textbf{Infant mortality rate} = \frac{\text{No. of children under 1 year dying in a specific year}}{\text{Midyear population of children under 1 year in a specific year}} \times 1{,}000 \text{ live births}$$

Update and brief discussion

Infant mortality estimates are obtained from household surveys and therefore have attached confidence intervals that need to be considered when comparing values along time or across countries. Similarly, these estimates are often affected by no-sampling errors that may affect equally recent levels and trends of infant mortality rates[39].

[37] Mbeu AD (2006). HIV and AIDS Research in South Africa. MRC. *Presentation to the Parliamentary Portfolio Committee on Science and Technology*. 29 August, 2006.
[38] Bradshaw D Laubscher R, Dorrington R, Bourne DE, Timæus IM (2005) Unabated rise in number of adult deaths in South Africa.
[39] UNDP. Millenium Development Goals Indicators. Accessed on 27/10/2006 at http://mdgs.un.org/unsd/mdg/Metadata.aspx?IndicatorId=13

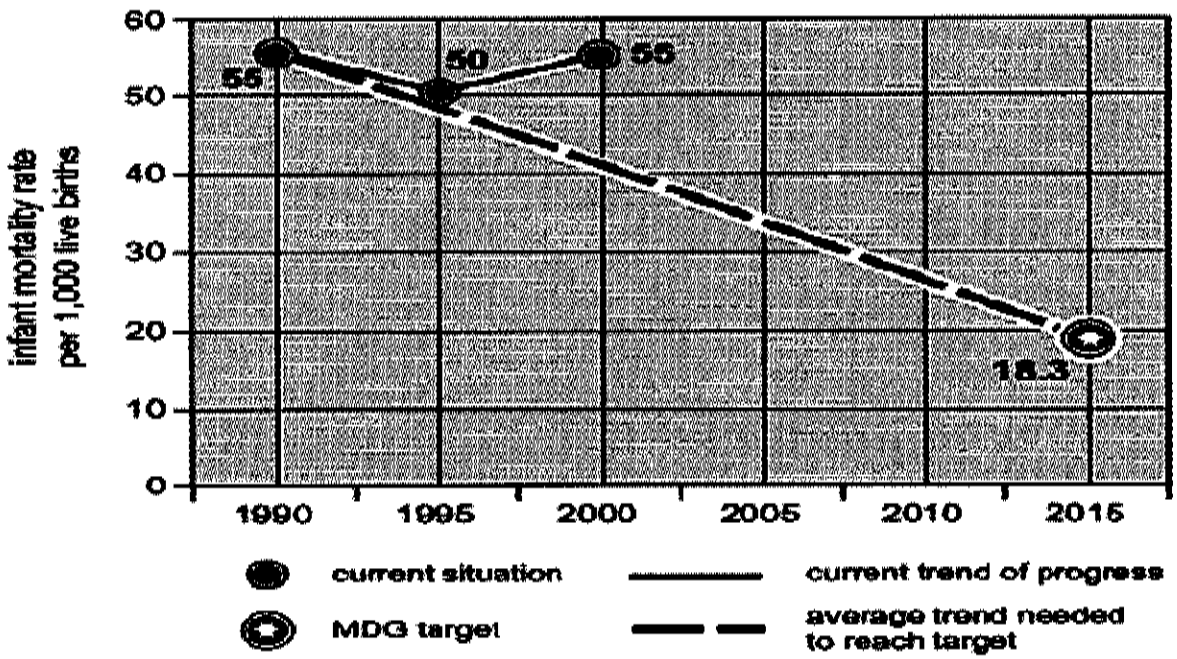
Infant mortality patterns are changing due to HIV/AIDS. This is largely due to two reasons: A proportion of children born to mothers infected with HIV are in turn infected at birth or shortly thereafter by breastfeeding and these children have resultant high mortality rates. Another reason is that mothers suffering from AIDS related illnesses are not able to care for their newborn, increasing the likelihood a child may die. Trends in the infant mortality rate over the past four decades showed a continuous downward movement. HIV/AIDS is reversing this trend.

The IMR has long been seen as a sensitive indicator of the health and socio-economic conditions in a country. In the most developed countries of the world, infant mortality rates of as low as 6 per 1 000 are found. In contrast, in the least developed countries, the IMR remains high, even as high as between 100 and 200 infant deaths per 1 000 live births.

In South Africa the IMR declined rapidly from the 1950s to the early 1990s, when it was estimated to be between 40 and 50 per 1,000 live births. In the 1950s the rate was 100 and in the 1970s it was around 80. South African infant mortality in the non-urban areas in 1998 was 52.2 compared to 32.6 in the urban areas. There were significant regional differences in the IMR in 1998: the Eastern Cape had a rate of 61.2 while the Western Cape's IMR was only 8.4[40] per 1,000 live births. The Health Systems Trust estimated the rate at 59 in 2002. In 2000, infant mortality was 55 per 1,000 live births in South Africa, which was higher than the rate for 1995. However the long-term trend of infant mortality in South Africa is decreasing.

Table 5 shows trends which indicates that the infant mortality rate have been increasing again from the mid-1990s. According to the SADHS, the IMR was 45/1,000 live births in 1998. In South Africa, infant mortality of 45.4 per 1000 live births relates to diseases such as gastroenteritis, respiratory infection. Many of this disease are in HIV positive infants[41].

Table 5: Trends in IMR in South Africa, 1990-2000 and progress towards MDG[42] by 2015



To prevent most of these unnecessary deaths could cost over R5 billion annually in terms of investment in housing, education, clean water, health clinics, health worker training, nutritional supplements etc[43].

[40] UNDP. Millennium Development Indicators for South Africa.
[41] Good Start - PMCT Cohort and Infant Feeding Study
[42] UNDP Human Development Report 1993, 1998, 2002, Department of Health (1998) SADHS
[43] Mbewu et al (2000).

In a heterosexually driven HIV epidemic, infant deaths occur as a result of babies being infected by their HIV-positive mothers. A significant proportion (estimated at about 30%) of babies born with HIV will die within their first year of life, thereby increasing the infant mortality rate. By monitoring the IMR, the impact of the epidemic on infants can be determined. It should be noted that deaths in the first year of life have a major impact on the life expectancy of a given population. As infant deaths increase, life expectancy at birth will decrease. The IMR is sensitive to changes in the health condition of a population and will provide an early indication thereof. HIV/AIDS is one health factor, and in countries with a mature HIV epidemic the number of infant deaths rose rapidly in the wake of the epidemic.

The IMR was updated with relative ease from information obtained from a vital registration system or from retrospective surveys. Recent improvements in the coverage of reported deaths and births in South Africa make it possible to use vital statistic information as reported by Stats SA. Adjustments were made for the under-reporting of both infant deaths and births. Information to calculate an infant mortality rate was also obtained from data gathered during surveys such as the Demographic and Health Survey. The IMR is an important indicator to monitor both the demographic and health impacts of HIV/AIDS.

3.4.5. The dependency ratio[44]

The number of children (0-14 years) expressed as a ratio of the adults (15-64 years) in a population.

Numerator: Number of children aged 0 to14 years
Denominator: Number of adults aged 15-64 years in a population in a specific year

$$\textbf{Dependency ratio} = \frac{\text{No. of children (0-14 years) and the elderly (65 years +) in a specific year}}{\text{Total midyear population of children and the elderly}} \times 100{,}000$$

Update and brief discussion

There are more non-working persons per worker in South Africa than in medium-income countries (with the exception of Lebanon). For every working man or woman in South Africa there are 2.9 people who are not working. In the high-income, high social transfer, countries there are only 1.2 dependent people per working person. In the peer group of developing countries there are 1.4 dependant people per working person.

Put differently, South Africa's dependency ratio is almost two-and-a-half times more adverse than in the high-income countries; and twice as onerous as that of its peer group countries at a similar stage of development. Social assistance programs – as opposed to insurance or savings programmes – involve a transfer from the employed, working population to the population that is not working. The more adverse the dependency ratio, the larger the burden and depressive effect of a given set of benefits on take-home pay and employment in the producing sector.

Why does South Africa have such an unfavourable dependency ratio? The following factors all play a role:
South Africa's working-age cohort (16-65) at 64.7% is small relative to high-income countries (67,1%), though similar to our peers (64.9%). Of the working age population in South Africa, a remarkably small percentage is in the labour-force, namely 56.7%, compared to our peers (69.9%) and the high-income countries (72.7%).

Among youth aged 15-24, nearly half (48.6%) are learners or students and a third (31.8%) are unemployed and looking for work. Among 25-34 year olds, nearly half (49.3%) are unemployed

[44] Source: http://www.pmg.org.za/docs/2003/appendices/030609bsa.htm

and looking for work. Among 15-24 year olds, 10.6% had less than grade 7 education, as did 21.4% of 25-49 year olds and 47.5% of those aged 50+. Nearly half (49.6%) of all respondents aged 25-49 attended two or more funerals of people who have died of AIDS in the past year[45].

South Africa's unemployment rate (measured as 30.5% according to the 'narrow' definition) is higher than in our peer group (where unemployment ranges from 2.0% to 20.6%) or in the high-income countries (around 16%). The cumulative effect of South Africa's young population, low labour participation rate and high unemployment is an unusually high dependency ratio.

The implications of the high dependency ratio

The dramatically higher number of non-working persons per worker means that the cost of a given broad-based social assistance programmes is far higher on a per worker basis in South Africa than in high-income countries or among our development peers. The size of the transfer burden creates problems irrespective of whether workers or employers are taxed. A tax on workers' salaries would lead to a significant reduction in take-home pay, reducing the incentive to search for or take up employment. In other words the core problem in South Africa's welfare equation, the low labour participation rate, would be worsened.

The alternatives are to tax employers, either on profits or on payroll. A tax on profit would reduce investment and employment in the formal sector – again worsening a root cause of South Africa's welfare problem, the low rate of employment creation. A tax on payroll would do the same, and also shift production technology away from labour-absorbing options. In this way the condition for social programmes similar to those in the high-income countries – a strongly more favourable dependency ratio – would be pushed ever further into the future.

Increased taxation of the formal economy would likely accelerate the trend towards informalisation of the South African economy. The 1999 October Household Survey registered a fall in formal sector employment and a significant rise in informal sector employment. The Labour Force Survey (2002) indicates a stable but stagnant formal employment sector over the last two years. Informalisation means a shrinking tax base, avoidance of safety, health and other regulations, and often reduced output due to financing constraints and the use of sub-optimal technology[46].

It was difficult to interpret this indicator because lower fertility rates and AIDS-related mortality have opposite effects.

Data sources and limitations

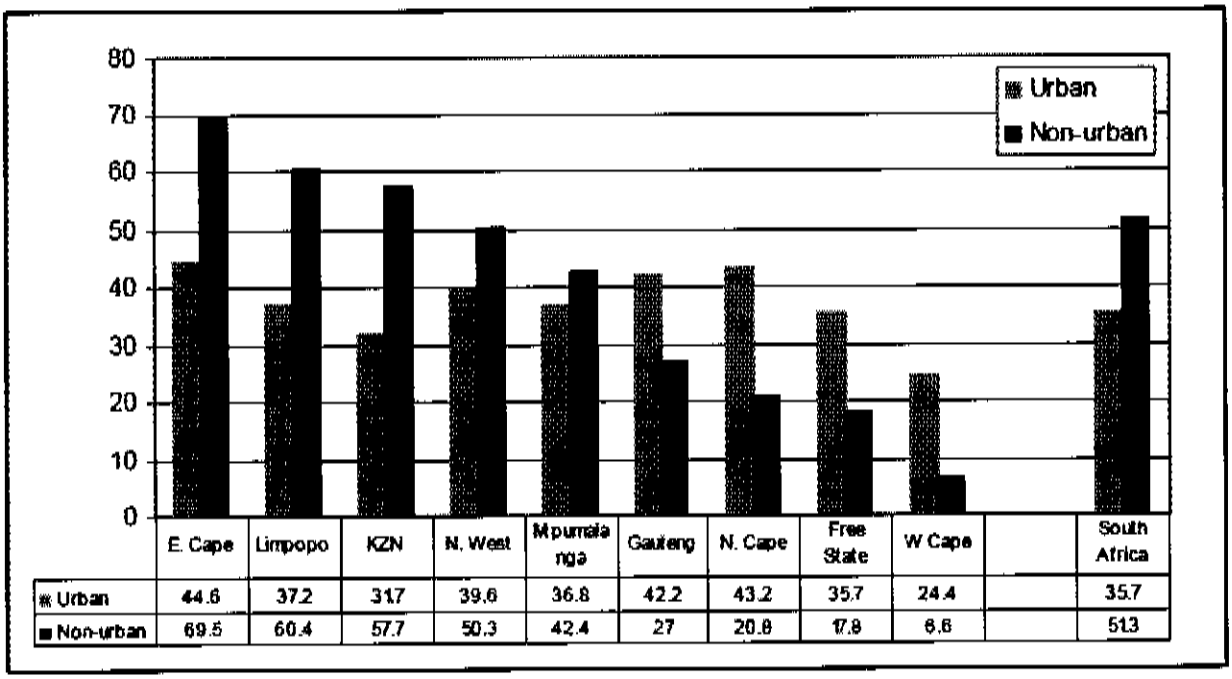
Stats SA published the *Advance release of recorded causes of death, 1997–2000*, based on information from the population register, to meet the growing need for up-to-date information on mortality. Prior to that, the report on recorded deaths for 1996 provided little insight into the causes of death contributing to the apparent increase in mortality. In 2002, Stats SA accelerated the processing of death notification forms (DNFs) for the period 1997 to 2001 and published a statistical release entitled *Causes of death in South Africa 1997–2001: Advance release of recorded causes of death,* based on a 12% sample of forms. This report demonstrated a fast-changing profile of mortality in the country[47].

[45] CCP (2006) *South African national HIV and AIDS communication survey 2006: Overall impact of 14 communication programs*. November 2006

[46] Source: http://www.pmg.org.za/docs/2003/appendices/030609bsa.htm

[47] Stats SA (2006). *Mortality and causes of death in South Africa, 2003 and 2004: Findings from death notification.*

Table 6: Provincial youth unemployment and dependency ratio in South Africa, 2003[48]



	E. Cape	Limpopo	KZN	N. West	Mpumala nga	Gauteng	N. Cape	Free State	W Cape		South Africa
Urban	44.6	37.2	31.7	39.6	36.8	42.2	43.2	35.7	24.4		35.7
Non-urban	69.5	60.4	57.7	50.3	42.4	27	20.8	17.8	6.6		51.3

Stats SA acknowledges that there are factors limiting the accuracy and completeness of data obtained from the death notification forms. These are:

- The data from death notification forms is subject to content errors and omissions. Even though provision is made on the death notification form to record marital status, education, occupation, and industrial sector in which the person worked, these variables have not been analysed in this survey, due to lack of completeness. Location of death could be provided at the level of province only.
- Another limitation of the data used in this study is the probable under-registration of deaths, particularly in rural areas, and of children. This leads to lower estimates of the total number of deaths that have occurred in the country and may lead to an under-estimation of some causes of death. Thus, it is not possible to calculate mortality rates using this data without first adjusting for the incompleteness of reporting. Deriving estimates of completeness of death registration is a complex issue and is not part of this release. However, the report provides an indication of completeness of the information published for 1998 to 2004.
- The causes of death may also be misreported on the form. This happens when an incorrect cause of death is given or when the cause of death is not detailed (i.e. an ill-defined cause of death). The quality of the reported information is determined largely by the diligence and integrity of the certifying official – physician, professional nurse or in some rural areas traditional headman. For example, the certifying officials sometimes write 'natural causes' instead of stating the actual cause.

The data on annual number of AIDS cases, cause-specific mortality rate, crude rate, infant mortality rate and dependency ratio were obtained from these sources.

[48] Source: Millennium development indicators for South Africa, 2004

4. INDICATORS REFLECTING A REDUCTION IN THE TRANSMISSION OF HIV

A number of indicators can be used to estimate, and more importantly, to monitor the current levels of HIV infection (and at the same time the reduction in these levels). The main source of information in South Africa remains the annual antenatal HIV and STI surveillance survey conducted by the Department of Health among women seeking care and advice at public prenatal health services. This data can be used to derive a variety of indices measuring prevalence (but not incidence).
The most common statistic is the HIV prevalence level among women by five-year age groups. This, however, is not a single and compact indicator. Another relevant indicator, especially for health services, is the percentage of babies born with HIV infection. It would be useful to have HIV prevalence levels of males. Only recently have empirical data been released, in general showing slightly lower infection rates among males than females[49].

For surveillance purposes, HIV infection is diagnosed through the HIV testing, according to, the HIV surveillance testing strategies recommended by the Department of Health. It is also common to select HIV prevalence among sub-populations with high-risk behaviour as an indicator. A major problem with this is the lack of suitable and accurate data on, for instance, sex workers, the clients of sex workers and intravenous drug users. Such estimates are very useful in countries where the HIV prevalence among the general population is low, while the infection levels are relatively high among these high-risk groups. In South Africa, the present levels of infection among the general population are high and it is debatable whether the epidemic originates primarily from these high-risk groups.

Another approach to monitoring the risk for HIV infection is to monitor sexually transmitted infections (STIs), due to the association between STIs and HIV. However, for the purpose of direct HIV monitoring, STI indicators are at most explanatory. Two indicators are proposed to monitor the prevalence of HIV.

[49] Shisana O, Simbayi L et al (2005). *South African national HIV prevalence, HIV incidence, behaviour and communication survey, 2005*

4.1. Percentage women aged 15-24 infected by HIV

Indicator description/definition

This indicator measures the percentage of blood samples taken from pregnant women aged 15-24 that test positive for HIV during unlinked, anonymous sentinel surveillance surveys at selected antenatal clinics. This indicator is calculated by dividing the number of women in this age category who tested HIV positive with the total number of women aged 15-24 who attended an antenatal health service facility during a specific year.

Numerator
The number of pregnant women aged 15-24 who test positive for HIV in the annual antenatal clinic survey.
Denominator
The total number of pregnant women aged 15-24 who tested in the annual antenatal clinic survey.

$$\textbf{\% women aged 15-24 infected by HIV} = \frac{\text{No. of women aged 15-24 who tested HIV positive}}{\text{Total number of women aged 15-24 who tested in the annual antenatal clinic survey}} \times 100$$

Review of % women aged 15-24 infected by HIV as an indicator

Rationale for use as an indicator

The purpose of this indicator is to assess progress towards reducing HIV infection. This indicator gives a fairly good estimate of relatively recent trends in HIV infection in South Africa where the epidemic is heterosexually driven.

In the absence of accurate mortality statistics, almost exclusive reliance has been placed on HIV prevalence estimates that are based on the random, anonymous testing of pregnant women attending antenatal clinics. With some, usually fairly minor, adjustments these test results are used to derive estimates of HIV prevalence among all adults in the population as a whole. However, from the limited evidence that is available, HIV infection among teenagers is much lower than the HIV prevalence estimates from ante-natal clinic surveys for this age group.

South Africa has a reliable annual antenatal HIV survey[50] conducted in public health clinics. The survey results provide prevalence rates by five-year age groups. It should be noted that the results from year to year reflect point estimates and provide no clue to the incidence of HIV infection (i.e. annual new infections).

One of the major aims of prevention campaigns is to reduce and ultimately stop new infections among those in the younger age groups. The age group 15-24 represents a cohort of women who are becoming sexually active, which makes it justifiable to track the force of infection in this age group. In addition, it has been argued that the HIV prevalence rate in this group can be equated to an incidence rate.

In 2003, the Reproductive Health Research Unit (RHRU) of the University of the Witwatersrand conducted a national survey of 15-24 year olds on HIV and sexual behavior among young South Africans.

[50] Department of Health. *National HIV and syphilis antenatal seroprevalence survey in South Africa 2005.*

In the light of this survey, the antenatal seroprevalence survey is not the only source of data for this indicator.

Update on % women aged 15-24 infected by HIV as an indicator to monitor the impact of HIV/AIDS

Utilisation and historical patterns

This indicator is calculated using data from pregnant women attending antenatal clinics in HIV sentinel surveillance sites. Data are available, as about 16 antenatal sero-prevalence surveys have been conducted since 1990. The published data only reflects the five-year age groups. Using the applicable weights, obtainable from the Department of Health, it was possible to construct a time series of the infection patterns in the age group 15-24.

Different trends have evolved between the younger and older age groups of women. HIV prevalence among teenagers was estimated at 15.9% in comparison to 16.1 in 2004. This was not statistically significant difference but could have been an indicator of declines in HIV prevalence in this age group. HIV prevalence among young women (<20 years old) continued to decline, suggesting a decline in new cases (incidence). This might imply a sustained change in behaviour among young people including engaging in safer sexual practices such as being in mutually faithful relationships. The DOH suggest that these gains need to be taken a step further to result in reduced teenage pregnancies as well. In 2005, teenagers constituted 20% of the sampled population[51].

Level of analysis

The national youth survey found that overall HIV prevalence among 15-24 year olds was 10.2%. Prevalence among 15-19 year olds was 4.8%; among 20-24 years olds, it was 16.5%. Prevalence was higher among females (15.5%) than males (4.8%) ages 15-24. This was true for each age group: prevalence among 15-19 year olds was 7.3% for females and 2.5% for males; among 20-24 year olds, prevalence was 24.5% for females and 7.6% for males. Most young South Africans living with HIV/AIDS are female (77%), but HIV prevalence among males and females is roughly equal by age 30[52].

The greatest difference between the HSRC, 2005 and Department of Health (2006) studies concerns prevalence among women aged 15-19 years old, for which the antenatal survey produces a rate much higher than the household survey (15.9% compared to 9.4%). This is, at least in part, probably because not all young women are sexually active, and those represented in the antenatal data are by definition engaging in unprotected sex, which puts them at higher risk of HIV infection. Overestimation of HIV prevalence in this age group is a known bias in antenatal studies. It is possible that overestimation occurs in older age groups as well, particularly as those who use condoms or abstain from sex stand less chance of both HIV infection and pregnancy. On the other hand, underestimation might also occur: for example, studies have shown that HIV lowers fertility.

[51] Department of Health (2006). *National HIV and syphilis antenatal seroprevalence survey in South Africa 2005.*

[52] Reproductive Health Research Unit (2004). *HIV and sexual behaviour among young South Africans 2003.*

Table 7: HIV prevalence in women aged 15-24 in the HSRC 2005 survey compared to the DOH 2005 antenatal survey

Age groups	HSRC2005 Females n=5,650		Pregnant in the last 24 months n=918		Antenatal survey 2005 n=16 510	
	% (n)	95% CI	% (n)	95% CI	% (n)	95% CI
15-19 years	9.4 (1,153)	7.1-12.4	19.7 (79)	10.0-34.2	15.9 (3,334)	14.6-17.2
20-24 years	23.9 (1,182)	19.8-28.4	25.0 (303)	18.0-33.7	30.6 (5,068)	29.0-32.2
Total	**16.7**		**22.4**		**23.3**	

Antenatal clinic survey published in 2006 showed that 5.54 million people were estimated to be HIV positive (11.6%) in 2005 in a population of 47,866,984. Anthony Mbeu indicated that the incidence (or new infection rate) declined by 521,607 in 2006; there was a 2% reduction over 2005[53].

Table 7 indicates that the prevalence of HIV in women aged 15-24 in the HSRC 2005 survey was 16.7% and 22.4% in women who had been pregnant in the last 24 months, compared to 23.3% of antenatal clients in the DOH 2005 survey

UNAIDS, (2006)[54] assumes that the rate of infection among non-pregnant women is equal to that among those that are pregnant. Given that the latter, by definition, have practised unprotected sex, they are at high risk of HIV infection. It reported that South Africa's epidemic is one of the worst in the world with an estimated 5.5 million people (18.8% of adults) living with HIV in 2005. Almost one in three pregnant women attending public antenatal clinics were living with HIV in 2004 and trends show a gradual increase in HIV prevalence. There has been significant scale-up on the treatment front – around 190,000 people were receiving therapy by the end of 2005 – however this still only represents less than 20% of those in need.

This is, in fact, supported by the findings of the HSRC, (2005)[55] survey, in which 24% of pregnant respondents to its survey were HIV positive, compared with just 12.8% of all women. In other words, extrapolating data from pregnant women to draw findings on the rest of the population is likely to produce results that are too high.

Advantages/Disadvantages

HIV prevalence at any given age is the difference between the cumulative numbers of people that have become infected with HIV up to this age minus the number who have died expressed as a percentage of the total number alive at this age. At older ages, changes in HIV prevalence are slow to reflect changes in the rate of new infections (HIV incidence) because the average duration of infection is long. Furthermore, declines in HIV prevalence can reflect saturation of infection among those individuals who are most vulnerable and rising mortality rather than behaviour change. At young ages, trends in HIV prevalence are a better indication of recent trends in HIV incidence and risk behaviour. Thus, reductions in HIV incidence associated with genuine behaviour change should first become detectable in HIV prevalence figures for the 15–19 year age group. Parallel behavioural surveillance data is used to aid interpretation of trends in HIV prevalence[56].

[53] MRC. *Presentation to the Parliamentary Portfolio Committee on Science and Technology*. 29 August, 2006.
[54] UNAIDS (2006). *Global AIDS report, 2006*. Geneva: Joint United Nations AIDS Programme
[55] Shisana O, Simbayi L et al (2005). *South African national HIV prevalence, HIV incidence, behaviour and communication survey, 2005*
[56] UNAIDS (2005). *Monitoring the declaration of commitment on HIV/AIDS: Guidelines on construction of core indicators*. Geneva: UNAIDS

Data sources and data availability and quality

Antenatal surveillance is internationally recognized as the most useful way of assessing HIV prevalence in countries with generalised epidemics. Pregnant women are sexually active and constitute an easily identifiable, accessible and stable population. They are more likely than any other single group to be representative of the general adult population. Nevertheless, there are a number of limitations to the Department of Health's technique.

Department of Health (2006). *National HIV and syphilis sero-prevalence survey in South Africa 2005.* This is the 16th in a series of annual studies which look at data from antenatal clinics and use it to estimate HIV prevalence amongst pregnant women. This remains a valuable source of HIV prevalence data among pregnant women. Constant improvements in sampling and testing procedures ensure that the antenatal results remain an important surveillance tool.

Antenatal care (ANC) data currently serve as South Africa's primary sentinel surveillance of HIV and AIDS. Though ANC prevalence data are widely used, they are imperfect. Children and the elderly, who are at substantially lower risk of HIV, are not captured by antenatal surveys. Even among adults in sexually active groups, the ANC survey prevalence does not reflect the lower overall risk of men, people who are less sexually active, and those who use private sector health facilities. Moreover, ANC data may underestimate HIV prevalence in women of reproductive age as recent studies indicate that fertility among HIV-positive women is substantially lower than among uninfected women.

The RHRU (2003) survey[57] was one of the largest nationally representative, household surveys of young people in the world. The survey was unique not only in that it included comprehensive sexual and other behavioral information, it also tested young people for HIV infection, providing the most up-to-date data on HIV prevalence among South Africa's youth by province, gender, age, and other key demographic characteristics.

One limitation of the current data is the lack of representativeness of all women in the age group 15-24, as an estimated 20% of women who fall pregnant do not attend public health clinics but rather use private doctors and health facilities. By including a scientifically drawn sample of women visiting private health facilities and doctors, the representativeness of the antenatal survey will improve markedly. The data should also be made available by population group to implement targeted interventions.

Some young women underreport their experiences (probably because of the stigma associated with nonmarital sex). The only way to obtain an accurate picture of the extent and pattern of HIV infection is to test large representative samples of the entire population. Typical sources are surveillance site data and data obtained from population-based surveys. This indicator specifically uses results from antenatal clinic surveys. It can be updated annually as results of the antenatal survey become available.

[57] Reproductive Health Research Unit. (2004). *HIV and sexual behaviour among young South Africans 2003.*

4.2. HIV prevalence rates for males aged 15-49

Indicator description/definition

The percentage of men aged 15-49 who are HIV positive. This is calculated by expressing the number of men in this age category who test HIV positive as a percentage of all men aged 15-49.

Numerator
The number of men aged 15-49 who test HIV positive in a population-based survey.
Denominator
The total number of men aged 15-49 included in a population-based survey, who consent to testing.

$$\textbf{HIV prevalence for males aged 15-49} = \frac{\text{No. of men aged 15-49 who test HIV positive in a population-based survey}}{\text{Total number of men aged 15-49 included in a population-based survey, who consent to testing}} \times 100{,}000$$

Review of HIV prevalence rates for males aged 15-49 as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

A need exists to have survey/surveillance-based data to confirm HIV prevalence among males in South Africa. This is necessary for a host of purposes including population projections, workforce forecasts and social impacts.

Update on HIV prevalence rates for males aged 15-49 as an indicator to monitor the impact of HIV/AIDS

Utilisation and historical patterns

Adult prevalence figures are based on data derived from antenatal clinics and so tend to exaggerate infection rates.

The HSRC 2005 survey found that the overall HIV prevalence in the 15-49 age group was 16.2%. However, prevalence in women was almost twice that of males – 20.2% compared to 11.7%.

UNAIDS (2006) estimates were predicated on a series of other assumptions, which lead to an overstatement of the true picture. The rate of male infection was reported as 85% that of the female rate – the HSRC study estimated the male infection rate to be just 74% of the female rate.

It must also be noted that adult prevalence is just that – referring only to 15 to 49-year-olds – and cannot be considered national infection rates. There can also be problems with data based solely on prevalence. By ignoring the rate of incidence (i.e. that of new infections), UNAIDS data can suggest that the spread of the epidemic is slowing when prevalence rates are falling.

The UNAIDS[58] (2001) data for South Africa was an exaggeration. Certainly, the picture it painted was a gloomy one. It recorded South Africa as having the highest number of people living with HIV of any country in the world, at five million. It also had the highest AIDS-related mortality rate: 360,000 people living with AIDS (Pleas) estimated to have died in South Africa in 2001. The adult

[58] UNAIDS (2001). *Report on the Global HIV/AIDS Epidemic.* Geneva: Joint United Nations Programme on HIV/AIDS/World Health Organization.

prevalence rate was estimated at 20.1%, up from 19.94% at the end of 1999. This represented only the seventh-highest rate in Africa, although the distinction between the rates of South Africa, Zambia and Namibia was largely insignificant given they are so similar.

Based on the results of many surveys, including the household and antenatal studies, UNAIDS/WHO (2005)[59] have made their own estimate of 18.8% prevalence in those aged 15-49 years old, at the end of 2005. Their high and low estimates are 16.8% and 20.7% respectively. According to their own estimate of total population (which is another contentious issue), this implies that around 5.5 million South Africans were living with HIV at the end of 2005, including 240,000 children under 15 years old.

Table 8: Comparison of HIV prevalence between adults aged 15–49 years and young people aged 15–24 years in the general population in selected countries in southern Africa[60]

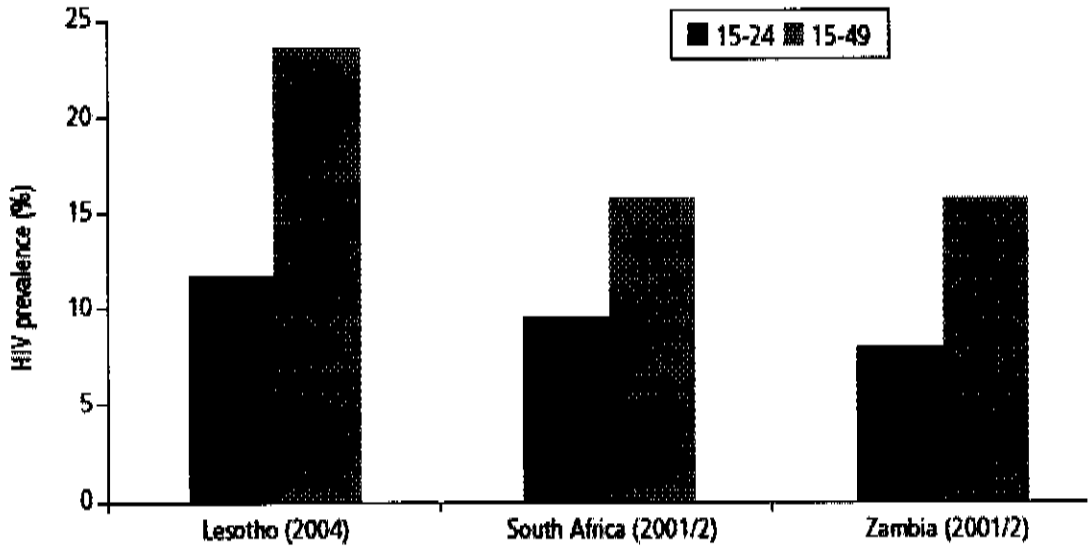


Table 8 shows a comparison of HIV prevalence between adults aged 15–49 years and young people aged 15–24 years in the general population in South Africa, Lesotho and Zambia. In the 15-49 year age group, South Africa and Zambia have a comparable HIV prevalence of about 15% in 2001/2, while Lesotho had a higher adult HIV prevalence of 23% in 2004.

Data availability and limitations

Department of Health (2004). *South African Demographic Health Survey 2003*. Preliminary report. Five types of questionnaires were used for the SADHS: a Household Questionnaire, a Women's Questionnaire, a Men's Questionnaire, an Adult Health Questionnaire, and an Additional Child's Questionnaire. The contents of the first three questionnaires were based on the DHS Model Questionnaires. The inclusion of an HIV/AIDS module in the questionnaire provided the opportunity to collect attitudinal, behaviour and other data from the South African population.

Shisana O, Simbayi L et al (2005). *South African national HIV prevalence, HIV incidence, behaviour and communication survey, 2005*[61]. This population-based survey makes it possible to

[59] UNAIDS/WHO (2005). AIDS epidemic update, December 2005.
[60] Source: WHO/AFR (2005). *HIV/AIDS epidemiological surveillance report for the WHO African region* 2005 update
[61] Shisana *et al., South African national HIV prevalence, behaviour and communication survey 2002 and 2005*

utilise empirical data instead of prevalence rates derived from models. It contains estimates of HIV prevalence in various groups of people, derived from this general population sample. The advantage of this survey is that it can give a better idea of HIV prevalence levels among men, children and non-sexually active women. The survey also recorded a vast amount of other data besides the age and location of respondents (most of which is beyond the scope of this page), including information on race, wealth and education. Participants were also interviewed about factors that might influence their risk of HIV infection, such as behaviour, knowledge and risk awareness.

Although the study attempted to survey as representative a population sample as possible, it recognised that some groups were excluded. Only people living in homes or hostels were contacted, so there was no representation of homeless people and those living in police and army barracks, prisons, hospitals and educational institutions. This probably resulted in underestimation of some prevalence figures. Additionally, by excluding all children below 2 years of age (because they cannot be reliably tested for HIV using antibody tests), the survey missed a significant proportion of children who acquired HIV from their mothers.

Joint UN Programme on HIV/AIDS (UNAIDS)[62] data is widely considered to be the most authoritative source of HIV/AIDS data and is the only official source of prevalence and mortality data in most countries. Its figures are the result of surveillance work undertaken by national governments as well as by UNAIDS and World Health Organization (WHO) officials. However, its estimates should be read with some caution.

Some of the data for men are based on much smaller sample sizes than those for women, thus affecting the precision of those estimates. In some cases, the number of respondents for a particular indicator is less than 20; where this occurs, either the data are not presented or the unweighted sample size is presented along with the data.

Conclusion of the comparison

In such a large and diverse country as South Africa, no-one can know exactly what the true figures are. What is essential is that the limitations of each study are acknowledged whenever their results are interpreted. To illustrate why this is so important, a few reasons have been suggested why the figures might vary.

UNAIDS and WHO recommend that antenatal and population-based studies should both be conducted at regular intervals. In countries with generalised epidemics, antenatal clinic attendees are thought to represent the adult population with good accuracy. Moreover, when conducted regularly such surveys can reveal long-term trends in prevalence. On the other hand, household surveys tell us more about the nature of the epidemic by providing prevalence data according to gender, race, wealth and other characteristics. Such information informs better interpretation of antenatal data.

[62] UNAIDS (2006). *Report on the Global HIV/AIDS Epidemic.* Geneva: Joint United Nations Programme on HIV/AIDS/World Health Organization.

5. INDICATORS REFLECTING THE SOCIO-ECONOMIC CONDITIONS THAT CONTRIBUTE TO VULNERABILITY AND SUSCEPTIBILITY TO HIV/AIDS

When considering the HIV epidemic, it is useful and necessary to take into account the broader socio-economic conditions prevailing in a country. These conditions determine the population's susceptibility and vulnerability to infection. Although they do not directly influence HIV transmission they play an important contributory and mediatory role in the spread of the epidemic as well as in the speed of the onset of AIDS-related illnesses.

First is the effect of poverty. Individuals living in poverty frequently engage in high-risk behaviours in terms of HIV, often as a result of a livelihood strategy. And once infected, a person living in a poor area is at a greater risk of dying. For instance, poor people have less access to nutritious food, thereby reducing the natural immunity of the body, and have little or no resources to invest in treatment regimes or to counter the host of opportunistic infections threatening the body. The challenge is to identify an indicator that provides a perspective on poverty, at both the national, provincial and smaller geographic level. It should also be able to monitor changes in the level and patterns of poverty. The per capita gross domestic product (GDP) is an indicator used for comparative purposes on a national level, but has only limited use at a smaller geographic level. Income distribution figures obtained from specialised surveys would serve a similar function, but once again their applicability at a smaller geographic scale is limited. It should however be noted that the risk of becoming infected with HIV does not correlate linearly with income. It has been shown that certain classes of people with available discretionary income have a higher risk of becoming infected.

In addition to a conventional poverty line indicator, we propose an alternative proxy indicator to measure the extent of poverty. Given all the problems involved in collecting accurate income data from respondents, we suggest the use of "availability of clean water/electricity" as an indicator because it is strongly associated with measures of poverty, and can be collected more readily and more accurately. The availability of water is important in itself. Fresh water plays a key role in agriculture, energy, health, ecosystems and combating poverty. For this reason one of the Millennium Development Goals is to halve by 2015, the proportion of the world's population unable to reach, or afford safe drinking water. Electricity is directly linked to development, health, education, communication, employment, transport etc. It is hard to imagine a modern society without the power of electricity.

Other economy-related factors also play a role in the spread of the epidemic. In South Africa the widespread system of labour migration and the well-developed transport infrastructure are relevant factors as they contribute to the spread of HIV across the country, particularly along main transport routes. South Africa also serves as a destination for people from across its borders in search of employment, many coming from countries with even higher HIV infection levels.

5.1. The number of households falling in the bottom 20 percent of the income distribution

Indicator description/definition

The number of households falling in the lowest quintile of the income distribution.

Numerator: Number of households falling in the lowest quintile of the income distribution
Denominator: Total midyear population

$$\textbf{No. households In the bottom 20\% of income distribution} = \frac{\text{No. of households falling in the lowest quintile of the income distribution}}{\text{Total midyear population}}$$

Review of the number of households falling in the bottom 20% of the income distribution as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

Since poverty is a factor in defining vulnerability, the poverty line is a useful indicator to present the proportion of households living below the poverty line. A number of methods exist to calculate the poverty line. The Bureau for Market Research at the University of South Africa regularly conducts surveys[63] to calculate the value of a monthly basket of minimum goods necessary to sustain a family and can be used to define the poverty datum line. Other approaches in choosing a poverty line are also used, e.g. using a fixed income amount. Stats SA used this approach by defining households receiving less than R800 per month (1995 level) as poor.

We propose to define the poorest households in terms of the bottom quintile of the national income distribution. In this way, the spatial location and characteristics of the poorest households in the country/province/community can be identified.

Utilisation and historical patterns

The Household Subsistence Level (HSL) and the Minimum Living Level (MLL) are the two commonly used poverty lines when poverty is estimated in South Africa[64]. The HSL and the MLL are the absolute income measures of poverty[65] which, as literature shows, are minimalist definitions of poverty based on subsistence. Woolard and Leibbrandt (2001) prefer to use the HSL and $1 a day international line (R3,509 and R2,200 per annum per adult equivalence in 1995 Rand). The latter may be thought of as the ultra-poverty line.

There is also the practice of creating what is called a relative measure of poverty which selects cut-off points of 40% and 20% to identify poor and 'ultra poor' households in the country ranked by adult equivalent income.

Another commonly used poverty indicator is that from the World Bank of one US dollar per day. This indicator uses purchasing parity price (PPP) adjusted to US$1 per day, a measure referred to as the headcount ratio.

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[63] Bureau of Market Research. Poverty levels in South Africa.
[64] Woolard I and Leibbrandt M (1999) Measuring poverty in South Africa. Cape Town: Development Policy Research Unit. (DPRU Working Paper 99/33).
[65] World Bank (1995). *Key indicators of poverty in South Africa.*

According to Streak (2003)[66] household income per individual is calculated simply by dividing total household income by the number of individuals in a household. She concedes that it is problematic for comparing the income status of individuals across households because households are not alike on the number and age of individuals in the household and these two factors affect income per individual. The concept of adult equivalent income attempts to make the comparison of income per individual across households more rigorous by adjusting for the positive impact of size and youth on income per individual in the household. It does this in the following way: Income per individual (or adult equivalent is calculated as Total household income (adults + 0.6 kids) 0.9. Raising income per individual to the power of 0.9 adjusts for economies of scale effect. Multiplying children by 0.6 adjusts for the age effect.

Advantages/limitations of the indicator

Problems of measurement make the collection of accurate income and expenditure data a difficult and expensive exercise.

Update on number of households falling in the bottom 20% of the income distribution as an indicator to monitor the impact of HIV/AIDS

Level of analysis/use

This indicator can be calculated at national, provincial and smaller geographic level. Attempting to track trends in poverty and inequality, Budlender (2000)[67] suggested that both poverty and inequality may have increased between 1994 and 1998, a finding supported by an official publication using the results of the 2000 income and expenditure survey[68]. The average annual per capita income in 1995 was reported to be R12 135 adjusted to 2000 prices, higher than the per capita income of R11 755 per annum reported in the 2000 Income and Expenditure Survey (IES)[69]. Other national studies of living standards suggest that both poverty and inequality remain high and may have increased during the same period[70].

Inequality of income: share of poorest 20%: In 1995, the poorest one-fifth of all households in South Africa only had 3% of all household income[71].

The HDI 2006[72] report indicates that children born into the poorest 20% of the income distribution in South Africa face a risk of dying before their fifth birthday that is about four times higher than for children born into the richest 20%. School completion rates also vary, with gender inequalities interacting with wealth-based disparities. Both girls and boys in the poorest 20% of the income distribution are far less likely to complete primary school than their high-income counterparts, though the disparity between girls and boys is equally marked.

Why does income distribution matter for poverty reduction? In a mechanical sense the rate of income poverty reduction in a country is a function of two things: the rate of economic growth and the share of any increment in growth captured by the poor. Other things being equal, the larger the share of income captured by the poor, the more efficient the country is in converting growth into poverty reduction.

Data sources, data availability and limitations

[66] Streak J (2003) *Child poverty in South Africa and implications for policy: Using indicators*. IDASA Budget Information Service

[67] Budlender D (2000) *Human development*. In May J (ed). Poverty and inequality in South Africa: Meeting the challenge. David Philip: Cape Town. 97 – 140.

[68] Stats SA (2002) Income and expenditure survey. Pretoria: Statistics South Africa.

[69] Stats SA (2000) Income and Expenditure Survey (IES). Pretoria: Statistics South Africa.

[70] Stats SA (2001) Income and expenditure survey. Pretoria: Statistics South Africa.

[71] Interview with Dr Eric Udjo

[72] UNDP. Human Development Report 2006

Comprehensive and reliable poverty data for South Africa only began to emerge from 1993 onwards, and a variety of data gathered during the post-apartheid period are now available. Key studies include the October Household Survey (OHS)[73] of 1994 to 1999, the Income and Expenditure Survey (IES) of 1995 and 2000, and data from the 1993 Project for Statistics on Living Standards and Development undertaken by the South African Labour and Development Research Unit (SALDRU) at the University of Cape Town which was the first representative survey on poverty. South Africa has also collected census data in 1996 and 2001, and Labour Force Surveys (LFS) have collected data on employment and unemployment every 6 months since 1999.

The first official study of poverty in post-1994 South Africa was *key indicators of poverty in South Africa* (1995)[74]. This study, conducted by the World Bank, was a quantitative analysis of the PSLSD and was published by the Reconstruction and Development Ministry. Poverty definitions and measurement are clearly spelt out in this study.

The report, *poverty and inequality in South Africa*[75] was the second significant addition to the understanding of poverty in post-apartheid South African society. This report has been hailed, and correctly so, to have made a significant contribution to the understanding of poverty in the country.

The 1995 and 2001 Income and Expenditure Surveys provide the necessary detail to calculate the indicator. Other surveys collecting income and expenditure data are also conducted from time to time.

Yet another different approach to understanding poverty in South Africa appeared in Statistics South Africa's *Measuring Poverty in South Africa* (2000)[76]. Of relevance to this discussion is how poverty is understood and viewed in the report.

A report on *perceived health and other health indicators in South Africa*[77], examined how the health status of various sectors of the South African population was perceived in 1999. It included a special focus on women and children, and on household living conditions in relation to perceived health status. It also focused on indicators of quality of life and the use of health services. It used data from the October household survey (OHS) of 1999.

Judith Streak's report on using indicators for child poverty in South Africa new and contemporary results on the level, depth and provincial distribution of child poverty in South Africa.

[73] Stats SA October Household Surveys of 1994 to 1999. Pretoria: Statistics South Africa.
[74] World Bank (1995). *Key indicators of poverty in South Africa.*
[75] May J. Poverty and inequality in South Africa. Report prepared for the Office of the Executive Deputy President and the Inter-Ministerial Committee for Poverty and Inequality. Durban, South Africa: Praxis Publishing Ltd, 1998
[76] Statistics South Africa (2000) *Measuring poverty in South Africa.*
[77] Lehohla P (2004) *Perceived health and other health indicators in South Africa.* Stats SA

5.2. Access to key resources–percentage households without clean water (rural areas) or electricity (urban areas)

Indicator description/definition

The percentage households without clean drinking water in rural areas and the percentage households without electricity in urban areas.

Numerator
Rural areas: The number of households without clean drinking water. Number of household members living in households[78] using improved sources of drinking water.
Urban areas: The number of households without electricity.

Denominator
Rural areas: The number of households covered during a general-purpose sample survey/census or the total number of household members in households surveyed.
Urban areas: The number of households covered during a general-purpose sample survey/census or the total number of household members in households surveyed.

$$\textbf{\% Households without clean water (in rural areas)} = \frac{\text{No. of households without clean drinking water}}{\text{Total number of households covered during a general-purpose sample survey/census}} \times 100{,}000$$

$$\textbf{\% Households without electricity (in urban areas)} = \frac{\text{No. of households without electricity}}{\text{Total number of households covered during a general-purpose sample survey/census}} \times 100{,}000$$

Review of access to key resources as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

Access to drinking water is a fundamental need and a human right vital for the dignity and health of all people. The health and economic benefits of improved water supply to households and individuals (especially children) are well documented.

Problems of measurement make the collection of accurate income data a difficult and expensive exercise. The use of proxy indicators in measuring income and poverty is well known. In rural areas of South Africa, lack of clean water is associated with poor communities. The availability of drinking water of adequate quality is important to prevent a host of water-borne communicable diseases. In addition, to prevent hygiene-related diseases, the availability of sufficient water for washing and cleaning purposes has been shown to be very important.

In urban areas in South Africa, there is near universal availability of clean water[79]. Thus poor households have access to clean drinking water. However, a substantial proportion of urban households do not have electricity, indicating an inability to pay for the service.

[78] This indicator is obtained by weighting the number of households by the number of household members (HH11).

This indicator is a simplification of the "Lived poverty index" referred to in 5.1. Analysis shows that the lack of clean water in rural areas is a proxy for households living in poverty. In South African urban areas, clean drinking water is widely available (Anderson et al., 2002), - thus poor households living in urban areas have access to clean drinking water. However, a substantial proportion of urban households do not have electricity, indicating an inability to pay for the service. Therefore, in urban areas the non-access to electricity can serve as a proxy for poverty. Data is available from census and survey results[80].

Update on access to key resources as an indicator to monitor the impact of HIV/AIDS.

The Department of Water Affairs and Forestry (DWAF) is responsible for providing South Africans with safe access to drinking water. The Water and Sanitation White Paper committed itself to supplying almost 100% of rural households with clean water and to provide adequate sanitation to at least 75% of rural households. Since June 1994, approximately 9.3 million people have been served, 26% of these are living in KwaZulu Natal, 16% in Eastern Cape, 15% in Limpopo, 15% in North West province and 15% in Mpumalanga.68 The total proportion of people that have access to safe water has increased from 78.5% in 1995 to 84.3% in 2000. There has been a significant increase in the proportion of non-urban households with access to an improved water source. Noteworthy is the fact that the difference between urban and non-urban households is very large – 98.2% of urban households have access to an improved water source while only 59.6% of the non-urban households have the same access[81].

Level of analysis/use

This indicator can be calculated at national, provincial and local authority level. There were an estimated 8,4 million households in South Africa receiving water from municipalities as at 30 June 2004. This represented an increase of 14,0% between 30 June 2003 and 30 June 2004. The province with the highest increase was Limpopo (30,6%), followed by Eastern Cape (29,8%) and Free State (29,3%). The province with the lowest increase was Gauteng (2,9%) followed by Western Cape (5,5%) and North West (6,3%).

There were an estimated 4,7 million households in South Africa receiving electricity from municipalities as at 30 June 2004. This represented an increase of 11,3% between 30 June 2003 and 30 June 2004. The province with the highest increase was Northern Cape (21,3%), followed by North West (20,2%) and Gauteng (17,3%). The province with the lowest increase of households receiving electricity services from municipalities was KwaZulu-Natal with 5,5%, followed by Western Cape (5,7%) and Mpumalanga (8,1%).

Of the 4,7 million households receiving electricity from municipalities in South Africa as at 30 June 2004, 64,6% had access to free basic electricity. Gauteng showed the highest proportion (90,7%), followed by Western Cape (89,4%) and Free State (83,8%). The province with lowest increase was KwaZulu-Natal (5,8%). The 3,0 million households receiving free basic electricity from municipalities in 2004, as compared with 2,2 million households in 2003[82].

In 1992, 32% of South African households had electricity. The national target from the RDP was to equip 70% of all households with electricity by 2000 and this target was reached in 1999. Urban households had a lower access to electricity in 2000 than in 1995. For non-urban households, there has been a large increase in access to electricity. Again, there is a significant difference between urban households (84.2%) and non-urban households (49.3%)[83].

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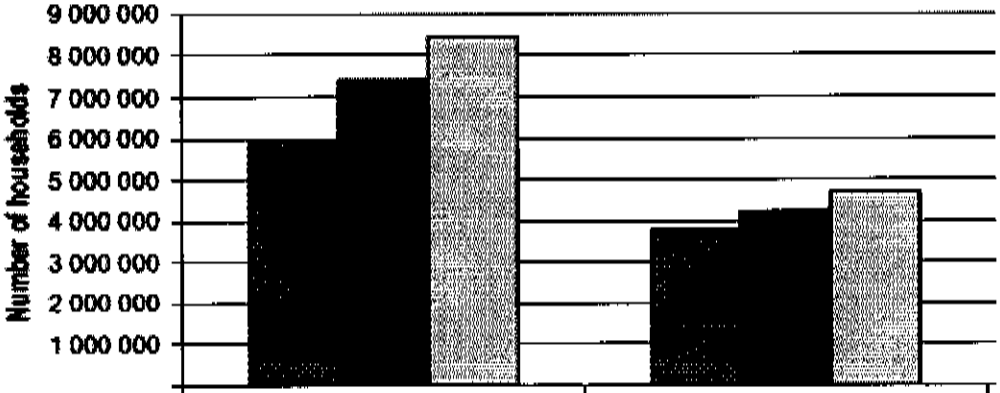
[79] Anderson B, Romani JH, van Zyl JA and Philips H (2002). Trends in conditions of life in South Africa, 1994-1999. Have things improved for rural Africans? Pretoria: HSRC. Unpublished paper.
[80] van Zyl JA (2003) An overview of HIV/AIDS and related indicators. Pretoria: HSRC.
[81] UNDP. Millennium development indicators for South Africa, 2004.
[82] Stats SA (2004). Non-financial census of municipalities for the year ended 30 June 2004.
[83] UNDP. Millennium development indicators for South Africa, 2004

Figure 3: Number of households receiving water and electricity from municipalities in South Africa for the years ended 30 June 2002, 2003 and 2004



	Water	Electricity
2002	5 982 008	3 774 506
2003	7 411 054	4 227 649
2004	8 447 283	4 706 691

Figure 3 shows that the number of households receiving water and electricity from municipalities increased in the period 2002 to 2004. The provision of water increased by 14,0% from 2003 to 2004, while the provision of electricity increased by 11,3% during the same period.

Data availability and limitations

The required information has been collected regularly in the past. Surveys such as the October Household Survey collect the required information with ease and accuracy. A Stats SA report on non-financial census of municipalities for the year ended 30 June 2004 was very helpful.

5.3. Proportion of the population defined as migrant workers

Indicator description/definition

The percentage of the population that is defined as migrant workers. These are people who are absent from their usual home for employment purposes or for purposes of seeking employment.

Numerator
The number of adult individuals (18-64) who report that they spend at least four nights a week away from their usual home, for employment purposes or seeking employment.
Denominator
The total number of adult individuals (18-64) included in a survey or census.

$$\textbf{Proportion of the population defined as migrant workers} = \frac{\text{No. of adult individuals (18-64) who report that they spend at least 4 nights a week away from their usual home, for employment purposes or seeking employment.}}{\text{Total number of adult individuals (18-64) included in a survey or census}} \times 100{,}000$$

Review of proportion of the population defined as migrant workers as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

People who leave their families and homes to seek employment elsewhere are at risk of contracting HIV. In South Africa, the system of migrant labour, whereby persons leave their home area for work in urban and mining areas, has deep structural roots. This phenomenon is mainly restricted to those in their economically active years. Persons in those age groups are also at the highest risk of contracting HIV. Men and women are migrant workers.

The vulnerability of migrant workers is exacerbated by the fact that in many cases these persons live in single-sex hostels. Being away from home and alone increases the risk of a person becoming infected. However, there is another danger in terms of HIV/AIDS. During visits to the home area, infected migrant workers may transmit the virus to wives/husbands or other persons, and once they fall ill, migrant workers usually return to their communities of origin for care and support and in this way become an economic and emotional burden to their families. It should also be noted that levels of labour migration differ between areas.

Utilisation of the indicator

Cross-border labour migration between South Africa and its neighbours dates back to the mid-19th century, when the South African diamond and gold mining industries were founded and the country began its trek towards a modern industrial economy. Until 1991, the official definition of an immigrant was that he or she had to be able to be assimilated into the white population. By definition, therefore, Africans were not considered immigrants. Rather, they came to South Africa as temporary workers, entering as contract migrants under bilateral agreements between the apartheid government and its neighbours such as Lesotho, Mozambique, and Zimbabwe. This gave rise to the infamous South African migrant labour system.

Undocumented or unauthorized migration has been part of regional migration to South Africa for decades. For considerable parts of South Africa's history, undocumented migration from the region was sanctioned by the state and at times incorporated into labour supply schemes.

However, the scale, scope, and impact of undocumented migration appear to have changed in the 1990s. Although migrants from Mozambique, Zimbabwe, Lesotho, and Malawi comprise the majority of undocumented migrants, evidence indicates that undocumented migration from the rest of Africa, Europe, North America, Asia, and the Indian Subcontinent is also increasing.

Advantages/limitations of the indicator

This indicator only provides a broad definition of the vulnerability of migrants. It is difficult to obtain accurate data on the number of migrant workers in South Africa as there are many "undocumented" migrant workers. As in most countries, it is virtually impossible to know how many undocumented migrants there are in South Africa, or where they come from. The figure most often cited by the South African state was of four to eight million in the country at any one time, but this is an exaggeration. The Human Sciences Research Council officially withdrew the figures from where they originated[84].

As in other parts of the world, there is widespread evidence for a role of labour migration and other forms of population mobility in the dissemination of HIV across South Africa. Typically, male migrant workers have multiple sexual partners while employed in urban areas and then return to wives and families at their rural homes. These migrants provide a bridge for the spread of HIV infection from high-risk female sex workers to women in rural communities, who appear to have a low risk profile in traditional terms.

Although the general association has been described repeatedly in different South African populations, there are still few data on how different forms of migration may affect the dissemination of disease at the population level and, more importantly, what steps may be taken to reverse the apparent pattern. In the case of South Africa, special questions emerge regarding the factors that shaped the geographic and temporal dissemination of the epidemic during the 1990s, particularly how the social and economic processes of urbanization affected the spread of the disease[85].

Update on proportion of the population defined as migrant workers as an indicator to monitor the impact of HIV/AIDS

Level of analysis/use

To calculate this indicator, information is needed on the migratory patterns of the population. Surveys and censuses over the past decades regularly collected migration data. This indicator has been calculated at national, provincial and smaller geographic level. Internal migration streams in the midyear population estimates in 2006, revealed that Gauteng, Western Cape and Kwazulu-Natal experienced positive net migration. There seemed to be a high migration movement from Limpopo and the North West provinces into Gauteng. The provinces with the highest outflow of people were Eastern Cape and Limpopo[86].

Reviewing and updating the proportion of migrant labour in South Africa is complex. It is not reducible either to the former homeland areas or deep rural areas or to the blue collar workers or miners. Of all black households identified by the 1996 to 1998 Household Surveys, 24% included migrant workers. Of the 27% households located in the deep rural areas, 43% percent had at least one migrant worker and 11% had at least two. Only between 9.1 and 12.3% of male migrant workers could possibly be assigned to mining and a further 8.6% were in various forms of security work, both public and private, and 9.4% are drivers[87].

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[84] Crush J (2003). South Africa: New nation, new migration policy? Southern Africa Migration Project

[85] Myer L, Erhlich RI and Susser ES. Social epidemiology in South Africa. *Epidemiological Review* 2004;26:112-123

[86] Stats SA (2006). Midyear population estimates, South Africa 2006.

[87] Cox K R, Hemson D and Todes A (2004) Urbanization in South Africa: The changing character of migrant labour. *South African Geographical Journal* 86:1(2004), 7- 16.

Table 9: Trends in settlement and type of migration in South Africa, 1996–2001[88]

	Destination settlement type of migrant					
Migration	**Metropolitan formal % total pop (n)**	**Other urban formal % total pop (n)**	**Urban informal % total pop (n)**	**Former homeland % total pop (n)**	**Commercial agriculture % total pop (n)**	**Total % total pop (n)**
Metropolitan formal	2,8% (1,234,714)	0,5% (212,113)	0,1% (40,740)	0,1% (58,551)	0,1% (51,301)	3,6% (1,597,420)
Other urban formal	0,9% (404,244)	2,8% (1,261,336)	0,2% (86,189)	0,4% (193,155)	0,6% (284,652)	5,0% (2,229,576)
Urban informal	0,1% (51,366)	0,2% (68,415)	0,1% (48,844)	0.0% (18,935)	0,0% (16,150)	0,5% (203,710)
Former homeland	0,4% (177,375)	0,6% (260,471)	0,1% (51,453)	0,6% (266,492)	0,2% (90,270)	1,9% (846,061)
Commercial agriculture	0,1% (5,401)	0,1% (60,887)	0,0% (8,241)	0,1% (27,142)	0,1% (24,256)	0,4% (175,927)
Non-movers	21,3% (9,522,763)	23,0% (10,246,667)	2,8% (1,674,977)	34,5% (15,384,573)	6,1% (2,726,196)	88,7% (39,555,176)
Total	**25,7% (11,445,863)**	**27,1% (12,109,889)**	**4,3% (1,910,444)**	**35,8% (15,948,849)**	**7,2% (3,192,825)**	**100% (44,607,870)**

Table 9 shows trends in the national level of settlement and migration matrix from 1996 to 2001. A quarter (25,7%) of the population migrated to the formal metropolitan areas, 27,1% migrated to other urban formal areas, 4,3% migrated to urban informal areas, 35,8% migrated to former homeland areas and 7,2% migrated to the commercial agricultural areas.

A significant proportion of the population of South Africa's neighbouring states have migrated to South Africa, many to work. In the case of Lesotho, for example, 81 percent of the adult population has been to South Africa. As many as 83 percent have parents and 51 percent have grandparents who have worked in South Africa. The equivalent figures for Mozambique are 29%, 53% and 32%, while for Zimbabwe the corresponding figures were 23%, 24%, and 23%.

In the case of the mining industry, contract workers from outside South Africa made up over 80% of the mine workforce of 400,000 by the early 1970s. It is estimated that approximately 284,000 men were employed in the mining sector in 1996, 122,000 (43%) of whom were foreigners[89]. By 2003, the figure was 55% but rising again. These men lived in single quarters and were not allowed to bring their families with them, creating a high risk for HIV transmission.

Since 1994, South Africa has deported over a million undocumented migrants to neighbouring states like Mozambique, Zimbabwe, and Lesotho. In late 2002, a new Immigration Act was signed into law. The most obvious indicator of post-1994 change is in the numbers of people entering South Africa legally on visitors permits for purposes of visiting, tourism, or business. The numbers rose from 3.7 million in 1992 to 9.9 million in 1999. Of the latter, 50 percent gave "holiday" as the purpose of entry.

By contrast, levels of immigration to South Africa have fallen dramatically in the 1990s. There has been a significant decline in the number of people being granted permanent residence in South Africa from around 14,000 per annum at the beginning of the decade to less than 4,000 by the end of it. In other words, contrary to the predictions of many, there has not been a massive brain

[88] Collinson, M., Kok, P. and Ganenne, M. (2006) Migration and changing settlement patterns: Multilevel data for policy. Report 03-04-01, Pretoria: Statistics South Africa.

[89] The Employment Bureau of Africa Limited, Annual Report 1997, Johannesburg 1997.

drain to South Africa from elsewhere on the continent. Unsurprisingly, there has also been a decline since 1994 in the number of people entering legally on temporary work permits. In 1996, 52,704 such permits were issued, a number that had fallen to 15,834 in 2000. Labour market evidence suggests that there has been no decline in demand for skilled workers.

According to government statistics, between 1989 and 1997, for example, approximately 82,000 skilled people officially emigrated from South Africa to five main destination countries (the UK, the US, Canada, Australia, and New Zealand). Other sources place the figure at closer to 230,000.

Various important trends in migration have become evident including:

- consistent downsizing in the mine workforce through mine closures and retrenchments from the late 1980s to around 2003, down from 376,000 in 1990 to 230,000 in 2000;
- growing sub-contracting of core production functions to the point where over 15% of the mine workforce is employed by contractors. Mozambican and Lesotho retrenched miners are an important source of labour;
- a growing proportion of the mine workforce is non-South African (up from 40 percent in 1985 to 47 percent by 1990 to nearly 60 percent by the late 1990s);
- a loss of over 100,000 South African jobs between 1990 and 2000;
- a similar proportional decline in employment levels for some foreign suppliers (e.g., Lesotho down from 100,000 to 58,000); and
- increased employment for Mozambicans on the mines. More Mozambicans were employed in 2000 than in 1990 (57,000 versus 45,000). The proportion of Mozambicans on the mines has increased from 12 percent to 25 percent, i.e., a quarter of all miners are now Mozambicans[90].

Data sources and data availability

Data availability to review availability for migrant workers as an indicator was a challenge. To update and review this indicator, data were obtained from sources such as Stats SA report on documented migration produced in 2003. The series of October Household Surveys[91] included questions that may be used to deduce the percentage of migrant workers, and similar questions were asked during the 1996 and 2001 censuses.

Census 1996 started to fill the data gap and Census 2001 built on this foundation. A report[92] commissioned by Stats SA on migration and settlement patterns in South Africa, started with an analysis of Census 2001 data to examine changing settlement types on a national scale. Then a second data source was introduced - the Agincourt Health and Demographic Surveillance System (HDSS), a twelve-year-old study based in Bushbuckridge in the Bohlabela district of Limpopo. This offers not only higher resolution at smaller scales of settlement change, but also, through its longitudinal nature, provides an expanded, i.e. a *de jure*, household definition.

While there are several sources of emigration statistics, at present Statistics South Africa obtains its emigration statistics from the departure forms filled in by South African residents upon departure from any of the three international airports. By law it is compulsory for South African citizens to fill in these forms[93].

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[90] Crush J (2003). South Africa: New nation, new migration policy? Southern Africa Migration Project (SAMP).

[91] Stats SA. (1999) October Household Survey. Pretoria: Statistics South Africa.

[92] Collinson M, Kok P and Ganenne M (2006) *Migration and changing settlement patterns: Multilevel data for policy*. Report 03-04-01, Pretoria: Statistics South Africa.

[93] Stats SA (2003). *Documented migration 2003*. Pretoria: Statistics South Africa.

6. INDICATORS REFLECTING KNOWLEDGE OF THE TRANSMISSION OF HIV

People are empowered by knowledge. In terms of HIV/AIDS, such empowerment includes being able to read information booklets and internalise the content and act upon it. Information can also be distributed by means of the radio or television. Being educated provides a person with the ability to read, hear and see HIV/AIDS-related messages and information, whereas being illiterate bars people from benefiting from written information. Important in the success of information, education and communication (IEC) campaigns are the population's level of access to the mass media. Without access to the mass media, IEC campaigns will not be successful.

6.1. Proportion of the population who completed Grade 12

Indicator description/definition

The percentage of the population 20-64 years old who successfully completed 12 years of schooling. Also defined as the proportion of persons 20 years and older who successfully completed 12 years of schooling[94].

Numerator
The number of respondents 20-64 years old who successfully completed 12 years of schooling.
Denominator
The total number of respondents aged 20-64 interviewed during a survey.

$$\textbf{Proportion of the population who completed Grade 12} = \frac{\text{No. of respondents 20-64 years old who successfully completed 12 years of schooling}}{\text{Total number of respondents aged 20-64 interviewed during a survey}} \times 100{,}000$$

Review of the proportion of the population who completed Grade 12 as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

Having attained 12 years of schooling can be regarded as a key achievement in the steps an individual takes to prepare him/her for living in a modern society. Entrance to a variety of tertiary education facilities depends on completing Grade 12/Standard 10. In addition, research has shown that a standard 10 level of education functions as a powerful predictor for positive behaviour and outcomes in health, occupation, income etc.

Knowledge is paramount in order for people to change their behaviour. Being literate improves the ability of a person to receive knowledge through the written media. In addition, higher levels of education contribute to more favourable behaviour patterns, e.g. health seeking behaviour. Fertility patterns indirectly correlate with educational levels (the higher the education level, the lower the fertility rate). A similar pattern holds for mortality and morbidity patterns among children. The children of parents with low educational qualifications invariably have higher rates of morbidity and mortality than children of parents with higher educational levels.

[94] van Zyl JA (2003) An overview of HIV/AIDS and related indicators. Pretoria: HSRC.

Advantages/limitations of the indicator

This indicator will reveal changes in the educational attainment of the South African population at large. The great strength of this indicator lies in its use as an analytic predictor of behaviour change.

Update on the proportion of the population who completed Grade 12 as an indicator to monitor the impact of HIV/AIDS

Level of analysis/use

Very few of primary school children have gone on to complete high school, a situation that is not unusual for developing countries. Almost 80% of adult South Africans have not completed high school. According to the 2001 census, 30% of individuals aged over 20 had started but not completed secondary education. There are, predictably, significant differences in secondary school completion rates between the population groups. More than 87% of Africans, 85% of Coloureds, 65% of Indians and 44% of Whites have not completed high school. Approximately half of all South Africans that have studied beyond high school level are White

In a variety of fertility, family-planning and health-related studies in South Africa, significant differences were observed between different levels of education. These differences persisted when controlling for other variables. In particular, people with at least 12 years of formal schooling exhibit patterns significantly different from people with no schooling, low levels of schooling and even medium levels of schooling. The maximum age range is set at 64 years since not only young individuals are at risk of infection. Messages should therefore also be targeted towards the older cohorts in the population.

Census 2001 indicates that on average 27.8% of South Africans completed Grade 12. Of these, Blacks were 16.8%, Coloureds were 18.5%, Indians were 34.9% and White were 40.9%. Lehohla, (1999) report indicated that 24.8% of South Africans completed Grade 12. The increase in the proportion of the population who completed Grade 12 between 1999 and 2001 was very small and insignificant.

Data sources and data availability

A historical database of schooling levels is available from a variety of sources. Data on education are routinely collected in censuses and a variety of surveys.

6.2. Percentage of the population aged 15 and older who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission

Indicator description/definition

The proportion of respondents (male/female) who are able to identify consistent condom use and mutual monogamy between HIV-negative partners as correct methods of reducing the risk of contracting HIV, and who reject common misconceptions about HIV. This indicator is also called comprehensive knowledge of HIV and measures the percentage of the population (15 and older) who correctly identify the two major ways of preventing the sexual transmission of HIV (using condoms and limiting sex to one faithful, uninfected partner), who reject the two most common local misconceptions about HIV transmission and who know that a healthy-looking person can have HIV.

Numerator

The number of respondents who identify consistent condom use and mutual monogamy between HIV-negative partners as correct methods of avoiding HIV infection, who know that a healthy looking person can have HIV, and who reject two common misconceptions about HIV/AIDS.

Denominator

The total number of respondents aged 15 and older interviewed during a survey.

$$\textbf{\% of the population who have comprehensive knowledge of HIV} = \frac{\text{\% of the population (15 years and older) who correctly identify the two major ways of preventing the sexual transmission of HIV}}{\text{Total number of respondents aged 15 and older interviewed during a survey}} \times 100{,}000$$

Review of this indicator as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

Knowledge is an important prerequisite for behaviour change. Some years ago it was hoped that knowledge about HIV/AIDS and how to prevent it would lead to behaviour change. This proved to be over-optimistic[95]. Most HIV/AIDS awareness campaigns that target the general population promote mutual monogamy ("be faithful") and condom use ("condomise") as the primary ways of preventing HIV infection among sexually active men and women in the general population. This indicator measures the extent to which those messages have reached the population. Abstinence was included in earlier versions of the indicator.

Misconceptions influence behaviour patterns negatively and thus undermine the value of HIV/AIDS information campaigns. For instance, if a person believes that he or she can get HIV as a result of a mosquito bite, such a person will be less likely to practise safe behaviours, since one can be infected in any case by a random event. The two misconceptions recommended for tracking purposes are: whether a person can get HIV from a mosquito bite and whether a person

[95] Family Health International, (2000).

can get HIV by sharing a meal with an infected person. The false belief that HIV can be transmitted through sharing food reinforces the stigma faced by people living with AIDS[96].

In South Africa other misconceptions about HIV/AIDS are that sleeping with a virgin can cure the disease, that the virus can be transmitted by means of witchcraft, that traditional African medicine can cure AIDS and that Western medicine has a cure for AIDS[97].

Utilisation and historical patterns

The indicator has not been measured regularly or consistently in South Africa. It is constructed from responses to the following set of prompted questions.

1. Can the risk of HIV transmission be reduced by having sex with only one faithful, uninfected partner?
2. Can the risk of HIV transmission be reduced by using condoms?
3. Can a healthy-looking person have HIV?
4. Can a person get HIV from mosquito bites?
5. Can a person get HIV by sharing a meal with someone who is infected?

Those who have never heard of HIV and AIDS should be excluded from the numerator but included in the denominator. Indicator scores are required for all respondents aged 15 years and older and for males and females, separately, each by urban/rural residence. Scores for each of the individual questions (based on the same denominator) are required as well as the score for the composite indicator.

The belief that a healthy-looking person cannot be infected with HIV is a common misconception that can result in unprotected sexual intercourse with infected partners. Rejecting major misconceptions about modes of HIV transmission is as important as correct knowledge of true modes of transmission. For example, belief that HIV is transmitted through mosquito bites can weaken motivation to adopt safer sexual behaviour, while belief that HIV can be transmitted through sharing food reinforces the stigma faced by people living with AIDS. This indicator is particularly useful in parts of the country where knowledge about HIV and AIDS is poor because it permits easy measurement of incremental improvements over time. However, it is also important as it can be used to ensure that pre-existing high levels of knowledge are maintained[98].

In order to gain the most value from this indicator, it should be presented by two broad age ranges, namely those aged 15-24, given the media campaigns directed at this segment of the population, and those aged 25-64.

Update on this indicator as an indicator to monitor the impact of HIV/AIDS

Level of analysis/use

This indicator can be calculated at national, provincial or even smaller geographic level, provided sample size is adequate. Breaking it down according to sex, place of residence and other relevant variables can enhance the usefulness of the indicator.

Since an important way to reduce the transmission of the AIDS virus is to remain faithful to one partner, the 2003 SADHS asked questions about the number of partners respondents had in the 12 months preceding the survey. Less than 3 percent of women respondents reported having more than one sexual partner in the previous year, compared with 4 percent of men. Almost 40 percent of women who had sexual intercourse in the 12 months prior to the survey, said they had

[96] UNGASS/UNAIDS, (2001). UNGASS Declaration of commitment on HIV/AIDS.
[97] Reproductive Health Research Unit. (2004). HIV and sexual behaviour among young South Africans 2003.
[98] UNAIDS (2005). Monitoring the Declaration of Commitment on HIV/AIDS: Guidelines on construction of core indicators. Geneva: UNAIDS

ever used a condom. One-third of women said they had used a condom the last time they had sex, though the proportion varies by type of partner.

Only 15 percent of women say they use condoms with their husbands or live-in partners, while 47 percent say they used a condom the last time they had sex with a non-cohabiting partner. The UNGASS country report for South Africa in 2003[99], indicates the 20% percent of young women (aged 15–24) had used a condom the last time they had sex with a non-regular partner. The finding in the UNGASS report is less than half the findings from the SADHS of the same year. This is not surprising as UNAIDS/UNGASS statistics are mainly extrapolated from the antenatal sero-prevalence survey results.

The UNGASS country report for South Africa in 2003[100] indicates the 20% percent of young women (aged 15–24) had comprehensive HIV and AIDS knowledge. Of these, 26.0% were in urban areas and 13.0% were in rural areas.

Data sources and data availability

The 2005 HSRC behavioural and prevalence survey[101] included questions that were used to review and update the indicator. Similar questions were included in the 2003 South African Demographic and Health Survey[102]. The UNAIDS/UNGASS report provides an interesting basis for comparison.

[99] UNAIDS (2006). *Report on the global AIDS epidemic.* Annex 3: Country progress indicators.
[100] UNAIDS (2006). *Report on the global AIDS epidemic.* Annex 3: Country progress indicators.
[101] Shisana O, Simbayi L et al (2005). *South African national HIV prevalence, behaviour and communication survey, 2005.* Cape Town: HSRC Publishers.
[102] Department of Health (2003). *South African Demographic Health Survey 2003.* Preliminary Report. Pretoria: Department of Health

6.3. Proportion of the population who has access to television

Indicator description/definition

The percentage of the population aged 15-64 with access to a working television set.

Numerator
The total number of respondents aged 15-64 interviewed during a survey who indicate that they have access to a television set.
Denominator
The total number of respondents interviewed during a survey.

$$\textbf{Proportion of the population who have access to TV} = \frac{\text{No. of respondents aged 15-64 interviewed during a survey who indicate that they have access to a TV set}}{\text{Total number of respondents interviewed during a survey}} \times 100{,}000$$

Review of proportion of population who have access to TV as an indicator

Rationale for use as an indicator

The decision to select television as an indicator to measure access to the mass media is arbitrary, but given that television covers auditory and visual inputs, and since a number of important HIV/AIDS campaigns are shown on television, access to television has been chosen. A provisional analysis of data collected during the HSRC's HIV prevalence, behaviour and mass media survey suggests a relationship between watching TV, receipt of information on HIV and the reported behaviour change. This relationship is however tenuous and needs further analysis. Behaviour change is a complex issue and definitive statements should be approached with caution.

Advantages/limitations of using the indicator

Being able to access information is important. The distribution of HIV/AIDS information takes place at a variety of levels and people derive knowledge from a variety of sources, for instance from television, radio, newspapers, magazines and billboards. Community information channels play an equally important role in disseminating HIV/AIDS knowledge, such as ordinary conversation or HIV talks given at schools.

This indicator has a number of well-known limitations, e.g. a television set at home does not equal a working television set. It does also not mean a person watches television; neither does it mean a person watches any of the HIV/AIDS information presentations.

Update on proportion of population who have access to TV as an indicator

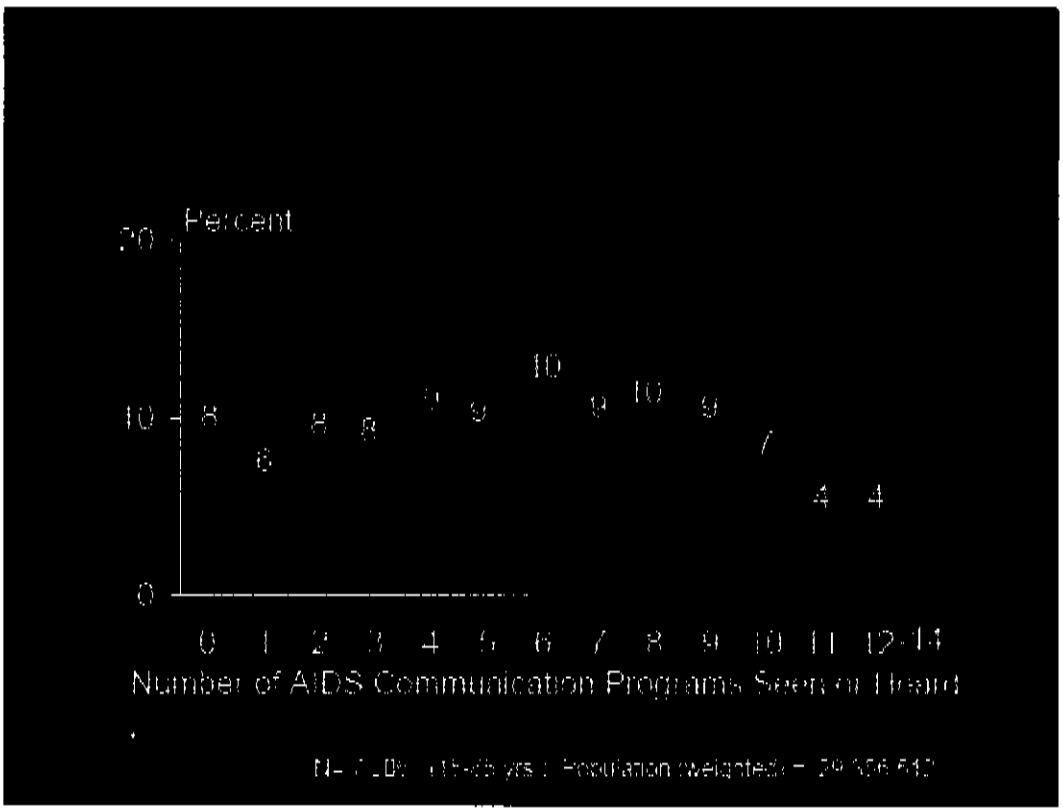
Level of analysis/use

Using survey results, this indicator was calculated at the national level among respondents aged 12 years and above in the HSRC 2005 survey and among respondents aged 15-65 in the CCP 2006 survey. While the HSRC survey measured exposure to television a few days a week or more, the CCP survey specifically measured exposure to AIDS programmes on television.

On average 67.3% of respondents in the HSRC 2005 survey were exposed to television a few days a week or more – about 70% of them were in the 12-24 year age group, about 68% in the 25-49 year age-group and 62% were 50 years and older.

Table 10 below indicates that less than 10% of respondents in the South African AIDS Communication survey 2006, had exposure to AIDS television programmes. Although the HSRC 2005 survey indicates that 67.3% of respondents were exposed to television, the South African AIDS Communication 2006 survey indicates that fewer South Africans are exposed to the most popular HIV/AIDS programmes on television.

Table 10: Exposure to AIDS television and radio programmes in South Africa[103]



Data sources and data availability

The HSRC 2005 survey included questions on exposure to television and other forms of media. Ownership and television watching patterns have been the focus of the series of AMPS surveys conducted since the inception of television in South Africa.

[103] Parker W, Makhubele B, Hajiyiannis H, Ntlabati P, Connolly C, Johnson S, Schierhout G, Matebeni Z, Goldstein S, Scheepers E, Coleman P and Kincaid DL (2006). South African National HIV and AIDS Communication Survey 2006: Overall Impact of 14 AIDS communication Programs

7. INDICATORS REFLECTING HUMAN BEHAVIOUR PATTERNS WITH A BEARING ON THE TRANSMISSION OF HIV

The spread of HIV/AIDS is largely driven by the sexual behaviour of humans. This has been the understanding since the first AIDS cases were identified. Behaviour patterns that increase the risk of being infected include engaging in multi-partner sex, visiting sex workers and having unprotected sex. The risks are amplified if a person has an STI. Various ways exist to reduce risk, e.g. by being faithful to one partner and using a barrier method (e.g. a condom) to prevent infection. Information, education and communication programmes have been emphasising these aspects since the epidemic started. Yet people do not necessarily change their behaviour by just hearing the correct messages. Ample evidence of this exists in the South African context. It should be borne in mind that condom use is only one measure of protection against HIV. Delaying age at first sex, reducing the number of non-regular sex partners and being faithful to one uninfected partner are equally important[104].

In monitoring the HIV/AIDS epidemic it is important to constantly review risky behaviour and to monitor whether such behaviour is changing. For the epidemic to be turned around, behaviour has to change. It is useful to include at least one behaviour indicator in the list of core indicators. A number of indicators have been suggested to monitor this aspect, including the prevalence of high-risk sex in the last year, condom use at last high-risk sex, young people using a condom at last high-risk sex and age mixing in sexual relationships.

7.1. Percentage of young people aged 15-24 reporting the use of a condom during sexual intercourse with a non-regular sex partner

Indicator description/definition

Percentage of young men and women (aged 15-24 years) who say they used a condom the last time they had sex with a non-marital, non-cohabiting partner in the last 12 months.

Numerator
The number of young people aged 15-24 who have had sex in the last 12 months with a non-regular partner, and used a condom at last sex with such a partner.
Denominator
Total number of young people aged 15-24 surveyed who had a sexual encounter with a non-regular partner during the last year.

$$\textbf{\% of young people aged 15-24 reporting the use of a condom during sex with a non-regular partner} = \frac{\text{No. of young people aged 15-24 who have had sex in the last 12 months with a non-regular partner, and used a condom at last sex with such partner}}{\text{Total number of young people aged 15-24 surveyed who had a sexual encounter with a non-regular partner during the last year}} \times 100{,}000$$

[104] UNGASS/UNAIDS, (2002). *UNGASS Declaration of commitment on HIV/AIDS.*

Review of % of young people aged 15-24 reporting use of condom as an indicator

Rationale for use as an indicator/discussion

The rationale for using this indicator is to assess progress in reducing the percentage of young people aged 15–24 who have higher risk sex.

Consistent correct use of condoms within non-regular sexual partnerships substantially reduces the risk of sexual HIV transmission. This is especially important for young people who often experience the highest rates of HIV infection. Condom use is one measure of protection against sexual transmission of HIV; others include delaying age at first sex, reducing the number of non-regular sexual partners, being faithful to one uninfected partner, avoidance of concurrent sexual partnerships and high -risk sexual practices such as unprotected anal sex[105].

High-risk sex is associated with HIV transmission. Consistent condom use with non-regular partners reduces the risk of sexual HIV transmission. This indicator assesses the progress in preventing early-age exposure to HIV through unprotected sex with non-regular partners. It thus tracks the success of campaigns and programmes to reduce the risk of pre-marital HIV infection by increasing condom use. Where low levels are reported, programme efforts need to be intensified to promote the use of condoms.

Indicator scores are required for all respondents aged 15–24 years and for males and females, separately, each by urban/rural residence. The percentage of young people who said they had started sex and the percentage of these who had had a non-regular partner in the last 12 months should be stated[106].

Utilisation and historical patterns

Survey respondents aged 15–24 years are asked whether they have commenced sexual activity (or otherwise this is inferred from responses to a question on age at first sex). Those who report sexual activity (whether currently married or unmarried) are then asked the following questions:
1. In the last 12 months, have you had sexual intercourse with a nonregular partner who was neither your spouse nor someone you were living with?
2. *If the answer to question 1 is "yes"*: How many non-regular partners have you had sex with in the 12 months?
3. *If the answer to question 1 is "yes"*: Did you (or your partner) use a condom the last time you last had sex with your most recent non-regular partner?

This indicator shows the extent to which condoms are used by young people who engage in non-regular sexual relationships. However, the broader significance of any given indicator score will depend upon the extent to which young people engage in such relationships. Thus, levels and trends should be interpreted carefully using the data obtained on percentages of young people who have started sex and (of these) that have engaged in a non-regular partnership within the last year. The maximum protective effect of condoms in non-regular sexual intercourse is achieved when their use is consistent rather than occasional. The alternative method of asking whether condoms were always/sometimes/never used in sexual encounters with non-regular partners in a specified period is subject to recall bias. Furthermore, the trend in condom use in the most recent sex act with a non-regular partner will generally reflect the trend in consistent condom use with such partners.

[105] WHO (2006). *Definitions and metadata*. Available at http://www.who.int/whosis/whostat2006DefinitionsAndMetadata.pdf
[106] UNAIDS (2005). *Monitoring the Declaration of Commitment on HIV/AIDS: Guidelines on construction of core indicators*. Geneva: UNAIDS

Respondents are asked about their marital status and the last three sexual partners within the last 12 months. For each partner, details are taken of cohabiting status as well as duration of the relationship, condom use and other factors. This indicator gives a picture of levels of higher-risk sex. If people stop having sex with all of their non-cohabiting partners, the change will be captured by changes in this indicator. However, if people simply decrease from seven non-cohabiting partners to one, for example, the indicator will not reflect a change, even though potentially this may have a significant impact on the epidemic spread of HIV and may be counted a programme success[107].

Update on % of young people aged 15-24 reporting use of condom as an indicator

Level of analysis/use

This indicator can be calculated at national, provincial and smaller geographic level depending on sample size. Disaggregating by various demographic variables provide insights into the dynamics of sexual behaviour among groups of young people.

The SADHS of 2003 presented findings about female sexual behaviour. It reported that among women aged 15-19 years, 8.5% have had sex by the age of 15, and of those who have ever had sex, 21.2% report using a condom when they last had sex with an unmarried partner.

On the other hand, among currently sexually active women aged 15-19 years, 51% use injectables as contraception, 33.6% use no method, and 4% report using a condom. Similar figures for males were not presented in the report[108]. In the HSRC 2002 study of 15-24-year-olds, 57.1% of men and 46.1% of women reported using a condom at last sexual intercourse[109]. In addition, a study has shown that gender was found to be a predictor of condom use, with more males than females reporting having used condoms. Past sexual behaviour was found to be a predictor of intention to have sex; i.e. once learners have had sex they are much more likely to have sex again[110].

Table 11: Comparison of condom use among young people aged 15-24 in the SA Communication survey 2006 and the HSRC 2005 survey

Ages 15-24	SA AIDS Communication survey[111]	HSRC 2005 survey
Urban formal	72.7%	-
Urban informal	67.1%	-
Rural	63.5%	-
Males	-	72,8%
Female	-	55,7%
Average	**67.8%**	**64.3%**

Table 11 shows that on average condom use among young people aged 15-24 in the SA Communication survey 2006 and the HSRC 2005 survey is comparable, 67.8% and 64.3% respectively.

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[107] UNAIDS (2005). Monitoring the declaration of commitment on HIV/AIDS: Guidelines on construction of core indicators. Geneva: UNAIDS

[108] Department of Health (2003). *South African Demographic Health Survey.*

[109] Shisana O. *Nelson Mandela HSRC Study of HIV/AIDS. South African national HIV prevalence, behavioural risks and mass media household survey 2002* Cape Town: HSRC.

[110] Klepp KI, Ndeki SS, Thuen F. Predictors of intention to be sexually active among Tanzanian school children. *East African Medical Journal* 1996; 73(4): 218 – 224.

[111] Parker W, Makhubele B, Hajiyiannis H, Ntlabati P, Connolly C, Johnson S, Schierhout G, Matebeni Z, Goldstein S, Scheepers E, Coleman P and Kincaid DL (2006). South African National HIV and AIDS Communication Survey 2006: Overall Impact of 14 AIDS communication Programs

Data on South African women attending antenatal clinics indicate that women in their 20s represent the group with the highest number of individuals with HIV infection[112]. A substantial number of young people are engaging in unprotected sex. Furthermore, by the age of 19 years at least 1 in 3 of all teenagers have been pregnant or had a child. Also, 11% of termination of pregnancies was by women under 18 years old[113]. From the above it is clear that a substantial number of young people, as a result of the sexual choices they make or situations they find themselves in, are at risk in terms of their sexual health and subsequently their physical and mental health.

Data sources and data availability

The 2005 HSRC behavioural and prevalence survey included questions that can be used to review the indicator. The appropriate questions were included in the 2003 SADHS and the RHRU/Lovelife survey of young people

Reddy SP, Panday S, Swart D, Jinabhai CC, Amosun SL, James S, Monyeki KD, Stevens G, Morejele N, Kambaran NS, Omardien RG and Van den Borne HW. Umthenthe Uhlaba Usamila – The South African Youth Risk Behaviour Survey 2002. Cape Town: South African Medical Research Council, 2003 provided valuable information for reviewing and updating this indicator.

The South African National HIV and AIDS Communication Survey 2006 measured the overall impact of 14 communication programmes. The survey findings were published late in 2006.

[112] Department of Health SA. National HIV and syphilis antenatal sero-prevalence survey in S. Africa. 2005.
[113] Dickson-Tetteh K, Ladha S. Youth Health. South African Health Review. 2000. Health Systems Trust.

8. INDICATORS REFLECTING SOCIO-CULTURAL ATTITUDES TOWARDS PERSONS LIVING WITH HIV/AIDS

In many countries, including South Africa, HIV/AIDS is still surrounded by stigma. Stigma prevents an open discussion of the disease and inhibits disclosure of an HIV-positive status. Discrimination on the basis of HIV/AIDS is closely related to stigma. Stigma also impacts on the willingness of people to care for and support those living with HIV/AIDS. HIV/AIDS campaigns should devote resources to combat the stigma of HIV/AIDS.

8.1. Accepting attitudes towards those living with HIV/AIDS: Willing to care for a family member sick with AIDS

Indicator description/definition

The proportion of respondents indicating that they would be willing to care for a family member who became sick as a result of HIV infection or have AIDS-related infections.

Numerator
The number of respondents indicating that they would be willing to care for a family member who became sick as a result of HIV infection or have AIDS-related infections.
Denominator
All respondents in a sample survey who have heard of HIV/AIDS.

$$\textbf{Willing to care for a family member sick with AIDS} = \frac{\text{No. of respondents indicating that they would be willing to care for a family member who became sick as a result of HIV infection or have AIDS-related infections}}{\text{All respondents in a sample survey who have heard of HIV/AIDS}} \times 100{,}000$$

Review of accepting attitudes towards those living with HIV/AIDS as an indicator

Rationale for use as indicator

The indicator is based on answers to attitudinal questions in surveys. The proportion is based on all those respondents who have heard of HIV/AIDS. If people have accepting attitudes and are willing to assist their kin, this attitude will expand into broader society, breaking down negative attitudes towards those living with the virus or being ill with AIDS. The results should be of interest to the department, given the concerns that are being expressed about caring for those living with HIV/AIDS.

Utilisation and historical patterns

The indicator has not been used extensively in this country. The HSRC, 2005 survey asked respondents if they would be willing to care for a family member sick with AIDS.
Due to existing discrimination against women in various societies, attitudes towards those who get infected are often less accommodating compared to the attitudes towards men in the same situation. Infected women are often blamed for infecting their husbands and unborn children and are described in stigmatising terms that are rarely used when describing infected men[114].

[114] UN/WHO (2000). *The HIV/AIDS pandemic and its gender implications*. NewYork: United Nations.

Update on accepting attitudes towards those living with HIV/AIDS as an indicator

Level of analysis/use

This indicator can be calculated at national, provincial and smaller geographic level depending on sample size. Disaggregating by demographic characteristics can also provide insight into the patterns of acceptance. Socio-cultural attitudes towards people living with HIV and AIDS have changed significantly. Most South Africans have accepting attitudes towards those living with HIV/AIDS. An overwhelming 90.7% of respondents in the HSRC, (2005) survey indicated that they would be willing to care for a family member sick with AIDS.

A survey[115], conducted by four organizations - Johns Hopkins Bloomberg School of Public Health's Centre for Communication Programs (CCP), Health Development Africa representing Khomanani, CADRE, and Soul City - including more than 8,000 respondents across South Africa examined how exposure to more than 20 AIDS communication interventions shaped people's knowledge and behaviour, found that the combined efforts of many AIDS communication campaigns in South Africa showed positive impacts on HIV prevention behaviours, increased positive attitudes towards people living with HIV and AIDS, and increased community involvement in response to the epidemic. The survey also found that one in five (20.8%) of people aged 25-49 have cared for a person sick with AIDS.

The HSRC measured an attitude of whether people would be willing to care for a family member sick with AIDS, while the CCP survey measured practice i.e. whether respondents have cared for a person sick with AIDS. The CCP survey shows that communication programmes have done a great job in changing people's attitude towards PLWHA. It is not surprising that there is such an overwhelming positive attitude and willingness to care for a family member sick with AIDS. The actual practice also confirms the changed attitudes.

In a qualitative study which examined community attitudes towards individuals living with HIV in KwaZulu-Natal, participants expressed positive attitudes to the treatment of AIDS patients and felt that people living with HIV were being cared for within families. However, they reported more negative attitudes to those living with HIV by the general community and suggested these attitudes and acts of discrimination influenced disclosure. Discrimination included physical isolation and symbolism such as referring to them using a 'three finger' gesture. Participants also reported mixed responses to known HIV-positive individuals, ranging from sympathy to a lack of care, on the grounds that the person is certain to die. There are gender differences in terms of the attitudes towards people living with HIV. Compassion and hopelessness seem to be more common among women than men[116].

Data sources and data availability

One question was included in the HSRC, 2005 survey. The appropriate questions should be included in the next South African Demographic and Health Survey. A CCP survey published in November 2006, measured practice i.e. whether respondents have cared for a person sick with AIDS

[115] CCP (2006) South African national HIV and AIDS communication survey 2006: Overall impact of 14 communication programs. November 2006

[116] Ndinda C, Chibwete C, Mcgrath N and Pool R (2007). Community attitudes towards individuals living with HIV in rural KwaZulu-Natal, South Africa. *AIDS Care*, January 2007; 19(1): 92 - 101

9. INDICATORS REFLECTING THE SOCIAL IMPACT OF HIV/AIDS

It is widely expected that HIV/AIDS will have an impact on society. During the interviews conducted by the HSRC with officials at government departments and other institutions, the issue of AIDS orphans was mentioned frequently. Any increase in the number of orphans as a result of the AIDS-related deaths of their parents will impact directly on the functions of the Department of Social Development. In this regard grants and the provision of other social services should be mentioned.

9.1. Percentage children who are maternal orphans (maternal orphan rate)

Indicator description/definition

The maternal orphan rate is defined as the proportion of children aged 0-18 whose biological mother has died. The broader definition of orphan rate refers to the number of children under 18 years who have lost either a mother (maternal orphan), a father (paternal orphan) or both parents (a double orphan) due to HIV/AIDS.

Previously the definition used was the number of children under 15 years whose mothers have died of HIV/AIDS. A summary of the definitions used:

ASSA 2000 - maternal orphans less than 15 years

ASSA 2002 and 2003 - maternal orphans less than 18 years[117]

Numerator
Number of children aged less than 18 years with at least one dead parent[118].
Denominator
Total number of children under 18 years surveyed.

$$\textbf{Maternal Orphan Rate} = \frac{\text{No. of children aged less than 18 years with at least one dead parent}}{\text{Total number of children under 18 years surveyed}} \times 100{,}000$$

Review of maternal orphan rate as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

In heterosexual HIV epidemics, more women than men are infected. This is also reflected in AIDS-related deaths. Those who are at the greatest risk of becoming infected are in the younger

[117] ASSA. *Actuarial Projection of the Epidemic: Summary Statistics*. AIDS Committee of Actuarial Society of South Africa. Downloaded 14/10/2006 from http://www.assa.org.za/scripts/file_build.asp?id=100000213&pageid=1000000050 .
[118] Household Listing module, HL9=2 OR HL11=2.

reproductive ages (20-35 years). The women in this age group who become infected often have already borne children by the time they die.

The death of mothers leaves children without primary emotional and material support, and these functions have to be taken over by relatives, friends, other institutions or the state. This is exacerbated by the fact that a substantial proportion of women who give birth in South Africa are not married, and the father, more often than not, will not provide care and support to such a child if the mother were to die.

AIDS orphans have become a matter of policy concern. In this regard the different care models, the availability and disbursement of foster care and other grants, as well as the potential demand on the treasury for such grants have become areas of contestation.

Advantages and disadvantages as an indicator

Information needed to calculate this indicator can be obtained with relative ease. In addition, the maternal orphan rate is important as a policy tool.

The old maternal orphan rate which was defined as the number of children aged less than 15 years with at least one dead parent, did not include children between the ages of 15 and 17 years. HIV/AIDS literature, in the past, did not distinguish between children who had lost a mother and children who had lost both parents[119].

Update on maternal orphan rate as an indicator to monitor the impact of HIV/AIDS

Utilisation and historical patterns

The definition of orphan consists of three components: (1) a child whose biological mother was reported dead at the time of a census or survey enquiry; (2) a child whose biological father was reported dead at the time of a census or survey enquiry; (3) a child whose both of the biological parents were reported dead at the time of a census or survey enquiry. The information on these components are obtained from the "orphanhood questions" (is the person's own biological mother still alive? Is the person's own biological father still alive?). The questions were developed by the late W. Brass for the indirect estimation of adult female and male mortality from census and survey enquiries.

In the context of HIV/AIDS, researchers have used the orphanhood questions to estimate the magnitude of orphans for persons less than 15 years and 18 years of age. Since as noted above, the questions were not designed for that purpose, the use of these questions as indicator of the magnitude of orphans should be treated with caution as this part of the information (i.e. pertaining to persons under the age of 18 years) is likely to be biased by the "adoption effect"[120].

Methodologies for Estimating Orphans[121]*:* Differences among the orphan estimates and projections of various organizations occur due to differences in methodologies, definitions (of "orphan," for example), and demographic and epidemiological assumptions. On the one hand, *Children on the Brink* and UNAIDS estimate the number of orphans using mathematical models, estimations, and projections based on certain assumptions about the impact of HIV/AIDS on adult mortality, fertility, and child survival. These assumptions are likely to lead to overestimations of female HIV prevalence and mortality. Surveys such as DHS and the Multiple Indicator Cluster Survey (MICS) (not available for South Africa), on the other hand, are based on data gathered through household surveys of representative samples of the national population. These surveys

[119] Department of Health (2003). *South African Demographic Health Survey 2003*. Preliminary Report.
[120] Udjo EO (2005) *Child rights indicators in South Africa*. SAHA.
[121] U.S. Agency for International Development.*Country Data Profile: Orphans in countries targeted by the Emergency Plan for AIDS Relief, South Africa*. Bureau for Africa, Office of Sustainable Development.

may underestimate the number of orphans because they fail to count orphans in institutions or on the street. In addition, surveys may underestimate the number of orphans if parental survival status is unknown.

According to the 2001 census[122], about 4% of children under the age of 18 were reported as having no mother (mother dead) and 12% as having no father (father dead) while 1.4% were reported as having both father and mother dead. These figures need to be taken with extreme caution. The proportion with mother dead is probably underreported (adoption effect) while the proportion with father dead is probably over reported (see section on definition of orphans above). Udjo (2005) has argued that in surveys and censuses in South Africa, some fathers who were alive at the time of the survey/census may have been reported dead due to what he termed "absentee father effect". While adoption effect biases reported proportion with mother alive downward, absentee father effect biases reported proportion with father alive upward.

The SADHS 2003 indicated that only about three-quarters of children under 15 have both their natural parents still alive. Two percent have lost their mothers only, 11 percent have lost their fathers only, while two percent have lost both parents. In this report, information was missing for 8 percent of children. Older children are more likely to have a deceased parent. Among children age 10-14, 4 percent have both parents deceased. The highest percentage of children who have lost only their father (14 percent) and the highest percentage of children of whom only mother died (3 percent) were also recorded in this age group[123].

Defining an orphan as a person under the age of 18 years whose mother has died, it is estimated that there were over 885 000 orphans in South Africa in July 2002. Of the overall total, 38% would have been orphaned as a result of AIDS. Dorrington et al. estimated that overall, AIDS will account for close on three-quarters (73%) of all new orphans[124].

Table 12: Orphan estimates as a percent of all children under age 15[125]

Factors	Source Name/Year								
	Children on the Brink 2002 (1995 estimates)		South Africa DHS 1998	*Children on the Brink 2002* (2001 estimates)		UNAIDS 2002 (2001 data)		*Children on the Brink 2002* (2010 projections)	
	%	# (000's)	%	%	# (000's)	%	# (000's	%	# (000's)
HIV/AIDS Prevalence (Adults and Children)							5,000		
Adult HIV Prevalence						20.1	4,700		
Total Orphans	7.5	1,087	10.1	10.3	1,528			15.8	2,303
Maternal Orphans	1.9	274	1.4	2.4	355			2.7	397
Paternal Orphans	4.9	705	7.6	6.1	906			4.8	699
Double Orphans	0.7	108	0.8	1.8	267			8.3	1,207
Orphans due to HIV/AIDS as a Percentage of Total Orphans	5.6	61		43.3	662			73.8	1,700

[122] Stats SA (2003) *South African population census 2001*. Pretoria: Statistics South Africa
[123] Department of Health (2003). *South African Demographic Health Survey 2003*. Preliminary Report.
[124] Dorrington R E, Bradshaw D and Budlender D. *HIV/AIDS profile of the provinces of South Africa – indicators for 2002*. Centre for Actuarial Research, MRC and the Actuarial Society of South Africa.
[125] Source: U.S. Agency for International Development.*Country Data Profile: Orphans in countries targeted by the Emergency Plan for AIDS Relief, South Africa*. Bureau for Africa, Office of Sustainable Development

As seen in Table 12, various estimates and projections of the percentage of children who are orphans (losing one or both parents due to all causes, including HIV/AIDS) are high – 7.5% (1995), 10.3% (2001), and 15.8% (2010, projected) and 10.1% (1998) by the SADHS. The data support the consensus that the number of orphans in South Africa is likely to increase throughout the decade and surpass 2 million by 2010[126].

The estimated percentage of children orphaned by AIDS, as opposed to other causes, increased from 5.6 percent of all orphans in 1995 to 43.3 percent in 2001. If current trends continue, it is projected that by 2010 nearly three-quarters of South Africa's orphans will have been orphaned by AIDS.

Of the overall orphanhood prevalence rate of 14.4% for children aged 2–18 years in the HSRC 2005 survey, 2.6% were maternal orphans, 10.0% were paternal orphans and 2% were double orphans. This means that overall there was a total of 2,531,810 orphans in South Africa in 2005, with 455,970 of them being maternal orphans, 1,745,715 paternal orphans and 330 125 double orphans.

Data availability

The required information was collected by means of the 2001 census, 2003 SADHS and modelling by CARe and ASSA in 2002, 2003 models and the October Household Survey of 1999.

[126] *Children on the Brink, 2002. A joint report on orphan estimates and program strategies*. New York: UNICEF, November 2002.

10. INDICATORS REFLECTING THE ECONOMIC IMPACT OF HIV/AIDS

HIV/AIDS is expected to have significant impacts on the economy. The epidemic will have an impact on different levels, e.g. the national level, the employment/business level and the individual household or personal level.

During the series of interviews with government officials, they expressed their concern about the impact of the disease on the employer. The projected impact of the epidemic is still unknown to most employers, although a number of organisations have commissioned studies to project future impacts. Many of these studies are generalising from the results of antenatal care surveys to specific businesses. Also in demand are HIV prevalence rates by economic sector and by broad occupational categories. Such information will assist in providing more accurate forecasts to businesses and planners.

10.1. Proportion of working days lost due to illness

Indicator description/definition

The proportion of potential working days lost due to illness or sick leave in all large enterprises/organisations. This is expressed as a proportion of the total number of working days.

Absenteeism from work may be due to care giving needs in the family or funeral attendances. Loss of labour and productivity may be due to associated illness, emotional and work stress and lower morale of infected and affected workers.

Numerator
The number of days lost due to illness in larger enterprises/organisations.
Denominator
The potential number of working days in large enterprises/organisations covered during a survey.

$$\textbf{Proportion of working days lost due to illness} = \frac{\text{No. of days lost due to illness in larger enterprises/organisations}}{\text{The potential number of working days in large enterprises/organisations covered during a survey}} \times 100{,}000$$

Review of proportion of working days lost due to illness as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

AIDS-related morbidity will result in an increase in the number of days of sick leave taken by employees. This indicator is an ideal indicator of the effect of morbidity on productivity at the level of an organisation/enterprise.

Update on proportion of working days lost due to illness as an indicator to monitor the impact of HIV/AIDS

Level of analysis/use

Data for this indicator can be analysed by broad economic sectors and private and government organisations.

Studies from other sectors in South Africa also show that workers living with HIV and AIDS incur a large number of sick leave days. For example a study at a sugar mill in South Africa[127] found that HIV positive workers incurred an average of 55 additional sick days during the last two years of their lives. Revenues may be decreased because of absenteeism due to illness or attendance at funerals and time spent on training.

One study for KwaZulu-Natal projects that there will be an increase of 419 burials a day by the year 2011 due to HIV/AIDS, from 224 per day to 643 per day. Not only does this increase the demand for cemetery plots, but costs will increase for the household, including burial costs, transport costs to and from the burial, and lost wages due to taking time off from work to attend funerals[128] .

A survey of 16 firms in South Africa asked whether the company prevalence rate was known, and whether HIV/AIDS had created any problems for the company. A major industrial company based in KwaZulu-Natal recorded a 31% increase in the number of ill-health retirements between 1995 and 1997; of these retirements, 17% of them were due to AIDS.
In a sugar mill in KwaZulu-Natal, 26 percent of all tested workers were infected with HIV. Infected workers incurred, on average, 55 additional days of sick leave during the last two years of their life[129]. Lifeworks has calculated that absenteeism due to HIV/Aids costs firms 15% of their payroll a year, other illnesses 17.5% and disability 10%.

Data availability and limitations

There were serious limitations in obtaining data to review and update this indicator. Ad hoc studies provide certain employers with forecasts of the impact of HIV/AIDS on their operations. The estimates derive from a variety of models and assumptions.

Attempts to collect sick leave data from employers has been met with resistance due to confidentiality and other reasons. No empirical data are available at present. A survey of a sample of large enterprises or organisations should provide the required information.

The annual HIV/AIDS prevalence survey of businesses conducted the Bureau of Economic Research (BER) for the South African Business Coalition on HIV/AIDS (SABCOHA) should include ways of measuring working days lost due to illness in large enterprises and small and medium enterprises.

[127] USAID, (2001). HIV/AIDS in Southern Africa: Background, projections, impacts and interventions. The Policy Project, Washington D.C.
[128] Whiteside A, Wilkins N, Mason B, Wood G (1995) The impact of HIV/AIDS on planning issues in KwaZulu-Natal.
[129] Morris, C., D.R. Burdge, and E.J. Cheevers. 2001. *Economic impact of HIV infection on a cohort of male sugar mill workers in South Africa from the perspective of industry.* Vancouver, Canada, and Durban, South Africa: University of British Columbia and Illovo Sugar.

11. ADDRESSING THE SOCIAL IMPACT OF HIV/AIDS

Programmatic indicators should be used to monitor and evaluate the scope and efficacy of HIV/AIDS programmes. The development of more programme-specific indicators requires attention.

11.1. Number of persons receiving government social grants

Indicator description/definition

The number of persons receiving grants from the Department of Social Development.

Numerator: Number of persons receiving grants from the Department of Social Development
Denominator: Total population covered during a survey

$$\textbf{No. of persons receiving government social grants} = \frac{\text{No. of persons receiving grants from the Department of Social Development}}{\text{Total population covered during a survey}} \times 100{,}000$$

Review of number of persons receiving government social grants as an indicator to monitor the impact of HIV/AIDS

Rationale for use as an indicator

The Department of Social Development disburses a range of social grants. These include an old age grant, a disability grant, a war veteran's grant, a care dependency grant, a foster child grant and a child support grant. The payment of these grants is dependent on a means test. The primary objective of these grants is to help alleviate poverty and to serve as a source of income for the most vulnerable groups in society.

With the exception of the disability grant (where payments can be made to persons suffering from full-blown AIDS), the grants are not specifically directed at those persons and households affected and infected by HIV/AIDS. Yet the social grants assist many HIV/AIDS affected households living in poverty. The child support grant and foster care grant are used by individuals to care for children who have become AIDS orphans. In many cases, such care would have been more difficult in the absence of any grant.

As the grant system is expanding its reach to more clients, it is expected that the number of people infected and affected by HIV/AIDS who benefit from the grants will increase.
In the SADHS household questionnaire, questions relating to social grants were included in order to establish to what extent grants are utilised in South Africa.

Utilisation as an indicator

The grants are means tested and are targeted: the old age pension is available for the elderly; disabled adults and children may receive disability grants; relatively small child support grants are targeted at poor children; foster care grants may be received by those legally fostering the child of other parents. While the old age pension is almost universal in its coverage – some analysts calculate that nearly 88 percent of the eligible are in fact receiving the grant[130].

[130] Financial and Fiscal Commission (1999), as cited in Chernick and Reschovsky, (2000:28)

Update on number of persons receiving government social grants as an indicator to monitor the impact of HIV/AIDS

The foremost of the state-driven poverty reduction programmes is the system of social grants that are in place for certain categories of vulnerable people. Inherited and continued from the apartheid Government's set of programmes, this is the present Government's largest poverty reduction programme and is overseen by the national Department of Social Development (DSD), and administered by DSD at the provincial level. Applications are taken and payments made at the local level.

The *Committee of Inquiry into a Comprehensive Social Security System* indicated that in the absence of social assistance transfers, 58 percent of South African households would fall below the subsistence level of R401 per adult equivalent. Moreover, the Taylor Committee noted that existing social security programmes reduced the average poverty gap by 23 percent[131]. Old age, disability and care-dependency grants increased to R820 a month in April 2006 (from R780 in April 2005), while child support grants went up to R190 a month (from R180 in 2005) and foster care grants increased to R590 a month (from R560 in 2005)[132].

In the SADHS of 2003, 16 percent of people in South Africa were reported to be receiving some sort of grant. Women were slightly more likely than men to be receiving a grant (18 percent vs. 14 percent). Children and the elderly are most likely to be grant recipients, as are those who live in rural areas and in Eastern Cape and Limpopo Provinces. The type of grants people receive that are most common are child support grants and old age pensions. These grants account for almost 40 percent of grant recipients each. Annual expenditure on grants increased 3.5 times in the 10 years between 1994 and 2004, from R10-billion to R34.8-billion. During the same period, the number of South Africans receiving social grants increased from 2.6-million to over seven million. This number has now grown to over 10 million people, with the budget for social assistance at over R55-billion for the 2005/06 financial year[133].

Table 13: Review and update on social security grants in South Africa, 2006[134]

Type of grant	Amount per month in 2006	Criteria	Number of recipients
Child Support Grant (CSG)	R190	Children 0-7 years, living in poverty. It is means-tested.	4.2 million in April 2004
Care Dependency Grant (CDG)	R820	Children with severe disabilities requiring and receiving permanent home care, 1-18 years. Available to parents, foster parents, custodians and guardians of children.	75,000 in April 2004
Foster Care Grant (FCG)	R590	Caregivers of children who have been legally placed in foster homes by the Court.	190,000 in April 2004
Old-Age Grant	R820	Women qualify at the age of 60 years and men at the age of 65	2 million in 2003
Disability Grant	R820	Caregivers of people who have been assessed as permanently or temporarily disabled	1.3 million in 2004
War Veterans' Grant	R838	Veterans of the Anglo Boer War, first and second world wars and the Korean war	
Grant-in-Aid	R180	An additional grant awarded to persons receiving the old-age pension who are unable to care for themselves and require full-time attendance due to a mental or physical condition.	

[131] Taylor (2002) Committee of Inquiry into a Comprehensive Social Security System (CICSSS).
[132] Sources: DSD and South African Social Security Agency. Accessed on 19/11/2006 at http://www.info.gov.za/aboutsa/socialdev.htm
[133] Department of Health (2003). South African Demographic Health Survey 2003. Preliminary Report.
[134] Sources: DSD and South African Social Security Agency. Accessed on 19/11/2006 at http://www.info.gov.za/aboutsa/socialdev.htm and http://www.sassa.gov.za/services/grants.asp

Table 13 provides a review and update on social security grants in South Africa.

Level of analysis/use

This indicator should initially be calculated at national and provincial level. Research conducted by the Economic Policy Research Institute (EPRI) in 2004, showed that South Africa's social assistance programme is helping to reduce poverty, contributing to social cohesion and having a positive impact on the economic opportunities of households.

The provision of social grants is the government's biggest poverty relief programme, paying out in the region of R50-billion per annum to over nine million South Africans. These include old age pensions and grants for child support, disability, care dependency and foster care. A 10% increase in the take-up of old age pensions reduces the poverty gap by 3.2%, while full take-up reduces the poverty gap by 6.2%. The greatest poverty-reducing potential, lies with the progressive extension of the child support grant to 14 years of age, which would yield a 57% poverty gap reduction. The study also found that the provision of grants contributes to an increase in the number of children enrolling in schools, while living in a household that receives grants is correlated with a higher success rate in finding employment[135].

The Minister of Social Development, Dr Zola Skweyiya, said that an analysis of the growth patterns and successes in improving the integrity of the social grants system seems to indicate that our targeting mechanisms are becoming more effective. The DSD has reached almost all the elderly people for old age grants and disability grants. He further said that the real growth for disability has only been around 1% since April 2004. The child support grant for children under seven years has stabilised, even declining since the anti-fraud initiatives. He concluded that the DSD was well on target to reaching eligible children in the 11 to 14 year age group[136].

The Children's Institute at the University of Cape Town identified some limitations and gaps in the social security system in 2001. They indicated that the social security system was fragmented and non-comprehensive, with many groups of children falling through the gaps. Poor children between the ages of seven and eighteen were not catered for, nor children with moderate disabilities or those infected by HIV/ AIDS. Many other children could not access the grants, such as street children and child-headed households. The Child Support grant amount of R110 was inadequate to cater for a child's basic needs, while the Care Dependency Grant had problems due to lack of clear definitions of 'disability' and 'permanent home care'. The Foster Child Grant was not accessible to the many extended family members who were informally caring for orphaned children. Generally, social security was limited to cash transfers, and did not incorporate a range of other possibilities, such as free services (health, education, transport). There were administrative problems with all the grants[137].

Data availability and limitations

Information is available from the DSD (SOCPEN System)[138] on the number of persons receiving grants in each of the categories.

As from the 1st April 2006, the South African Social Security Agency (SASSA) was assigned the tasks and responsibilities of social grants by an Act of Parliament. SASSA took over the payment, processing and authorising of social grants from provincial governments. The latest data on the amounts, criteria, etc of grants is getting provided on the website of SASSA.

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[135] Samson M, Lee U, Ndlebe A, Mac Quene K, van Niekerk I, Gandhi V, Harigaya T and Abrahams C (2004). *The social and economic impact of South Africa's social security system*. Cape Town: EPRI.

[136] Quoted from newspaper interview

[137] The Children's Institute (2001). Fact Sheet. *Social Assistance Provisioning for Children in South Africa*. The Children's Institute, UCT Aug 2001.

[138] Department of Social Development. *Social Pensions (SOCPEN) system*.

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APPENDICES

Appendix A: Summary review and update of indicators to monitor the social impacts and other aspects of HIV and AIDS in South Africa

Measuring	Selected indicators	% or value	Year	Source(s)
1. Impact of AIDS-related mortality on the population and other demographic variables	1.1. Death rate in the age group 15-49	46.1% (230,300)	2002	StatsSA, (2005). *Mortality & causes...*
	1.2. Under-5 mortality rate	58 per 1,000	2004	SADHS 2003
		100 per 1,000	2002	Bradshaw and Nannan, 2002
	1.3. Life expectancy at birth	50.7 years	2004	SADHS, 2003 and Dorrington et al 2004
	1.4. Infant mortality rate	56 per 1,000	2006	Stats SA, 2006[139] and Dorrington et al, 2004
		43 per 1,000	2004	
		59 per 1,000	2004	SADHS, 2003
				Bradshaw/Nannan in *SA Health Review 2004*
2. A reduction in the transmission of HIV	2.1. Percentage women aged 15-24 infected by HIV	16.9%	2005	HSRC/Mandela 2005
		15.5%	2003	RHRU National youth survey
		16.4%	2004	Dorrington, Bradshaw et al.[140]
	2.2. HIV prevalence for males aged 15-49	11.7%	2005	HSRC/Mandela 2005
		16.6%	2004	Dorrington, Bradshaw et al.
3. Socio-economic conditions that contribute to vulnerability and susceptibility to HIV	3.1. No. of households in the bottom 20% of income distribution	10.5% (4.7 m)[141]	2002	UNDP, 2003. MDGs for South Africa
	3.2. % households without clean water in rural areas	18%	2004	Parnel S[142]
	% households without electricity in urban areas	25% (192,450)	2004	Parnel S
	3.3. Proportion of the population defined as migrant workers	2,5 million	2001	*Labour Migration to South Africa in the 1990's*

[139] Stats SA. *Mid-year population estimates for SA 2006*
[140] Dorrington R, Bradshaw D, Johnson L and Budlender D. The demographic impact of HIV/AIDS in SA: National indicators for 2004.
[141] This rate reflects the population living below US$1 per day
[142] Parnell S (2004) Constructing a developmental nation - the challenge of including the poor in the post apartheid city

Measuring	Selected indicators	% or value	Year	Source(s)
4. Knowledge of the transmission of HIV	4.1. Proportion of the population who completed Grade 12	27.8% 24.8%	2001 2004	Census 2001 Lehohla, 2004. Perceived health & other indicators
	4.2. % of the population aged 15 and older who both correctly identify ways of preventing the sexual transmission of HIV	85.6%[143]	2005	HSRC/Mandela 2005
	4.3. Proportion of the population who have access to television	67.3%	2005	HSRC/Mandela 2005
5. Human behaviour patterns with a bearing on the transmission of HIV	5.1. Percentage of young people aged 15-24 reporting the use of a condom during sexual intercourse with a non-regular sex partner	64.3% 51.95%	2005 2004	HSRC, 2005 SADHS 2003
6. Socio-cultural attitudes towards persons living with HIV/AIDS	Accepting attitudes towards those living with HIV/AIDS: Willing to care for a family member sick with AIDS	90.7%	2005	HSRC/Mandela 2005
7. The social impact of HIV/AIDS	Maternal orphan rate (under 18 years) % with mother dead Maternal orphans (under 18) - total AIDS orphans	1.9%(<15 years) 2.7% 2.6% (455,970) 626,000	2004 2001 2005 2004	SADHS, 2003 2001 Census, Stats SA HSRC/Mandela, 2005 Dorrington, et al, 2004
8. The economic impact of HIV/AIDS	Proportion of working days lost due to illness	34%	2002[144]	Johnson et al
9. Addressing the social impact of HIV/AIDS	Number of persons receiving government social grants	15.9% households (10 million people)	2004	SADHS 2004

[143] This rate was calculated from knowledge of HIV question ("prevented by using condoms") for age groups 15 and above

[144] Johnson S, Schierhout G, Steinberg M, Russell B, Hall K, Morgan J, 2002. AIDS in the household. *South African Health Review 2002*. Cape Town, South Africa: The Health Systems Trust.