Ministry of Health

KENYA HIV ESTIMATES

2014

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June 2014

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Control Programme**

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Kenya has a number of information sources on HIV prevalence levels and trends. Four national surveys, the Kenya Demographic and Health Survey of 2003[1] (KDHS 2003), the Kenya AIDS Indicator Survey 2007[2] (KAIS 2007), the Kenya Demographic and Health Survey of 2008/9[3] and the Kenya AIDS Indicator Survey 2012[4] provide good estimates of national prevalence for those four years and the trend between those years.

1   Central Bureau of Statistics (CBS) [Kenya], Ministry of Health (MOH) {Kenya], and ORC Macro. 2004.
    Kenya Demographic and Health Survey 2003. Calverton, Maryland" CBS, MOH and ORC Macro.
2   National AIDS and STD Control Programme, Ministry of Health, Kenya. July 2008. Kenya AIDS Indica-
    tor Survey 2007: Preliminary Report. Nairobi, Kenya.
3   KNBS [Kenya] 2009. Kenya Demographic and Health Survey 2008-09 Preliminary Report. Calverton,
    Maryland. KNBS, NACC, NASCOP, NPHLS, KMRI, NCAPD, ICF Macro, September 2009.
4   National AIDS and STI Control Programme, Kenya AIDS Indicator Survey 2012, Preliminary Report,
    September 2013

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Foreword

The Ministry of Health has adopted an evidence-informed approach for advocacy, planning, and budgeting at the National and County levels for the HIV and AIDS response. Understanding trends in the HIV epidemic and the burden in different Counties is an important step in this approach. The successful implementation of the HIV prevention and treatment programme has shown positive results, with Kenya's 2014 HIV estimates clearly indicating a decline in the trajectory of the HIV epidemic.

This 2014 HIV Estimates Report aims to provide an improved understanding of the HIV epidemic in Kenya, and offers important insights into the impact of various interventions. The estimates have been derived from many important data sources and benefit from National consultation and review with key stakeholders from the government, national and international organizations. The highlights of this report include a gradual decline in adult HIV incidence to an estimated 0.44% in 2013. When prevention programs achieve heightened awareness, significant changes in behaviour will occur. This is expected to lead to a significant reduction in the need for PMTCT services, as well as a reduction in the number of new HIV infections. There is therefore an urgent need to

Kenya has a number of information sources on HIV prevalence levels and trends, Understanding trends in the HIV epidemic and the burden in different Counties is important in management of the epidemic.

scale up prevention programmes in an effort to continue reducing HIV incidence. A positive outcome of treatment scale up is the reduction in mortality, and a corresponding reduction in the number of AIDS orphans. Although prevalence still remains high at about 6%, a combination of increased awareness, scale up of prevention and treatment programs will lead to a sustained decline of HIV prevalence in Kenya. However, the wide geographic variation in HIV burden directs us to redouble our efforts and commitment to further reduce the burden of HIV and AIDS.

The Estimates Report process was coordinated by a Technical Working Group on HIV estimates with experts from NACC, NASCOP, KNBS, KEMRI, Future Institute, UNAIDS, CDC, and WHO under the overall coordination of National AIDS Control Council. I give particular thanks all the experts from these organizations.

John Stover from Futures Institute is thanked for his guidance and technical support, as well as UNAIDS for their financial and technical support during this process. My special appreciation goes to Dr Patrick Murethi and Dr Joyce Njeri for their contributions in coordinating the HIV estimates process and disseminating the results. I am sure that this report will be useful to programme managers, epidemiologists and researchers across the country.

Mr. James Macharia,
Cabinet Secretary, Ministry of Health,
Government of Kenya

Preface

The National AIDS Control Council in consultation with the national and international epidemiologists, demographers, public health experts and monitoring and evaluation specialists undertakes estimation of HIV burden annually. Futures Institute and UNAIDS provide continuous technical support to this process. The estimates are based on data from Kenya Demographic Health Surveys, Kenya AIDs Indicator Surveys, HIV Sentinel Surveillance among pregnant women, data from programmes and census. The estimates use the Estimation and Projection Package and Spectrum tools as recommended by the UNAIDS Reference Group on Estimates, Modelling and Projections

The HIV Estimates bring forth a sound reflection on the existing nature of HIV burden and trajectory of the HIV epidemic in the form of prevalence, new infections, AIDS orphans and related deaths. With adult (15-49 years) HIV prevalence estimated at about 6% in 2013 and approximately 1.6 million people living with HIV, Kenya has succeeded in reducing the epidemic through focused interventions. However, nine Counties contribute 65% of the total national new HIV infections, and some Counties have hyper-endemic prevalence levels that compare to Southern African countries. The details of these and other indicators are provided in this report. The robust estimates generated for Kenya and the 47 Counties are a rich resource for county level planning, estimating the resource needs and for developing strategies for scaling up high impact interventions.

The HIV Estimates bring forth a sound reflection on the existing nature of HIV burden and trajectory of the HIV epidemic in the form of prevalence, new infections, AIDS orphans and related deaths.

Although Kenya's progression in the AIDS response is unambiguous, the gains need to be capitalised.

Kenya must sustain its efforts and move forward in achieving National and internationally committed targets. Considering the varied nature of the epidemic across the Counties, and endeavouring to implement a range of essential HIV programmes on a population wide scale based on a sound evidence base, can Kenya meet the challenge of realising zero new infections?

In order to achieve this goal and free future generations from AIDS, we require leadership, political commitment, civil society participation, knowledge capital generation, financial resources, innovations in developing new and affordable medicines and preventive technologies. We also need to tackle the fundamental drivers of the epidemic, particularly gender inequality, poverty, stigma and discrimination in family and health service settings. In doing so, we will achieve our goals.

Director,
National AIDS Control Council

Executive Summary

75%

of new HIV infections among children occured in 5 of the 47 Counties: *Homabay, Kisumu, Siaya, Migori and Kisii*

Adult HIV Incidence Rate

0.62% in 2000

0.44% in 2013

The National HIV and AIDS Estimates process, led by the Ministry of Health, is designed to describe the impact of the epidemic at national and county levels. It estimates HIV prevalence and incidence, AIDS-related deaths, the impact of care and treatment and the number of pregnant women and children affected by HIV and AIDS and the current number of AIDS orphans.

The 2014 National and County HIV and AIDS estimates were generated using the Estimation and Projection Package (EPP) and Spectrum software recommended by the UNAIDS Reference Group on Estimates, Modeling and Projections. The software uses data collected from antenatal clinic surveillance, population based surveys including the new Kenya AID Indicator Survey II (KAIS 2012) and other program data to estimate the prevalence of HIV and its impact on the population.

Because the data, methods and software changes with each estimate process, the prevalence estimates are not directly comparable. Only the estimates produced by a single curve or model can be meaningfully compared to assess changes in HIV prevalence, and describe trends in the epidemic. This report presents the trend of data generated since 2000 in the current EPP and Spectrum software.

In this report, two sets of estimates were prepared. The National estimates projected indicators for all of Kenya by fitting prevalence curves to surveillance and survey data for urban and rural populations. The Regional estimates produced separate data for each of the former provinces by fitting prevalence curves to data for each province. The provincial estimates may be aggregated to produce National estimates. Final estimates were derived from the National data. The Regional estimates have been used to disaggregate the National indicators to the provincial and county levels.

Adult HIV Prevalence

The National HIV and AIDS Estimates Working group estimated HIV prevalence rate among people aged 15-49 to be 6.0% in 2013. Although the Spectrum results show a continued decline of HIV prevalence among adult population from late 1990s to 2008 the prevalence has since stabilized. Kenya's HIV epidemic is geographically diverse, ranging from a prevalence of 25.7 percent in Homa Bay County in Nyanza region to approximately 0.2 per cent in Wajir County in North Eastern region. These new estimates confirm a decline in HIV prevalence among both men and women at National level. Prevalence remains higher among women at 7.6% compared to men at 5.6% .

In descending order, Counties with the highest adult HIV prevalence in 2013 included Homa Bay 25.7%; Siaya 23.7%; Kisumu 19.3%; Migori 14.7%; Kisii 8%; Nairobi 8%; Turkana 7.6%; and Mombasa 7.4%

National HIV
Prevalence
6%

5.6% | 7.6%

1.6 million Kenyans were living with HIV in 2013

1.4 million Adults were living with HIV in 2013

191,840 Children (0-14 years) were living with HIV in 2013

COUNTY	PREVALENCE (%)
HOMA BAY	**25.7**
SIAYA	**23.7**
KISUMU	**19.3**
MIGORI	**14.7**
NAIROBI	**8.0**
KISII	**8.0**
TURKANA	**7.6**
MOMBASA	**7.4**
BUSIA	6.8
TAITA TAVETA	6.1
KAKAMEGA	5.9
BOMET	5.8
NAKURU	5.3
MURANGA	5.2
TRANS NZOIA	5.1
NAROK	5.0
MACHAKOS	5.0
KIAMBU	3.8
BUNGOMA	3.2
UASIN GISHU	4.3
KILIFI	4.4
NYAMIRA	6.4
MAKUENI	5.6
MERU	3.0

COUNTY	PREVALENCE (%)
KAJIADO	4.4
KWALE	5.7
KITUI	4.3
NYERI	4.3
NANDI	3.7
KERICHO	3.4
NYANDARUA	3.8
KIRINYAGA	3.3
VIHIGA	3.8
EMBU	3.7
BARINGO	3.0
LAIKIPIA	3.7
THARAKA	4.3
WEST POKOT	2.8
SAMBURU	5.0
ELGEYO MARAKWET	2.5
MANDERA	1.70
GARISSA	2.10
ISIOLO	4.20
MARSABIT	1.20
LAMU	2.30
TANA RIVER	1.00
WAJIR	0.20

ANNUAL NEW HIV INFECTIONS 2013

12,940   50,530   38,090

TREATMENT NEEDS

	2005 (CD4 <200)	2013 (CD4 <350)
Children (0-14)	213,000	760,000
Adults 15+	103,000	141,610
HIV+ pregnant women	92,000	79,000

AIDS RELATED DEATHS 2013

10,390   27,310   20,765

HIV prevalence among males and females aged 15 to 24

HIV prevalence among young females aged 15-24 was higher than that of males in the same age group at 2.7% and 1.7% respectively. Overall HIV prevalence was 2.2% for the same age group. Notably young women in this age group account for 21% of all new HIV infections in Kenya, a clear incidence marker.

Annual New HIV Infections

There were approximately 88,620 new HIV infections that occured among adults and 12,940 among children in 2013. Five counties: Homabay (12,280), Kisumu (10,350), Siaya (9870), Migori (6790) and Kisii (4890) contributed about 50% of the

760,000

Estimated number of adults in need of Anti Rertroviral Treatment in 2013

total new adult infections and 75% of the new infections that occurred among children nationally.

Trends in New HIV Infections

Kenya has seen a decline in HIV incidence rates among adults aged 15-49 from 0.62% in 2000 to 0.44 in 2013 possibly due to the scale up of various prevention and treatment programmes. In terms of absolute numbers, the new HIV infections among all adults 15+ declined by 15% nationally from 105,000 in 2000 to 88,620 in 2013. Among children a declined was noted from 44,000 in 2000 to 12,940 in 2013.

Treatment Needs

If the country continues the scale up of prevention programmes, a positive outcome will be the reduction in need for prevention of mother to child transmission (PMTCT) and child treatment services. The number of HIV-positive pregnant women in need of PMTCT services in 2005 was 92,000. In 2013, approximately 79,000 HIV positive pregnant women required PMTCT services. The decrease in the number of HIV+ pregnant women is likely to be a function of several factors; reduced transmission (incidence) in the young women, reduced number of pregnancies in older women as a result of either reduced fertility or increased awareness hence better fertility choices.

The number of adults in need of ART reached 213,000 in 2005 and is estimated to have reached 760,000 in 2013 based on CD4 <350. During the same period the ART needs among children (0-14) rose from 103,000 to 141,610.

Deaths averted/Lives Saved Due to ART

It is estimated that the scale up of ART since 2009 has saved over 380,000 lives in the country by averting deaths due to AIDS-related causes.

People Living with HIV

While the decline in HIV prevalence is encouraging, the total number of people living with HIV (PLHIV) in Kenya was estimated to be 1.6 million in 2013. Children under 15 years of age account for 12% of all people living with HIV. An estimated 58% (815,630) of all adults aged 15+ living with HIV in Kenya are women.

Approximately 44% of all adults living with HIV in the country are in five counties; Nairobi (164,660); Homa Bay (140,600), Kisumu (118,500), Siaya (113,000) and Migori (77,700)

AIDS Related Deaths

Annual AIDS related deaths have declined since 2003. Approximately 58,465 people died of AIDS related causes in 2013 compared to 167,000 in 2003. The decline is directly attributable to the wider access to ART—made available with the roll out of free ART in 2003—and the ability of the National AIDS/STI Control Programme to cover treatment needs for HIV and AIDS, co-infections and provide care services.

AIDS deaths are estimated based on the latest global evidence on survival time, with and without treatment, and globally recognized methods and models are used to calculate this specific indicator. Estimates of adult AIDS related deaths are based on several assumptions and additional data sets that include: estimates of the number of adults and children who are living with HIV, and estimates of survival from the time of infection to the time of death for both adults and children living with HIV, with or without treatment.

Despite progress in advancing towards national targets much remains to be done to halt and reverse the spread of HIV in Kenya. In absolute terms, a large proportion of Kenya's population is infected or affected by HIV. The spread of the epidemic must be halted; with zero new infections the principal target. The vision of eliminating the the AIDS epidemic can be realized through generation of strategic county level information and translation of this information into policy and practice by planners, programme administrators and implementers. Data presented through Kenya HIV Estimates should act as a primary step to catalyze continued action.

Sustained Action Needed for 'Getting to Zero'

The evidence presented above shows that Kenya is on track to achieve the global targets of 'Zero New Infections, Zero AIDS-related deaths and Zero discrimination'. Sustaining prevention focus and intensity in the areas where significant declines in HIV incidence have been achieved is critical to consolidate these gains. Emerging epidemics must be addressed effectively and prevention efforts intensified in high prevalence areas. With increasing treatment coverage and a decline in AIDS-related deaths, a significant number of people are likely to require first and second line ART treatment in the coming years. A major challenge for the HIV programme will be to ensure that the treatment requirements of people living with HIV are fully met without sacrificing the needs of prevention.

The evidence presented above shows that Kenya is on track to achieve the global targets of 'Zero New Infections, Zero AIDS-related deaths and Zero discrimination'. Sustaining prevention focus and intensity in the areas where significant declines in HIV incidence have been achieved is critical to consolidate these gains.

Background

Kenya has a number of information sources on HIV prevalence levels and trends. Four national surveys; the Kenya Demographic and Health Survey of 2003[1] (KDHS 2003), the Kenya AIDS Indicator Survey 2007[2] (KAIS 2007), the Kenya Demographic and Health Survey of 2008/9[3] and the Kenya AIDS Indicator Survey 2012[4], provide good estimates of national prevalence and trends. Antenatal clinic surveillance has been conducted since 1990, starting with 13 sites and expanding to 44 sites today. ANC surveillance provides information on trends at surveillance sites particularly in the period before the first survey in 2003. The new estimates for 2013 are based on the four national surveys and surveillance data through 2011.

HIV testing among pregnant women at PMTCT sites has now reached high coverage and may be useful for tracking national trends in the future. This data has not been used in this report due to uncertainties about comparability with ANC estimates. We do expect this issue to be addressed so that prevalence estimates from PMTCT testing can be used in the future.

HIV testing among pregnant women at PMTCT sites has now reached high coverage and may be useful for tracking National trends in the future.

Kenya produces annual estimates of HIV prevalence and key indicators. The last estimates were prepared in 2011[5]. This paper describes the process used to prepare the 2013 national estimates and the results for key indicators.

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1   Central Bureau of Statistics (CBS) [Kenya], Ministry of Health (MOH) {Kenya], and ORC Macro. 2004. *Kenya Demographic and Health Survey 2003.* Calverton, Maryland" CBS, MOH and ORC Macro.

2   National AIDS and STD Control Programme, Ministry of Health, Kenya. July 2008. *Kenya AIDS Indicator Survey 2007: Preliminary Report.* Nairobi, Kenya.

3   KNBS [Kenya] 2009. *Kenya Demographic and Health Survey 2008-09 Preliminary Report.* Calverton, Maryland. KNBS, NACC, NASCOP, NPHLS, KMRI, NCAPD, ICF Macro, September 2009.

4   National AIDS and STI Control Programme, Kenya AIDS Indicator Survey 2012, Preliminary Report, September 2013

5   NACC and NASCOP. National HIV Indicators for Kenya: 2011. Nairobi, NACC and NASCOP, March 2012.

Methods

The methods used to estimate national HIV prevalence in Kenya have changed over time in response to the data available. Before the first national survey, smooth prevalence curves were fit to individual surveillance sites to determine trends at those sites, and then these trends were aggregated by weighting them by the population represented by each site. When the first national survey became available the national trend was adjusted to match the survey findings in 2003[6]. Now that four surveys are available they can be used to adjust not only the level but also the trend in prevalence from 2003 to 2012.

This curve fitting process smooths annual fluctuations in surveillance and survey data. Although the final curve may not be an exact match for the point estimates from any one survey, it should lie within the confidence bounds of all survey estimates.

UNAIDS has supported the development of a number of tools to make national estimates. For Kenya the relevant tools are the Estimation and Projection Package (EPP) and Spectrum[7],[8]. EPP is used to fit smooth prevalence curves to surveillance and survey data separately for urban and rural areas. These curves are then combined into a single national curve. The incidence implied by the national

prevalence curve is then transferred to Spectrum where it is combined with additional information on the age structure of incidence and program coverage (ART, PMTCT, cotrimoxazole for children) to estimate indicators of interest such as the number of people living with HIV, the number of new infections, AIDS deaths and the need for ART, PMTCT and cotrimoxazole.

For this round two sets of estimates were prepared. The *National* set projected indicators for all of Kenya on the basis of fitting prevalence curves to surveillance and survey data for urban and rural populations. The *Regional* set produced separate estimates for each of the former provinces by fitting prevalence curves just to data for each province. The provincial estimates may be aggregated to produce national estimates. The *National* file has been used for the final estimates. The *Regional* estimates have been used to disaggregate the national indicators to the provincial and county levels.

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6   National AIDS Control Council (NACC) and National AIDS and STD Control Programme (NASCOP) 2007. National HIV Prevalence in Kenya. Nairobi: NACC and NASCOP.
7   Stover J, Brown T, Marston M. Updates to the Spectrum/Estimation and Projection Package (EPP) model to estimate HIV trends for adults and children (2012) Sex Trans Infect 2012;88:i11–ii16. doi:10.1136/sextrans-2012-050640
8   Futures Institute, AIM: A Computer Program for Making HIV/AIDS Projections and Examining The Demographic and Social Impacts of AIDS, Glastonbury, CT: Futures Institute, January 2014.

How the Estimates are Derived

DATA FROM FOUR NATIONAL SURVEYS IS USED TO GENERATE GRAPHS THAT GIVE AN INDICATION OF HIV TREND IN KENYA
❶ Kenya Demographic and Health Survey of 2003 (KDHS 2003)
❷ Kenya AIDS Indicator Survey 2007 (KAIS 2007)
❸ Kenya Demographic and Health Survey of 2008/9
❹ Kenya AIDS Indicator Survey 2012

SURVEILLANCE DATA
Collected from surveillance sites

PROCESSING TOOLS
Estimation and Projection Package (EPP) and Spectrum.
• EPP is used to fit smooth prevalence curves to surveillance and survey data separately for urban and rural areas. These curves are then combined into a single National curve.
• The incidence implied by the national prevalence curve is transferred to Spectrum where it is combined with additional information (age structure of incidence and program coverage) to estimate indicators of interest such as the number of people living with HIV, the number of new infections e.t.c

RESULTS
Kenya HIV Estimates.
• The resulting information provides a riliable guide on HIV trend in Kenya

Results

SUMMARY OF RESULTS

Table 1.   **National HIV estimates for 2013**

Indicator	Value	Range
Number living with HIV	1.6 million	1.5 – 1.7 million
Prevalence 15+	6%	5.6 – 6.6%
New adult infections	89,000	69,000 – 110,000
New child infections	12,900	9,300 – 17,000
Annual AIDS deaths	58,000	49,000 – 72,000
Need for ART: adults	760,000	730,000 – 800,000
Need for ART: children	140,000	120,000 – 160,000
Mothers needing PMTCT	79,000	69,000 – 90,000

Table 1 shows the results for key indicators for 2013.
These estimates are similar to those produced previously.
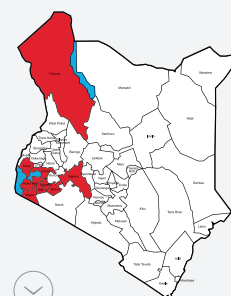
65%
of new HIV infections occur in nine of the 47 Counties

Adult HIV Prevalence

Adult HIV prevalence is the percentage of adults aged 15-49 living with HIV. For urban areas the sentinel surveillance data indicated that HIV prevalence rose sharply during the late 1980s and early 1990s reaching a peak in the mid-1990s. Since then, HIV prevalence has declined in most sites and in some sites the decline has been quite steep (Figure 1)

Figure 1.   **Sentinel Surveillance for Urban Areas**

Kitui	Nyeri	Kisii	Kitale
Thika	Kakamega	Kisumu	Busia
Dandora	Baba Dogo	Jericho	Nakuru
Garissa	Meru	Mombasa	Kariobangi
Riruta	Median		
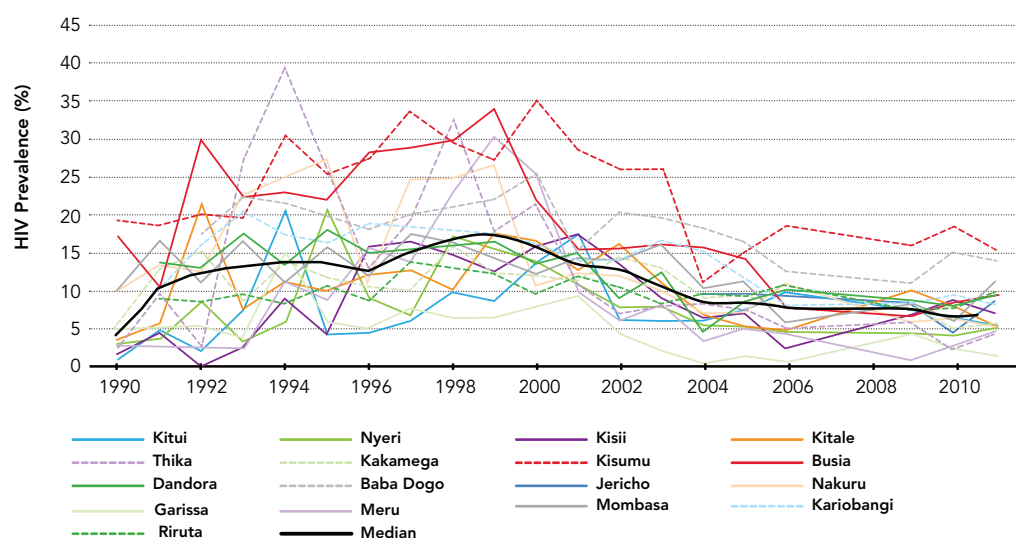
According to the national surveys HIV prevalence among urban adults declined from 10.0% (6.9%-13.1%) in 2003 to 8.0% (6.6%-10.2%) in 2007 to 7.2% (4.6%-9.8%) in 2008/9 and to 6.5% (4.2%-8.8%) in 2013. Together this information indicates that urban prevalence peaked around 1996 and has steadily declined. This trend is shown in Figure 2 below.

The urban prevalence trend was fit to the data using the R-trend model. No prevalence restrictions were applied and the default prior assumptions for the model parameters were used. All surveillance data (with exception of results for 1995 and 1996 excluded from the fit due to data anomalies) and data from the four surveys were included.

Figure 2.   **Prevalence Trend for Urban Areas**
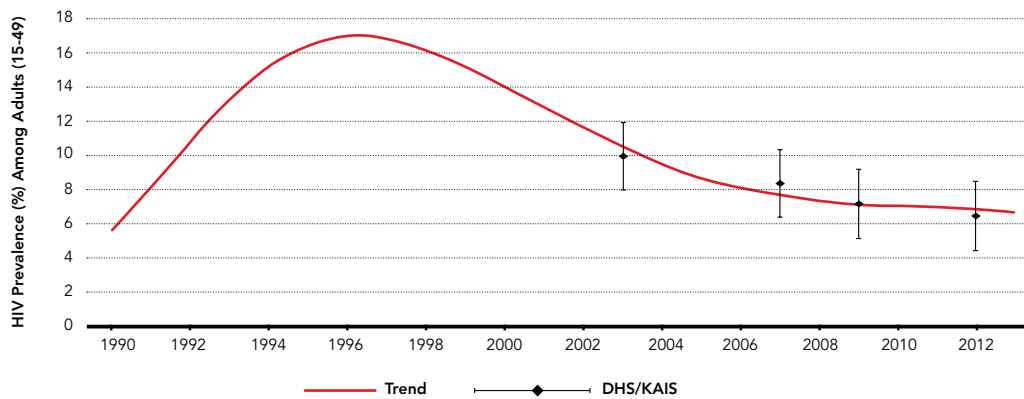
Antenatal surveillance data also indicates that rural HIV prevalence rose during the mid- 1990s, then began to decline in around 2000, levelling off in the last few years (Figure 3).

Figure 3: Sentinel Surveillance for Rural Areas
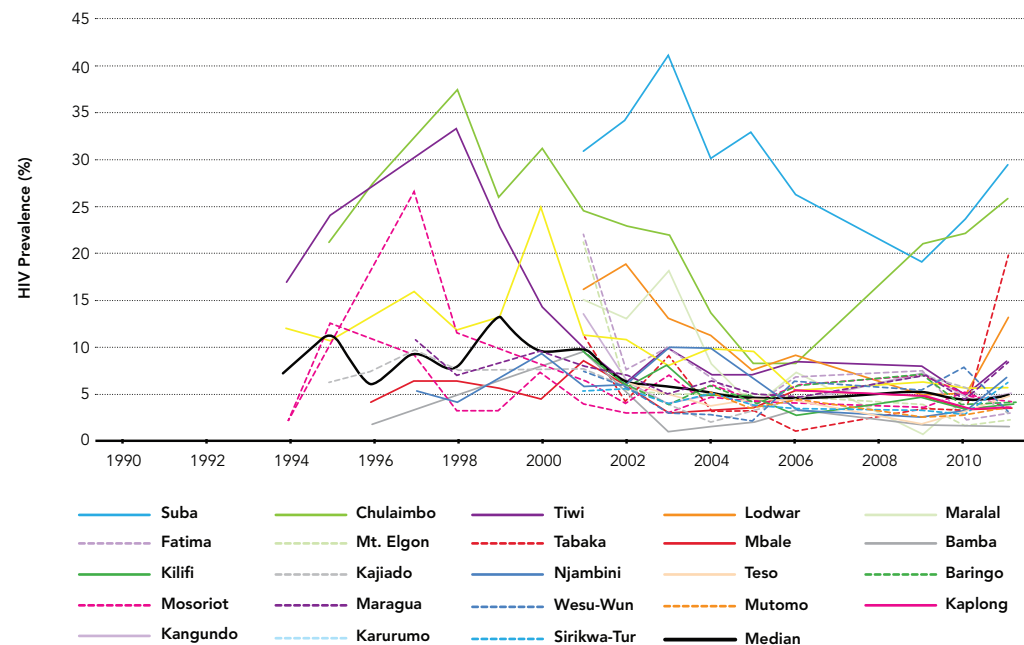
The surveys show that rural HIV prevalence has been more or less constant since 2003 with estimates of 5.6% (4.2%-7.0%) in 2003, 6.7% (5.7%-7.7%) in 2007, 6.0% (4.6%-7.4%) in 2008/9 and 5.1% (3.5%-6.7%) in 2012.For this estimate, awith the prevalence curve has been roughly stable over the past few years, as indicated by the surveys and surveillance data. The result is shown in Figure 4.

All surveillance data and surveys were used to fit the rural prevalence curve using the EPP Classic model using default parameter values.

Figure 4.   **Prevalence Trend for Rural Areas**
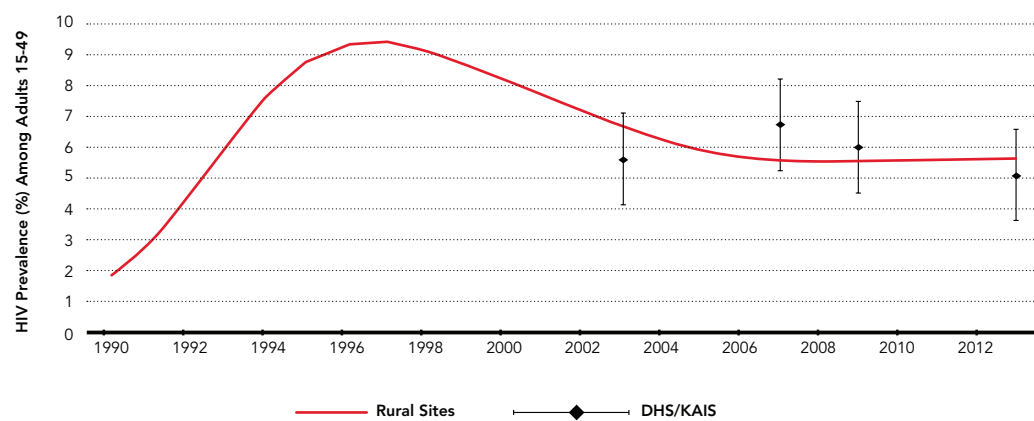
Combining the two trends indicates that National prevalence peaked at 10-11% in the mid-1990s, declined to about 6% by 2006 and has been relatively stable at that level for several years (Figure 5).

Figure 5. **National Prevalence Trend**

The national projection was validated by comparing the estimated total mortality with deaths estimates from vital statistics (adjusted for undercount) as shown in Figure 6 and by comparing the estimated age-specific prevalence with survey estimates as shown in Figure 7.

Figure 6.   **Spectrum Estimate of All Cause Mortality Compared to Vital Statistics**
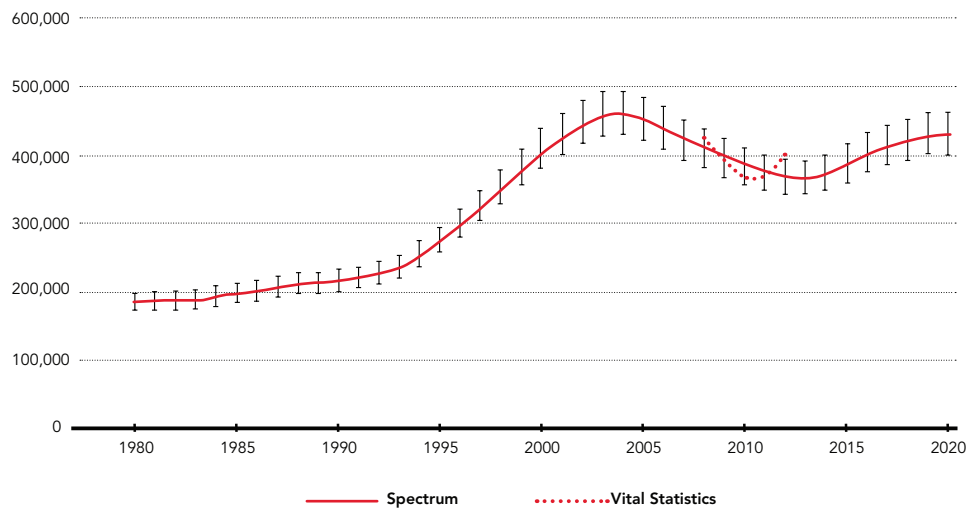
Figure 7. Spectrum estimates of prevalence by age compared to survey estimates

Prevalence by Age, 2012

Males

Females

Prevalence by Age, 2007

Males

Females

Prevalence by Age, 2009

Males

Females
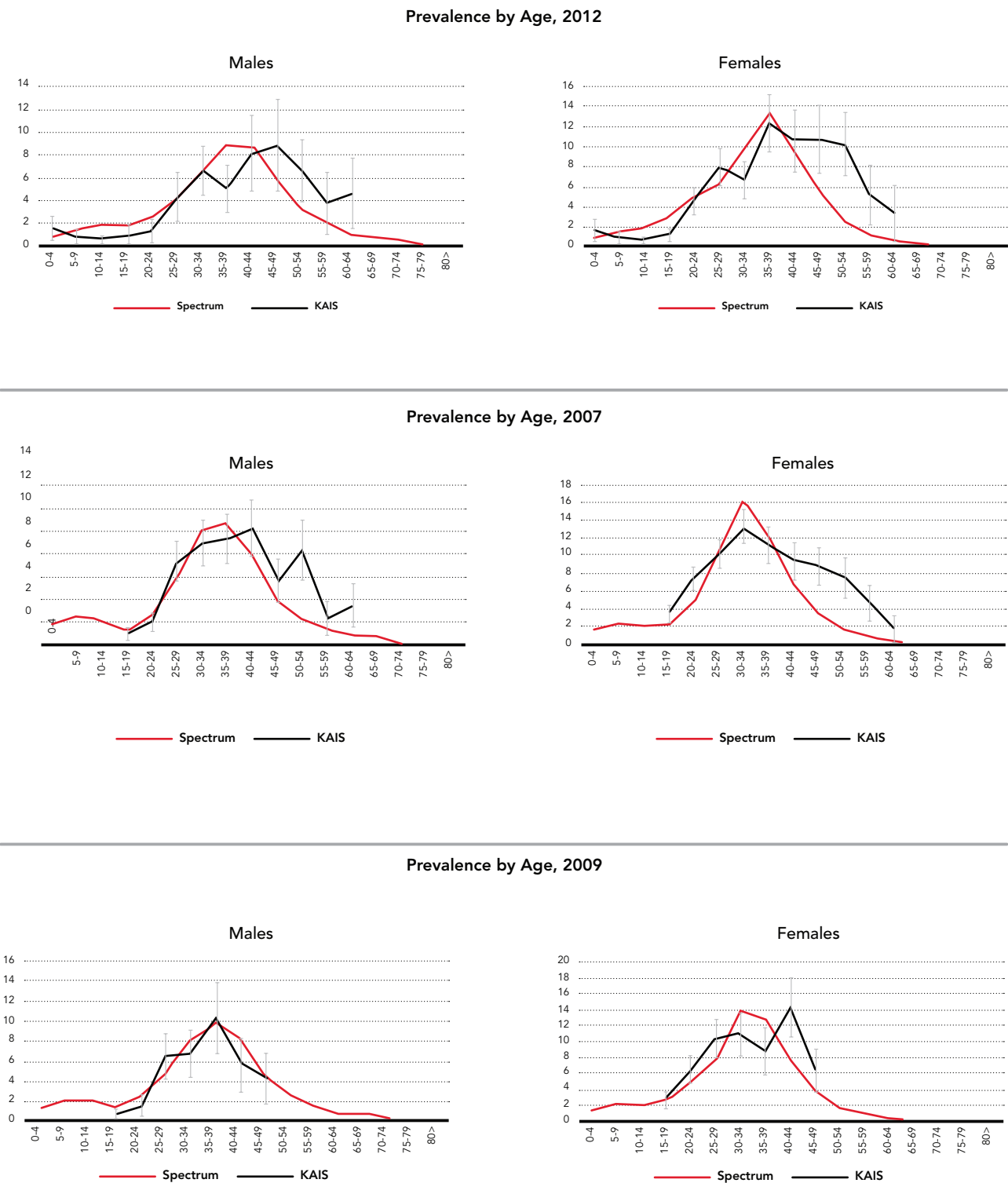
New Adult HIV Infections

National adult HIV incidence is estimated over time by use of prevalence trends and incorporating the effects of AIDS mortality, non-AIDS mortality and population aging. These calculations indicate that the annual number of new HIV infections increased steadily to a peak in the mid-1990s before declining sharply to about 100,000 per year by 2004 and then declining again the last two years to a range of 85000-90,000 in 2013 (Figure 8).

This trend implies that HIV incidence rate has declined from 2003 at 0.62 (0.57-0.69) to about 0.44 (0.34-0.56) in 2013. Since 2004 new HIV infections stabilized at a level of about 90,000 per year.

Figure 8. Annual Number of Adult HIV Infections
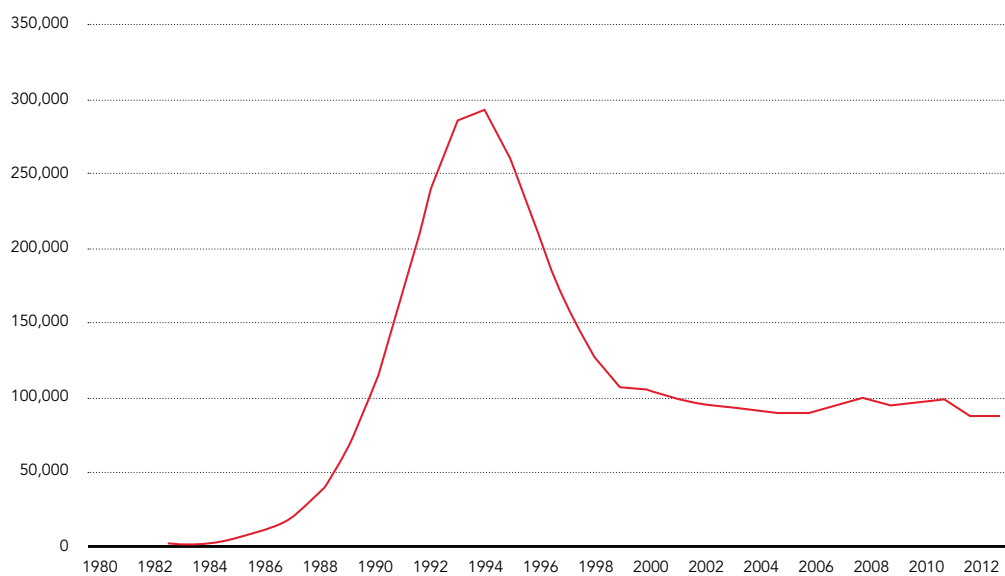
Need for Treatment

The estimated number of new adult HIV infections is combined with information about progression in CD4 counts, the mother-to-child transmission rate and service statistics to estimate the need for services. For adult ART, eligibility for treatment was a CD4 count of less than 200 cells/µl through 2006, less than 250 cells/µl from 2007-2009 and a CD4 count of less than 350 cells/µl in 2010 and later. Spectrum tracks adults living withn HIV by CD4 count based on assumed rates of progression to lower CD4 counts, AIDS mortality by CD4 count and initiation of ART[1].The parameters of the model were set to reproduce the CD4 count distribution of the population living with HIV who were not on ART, asreported by the 2007 KAIS (Figure 9).

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1   Futures Institute, AIM: A Computer Program for Making HIV/AIDS Projections and Examining The Demographic and Social Impacts of AIDS, Glastonbury, CT: Futures Institute, January 2014.

For children, eligibility for treatment is based on Kenyan guidelines as updated in 2008 which include all children living with HIV under the age of 18 months, children 19-59 months with CD4 percent under 25 and children older than 5 years with CD4 counts under 350. The child model in Spectrum follows children from HIV infection to death based on survival patterns, which are dependent on time of infection (peripartum, 6-12 months, 13-24 months, >24 months)[2].

Spectrum calculates the number of children infected through mother-to-child transmission using program data on the number of women receiving PMTCT services by regimen and the latest estimates of the probability of transmission for each option[3].

There are uncertainties inherent in these estimates based on the error of measuring HIV prevalence through population surveys and the uncertainty in the assumptions used for time of progression, the distribution of new

Figure 9. **Distribution of HIV Positive Adults not on ART in 2007**
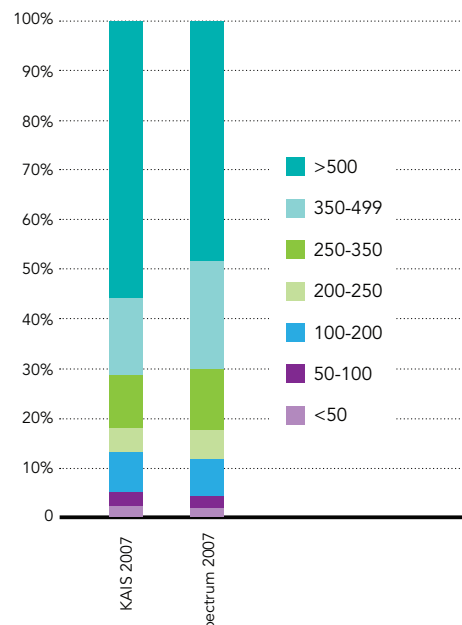
infections by age and sex, mother-to-child transmission rates, and the effectiveness of treatment. In order to quantify this uncertainty we performed 1000 Monte Carlo projections using randomly selected values for these assumptions with ranges indicated by the sources. The results provide plausibility bounds around each estimate.

2   Futures Institute, AIM: A Computer Program for Making HIV/AIDS Projections and Examining The Demographic and Social Impacts of AIDS, Glastonbury, CT: Futures Institute, January 2014.
3   Rollins N, Mahy M, Becquet R, Kuhn L, Creek T, Mofenson L. Estimates of peripartum and postnatal mother-to-child transmission probabilities of HIV for use in Spectrum and other population-based models *Sex Trans Infect* 2012;88:i44-i51.

Impact

The Spectrum model is used to estimate the impact of treatment in terms of the number of lives saved. This scenario is compared to an hypothetical situation in which no one is placed on ART. The difference in the number of AIDS deaths between the two projections, is then estimated as impact of treatment. Figure 10 shows an estimated 380,000 AIDS deaths have been averted through 2013 due to the scale-up of ART.

Figure 10. HIV-related Deaths Averted by ART
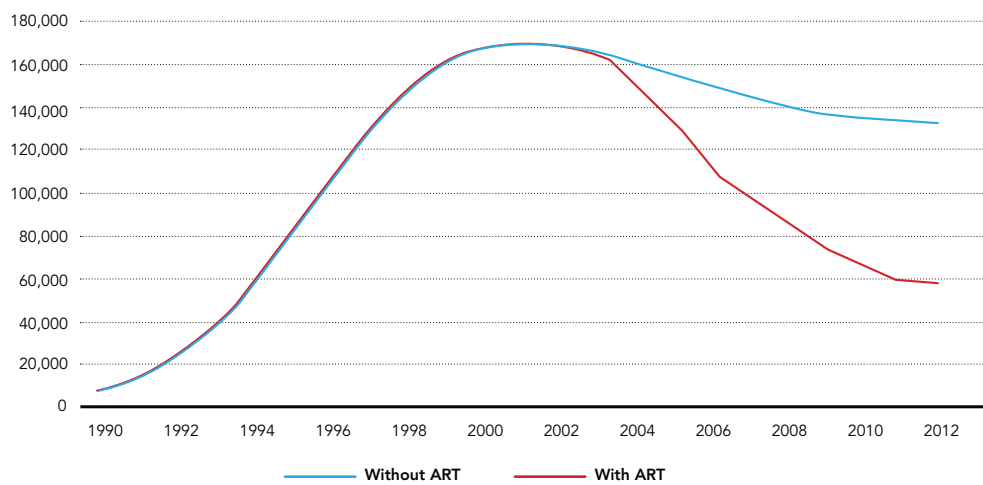
The program to prevent mother-to-child transmission of HIV has been scaled up rapidly in the past few years. In 2013 about 55,000 women living with HIV received ARV prophylaxis to prevent transmission to their new born children. This represents about 70% of need. As a result of the scale up of this program since 2004, about 73,000 child HIV infections have been averted as shown in Figure 11.

Figure 11. Number of Child Infections Averted by PMTCT
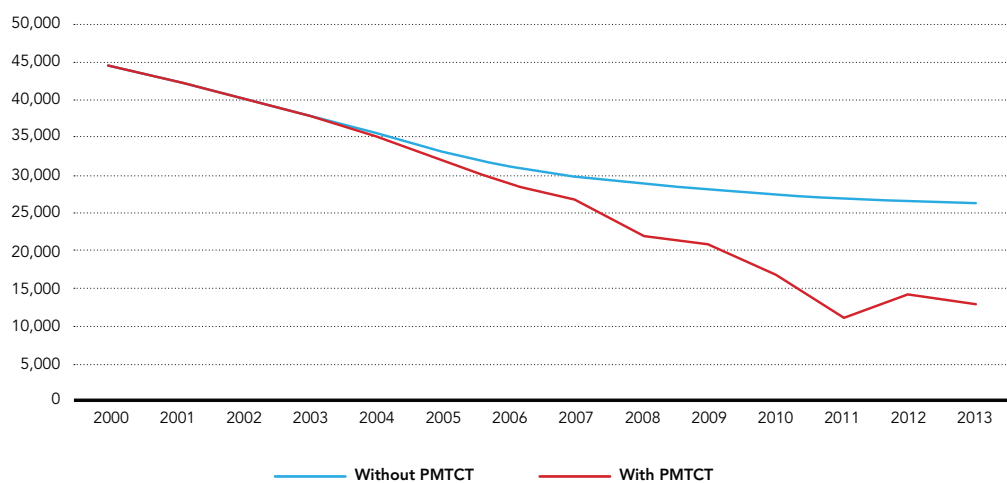
Annex Tables 1, 2 and 3 below show the full set of indicators.

County HIV Estimates

County HIV estimates of key indicators were prepared by disaggregating the National indicators, first to the province level, and then disaggregating the provincial total to the Counties within each province. Separate Spectrum files were prepared for each province and prevalence trends were fit to surveillance and survey data. Population projections for each province were based on total fertility rates and mortality indicators from KDHS and adjusted to match census estimates by county. The estimated prevalence trends for each province are shown in Figure 13.

Figure 12**. Prevalence trends by province**
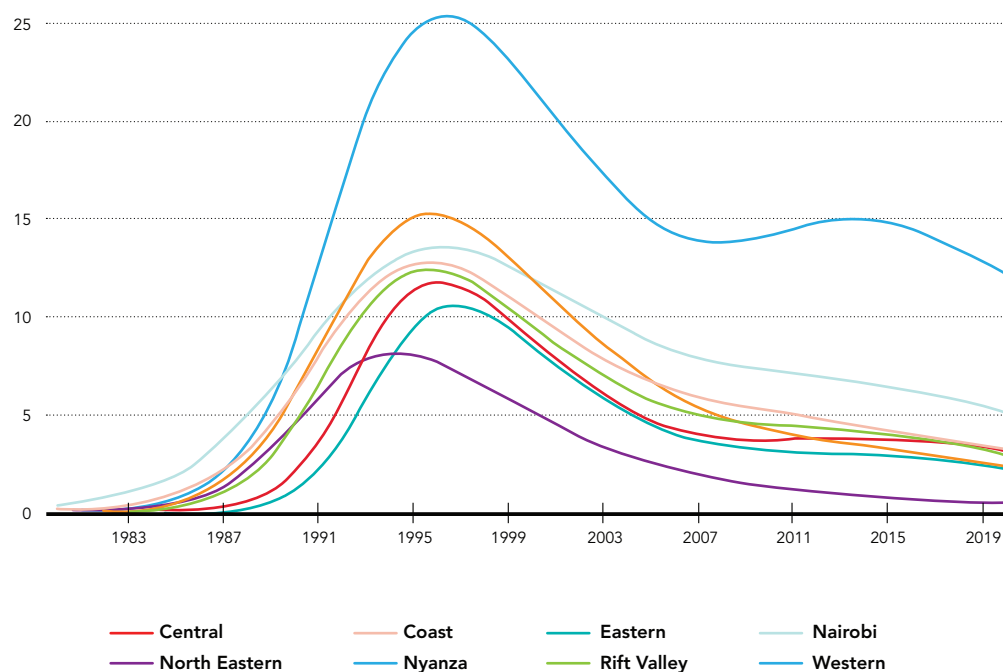
For each of the key indicators the National estimates were distributed to each province on the basis of that province's proportion of the total.

Estimates of prevalence by County were prepared by examining surveillance and survey cluster data from 2003 to 2012. For each County the prevalence trend was determined by one of five options: 1) overall average across all data points, 2) a linear trend fit to all data points, 3) the most recent value, 4) the latest KAIS estimate or 5) the latest KDHS estimate. The prevalence estimate for 2013 for each County was multiplied by the population 15-49 in the County to estimate the number of adults living with HIV aged 15-49. The number of adults living with HIV aged 15+ in each County was adjusted so that the total across all Counties in a province would equal the provincial total. Values for other indicators were first distributed by County according to the number of HIV+ adults and then adjusted to match the county totals. The results are shown below.

Table 2. National HIV estimates with bounds (1990-2013)

Year	HIV Adults + Children Estimate (Low-High)	New HIV infections Estimate (Low-High)	Annual AIDS Deaths Estimate (Low-High)	Prevalence Adult (%) Estimate (Low-High)	Incidence (15-49) (%) Estimate (Low-High)	HIV+ Adults (15+) Estimate (Low-High)	HIV+ Adult Female (15+) Estimate (Low-High)	New HIV infections - Adults (15+) Estimate (Low-High)	Annual AIDS deaths - Adults (15+) Estimate (Low-High)	Prevalence Young Male (15-24) Estimate (Low-High)	Prevalence Young Female (15-24) Estimate (Low-High)	HIV Children (0-14) Estimate (Low-High)	New Infections (0-14) Estimate (Low-High)	Orphans due to AIDS Estimate (Low-High)
1990	280 000 (240 000-330 000)	120 000 (110 000-150 000)	7600 (6600-9300)	2.5 (2.2-2.9)	1.15 (1.01-1.35)	270 000 (230 000-310 000)	150 000 (130 000-170 000)	120 000 (100 000-140 000)	5300 (4500-6600)	1.3 (0.9-1.7)	2.2 (1.9-2.6)	14 000 (12 000-17 000)	8700 (7300-10 000)	19 000 (16 000-24 000)
1991	460 000 (400 000-530 000)	190 000 (170 000-220 000)	13 000 (11 000-16 000)	3.9 (3.4-4.5)	1.69 (1.49-1.95)	430 000 (380 000-500 000)	240 000 (210 000-280 000)	180 000 (150 000-200 000)	9500 (8000-12 000)	2.0 (1.3-2.6)	3.4 (2.9-4.1)	23 000 (20 000-28 000)	14 000 (12 000-16 000)	35 000 (29 000-42 000)
1992	690 000 (610 000-790 000)	260 000 (230 000-290 000)	22 000 (19 000-27 000)	5.6 (5.0-6.4)	2.24 (2.01-2.51)	660 000 (580 000-750 000)	370 000 (330 000-430 000)	240 000 (210 000-270 000)	16 000 (14 000-20 000)	2.7 (1.9-3.7)	4.9 (4.1-5.8)	37 000 (31 000-44 000)	20 000 (17 000-24 000)	60 000 (51 000-74 000)
1993	970 000 (870 000-1 100 000)	310 000 (290 000-340 000)	35 000 (31 000-42 000)	7.5 (6.8-8.3)	2.60 (2.39-2.77)	910 000 (820 000-1 000 000)	520 000 (470 000-580 000)	290 000 (260 000-310 000)	27 000 (23 000-33 000)	3.5 (2.3-4.7)	6.4 (5.5-7.5)	55 000 (47 000-65 000)	28 000 (24 000-32 000)	100 000 (86 000-130 000)
1994	1 200 000 (1 100 000-1 400 000)	330 000 (310 000-350 000)	53 000 (46 000-63 000)	9.1 (8.4-9.9)	2.59 (2.47-2.69)	1 200 000 (1 100 000-1 300 000)	660 000 (610 000-730 000)	290 000 (280 000-310 000)	42 000 (36 000-51 000)	4.1 (2.7-5.4)	7.5 (6.7-8.8)	77 000 (67 000-90 000)	35 000 (31 000-40 000)	170 000 (140 000-200 000)
1995	1 500 000 (1 400 000-1 600 000)	300 000 (280 000-320 000)	75 000 (66 000-88 000)	10.3 (9.7-10.8)	2.24 (2.06-2.38)	1 400 000 (1 300 000-1 400 000)	770 000 (720 000-830 000)	260 000 (230 000-280 000)	60 000 (53 000-73 000)	4.3 (2.8-5.9)	8.1 (7.4-9.5)	100 000 (89 000-120 000)	40 000 (36 000-45 000)	260 000 (220 000-310 000)
1996	1 600 000 (1 500 000-1 700 000)	250 000 (230 000-280 000)	99 000 (88 000-110 000)	10.8 (10.3-11.2)	1.75 (1.56-1.92)	1 500 000 (1 400 000-1 600 000)	850 000 (800 000-900 000)	210 000 (180 000-230 000)	82 000 (73 000-96 000)	4.2 (2.7-6.0)	8.0 (7.4-9.5)	130 000 (110 000-140 000)	44 000 (39 000-49 000)	380 000 (330 000-460 000)
1997	1 700 000 (1 600 000-1 800 000)	210 000 (190 000-230 000)	120 000 (110 000-140 000)	10.8 (10.4-11.2)	1.33 (1.17-1.48)	1 500 000 (1 500 000-1 600 000)	880 000 (840 000-930 000)	160 000 (140 000-190 000)	100 000 (93 000-120 000)	3.8 (2.3-5.8)	7.4 (6.8-8.9)	150 000 (130 000-170 000)	46 000 (41 000-51 000)	530 000 (460 000-630 000)
1998	1 700 000 (1 600 000-1 800 000)	180 000 (160 000-200 000)	140 000 (130 000-160 000)	10.4 (10.1-10.8)	1.02 (0.91-1.15)	1 500 000 (1 500 000-1 600 000)	880 000 (840 000-930 000)	130 000 (110 000-150 000)	120 000 (110 000-140 000)	3.3 (2.0-5.4)	6.5 (5.9-8.1)	170 000 (150 000-190 000)	46 000 (42 000-51 000)	700 000 (620 000-820 000)
1999	1 700 000 (1 600 000-1 800 000)	150 000 (140 000-170 000)	160 000 (150 000-170 000)	9.9 (9.5-10.3)	0.82 (0.75-0.92)	1 500 000 (1 400 000-1 600 000)	860 000 (820 000-920 000)	110 000 (97 000-120 000)	130 000 (120 000-150 000)	2.8 (1.6-4.8)	5.6 (5.1-7.1)	190 000 (170 000-220 000)	46 000 (41 000-51 000)	890 000 (790 000-1 000 000)
2000	1 700 000 (1 600 000-1 700 000)	150 000 (140 000-170 000)	170 000 (160 000-180 000)	9.3 (9.0-9.7)	0.78 (0.72-0.87)	1 400 000 (1 400 000-1 500 000)	840 000 (790 000-890 000)	110 000 (97 000-120 000)	140 000 (130 000-160 000)	2.4 (1.4-4.3)	4.9 (4.3-6.2)	210 000 (190 000-240 000)	44 000 (40 000-49 000)	1 100 000 (950 000-1 200 000)
2001	1 600 000 (1 500 000-1 700 000)	140 000 (130 000-160 000)	170 000 (160 000-180 000)	8.7 (8.4-9.1)	0.71 (0.65-0.78)	1 400 000 (1 300 000-1 500 000)	810 000 (760 000-860 000)	99 000 (91 000-110 000)	150 000 (140 000-160 000)	2.1 (1.2-3.7)	4.2 (3.8-5.4)	230 000 (210 000-250 000)	42 000 (38 000-47 000)	1 200 000 (1 100 000-1 400 000)
2002	1 600 000 (1 500 000-1 700 000)	140 000 (120 000-150 000)	170 000 (160 000-180 000)	8.1 (7.7-8.5)	0.65 (0.60-0.73)	1 300 000 (1 300 000-1 400 000)	780 000 (730 000-830 000)	95 000 (87 000-110 000)	150 000 (140 000-160 000)	1.8 (1.1-3.1)	3.7 (3.3-4.7)	240 000 (220 000-270 000)	40 000 (36 000-45 000)	1 300 000 (1 200 000-1 500 000)
2003	1 500 000 (1 500 000-1 600 000)	130 000 (120 000-150 000)	170 000 (160 000-180 000)	7.5 (7.2-7.9)	0.62 (0.57-0.69)	1 300 000 (1 200 000-1 400 000)	750 000 (700 000-800 000)	94 000 (85 000-110 000)	140 000 (140 000-160 000)	1.6 (1.0-2.7)	3.3 (2.9-4.1)	250 000 (230 000-280 000)	38 000 (34 000-43 000)	1 400 000 (1 300 000-1 600 000)
2004	1 500 000 (1 400 000-1 600 000)	130 000 (120 000-140 000)	160 000 (150 000-180 000)	7.0 (6.7-7.4)	0.58 (0.53-0.65)	1 200 000 (1 200 000-1 300 000)	720 000 (670 000-770 000)	91 000 (83 000-100 000)	140 000 (130 000-150 000)	1.5 (0.9-2.4)	3.0 (2.7-3.7)	260 000 (230 000-290 000)	35 000 (31 000-40 000)	1 500 000 (1 400 000-1 700 000)
2005	1 400 000 (1 400 000-1 500 000)	120 000 (110 000-140 000)	150 000 (140 000-160 000)	6.6 (6.3-7.0)	0.55 (0.50-0.62)	1 200 000 (1 100 000-1 300 000)	690 000 (650 000-750 000)	89 000 (80 000-100 000)	120 000 (120 000-130 000)	1.4 (0.9-2.2)	2.8 (2.5-3.4)	260 000 (230 000-290 000)	32 000 (28 000-36 000)	1 600 000 (1 400 000-1 700 000)
2006	1 400 000 (1 300 000-1 500 000)	120 000 (110 000-140 000)	130 000 (120 000-140 000)	6.3 (6.0-6.7)	0.54 (0.49-0.61)	1 200 000 (1 100 000-1 300 000)	680 000 (640 000-730 000)	91 000 (81 000-110 000)	110 000 (100 000-120 000)	1.4 (0.9-2.1)	2.7 (2.4-3.3)	260 000 (230 000-290 000)	29 000 (25 000-33 000)	1 600 000 (1 400 000-1 700 000)
2007	1 400 000 (1 300 000-1 500 000)	120 000 (110 000-140 000)	110 000 (100 000-120 000)	6.2 (5.8-6.5)	0.55 (0.49-0.62)	1 200 000 (1 100 000-1 300 000)	680 000 (640 000-740 000)	95 000 (85 000-110 000)	87 000 (80 000-97 000)	1.4 (0.9-2.0)	2.6 (2.3-3.2)	260 000 (230 000-290 000)	27 000 (23 000-31 000)	1 600 000 (1 400 000-1 700 000)
2008	1 400 000 (1 400 000-1 500 000)	120 000 (110 000-140 000)	97 000 (89 000-110 000)	6.1 (5.7-6.5)	0.56 (0.50-0.63)	1 200 000 (1 100 000-1 300 000)	700 000 (650 000-750 000)	99 000 (88 000-110 000)	79 000 (72 000-89 000)	1.4 (1.0-2.1)	2.6 (2.3-3.2)	250 000 (220 000-280 000)	22 000 (19 000-26 000)	1 500 000 (1 400 000-1 600 000)
2009	1 500 000 (1 400 000-1 600 000)	120 000 (100 000-140 000)	86 000 (78 000-97 000)	6.0 (5.7-6.4)	0.53 (0.46-0.60)	1 200 000 (1 100 000-1 300 000)	710 000 (660 000-770 000)	96 000 (83 000-110 000)	69 000 (62 000-79 000)	1.5 (1.0-2.1)	2.7 (2.4-3.2)	240 000 (220 000-270 000)	21 000 (17 000-25 000)	1 500 000 (1 300 000-1 600 000)
2010	1 500 000 (1 400 000-1 600 000)	110 000 (97 000-130 000)	74 000 (65 000-85 000)	6.0 (5.7-6.4)	0.52 (0.44-0.60)	1 300 000 (1 200 000-1 400 000)	730 000 (680 000-800 000)	97 000 (82 000-110 000)	59 000 (52 000-69 000)	1.6 (1.1-2.1)	2.7 (2.4-3.3)	230 000 (210 000-260 000)	17 000 (13 000-20 000)	1 400 000 (1 300 000-1 500 000)
2011	1 500 000 (1 400 000-1 600 000)	110 000 (90 000-130 000)	67 000 (58 000-79 000)	6.1 (5.7-6.5)	0.51 (0.42-0.61)	1 300 000 (1 200 000-1 400 000)	760 000 (710 000-830 000)	99 000 (81 000-120 000)	54 000 (47 000-65 000)	1.6 (1.2-2.2)	2.8 (2.4-3.3)	220 000 (190 000-250 000)	11 000 (7 700-15 000)	1 300 000 (1 200 000-1 400 000)
2012	1 600 000 (1 400 000-1 700 000)	100 000 (81 000-130 000)	59 000 (51 000-72 000)	6.1 (5.6-6.5)	0.45 (0.35-0.55)	1 400 000 (1 300 000-1 500 000)	790 000 (730 000-860 000)	88 000 (70 000-110 000)	48 000 (40 000-59 000)	1.7 (1.2-2.2)	2.8 (2.4-3.3)	200 000 (180 000-230 000)	14 000 (11 000-18 000)	1 200 000 (1 100 000-1 300 000)
2013	1 600 000 (1 500 000-1 700 000)	100 000 (79 000-130 000)	58 000 (49 000-72 000)	6.0 (5.6-6.6)	0.44 (0.34-0.56)	1 400 000 (1 300 000-1 500 000)	820 000 (750 000-890 000)	89 000 (69 000-110 000)	48 000 (40 000-60 000)	1.7 (1.3-2.3)	2.8 (2.4-3.4)	190 000 (170 000-220 000)	13 000 (9 200-17 000)	1 100 000 (1 000 000-1 300 000)

Table 3. County HIV estimates for 2013

Counties	Population	People Living With HIV	HIV Prevalence	Living With HIV	New HIV infections annually	HIV-Related Deaths	Need for ART	NLiving With HIV	New HIV Infections annually	HIV-Related Deaths	Need for ART	Need for PMTCT	Adults receiving ART	Adult ART coverage (%)	Children receiving ART	coverage among Children (%)	Male	Female	Maternal Prophylaxis	%
				ADULTS (15+)					**CHILDREN (0-14)**					**ART**			**ADULTS (15-64) PREVALENCE**		**PROPHYLAXIS**	
Kenya	**41,792,563**	**1,599,451**	**6.04**	**1,407,615**	**88,622**	**48,072**	**760,694**	**191,836**	**12,941**	**10,393**	**141,608**	**79,036**	**596,228**	**79**	**60,141**	**42**	**5.6**	**7.6**	**55,543**	**70**
Baringo	632,588	10,553	3.00	9,200	707	525	4,498	1,353	34	73	952	540	2,406	53	345	36	2.6	4.3	160	31
Bomet	824,347	27,989	5.80	24,400	1,875	1,393	11,930	3,589	90	195	2,525	1,433	4,511	38	407	16	4.9	8.2	474	36
Bungoma	1,750,634	31,186	3.20	26,100	83	864	17,164	5,086	93	249	3,578	1,500	10,982	64	1,140	32	2.4	4.0	1,083	53
Busia	523,875	19,238	6.80	16,100	51	533	10,588	3,138	58	153	2,207	925	19,398	183	1,657	75	5.1	8.4	938	52
Elgeyo Marakwet	421,282	5,965	2.50	5,200	400	297	2,542	765	19	42	538	305	978	38	89	17	2.1	3.5	124	28
Embu	543,158	11,065	3.70	9,600	518	326	5,540	1,465	28	63	1,046	446	5,132	93	513	49	2.2	5.0	371	61
Garissa	409,007	4,375	2.10	3,300	116	521	1,649	1,075	14	69	755	220	786	48	73	10	0.8	3.6	42	12
Homa Bay	1,053,465	159,970	25.70	140,600	12,279	3,395	70,837	19,370	2,724	1,234	15,235	9,674	49,738	70	6,331	42	23.7	27.4	5,515	62
Isiolo	150,817	3,227	4.20	2,800	151	95	1,616	427	8	18	305	130	969	60	92	30	2.5	5.7	124	77
Kajiado	782,409	23,056	4.40	20,100	1,545	1,147	9,827	2,956	74	161	2,080	1,181	5,219	53	372	18	3.8	6.3	846	51
Kakamega	1,782,152	57,952	5.90	48,500	154	1,605	31,896	9,452	173	462	6,648	2,788	21,014	66	2,224	33	4.4	7.3	2,005	60
Kericho	863,222	18,124	3.40	15,800	1,214	902	7,725	2,324	58	126	1,635	928	9,299	120	832	51	2.9	4.8	835	51
Kiambu	1,760,692	46,656	3.80	42,400	2,931	1,207	23,747	4,256	96	180	3,041	1,500	24,104	102	2,011	66	2.0	5.6	1,518	75
Kilifi	1,262,127	27,907	4.40	24,400	821	1,021	13,868	3,507	87	179	2,459	1,387	9,884	71	1,087	44	2.7	6.3	1,476	113
Kirinyaga	572,889	12,654	3.30	11,500	795	327	6,441	1,154	26	49	825	407	5,831	91	559	68	1.7	4.8	314	55
Kisii	1,259,489	63,715	8.00	56,000	4,891	1,352	28,214	7,715	1,085	492	6,068	3,853	13,629	48	1,169	19	7.3	8.5	1,240	33
Kisumu	1,059,053	134,826	19.30	118,500	10,349	2,861	59,703	16,326	2,296	1,040	12,840	8,153	62,280	104	6,881	54	17.8	20.6	5,917	86
Kitui	1,065,329	21,092	4.30	18,300	988	622	10,561	2,792	54	120	1,994	849	9,273	88	1,269	64	2.5	5.8	698	54
Kwale	739,435	21,159	5.70	18,500	623	774	10,515	2,659	66	136	1,864	1,052	3,227	31	292	16	3.5	8.1	855	67
Laikipia	454,412	10,324	3.70	9,000	692	514	4,400	1,324	33	72	931	529	2,391	54	161	17	3.2	5.3	183	48
Lamu	115,520	1,487	2.30	1,300	44	54	739	187	5	10	131	74	700	95	80	61	1.4	3.2	147	319
Machakos	1,155,957	31,235	5.00	27,100	1,463	921	15,640	4,135	80	177	2,953	1,258	11,542	74	1,609	54	2.9	6.8	1,085	68
Makueni	930,630	25,472	5.60	22,100	1,193	751	12,754	3,372	65	145	2,408	1,026	9,705	76	1,480	61	3.3	7.6	825	59
Mandera	673,356	5,171	1.70	3,900	137	615	1,948	1,271	17	81	892	260	77	4	27	3	0.6	2.9	11	3
Marsabit	306,471	1,729	1.20	1,500	81	51	866	229	4	10	163	70	746	86	93	57	0.7	1.6	100	205
Meru	1,427,135	23,282	3.00	20,200	1,090	686	11,658	3,082	59	132	2,201	937	9,615	82	1,052	48	1.8	4.1	526	37
Migori	1,002,499	88,405	14.70	77,700	6,786	1,876	39,147	10,705	1,506	682	8,419	5,346	34,927	89	3,136	37	13.6	15.7	3,732	88
Mombasa	1,068,307	54,670	7.40	47,800	1,609	2,000	27,168	6,870	171	351	4,817	2,717	26,490	98	1,995	41	4.5	10.5	1,764	38
Muranga	1,022,427	31,581	5.20	28,700	1,984	817	16,074	2,881	65	122	2,058	1,015	7,177	45	656	32	2.8	7.7	468	40
Nairobi	3,781,394	177,552	8.00	164,658	3,098	3,579	102,103	12,894	316	448	9,398	4,982	93,714	92	6,988	74	5.3	8.4	9,700	133
Nakuru	1,825,229	61,598	5.30	53,700	4,127	3,065	26,255	7,898	199	429	5,558	3,154	16,345	62	1,677	30	4.5	7.5	1,692	53
Nandi	857,207	18,697	3.70	16,300	1,253	930	7,969	2,397	60	130	1,687	958	6,507	82	664	39	3.1	5.2	546	46
Narok	968,390	26,956	5.00	23,500	1,806	1,341	11,490	3,456	87	188	2,432	1,380	4,351	38	296	12	4.3	7.1	445	34
Nyamira	653,914	26,738	6.40	23,500	2,052	567	11,840	3,238	455	206	2,546	1,617	6,886	58	972	38	5.8	6.8	785	51
Nyandarua	646,876	14,305	3.80	13,000	899	370	7,281	1,305	29	55	932	460	5,596	77	592	63	2.0	5.6	255	46
Nyeri	752,469	20,797	4.30	18,900	1,307	538	10,586	1,897	43	80	1,355	669	10,471	99	924	68	2.3	6.3	463	58
Samburu	254,997	6,883	5.00	6,000	461	342	2,934	883	22	48	621	352	700	24	55	9	4.3	7.1	50	15
Siaya	920,671	128,568	23.70	113,000	9,869	2,728	56,932	15,568	2,190	992	12,244	7,775	46,413	82	5,285	43	21.8	25.3	5,547	108
Taita Taveta	323,867	11,209	6.10	9,800	330	410	5,570	1,409	35	72	988	557	2,903	52	194	20	3.7	8.7	341	52
Tana River	273,205	1,372	1.00	1,200	40	50	682	172	4	9	121	68	660	97	31	26	0.6	1.5	61	42
Tharaka	384,379	8,760	4.30	7,600	410	258	4,386	1,160	22	50	828	353	4,177	95	538	65	2.5	5.8	172	31
Trans Nzoia	932,223	27,874	5.10	24,300	1,867	1,387	11,881	3,574	90	194	2,515	1,427	6,618	56	725	29	4.4	7.3	464	24
Turkana	973,742	44,736	7.60	39,000	2,997	2,226	19,068	5,736	144	311	4,036	2,291	3,791	20	778	19	6.5	10.8	409	14
Uasin Gishu	1,017,723	28,677	4.30	25,000	1,921	1,427	12,223	3,677	92	200	2,587	1,469	17,614	144	1,895	73	3.7	6.1	466	29
Vihiga	595,301	11,829	3.80	9,900	31	328	6,511	1,929	35	94	1,357	569	6,324	97	769	57	2.8	4.7	680	63
Wajir	434,524	663	0.20	500	18	79	250	163	2	10	114	33	66	26	5	4	0.1	0.3	0	0
West Pokot	583,767	8,603	2.80	7,500	576	428	3,667	1,103	28	60	776	441	1,062	29	121	16	2.4	4.0	92	25

Annex Table 1.　Indicators for Adults 15+

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
HIV population														
Total	1,443,401	1,389,760	1,332,942	1,277,040	1,225,407	1,186,923	1,166,643	1,172,518	1,192,978	1,221,956	1,264,911	1,314,791	1,360,903	1,407,615
Male	605,155	580,842	555,656	531,234	509,092	492,903	484,844	488,218	497,744	510,898	529,971	551,645	571,628	591,991
Female	838,245	808,919	777,286	745,806	716,315	694,020	681,799	684,300	695,234	711,059	734,940	763,146	789,275	815,625
Adult Prevalence (15+)	8.47	7.91	7.36	6.85	6.39	6.02	5.76	5.64	5.58	5.56	5.59	5.65	5.67	5.7
New HIV Infections														
Total	105,735	99,173	95,388	93,779	91,456	89,362	90,906	95,038	99,194	95,555	97,146	98,648	87,833	88,622
Male	45,445	42,640	41,023	40,340	39,343	38,449	39,105	40,870	42,645	41,073	41,750	42,396	37,751	38,088
Female	60,290	56,534	54,365	53,439	52,113	50,913	51,801	54,167	56,549	54,482	55,395	56,252	50,083	50,534
incidence	0.7	0.64	0.59	0.56	0.53	0.5	0.49	0.5	0.51	0.47	0.47	0.46	0.4	0.39
Annual Deaths														
Total	142,477	146,200	146,221	143,687	138,234	122,648	107,174	87,067	79,020	69,142	58,921	54,455	47,864	48,072
Male	62,408	63,562	63,155	61,719	59,113	52,025	45,152	36,441	33,260	29,202	25,034	23,553	20,821	20,765
Female	80,069	82,637	83,066	81,968	79,121	70,623	62,022	50,627	45,760	39,941	33,887	30,902	27,043	27,307
Annual AIDS Deaths among those on ART														
Total	0	0	0	0	410	2,516	4,309	7,197	7,533	9,456	11,509	12,635	14,095	13,540
Male	0	0	0	0	219	1,345	2,292	3,800	3,933	4,964	6,018	6,547	7,360	7,106
Female	0	0	0	0	192	1,171	2,016	3,397	3,600	4,492	5,491	6,089	6,735	6,434
Annual Deaths among those not on ART														
Total	142,477	146,200	146,221	143,687	137,824	120,132	102,866	79,870	71,487	59,686	47,411	41,820	33,770	34,532
Male	62,408	63,562	63,155	61,719	58,894	50,679	42,860	32,640	29,327	24,237	19,016	17,007	13,461	13,659
Female	80,069	82,637	83,066	81,968	78,929	69,452	60,006	47,230	42,160	35,449	28,396	24,814	20,308	20,873

Annex Table 2.　Indicators for Children

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
HIV Population														
Total	212,834	228,766	241,793	251,761	258,416	261,154	260,776	257,890	250,889	242,557	231,075	215,773	204,036	191,836
Male	107,367	115,383	121,933	126,938	130,276	131,636	131,430	129,960	126,417	122,211	116,410	108,682	102,762	96,606
Female	105,468	113,383	119,860	124,823	128,140	129,518	129,346	127,931	124,472	120,346	114,665	107,091	101,274	95,230
New HIV infections														
Total	44,374	42,470	40,198	37,825	35,180	31,783	28,873	26,660	22,047	20,850	16,723	11,157	14,168	12,941
Male	22,488	21,523	20,371	19,168	17,827	16,104	14,629	13,506	11,166	10,561	8,469	5,650	7,176	6,554
Female	21,886	20,948	19,827	18,657	17,353	15,678	14,245	13,154	10,881	10,290	8,253	5,506	6,992	6,386
Annual AIDS Deaths														
Total	22,835	23,370	23,705	23,887	23,870	23,333	22,121	20,613	18,264	16,761	14,727	5,506	11,323	10,393
Male	11,525	11,793	11,960	12,050	12,040	11,767	11,154	10,392	9,206	8,448	7,421	6,223	5,705	5,236
Female	11,311	11,577	11,745	11,837	11,830	11,566	10,967	10,221	9,058	8,313	7,306	6,130	5,618	5,157

Annex Table 3. Treatment Indicators

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total need for ART (15+)														
Total	227,311	227,658	223,359	216,237	209,470	213,207	228,283	325,340	360,875	405,430	581,860	638,198	700,790	760,694
Male	97,080	96,542	94,188	90,797	87,763	89,568	96,473	137,608	153,305	172,811	246,848	271,032	297,857	323,647
Female	130,231	131,116	129,172	125,440	121,707	123,639	131,810	187,732	207,571	232,618	335,012	367,158	402,933	437,047
Total receiving ART (15+) Male														
Number	0	0	0	2840	11362	24416	53964	74218	102,202	138,541	172,208	212,910	238,017	258,700
Percent	0	0	0	3.1	12.9	27.3	55.9	53.9	66	80.2	69.8	78.6	79.9	79.9
Total receiving ART (15+) Female														
Number	0	0	0	3400	13598	29677	66425	94016	128,857	177,017	224,317	277,527	310,544	337,528
Percent	0	0	0	2.7	11.2	24	50.4	50.1	62.1	76.1	67.0	75.6	77.1	77.2
ART coverage of eligible population (15+) (%)														
Total	0	0	0	2.9	11.9	25.4	52.7	51.7	63.8	77.8	68.2	76.9	78.3	78.4
Male	0	0	0	3.1	13	27.3	55.9	53.9	66	80.2	69.8	78.6	79.9	79.9
Female	0	0	0	2.7	11.2	24	50.4	50.1	62.1	76.1	67	75.6	77.1	77.2
ART coverage of all HIV+ adults (15+) (%)														
Total	0	0	0	0.5	2.1	4.6	10.3	14.2	19.1	25.4	30.7	36.7	39.6	41.7
Male	0	0	0	0.6	2.3	5	11.1	15.1	20.1	26.6	31.8	37.9	40.9	43
Female	0	0	0	0.5	1.9	4.3	9.7	13.6	18.3	24.5	30	35.8	38.7	40.8
Children in need of cotrimoxazole (0-14)	304,875	300,477	293,960	286,272	278,047	269,803	262,245	255,968	264,642	282,733	284,689	274,484	264,185	255,382
Number	0	0	0	0	0	0	0	18,396	36,000	47,354	98,337	132,406	116,788	130,016
Percent	0	0	0	0	0	0	0	7.1	14.2	17.2	34	47.3	43.4	50.1
Total coverage for cotrimoxazole (0-14)	0	0	0	0	0	0	0	7.19	13.6	16.8	34.5	48.2	44.2	50.9
Children needing ART (0-14)	86,073	91,301	95,781	99,406	101,834	102,903	103,005	102,154	128,828	162,667	162,911	154,064	148,343	141,608
Number	0	0	0	0	0	2,354	8,333	16,667	20,575	28,370	36,096	48,547	55,439	60,141
Percent	0	0	0	0	0	2.3	8.1	16.2	20.3	18.2	21.3	31	36.6	41.4
ART coverage of eligible population (0-14)	0	0	0	0	0	2.3	8.1	16.3	16	17.4	22.2	31.5	37.4	42.5
ART coverage of all HIV+ children (0-14)	0	0	0	0	0	0.9	3.2	6.6	8.3	12	16.2	23.1	28	32.4

Estimated Adult HIV Prevalence by County in Kenya

Turkana 7.6

Mandera 1.7

Marsabit 1.2

West Pokot 2.8

Samburu 5.0

Wajir 0.2

Trans Nzoia 5.1

Elgeyo Marakwet 2.5

Isiolo 4.2

Bungoma 3.2

Uasin Gishu 4.3

Baringo 3.0

Busia 6.8

Kakamega 5.9

Nandi 3.7

Laikipia 3.7

Meru 3.0

Siaya 23.7

Vihiga 3.8

Kisumu 19.3

Kericho 3.4

Nakuru 5.3

Nyandarua 3.8

Nyeri 4.3

Kirinyaga 3.3

Tharaka Nithi 4.3

Embu 3.7

Garissa 2.1

Homa Bay 25.7

Nyamira 6.4

Bomet 5.8

Muranga 5.2

Kisii 8.0

Migori 14.7

Narok 5.0

Kiambu 3.8

Nairobi 6.8

Machakos 5.0

Kitui 4.3

Tana River 1.0

Lamu 2.3

Makueni 5.6

Kajiado 4.4

Kilifi 4.4

Taita Taveta 6.1

Kwale 5.7

Mombasa 7.4

County HIV Prevalence

- >15% Hyper endemic
- 5-14.9%
- 1-4.9%
- < 1%

National Average Prevalence 6.04%

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