



# Smart Investment to End HIV AIDS in ZIMBABWE based on Hotspot Analysis.



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## List of Acronyms

MOHCH	Ministry of Health and Child Care, Zimbabwe
NAC	National Aids Council
UNAIDS	United Nations Programme on HIV/AIDS
WFP	United Nations World Food Programme
CDC	Centre for Disease Control
HIV	Human Immuno-deficiency
AIDS	Acquired Immune Deficiency Syndrome
PLWHIV	People Living with HIV and AIDS
ANC	Ante Natal Care
PMTCT	Prevention of Mother to Child Transfer
ZDHS	Zimbabwe Demographic Health Survey
MC	Male Circumcision
IEHDC	Action Institute for Environmental Health and Development Communication
GDP	Gross Domestic Product
WHO	World Health Organisation
SADC	Southern African Development Committee
UNDESA	United Nations Department of Economic and Social Affairs
FAO	Food and Agriculture Organisation
UNICEF	United Nations Children's Education Fund

# Chapter One: Background

## Introduction

The hot spot analysis project provides a prospect to review and analyse populations at greatest risk of HIV/AIDS infection, population being left out by current interventions and geographic hotspots. This project is an Inter-agency programme between (Ministry of Health and Child Care, NAC, UNAIDS and WFP), an initiated discussion to identify the HIV hotspots in Zimbabwe through analysis of the available datasets and present the findings in a series of high quality maps and charts. By conducting the HIV hot spot analysis and identifying the hotspots, will assist in future programming and interventions strategies. A detailed Desktop review of peer reviewed documents, surveys and published articles was conducted. However, this project does not give detailed discussion on the selected indicators why? The project explores the HIV Hotspots through the identification of HIV drivers in Zimbabwe, incidence, HIV prevalence and the measures (interventions) that have been put in place to curb new incidences. At the same time, the same project tries to understand the impacts of HIV on the economy and on food security (at country, household and individual levels).

## Objectives

- Collate and review existing information on HIV-AIDS situation in Zimbabwe, including drivers and impacts.
- Collate and map HIV-AIDS trends and patterns of prevalence, incidence, risk factors and delivery services over time.
- Identify hotspots by geographic focus and population groups and livelihood categories.
- Assess the coverage of delivery services and possible gaps in provision of services.

## Structure of the Report

The Hotspot analysis report starts with an introduction section which provides a background to this study.

**Chapter 2** looks at the literature review and Impacts of the epidemic.

**Chapter 3** details the methodology that was used for this study.

**Chapter 4** give the finding of the HIV hotspot mapping exercise and also give the identifies HIV hotspots.

**Chapter 5** presents the conclusion and recommendations for the study.

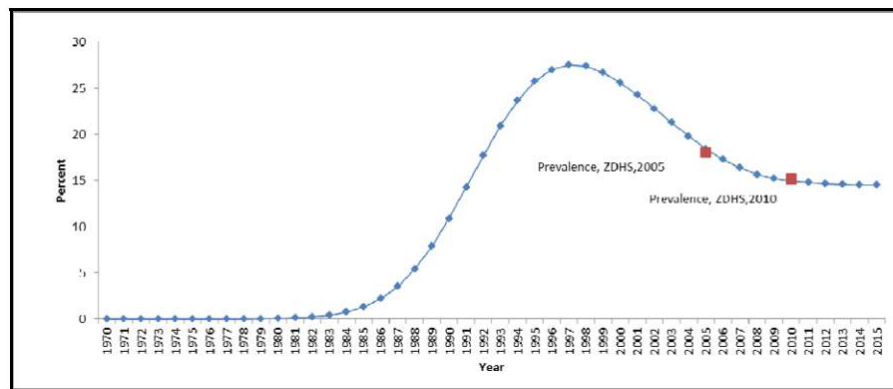
## HIV Situation in Zimbabwe

Southern Africa has experienced the worst/highest levels of HIV in the world. With most countries in the region recording the highest HIV/AIDS prevalence rates worldwide. However, since 2005 the Zimbabwe HIV epidemic has declined (Zimbabwe National HIV/AIDS Estimates, 2011). This was further supported by the ZDHS of 2005/6 and 2010/11 whose results indicate that the 15-49 years age group's HIV Prevalence has declined from 18.1% to 15.2%. The decline in HIV prevalence could be due to many factors including, high HIV deaths, an increase in HIV awareness, increase in responsible behaviour like condom use, reduction in number of sexual partners, delay in sexual encounter by young people, and the effectiveness of the interventions like PMTCT.

HIV prevalence levels across the country are fairly homogeneous, with overall prevalence similar across provinces and rural – urban zones. Nevertheless, this project has identified some hotspots. In response to the high numbers of HIV/AIDS, the Government of Zimbabwe and partners are implementing a comprehensive multi-sectorial response to HIV/AIDS. Action IEHDC (2012), indicates that high HIV prevalence in Southern Africa is located along commercial transport corridors, this indicates that the spread of HIV can be linked to mobility.

According to the Global AIDS Response Country Progress Report (2014) the HIV epidemic in Zimbabwe is generally heterosexually driven. The adult prevalence rate of Zimbabwe is 15% while the incidence rate is 0.98% (Global AIDS Response Country Progress Report, 2014). In Zimbabwe the HIV prevalence is more significant in urban areas as compared to rural areas. While, the 15-24 years women age group's HIV prevalence is 1.5 times higher than the male counterparts. The HIV prevalence for males becomes higher than that of their female counterparts after the age of 30 years.

**Figure 1:** Showing the Decline in Zimbabwe HIV prevalence over the years



Source: Global AIDS Response Country Progress Report (2014)

In contrast to the early years of the HIV epidemic, more educated populations are now relatively less likely to be HIV positive. This indicates a positive effect of Education on HIV risk.

Zimbabwe has high rates of marriage, compared to other countries in the Southern African region. People marry comparatively early, and this shortens overall the period of pre-marital sex. Another consequence of early marriage is that the majority of PLHIV are in union (about three quarters of male PLHIV and over half of female PLHIV). Of all infected couples with at least one of the partners HIV infected, 47% are sero-discordant, representing an opportunity for prevention in couples.

HIV infection is also clustered in people with a history of STIs, especially genital ulcer disease. There has been a decline of STI episodes recorded at public health facilities, but there are recent reports of STI increases in certain population groups like youth in Harare and mine workers in Mhondoro.

The prevalence of male circumcision is very low in Zimbabwe, in the 2005 ZDHS, 11% of men said that they are circumcised. Such a low level is unlikely to affect overall HIV transmission to an important degree. Circumcision is traditionally practised in a few ethnic groups only like Tonga, but there is evidence that many Zimbabwean men are interested and willing if the procedure is done safely and affordable.

## Chapter Two: Literature Review

### Definition of a hotspot

An HIV/AIDS hotspot is defined as a geographical area or location with evidence of high prevalence of HIV, STIs or behaviours that put people at risk for acquiring HIV infection (WHO, 2013). Wand and Ramjee (2010:2) use the term “hot spot” and “cluster” interchangeably and their definition of a hot spot is detected within a defined geographical location during a specific time frame when a location has a disproportionate excess of HIV infections when compared with neighbouring areas under study. At the same time, Gommers et al (2004:6) define a hot spot as “a location or activity where the adaptation potential is at risk of being exceeded. In addition, Phalla, Leng and Samnang (2004:13) view the notion of a hot spot as “places where sexually related services and HIV risk related factors co-exist”. The Global Aids response Country progress report (2014) highlight hotspots as mining areas, border towns, resettlement farms and growth points.

### Key Drivers of the epidemic

There are many drivers that lead to HIV this include mobility and migration, concurrent sexual partnerships as a result of separation from permanent partners (Action IEHDC, 2012). The epidemic in Zimbabwe is driven predominantly by heterosexual transmission, which accounts for more than 80 percent of new infections. Mother-to-child transmission is also an important factor, accounting for 7 percent of infections ([www.unaids.org](http://www.unaids.org)). The highest numbers of new infections have been recorded in the 20-29 age group.

New infections are a result of low-risk heterosexual sex (56%), with casual heterosexual sex (24%) and transactional sex (paid sex) with (14%). The second significant source of new infections is Mother-To-Child-Transmission (PMTCT) ([www.unaids.org](http://www.unaids.org)).

According to SADC<sup>1</sup>, the drivers of HIV in Southern Africa include:

- Extreme poverty and income inequalities;
- High mobility and migrant labour between rural and urban areas, within countries and between Member States;
- Gender dynamics and gender-based violence;
- Illiteracy;
- Stigma and discrimination;
- Alcohol abuse;
- Emergency situations such as civil conflict, war and displacement;
- Multiple sexual partners;
- Low rates of male circumcision; and
- Cultural determinants, such as cleansing.

In Zimbabwe, multiple studies have confirmed that multiple partnerships, especially long term concurrent partnerships remain a key driver and is frequently underestimated (based on self-reported behaviour in surveys). According to the National Behaviour Change Strategy baseline survey of 2007/08, 28% of men and

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<sup>1</sup> <http://www.sadc.int/issues/hiv-aids/>



9% of women reported having two or more sexual partners in past 12 months, and 10% of men and 3% of women reported having had a concurrent sexual partnership.

**Male circumcision level:** <sup>2</sup>Zimbabwe is a low-circumcision country with none of the provinces having MC prevalence above 19%. WHO has recommended scale-up of MC in high HIV prevalence countries as an additional HIV prevention strategy. New modelling data, generated by using Zimbabwe data, suggests that communities, and especially women, may benefit even more from MC interventions than previously thought-the study predicted a large effect on reducing male-to-female HIV transmission, increasing by 40 the infections averted by the intervention overall and doubling the number of infections averted among women. The Zimbabwe MC situation analysis on feasibility and acceptability concluded that MC is an appropriate intervention for both circumcising and non-circumcising communities.

**Condom use of longer-term relationships:** Several contemporaneous studies and reviews try to gauge the importance of condom promotion and distribution in the Zimbabwean epidemic. They generally conclude that condoms are likely to have had an effect on the course of the Zimbabwean epidemic. While condoms were a family planning tool in the early 1990, they became a risk reduction tool in causal and commercial relationships as the AIDS epidemic unfolded, and there are reports of more consistent condom use in recent years. Unfortunately, there is no robust trend data on condom in longer-term relationships.

**HIV Prevalence-Patterns and Trends:** Zimbabwe has a generalised HIV epidemic, with exceptionally high level of HIV prevalence in the past and significantly lower levels at present-it is estimated that over the 12 years from 1997 to 2009, adult HIV prevalence has almost halved from 26.5% to 14.3%. Comparison with other Eastern and Southern African countries shows that in the mid-1990s, Zimbabwe probably had the highest HIV prevalence in the world. Since then, the epidemic has contracted faster than any other HIV epidemic in the Eastern and Southern Africa. In 2005, according to the 2005/6 DHS, 18.1% of adults aged 15-49 years were HIV positive. In 2009, the Spectrum estimate for HIV prevalence in adults aged 15 and above was 14.3% (using DHS and ANC surveillance data, as well as population growth projections) and in children 0-14 years it was 2.1%.

Zimbabwe has an estimated 1.2 million people living with HIV, still representing the third largest HIV burden in Southern Africa. In Zimbabwe, the highest number of PLHIV ever reached was an estimated 1.8 million (ranging from 1.6-1.9 million) at the end of the 1990s. In 2009, there were an estimated 1 million adults aged 15 and above and 150,000 children under 15 living with HIV (UNAIDS, 2010). It is also estimated that since this peak, well over 100,000 people have died every year due to AIDS-related causes up to 2007. Estimates and projections of adult mortality show that in 2010, Zimbabwe had one of the highest rates of pre-mature adult mortality in the world, largely due to AIDS. Annual mortality increased from 244 per 100,000 in 1990 to 577 per 100,000 among adult women 15-49, while mortality among adult men was even higher, increasing from 344 per 100,000 in 1990 to 725 per 100,000 (Rajaratnam et. Al. 2010). However, AIDS related mortality is following a decreasing trend.

AIDS-related mortality and reduced HIV incidence keep HIV prevalence 'in check', but population growth and life-prolonging antiretroviral treatment maintain the actual number of positive people at a high level in Zimbabwe. As of 2009, the estimated number of annual deaths (70,000) exceeded the number of annual new HIV infections (48 000), and the percent of HIV positive Zimbabwean adults is slowly declining. However, the absolute number of positive people has recently stabilised instead of declined. The main two reasons for this is the prevailing population growth rate and ART. The population growth rate is projected at 2.1% (2010-2015). Urban population has come down from over 6% in the 1980s to an estimated 1.7% in

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<sup>2</sup> Zimbabwe Analysis of HIV Response and Mode of Transmission Report, 2010

2005, whereas rural population growth has reduced from over 3% in the 1980s to a negative growth rate - 0.1% by 2005. While Zimbabwe's current fertility rate (of 3.4 children per woman) would translate into population growth, out-migration and deaths due to AIDS seem to have caused population growth to stagnate during the late 1990s and early 2000s. So it is in urban areas where PLHIV numbers are expected to rise year on year simply due to the positive population growth rate. Concerning ART, the number of people currently on ART increased from 85,000 to 215,000 between December 2008 and December 2009. The increase was a result of programme decentralization as well as expansion of outreach programmes particularly in Global Fund supported districts.

The Zimbabwean HIV epidemic is geographically homogenous. HIV prevalence is similar across provinces and rural-urban zones. HIV prevalence shows little variation across the ten provinces, ranging from 15.1% (Masvingo) to 20.8% (Matebeleland South) (2005/6 data). Geographical homogeneity also applies when HIV prevalence in rural and urban zones is compared. Rural and urban residents have similar odds of being infected (17.6% in rural and 18.9% in urban areas,  $p=0.063$ ).

There may be considerable heterogeneity in HIV prevalence at local level. As described for rural Manicaland and for ANC sentinel sites. The Manicaland HIV/STD Prevention Project in eastern Zimbabwe showed that in the 2001-03 survey, it was found that HIV prevalence was much higher in the small towns (33%) and also increased in the estates (21%) compared to the rural business centres and villages (16%) (Mugurungi et al., 2006). Coffee et al. (2005) reported that HIV prevalence was at 50% in females living in the least developed subsistence farming areas. Among migrant agricultural workers, prevalence was 39% for women and 26% for men, compared with 30% and 21% for other sexually active women and men, respectively.

HIV prevalence has steeply declined in all areas of the country. The steep decline of HIV prevalence in the past decade occurred in all areas of the country. It declined among 15-49 year old pregnant women nationally from 32% to 24% over the period 2000-2004, and continued to decline in subsequent surveys for women up to age 40 (Gregson et al. 2010:6). According to the 2009 ANC Sentinel Surveillance report, HIV prevalence among pregnant women 15-49 years declined from 17.7% in 2006, to 16.1% in 2009 ( $p<0.001$ ). Prevalence at urban sites declined from 26.5% in 2002 to 15.5% in 2009, while prevalence in rural sites declined from 22.4% in 2002 to 14.5% in 2009. Prevalence in sites classified as other was higher than prevalence in urban or rural sites but also declined from 28.9% in 2002 to 20.5% in 2009.

In 2009, compared to 2006, two ANC sites were found to have substantially higher HIV prevalence- Murambinda Hospital (10%) increase and Chiredzi District Hospital (5%) increase. Murambinda Hospital is a known high performing ART site and the health services see more positive women due to the services offered for them, explaining the significant prevalence differential between the two surveys. Chiredzi Hospital, a site in a commercial farming area, also showed an increase in HIV prevalence in 2009, but it was not statistically significant. The increase is unlikely to be due to ART, but may partly be associated with commercial sex work in the catchment area of the site as a result of the dollarization of the economy. This site has consistently had a high HIV prevalence rate.

## Impacts of the epidemic on the:

### i. Health Sector

The HIV/AIDS epidemic has posed and will continue to pose tremendous challenges to the health systems of the developing countries, especially in the most severely affected countries. HIV/AIDS increases overall health expenditures for both medical care and social support at the same time that it is claiming the lives of doctors and nurses in the developing countries.

The World Bank has estimated that a country with a stable 5 per cent adult HIV prevalence rate can expect that each year between 0.5 and 1 percent of its health-care providers will die from AIDS. In contrast, a country with 30 per cent prevalence would lose 3-7 per cent of its health workers to the HIV/AIDS epidemic (World Bank,1999). Absenteeism and illness among health workers is a major issue. The quality of care of AIDS patients may also suffer because caregivers fear contracting the disease.

Many countries in the developing world are faced with a high demand for treatment of AIDS related diseases, making it difficult to satisfy the demand for treatment of other diseases. Information on bed usage by AIDS patients is available for major hospitals in a number of countries. For many of the most affected countries, the loss of hospital capacity may be on the order of 50 percent.

Calculations by the World Bank (1999) suggest that the effect of HIV/AIDS on total health care costs is likely to be quite large, even in countries that are spared the most serious epidemics. As HIV/AIDS increases the demand for health care, it will tend to drive up the effective price of health care as well, amplifying the impact on total health-care spending. Higher prices will lead some people to forego care they would have sought at the lower price, with the poor likely to feel the greatest effect. However, the price responsiveness or elasticity of demand for adult health care is usually small, since people who are sick and who have the ability to pay will often pay whatever is needed to get well (World Bank,1999, p. 191).

In many affected countries, the health budget allocated to the HIV/AIDS epidemic has increased, leading to the compression of the non-AIDS health budget (Shepard, 1998). One of the reasons for a higher allocation to AIDS in the health budget is that AIDS is far more costly to treat than other conditions. A study in Zimbabwe shows, for instance, that hospital care for HIV/AIDS patients was twice as expensive as that for the non-HIV/AIDS patients.

In the less developed countries, especially in the most affected ones, the total effects on the health sector are already serious and are projected to increase sharply as the number of AIDS cases grows. Increased need for health-care services, together with an eroding supply of health-care workers, risks degrading the quality and quantity of health care for whole populations.

## ii. Economy

According to the UNAIDS and UNDESA<sup>3</sup> the epidemic represents serious challenges on the whole national economy, this is because it affects the whole spectrum of the economy. The effects of HIV/AIDS, will affect first, families, individuals then firms, businesses and governments. The epidemic also aggravates deprivation leading to poverty and disparity in incomes as GDP declines. According to UNAIDS, in 1997, 23 to 24\$ was approximately the additional cost for treating the disease per household and 4000 Z\$ was the average cost for funerals in 1998<sup>4</sup>.

As national and individual savings finance HIV/AIDS costs, it leaves less income for investments besides that the epidemic diminishes foreign investments. Otherwise, high costs, decrease of profits and productivity for firms will be noticed. HIV/AIDS diminishes education rates and agricultural production resulting in an increase in food insecurity. Moreover, the HIV/AIDS results in markets and suppliers declining, in employment and labour losses. The epidemic may also depletes income of households besides the fact that the cost of goods keep increasing on the market, leaving households with very little buying power.

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<sup>3</sup> United Nations Department of Economic and Social Affairs

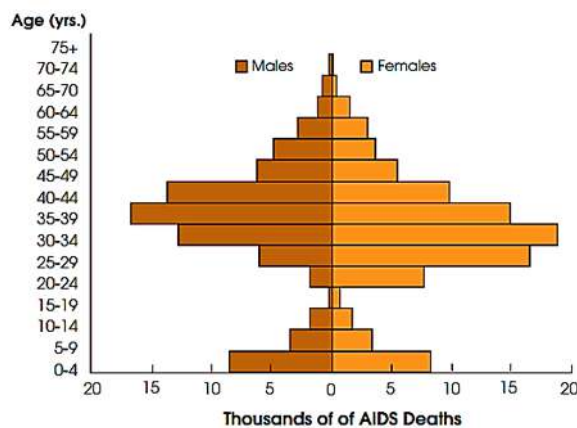
<sup>4</sup> Source: Aids In Africa, Country By Country

### a. Labour and Labour Market Disorganization

According to **figure 2**, the majority of the people infected are the workforce (aged from 15 to 49 years)<sup>5</sup>. The high morbidity and death rates affects labour quality and results in supply loss, debilitates the labour, rising of absenteeism, skills losses, efficiency and knowledge losses, accelerate staff turnover as well as morale drop which may lead to diminish the productivity. According to the FAO (Food and Agricultural Organisation), the disease by 2020, will result in the loss of 23% of the labour force in Zimbabwe. Labour turnover and death result in a less experienced labour force with lower productivity leading to direct diminish of the nation's productivity capacity.

**Figure 2:** Estimated AIDS Deaths by Age and Sex, 1998-2018

*Estimated AIDS Deaths by Age and Sex, 2003, 1988-2018*



Source: AIDS Impact Model, 2003.

### ii. Economic Impact on Agriculture

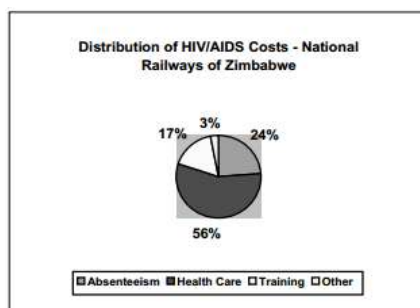
HIV/AIDS diminishes farming production of both cash and food crops and also crop variety due to labour loss. In 2000, agricultural labour losses was 9.6% and would reach to 22.7 % in 2020 according to the FAO<sup>6</sup> (state the report or website). For commercial and business firms, HIV may cause losses in experienced and skilled labour resulting in low productivity due to shortage of labour during crucial periods of planting and harvesting. The employer also incur other employment related costs such as, rising costs of staff welfare, training, recruitment, and funerals. The individual farmworker families, are experiencing shortage of labour, reduction of labour supply, lack of essential

inputs, experienced and skilled labour loss, revenue and output losses, accumulation of knowledge and land losses and eventually switch to less-labor-intensive crops. The switch to less-labor-intensive crops implies shifting from export crops to food crops which will reduce over the long term, national export earnings and needed foreign exchange. According to the UNDESA<sup>7</sup>, the farming production has decreased at close range of 50% in households affected by HIV/AIDS.

### b. Economic Impact on Firms

The disease involves expenditures increase, higher production costs, reduction of profits and the decrease of productivity which causes output. These higher production costs prevent Zimbabwe to stay worldwide competitive. During the decade 1993-2003, the nominal output loss due to HIV/AIDS, was 103.67 billion<sup>8</sup>. Since 1998, manufacture output losses were 25% and the mining output losses was 20% since 1999.

**Figure 3:** Distribution of HIV/AIDS Costs – National Railways of Zimbabwe



and Sex, 1998-2018  
cultural Sector: Impact on Food Demand  
and Social Affairs  
- National Railways of Zimbabwe

Indeed, expenditures (= costs) are increased by health care costs (which represents the highest expenditure percentage for firms as we can see on the figure 29), burial fees, health insurance, training and recruitment. The cost of AIDS to National Railways was equivalent to 20% of the company's profits and absenteeism cost up to Z\$80 million in 1997 (**figure 3**). High costs due to HIV/AIDS could impede investments by the firms. Even foreign investors choose to defer investments as HIV/AIDs will affect cost structure of any investments.

### iii. Education

HIV/AIDS affects the overall management education system. Indeed, it depletes the national supply of skilled teachers, the number of skilled teachers, the absence of pupils because of illness, and orphanhood. Students are leaving schools also in order to save on educational expenses and increase household labour but also in order to take care of sick persons. This substitution of labour by students limit pupils 'ability to attend schools and learning. That's why, the labour might be undereducated and unskilled on the long term. 48% of primary and secondary school orphans dropped out schools due to the disease and death of their parents<sup>10</sup>. In 1999, 86 000 primary schoolchildren lost a teacher according to UNAIDS and UNICEF. The result is an increase of training costs, difficulties to replace the well-experienced and skilled labour and the investment loss in the human capital stock. Others impacts include underperformance, the loss or absenteeism of skilled teachers, education and education management officers within the education and training institutes. These consequences have a negative impact on the quality of education, overall educational attainments, skills development and human capital which affect economic performance.

### iv. Food Security

HIV/AIDS is capable of having devastating effects on household food and nutrition security (FAO, 2001). With regards to food security, HIV/AIDS affects the livelihood systems of households (Haddad and Gillespie, 2001). The level of impact on households varies according to the household's production activities which can either be agricultural or non-agricultural. The impacts have to be contextualised to the economic and social-cultural of the household or individual (Haslwimmer, 1994 and FAO, 2001). HIV/AIDS causes a reduction in farming production, therefore, a reduction of cash crops and food crops due to labour loss. On the long run, the HIV epidemic leads to a chronic food crisis - low quantities, less nutrition among the affected households and individuals. At the same time, HIV impairs the nutritional status of an individual by compromising the immune system, additionally it suppresses the nutrient intake, absorption and use (Semba and Tang, 1999).

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<sup>10</sup> Source : The HIV and AIDS Epidemic in Zimbabwe

## Chapter Three: Datasets and Methodology

A composite index derived from the following normalised set of indicators was used to identify the geographic hotspots. These indicators were:

- i. HIV prevalence
- ii. HIV Incidence rates
- iii. Risk factors (defined by a combination of condom use, multiple sexual partners, high risk sexual intercourse and young people fertility as a proxy for pregnancy gives and estimation of risk factors by young people)
- iv. Service coverage data.

Figure 4 shows the process used to construct the index. Each of the indicators were standardised using the following transformation<sup>11</sup>.

$$XS_{ij} = (X_{ij} - \text{Min}_{xj}) / (\text{Max}_{xj} - \text{Min}_{xj}) \quad j = 1, 2, \dots, 4 ; i = 1, 2, \dots, 89.$$

where:

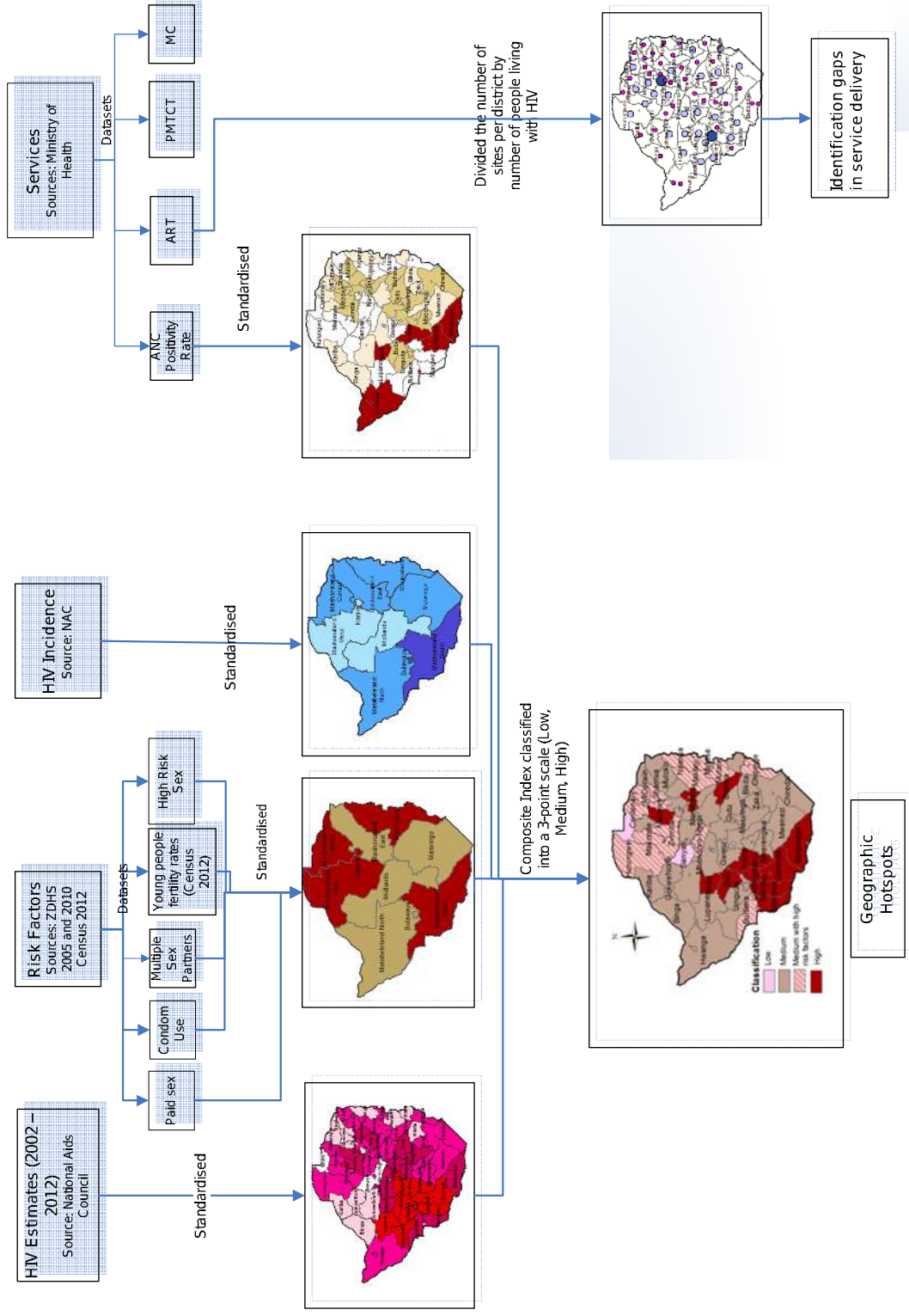
- $XS_{ij}$  is the value of the standardized observation for district  $i$  of indicator  $j$ ;
- $X_{ij}$  is the actual value of the same observation;
- $\text{Min}_{xj}$  and  $\text{Max}_{xj}$  are the minimum and maximum values of the same observations for component  $j$ .

This transforms the values of observations in a particular variable array so that they take a range of values from 0 to 1 which is necessary to minimise variability and also allow comparability across datasets. The standardised values of each indicator were classified into a 3-point scale (1, 2, 3) where 1 = Low, 2 = Medium and 3 = High. These points were added up into a composite index and the index was classified into Low, Medium and High categories. The medium classification was further clarified into three categories i.e. medium with low risk factors and medium with medium risk factors (these two are represented on the hotspot map as medium) and medium with high risk factors. Medium with high risk factors are those areas that are not hotspots but have great potential to become hotspots if the risk factors are not mitigated. In addition to geographic hotspots, an attempt was made using existing prevalence or positivity rate data to identify age group and livelihood zone based hotspots. The ANC positivity rate data was summarised by age-categories and livelihood sectors to give an idea of hotspots by population category and livelihood.

In order to determine if there are any gaps in service delivery, the number of sites (for ART and PMTCT) per district was divided by the population of people living with HIV to get an average number of clients per site. This was used as a proxy for access proxy services.

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<sup>11</sup> [http://www.wider.unu.edu/publications/working-papers/research-papers/2008/en\\_GB/rp2008-55/](http://www.wider.unu.edu/publications/working-papers/research-papers/2008/en_GB/rp2008-55/)



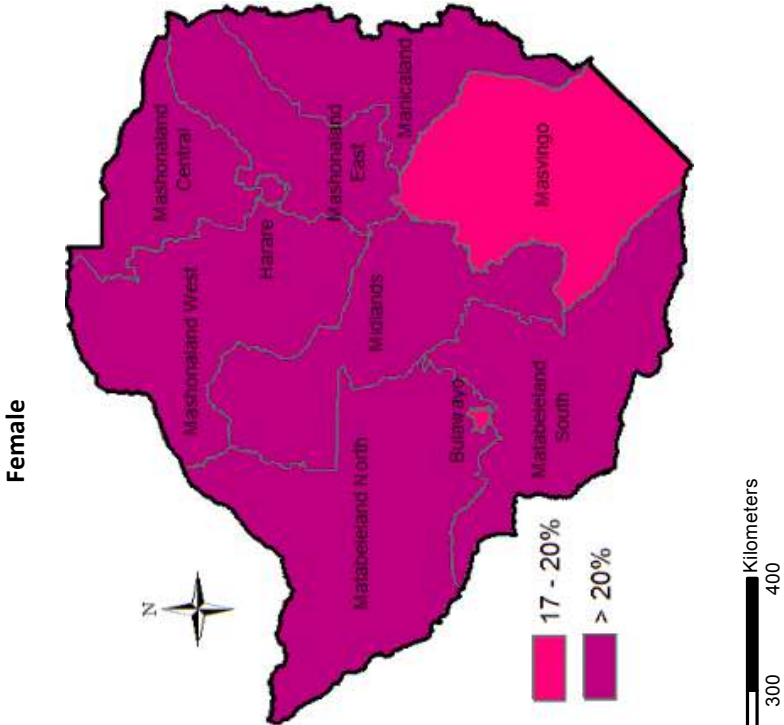
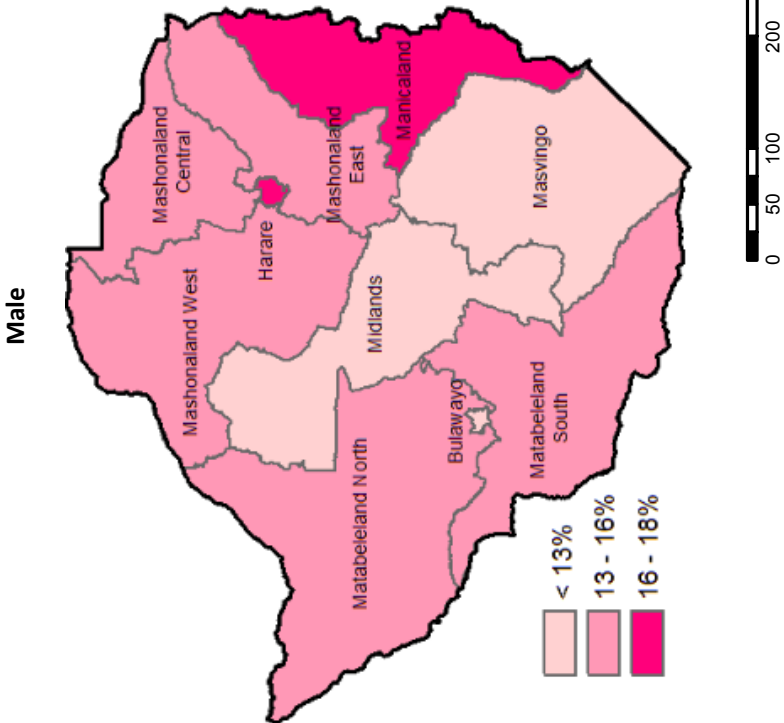
**Figure 4: Datasets and Methodology**



Chapter Four: Findings

National HIV Prevalence

Map 1: HIV Prevalence (15 – 49 Years) , 2005

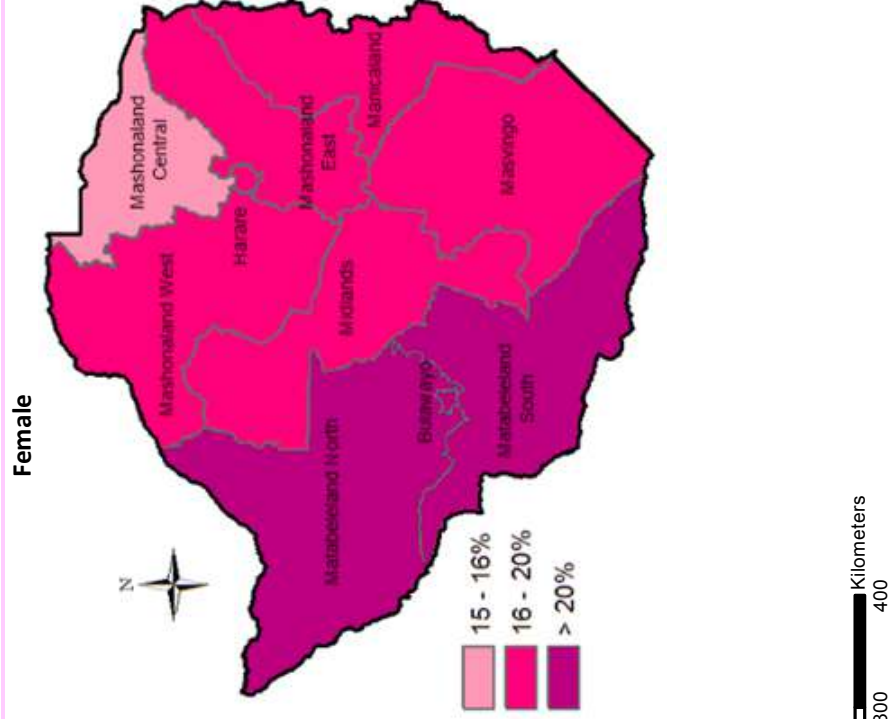
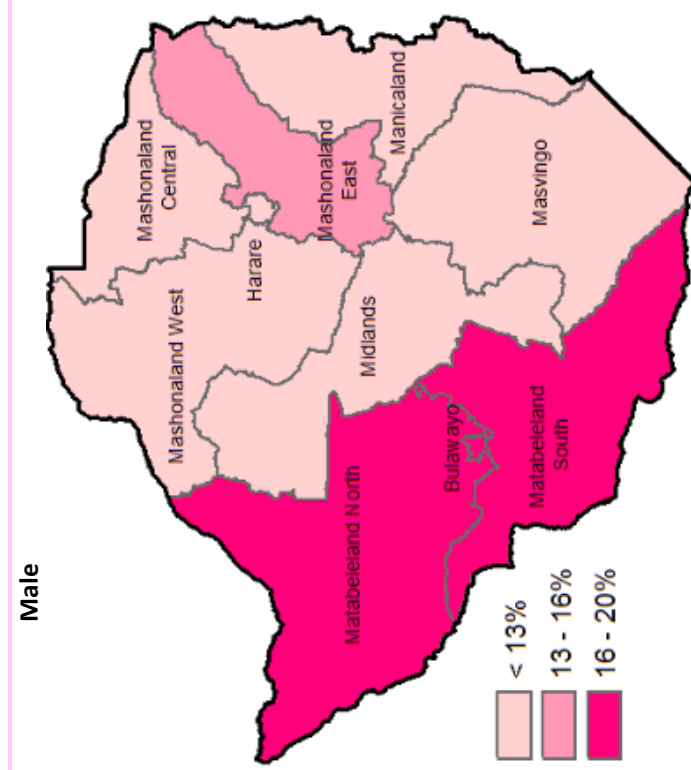


In 2005, the women (15 – 49 years) general, had a higher prevalence compared to their male counterparts. The highest prevalence for males was in Harare and Manicaland which were in the 16 – 18% category, and this category was the minimum for women with their prevalence starting at 17% for Masvingo and Bulawayo. The rest of the country for women had a prevalence greater than 20%.

Data Sources: Zimbabwe Demographic Health Survey.  
Shape Files: The Department of the Surveyor General.



**Map 2: HIV Prevalence (15 – 49 years), 2010**

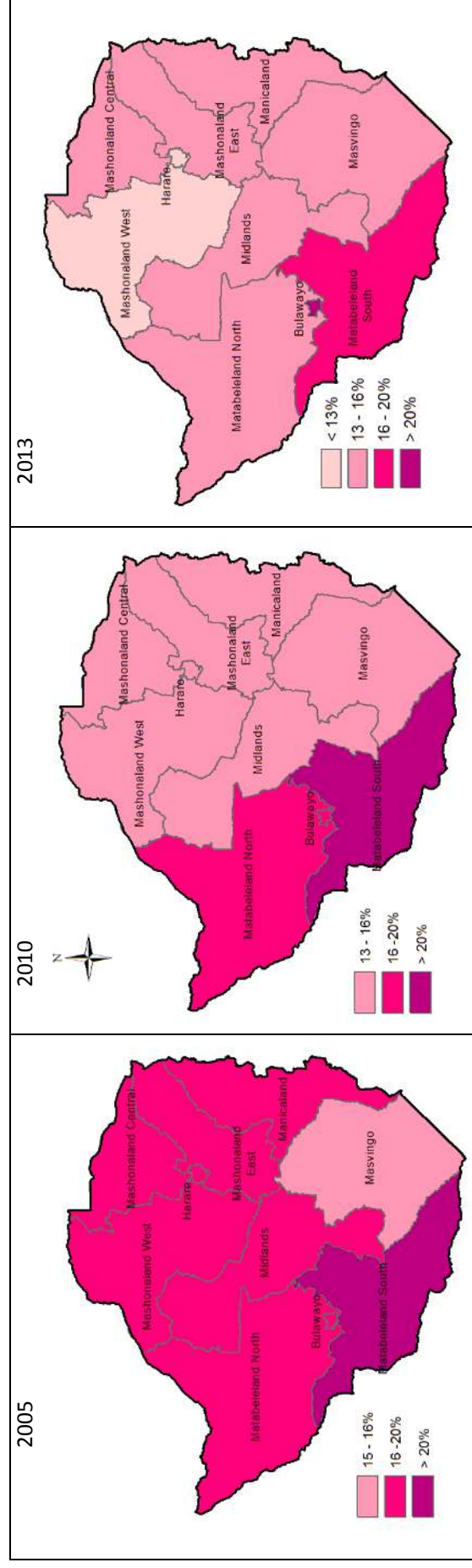


Compared to 2005, there is an improvement for the women with most provinces moving from > 20% to the 16 – 20% category. Bulawayo moved to the >20% category and Matabeleland remained in the highest category. For the males we saw an increase in prevalence in Matabeleland and Bulawayo. A decline is observed for Manicaland, Mashonaland west and central.

**Data Sources:** Zimbabwe Demographic Health Survey.  
**Shape Files:** The Department of the Surveyor General.

## National HIV Prevalence Trends

**Map 3:** HIV Prevalence Rates by Provinces

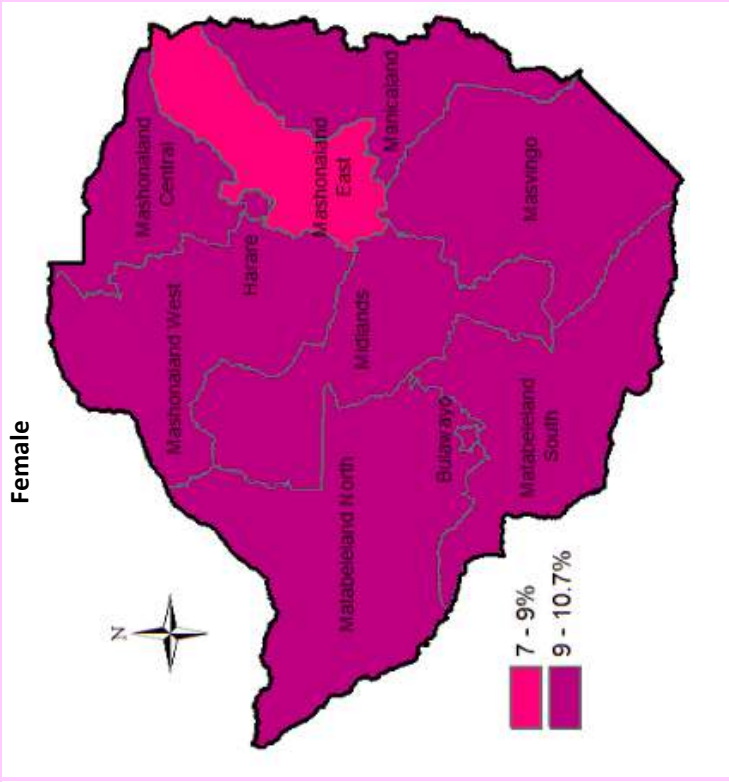
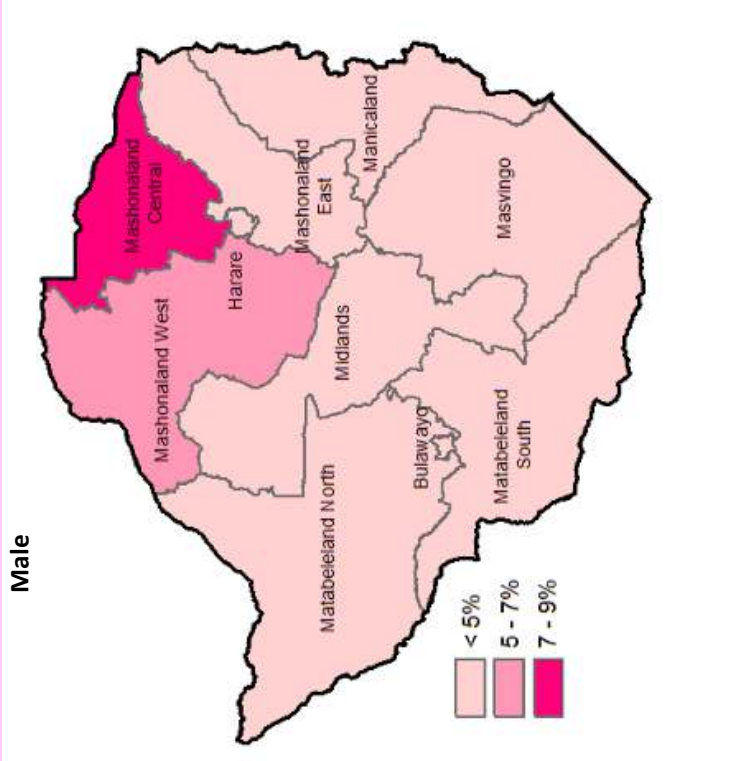


The HIV Prevalence for 2005 shows that most parts of the country were in the 16 – 20% with Matabeleland South having the highest prevalence which is greater than 20% category. An improvement can be observed in the 2010 map as most of the country moved to the 11 – 15% with no changes in the Matabeleland. According to the National Aids council estimates for 2013, only Matabeleland South has an estimate of above 17% as a result, Matabeleland South has consistently fall in the highest HIV prevalence category.

According to the ZDHS 2010, the prevalence for young adults aged 15 – 24 years is also highest in Matabeleland south with a prevalence of 9.2% which is very high compared to provinces like Manicaland and Mashonaland west with prevalence below 5%.

HIV Prevalence amongst Young People

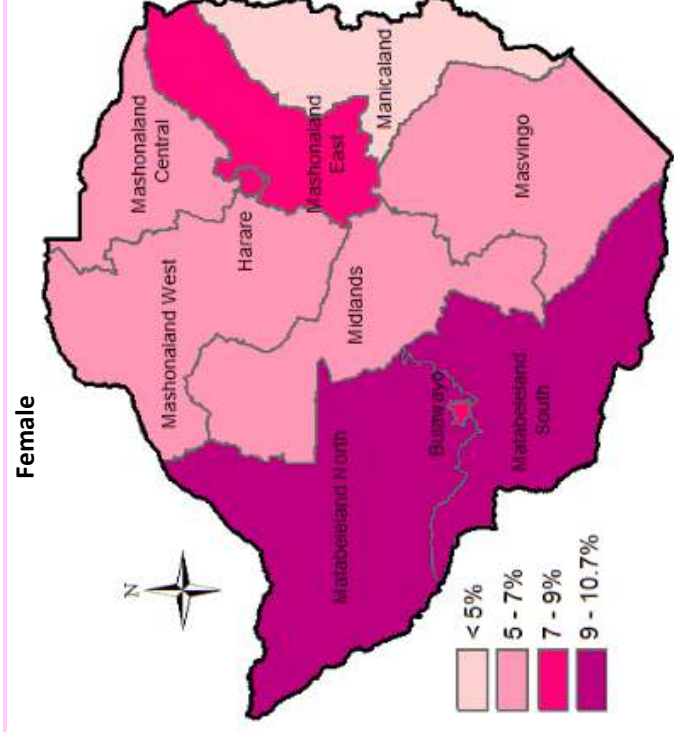
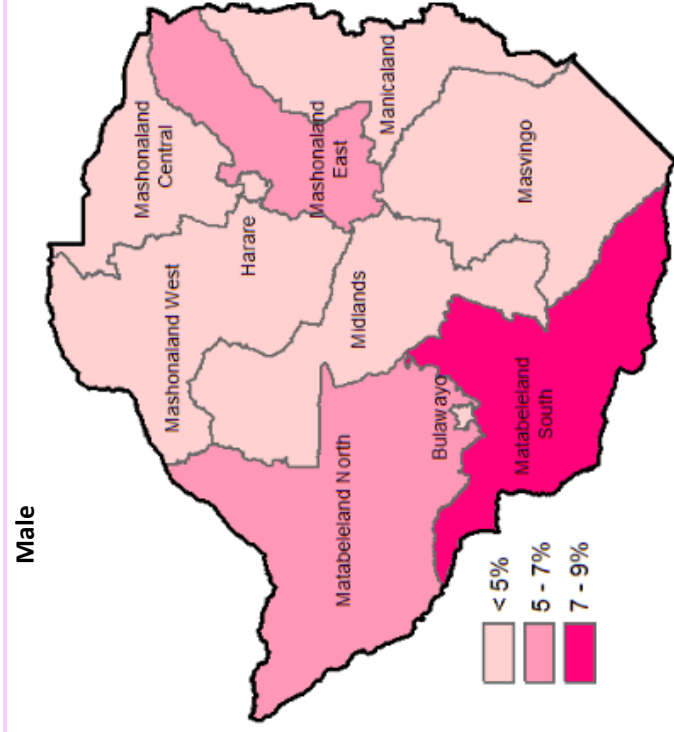
Map 4: HIV Prevalence (15 – 24 years ) - 2005



A high prevalence for the young women is observed in all the provinces compared to their male counterparts where most of the country is in the below 5% range, a category which is not available for the young women.

Data Sources: Zimbabwe Demographic Health Survey.  
Shape Files: The Department of the Surveyor General.

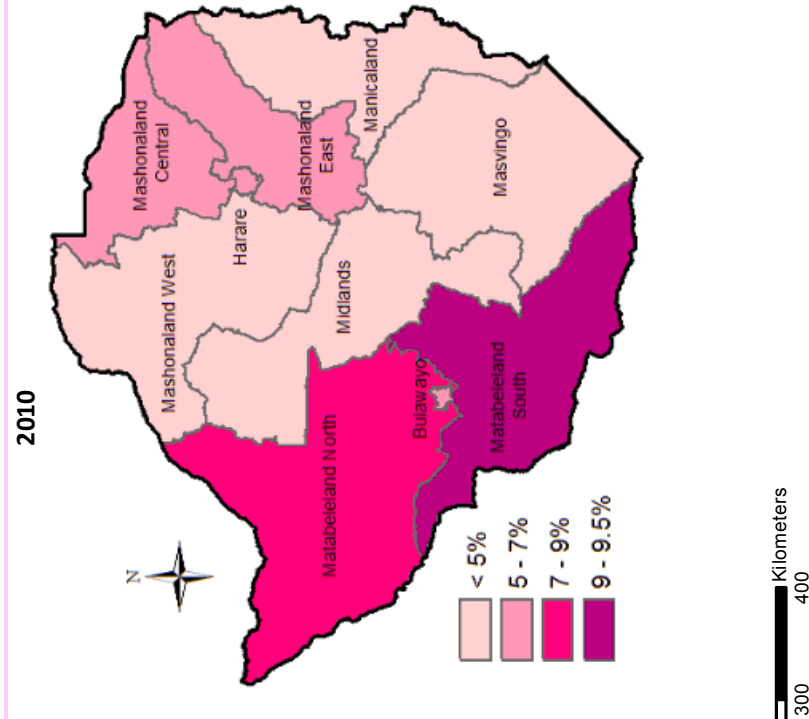
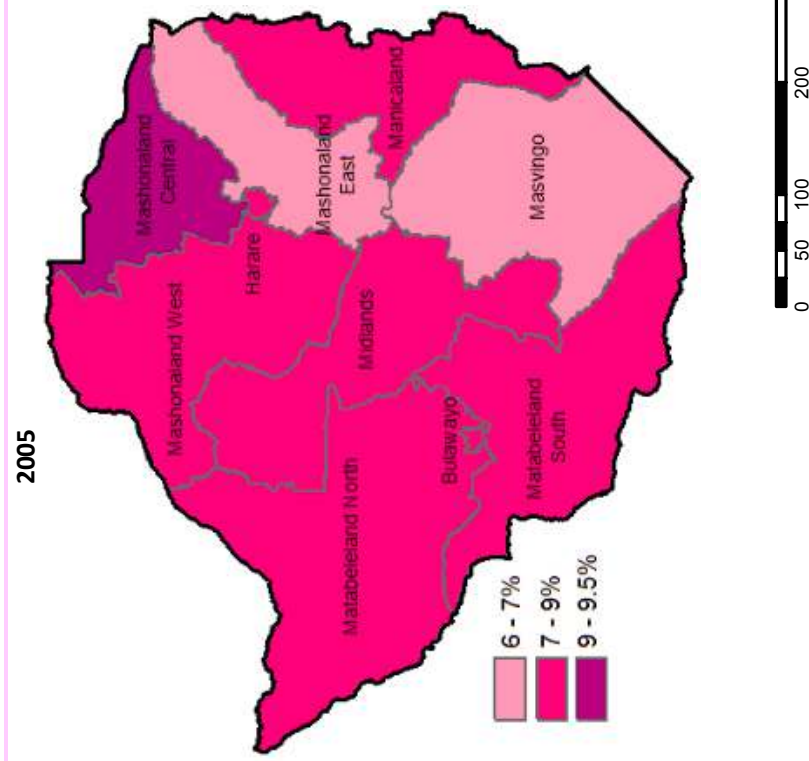
**Map 5: HIV Prevalence (15 – 24 years ) - 2010**



An improvement is observed for the young women which most provinces recording a decline in prevalence. This might be contributed by various factors including HIV deaths and services. The 15 – 24 years is an active ante natal care age group, and with the increase in HIV services, this might have greatly contributed towards the decline for women. The men for this age group shows a slight increase in prevalence with Matabeleland south recording an increase from <5% to between 7 and 9%.

**Data Sources:** Zimbabwe Demographic Health Survey.  
**Shape Files:** The Department of the Surveyor General.

**Map 6: National HIV Prevalence (15 – 24 years )**



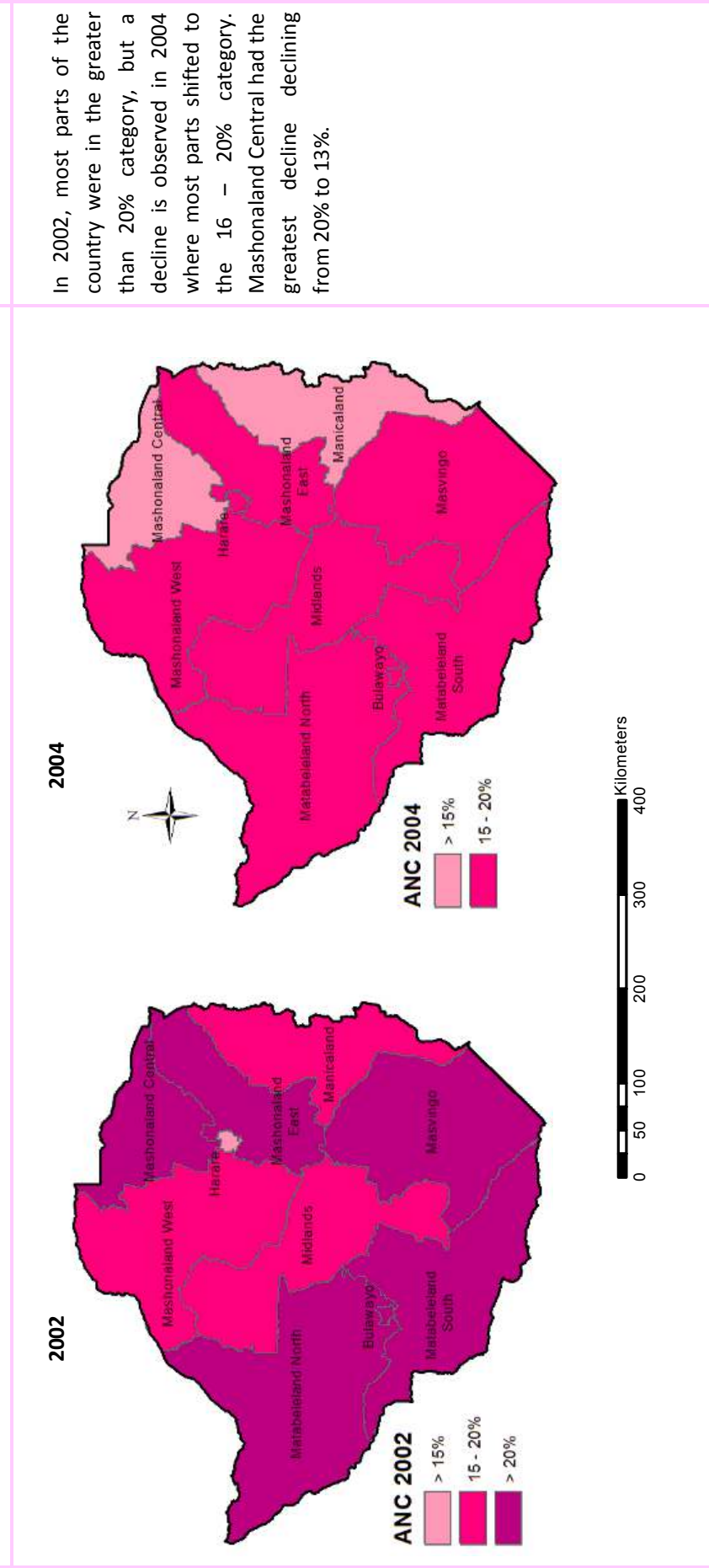
In 2005 the lowest prevalence was in Mashonaland East with a prevalence of 6.5% and the highest was in Mashonaland central with 9.4%. In 2010 Matabeleland South had the highest prevalence of 9.2% which was up from 7.6% in 2005. Mashonaland Central moved from 9.4% in 2005 to 5.2% in 2010. Mashonaland East remained in the 6 - 7 % category without much movement.

**Data Sources:** Zimbabwe Demographic Health Survey.  
**Shape Files:** The Department of the Surveyor General.



# HIV Prevalence among pregnant young women (15 – 24 years)

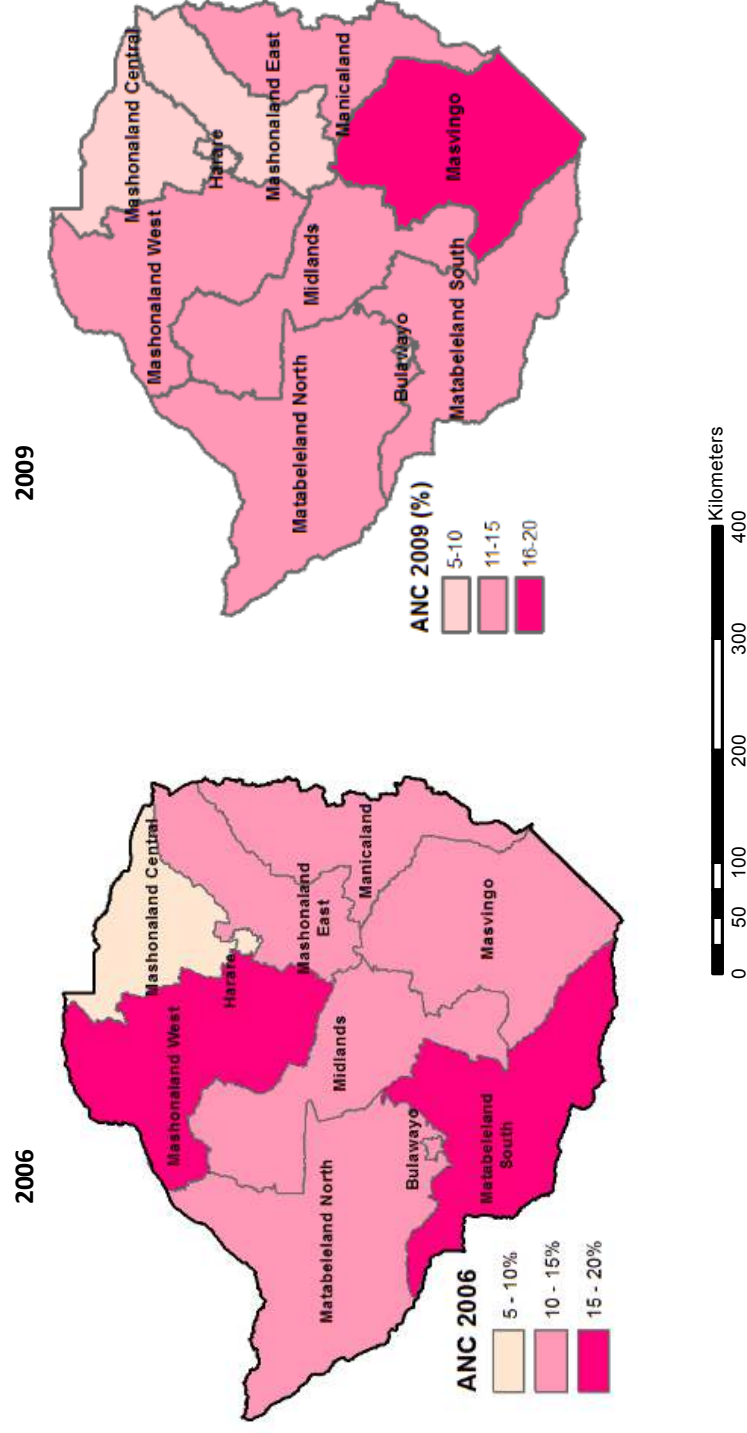
**Map 7:** HIV prevalence estimates among ANC attendees (15 – 24 years)



**Data Sources:** Zimbabwe Demographic Survey.

**Shape Files:** The Department of the Surveyor General.

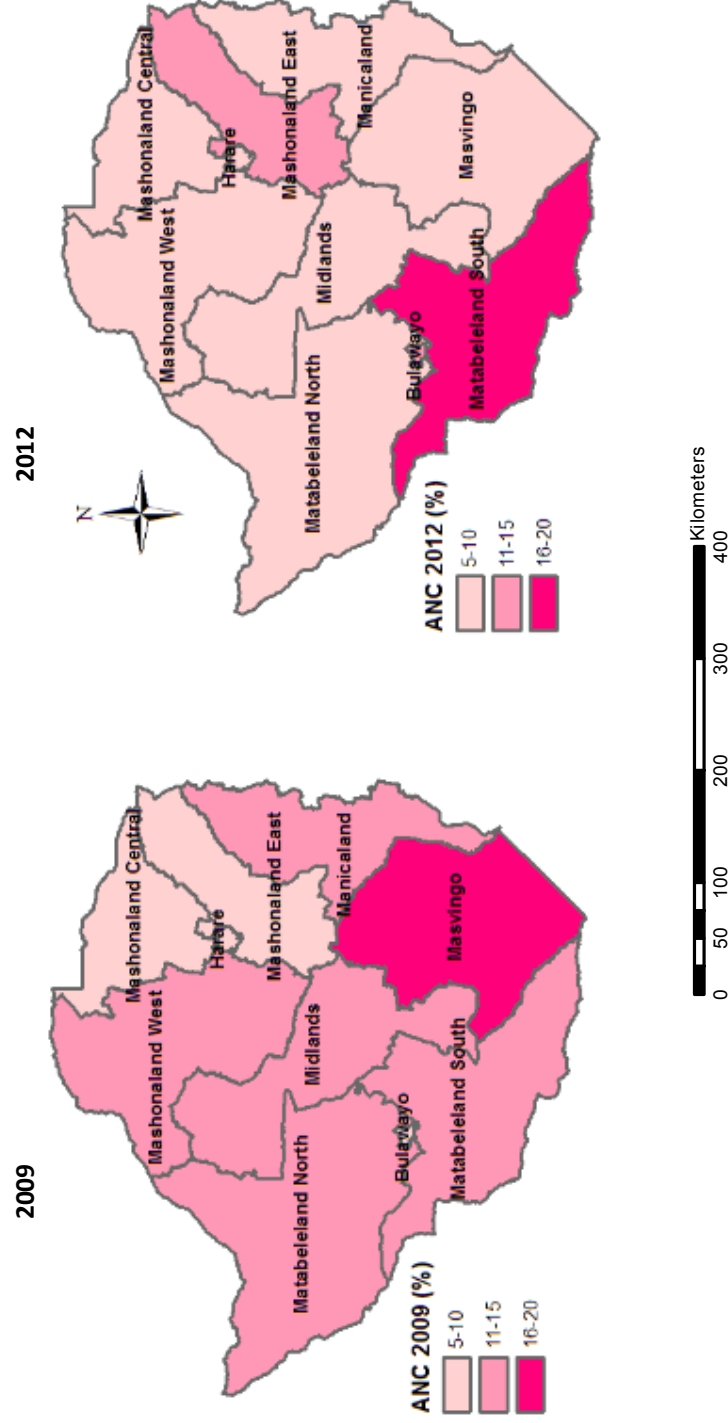
**Map 8:** HIV prevalence estimates among ANC attendees (15 – 24 years)



Compared to 2004, a decline continue to be observed with most parts of the country declining to less than 15% and having other provinces falling below 10% which is a new category compared to the previous years.

**Data Sources:** Ministry of Health and Child Care.  
**Shape Files:** The Department of the Surveyor General.

**Map 9:** HIV prevalence estimates among ANC attendees (15 – 24 years)



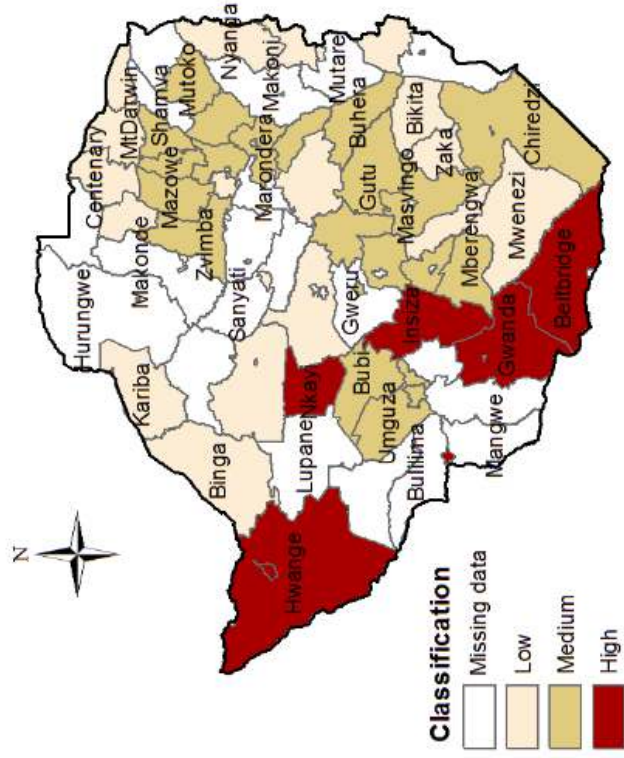
In 2012 most provinces except Matabeleland South and Mashonaland East, had prevalence less than 10%. Matabeleland South is the highest in 2012 with a prevalence of 18% up from 14% in 2009. Mashonaland East also experienced an increase from 9% in 2009 to 10% in 2012. Most parts of the country experienced a decline from between 11 – 15% to less than 10%. Increase in HIV interventions and an increase in choices for women might be contributing towards this decline.

**Data Sources:** Ministry of Health and Child Care.  
**Shape Files:** The Department of the Surveyor General.



# General trends of HIV positivity rate amongst pregnant women

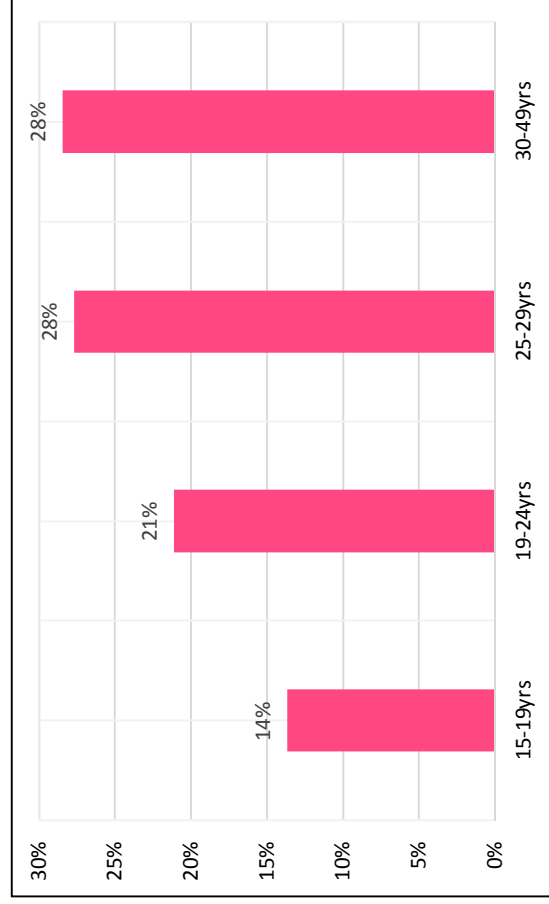
**Map 10:** HIV Positivity Rate per District 2012



Source: NAC ANC Data

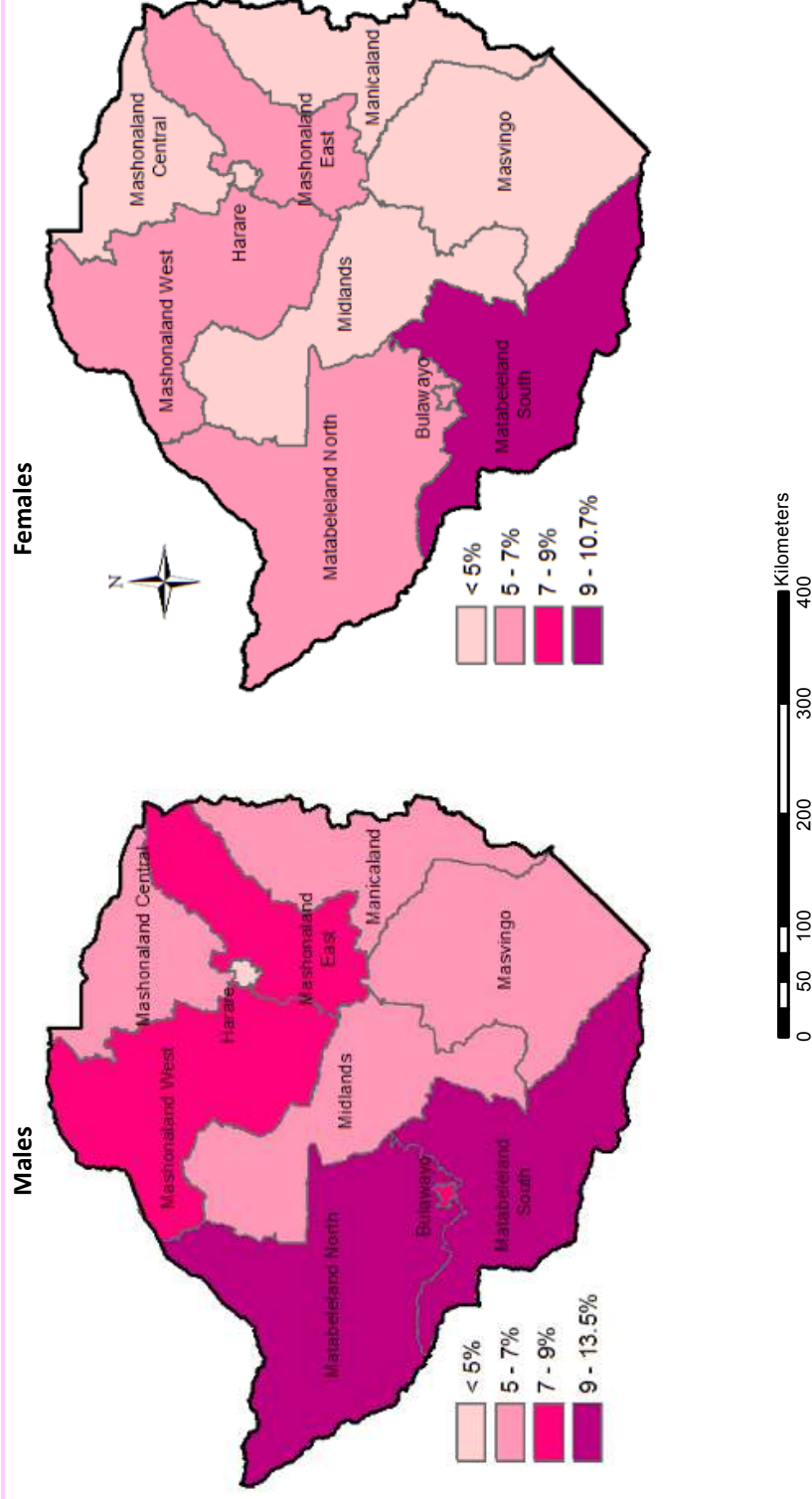
Figure 5 shows the 12 year average (2001 – 2012) positivity rate for pregnant women, the 25 – 29 years age groups, have the highest average positivity rate for pregnant women. In 2012 (figure 4), Hwange, Nkayi, Insiza, Gwanda and Beitbridge had the highest HIV positivity rate. Compared to the national HIV prevalence, it can be seen that the districts with high HIV prevalence in Figure 4 are in Matabeleland south and north and these have high national HIV prevalence as shown in map 3.

**Figure 5:** Average HIV Positivity Rate by Age Group for pregnant women attending ANC (2001 – 2012)



## HIV Prevalence amongst Married Couples

**Map 11:** HIV prevalence amongst married discordant couples - 2010

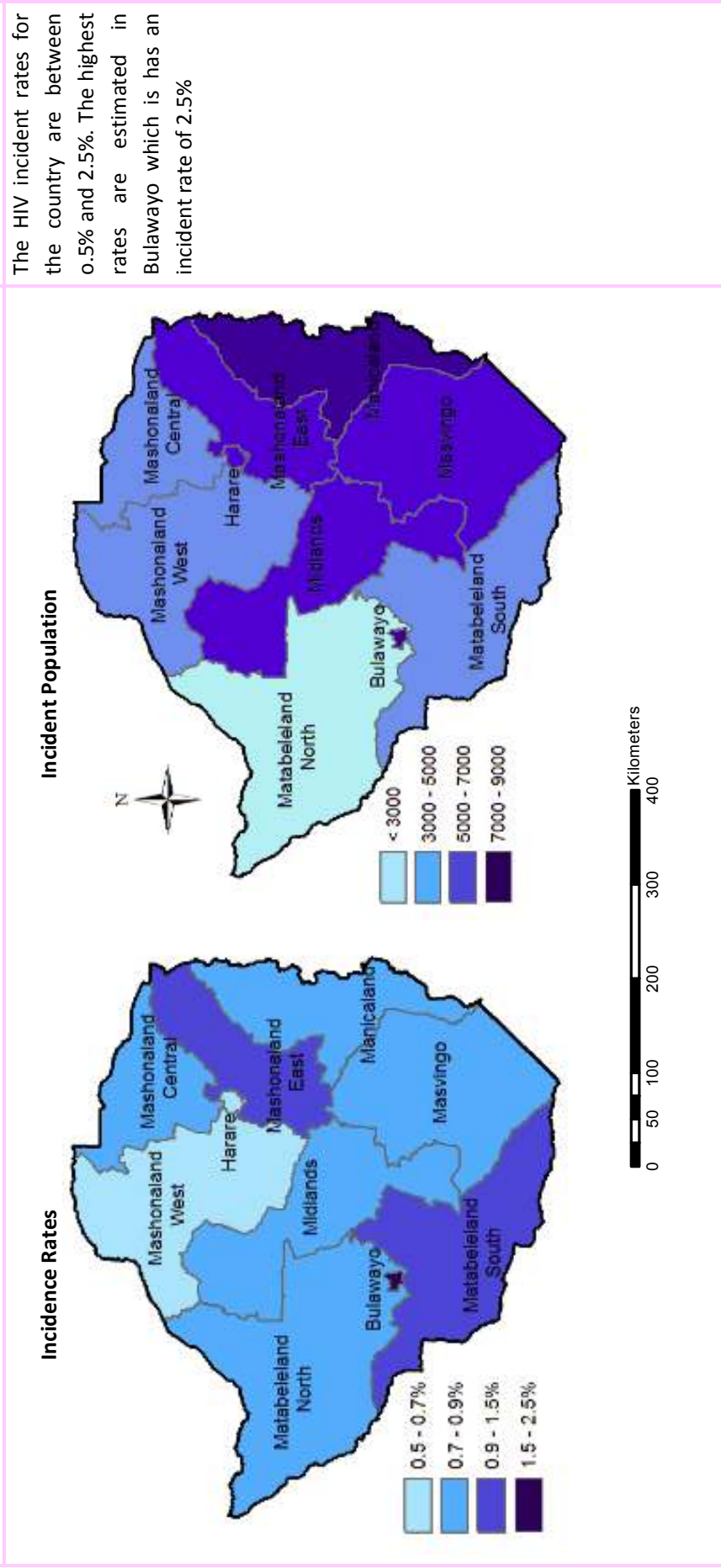


The HIV prevalence amongst discordant couples shows that generally, there are more men who are HIV positive compared to the women. This low prevalence for women in discordant couples might be attributed to increase in knowledge for women through programmes like PMTCT, ANC and the general HIV awareness programmes and also due to more prevention method choices for women.

**Data Sources:** Zimbabwe Demographic Health Survey  
**Shape Files:** The Department of the Surveyor General.

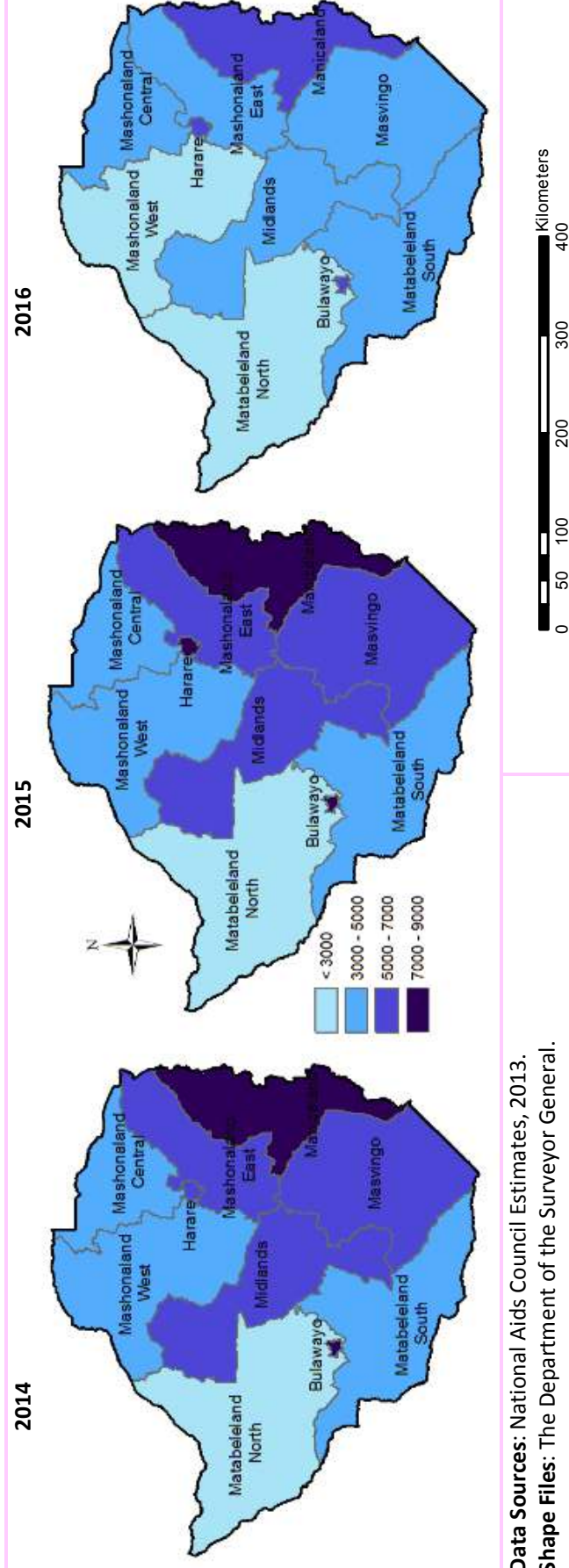
# HIV Incidence

Map 12: Adult HIV Incidence 2013



Data Sources: Zimbabwe Demographic Health Survey  
Shape Files: The Department of the Surveyor General.

**Map 13:** HIV Incidence Population (15 – 49 years)



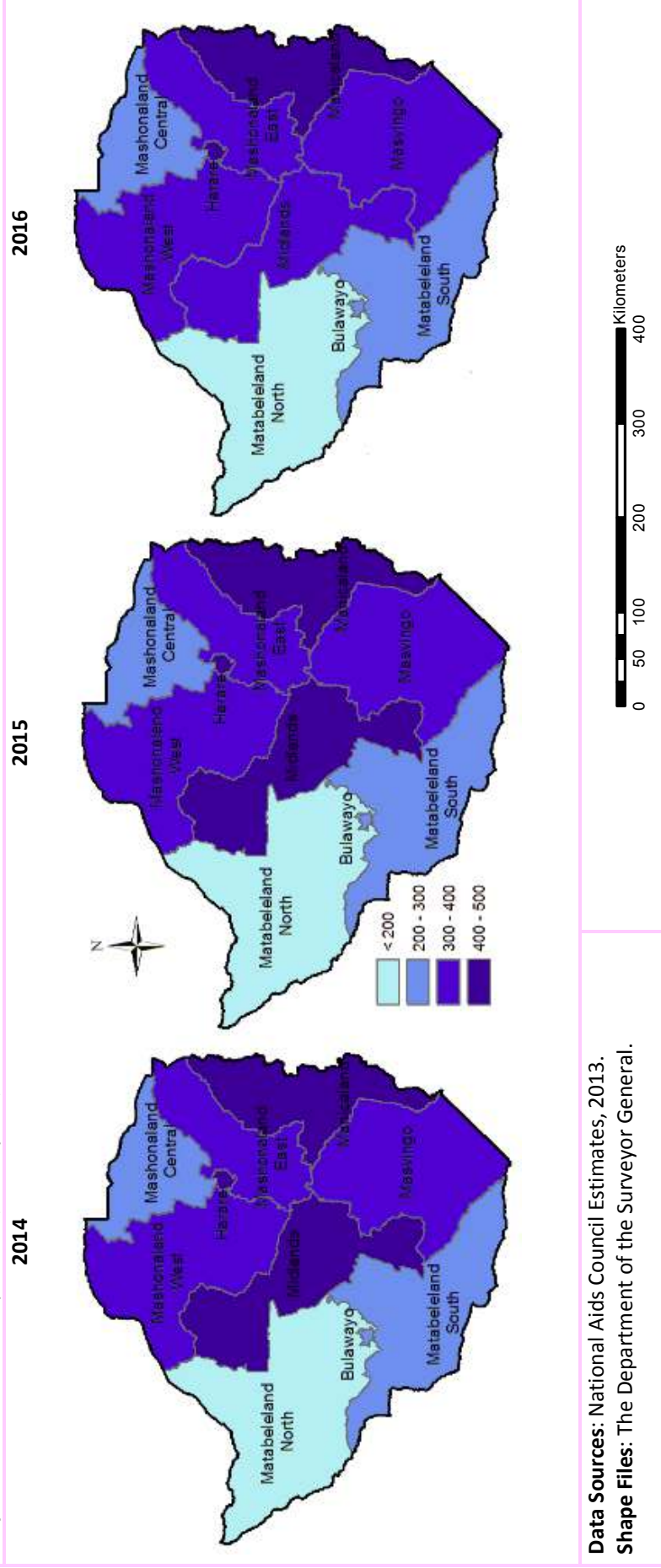
**Data Sources:** National Aids Council Estimates, 2013.

**Shape Files:** The Department of the Surveyor General.

The HIV Incidence population is estimated to decrease over the years. This can be a result of the HIV awareness programmes and prevention methods.



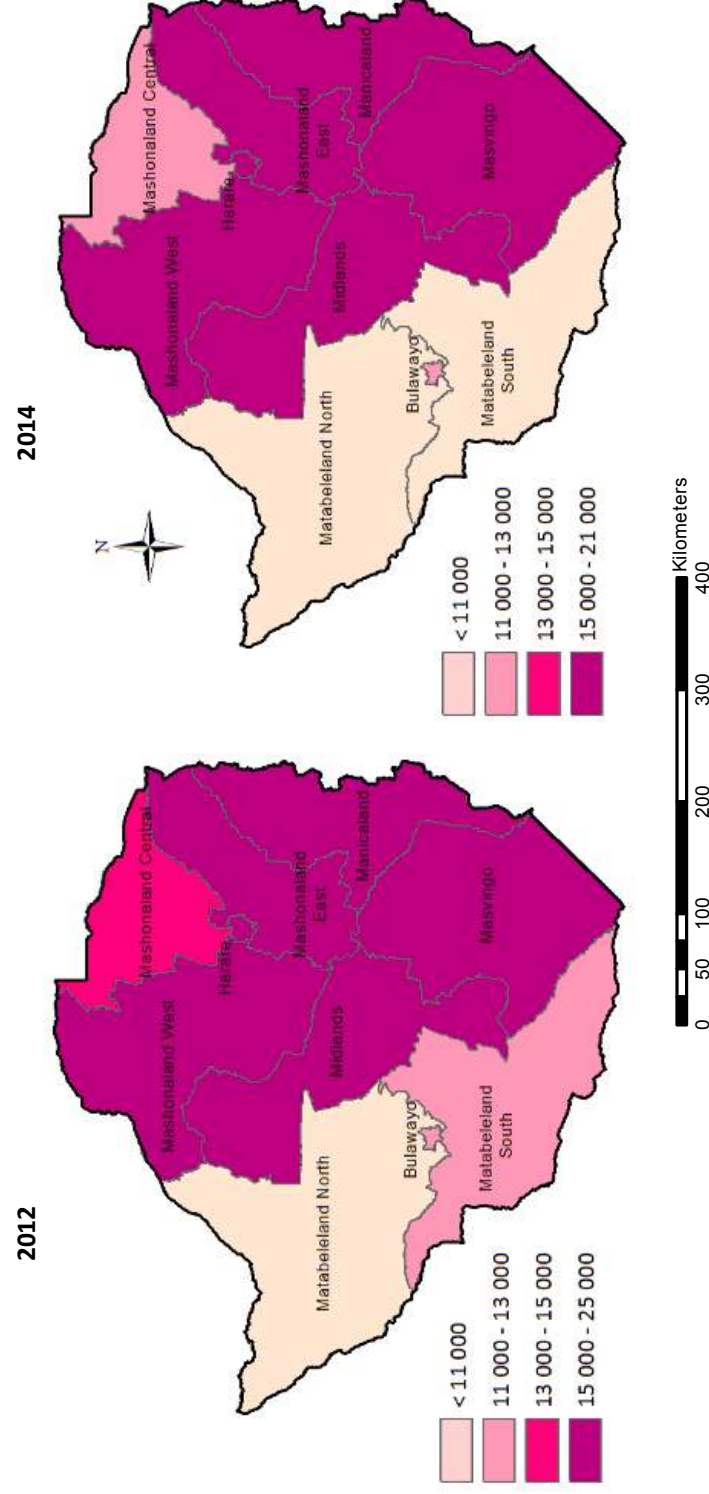
**Map 14:** HIV Incidence Population (0 – 14 years)



The incidence population for the 0 – 14 years remains almost the same for the districts over the years.

## People Living with HIV

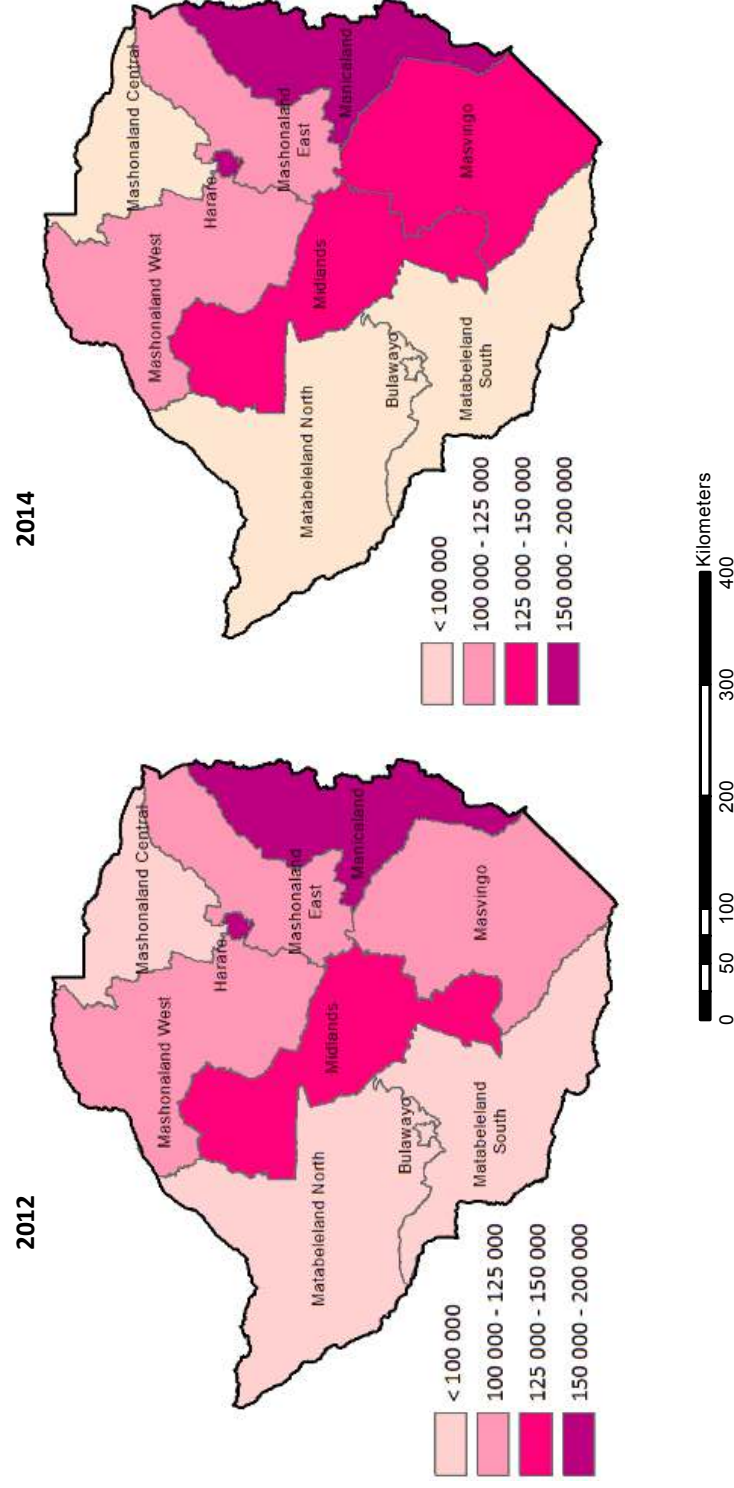
**Map 15:** People Living with HIV ( 0 - 14 years )



The population of children aged 0 – 14 years in the highest category was very high for both years compared to the 2016 estimates. Mashonaland Central and Matabeleland South are the two provinces that are showing a decline in the population of children aged 0 – 14 years.

**Data Sources:** Ministry of Health and Child Care and the National AIDS Council.  
**Shape Files:** The Department of the Surveyor General.

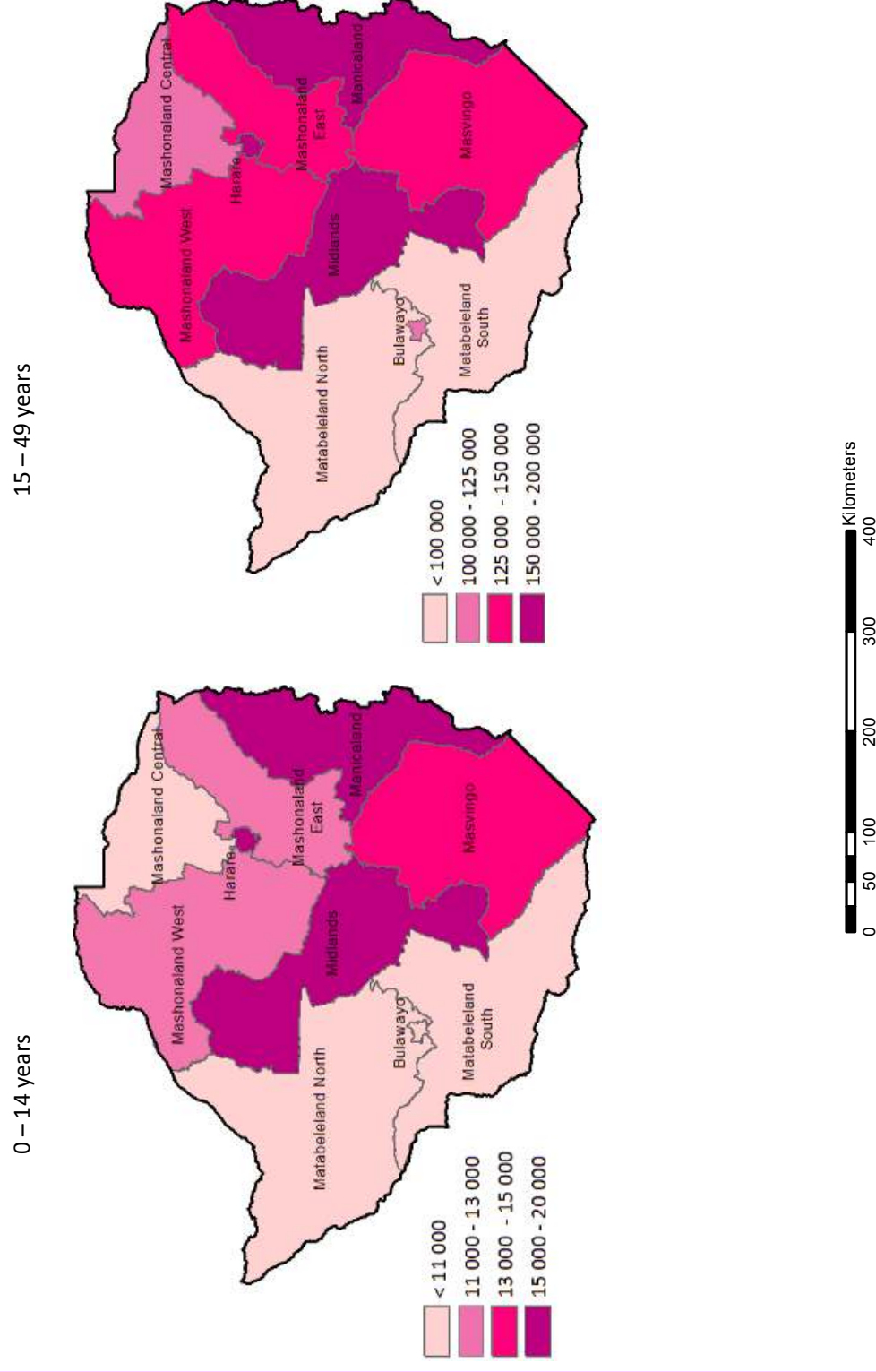
**Map 16:** People Living with HIV ( 15 – 49 years )



The highest population of people living with HIV are in Manicaland and Harare and this is following the Census 2012 population distribution patterns.

**Data Sources:** Ministry of Health and Child Care and the National AIDS Council.  
**Shape Files:** The Department of the Surveyor General.

**Map 17:** People Living with HIV , 2016



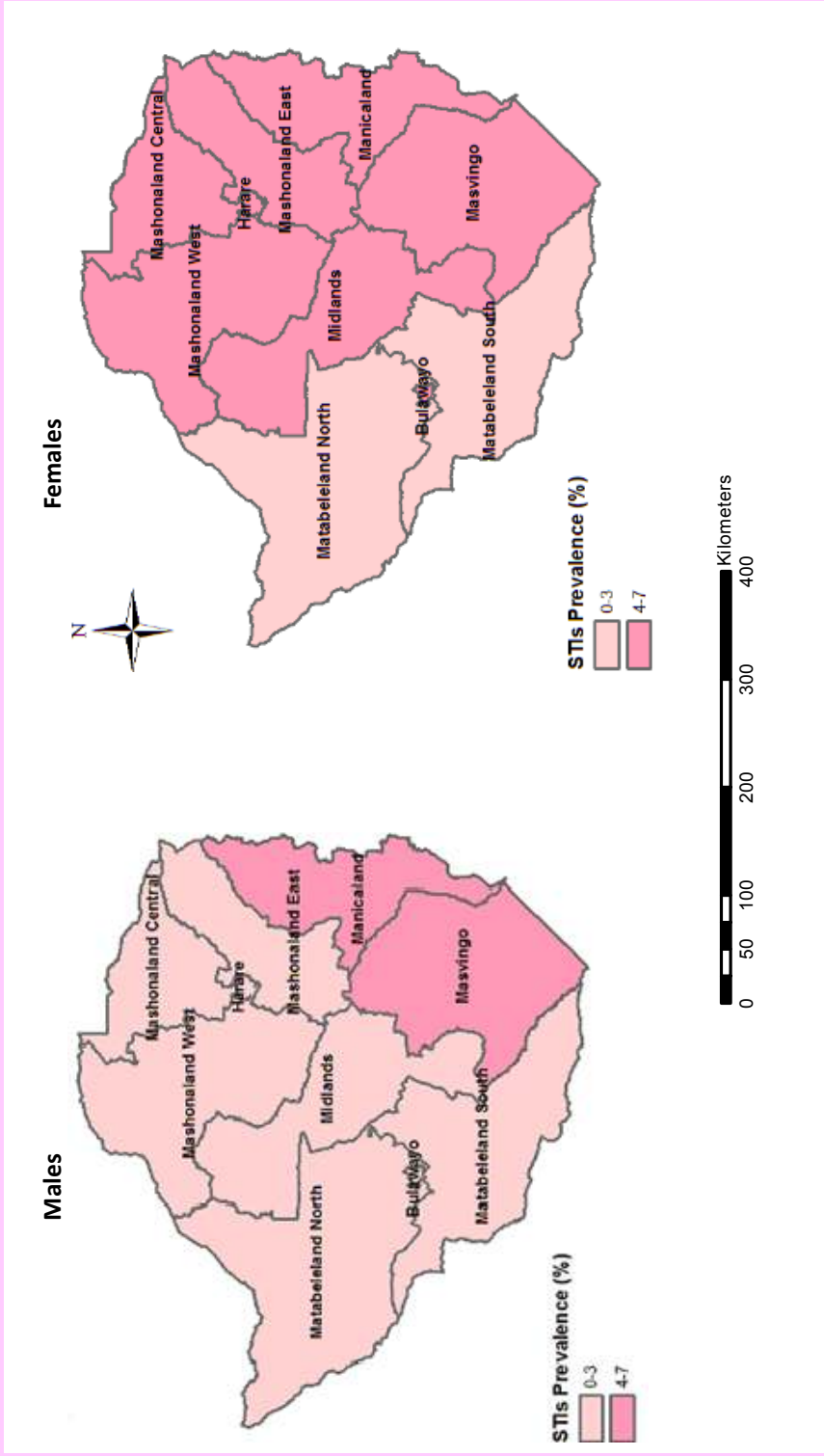
Compared to the population of people living with HIV in 2014, there will be increases in 2016. Whilst the rest of the country remains in the same category, Midlands will experience an increase of about 10 000 for the 15 – 49 years and about 2 000 for the 0 – 14 years age groups. Mashonaland Central will also have an increase for the 15 – 49 years age group of about 10 000 people living with HIV. The general increase can be attributed to the ART treatment which enables HIV patients to live longer.

**Data Sources:** Zimbabwe Demographic Survey.  
**Shape Files:** The Department of the Surveyor General.



Risk Factors

Map 18: Sexual Transmission Infections prevalence, 2005



For the year 2005, the prevalence of STIs was generally low compared to that of HIV. The highest for males was in Masvingo and Manicaland whereas for the ladies only two provinces were in the 0 – 3% , Matabeleland North and South, the rest of the country for the females is in the high category.

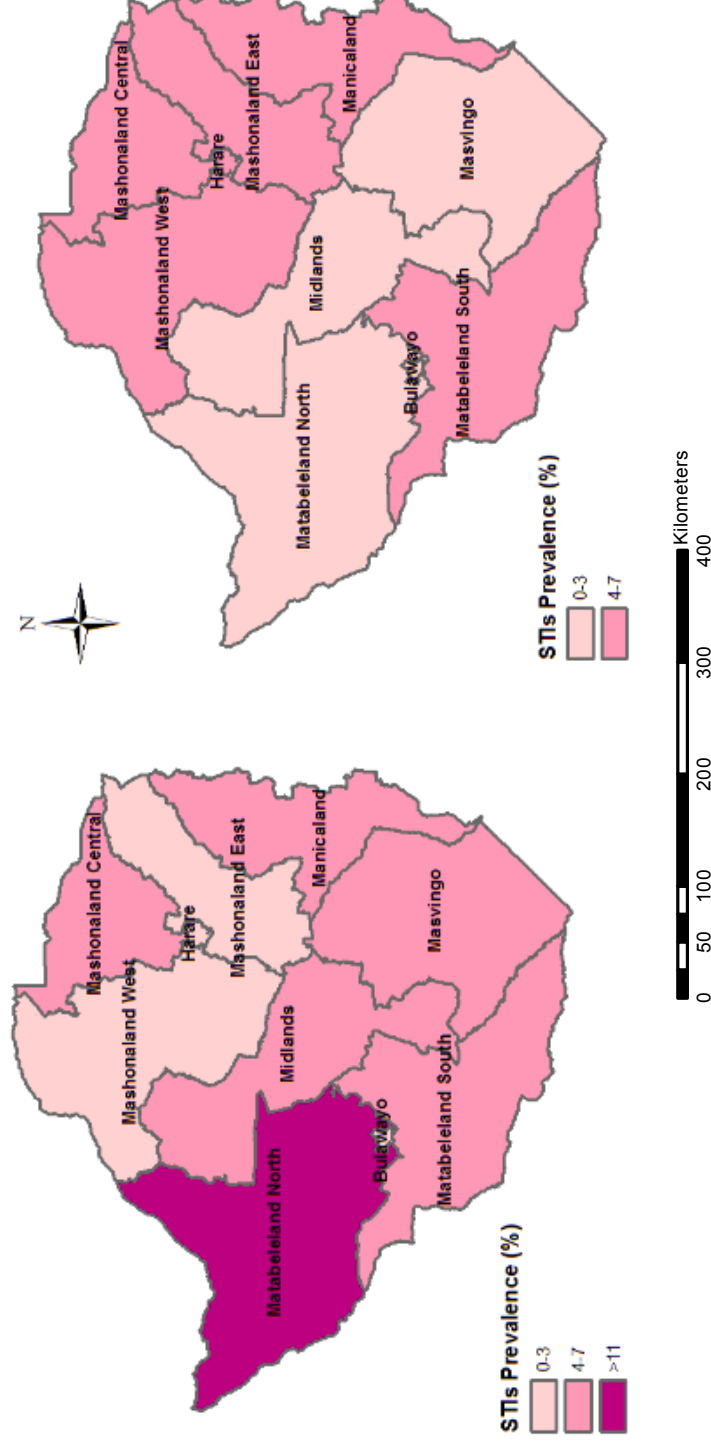
Data Sources: Zimbabwe Demographic Health Survey 2005.  
Shape Files: The Department of the Surveyor General.

**Map 19:** Sexual transmission infections prevalence, 2010

**Females**

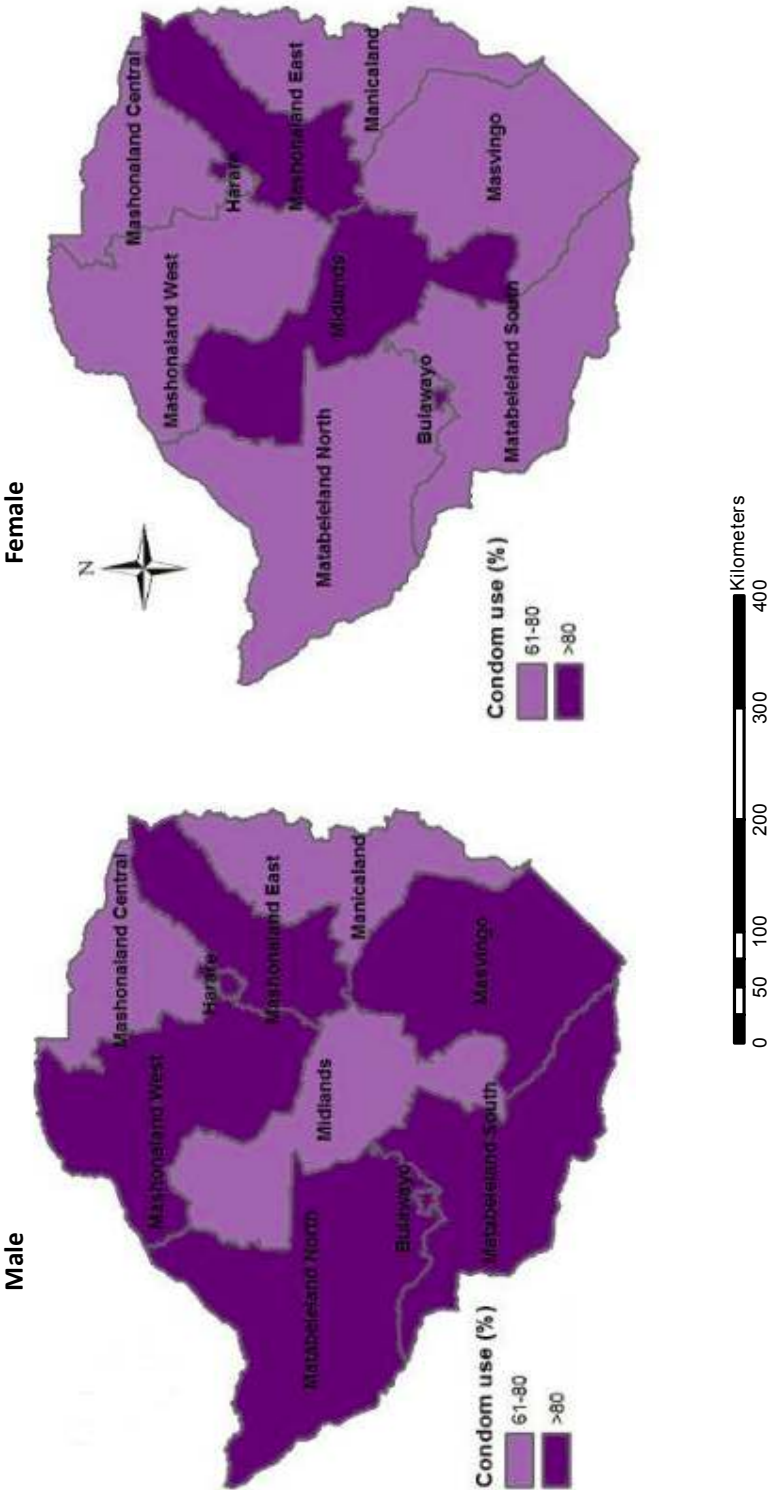
**Males**

In 2010 the situation is different with more males infected with an STI compared to the females. Matabeleland North has the highest prevalence of about 12% whereas the highest for the females is about 4% in Mashonaland central and Harare.



Data Sources: Zimbabwe Demographic Health Survey, 2010.  
Shape Files: The Department of the Surveyor General.

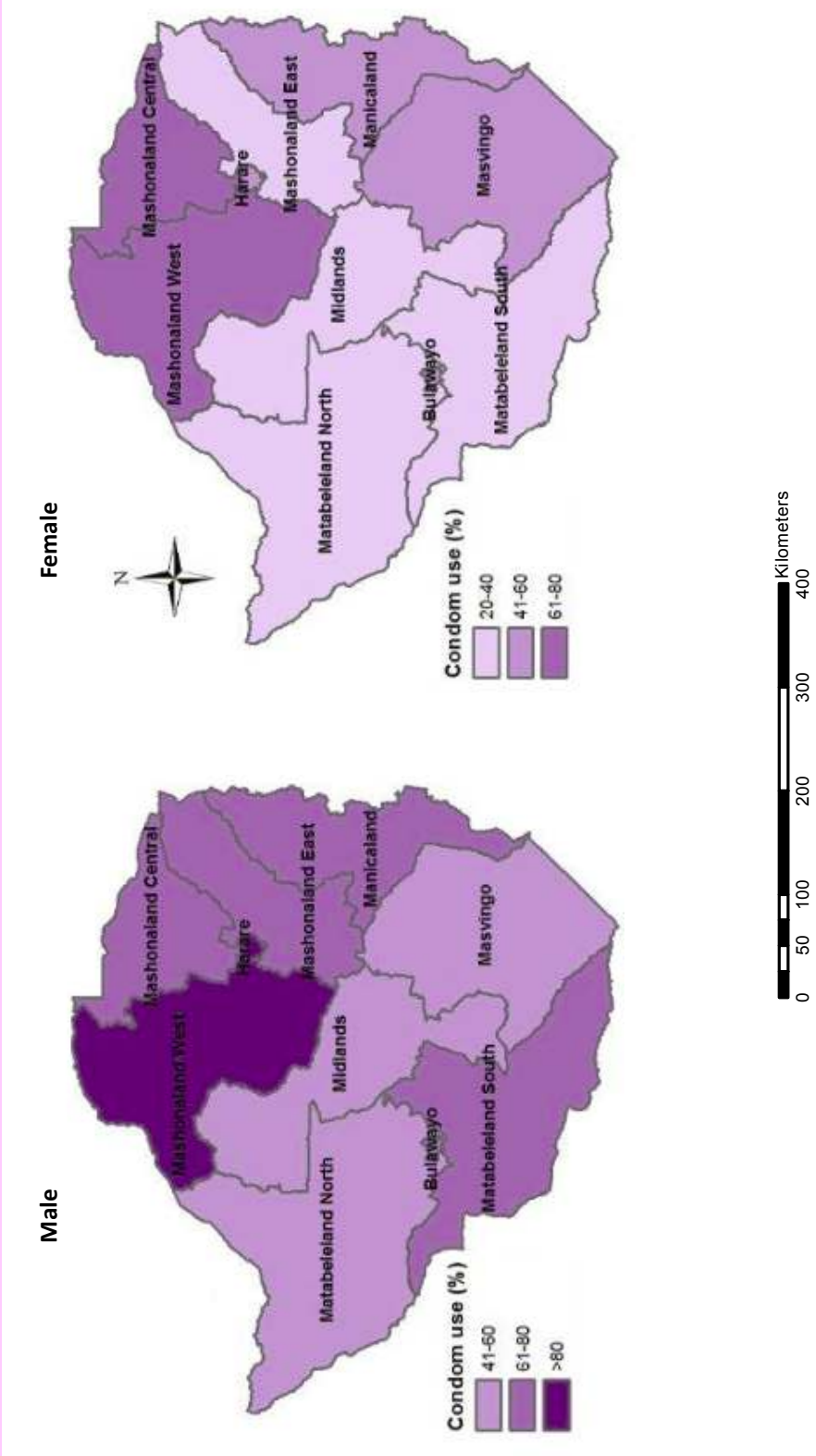
**Map 20:** Knowledge of condom use as a prevention method, 2005



From the 2005 ZDHS data it very clear that men had the knowledge that condoms can be used as an HIV prevention method compared to women. Only two provinces had more than 80% of women who are aware of the fact.

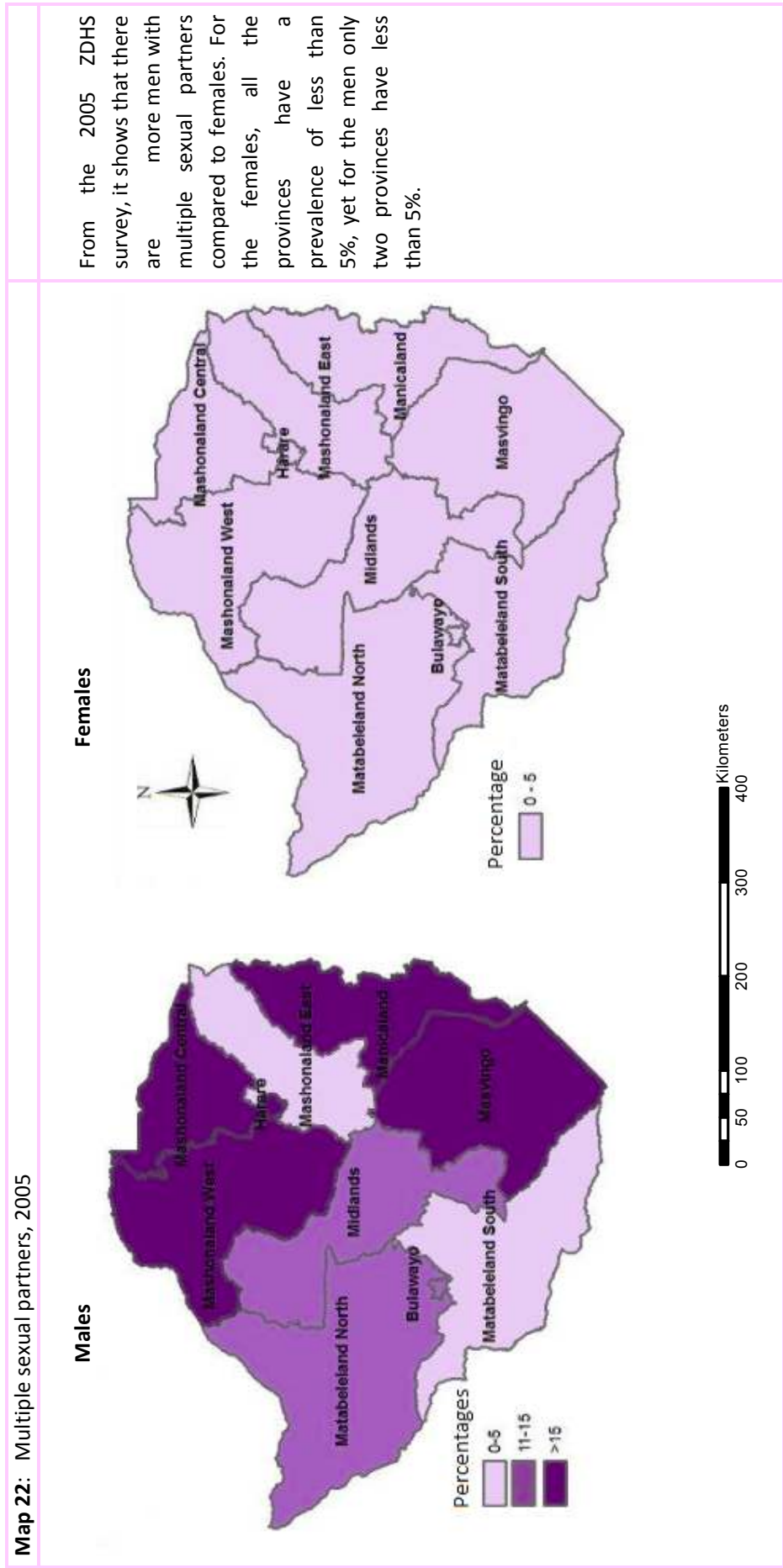
**Data Sources:** Zimbabwe Demographic Health Survey, 2005.  
**Shape Files:** The Department of the Surveyor General.

**Map 21:** Knowledge of condom use as a prevention method, 2010



In 2010 more men than women responded positively to the effect that they had knowledge on the use of condoms as an HIV prevention method. When compared with 2005, it shows that generally women has less knowledge on the use of condoms as a preventive measure compared to men.

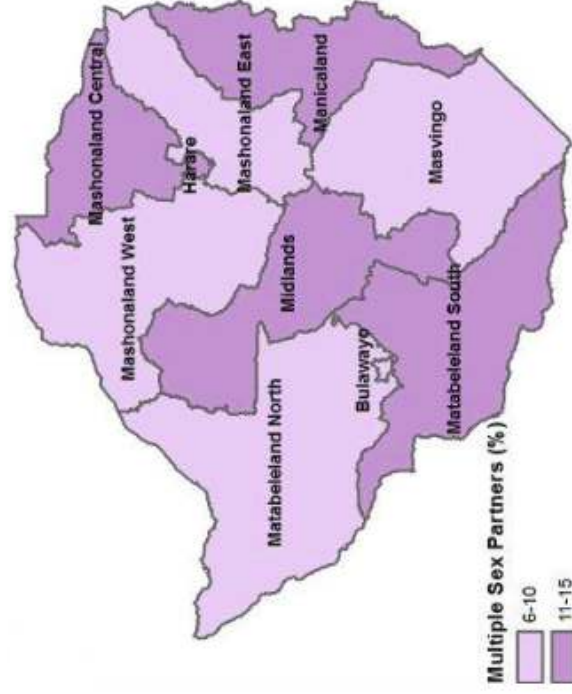
**Data Sources:** Zimbabwe Demographic Health Survey, 2010.  
**Shape Files:** The Department of the Surveyor General.



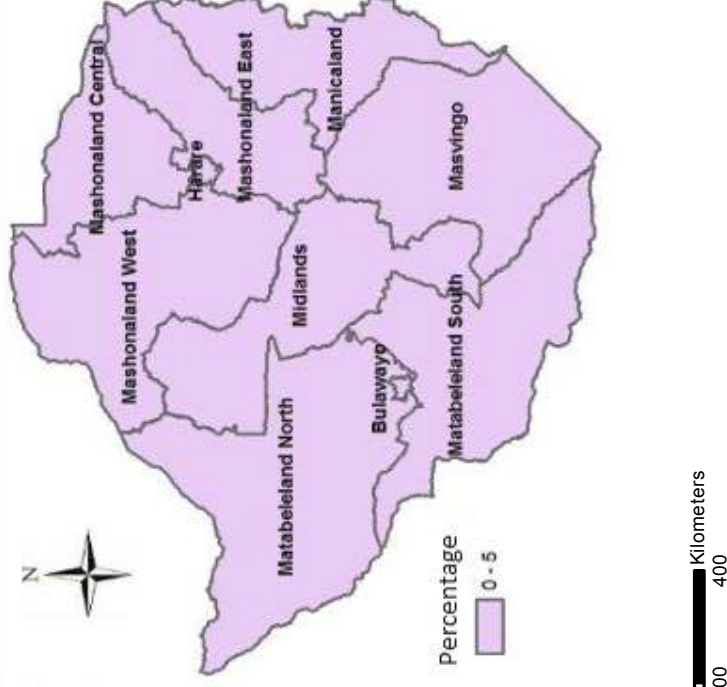
**Data Sources:** Zimbabwe Demographic Health Survey, 2005.  
**Shape Files:** The Department of the Surveyor General.

**Map 23:** Multiple sexual partners, 2010

**Males**



**Females**



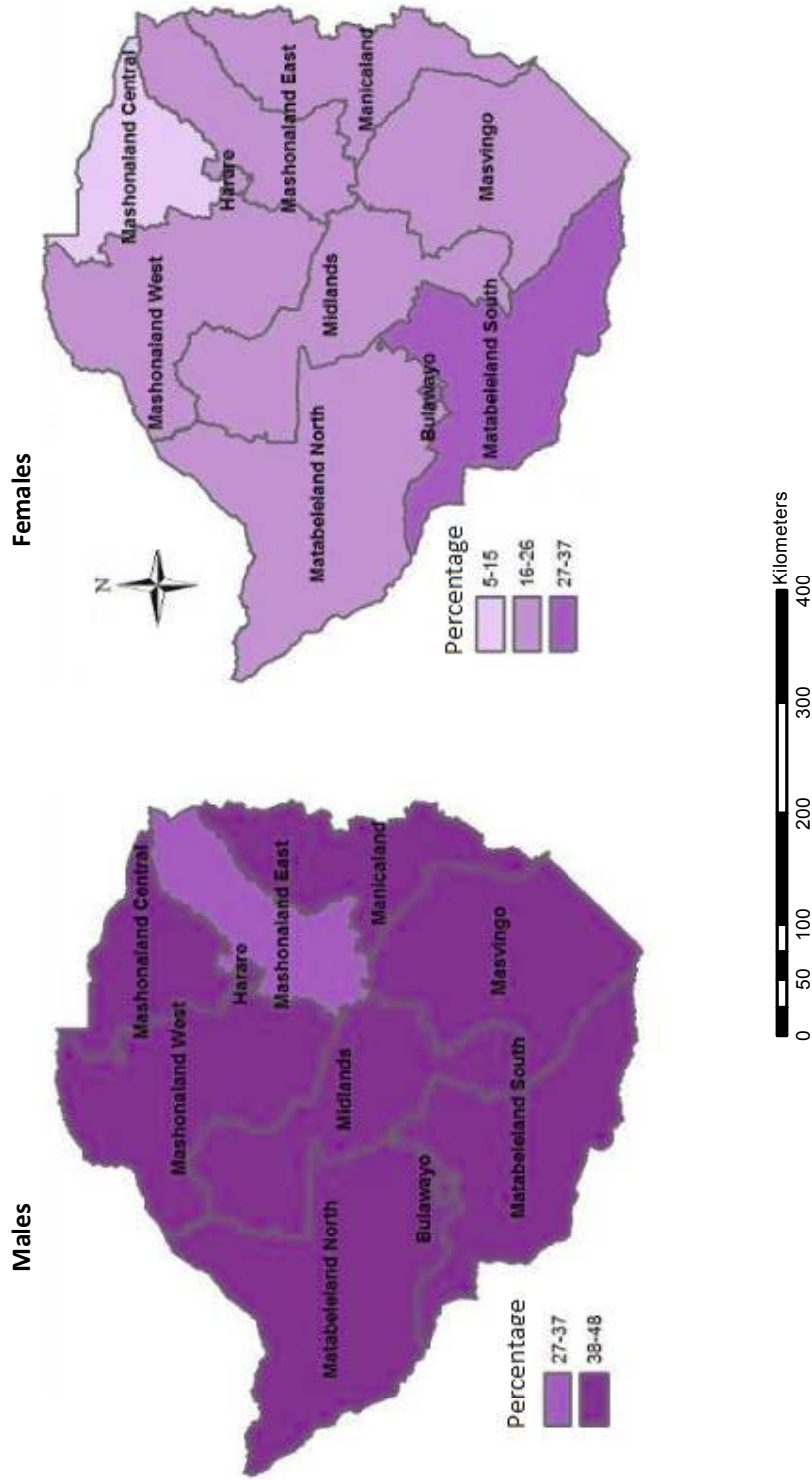
**Comments**

According to the ZDHS 2010 data, there is a slight decrease in the prevalence of males with multiple sexual partners as the highest prevalence is less than 15%.

**Data Sources:** Zimbabwe Demographic Health Survey, 2010.  
**Shape Files:** The Department of the Surveyor General.



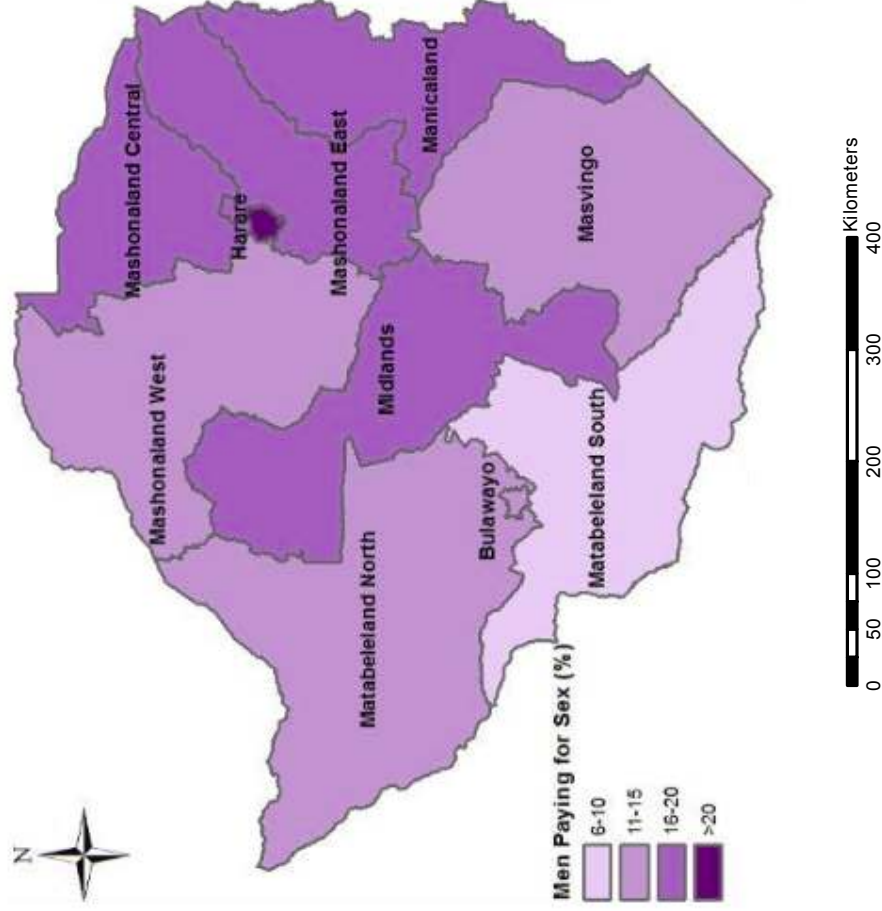
**Map 24:** High risk sexual intercourse, 2005



The prevalence of people who had been involved in high risk sexual intercourse is more for the males than the females. For all the districts the prevalence for the males starts from the 27 – 37 % category whilst that of the females starts from 5 – 15%. Only Mashonaland East for the males fall in the 27- 37%. The rest of the country for the males goes as high as close to 50%. This data was only collected in the ZDHS 2005.

**Data Sources:** Zimbabwe Demographic Health Survey, 2005.

Map 25: Paid sex, 2010

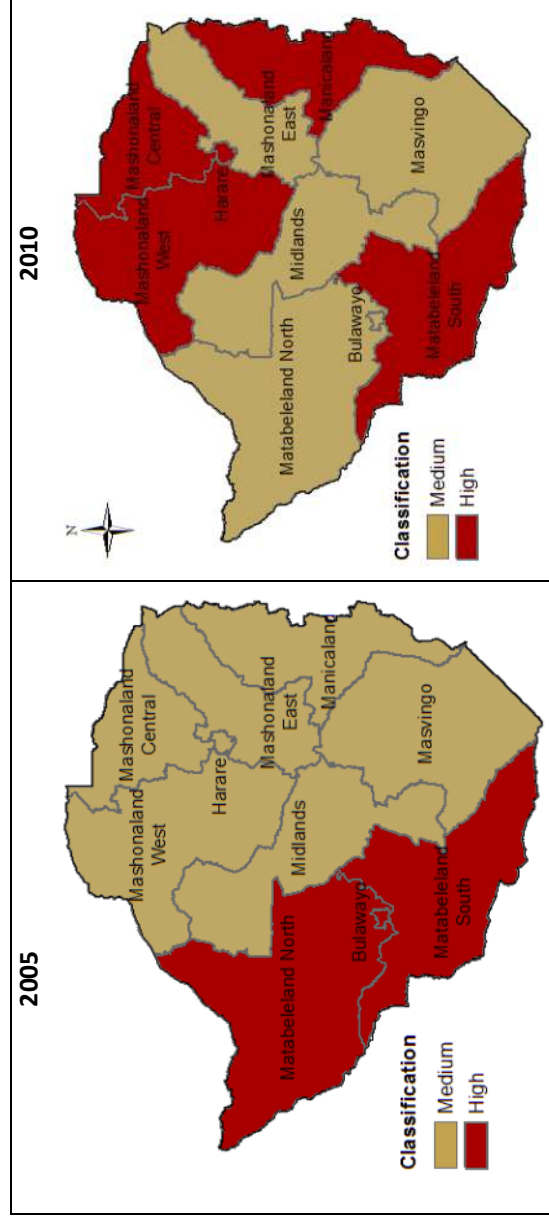


The percentage of men who paid for sex is highest in Harare with a prevalence of greater than 23%. It is lowest in Matabeleland South with a prevalence of about 7%. According to **map 17**, the prevalence is high in the eastern parts of the country, i.e. Manicaland, Mashonaland Central and East and also in Midlands.



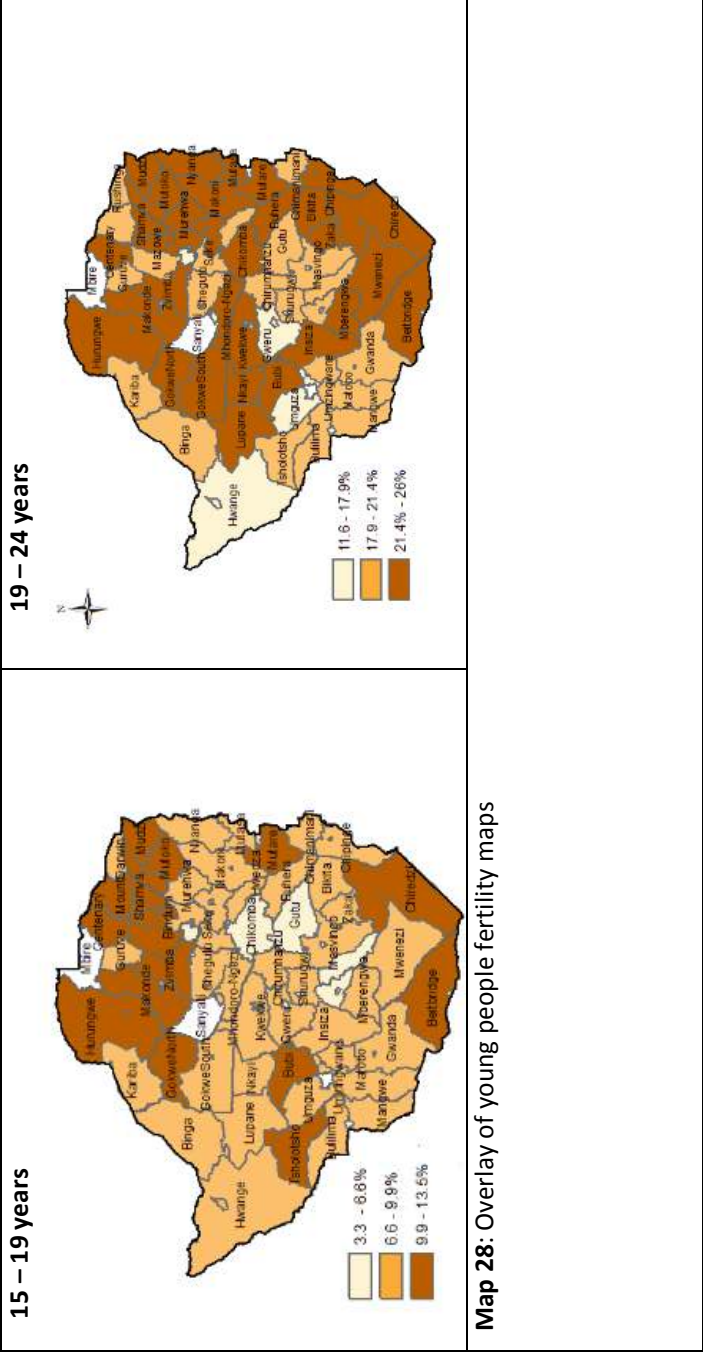
**Data Sources:** Zimbabwe Demographic Health Survey, 2010.  
**Shape Files:** The Department of the Surveyor General.

**Map 26: classification of risk factors by provinces for 2005 and 2010**



In 2005, no province fell under the low category, with the intensification of awareness programmes most of the country except urban areas and Matabeleland South remained under the high classification with Matabeleland North moving to Medium. Nevertheless the risk factors are generally still very high in the country as a whole as shown by 2010 data.

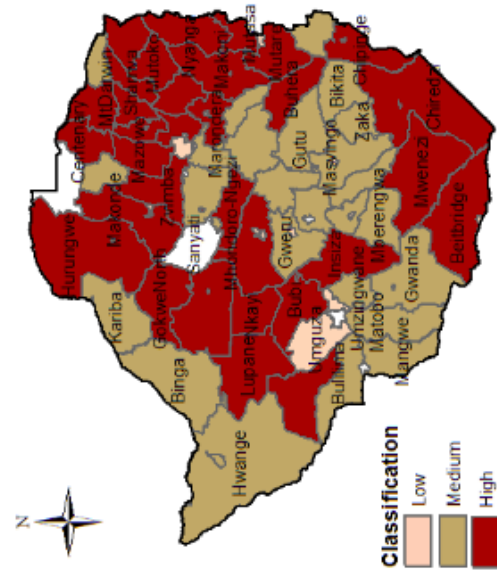
Map 27 : Teenage pregnancy (Census 2012)



According to the data, there is low pregnancy rate for the age group 15 – 19 with the highest prevalence in the northern parts of the country, Chiredzi, Mutare and Beitbridge. The story is different for the 19 – 24 years as the rates go as high as 26 % in most parts of the country.

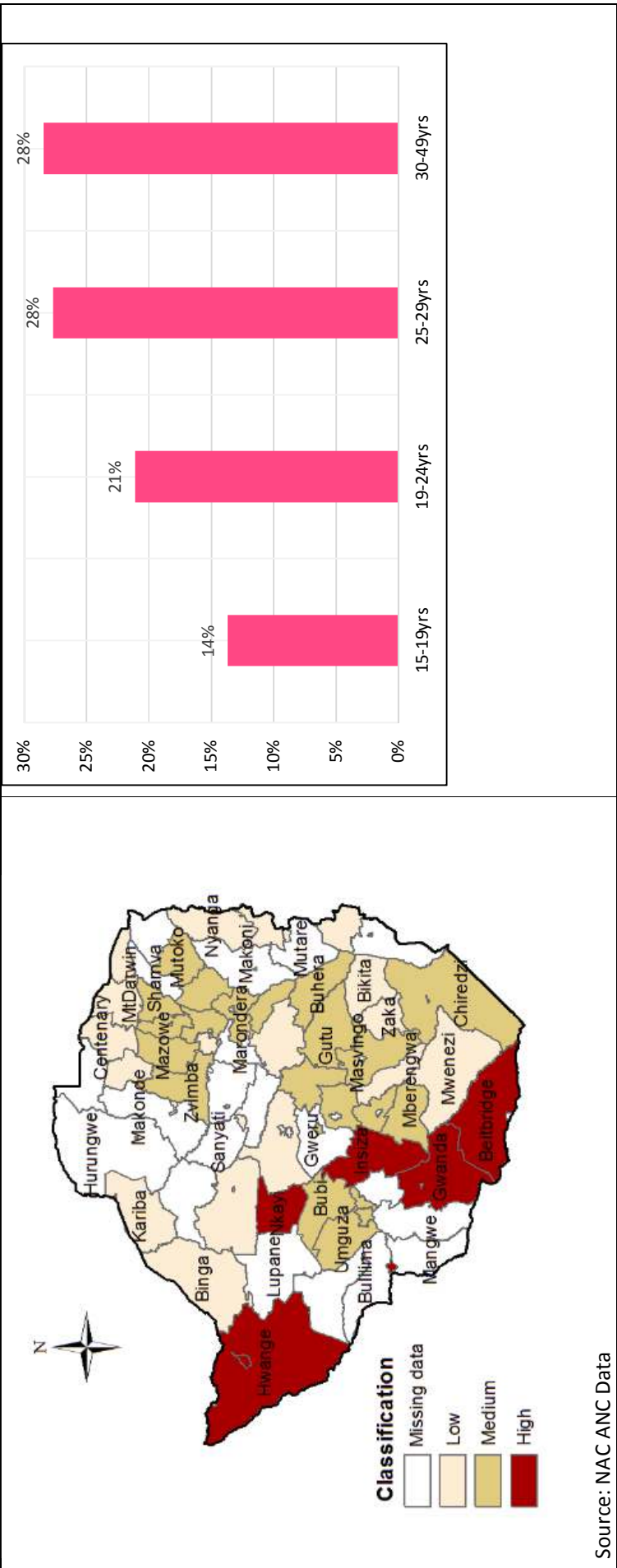
Map 28: Overlay of young people fertility maps

From the overlay it can be seen that, most districts have high prevalence of young women fertility which might be an indicator of young women practising unsafe sex.



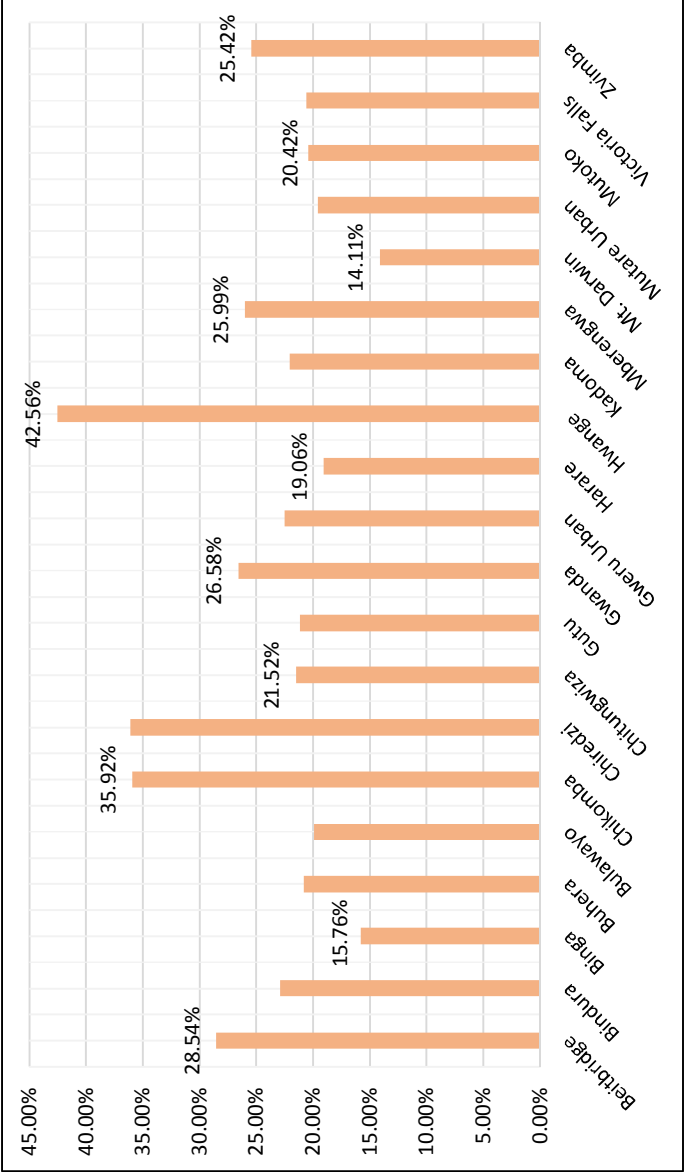
**Map 29:** HIV Positivity Rate per District 2012

**Figure 6:** Average HIV Positivity Rate by Age Group for pregnant women attending ANC (2001 – 2012)



The ANC data is collected from 22 selected sites, in 19 districts. The average HIV positivity rate is calculated from the site positivity rates for the period 2001 to 2009. From the averages Chikomba, Chiredzi, Hwange and Beitbridge have very high HIV positivity rates. The HIV positivity rate is also generally high for the 30 – 49 years amongst pregnant women and also for the 25 – 29 years. In 2012, the highest prevalence of HIV positivity rates among pregnant women was in Gwanda with a rate of 28%, this was followed by Insiza and Hwange with 24%. Compared to the 2001 – 2009 average rate of 42% for Hwange, there is a sharp decline in the positivity rate for pregnant women attending ANC clinics.

**Figure 7:** Ante Natal Care HIV Positivity Rate by districts (2001 – 2009)

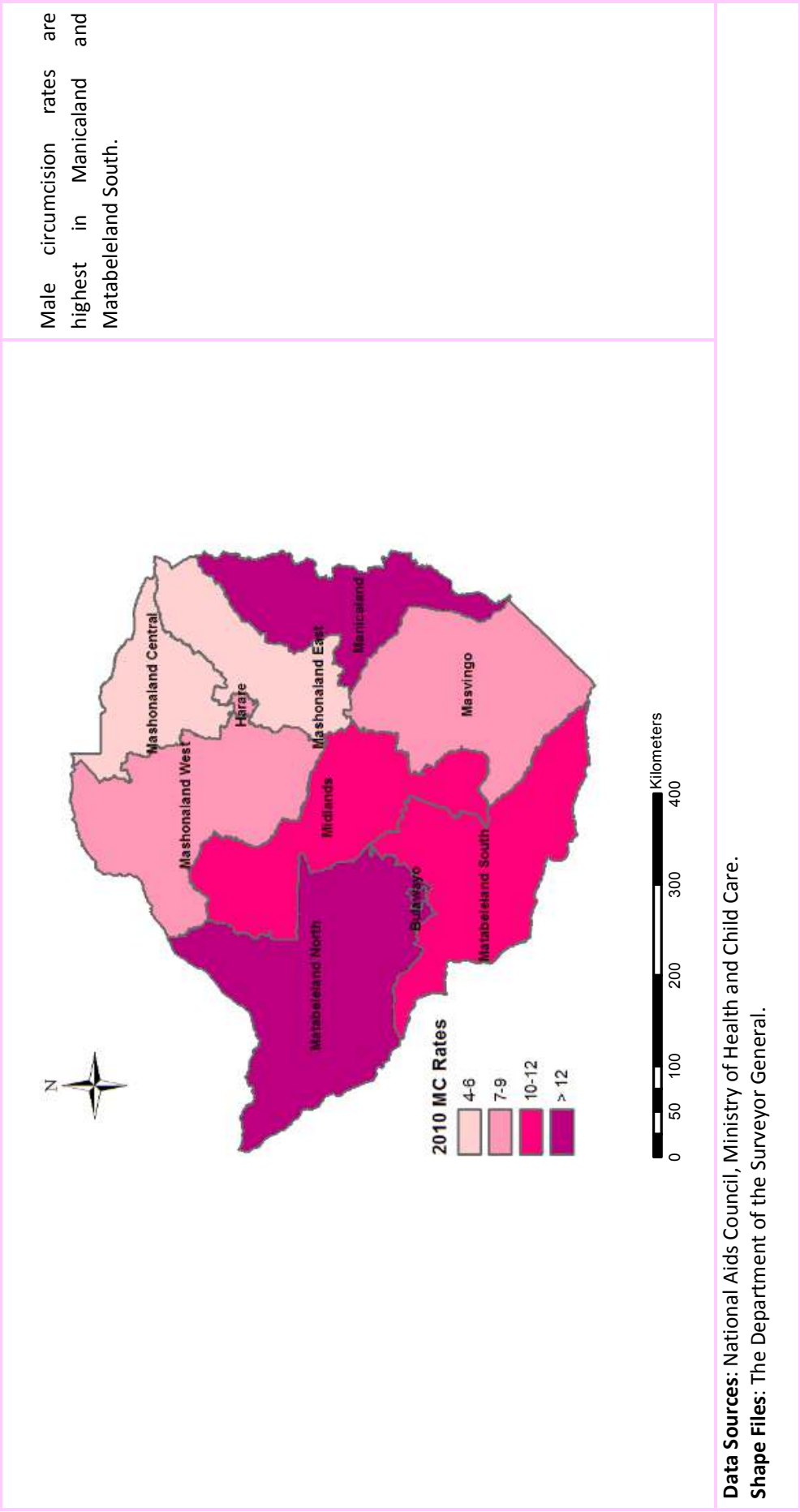


The average HIV positivity rate among pregnant women who visit ante natal care clinics is highest in Hwange with an average positivity rate of 42.6%. Chiredzi and Chikomba have an average rate of almost 40%. Beitbridge has a positivity rate of 29%.

**Data Sources:** National Aids Council, Ante Natal Care National Surveillance  
**Shape Files:** The Department of the Surveyor General.

Maps for Service Delivery

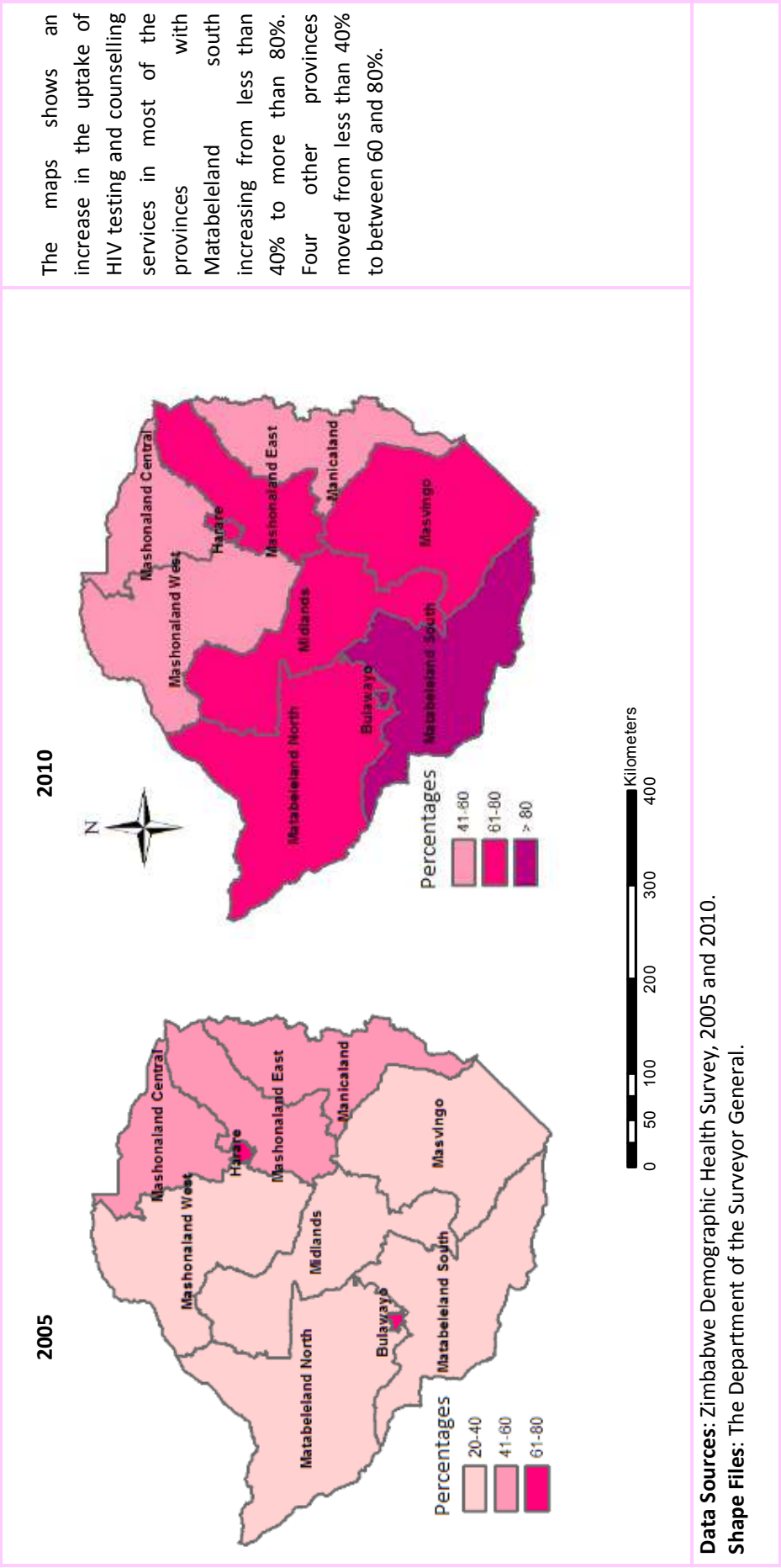
**Map 30:** Male circumcision, 2010



Male circumcision rates are highest in Manicaland and Matabeleland South.

**Map 31:** Voluntary HIV counselling amongst pregnant women



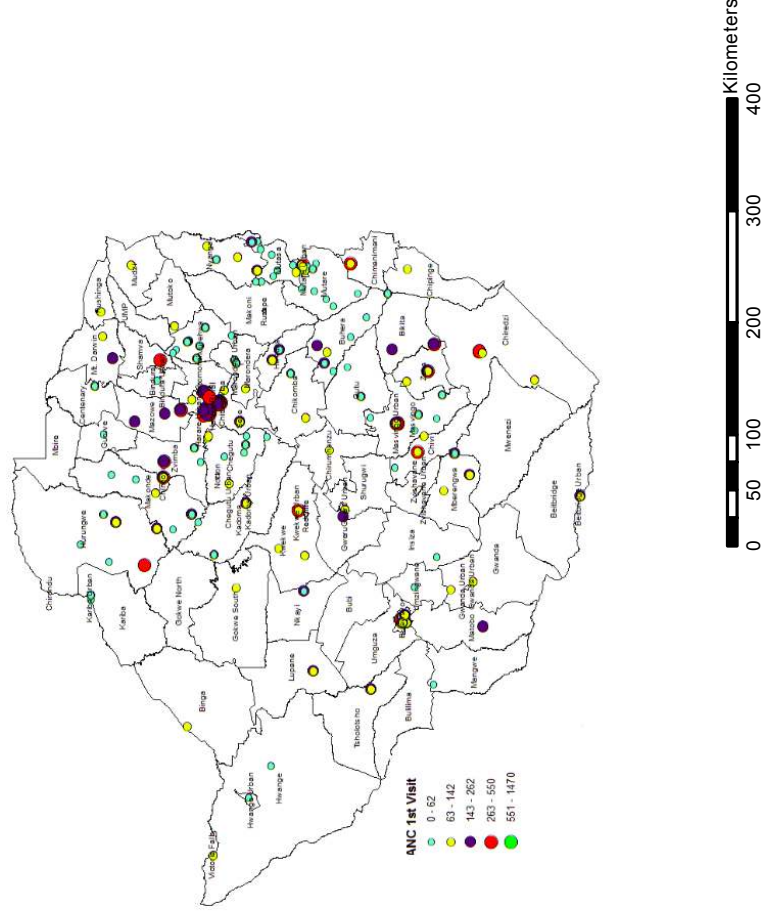


Map 32: Anti-retroviral sites (to be re-inserted)

2004

2008

In general the sites have been increasing from 2004 to 2008

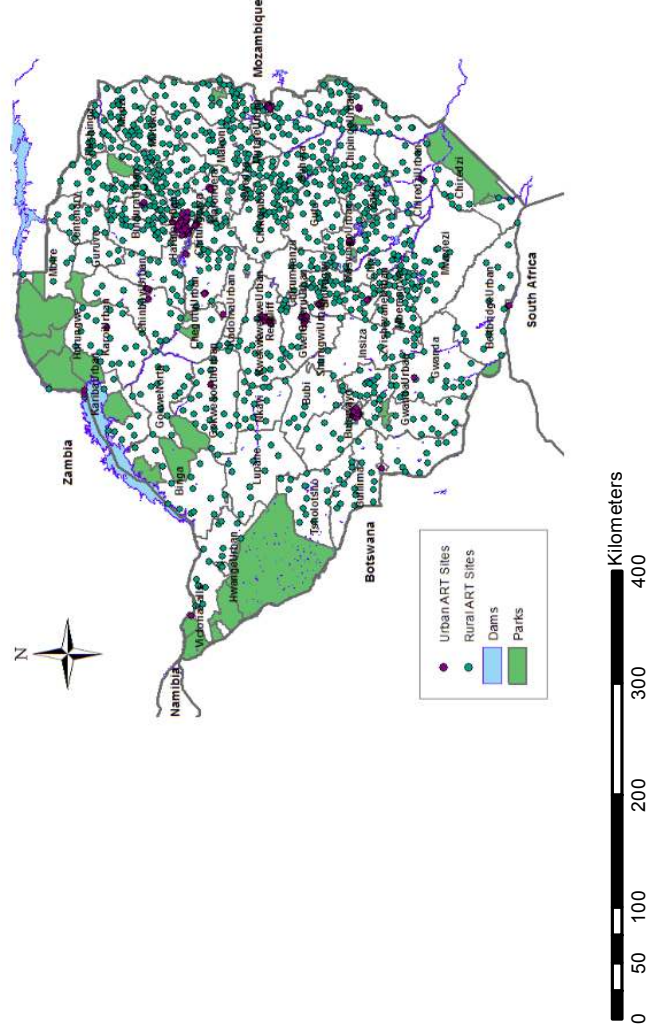


**Data Sources:** Ministry of Health and Child Care.  
**Shape Files:** The Department of the Surveyor General.

**Map 33:** Anti-retroviral sites (to be inserted)

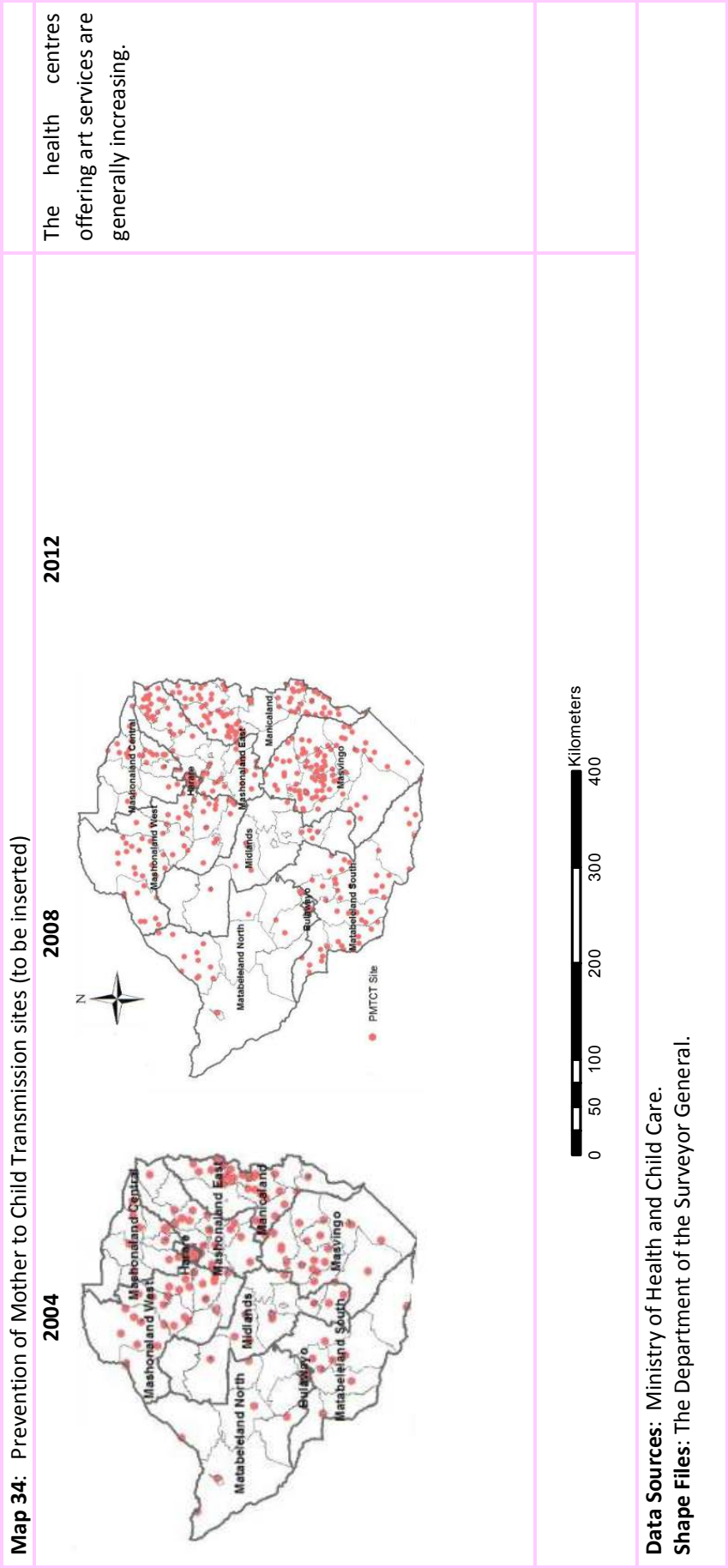
**2010**

**2013**



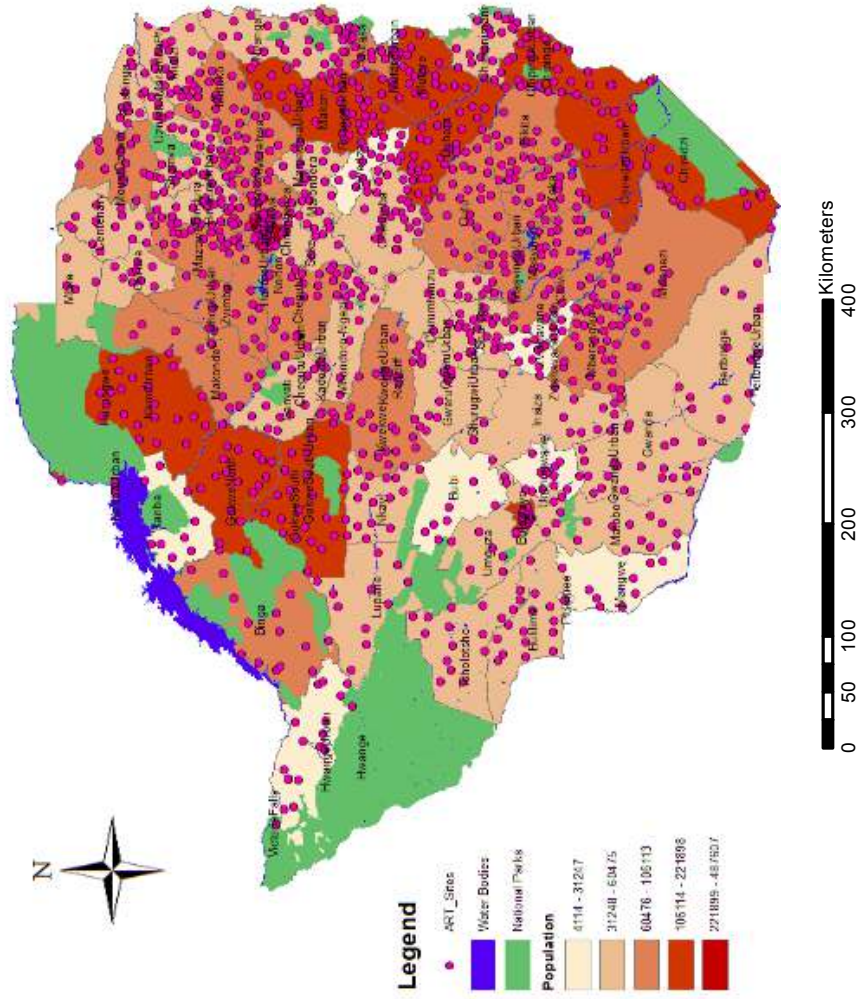
The health centres offering ART services are generally increasing.

**Data Sources:** Ministry of Health and Child Care.  
**Shape Files:** The Department of the Surveyor General.



**Map 35:** People Living with HIV and ART sites

**Comments**



**Data Sources:** National AIDS Council.

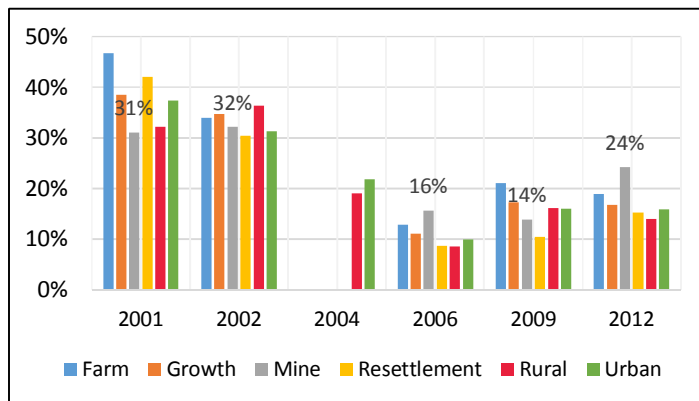
**Shape Files:** The Department of the Surveyor General.







**Figure 9: HIV positivity rates by livelihood sectors**



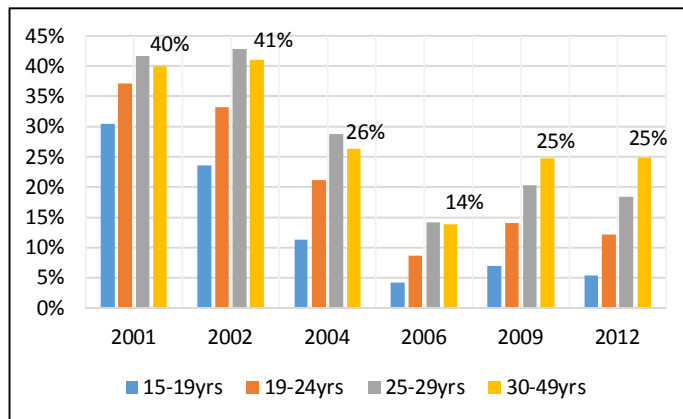
Source ANC Data

In 2006 and 2012 mining areas had the highest positivity rate. In general, the positivity rates for farming areas, growth points and mining areas are high. It can be concluded that areas that are densely populated have high spread of HIV infections.

In 2012 the mining areas have a significantly high rates compared to other livelihood sectors, with a positivity rate of 24% up from 14% in 2009. This sharp increase in HIV positivity among pregnant women in mining areas needs to be investigated further.

### 3. Age Group Based Hotspots

**Figure 10: HIV Positivity Rate by age group**

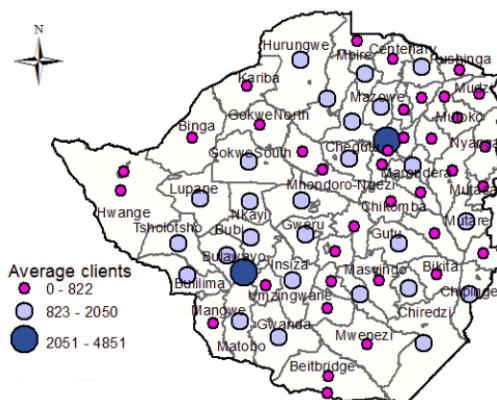


From 2001 to 2004, the 25 – 29 age group had the highest HIV positivity rate, the highest being 43% in 2002. In 2006 the prevalence for the 25 – 29 years and that for 30 – 49 years were both at 14%. The prevalence for the 25 – 29 years age group rose again in 2009 to 20 and decreased slightly in 2012 to 18%. The HIV positivity rate for the 30 – 49 years, has also been high in 2001 up to 2004 with the highest being 41% in 2002. It decreased in 2006 to 14% then rose to 25% in 2009 and 2012.

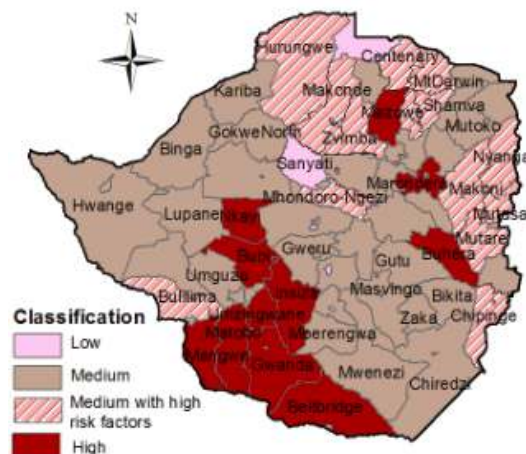
The average HIV positivity rates for the age groups from 2001 to 2012 according to **Figure 14** is highest for the 25 – 29 years and the 30 – 49 years age groups. These two age groups have constantly have a high HIV positivity rates over the 12 year period and when added together with high risk factors prevailing in the country, the incident rates and high prevalence rates, this makes them HIV age group based hotspots.

## 2. Service Delivery

**Map 37 : Average clients per ART/ PMTCT site per district**



**Map 38 : HIV hotspots**



The average number of clients receiving service per site was calculated using the number of site per district and the number of People living with HIV within each district. It is known that other people travel to get services from other health centres out of their district boundaries but the percentage is very minimal due to the cost implications.

From figure 15 and 17, the areas that are classified as high or medium with high risk factors, in general, a have relatively low coverage given the high average number of clients per ART site. Harare and Bulawayo serve on average at least 2050 people living with HIV per site. More effort should be done to expand ART services in those areas.

## Chapter 5: Conclusion and Recommendations

The HIV geographical hotspots are mainly in Matabeleland South and to a small extent in parts of Manicaland, Mashonaland East and Central. Although most of the rest of the country is rated as medium in terms of hotspots, most districts in Manicaland have potential of becoming hotspots if special attention is not taken according to the analysis. This also include those districts rated as Medium with high risk factors in the northern districts Mashonaland west province (Hurungwe, Makonde, Zvimba, Centenary, Mount Darwin and Shamva and in Midlands Mhondoro-Ngezi.

Data disaggregated by livelihood zones shows high positivity rates in farming areas followed by growth points followed by farming areas, therefore these are considered potential livelihoods hotspots. More data is needed to understand the livelihood dynamics of HIV and AIDS.

ANC positivity data disaggregated by age seem to suggest a consistent high rate of positivity for the 30 – 49 years age group for data between the years 2009 to 2012. This is followed by age group 25 – 29 years. Much older data still reflect the similar picture but somewhat inverted where the positivity rates are slightly higher for the 25 – 29 years age group followed by the 30 – 49 years age group.

In terms of coverage of services, generally with the exception of Nyanga and Mutare, the potential hotspot areas seem to have a larger average number of clients receiving services to a particular site. This is an indication that more efforts should be placed to expand the coverage of services of PMTCT and ART to boost access to HIV services.

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