

# Zimbabwe's Maturing HIV Epidemic: A Data Triangulation Analysis of Prevalence, Behavioral, and Programmatic Data

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## Introduction

Over the last thirty years, Zimbabwe has faced one of the worst HIV crises in the world. From its first diagnosed case of HIV/AIDS in 1985, Zimbabwe's HIV prevalence climbed through the 1990s, peaking at 32.1% in 2000, the highest prevalence in the world at the turn of the century, and dropping to 15.0% in 2013 [1, 2].

In the timeline of the maturing epidemic, there are points where assessment of national policy, program implementation, surveillance, and research must be conducted to continue effective response to the epidemic. These may be points of policy changes, funding, prevalence or behavior changes, scale-up of prevention activities, or a combination of all these factors. Second generation HIV surveillance, designed in 2000 to continually tailor behavioral and prevalence data collection to the unique epidemic of a country or region [3], recommends that such an assessment, or exercise, take place for a continual informed response to the epidemic. In view of this, a data triangulation exercise including a systematic review of the available data on the HIV/AIDS epidemic and national response in Zimbabwe was conducted to better direct the nation's response to its evolving epidemic.

## Materials and Methods

### Data Triangulation

In August 2013, the Centers for Disease Control and Prevention (CDC) Zimbabwe and national Ministry of Health and Child Welfare (MOHCW) hosted an initial stakeholders' meeting in Harare, Zimbabwe, where the following questions were proposed for analysis:

**Epidemiology:** What are the determinants of the patterns and distribution of the epidemic? What are the key drivers and where are the hot spots of the epidemic by region? And what may be the future direction of the epidemic?

**Prevention:** Are the current prevention services contributing to the decline in HIV infection in the country? i.e., what are the current coverage, intensity, impact, and 'quality' of the prevention services?

To answer the above questions, over the following year, a secondary data analysis was performed using the following data sources:

- Antenatal Clinic Surveillance (ANC) Prevalence – 2000-2012
- NAC Spectrum Prevalence Estimations – 2000-2013
- Demographic Health Surveys (DHS) - 2005/06 & 2010/11
- NAC & MOHCW Programmatic Data – 2008-2013

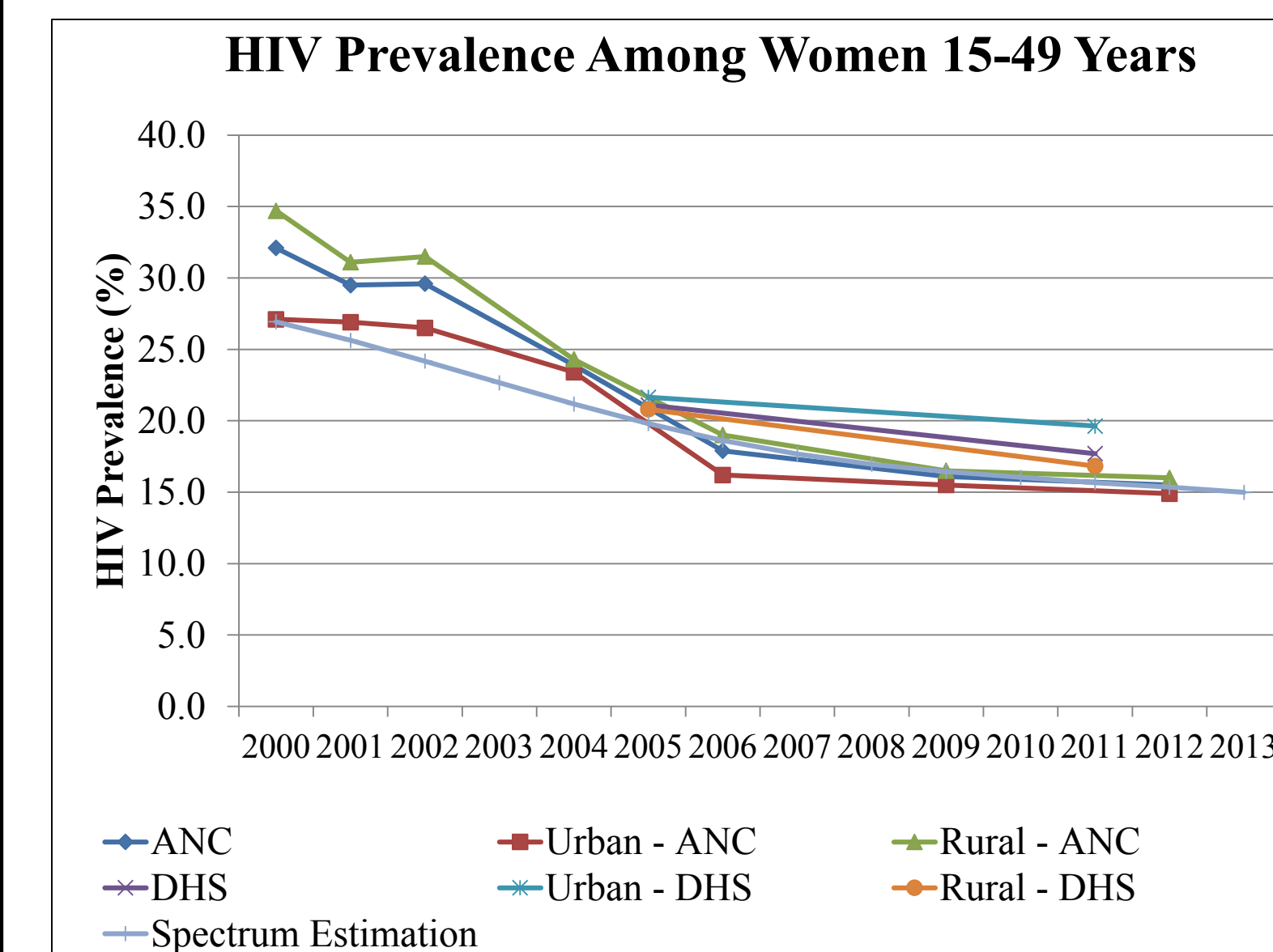
### Data Analysis

Original DHS data was analyzed using SAS software, weighting values per DHS protocol to determine HIV prevalence and behavioral data by age. The Mantel-Haenszel chi-square test of proportions with alpha=0.05 was utilized to compare prevalence, behavioral indicator, and programmatic data presented as proportions from one year to the next, and statistically significance differences were defined where p<0.05. Mean values calculated from DHS data were compared from the 2005/06 to the 2010/11 surveys using two-sample independent t-tests and an alpha=0.05.

## Results

### HIV Prevalence

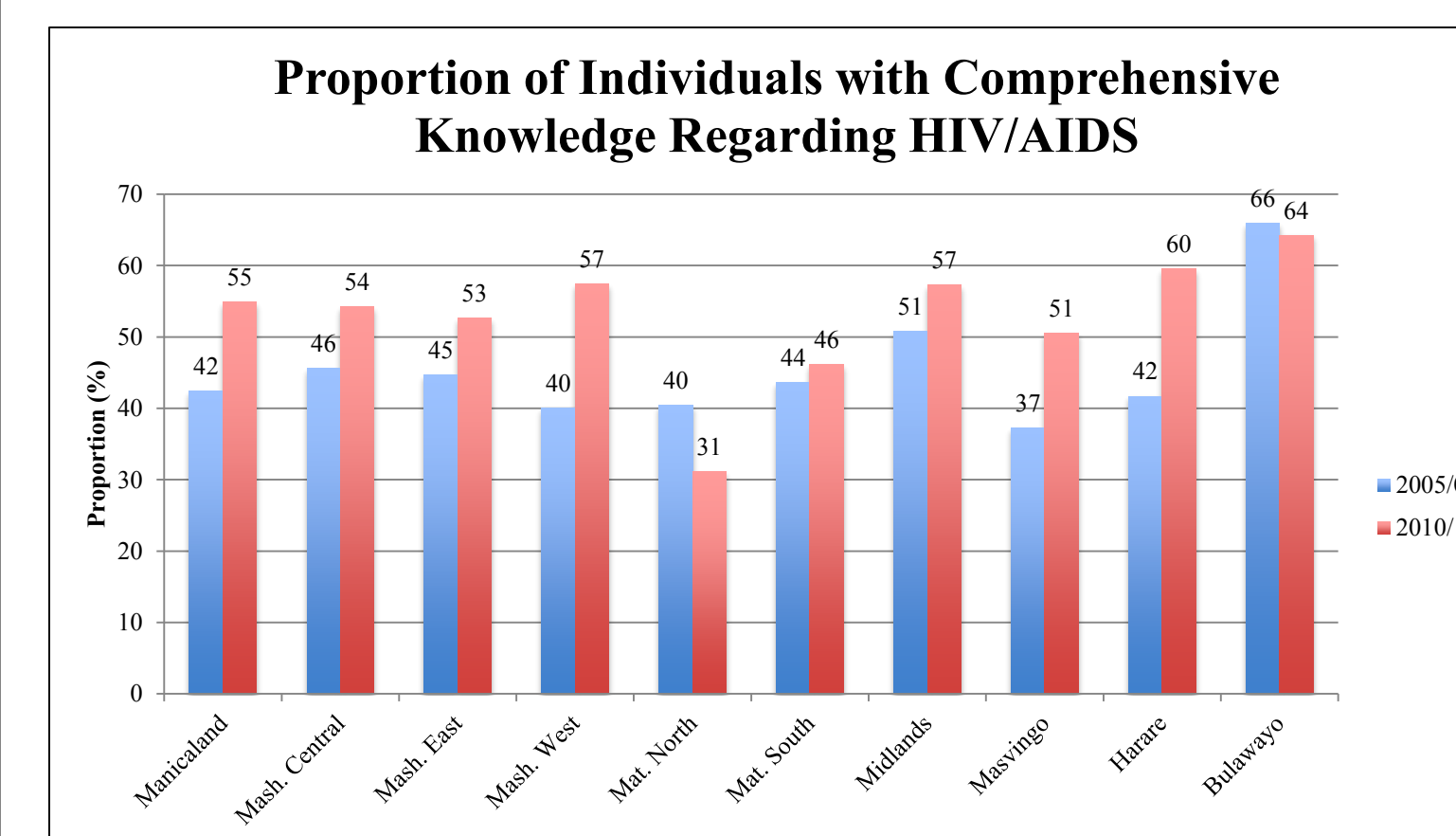
- HIV prevalence declined among women at ANCs from 32.1% in 2000 to 15.5% in 2012
- DHS data indicates a decline from 21.1% in 2005/06 to 17.7% in 2010/11
- MOHCW's Spectrum prevalence dropped from its peak at 28.9% in 1997 to 15.0% in 2013



### Behavioral Indicators

#### Comprehensive Knowledge

- Increased among both men and women from the 2005/06 to 2010/11 DHS (p<0.001)
- Declines among men in: Matebeleland North, Matebeleland South, Bulawayo, and Mashonaland East
- Declines among women in: Matebeleland North and Bulawayo saw declines among women.



#### Other Indicators

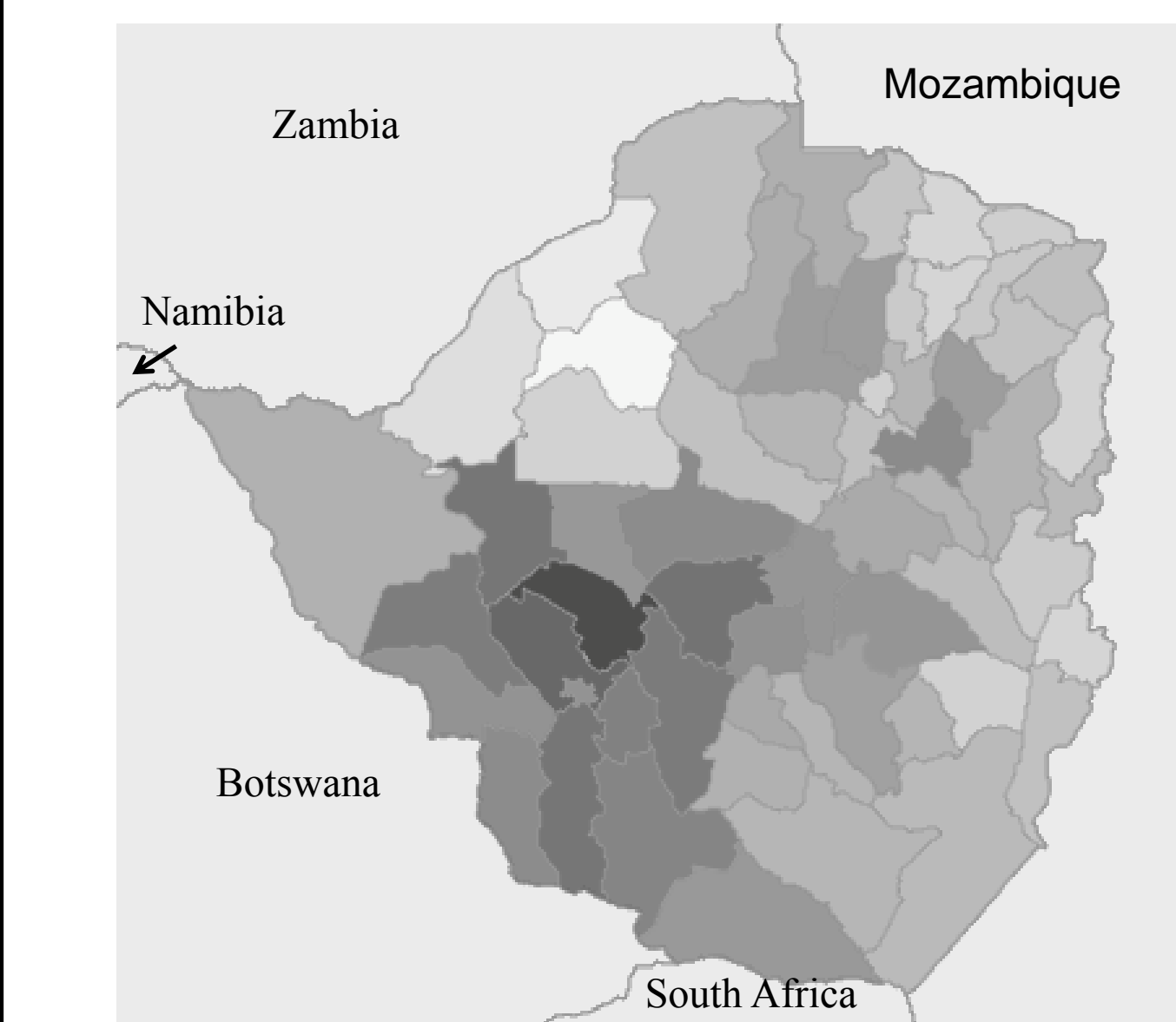
- Proportion reporting using a condom during their last sex increased nationally (p<0.01)
  - Highest levels in Matebeleland South and Bulawayo (14.5% and 20.5% among women and 26.4% and 27.3% among men)
- Proportion of men having two or more partners in the last year increased (p<0.05)
  - Greatest jumps seen in Matebeleland South from 1.3% to 10.2% and in Mashonaland East from 2.5% to 9.0% (p<0.001)
  - Matebeleland South has highest proportion of women with 2+ partners at 3.0%, nearly double the rate of the next highest province

	Men			Women		
	2005/2006	2010/2011	P-value	2005/2006	2010/2011	P-value
Comprehensive Knowledge of HIV	46.5%	53.0%	<0.001	43.4%	55.9%	<0.001
Used Condom at Last Sex	16.2%	18.1%	0.002	5.5%	9.8%	<0.001
Had 2+ Partners in Last Year	9.0%	10.5%	0.003	0.9%	1.1%	0.13
Ever Tested for HIV	18.6%	38.3%	<0.001	25.8%	59.7%	<0.001
Paid for Sex in Last Year	2.6%	3.1%	0.09	-	-	-
Mean Number of Lifetime Partners	5.5	5.8	0.12	1.6	2.2	<0.001

### Geographic Disparity

Although the urban-rural gap is closing, there remains a geographic disparity in prevalence. Highest in Southwest Lowest in Northwest

- Bubi – 27.0%
- Umuza – 24.2%
- Gweru – 23.8%
- Gokwe North – 6.5%
- Kariba 8.3%
- Binga 10.1%



### Age Disparity

- HIV prevalence declining mostly among younger women, ending at 9.6% in 2012 among those aged 15-24 years
  - May suggest an overall decline in incidence
- Among women 40-49 years, HIV prevalence increased from 18.4% in 2006 to 22.7% in 2012

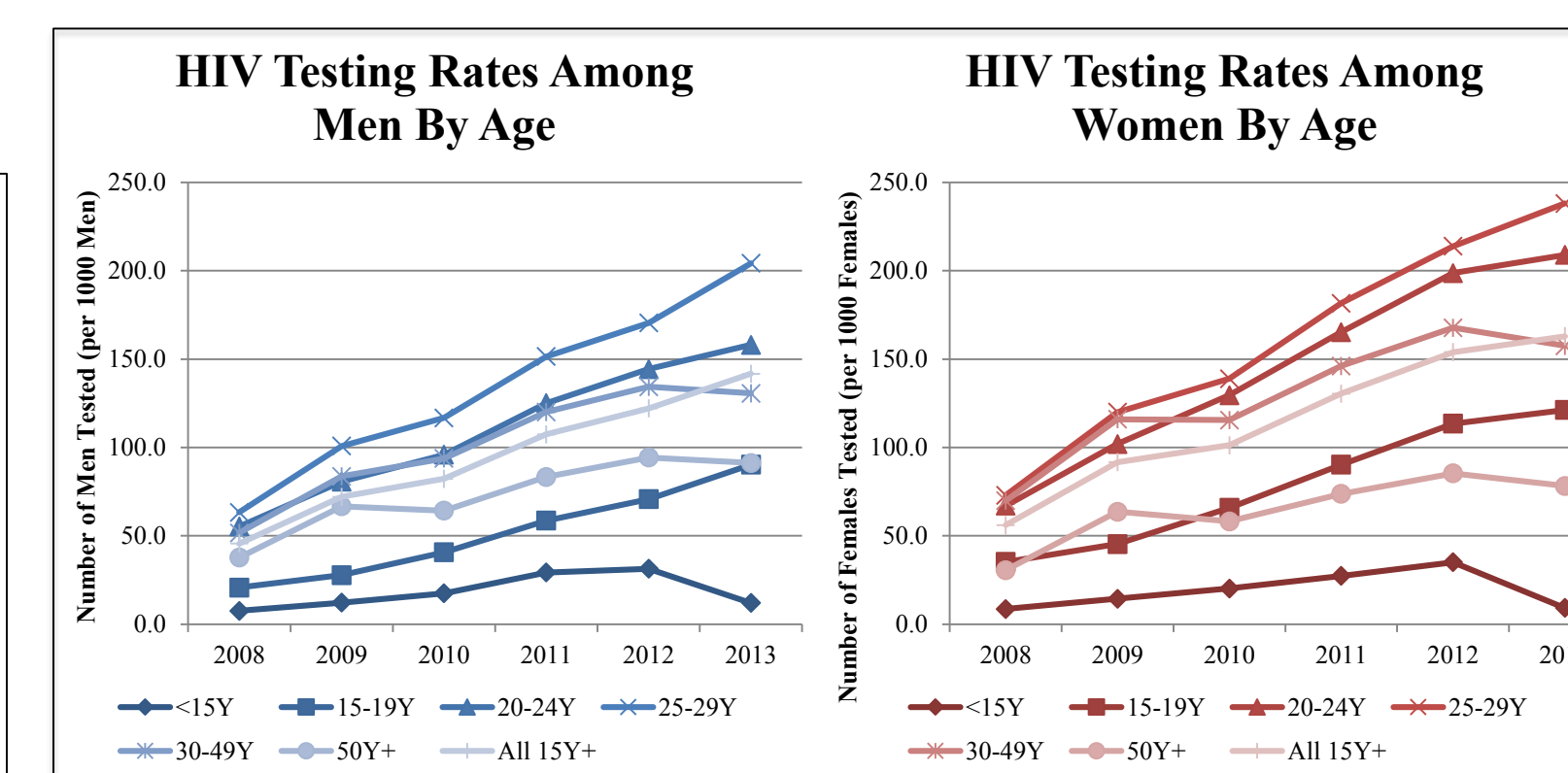
### HIV Prevalence Among Men

Lower than in women with a decline from 14.5% in 2005/06 to 12.3% in 2010/11 (p<0.01)

### Programmatic Data

#### Voluntary Counseling and Testing (VCT)

- Among men, increased from 45.6 to 141.7 tested per 1000 men from 2008 to 2013 (p<0.001)
- Among women, increased from 56.1 to 162.8 tested per 1,000 women from 2008 to 2013 (p<0.001)



#### Condom Distribution

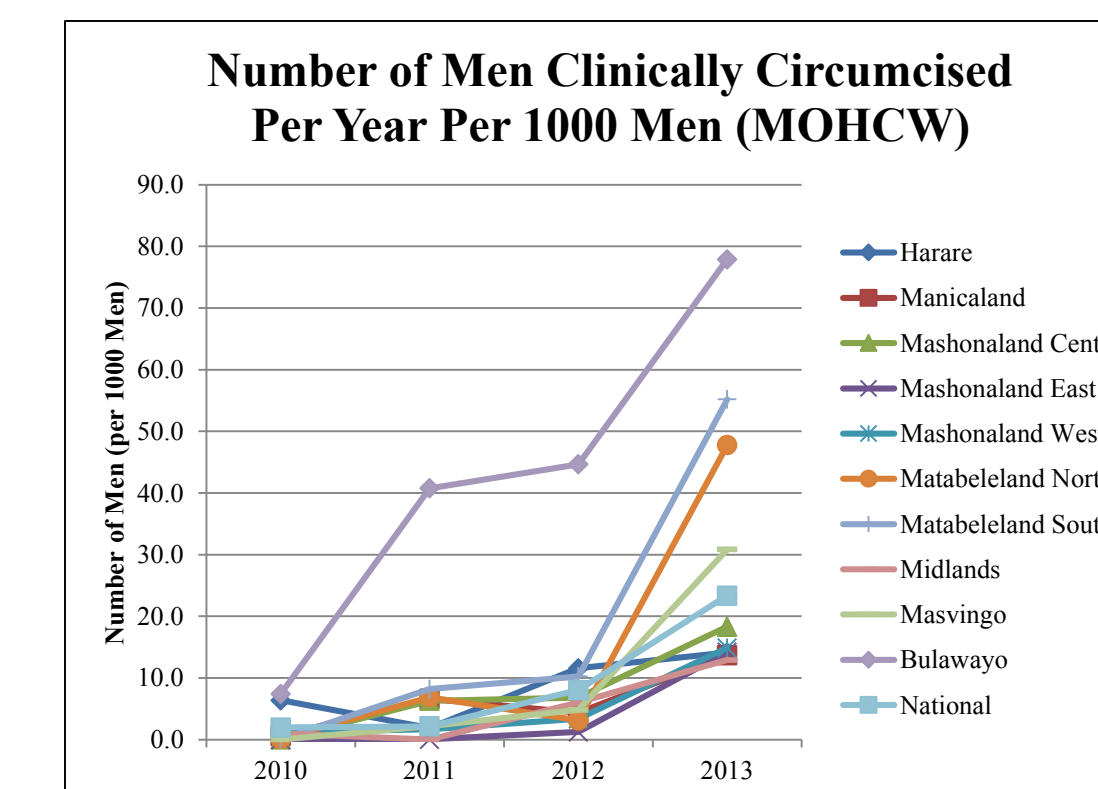
- 350% increase in the number of male condoms distributed per man per year, from 4.3 to 14.9 nationally from 2008 to 2013
- Number of female condoms distributed per woman per year increased from 0.4 condoms per woman in 2008 to 1.0 in 2013

#### STI Incidence

- Number of new STIs among men reported to the NAC per year has increased from 30.0 to 36.0 per 1000 men from 2008 to 2013, with slight fluctuation over the years (p<0.001)
- Among women, increased from 43.6 to 51.9 per 1000 women from 2008 to 2013 (p<0.001)

#### Voluntary Medical Male Circumcision

- Nationally, the number of men aged 15-49 years who were clinically circumcised each year increased more than tenfold (p<0.05)
- Geographic disparity with western provinces have circumcision rates greater than 30.0 per 1000 men in 2013, twice the rate of eastern provinces



#### ART Coverage

- Fluctuated from 2008 to 2013 among adults, ending at 76.9%
- Among pregnant women and children, ART coverage is even lower, ending at 51.5% and 46.1%, respectively in 2013

## Conclusions

Overall, Zimbabwe's HIV prevalence has dropped by more than 50% from 2000 to 2013. The great drop in prevalence seen among women 15-19 years old from 25.3% in 2000 to 5.4% in 2012 can serve as a proxy for a declining incidence, as this subpopulation most likely represents recent transmissions [4,5]. Additionally, as shown in multiple studies, a reduction of risky behaviors in the setting of close exposure to AIDS-mortality in the late 1990s and early 2000s likely played the greatest role in the drop in prevalence [5-10]. However, this analysis reveals that some risky behaviors are on the rise. Although self-reported condom usage has increased and the proportion of men paying for sex in the last year has not changed significantly, the mean number of lifetime partners among women and the proportion of men reporting two or more partners in the last year have risen. Zimbabwe's Western provinces appear to be struggling the most, with higher HIV prevalence, lower proportions of comprehensive knowledge of HIV, and rising rates of risky behaviors.

Zimbabwe's programmatic response to its epidemic on the whole has been quite successful, as condom distribution, testing, and male circumcision have increased over the last decade. With more than one in seven infected with HIV, however, there is still much room for improvement. Through this data triangulation exercise, the full scope of Zimbabwe's maturing epidemic can be better understood, setting the scene for the nation's future successes against this disease.

## Works Cited

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