Republic of Botswana

The Fifth Botswana AIDS Impact Survey 2021 (BAIS V) Report

AUGUST 2023

BAIS V

FIFTH BOTSWANA AIDS IMPACT SURVEY

A future without HIV

A future without HIV

National AIDS and Health Promotion Agency NAHPA Botswana

STATISTICS BOTSWANA

PEPFAR U.S. President's Emergency Plan for AIDS Relief

CDC Centers for Disease Control and Prevention

University of Maryland Baltimore

The Fifth Botswana AIDS Impact Survey 2021 (BAIS V) Report

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National AIDS & Health Promotion Agency
Government of Botswana
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GLOSSARY OF TERMS

95-95-95: Treatment targets proposed by the Joint United Nations Programme on HIV and AIDS (UNAIDS) to help end the AIDS epidemic. The targets for 2025 are that 95% of all people living with HIV would know their HIV status; 95% of all people with diagnosed HIV would receive sustained antiretroviral therapy (ART); and 95% of all people receiving ART would achieve viral load (VL) suppression (VLS).

Acquired Immunodeficiency Syndrome (AIDS): AIDS is a disease that can develop after HIV causes severe damage to the immune system, leaving the body vulnerable to life-threatening conditions, such as infections and cancers.

Adults: Unless otherwise noted, adults are defined as the survey population aged 15-64 years.

Antiretroviral (ARV): A type of medication that inhibits the ability of HIV to multiply in the body.

Antiretroviral Therapy (ART): Treatment with a combination of ARV medications that reduces the amount of HIV in the body (viral load), leading to improved health and survival in a person living with HIV.

CD4+ T Cells: CD4+ T-cells (CD4) are white blood cells that are an essential part of the human immune system. These cells are often referred to as T-helper cells. HIV attacks and kills CD4 cells, leaving the body vulnerable to a wide range of infections. The CD4 count is used to determine the degree of weakness of the immune system from HIV infection.

Children: Unless otherwise noted, children are defined as the survey population aged 6 weeks to 14 years.

Coronavirus Disease 2019 (COVID-19): An illness caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a virus that can be spread from person to person. The ongoing pandemic caused by COVID-19 has caused millions of deaths, led to major societal, economic disruptions, and profoundly strained health systems across the globe.

De Facto Household Resident: A person who slept in the household the night before the survey.

Enumeration Area (EA): A limited geographic area defined by the national statistical authority and the primary sampling unit for the Population-based HIV Impact Assessment (PHIA) surveys.

Emancipated Minor: An emancipated minor is any adolescent aged 14-17 years who has ever been married, has run a legal business, or is financially independent, as defined in Botswana.

Foreign Tourist: A foreign tourist is defined as a non-citizen tourist who is in Botswana on holidays or any other related business and is not working/living permanently in Botswana. “Foreign tourist” is a term used and understood locally in Botswana as any person coming into the country temporarily for any reason and who is not working or living permanently in Botswana.

Head of Household: The person who is recognized within the household as being the head and is aged 18 years or older or is considered an emancipated minor as defined by law in Botswana.

Human Immunodeficiency Virus (HIV): HIV is the virus that causes AIDS. The virus is passed from person to person through blood, semen, vaginal fluids, and breast milk. HIV attacks CD4 cells in the body, leaving a person living with HIV vulnerable to illnesses that a healthy immune system would eliminate.

HIV Incidence: A measure of the frequency with which new cases of HIV occur in a population over a period of time. The denominator is the population at risk; the numerator is the number of new cases that occur during a given time period.

HIV Prevalence: The proportion of persons in a population who are living with HIV at a specific point in time.

HIV Viral Load (VL): The concentration of HIV RNA in the blood, usually expressed as copies per milliliter (mL).

HIV Viral Load Suppression (VLS): An HIV viral load of less than 1,000 copies per mL.

Household: A person or group of persons related or unrelated to each other who live in the same compound (fenced or unfenced), share the same cooking arrangements, and have one person whom they identify as head of that household.

Informed Consent: Informed consent is a legal condition whereby a person can give consent based upon a clear understanding of the facts, implications, and future consequences of an action. To give informed consent, the individual concerned must have adequate reasoning faculties and be in possession of all relevant facts at the time he or she gives consent.

Male Circumcision: Male circumcision is the removal of some or the entire foreskin (prepuce) from the penis. Medically supervised adult male circumcision is a scientifically proven method for reducing a man's risk of acquiring HIV through heterosexual intercourse. Voluntary medical male circumcision is an important part of national HIV prevention programs in most HIV high burden countries.

Older Adolescents: Unless otherwise noted, individuals aged 15-19 years are referred to as older adolescents (older adolescent girls and older adolescent boys). Note that while older adolescents are included as part of the aggregated adult population for reporting purposes, they are distinct from young adults as a population of concern for HIV programs.

Pediatric: Unless otherwise noted, pediatrics are defined as the survey population aged 6 weeks to 14 years.

Population Viremia: Population viremia is the prevalence of unsuppressed viral load (defined here as ≥ 1,000 copies/mL) measured without regard to HIV status. The numerator is the number of people with unsuppressed viral loads, and the denominator is the entire population tested. Subnational areas with higher population viremia could be at risk of higher incidence.

Pre-exposure Prophylaxis (PrEP): PrEP is the use of ARVs by people at risk for HIV to prevent HIV acquisition.

Prevention of Mother-to-Child-Transmission (PMTCT): In order to prevent females living with HIV from passing the virus to their babies during pregnancy, labor and delivery, or breastfeeding, the World Health Organization (WHO) recommends a four-pronged approach: (1) primary prevention of HIV infection among females of childbearing age; (2) preventing unintended pregnancies among females living with HIV; (3) preventing HIV transmission from females living with HIV to their infants; and (4) providing appropriate treatment, care, and support to mothers living with HIV and their children and families.

Tuberculosis: Tuberculosis (TB) is a bacterial disease that most often affects the lungs but can also affect other parts of the body. When a person with active TB coughs, sneezes, sings, or talks, TB bacilli can spread through the air and may remain airborne in an enclosed area for hours. TB is the leading cause of death among people living with HIV.

Young Adults: Unless otherwise noted, individuals aged 20-24 years are defined as young adults, including young females and young males.

Young People: In this report, individuals aged 15-24 years are defined as young people. By sex, this includes older adolescent girls aged 15-19 years and young females aged 20-24 years and older adolescent boys aged 15-19 years and young males aged 20-24 years.

LIST OF ABBREVIATIONS

ADR	Acquired HIV Drug-Resistance
AIDS	Acquired Immunodeficiency Syndrome
ALTC	Active Linkage to Care
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARV	Antiretroviral
BAIS V	Fifth Botswana AIDS Impact Survey
BHHRL	Botswana Harvard HIV Reference Laboratory
CDC	US Centers for Disease Control and Prevention
CD4	CD4+ T cell
CI	Confidence Interval
COVID-19	Coronavirus Disease 2019
CSPro	Census and Survey Processing System
DAAC	Data Analysis and Advisory Committee
DBS	Dried Blood Spot
DR	Drug Resistance
EA	Enumeration Area
HBTC	Home-Based Testing and Counseling
HIV	Human Immunodeficiency Virus
HRDC	Health Research and Development Committee
INI	Integrase Inhibitor
LAg	Limiting Antigen
mL	Milliliter
µL	Microliter
MOH	Ministry of Health
MOS	Measure of Size
MTCT	Mother-to-Child Transmission
ODn	(normalized) Optical Density
OAGYM	Older Adolescent Girls and Young Men
OABYW	Older Adolescent Boys and Young Women
PCR	Polymerase Chain Reaction
PEPFAR	US President's Emergency Plan for AIDS Relief
PHIA	Population-based HIV Impact Assessment
PMTCT	Prevention of Mother-to-Child Transmission
PrEP	Pre-Exposure Prophylaxis
POC	Point of Care
QA	Quality Assurance
QC	Quality Control
RR	Response Rate
SGBV	Sexual and Gender-Based Violence
SMS	Short Message Service
STI	Sexually Transmitted Infection
TB	Tuberculosis
TWG	Technical Working Group
UMB	University of Maryland Baltimore
UNAIDS	Joint United Nations Programme on HIV and AIDS
VL	Viral Load
VLS	Viral Load Suppression
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organization

FOREWORD

Botswana has one of the highest HIV prevalence rates in the world and has made remarkable progress in the national response against HIV and AIDS. Botswana, having a generalized epidemic, revealed a prevalence rate of 18.6% among the general population during the Botswana AIDS Impact Survey (BAIS) IV survey of 2013.

In response to the HIV/AIDS epidemic, the Government of Botswana has demonstrated great political and economic commitment with a comprehensive plan of action. The national response aligns with the third National Strategic Framework for HIV 2018-2023 through focusing on scaling-up high impact intervention and prioritizing populations that are more vulnerable to HIV infections or more likely to be living with HIV. There is still work to be done, as we identify gaps and emerging challenges such as an aging population and testing and treatment opportunities in young men and women.

It is worth noting that Botswana has met and surpassed the 95-95-95 UNAIDS targets and was also awarded the WHO "Silver Tier" status in December 2021, as a way of appreciating its accomplishment towards eliminating the mother to child transmission of HIV. The results of the following report support these achievements and provide critical evidence to further data-driven partnerships and interventions. Botswana has made tremendous progress in 30 years and is well-positioned to end the AIDS epidemic.

It is my pleasure to have the honor to present the Fifth Botswana AIDS Impact Survey 2021 to all stakeholders, partners, interested parties and institutions. I call upon you to stand together to continue the fight against this epidemic and strive to end AIDS by 2030.

Dr. Burton S. Mguni
Statistician General, Statistics Botswana

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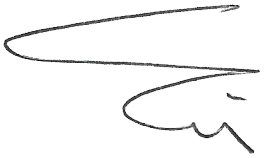
The National AIDS and Health Promotion Agency (NAHPA) would like to acknowledge the efforts of the national and international stakeholders in the successful planning and implementation of BAIS V and in writing and producing the BAIS V 2021 Final Report. To all these institutions, we express our sincere thanks.

In particular, we would like to acknowledge the funding from the United States Government through the United States (U.S.) President's Emergency Plan for AIDS Relief (PEPFAR), which, through technical assistance and partnership with the U.S. Centers for Disease Control and Prevention (CDC), made the survey possible.

We express our gratitude to the University of Maryland, Baltimore, which worked collaboratively with our partners at the Ministry of Health, Statistics Botswana, and Botswana National Health Laboratory to implement the survey.

We would like to thank the health workers, district authorities, community leaders, and especially our field staff for their contributions in making this study a success.

Most importantly, the study would not have been a success without the cooperation of the participants, who graciously provided their time and information for the benefit of the nation.



Ontiretse Letlhare
National Coordinator, NAHPA

PREFACE

The Fifth Botswana AIDS Impact Survey, BAIS V, was a household-based national survey among adults (defined as individuals aged 15 to 64 years) and children (defined as individuals aged 6 weeks to 14 years) conducted from March 2021 to August 2021 to measure the impact of the national HIV response. The survey offered HIV counseling and testing with return of results to the participants and collected information about the uptake of HIV care and treatment services.

BAIS V was led by the National AIDS and Health Promotion Agency (NAHPA), the Ministry of Health (MOH), and Statistics Botswana. The survey was conducted with funding from the United States (U.S.) President's Emergency Plan for AIDS Relief (PEPFAR) and through technical assistance and partnership with the U.S. Centers for Disease Control and Prevention (CDC). BAIS V was implemented by the University of Maryland, Baltimore in collaboration with the Government of Botswana institutions. The Government of Botswana, local civil society organizations, and international development partners participated in the Technical Working Group to provide input on survey planning and survey implementation.

This BAIS V data were used to estimate national HIV incidence, national and district-level HIV prevalence, and viral load suppression (VLS), defined as HIV RNA <1,000 copies per milliliter (mL) among adults living with HIV. The previous BAIS surveys were conducted in 2001, 2005, 2008, and 2013. The results of these five surveys provide critical information on national and district-level progress toward control of the HIV epidemic.

BAIS V used a two-stage, stratified cluster sample design, in which census enumeration areas (EAs) were selected in the first stage, and households were selected in the second stage. The first stage selected 385 EAs with an average of 35 households per EA (Table 2.1). The overall sample size and allocation by district was calculated in order to estimate VLS among people living with HIV aged 15-49 years at the district level with a 95% confidence interval (CI) ± 10%, and HIV incidence among persons aged 15-49 years at the national level with a relative standard error (RSE) <0.2. The target sample size was 28,829 eligible adults aged 15-64 years and 3,762 eligible children aged 6 weeks to 14 years from mothers living with HIV, deceased mothers, and mothers of unknown HIV status. The total number of expected participants in the blood draw and HIV testing was 27,950.

Of 11,478 occupied eligible households, 87.7% completed a household interview (unweighted) (Table 2.2). Among 19,914 eligible adults aged 15-64 years (11,095 eligible females and 8,819 eligible males), a total of 17,205 adults participated in the individual interview: interview response rates (RRs) were 86.8% for females and 78.3% for males. Among those interviewed, 87.1% of females and 84.1% of males also had their blood drawn. The overall unweighted response rate for adults was 65.0%: 68.6% for females, 60.5% for males. The final adult sample size was 14,763 (8,675 females and 6,088 males) (Table 2.3). Among 3,552 eligible children aged 6 weeks to 14 years (1,805 eligible females and 1,747 eligible males), 68.1% of females and 66.1% of males had their blood drawn. (Table 2.3).

HIV testing was conducted in each household using a serological rapid diagnostic testing algorithm based on national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. For confirmed HIV-positive samples, laboratory-based testing was conducted for quantitative evaluation of viral load and qualitative detection of ARVs. All confirmed HIV-positive samples were tested for the presence for efavirenz, atazanavir, and dolutegravir. Confirmed HIV-positive samples obtained from participants aged 6 weeks to 14 years also were tested for for nevirapine and lopinavir. A laboratory-based incidence testing algorithm (HIV-1 limiting antigen-avidity assay with correction for viral load and detectable ARVs) was used to distinguish recent from long-term infection. Incidence estimates were obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays. Survey weights were utilized for all estimates.

EXECUTIVE SUMMARY

TOPLINE FINDINGS

- The annual incidence of HIV among adults (defined as those aged 15-64 years) in Botswana was 0.2%, which corresponds to approximately 2,200 new cases of HIV per year among adults.
- The prevalence of HIV among adults in Botswana was 20.8%, which corresponds to approximately 329,000 adults living with HIV.
- The prevalence of HIV among children aged 0-14 years in Botswana was 0.8%, which corresponds to approximately 5,600 children living with HIV.
- The prevalence of VLS among all adults living with HIV in Botswana was 91.8%.
- Botswana exceeded all UNAIDS 95-95-95 targets at 95.1%, 98.0%, and 97.9% among adults (15-64 years) living with HIV.

TOPLINE FINDINGS IN FOCUS

- The annual HIV incidence among adults (those aged 15-64 years) in Botswana was 0.2%, which corresponds to approximately 2,200 new cases of HIV annually among adults in Botswana. HIV incidence was 0.4% among females and 0.0% among males (Tables 5.1 and 5.2).
- The prevalence of HIV among adults in Botswana was 20.8%, which corresponds to approximately 329,000 adults living with HIV. HIV prevalence was higher among females, at 26.2% (95% CI: 24.0%-28.4%), than among males, at 15.2% (95% CI: 13.8%-16.6%)* (Tables 6.2 and 5.2).
- The prevalence of HIV among children aged 0-14 years in Botswana was 0.8%, which corresponds to approximately 5,600 children living with HIV. HIV prevalence among male children was 1.0% (95% CI: 0.0%-12.9%) and among female children, 0.6% (95% CI: 0.0%-5.3%) (Tables 6.3 and 5.2).
- The prevalence of VLS among all adults living with HIV in Botswana was 91.8%: 94.0% among females and 88.1% among males. Note, these estimates of VLS are among all adults living with HIV regardless of their knowledge of HIV status or use of antiretroviral therapy (Table 8.1).
- At district level, prevalence of VLS among all adults living with HIV ranged from 85.3%‡ in Gaborone to 100.0% in Selibe Phikwe (Table 8.1, Figure 8.1.1 and 8.1.2).

Approximately 2,200 new cases of HIV occurred in 2021 among adults.

UNAIDS 95-95-95 TARGETS

UNAIDS set the 95-95-95 targets with the aim that by 2025, 95% of all people living with HIV (PLHIV) would know their status, 95% of those who were diagnosed would be on antiretroviral therapy (ART), and 95% of those who were on ART would have VLS. Botswana's progress towards achieving these targets is presented in two ways: the conditional 95-95-95 and the overall 95-95-95.

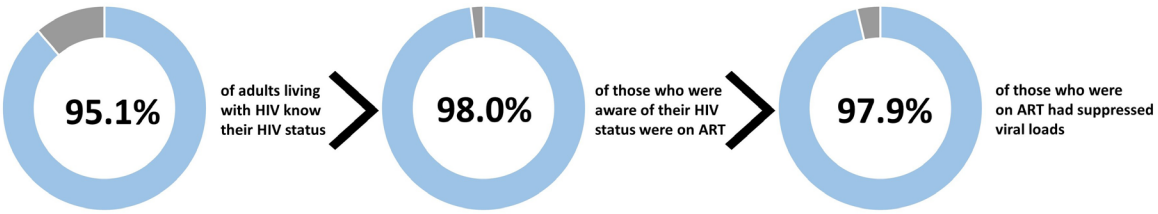
Botswana exceeded all UNAIDS 95-95-95 targets at 95%, 98%, and 98% among adults (15-64 years) living with HIV.

Adult 95-95-95, based on self-report and antiretroviral (ARV) detection in blood:

For the conditional 95-95-95, the denominator for the second and third 95 is the value of the preceding 95 (Figure 1, Table 9.1.B, and Figure 9.1):

- **Diagnosed:** 95.1% of adults living with HIV were aware of their HIV-positive status: 96.4% of females and 93.0% of males living with HIV.
- **On treatment:** Among those who were aware of their HIV-positive status, 98.0% were on ART: 98.4% of females and 97.2% of males.
- **With viral load suppression:** Among those who were aware of their HIV-positive status and on treatment, 97.9% had VLS: 98.6% of females living with HIV and 96.6% of males living with HIV.

Figure 1: Conditional 95-95-95 achievements among adults



* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 6 for more information.

‡ This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

For the overall 95-95-95, the denominator for all three 95s is the overall population of adults living with HIV in Botswana (Table 9.1.A, Figure 9.1). Note that these estimates are based on the survey population for whom data on treatment status and viral load are available:

- **Diagnosed:** 95.1% of adults living with HIV were aware of their HIV-positive status: 96.4% of females and 93.0% of males living with HIV.
- **On treatment:** Among all adults living with HIV in Botswana, 93.2% were on ART: 94.8% among females and 90.4% among males.
- **With viral load suppression:** Among all adults living with HIV in Botswana, 91.3% had achieved VLS on treatment: 93.5% among females and 87.3% among males.

(Please see chapter 9 for a full explanation of the differences between estimates of VLS among people living with HIV, and in the two 95-95-95 cascades).

Young people (aged 15-24 years) 95-95-95, based on self-reported HIV status and antiretroviral (ARV) detection in blood:

For the conditional 95-95-95 (Table 9.1.B):

- **Diagnosed:** 84.5% of young people† living with HIV were aware of their HIV-positive status: 82.3% among young females and 89.1%‡ among young males.
- **On treatment:** Among those who were aware of their HIV-positive status, 98.5% were on ART: 97.8% among young females and 100.0%‡ among young males.
- **With viral load suppression:** Among those who were aware of their HIV-positive status and on treatment, 91.6% had achieved VLS: 91.5% among young females and 91.8%‡ among young males.

Among young people, the estimated progress toward achievement of the UNAIDS 95-95-95's targets were 85%, 99%, 92%.

For the overall 95-95-95 (Table 9.1.A):

- **Diagnosed:** 84.5% of young people† living with HIV were aware of their HIV-positive status: 82.3% among young females and 89.1%‡ among young males.
- **On treatment:** Among all young people† living with HIV in Botswana, 83.2% were on ART: 80.5% among young females and 89.1%‡ among young males.
- **With viral load suppression:** Among all young people† living with HIV in Botswana, 76.2% had achieved VLS on treatment: 73.7% among young females and 81.8%‡ among young males.

95-95-95 analyses at the district level

- At the district level, there were some differences in achievement of the 95-95-95 targets. For instance, achievement of the conditional 95-95-95 was highest at 99%-98%-100% and 99%-99%-99% in Selibe Phikwe and Kgalagadi North respectively, while Ghanzi did not achieve the first target, at 90%-96%-96% along with ten other districts. Every district reached the overall target of 95% of all adults living with HIV on treatment and 95% of all adults living with HIV on treatment with VLS, with the exception of Kgatleng and Central Tutume respectively (Table 9.3.B)
- Over half of districts attained more than 95% of PLHIV aware of their HIV status. The district with the lowest percentage of PLHIV aware of their status was Ngwaketse South (89.6%) (Table 9.3.A, Table 9.3.B).
- All districts attained the target of 85.7% of the adult population with viral load suppression except Ghanzi and Gaborone (Table 9.3.A).
- Over 95% of those diagnosed with HIV were on treatment across all districts except Kgatleng at 94.4%. More than 95% of those on treatment were virally suppressed with the exception of Central Tutume (93.4%) (Table 9.3.B).

†The term "young people" includes older adolescents aged 15-19 years and young adults aged 20-24 years. Older adolescents are a distinct population of concern from young adults, but this report uses the terms "young females aged 15-24 years" and "young males aged 15-24 years" when young people are disaggregated by sex.

‡ This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

OTHER KEY FINDINGS

Household characteristics

- In Botswana, 34.8% of households had at least one member living with HIV (40.2% in rural, 31.8% in urban households) (Table 3.4, Figure 3.4).
- The proportion of households headed by a person living with HIV was higher among female-headed households, at 36.4% (95% CI: 33.9%-38.9%), than among male-headed households, at 21.3% (95% CI: 19.0%-23.7%)* (Table 3.5, Figure 3.5).

Survey respondent characteristics

- Among the survey participants, 67.2% resided in urban areas and 32.8% in rural areas (Table 4.1).
- More than a quarter (26.7%) of the survey respondents were young people† aged 15-24, while 15.1% were aged 50-64 years (Table 4.1).

HIV incidence

- The annual incidence of HIV among adults aged 15-49 years was 0.1% (95% CI: 0.00%-0.21%): 0.2% (95% CI: 0.01%-0.43%) among females and 0.0% (95% CI 0.00%-0.23%) among males (Table 5.1).
- The annual incidence of HIV among young people† aged 15-24 years was 0.2% (95% CI: 0.00%-0.43%): 0.4% (95% CI: 0.00%-0.86%) among young females and 0.0% among young males (95% CI: 0.00%-0.64%) (Table 5.1).
- Among adults aged 25-34 years, HIV incidence was 0.0% (95% CI: 0.00%-0.14%): 0.1% (95% CI 0.00%-0.27%) among females and 0.0% among males (95% CI: 0.00%-0.75%). However, it should be noted that the survey was not powered to generate estimates with confidence among subgroups smaller than adults aged 15-49 years, so these estimates should be interpreted with caution (Table 5.1).

HIV prevalence

- HIV prevalence among adults aged 15-64 years ranged from 11.1% in Gaborone to 33.3% in Central Mahalapye; and was lower in urban areas, 18.9% (95% CI: 16.8%- 21.0%) than in rural areas, 24.6% (95% CI: 23.1%- 26.1%)* (Table 6.2, Figure 6.2.1 and Figure 6.2.2).
- HIV prevalence among adult females aged 15-64 years was lower in urban areas 23.8% (95% CI: 21.0%-26.5%) than in rural areas, 31.3% (95% CI: 28.7%-33.9%)*. HIV prevalence among adult males aged 15-64 years was 13.7% (95% CI: 11.8-%-15.6%) in urban areas and 18.0%)
- By age group, HIV prevalence peaked at 45.3% (95% CI: 38.4%-52.1%) among those aged 45-49 years (Table 6.3).

HIV testing, diagnosis, and treatment status

- Among adults aged 15-64 years, 88.0% reported that they had ever received an HIV test (Table 7.1 C), with a higher percentage among females: 89.4% (95% CI: 88.6%-90.2%) than males: 86.5% (95% CI: 85.3%-87.7%)* (Tables 7.1.A-B).
- Based upon self-report and ARV-detection data, 4.8% of adults who tested positive for HIV in Botswana were unaware of their HIV status. 5.5% of adults aged 15-49 years and 3.1% of adults aged 50-64 years who tested positive in Botswana were unaware of their status (Table 7.2.C).

Prevalence of HIV among adults in Botswana was 20.8%, which corresponds to approximately 329,000 adults living with HIV in Botswana in 2021.

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 6 for more information.

†The term “young people” includes older adolescents aged 15-19 years and young adults aged 20-24 years. Older adolescents are a distinct population of concern from young adults, but this report uses the terms “young females aged 15-24 years” and “young males aged 15-24 years” when young people are disaggregated by sex.

- Among young people† aged 15-24 years, the percentage reporting that they had ever received an HIV test was 66.4%: 65.8% among OAGYW and 67.1% among OABYM. The percentage of young people† who reported that they had received an HIV test in the 12 months before the survey was 31.1%: 41.1% among OAGYW and 20.8% among OABYM (Tables 7.1.A-C).
- A substantial percentage (15.5%) of young people† who tested positive for HIV were unaware of their HIV status (based on self-report and ARV-detection data): 17.7% (95% CI: 5.5%-29.9%) among OAGYW and 10.9% (95% CI: 0.0%-22.6%)‡ among OABYM (Tables 7.2.A-C).
- Among adults who tested HIV positive, ARVs were detectable in the blood of 17.1% of those who reported that they had not been previously diagnosed, and 12.5% who said that they had been previously diagnosed but were not yet taking ART (Table 7.3.C).
- Among adults who tested HIV positive, ARVs were detectable in the blood of 97.1% of those who self-reported that they had been previously diagnosed and were taking ART (Table 7.3.C).

Viral load suppression

Prevalence of VLS among adults aged 15-64 years living with HIV in Botswana was 91.8%.

- Among young people† living with HIV, prevalence of VLS was 77.1% (95% CI: 67.0%-87.3%) which was lower than the adult population aged 15-64 years living with HIV overall: 91.8% (95% CI: 90.2%- 93.5%)* (Table 8.1).
- Among adults living with HIV, VLS varied by age, ranging from 71.0% among males aged 25-34 years to 97.4% among males aged 55-64 years, and from 74.9% among OAGYW aged 15-24 years to 96.5% among females aged 35-44 (Table 8.2).
- Among all adults in Botswana, the percentage of population viremia (the proportion of the population with unsuppressed viral load—see chapter 8) was 1.7%. At the district level, the percentage of adults with population viremia ranged from 0.0% in Selibe Phikwe to 3.4% in Central Tutume (Table 8.3 and Figure 8.3).
- Among all adults living with HIV, 87.7% had a VL below 200 copies/mL: 91.0% among females, and 81.9% among males. Among those who were aware of their HIV-positive status and on ART (based on self-report and ARV-detection data), 93.7% had a viral load below 200 copies/mL: 95.8% among females, and 89.8% among males. For the overall population, the prevalence of VL below 200 copies/mL was greater than or equal to 87.2% in the 5-year age groups starting at age 35 years, while for young people† aged 15-24 years, it was 71.8% (Table 8.4).
- Access to viral load testing and results found that 94.4% of adults aged 15-64 years living with HIV reported ever having a viral load test, and 67.7% of those who had had a viral load test reported that they had received their viral load test results back (Table 8.5).
- Viral load testing varied geographically. At the district level, self-reported viral load testing ranged from 86.5% in Ghanzi to 100.0% in Sowa. Among adults who reported ever having a VL test, the percentage who received results from their last test ranged from 45.0% in Kgalagadi North to 84.1% in South East (Table 8.5).

Clinical perspectives on people living with HIV

- Among adults living with HIV, CD4 count varied depending on awareness of HIV status and treatment status. The median CD4 count was 346 cells per microliter (µL) among those who were unaware of their status, 240 cells/µL among those who were aware of their status but not on ART, and 610 cells/µL among those who were taking ART. Among the population of adults living with HIV overall, the median CD4 count was 509 cells/µL among males and 659 cells/µL among females (Table 10.1 and Figure 10.1).

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 6 for more information.

† The term “young people” includes older adolescents aged 15-19 years and young adults aged 20-24 years. Older adolescents are a distinct population of concern from young adults, but this report uses the terms “young females aged 15-24 years” and “young males aged 15-24 years” when young people are disaggregated by sex.

‡This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

- Among persons aged 15-64 years who reported an HIV negative status and tested positive, a higher percentage of males, 34.5% (95% CI 15.5%-53.6%), had CD4 counts less than 200 cells/μL compared to 7.0% of females (95% CI 0.8%- 13.2%).* 27.2% (95% CI 13.2%-41.2%) of males had CD4 counts between 200-349 cells/μL compared to 33.6% (95% CI 19.8%-47.4%) of Among persons aged 15-64 years who reported an HIV negative status and tested positive, 24.0% (95% CI 8.5-39.4) participants living in urban areas, and 16.8% (95% CI 5.5-28.0) of rural participants had CD4 counts less than 200 cells/μL, (Table 10.2).
- Among persons aged 15-64 years who reported an HIV negative status and tested positive, 24.0% (95% CI 8.5-39.4) participants living in urban areas, and 16.8% (95% CI 5.5-28.0) of rural participants had CD4 counts less than 200 cells/μL, (Table 10.2).
- Among persons aged 15-49 years who reported an HIV negative status and tested positive, 24.1% had CD4 counts less than 200 cells/μL. Among the adult population aged 15-64 years overall, 21.5% had CD4 counts less than 200 cells/μL. 33.6% of persons aged 15-49 years had CD4 counts between 200-349 cells/μL compared to 30.2% among the adult population aged 15-64 years overall (Table 10.2).
- Based upon self-report, 98.5% of all adults living with HIV who had started on ART were still taking it: 98.9% among females and 97.8% among males (Table 10.3).
- The proportion of PLHIV who were aware of their status and were on ART was similar whether they had reported an extended stay away from home in the past year or not, 91.6% (95% CI 86.4%-96.9%) versus 93.4% (95% CI 91.8-94.9) (Table 10.4).
- Among PLHIV aged 15-64 years with an extended stay away from home 11.0% were not virally suppressed, while 7.9% were not virally suppressed among those who did not have an extended stay away from home (Table 10.4).
- Among PLHIV aged 15-64 years with an extended stay away from home, 6.2% reported treatment interruption, and 3.2% were never on ART (Table 10.4).
- More than 80% of adults living with HIV and on ART picked up their ART from a local clinic regardless of whether they had not lived away (80.4%; 95% CI 77.3%-83.5%) or had lived away (83.0%; 95% CI 76.6-89.3%) from home for extended periods (Table 10.4).

95% of females who delivered a child in the 12 months before the survey reported knowing their HIV status when they were pregnant.

Prevention of mother-to-child transmission of HIV (PMTCT)

- Among females aged 15-49 years who delivered in the 12 months before the survey, 95.0% reported that they knew their HIV status: 13.5% already knew they were HIV positive, 80.2% tested HIV negative, and 1.3% tested positive during ANC testing (Table 11.1).
- Among females aged 15-49 years living with HIV who delivered in the 12 months before the survey, 100.0% reported that they took ART to reduce mother-to-child transmission: 79.1% reported that they were already on ART before becoming pregnant, and 20.9% reported that they started ART during pregnancy or during labor and delivery (Table 11.2).
- Among females aged 15-49 years who delivered in the 3 years before the survey, 27.9% reported that they were still breastfeeding at the time of the survey, 57.3% reported that they had breastfed but were no longer doing so, while 14.8% reported that they had never breastfed. Among females who delivered in the 3 years before the survey who tested positive for HIV, 61.7% reported that they had never breastfed, 1.8 who tested HIV negative reported that they had never breastfed (Table 11.4).

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 6 for more information.

Among adults who tested HIV-negative and had heard of PrEP, 69.8% said that they would be willing to take it.

HIV risk factors

- Having more than one lifetime sexual partner was associated with a higher prevalence of HIV, 23.1% (95% CI: 21.7%-24.6%) than having one lifetime partner, 13.7% (95% CI: 11.7%-15.7%)* (Table 12.2).
- Among adults, 1.3% of females and 2.6% of males reported that they had had sexual intercourse before the age of 15 years (early sexual debut) (Table 12.1).
- Among young people† aged 15-24 years, 2.1% reported sex before the age of 15 years: 1.2% among OAGYW and 3.1% among OABYM. Among just the older young adults aged 20-24 years, 2.9% reported sex before the age of 15 years: 1.1% among young females and 4.7% among young males (Table 12.3).
- Among those who reported sex before the age of 15 years, HIV prevalence was 23.0%: higher among females at 47.9% (95% CI: 37.0%-58.8%) than among males at 10.2% (95% CI: 2.9%-17.5%)* (Table 12.2).
- Among young people† who reported sex in the 12 months before the survey, 84.2% reported sex with a nonmarital, non-cohabitating partner, 75.2% of whom reported condom use the last time they had sex with such a partner (Table 12.4.C).
- Among males aged 15-64 years, 45.3% reported that they had been medically circumcised, 3.1% reported that they had a nonmedical circumcision, while 51.6% reported that they were uncircumcised. The percentage of OABYM aged 15-24 years who reported having a medical circumcision was 66.7%). The prevalence of self-reported medical circumcision varied by district, ranging from 22.7% in Ngamiland West to 57.6% in Central Mahalapye. The percentage of self-reported medical circumcision was higher among adult males who tested HIV negative than those who tested HIV positive during the survey: 49.6% (95% CI: 47.6%-51.5%) versus 24.4% (95% CI: 20.9%-27.8%)* (Table 12.5).
- Among all adults, 26.4% had heard of pre-exposure prophylaxis (PrEP): higher among females at 30.1% (95% CI: 28.6%-31.7%), than among males 22.6% (95% CI: 21.0%-24.3%)*. Among adults who tested HIV-negative and had heard of PrEP, 69.8% said that they would be willing to take it: 68.8% among females and 70.7% among males. Among adults who tested HIV-negative overall, 11.2% reported that they had taken PrEP: 11.1% among females and 11.4% among males (Tables 12.6, 12.7, and 12.8).
- Among all adults, those who had heard of PrEP was higher in urban areas than rural areas: 29.3% (95% CI: 27.6%-30.9%) versus 20.7% (95% CI: 18.5%-22.8%)* (Table 12.6).

Tuberculosis, cervical cancer screening, and other chronic conditions

- Among females living with HIV aged 30-49 years in Botswana, 68.7% reported that they have ever been screened for cervical cancer. Among females of that age who reported they were screened, 3.9% reported that they had an abnormal result (Table 13.1).
- There were variations and disparities in the self-reported receipt of cervical cancer screening services by education level and district:
  - The prevalence of cervical cancer screening ranged from 46.6% among those with no formal education to 76.3% among those with more than a secondary education (Table 13.1).
  - At the district level, the prevalence of cervical cancer screening ranged from 43.8% in Ngamiland West to 82.7% in Ngwaketse West (Table 13.1).

*In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 6 for more information.

- According to adults who reported that they visited a tuberculosis (TB) clinic in the 12 months before the survey, 42.6% were tested for HIV, 25.9% reported that they already knew they were HIV-positive, and 31.4% were not aware of their status (Table 13.3).
- TB symptom screening among adults living with HIV, which WHO recommends should occur systematically at every clinic visit, was reported by 65.0%: 64.0% among females and 67.1% among males (Table 13.5).

GAPS AND UNMET NEEDS

- Although the country's HIV program has achieved remarkable results at the national level, some gaps remain. For instance, adult males aged 15-64 years have not yet reached the first 95. In addition, viral load suppression among males aged 15-44 years and females aged 15-24 years
- An opportunity for HIV testing exists among young people† aged 15-24 years. A relatively low proportion of young people† received an HIV test in 12 months before the survey and young people† were the largest proportion who tested positive that were unaware of their status. We continue to see gaps in ART coverage and viral load suppression among young people† living with HIV. These gaps are greater among men than women.
- Ongoing surveillance to detect threats to epidemic control such as interruptions in treatment and suboptimal viral suppression will be important to maintain Botswana's achievements.

PROGRAMMATIC RESPONSES OR RECOMMENDATIONS

- Moving forward, Botswana is well positioned to maintain the UNAIDS 95-95-95 targets and end the AIDS epidemic by 2030. The country can ensure that all people benefit from these achievements by helping younger people achieve viral load suppression and focusing on finding the remaining few people living with HIV who are unaware of their status.

CONCLUSION

- BAIS V provided critical data on the primary outcomes of HIV incidence and VLS among adults at national levels. MOH encourages public health staff, programmers, epidemiologists, and policy makers to examine the BAIS V data for their respective program areas and utilize the data to inform program planning.

1. INTRODUCTION

1.1 BACKGROUND

The Population-based HIV Impact Assessment is a multicountry project funded by the United States (U.S.) President's Emergency Plan for AIDS Relief (PEPFAR) to conduct national HIV-focused surveys that describe the status of the HIV epidemic. The surveys measure important national and subnational area HIV-related parameters, including progress toward the achievement of the Joint United Nations Programme on HIV and AIDS (UNAIDS) 95-95-95 targets for 2025 and will guide policy and funding priorities.*

The Fifth Botswana AIDS Impact Survey, BAIS V, was led by the Government of Botswana through the National AIDS and Health Promotion Agency (NAHPA) and Botswana Ministry of Health (MOH). The survey was conducted as a Population-based HIV Impact Assessment (PHIA) survey with funding from the U.S. PEPFAR and technical assistance through the U.S. Centers for Disease Control and Prevention (CDC). The University of Maryland, Baltimore (UMB) implemented the survey in collaboration with Government of Botswana institutions, including the NAHPA, MOH, Statistics Botswana, the Botswana National Laboratory, referral hospitals, and local government authorities. The Government of Botswana, local civil society organizations, and international development partners participated in steering committees and technical working groups to provide input on survey planning and implementation.

1.2 OVERVIEW OF BAIS V 2021

BAIS V was a household-based national survey among adults (defined as individuals aged 15-64 years) and children (defined as individuals aged 6 weeks to 14 years) that measured the status of Botswana's national HIV response. Conducted from March 2021 through August 2021 (following the pause of the survey start from April 2020 until March 2021 due to the COVID-19 pandemic), BAIS V offered home-based testing and counseling (HBTC) with return of results, and collected information about households and individuals' background, and the uptake of HIV care and treatment services. BAIS V data were used to estimate national HIV incidence, prevalence, and national and district-level viral load suppression (VLS), defined as HIV RNA <1,000 copies per milliliter (mL) among adults (defined as those 15 years and 64 years living with HIV); and national HIV prevalence among children aged 6 weeks to 14 years. The first BAIS was conducted in 2001.

With its focus on measuring key biological endpoints in a nationally representative sample of the population, BAIS V provides direct estimates of HIV-infection risk and burden, the effectiveness and population-level impact of HIV-related prevention, care, and treatment interventions implemented in the country, and Botswana's progress toward the achievement of the UNAIDS 95-95-95 targets.

1.3 SPECIFIC OBJECTIVES

The goal of the survey was to assess the status of the HIV epidemic in Botswana as well as the coverage and impact of HIV services at the population level and to characterize HIV-related risk behaviors using a nationally representative sample of adults aged 15-64 years. A sample of children aged 6 weeks to 14 years were also included.

The main objectives of the survey were:

- To generate national HIV incidence estimates.
- To estimate the national and subnational-level prevalence of VLS among adults living with HIV.
- To measure national and subnational HIV prevalence among adults aged 15-64 years
- To measure the national HIV prevalence among children aged 6 weeks to 14 years.
- To estimate national and district progress towards achievement of the Joint United Nations Programme on HIV/AIDS (UNAIDS) 90-90-90 targets among adults aged 15-64 years;
- To estimate national progress towards achievement of UNAIDS 90-90-90 targets among children aged 6 weeks to 14 years;
- To assess health response coverage by gathering data on the uptake and barriers to uptake of HIV-related services and exposure to HIV interventions;
- To assess uptake of HIV-related services (e.g., prevention of mother-to-child transmission (PMTCT), early infant diagnosis (EID)) and exposure to HIV interventions (e.g., safe male circumcision (SMC)) among children aged 6 weeks to 14 years;
- To produce weighted estimates of the prevalence of primary and secondary antiretroviral (ARV) drug resistance (DR) in adults living with HIV.
- To estimate CD4 cell count distribution in adults living with HIV aged 15-64 years.

* Joint United Nations Programme on HIV/AIDS (UNAIDS). Prevailing against pandemics by putting people at the centre. Geneva: UNAIDS; 2020. https://www.unaids.org/sites/default/files/media_asset/prevailing-against-pandemics_en.pdf

2. SURVEY DESIGN, METHODS, AND RESPONSE RATES

BAIS V was a nationally representative, cross-sectional, two-stage, population-based survey of households across Botswana. Its target population corresponded to persons aged 6 weeks-64 years.

2.1 SAMPLE FRAME AND DESIGN

BAIS V used a two-stage, stratified cluster sample design. The sampling frame was comprised of all households in the 5,203 EAs in Botswana, based on the 2011 population census. Based on population projections for 2021, derived from the 2011 census, there were 2,230,905 individuals and 550,243 households in Botswana, with an average number of persons per household of 3.68 and households per EA of 120 to 150. The updated sampling frame consisted of 387 EAs in the first stage.[1] During the second stage, a sample of households was randomly selected within each cluster, using an equal probability method, where the average number of households selected per cluster was 35. Urban areas were characterized by either high population density, or a high level of economic activities or infrastructure. Rural areas were those with only minimal population density, little infrastructure, or economic activities.

The overall sample size and allocation by district was calculated to estimate the following indicators: (1) VLS among HIV-positive persons aged 15-49 years at the district level with a 95% CI ± 10%; (2) HIV incidence among persons aged 15-49 years at the national level with a relative standard error (RSE) < 0.2. The total HIV testing sample size was 24,933.

Table 2.1 Distribution of sampled enumeration areas and households by district

Distribution of sampled enumeration areas and households by district, BAIS V 2021

	Enumeration Areas			Households		
District	**Urban**	**Rural**	**Total**	**Urban**	**Rural**	**Total**
Gaborone	16	-	16	485	-	485
Francistown	12	-	12	317	-	317
Lobatse	15	-	15	499	-	499
Selibe Phikwe	11	-	11	245	-	245
Orapa	16	-	16	754	-	754
Jwaneng	18	-	18	567	-	567
Sowa	12	-	12	331	-	331
Ngwaketse South	11	8	19	368	273	641
Borolong	2	11	13	79	375	454
Ngwaketse West	-	14	14	-	411	411
South East	13	2	15	543	98	641
Kweneng East	12	1	13	469	31	500
Kweneng West	3	16	19	82	574	656
Kgatleng	7	6	13	335	177	512
Serowe Palapye	7	8	15	243	274	517
Central Mahalapye	5	8	13	160	288	448
Central Bobonong	6	8	14	219	254	473

Table 2.1 Distribution of sampled enumeration areas and households by district **(continued)**

Distribution of sampled enumeration areas and households by district, BAIS V 2021

	Enumeration Areas			Households		
	Urban	Rural	Total	Urban	Rural	Total
Central Boteti	6	7	13	244	204	448
Central Tutume	6	9	15	202	311	513
North East	2	12	14	72	410	482
Ngamiland East	11	5	16	625	227	852
Ngamiland West	2	15	17	94	548	642
Chobe	8	6	14	275	258	533
Ghanzi	6	8	14	233	213	446
Kgalagadi South	8	12	20	337	397	734
Kgalagadi North	3	11	14	94	365	459
Total	218	167	385	7,872	5,688	13,560

Appendix A: Sample Design and Weighting provides a more detailed explanation of the sampling and weighting processes.

2.2 ELIGIBILITY CRITERIA, RECRUITMENT, AND CONSENT PROCEDURES

In BAIS V, individuals aged 15-64 years and individuals aged 6 weeks-14 years were eligible to participate in the survey, defined as adults and children respectively for sampling and reporting purposes in this report. The inclusion criteria included:

- Female and male participants aged 15-64 years or emancipated minors aged 14-17 years who are either usual household members who slept in the household the night before the survey or visitors who slept in the household the night before the survey, who were willing and able to provide verbal (oral) informed consent in English or Setswana, or in a language accommodated by the survey team. If present in a selected HH, foreign tourists were included in HH roster and HH questionnaire, but were not be eligible for the individual questionnaire or collection of biological samples.
- For minors aged 10-17 years, able and willing to provide verbal assent and parent/guardian able and willing to provide verbal informed consent/permission in English or Setswana, or in a language able to be accommodated by the survey team (note that any individual aged 16 years and older may consent for HIV testing without parental permission).
- For children aged 6 weeks-14 years, the natural mother is HIV-positive, has unknown HIV status (or refused testing), or is absent or dead.
- For children aged 6 weeks-9 years, parent/guardian is able and willing to report the child's age and provide verbal informed consent/permission in English or Setswana, or in a language able to be accommodated by the survey team.

A survey interviewer administered the informed consent process using electronic consent forms (see Appendix G) in the following order. First, a designated head of household provided verbal consent for the household interview, after which individual household members were rostered. Once the household interview was completed, eligible adults and emancipated minors could then provide verbal consent for an interview and for participation in the biomarker component of the survey, including HBTC, with return of HIV-testing results during the household visit.Participants had to consent to receipt of their test results in order to participate in the biomarker component of the survey; if an individual did not want to receive his or her HIV test result, this was considered a biomarker component refusal. (Participants who self-reported as HIV-positive and provided documentation provided verbal consent for blood collection but did not have a rapid test in the household; the HIV rapid test was instead performed in the satellite lab.) The interviewer also asked participants for verbal consent to store their blood samples in a repository to perform additional tests in the future, and for verbal consent to be contacted for future research. After the biomarker component of the survey, the interviewer asked all participants who tested newly HIV-positive, or participants who self-reported HIV-positive and not on ART, to provide consent to share their contact information with a trained healthcare worker or counselor to facilitate active linkage to care (ALTC) to the facility of their choice.

The consent process for minors differed from that of adults. Consent/permission for all minors (aged 6 weeks-17 years) was obtained from a parent or guardian for the minor to participate in the research. The interviewer asked minors aged 15-17 years for their assent to the interview and biomarker components after permission was granted by their parents or guardians. Although parental consent was required for their participation in the survey, minors aged 16-17 years could receive their HIV testing results without their parents being present. The consent process to share contact information for active linkage to care and return of viral load and CD4 results to a health facility was the same as for adults.

Verbal assent from participants' aged 10-14 years for blood draw and storage was required. Before verbal assent was obtained from the participant, verbal permission was previously obtained from a parent/guardian. Answers to survey questions in the child module were obtained from the parent who consented to answer questions as well as the blood draw for the children to participate. If the minor wanted to proceed with the research activities, he/she had to provide their verbal assent. The request and obtention of an assent from the minor followed the request and obtention of the parental/guardian consent. However, to allow the minor to ask any questions about study participation in private, the parent/guardian did not need to stay present after the assent discussion. For children aged 6 weeks-9 years, parental verbal consent for a blood test and blood storage was obtained. Parents also consented to answer questions from the child module as well as the blood draw for the child to participate.

At each stage of the consent process, the interviewer recorded on the consent form on the tablet whether verbal consent/assent was given, and a printed copy was provided to the participant. The interviewer assessed the cognitive ability of each potential participant by providing information on survey participation and asking them to summarize their understanding of the purpose of the survey and what the survey involves. Standard operating procedures on eligibility determination process and verification of eligibility criteria were used to guide the interviewers on how to assess the respondent's cognitive ability based on the summary they provide. Persons who were unable to give consent or assent due to cognitive impairment or intellectual disability were not eligible to participate. Individuals with disabilities who could give verbal consent were offered survey participation.

All BAIS V survey protocols, consent forms, screening forms, referral forms, recruitment materials and questionnaires were reviewed and approved by in-country ethics and regulatory bodies, including the Health Research and Development Committee (HRDC) of Botswana, and the institutional review boards of CDC, and UMB.

2.3 SURVEY IMPLEMENTATION

Training of Field and Laboratory Staff

Survey staff received training on both the contents of the data collection instruments and tablet use. The training curriculum included:

- Scientific objectives of the survey
- Survey design and methods
- Completion of survey forms
- Data collection
- Staff responsibilities
- Completion of survey forms
- Data collection
- Staff responsibilities
- Recruitment of participants
- Informed consent procedures, including human participants' protection, privacy, and confidentiality
- Blood collection including venipuncture and finger/heel stick
- Home-based HIV testing and counseling
- Referral of participants to health and social services
- Management and transportation of blood specimens
- Biosafety
- Communication skills
- Protocol deviations, adverse events, and reporting of events
- COVID-19 risk mitigation training: Prior to the start of data collection after the start of the survey was delayed due to COVID-19, a 5-day training session for all survey staff was conducted to refresh on survey procedures and COVID-19 mitigation measures. The COVID-19 training component included the general COVID-19 introduction and guidance; staff screening, isolation, and quarantine procedures (see below).

Laboratory staff were trained in specimen management, including sample processing, labeling, and quality assurance (QA). Central laboratory staff were trained in viral load measurement, early infant diagnosis, HIV confirmatory testing, and HIV recency testing using the limiting antigen (LAg) avidity enzyme immunoassay (see below). In addition, after pausing for COVID-19, laboratory staff received training on COVID-19 risk mitigation within the laboratory setting.

COVID-19 mitigation

Survey fieldwork was delayed from April 2020 to March 2021 due to the COVID-19 pandemic. During the pause, the project team continually monitored the COVID-19 situation in the country and worked with partners to develop guidelines for mitigating risk of COVID-19 transmission during survey implementation. Before restarting fieldwork, the project team took precautions to prioritize the health and well-being of the team members, members of surveyed households, and of the greater community where the survey operated. Working in close contact with its partners, the survey team adapted survey-related work to be consistent with rapidly evolving guidance. These approaches included COVID-19 mitigation training for survey and laboratory staff, updated community sensitization materials in advance of the survey restart (with an emphasis on holding outdoor community meetings of 10 or less people with all COVID-19 protocols observed), adjustments to the household entry procedures survey team size, and the best practices for interacting with households, including providing personal protective equipment (PPE) to household members.

Survey staff were required to reduce their own coronavirus risk through application of the prevention and control measures that were available at the time. Mitigation measures implemented during fieldwork included consistent use of masks for both survey staff and household participants, testing for SARS-COV-2 before training and the start or restart of field work (in case of a pause), participating in daily symptom screening of all staff using a mobile phone app developed for this purpose before they could be cleared for work, submitting to SARS-CoV-2 testing whenever they screened positive for symptoms consistent with COVID-19, close monitoring of quarantine and isolation periods of those infected or who were close contacts of COVID-19 cases, and providing virtual training for those in isolation or quarantine. Field data collection teams and satellite laboratory shifts operated as cohorts, with all members being considered close contacts of each other. The number of staff interacting with each household was minimized, and staff were encouraged to complete survey procedures outdoors or in well ventilated rooms when possible.

Survey Staff

Fieldwork started in March 2021. Fieldwork was conducted by 40 locally-hired field teams with 7 members each, composed of a team leader, 4 counselors and 2 field testers who performed interviews, phlebotomy, testing, and counseling. Each team was supported by 2 drivers. Field teams included both male and female staff and members spoke the languages used in the areas to which they were deployed wherever possible. Overall, a total of 280 field staff comprising of 3 regional field supervisors, 40 team leaders, 160 counselor interviewers, 80 field testers, and 78 drivers participated in data collection. The field teams were supervised by 40 team leaders and the three regional field supervisors and managed by central staff who guided and oversaw data collection activities, performed quality checks, and provided technical support (Appendix D).

The laboratory staff was organized at different levels (central laboratory staff, supervisors, satellite laboratory managers, satellite/mobile lab technicians, and satellite lab logisticians). Overall, 3 regional lab supervisors, 38 satellite laboratory technicians, 5 satellite laboratory logisticians, and 5 central lab technicians processed samples and performed additional procedures for HIV-1 VL, CD4 counts, quality control (QC), and QA. National and international monitors periodically conducted direct observation of data collection activities in the field and in the laboratories to provide technical support and ensure quality.

Community Sensitization and Mobilization

In order to maximize community support and participation in the survey, the survey also employed community mobilization teams (consisting of 6 community mobilization coordinators and 738 community mobilizers, managed by a community mobilization lead) to mobilize communities before data collection. The mobilization began before fieldwork commenced with a high-level national launch meeting that included key national and district leaders, mass media, and other stakeholders. Community mobilization teams visited each EA before initiation of fieldwork, presented themselves and the survey to the local leaders, and worked with community health workers and other key gatekeepers in the communities (local government officials, religious and community leaders) to mobilize the community. The mobilization teams held community sensitization meetings, disseminated written informational materials such as brochures and posters, and held discussions with households and other community residents. Due to COVID-19, risk mitigation measures were put into place for community mobilization. This included COVID-19 testing for all community mobilization coordinators and community mobilization leads three days prior to training and three days prior to deployment. Community mobilizers were oriented to answer questions related to COVID-19 and had MOH approved information, education and communication (IEC) materials available for use. The orientation included COVID-19 signs and symptoms, prevention, and where to get tested in the community. While community mobilization gatherings would have normally been held, these meetings were either not conducted or modified in frequency or size to reduce risk of COVID-19 in the communities. Social distancing of 2 meters was implemented at all times during the survey and community mobilization key stakeholder entry meetings were limited to less than 10 people.

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Supervision

Data-collection teams were continuously overseen by field-based supervisors as well as periodically monitored by national and international teams with representation from collaborating institutions. Monitoring teams visited field and laboratory sites at least monthly and provided direct supervision as well as verification of results by household revisits. Online monitoring forms used by field monitors on tablets/phones and daily monitoring forms for household and individual outcome tracking were also reviewed by monitors for completeness. Field-based supervisors also supported teams by organizing supplies and transport of blood samples, coordinating community-mobilization efforts, providing technical troubleshooting, and checking the quality of household procedures and data collected.

The national and international monitoring teams observed and assessed the quality of survey procedures, including adherence to protocol and standard operating procedures, and identified and responded to challenges with data collection. Regular debriefing sessions were held between field-based supervisors and monitoring teams. Monitoring reports were circulated to collaborating institutions and the BAIS V Technical Working Group to respond to any issues.

Electronic Monitoring System

An electronic dashboard system was established to monitor the progression of the survey. The dashboard summarized data uploaded to the BAIS V server daily. The dashboard tracked coverage and completion of EAs, sampled households, household response, eligible household members providing consent to the interview, and biomarker components of the survey, blood draws, response rates, and overall progress towards the achievement of the target sample.

Questionnaire Data Collection

Questionnaire and field laboratory data were collected on mobile tablet devices using an application programmed in Census and Survey Processing System (CSPro) software, an open-source mobile data collection application. The household interview collected information on household residents, assets, economic support, recent deaths, and orphans and vulnerable children (see Appendix E). The individual interview was administered to all participants and included modules on demographic characteristics, sexual and reproductive health, marriage, male circumcision, sexual activity, the HIV testing and treatment history, TB and other health issues, and alcohol use (see Appendix F). Participants who self-reported their HIV-positive status were asked questions about their HIV care experience. Females were interviewed by female staff, and males by male staff, whenever possible. Parents or guardians of eligible minors aged 6 weeks to 14 years were administered the child interview which included modules on demographic characteristics and HIV testing and treatment history (see Appendix G). The questionnaire was administered in English and Setswana. Versions of the questionnaires in Setswana were reviewed and tested thoroughly for acceptability, feasibility, and flow of questions.

2.4 FIELD-BASED BIOMARKER TESTING

Blood Collection

Qualified survey staff collected blood from consenting participants. Participants 24 months and older had venous blood collected unless they refused to give venous blood or had venous blood draw failure. Participants had approximately 14 mL (aged 15–64 years) or 6 mL (aged 24 months-14 years) of venous blood drawn. Capillary blood (1 mL)was collected among participants aged 6 weeks-23 months. Blood samples were labeled with a unique barcoded participant identification number and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for processing into plasma aliquots and dried blood spots (DBS) and were frozen within 24 hours of blood collection at -20° Celsius. Plasma and DBS samples were regularly transferred to the central laboratory for repository storage at -80° Celsius.

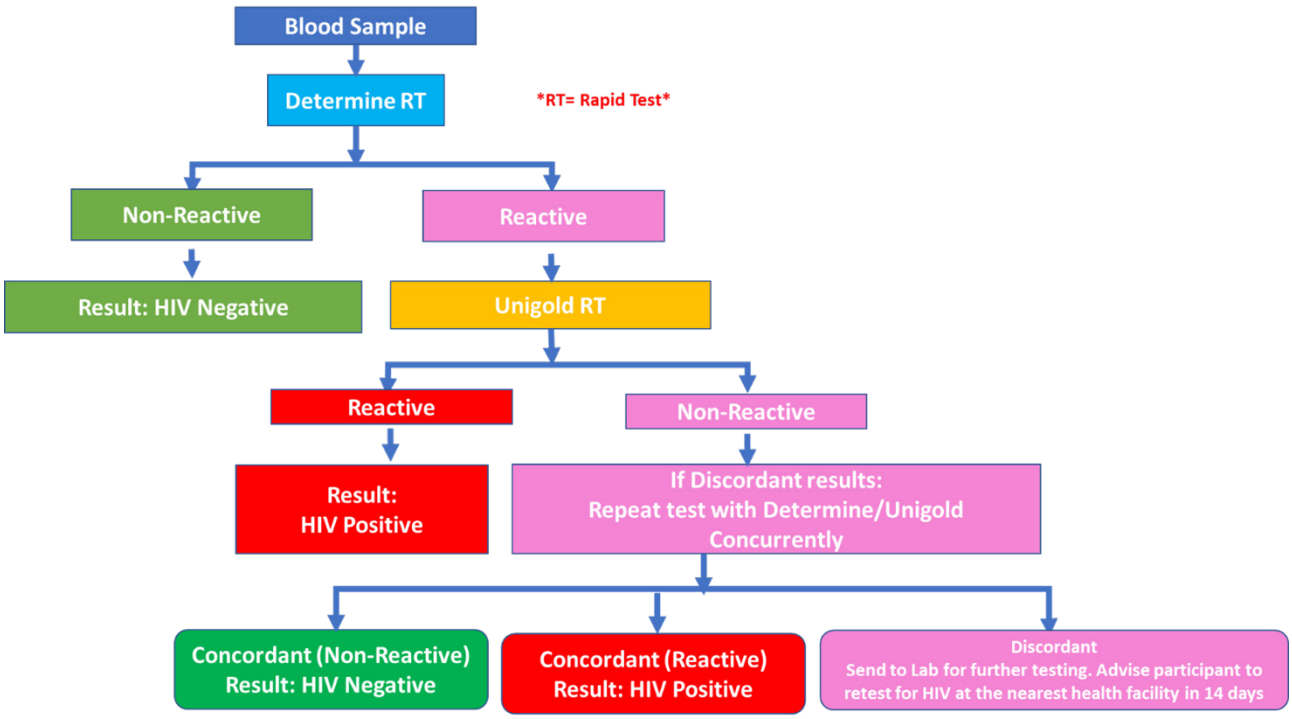
HIV Home-Based Testing and Counseling

HIV HBTC was conducted in each household in accordance with national guidelines. Per these guidelines, the survey used a sequential rapid-testing algorithm in the field (Figure 2.1).

Some participants were not eligible for HH HIV rapid testing. In consenting participants who self-reported and documented HIV positive the HIV rapid test (RT) was performed in the satellite lab. Proof of HIV-positive documentation could include a health card, pill bottle, or HIV test card from testing services, each identified with the name of participant. If a participant self-reported HIV positive but could not produce documentation, they received the rapid test in the HH. Eligible infants < 18 months born to mothers of unknown HIV status or HIV-positive mothers were not given a HH rapid test but received EID testing using prepared DBS at the central laboratory.

The BAIS V HIV rapid testing algorithm used a serial algorithm. Individuals who were non-reactive on Determine™ HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States) RT were reported as negative HIV status. Individuals who were reactive on Determine RT were tested with Uni-Gold™ HIV (Trinity Biotech, plc. Wicklow, Ireland) RT. Individuals with a reactive result on both tests (Determine and Unigold) were reported as HIV-positive. Individuals with one reactive and one non-reactive (discordant) test result were retested concurrently with both Determine and Unigold RTs. If both Determine and Unigold RTs were reactive then the participant was considered HIV positive. If both Determine and Unigold RTs were non-reactive then the participant was considered HIV negative. Those who continued to have discordant results had their specimen sent to the satellite and central labs for further testing. Participants with discordant results were directed to the nearest health facility to retest for HIV 14 days later. For the survey, samples with positive results from the field testing received further testing and evaluation to allow for final classification of HIV status using the Geenius™ HIV 1/2 Supplemental Assay (Bio-Rad, Hercules, California, United States) confirmatory tests or equivalent.

Figure 2.1 Household-based HIV testing algorithm



Participants who newly tested positive for HIV as part of the survey, participants who had previously tested positive but never initiated treatment, and participants who had previously tested positive and who had stopped treatment, were counseled on the possibility of receiving a facilitated linkage to a clinic for ART, care and support and asked to provide verbal consent for their information to be shared with a trained healthcare worker or counselor to facilitate the linkage. If the participant consented, the field staff completed the Active Linkage to Care Form, informed the participant or parent/guardian of the participant that he/she should visit the health facility of their choice for ALTC as soon as possible and that a third-party organization or expert client would contact them for follow up as necessary. All organizations participating in linkage to care were trained in confidentiality procedures and detailed procedures on active linkage to care, including eligibility for linkage to care, how contact information should be shared with the facility, community-based organization or a local linkage counselor, mechanisms of facilitated linkage, and documentation of linkage to care.

If a person who self-reported an HIV-positive status tested HIV negative in the survey, additional testing was performed at the satellite lab to confirm their status (see below). Once the participant's status was confirmed, the return of results and the provision of appropriate counseling to the participant was led by MOH.

Field QC and proficiency testing: QC using a panel of positive and negative dried tube specimens was performed on a regular basis by field staff performing HIV testing. In addition, QA proficiency testing was conducted twice during the survey, using a panel of masked HIV-positive and negative dried tube specimens. Proficiency in the correct performance and interpretation of the HIV testing algorithm was assessed for each tester.

2.5 LABORATORY-BASED BIOMARKER TESTING

Satellite and Central Laboratories

Fifteen satellite laboratories for the survey were established. One central reference laboratory (Botswana Harvard HIV Reference Lab – Sentinel Lab) was chosen for more specialized tests. At each satellite laboratory, trained technicians performed HIV confirmatory testing, CD4 testing, QA testing, and processing of whole blood specimens into plasma aliquots and DBS cards for temporary storage at -20°C.

HIV QA and confirmatory testing: For QA of the HIV rapid testing conducted in the field, the first 25 samples tested by each field tester were retested in the satellite laboratory using the national HIV rapid-testing algorithm. All specimens that tested HIV positive during HBTC, and those that had confirmed positive rapid test results during QA, underwent confirmatory testing using the Geenius™ HIV 1/2 Supplemental Assay (Bio-Rad, Hercules, California, United States). A positive Geenius result defined HIV-positive status for the survey.

For participants who self-reported a previous HIV-positive test result, did not have documentation, and tested HIV negative in HBTC, additional HIV rapid tests were conducted at the satellite lab (following the same national testing algorithm as used in the field). Central laboratory procedures included HIV viral load testing, HIV total nucleic acid (TNA) polymerase chain reaction (PCR), HIV recency testing, HIV drug resistance (HIVDR) testing, ARV detection, and long-term storage of samples at -80°C.

HIV TNA PCR was conducted at the central laboratory for EID testing among eligible infants aged 6 weeks-17 months born to mothers of unknown HIV status, mothers who were deceased, or mothers with an HIV-positive status. HIV TNA PCR was also conducted for the confirmation of status of those who self-reported an HIV-positive status with documentation but tested negative through RT in the satellite lab.

The survey conducted household revisits for investigation of discrepancies between the results of testing in the field and in the laboratory. The specimens collected during the revisit underwent comprehensive retesting in the laboratory. For each case, an analysis of the nature of the discrepancy, and potential sources of error, was performed to define the definitive HIV status for analytical purposes.

CD4 Count Measurement

Blood samples from the participants who tested HIV-positive underwent CD4 count measurement at the satellite laboratory. The measurement was performed using the Pima™ CD4 Analyzer (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere).

Viral Load Testing

The HIV-1 viral load (HIV RNA copies per mL) of all confirmed HIV-positive participants was measured on plasma samples using the COBAS AmpliPrep/Taqman 96 assay on the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) HIV-1, v2.0 Test (Roche Molecular Diagnostics, Branchburg, New Jersey, United States. In cases where plasma samples were not available, HIV-1 viral load was performed on dried blood spot (DBS) samples using the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) Free Virus Elution (FVE) Protocol (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). The COBAS AmpliPrep/TaqMan HIV-1 is a nucleic acid amplification test for the quantification of HIV Type 1 (HIV-1) RNA in human plasma or dried blood spots. Specimen preparation was automated using COBAS AmpliPrep with amplification and detection using TaqMan.

Return of CD4 and Viral Load Results

The return of results coordinator delivered CD4 and viral load results within 8-12 weeks to the health facility chosen by each HIV-positive participant or their parent. HIV-positive participants or their parents were provided with a referral form during HBTC for subsequent retrieval of their results. Survey staff also contacted each participant or their parent via mobile phones, informing them that their viral load and CD4 results were available at the chosen facility and further advising them to seek care and treatment.

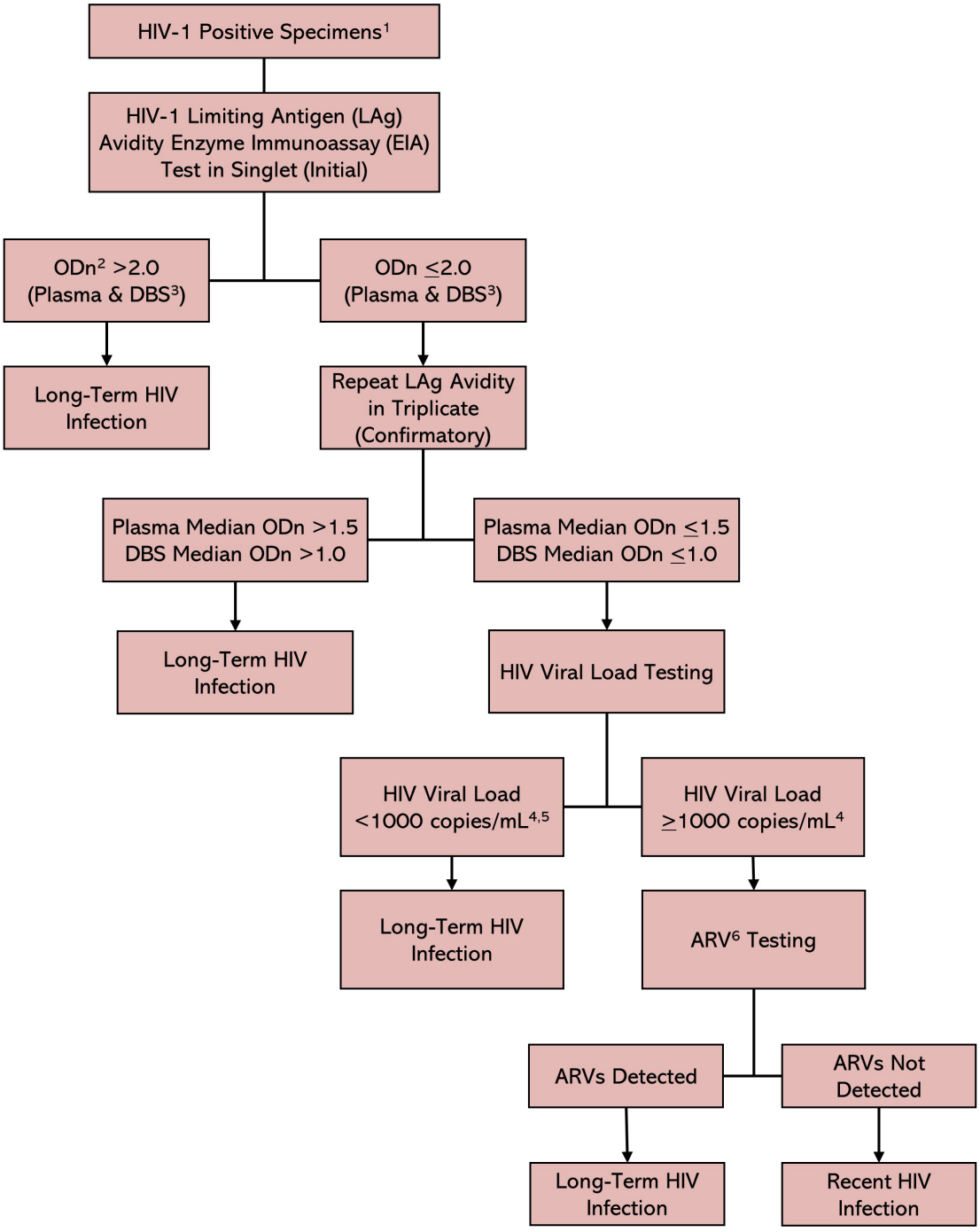
HIV Recent Infection Testing Algorithm

To distinguish recent from long-term HIV infections, in order to estimate incidence, the survey used a laboratory-based testing algorithm that employed a combination of assays: an HIV-1 LAg avidity assay, VL, and ARV detection (Figure 2.2), as described in Appendix B.

Viral load results were assessed on all HIV-positive specimens. Those with viral load < 1,000 copies/mL were classified as long-term infections, while those viral load ≥ 1,000 copies/mL were classified as potential recent infections and LAg avidity assessed. The Sedia HIV-1 LAg-Avidity EIA (Sedia Biosciences Corporation, Portland, Oregon, United States) was used on plasma specimens, while the Maxim HIV-1

Limiting Antigen-Avidity Dried Blood Spot (DBS) EIA (Maxim Biomedical, Bethesda, Maryland, United States) was used on DBS specimens. Plasma specimens with median normalized optical density (ODn) > 1.5 and DBS with a median ODn > 1.0 were classified as long-term infections while plasma specimens with an ODn ≤ 1.5 and DBS specimens with median ODn ≤ 1.0 were classified as potential recent infections and their ARV detection data were assessed. Those with a detectable ARV were classified as long-term infections and those without were classified as recent infections (Figure 2.2). Afterwards, LAg avidity testing was performed separately on specimens with a viral load <1,000 copies/mL but the long-term infection classification was retained for all.

Figure 2.2 HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), BAIS V 2021



[1]Confirmed by Geenius HIV 1/2 rapid test or equivalent method; [2]ODn: Normalized optical density; [3]DBS: Dried blood spot; [4]mL: milliliter, [5]All specimens were classified as long-term infection, regardless if LAg Avidity testing occurred. [6]ARV: antiretroviral

Detection of Antiretroviral Drug Resistance

HIV resistance to ARVs was assessed for HIV-positive participants including recent cases, those without VLS (≥1,000 copies/mL; both on treatment and not on treatment), and those with viral load of 200-999 copies/mL.

The findings will be presented in a separate addendum to this report.

Detection of Antiretrovirals

Qualitative screening for detectable concentrations of ARVs was conducted on DBS specimens from all HIV-positive participants and those who self-reported HIV positive and tested HIV negative by means of high-resolution liquid chromatography coupled with tandem mass spectrometry. The method used for ARV detection was a modified version of the methodology described by Koal et al.[2] This qualitative assay was highly specific, as it separates the parent compound from the fragments, and highly sensitive, with a limit of detection of 0.02 µg/mL for each drug, and a signal-to-noise ratio of at least 5:1 for all drugs. As detection of all ARVs in use at the time of the survey was cost-prohibitive, five ARVs: efavirenz, lopinavir, dolutegravir, atazanavir, and nevirapine were selected as markers for the most prescribed first- and second-line regimens in Botswana. Adults were tested for atazanavir, dolutegravir, and efavirenz and children were tested for these as well as lopinavir and nevirapine. These ARVs were also selected based on their relatively long half-lives, allowing for a longer period of detection following intake.

Detection of ARVs indicates participant use of a given drug at the time of blood collection. Results below the limit of detection among individuals who reported taking ART indicate that there was no recent exposure to the regimen and that adherence to a prescribed regimen is suboptimal, but cannot be interpreted as “not on ART.” In addition, given the limited number of ARVs selected for detection, their absence could not rule out the use of other ART regimens that do not include them.

ARV detection was performed by the Division of Clinical Pharmacology of the Department of Medicine at the University of Cape Town, South Africa.

2.6 DATA PROCESSING AND ANALYSIS

All field data were collected on tablets, transmitted to a central server using a secure virtual private network, and stored in a secure PostgreSQL database. Data cleaning was conducted using SAS 9.4 (SAS Institute Inc. Cary, North Carolina, United States). Laboratory data were cleaned and merged with the final questionnaire database using unique specimen barcodes and study identification numbers.

All results presented in the report are based on weighted estimates unless otherwise noted. Analysis weights account for sample selection probabilities and were adjusted for nonresponse and noncoverage. Nonresponse adjusted weights were calculated for households, individual interviews, and individual blood draws in a hierarchical form. Weighting adjustment cells, defined by a combination of variables that are potential predictors of response, were developed to adjust initial individual and blood-level weights for nonresponse. The nonresponse adjustment cells were constructed using chi-square automatic interaction detection, or the Chi-square Automatic Interaction Detector (CHAID) algorithm. The cells were defined based on data from the household interview for the adjustment of individual-level weights, and from both the household and individual interviews for the adjustment of blood sample-level weights. Post-stratification adjustments were implemented to compensate for noncoverage in the sampling process. This final adjustment calibrated the nonresponse-adjusted individual and blood weights to make the sum of each set of weights conform to national population totals by sex and 5-year age groups. Descriptive analyses of RR, characteristics of respondents and other indicators were conducted using SAS 9.4.

Incidence estimates were based on the number of HIV infections identified as recent with the HIV-1 LAg avidity plus viral load and ARV detection algorithm, and obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays, and with assay performance characteristics of a mean duration of recent infection = 130 days (95% CI: 118, 142), a time cutoff = 1.0 year and percentage false recent = 0.00.3

Unless otherwise noted in the report, comparisons between estimates were based upon nonoverlapping 95% CIs. Note that CIs are not shown in most of report tables. However, the public use data packages provides instructions to calculate the CIs available at https://microdata.statsbots.org.bw/index.php/catalog/edit/26

Where applicable, the UNAIDS and PEPFAR indicators (that were in effect when the survey concluded) corresponding to a given table are specified at the end of the table. The UNAIDS Global Monitoring indicators refer to the 2020 release of the indicators, available at: https://www.aidsdatahub.org/sites/default/files/resource/unaids-2020-gam-guidelines-2019.pdf and the PEPFAR indicators are available at: https://www.state.gov/wp-content/uploads/2019/10/PEPFAR-MER-Indicator-Reference-Guide-Version-2.4-FY20.pdf.

2.7 RESPONSE RATES

Household RRs were calculated using the American Association for Public Opinion Research Response Rate 4 method[4] as the number of complete and incomplete household interviews among all eligible households and those estimated to be eligible among those with unknown eligibility (households not located, not attempted, or unreachable). Vacant and destroyed households, nonresidential units, and household units with no eligible respondents were considered not eligible and excluded from the calculation.

Individual interview RRs were calculated as the number of individuals who were interviewed divided by the number of individuals eligible to participate in the survey. Blood draw RRs were calculated as the number of individuals who provided blood divided by the number of individuals who were interviewed. All RRs presented below are weighted unless otherwise specified.

Of the 13,560 selected households, 11,478 and 10,210 were occupied and interviewed, respectively. The overall household RR (unweighted) was 87.7%. After adjusting for differential sampling probabilities and nonresponse, the overall weighted household RR was 86.3% (Table 2.2).

A total of 19,914 adults (8,819 males and 11,095 females) were eligible to participate in the survey. A total of 17,205 adults participated in the individual interview: interview RRs were 82.1% among males and 89.8% among females. Among those interviewed, 84.1% of males and 87.1% of females also had their blood drawn (Table 2.3). In children, a total of 3,552 individuals (1,747 males and 1,805 females) were eligible to participate. Blood draw response rate in eligible children was 67.1% (66.1% in males and 68.1% in females) (Table 2.3).

Table 2.2 Household response rates

Number of households selected, occupied, and interviewed and household response rates (unweighted and weighted) by residence, BAIS V 2021

	Residence		Total
Result	**Urban**	**Rural**	
Household interviews			
Households selected	7,872	5,688	13,560
Households occupied	6,786	4,692	11,478
Households interviewed	5,910	4,300	10,210
Household response rate[1] (unweighted)	85.7	90.6	87.7
Household response rate[1] (weighted)	84.5	89.9	86.3

[1]Household response rate was calculated using the American Association for Public Opinion Research (AAPOR) Response Rate 4 (RR4) method: https://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf

Table 2.3 Individual interview and blood draw response rates

Number of eligible individuals and response rates for individual interviews[1] and blood draws[2] (unweighted and weighted) by residence and sex, BAIS V 2021

	Residence				Total by Sex		Total
	Urban		Rural				
Result	Males	Females	Males	Females	Males	Females	
Eligible individuals, aged 0-14 years							
Number of eligible individuals[3]	903	921	844	884	1,747	1,805	3,552
Blood draw response rate (unweighted)	60.1	60.5	72.4	76.0	66.1	68.1	67.1
Eligible individuals, aged 15-24 years							
Number of eligible individuals	1,409	1,675	970	1,076	2,379	2,751	5,130
Interview response rate (unweighted)	80.4	87.6	84.1	91.3	81.9	89.0	85.7
Interview response rate (weighted)	78.6	83.8	83.1	89.6	80.1	85.6	83.1
Blood draw response rate (unweighted)	82.4	86.0	87.5	90.3	84.6	87.7	86.3
Blood draw response rate (weighted)	79.5	83.8	85.8	88.8	81.6	85.3	83.6
Eligible individuals, aged 15-49 years							
Number of eligible individuals	4,628	5,645	2,906	3,626	7,534	9,271	16,805
Interview response rate (unweighted)	79.6	87.5	84.6	92.2	81.5	89.3	85.8
Interview response rate (weighted)	74.8	84.1	83.6	90.5	77.6	86.1	82.2
Blood draw response rate (unweighted)	80.4	84.0	87.5	89.3	83.2	86.1	84.9
Blood draw response rate (weighted)	77.4	82.7	86.0	88.4	80.2	84.5	82.5
Eligible individuals, aged 15-64 years							
Number of eligible individuals	5,265	6,587	3,554	4,508	8,819	11,095	19,914
Number of interviewed individuals	4,206	5,798	3,035	4,166	7,241	9,964	17,205
Number of individuals with blood draw	3,408	4,919	2,680	3,756	6,088	8,675	14,763
Interview response rate (unweighted)	79.9	88.0	85.4	92.4	82.1	89.8	86.4
Interview response rate (weighted)	75.5	84.8	84.0	91.2	78.3	86.8	83.0
Blood draw response rate (unweighted)	81.0	84.8	88.3	90.2	84.1	87.1	85.8
Blood draw response rate (weighted)	78.2	83.6	86.6	89.2	81.0	85.4	83.4
Overall response rate (unweighted)[4]	56.8	65.5	66.1	73.1	60.5	68.6	65.0

[1]Interview response rate = number of individuals interviewed/number of eligible individuals.

[2]Blood draw response rate = number of individuals who provided blood/number of individuals interviewed.

[3]Pediatric population is children of HIV-positive or deceased mothers and children of mothers with unknown HIV status from households selected in the 25% pediatric subsample.

[4]Overall response rate = household response rate * interview response rate * blood draw response rate.

2.8 REFERENCES

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3. SURVEY HOUSEHOLD CHARACTERISTICS

3.1 BACKGROUND

This chapter presents characteristics of households surveyed in BAIS V. Household composition is described in terms of sex of the head of household, as well as the size of the household. The age structure of the de facto household population (i.e., usual household members or visitors excluding foreign tourists who slept in the household the night before) is described by sex as well as urban/rural residence. This chapter also describes the prevalence and composition of households impacted by HIV, which are households with one or more members with an HIV-positive test result.

3.2 RESULTS

The following tables and figures describe household characteristics.

Table 3.1: Household composition

Percent distribution of households by sex of head of household; median (Quartile 1, Quartile 3) size of household and median (Q1, Q3) number of children under 18 years of age by residence, BAIS V 2021

	Residence					
	Urban		Rural		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Head of household						
Male	44.3	2,563	42.9	1,783	43.8	4,346
Female	55.7	3,347	57.1	2,517	56.2	5,864
Total	100.0	5,910	100.0	4,300	100.0	10,210

	Residence					
	Urban		Rural		Total	
Characteristic	Median	Q1, Q3	Median	Q1, Q3	Median	Q1, Q3
Size of households						
Number of children under 18 years of age	2 0	(1, 4) (0, 2)	3 0	(1, 5) (0, 2)	2 0	(1, 4) (0, 2)

Table 3.2: Distribution of de facto household population (population pyramid)

Percent distribution of the de facto household population by 5-year age groups and sex, BAIS V 2021

	Males		Females		Total	
Age	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
0-4	5.6	1,973	5.8	2,058	11.4	4,031
5-9	5.7	2,032	5.8	2,050	11.5	4,082
10-14	5.2	1,902	5.4	1,952	10.6	3,854
15-19	3.9	1,303	4.0	1,372	7.9	2,675
20-24	3.2	1,101	4.4	1,405	7.6	2,506
25-29	3.7	1,120	4.3	1,395	7.9	2,515
30-34	3.4	1,056	4.0	1,427	7.4	2,483
35-39	3.3	1,144	4.4	1,537	7.7	2,681
40-44	3.0	1,029	3.8	1,238	6.8	2,267
45-49	2.6	829	2.7	946	5.3	1,775
50-54	1.6	601	2.2	727	3.8	1,328
55-59	1.3	397	1.8	632	3.1	1,029
60-64	0.9	292	1.5	465	2.5	757
65-69	1.0	302	1.4	441	2.4	743
70-74	0.5	186	0.9	281	1.4	467
75-79	0.4	123	0.7	229	1.1	352
80+	0.6	187	1.1	362	1.7	549
Total	45.8	15,577	54.2	18,517	100.0	34,094

Figure 3.2: Distribution of the de facto population by sex and age, BAIS V 2021

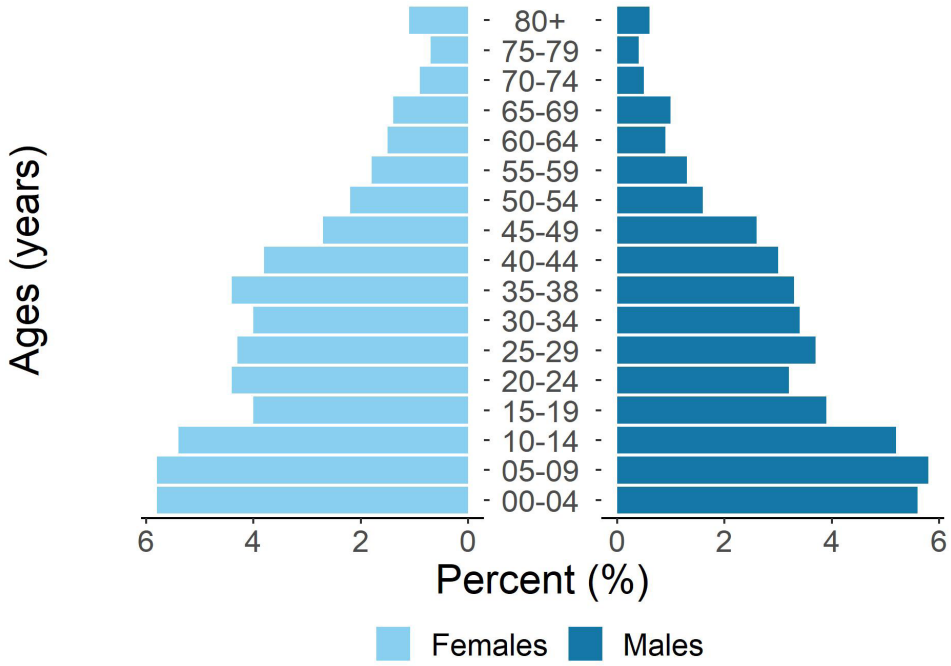

Table3.3: Household population by age, sex, and residence

Percent distribution of the household population aged 0-64 years by age, sex, and residence, BAIS V 2021

Urban

	Males		Females		Total	
Age	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
0-4	12.4	1,053	10.2	1,041	11.2	2,094
5-14	23.6	2,138	21.7	2,229	22.6	4,367
15-49	56.1	4,655	58.0	5,679	57.1	10,334
50-64	7.9	641	10.1	942	9.1	1,583
Total	100.0	8,487	100.0	9,891	100.0	18,378

Rural

	Males		Females		Total	
Age	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
0-4	14.2	920	14.1	1,017	14.1	1,937
5-14	27.9	1,796	23.4	1,773	25.5	3,569
15-49	47.4	2,927	49.8	3,641	48.6	6,568
50-64	10.5	649	12.7	882	11.7	1,531
Total	100.0	6,292	100.0	7,313	100.0	13,605

Figure 3.3: Household population by age, sex, and residence, BAIS V 2021

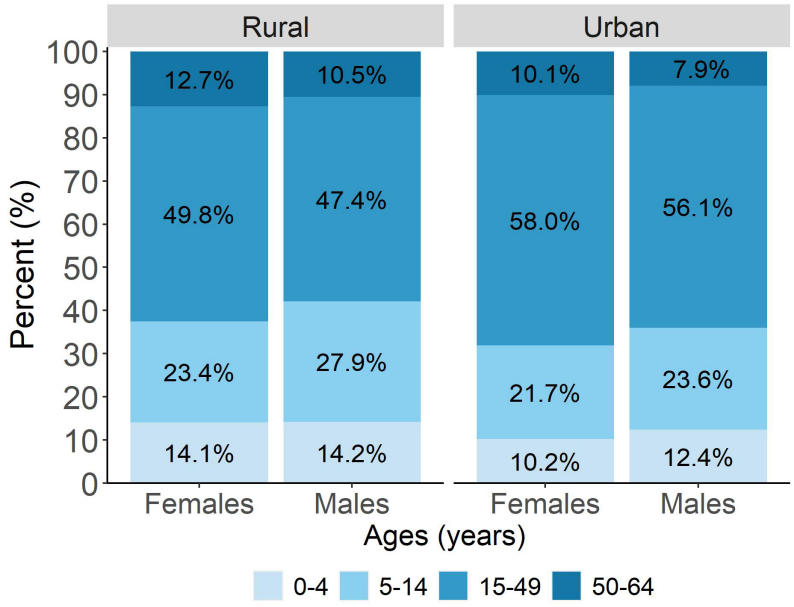

Table3.4: Prevalence of HIV-affected households

Percentage of households with at least one HIV-positive household member by residence, BAIS V 2021

Residence	Percent	Number
Urban	31.8	4,648
Rural	40.2	3,492
Total	34.8	8,140

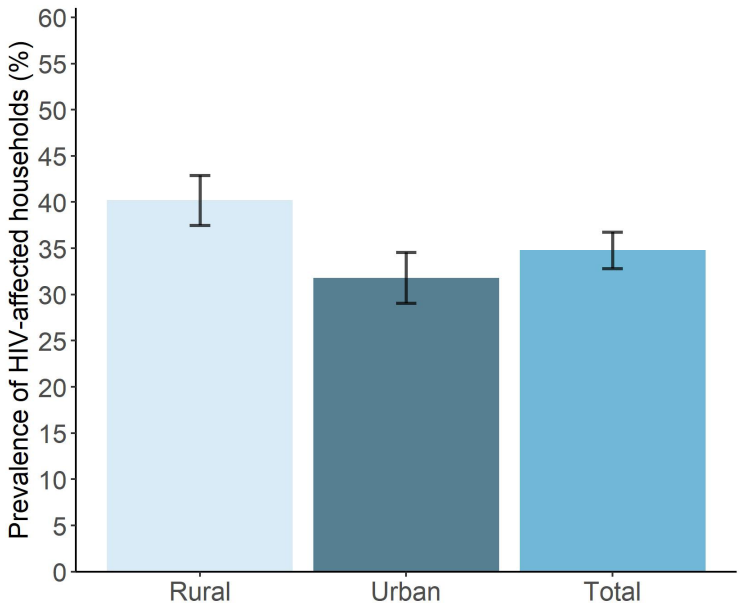

Figure 3.4: Prevalence of HIV-affected households by residence, BAIS V 2021

Table 3.5: Prevalence of households with an HIV-positive head of household

Percentage of households with an HIV-positive head of household by sex of head of household, BAIS V 2021

Sex of head of household	Percent	Number
Male	21.3	2,691
Female	36.4	4,093
Total	30.3	6,784

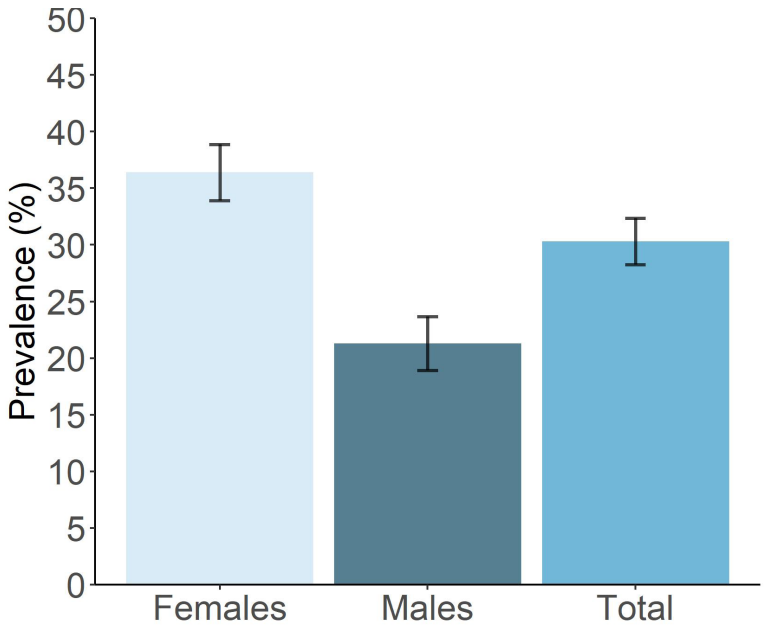

Figure 3.5: Prevalence of HIV among heads of households by sex, BAIS V 2021

4. SURVEY RESPONDENT CHARACTERISTICS

4.1 BACKGROUND

This chapter presents characteristics of households surveyed in BAIS V. Household composition is described in terms of sex of the head of household, as well as the size of the household. The age structure of the de facto household population (i.e., usual household members or visitors excluding foreign tourists who slept in the household the night before) is described by sex as well as urban/rural residence. This chapter also describes the prevalence and composition of households impacted by HIV, which are households with one or more members with an HIV-positive test result.

4.2 RESULTS

Tables 4.1 and 4.2 present the demographic characteristics of Botswana respondents.

Table 4.1: Demographic characteristics of the adult population

Percent distribution of the population aged 15-64 years by sex and selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Residence						
Urban	66.6	4,206	67.8	5,798	67.2	10,004
Rural	33.4	3,035	32.2	4,166	32.8	7,201
District						
Gaborone	12.3	222	11.4	253	11.8	475
Francistown	4.7	156	4.1	205	4.4	361
Lobatse	1.4	238	1.6	400	1.5	638
Selibe Phikwe	1.5	94	1.9	168	1.7	262
Orapa	1.0	484	0.9	606	0.9	1,090
Jwaneng	0.9	292	0.8	351	0.9	643
Sowa	0.2	185	0.2	198	0.2	383
Ngwaketse South	6.6	347	6.1	466	6.3	813
Borolong	2.4	274	2.4	362	2.4	636
Ngwaketse West	0.5	232	0.5	309	0.5	541
South East	7.4	356	5.7	423	6.5	779
Kweneng East	13.5	242	14.5	372	14.0	614
Kweneng West	1.8	308	2.0	484	1.9	792
Kgatleng	4.5	263	4.8	359	4.7	622
Serowe Palapye	7.9	287	7.7	382	7.8	669
Central Mahalapye	4.0	192	5.0	326	4.5	518
Central Bobonong	2.3	181	3.2	342	2.7	523
Central Boteti	2.6	247	2.5	320	2.6	567
Central Tutume	6.3	298	5.8	373	6.0	671
North East	2.2	190	2.7	356	2.5	546
Ngamiland East	7.9	571	7.7	763	7.8	1,334
Ngamiland West	2.6	325	3.2	569	2.9	894

Table 4.1: Demographic characteristics of the adult population **(continued)**

Percent distribution of the population aged 15-64 years by sex and selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Chobe	1.2	248	1.0	279	1.1	527
Ghanzi	2.2	282	2.0	351	2.1	633
Kgalagadi South	1.5	443	1.4	578	1.4	1,021
Kgalagadi North	0.9	284	0.9	369	0.9	653
Marital status						
Never married	59.1	4,246	59.6	5,889	59.4	10,135
Married or living together	35.1	2,571	32.5	3,309	33.8	5,880
Divorced or separated	5.3	364	5.3	499	5.3	863
Widowed	(0.5)	43	2.7	250	1.6	293
Education						
No education	7.1	574	4.9	628	6.0	1,202
Primary	11.8	977	12.7	1,397	12.3	2,374
Secondary	55.3	4,018	56.8	5,759	56.1	9,777
More than secondary	25.8	1,665	25.6	2,177	25.7	3,842
Wealth quintile						
Lowest	17.4	1,672	16.4	2,215	16.9	3,887
Second	19.2	1,389	19.2	2,013	19.2	3,402
Middle	20.9	1,256	20.0	1,720	20.4	2,976
Fourth	20.7	1,439	22.1	1,996	21.4	3,435
Highest	21.7	1,485	22.4	2,020	22.0	3,505
Age						
15-19	14.0	1,034	13.3	1,177	13.6	2,211
20-24	13.4	915	12.8	1,272	13.1	2,187
25-29	13.5	923	13.2	1,256	13.3	2,179
30-34	12.6	839	12.8	1,246	12.7	2,085
35-39	13.0	925	13.2	1,378	13.1	2,303
40-44	10.7	846	10.6	1,105	10.7	1,951
45-49	8.6	660	8.2	849	8.4	1,509
50-54	6.1	505	6.2	667	6.1	1,172
55-59	4.6	338	5.4	582	5.0	920
60-64	3.6	256	4.4	432	4.0	688
Total 15-24	27.4	1,949	26.1	2,449	26.7	4,398
Total 15-49	85.7	6,142	84.1	8,283	84.9	14,425
Total 50-64	14.3	1,099	15.9	1,681	15.1	2,780
Total 15-64	100.0	7,241	100.0	9,964	100.0	17,205

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution

Table 4.2: Demographic characteristics of the pediatric population

Percent distribution of the population[1] aged 0-14 years by sex and selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Residence						
Urban	57.1	1,894	57.7	2,001	57.4	3,895
Rural	42.9	1,671	42.3	1,789	42.6	3,460
District						
Gaborone	6.2	54	7.6	70	6.9	124
Francistown	2.4	62	3.1	59	2.8	121
Lobatse	1.0	114	1.1	105	1.0	219
Selibe Phikwe	1.6	56	(1.0)	49	1.3	105
Orapa	0.6	191	0.7	235	0.7	426
Jwaneng	0.6	97	0.6	114	0.6	211
Sowa	0.2	73	0.1	52	0.1	125
Ngwaketse South	6.0	147	5.6	143	5.8	290
Borolong	3.0	139	3.7	157	3.4	296
Ngwaketse West	0.6	91	0.6	124	0.6	215
South East	2.9	92	2.7	89	2.8	181
Kweneng East	10.2	101	10.5	109	10.4	210
Kweneng West	2.8	202	3.7	262	3.2	464
Kgatleng	3.5	80	3.1	89	3.3	169
Serowe Palapye	9.6	148	7.4	146	8.5	294
Central Mahalapye	8.0	137	8.2	153	8.1	290
Central Bobonong	4.5	148	4.2	144	4.3	292
Central Boteti	3.3	151	3.0	163	3.1	314
Central Tutume	10.2	166	8.6	156	9.4	322
North East	3.8	138	5.4	144	4.6	282
Ngamiland East	8.0	274	8.5	318	8.3	592
Ngamiland West	4.3	309	5.1	326	4.7	635
Chobe	0.6	74	0.7	69	0.7	143
Ghanzi	2.9	152	2.2	134	2.5	286
Kgalagadi South	2.1	244	1.7	238	1.9	482
Kgalagadi North	1.1	125	0.8	142	1.0	267
Wealth quintile						
Lowest	27.7	1,121	26.1	1,231	26.9	2,352
Second	23.5	801	23.1	807	23.3	1,608
Middle	20.7	567	19.6	611	20.2	1,178
Fourth	16.6	582	18.1	572	17.3	1,154
Highest	11.5	494	13.1	569	12.3	1,063

Table 4.2: Demographic characteristics of the pediatric population **(continued)**

Percent distribution of the population[1] aged 0-14 years by sex and selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Age						
0-17 months	10.6	456	8.5	474	9.5	930
18-59 months	23.0	835	25.1	925	24.0	1,760
5-9 years	33.4	1,213	33.5	1,277	33.4	2,490
10-14 years	33.1	1,061	32.9	1,114	33.0	2,175
0-17 months	10.6	456	8.5	474	9.5	930
18 months-14 years	89.4	3,109	91.5	3,317	90.5	6,426
Total 0-4 years	33.6	1,291	33.6	1,399	33.6	2,690
Total 0-14 years	100.0	3,565	100.0	3,790	100.0	7,355

[1]Pediatric population is children of HIV-positive or deceased mothers, children of HIV unknown mothers from households selected in the 25% pediatric subsample, and children of HIV-negative mothers. Refer to the Sampling and Weighting Technical Report for sample design.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

5. HIV INCIDENCE

5.1 BACKGROUND

HIV incidence, the measure of new HIV infections in a population over time, provides important information on the status of the HIV epidemic. It can be used for effective targeted HIV prevention planning in groups most vulnerable to recent infections and to measure the impact of HIV prevention programs. This chapter presents annual estimates of HIV incidence among adults (aged 15-64 years) at the national level. For the purposes of this analysis, HIV incidence is expressed as the cumulative incidence or risk of new infections in a 12-month period, which is a close approximation to the instantaneous incidence rate. It is important to note that BAIS V was not powered to estimate incidence at the district level or across different sub-groups.

A laboratory-based incidence testing algorithm (HIV-1 LAg avidity plus viral load and ARV detection) was used to distinguish recent from long-term infection, and incidence estimates were obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays, and with assay performance characteristics of a mean duration of recent infection = 130 days (95% CI: 118, 142), with time cutoff = 1.0 year and residual proportion false recent = 0.00.1 Survey weights are utilized for all estimates. All HIV-positive participants were tested for recent infection using HIV-1 LAg avidity assay.

Incidence estimation is based on recent/long-term classification by the recent infection testing algorithm using limiting antigen (LAg) avidity to identify potential recent infections.[2,3,4] The algorithm uses viral load testing to exclude specimens with low viral load and limit misclassification of persons as recent infections who are elite controllers or on effective ART. The algorithm uses ARV detection to exclude specimens with high viral load and limit misclassification as recent infections of persons with longstanding infection who are on ART but have drug resistance or poor treatment adherence.[5]

5.2 RESULTS

Table 5.1 reports estimated HIV incidence. Table 5.2 presents estimates for the total number of new infections among adults using the recent infection algorithm, as well as the total number of adults living with HIV using prevalence estimates in Chapter 6.

Elite controllers are a small subset of people living with HIV whose immune systems are able to maintain viral load suppression for years without treatment.

Table 5.1: Annual HIV incidence using the recent infection testing algorithm

Annual incidence of HIV among adults aged 15-49 and 15-64 years by sex and age, using the recent infection testing algorithm (limiting antigen plus viral load plus antiretroviral biomarker testing), BAIS V 2021

	Males		Females		Total	
Age	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI
15-24	0.0	(0.00 - 0.64)	0.4	(0.00 - 0.86)	0.2	(0.00 - 0.43)
25-34	0.0	(0.00 - 0.75)	0.1	(0.00 - 0.27)	0.0	(0.00 - 0.14)
35-49	0.0	(0.00 - 0.69)	0.1	(0.00 - 0.46)	0.1	(0.00 - 0.21)
50-64	0.0	(0.00 - 1.63)	1.4	(0.00 - 3.99)	0.7	(0.00 - 2.11)
15-49	0.0	(0.00 - 0.23)	0.2	(0.09 - 0.43)	0.1	(0.00 - 0.21)
15-64	0.0	(0.00 - 0.20)	0.4	(0.00 - 0.77)	0.2	(0.00 - 0.36)

[1]Relates to Global AIDS Monitoring 2021 Indicator 3.1: HIV incidence.

Table 5.2: People living with HIV and number of new HIV infections[1] per year using the recent infection testing algorithm

People living with HIV aged 0-64 years and number of new HIV infections[1] per year among adults aged 15-49 years and 15-64 years, by age, using the recent infection testing algorithm (limiting antigen plus viral load plus antiretroviral biomarker testing), BAIS V 2021

Age	People living with HIV[2]	95% CI	Number of new infections per year	95% CI
0-14	5,611	(0 – 64,689)	NA[1]	NA
15-24	14,293	(11,462 - 17,124)	801	(0 - 1,789)
25-34	48,855	(42,401 - 55,310)	115	(0 - 494)
35-49	177,022	(159,434 - 194,611)	206	(0 - 692)
50-64	88,607	(80,689 - 96,525)	1,117	(0 - 3,219)
15-49	240,171	(219,090 - 261,252)	1,126	(0 - 2,292)
15-64	328,778	(303,076 - 354,480)	2,244	(0 - 4,561)

[1]HIV incidence was not measured in children PLHIV is calculated as the weighted total number of HIV-positive people, equivalent to multiplying the HIV prevalence by the population count.

[2]PLHIV is calculated as the weighted total number of HIV-positive people, equivalent to multiplying the HIV prevalence by the population count.

5.3 REFERENCES

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6. HIV PREVALENCE

6.1 BACKGROUND

This chapter presents representative estimates of HIV prevalence among children aged 6 weeks-14 years and adults aged 15-64 years at the national and district level by selected demographic and behavioral characteristics. It also presents estimates of the number of people living with HIV in Botswana. HIV testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Botswana's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. An HIV rapid test was not administered among individuals who self-reported previously being diagnosed with HIV; their blood sample was tested in the satellite laboratory. Appendix B describes the BAIS V HIV testing methodology

6.2 RESULTS

The following tables and figures report estimated HIV prevalence data by demographic characteristics.

Table 6.1: HIV prevalence by demographic characteristics: Adults aged 15-49 years

Prevalence of HIV among adults aged 15-49 years by sex and selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	11.0	2,961	21.5	4,149	16.3	7,110
Rural	13.6	2,152	29.1	2,986	21.2	5,138
District						
Gaborone	6.4	145	14.4	179	10.4	324
Francistown	16.7	113	24.0	154	20.2	267
Lobatse	5.4	166	16.3	265	11.0	431
Selibe Phikwe	20.3	60	25.0	119	23.0	179
Orapa	10.8	356	21.1	474	16.1	830
Jwaneng	8.6	225	15.1	247	11.6	472
Sowa	6.6	127	16.5	140	11.2	267
Ngwaketse South	12.5	218	26.3	295	19.2	513
Borolong	12.6	188	24.5	251	18.5	439
Ngwaketse West	10.4	158	28.5	214	19.8	372
South East	5.9	232	15.5	278	10.2	510
Kweneng East	12.1	143	20.0	240	16.4	383
Kweneng West	12.6	214	18.8	351	15.8	565
Kgatleng	8.5	157	23.4	219	16.5	376
Serowe Palapye	13.9	222	32.9	274	22.6	496

Table 6.1: HIV prevalence by demographic characteristics: Adults aged 15-49 years **(continued)**

Prevalence of HIV among adults aged 15-49 years by sex and selected demographic characteristics, BAIS V 2021

Characteristic	Males		Females		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Central Mahalapye	17.5	127	40.2	227	30.2	354
Central Bobonong	16.9	137	30.9	242	24.7	379
Central Boteti	10.3	189	23.0	258	16.5	447
Central Tutume	22.2	222	32.6	261	27.0	483
North East	14.2	124	34.1	235	25.3	359
Ngamiland East	9.7	403	22.0	566	15.8	969
Ngamiland West	13.3	255	29.7	465	22.4	720
Chobe	10.9	186	27.6	209	18.1	395
Ghanzi	8.3	219	20.9	260	14.2	479
Kgalagadi South	10.6	314	20.9	429	15.8	743
Kgalagadi North	12.3	213	21.6	283	16.9	496
Marital status						
Never married	7.5	3,329	21.1	4,510	14.3	7,839
Married or living together	19.9	1,530	26.5	2,268	23.3	3,798
Divorced or separated	19.3	236	39.0	291	28.2	527
Widowed	*	6	57.7	55	55.3	61
Education						
No education	31.5	248	45.2	213	36.5	461
Primary	26.4	542	51.0	604	37.4	1,146
Secondary	11.5	3,199	26.1	4,762	19.0	7,961
More than secondary	5.6	1,119	10.8	1,554	8.3	2,673
Wealth quintile						
Lowest	16.8	1,251	32.4	1,673	24.4	2,924
Second	15.6	1,027	31.6	1,486	23.5	2,513
Middle	12.3	882	25.3	1,238	18.6	2,120
Fourth	11.1	1,000	20.8	1,368	16.1	2,368
Highest	4.8	953	13.0	1,370	9.1	2,323
Pregnancy status						
Pregnant at time of survey	NA	NA	16.4	286	NA	NA
Not pregnant at time of survey	NA	NA	24.2	6,795	NA	NA
Total 15-49						
	11.8	5,113	23.8	7,135	17.9	12,248

*Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 6.2: Prevalence of HIV among adults aged 15-64 years by sex and selected demographic characteristics, BAIS V 2021

Prevalence of HIV among adults aged 15-64 years by sex and selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	13.7	3,408	23.8	4,919	18.9	8,327
Rural	18.0	2,680	31.3	3,756	24.6	6,436
District						
Gaborone	6.8	156	15.5	203	11.1	359
Francistown	18.4	127	27.1	171	22.6	298
Lobatse	7.4	191	18.9	312	13.4	503
Selibe Phikwe	22.4	71	30.0	141	26.7	212
Orapa	12.6	400	21.4	518	17.1	918
Jwaneng	9.5	247	17.6	289	13.4	536
Sowa	12.1	148	19.9	157	15.6	305
Ngwaketse South	17.6	281	26.4	396	21.9	677
Borolong	17.2	238	25.5	323	21.4	561
Ngwaketse West	15.3	201	30.4	278	23.2	479
South East	9.0	282	17.7	333	12.8	615
Kweneng East	15.5	179	21.4	296	18.7	475
Kweneng West	17.7	276	23.1	447	20.5	723
Kgatleng	13.3	195	24.4	273	19.3	468
Serowe Palapye	16.7	255	35.9	344	25.9	599
Central Mahalapye	22.8	163	41.3	304	33.3	467
Central Bobonong	21.2	161	37.1	319	30.5	480
Central Boteti	13.1	212	24.1	296	18.6	508
Central Tutume	26.6	271	36.0	346	31.1	617
North East	22.7	167	36.1	301	30.0	468
Ngamiland East	12.4	456	25.7	662	19.1	1,118
Ngamiland West	17.5	297	30.9	541	25.0	838
Chobe	13.9	218	30.8	255	21.4	473
Ghanzi	9.5	257	21.5	312	15.2	569
Kgalagadi South	14.7	381	22.8	514	18.8	895
Kgalagadi North	16.7	258	25.7	344	21.1	602

Table 6.2: Prevalence of HIV among adults aged 15-64 years by sex and selected demographic characteristics, BAIS V 2021 **(continued)**

Prevalence of HIV among adults aged 15-64 years by sex and selected demographic characteristics, BAIS V 2021

Characteristic	Males		Females		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Marital status						
Never married	9.4	3,572	23.5	5,091	16.6	8,663
Married or living together	23.2	2,178	27.4	2,910	25.3	5,088
Divorced or separated	22.8	290	35.8	435	29.4	725
Widowed	(44.8)	35	52.8	225	51.8	260
Education						
No education	33.5	534	38.1	596	35.4	1,130
Primary	34.0	907	45.8	1,314	40.2	2,221
Secondary	12.6	3,396	27.3	5,061	20.1	8,457
More than secondary	7.2	1,244	11.7	1,701	9.5	2,945
Wealth quintile						
Lowest	19.5	1,547	34.4	2,090	26.8	3,637
Second	19.8	1,199	33.8	1,833	27.0	3,032
Middle	16.8	1,044	27.8	1,504	22.3	2,548
Fourth	14.1	1,176	23.7	1,647	19.1	2,823
Highest	6.8	1,122	14.5	1,601	10.8	2,723
Pregnancy status						
Pregnant at time of survey	NA	NA	16.4	286	NA	NA
Not pregnant at time of survey	NA	NA	26.6	8,334	NA	NA
Total 15-64	15.2	6,088	26.2	8,675	20.8	14,763

( ) Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Figure 6.2.1: HIV prevalence among adults aged 15 - 64 years by district, BAIS V 2021 (map)

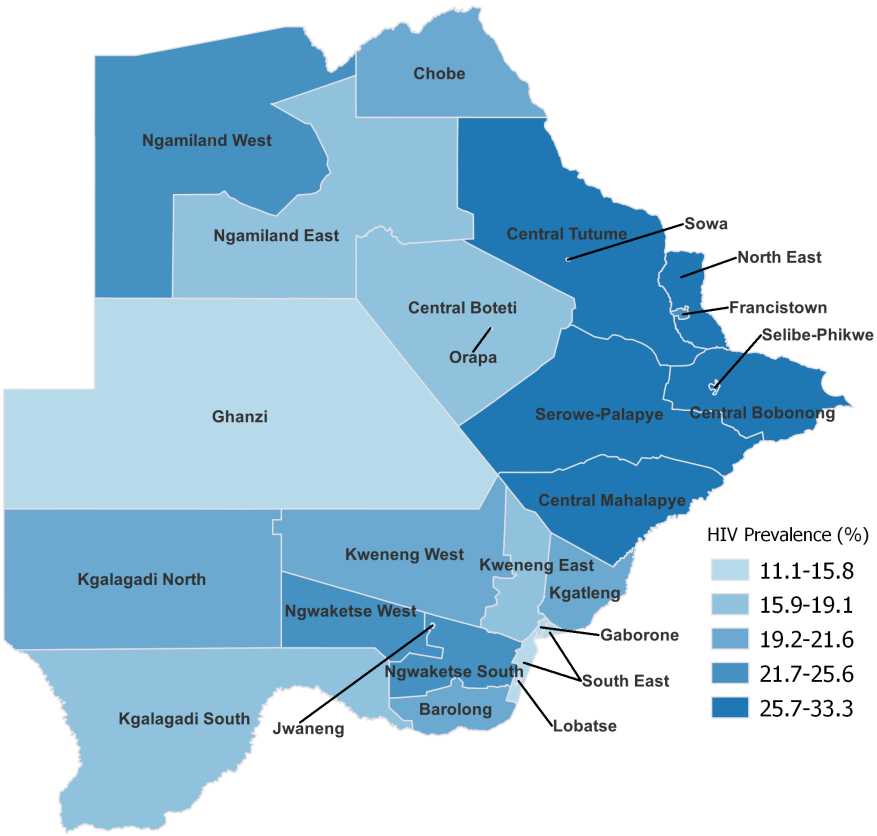


Figure 6.2.2: HIV prevalence among adults aged 15 - 65 years, by district, BAIS V 2021 (bar graph)

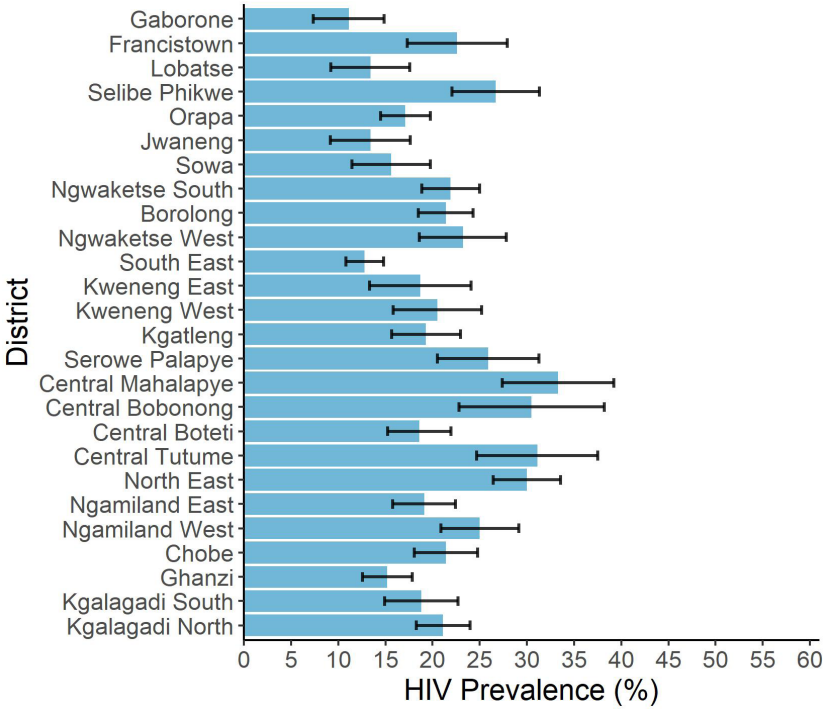
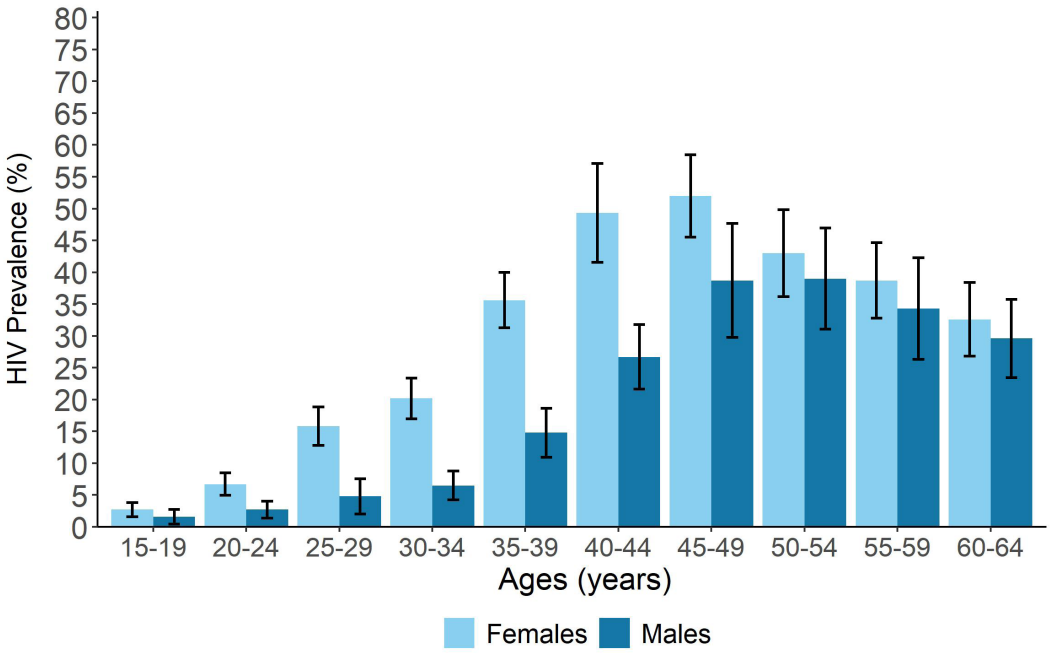


Table 6.3: HIV prevalence by age

Prevalence of HIV among children and adults aged 0-64 years by sex and age, BAIS V 2021

Age	Males		Females		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
0-17 months	0.0	456	0.0	474	0.0	930
18-59 months	0.1	835	1.2	925	0.6	1,760
5-9	2.4	1,213	0.3	1,277	1.3	2,490
10-14	0.6	1,061	0.5	1,114	0.5	2,175
Total 0-4	0.1	1,291	0.9	1,399	0.5	2,690
Total 0-14	1.0	3,565	0.6	3,790	0.8	7,355
15-19	1.6	880	2.7	1,011	2.1	1,891
20-24	2.7	768	6.7	1,137	4.7	1,905
25-29	4.8	765	15.8	1,078	10.3	1,843
30-34	6.5	698	20.2	1,060	13.5	1,758
35-39	14.8	742	35.6	1,161	25.4	1,903
40-44	26.7	691	49.3	939	38.0	1,630
45-49	38.7	569	52.0	749	45.3	1,318
50-54	39.0	450	43.0	607	41.0	1,057
55-59	34.3	299	38.7	535	36.7	834
60-64	29.6	226	32.6	398	31.3	624
Total 15-24	2.1	1,648	4.6	2,148	3.4	3,796
Total 15-49	11.8	5,113	23.8	7,135	17.9	12,248
Total 50-64	35.1	975	38.7	1,540	37.0	2,515
Total 15-64	15.2	6,088	26.2	8,675	20.8	14,763

Figure 6.3: HIV prevalence by age and sex, BAIS V 2021



7. HIV DIAGNOSIS AND TREATMENT

7.1 BACKGROUND

HIV testing is necessary for awareness of HIV status and is an essential component of HIV epidemic control targets. While many countries have expanded uptake of HIV testing services, making certain that everyone knows their current HIV status remains a challenge. BAIS V gathered data on HIV testing and awareness to help identify gaps in testing uptake, and whether there were subpopulations in need of expanded or community-based HIV testing services options such as self-testing, mobile testing, partner notification/testing, and index case testing. Awareness of HIV-positive status is the first step to engagement with HIV care and treatment services, accessing ART, prevention counseling for HIV-positive and HIV-negative individuals to reduce risk of HIV transmission or acquisition, and access to screening services for other comorbidities.

Once someone has been diagnosed, current guidelines recommend that they immediately be linked to HIV treatment services to start ART as soon as possible.[1,2] Treating people living with HIV as soon as possible can improve their immune recovery and preserve health, decreasing the risk of opportunistic infections, cancer, comorbidities and mortality. In addition, it can help them to protect their loved ones from sexual and vertical transmission of HIV. In 2016, after an extensive review of evidence of both the clinical and population-level benefits of expanding ART, WHO changed their ART policy recommendations to "Treat All" regardless of CD4 count. In June 2016, the Government of Botswana launched Botswana's "Treat All" strategy.[3] By November 2017, all countries in sub-Saharan Africa had adopted this policy, despite the challenges in ensuring uptake and implementation.[2]

7.2 RESULTS

Tables 7.1.A-C report on self-reported uptake of testing and receipt of results (ever or within the 12 months before the survey) among males, females, and by survey HIV test result and other selected characteristics. Figure 7.1.A illustrates self-reported testing in the 12 months before the survey in order to understand frequent or recent testing by age and sex.

Tables 7.2.A-C and Figure 7.2 present the proportion of participants who tested HIVpositive in BAIS V who reported awareness of their status as well as the proportion of those who were aware of their HIV-positive status who reported that they were also on ART.

Note that since participants are sometimes reluctant to reveal their HIV and treatment status in a household survey, BAIS V determined whether adults aged 15-64 years were taking ART, by screening their blood for the presence of selected ARVs (efavirenz, atazanavir, and dolutegravir) used in first- and second-line regimens in the country at the time of the survey. Since many tables in this report describe estimates among self-reported people living with HIV without adjustment for ARV detection, Tables 7.3.A-C reports the concordance of self-reported and actual ART use based upon these ARV biomarker data.

Table 7.1.A: Self-reported HIV testing: Males

Percentage of males aged 15-64 years who reported they had ever received an HIV test, and percentage who reported that they had received an HIV test in the 12 months before the survey, by result of BAIS V HIV test and selected demographic characteristics, BAIS V 2021

Characteristic	Among all males			Among males who did not self-report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Result of BAIS V HIV test						
HIV positive	99.1	9.1	910	87.5	20.4	73
HIV negative	83.8	33.4	4,767	83.8	33.4	4,760
Not tested	87.9	43.8	1,093	86.8	46.4	1,005
Residence						
Urban	87.2	33.8	3,980	85.4	37.0	3,505
Rural	85.2	29.4	2,790	82.4	33.6	2,333
District						
Gaborone	86.3	31.8	215	85.1	33.9	197
Francistown	88.6	37.3	146	86.6	42.3	122
Lobatse	88.7	36.7	225	87.7	39.8	207
Selibe Phikwe	92.8	34.6	86	91.1	42.8	69
Orapa	91.0	63.1	465	89.8	68.0	413
Jwaneng	89.0	47.6	282	87.9	52.0	254
Sowa	92.0	41.9	181	90.8	47.6	154
Ngwaketse South	84.7	34.0	325	82.3	35.7	281
Borolong	88.0	27.6	258	85.8	30.6	215
Ngwaketse West	88.7	27.0	195	86.9	30.9	166
South East	87.6	32.5	329	86.5	35.0	302
Kweneng East	88.6	34.2	211	86.5	38.9	179
Kweneng West	87.9	27.3	259	85.7	31.1	216
Kgatleng	86.6	35.2	236	85.1	36.8	214
Serowe Palapye	85.5	32.5	275	82.8	36.3	232
Central Mahalapye	92.4	27.4	187	90.6	33.6	150
Central Bobonong	84.9	28.1	169	81.2	33.5	135
Central Boteti	80.6	32.2	235	78.0	35.5	204
Central Tutume	87.1	27.5	275	83.4	32.2	215
North East	87.3	28.3	184	83.8	33.6	141
Ngamiland East	83.7	32.1	545	81.8	34.7	485
Ngamiland West	78.8	26.0	316	74.9	30.5	264
Chobe	87.7	42.0	236	86.1	44.8	207
Ghanzi	81.0	25.7	265	79.2	27.7	240
Kgalagadi South	83.9	30.4	408	81.6	33.9	357
Kgalagadi North	87.8	24.4	262	85.5	28.2	219

Table 7.1.A: Self-reported HIV testing: Males **(continued)**

Percentage of males aged 15-64 years who reported they had ever received an HIV test, and percentage who reported that they had received an HIV test in the 12 months before the survey, by result of BAIS V HIV test and selected demographic characteristics, BAIS V 2021

Characteristic	Among all males			Among males who did not self-report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Marital status						
Never married	81.4	30.2	4,017	79.8	32.1	3,676
Married or living together	94.4	35.9	2,350	92.9	43.2	1,847
Divorced or separated	92.9	33.4	346	91.3	38.9	278
Widowed	(92.0)	(25.4)	40	(87.6)	(35.9)	26
Education						
No education	84.6	22.3	474	78.4	27.8	340
Primary	89.0	20.4	885	83.3	28.0	604
Secondary	83.7	30.1	3,813	81.7	32.6	3,411
More than secondary	91.8	44.6	1,591	91.3	46.4	1,476
Wealth quintile						
Lowest	80.7	24.5	1,500	76.9	28.3	1,258
Second	87.1	31.9	1,291	84.2	37.1	1,067
Middle	88.9	31.0	1,183	86.8	35.1	998
Fourth	87.4	34.3	1,355	86.0	37.1	1,193
Highest	87.3	38.0	1,441	86.3	39.8	1,322
Age						
15-19	53.5	5.7	984	52.9	5.6	971
20-24	81.1	36.4	872	80.7	37.3	850
25-29	92.8	43.0	873	92.6	43.9	854
30-34	94.8	45.5	799	94.5	47.2	757
35-39	95.5	42.5	874	94.8	48.0	768
40-44	95.4	37.0	785	94.0	42.6	608
45-49	96.1	23.9	604	93.8	35.1	389
50-54	94.1	29.5	456	90.5	43.7	280
55-59	90.8	24.7	294	86.5	34.0	199
60-64	86.2	17.3	229	81.5	19.0	162
Total 15-24	67.1	20.8	1,856	66.4	21.0	1,821
Total 15-49	85.8	33.5	5,791	84.2	36.2	5,197
Total 50-64	91.0	24.8	979	86.6	33.5	641
Total 15-64	86.5	32.3	6,770	84.4	35.9	5,838

[1] Relates to PEPFAR HTS_TST: Number of individuals who received HIV testing services and received their test results.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 7.1.B: Self-reported HIV testing: Female

Percentage of females aged 15-64 years who reported they had ever received an HIV test, and percentage who reported that they had received an HIV test in the 12 months before the survey, by result of BAIS V HIV test and selected demographic characteristics, BAIS V 2021

Characteristic	Among all females			Among females who did not self-report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Result of BAIS V HIV test						
HIV positive	99.3	6.8	2,281	84.8	27.0	104
HIV negative	86.9	44.8	5,959	86.9	44.8	5,949
Not tested	84.8	43.3	1,223	82.0	48.5	1,032
Residence						
Urban	89.1	36.2	5,547	86.1	44.3	4,290
Rural	90.1	35.2	3,916	85.9	47.3	2,795
District						
Gaborone	94.2	32.6	242	93.3	36.9	206
Francistown	86.9	38.2	198	83.2	47.3	149
Lobatse	88.4	42.7	379	86.1	50.4	314
Selibe Phikwe	93.4	41.6	156	91.0	54.9	113
Orapa	90.4	48.0	595	88.1	56.1	478
Jwaneng	87.1	41.0	337	85.0	46.5	281
Sowa	91.2	47.0	196	89.4	55.9	161
Ngwaketse South	86.8	37.0	445	82.1	45.8	330
Borolong	90.8	35.5	351	87.9	43.3	266
Ngwaketse West	89.2	34.6	270	84.8	46.6	189
South East	88.0	34.8	400	85.7	39.2	336
Kweneng East	85.6	34.3	337	82.0	41.6	267
Kweneng West	91.1	43.6	439	88.5	53.6	339
Kgatleng	86.7	37.0	337	83.5	42.1	268
Serowe Palapye	92.0	38.0	365	88.1	52.3	241
Central Bobonong	88.1	32.6	329	81.7	47.9	209
Central Boteti	90.9	35.1	305	88.2	43.6	234
Central Tutume	89.2	34.9	347	83.7	49.4	227
North East	88.5	34.6	345	82.3	48.4	223
Ngamiland East	89.3	36.3	742	86.0	46.8	557
Ngamiland West	93.2	35.4	546	90.3	49.0	376
Chobe	89.0	32.9	268	84.8	44.4	191
Ghanzi	87.3	41.1	333	84.3	50.4	264
Kgalagadi South	84.7	38.3	545	80.7	46.8	431
Kgalagadi North	89.9	35.8	347	253	86.6	47.9

Table 7.1.B: Self-reported HIV testing: Female **(continued)**

Percentage of females aged 15-64 years who reported they had ever received an HIV test, and percentage who reported that they had received an HIV test in the 12 months before the survey, by result of BAIS V HIV test and selected demographic characteristics, BAIS V 2021

Characteristic	Among all females			Among females who did not self-report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Marital status						
Never married	83.9	37.8	5,661	79.5	46.2	4,373
Married or living together	97.7	34.7	3,095	96.9	44.7	2,264
Divorced or separated	98.9	29.5	467	98.4	42.1	309
Widowed	98.3	17.7	224	96.7	27.1	124
Education						
No education	90.1	26.7	513	84.4	37.9	320
Primary	95.2	22.2	1,268	91.7	36.5	712
Secondary	86.2	35.7	5,567	81.4	45.5	4,151
More than secondary	93.7	44.2	2,112	92.9	48.2	1,900
Wealth quintile						
Lowest	90.3	34.4	2,058	85.7	47.7	1,424
Second	89.4	37.1	1,892	84.6	51.0	1,321
Middle	91.0	35.6	1,649	87.9	45.6	1,201
Fourth	89.5	35.7	1,890	86.5	44.8	1,455
Highest	87.3	36.3	1,974	85.4	40.0	1,684
Age						
15-19	39.5	22.1	1,151	38.2	22.5	1,132
20-24	93.3	61.5	1,242	92.9	64.2	1,164
25-29	98.5	49.5	1,229	98.2	56.0	1,062
30-34	99.2	47.3	1,210	99.0	56.3	975
35-39	99.2	34.9	1,330	98.8	50.2	890
40-44	99.2	23.8	1,041	98.9	40.3	555
45-49	97.8	19.9	794	95.6	33.0	405
50-54	97.8	23.4	608	96.3	35.8	351
55-59	93.5	19.8	496	89.8	29.1	303
60-64	92.9	19.4	362	89.7	24.0	248
Total 15-24	65.8	41.4	2,393	64.4	42.5	2,296
Total 15-49	88.4	38.5	7,997	85.2	47.3	6,183
Total 50-64	95.1	21.1	1,466	92.2	30.2	902
Total 15-64	89.4	35.9	9,463	86.0	45.2	7,085

[1] Relates to PEPFAR HTS_TST: Number of individuals who received HIV testing services and received their test results.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 7.1.C: Self-reported HIV testing: Total

Percentage of adults aged 15-64 years who reported they had ever received an HIV test, and percentage who reported that they had received an HIV test in the 12 months before the survey, by result of BAIS V HIV test and selected demographic characteristics, BAIS V 2021

Characteristic	Among all adults			Among adults who did not self-report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Result of BAIS V HIV test						
HIV positive	99.2	7.6	3,191	86.1	23.8	177
HIV negative	85.3	39.0	10,726	85.3	39.0	10,709
Not tested	86.5	43.6	2,316	84.8	47.3	2,037
Residence						
Urban	88.2	35.0	9,527	85.7	40.5	7,795
Rural	87.7	32.3	6,706	84.0	39.9	5,128
District						
Gaborone	90.1	32.2	457	88.9	35.3	403
Francistown	87.8	37.7	344	85.0	44.6	271
Lobatse	88.5	39.9	604	86.9	45.3	521
Selibe Phikwe	93.1	38.6	242	91.0	49.4	182
Orapa	90.7	55.5	1,060	89.0	62.3	891
Jwaneng	88.1	44.4	619	86.6	49.4	535
Sowa	91.7	44.3	377	90.2	51.3	315
Ngwaketse South	85.7	35.5	770	82.2	40.3	611
Borolong	89.5	31.7	609	86.8	36.9	481
Ngwaketse West	89.0	31.0	465	85.8	38.5	355
South East	87.8	33.5	729	86.2	36.8	638
Kweneng East	87.0	34.2	548	84.2	40.3	446
Kweneng West	89.6	36.3	698	87.2	43.1	555
Kgatleng	86.7	36.1	573	84.3	39.5	482
Serowe Palapye	88.7	35.2	640	85.2	43.4	473
Central Mahalapye	92.9	30.4	496	89.7	42.6	332
Central Bobonong	86.8	30.8	498	81.5	41.4	344
Central Boteti	85.7	33.7	540	82.7	39.2	438
Central Tutume	88.1	31.1	622	83.5	40.0	442
Ngamiland West	86.8	31.2	862	82.7	39.9	640
Chobe	88.3	37.9	504	85.6	44.6	398
Ghanzi	84.0	33.2	598	81.5	38.0	504
Kgalagadi South	84.3	34.4	953	81.2	40.1	788
Kgalagadi North	88.9	30.3	609	86.0	37.7	472

Table 7.1.C: Self-reported HIV testing: Total **(continued)**

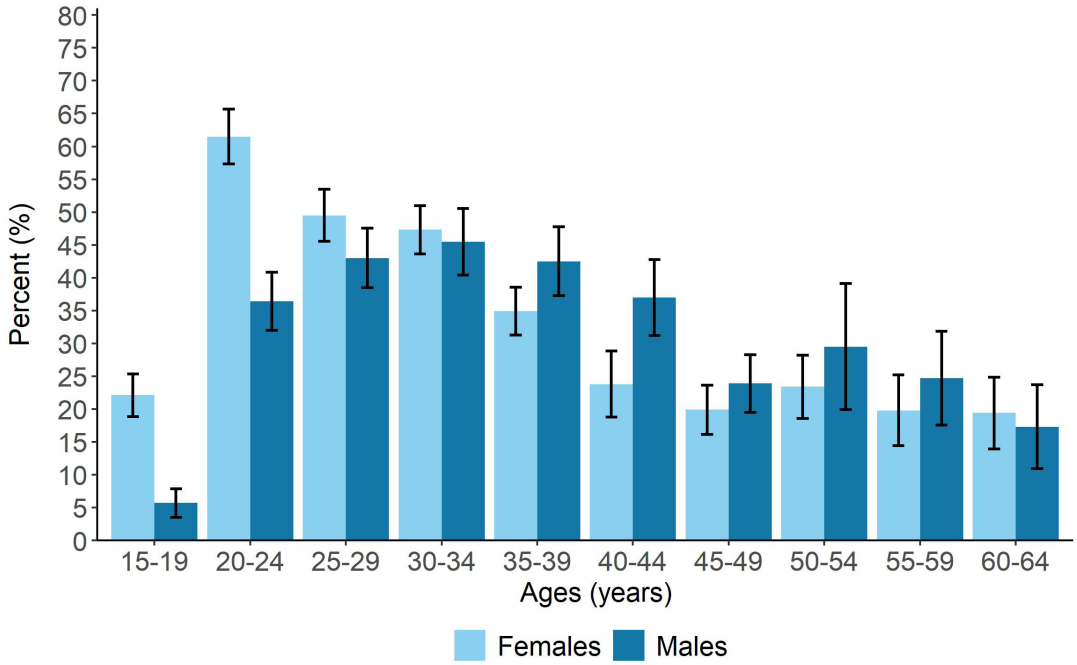
Percentage of adults aged 15-64 years who reported they had ever received an HIV test, and percentage who reported that they had received an HIV test in the 12 months before the survey, by result of BAIS V HIV test and selected demographic characteristics, BAIS V 2021

Characteristic	Among all adults			Among adults who did not self-report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Marital status						
Never married	82.7	34.1	9,678	79.6	38.8	8,049
Married or living together	96.0	35.3	5,445	94.8	43.9	4,111
Divorced or separated	95.9	31.5	813	94.5	40.3	587
Widowed	97.3	18.9	264	95.1	28.7	150
Education						
No education	86.9	24.2	987	80.7	31.8	660
Primary	92.2	21.4	2153	87.3	32.1	1,316
Secondary	85.0	33.0	9380	81.6	38.7	7,562
More than secondary	92.8	44.4	3703	92.1	47.3	3,376
Wealth quintile						
Lowest	85.5	29.5	3558	80.9	37.0	2,682
Second	88.3	34.6	3183	84.4	43.7	2,388
Middle	89.9	33.3	2832	87.3	40.0	2,199
Fourth	88.5	35.0	3245	86.3	40.8	2,648
Highest	87.3	37.1	3415	85.8	39.9	3,006
Age						
15-19	46.5	13.9	2135	45.6	14.0	2,103
20-24	87.2	49.0	2114	86.7	50.5	2,014
25-29	95.7	46.3	2102	95.3	49.7	1,916
30-34	97.0	46.4	2009	96.6	51.5	1,732
35-39	97.4	38.6	2204	96.6	49.0	1,658
40-44	97.4	30.3	1826	96.1	41.6	1,163
45-49	97.0	21.9	1398	94.6	34.2	794
50-54	96.0	26.3	1064	93.5	39.7	631
55-59	92.3	22.0	790	88.3	31.4	502
60-64	89.8	18.4	591	85.8	21.6	410
Total 15-24	66.4	31.1	4249	65.4	31.7	4,117
Total 15-49	87.1	36.0	13788	84.6	41.5	11,380
Total 50-64	93.2	22.9	2445	89.5	31.8	1,543
Total 15-64	88.0	34.1	16233	85.2	40.3	12,923

[1] Relates to PEPFAR HTS_TST: Number of individuals who received HIV testing services and received their test results.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Figure 7.1.A: Proportion of adults who self-reported having received an HIV test in the 12 months before the survey, by age and sex, BAIS V 2021



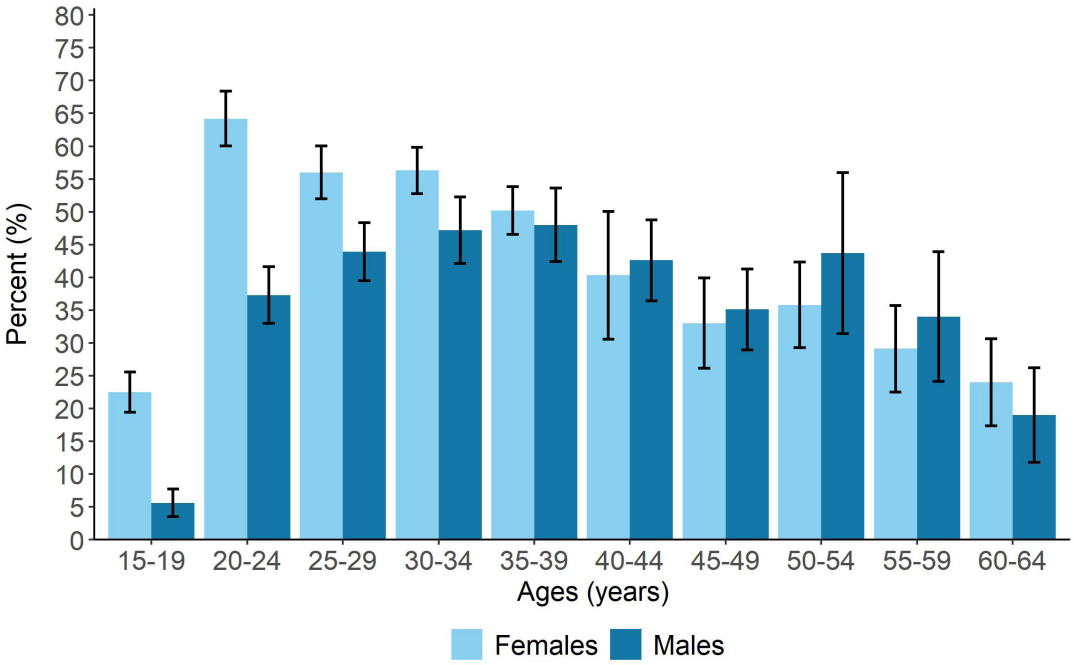


Figure 7.1.B: Proportion of adults who reported having received an HIV test in the 12 months before the survey among adults who did not self-report HIV positive, by age and sex, BAIS V 2021

Table 7.2.A: HIV diagnosis and treatment status: Males

Percent distribution of HIV-positive males aged 15-64 years, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, BAIS V 2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Residence					
Urban	7.3	2.9	89.7	100.0	488
Rural	6.5	2.0	91.5	100.0	503
District					
Gaborone					14
Francistown	(7.5)	(5.6)	(86.9)	(100.0)	26
Lobatse	*	*	*	*	16
Selibe Phikwe	*	*	*	*	17
Orapa	(3.3)	(3.8)	(92.9)	(100.0)	49
Jwaneng	(8.3)	(5.5)	(86.2)	(100.0)	27
Sowa	*	*	*	*	22
Ngwaketse South	(18.7)	(0.0)	(81.1)	(100.0)	45
Borolong	(8.7)	(0.0)	(91.3)	(100.0)	46
Ngwaketse West	(6.6)	(0.0)	(93.4)	(100.0)	33
South East	(0.0)	(0.0)	(100.0)	(100.0)	25
Kweneng East	(5.4)	(2.4)	(92.2)	(100.0)	30
Kweneng West	8.4	8.6	83.0	100.0	57
Kgatleng	(10.3)	(5.9)	(83.9)	(100.0)	27
Serowe Palapye	(1.8)	(5.3)	(92.8)	(100.0)	46
Central Mahalapye	(2.1)	(0.0)	(97.9)	(100.0)	39
Central Bobonong	(3.7)	(0.0)	(96.3)	(100.0)	35
Central Boteti	(7.2)	(4.1)	(88.7)	(100.0)	33
Central Tutume	6.6	4.3	89.1	100.0	73
North East	(8.7)	(3.8)	(87.5)	(100.0)	42
Ngamiland East	12.7	0.0	87.3	100.0	64
Ngamiland West	2.8	0.0	97.2	100.0	56
Chobe	(18.0)	(0.0)	(82.0)	(100.0)	33
Ghanzi	(13.6)	(4.7)	(81.7)	(100.0)	27
Kgalagadi South	12.0	1.6	86.5	100.0	61
Kgalagadi North	(2.4)	(2.0)	(95.6)	(100.0)	48
Marital status					
Never married	9.9	2.7	87.3	100.0	379
Married or living together	3.9	2.0	94.1	100.0	524
Divorced or separated	14.6	2.1	83.3	100.0	67
Widowed	*	*	*	*	16

Table 7.2.A: HIV diagnosis and treatment status: Males **(continued)**

Percent distribution of HIV-positive males aged 15-64 years, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, BAIS V 2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Education					
No education	4.4	4.3	91.3	100.0	174
Primary	4.0	1.1	94.9	100.0	299
Secondary	9.3	1.3	89.4	100.0	415
More than secondary	8.2	8.3	83.5	100.0	103
Wealth quintile					
Lowest	7.0	3.4	89.6	100.0	297
Second	7.0	1.7	91.3	100.0	231
Middle	6.1	0.4	93.5	100.0	183
Fourth	9.6	4.8	85.6	100.0	173
Highest	3.9	3.3	92.8	100.0	107
Age					
15-19	*	*	*	*	14
20-24	(13.3)	(0.0)	(86.7)	(100.0)	25
25-29	(16.7)	(7.8)	(75.5)	(100.0)	31
30-34	19.0	9.3	71.7	100.0	54
35-39	10.1	2.9	87.0	100.0	101
40-44	8.6	4.9	86.5	100.0	174
45-49	5.7	0.9	93.3	100.0	223
50-54	2.0	0.4	97.6	100.0	187
55-59	2.6	0.0	97.4	100.0	107
60-64	1.8	2.4	95.9	100.0	75
Total 15-24	(10.9)	(0.0)	(89.1)	(100.0)	39
Total 15-49	9.4	3.5	87.1	100.0	622
Total 50-64	2.1	0.7	97.2	100.0	369
Total 15-64	7.0	2.6	90.4	100.0	991

[1] Relates to Global AIDS Monitoring 2021 Indicator 1.2: People living with HIV on antiretroviral therapy (ART) and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving ART.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 7.2.B: HIV diagnosis and treatment status: Females

Percent distribution of HIV-positive females aged 15-64 years, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, BAIS V 2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Residence					
Urban	4.0	1.7	94.3	100.0	1,267
Rural	3.0	1.4	95.6	100.0	1,166
District					
Gaborone	(9.9)	(5.3)	(84.8)	100.0	35
Francistown	(5.5)	(0.0)	(94.5)	100.0	48
Lobatse	9.0	5.3	85.7	100.0	64
Selibe Phikwe	(2.2)	(0.0)	(97.8)	100.0	45
Orapa	8.8	4.0	87.2	100.0	119
Jwaneng	5.0	0.0	95.0	100.0	56
Sowa	(3.7)	(2.6)	(93.6)	100.0	33
Ngwaketse South	4.6	0.0	95.4	100.0	104
Borolong	2.7	4.2	93.1	100.0	87
Ngwaketse West	3.1	0.0	96.9	100.0	92
South East	2.2	2.9	94.8	100.0	66
Kweneng East	3.1	0.0	96.9	100.0	69
Kweneng West	1.7	1.2	97.1	100.0	109
Kgatleng	6.5	4.9	88.6	100.0	71
Serowe Palapye	3.0	2.1	94.9	100.0	131
Central Mahalapye	1.6	1.6	96.7	100.0	132
Central Bobonong	3.4	1.4	95.2	100.0	126
Central Boteti	1.0	3.5	95.4	100.0	75
Central Tutume	0.7	0.0	99.3	100.0	131
North East	1.1	0.9	98.0	100.0	111
Ngamiland East	4.1	1.2	94.8	100.0	182
Ngamiland West	1.0	0.0	99.0	100.0	174
Chobe	4.2	1.6	94.3	100.0	83
Ghanzi	7.9	2.5	89.6	100.0	74
Kgalagadi South	6.8	0.0	93.2	100.0	124
Kgalagadi North	0.9	0.0	99.1	100.0	92
Marital status					
Never married	3.6	1.4	94.9	100.0	1,324
Married or living together	2.5	1.4	96.1	100.0	835
Divorced or separated	6.0	2.8	91.2	100.0	163
Widowed	7.5	2.4	90.2	100.0	110

Table 7.2.B: HIV diagnosis and treatment status: Females **(continued)**

Percent distribution of HIV-positive females aged 15-64 years, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, BAIS V 2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Education					
No education	2.2	1.0	96.8	100.0	235
Primary	2.0	1.4	96.6	100.0	598
Secondary	3.1	0.9	96.0	100.0	1,390
More than secondary	10.0	6.0	84.0	100.0	208
Wealth quintile					
Lowest	2.2	0.7	97.1	100.0	686
Second	3.0	1.0	96.0	100.0	605
Middle	3.0	2.3	94.7	100.0	441
Fourth	5.8	1.0	93.2	100.0	418
Highest	4.9	4.1	91.0	100.0	283
Age					
15-19	(16.1)	(1.5)	(82.3)	100.0	26
20-24	18.3	2.0	79.7	100.0	92
25-29	5.6	3.6	90.8	100.0	177
30-34	3.4	3.2	93.4	100.0	231
35-39	1.4	0.4	98.2	100.0	419
40-44	2.9	1.0	96.1	100.0	477
45-49	1.6	2.4	95.9	100.0	389
50-54	3.2	1.4	95.3	100.0	269
55-59	6.9	0.0	93.1	100.0	221
60-64	0.8	1.8	97.5	100.0	132
Total 15-24	17.7	1.8	80.5	100.0	118
Total 15-49	3.5	1.8	94.7	100.0	1,811
Total 50-64	3.9	1.0	95.1	100.0	622
Total 15-64	3.6	1.6	94.8	100.0	2,433

[1] Relates to Global AIDS Monitoring 2021 Indicator 1.2: People living with HIV on antiretroviral therapy (ART) and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving ART.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 7.2.C: HIV diagnosis and treatment status: Total

Percent distribution of HIV-positive adults aged 15-64 years, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, BAIS V 2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Residence					
Urban	5.2	2.1	92.7	100.0	1755
Rural	4.3	1.6	94.1	100.0	1,669
District					
Gaborone	(9.1)	(3.7)	(87.2)	100.0	49
Francistown	6.4	2.4	91.2	100.0	74
Lobatse	6.6	3.9	89.5	100.0	80
Selibe Phikwe	1.4	1.8	96.8	100.0	62
Orapa	6.8	3.9	89.2	100.0	168
Jwaneng	6.3	2.1	91.6	100.0	83
Sowa	4.0	3.5	92.5	100.0	55
Ngwaketse South	10.4	0.0	89.6	100.0	149
Borolong	5.1	2.5	92.4	100.0	133
Ngwaketse West	4.2	0.0	95.8	100.0	125
South East	1.4	1.8	96.9	100.0	91
Kweneng East	4.0	0.9	95.1	100.0	99
Kweneng West	4.5	4.2	91.3	100.0	166
Kgatleng	7.7	5.2	87.1	100.0	98
Serowe Palapye	2.6	3.2	94.2	100.0	177
Central Mahalapye	1.8	1.2	97.1	100.0	171
Central Bobonong	3.5	1.0	95.5	100.0	161
Central Boteti	3.2	3.7	93.0	100.0	108
Central Tutume	3.4	1.9	94.7	100.0	204
North East	3.7	1.9	94.4	100.0	153
Ngamiland East	6.9	0.8	92.4	100.0	246
Ngamiland West	1.6	0.0	98.4	100.0	230
Chobe	9.2	1.0	89.8	100.0	116
Ghanzi	9.8	3.2	87.0	100.0	101
Kgalagadi South	8.8	0.6	90.6	100.0	185
Kgalagadi North	1.5	0.8	97.7	100.0	140
Marital status					
Never married	5.4	1.8	92.8	100.0	1,703
Married or living together	3.2	1.7	95.1	100.0	1,359
Divorced or separated	9.2	2.6	88.2	100.0	230
Widowed	7.8	2.1	90.1	100.0	126

Table 7.2.C: HIV diagnosis and treatment status: Total **(continued)**

Percent distribution of HIV-positive adults aged 15-64 years, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, BAIS V 2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Education					
No education	3.4	2.8	93.8	100.0	409
Primary	2.8	1.3	95.9	100.0	897
Secondary	5.0	1.0	94.0	100.0	1,805
More than secondary	9.3	6.8	83.8	100.0	311
Wealth quintile					
Lowest	4.0	1.7	94.3	100.0	983
Second	4.4	1.3	94.3	100.0	836
Middle	4.2	1.6	94.2	100.0	624
Fourth	7.2	2.3	90.5	100.0	591
Highest	4.6	3.8	91.6	100.0	390
Age					
15-19	(12.7)	(1.0)	(86.3)	(100.0)	40
20-24	16.8	1.4	81.8	100.0	117
25-29	8.2	4.5	87.3	100.0	208
30-34	7.0	4.6	88.3	100.0	285
35-39	3.9	1.1	95.0	100.0	520
40-44	4.9	2.3	92.8	100.0	651
45-49	3.4	1.8	94.8	100.0	612
50-54	2.7	1.0	96.4	100.0	456
55-59	5.1	0.0	94.9	100.0	328
60-64	1.2	2.0	96.8	100.0	207
Total 15-24	15.5	1.3	83.2	100.0	157
Total 15-49	5.5	2.3	92.2	100.0	2,433
Total 50-64	3.1	0.9	96.0	100.0	991
Total 15-64	4.8	1.9	93.2	100.0	3,424

[1] Relates to Global AIDS Monitoring 2021 Indicator 1.2: People living with HIV on antiretroviral therapy (ART) and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving ART.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

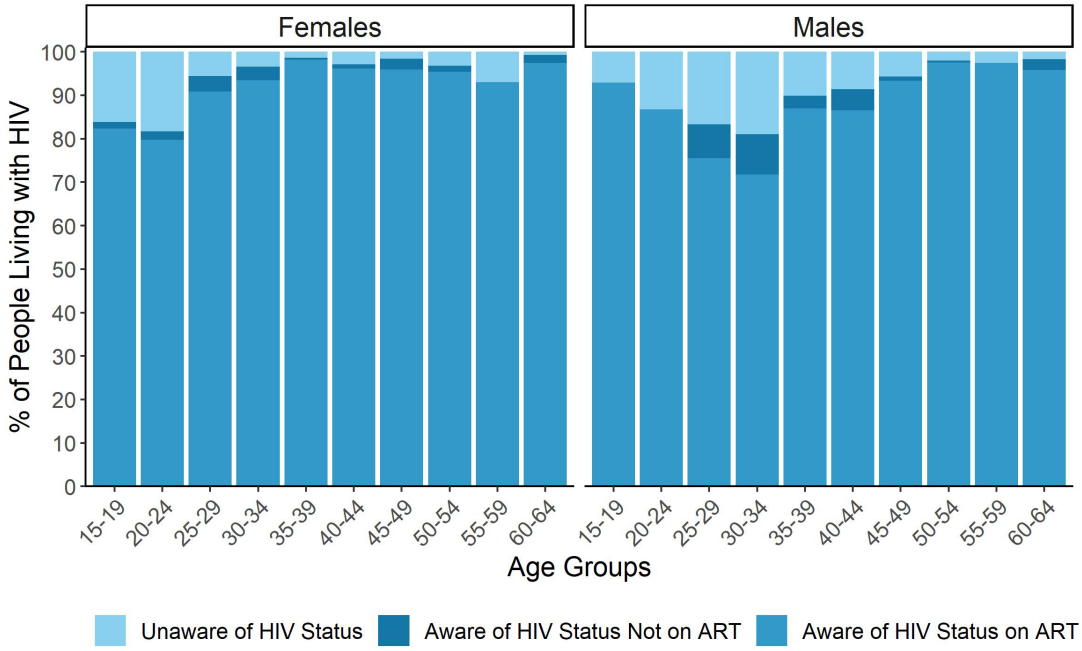


Figure 7.2: Proportion of adults living with HIV who reported awareness of HIV status and antiretroviral therapy use by age and sex, BAIS V 2021

Table 7.3.A: Concordance of self-reported treatment status versus presence of detectable antiretrovirals: Males

Percent distribution of HIV-positive men aged 15-64 years by presence of detectable antiretrovirals (ARVs) versus self-reported HIV treatment status, BAIS V 2021

	ARV status			
Characteristic	**Not detectable**	**Detectable**	**Total**	**Number**
Self-reported treatment status				
Not previously diagnosed	82.8	17.2	100.0	82
Previously diagnosed, not on antiretroviral therapy (ART)	*	*	*	24
Previously diagnosed, on ART	2.8	97.2	100.0	882
Total 15-24	(12.6)	(87.4)	(100.0)	39
Total 15-49	16.0	84.0	100.0	621
Total 50-64	4.2	95.8	100.0	368
Total 15-64	12.1	87.9	100.0	989

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 7.3.B: Concordance of self-reported treatment status versus presence of detectable antiretrovirals: Females

Percent distribution of HIV-positive women aged 15-64 years by presence of detectable antiretrovirals (ARVs) versus self-reported HIV treatment status, BAIS V 2021

	ARV status			
Characteristic	**Not detectable**	**Detectable**	**Total**	**Number**
Self-reported treatment status				
Not previously diagnosed	82.9	17.1	100.0	105
Previously diagnosed, not on antiretroviral therapy (ART)	(86.8)	(13.2)	(100.0)	35
Previously diagnosed, on ART	2.9	97.1	100.0	2,279
Total 15-24	28.4	71.6	100.0	118
Total 15-49	8.4	91.6	100.0	1,804
Total 50-64	6.0	94.0	100.0	618
Total 15-64	7.9	92.1	100.0	2,422

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 7.3.C: Concordance of self-reported treatment status versus presence of detectable antiretrovirals: Total

Percent distribution of HIV-positive adults aged 15-64 years by presence of detectable antiretrovirals (ARVs) versus self-reported HIV treatment status, BAIS V 2021

	ARV status			
Characteristic	**Not detectable**	**Detectable**	**Total**	**Number**
Self-reported treatment status				
Not previously diagnosed	82.9	17.1	100.0	187
Previously diagnosed, not on antiretroviral therapy (ART)	87.5	12.5	100.0	59
Previously diagnosed, on ART	2.9	97.1	100.0	3,161
Total 15-24	23.4	76.6	100.0	157
Total 15-49	10.9	89.1	100.0	2,425
Total 50-64	5.2	94.8	100.0	986
Total 15-64	9.4	90.6	100.0	3,411

7.3 REFERENCES

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3. World Health Organization. Treat all: policy adoption and implementation status in countries. Geneva: World Health Organization; 2017. http://apps.who.int/iris/bitstream/handle/10665/259532/WHO-HIV-2017.58-eng.pdf;jsessionid=B3857967C208CC9E4093EEA9CEDC3A0C?sequence=1. Accessed July 20, 2021.

8. VIRAL LOAD SUPPRESSION

8.1 BACKGROUND

Viral load suppression (VLS) is a key indicator of treatment efficacy in people living with HIV. Achieving VLS reduces the damage that HIV can do to the immune system, improves health outcomes, and reduces the risk of HIV transmission.

VLS among all people living with HIV is also an indicator of HIV programmatic success. In the 2016 Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection, WHO set a threshold for VLS of less than 1,000 HIV RNA copies/mL.[1] This definition of VLS has been used by UNAIDS, PEPFAR as well as across PHIAs to compare progress across countries and subnational areas.[2,3] It should be noted that, to improve treatment monitoring in people living with HIV, WHO has since lowered the threshold for viral suppression, defining it as <50 copies/mL, while the threshold for treatment failure remains at 1,000 HIV RNA copies/mL or more.[4]

This chapter describes VLS among the population of adults who tested HIV-positive by age, sex, district, and other demographic characteristics.

Recent research suggests other potential programmatic uses for viral load data. This chapter presents estimates, by district, of the proportion of the population with HIV viremia, which may be correlated with HIV incidence.[5] Population viremia is the prevalence of unsuppressed viral load (defined here as ≥ 1,000 copies/mL) measured without regard to HIV status—the numerator is the number of people with unsuppressed viral loads, and the denominator is the entire population tested. Districts with higher population viremia could be at risk of higher incidence.

BAIS V also reports on the proportion of people living with HIV with viral load of less than 400 copies/mL and 200 copies/mL. Although the current definition for VLS serves as a benchmark for monitoring global targets over time, using a lower viral load threshold for clinical monitoring may provide a number of potential benefits. Studies have shown that low-level viremia (detectable ongoing viral replication at levels below 1,000 copies/mL) is associated with a significant risk of subsequent treatment failure and drug resistance.[6,7] Botswana 2016 Integrated HIV Clinical Care Guidelines consider a viral load of less than 400 copies/mL to be suppressed.[8] WHO guidelines recommend enhanced adherence support for those with low level viremia, as well as repeat viral load monitoring at three months.[4]

Finally, BAIS V also evaluated access to viral load tests and receipt of results among people living with HIV in Botswana. In addition to the clinical benefits that viral load monitoring offers, knowing one's own viral load could also help protect a sexual partner from HIV. Several recent studies of couples in which one partner had HIV and the other did not, found that there was no HIV transmission despite sexual activity when viral load was sustained below 200 copies/mL.[9] In addition, a recent WHO review of the HIV transmission on ART studies found low level viremia was not associated with sexual transmission.[4] These studies serve as the basis of the U=U (Undetectable = Untransmittable) strategy, which encourages people living with HIV on ART to maintain an undetectable viral load for their own health and to eliminate the risk of HIV transmission to their sexual partners.[4]

8.2 RESULTS

The following tables and figures present VLS data of people living with HIV in Botswana, population viremia by district, and other viral load data at the time of the BAIS V survey.

Table 8.1: Viral load suppression (HIV RNA < 1,000 copies/milliliter) by demographic characteristics

Among HIV-positive adults aged 15-64 years, percentage with viral load suppression (VLS), by sex, self-reported HIV diagnosis and antiretroviral therapy (ART) use (adjusted by antiretroviral [ARV] biomarker testing), and selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
HIV diagnosis and treatment status[2]						
Unaware of HIV status	8.2	69	6.8	83	7.5	152
Aware of HIV status and not on ART	*	21	(7.9)	33	7.7	54
Aware of HIV status and on ART	96.6	899	98.6	2,309	97.9	3,208
Residence						
Urban	87.9	487	93.4	1,263	91.4	1,750
Rural	88.4	502	94.9	1,162	92.5	1,664
District						
Gaborone	*	14	(82.1)	35	(85.3)	49
Francistown	(86.9)	26	(91.9)	48	89.7	74
Lobatse	*	16	85.7	64	87.5	80
Selibe Phikwe	*	17	(100.0)	44	100.0	61
Orapa	(92.9)	49	88.2	118	89.9	167
Jwaneng	(83.6)	27	93.4	56	89.7	83
Sowa	*	22	(93.6)	33	89.8	55
Ngwaketse South	(79.4)	45	96.3	102	89.3	147
Borolong	(88.9)	45	90.9	87	90.1	132
Ngwaketse West	(93.4)	33	93.4	92	93.4	125
South East	*	24	94.8	66	96.8	90
Kweneng East	(92.2)	30	96.9	69	95.1	99
Kweneng West	83.4	57	94.8	109	90.2	166
Kgatleng	(83.9)	27	90.2	70	88.2	97
Serowe Palapye	(89.7)	46	93.0	130	91.9	176
Central Mahalapye	(100.0)	39	95.9	131	97.1	170
Central Bobonong	(96.3)	35	94.7	126	95.2	161
Central Boteti	(76.0)	33	95.4	75	88.6	108
Central Tutume	80.1	73	96.1	131	88.9	204
North East	(82.9)	42	97.9	110	92.7	152
Ngamiland East	83.8	64	95.3	182	91.6	246
Ngamiland West	90.7	56	96.5	174	94.7	230
Chobe	(84.2)	33	94.3	83	90.6	116
Ghanzi	(80.0)	27	89.6	74	86.5	101
Kgalagadi South	85.0	61	93.2	124	90.0	185
Kgalagadi North	(93.8)	48	99.1	92	97.0	140
Marital status						
Never married	84.8	377	93.9	1,321	91.3	1,698
Married or living together	92.6	524	95.2	833	94.0	1,357
Divorced or separated	76.6	67	91.7	161	86.0	228
Widowed	*	16	89.8	109	89.1	125

Table 8.1: Viral load suppression (HIV RNA < 1,000 copies/milliliter) by demographic characteristics **(continued)**

Among HIV-positive adults aged 15-64 years, percentage with viral load suppression (VLS), by sex, self-reported HIV diagnosis and antiretroviral therapy (ART) use (adjusted by antiretroviral [ARV] biomarker testing), and selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	**Percentage with VLS[1]**	**Number**	**Percentage with VLS[1]**	**Number**	**Percentage with VLS[1]**	**Number**
Education						
No education	88.9	174	96.9	235	92.5	409
Primary	92.7	299	96.3	595	94.9	894
Secondary	86.9	414	94.4	1,387	92.1	1,801
More than secondary	81.9	102	85.4	206	84.1	308
Wealth quintile						
Lowest	86.5	297	96.4	685	92.7	982
Second	89.3	230	95.2	602	93.1	832
Middle	91.9	183	93.5	441	92.9	624
Fourth	81.0	172	91.8	416	87.9	588
Highest	93.9	107	91.3	281	92.1	388
Total 15-24	(81.8)	39	74.9	118	77.1	157
Total 15-49	84.1	621	93.6	1,804	90.4	2,425
Total 50-64	96.2	368	95.3	621	95.7	989
Total 15-64	88.1	989	94.0	2,425	91.8	3,414

[1] Relates to Global AIDS Monitoring 2021 indicator 1.3: People living with HIV who have suppressed viral loads.
[2] Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Figure 8.1.1 Viral load suppression among HIV-positive adults 15-64 by district, BAIS V 2021 (map)

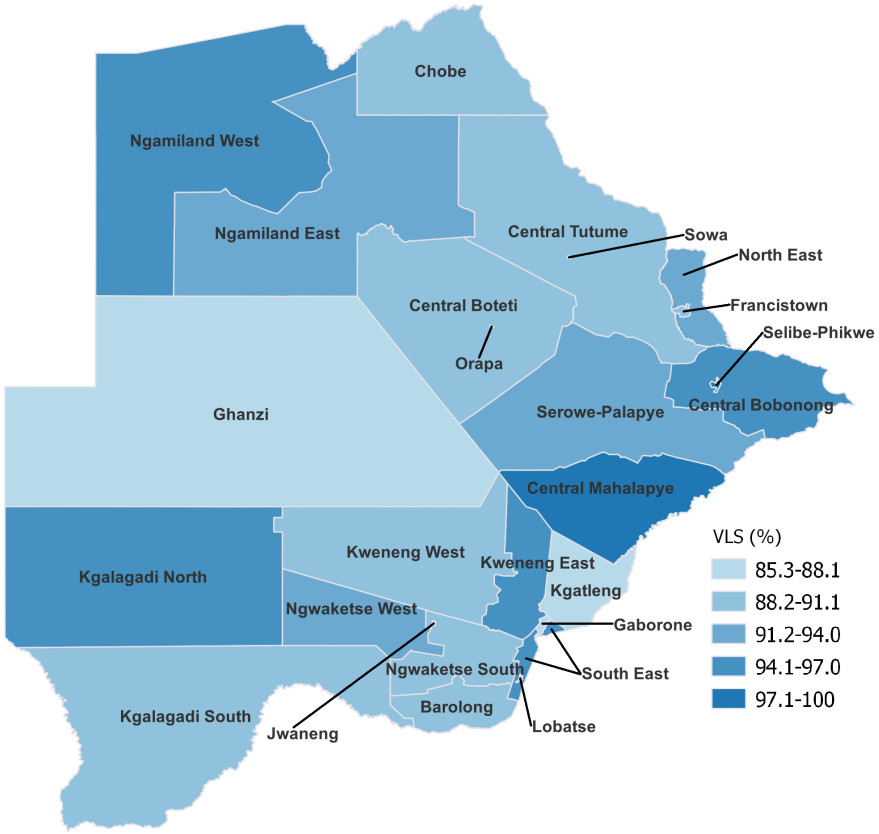

Figure 8.1.2 Viral load suppression among HIV-positive adults 15-64 by district, BAIS V 2021 (bar graph)

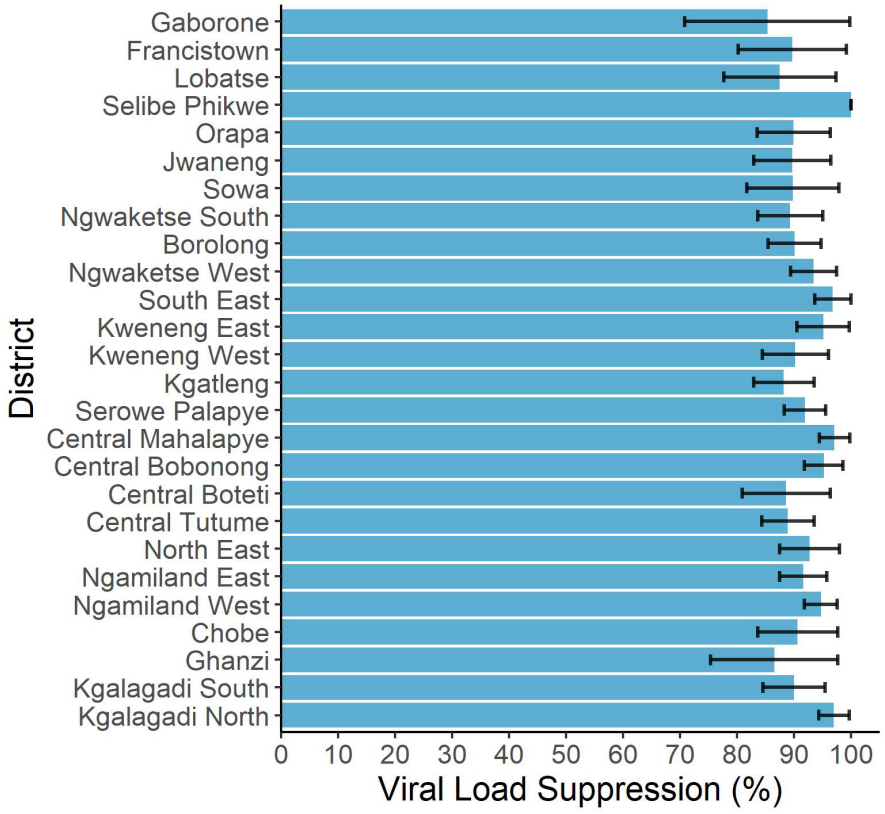

Table 8.2: Viral load suppression (HIV RNA < 1,000 copies per milliliter) by age and sex

Among HIV-positive people aged 0-64 years, percentage with viral load suppression (VLS) by sex and age, BAIS V 2021

	Males		Females		Total	
Age	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
0-14	*	8	*	9	*	17
15-19	*	14	(72.3)	26	(75.8)	40
20-24	(81.8)	25	76.1	92	77.7	117
25-29	(76.1)	31	91.8	175	88.1	206
30-34	66.9	54	91.7	231	85.9	285
35-39	83.9	101	97.8	416	93.8	517
40-44	83.6	174	95.4	477	91.3	651
45-49	90.8	222	94.0	387	92.6	609
50-54	94.9	187	95.3	268	95.2	455
55-59	98.7	106	93.1	221	95.5	327
60-64	95.5	75	98.2	132	97.1	207
0-11	*	6	*	7	*	13
12-17	*	8	*	8	*	16
15-24	(81.8)	39	74.9	118	77.1	157
25-34	71.0	85	91.7	406	86.9	491
35-44	83.7	275	96.5	893	92.4	1,168
45-54	92.5	409	94.5	655	93.6	1,064
55-64	97.4	181	95.2	353	96.1	534
Total 15-49	84.1	621	93.6	1,804	90.4	2,425
Total 50-64	96.2	368	95.3	621	95.7	989
Total 15-64	88.1	989	94.0	2,425	91.8	3,414

[1]Relates to Global AIDS Monitoring 2021 indicator 1.3: People living with HIV who have suppressed viral loads.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed.

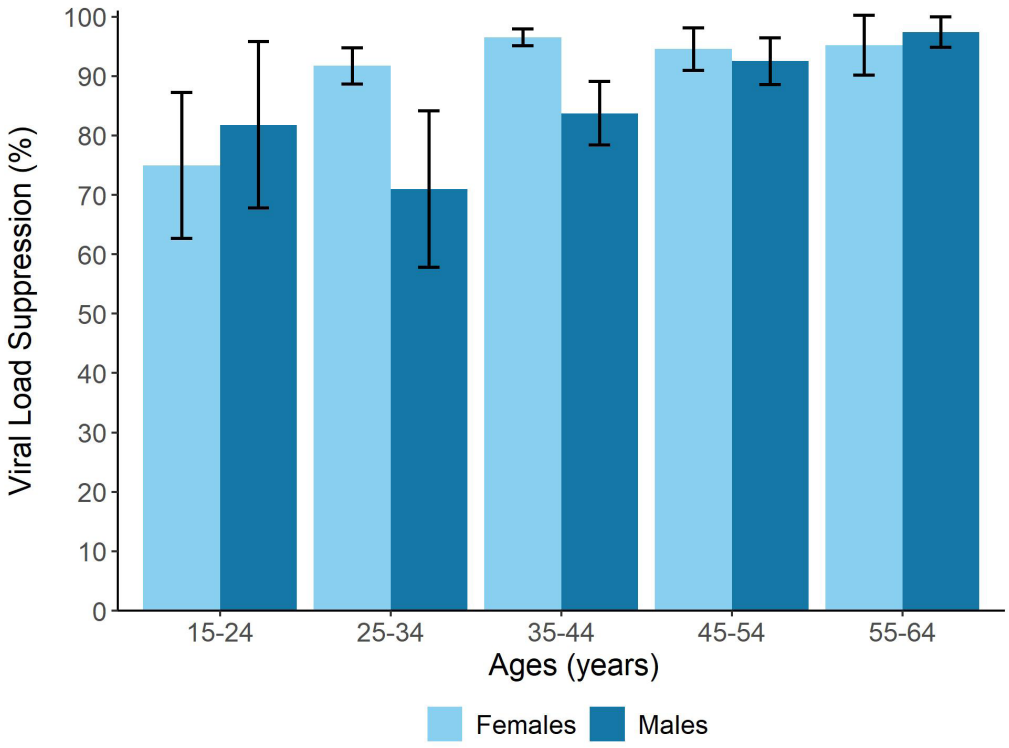

Figure 8.2: Viral load suppression among adults 15-64 years living with HIV by age and sex, BAIS V 2021

Table 8.3: Population viremia among the adult population in Botswana, by district

Population viremia[1] (unsuppressed viral load [VL], defined as HIV RNA ≥ 1,000 copies per milliliter) among adults aged 15-64 years, by District, BAIS V 2021

	Percentage with VL ≥ 1,000[1]	Number of adults tested for HIV	Mean log_{10} VL	Number of HIV-positive adults with VL results
District				
Gaborone	1.6	359	(1.8)	49
Francistown	2.3	298	1.7	74
Lobatse	1.7	503	1.6	80
Selibe Phikwe	0.0	212	1.2	61
Orapa	1.7	918	1.7	167
Jwaneng	1.4	536	1.5	83
Sowa	1.6	305	1.5	55
Ngwaketse South	2.3	677	1.6	147
Borolong	2.1	561	1.6	132
Ngwaketse West	1.5	479	1.4	125
South East	0.4	615	1.3	90
Kweneng East	0.9	475	1.5	99
Kweneng West	2.0	723	1.5	166
Kgatleng	2.3	468	1.7	97
Serowe Palapye	2.1	599	1.5	176
Central Mahalapye	1.0	467	1.4	170
Central Bobonong	1.5	480	1.5	161
Central Boteti	2.1	508	1.6	108
Central Tutume	3.4	617	1.6	204
North East	2.2	468	1.6	152
Ngamiland East	1.6	1,118	1.6	246
Ngamiland West	1.3	838	1.4	230
Chobe	2.0	473	1.5	116
Ghanzi	2.1	569	1.9	101
Kgalagadi South	1.9	895	1.6	185
Kgalagadi North	0.6	602	1.4	140
Total 15-64	1.7	14,763	1.6	3,414

[1]Population viremia is defined with a numerator of those with unsuppressed VL (1,000+ copies/mL) and denominator of all persons tested (HIV- and HIV+).
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Figure 8.3: Population viremia (proportion of unsuppressed viral load by the adult population) by district, BAIS V 2021 (map)

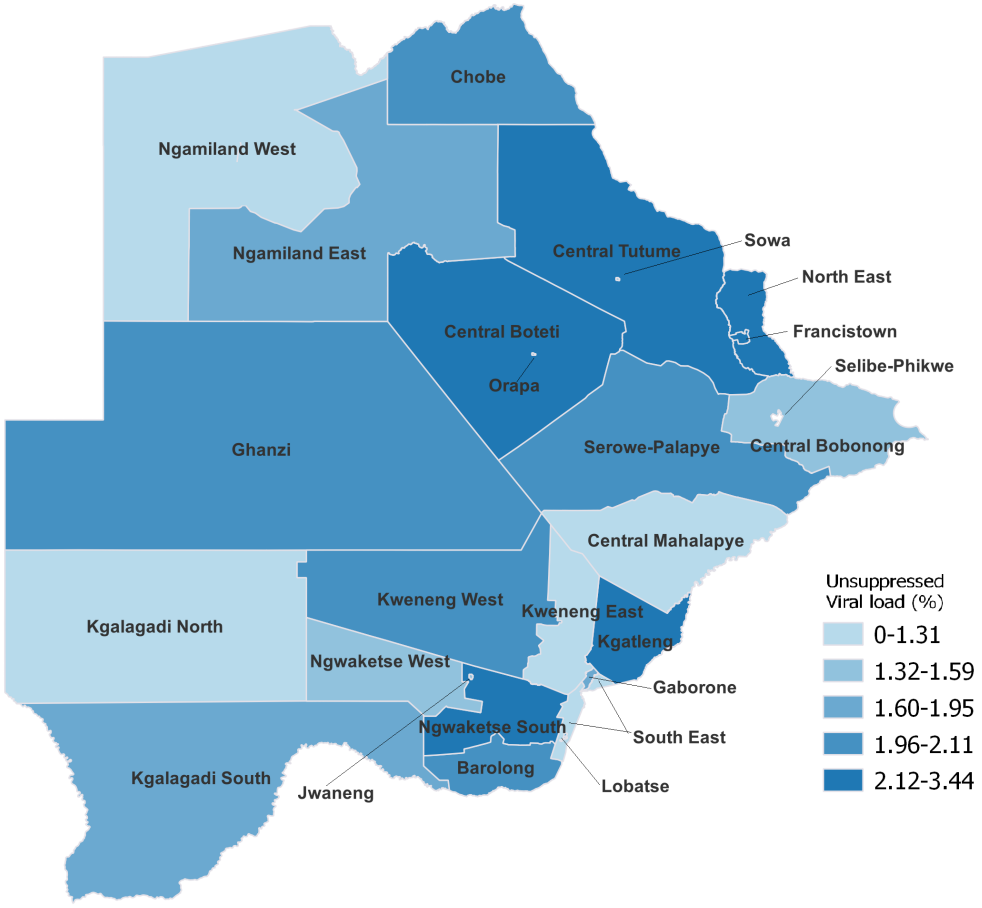

Table 8.4: Viral load < 200 HIV RNA copies per milliliter by demographic and treatment characteristics

Among HIV-positive adults aged 15-64 years, percentage with a viral load (VL) < 200 copies per milliliter, by sex, self-reported diagnosis and antiretroviral therapy (ART) use (adjusted by antiretroviral [ARV] biomarker testing), and selected demographic characteristics, BAIS V 2021

Characteristic	Males		Females		Total	
	Percentage with VL < 200 copies/mL	Number	Percentage with VL < 200 copies/mL	Number	Percentage with VL < 200 copies/mL	Number
HIV diagnosis and treatment status[1]						
Unaware of HIV status	7.6	69	2.3	83	5.1	152
Aware of HIV status and not on ART	*	21	(2.4)	33	4.3	54
Aware of HIV status and on ART	89.8	899	95.8	2,309	93.7	3,208
Number of years since initiating ART						
Less than 12 months	(95.1)	46	90.2	120	91.8	166
12 months or more	89.6	714	96.4	1,902	94.0	2,616
1 to 5 years	90.1	180	96.6	415	94.1	595
5 to 10 years	92.1	185	97.8	532	95.9	717
More than 10 years	87.9	349	95.6	955	93.1	1,304
Residence						
Urban	82.2	487	90.2	1,263	87.4	1,750
Rural	81.5	502	92.3	1,162	88.3	1,664
District						
Gaborone	*	14	(77.7)	35	(82.2)	49
Francistown	(79.2)	26	(87.2)	48	83.8	74
Lobatse	*	16	85.7	64	87.5	80
Selibe Phikwe	*	17	(95.6)	44	97.2	61
Orapa	(86.2)	49	85.6	118	85.8	167
Jwaneng	(83.6)	27	93.4	56	89.7	83
Sowa	*	22	(93.6)	33	86.5	55
Ngwaketse South	(75.5)	45	91.0	102	84.5	147
Borolong	(87.4)	45	87.9	87	87.7	132
Ngwaketse West	(86.1)	33	91.2	92	89.6	125
South East	*	24	93.1	66	94.7	90
Kweneng East	(81.7)	30	92.8	69	88.6	99
Kweneng West	78.9	57	91.6	109	86.4	166
Kgatleng	(81.1)	27	83.7	70	82.9	97
Serowe Palapye	(82.4)	46	90.1	130	87.5	176
Central Mahalapye	(93.5)	39	93.6	131	93.6	170
Central Bobonong	(91.1)	35	93.7	126	93.0	161
Central Tutume	73.2	73	95.1	131	85.3	204
North East	(71.7)	42	96.3	110	87.8	152
Ngamiland East	76.5	64	92.5	174	93.2	230
Ngamiland West	87.1	56	96.0	83	88.7	116
Chobe	(79.6)	33	93.8	83	88.7	116
Ghanzi	(61.7)	27	86.7	74	78.5	101

Table 8.4: Viral load < 200 HIV RNA copies per milliliter by demographic and treatment characteristics **(continued)**

Among HIV-positive adults aged 15-64 years, percentage with a viral load (VL) < 200 copies per milliliter, by sex, self-reported diagnosis and antiretroviral therapy (ART) use (adjusted by antiretroviral [ARV] biomarker testing), and selected demographic characteristics, BAIS V 2021

Characteristic	Males		Females		Total	
	Percentage with VL < 200 copies/mL	Number	Percentage with VL < 200 copies/mL	Number	Percentage with VL < 200 copies/mL	Number
Kgalagadi South	76.3	61	93.2	124	86.5	185
Kgalagadi North	(81.4)	48	92.9	92	88.3	140
Marital status						
Never married	80.3	377	91.3	1,321	88.2	1,698
Married or living together	84.3	524	93.2	833	89.1	1,357
Divorced or separated	75.3	67	84.0	161	80.7	228
Widowed	*	16	82.7	109	82.8	125
Education						
No education	85.1	174	90.9	235	87.7	409
Primary	84.3	299	93.3	595	89.7	894
Secondary	82.6	414	92.4	1,387	89.4	1,801
More than secondary	69.9	102	79.6	206	76.0	308
Wealth quintile						
Lowest	81.6	297	92.9	685	88.7	982
Second	82.8	230	93.4	602	89.6	832
Middle	86.1	183	90.3	441	88.7	624
Fourth	73.8	172	88.7	416	83.4	588
Highest	86.7	107	87.7	281	87.4	388
Age						
15-19	*	14	(70.7)	26	(74.9)	40
20-24	(63.9)	25	73.0	92	70.4	117
25-29	(70.5)	31	87.2	175	83.3	206
30-34	63.4	54	90.2	231	83.9	285
35-39	78.9	101	96.3	416	91.3	517
40-44	78.1	174	93.3	477	88.0	651
45-49	85.4	222	88.6	387	87.2	609
50-54	85.1	187	92.1	268	88.8	455
55-59	92.1	106	90.0	221	90.9	327
60-64	91.6	75	95.0	132	93.6	207
Total 15-24	(70.7)	39	72.3	118	71.8	157
Total 15-49	78.6	621	90.7	1,804	86.7	2,425
Total 50-64	88.7	368	92.1	621	90.6	989
Total 15-64	81.9	989	91.0	2,425	87.7	3,414

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 8.5: Self-reported viral load testing

Percentage of HIV-positive adults aged 15-64 years who reported they had ever had a viral load (VL) test, and among those who had a VL test, percentage who reported that they received VL results from their last test, by selected demographic characteristics, BAIS V 2021

Characteristic	Among all HIV-positive adults receiving HIV care		Among adults who ever had a VL test	
	Percentage who ever had a VL test	Number	Percentage who received VL results from their last test	Number
Sex				
Male	93.9	873	66.9	820
Female	94.6	2,237	68.2	2,095
Residence				
Urban	94.2	1,584	68.5	1,484
Rural	94.6	1,526	66.5	1,431
District				
Gaborone	(98.2)	41	(74.6)	40
Francistown	94.7	67	67.1	63
Lobatse	92.9	72	80.5	68
Selibe Phikwe	95.9	58	76.5	56
Orapa	94.8	145	75.5	136
Jwaneng	98.7	76	77.2	75
Sowa	100.0	51	64.8	51
Ngwaketse South	91.6	127	65.6	119
Borolong	95.2	116	53.1	110
Ngwaketse West	92.4	119	62.5	110
South East	88.9	86	84.1	76
Kweneng East	97.1	89	68.5	86
Kweneng West	93.6	144	58.7	135
Kgatleng	89.6	86	59.9	76
Serowe Palapye	98.0	166	73.9	163
Central Mahalapye	97.6	163	69.2	159
Central Bobonong	97.2	154	72.9	150
Central Boteti	91.7	99	58.9	91
Central Tutume	91.9	189	62.4	175
North East	96.7	146	64.3	140
Ngamiland East	92.1	218	65.8	201
Ngamiland West	87.8	220	58.0	194
Chobe	93.5	98	52.4	92
Ghanzi	86.5	90	69.4	78
Kgalagadi South	94.9	159	70.0	150
Kgalagadi North	92.8	131	45.0	121
Central Boteti	91.7	99	58.9	91
Central Tutume	91.9	189	62.4	175
North East	96.7	146	64.3	140
Ngamiland East	92.1	218	65.8	201
Ngamiland West	87.8	220	58.0	194

Table 8.5: Self-reported viral load testing (continued)

Percentage of HIV-positive adults aged 15-64 years who reported they had ever had a viral load (VL) test, and among those who had a VL test, percentage who reported that they received VL results from their last test, by selected demographic characteristics, BAIS V 2021

Characteristic	Among all HIV-positive adults receiving HIV care		Among adults who ever had a VL test	
	Percentage who ever had a VL test	Number	Percentage who received VL results from their last test	Number
Chobe	93.5	98	52.4	92
Ghanzi	86.5	90	69.4	78
Kgalagadi South	94.9	159	70.0	150
Kgalagadi North	92.8	131	45.0	121
Marital status				
Never married	94.6	1,537	69.6	1,437
Married or living together	93.9	1,252	66.5	1,168
Divorced or separated	95.7	208	60.3	201
Widowed	94.9	110	71.0	106
Education				
No education	87.9	366	57.0	323
Primary	95.6	838	67.9	793
Secondary	94.2	1,635	68.5	1,532
More than secondary	98.3	270	72.4	266
Wealth quintile				
Lowest	92.2	898	65.0	822
Second	93.3	769	64.9	714
Middle	96.1	569	69.2	545
Fourth	95.2	532	75.8	507
Highest	96.3	342	62.6	327
Age				
15-19	(93.5)	33	(65.1)	30
20-24	87.9	94	54.4	81
25-29	88.8	170	67.4	143
30-34	94.4	249	67.4	234
35-39	95.1	481	67.9	453
40-44	94.1	596	66.9	566
45-49	96.7	571	69.6	545
50-54	94.7	424	72.3	402
55-59	96.1	306	67.7	291
60-64	91.3	186	60.6	170
Total 15-24	89.8	127	58.2	111
Total 15-49	94.4	2,194	67.5	2,052
Total 50-64	94.4	916	68.4	863
Total 15-64	94.4	3,110	67.7	2,915

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 8.6: Viral load < 400 HIV RNA copies per mililiter by demographic and treatment characteristics

Among HIV-positive adults aged 15-64, percentage with a viral load (VL) < 400 copies per milliliter, by sex, self-reported diagnosis and antiretroviral therapy (ART) use (adjusted by antiretroviral [ARV] biomarker testing), and selected demographic characteristics, BAIS V 2021

Characteristic	Males		Females		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
HIV diagnosis and treatment status[1]						
Unaware of HIV status	8.2	69	5.0	83	6.7	152
Aware of HIV status and not on ART	*	21	(2.4)	33	4.9	54
Aware of HIV status and on ART	94.0	899	98.0	2,309	96.6	3,208
Residence						
Urban	85.6	487	92.6	1,263	90.2	1,750
Rural	86.1	502	94.2	1,162	91.2	1,664
District						
Gaborone	*	14	(82.1)	35	(85.3)	49
Francistown	(82.4)	26	(90.1)	48	86.8	74
Lobatse	*	16	85.7	64	87.5	80
Selibe Phikwe	*	17	(100.0)	44	100.0	61
Orapa	(92.9)	49	86.8	118	89.0	167
Jwaneng	(83.6)	27	93.4	56	89.7	83
Sowa	(84.6)	22	(93.6)	33	89.8	55
Ngwaketse South	(78.0)	45	96.3	102	88.6	147
Borolong	(88.9)	45	90.9	87	90.1	132
Ngwaketse West	(90.2)	33	91.2	92	90.9	125
South East	*	24	93.1	66	94.7	90
Kweneng East	(89.5)	30	96.9	69	94.1	99
Kweneng West	81.8	57	93.5	109	88.7	166
Kgatleng	(83.9)	27	88.7	70	87.1	97
Serowe Palapye	(87.2)	46	91.6	130	90.1	176
Central Mahalapye	(100.0)	39	94.3	131	96.0	170
Central Bobonong	(91.1)	35	94.7	126	93.7	161
Central Boteti	(72.5)	33	94.1	75	86.5	108
Central Tutume	75.7	73	96.1	131	87.0	204
North East	(75.8)	42	97.2	110	89.8	152
Ngamiland East	83.8	64	94.5	182	91.0	246
Ngamiland West	89.4	56	96.0	174	93.9	230
Ghanzi	(72.6)	27	86.7	74	82.0	101
Kgalagadi South	83.2	61	93.2	124	89.2	185
Kgalagadi North	(91.9)	48	99.1	92	96.2	140

Table 8.6: Viral load < 400 HIV RNA copies per mililiter by demographic and treatment characteristics **(continued)**

Among HIV-positive adults aged 15-64, percentage with a viral load (VL) < 400 copies per milliliter, by sex, self-reported diagnosis and antiretroviral therapy (ART) use (adjusted by antiretroviral [ARV] biomarker testing), and selected demographic characteristics, BAIS V 2021

Characteristic	Males		Females		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
Marital status						
Never married	83.2	377	93.2	1,321	90.4	1,698
Married or living together	89.4	524	94.7	833	92.2	1,357
Divorced or separated	76.1	67	90.1	161	84.8	228
Widowed	*	16	88.4	109	87.9	125
Education						
No education	88.5	174	96.5	235	92.1	409
Primary	89.1	299	95.3	595	92.8	894
Secondary	84.2	414	93.8	1,387	90.8	1,801
More than secondary	81.2	102	84.8	206	83.5	308
Wealth quintile						
Lowest	85.7	297	96.0	685	92.2	982
Second	85.5	230	94.3	602	91.1	832
Middle	88.4	183	92.3	441	90.8	624
Fourth	79.7	172	91.4	416	87.2	588
Highest	93.1	107	90.7	281	91.4	388
Total 15-24	(75.1)	39	73.1	118	73.8	157
Total 15-49	82.0	621	93.1	1,804	89.4	2,425
Total 50-64	93.4	368	93.7	621	93.6	989
Total 15-64	85.8	989	93.2	2,425	90.6	3,414

[1]Relates to Global AIDS Monitoring 2021 indicator 1.3: People living with HIV who have suppressed viral loads.

[2]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Table 8.7: Viral load < 400 HIV RNA copies per mililiter by age and sex

Among HIV-positive adults aged 15-64 years, percentage with viral load suppression (HIV RNA < 400 copies per mL) by sex and age, BAIS V 2021

Age	Males		Females		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
0-14	*	8	*	9	*	17
15-19	*	14	(70.7)	26	(74.9)	40
20-24	(71.1)	25	74.1	92	73.2	117
25-29	(76.1)	31	90.8	175	87.4	206
30-34	65.2	54	91.7	231	85.5	285
35-39	82.6	101	97.8	416	93.4	517
40-44	83.0	174	95.0	477	90.8	651
45-49	87.4	222	93.3	387	90.7	609
50-54	91.4	187	93.9	268	92.8	455
55-59	95.8	106	92.0	221	93.6	327
60-64	94.4	75	95.9	132	95.2	207
15-24	(75.1)	39	73.1	118	73.8	157
25-34	70.1	85	91.3	406	86.3	491
35-44	82.8	275	96.3	893	92.0	1,168
45-54	89.1	409	93.5	655	91.5	1,064
55-64	95.2	181	93.6	353	94.3	534
Total 15-49	82.0	621	93.1	1,804	89.4	2,425
Total 50-64	93.4	368	93.7	621	93.6	989
Total 15-64	85.8	989	93.2	2,425	90.6	3,414

[1]Relates to Global AIDS Monitoring 2021 indicator 1.3: People living with HIV who have suppressed viral loads.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

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9. UNAIDS 95-95-95 TARGETS

9.1 BACKGROUND

To bring the HIV epidemic under control, UNAIDS has set targets that by 2025, 95% of all people living with HIV would know their HIV status; 95% of all persons diagnosed with HIV would receive sustained ART; and 95% of all persons receiving ART would have VLS, defined by UNAIDS as HIV RNA < 1,000 copies/mL.[2]

While Chapter 7 provides results on coverage of HIV testing and treatment services and Chapter 8 reports VLS among all HIV-positive individuals, irrespective of knowledge of status or ART use, this chapter presents the status of the 95-95-95, which reflects each stage of program performance. Awareness of HIV-positive status among people living with HIV and current ART use among those who are aware of their HIV-positive status are indicators of access to services. VLS among those who know their HIV-positive status and are on treatment not only provides an indication of access to and retention in care, but also provides a measure of program success. The overall 95-95-95 target of VLS among all HIV-positive individuals of 85.7% (the product of 95% of people living with HIV diagnosed, 95% of those diagnosed on treatment, and 95% of those on treatment achieving VLS) or greater is an indication of successful testing and treatment services.[1]

BAIS V measured the 95-95-95 indicators using self-reported data adjusted with one of two types of biomarker data: either ARV biomarker or having a viral load result below 200 copies/mL. For instance, in the ARV-adjusted estimates at the national and subnational district levels, individuals were defined as 'aware' of their HIV-positive status if they reported knowing they were HIV positive before testing as part of BAIS V or if they had a detectable ARV in their blood. Individuals were categorized as 'on treatment' if they or their parent/guardian reported ART use or if they had an ARV detectable in their blood. This chapter also presents 95-95-95 estimates at the national level using self-reported data adjusted for having a viral load below 200 copies/mL. Recent research suggests that a viral load measurement below 200 HIV RNA copies/mL may be a useful alternative to ARV detection for determining awareness and treatment status since individuals are unlikely to have a viral load below 200 copies/mL if they are not on ART.[3]

The tables in this chapter present the 95-95-95 results in two ways, as conditional, and overall percentages. In both the conditional and the overall cascade, the denominator for the first 95, awareness of HIV-positive status, is all the adults or children li iving with HIV in the country. However, in the conditional 95-95-95 cascade (shown in Tables 9.1.B, 9.2.B, 9.4.B, and 9.5B), the denominator for the second and third 95 indicator is the value of the target preceding it. In other words, the second 95 is the percentage of people on ART among those aware of their HIV-positive status (diagnosed), and the third 95 is the percentage of people with VLS among those on treatment.

In the 95-95-95 overall percentages tables (9.1.A, 9.2.A, 9.4.A, 9.5.A), the denominator is the same for each 95 indicator: the overall population of adults or children living with HIV in the country. Thus, while the first 95 is the same as in the conditional table, the second 95 estimate is the percentage of people receiving treatment among the overall population of adults living with HIV in the country, while the third 95 is the percentage of people achieving VLS on ART among all the adults living with HIV in Botswana.

The figures in this chapter present both conditional percentages (the estimates shown in the insets in the figures) and overall percentages (represented by the bar heights in the figures).

Note that in each 95-95-95 table, individuals with VLS who were not aware of their HIV-positive status or were not on ART, were excluded from the numerator for the third 95 (VLS among those on ART). For this reason, the VLS estimates in the overall 95-95-95 are sometimes slightly lower than VLS estimates reported in the previous chapter, which may include VLS data from individuals with low viral loads who were not receiving treatment, such as individuals who have transiently low viral loads after seroconversion and elite controllers—a small subset of people living with HIV whose immune systems are able to maintain VLS for a period without treatment. Thus, the overall 95-95-95 VLS estimates represent the percentage of the adult population living with HIV known to have been reached by the national HIV program and who are benefiting at each step of the cascade.

9.2 RESULTS

The following tables and figures describe progress towards the 95-95-95 targets overall and by demographic characteristics in adults. Pediatric tables are also provided but should be interpreted with caution given the low HIV prevalence and consequently small number of children who tested positive for HIV in the survey.

Table 9.1.A: Adult 95-95-95 (self-reported and antiretroviral biomarker data); overall percentages

95-95-95 targets among people living with HIV aged 15-64 years based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for a having a detectable antiretroviral (ARV) in blood, by sex and age, BAIS V 2021

Diagnosed

Age	Males		Females		Total	
	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number
15-24	(89.1)	39	82.3	118	84.5	157
25-34	82.0	85	95.6	408	92.5	493
35-49	92.2	497	98.0	1,281	95.9	1,778
50-64	97.9	368	96.1	621	96.9	989
15-49	90.6	621	96.5	1,807	94.5	2,428
15-64	93.0	989	96.4	2,428	95.1	3,417

On Treatment

Age	Males		Females		Total	
	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
15-24	(89.1)	39	80.5	118	83.2	157
25-34	73.4	85	92.3	408	87.9	493
35-49	89.4	497	96.7	1,281	94.1	1,778
50-64	97.1	368	95.1	621	96.0	989
15-49	87.1	621	94.7	1,807	92.2	2,428
15-64	90.4	989	94.8	2,428	93.2	3,417

Viral Load Suppression (VLS)

Age	Males		Females		Total	
	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number
15-24	(81.8)	39	73.7	118	76.2	157
25-34	66.9	85	91.1	408	85.5	493
35-49	86.2	497	95.4	1,281	92.1	1,778
50-64	95.7	368	94.8	621	95.2	989
15-49	83.2	621	93.1	1,807	89.8	2,428
15-64	87.3	989	93.5	2,428	91.3	3,417

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood;

[2]Relates to Global AIDS Monitoring Indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed);

[3]Relates to GAM 1.2: People living with HIV on antiretroviral therapy, and PEPFAR TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving antiretroviral therapy (ART);

[4]Relates to GAM 1.3: People living with HIV who have suppressed viral loads, and PEPFAR VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 9.1.B: Adult 95-95-95 (self-reported and antiretroviral biomarker data); conditional percentages

95-95-95 targets among people living with HIV aged 15-64 years based upon their self-reported HIV status and antiretroviral (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex and age, BAIS V 2021

Diagnosed

Age	Males		Females		Total	
	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number
15-24	(89.1)	39	82.3	118	84.5	157
25-34	82.0	85	95.6	408	92.5	493
35-49	92.2	497	98.0	1,281	95.9	1,778
50-64	97.9	368	96.1	621	96.9	989
15-49	90.6	621	96.5	1,807	94.5	2,428
15-64	93.0	989	96.4	2,428	95.1	3,417

On Treatment Among Those Diagnosed

Age	Males		Females		Total	
	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
15-24	(100.0)	34	97.8	99	98.5	133
25-34	89.5	64	96.5	383	95.0	447
35-49	97.0	462	98.8	1,254	98.1	1,716
50-64	99.3	360	98.9	606	99.1	966
15-49	96.2	560	98.2	1,736	97.5	2,296
15-64	97.2	920	98.4	2,342	98.0	3,262

Viral Load Suppression (VLS) Among Those on Treatment

Age	Males		Females		Total	
	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number
15-24	(91.8)	34	91.5	96	91.6	130
25-34	91.1	60	98.8	371	97.3	431
35-49	96.5	449	98.6	1,242	97.9	1,691
50-64	98.5	356	99.7	600	99.2	956
15-49	95.5	543	98.3	1,709	97.4	2,252
15-64	96.6	899	98.6	2,309	97.9	3,208

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood;

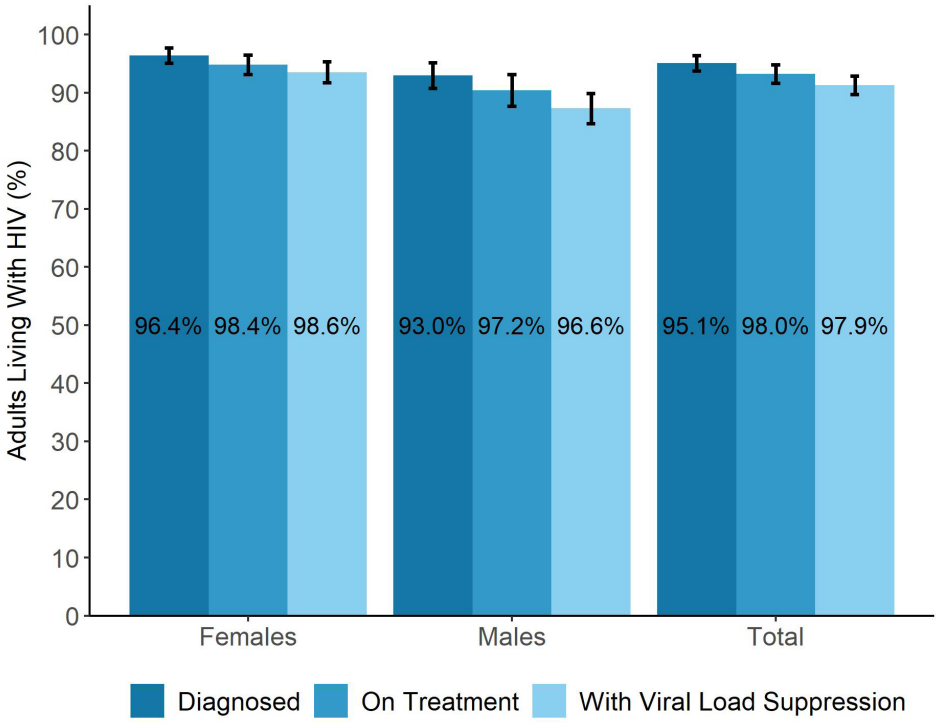
[2]Relates to Global AIDS Monitoring Indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed);

[3]Relates to GAM 1.2: People living with HIV on antiretroviral therapy, and PEPFAR TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving antiretroviral therapy (ART);

[4]Relates to GAM 1.3: People living with HIV who have suppressed viral loads, and PEPFAR VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Figure 9.1: ARV-adjusted 95-95-95 among adults (aged 15 - 64) living with HIV by sex, BAIS V 2021



Note: In the antiretroviral (ARV)-adjusted 95-95-95, participants are classified as "aware" or "diagnosed" if they reported knowing their HIV-positive status before testing positive in BAIS V 2021 or had a detectable antiretrovirals (ARVs) in their blood. Participants are classified as "on treatment" if they reported that they were on treatment or if they had detectable ARVs in their blood. Inset numbers are conditional proportions; the heights of the bars represent the unconditional proportions among all adults living with HIV.

Table 9.2.A: Adult 95-95-95 (self-reported data adjusted for a viral load < 200 HIV RNA copies per milliliter; overall percentages

95-95-95 targets among adults living with HIV aged 15-64 years, based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a viral load (VL) < 200 copies per milliliter, by sex and age, BAIS V 2021

	Diagnosed					
	Males		Females		Total	
Age	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number
15-24	(87.6)	39	83.2	118	84.6	157
25-34	83.3	85	95.6	408	92.7	493
35-49	92.5	497	97.9	1,281	96.0	1,778
50-64	98.1	368	96.1	621	97.0	989
15-49	90.9	621	96.5	1,807	94.6	2,428
15-64	93.3	989	96.4	2,428	95.3	3,417

Table 9.2.A: Adult 95-95-95 (self-reported data adjusted for a viral load < 200 HIV RNA copies per milliliter; overall percentages **(continued)**

95-95-95 targets among adults living with HIV aged 15-64 years, based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a viral load (VL) < 200 copies per milliliter, by sex and age, BAIS V 2021

	On Treatment					
	Males		Females		Total	
Age	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
15-24	(87.6)	39	81.3	118	83.3	157
25-34	75.8	85	92.2	408	88.4	493
35-49	89.5	497	96.8	1,281	94.1	1,778
50-64	97.4	368	95.1	621	96.1	989
15-49	87.4	621	94.8	1,807	92.3	2,428
15-64	90.7	989	94.8	2,428	93.3	3,417

	Viral Load Suppression (VLS)					
	Males		Females		Total	
Age	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number
15-24	(81.8)	39	74.5	118	76.8	157
25-34	70.7	85	91.1	408	86.4	493
35-49	86.3	497	95.4	1,281	92.2	1,778
50-64	96.1	368	94.8	621	95.4	989
15-49	83.8	621	93.2	1,807	90.1	2,428
15-64	87.9	989	93.5	2,428	91.5	3,417

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood;

[2]Relates to Global AIDS Monitoring Indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed);

[3]Relates to GAM 1.2: People living with HIV on antiretroviral therapy, and PEPFAR TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving antiretroviral therapy (ART);

[4]Relates to GAM 1.3: People living with HIV who have suppressed viral loads, and PEPFAR VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 9.2.B: Adult 95-95-95 (self-reported data adjusted for a viral load < 200 HIV RNA copies per milliliter; conditional percentages

95-95-95 targets among adults living with HIV aged 15-64 years, based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a viral load (VL) < 200 copies per milliliter, by sex and age, BAIS V 2021

	Diagnosed					
	Males		Females		Total	
Age	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number
15-24	87.6	39	83.2	118	84.6	157
25-34	83.3	85	95.6	408	92.7	493
35-49	92.5	497	97.9	1,281	96.0	1,778
50-64	98.1	368	96.1	621	97.0	989
15-49	90.9	621	96.5	1,807	94.6	2,428
15-64	93.3	989	96.4	2,428	95.3	3,417

	On Treatment Among Those Diagnosed					
	Males		Females		Total	
Age	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
15-24	(100.0)	33	97.8	100	98.5	133
25-34	91.0	66	96.5	382	95.3	448
35-49	96.7	464	98.8	1,253	98.1	1,717
50-64	99.3	360	98.9	606	99.1	966
15-49	96.2	563	98.2	1,735	97.6	2,298
15-64	97.2	923	98.4	2,341	98.0	3,264

	Viral Load Suppression (VLS) Among Those On Treatment					
	Males		Females		Total	
Age	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number
15-24	(93.4)	33	91.6	97	92.2	130
25-34	93.3	63	98.8	370	97.7	433
35-49	96.5	451	98.6	1,243	97.9	1,694
50-64	98.7	356	99.7	600	99.3	956
15-49	95.9	547	98.3	1,710	97.6	2,257
15-64	96.9	903	98.6	2,310	98.0	3,213

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood;

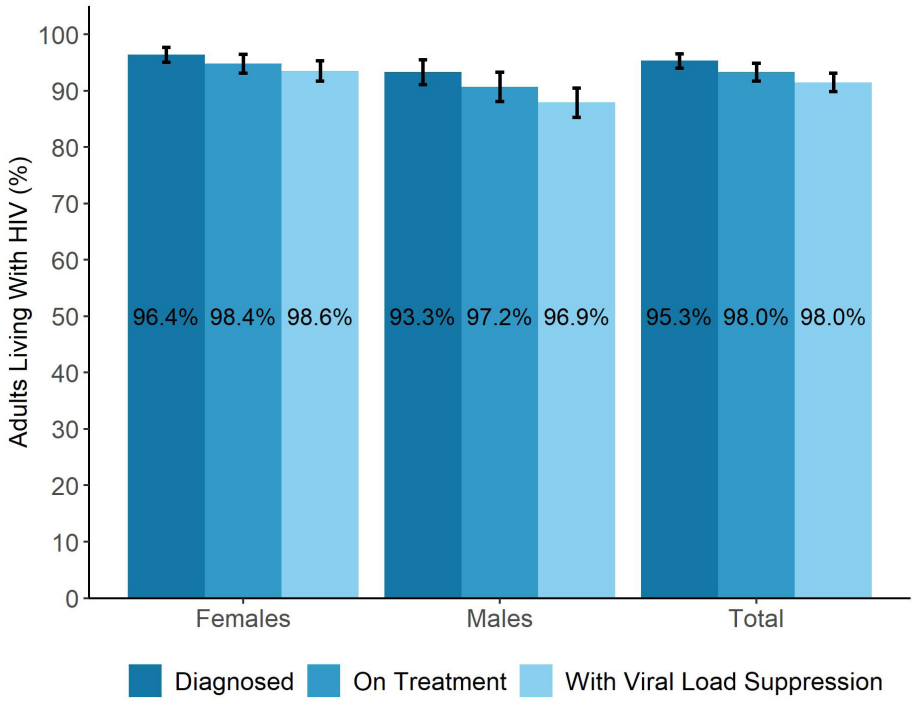
[2]Relates to Global AIDS Monitoring Indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed);

[3]Relates to GAM 1.2: People living with HIV on antiretroviral therapy, and PEPFAR TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving antiretroviral therapy (ART);

[4]Relates to GAM 1.3: People living with HIV who have suppressed viral loads, and PEPFAR VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Figure 9.2: Viral load-adjusted 95-95-95 among adults (aged 15 - 64) living with HIV by sex, BAIS V 2021



Note: In the antiretroviral (ARV)-adjusted 95-95-95, participants are classified as "aware" or "diagnosed" if they reported knowing their HIV-positive status before testing positive in BAIS V 2021 or had a detectable antiretrovirals (ARVs) in their blood. Participants are classified as "on treatment" if they reported that they were on treatment or if they had detectable ARVs in their blood. Inset numbers are conditional proportions; the heights of the bars represent the unconditional proportions among all adults living with HIV.

Table 9.3.A: Adult 95-95-95 by geography (self-reported and antiretroviral biomarker data); overall percentages

95-95-95 targets among people living with HIV aged 15-64 years based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex, residence, and District, BAIS V 2021

	Diagnosed					
	Males		Females		Total	
Geography	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number
Residence						
Urban	92.6	487	96.0	1,264	94.8	1,751
Rural	93.5	502	97.0	1,164	95.7	1,666
District						
Gaborone	*	14	(90.1)	35	(90.9)	49
Francistown	(92.5)	26	(94.5)	48	93.6	74
Lobatse	*	16	91.0	64	93.4	80
Selibe Phikwe	*	17	(97.7)	44	98.6	61
Orapa	(96.7)	49	91.2	119	93.2	168
Jwaneng	(91.7)	27	95.0	56	93.7	83
Sowa	(95.5)	22	(96.3)	33	96.0	55
Ngwaketse South	(81.3)	45	95.4	103	89.6	148
Borolong	(91.1)	45	93.1	87	92.3	132
Ngwaketse West	(93.4)	33	96.9	92	95.8	125
South East	*	24	94.8	66	96.8	90
Kweneng East	(92.2)	30	96.9	69	95.1	99
Kweneng West	83.0	57	97.1	109	91.3	166
Kgatleng	(83.9)	27	88.6	71	87.1	98
Serowe Palapye	(92.2)	46	94.8	130	94.1	176
Central Mahalapye	(97.9)	39	96.7	131	97.1	170
Central Bobonong	(96.3)	35	95.2	126	95.5	161
Central Boteti	(88.7)	33	95.4	75	93.0	108
Central Tutume	89.1	73	99.3	131	94.7	204
North East	(87.5)	42	98.0	110	94.4	152
Ngamiland East	87.3	64	94.8	182	92.4	246
Ngamiland West	97.2	56	99.0	174	98.4	230
Chobe	(82.0)	33	94.3	83	89.8	116
Ghanzi	(81.7)	27	89.6	74	87.0	101
Kgalagadi South	86.5	61	93.2	124	90.6	185
Kgalagadi North	(95.6)	48	99.1	92	97.7	140

Table 9.3.A: Adult 95-95-95 by geography (self-reported and antiretroviral biomarker data); overall percentages **(continued)**

95-95-95 targets among people living with HIV aged 15-64 years based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex, residence, and District, BAIS V 2021

	On Treatment					
	Males		Females		Total	
Geography	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
Residence						
Urban	89.7	487	94.3	1,264	92.7	1,751
Rural	91.4	502	95.6	1,164	94.1	1,666
District						
Gaborone	*	14	(84.8)	35	(87.2)	49
Francistown	(86.9)	26	(94.5)	48	91.2	74
Lobatse	*	16	85.7	64	89.5	80
Selibe Phikwe	*	17	(97.8)	44	96.8	61
Orapa	(92.9)	49	87.2	119	89.2	168
Jwaneng	(86.2)	27	95.0	56	91.6	83
Sowa	*	22	(93.6)	33	92.5	55
Ngwaketse South	(81.3)	45	95.4	103	89.6	148
Borolong	(91.1)	45	93.1	87	92.3	132
Ngwaketse West	(93.4)	33	96.9	92	95.8	125
South East	*	24	94.8	66	96.8	90
Kweneng East	(92.2)	30	96.9	69	95.1	99
Kweneng West	83.0	57	97.1	109	91.3	166
Kgatleng	(83.9)	27	88.6	71	87.1	98
Serowe Palapye	(92.2)	46	94.8	130	94.1	176
Central Mahalapye	(97.9)	39	96.7	131	97.1	170
Central Bobonong	(96.3)	35	95.2	126	95.5	161
Central Boteti	(88.7)	33	95.4	75	93.0	108
Central Tutume	89.1	73	99.3	131	94.7	204
North East	(87.5)	42	98.0	110	94.4	152
Ngamiland East	87.3	64	94.8	182	92.4	246
Ngamiland West	97.2	56	99.0	174	98.4	230
Chobe	(82.0)	33	94.3	83	89.8	116
Ghanzi	(81.7)	27	89.6	74	87.0	101
Kgalagadi South	86.5	61	93.2	124	90.6	185
Kgalagadi North	(95.6)	48	99.1	92	97.7	140

Table 9.3.A: Adult 95-95-95 by geography (self-reported and antiretroviral biomarker data); overall percentages **(continued)**

95-95-95 targets among people living with HIV aged 15-64 years based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex, residence, and District, BAIS V 2021

	Viral Load Suppression (VLS) on Treatment					
	Males		Females		Total	
Geography	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number
Residence						
Urban	87.1	487	93.0	1,264	90.9	1,751
Rural	87.6	502	94.2	1,164	91.8	1,666
District						
Gaborone	*	14	(82.1)	35	(85.3)	49
Francistown	(86.9)	26	(91.9)	48	89.7	74
Lobatse	*	16	85.7	64	87.5	80
Selibe Phikwe	*	17	(97.7)	44	96.8	61
Orapa	(92.9)	49	86.5	119	88.8	168
Jwaneng	(83.6)	27	93.4	56	89.7	83
Sowa	*	22	(93.6)	33	89.8	55
Ngwaketse South	(79.4)	45	95.4	103	88.8	148
Borolong	(86.8)	45	90.9	87	89.3	132
Ngwaketse West	(93.4)	33	93.4	92	93.4	125
South East	*	24	92.2	66	95.2	90
Kweneng East	(92.2)	30	96.9	69	95.1	99
Kweneng West	79.6	57	94.8	109	88.6	166
Kgatleng	(83.9)	27	88.6	71	87.1	98
Serowe Palapye	(89.7)	46	93.0	130	91.9	176
Central Mahalapye	(97.2)	39	95.1	131	95.9	170
Central Bobonong	(96.3)	35	93.7	126	94.4	161
Central Boteti	(76.0)	33	95.4	75	88.6	108
Central Tutume	78.9	73	96.1	131	88.4	204
North East	(82.9)	42	97.1	110	92.2	152
Ngamiland East	81.9	64	94.8	182	90.6	246
Ngamiland West	90.7	56	96.5	174	94.7	230
Chobe	(82.0)	33	94.3	83	89.8	116
Ghanzi	(74.1)	27	88.3	74	83.7	101
Kgalagadi South	82.5	61	92.4	124	88.5	185
Kgalagadi North	(93.8)	48	99.1	92	97.0	140

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood;

[2]Relates to Global AIDS Monitoring 2021 Indicator (GAM 2021) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed);

[3]Relates to GAM 2021 1.2: People living with HIV on antiretroviral therapy, and PEPFAR TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving antiretroviral therapy (ART);

[4]Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads, and PEPFAR VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Table 9.3.B: Adult 95-95-95 by geography (self-reported and antiretroviralbiomarker data); conditional percentages

95-95-95 targets among people living with HIV aged 15-64 years based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex, residence, and District, BAIS V 2021

Geography	Diagnosed					
	Males		Females		Total	
	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number	Percentage aware of HIV status [1,2]	Number
Residence						
Urban	92.6	487	96.0	1,264	94.8	1,751
Rural	93.5	502	97.0	1,164	95.7	1,666
District						
Gaborone	*	14	(90.1)	35	(90.1)	49
Francistown	(92.5)	26	(94.5)	48	93.6	74
Lobatse	*	16	91.0	64	93.4	80
Selibe Phikwe	*	17	(97.7)	44	98.6	61
Orapa	(96.7)	49	91.2	119	93.2	168
Jwaneng	(91.7)	27	95.0	56	93.7	83
Sowa	*	22	(96.3)	33	96.0	55
Ngwaketse South	(81.3)	45	95.4	103	89.6	148
Borolong	(91.1)	45	97.3	87	94.9	132
Ngwaketse West	(93.4)	33	96.9	92	95.8	125
South East	*	24	97.8	66	98.6	90
Kweneng East	(94.6)	30	96.9	69	96.0	99
Kweneng West	91.6	57	98.3	109	95.5	166
Kgatleng	(89.7)	27	93.5	71	92.3	98
Serowe Palapye	(98.2)	46	96.9	130	97.3	176
Central Mahalapye	(97.9)	39	98.4	131	98.2	170
Central Bobonong	(96.3)	35	96.6	126	96.5	161
Central Boteti	(92.8)	33	99.0	75	96.8	108
Central Tutume	93.4	73	99.3	131	96.6	204
North East	(91.3)	42	98.9	110	96.3	152
Ngamiland East	87.3	64	95.9	182	93.1	246
Ngamiland West	97.2	56	99.0	174	98.4	230
Chobe	(82.0)	33	95.8	83	90.8	116
Ghanzi	(86.4)	27	92.1	74	90.2	101
Kgalagadi South	88.0	61	93.2	124	91.2	185
Kgalagadi North	(97.6)	48	99.1	92	98.5	140

Table 9.3.B: Adult 95-95-95 by geography (self-reported and antiretroviralbiomarker data); conditional percentages **(continued)**

95-95-95 targets among people living with HIV aged 15-64 years based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex, residence, and District, BAIS V 2021

	On Treatment Among Those Diagnosed[1]					
	Males		Females		Total	
Geography	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
Residence						
Urban	96.8	451	98.2	1,216	97.7	1,667
Rural	97.8	469	98.6	1,126	98.3	1,595
District						
Gaborone	*	13	(94.1)	32	(95.9)	45
Francistown	*	24	(100.0)	45	97.4	69
Lobatse	*	16	94.2	59	95.8	75
Selibe Phikwe	*	17	(100.0)	43	98.2	60
Orapa	(96.1)	47	95.6	109	95.8	156
Jwaneng	(94.0)	25	100.0	53	97.8	78
Sowa	*	21	(97.3)	32	96.4	53
Ngwaketse South	(100.0)	39	100.0	99	100.0	138
Borolong	(100.0)	41	95.6	85	97.3	126
Ngwaketse West	(100.0)	32	100.0	89	100.0	121
South East	*	24	97.0	64	98.2	88
Kweneng East	(97.5)	29	100.0	67	99.0	96
Kweneng West	90.7	53	98.8	107	95.6	160
Kgatleng	*	24	94.8	67	94.4	91
Serowe Palapye	(94.6)	45	97.8	126	96.7	171
Central Mahalapye	(100.0)	38	98.3	129	98.8	167
Central Bobonong	(100.0)	34	98.6	122	99.0	156
Central Boteti	(95.5)	30	96.4	74	96.1	104
Central Tutume	95.4	68	100.0	130	98.0	198
North East	(95.8)	39	99.1	109	98.0	148
Ngamiland East	100.0	56	98.8	174	99.2	230
Ngamiland West	100.0	54	100.0	172	100.0	226
Chobe	(100.0)	27	98.4	79	98.9	106
Ghanzi	*	24	97.3	69	96.4	93
Kgalagadi South	98.2	53	100.0	116	99.3	169
Kgalagadi North	(98.0)	47	100.0	91	99.2	138

Table 9.3.B: Adult 95-95-95 by geography (self-reported and antiretroviralbiomarker data); conditional percentages **(continued)**

95-95-95 targets among people living with HIV aged 15-64 years based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex, residence, and District, BAIS V 2021

	Viral Load Suppression (VLS) Among Those on Treatment[1]					
	Males		Females		Total	
Geography	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number
Residence						
Urban	97.1	438	98.7	1,194	98.1	1,632
Rural	95.8	461	98.5	1,115	97.6	1,576
District						
Gaborone	*	13	(96.9)	31	(97.9)	44
Francistown	*	23	(97.2)	45	98.4	68
Lobatse	*	16	100.0	56	97.7	72
Selibe Phikwe	*	16	(100.0)	43	100.0	59
Orapa	(100.0)	45	99.2	104	99.5	149
Jwaneng	*	24	98.3	53	97.9	77
Sowa	*	20	(100.0)	31	97.1	51
Ngwaketse South	(97.7)	39	100.0	99	99.1	138
Borolong	(95.3)	41	97.6	82	96.7	123
Ngwaketse West	(100.0)	32	96.4	89	97.5	121
South East	*	24	97.2	62	98.3	86
Kweneng East	(100.0)	28	100.0	67	100.0	95
Kweneng West	(95.8)	49	97.7	106	97.0	155
Kgatleng	*	23	100.0	64	100.0	87
Serowe Palapye	(96.7)	43	98.1	123	97.6	166
Central Mahalapye	(100.0)	38	98.4	127	98.8	165
Central Bobonong	(100.0)	34	98.4	120	98.9	154
Central Boteti	(85.7)	29	100.0	73	95.2	102
Central Tutume	88.6	66	96.8	130	93.4	196
North East	(94.8)	38	99.0	108	97.7	146
Ngamiland East	93.9	56	100.0	172	98.1	228
Ngamiland West	93.4	54	97.5	172	96.2	226
Chobe	(100.0)	27	100.0	78	100.0	105
Ghanzi	*	23	98.6	67	96.2	90
Kgalagadi South	95.4	52	99.2	116	97.8	168
Kgalagadi North	(98.1)	46	100.0	91	99.3	137

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood;

[2]Relates to Global AIDS Monitoring indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed);

[3]Relates to GAM 2021 1.2: People living with HIV on antiretroviral therapy, and PEPFAR TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving antiretroviral therapy (ART);

[4]Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads, and PEPFAR VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Table 9.4.A: Pediatric 95-95-95 (self-reported and antiretroviral biomarker data); overall percentages

95-95-95 targets among people living with HIV aged 0-14 years[5] based upon parent report of child's HIV status and antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex and age, BAIS V 2021

	Diagnosed		On Treatment Among Those Diagnosed		Viral Load Suppression (VLS) Among Those on Treatment	
Age	Total Percentage whose parent reported that the child is HIV positive[1, 2]	Number	Total Percentage on ART[1, 3]	Number	Total Percentage with VLS[4]	Number
0-17 months	*	0	*	0	*	0
18-59 months	*	3	*	3	*	3
0-4 years	*	3	*	3	*	3
5-9 years	*	6	*	6	*	6
10-14 years	*	9	*	9	*	9
0-14 years	*	18	*	18	*	18

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

[2]Relates to Global AIDS Monitoring indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status; and PEPFAR indicator DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed).

[3]Relates to GAM 2021 1.2: People living with HIV on ART; and PEPFAR indicator TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving ART.

[4]Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads; and PEPFAR indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

[5]Pediatric population is children of HIV-positive or deceased mothers and children of mothers with unknown HIV status from households selected in the 25% pediatric subsample.

* Estimates based on a denominator less than 25 have been suppressed.

Table 9.4.B: Pediatric 95-95-95 (self-reported and antiretroviral biomarker data); conditional percentages

95-95-95 targets among people living with HIV aged 0-14 years[5] based upon parent report of child's HIV status and antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex and age, BAIS V 2021

	Diagnosed		On Treatment Among Those Diagnosed		Viral Load Suppression (VLS) Among Those on Treatment	
Age	Total Percentage whose parent reported that the child is HIV positive[1, 2]	Number	Total Percentage on ART[1, 3]	Number	Total Percentage with VLS[4]	Number
0-17 months	*	0	*	0	*	0
18-59 months	*	3	*	2	*	2
0-4 years	*	3	*	2	*	2
5-9 years	*	6	*	3	*	3
10-14 years	*	9	*	8	*	8
0-14 years	*	18	*	13	*	13

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

[2]Relates to Global AIDS Monitoring indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status; and PEPFAR indicator DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed).

[3]Relates to GAM 2021 1.2: People living with HIV on ART; and PEPFAR indicator TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving ART.

[4]Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads; and PEPFAR indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

[5]Pediatric population is children of HIV-positive or deceased mothers and children of mothers with unknown HIV status from households selected in the 25% pediatric subsample.

* Estimates based on a denominator less than 25 have been suppressed.

Table 9.5.A: Pediatric 95-95-95 (self-reported data adjusted for a viral load < 200 HIV RNA copies per milliliter); overall percentages

95-95-95 targets among people living with HIV aged 0-14 years[5] based upon parent report of child's HIV status and antiretroviral therapy (ART) use, both adjusted for having a viral load (VL) < 200 copies per mL, by sex and age, BAIS V 2021

	Diagnosed		On Treatment Among Those Diagnosed		Viral Load Suppression (VLS) Among Those on Treatment	
	Total		Total		Total	
Age	Percentage whose parent reported that the child is HIV positive[1, 2]	Number	Percentage on ART[1, 3]	Number	Percentage with VLS[4]	Number
0-17 months	*	0	*	0	*	0
18-59 months	*	3	*	3	*	3
0-4 years	*	3	*	3	*	3
5-9 years	*	6	*	6	*	6
10-14 years	*	9	*	9	*	9
0-14 years	*	18	*	18	*	18

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

[2]Relates to Global AIDS Monitoring indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status; and PEPFAR indicator DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed).

[3]Relates to GAM 2021 1.2: People living with HIV on ART; and PEPFAR indicator TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving ART.

[4]Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads; and PEPFAR indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

[5]Pediatric population is children of HIV-positive or deceased mothers and children of mothers with unknown HIV status from households selected in the 25% pediatric subsample.

* Estimates based on a denominator less than 25 have been suppressed.

Table 9.5.B: Pediatric 95-95-95 (self-reported data adjusted for a viral load < 200 HIV RNA copies per milliliter); conditional percentages

95-95-95 targets among people living with HIV aged 0-14 years[5] based upon parent report of child's HIV status and antiretroviral therapy (ART) use, both adjusted for having a viral load (VL) < 200 copies per mL, by sex and age, BAIS V 2021

	Diagnosed		On Treatment Among Those Diagnosed		Viral Load Suppression (VLS) Among Those on Treatment	
	Total		Total		Total	
Age	Percentage whose parent reported that the child is HIV positive[1, 2]	Number	Percentage on ART[1, 3]	Number	Percentage with VLS[4]	Number
0-17 months	*	0	*	0	*	0
18-59 months	*	3	*	2	*	2
0-4 years	*	3	*	2	*	2
5-9 years	*	6	*	3	*	3
10-14 years	*	9	*	8	*	8
0-14 years	*	18	*	13	*	13

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

[2]Relates to Global AIDS Monitoring indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status; and PEPFAR indicator DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed).

[3]Relates to GAM 2021 1.2: People living with HIV on ART; and PEPFAR indicator TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving ART.

[4]Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads; and PEPFAR indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.

[5]Pediatric population is children of HIV-positive or deceased mothers and children of mothers with unknown HIV status from households selected in the 25% pediatric subsample.

* Estimates based on a denominator less than 25 have been suppressed.

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10. CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV

10.1 BACKGROUND

As countries implement treatment for all people living with HIV, ensuring a sustainable health system that is people-centered and innovative requires diligent monitoring and responsiveness.[1] Keeping track of whether those who started on ART remain on treatment can help identify factors associated with disruptions in care and to understand whether there are barriers to retention on ART among certain populations. The data can be used to demonstrate the effectiveness of programs and highlight obstacles to expanding and improving them.

BAIS V provided a unique opportunity to gauge progress in the expansion of HIV clinical services in Botswana, as well as identify gaps and future challenges. Indicators such as CD4 count at diagnosis and retention on ART can provide evidence of program coverage, the ability to reach vulnerable populations, and quality of care. The distribution of CD4 counts also reflects population health, and the potential impact of HIV on mortality. For instance, a CD4 count below 350/µL is categorized as immune suppression, and a CD4 count of less than 200/µL is categorized as advanced HIV disease that requires more intensive care, treatment, and support services to manage. When HIV is diagnosed in someone with immune suppression or advanced HIV disease, it is also considered a late diagnosis. Tracking the proportion of diagnoses made late can serve as an indicator of whether there are barriers to testing and can help programs allocate resources for the care of people living with advanced HIV disease.

Mobility with extended stays away from home among people living with HIV may also interfere with continuity of care and lead to treatment disruptions and failure, although this may be mitigated by differentiated approaches to treatment delivery. In addition, this survey gathered data on whether mental health issues affect health-seeking behavior, adherence, retention in care, and other clinical outcomes.[2]

10.2 RESULTS

The following tables and figures describe progress towards the 95-95-95 targets overall and by demographic characteristics in adults. Pediatric tables are also provided but should be interpreted with caution given the low HIV prevalence and consequently small number of children who tested positive for HIV in the survey.

Table 10.1: Median CD4 count by HIV diagnosis and antiretroviral therapy status

Among HIV-positive adults aged 15-64 years, median (quartile 1 [Q1], quartile 3 [Q3]) CD4 count (cells per microliter), by sex, and HIV diagnosis and treatment status based upon self-reported HIV-status and current antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, BAIS V 2021

	Males		
Characteristic	**Median (Q1, Q3)**	**Range**	**Number**
HIV diagnosis and treatment status[1]			
Unaware of HIV status	261 (167, 486)	261 (167, 486)	261 (167, 486)
Aware of HIV status and not on ART	*	*	*
Aware of HIV status and on ART	525 (385, 657)	525 (385, 657)	525 (385, 657)
Total 15-24	[605 (393, 745)]	(209 - 1238)	39
Total 15-49	518 (330, 664)	38 - 1421	622
Total 50-64	489 (378,621)	77 - 1396	369
Total 15-64	509 (352, 649)	38 - 1421	991

	Females		
Characteristic	**Median (Q1, Q3)**	**Range**	**Number**
HIV diagnosis and treatment status[1]			
Unaware of HIV status	417 (281, 580)	52 - 1581	84
Aware of HIV status and not on ART	[317 (140, 487)]	(86 - 1294)	33
Aware of HIV status and on ART	671 (506, 862)	71 - 1936	2,311
Total 15-24	651 (484, 850)	241 - 1401	118
Total 15-49	655 (482, 849)	52 - 1874	1,807
Total 50-64	673 (522, 875)	89 - 1936	621
Total 15-64	659 (490, 857)	52 - 1936	2,428

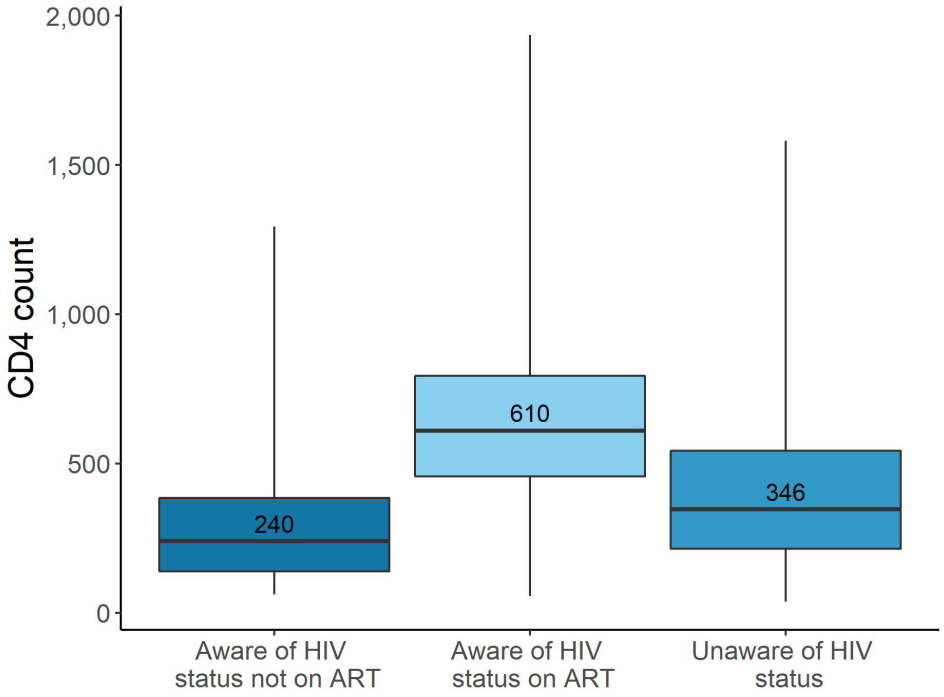
	Total		
Characteristic	**Median (Q1, Q3)**	**Range**	**Number**
HIV diagnosis and treatment status[1]			
Unaware of HIV status	346 (214, 543)	38 - 1581	153
Aware of HIV status and not on ART	240 (139, 384)	62 - 1294	54
Aware of HIV status and on ART	610 (456, 794)	56 - 1936	3,212
Total 15-24	616 (470, 809)	209 - 1401	157
Total 15-49	601 (430, 789)	38 - 1874	2,429
Total 50-64	581 (454, 770)	77 - 1936	990
Total 15-64	598 (437,785)	38 - 1936	3,419

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Figure 10.1: CD4 count distribution among adults (aged 15 – 64) living with HIV, by HIV diagnosis and ART status, BAIS V 2021



Abbreviation: CD4 count: CD4+ T cell count, ART, antiretroviral therapy

Table 10.2: CD4 count distribution

Percent distribution of CD4 count among adults aged 15-64 years who tested HIV positive in the survey but reported an HIV-negative status and had no antiretroviral detectable in blood, by sex and selected demographic characteristics, BAIS V 2021

	CD4 Count				Number
Characteristic	**< 200 cells/μL[1]**	**200-349 cells/μL**	**350-499 cells/μL**	**≥ 500 cells/μL**	
Sex					
Males	34.5	27.2	14.2	24.1	69
Females	7.0	33.6	20.8	38.7	84
Residence					
Urban	24.0	32.8	16.0	27.3	84
Rural	16.8	25.3	19.9	38.0	69
District					
Gaborone	*	*	*	*	4
Francistown	*	*	*	*	5
Lobatse	*	*	*	*	5
Selibe Phikwe	*	*	*	*	1
Orapa	*	*	*	*	12
Jwaneng	*	*	*	*	5

Table 10.2: CD4 count distribution **(continued)**

Percent distribution of CD4 count among adults aged 15-64 years who tested HIV positive in the survey but reported an HIV-negative status and had no antiretroviral detectable in blood, by sex and selected demographic characteristics, BAIS V 2021

	CD4 Count				Number
Characteristic	**< 200 cells/µL[1]**	**200-349 cells/µL**	**350-499 cells/µL**	**≥ 500 cells/µL**	
Francistown	*	*	*	*	5
Lobatse	*	*	*	*	5
Selibe Phikwe	*	*	*	*	1
Orapa	*	*	*	*	12
Jwaneng	*	*	*	*	5
Sowa	*	*	*	*	2
Ngwaketse South	*	*	*	*	10
Borolong	*	*	*	*	6
Ngwaketse West	*	*	*	*	3
South East	*	*	*	*	2
Kweneng East	*	*	*	*	3
Kweneng West	*	*	*	*	6
Kgatleng	*	*	*	*	6
Serowe Palapye	*	*	*	*	5
Central Mahalapye	*	*	*	*	3
Central Bobonong	*	*	*	*	5
Central Boteti	*	*	*	*	4
Central Tutume	*	*	*	*	6
North East	*	*	*	*	4
Ngamiland East	*	*	*	*	16
Ngamiland West	*	*	*	*	4
Chobe	*	*	*	*	10
Ghanzi	*	*	*	*	8
Kgalagadi South	*	*	*	*	16
Kgalagadi North	*	*	*	*	2
Age					
15-24	*	*	*	*	24
25-34	(22.5)	(22.5)	(16.4)	(37.3)	45
35-44	(27.5)	(27.5)	(6.2)	(20.5)	44
45-54	(37.9)	(37.9)	(27.4)	(15.1)	28
55-64	*	*	*	*	12
Total 15-24	*	*	*	*	24
Total 15-49	24.1	33.6	17.3	25.0	130
Total 50-64	*	*	*	*	23
Total 15-64	21.5	30.2	17.3	31.0	153

[1]Relates to Global AIDS Monitoring 2021 Indicator 1.4: Late HIV Diagnosis

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Table 10.3: Retention on antiretroviral therapy

Among HIV-positive adults aged 15-64 years who reported initiating antiretroviral therapy (ART), percentage who reported they were still taking ART, by sex and years since initiating ART, BAIS V 2021

	Males		Females		Total	
Characteristic	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Number of years since initiating ART						
Less than 12 months	(100.0)	46	100.0	120	100.0	166
12 months or more	100.0	716	100.0	1,906	100.0	2,622
1 to 5 years	100.0	180	100.0	415	100.0	595
5 to 10 years	100.0	185	100.0	533	100.0	718
10 years or more	100.0	351	100.0	958	100.0	1,309
Total 15-24	(100.0)	31	98.4	96	99.0	127
Total 15-49	97.0	543	98.6	1,704	98.1	2,247
Total 50-64	99.4	355	99.8	597	99.6	952
Total 15-64	97.8	898	98.9	2,301	98.5	3,199

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 10.4: HIV care and treatment status by extended stay away from home

Among HIV-positive adults aged 15-64 years, percent distribution of HIV care and antiretroviral therapy (ART) status and receipt characteristics, by extended stay away from home, based upon self-report, BAIS V 2021

	Lived away from home for more than one month at a time in the past year			
Characteristic	Yes	Number	No	Number
HIV diagnosis and treatment status[1]				
Unaware of HIV status	5.4	13	4.8	141
Aware of HIV status and not on ART	3.0	8	1.8	45
Aware of HIV status and on ART	91.6	231	93.4	2956
Viral load suppression (VLS)				
Yes	89.0	228	92.1	2907
No	11.0	24	7.9	225
Treatment interrupted				
Yes	6.2	9	0	0
No	90.6	173	0	0
Never on ART	3.2	5	100.0	25
Was ART changed				
Yes	59.7	146	63.9	1909
No	37.9	83	35.4	1003
Never on ART	2.4	5	0.7	25

Table 10.4: HIV care and treatment status by extended stay away from home **(continued)**

Among HIV-positive adults aged 15-64 years, percent distribution of HIV care and antiretroviral therapy (ART) status and receipt characteristics, by extended stay away from home, based upon self-report, BAIS V 2021

	Lived away from home for more than one month at a time in the past year			
Characteristic	**Yes**	**Number**	**No**	**Number**
How was ART normally received at time of survey				
Picked up at local clinic	83.0	195	80.4	2354
Picked up at hospital	13.1	32	17.3	546
From the community support group/adherence club	0.0	0	0.5	3
Delivery	1.5	1	0.1	3
A family member or friend collected them	0.8	1	0.3	6
Not on ART at time of survey	1.7	4	1.5	24
Total 15-64	100.0	252	100.0	3142

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

Table 10.5: Mental health and HIV care and treatment

Percent distribution of care and treatment outcomes among HIV positive adults by mental health screening symptoms, BAIS V 2021

	Screened likely for depressive symptoms[2]		Did not screen likely for depressive symptoms		Screened likely for generalized anxiety symptoms[3]		Did not screen likely for generalized anxiety symptoms	
	Percentage	**Number**	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
HIV diagnosis and treatment status[1]								
Unaware of HIV status	(0.0)	0	4.9	155	(0.0)	0	4.9	155
Aware of HIV status and not on antiretroviral therapy (ART)	(4.3)	3	1.9	51	(1.1)	1	1.8	52
Aware of HIV status and on ART	(95.7)	28	93.2	3,177	(98.9)	45	93.2	3,152
Presence of a detectable antiretroviral								
Detectable	(76.0)	25	90.7	3,097	(81.8)	41	90.8	3,073
Not detectable	(24.0)	6	9.3	273	(18.2)	5	9.2	273
Viral load suppression (VLS)								
Yes	(86.7)	27	91.9	3,127	(88.8)	43	92.0	3,104
No	(13.3)	4	8.1	246	(11.2)	3	8.0	245

Table 10.5: Mental health and HIV care and treatment **(continued)**

Percent distribution of care and treatment outcomes among HIV positive adults by mental health screening symptoms, BAIS V 2021

	Screened likely for depressive symptoms[2]		Did not screen likely for depressive symptoms		Screened likely for generalized anxiety symptoms[3]		Did not screen likely for generalized anxiety symptoms	
	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number
Ever on ART								
Yes	(96.1)	29	99.1	3,161	(98.9)	45	99.2	3,137
No	(3.9)	2	0.9	29	(1.1)	1	0.8	29
Retention (among those who reported ever initiating ART)								
Reported current ART use[1]	(99.6)	28	98.5	3,134	(100.0)	45	98.5	3,109
Reported initiating but not on ART at time of the survey[1]	(0.4)	1	1.5	27	(0.0)	0	1.5	28
Adherence (among those who reported current ART use)								
Adherent	(100.0)	28	96.7	3,039	(90.6)	42	97.0	3,019
Non-adherent	(0.0)	0	3.3	85	(9.4)	3	3.0	80
Total 15-64	(100.0)	31	100.0	3,383	(100.0)	46	100.0	3,359

[1] Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

[2] PHQ-2 score over 3 indicating depressive symptoms.

[3] GAD-2 score over 3 indicating generalized anxiety symptoms.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

10.3 REFERENCES

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11. PREVENTION OF MOTHER-TO-CHILD TRANSMISSION

11.1 BACKGROUND

Pregnant females living with HIV who are not on ART are at high risk of transmitting HIV to their infants during pregnancy, during birth, or through breastfeeding. Over 90% of new HIV infections among infants and young children occur through vertical transmission.[1] Without any interventions, between 15% to 45% of infants may become infected with HIV, with an estimated risk of 5% to 10% during pregnancy, 10% to 20% during labor and delivery, and 5% to 20% through breastfeeding.[1] In 2010, global targets were set to decrease new HIV infections in children and reduce mortality among mothers living with HIV, including a 90% reduction in child HIV infections, a 50% reduction in AIDS-related maternal deaths, and virtual elimination of vertical transmission of HIV.[2]

To prevent vertical transmission, WHO recommends a comprehensive four-pronged approach including: (1) primary prevention of HIV infection among females of childbearing age (aged 15-49 years, referred to as females in this chapter); (2) preventing unintended pregnancies among females living with HIV; (3) preventing HIV transmission from females living with HIV to their infants; and (4) providing appropriate treatment, care, and support to mothers living with HIV and their children and families.[2]

The broader health goal is to deliver an integrated package of care for the mothers and infants that includes maternal, newborn and child health and prevention of mother-to-child transmission (PMTCT) services. Antenatal care (ANC) is a critical entry platform where most females access PMTCT and it provides the opportunity to monitor pregnancy, provide the interventions needed for PMTCT and overall reduce risk of morbidity for mother and infant. To achieve the "elimination of" vertical transmission goal, 95% of mothers need to know their status, 95% of HIV-positive females need to be on ART and 95% need to achieve VLS.3 With such high targets, countries cannot afford to miss any females in need of these services.

11.2 RESULTS

The following tables present ANC attendance, breastfeeding practices, awareness of female's HIV status before or during pregnancy, use of ART during pregnancy in females who were aware of their HIV-positive status during pregnancy, VLS among females, mother-reported infant HIV testing during the survey, and mother-to-child transmission of HIV.

Table 11.1 Prevention of mother-to-child transmission: Known HIV status

Among females aged 15-49 years who gave birth within the 12 months before the survey, percentage who reported that they were tested for HIV during antenatal care (ANC) and received their results or that they already knew they were HIV positive during their last pregnancy, by selected demographic characteristics, BAIS V 2021

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of females who gave birth within the 12 months before the survey
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Residence					
Urban	0.8	84.9	9.7	95.4	353
Rural	2.1	72.4	19.7	94.3	319
District					
Gaborone	*	*	*	*	15
Francistown	*	*	*	*	12
Lobatse	*	*	*	*	23
Selibe Phikwe	*	*	*	*	9
Orapa	(0.0)	(72.5)	(15.0)	(87.6)	25
Jwaneng	*	*	*	*	17
Sowa	*	*	*	*	9

Table 11.1 Prevention of mother-to-child transmission: Known HIV status **(continued)**

Among females aged 15-49 years who gave birth within the 12 months before the survey, percentage who reported that they were tested for HIV during antenatal care (ANC) and received their results or that they already knew they were HIV positive during their last pregnancy, by selected demographic characteristics, BAIS V 2021

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of females who gave birth within the 12 months before the survey
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Ngwaketse South	(7.8)	(66.9)	(25.3)	(100.0)	25
Borolong	*	*	*	*	19
Ngwaketse West	*	*	*	*	23
South East	*	*	*	*	24
Kweneng East	*	*	*	*	19
Kweneng West	1.5	83.2	13.6	98.4	57
Kgatleng	*	*	*	*	14
Serowe Palapye	*	*	*	*	20
Central Mahalapye	(0.0)	(65.7)	(24.8)	(90.6)	31
Central Bobonong	*	*	*	*	24
Central Boteti	*	*	*	*	23
Central Tutume	*	*	*	*	23
North East	*	*	*	*	18
Ngamiland East	0.0	83.8	6.0	89.8	67
Ngamiland West	1.5	68.0	17.4	87.0	71
Chobe	*	*	*	*	10
Ghanzi	(2.6)	(83.2)	(7.4)	(93.3)	34
Kgalagadi South	(2.4)	(68.5)	(13.8)	(84.7)	38
Kgalagadi North	*	*	*	*	22
Marital status					
Never married	1.5	81.3	13.2	96.1	413
Married or living together	1.1	78.9	12.7	92.7	229
Divorced or separated	0.0	76.3	19.8	96.2	29
Widowed	*	*	*	*	1
Education					
No education	*	*	*	*	14
Primary	3.3	64.6	20.2	88.1	56
Secondary	1.3	76.8	16.1	94.3	456
More than secondary	0.6	91.8	5.4	97.8	146
Wealth quintile					
Lowest	2.8	70.4	19.6	92.8	223
Second	0.3	75.6	17.5	93.4	178
Middle	1.9	86.6	7.3	95.8	101
Fourth	1.2	86.6	10.3	98.1	84
Highest	0.0	88.5	8.2	96.7	86

Table 11.1 Prevention of mother-to-child transmission: Known HIV status (**continued**)

Among females aged 15-49 years who gave birth within the 12 months before the survey, percentage who reported that they were tested for HIV during antenatal care (ANC) and received their results or that they already knew they were HIV positive during their last pregnancy, by selected demographic characteristics, BAIS V 2021

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of females who gave birth within the 12 months before the survey
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Age					
15-19	0.0	96.2	1.3	97.5	50
20-24	1.6	89.6	6.1	97.4	180
25-29	0.3	83.0	12.4	95.7	160
30-34	0.9	76.0	17.5	94.4	127
35-39	3.3	62.5	25.4	91.3	119
40-44	(1.7)	(62.4)	(24.8)	(88.9)	35
45-49	*	*	*	*	1
Total 15-24	1.3	91.1	5.0	97.4	230
Total 15-49	1.3	80.2	13.5	95.0	672

[1]Relates to PEPFAR indicator PMTCT_STAT_NAT / SUBNAT: Percentage of pregnant females with known HIV status and Global AIDS Monitoring 2021 indicator 2.6: HIV testing in pregnant females.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 11.2 Prevention of mother-to-child transmission: HIV-positive pregnant females who received antiretroviral therapy

Among self-reported HIV-positive females aged 15-49 years who gave birth within the 12 months before the survey, percentage who reported they had received antiretroviral therapy (ART) during their last pregnancy to reduce the risk of mother-to-child-transmission by selected demographic characteristics, BAIS V 2021

Characteristic	Percentage who were already on ART prior to pregnancy	Percentage who were newly initiated on ART during pregnancy or labor and delivery	Total percentage who received ART[1]	Number of HIV-positive females who gave birth within the 12 months before the survey
Residence				
Urban	(77.5)	(22.5)	(100.0)	44
Rural	80.3	19.7	100.0	67
District				
Gaborone	*	*	*	0
Francistown	*	*	*	2
Lobatse	*	*	*	3
Selibe Phikwe	*	*	*	1

Table 11.2 Prevention of mother-to-child transmission: HIV-positive pregnant females who received antiretroviral therapy **(continued)**

Among self-reported HIV-positive females aged 15-49 years who gave birth within the 12 months before the survey, percentage who reported they had received antiretroviral therapy (ART) during their last pregnancy to reduce the risk of mother-to-child-transmission by selected demographic characteristics, BAIS V 2021

Characteristic	Percentage who were already on ART prior to pregnancy	Percentage who were newly initiated on ART during pregnancy or labor and delivery	Total percentage who received ART[1]	Number of HIV-positive females who gave birth within the 12 months before the survey
Orapa	*	*	*	4
Jwaneng	*	*	*	1
Sowa	*	*	*	1
Ngwaketse South	*	*	*	7
Borolong	*	*	*	6
Ngwaketse West	*	*	*	5
South East	*	*	*	5
Kweneng East	*	*	*	2
Kweneng West	*	*	*	9
Kgatleng	*	*	*	0
Serowe Palapye	*	*	*	4
Central Mahalapye	*	*	*	8
Central Bobonong	*	*	*	7
Central Boteti	*	*	*	4
Central Tutume	*	*	*	6
North East	*	*	*	3
Ngamiland East	*	*	*	4
Ngamiland West	*	*	*	13
Chobe	*	*	*	2
Ghanzi	*	*	*	4
Kgalagadi South	*	*	*	6
Kgalagadi North	*	*	*	4
Marital status				
Never married	85.1	14.9	100.0	67
Married or living together	(70.6)	(29.4)	(100.0)	38
Divorced or separated	*	*	*	5
Widowed	*	*	*	1
Education				
No education	*	*	*	5
Primary	*	*	*	15
Secondary	85.2	14.8	100.0	81
More than secondary	*	*	*	10
Wealth quintile				
Lowest	(78.2)	(21.8)	(100.0)	46
Second	(95.6)	(4.0)	(100.0)	37
Middle	*	*	*	10
Fourth	*	*	*	10
Highest	*	*	*	8

Table 11.2 Prevention of mother-to-child transmission: HIV-positive pregnant females who received antiretroviral therapy **(continued)**

Among self-reported HIV-positive females aged 15-49 years who gave birth within the 12 months before the survey, percentage who reported they had received antiretroviral therapy (ART) during their last pregnancy to reduce the risk of mother-to-child-transmission by selected demographic characteristics, BAIS V 2021

Characteristic	Percentage who were already on ART prior to pregnancy	Percentage who were newly initiated on ART during pregnancy or labor and delivery	Total percentage who received ART[1]	Number of HIV-positive females who gave birth within the 12 months before the survey
Age				
15-19	*	*	*	1
20-24	*	*	*	13
25-29	*	*	*	20
30-34	(90.3)	(9.7)	(100.0)	27
35-39	(66.6)	(33.4)	(100.0)	36
40-44	*	*	*	14
45-49	*	*	*	0
Total 15-24				14
Total 15-49	79.1	20.9	100.0	111

[1]Relates to Global AIDS Monitoring 2021 indicator 2.3: Preventing mother-to-child transmission of HIV and PEPFAR indicator PMTCT_ARV_NAT / SUBNAT: Number and percentage of HIV-positive pregnant females who received antiretroviral medicine (ARV) during pregnancy to reduce the risk of mother-to-child transmission.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 11.3 Prevention of mother-to-child transmission: Early infant testing

Among self-reported HIV-positive women aged 15-49 years who delivered in the 3 years before the survey, percentage who reported their last-born infant had an HIV test done within 2 months of birth and within 12 months of birth, by result of infant's HIV test, BAIS V 2021

Characteristic	Percentage of infants who had an HIV test done at 2 months of age or less[1,2]	Percentage of infants who had an HIV test done between 3 and 11 months of age[2]	Number of infants born in the 36 months before the survey to HIV-positive females[3]
Result of infant's HIV test			
HIV positive	*	*	0
HIV negative	76.7	18.9	244
Don't know/other	(81.9)	(18.1)	28
Total	77.2	18.8	272

[1] Relates to Global AIDS Monitoring 2021 indicator 2.1: Early infant diagnosis

[2] Relates to PEPFAR indicator PMTCT_EID: Percentage of infants born to HIV-positive females who received a first virologic HIV test (sample collected) by 12 months of age.

[3] Includes only last-born infants.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Figure 11.3: Self-reported HIV testing status and antiretroviral therapy use during antenatal care among mothers aged 15 – 49 years who delivered in the 12 months before the survey, BAIS V 2021

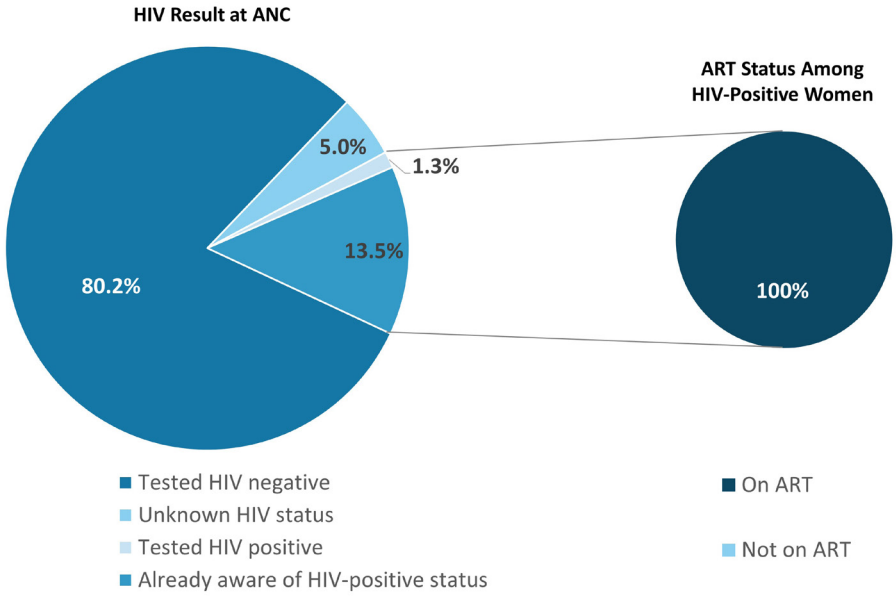

Table 11.4 Breastfeeding status by child's age and mother's HIV status

Percent distribution of last-born children born to females aged 15-49 years in the three years before the survey by breastfeeding status reported by their mothers by child's age and mother's HIV status, BAIS V 2021

Characteristic	Never breastfed	Ever breastfed, but not currently breastfeeding	Currently breastfeeding	Total	Number
Child's age (months)					
0-1	13.4	15.5	71.1	100.0	88
2-3	7.2	28.4	64.4	100.0	108
4-5	12.8	25.0	62.1	100.0	107
6-8	15.5	34.1	50.5	100.0	172
9-11	12.7	46.2	41.0	100.0	171
12-17	12.1	55.3	32.6	100.0	344
18-23	18.9	72.8	8.3	100.0	260
24-36	17.1	79.4	3.6	100.0	540
Result of mother's BAIS V HIV test					
HIV positive	61.7	33.2	5.2	100.0	350
HIV negative	1.8	63.1	35.0	100.0	1,277
Not tested	14.9	63.4	21.6	100.0	163
Total	14.8	57.3	27.9	100.0	1,790

Table 11.5 Antenatal care

Among women aged 15-49 years who delivered in the three years before the survey, percentage who reported attending at least one antenatal care (ANC) visit for her most recent birth, by selected demographic characteristics, BAIS V 2021

Characteristic	Percentage who attended at least one ANC visit	Number
Residence		
Urban	99.0	968
Rural	98.6	843
District		
Gaborone	(98.6)	43
Francistown	(100.0)	36
Lobatse	98.2	53
Selibe Phikwe	(100.0)	25
Orapa	100.0	64
Jwaneng	(98.0)	44
Sowa	(100.0)	36
Ngwaketse South	100.0	62
Borolong	97.9	52
Ngwaketse West	98.7	65
South East	98.5	58
Kweneng East	98.6	64
Kweneng West	97.3	125
Kgatleng	100.0	51
Serowe Palapye	98.3	74
Central Mahalapye	100.0	65
Central Bobonong	100.0	67
Central Boteti	97.9	71
Central Tutume	97.5	74
North East	98.2	63
Ngamiland East	100.0	167
Ngamiland West	100.0	166
Chobe	(100.0)	47
Ghanzi	95.8	78
Kgalagadi South	100.0	93
Kgalagadi North	98.8	68
Marital status		
Never married	98.9	1,059
Married or living together	98.8	671
Divorced or separated	99.5	75
Widowed	*	4
Education		
No education	(84.6)	(84.6)
Primary	99.1	99.1
Secondary	98.9	98.9
More than secondary	99.8	99.8

Table 11.5 Antenatal care **(continued)**

Among women aged 15-49 years who delivered in the three years before the survey, percentage who reported attending at least one antenatal care (ANC) visit for her most recent birth, by selected demographic characteristics, BAIS V 2021

Characteristic	Percentage who attended at least one ANC visit	Number
Wealth quintile		
Lowest	98.4	557
Second	98.9	416
Middle	98.0	319
Fourth	99.6	270
Highest	100.0	249
Age		
15-19	95.9	81
20-24	98.8	458
25-29	99.3	426
30-34	98.2	381
35-39	99.5	312
40-44	100.0	126
45-49	(100.0)	27
Total 15-24	98.4	539
Total 15-49	98.9	1,811

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 11.6 Viral load suppression in HIV-positive females of childbearing age (aged 15-49 years), by pregnancy status and postpartum-related characteristics

Among HIV-positive females aged 15-49 years, percentage with viral load suppression (VLS) (HIV RNA < 1,000 copies per milliliter), by self-reported pregnancy and postpartum-related characteristics, BAIS V 2021

	Females	
Characteristic	Percentage with VLS	Number
Ever Pregnant		
Yes	94.9	1,581
No	84.3	223
Pregnancy status		
Pregnant at time of the survey	(95.5)	43
Not pregnant at time of the survey	93.5	1,748
Delivered in the 12 months before the survey		
Delivered in the 12 months before the survey	97.5	126
Did not deliver in the 12 months before the survey	94.7	1,453

Table 11.6 Viral load suppression in HIV-positive females of childbearing age (aged 15-49 years), by pregnancy status and postpartum-related characteristics **(continued)**

Among HIV-positive females aged 15-49 years, percentage with viral load suppression (VLS) (HIV RNA < 1,000 copies per milliliter), by self-reported pregnancy and postpartum-related characteristics, BAIS V 2021

	Females	
Characteristic	**Percentage with VLS**	**Number**
Breastfeeding status		
Never breastfed	95.8	248
Ever breastfed, but not breastfeeding at the time of the survey	97.3	128
Breastfeeding at the time of the survey	*	24

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed.

Figure 11.6 Viral load suppression among women aged 15-49 years by pregnancy status, postpartum timing, and breastfeeding status at time of survey, BAIS V 2021

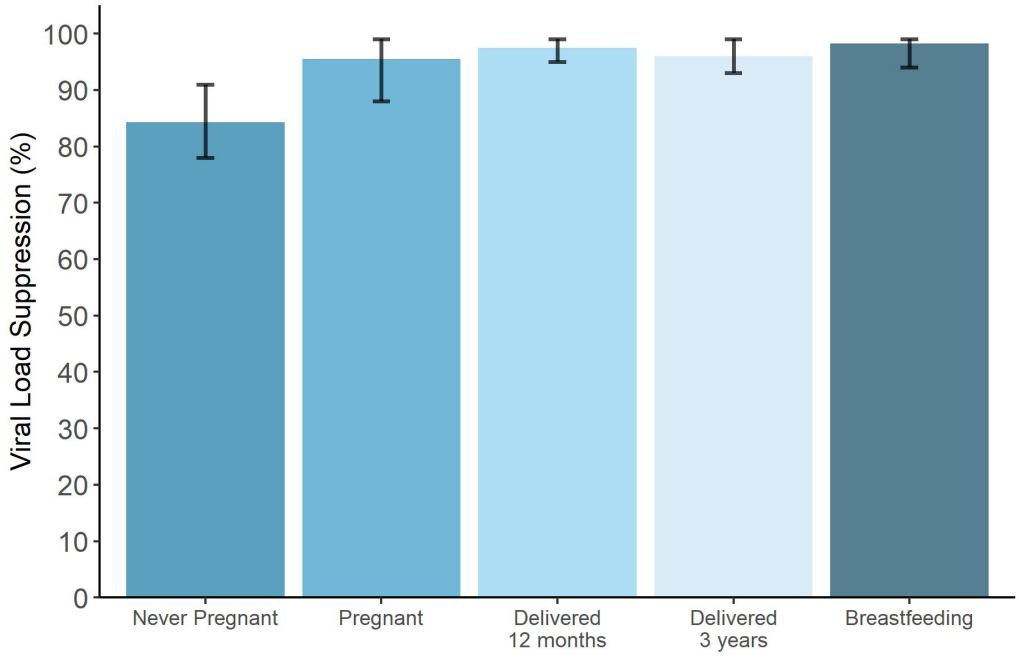

Table 11.7: Viral load suppression HIV RNA < 400 copies per milliliter in HIV-positive females of childbearing age (aged 15-49 years), by pregnancy status and postpartum-related characteristics

Among HIV-positive women aged 15-49 years, percentage with viral load suppression (VLS) (HIV RNA < 400 copies per milliliter), by self-reported pregnancy and postpartum-related characteristics, BAIS V 2021

	Females	
Characteristic	**Percentage with VLS**	**Number**
Ever Pregnant		
Yes	94.5	1,581
No	83.2	223
Pregnancy status		
Pregnant at time of the survey	(95.5)	43
Not pregnant at time of the survey	93.0	1,748
Delivered in the 12 months before the survey		
Delivered in the 12 months before the survey	96.1	126
Did not deliver in the 12 months before the survey	94.4	1,453
Delivered in the 3 years before the survey		
Delivered in the 3 years before the survey	95.4	350
Did not deliver in the 3 years before the survey	94.3	1,229
Breastfeeding status		
Never breastfed	94.9	248
Ever breastfed, but not currently breastfeeding	97.3	128
Currently breastfeeding	*	24

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed.

Table 11.8: Mother-to-child transmission of HIV

Percentage confirmed positive for HIV infection among infants born in the last 17 months to HIV-positive females aged 15 to 49 years by mother's self-reported ARV and breastfeeding status, BAIS V 2021

Characteristic	Percentage of infants confirmed HIV positive[1]	Number of infants born to HIV-positive females[2]
Mother's self-reported ARV status		
Unaware of HIV status during pregnancy	*	0
Already on ARVs at first antenatal visit	0.0	71
Newly initiated on ARVs during pregnancy or labor and delivery	*	12
Did not receive ARVs during pregnancy	*	0
Missing self-reported ARV status during pregnancy	*	0
Breastfeeding status		
Never breastfed	(0.0)	48
Ever breastfed, but not currently breastfeeding	(0.0)	29
Currently breastfeeding	*	6
Total 0-11 months	0.0	57
Total 0-17 months	0.0	83

[1] Relates to Global AIDS Monitoring indicator 2021 2.2; 2Includes only infants who were tested for HIV during the PHIA survey

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

11.3 REFERENCES

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3. World Health Organization. Global guidance on criteria and processes for validation: elimination of mother-to-child transmission of HIV and syphilis, 2nd edition. Geneva: World Health Organization; 2017. https://apps.who.int/iris/bitstream/handle/10665/259517/9789241513272-eng.pdf;jsessionid=FC915C7298AF6DD2E2D1AB4BA706B0AF?sequence=1. Accessed July 20, 2021

12. HIV RISK FACTORS AND PREVENTION TRANSMISSION INTERVENTIONS

12.1 BACKGROUND

This chapter describes the prevalence of sexual behaviors that increase the risk of HIV infection as well as the uptake of key HIV prevention methods. BAIS V provides evidence on high-risk behaviors, including early sexual debut, number of lifetime sexual partners and recent engagement in multiple sexual partnerships among adults in Botswana. The report also presents data on use of proven HIV prevention interventions including condom use, male circumcision, and PrEP (pre-exposure prophylaxis— the use of ARVs to prevent HIV acquisition).

Risk taking behavior among young adolescents (aged 10-14 years) and young people† (aged 15-24 years) is a particularly important challenge for long-term epidemic control. Young people† are particularly more likely to engage in risky sexual behaviors than older adults and have less frequent contact with the healthcare system.[1] Although young adolescents were not included in BAIS V, Table 12.3 shows the prevalence of early sexual debut before the age of 15 years self-reported by young people† in Botswana, by sex, district, and other selected sociodemographic characteristics that may identify where young adolescents and young people† may benefit from enhanced HIV education and prevention efforts.

Although the scale-up of universal testing and treatment is expected to lead to reduced HIV transmission, eliminating HIV transmission will require a combination of prevention options that can meet the current needs of different people.[2] Condoms remain an inexpensive and effective tool that can prevent HIV, sexually transmitted infections, and unwanted pregnancies. BAIS V asked participants about their condom use at last sexual intercourse, particularly with nonmarital, non-cohabitating partners (Tables 12.4.A, 12.4.B, 12.4.C). Since 2007, WHO and UNAIDS have also recommended voluntary medical male circumcision as a cost-effective strategy to reduce male acquisition of HIV.[3] To inform the national voluntary medical male circumcision program, BAIS V asked males whether they had been medically or traditionally circumcised (Table 12.5). Finally, PrEP has become an important prevention tool among some populations and in districts with the highest HIV prevalence.[4] Tables 12.6, 12.7, and 12.8 describe the knowledge levels and acceptability of and uptake of PrEP among adults in Botswana at the time of the survey.

With this information, the national program can tailor its prevention efforts to reach those individuals most at risk for HIV infection and most in need of services and provide them with prevention options that work for them.

12.2 RESULTS

The following tables present BAIS V data on HIV risk factors and uptake of prevention interventions by demographic characteristics.

Table 12.1 Sexual behavior by demographic characteristics

Percent distribution of self-reported sexual behavior characteristics among adults aged 15-64 years by sex, BAIS V 2021

	Males		Females		Total	
Characteristic	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
Ever had sex						
Yes	83.4	6,035	89.3	9,037	86.4	15,072
No	15.0	1,098	10.7	927	12.8	2,025
Had sex in the 12 months before the survey						
Yes	71.5	5,145	71.4	7,213	71.4	12,358
No	25.2	1,862	26.8	2,584	26.0	4,446
Had sexual intercourse before the age of 15 years						
Yes	2.6	162	1.3	140	1.9	302
No	81.6	6,033	86.0	8,600	83.8	14,633
Total 15-24	27.4	1,949	26.1	2,449	26.7	4,398
Total 15-49	85.7	6,142	84.1	8,283	84.9	14,425
Total 50-64	14.3	1,099	15.9	1,681	15.1	2,780
Total 15-64	100.0	7,241	100.0	9,964	100.0	17,205

Table 12.2: HIV prevalence by sexual behavior

Prevalence of HIV among adults aged 15-64 years by sex and self-reported sexual behavior characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	**Percentage HIV positive**	**Number**	**Percentage HIV positive**	**Number**	**Percentage HIV positive**	**Number**
Age at first sexual intercourse						
Under 15	10.2	137	47.9	128	23.0	265
15-19	13.9	2,344	27.9	4,261	21.8	6,605
20-24	17.2	1,382	26.8	2,182	22.3	3,564
25+	23.0	451	37.5	281	27.6	732
Number of lifetime sexual partners						
0	6.0	916	3.6	758	5.0	1,674
1	9.3	500	16.1	1,356	13.7	1,856
2+	15.8	3,540	30.6	4,969	23.1	8,509
Number of sexual partners in the 12 months before the survey						
0	20.8	657	39.2	1,465	32.0	2,122
1	18.4	3,440	26.4	5,748	22.8	9,188
2+	8.9	904	25.6	566	14.1	1,470
Condom use at last sexual intercourse in the 12 months before the survey						
Used condom	19.0	2,859	32.2	4,006	25.6	6,865
Did not use condom	10.7	1,474	16.0	2,295	13.5	3,769
No sexual intercourse in the 12 months before the survey	12.2	1,565	25.3	2,210	19.0	3,775
Total 15-24	2.1	1,648	4.6	2,148	3.4	3,796
Total 15-49	11.8	5,113	23.8	7,135	17.9	12,248
Total 50-64	35.1	975	38.7	1,540	37.0	2,515
Total 15-64	15.2	6,088	26.2	8,675	20.8	14,763

Table 12.3: Sex before the age of 15 years

Percentage of young people aged 15-24 years who reported that they had sexual intercourse before the age of 15 years by sex and selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	**Percentage who had sex before the age of 15 years**	**Number**	**Percentage who had sex before the age of 15 years**	**Number**	**Percentage who had sex before the age of 15 years**	**Number**
Residence						
Urban	2.8	1,091	1.2	1,435	2.0	2,526
Rural	3.7	775	1.1	952	2.4	1,727
District						
Gaborone	4.4	61	0.0	56	2.4	117
Francistown	(3.9)	39	0.0	59	2.0	98
Lobatse	3.3	54	1.8	96	2.4	150
Selibe Phikwe	(7.1)	27	0.0	47	3.0	74
Orapa	0.0	113	0.9	126	0.5	239
Jwaneng	2.0	64	0.0	82	1.0	146
Sowa	(0.0)	41	(0.0)	41	0.0	82
Ngwaketse South	4.8	94	0.0	115	2.5	209
Borolong	1.1	69	0.0	84	0.6	153
Ngwaketse West	0.0	57	0.0	68	0.0	125
South East	4.2	82	0.9	106	2.5	188
Kweneng East	1.8	54	3.2	93	2.6	147
Kweneng West	1.5	64	4.7	93	3.2	157
Kgatleng	1.3	74	0.0	88	0.6	162
Serowe Palapye	2.5	75	1.1	79	1.8	154
Central Mahalapye	2.2	50	1.4	67	1.8	117
Central Bobonong	0.0	52	0.9	79	0.5	131
Central Boteti	2.1	60	1.6	72	1.8	132
Central Tutume	3.5	79	1.0	96	2.3	175
North East	3.8	51	0.0	88	1.7	139
Ngamiland East	3.1	183	0.9	226	2.0	409
Ngamiland West	7.9	94	1.6	132	4.7	226
Chobe	4.4	59	1.9	58	3.4	117
Ghanzi	1.3	80	2.6	97	1.9	177
Kgalagadi South	0.6	114	1.8	148	1.2	262
Kgalagadi North	0.0	76	2.3	91	1.1	167
Marital status						
Never married	2.9	1,754	1.1	2,097	2.0	3,851
Married or living together	4.7	70	1.8	242	2.6	312
Divorced or separated	(8.8)	36	(0.0)	43	4.8	79
Widowed	*	0	*	0	*	0

Table 12.3: Sex before the age of 15 years **(continued)**

Percentage of young people aged 15-24 years who reported that they had sexual intercourse before the age of 15 years by sex and selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	**Percentage who had sex before the age of 15 years**	**Number**	**Percentage who had sex before the age of 15 years**	**Number**	**Percentage who had sex before the age of 15 years**	**Number**
Education						
No education	(6.7)	32	(5.9)	28	6.3	60
Primary	2.0	80	4.5	64	2.9	144
Secondary	2.6	1,520	1.2	1,873	1.9	3,393
More than secondary	5.0	234	0.3	422	2.3	656
Wealth quintile						
Lowest	4.9	427	1.3	534	3.1	961
Second	3.3	397	0.8	536	2.0	933
Middle	2.2	335	1.2	419	1.7	754
Fourth	2.5	368	0.7	458	1.6	826
Highest	3.1	339	1.9	440	2.5	779
Age						
15-19	1.6	1,018	1.2	1,173	1.4	2,191
20-24	4.7	848	1.1	1,214	2.9	2,062
Total 15-24	3.1	1,866	1.2	2,387	2.1	4,253

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 12.4.A: Condom use at last sex with a nonmarital, non-cohabitating partner: Males

Among males aged 15-64 years, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey by selected demographic characteristics, BAIS V 2021

	Among males who reported having sex in the 12 months before the survey		Among males who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey	
Characteristic	**Percentage who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey[1]**	**Number**	**Percentage who reported using a condom the last time they had sex with such a partner[2]**	**Number**
Residence				
Urban	55.7	3,061	78.2	1,482
Rural	58.0	2,069	77.1	1,022
District				
Gaborone	54.4	159	79.5	83
Francistown	56.9	120	78.6	61
Lobatse	48.4	173	78.7	71
Selibe Phikwe	39.4	68	*	23
Orapa	41.6	368	73.8	142
Jwaneng	44.6	218	68.8	88
Sowa	49.7	144	82.4	58
Ngwaketse South	55.5	218	83.7	106
Borolong	62.8	183	75.8	105
Ngwaketse West	54.5	133	67.6	71
South East	53.8	248	75.4	122
Kweneng East	53.7	170	84.5	78
Kweneng West	47.4	188	68.1	79
Kgatleng	59.8	174	66.7	98
Serowe Palapye	61.7	212	74.8	110
Central Mahalapye	59.0	132	77.1	68
Central Bobonong	57.5	136	74.7	67
Central Boteti	59.0	188	80.2	104
Central Tutume	58.1	213	74.4	108
North East	62.6	133	79.0	68
Ngamiland East	63.7	426	79.7	232
Ngamiland West	54.0	248	79.4	124
Chobe	60.5	202	73.9	105
Ghanzi	53.8	193	76.4	95
Kgalagadi South	58.2	291	75.9	151
Kgalagadi North	52.8	192	71.5	87
Marital status				
Never married	89.9	2,494	79.2	2,005
Married or living together	13.4	2,331	72.4	234
Divorced or separated	95.2	270	72.2	238
Widowed	*	23	*	16

Table 12.4.A: Condom use at last sex with a nonmarital, non-cohabitating partner: Males **(continued)**

Among males aged 15-64 years, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey by selected demographic characteristics, BAIS V 2021

	Among males who reported having sex in the 12 months before the survey		Among males who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey	
Characteristic	**Percentage who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey[1]**	**Number**	**Percentage who reported using a condom the last time they had sex with such a partner[2]**	**Number**
Education				
No education	33.5	400	67.8	125
Primary	39.1	705	71.8	243
Secondary	64.5	2,663	79.7	1,464
More than secondary	54.8	1,357	77.0	670
Wealth quintile				
Lowest	54.6	1,136	76.1	531
Second	64.4	967	80.0	538
Middle	60.4	893	79.0	465
Fourth	56.7	1,021	75.9	515
Highest	46.6	1,113	77.2	455
Age				
15-19	98.4	187	86.8	168
20-24	89.0	634	80.5	525
25-29	76.9	748	72.7	504
30-34	64.7	708	80.5	396
35-39	53.8	776	74.8	344
40-44	41.7	702	80.4	247
45-49	30.5	535	75.8	152
50-54	25.5	388	77.0	86
55-59	20.5	262	(62.8)	49
60-64	15.6	190	(75.5)	33
Total 15-24	91.1	821	82.0	693
Total 15-49	62.8	4,290	78.1	2,336
Total 50-64	21.5	840	72.5	168
Total 15-64	56.5	5,130	77.8	2,504

[1] For individuals with more than three partners, having sex with a nonmarital non-cohabitating partner is determined using information about the last three partners.

[2] Relates to Global AIDS Monitoring 2021 indicator 3.18: Condom use at last high risk sex.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 12.4.B: Condom use at last sex with a nonmarital, non-cohabitating partner: Females

Among women aged 15-64 years, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey by selected demographic characteristics, BAIS V 2021

	Among females who reported having sex in the 12 months before the survey		Among females who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey	
Characteristic	**Percentage who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey[1]**	**Number**	**Percentage who reported using a condom the last time they had sex with such a partner[2]**	**Number**
Residence				
Urban	54.6	4,218	68.7	1,974
Rural	56.7	2,976	71.9	1,454
District				
Gaborone	47.8	187	65.2	81
Francistown	51.7	137	66.0	61
Lobatse	56.9	297	68.5	136
Selibe Phikwe	59.2	120	69.8	63
Orapa	43.6	460	76.7	180
Jwaneng	43.9	270	72.4	95
Sowa	47.1	155	70.2	66
Ngwaketse South	63.3	318	72.6	164
Borolong	55.7	254	72.9	126
Ngwaketse West	59.0	191	63.8	104
South East	50.8	301	72.3	132
Kweneng East	54.3	268	67.7	126
Kweneng West	54.0	340	59.9	161
Kgatleng	52.4	234	68.5	103
Serowe Palapye	60.7	283	69.6	153
Central Mahalapye	62.7	234	70.3	138
Central Bobonong	55.6	241	80.9	113
Central Boteti	52.3	238	70.1	114
Central Tutume	52.1	267	74.7	125
North East	63.4	248	75.4	142
Ngamiland East	59.5	571	69.0	274
Ngamiland West	60.8	434	64.6	231
Chobe	56.5	206	77.9	100
Ghanzi	49.1	264	72.5	115
Kgalagadi South	58.0	400	66.7	196
Kgalagadi North	53.6	276	77.5	129
Marital status				
Never married	87.0	3,793	70.4	2,917
Married or living together	10.1	3,029	66.8	210
Divorced or separated	93.1	282	63.6	242
Widowed	79.2	79	74.9	51

Table 12.4.B: Condom use at last sex with a nonmarital, non-cohabitating partner: Females **(continued)**

Among women aged 15-64 years, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey by selected demographic characteristics, BAIS V 2021

	Among females who reported having sex in the 12 months before the survey		Among females who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey	
Characteristic	**Percentage who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey[1]**	**Number**	**Percentage who reported using a condom the last time they had sex with such a partner[2]**	**Number**
Education				
No education	34.9	359	56.3	101
Primary	38.2	853	70.9	276
Secondary	60.2	4,207	70.6	2,176
More than secondary	54.6	1,772	68.8	874
Wealth quintile				
Lowest	54.1	1,638	67.5	769
Second	64.3	1,399	72.5	778
Middle	58.5	1,261	72.1	639
Fourth	56.4	1,438	68.1	691
Highest	44.3	1,458	67.9	551
Age				
15-19	88.7	353	75.4	290
20-24	75.2	1,073	65.9	726
25-29	64.1	1,087	70.9	631
30-34	57.8	1,083	66.6	518
35-39	52.7	1,222	71.4	511
40-44	43.3	900	68.0	342
45-49	44.5	651	80.7	245
50-54	26.3	412	69.3	94
55-59	15.6	253	(59.5)	44
60-64	21.1	160	(58.2)	27
Total 15-24	78.6	1,426	68.7	1,016
Total 15-49	59.4	6,369	70.0	3,263
Total 50-64	21.9	825	64.8	165
Total 15-64	55.3	7,194	69.8	3,428

[1] For individuals with more than three partners, having sex with a nonmarital non-cohabitating partner is determined using information about the last three partners.

[2] Relates to Global AIDS Monitoring 2021 indicator 3.18: Condom use at last high risk sex.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 12.4.C: Condom use at last sex with a nonmarital, non-cohabitating partner: Total

Among adults aged 15-64 years, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey by selected demographic characteristics, BAIS V 2021

	Among persons who reported having sex in the 12 months before the survey		Among persons who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey	
Characteristic	Percentage who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey[1]	Number	Percentage who reported using a condom the last time they had sex with such a partner[2]	Number
Residence				
Urban	55.1	7,279	73.5	3,456
Rural	57.4	5,045	74.5	2,476
District				
Gaborone	51.1	346	72.9	164
Francistown	54.7	257	73.5	122
Lobatse	53.0	470	72.7	207
Selibe Phikwe	50.4	188	72.6	86
Orapa	42.6	828	75.2	322
Jwaneng	44.3	488	70.4	183
Sowa	48.5	299	76.8	124
Ngwaketse South	59.4	536	77.9	270
Borolong	59.1	437	74.4	231
Ngwaketse West	56.9	324	65.5	175
South East	52.5	549	74.1	254
Kweneng East	54.0	438	75.7	204
Kweneng West	51.1	528	63.1	240
Kgatleng	56.0	408	67.5	201
Serowe Palapye	61.2	495	72.2	263
Central Mahalapye	61.1	366	73.0	206
Central Bobonong	56.4	377	78.1	180
Central Boteti	55.7	426	75.6	218
Central Tutume	55.2	480	74.6	233
North East	63.0	381	76.9	210
Ngamiland East	61.6	997	74.6	506
Ngamiland West	57.8	682	70.8	355
Chobe	58.8	408	75.5	205
Ghanzi	51.4	457	74.5	210
Kgalagadi South	58.1	691	71.3	347
Kgalagadi North	53.2	468	74.8	216
Marital status				
Never married	88.4	6,287	74.7	4,922
Married or living together	11.8	5,360	70.1	444
Divorced or separated	94.3	552	68.5	480
Widowed	75.0	102	73.3	67

Table 12.4.C: Condom use at last sex with a nonmarital, non-cohabitating partner: Total **(continued)**

Among adults aged 15-64 years, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey by selected demographic characteristics, BAIS V 2021

	Among persons who reported having sex in the 12 months before the survey		Among persons who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey	
Characteristic	**Percentage who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey[1]**	**Number**	**Percentage who reported using a condom the last time they had sex with such a partner[2]**	**Number**
Education				
No education	34.0	759	63.1	226
Primary	38.7	1,558	71.4	519
Secondary	62.2	6,870	75.1	3,640
More than secondary	54.7	3,129	72.8	1,544
Wealth quintile				
Lowest	54.3	2,774	71.8	1,300
Second	64.4	2,366	76.3	1,316
Middle	59.5	2,154	75.7	1,104
Fourth	56.6	2,459	71.8	1,206
Highest	45.4	2,571	72.7	1,006
Age				
15-19	92.8	540	80.4	458
20-24	81.5	1,707	73.3	1,251
25-29	70.3	1,835	71.8	1,135
30-34	61.1	1,791	73.8	914
35-39	53.2	1,998	73.1	855
40-44	42.5	1,602	74.1	589
45-49	37.2	1,186	78.6	397
50-54	25.9	800	73.6	180
55-59	18.4	515	61.6	93
60-64	17.6	350	67.8	60
Total 15-24	84.2	2,247	75.2	1,709
Total 15-49	61.1	10,659	74.0	5,599
Total 50-64	21.6	1,665	69.2	333
Total 15-64	55.9	12,324	73.8	5,932

[1] For individuals with more than three partners, having sex with a nonmarital non-cohabitating partner is determined using information about the last three partners.

[2] Relates to Global AIDS Monitoring 2021 indicator 3.18: Condom use at last high risk sex.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Figure 12.4: Self-reported sex and condom use at last sex with a nonmarital, noncohabitating partner in the 12 months before the survey, BAIS V 2021

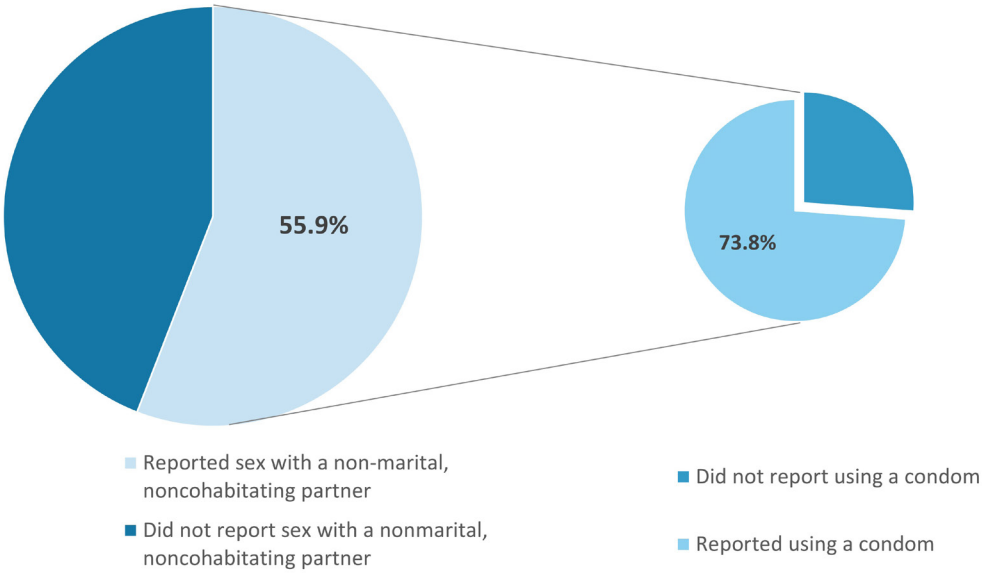

Table 12.5: Male circumcision

Percent distribution of males aged 15-64 years by self-reported circumcision status by result of BAIS V HIV test and selected demographic characteristics, BAIS V 2021

	Circumcised[1]		Uncircumcised	Total	Number
Characteristic	Medical circumcision	Non-medical circumcision			
Result of BAIS V HIV test					
HIV positive	24.4	5.1	70.5	100.0	977
HIV negative	49.6	2.7	47.7	100.0	5,002
Not tested	44.3	3.2	52.5	100.0	1,127
Residence					
Urban	46.1	2.8	51.1	100.0	4,128
Rural	43.7	3.6	52.6	100.0	2,978
District					
Gaborone	52.1	4.1	43.8	100.0	219
Francistown	41.2	2.9	55.9	100.0	153
Lobatse	48.2	2.0	49.8	100.0	228
Selibe Phikwe	49.4	3.3	47.3	100.0	90
Orapa	51.7	1.5	46.8	100.0	480
Jwaneng	54.7	0.7	44.6	100.0	284
Sowa	47.9	3.3	48.8	100.0	185
Ngwaketse South	37.4	3.3	59.3	100.0	341
Borolong	44.8	3.1	52.1	100.0	272

Table 12.5: Male circumcision **(continued)**

Percent distribution of males aged 15-64 years by self-reported circumcision status by result of BAIS V HIV test and selected demographic characteristics, BAIS V 2021

Characteristic	Circumcised[1]		Uncircumcised	Total	Number
	Medical circumcision	Non-medical circumcision			
Ngwaketse West	48.5	0.8	50.7	100.0	229
South East	49.8	2.1	48.1	100.0	351
Kweneng East	45.8	0.9	53.3	100.0	231
Kweneng West	48.5	2.1	49.3	100.0	302
Kgatleng	50.3	6.0	43.7	100.0	258
Serowe Palapye	48.2	1.0	50.7	100.0	284
Central Mahalapye	57.6	2.8	39.6	100.0	187
Central Bobonong	40.0	2.1	57.9	100.0	178
Central Boteti	40.8	3.9	55.2	100.0	241
Central Tutume	47.8	5.4	46.8	100.0	291
North East	42.9	2.0	55.1	100.0	188
Ngamiland East	34.8	4.2	60.9	100.0	561
Ngamiland West	22.7	3.4	73.9	100.0	321
Chobe	42.1	3.5	54.4	100.0	242
Ghanzi	37.7	11.4	50.8	100.0	274
Kgalagadi South	41.3	1.4	57.3	100.0	437
Kgalagadi North	49.4	1.4	49.2	100.0	279
Marital status					
Never married	51.2	2.1	46.8	100.0	4,184
Married or living together	36.5	4.6	59.0	100.0	2,508
Divorced or separated	39.8	4.5	55.7	100.0	356
Widowed	(22.2)	(9.4)	(68.4)	(100.0)	42
Education					
No education	30.0	8.2	61.7	100.0	556
Primary	28.0	7.5	64.5	100.0	948
Secondary	50.1	2.0	48.0	100.0	3,961
More than secondary	47.1	2.1	50.8	100.0	1,634
Wealth quintile					
Lowest	38.5	4.3	57.2	100.0	1,642
Second	43.7	3.6	52.7	100.0	1,370
Middle	47.5	2.9	49.6	100.0	1,234
Fourth	46.8	2.6	50.5	100.0	1,404
Highest	48.7	2.3	48.9	100.0	1,456
Age					
15-19	70.9	0.2	28.9	100.0	1,028
20-24	62.2	0.8	37.0	100.0	908
25-29	44.1	0.6	55.3	100.0	910

Table 12.5: Male circumcision **(continued)**

Percent distribution of males aged 15-64 years by self-reported circumcision status by result of BAIS V HIV test and selected demographic characteristics, BAIS V 2021

	Circumcised[1]		Uncircumcised	Total	Number
Characteristic	Medical circumcision	Non-medical circumcision			
30-34	44.2	2.1	53.7	100.0	823
35-39	38.1	4.3	57.6	100.0	913
40-44	36.4	5.0	58.7	100.0	826
45-49	33.0	4.7	62.3	100.0	640
50-54	26.6	5.6	67.8	100.0	488
55-59	27.9	9.2	62.9	100.0	323
60-64	23.3	10.9	65.8	100.0	247
Total 15-24	66.7	0.5	32.9	100.0	1,936
Total 15-49	48.4	2.3	49.3	100.0	6,048
Total 50-64	26.2	8.1	65.7	100.0	1,058
Total 15-64	45.3	3.1	51.6	100.0	7,106

[1] Relates to Global AIDS Monitoring 2021 indicator 3.16: Prevalence of male circumcision and PEPFAR indicator VMMC_TOTALCIRC NAT / SUBNAT: Total number of men ever circumcised.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Figure 12.5: Self-reported male circumcision status by survey HIV test result, BAIS V 2021

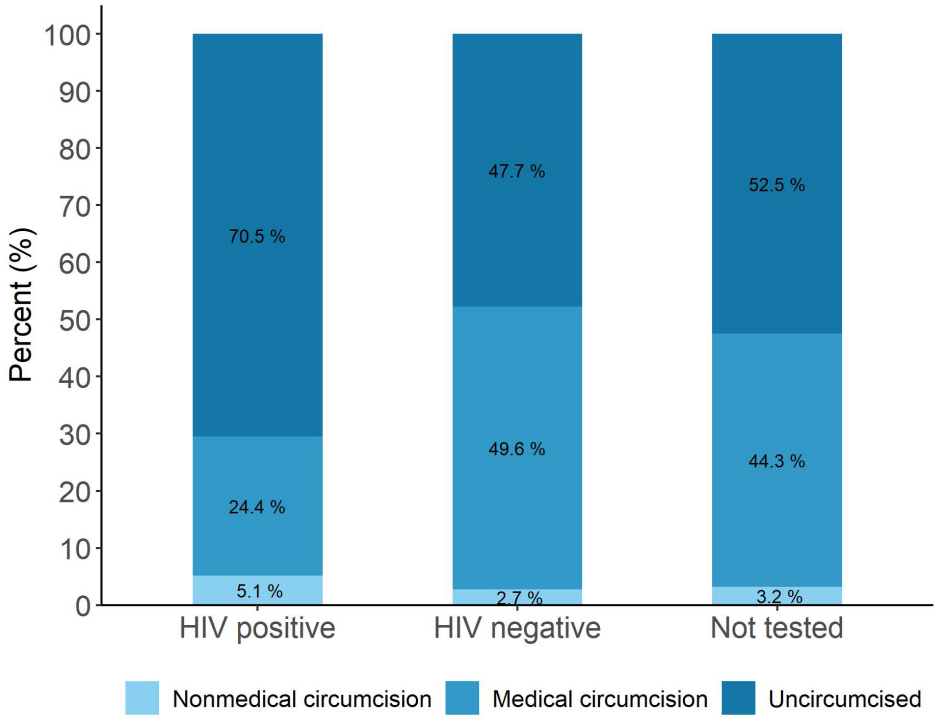

Table 12.6: Self-reported knowledge of pre-exposure prophylaxis

Among adults aged 15-64 years, percentage who reported they had heard of pre-exposure prophylaxis (PrEP), BAIS V 2021

	Males		Females		Total	
Characteristic	**Percentage who had heard of PrEP**	**Number**	**Percentage who had heard of PrEP**	**Number**	**Percentage who had heard of PrEP**	**Number**
Residence						
Urban	25.1	4,198	33.2	5,793	29.3	9,991
Rural	17.7	3,033	23.7	4,165	20.7	7,198
District						
Gaborone	31.1	222	43.9	252	37.3	474
Francistown	28.0	156	37.9	205	32.7	361
Lobatse	28.7	237	39.0	400	34.2	637
Selibe Phikwe	21.9	94	32.1	168	27.7	262
Orapa	30.1	482	36.2	606	33.1	1,088
Jwaneng	29.0	292	36.2	351	32.5	643
Sowa	29.3	185	33.1	197	31.0	382
Ngwaketse South	17.2	345	26.5	465	21.7	810
Borolong	12.6	273	21.3	362	17.1	635
Ngwaketse West	12.2	231	17.6	309	15.0	540
South East	32.1	356	40.6	423	35.9	779
Kweneng East	20.4	242	30.7	372	25.9	614
Kweneng West	9.7	308	18.1	484	14.2	792
Kgatleng	25.2	263	34.6	359	30.2	622
Serowe Palapye	22.6	287	32.9	382	27.8	669
Central Mahalapye	15.5	192	25.1	325	20.9	517
Central Bobonong	18.1	181	19.7	342	19.0	523
Central Boteti	25.1	247	23.6	320	24.4	567
Central Tutume	17.6	298	26.0	372	21.7	670
North East	23.6	189	27.2	356	25.6	545
Ngamiland East	20.4	570	22.6	763	21.5	1,333
Ngamiland West	18.1	325	17.2	569	17.6	894
Chobe	29.2	248	29.7	278	29.4	526
Ghanzi	12.7	282	18.9	351	15.7	633
Kgalagadi South	19.3	442	17.7	578	18.5	1,020
Kgalagadi North	19.3	284	22.7	369	21.0	653
Marital status						
Never married	21.9	4,241	31.1	5,885	26.6	10,126
Married or living together	23.1	2,568	29.3	3,307	26.1	5,875
Divorced or separated	28.5	362	30.3	499	29.4	861
Widowed	(24.7)	43	20.0	250	20.6	293

Table 12.6: Self-reported knowledge of pre-exposure prophylaxis **(continued)**

Among adults aged 15-64 years, percentage who reported they had heard of pre-exposure prophylaxis (PrEP), BAIS V 2021

	Males		Females		Total	
Characteristic	**Percentage who had heard of PrEP**	**Number**	**Percentage who had heard of PrEP**	**Number**	**Percentage who had heard of PrEP**	**Number**
Education						
No education	8.9	573	8.6	628	8.8	1,201
Primary	10.4	973	12.2	1,396	11.3	2,369
Secondary	18.5	4,014	26.1	5,755	22.4	9,769
More than secondary	40.9	1,664	52.1	2,176	46.6	3,840
Wealth quintile						
Lowest	9.9	1,670	12.9	2,213	11.4	3,883
Second	17.2	1,386	26.0	2,011	21.7	3,397
Middle	19.4	1,254	27.7	1,720	23.5	2,974
Fourth	27.8	1,438	36.3	1,995	32.2	3,433
Highest	35.9	1,483	42.5	2,019	39.3	3,502
Age						
15-19	13.9	1,033	20.5	1,176	17.2	2,209
20-24	23.2	913	40.0	1,270	31.5	2,183
25-29	28.6	922	35.2	1,255	31.9	2,177
30-34	26.9	837	34.6	1,246	30.8	2,083
35-39	26.8	925	36.0	1,378	31.5	2,303
40-44	24.8	846	32.2	1,105	28.5	1,951
45-49	23.8	659	28.9	848	26.3	1,507
50-54	19.2	505	23.3	666	21.3	1,171
55-59	15.8	338	14.6	582	15.2	920
60-64	7.5	253	11.2	432	9.6	685
Total 15-24	18.5	1,946	30.0	2,446	24.2	4,392
Total 15-49	23.9	6,135	32.6	8,278	28.3	14,413
Total 50-64	15.2	1,096	17.0	1,680	16.2	2,776
Total 15-64	22.6	7,231	30.1	9,958	26.4	17,189

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 12.7: Willingness to take pre-exposure prophylaxis

Among adults aged 15-64 years who are HIV negative, percentage who reported they would take pre-exposure prophylaxis (PrEP) to prevent HIV, BAIS 2021

	Males		Females		Total	
Characteristic	**Percentage who would take PrEP**	**Number**	**Percentage who would take PrEP**	**Number**	**Percentage who would take PrEP**	**Number**
Heard of PrEP						
Yes	79.6	926	73.9	1,379	76.5	2,305
No	68.3	3,824	66.8	4,400	67.6	8,224
Residence						
Urban	69.9	2,712	68.2	3,357	69.0	6,069
Rural	72.5	2,040	70.2	2,425	71.5	4,465
District						
Gaborone	71.1	135	62.3	155	66.9	290
Francistown	63.6	94	69.0	115	66.0	209
Lobatse	70.7	165	77.6	228	74.0	393
Selibe Phikwe	49.7	50	49.9	89	49.9	139
Orapa	68.6	313	73.0	363	70.8	676
Jwaneng	66.2	206	67.4	222	66.7	428
Sowa	67.6	107	67.3	111	67.5	218
Ngwaketse South	60.1	220	67.8	265	63.6	485
Borolong	71.9	179	68.6	218	70.3	397
Ngwaketse West	73.4	159	78.8	173	75.9	332
South East	72.2	240	64.8	239	69.2	479
Kweneng East	71.6	137	69.2	206	70.4	343
Kweneng West	61.8	205	64.0	313	62.9	518
Kgatleng	67.4	164	69.0	183	68.2	347
Serowe Palapye	67.8	192	73.2	196	70.1	388
Central Mahalapye	69.5	104	67.3	155	68.4	259
Central Bobonong	62.3	117	65.6	184	64.0	301
Central Boteti	73.5	164	66.1	204	70.0	368
Central Tutume	76.6	180	66.0	192	71.9	372
North East	75.3	117	67.7	170	71.6	287
Ngamiland East	81.2	378	79.0	460	80.2	838
Ngamiland West	74.3	233	77.0	351	75.7	584
Chobe	71.8	176	72.1	161	71.9	337
Kgalagadi North	80.3	205	74.8	238	77.8	443

Table 12.7: Willingness to take pre-exposure prophylaxis **(continued)**

Among adults aged 15-64 years who are HIV negative, percentage who reported they would take pre-exposure prophylaxis (PrEP) to prevent HIV, BAIS 2021

	Males		Females		Total	
Characteristic	**Percentage who would take PrEP**	**Number**	**Percentage who would take PrEP**	**Number**	**Percentage who would take PrEP**	**Number**
Marital status						
Never married	71.6	2,969	69.4	3,479	70.6	6,448
Married or living together	68.1	1,542	67.3	1,930	67.7	3,472
Divorced or separated	76.7	215	72.3	252	74.7	467
Widowed	*	18	67.9	109	70.0	127
Education						
No education	65.5	333	57.9	341	62.5	674
Primary	72.1	571	68.1	677	70.2	1,248
Secondary	71.2	2,794	69.6	3,416	70.5	6,210
More than secondary	70.5	1,047	68.8	1,347	69.7	2,394
Wealth quintile						
Lowest	74.2	1,180	74.4	1,332	74.3	2,512
Second	73.5	908	69.5	1,137	71.7	2,045
Middle	69.0	799	68.7	984	68.9	1,783
Fourth	69.2	937	66.0	1,127	67.7	2,064
Highest	68.9	928	67.5	1,202	68.2	2,130
Age						
15-19	69.0	807	69.7	908	69.3	1,715
20-24	71.1	696	74.5	964	72.8	1,660
25-29	73.3	685	70.7	832	72.1	1,517
30-34	75.3	604	69.6	775	72.6	1,379
35-39	71.7	594	69.4	673	70.7	1,267
40-44	71.3	470	63.5	422	68.1	892
45-49	68.8	322	64.4	333	67.0	655
50-54	70.1	250	54.9	324	62.7	574
55-59	67.8	181	67.7	298	67.8	479
60-64	46.3	143	63.7	253	55.9	396
Total 15-24	70.0	1,503	72.0	1,872	71.0	3,375
Total 15-49	71.7	4,178	69.9	4,907	70.9	9,085
Total 50-64	62.8	574	62.0	875	62.4	1,449
Total 15-64	70.7	4,752	68.8	5,782	69.8	10,534

* Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 12.8 Ever taken pre-exposure prophylaxis

Among adults aged 15-64 years who are HIV negative, percentage who reported they had ever taken pre-exposure prophylaxis (PrEP) to prevent HIV by selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	Percentage who had ever taken PrEP	Number	Percentage who had ever taken PrEP	Number	Percentage who had ever taken PrEP	Number
Residence						
Urban	11.2	726	11.0	1,128	11.1	1,854
Rural	12.1	359	11.5	511	11.8	870
District						
Gaborone	(7.4)	42	8.4	73	8.0	115
Francistown	*	24	8.1	50	12.0	74
Lobatse	1.7	57	8.0	93	4.9	150
Selibe Phikwe	*	12	(12.2)	28	(18.3)	40
Orapa	10.3	106	7.4	152	8.8	258
Jwaneng	15.2	61	9.4	82	12.2	143
Sowa	(21.3)	35	(11.6)	39	16.9	74
Ngwaketse South	(8.1)	38	9.3	68	8.8	106
Borolong	*	23	(6.8)	42	7.2	65
Ngwaketse West	*	18	(0.0)	31	(5.4)	49
South East	9.0	78	10.2	107	9.5	185
Kweneng East	(10.3)	27	10.3	73	10.3	100
Kweneng West	*	18	27.0	52	19.0	70
Kgatleng	(8.8)	41	15.2	73	12.4	114
Serowe Palapye	17.1	56	12.4	72	14.9	128
Central Mahalapye	*	17	(10.2)	49	12.0	66
Central Bobonong	(25.2)	27	(14.2)	40	19.4	67
Central Boteti	(25.3)	40	24.6	50	24.9	90
Central Tutume	(14.7)	35	17.7	59	16.3	94
North East	(0.0)	32	(15.5)	41	7.3	73
Ngamiland East	8.3	79	7.8	90	8.1	169
Ngamiland West	(12.1)	40	21.8	60	17.0	100
Chobe	14.0	51	10.5	55	12.6	106
Ghanzi	(20.1)	32	(11.2)	41	15.6	73
Kgalagadi South	7.0	59	6.6	63	6.8	122
Kgalagadi North	(10.4)	37	16.7	56	13.6	93
Marital status						
Never married	11.1	634	11.4	1,004	11.3	1,638
Married or living together	12.7	395	10.9	537	11.7	932
Divorced or separated	8.1	52	11.0	82	9.5	134
Widowed	*	3	*	14	*	17

Table 12.8 Ever taken pre-exposure prophylaxis **(continued)**

Among adults aged 15-64 years who are HIV negative, percentage who reported they had ever taken pre-exposure prophylaxis (PrEP) to prevent HIV by selected demographic characteristics, BAIS V 2021

	Males		Females		Total	
Characteristic	**Percentage who had ever taken PrEP**	**Number**	**Percentage who had ever taken PrEP**	**Number**	**Percentage who had ever taken PrEP**	**Number**
Education						
No education	(20.6)	32	*	24	14.5	56
Primary	27.2	67	5.5	71	16.2	138
Secondary	10.2	517	13.3	788	11.9	1,305
More than secondary	10.7	468	9.8	755	10.2	1,223
Wealth quintile						
Lowest	14.9	120	13.1	152	14.0	272
Second	15.7	167	14.8	260	15.2	427
Middle	19.3	155	6.5	259	12.0	414
Fourth	12.5	281	11.7	426	12.1	707
Highest	5.2	362	11.1	542	8.4	904
Age						
15-19	4.7	94	11.1	178	8.4	272
20-24	9.0	152	9.9	335	9.6	487
25-29	11.7	196	12.9	284	12.3	480
30-34	11.4	173	14.0	251	12.8	424
35-39	18.6	166	12.2	234	15.1	400
40-44	13.7	134	10.2	138	11.9	272
45-49	12.2	83	10.5	92	11.4	175
50-54	(2.0)	44	0.4	61	1.2	105
55-59	(15.8)	28	(6.3)	42	11.0	70
60-64	*	15	*	24	(4.1)	39
Total 15-24	7.3	246	10.4	513	9.2	759
Total 15-49	11.8	998	11.7	1,512	11.7	2,510
Total 50-64	6.3	87	3.4	127	4.7	214
Total 15-64	11.4	1,085	11.1	1,639	11.2	2,724

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with cau-tion.

* Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was com-pleted.

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13. TUBERCULOSIS, CERVICAL CANCER AND CHRONIC CONDITIONS

13.1 BACKGROUND

People living with HIV are at a heightened risk for acquiring other diseases such as cervical cancer among female, TB, and common noncommunicable chronic health conditions that can also complicate their clinical care.

Females living with HIV are at greater risk of developing cervical cancer because their weakened immune systems are not able to clear human papillomavirus (HPV) infections. WHO recommends HPV screening and treatment for all sexually-active HIV-positive females.[1] Among females living with HIV, WHO recommends that priority should be given to screening those aged 25-49 years, and that when tools are available to manage females living with HIV aged 50-65 years, those in that age bracket who have never been screened should also be prioritized. BAIS V provides population-based rates of screening unavailable from routine clinic data. This chapter presents cervical cancer screening rates by age and sociodemographic characteristics.

With changes in lifestyle and diet, noncommunicable health conditions, including diabetes, hypertension, heart disease, kidney disease, cancers, lung diseases and depression or other mental health issues have become increasingly important causes of illness and mortality in many communities in low and middle-income countries.[2] While it is not clear whether these conditions are more common among people living with HIV, there are some data to suggest that people living with HIV may develop comorbidities at younger ages and may be at higher risk of developing multiple chronic comorbidities.[3] Regardless, as people live longer with HIV on treatment, their care is more likely to require prevention and/or management of chronic health comorbidities.[4] In order to inform national program planning, BAIS V asked both HIV-negative and HIV-positive participants whether they have been told by a doctor or health worker that they have a chronic health condition.

Finally, TB remains the leading cause of death for people living with HIV in Africa.[5] HIV infection increases a person's susceptibility to TB infection and dramatically increases the risk of progression of latent TB to active disease.[6]

Information regarding health-seeking behavior and access to services among people living with HIV, particularly for TB health services, can help the HIV program decrease the impact of TB on people living with HIV. This chapter also describes the self-reported uptake of TB services (TB clinic attendance, TB diagnosis, and TB treatment initiation) among people living with HIV in Botswana. In addition, this chapter presents data on the performance of two of the key collaborative TB/HIV activities recommended by WHO: (1) HIV testing of all of those visiting a TB clinic who are not already aware of their HIV-positive status; and (2) TB symptom screening of all people living with HIV at every HIV clinic visit.[9]

13.2 RESULTS

The following tables report on cervical cancer screening among females living with HIV, the proportion of self-reported chronic health conditions among all survey participants and the self-reported uptake and delivery of the key TB/HIV services.

Table 13.1: Cervical cancer screening among females living with HIV

Among HIV-positive females aged 30-49 years, percentage who reported they had ever received a cervical cancer screening test by selected demographic characteristics, BAIS V 2021

	Among HIV-positive females		Among HIV-positive females who reported they had received a cervical cancer screening test	
Characteristic	**Percentage who reported they had ever received a cervical cancer screening test**	**Number**	**Percentage with an abnormal result**	**Number**
Residence				
Urban	68.2	801	3.2	514
Rural	69.6	714	5.1	430
District				
Gaborone	*	23	*	12
Francistown	(70.0)	30	*	20
Lobatse	(65.5)	39	*	23
Selibe Phikwe	(76.4)	25	*	20
Orapa	62.7	90	1.3	57
Jwaneng	(61.1)	33	*	20
Sowa	*	23	*	16
Ngwaketse South	70.5	57	(0.0)	35
Borolong	73.6	55	(2.7)	39
Ngwaketse West	82.7	57	(5.1)	37
South East	(83.6)	41	(9.4)	35
Kweneng East	(66.9)	47	(0.0)	30
Kweneng West	64.9	63	(2.7)	35
Kgatleng	(69.9)	47	(0.0)	31
Serowe Palapye	79.3	79	9.8	60
Central Mahalapye	79.0	84	6.9	64
Central Bobonong	71.3	67	(6.3)	43
Central Boteti	71.8	54	(0.0)	35
North East	77.5	67	(5.5)	48
Ngamiland East	66.1	114	2.9	68
Ngamiland West	43.8	115	(0.0)	45
Chobe	69.3	51	(0.0)	34
Ghanzi	(50.2)	46	*	18
Kgalagadi South	60.1	81	(1.9)	46
Kgalagadi North	57.2	55	(6.7)	31
Marital status				
Never married	68.4	829	5.2	498
Married or living together	68.6	568	1.3	362
Divorced or separated	69.6	86	7.6	61
Widowed	(76.7)	32	*	23

Table 13.1: Cervical cancer screening among females living with HIV **(continued)**

Among HIV-positive females aged 30-49 years, percentage who reported they had ever received a cervical cancer screening test by selected demographic characteristics, BAIS V 2021

	Among HIV-positive females		Among HIV-positive females who reported they had received a cervical cancer screening test	
Characteristic	**Percentage who reported they had ever received a cervical cancer screening test**	**Number**	**Percentage with an abnormal result**	**Number**
Education				
No education	46.6	77	(2.6)	35
Primary	60.6	270	2.2	151
Secondary	70.5	1,023	4.5	661
More than secondary	76.3	144	3.4	97
Wealth quintile				
Lowest	61.5	412	4.5	214
Second	66.1	368	1.9	223
Middle	72.7	272	3.7	191
Fourth	71.5	266	6.2	181
Highest	73.9	197	3.8	135
Age				
30-34	61.9	231	0.0	124
35-39	68.1	419	2.6	253
40-44	68.8	476	5.5	303
45-49	73.6	389	5.6	264
Total 30-49	68.7	1,515	3.9	944

[1] Relates to Global AIDS Monitoring 2021 indicator 10.8: Cervical cancer screening among females living with HIV and PEPFAR indicator CXCA_SCRN NAT/SUBNAT: Percentage of HIV-positive females on ART screened for cervical cancer.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was com-pleted.

Table 13.2: Chronic health conditions among HIV-positive and HIV-negative individuals

Among HIV-positive females aged 30-49 years, percentage who reported they had ever received a cervical cancer screening test by selected demographic characteristics, BAIS V 2021

Chronic health conditions	HIV Negative		HIV Positive							
			Unaware of HIV status[1]		Aware of HIV status and not on ART[1]		Aware of HIV status and on ART[1]		Total	
	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number
High blood sugar or diabetes										
Yes	4.2	411	1.6	2	2.4	1	3.6	114	3.5	117
No	95.4	10,882	97.3	152	97.6	53	96.2	3,094	96.2	3,299
High blood pressure or hypertension										
Yes	10.3	1,269	6.6	15	9.8	8	14.8	535	14.3	558
No	89.4	10,030	92.4	139	90.2	46	85.0	2,675	85.5	2,860
Heart disease or chronic heart condi-tion										
Yes	1.5	187	1.0	2	2.4	1	1.2	43	1.2	46
No	98.2	11,120	98.0	152	97.6	53	98.3	3,163	98.3	3,368
Kidney disease										
Yes	0.6	72	0.3	1	3.8	2	2.7	99	2.6	102
No	99.1	11,224	99.7	154	96.2	52	97.1	3,109	97.2	3,315
Cancer or tumor										
Yes	0.3	34	0.0	0	0.0	0	1.5	51	1.4	51
No	99.4	11,267	98.9	154	100.0	54	98.1	3,152	98.2	3,360
Lung disease or chronic lung condition										
Yes	0.9	97	0.0	0	0.0	0	0.8	34	0.8	34
No	98.8	11,200	95.6	152	100.0	54	99.0	3,175	98.9	3,381
Depression or mental health condition										
Yes	1.4	113	3.8	2	0.0	0	0.9	30	1.0	32
No	98.4	11,200	96.2	153	100.0	54	99.0	3,181	98.8	3,388
Total 15-64	100.0	11,339	100.0	155	100.0	54	100.0	3,215	100.0	3,424

[1] Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

Table 13.3: HIV testing in tuberculosis clinics

Among adults aged 15-64 years who reported visiting a tuberculosis (TB) clinic in the 12 months before the survey, percentage who reported that they were tested for HIV during a TB clinic visit in that period, by sex and self-reported TB diagnosis, BAIS V 2021

Characteristic	Tested for HIV during a TB clinic visit in the 12 months before the survey	Not tested for HIV during a TB clinic visit in the 12 months before the survey		Total	Number
		Already knew they were HIV positive	Did not know their status		
Sex					
Male	44.4	22.3	33.2	100.0	217
Female	39.6	32.0	28.5	100.0	212
TB diagnosis in the 12 months before the survey					
Diagnosed with TB	50.9	31.4	17.7	100.0	68
Not diagnosed with TB	41.2	24.9	33.8	100.0	360
Total 15-64	42.6	25.9	31.4	100.0	429

Table 13.4: Self-reported tuberculosis clinic attendance and services among HIV-positive adults

Among self-reported HIV-positive adults aged 15-64 years, percentage who reported that they had visited a tuberculosis (TB) clinic in the 12 months before the survey; among those who visited a TB clinic during that period, percentage who were diagnosed for TB; and among those diagnosed with TB in that period, percentage who reported receiving treatment for TB, by sex and selected demographic characteristics, BAIS V 2021

	Among HIV-positive adults		Among HIV-positive adults who visited a TB clinic in the 12 months before the survey		Among HIV-positive adults diagnosed with TB in the 12 months before the survey	
Characteristic	Percentage who visited a TB clinic in the 12 months before the survey	Number	Percentage diagnosed with TB in the 12 months before the survey	Number	Percentage treated for TB in the 12 months before the survey	Number
Sex						
Male	8.7	1,010	25.9	68	*	17
Female	4.0	2,535	16.8	106	*	16
Residence						
Urban	6.7	1,835	20.3	101	*	20
Rural	4.0	1,710	25.2	73	*	13
District						
Gaborone	8.1	56	*	5	*	1
Francistown	3.2	78	*	3	*	0
Lobatse	9.8	87	*	7	*	1
Selibe Phikwe	5.3	66	*	4	*	0
Orapa	3.9	173	*	8	*	2
Jwaneng	4.8	85	*	4	*	0
Sowa	2.7	63	*	2	*	0
Ngwaketse South	11.2	167	*	16	*	5
Borolong	5.2	136	*	7	*	4
Ngwaketse West	8.3	129	*	11	*	1
South East	7.5	99	*	5	*	2
Kweneng East	8.2	118	*	10	*	1
Kweneng West	4.9	167	*	7	*	1
Kgatleng	9.7	101	*	9	*	2
Serowe Palapye	4.2	180	*	6	*	2
Central Mahalapye	2.5	173	*	4	*	0
Central Bobonong	3.5	163	*	6	*	1
Central Boteti	2.5	110	*	2	*	0
Central Tutume	3.5	202	*	7	*	2
North East	5.3	168	*	10	*	2
Ngamiland East	3.8	254	*	10	*	1
Ngamiland West	3.9	234	*	9	*	2
Chobe	4.8	115	*	5	*	1
Ghanzi	3.2	99	*	3	*	0
Kgalagadi South	5.0	177	*	8	*	1
Kgalagadi North	3.9	145	*	6	*	1

Table 13.4: Self-reported tuberculosis clinic attendance and services among HIV-positive adults **(continued)**

Among self-reported HIV-positive adults aged 15-64 years, percentage who reported that they had visited a tuberculosis (TB) clinic in the 12 months before the survey; among those who visited a TB clinic during that period, percentage who were diagnosed for TB; and among those diagnosed with TB in that period, percentage who reported receiving treatment for TB, by sex and selected demographic characteristics, BAIS V 2021

	Among HIV-positive adults		Among HIV-positive adults who visited a TB clinic in the 12 months before the survey		Among HIV-positive adults diagnosed with TB in the 12 months before the survey	
Characteristic	**Percentage who visited a TB clinic in the 12 months before the survey**	**Number**	**Percentage diagnosed with TB in the 12 months before the survey**	**Number**	**Percentage treated for TB in the 12 months before the survey**	**Number**
Age						
15-24	4.5	145	*	6	*	2
25-34	4.3	483	*	20	*	5
35-44	5.6	1,261	22.5	57	*	7
45-54	6.6	1,107	21.5	63	*	13
55-64	5.3	549	(16.9)	28	*	6
Pregnancy status						
Pregnant at time of survey	(6.2)	49	*	2	*	0
Not pregnant at time of survey	3.9	2,471	17.7	102	*	16
Total 15-24	4.5	145	*	6	*	2
Total 15-49	5.4	2,534	24.8	115	*	23
Total 50-64	6.3	1,011	14.5	59	*	10
Total 15-64	5.6	3,545	21.7	174	(85.2)	33

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* Estimates based on a denominator less than 25 have been suppressed.

Table 13.5: Tuberculosis symptom screening in HIV clinics

Among self-reported HIV-positive adults aged 15-64 years currently in HIV care, percentage who re-ported that they were screened for tuberculosis (TB) symptoms during their last HIV clinic visit by sex, BAIS V 2021

Characteristic	Percentage screened for TB symptoms[1]	Number
Sex		
Male	67.1	871
Female	64.0	2,261
Total 15-64	65.0	3,132

[1] TB symptoms include persistent cough, fever, night sweats, and weight loss.

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APPENDIX A. SAMPLE DESIGN AND IMPLEMENTATION

APPENDIX A. SAMPLE DESIGN AND IMPLEMENTATION

Appendix A provides a high-level overview of sampling and weighting procedures for BAIS V 2021. In-depth details are provided in the BAIS V 2021 Sampling and Weighting Technical Report, which may be found at https://microdata.statsbots.org.bw/index.php/catalog/edit/26 .

A.1 SAMPLE DESIGN

Overview

The sample design for the BAIS V 2021 is a stratified multistage probability sample design, with strata defined by the 26 districts of the country. In the first stage, enumeration areas (EAs) were selected as primary sampling units (PSUs) with probability proportional to the EA size, and the number of households according to the census frame. A household listing operation was carried out in all the selected EAs, and the resulting list of households served as the sampling frame for the selection of households in the next stage. In the second stage of selection, households were selected from each EA with an equal probability systematic selection from the newly created household listing. Within each EA, one of every four of the selected households was assigned as a pediatric household. The sampling frame used for BAIS was based on the Botswana Population and Housing Census conducted in 2011, provided by Statistics Botswana. 1 The overall sample size and allocation by district were determined by precision requirements for: (1) VLS among HIV-positive persons aged 15 -49 years at the district level with a 95% confidence interval (CI) of ±10%; and (2) HIV incidence among persons aged 15 -49 years at the national level with a relative standard error (RSE) ≤0.2.

Within the sampled households, all eligible female and male participants aged 6 weeks to 64 years who were either usual household members who slept in the household the night before the survey, or visitors who slept in the household the night before the survey. were included in the study sample for data collection.

Population of Inference

The population of inference for BAIS V 2021 comprised the de facto household population of citizens and

residents of Botswana. The de facto population comprised individuals who were present in households (i.e., slept in the household) on the night prior to the household interview. In contrast, the de jure population comprised individuals who are usual residents of the household, irrespective of whether they slept in the household on the night prior to the household interview. Individuals who were neither citizens nor residents of Botswana were not eligible for BAIS.

Precision Specifications and Assumptions

The following specifications were used to develop the sample design for the BAIS V 2021.

- District-level viral load suppression (VLS) among HIV-positive persons aged 15-49 years with 95% confidence interval ±10%
- National-level HIV incidence for persons aged 15-49 years with relative standard error (RSE) ≤ 0.2

The following assumptions were used to develop the sample design for the BAIS V 2021.

- District-level VLS for HIV-positive persons aged 15-49 years = 0.5
- National-level and district-level HIV prevalence estimates for persons aged 15-49 years based on the BAIS IV survey = 24.3% national-level prevalence
- National-level annual HIV incidence for persons aged 15-64 years = 0.92%
- Intraclass correlation coefficient (ICC) for VLS = 0.033
- ICC for HIV prevalence = 0.039
- ICC for HIV incidence = 0.0
- Median duration of recent infection = 130 days
- Proportion false recent = 0.000001%
- Adjustment factor = 1.015 to account for MDRI and PFR included for national HIV incidence estimation and associated variance calculations
- Average number of selected dwelling units per cluster = 35
- Actual number of selected dwelling units per cluster to reflect changes in the measure of size between the sampling frame and household listing
- Average number of de facto household members aged 15-49 years = 1.97, and average number of de facto household members aged 50-64 years = 0.32, based on the BAIS IV survey
- Overall response rate for children assumed to be 5% lower than that of adults based on the BAIS IV survey
- Household occupancy rate based on the BAIS IV survey = 100%
- Household interview, individual interview, and HIV testing response rates based on the BAIS IV survey = 93%, 84%, 73% respectively

Selection of the Primary Sampling Units

The sampling frame used for BAIS V 2021 was based on the Botswana Population and Housing Census conducted in 2011, provided by Statistics Botswana. Botswana is divided into 26 districts. Each district is subdivided into localities and each locality into mutually exclusive EAs. The census frame contained a total of 5,203 EAs containing 2,230,905 individuals living in 550,243 households, with an average number of 3.68 persons per household and 120 to 150 households per EA.

A stratified sample of 387 EAs was selected with probability proportional to the EA measure of the size and with independent selection in each sampling stratum. The measure of size was the number of residential households residing in the EA based on the 2011 Botswana Population and Housing Census. Implicit stratification and proportional allocation were achieved at each of the lower administrative levels by sorting the sampling frame within each sampling stratum before sample selection according to administrative levels and by using a probability proportional to size selection at the first stage of sampling.

Details regarding EA segmentation may be found in the BAIS V 2021 Sampling and Weighting Technical Report available at https://microdata.statsbots.org.bw/index.php/catalog/edit/26 .

Selection of Households

For both sampling and analysis purposes, a household was defined as a group of persons who normally live and eat together. These people may or may not be related by blood but make common provisions for food or other essentials for living, and they have only one person whom they all regarded as the head of the household. Households were eligible for participation in the survey if they were within the predefined EA and were randomly selected for inclusion in the survey.

The selection of households for the BAIS V 2021 involved the following steps: (1) listing the dwelling units/households within the sampled EAs; (2) assigning eligibility codes to the listed dwelling unit/household records; (3) and selecting the samples of dwelling units/households.

A description of the household listing process as well as a summary of household eligibility may be found in the BAIS V 2021 Sampling and Weighting Technical Report at https://microdata.statsbots.org.bw/index.php/catalog/edit/26 .

Within each EA, a random sample of households was selected from households listed during the listing process. Using a systematic sampling procedure, an average of 35 households, ranging between 15 and 70 households, were sampled from each cluster as a secondary sampling unit. This sample of households served as a frame for a subsample of households to be selected for the pediatric households, from which 1 in 4 households was selected to be a pediatric household. The BAIS V 2021 Sampling and Weighting Technical Report provides an in-depth description of the equal probability sample design, as well as a detailed summary of the results of the household selection.

Selection of Individuals

The selection of individuals for BAIS V 2021 involved the following steps: (1) compiling a list of all individuals known to reside in the household or who slept in the household during the night prior to data collection, (2) identifying rostered individuals who were eligible for data collection, and (3) selecting those individuals meeting the age and residency requirements of the study. Only those individuals who slept in the household the night before the household interview (i.e., the de facto population) and who are citizens or residents of Botswana were eligible for interviews.

In all households, all de facto adults aged 15-64 years and emancipated minors aged 14 years who were citizens or residents of Botswana were eligible to complete the individual questionnaire. The following children were eligible for a child module questionnaire that was completed by a parent/guardian: all de facto children who were aged 6 weeks to 14 years who were not emancipated minors and were citizens or residents of Botswana and who were: (1) children of HIV-positive or deceased mothers or (2) children of mothers with unknown HIV status from households selected in the pediatric subsample that was 25% of the selected households. Due to the large number of children of mothers with unknown HIV status and the small HIV prevalence in that group, only a subsample (25%) of those children were eligible for the child module and blood testing. Also, due to the negligible HIV prevalence of children of HIV-negative mothers, those children were not eligible for participation in BAIS V 2021, in either the child module or the blood testing.

The BAIS V 2021 Sampling and Weighting Technical Report provides a brief description of the process for listing and selecting individuals for participation in the BAIS V 2021, and also presents detailed summaries of the distributions of eligible individuals and participants in individual interviews and HIV testing by strata and age.

A.2 WEIGHTING

Overview

In general, the purpose of weighting survey data from a complex sample design is to (1) compensate for variable probabilities of selection, (2) account for differential nonresponse rates within relevant subsets of the sample, and (3) adjust for possible under-coverage of certain population groups. Weighting is accomplished by assigning an appropriate sampling weight to each responding sampled unit (e.g., a household or person), and using that weight to calculate weighted estimates from the sample. The critical component of the sampling weight is the base weight, which is defined as the reciprocal of the probability of including a household or person in the sample. The base weights are used to inflate the responses of the sampled units to population levels and are generally unbiased (or consistent) if there is no nonresponse or noncoverage in the sample. When nonresponse or noncoverage occurs in the survey, weighting adjustments are applied to the base weights to compensate for both types of sample omissions.

Nonresponse is unavoidable in virtually all surveys of human populations. For BAIS V 2021, nonresponse could occur at different stages of data collection: (1) before the enumeration of individuals in the household, (2) after household enumeration and selection of persons but before completion of the individual interview, and (3) after completion of the interview but before collection of a usable blood sample. The procedures used to compensate for nonresponse at each of the relevant stages of data collection are described in the BAIS V 2021 Sampling and Weighting Technical Report Noncoverage arises when some members of the survey population have no chance of being selected for the sample. For example, noncoverage can occur if the field operations fail to enumerate all dwelling units during the listing process, or if certain household members are omitted from the household rosters. To compensate for such omissions, post-stratification procedures were used to calibrate the weighted sample counts to available population projections.

Methods

The overall weighting approach for BAIS V 2021 included several steps. Methods and results for each of the steps below are detailed in the BAIS V 2021 Sampling and Weighting Technical Report.

Initial checks: Checks of the data files were carried out as part of the survey and data quality control, and the probabilities of selection for PSUs and households were calculated and checked.

Creation of jackknife replicates: The variables needed to create the jackknife replicates for variance estimation were established at this point. This step was implemented immediately after the PSU sample was selected. All of the subsequent weighting steps described below were applied to the full sample, and to each of the jackknife replicates.

Calculation of base weight: The weighting process began with the calculation and checking of the sample PSU (EA) probabilities of selection and the within-EA household selection probabilities. The reciprocal of the product of the two probabilities was the base weight for all the next steps. At this step, the base weight was adjusted for any PSUs that could not be accessed or interviewed.

Calculation of household weight (hhwt0): The next step was to calculate household weights by adjusting the base weight for selected households for which it could not be determined whether the dwelling unit contained an eligible household and for nonresponding eligible households. This adjustment was made based on the EA the households are in, and the resulting weight was the final household weight.

Calculation of interview weight (intwt0): After the household weights were calculated, they were used to calculate the individual weights. The household weights were adjusted for nonresponse among the eligible individuals and calibrated to compensate for under-coverage in the sampling process by weighting up to 2021 population projections. For children who were eligible for blood draws, their parents/guardians were also eligible to complete a child module on their behalf. Therefore, interview weights were calculated for eligible children.

Calculation of biomarker weight (btwt0): For adults who were interviewed, the interview weights were then adjusted for nonresponse for blood testing and then calibrated to compensate for under-coverage.

Calculation of child weight (chwt_bw0): For children for whom child modules were completed and for children of HIV-negative mothers who were not tested, the interview weights of the tested children were then adjusted for nonresponse for blood testing and then the weight of the two groups was calibrated to compensate for under-coverage.

Application of weighting adjustments to jackknife replicates: All the adjustment processes were applied to the full sample and the replicate samples so that the final set of full sample and replicate weights could be used for variance estimation that considers the complex sample design.

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APPENDIX B. HIV TESTING METHODOLOGY

APPENDIX B. SAMPLE DESIGN AND IMPLEMENTATION

SPECIMEN COLLECTION AND HANDLING

Qualified survey staff collected blood from consenting participants. Participants 24 months and older had venous blood collected unless they refused to give venous blood or for whom venous blood draw failed. Participants had approximately 14 mL (aged 15–64 years) or 6 mL (aged 24 months to 14 years) of venous blood drawn. Capillary blood (1mL) was collected among participants aged 6 weeks-23 months. Blood samples were labeled with a unique barcoded participant identification number and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for processing into plasma aliquots and dried blood spots (DBS) and were frozen within 24 hours of blood collection at -20° Celsius. Plasma and DBS samples were regularly transferred to the central laboratory for repository storage at -80° Celsius.

HOUSEHOLD-BASED PROCEDURES

HIV Rapid Testing

Whole blood was used to conduct HIV testing in the field for participants who consented/assented or whose parent/guardian consented to rapid testing, except those who were self-reported and documented HIV positive.

Individuals were excluded from household HIV rapid testing if they met the following exclusion criteria:

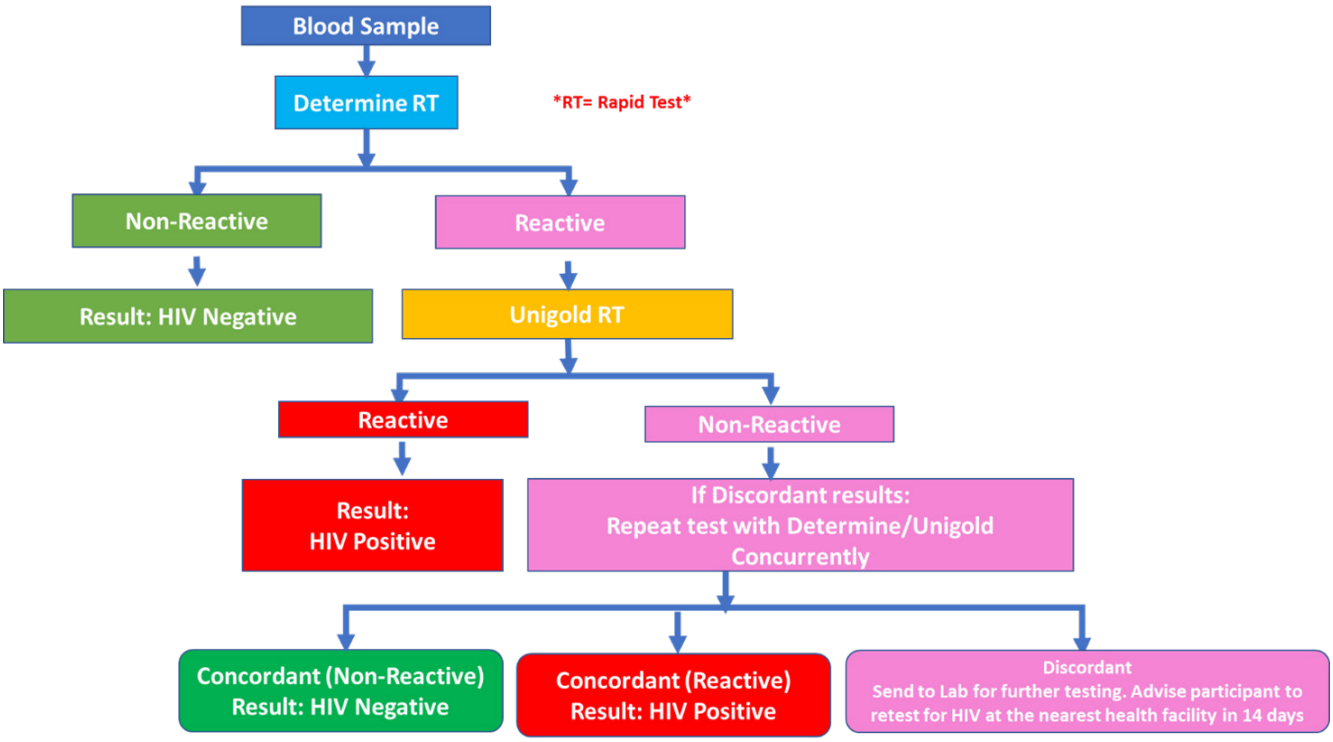
- Survey participants who were self-reported HIV-positive with proof of documentation including health card, pill bottle, or HIV test card from testing services, each identified with the name of the participant (these participants instead had RT done at a satellite lab). If participant was self-reported HIV positive but could not produce documentation, he/she received the rapid test in the household.
- Survey participants who were under 18 months (instead had TNA polymerase chain reaction (PCR)/EID test at the central laboratory).

HIV rapid testing was conducted in each household in accordance with Botswana's national guidelines which applies two tests in sequence (Figure B.1). As per these guidelines, the survey used a sequential rapid-testing algorithm in the field.

Individuals who were non-reactive on Determine™ HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States) rapid test (RT) were classified as negative HIV status. Individuals who were reactive on Determine RT were tested with Uni-Gold™ (Trinity Biotech, plc. Wicklow, Ireland) RT. Individuals with a reactive result on both tests (Determine and Unigold) were classified as positive HIV status. Individuals with one reactive and one non-reactive (discordant) test result were retested concurrently with both Determine and Unigold RTs. If both Determine and Unigold RTs were reactive then the participant was classified as positive HIV status. If both Determine and Unigold RTs were non-reactive then the participant was classified as negative HIV status. Those who continued to have discordant results had their specimen sent to the satellite and central labs for further testing. Participants with discordant results were directed to the nearest health facility to retest for HIV in 14 days.

For the survey, samples with positive results from the field testing received further testing and evaluation to allow for final classification of HIV status using the Geenius™ HIV-1/2 Supplemental Assay (Bio-Rad Laboratories, Inc., Redmond, Washington, United States) confirmatory tests or equivalent.

Figure B.1: Household-based HIV testing algorithm, BAIS V 2021



Counseling, Referral to Care, and Active Linkage to Care

Pre- and post-test counseling were conducted in each household in accordance with Botswana's national guidelines. Survey staff communicated results directly to participants aged 16 years or older. The age of consent for HTC and receipt of HIV test results in Botswana is 16 years. Therefore, the parent/guardian of minors under 16 years of age who took part in the survey and HIV testing received their child's test results. Minors 16–17 years of age who took part in the survey and HIV testing received their own results without their parent/guardian present unless requested by the minor. The post-counseling session may have included a parent/guardian based on the choice of the minor participant.

Participants who newly tested positive for HIV as part of the survey, participants who had previously tested positive but never initiated treatment, and participants who had previously tested positive and who had stopped treatment, were counseled on the possibility of receiving a facilitated linkage to a clinic for ART, care and support and asked to provide verbal consent for their information to be shared with a trained healthcare worker or counselor to facilitate the linkage. If the participant consented, the field staff completed the Active Linkage to Care (ALTC) Form, informed the participant or parent/guardian of the participant that he/she should visit the health facility of their choice for ALTC as soon as possible and that a third-party organization or expert client would contact them for follow up as necessary. All organizations participating in linkage to care were trained in confidentiality procedures and detailed procedures on active linkage to care, including eligibility for linkage to care, how contact information should be shared with the facility, community-based organization or a local linkage counselor, mechanisms of facilitated linkage, and documentation of linkage to care.

If a person who self-reported an HIV-positive status tested HIV negative in the survey, additional testing was performed at the satellite lab to confirm their status. Once the participant's status was confirmed, the return of results and the provision of appropriate counseling to the participant was led by MOH. In other rare cases where participants were provided an incorrect HIV test result or required additional collection of blood to complete testing, households were revisited by qualified personnel to provide participants with correct information and guidance on appropriate actions.

Quality Assurance and Control

To control the quality of the performance of HIV rapid tests, field and laboratory staff performing HIV testing conducted QC testing of a panel of HIV-positive and HIV-negative dried tube specimen (DTS) on a weekly basis.

To assure the quality of the performance of field staff conducting HIV testing, proficiency testing was conducted twice during the course of the survey, using a panel of masked HIV-positive and HIV-negative DTS. Additionally, sample re-testing was conducted at a satellite lab for the first 25 samples tested by each field staff member. Proficiency in the correct performance and interpretation of the HIV testing algorithm was assessed for each tester.

A limitation of the survey was the limited potential of rapid tests to detect low levels of HIV antibodies among people within the serological window of infection and in HIV-positive people on ART. Participants in these two categories were not expected to be a significant source of bias.

LABORATORY-BASED PROCEDURES

Fifteen satellite laboratories for the survey were established. One central reference laboratory (Botswana Harvard HIV Reference Lab – Sentinel Lab) was chosen for more specialized tests. At each satellite laboratory, trained technicians performed HIV confirmatory testing, CD4 count, QA testing, and processing of whole blood specimens into plasma aliquots and DBS cards for temporary storage at -20°C.

Geenius Testing

All HIV-positive samples, as well as samples with discrepant or indeterminate results, were tested using the Geenius™ HIV 1/2 Supplemental Assay (Bio-Rad, Hercules, California, United States). Testing was conducted at satellite laboratories in accordance with the manufacturer-specified protocol.

HIV Total Nucleic Acid (TNA) Polymerase Chain Reaction (PCR)

HIV TNA PCR was conducted at the central laboratory for EID testing among eligible infants aged 6 weeks -17 months born to mothers of unknown HIV status, mothers who were deceased, or mothers with an HIV-positive status. HIV TNA PCR was also conducted for the confirmation of status of those who self-reported an HIV-positive status with documentation but tested negative through RT in the satellite laboratory. HIV TNA PCR was conducted using the COBAS® AMPLICOR HIV-1 MONITOR Test v1.5 (Roche Molecular Systems, Inc., Branchburg, New Jersey) at Botswana Harvard HIV Reference Lab in accordance with the manufacturer-specified protocol.

Classification of Final HIV Status

The algorithm for classification of final HIV status included results from HIV rapid testing, Geenius testing, and HIV TNA PCR. Classification of final HIV status was used to determine estimates for HIV prevalence and to inform estimates for HIV incidence.

CD4 Count Measurement

Blood samples from the participants who tested HIV-positive underwent CD4 count measurement at the satellite laboratory. The measurement was performed using the Pima™ CD4 Analyzer (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere).

Viral Load Testing

The HIV-1 viral load (HIV RNA copies per mL) of all confirmed HIV-positive participants with plasma samples was measured using the COBAS AmpliPrep/Taqman 96 assay on the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) HIV-1, v2.0 Test (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). In cases where plasma samples were not available, HIV-1 viral load was performed on dried blood spot (DBS) samples using the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) Free Virus Elution (FVE) Protocol (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). The COBAS AmpliPrep/ TaqMan HIV-1 is a nucleic acid amplification test for the quantification of HIV Type 1 (HIV-1) RNA in human plasma or dried blood spots. Specimen preparation was automated using COBAS AmpliPrep with amplification and detection using TaqMan.

HIV Recency Testing

Estimation of annualized HIV-1 incidence was based on the classification of confirmed HIV-positive cases as recent or long-term HIV infections. To distinguish recent from long-term HIV infections, the survey used a laboratory-based testing algorithm that employed a combination of assays: an HIV-1 LAg avidity assay, viral load, and ARV detection (Figure B.2).

First, viral load results were assessed on all HIV-positive specimens. Those with viral load < 1,000 copies/mL were classified as long-term infections, while those viral load ≥ 1,000 copies/mL were classified as potential recent infections and LAg avidity assessed.

The Sedia HIV-1 LAg-Avidity EIA (Sedia Biosciences Corporation, Portland, Oregon, United States) was used on plasma specimens, while the Maxim HIV-1 Limiting Antigen-Avidity Dried Blood Spot (DBS) EIA (Maxim Biomedical, Bethesda, Maryland, United States) was used on DBS specimens.

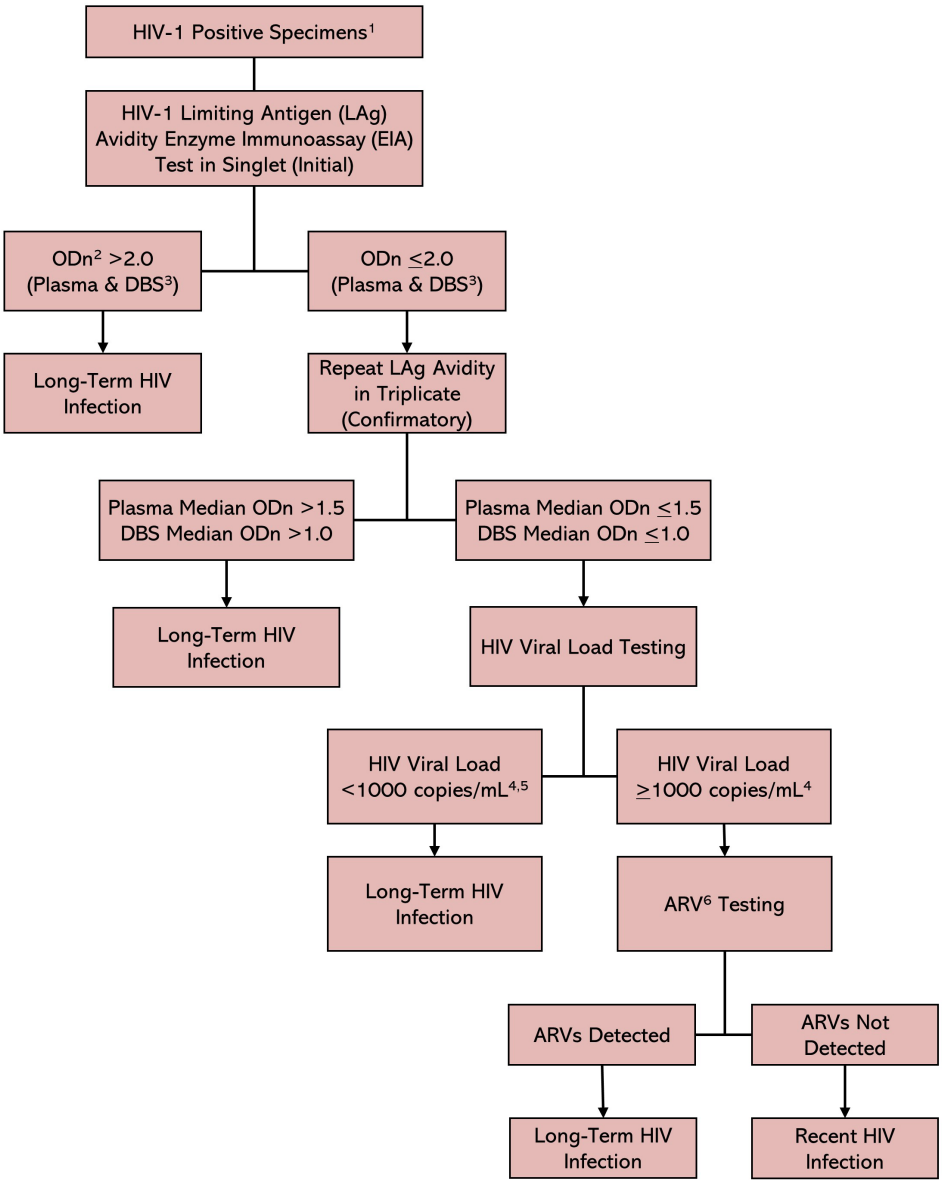
In the case of plasma specimens, LAg avidity testing was performed twice, with an initial screening test followed by a confirmatory test. Samples with a ODn > 2.0 during initial testing were classified as long-term infections, while those with ODn ≤ 2.0 underwent further testing of the specimen in triplicate. Samples with a median ODn > 1.5 during confirmatory testing were classified as long-term infections.

In the case of DBS specimens, LAg avidity testing was performed twice, with an initial screening test followed by a confirmatory test. Samples with ODn > 2.0 during initial testing were classified as long-term infections, while those with ODn ≤ 2.0 underwent further testing of the specimen in triplicate. Samples with a median ODn > 1.0 during confirmatory testing were classified as long-term infections.

ARV detection data were assessed for the samples with a median ODn ≤ 1.5 for plasma and ODn ≤ 1.0 for DBS. Those with a detectable ARV were classified as long-term infections and those without were classified as recent infections.

Afterwards, LAg avidity testing was performed separately on specimens with a viral load <1000 copies/mL but the long-term infection classification was retained for all (Figure B.2).

Figure B.2: HIV-1 recent infection testing algorithm, BAIS V 2021



[1]Confirmed by Geenius HIV 1/2 rapid test or equivalent method; [2]ODn: Normalized optical density; [3]DBS: Dried blood spot; [4]mL: milliliter, [5]All specimens were classified as long-term infection, regardless if LAg Avidity testing occurred. [6]ARV: antiretroviral

HIV Incidence Estimation

Incidence estimates were obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays. Weighted counts for HIV-negative persons (N); HIV-positive persons (P); numbers tested on the LAg assay (Q); and numbers HIV recent (R) were provided for use in incidence calculations or the UNAIDS Spectrum models (Table B.1). Incidence estimates were calculated using the following parameters: mean duration recent infection = 130 days (95% CI: 118-142 days); proportion false recent (PFR) = 0.000001%; time cutoff (T) = 1 year. In-depth details are provided in the BAIS V 2021 Public Use Package Data Manual found online at https://microdata.statsbots.org.bw/index.php/catalog/edit/26 .

Table B.1: Annual HIV incidence auxiliary data: N, P, Q, R, MDRI, PFR, and T

Annual incidence of HIV among persons aged 15-49 years and 15-64 years, by sex and age, using the re-cent infection algorithm, BAIS V, 2021

Males

Age	Number HIV negative[1] (N)	Number HIV positive[1] (P)	Number tested on LAg assay[1] (Q)	Number HIV recent[1] (R)
15-24	1,613	35	35	0
25-34	1,381	82	82	0
35-49	1,499	503	502	0
50-64	632	343	341	0
15-49	4,507	606	605	0
15-64	5,165	923	921	0

Females

Age	Number HIV negative[1] (N)	Number HIV positive[1] (P)	Number tested on LAg assay[1] (Q)	Number HIV recent[1] (R)
15-24	2,048	100	100	3
25-34	1,754	384	383	0
35-49	1,586	1,263	1,256	1
50-64	945	595	591	5
15-49	5,434	1,701	1,692	4
15-64	6,402	2,273	2,260	9

Table B.1: Annual HIV incidence auxiliary data: N, P, Q, R, MDRI, PFR, and T **(continued)**

Annual incidence of HIV among persons aged 15-49 years and 15-64 years, by sex and age, using the re-cent infection algorithm, BAIS V, 2021

	Total			
Age	**Number HIV negative[1] (N)**	**Number HIV positive[1] (P)**	**Number tested on LAg assay[1] (Q)**	**Number HIV recent[1] (R)**
15-24	3,668	128	128	3
25-34	3,174	427	426	0
35-49	3,163	1,688	1,681	1
50-64	1,584	931	925	4
15-49	10,060	2,188	2,180	4
15-64	11,698	3,065	3,052	7

[1] Weighted number.

Note: mean duration recent infection (MDRI) = [130 days (95% CI: 118-142 days) or country-specific]; propor-tion false recent (PFR) = 0.00; time cutoff (T) = 1 year.

Detection of Antiretrovirals

Qualitative screening for detectable concentrations of ARVs was conducted on DBS specimens from all HIV-positive participants by means of high-resolution liquid chromatography coupled with tandem mass spectrometry. The method used for ARV detection was a modified version of the methodology described by Koal et al.1 To qualitatively detect ARVs, a single DBS was eluted, and chromatographic separation carried out on a Luna 5µm PFP column (110 Å, 50 x 2 mm) (Phenomonex, Torrance, California, United States). Each ARV was detected using an API 4000 LC/MS/MS instrument (Applied Biosystems, Foster City, California, United States). Internal standards and in-house QC cut-off samples, including negative controls, were utilized in each run.

This qualitative assay was highly specific, as it separates the parent compound from the fragments, and highly sensitive, with a limit of detection of 0.02 µg/mL for each drug, and a signal-to-noise ratio of at least 5:1 for all drugs. Samples with concentrations above 0.02 µg/mL were considered positive for each ARV. As detection of all ARVs in use at the time of the survey was cost-prohibitive, five ARVs (efavirenz, lopinavir, nevirapine, atazanavir and dolutegravir) were selected as markers for the most prescribed first- and second-line regimens. Adults were tested for atazanavir, dolutegravir, and efavirenz and children were tested for these as well as lopinavir and nevirapine. These ARVs were also selected based on their relatively long half-lives, allowing for a longer period of detection following intake.

ARV detection was performed by the Division of Clinical Pharmacology of the Department of Medicine at the University of Cape Town, South Africa.

Genotyping for Detection of Antiretroviral Drug Resistance and HIV Subtyping

HIV resistance to ARVs was assessed for HIV-positive participants including recent cases, those without VLS (≥1,000 copies/mL; both on treatment and not on treatment), and those with viral load of 200-999 copies/mL. The findings will be presented in a separate addendum to this report.

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APPENDIX C. ESTIMATES OF SAMPLING ERRORS

APPENDIX C. ESTIMATES OF SAMPLING ERRORS

Estimates from sample surveys are affected by two types of errors: nonsampling errors and sampling errors. Nonsampling errors result from mistakes made during data collection (e.g., misinterpretation of an HIV test result) and data management (e.g., transcription errors in data entry). While BAIS V 2021 implemented numerous QA and QC measures to minimize nonsampling errors, these errors are impossible to avoid and difficult to evaluate statistically.

In contrast, sampling errors can be evaluated statistically. The sample of respondents selected for BAIS V 2021 is only one of many samples that could have been selected from the same population, using the same design and expected size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. Sampling errors are a measure of the variability between all possible samples. Although the degree of variability is not known exactly, it can be estimated from the survey results.

The standard error, which is the square root of the variance, is the usual measurement of sampling error for a particular statistic (e.g., proportion, mean, rate, count). In turn, the standard error can be used to calculate confidence intervals within which the true value for the population can reasonably be assumed to fall. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range of approximately plus or minus two times the standard error of that statistic in 95% of all possible samples of identical size and design.

BAIS V 2021 utilized a multistage stratified sample design, which required complex calculations to obtain sampling errors. Specifically, a variant of the jackknife replication method was implemented in SAS to estimate variance for proportions (e.g., HIV prevalence), rates (e.g., annual HIV incidence), and counts (e.g., numbers of people living with HIV). Each replication considered all but one cluster in the calculation of the estimates. Pseudo-independent replications were thus created. In BAIS V 2021, a jackknife replicate was created by randomly deleting one cluster from each variance-estimation stratum and retaining all of the clusters in the remaining strata. A total of 186 variance-estimation strata were created by pairing (or occasionally tripling) the sample clusters in the systematic order in which they had been selected. Hence, 186 replications were created. The variance of a sample-based statistic, y, was calculated as follows:

$$var(y) = \sum_{k=1}^{K} (yk - y)_2$$

where y is the full-sample estimate, and yk is the corresponding estimate for jackknife replicate k (k = 1, 2, ..., K).

In addition to the standard error, the design effect for each estimate was also calculated. The design effect is defined as the ratio of the variance using the given sample design to the variance that would result if a simple random sample had been used. A design effect of 1.0 indicates that the sample design is as efficient as a simple random sample, while a value greater than 1.0 indicates the increase in the variance due to the use of a more complex and less statistically efficient design. Confidence limits for the estimates, which are calculated as follows:

$$y \pm t(0.975; K) \sqrt{var(y)}$$

where t (0.975; K) is the 97.5th percentile of a t-distribution with K degrees of freedom, were also computed.

Sampling errors for selected variables from the BAIS V 2021 are presented in tables C.1 through C.8, and sampling errors for all survey estimates may be found online on the https://microdata.statsbots.org.bw/index.php/catalog/edit/26. For each variable, sampling error tables include the weighted estimate, unweighted denominator, standard error, design effect, or lower and upper 95% confidence limits.

Table C.1: Sampling errors: Annual HIV incidence by age, BAIS V 2021

Age (years)	Weighted estimate (%)	Standard error	Design Effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Males			
15-24	0.0	0.31	Missing	ND	0.000	0.639
25-34	0.0	0.36	Missing	ND	0.000	0.746
35-49	0.0	0.33	Missing	ND	0.000	0.689
50-64	0.0	0.79	Missing	ND	0.000	1.627
15-49	0.0	0.11	Missing	ND	0.000	0.230
15-64	0.0	0.10	Missing	ND	0.000	0.201
			Females			
15-24	0.4	0.22	1.0285	0.577	0.000	0.857
25-34	0.1	0.10	0.4184	0.990	0.000	0.271
35-49	0.1	0.15	0.5066	0.706	0.000	0.459
50-64	1.4	1.26	4.3230	0.997	0.000	4.024
15-49	0.2	0.10	0.8960	0.410	0.009	0.429
15-64	0.4	0.12	2.3317	0.380	0.000	0.767
			Total			
15-24	0.2	0.12	0.9009	0.578	0.000	0.433
25-34	0.0	0.05	0.3571	1.000	0.000	0.136
35-49	0.1	0.07	0.4351	0.707	0.000	0.208
50-64	0.7	0.67	3.7703	0.999	0.000	2.114
15-49	0.1	0.05	0.7726	0.410	0.000	0.207
15-64	0.2	0.06	2.0120	0.381	0.000	0.363

Table C.2: Sampling errors: HIV prevalence among children and adults aged 0-64 years by age, BAIS V 2021

Age	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Males			
0-17 months	0.0	456	0.083	NA	2.602	0.00	0.20
18-59 months	0.1	835	0.390	NA	3.638	0.00	0.91
5-9	2.4	1,213	18.087	NA	7.471	0.00	39.67
10-14	0.6	1,061	0.798	NA	1.414	0.00	2.21
Total 0-4	0.1	1,291	0.262	NA	3.143	0.00	0.62
Total 0-14	1.0	3,565	5.745	NA	5.619	0.00	12.86

Table C.2: Sampling errors: HIV prevalence among children and adults aged 0-64 years by age, BAIS V 2021 **(continued)**

Age	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Males			
15-19	1.6	880	0.568	1.8219	0.359	0.41	2.75
20-24	2.7	768	0.638	1.1844	0.235	1.40	4.03
25-29	4.8	765	1.340	3.0140	0.280	2.02	7.54
30-34	6.5	698	1.087	1.3622	0.168	4.22	8.70
35-39	14.8	742	1.870	2.0585	0.127	10.91	18.61
40-44	26.7	691	2.472	2.1546	0.093	21.59	31.77
45-49	38.7	569	4.352	4.5323	0.112	29.78	47.70
50-54	39.0	450	3.853	2.8019	0.099	31.07	46.94
55-59	34.3	299	3.874	1.9847	0.113	26.32	42.28
60-64	29.6	226	2.976	0.9557	0.100	23.49	35.75
Total 15-24	2.1	1,648	0.411	1.3327	0.193	1.29	2.98
Total 15-49	11.8	5,113	0.642	2.0174	0.054	10.52	13.17
Total 50-64	35.1	975	2.045	1.7880	0.058	30.92	39.34
Total 15-64	15.2	6,088	0.683	2.2083	0.045	13.76	16.58
				Females			
0-17 months	0.0	474	0.0	NA	0.919	0.00	0.11
18-59 months	1.2	925	9.0	NA	7.832	0.00	19.74
5-9	0.3	1,277	1.6	NA	6.276	0.00	3.49
10-14	0.5	1,114	1.3	NA	2.403	0.00	3.15
Total 0-4	0.9	1,399	7.1	NA	8.199	0.00	15.58
Total 0-14	0.6	3,790	2.3	NA	4.163	0.00	5.27
15-19	2.7	1,011	0.6	1.1893	0.207	1.53	3.80
20-24	6.7	1,137	0.9	1.3347	0.128	4.92	8.45
25-29	15.8	1,078	1.5	1.7413	0.093	12.76	18.80
30-34	20.2	1,060	1.6	1.5828	0.077	17.01	23.41
35-39	35.6	1,161	2.1	2.2592	0.059	31.27	39.98
40-44	49.3	939	3.8	5.3344	0.077	41.49	57.02
45-49	52.0	749	3.1	2.9642	0.061	45.50	58.45
50-54	43.0	607	3.3	2.7279	0.077	36.12	49.80
55-59	38.7	535	2.9	1.8664	0.074	32.74	44.60
60-64	32.6	398	2.8	1.4223	0.086	26.81	38.36
Total 15-24	4.6	2,148	0.5	1.2892	0.111	3.57	5.70
Total 15-49	23.8	7,135	1.1	4.4552	0.045	21.64	26.03
Total 50-64	38.7	1,540	2.2	3.2018	0.057	34.08	43.23
Total 15-64	26.2	8,675	1.0	4.9143	0.040	24.04	28.35

Table C.2: Sampling errors: HIV prevalence among children and adults aged 0-64 years by age, BAIS V 2021 **(continued)**

Age	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Total			
0-17 months	0.0	930	0.1	NA	1.835	0.00	0.17
18-59 months	0.6	1,760	4.6	NA	7.040	0.00	10.06
5-9	1.3	2,490	8.3	NA	6.201	0.00	18.48
10-14	0.5	2,175	0.4	NA	0.740	0.00	1.38
Total 0-4	0.5	2,690	3.4	NA	7.205	0.00	7.51
Total 0-14	0.8	7,355	4.0	NA	5.111	0.00	9.09
15-19	2.1	1,891	0.4	1.4253	0.187	1.30	2.93
20-24	4.7	1,905	0.5	1.2532	0.116	3.57	5.80
25-29	10.3	1,843	1.1	2.5008	0.109	7.99	12.60
30-34	13.5	1,758	1.0	1.5591	0.075	11.41	15.60
35-39	25.4	1,903	1.3	1.7711	0.052	22.69	28.16
40-44	38.1	1,630	2.6	4.6860	0.068	32.69	43.41
45-49	45.3	1,318	3.3	5.8682	0.073	38.45	52.13
50-54	41.0	1,057	3.0	3.9767	0.074	34.81	47.25
55-59	36.7	834	1.7	1.0539	0.047	33.15	40.21
60-64	31.3	624	2.0	1.1490	0.064	27.18	35.38
Total 15-24	3.4	3,796	0.3	1.2259	0.096	2.71	4.04
Total 15-49	17.9	12,248	0.8	4.8395	0.043	16.30	19.44
Total 50-64	37.0	2,515	1.6	2.7811	0.043	33.71	40.32
Total 15-64	20.8	14,763	0.8	5.5728	0.038	19.14	22.39

Table C.3: Sampling errors: HIV prevalence by residence and subnational area, BAIS V 2021

	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Males			
Residence							
Urban	13.7	3,408	0.9	2.3960	0.067	11.83	15.58
Rural	18.0	2,680	0.8	1.2152	0.045	16.36	19.73
District							
Gaborone	6.8	156	1.8	0.8014	0.267	3.05	10.49
Francistown	18.4	127	3.3	0.9006	0.178	11.67	25.17
Lobatse	7.4	191	2.5	1.6852	0.332	2.35	12.52
Selibe Phikwe	22.4	71	5.0	1.0098	0.224	12.06	32.68
Orapa	12.6	400	2.2	1.8386	0.179	7.92	17.19
Jwaneng	9.5	247	2.0	1.1934	0.214	5.33	13.76

Table C.3: Sampling errors: HIV prevalence by residence and subnational area, BAIS V 2021 **(continued)**

	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Males			
Sowa	12.1	148	2.7	1.0329	0.226	6.45	17.70
Ngwaketse South	17.6	281	1.2	0.2972	0.071	15.04	20.15
Borolong	17.2	238	1.4	0.3199	0.081	14.36	20.08
Ngwaketse West	15.3	201	1.9	0.5416	0.122	11.46	19.18
South East	9.0	282	1.4	0.6549	0.154	6.14	11.82
Kweneng East	15.5	179	1.9	0.4965	0.123	11.60	19.48
Kweneng West	17.7	276	3.1	1.7905	0.174	11.32	23.99
Kgatleng	13.3	195	2.8	1.2733	0.207	7.66	19.00
Serowe Palapye	16.7	255	3.1	1.7917	0.187	10.28	23.19
Central Mahalapye	22.8	163	3.4	1.0455	0.148	15.83	29.71
Central Bobonong	21.2	161	5.0	2.3965	0.236	10.90	31.50
Central Boteti	13.1	212	1.9	0.6594	0.144	9.19	16.95
Central Tutume	26.6	271	3.3	1.4838	0.123	19.85	33.34
North East	22.7	167	2.5	0.5705	0.108	17.68	27.80
Ngamiland East	12.4	456	1.5	0.9709	0.123	9.25	15.52
Ngamiland West	17.5	297	2.4	1.2301	0.140	12.45	22.54
Chobe	13.9	218	1.5	0.3820	0.104	10.91	16.89
Ghanzi	9.5	257	1.6	0.7208	0.163	6.32	12.74
Kgalagadi South	14.7	381	2.3	1.6628	0.159	9.89	19.54
Kgalagadi North	16.7	258	2.1	0.8235	0.127	12.31	20.99
				Females			
Residence							
Urban	23.8	4,919	1.3	4.8440	0.056	21.03	26.54
Rural	31.3	3,756	1.3	2.7531	0.040	28.72	33.89
District							
Gaborone	15.5	203	2.6	1.0694	0.170	10.04	20.87
Francistown	27.1	171	3.4	0.9657	0.124	20.20	34.00
Lobatse	18.9	312	2.1	0.9167	0.112	14.56	23.33
Selibe Phikwe	30.0	141	3.1	0.6611	0.105	23.52	36.50
Orapa	21.4	518	1.3	0.5548	0.063	18.64	24.17
Jwaneng	17.6	289	2.9	1.7230	0.167	11.57	23.72
Sowa	19.9	157	3.0	0.8524	0.148	13.82	25.98
Ngwaketse South	26.4	396	2.8	1.5537	0.105	20.71	32.10
Borolong	25.5	323	2.5	1.0160	0.096	20.50	30.59
Ngwaketse West	30.4	278	3.6	1.6681	0.118	23.02	37.72
South East	17.7	333	1.8	0.7432	0.102	13.96	21.40
Kweneng East	21.4	296	3.9	2.7036	0.183	13.35	29.53
Kweneng West	23.1	447	3.2	2.5206	0.137	16.62	29.68
Kgatleng	24.4	273	2.7	1.0408	0.109	18.90	29.83
Serowe Palapye	35.9	344	3.8	2.0978	0.105	28.14	43.59
Central Mahalapye	41.3	304	2.9	1.0538	0.070	35.31	47.27
Central Bobonong	37.1	319	3.9	2.1202	0.106	28.95	45.19
Central Boteti	24.1	296	2.3	0.8309	0.094	19.44	28.79

Table C.3: Sampling errors: HIV prevalence by residence and subnational area, BAIS V 2021 **(continued)**

	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Females			
Central Tutume	36.0	346	3.1	1.4190	0.085	29.70	42.38
North East	36.1	301	3.4	1.5408	0.095	29.02	43.20
Ngamiland East	25.7	662	2.0	1.4161	0.079	21.54	29.88
Ngamiland West	30.9	541	2.1	1.0901	0.067	26.65	35.20
Chobe	30.8	255	2.5	0.7588	0.082	25.57	35.96
Ghanzi	21.5	312	2.2	0.9280	0.104	16.89	26.13
Kgalagadi South	22.8	514	1.9	1.0417	0.083	18.94	26.73
Kgalagadi North	25.7	344	1.5	0.4107	0.059	22.61	28.84
				Total			
Residence							
Urban	18.9	8,327	1.0	5.6667	0.054	16.78	20.98
Rural	24.6	6,436	0.7	1.8864	0.030	23.09	26.13
District							
Gaborone	11.1	359	1.8	1.1934	0.163	7.40	14.88
Francistown	22.6	298	2.6	1.1204	0.114	17.27	27.84
Lobatse	13.4	503	2.0	1.7922	0.152	9.19	17.57
Selibe Phikwe	26.7	212	2.2	0.5436	0.084	22.12	31.38
Orapa	17.1	918	1.3	1.0606	0.075	14.45	19.72
Jwaneng	13.4	536	2.1	1.9642	0.154	9.11	17.60
Sowa	15.6	305	2.0	0.9384	0.129	11.45	19.75
Ngwaketse South	21.9	677	1.5	0.8786	0.068	18.82	24.96
Borolong	21.4	561	1.4	0.6659	0.066	18.46	24.28
Ngwaketse West	23.2	479	2.2	1.3367	0.096	18.56	27.75
South East	12.8	615	1.0	0.5270	0.076	10.78	14.81
Kweneng East	18.7	475	2.6	2.1170	0.139	13.36	24.09
Kweneng West	20.5	723	2.3	2.3086	0.111	15.83	25.24
Kgatleng	19.3	468	1.8	0.9367	0.092	15.62	22.89
Serowe Palapye	25.9	599	2.6	2.1365	0.101	20.55	31.34
Central Mahalapye	33.3	467	2.9	1.7403	0.086	27.39	39.25
Central Bobonong	30.5	480	3.7	3.1718	0.123	22.75	38.18
Central Boteti	18.6	508	1.6	0.8907	0.088	15.22	21.94
Central Tutume	31.1	617	3.1	2.7997	0.100	24.68	37.53
North East	30.0	468	1.7	0.6695	0.058	26.46	33.61
Ngamiland East	19.1	1,118	1.6	1.9020	0.085	15.72	22.40
Ngamiland West	25.0	838	2.0	1.7969	0.080	20.83	29.09
Chobe	21.4	473	1.6	0.7478	0.076	18.05	24.78
Ghanzi	15.2	569	1.3	0.7219	0.084	12.58	17.85
Kgalagadi South	18.8	895	1.9	2.0796	0.100	14.89	22.65
Kgalagadi North	21.1	602	1.4	0.6896	0.065	18.28	23.97

Table C.4: Sampling errors: Viral load suppression by age, BAIS V 2021

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Males			
0-14	98.4	8	33.094	48.6254	0.336	30.24	100.00
15-19	81.7	14	9.911	0.8555	0.121	61.33	100.00
20-24	81.8	25	7.834	0.9887	0.096	65.65	97.92
25-29	76.1	31	10.748	1.9079	0.141	54.01	98.28
30-34	66.9	54	8.170	1.5968	0.122	50.04	83.69
35-39	83.9	101	3.724	1.0284	0.044	76.27	91.61
40-44	83.6	174	3.683	1.7101	0.044	76.00	91.17
45-49	90.8	222	3.101	2.5495	0.034	84.43	97.21
50-54	94.9	187	1.493	0.8640	0.016	91.87	98.02
55-59	98.7	106	0.905	0.6604	0.009	96.82	100.00
60-64	95.5	75	2.720	1.2629	0.028	89.86	100.00
0-11	98.4	6	35.526	39.2954	0.361	25.20	100.00
12-17	68.2	8	27.399	2.4249	0.401	11.82	100.00
15-24	81.8	39	6.816	1.1842	0.083	67.73	95.81
25-34	71.0	85	6.397	1.6686	0.090	57.80	84.15
35-44	83.7	275	2.603	1.3622	0.031	78.37	89.09
45-54	92.5	409	1.912	2.1595	0.021	88.60	96.47
55-64	97.4	181	1.234	1.0760	0.013	94.84	99.93
Total 15-49	84.1	621	1.851	1.5897	0.022	80.29	87.92
Total 50-64	96.2	368	0.963	0.9373	0.010	94.25	98.21
Total 15-64	88.1	989	1.269	1.5182	0.014	85.49	90.72
				Females			
0-14	33.5	9	206.059	152.4570	6.149	0.00	100.00
15-19	72.3	26	11.444	1.6340	0.158	48.70	95.84
20-24	76.1	92	6.804	2.3131	0.089	62.04	90.07
25-29	91.8	175	2.223	1.1403	0.024	87.21	96.36
30-34	91.7	231	2.062	1.2787	0.023	87.41	95.90
35-39	97.8	416	0.550	0.5833	0.006	96.67	98.93
40-44	95.4	477	1.222	1.6147	0.013	92.86	97.90
45-49	94.0	387	2.651	4.8364	0.028	88.58	99.50
50-54	95.3	268	1.649	1.6330	0.017	91.94	98.73
55-59	93.1	221	4.127	5.8230	0.044	84.59	100.00
60-64	98.2	132	1.320	1.3213	0.013	95.53	100.00
0-11	53.3	7	26.670	1.7144	0.501	0.00	100.00
12-17	54.5	8	245.697	170.3840	4.512	0.00	100.00
15-24	74.9	118	5.966	2.2182	0.080	62.66	87.24
25-34	91.7	406	1.480	1.1668	0.016	88.66	94.76
35-44	96.5	893	0.675	1.2095	0.007	95.13	97.91

Table C.4: Sampling errors: Viral load suppression by age, BAIS V 2021 **(continued)**

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Females			
45-54	94.5	655	1.750	3.8756	0.019	90.93	98.14
55-64	95.2	353	2.571	5.0800	0.027	89.90	100.00
Total 15-49	93.6	1,804	0.947	2.6850	0.010	91.61	95.51
Total 50-64	95.3	621	1.614	3.5698	0.017	91.93	98.58
Total 15-64	94.0	2,425	0.872	3.2482	0.009	92.16	95.76
				Total			
0-14	85.3	17	56.631	40.8954	0.664	0.00	100.00
15-19	75.8	40	8.150	1.4138	0.107	59.05	92.62
20-24	77.7	117	5.662	2.1481	0.073	66.07	89.39
25-29	88.1	206	2.814	1.5533	0.032	82.35	93.94
30-34	85.9	285	3.033	2.1522	0.035	79.62	92.11
35-39	93.8	517	1.125	1.1297	0.012	91.52	96.15
40-44	91.3	651	1.586	2.0546	0.017	88.01	94.54
45-49	92.6	609	1.993	3.5448	0.022	88.54	96.75
50-54	95.2	455	1.074	1.1349	0.011	92.94	97.36
55-59	95.5	327	2.487	4.6473	0.026	90.33	100.00
60-64	97.1	207	1.424	1.4740	0.015	94.15	100.00
0-11	93.1	13	113.443	239.3860	1.219	0.00	100.00
12-17	59.8	16	156.998	153.7760	2.626	0.00	100.00
15-24	77.1	157	4.927	2.1466	0.064	66.98	87.27
25-34	86.9	491	1.997	1.7132	0.023	82.76	90.99
35-44	92.4	1,168	0.953	1.5138	0.010	90.46	94.39
45-54	93.6	1,064	1.243	2.7594	0.013	91.08	96.20
55-64	96.1	534	1.613	3.7120	0.017	92.79	99.44
Total 15-49	90.4	2,425	0.956	2.5632	0.011	88.47	92.41
Total 50-64	95.7	989	1.039	2.5794	0.011	93.54	97.82
Total 15-64	91.9	3,414	0.788	2.8289	0.009	90.23	93.47

Table C.5: Sampling errors: Viral load suppression by residence and subnational area, BAIS V 2021

	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Males			
Residence							
Urban	87.9	487	1.853	1.5686	0.021	84.07	91.71
Rural	88.4	502	1.496	1.0946	0.017	85.34	91.50
District							
Gaborone	92.6	14	7.550	1.0852	0.082	77.08	100.00
Francistown	86.9	26	9.158	1.8372	0.105	68.00	100.00
Lobatse	92.4	16	4.855	0.5016	0.053	82.37	100.00
Selibe Phikwe	100.0	17	0.000	0.0000	0.000	100.00	100.00
Orapa	92.9	49	5.230	1.9965	0.056	82.15	100.00
Jwaneng	83.6	27	6.064	0.6964	0.073	71.08	96.06
Sowa	84.6	22	5.913	0.5648	0.070	72.47	96.82
Ngwaketse South	79.4	45	4.552	0.5584	0.057	70.07	88.82
Borolong	88.9	45	5.077	1.1462	0.057	78.41	99.32
Ngwaketse West	93.4	33	4.638	1.1242	0.050	83.90	100.00
South East	100.0	24	0.000	.	0.000	100.00	100.00
Kweneng East	92.2	30	5.400	1.1705	0.059	81.04	100.00
Kweneng West	83.4	57	4.505	0.8218	0.054	74.15	92.70
Kgatleng	83.9	27	7.337	1.0360	0.087	68.79	99.01
Serowe Palapye	89.7	46	4.524	0.9930	0.050	80.34	98.97
Central Mahalapye	100.0	39	0.000	.	0.000	100.00	100.00
Central Bobonong	96.3	35	3.793	1.3645	0.039	88.46	100.00
Central Boteti	76.0	33	7.322	0.9395	0.096	60.87	91.04
Central Tutume	80.1	73	3.568	0.5742	0.045	72.71	87.40
North East	82.9	42	5.206	0.7850	0.063	72.21	93.65
Ngamiland East	83.8	64	4.855	1.0948	0.058	73.81	93.81
Ngamiland West	90.7	56	2.467	0.3982	0.027	85.65	95.82
Chobe	84.2	33	9.139	2.0068	0.109	65.36	100.00
Ghanzi	80.0	27	11.905	2.3038	0.149	55.49	100.00
Kgalagadi South	85.0	61	5.503	1.4250	0.065	73.67	96.33
Kgalagadi North	93.8	48	3.269	0.8695	0.035	87.11	100.00
				Females			
Residence							
Urban	93.4	1,263	1.346	3.6945	0.014	90.60	96.14
Rural	94.9	1,162	0.764	1.4039	0.008	93.34	96.49
District							
Gaborone	82.1	35	9.275	1.9930	0.113	63.03	100.00
Francistown	91.9	48	4.826	1.4688	0.053	81.95	100.00
Lobatse	85.7	64	6.555	2.2044	0.077	72.16	99.17
Selibe Phikwe	100.0	44	0.000	.	0.000	100.00	100.00
Orapa	88.2	118	2.297	0.5937	0.026	83.48	92.94
Jwaneng	93.4	56	2.823	0.7097	0.030	87.57	99.20

Table C.5: Sampling errors: Viral load suppression by residence and subnational area, BAIS V 2021 **(continued)**

	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Females			
Sowa	93.6	33	4.060	0.8854	0.043	85.28	100.00
Ngwaketse South	96.3	102	1.609	0.7251	0.017	92.94	99.57
Borolong	90.9	87	1.505	0.2347	0.017	87.77	93.97
Ngwaketse West	93.4	92	1.107	0.1816	0.012	91.15	95.71
South East	94.8	66	2.826	1.0446	0.030	88.94	100.00
Kweneng East	96.9	69	1.817	0.7529	0.019	93.18	100.00
Kweneng West	94.8	109	2.162	1.0290	0.023	90.37	99.28
Kgatleng	90.2	70	2.225	0.3866	0.025	85.62	94.78
Serowe Palapye	93.0	130	1.876	0.7005	0.020	89.17	96.90
Central Mahalapye	95.9	131	2.083	1.4364	0.022	91.61	100.00
Central Bobonong	94.7	126	1.856	0.8572	0.020	90.87	98.52
Central Boteti	95.4	75	2.610	1.1539	0.027	90.05	100.00
Central Tutume	96.1	131	1.279	0.5702	0.013	93.49	98.75
North East	97.9	110	1.351	0.9829	0.014	95.15	100.00
Ngamiland East	95.3	182	0.857	0.2969	0.009	93.54	97.07
Ngamiland West	96.5	174	1.789	1.6519	0.019	92.84	100.00
Chobe	94.3	83	1.762	0.4700	0.019	90.62	97.88
Ghanzi	89.6	74	3.868	1.1754	0.043	81.67	97.60
Kgalagadi South	93.2	124	2.585	1.2900	0.028	87.84	98.49
Kgalagadi North	99.1	92	0.899	0.8371	0.009	97.26	100.00
				Total			
Residence							
Urban	91.4	1,750	1.174	3.0788	0.013	89.02	93.85
Rural	92.5	1,664	0.787	1.4839	0.009	90.88	94.12
District							
Gaborone	85.3	49	8.303	2.6389	0.097	68.20	100.00
Francistown	89.7	74	4.611	1.6854	0.051	80.24	99.24
Lobatse	87.5	80	4.764	1.6356	0.054	77.65	97.28
Selibe Phikwe	100.0	61	0.000	.	0.000	100.00	100.00
Orapa	89.9	167	3.109	1.7687	0.035	83.51	96.31
Jwaneng	89.7	83	3.274	0.9493	0.037	82.93	96.42
Sowa	89.8	55	3.912	0.9033	0.044	81.76	97.87
Ngwaketse South	89.3	147	2.775	1.1726	0.031	83.54	94.97
Borolong	90.1	132	2.264	0.7507	0.025	85.41	94.73
Ngwaketse West	93.4	125	1.975	0.7884	0.021	89.37	97.50
South East	96.8	90	1.856	0.9835	0.019	92.96	100.00
Kweneng East	95.1	99	2.218	1.0357	0.023	90.54	99.67
Kweneng West	90.2	166	2.825	1.4833	0.031	84.34	95.97
Kgatleng	88.2	97	2.589	0.6165	0.029	82.82	93.49
Serowe Palapye	91.9	176	1.777	0.7422	0.019	88.24	95.56
Central Mahalapye	97.1	170	1.491	1.3410	0.015	94.05	100.00
Central Bobonong	95.2	161	1.625	0.9163	0.017	91.81	98.50
Central Boteti	88.6	108	3.765	1.4968	0.043	80.80	96.31

Table C.5: Sampling errors: Viral load suppression by residence and subnational area, BAIS V 2021 **(continued)**

	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Total			
Central Tutume	88.9	204	2.218	1.0151	0.025	84.37	84.37
North East	92.7	152	2.548	1.4573	0.027	87.50	87.50
Ngamiland East	91.6	246	2.031	1.3107	0.022	87.39	87.39
Ngamiland West	94.7	230	1.401	0.8997	0.015	91.84	91.84
Chobe	90.6	116	3.415	1.5790	0.038	83.59	83.59
Ghanzi	86.5	101	5.410	2.5005	0.063	75.32	75.32
Kgalagadi South	90.0	185	2.657	1.4383	0.030	84.49	84.49
Kgalagadi North	97.0	140	1.491	1.0637	0.015	93.94	93.94

Table C.6 Sampling errors: ARV-adjusted 95-95-95 by age (conditional percentages), BAIS V 2021

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Males			
				Diagnosed			
15-24	89.1	39	5.69	1.2598	0.064	77.35	100.00
25-34	82.0	85	4.47	1.1365	0.054	72.84	91.24
35-49	92.2	497	1.69	1.9752	0.018	88.72	95.69
50-64	97.9	368	0.83	1.2070	0.008	96.15	99.57
15-49	90.6	621	1.60	1.8502	0.018	87.27	93.85
Total 15-64	93.0	989	1.07	1.7323	0.012	90.76	95.17
				On Treatment			
15-24	100.0	34	0.00		0.000	100.00	100.00
25-34	89.5	64	6.09	2.4864	0.068	76.94	100.00
35-49	97.0	462	1.08	1.8364	0.011	94.74	99.20
50-64	99.3	360	0.51	1.3071	0.005	98.21	100.00
15-49	96.2	560	1.14	1.9524	0.012	93.83	98.50
Total 15-64	97.2	920	0.77	2.0141	0.008	95.67	98.82
				Viral Load Suppression			
15-24	91.8	34	3.86	0.6529	0.042	83.88	99.76
25-34	91.1	60	5.13	1.9200	0.056	80.54	100.00
35-49	96.5	449	0.85	0.9431	0.009	94.70	98.20
50-64	98.5	356	0.44	0.4835	0.004	97.63	99.45
15-49	95.5	543	1.04	1.3765	0.011	93.39	97.68
Total 15-64	96.6	899	0.67	1.2237	0.007	95.22	97.98

Table C.6 Sampling errors: ARV-adjusted 95-95-95 by age (conditional percentages), BAIS V 2021 **(continued)**

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Females				
			Diagnosed				
15-24	82.3	118	5.93	2.8256	0.072	70.12	94.54
25-34	95.6	408	0.95	0.8692	0.010	93.67	97.57
35-49	98.0	1,281	0.49	1.5261	0.005	96.94	98.96
50-64	96.1	621	1.58	4.0800	0.016	92.83	99.32
15-49	96.5	1,807	0.57	1.6934	0.006	95.29	97.62
Total 15-64	96.4	2,428	0.65	2.9439	0.007	95.03	97.71
			On Treatment				
15-24	97.8	99	1.64	1.2136	0.017	94.38	100.00
25-34	96.5	383	0.93	0.9638	0.010	94.58	98.39
35-49	98.8	1,254	0.70	4.9251	0.007	97.33	100.00
50-64	98.9	606	0.47	1.2887	0.005	97.97	99.92
15-49	98.2	1,736	0.55	2.9815	0.006	97.04	99.32
Total 15-64	98.4	2,342	0.43	2.7044	0.004	97.47	99.25
			Viral Load Suppression				
15-24	91.51	96	3.54	1.5342	0.039	84.21	98.80
25-34	98.78	371	0.72	1.5919	0.007	97.30	100.00
35-49	98.58	1,242	0.44	1.7307	0.004	97.67	99.49
50-64	99.73	600	0.23	1.1764	0.002	99.26	100.00
15-49	98.26	1,709	0.38	1.4665	0.004	97.47	99.05
Total 15-64	98.61	2,309	0.30	1.4929	0.003	98.00	99.22
			Total				
			Diagnosed				
15-24	84.47	157	4.81	2.7485	0.057	74.57	94.37
25-34	92.46	493	1.24	1.0917	0.013	89.90	95.02
35-49	95.89	1,778	0.66	1.9676	0.007	94.53	97.25
50-64	96.86	989	0.97	3.0727	0.010	94.86	98.86
15-49	94.51	2,428	0.70	2.3137	0.007	93.06	95.96
Total 15-64	95.14	3,417	0.64	3.0680	0.007	93.82	96.47

Table C.6 Sampling errors: ARV-adjusted 95-95-95 by age (conditional percentages), BAIS V 2021 **(continued)**

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Total				
			On Treatment				
15-24	98.5	133	1.09	1.0720	0.011	96.27	100.00
25-34	95.0	447	1.39	1.8321	0.015	92.17	97.91
35-49	98.1	1,716	0.61	3.5101	0.006	96.88	99.40
50-64	99.1	966	0.35	1.3338	0.004	98.36	99.82
15-49	97.5	2,296	0.52	2.5905	0.005	96.47	98.61
Total 15-64	98.0	3,262	0.38	2.3046	0.004	97.19	98.74
			Viral Load Suppression				
15-24	91.61	130	2.57	1.1123	0.028	86.31	96.91
25-34	97.29	431	1.51	3.7054	0.015	94.19	100.00
35-49	97.86	1,691	0.41	1.3316	0.004	97.02	98.69
50-64	99.20	956	0.23	0.6575	0.002	98.72	99.68
15-49	97.41	2,252	0.45	1.7836	0.005	96.49	98.33
Total 15-64	97.91	3,208	0.33	1.6822	0.003	97.23	98.58

Table C.7: Sampling errors: ARV-adjusted 95-95-95 by age (overall percentages), BAIS V 2021

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Males				
			Diagnosed				
15-24	89.1	39	5.69	1.2598	0.064	77.35	100.00
25-34	82.0	85	4.47	1.1365	0.054	72.84	91.24
35-49	92.2	497	1.69	1.9752	0.018	88.72	95.69
50-64	97.9	368	0.83	1.2070	0.008	96.15	99.57
15-49	90.6	621	1.60	1.8502	0.018	87.27	93.85
Total 15-64	93.0	989	1.07	1.7323	0.012	90.76	95.17

Table C.7: Sampling errors: ARV-adjusted 95-95-95 by age (overall percentages), BAIS V 2021 **(continued)**

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Males				
			On Treatment				
15-24	89.1	39	5.69	1.2598	0.064	77.35	100.00
25-34	73.4	85	6.50	1.8161	0.088	60.04	86.79
35-49	89.4	497	1.91	1.9115	0.021	85.47	93.34
50-64	97.1	368	0.97	1.2430	0.010	95.15	99.14
15-49	87.1	621	1.87	1.9346	0.022	83.23	90.95
Total 15-64	90.4	989	1.31	1.9456	0.014	87.72	93.10
			Viral Load Suppression				
15-24	81.8	39	6.82	1.1842	0.083	67.73	95.81
25-34	66.9	85	6.65	1.6773	0.099	53.19	80.58
35-49	86.2	497	1.96	1.6017	0.023	82.20	90.27
50-64	95.7	368	1.06	0.9992	0.011	93.55	97.90
15-49	83.2	621	1.88	1.5710	0.023	79.32	87.08
Total 15-64	87.3	989	1.27	1.4459	0.015	84.71	89.95
			Females				
			Diagnosed				
15-24	82.3	118	5.93	2.8256	0.072	70.12	94.54
25-34	95.6	408	0.95	0.8692	0.010	93.67	97.57
35-49	98.0	1,281	0.49	1.5261	0.005	96.94	98.96
50-64	96.1	621	1.58	4.0800	0.016	92.83	99.32
15-49	96.5	1,807	0.57	1.6934	0.006	95.29	97.62
Total 15-64	96.4	2,428	0.65	2.9439	0.007	95.03	97.71
			On Treatment				
15-24	80.5	118	5.738	2.4527	0.071	68.67	92.31
25-34	92.3	408	1.367	1.0639	0.015	89.44	95.07
35-49	96.7	1,281	1.078	4.7105	0.011	94.51	98.95
50-64	95.1	621	1.63	3.4869	0.017	91.71	98.41
15-49	94.7	1,807	0.90	2.9220	0.010	92.85	96.56
Total 15-64	94.8	2,428	0.85	3.5315	0.009	93.04	96.53

Table C.7: Sampling errors: ARV-adjusted 95-95-95 by age (overall percentages), BAIS V 2021 **(continued)**

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Females				
			Viral Load Suppression				
15-24	73.7	118	5.92	2.1157	0.080	61.45	85.85
25-34	91.1	408	1.50	1.1379	0.016	88.04	94.23
35-49	95.4	1,281	1.13	3.6734	0.012	93.04	97.68
50-64	94.8	621	1.64	3.3820	0.017	91.43	98.18
15-49	93.1	1,807	0.96	2.5657	0.010	91.08	95.03
Total 15-64	93.5	2,428	0.88	3.0611	0.009	91.66	95.27
			Total				
			Diagnosed				
15-24	84.5	157	4.81	2.7485	0.057	74.57	94.37
25-34	92.5	493	1.24	1.0917	0.013	89.90	95.02
35-49	95.9	1,778	0.66	1.9676	0.007	94.53	97.25
50-64	96.9	989	0.97	3.0727	0.01	94.86	98.86
15-49	94.5	2,428	0.70	2.3137	0.007	93.06	95.96
Total 15-64	95.1	3,417	0.64	3.0680	0.007	93.82	96.47
			On Treatment				
15-24	83.2	157	4.70	2.4721	0.057	73.53	92.91
25-34	87.9	493	1.74	1.4046	0.020	84.28	91.47
35-49	94.1	1,778	1.00	3.1800	0.011	92.06	96.16
50-64	96.0	989	1.03	2.7381	0.011	93.85	98.11
15-49	92.2	2,428	0.93	2.9112	0.010	90.27	94.10
Total 15-64	93.2	3,417	0.78	3.3143	0.008	91.60	94.82
			Viral Load Suppression				
15-24	76.2	157	4.94	2.0985	0.065	66.07	86.41
25-34	85.5	493	2.02	1.6149	0.024	81.34	89.65
35-49	92.1	1,778	1.03	2.5722	0.011	89.98	94.21
50-64	95.2	989	1.07	2.4695	0.011	93.01	97.41
15-49	89.8	2,428	0.97	2.4858	0.011	87.81	91.80
Total 15-64	91.3	3,417	0.79	2.6853	0.009	89.63	92.89

Table C.8: Sampling errors: Number of new infections annually and number of people living with HIV by age, BAIS V 2021

Age (years)	Weighted estimate	Standard error	Design effect	Relative standard error	Lower confidence limit	Upper confidence limit
			Number of New Infections Annually			
15-24	801	388.34	0.9009	0.593	0.00	1,788.92
25-34	115	55.81	0.3571	0.999	0.00	493.50
35-49	206	99.93	0.4351	0.790	0.00	692.01
50-64	1,117	541.21	3.7703	0.950	0.00	3,218.56
15-49	1,126	545.65	0.7726	0.461	0.00	2,292.26
15-64	2,244	1,087.62	2.0120	0.520	0.00	4,561.41
			People living with HIV			
15-24	14,293	1,374.67	1.2259	0.096	11,461.76	17,124.13
25-34	48,855	3,134.04	1.9935	0.064	42,400.71	55,310.06
35-49	177,022	8,540.09	6.0255	0.048	159,433.75	194,611.03
50-64	88,607	3,844.56	2.7811	0.043	80,689.26	96,525.31
15-49	240,171	10,235.79	4.8395	0.043	219,089.71	261,251.72
15-64	328,778	12,479.39	5.5728	0.038	303,076.21	354,479.79

APPENDIX D.
SURVEY PERSONNEL

APPENDIX D. SURVEY PERSONNEL

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Brayton Kelly Matthys
Nhlatshwa Mbako
Oteng Menwane
Kakanyo Mmabe
Modongo Mmereki
Maduo Mmereki
Khumo Moamogwe
Maduo Moara
Gomolemo Modie
Osupile Modiegi
Malebogo Modisane
Segolame Modise
Mmereki Modongo
Ofilwe Mokae
Taboka Mokeresete
Samson Mokgalagadi
Kabelo Mokganedi
Goitseone Candy Mokwetla
Theo Molatlhegi
Lone Molatlhegi
Botumile Molebatsi
Lucky Moletsane
Goitsemang Moletsane
Anthony Molosi
Thuto Montle
Tiny Mooketsi
Gofaone Morapedi
Kelebogile Morekwa
Maipelo Morgan
Gomotsegang Morobisi
Gwandu Morris
Goitseone Moruakgomo
Marry Morwagole
Oaitse Mosala
Itumeleng Mosarwa
Lorato Moseki
Boineelo Mosesane
Boitshwarelo Mosipidi
Tiny Mosope
Katlo Mosoroke
Rebecca Motang
Annah Mothibi
Bontle Mothobi
Lesole Motia
Bontle Motlhanke
Itumeleng Motsamai
Oscar Motsumi
Ramokgwebana Moutlwatsi
Lesego Nomsa Mpena
Bolokang Mphuthele
Mpho Milpha Mpolokang
Mpho Mpone
Olebile Mungungu
Mothusi Muzila
Onalenna Nareetsile
Mafoko Neo
Watandapi Ngakaemang
Poloko Nkaditswa
Lebogang Nkaditswa
Sesame Nokane
Kobamelo Nyambe
Gaoletlhoo Nyokolane
Kaisara Oarabile
Kgalalelo Oats
Oteng Obopilwe
Bofilwemang Oikanyeng
Thatayaone Olaotse
Emmanuel Olaotswe
Sekgwa Ompepetleditse
Sautu Onalethata
Petros Ononofile
Modiegi Osupile
Mbayi Otsile
Gaone Otumile

Ononofile Petros
Danabe Phetso
Agisanyang Phoga
Lame Phorogo
Tefo Pikashe
Bame Pilane
Pholoso Pilatwe
Fanyana Proud
Roy Pule
Eunice Rabaloi
Kealeboga Raditsebe
Pearl Ramagonono
Kaone Ramarinyaneng
Ronald Ramasesane
Connie Ramere
Keemenao Ranjafu
Abaleng Rantleru
Amantle Rasedikela
Felicia Rasepatela
Boitshoko Rasetshwane
Bonno Ratholo
Wilfred Peter Rautebach
Mpho Ritz
Sydney Ritz
Olorato Rolang
Maipelo Sabata
Bonolo Sakeng
Onalethata Sautu
Kgotla Seabe
Bonolo Seemane
Kutlo Segadimo
Wright Segolame
Sebonego Segwabe
Matilda Sejamakuka
Ompepetleditse Sekgwa
Gouta Seosenyeng
Daman Sesha
Mpolokang Setereke
Kedibonye Setswalo
Mokeresete Taboka
Goabaone Tafhi
Thandi Tebelelo
Boago Tekelelo
Goabaone Geel Teko
Kegomoditswe Telekelo
Bophelo Thamuku
Bohejane Thamuku
Fanabe Thatayotlhe
Kago Thebeemang
Kgomotso Thobega
Amantle I Thulo
Amantle Idah Thulo
Rebecca Thutwa
Kankangwane Tinaye
Mooketsi Tiny
Keetile Hildah Tiny
Kaelo Tiroyamodimo
Embrey Titus
Daman Tjibuya
Agang Tsheko
Gaebope Tshephang
Kegomoditswe Tshephe
Tsholofelo Tshugane
Moemedi Usupeng
Mopei Waleru
Anthony Van Der Westhuizen
Rosemary Wright
Segolame Wright
Gedion Yahimisa

Facility Linkage Focal Persons

Community Mobilizers

Boka moso Akanyang
Gaotshetse Ansley
Gobona Baipidi
Omphemetse Bajameo
Gorata Balapile
James Balekang
Kelebile Bapele
Koketso Baragodi
Pelonomi Bareeng
Gofaone Bathobasele
Karabo Ben
Sarah Bhuka
Bright Bobelo
Dadani Boifang
Frankel Bontsi
Tebogo Bontsi
Boitumelo Bosuping
John Botite
Maitumelo Botshelo
Agnes Chihiya
Mavis Clinic
Kabelo David
Mphoentle Dilampi
Mmoni Dipheng
Nancy B Dithusang
Olebogeng Ditshotse
Ronald Esterhuizen
Mogomotsi Feibi
Masego Gaarekwe

Anastacia Gakebalaole
Bokamoso Galeboe
Betty Gamo
Thatayaone Gaopatwe
Dineo Gaotlhobogwe
Neo Gareomane
Thato Gilbert
Ompatile Gobuiwang
Tshiangala Guy
Hlabano
Dipone B Ikopeng
T Jerk
Kesetswe Johane
Inalegolo John
Ookeditse Jublilee
Magdaline Kaote
Onkageletse Keabetswe
Gabriel Keabilwe
Malebogo Kebaduetse
loago Keboseope
Atang Keikepe
Bakang Keipeile
Gaofenngwe Keisang
Phomolo Kele
Kgotla Kenosi
Boitumelo Kenosi
Onica Keokilwe
Gaone Kgakge
Gofaone Kgang
Nancy Khani
Motlhomela Khotso
Mangobe Kirmbely
Naomi Kokorwe
Pelonomi Kootsene
Winnie Kowa
Sethunya Kwala
Philip Lebopo
Dorothy Legakwa
Ronald Lengela
Thabang Lesabe
Bonang Letsatsi
Kumbubzni Libinda
Tiroyane Mabe
Honest Mabua
Emmaunel Madubeko
Tabona Madzingwana
Tiro Magakwa
Lesang Mahupe
Arone Makgetle
Pako Malebe
Kebapetswe Maleke
Thapelo Maleke
Tlotlo Malema
Pricela Malibo
Keolebogile Marumo
Johane Marumo
Nelly Masilo
Comfort Matengu
Mooketsi Mathake
Nthaka Matlho
Thero Matongo
Fredy Mbiganyi
Kumbudzani Medinda
Botho Medupe
Tebogo Mkutu
Onneile Mmipi
Oreeditse Moabaloso
Dolly Modisaotsile
Agnes Modisapodi
Maikano Modise
Kgosi Modubu
Olebogeng Modungwa
Laone Moeng
Basadi Mogaetsho
Rozeline Mogorosi
Thabo Mogorosi
Kebafentse Mogotsi
Ramodibana Mohau
Tshepho Mohlomi
David Moilwa
Onalethata Mojiwa
Reitumetse Mokgautsane
Caroline Mokoka
Tsholofelo Molalapata
Irene Molatise
Obusitswe Molatlhegi
Bontsi Molema
Sedilame Moloisi
Omphemetse Monnadibe
Boitumelo Monnahela
Karabo Monnakgotlo
Dudu Monthe
Uyapo Monthe
Pearl Mopako
Phenyo Moremi
Lovemore Moruwakgomo
Sethunya Mosalakatane
Loago L Mosetlhane
Amantle Moshaga
Masego Moswetsi
Jimmy Motereko
Boikago Motiba

Susan Motlaletsie
Doreen Motlusiemang
Tsholofelo Motshidisi
Kgomotso Mpaetona
Katlego Mpedi
Ernest Mphodi
Kelebogile Mpolokang
Kholisane Mulunbile
Boikobo Munere
Modongo Museke
Arnold Mwangana
Tabona Mzingwane
Gabriel Nachochi
Tshepiso Ndesele
Kasweka Nfana
Batlang Nfichane
Imaninaswi Ngwaca
Keneilwe Nkobi
Pako Ntloesele
Kebonyeone Ntloesele
Iapologang Ntokolo
Khumo Ntseane
Gokatweng Ntshupegetsang
Keletso Obakeng
Gaongalelwe Oboletse
Naledi Okatswa
Tongwane Ommaatla
Tshepiso Omphitlhetse
Aobakwe Osupeng
Ncana Otsetswe
Kutlwano Otsilegape
Keaobaka Phaladze
Vusa Phena
Keatweng Phepafalo
Tshepho Pheto
Olorato Philip
Keagile Phologa
Neo Phologo
Wametsi Phuthego
Thabiso Pitso
Baratang Prompi
Nanyang Qhiwya
Onalethata Rabadisa
Ompatile Rabogadi
Oarabile Raboloko
Olebogeng Rakodu
Pelonomi Ramokgani
Golesedi Ramphothokgwane
Itumeleng Rannobe
Kagiso Rapalai
Mercy Raphaka
Ronald Rebatho
Kitso Refilwe
Obotseng Sadiko
Onyana Sankgopa
Keven Sebetso
Edmund Seboko
Keikantseng Sedimonyane
Tiny Seemule
Lebogang Segale
Charity Segotsi
Phodise Segwagwa
Kefilwe Sekga
Prince Sekgoma
Happy Sekgwa
Tlotlo Sesunkwane
Moshova Shoro
Mompoloki Shumana
Nicollet Sumake
Joshua Sunny
Daniel Taolo
Kedibonye Thamage
Keledi Thipe
Theo Tide
Kuda Tlhwaelo
Nchidzi Tobokwa
Gidion Tsalaile
Mothusi Tshimologo
Pearl Tshole
Olebile Tshotlo
Lorato Tshukudu
Olebogeng Lele Tsie
Goitsemodimo Tsimakae
Patricia Wakgotla
Tapiwa Waniwa
Kagiso Wiffone
Keotshepile Willy
Tshene Zhiro

Vendors, Facilities & Services

Accommodations and Conferencing

Adansonia Hotel & Conferencing
Avani Gaborone Resort
Chobe Marina Lodge
Cresta Lodge
Cresta Mahalapye
Cresta Marang
Cresta Maun
Cresta President
Cycad Palm Hotels

Groot De Laan
Gumare Executive Inn
Kalahari Arms Hotel
Kamore Inn
Makgovango Inn
Oasis Motel
Room50two
Staybridge Hotel
The Grand Palm Hotel
Tlotlo Conference Centre
Travel Lodge

Camping Facilities

Apples Guest House
Beautiful Gates BnB
Bel Servest
Boiketlo Nature Resort
Camel Park
Camp Itumela
Crocodile Camp & Spa
Damba's Farms
Deep Sands
Dikukama Hotel
Dladleng Amusement Park and Camping
Drotsky's Cabins
Fahms Self Catering
Guma Lagoon Camp
Hotel Pudzi
Jwaneng Town Council
Limpopo-Lipadi
Lucky Bush Camp
Matswelo Hotel
Moko Hotel
Motswedi Hotel
Nguna Island Lodge
Nxabii Cottages
Pelican Lodge & Camping
Seduda Wedding House and Gardens
Seelo Guest House
The Habour Guest House
The Nook Guest House
Thebe River Safari's

Lab Transition

Glidding Beetles
Phoenix Mark

Field Vehicle Hires

Blec of all Trades
Citimax
Fiafido Travel and Tours
Motor Holdings
Siton Holdings

Printing

Emprus Group
Express Cop Shop
Juke Jar
Time Catch (Pty) Ltd

Stationary

Tharisa Investments
Abokef Group
Sports Inc
Enough Stationers

Photography

Goldern Girls

Media Houses

Botswana Television
Duma FM
Gabz FM
Radio Botswana
RB2
Yarona FM

Print Media

Botswana Guardian
Sunday Standard
The Daily News
The Voice

Consultancy

BONASO
Lawal Kunle S.

Storage

ANL Projects
Speedspace
Storage Solutions

Laboratory Supplies and Services

Diagnofirm
Mediland
Orthosurge
WVR International

APPENDIX E. HOUSEHOLD QUESTIONNAIRE

[6APRIL2021 Version 3.2

BOTSWANA POPULATION-BASED HIV IMPACT ASSESSMENT SURVEY

HOUSEHOLD IDENTIFICATION

01	EA NUMBER	
02	HOUSEHOLD NUMBER	
03	LOCALITY	
04	VILLAGE	
05	DISTRICT	
06	GPS COORDINATES OF HOUSEHOLD	
06a	LATITUDE ..... S	.
06b	LONGITUDE ..... E	.
7	URBAN/RURAL (URBAN = 1, RURAL = 2)	

INTERVIEWER VISITS

	FIRST VISIT	SECOND VISIT	THIRD VISIT	FINAL VISIT
DATE				DAY / MONTH / YEAR (2021)
INTERVIEWER'S NAME				INT. NO.
RESULT* USE CODES BELOW				RESULT*
				CHILDREN SUBSAMPLE (1=SELECTED, 2=NOT SELECTED)
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS
TIME				

*VISIT RESULT CODES:
- 01 COMPLETED
- 02 NO HOUSEHOLD MEMBER AT HOME
- 03 ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD OF TIME
- 04 POSTPONED
- 05 REFUSED
- 06 DWELLING VACANT
- 07 ADDRESS NOT A DWELLING
- 08 DWELLING DESTROYED
- 09 DWELLING NOT FOUND
- 10 INACCESSIBLE DUE TO FLOODING OR SECURITY
- 11 WITHDRAWN
- 12 STOP SURVEY
- 13 NO COMPETENT HEAD OF HOUSEHOLD
- 14 AT HOME, RESCHEDULE VISIT
- 15 TEAM IN ISOLATION/QUARANTINE FOR COVID-19
- 16 NO HOUSEHOLD MEMBER AT HOME, NO FURTHER VISITS PLANNED
- 96 OTHER _____ (SPECIFY)

09	TOTAL PERSONS IN HOUSEHOLD
10	TOTAL ELIGIBLE WOMEN AGE 15 AND OLDER
11	TOTAL ELIGIBLE MEN AGE 15 AND OLDER
12	LINE NUMBER OF HH RESPONDENT

13 TEAM LEAD _____ NAME ____ NUMBER

14 TEAM NUMBER

NATIVE LANGUAGE OF RESPONDENT** 0 1 | LANGUAGE OF INTERVIEW** | LANGUAGE OF QUESTIONNAIRE**

LANGUAGE OF QUESTIONNAIRE** ENGLISH

**LANGUAGE CODES:
01 ENGLISH
02 SETSWANA
96 OTHER (SPECIFY)

MODULE 0: HEAD OF HOUSEHOLD ELIGIBILITY

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
E1	DOES THE HEAD OF HOUSEHOLD HAVE A HEARING IMPAIRMENT? FOR EXAMPLE, DOES THE HEAD OF HOUSEHOLD HAVE DIFFICULTY ENGAGING IN CONVERSATION?	HEARING GOOD ..... 1 HEARING BAD 2	→ E3
E2	CAN THE SURVEY TEAM ACCOMMODATE THIS HEARING IMPAIRMENT?	YES ..... 1 NO 2	END →INTERVIE
E3	DOES THE HEAD OF THE HOUSEHOLD SPEAK AND UNDERSTAND ONE OF THE SURVEY LANGUAGES?	YES ..... 1 NO 2	INTERVIE →W
E4	ASK [NAME] TO READ THE TEXT BELOW. HIV is a virus that causes an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly. This study will help us know how many people in Botswana have HIV and need health services. We expect about 28,000 total participants from about 13,500 households throughout Botswana to take part in the study. This will include over 24,000 adolescents and adults aged 15 to 64 years of age and about 4,000 children aged 6 weeks to 14 years. If you take part, you will help the Ministry of Health and Wellness improve HIV services in the country. This form might have some words in it that are not familiar to you. Please ask me to explain anything that you do not understand.		
E5	IS THE HOUSEHOLD RESPONDENT COGNITIVELY ABLE TO CONSENT? FOR EXAMPLE, CAN THE HEAD OF HOUSEHOLD REPEAT OR SUMMARIZE THE MAIN POINTS OF THE PARAGRAPH?	YES ..... 1 NO 2	→END INTERVIE
E6	HOW OLD IS THE HEAD OF HOUSEHOLD?	18 YEARS OR OLDER ..... 1 AGE 14 - 17 ..... 2 LESS THAN 14 YEARS OLD 3	→E8 →END INTERVIE
E7	IS THE HEAD OF HOUSEHOLD AN EMANCIPATED MINOR? Emancipated minors are any adolescents between the ages of 14 to 17 years old who is free from parental/guardian control and who may be married, pregnant, or is a parent or a head of household.	YES ..... 1 NO 2	→END INTERVIE
E8	THE NEXT STEP WILL BE TO READ THE HOUSEHOLD CONSENT FROM THE TABLET AND ADDRESS ANY QUESTIONS FROM THE HEAD OF HOUSEHOLD.		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
100	Now I would like to ask you some more questions about your household.		
101	Has any usual resident of your household died since January 1, 2019?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 109a
102	How many usual household residents died since January 1, 2019?	NUMBER OF DEATHS IF LESS THAN 10 . . . . . 0 ☐ 10 OR MORE DEATHS 10	

103 NO.	104 What was the name of the person who died [most recently/before him/her]? RECORD NAME OF PERSON WHO DIED. IF MORE THAN 10 DEATHS, LIST 10 MOST RECENT DEATHS.	105 When did [NAME] die? Please give your best guess. IF DAY OR MONTH UNKNOWN, ENTER '98'. IF REFUSED, ENTER '99'. IF YEAR UNKNOWN, ENTER '9998'. IF REFUSED, ENTER '9999'.	106 Was [NAME] male or female?	107 How old was [NAME] when (he/she) died?	108 CHECK 102: HAS ANYONE ELSE DIED?
01	_____	DAY ☐☐ MONTH ☐☐ ☐☐☐☐ YEAR	MALE . . . . 1 FEMALE . . 2	AGE ☐☐ DAY . . . . . 1 MONTH . . . . . 2 YEAR . . . . . 3 DK AGE . . 998 REFUSED . . 999	YES 1 → NEXT DEATH NO . . 2 → 109a
02	_____	DAY ☐☐ MONTH ☐☐ ☐☐☐☐ YEAR	MALE . . . . 1 FEMALE . . 2	AGE ☐☐ DAY . . . . . 1 MONTH . . . . . 2 YEAR . . . . . 3 DK AGE . . 998 REFUSED . . 999	YES 1 → NEXT DEATH NO . . 2 → 109a
03	_____	DAY ☐☐ MONTH ☐☐ ☐☐☐☐ YEAR	MALE . . . . 1 FEMALE . . 2	AGE ☐☐ DAY . . . . . 1 MONTH . . . . . 2 YEAR . . . . . 3 DK AGE . . 998 REFUSED . . 999	YES 1 → NEXT DEATH NO . . 2 → 109a

HOUSEHOLD CHARACTERISTICS

109a	Thank you for sharing information about deaths in your family. Now I would like to ask you more questions about your household and its assets.	
DRINKING WATER		
109	What is the main source of drinking water for your household?	**PIPED WATER** PIPED INDOORS . . . . . 11 STAND-PIPE WITHIN PLOT . . . . . 12 PUBLIC TAP/STANDPIPE . . . . . 13 TUBE WELL OR BOREHOLE . . . . . 21 **DUG WELL**

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
		PROTECTED WELL ..... 31 UNPROTECTED WELL ..... 32 **WATER FROM SPRING** PROTECTED SPRING ..... 41 UNPROTECTED SPRING ..... 42 RAINWATER ..... 51 TANKER TRUCK ..... 61 CART WITH SMALL TANK ..... 71 SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL) ..... 81 BOTTLED WATER ..... 91 OTHER _____ 96 (SPECIFY) DON'T KNOW ..... 98 REFUSED 99	
SANITATION			
110	What kind of toilet facility do members of your household usually use?	FLUSH OR POUR FLUSH TOILET ..... 11 TRADITIONAL PIT LATRINE ..... 21 VENTILATED IMPROVED PIT LATRINE (VIP) ..... 22 NO FACILITY/BUSH/FIELD ..... 61 OTHER _____ 96 (SPECIFY) DON'T KNOW ..... 98 REFUSED 99	→ 112 → 112
111	Do you share this toilet with other households?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	
HOUSEHOLD CHARACTERISTICS			
112	Does your household have: a) Electricity? b) A working radio? c) A working television? d) A working fixed phone? e) A working refrigerator? f) Internet? g) A computer? h) A bed? i) A table? j) A sofa? k) A hammer mill? l) A microwave?	Y N DK R a) ELECTRICITY ..... 1 2 8 9 b) RADIO ..... 1 2 8 9 c) TELEVISION ..... 1 2 8 9 d) FIXED PHONE ..... 1 2 8 9 e) REFRIGERATOR ..... 1 2 8 9 f) INTERNET ..... 1 2 8 9 g) COMPUTER ..... 1 2 8 9 h) BED ..... 1 2 8 9 i) TABLE ..... 1 2 8 9 j) SOFA ..... 1 2 8 9 k) HAMMER MILL ..... 1 2 8 9 l) MICROWAVE 1 2 8 9	
ELECTRICITY AND COOKING FUEL			
113	What type of fuel does your household mainly use for cooking?	ELECTRICITY ..... 01 LPG / NATURAL GAS ..... 02 BIOGAS ..... 03 PARAFFIN / KEROSENE ..... 04 COAL, LIGNITE ..... 05 CHARCOAL FROM WOOD ..... 06 FIREWOOD / STRAW ..... 07 DUNG ..... 08 NO FOOD COOKED IN THE HOUSEHOLD ..... 95 OTHER _____ 96 (SPECIFY) DON'T KNOW ..... 98 REFUSED 99	
113A	OBSERVE THE TYPE OF HOUSING UNIT.	TRADITIONAL (MUD HUT) ..... 01 MIXED STRUCTURES 02	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
	RECORD OBSERVATION.	DETACHED . . . . . 03 SEMI-DETACHED . . . . . 04 TOWN HOUSE/TERRACED . . . . . 05 FLATS/APARTMENTS . . . . . 06 PART OF COMMERCIAL BUILDING . . . . . 07 MOVABLE/CARAVAN/TENT . . . . . 08 SHACK . . . . . 09 ROOMS . . . . . 10 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	
114	OBSERVE MAIN MATERIAL OF THE FLOOR OF THE DWELLING. RECORD OBSERVATION.	**NATURAL FLOOR** EARTH/SAND . . . . . 11 DUNG . . . . . 12 **RUDIMENTARY FLOOR** WOOD PLANKS . . . . . 21 PALM/BAMBOO . . . . . 22 **FINISHED FLOOR** PARQUET OR POLISHED WOOD . . . . . 31 VINYL OR ASPHALT STRIPS . . . . . 32 CERAMIC TILES . . . . . 33 CEMENT/TERAZO . . . . . 34 CARPET . . . . . 35 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	
115	OBSERVE MAIN MATERIAL OF THE ROOF OF THE DWELLING. RECORD OBSERVATION.	**NATURAL ROOF** NO ROOF . . . . . 11 THATCH/PALM LEAF . . . . . 12 DUNG / MUD . . . . . 13 **RUDIMENTARY ROOF** CORRUGATED IRON . . . . . 21 TIN CANS . . . . . 22 **FINISHED ROOF** ASBESTOS SHEET . . . . . 31 CONCRETE . . . . . 32 TILES . . . . . 33 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	
116	OBSERVE MAIN MATERIAL OF THE EXTERIOR WALLS OF THE DWELLING. RECORD OBSERVATION.	**NATURAL WALLS** NO WALLS . . . . . 11 CANE/PALM/TRUNKS . . . . . 12 DUNG/MUD . . . . . 13 **RUDIMENTARY WALLS** BAMBOO WITH MUD . . . . . 21 STONE WITH MUD . . . . . 22 PLYWOOD/CARDBOARD . . . . . 23 CARTON . . . . . 24 REUSED WOOD . . . . . 25 **FINISHED WALLS** CEMENT . . . . . 31 STONE WITH LIME/CEMENT . . . . . 32 BRICKS . . . . . 33 CEMENT BLOCKS . . . . . 34 WOOD PLANKS/SHINGLES . . . . . 35 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	
117	How many rooms in this household are used for sleeping?	ROOMS . . . . . [ ][ ]	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
118	Does any member of your household own: a) A bicycle? b) A working motorcycle or motor scooter? c) A working car or truck? d) A working boat with a motor? e) A canoe? f) A donkey cart? g) A tractor? h) A plough? i) A grain-grinder? j) A feature (mobile) phone? k) A smart phone?	Y N DK R a) BICYCLE . . . . . 1 2 8 9 b) MOTORCYCLE/SCOOTER . . . . . 1 2 8 9 c) CAR/TRUCK . . . . . 1 2 8 9 d) BOAT WITH MOTOR . . . . . 1 2 8 9 e) CANOE . . . . . 1 2 8 9 f) DONKEY CART . . . . . 1 2 8 9 g) TRACTOR . . . . . 1 2 8 9 h) PLOUGH . . . . . 1 2 8 9 i) GRAIN-GRINDER . . . . . 1 2 8 9 j) FEATURE PHONE . . . . . 1 2 8 9 k) SMART PHONE 1 2 8 9	
119	How many of the following animals does this household own? IF NONE, RECORD '00'. IF 95 OR MORE, RECORD '95'. IF OWN BUT NUMBER UNKNOWN, RECORD '98'. a) Cows? b) Goats or sheep? c) Chickens? d) Dogs? e) Horses/donkeys? f) Camels?	a) COWS . . . . . ☐☐ b) GOATS/SHEEP . . . . . ☐☐ c) CHICKENS . . . . . ☐☐ d) DOGS . . . . . ☐☐ e) HORSES/DONKEYS . . . . . ☐☐ f) CAMELS . . . . . ☐☐	
120A	Does any member of this household own any agricultural land?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 120
120B	How many acres or hectares of agricultural land do members of this household own? IF MORE THAN 95 ACRES, ENTER IN HECTARES. IF MORE THAN 95 HECTARES, ENTER '9995'.	ACRES . . . . . 1 ☐☐.☐ HECTARES . . . . . 2 ☐☐.☐ 95 OR MORE HECTARES . . . . . 9995 DON'T KNOW . . . . . 9998 REFUSED 9999	
120	Now I will ask you questions on economic support you may have received.		
ECONOMIC SUPPORT			
121	Has your household received any of the following forms of external economic support in the last 12 months? READ OPTIONS ALOUD. SELECT UP TO THREE RESPONSES. IF MORE THAN THREE RESPONSES ARE GIVEN,	NOTHING . . . . . A CASH TRANSFER (E.G. PENSIONS, DISABILITY GRANTS, CHILD GRANT) . . . . . B ASSISTANCE FOR SCHOOL FEES . . . . . C MATERIAL SUPPORT FOR EDUCATION (E.G. UNIFORMS, SCHOOL BOOKS, EDUCATION, TUITION SUPPORT, BURSARIES) . . . . . D	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
	PROBE FOR THE THREE MOST IMPORTANT SOURCES.	INCOME GENERATION SUPPORT IN CASH OR KIND (E.G. AGRICULTURAL INPUTS) . . . . . E FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD / EXTERNAL INSTITUTION . . . . . F MATERIAL OR FINANCIAL SUPPORT FOR SHELTER . . . . . G SOCIAL PENSION . . . . . H REMITTANCES . . . . . I OVC PROGRAMS . . . . . J OTHER _____ (SPECIFY) X DON'T KNOW . . . . . Y REFUSED . . . . . Z	
121A	CHECK 121: WERE ANY FORMS OF ECONOMIC SUPPORT SELECTED? ANY FORM OF SUPPORT SELECTED (B-X) ☐ ↓ A, Y, Z ONLY ☐ →		122
121B	Was any of this external economic support related to COVID-19 or CORONA?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
122	Thank you for taking the time to participate in the first part of this survey. Your responses will be very helpful to the Ministry of Health to better understand how to improve health programs in the country. PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS, IF NOT ALREADY GIVEN		

APPENDIX F. INDIVIDUAL QUESTIONNAIRE

6APRIL2021 Version 3.2

BOTSWANA POPULATION-BASED HIV IMPACT ASSESSMENT SURVEY - INDIVIDUAL QUESTIONNAIRE

IDENTIFICATION

01 EA NUMBER . . . . . [ ][ ][ ][ ]

02 HOUSEHOLD NUMBER . . . . . [ ][ ][ ][ ]

03 LINE NUMBER OF RESPONDENT . . . . . [ ][ ]

04 NAME OF THE RESPONDENT _____

05 SEX OF THE RESPONDENT (MALE = 1, FEMALE = 2) . . . . . [ ]

INTERVIEWER VISITS

	FIRST VISIT	SECOND VISIT	THIRD VISIT	FINAL VISIT
DATE	_____	_____	_____	DAY [ ][ ]
				MONTH [ ][ ]
INTERVIEWER'S NAME	_____	_____	_____	YEAR 2 0 2 1
RESULT*	_____	_____	_____	INT. NO. [ ][ ][ ][ ]
USE CODES BELOW				RESULT* [ ]
NEXT VISIT: DATE	_____	_____		TOTAL NUMBER OF VISITS [ ]
TIME	_____	_____		

*RESULT CODES:

01 COMPLETED
02 NOT AT HOME
03 POSTPONED
04 REFUSED
05 INCAPACITATED _____ (SPECIFY)
06 WITHDRAWN
07 COGNITIVELY IMPAIRED (INELIGIBILE)
08 STOP SURVEY
09 AT HOME, RESCHEDULE VISIT
10 TEAM IN ISOLATION/QUARANTINE FOR COVID-19
11 NOT HOME, NO FURTHER VISITS PLANNED
OTHER _____ (SPECIFY)

06 SUPERVISOR _____ NAME [ ][ ][ ][ ] NUMBER

07 TEAM NUMBER [ ][ ]

NATIVE LANGUAGE OF RESPONDENT** [0][1] LANGUAGE OF INTERVIEW** [ ][ ] LANGUAGE OF QUESTIONNAIRE** [ ][ ] TRANSLATOR USED (YES = 1, NO = 2) [ ]

LANGUAGE OF QUESTIONNAIRE** ENGLISH

**LANGUAGE CODES:
01 ENGLISH
02 SETSWANA
96 OTHER (SPECIFY)

1. RESPONDENT BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
100	Thank you for agreeing to participate in this survey. The first set of questions is about your life in general. Afterwards, we will move on to other topics.		
101	WHAT IS THE SEX OF RESPONDENT?	MALE . . . . . 1 FEMALE 2	
102	In what month and year were you born?	MONTH ☐☐ DON'T KNOW MONTH . . . . . 98 REFUSED . . . . . 99 YEAR ☐☐☐☐ DON'T KNOW YEAR . . . . . 9998 REFUSED 9999	
103	How old were you at your last birthday? COMPARE AND CORRECT 102 AND/OR 103 IF INCONSISTENT.	AGE IN COMPLETED YEARS ☐☐ DON'T KNOW . . . . . 98 REFUSED 99	
104	Have you ever attended school?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→107
105	Are you currently enrolled in school?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
106	What is the highest level of school you attended: primary, secondary, or higher?	PRIMARY . . . . . 0 SECONDARY . . . . . 1 HIGHER . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
106A	What is the highest year you completed at that level?	GRADE/YEAR ☐☐ DON'T KNOW . . . . . 98 REFUSED 99	
106B	Have you completed any other type of formal education? SELECT ALL THAT APPLY	NONE . . . . . A APPRENTICE . . . . . B BRIGADE . . . . . C TECHNICAL/VOCATIONAL . . . . . D OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Y REFUSED . . . . . Z	
107	How long have you lived in this area or locality? IF LESS THAN ONE YEAR, ENTER TIME IN MONTHS	MONTHS 1 ☐☐ YEARS 2 ☐☐ ALWAYS LIVED HERE . . . . . 993 DON'T KNOW . . . . . 998 REFUSED 999	→110
108	Just before you moved here, did you live in a	CITY/TOWN 1	

1. RESPONDENT BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
	city/town, in an urban village, or in a rural area?	URBAN VILLAGE ..... 2 RURAL AREA ..... 3 DON'T KNOW ..... 8 REFUSED 9	
109	Before you moved here, which district did you live in? If you lived outside of Botswana, which country did you live in?	SELEBI PHIKWE ..... 01 FRANCISTOWN ..... 02 CENTRAL MAHALAPYE ..... 03 KWENENG EAST ..... 04 BAROLONG ..... 05 CENTRAL BOTETI ..... 06 KGATLENG ..... 07 SOWA TOWN ..... 08 CENTRAL BOBONONG ..... 09 NGWAKETSE WEST ..... 10 CENTRAL TUTUME ..... 11 KGALAGADI NORTH ..... 12 NORTH EAST ..... 13 CHOBE ..... 14 GHANZI ..... 15 LOBATSE ..... 16 SEROWE/PALAPYE ..... 17 GABORONE ..... 18 SOUTH EAST ..... 19 ORAPA ..... 20 NGAMILAND E/S ..... 21 NGAMILAND W/N ..... 22 JWANENG ..... 23 NGWAKETSE ..... 24 KWENENG WEST ..... 25 KGALAGADI SOUTH ..... 26 ANGOLA ..... 31 LESOTHO ..... 32 MALAWI ..... 33 MOZAMBIQUE ..... 34 NAMIBIA ..... 35 SOUTH AFRICA ..... 36 ESWATINI ..... 37 ZAMBIA ..... 38 ZIMBABWE ..... 39 TANZANIA ..... 40 INDIA ..... 41 MAURITIUS ..... 42 UK ..... 43 USA ..... 44 OTHER _____ (SPECIFY) 96 DON'T KNOW ..... 98 REFUSED 99	
110	Have you ever lived away from home for more than 1 month at a time?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	→ 117
111	When was the last time that you lived away from home for over a month?	MONTH ☐☐ DON'T KNOW MONTH ..... 98 REFUSED 99	

1. RESPONDENT BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
		YEAR ☐☐☐☐ DON'T KNOW YEAR . . . . . 9998 REFUSED 9999	
112	CHECK 111: BOTH MONTH AND YEAR ARE DON'T KNOW/REFUSED? NO ☐ YES ☐		→ 115
113	CHECK 111: IS LAST TIME RESPONDENT LIVED AWAY FROM HOME MORE THAN ONE YEAR AGO? NO ☐ YES ☐		→ 115
114	How many times have you been away from home for one or more months in the past year?	NUMBER OF TIMES ☐☐ DON'T KNOW . . . . . 98 REFUSED 99	
115	The last time you were away from home for more than a month, where were you? PROBE: If you were in more than one place while you were away, please give the place you spent the most time.	ANOTHER LOCALITY IN THIS DISTRICT . . . . 01 SELEBI PHIKWE . . . . . 02 FRANCISTOWN . . . . . 03 CENTRAL MAHALAPYE . . . . . 04 KWENENG EAST . . . . . 05 BAROLONG . . . . . 06 CENTRAL BOTETI . . . . . 07 KGATLENG . . . . . 08 SOWA TOWN . . . . . 09 CENTRAL BOBONONG . . . . . 10 NGWAKETSE WEST . . . . . 11 CENTRAL TUTUME . . . . . 12 KGALAGADI NORTH . . . . . 13 NORTH EAST . . . . . 14 CHOBE . . . . . 15 GHANZI . . . . . 16 LOBATSE . . . . . 17 SEROWE/PALAPYE . . . . . 18 GABORONE . . . . . 19 SOUTH EAST . . . . . 20 ORAPA . . . . . 21 NGAMILAND E/S . . . . . 22 NGAMILAND W/N . . . . . 23 JWANENG . . . . . 24 NGWAKETSE . . . . . 25 KWENENG WEST . . . . . 26 KGALAGADI SOUTH . . . . . 27 ANGOLA . . . . . 31 LESOTHO . . . . . 32 MALAWI . . . . . 33 MOZAMBIQUE . . . . . 34 NAMIBIA . . . . . 35 SOUTH AFRICA . . . . . 36 ESWATINI . . . . . 37 ZAMBIA . . . . . 38 ZIMBABWE . . . . . 39 TANZANIA . . . . . 40 INDIA . . . . . 41 MAURITIUS . . . . . 42 UK . . . . . 43 USA . . . . . 44 OTHER _____ 96 (SPECIFY)	

1. RESPONDENT BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
		DON'T KNOW . . . . . 98 REFUSED 99	
116	What was the main reason you went there?	WORK . . . . . 01 SCHOOL/UNIVERSITY . . . . . 02 FAMILY/MARRIAGE . . . . . 03 ACCESS HEALTH OR OTHER SERVICES . . 04 NATURAL DISTASTER (FLOODS, CYCLONE, DROUGHT) . . . . . 05 CORONA LOCKDOWN . . . . . 06 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	
117	Have you done any work in the last 12 months for which you received cash or goods as payment? This includes work on the family farm or business for which you may not have been paid directly.	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 200
118	Have you done any work in the last seven days for which you received cash or goods as payment? This includes work on the family farm or business for which you may not have been paid directly.	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
119	What is your occupation? That is, what kind of work do you mainly do?	MINING . . . . . 01 AGRICULTURE/FARMING . . . . . 02 TRANSPORT . . . . . 03 CONSTRUCTION . . . . . 04 UNIFORMED PERSONNEL . . . . . 05 INFORMAL TRADE . . . . . 06 GARMENT INDUSTRIES . . . . . 07 HOUSEKEEPER . . . . . 08 SEX WORKER . . . . . 09 STUDENT . . . . . 10 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	
120	Where do you normally work? In your home community, elsewhere in region/country, or outside the country?	HOME DISTRICT . . . . . 1 SAME COUNTRY, DIFFERENT DISTRICT . . . . 2 OUTSIDE THE COUNTR\ . . . . . 3 DON'T KNOW . . . . . 8 REFUSED 9	

2. MARRIAGE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
200	Now I would like to ask you about your current and previous relationships and/or marriages.		
201	Have you ever been married or lived together with a [man/woman] as if married?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→300
202	How old were you the first time you married or started living with a [man/woman] as if married?	AGE IN YEARS ☐☐ DON'T KNOW . . . 98 REFUSED . . . 99	
203	What is your marital status now: are you married, living together with someone as if married, widowed, divorced, or separated/single?	MARRIED . . . 1 LIVING TOGETHER . . . 2 WIDOWED . . . 3 DIVORCED . . . 4 SEPERATED/SINGLE . . . 5 DON'T KNOW . . . 8 REFUSED . . . 9	→300
203A	CHECK 101: IS RESPONDENT MALE OR FEMALE? MALE ☐ ↓ FEMALE ☐		→ 208
204	Altogether, how many wives or live-in partners do you have who live with you here in this household?	NUMBER OF WIVES/PARTNERS ☐☐ NONE . . . 00 DON'T KNOW . . . 98 REFUSED . . . 99	→206
205	Please tell me the name(s) of your wife or partner that lives in this household. RECORD THE NAME AND THE LINE NUMBER FROM THE HOUSEHOLD QUESTIONNAIRE FOR EACH WIFE AND LIVE-IN PARTNER. IF A WOMAN IS NOT LISTED IN THE HOUSEHOLD,RECORD '00' AND RECORD NAME OF WIFE/LIVE-IN PARTNER.	NAME(S) / LINE NO. _____ ☐☐ _____ ☐☐ _____ ☐☐ _____ ☐☐ NOT LISTED IN THE HOUSEHOLD _____ (SPECIFY NAME) 00 DON'T KNOW . . . 98 REFUSED . . . 99	
206	How many wives or live-in partners do you have who live elsewhere? This would include wives or partners that you stay with or support in other households.	NUMBER OF WIVES/PARTNERS ☐☐ NONE . . . 00 DON'T KNOW . . . 98 REFUSED . . . 99	→327A
207	You mentioned that you have [NUMBER] wife/wives who live elsewhere. Where are they?	STAYING IN A DIFFERENT HOUSEHOLD,	

2. MARRIAGE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
		SAME LOCALITY . . . . . 1 STAYING IN A DIFFERENT LOCALITY, SAME DISTRICT . . . . . 2 STAYING IN A DIFFERENT DISTRICT . . . . . 3 STAYING IN A DIFFERENT COUNTRY . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	→327A
208	Is your husband or partner living with you now or is he staying elsewhere?	LIVING IN THE HOUSEHOLD . . . . . 1 STAYING IN A DIFFERENT HOUSEHOLD, SAME LOCALITY . . . . . 2 STAYING IN A DIFFERENT LOCALITY, SAME DISTRICT . . . . . 3 STAYING IN A DIFFERENT DISTRICT . . . . . 4 STAYING IN A DIFFERENT COUNTRY . . . . . 5 DON'T KNOW . . . . . 8 REFUSED 9	→210
209	Please tell me the name(s) of your husband or live-in partner that lives in this household. RECORD THE NAME AND THE LINE NUMBER FROM THE HOUSEHOLD QUESTIONNAIRE FOR THE HUSBAND OR LIVE-IN PARTNER. IF NOT LISTED IN THE HOUSEHOLD,RECORD '00' AND RECORD NAME OF HUSBAND/LIVE-IN PARTNER.	NAME _____ LINE NO. ☐☐ NOT LISTED IN THE HOUSEHOLD _____ (SPECIFY NAME) 00 DON'T KNOW . . . . . 98 REFUSED 99	
210	Does your husband or partner have other wives or does he live with other women as if married?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→300
211	Including yourself, in total, how many wives or live-in partners does your husband or partner have?	NUMBER OF WIVES/PARTNERS ☐☐ DON'T KNOW . . . . . 98 REFUSED 99	

3. REPRODUCTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
300	CHECK 101: IS RESPONDENT MALE OR FEMALE? FEMALE ☐ MALE ☐ → 327A		
300A	Now I would like to ask you questions about your pregnancies and your children.		
301	How many times have you had a pregnancy that resulted in a live birth? A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement, even if the baby subsequently died.	NUMBER OF LIVE BIRTHS ☐☐ NONE . . . 00 DON'T KNOW . . . 98 REFUSED . . . 99	→ 326B
302	How many times have you had a pregnancy that resulted in a live birth since the 1st of January, 2018?	NUMBER OF LIVE BIRTHS ☐☐ NONE . . . 00 DON'T KNOW . . . 98 REFUSED . . . 99	→ 326B
302A	Now I would like to ask you some questions about the last pregnancy that resulted in a live birth since the 1st of January, 2018.		
303	Did your last pregnancy result in birth to twins or more?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 305
304 304A	What is the name of the (first/next) born child from your last pregnancy that resulted in a live birth? A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement, even if the baby subsequently died. IF THE CHILD WAS NOT NAMED BEFORE DEATH, RECORD "BIRTH 1". Was there another multiple born alive? IF YES, RECORD NAME OF NEXT CHILD BORN ALIVE.	BIRTH ORDER / NAME(S) 1 _____ 2 _____ 3 _____ 4 _____	→ 306
305	What is the name of the child from your last pregnancy that resulted in a live birth? A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement, even if the baby subsequently died.	NAME _____	
306	During your last pregnancy with [LAST CHILD], did you visit a health facility for antenatal care?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 314
307	Have you ever tested for HIV before your pregnancy with [LAST CHILD]?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 310
308	Did you test positive for HIV before your pregnancy with [LAST CHILD]?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 310
308A	CHECK 306: DID RESPONDENT VISIT HEALTH CENTER FOR ANC? YES ☐ NO / DON'T KNOW / REFUSED ☐ → 312		
309	At the time of your first antenatal care visit when you were last pregnant with [LAST CHILD], were you already taking ARVs, that is, antiretroviral medications to treat HIV?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 316 → 312
310	Were you tested for HIV anytime during pregnancy or delivery with [LAST CHILD]?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	→ 314

		REFUSED 9	
311	What was the result of your last HIV test during your last pregnancy with [LAST CHILD]?	POSITIVE . . . . . 1 NEGATIVE . . . . . 2 UNKNOWN/ INDETERMINATE . . . . . 3 DID NOT RECEIVE RESULTS . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	→ 314
312	Did you take ARVs at any time during your last pregnancy with [LAST CHILD] to prevent the child from getting HIV?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 316 → 316
313	What was the main reason you did not take ARVs while you were pregnant with [LAST CHILD]?	WAS NOT PRESCRIBE . . . . . 01 FELT HEALTHY/NOT SICK . . . . . 02 COST OF MEDICATION . . . . . 03 COST OF TRANSPORT . . . . . 04 RELIGIOUS REASONS . . . . . 05 TAKING TRADITIONAL MEDICATION . . . . . 06 MEDICATIONS OUT OF STOCK . . . . . 07 DID NOT WANT PEOPLE TO KNOW HIV STATUS . . . . . 08 DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY . . . . . 09 CORONA LOCKDOWN . . . . . 10 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	→ 316
314	Were you tested for HIV at any time after delivery of your last pregnancy with [LAST CHILD]? For example, were you tested while you were breastfeeding or after you completed breastfeeding?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 316
315	What was result of the HIV test that you received after delivery of your last pregnancy with [LAST CHILD]?	POSITIVE . . . . . 1 NEGATIVE . . . . . 2 UNKNOWN/ INDETERMINATE . . . . . 3 DID NOT RECEIVE RESULTS . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	
316	When did you give birth to [LAST CHILD]?	DAY ☐☐ DON'T KNOW DAY . . . . . 98 REFUSED DAY . . . . . 99 MONTH ☐☐ DON'T KNOW MONTH . . . . . 98 REFUSED MONTH . . . . . 99 YEAR ☐☐☐☐ DON'T KNOW YEAR . . . . . 9998 REFUSED YEAR 9999	
316A	Where did you give birth to [LAST CHILD]?	HOME . . . . . 1 PUBLIC HEALTH FACILITY . . . . . 2 PRIVATE HEALTH FACILITY . . . . . 3 OTHER _____ 6 (SPECIFY) DON'T KNOW . . . . . 8 REFUSED 9	

317	Is [CHILD] still alive?	YES . . . . . 1 → SKIP TO 319 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 → SKIP TO 319	YES . . . . . 1 → SKIP TO 319 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 → SKIP TO 319	YES . . . . . 1 → SKIP TO 319 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 → SKIP TO 319
318	How old was [CHILD] when he/she died? IF CHILD WAS LESS THAN ONE YEAR OLD, ENTER AGE IN MONTHS. IF CHILD WAS LESS THAN ONE MONTH OLD, ENTER '00' IN MONTHS.	MONTHS 1 ☐☐ YEARS 2 ☐☐ DON'T KNOW . . . . . 998 REFUSED 999	MONTHS 1 ☐☐ YEARS 2 ☐☐ DON'T KNOW . . . . . 998 REFUSED 999	MONTHS 1 ☐☐ YEARS 2 ☐☐ DON'T KNOW . . . . . 998 REFUSED 999

319	Did you ever breastfeed [CHILD]?	YES . . . . . 1 NO, NEVER BREASTFED . . . . . 2 NO, CHILD DIED BEFORE BREASTFEEDING . . . . . 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 SKIP TO 320A	YES . . . . . 1 NO, NEVER BREASTFED . . . . 2 NO, CHILD DIED BEFORE BREASTFEEDING . . . . . 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 SKIP TO 320A	YES . . . . . 1 NO, NEVER BREASTFED . . . . 2 NO, CHILD DIED BEFORE BREASTFEEDING . . . . . 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 SKIP TO 320A
319A	CHECK 308, 311, & 315: DID RESPONDENT TEST HIV-POSITIVE?	YES → NO/DK/R → 320	YES → NO/DK/R → 320	YES → NO/DK/R → 320
319B	Did you take ARVs while you were breastfeeding [CHILD]?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9
319C	CHECK 317:	YES → NO/DK/R → 320A	YES → NO/DK/R → 320A	YES → NO/DK/R → 320A
320	Are you still breastfeeding [CHILD]?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9
320A	Now I will ask you some questions about what [CHILD] drank or ate in the first 6 months of life. Did [CHILD]: a) drink breastmilk? b) drink formula? c) eat solids?	Y N DK R a) 1 2 8 9 b) 1 2 8 9 c) 1 2 8 9	Y N DK R a) 1 2 8 9 b) 1 2 8 9 c) 1 2 8 9	Y N DK R a) 1 2 8 9 b) 1 2 8 9 c) 1 2 8 9
321	After [CHILD] was born, was he/she tested for HIV?	YES . . . . . 1 NO, NOT TESTED FOR HIV . . 2 NO, CHILD DIED BEFORE TESTING . . . . . 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 SKIP TO NEXT	YES . . . . . 1 NO, NOT TESTED FOR HI . . . . 2 NO, CHILD DIED BEFORE TESTING . . . . . 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 SKIP TO NEXT	YES . . . . . 1 NO, NOT TESTED FOR HI . . . . 2 NO, CHILD DIED BEFORE TESTING . . . . . 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 SKIP TO 326B
322	How old was [CHILD] when he/she first tested for HIV?	WEEKS 1 ☐☐ MONTHS 2 ☐☐ YEARS 3 ☐☐ DON'T KNOW . . . . . 998 REFUSED 999	WEEKS 1 ☐☐ MONTHS 2 ☐☐ YEARS 3 ☐☐ DON'T KNOW . . . . . 998 REFUSED 999	WEEKS 1 ☐☐ MONTHS 2 ☐☐ YEARS 3 ☐☐ DON'T KNOW . . . . . 998 REFUSED 999
323	What was the result of [CHILD]'s first HIV test?	POSITIVE, CHILD HAS HIV . . . . . 1 NEGATIVE, CHILD DOES NOT HAVE HIV . . 2 UNKNOWN/ INDETERMINATE . . . . . 3 DID NOT RECEIVE RESULTS . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	POSITIVE, CHILD HAS HIV . . . . . 1 NEGATIVE, CHILD DOES NOT HAVE HIV . . 2 UNKNOWN/ INDETERMINATE . . . . 3 DID NOT RECEIVE RESULTS . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	POSITIVE, CHILD HAS HIV . . . . . 1 NEGATIVE, CHILD DOES NOT HAVE HIV . . 2 UNKNOWN/ INDETERMINATE . . . . 3 DID NOT RECEIVE RESULTS . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9
323A	CHECK 319:	YES → NO/DK/R → 325	YES → NO/DK/R → 325	YES → NO/DK/R → 325
323B	CHECK 320:	NO/DK/R → YES → 325	NO/DK/R → YES → 325	NO/DK/R → YES → 325
324	Was [CHILD] tested for HIV after you stopped breastfeeding?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9
325	How old was [CHILD] when he/she last tested for HIV?	WEEKS 1 ☐☐	WEEKS 1 ☐☐	WEEKS 1 ☐☐

		MONTHS 2 ___ YEARS 3 ___ ONLY TESTED ONCE ..... 993 DON'T KNOW ..... 998 REFUSED 999	MONTHS 2 ___ YEARS 3 ___ ONLY TESTED ONCE ..... 993 DON'T KNOW ..... 998 REFUSED 999	MONTHS 2 ___ YEARS 3 ___ ONLY TESTED ONCE ..... 993 DON'T KNOW ..... 998 REFUSED 999
325A	CHECK 323: WHAT WAS THE RESULT OF CHILD'S FIRST HIV TEST?	OTHER → POSITIVE → 326A	OTHER → POSITIVE → 326A	OTHER → POSITIVE → 326A
325B	CHECK 325: WAS CHILD ONLY TESTED ONCE?	NO → YES → 326D	NO → YES → 326D	NO → YES → 326D
326	What was the result of [CHILD]'s most recent HIV test?	POSITIVE, CHILD HAS HIV ..... 1 NEGATIVE, CHILD DOES NOT HAVE HIV ..... 2 UNKNOWN/ INDETERMINAT ..... 3 DID NOT RECEIVE RESULTS ..... 4 DON'T KNOW ..... 8 REFUSED ..... 9 SKIP TO NEXT	POSITIVE, CHILD HAS HIV ..... 1 NEGATIVE, CHILD DOES NOT HAVE HIV ..... 2 UNKNOWN/ INDETERMINAT ..... 3 DID NOT RECEIVE RESULTS ..... 4 DON'T KNOW ..... 8 REFUSED ..... 9 SKIP TO NEXT	POSITIVE, CHILD HAS HIV ..... 1 NEGATIVE, CHILD DOES NOT HAVE HIV ..... 2 UNKNOWN/ INDETERMINAT ..... 3 DID NOT RECEIVE RESULTS ..... 4 DON'T KNOW ..... 8 REFUSED 9 326D
326A	Was [CHILD] given ARVs?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9
326D	Thank you for the information regarding [CHILD]. I will now ask about current pregnancies.			
327	Are you pregnant now?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED ..... 9 → 500		
327A	I will now ask you about family planning.			
328	Are you or your partner currently doing something or using any method to delay or avoid getting pregnant?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED ..... 9 → 400		
329	Which method are you or your partner using? SELECT ALL THAT APPLY	FEMALE STERILIZATION ..... A MALE STERILIZATION ..... B PILL ..... C IUD/COIL ..... D INJECTIONS ..... E IMPLANT ..... F CONDOM ..... G FEMALE CONDOM ..... H RHYTHM/NATURAL METHOD/CYCL ..... I WITHDRAWAL ..... J NOT HAVING SEX ..... K OTHER _____ X (SPECIFY) DON'T KNOW ..... Y REFUSED ..... Z		

4. MALE CIRCUMCISION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
400	CHECK 101: IS RESPONDENT MALE OR FEMALE? MALE ☐ ↓ FEMALE ☐ →		500
400A	I will be asking a few questions about circumcision. Circumcision is the complete removal of the foreskin from the penis. If you feel comfortable, I can show you a picture of an uncircumcised penis, a partially circumcised penis and a completely circumcised penis.		
401	Some men are uncomfortable talking about circumcision, but it is important for us to have this information. Some men are circumcised. Are you circumcised?	YES, FULLY CIRCUMCISED . . . 1 YES, PARTIALLY CIRCUMCISED . . . 2 NOT CIRCUMCISED . . . 3 DON'T KNOW . . . 8 REFUSED . . . 9	1, 2 → 402B 8, 9 → 500
402	Are you planning to get circumcised within the next 12 months?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	1 → 500
402A	Why would you NOT want to get circumcised? SELECT ALL THAT APPLY.	PAIN . . . A REDUCED SEXUAL PLEASURE . . . B FEAR . . . C CULTURE . . . D RELIGION . . . E SPOUSE CONSENT . . . F PARENTAL CONSENT . . . G LONG DURATION OF HEALING . . . H FEAR OF HIV TEST . . . I OTHER _____ (SPECIFY) X DON'T KNOW . . . Y REFUSED . . . Z	A–I, X, Y, Z → 500
402B	Some men are circumcised by a medical provider such as a doctor, clinical officer, nurse, or midwife. Some men are circumcised by a traditional practitioner. Some men are circumcised by both a medical provider and a traditional practitioner.		
403	Were you circumcised by a traditional practitioner or circumciser?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	
404	Were you circumcised by a medical provider? By medical provider, I mean a doctor, clinical officer, nurse or midwife.	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	
405	How old were you when you were circumcised? ENTER, '00' IF LESS THAN ONE YEAR.	AGE IN YEARS ☐☐ LESS THAN ONE YEAR . . . 0 DON'T KNOW . . . 98 REFUSED . . . 99	

MODULE 5: SEXUAL ACTIVITY - ADULT RESPONDENT

500	In this part of the interview, I will be asking about your sexual relationships and practices. These questions will help us better understand how they may affect your life and risk for HIV. Sex is when a penis enters a vagina or the anus.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
501	How old were you when you had sex for the very first time? IF THEY ARE UNSURE, CONFIRM IF THEY HAVE HAD VAGINAL SEX.	AGE ☐☐ NEVER HAD SEX ..... 95 DON'T KNOW ..... 98 REFUSED 99	→ 600
501A	What was the sex of the person you had sex with for the first time?	MALE ..... 1 FEMALE ..... 2 DON'T KNOW ..... 8 REFUSED 9	
502	People often have sex with different people over their lifetime. In total, with how many different people have you had sex in your lifetime? Please give your best guess.	NUMBER OF PARTNERS ☐☐☐ 995 OR MORE ..... 995 DON'T KNOW ..... 998 REFUSED 999	
503	How many different people have you had sex with in the last 12 months? ENTER, '000' FOR NONE IF NUMBER OF PARTNERS MORE THAN 100, ENTER '100'.	NUMBER OF PARTNERS ☐☐☐ NONE ..... 000 100 OR MORE ..... 100 DON'T KNOW ..... 998 REFUSED 999	→ 600 → 600
503A	Which type(s) of sex have you had in the past 12 months? SELECT ALL THAT APPLY	VAGINAL ..... A ANAL ..... B ORAL ..... C DON'T KNOW ..... Y REFUSED ..... Z	
504	Now I would like to ask you some questions about the people you have had sex with (including non-consensual sex) in the last 12 months. Let me assure you again that your answers are completely confidential and will not be told to anyone. I will first ask you about the most recent person you had sex with. ASK ONLY ABOUT THE LAST THREE PERSONS THE RESPONDENT HAS HAD SEX WITH.		

NO.	QUESTION	PARTNER 1	PARTNER 2	PARTNER 3
505	Is the [MOST RECENT/NEXT] person that you had sex with a spouse or a partner who lives in this household?	YES ..... 1 NO ..... 2 → SKIP TO 507	YES ..... 1 NO ..... 2 → SKIP TO 507	YES ..... 1 NO ..... 2 → SKIP TO 507
506	Please select the name below from the household membership list. Please identify the person you had sex with.	LINE NO. ☐☐ NOT LISTED IN HOUSEHOLD 00	LINE NO. ☐☐ NOT LISTED IN HOUSEHOLD 00	LINE NO. ☐☐ NOT LISTED IN HOUSEHOLD 00
507	I would like to ask you for the initials of this person so I can keep track. They do not have to be the actual initials of this person.	INITIALS ☐☐	INITIALS ☐☐	INITIALS ☐☐
508	Is [INITIALS] the most recent person you had sex with?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED ..... 9 → REENTER 505		
509	What is your relationship with [INITIALS]?	HUSBAND/WIFE ..... 01 LIVE-IN PARTNER 02	HUSBAND/WIFE ..... 01 LIVE-IN PARTNER 02	HUSBAND/WIFE ..... 01 LIVE-IN PARTNER 02

		PARTNER, NOT LIVE-IN 03 EX-SPOUSE/ EX-PARTNER ..... 04 FRIEND/ ACQUAINTANCE .. 05 SEX WORKER .... 06 SEX WORKER CLIENT .. 07 STRANGER .... 08 FAMILY MEMBER/ RELATIVE .... 09 TEACHER/ PROFESSOR ..... 10 OTHER ______ 96 (SPECIFY) DON'T KNOW .... 98 REFUSED 99	PARTNER, NOT LIVE-IN 03 EX-SPOUSE/ EX-PARTNER .... 04 FRIEND/ ACQUAINTANCE .. 05 SEX WORKER .... 06 SEX WORKER CLIENT .. 07 STRANGER .... 08 FAMILY MEMBER/ RELATIVE .... 09 TEACHER/ PROFESSOR .... 10 OTHER ______ 96 (SPECIFY) DON'T KNOW .... 98 REFUSED 99	PARTNER, NOT LIVE-IN 03 EX-SPOUSE/ EX-PARTNER .... 04 FRIEND/ ACQUAINTANCE .. 05 SEX WORKER .... 06 SEX WORKER CLIENT .. 07 STRANGER .... 08 FAMILY MEMBER/ RELATIVE .... 09 TEACHER/ PROFESSOR .... 10 OTHER ______ 96 (SPECIFY) DON'T KNOW .... 98 REFUSED 99
510	Is [INITIALS] male or female?	MALE .... 1 FEMALE .... 2 DON'T KNOW .... 8 REFUSED 9	MALE .... 1 FEMALE .... 2 DON'T KNOW .... 8 REFUSED 9	MALE .... 1 FEMALE .... 2 DON'T KNOW .... 8 REFUSED 9
511	How old is [INITIALS]? Please give your best guess.	AGE DON'T KNOW .... 98 REFUSED 99	AGE DON'T KNOW .... 98 REFUSED 99	AGE DON'T KNOW .... 98 REFUSED 99
512	The last time you had sex with [INITIALS], was a condom used?	YES .... 1 NO .... 2 DON'T KNOW .... 8 REFUSED .... 9 SKIP TO 513	YES .... 1 NO .... 2 DON'T KNOW .... 8 REFUSED .... 9 SKIP TO 513	YES .... 1 NO .... 2 DON'T KNOW .... 8 REFUSED .... 9 SKIP TO 513
512A	What type of condom was used?	MALE CONDOM ..... 1 FEMALE CONDOM ..... 2 DON'T KNOW .... 8 REFUSED 9	MALE CONDOM .... 1 FEMALE CONDOM .... 2 DON'T KNOW .... 8 REFUSED 9	MALE CONDOM .... 1 FEMALE CONDOM .... 2 DON'T KNOW .... 8 REFUSED 9
513	The last time you had sex with [INITIALS], did either of you use any drugs, alcohol, or substances beforehand?	ONLY I WAS .... 1 ONLY PARTNER WAS .. 2 BOTH WERE .... 3 NEITHER .... 4 DON'T KNOW .... 8 REFUSED .... 9 SKIP TO 514	ONLY I WAS .... 1 ONLY PARTNER WAS .. 2 BOTH WERE .... 3 NEITHER .... 4 DON'T KNOW .... 8 REFUSED .... 9 SKIP TO 514	ONLY I WAS .... 1 ONLY PARTNER WAS .. 2 BOTH WERE .... 3 NEITHER .... 4 DON'T KNOW .... 8 REFUSED .... 9 SKIP TO 514
513A	What type(s) of alcohol, drugs, or substances did you and/or your partner use? SELECT ALL THAT APPLY	COMMERCIAL ALCOHOL .... A HOME BREWS .... B MARIJUANA (MOTOKWANA) ..... C OTHER ______ (SPECIFY) X DON'T KNOW .... Y REFUSED .... Z	COMMERCIAL ALCOHOL .... A HOME BREWS .... B MARIJUANA (MOTOKWANA) .... C OTHER ______ (SPECIFY) X DON'T KNOW .... Y REFUSED .... Z	COMMERCIAL ALCOHOL .... A HOME BREWS .... B MARIJUANA (MOTOKWANA) .... C OTHER ______ (SPECIFY) X DON'T KNOW .... Y REFUSED .... Z
514	Does [INITIALS] know your HIV status? HIV status could mean you are HIV negative or HIV positive	YES .... 1 NO .... 2 DON'T KNOW .... 8 REFUSED 9	YES .... 1 NO .... 2 DON'T KNOW .... 8 REFUSED 9	YES .... 1 NO .... 2 DON'T KNOW .... 8 REFUSED 9
515	What is the HIV status of [INITIALS]? READ RESPONSE OPTIONS OUT LOUD TO PARTICIPANT.	POSITIVE .... 1 POSITIVE, TESTED TOGETHER .... 2 NEGATIVE .... 3 NEGATIVE, TESTED TOGETHER .... 4 DON'T KNOW STATUS 8 REFUSED 9	POSITIVE .... 1 POSITIVE, TESTED TOGETHER .... 2 NEGATIVE .... 3 NEGATIVE, TESTED TOGETHER .... 4 DON'T KNOW STATUS 8 REFUSED 9	POSITIVE .... 1 POSITIVE, TESTED TOGETHER .... 2 NEGATIVE .... 3 NEGATIVE, TESTED TOGETHER .... 4 DON'T KNOW STATUS 8 REFUSED 9
516	CHECK 503: HAS THE RESPONDENT HAD ANOTHER SEXUAL PARTNER IN THE PAST 12	YES .... 1 SKIP TO 505 NO 2 600	YES .... 1 SKIP TO 505 NO 2 600	

	MONTHS?				

MODULE 6: HIV TESTING - ADULT RESPONDENT			
600	I would now like to ask you some questions about HIV testing.		
NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
601	Have you seen a doctor, clinical officer or nurse in a health facility in the last 12 months?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 603
602	During any of your visits to the health facility in the last 12 months, did a doctor, clinical officer or nurse offer you an HIV test?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	
603	Have you ever been tested for HIV?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 605 → 611
604	Why have you never been tested for HIV? SELECT ALL THAT APPLY. PROBE: Any other reason?	DON'T KNOW WHERE TO TEST . . . A TEST COSTS TOO MUCH . . . B TRANSPORT COSTS TOO MUCH . . . C TOO FAR AWAY . . . D AFRAID OTHERS WILL KNOW ABOUT TEST RESULTS . . . E DON'T NEED TEST/LOW RISK . . . F DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY . . . G AFRAID SPOUSE/PARTNER/FAMILY WILL KNOW RESULTS . . . H DON'T WANT TO KNOW I HAVE HIV . . . I CANNOT GET TREATMENT FOR HIV . . . J TEST KITS NOT AVAILABLE . . . K RELIGIOUS REASONS . . . L CORONA LOCKDOWN . . . M OTHER _____ (SPECIFY) X DON'T KNOW . . . Y REFUSED . . . Z	→ 611
605	When was your last HIV test? Please give month and year if you can.	MONTH ☐☐ DON'T KNOW MONTH . . . 98 REFUSED MONTH . . . 99 YEAR ☐☐☐☐ DON'T KNOW YEAR . . . 9998 REFUSED YEAR . . . 9999	
606	Where was your last HIV test done?	VCT FACILITY . . . 01 MOBILE VCT . . . 02 AT HOME . . . 03 HEALTH CLINIC / FACIITY . . . 04 HOSPITAL OUTPATIENT CLINIC/OUT PATIENT DEPARTMENT (OPD) . . . 05 TB CLINIC . . . 06 STI CLINIC . . . 07 HOSPITAL INPATIENT WARDS . . . 08 BLOOD DONATING CENTER . . . 09 ANC CLINIC . . . 10 VMMC CLINIC . . . 11 OTHER _____ (SPECIFY) 96 DON'T KNOW . . . 98 REFUSED . . . 99	
607	When you last tested for HIV, what was the main reason	WAS OFFERED TEST BY HEALTH	

	you tested?	CARE OR OUTREACH WORKER . . . . . 01 WANTED TO KNOW MY HIV STATUS . . . . . 02 FELT AT RISK . . . . . 03 FELT SICK . . . . . 04 NEW PARTNER . . . . . 05 PREGNANCY . . . . . 06 MY PARTNER TESTED POSITIVE . . . . . 07 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	
608	What was the result of your last HIV test?	POSITIVE . . . . . 01 NEGATIVE . . . . . 02 UNKNOWN/INDETERMINATE . . . . . 03 DID NOT RECEIVE THE RESULT . . . . . 04 DON'T KNOW . . . . . 98 REFUSED 99	→ 610A
609	When was your first positive HIV test? Please give month and year. This will be the very first HIV positive test result that you have received. This will be the first time a health care provider told you that you had HIV. PROBE TO VERIFY DATE. SUGGEST THAT THEY CAN LOOK AT TREATMENT CARD IF AVAILABLE.	MONTH ☐☐ DON'T KNOW MONTH . . . . . 98 REFUSED MONTH . . . . . 99 YEAR ☐☐☐☐ DON'T KNOW YEAR . . . . . 9998 REFUSED YEAR 9999	
609A	CHECK 308, 311, 315, 608: HAS THE RESPONDENT SELF-REPORTED HIV-POSITIVE STATUS? HIV-POSITIVE ☐ NO ☐		→ 610A
610	When was your last negative HIV test? This would be your last negative before you tested positive. Please give month and year.	MONTH ☐☐ NO PREVIOUS HIV NEGATIVE TEST BEFORE THE POSITIVE TEST . . . . . 93 DON'T KNOW MONTH . . . . . 98 REFUSED MONTH . . . . . 99 YEAR ☐☐☐☐ NO PREVIOUS HIV NEGATIVE TEST BEFORE THE POSITIVE TES . . . . . 9993 DON'T KNOW YEAR . . . . . 9998 REFUSED YEAR 9999	
610A	CHECK 308, 311, 315, 608, 611: HAS THE RESPONDENT SELF-REPORTED HIV-POSITIVE STATUS? NO ☐ HIV-POSITIVE ☐		→ 613
611	Has a health care provider ever told you that you have HIV?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 613
612	When did a health care provider first tell you that you have HIV?	MONTH ☐☐ DON'T KNOW MONTH . . . . . 98 REFUSED MONTH . . . . . 99 YEAR ☐☐☐☐ DON'T KNOW YEAR . . . . . 9998 REFUSED YEAR 9999	

613	There are now HIV tests that you can do yourself at home. Some of these self-test kits allow you to test yourself for HIV by swabbing your mouth or pricking your finger and testing the fluid for HIV.		
614	Have you ever tested yourself for HIV using a self-test kit?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
615A	CHECK 308, 311, 315, 608: HAS THE RESPONDENT SELF-REPORTED HIV-POSITIVE STATUS? HIV-POSITIVE ☐ NO ☐		→ 616
615	Of the following people, who have you told that you are HIV positive? a) Spouse or sex partner? b) Doctor? c) Friend? d) Family member? x) Other?	Y N DK R a) SPOUSE/SEX PARTNER . . . . . 1 2 8 9 b) DOCTOR . . . . . 1 2 8 9 c) FRIEND . . . . . 1 2 8 9 d) FAMILY MEMBER . . . . . 1 2 8 9 x) OTHER _____ 1 2 8 9 (SPECIFY)	
616	PrEP, or pre-exposure prophylaxis, involves taking a daily pill to reduce the chance of getting HIV.		
617	Have you ever heard of PrEP before now?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 619A
618	Have you ever taken PrEP?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 619A
618A	CHECK 308, 311, 315, 608, 611: HAS THE RESPONDENT SELF-REPORTED HIV-POSITIVE STATUS? NO ☐ HIV-POSITIVE ☐		→ 700
619	Are you currently taking PrEP?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 700
619A	CHECK 308, 311, 315, 608, 611: HAS THE RESPONDENT SELF-REPORTED HIV-POSITIVE STATUS? NO ☐ HIV-POSITIVE ☐		→ 700
620	Would you take PrEP to help prevent HIV?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	

MODULE 7: HIV STATUS, CARE, AND TREATMENT - ADULT RESPONDENT

700 CHECK 308, 311, 315, 608, 611: HAS THE RESPONDENT SELF-REPORTED HIV-POSITIVE STATUS?

HIV-POSITIVE ☐ NO ☐ → 800

700A Now I am going to ask you more about your experience with HIV care and treatment.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
701	After learning you had HIV, have you ever received care or treatment for HIV from a doctor, clinical officer, or nurse?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 702A → 709
702	What is the main reason why you have never received care or treatment for HIV from a doctor, clinical officer,	FACILITY IS TOO FAR AWAY . . . 01 DON'T KNOW WHERE TO GET HIV MEDICAL CARE . . . 02 COST OF CARE . . . 03 COST OF TRANSPORT . . . 04 DO NOT NEED IT/FEEL HEALTHY/NOT SICK . . . 05 FEAR PEOPLE WILL KNOW HAVE HIV IF I GO TO A CLINIC . . . 06 RELIGIOUS REASONS . . . 07 TAKING TRADITIONAL MEDICINE . . . 08 DO NOT TRUST THE STAFF/QUALITY OF CARE . . . 09 CORONA LOCKDOWN . . . 10 OTHER _____ (SPECIFY) 96 DON'T KNOW . . . 98 REFUSED . . . 99	→ 709
702A	When seeking health services in the last 12 months, did you experience any of the following HIV related discrimination because of your HIV positive status: a) Being denied care? b) Being the subject of gossip? c) Being advised not to have sex? d) Being verbally abused? e) Through people avoiding physical contact with you? f) Through sharing of HIV status without consent?	Y N DK R a) BEING DENIED CARE . . . 1 2 8 9 b) BEING THE SUBJECT OF GOSSIP . . . 1 2 8 9 c) BEING ADVISED NOT TO HAVE SEX . . . 1 2 8 9 d) BEING VERBALLY ABUSED . . . 1 2 8 9 e) THROUGH PEOPLE AVOIDING PHYSICAL CONTACT WITH YOU . . . 1 2 8 9 f) THROUGH SHARING OF HIV STATUS WITHOUT CONSENT . . . 1 2 8 9	
703	Are you currently receiving HIV care from a health facility?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 706
704	At which facility are you currently receiving HIV care?	[FACILITY 1] . . . 01 [FACILITY 2] . . . 02 [FACILITY 3] . . . 03 [FACILITY 4] . . . 04 [FACILITY 5] . . . 05 FACILITY NOT ON LIST _____ (SPECIFY) 96	
705	In the past year, did you change the clinic where you receive HIV care?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	
706	At your last HIV care visit, approximately how long did it take you to travel from your home (or workplace) one-way?	LESS THAN HALF HOUR . . . 1 HALF HOUR TO ONE HOUR . . . 2 ONE TO TWO HOURS . . . 3 MORE THAN TWO HOURS . . . 4 DON'T KNOW . . . 8 REFUSED . . . 9	
707	Does travel time to a health facility make it difficult for you to access care?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	
708	When did you last see a doctor, clinical officer, pharmacist or nurse for HIV treatment or care?	MONTH ☐☐	

		DON'T KNOW MONTH ..... 98 REFUSED MONTH ..... 99 YEAR ☐☐☐☐ DON'T KNOW YEAR ..... 9998 REFUSED YEAR 9999	
709	Have you ever taken ARVs, that is, antiretroviral medications to treat HIV infection?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	→711 →710
710A	CHECK 701: YES OR NO ☐ → 720 DON'T KNOW OR REFUSED ☐		→ 722A
710	What is the main reason you have never taken ARVs?	NOT ELIGIBLE FOR TREATMENT ..... 01 HEALTH CARE PROVIDER DID NOT PRESCRIBE ..... 02 HIV MEDICINES NOT AVAILABLE ..... 03 FEEL HEALTHY/NOT SICK ..... 04 COST OF CARE ..... 05 RELIGIOUS REASONS ..... 06 TAKING TRADITIONAL MEDICATIONS ..... 07 NOT ATTENDING HIV CLINIC ..... 08 CLINIC IS TOO FAR ..... 09 CORONA LOCKDOWN ..... 10 OTHER _____ 96 (SPECIFY) DON'T KNOW ..... 98 REFUSED 99	→ 720
711	What month and year did you first start taking ARVs? PROBE TO VERIFY DATE.	MONTH ☐☐ DON'T KNOW MONTH ..... 98 REFUSED MONTH ..... 99 YEAR ☐☐☐☐ DON'T KNOW YEAR ..... 9998 REFUSED YEAR 9999	
712	Are you currently taking ARVs, that is, antiretroviral medications? By currently, I mean that you may have missed some doses but you are still taking ARVs.	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	→714 →720
713	Can you tell me the main reason why you stopped taking ARVs?	I HAD TROUBLE TAKING A TABLET EVERYDAY ..... 01 I HAD SIDE EFFECTS ..... 02 FACILITY TOO FAR AWAY FOR ME TO GET MEDICINE REGULARLY ..... 03 COST OF CARE ..... 04 I FEEL HEALTHY/NOT SICK ..... 05 FACILITY WAS OUT OF STOCK ..... 06 RELIGIOUS REASONS ..... 07 TAKING TRADITIONAL MEDICATIONS ..... 08 CORONA LOCKDOWN ..... 09 OTHER _____ 96 (SPECIFY) DON'T KNOW ..... 98 REFUSED 99	→ 720
714	How do you normally receive your ARVs? READ EACH RESPONSE. SELECT THE MOST COMMON METHOD OF COLLECTION.	PICK UP AT THE LOCAL CLINIC ..... 1 PICK UP AT THE HOSPITAL ..... 2 FROM THE COMMUNITY SUPPORT GROUP/ ADHERENCE CLU ..... 3 THEY ARE DELIVERED TO MY HOME ..... 4 A FAMILY MEMBER/FRIEND COLLECTS TH ..... 5 DON'T KNOW ..... 8 REFUSED 9	
714A	Since March 2020, the CORONA pandemic has affected many medical services including HIV testing	YES ..... 1 NO 2	

	and HIV care and treatment. Was there any period since March 2020 when you obtained (or were told to obtain) your ARV in a different way or place than where you usually receive them?	DON'T KNOW ..... 8 REFUSED 9	
715	The last time you picked up or received your ARVs, how much supply were you given? You should include both your prescription and any extra you were given. USE WEEKS IF LESS THAN ONE MONTH.	WEEKS 1 ☐☐ MONTHS 2 ☐☐ DON'T KNOW ..... 998 REFUSED 999	
715A	The last time you picked up or received your ARV, were you told that you were being given an extra supply because of the CORONA lockdown?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	
716	Have your ARVs ever been changed or modified?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	→ 718A
717	Why were your ARVs changed?	I WAS NOT RESPONDING TO MY FIRST TREATMENT ..... 1 MY VIRAL LOAD WASN'T SUPPRESSED ..... 2 I WANTED TO GET PREGNANT OR WAS PREGNANT ..... 3 I WAS HAVING/WORRIED ABOUT SERIOUS SIDE EFFECTS .. 4 NATIONAL ART REGIMEN CHANGE ..... 5 OTHER _____ 6 (SPECIFY) DON'T KNOW ..... 8 REFUSED 9	
718A	CHECK 114: RESPONDENT AWAY FROM HOME FOR ONE OR MORE TIMES IN THE PAST YEAR? YES, 1 OR MORE TIMES ☐ ↓ NO, 0 TIMES OR DON'T KNOW OR REFUSED ☐ → 718A		
718	You said before that you had been away from home during the past year. At any point in the past year when you were away from home, was there any period when you interrupted your ARV treatment?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	
718A	Since March 2020, the CORONA pandemic has affected many medical services including HIV testing and HIV care and treatment. Was there any period since March 2020 when your ARV treatment was interrupted due to the CORONA lockdown?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	
719	People sometimes forget to take all of their ARVs every day. In the last 30 days, how many days have you missed taking any of your ARV pills?	NUMBER OF DAYS ☐☐ NONE ..... 00 DON'T KNOW ..... 98 REFUSED 99	
720	Did you ever have a viral load test? This is a test that measures how much HIV is in your blood.	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	→ 722A
721	When did you last have a viral load test?	MONTH ☐☐ DON'T KNOW MONTH ..... 98 REFUSED MONTH ..... 99 YEAR ☐☐☐☐	

		DON'T KNOW YEAR ..... 9998 REFUSED YEAR 9999	
722	Did you receive the results of your last viral load test?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	
722A	You told me that you are HIV-positive. Can you please show me documentation of your HIV status? This may be anything that you have received from a health facility or doctor that has your name and indicates your HIV status. PROOF OF DOCUMENTATION CAN INCLUDE HEALTH CARD, PILL BOTTLE, OR HIV TEST CARD FROM TESTING SERVICES, EACH IDENTIFIED WITH THE NAME OF PARTICIPANT.	YES, DOCUMENTATION SHOWN ..... 1 NO DOCUMENTATION 2	
722B	CHECK 701: YES OR NO ☐	DON'T KNOW OR REFUSED ☐ →	800
723	At your last HIV medical care visit, were you asked if you had any of the following tuberculosis or TB symptoms: Persistent cough? Fever? Night sweat? Weight loss?	Y N DK R a) PERSISTENT COUGH ..... 1 2 8 9 b) FEVER ..... 1 2 8 9 c) NIGHT SWEAT ..... 1 2 8 9 d) WEIGHT LOSS 1 2 8 9	
724	Have you ever taken medicine or a pill to prevent you from coming down with TB? This is sometimes known as TB Preventative Therapy or TPT. An example of TPT is Isoniazid, IPT or INH, which is medication that prevents TB. It is given to people with HIV or people who are in contact with someone with TB. It is not treatment for TB.	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	→ 800
725	Are you currently taking TPT? By currently, I mean that you may have missed some doses but you are still taking TPT.	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	→ 800
726	How many months have you taken TPT?	NUMBER OF MONTHS ☐☐ DON'T KNOW ..... 98 REFUSED 99	

MODULE 8: TUBERCULOSIS AND OTHER HEALTH ISSUES

800A Now we will ask you about tuberculosis or TB.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
801	In the last 12 months, did you visit a clinic for TB diagnosis or treatment?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	8 → 807A
802	When you visited a TB clinic In the last 12 months, were you tested for HIV?	YES . . . 1 NO, WAS NOT TESTED FOR HIV . . . 2 NO, ALREADY KNOW HIV POSITIVE STATUS . . . 3 DON'T KNOW . . . 8 REFUSED . . . 9	
803	In the last 12 months, were you told by a doctor, clinical officer or nurse that you had TB?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	8 → 807A
804	In the last 12 months, were you treated for TB?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	8 → 807A
805	Are you currently on treatment for TB?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	1 → 807A
806	The last time you were treated for TB, did you complete at least 6 months of treatment?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	
807A	CHECK 101: IS THE RESPONDENT MALE OR FEMALE? FEMALE ☐ (↓) MALE ☐ →		→ 813
807	Now I am going to ask you about tests a health care provider can do to check for cervical cancer. The cervix connects the uterus to the vagina. The tests a health care provider can do to check for cervical cancer are called a Pap smear, HPV test and VIA test. For a Pap smear and HPV test, a health care provider puts a small stick inside the vagina to wipe the cervix and sends the sample to the laboratory. For a VIA test, a healthcare worker puts vinegar on the cervix and looks to see if the cervix changes color		
808	Have you ever been tested for cervical cancer?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	8 → 813
809	What month and year was your last test for cervical cancer?	MONTH ☐☐ DON'T KNOW MONTH . . . 98 REFUSED MONTH . . . 99 YEAR ☐☐☐☐ DON'T KNOW YEAR . . . 9998 REFUSED YEAR . . . 9999	
810	What was the result of your last test for cervical cancer?	NORMAL/NEGATIVE . . . 1 ABNORMAL/POSITIVE . . . 2 SUSPECT CANCER . . . 3 UNCLEAR/INCONCLUSIVE . . . 4 DID NOT RECEIVE RESULTS . . . 5 DON'T KNOW . . . 8 REFUSED . . . 9	1 → 812 8 → 812
811	Did you receive treatment after your last test for cervical cancer? Did you receive treatment on the same day or on a different day?	YES, I WAS TREATED ON THE SAME DAY . . . 1 YES, I RECEIVED TREATMENT ON A DIFFERENT DAY . . . 2	

		NO . . . . . 3 DON'T KNOW . . . . . 8 REFUSED 9	
812	Have you ever been vaccinated to prevent cervical cancer? This would be the HPV vaccine.	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
813	I am now going to ask you about other aspects of health.		
814	Over the past two weeks, how often have you been bothered by having little interest or pleasure in doing things?	NOT AT ALL . . . . . 1 1 – 7 DAYS . . . . . 2 8 – 11 DAYS . . . . . 3 12 – 14 DAYS . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	
815	Over the past two weeks, how often have you felt down, depressed or hopeless?	NOT AT ALL . . . . . 1 1 – 7 DAYS . . . . . 2 8 – 11 DAYS . . . . . 3 12 – 14 DAYS . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	
816	Over the past two weeks, how often have you felt nervous, anxious or on edge?	NOT AT ALL . . . . . 1 1 – 7 DAYS . . . . . 2 8 – 11 DAYS . . . . . 3 12 – 14 DAYS . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	
817	Over the past two weeks, how often have you not been able to stop or control worrying?	NOT AT ALL . . . . . 1 1 – 7 DAYS . . . . . 2 8 – 11 DAYS . . . . . 3 12 – 14 DAYS . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	

INSTRUCTION: FOR EACH CONDITION, ASK QUESTION A. IF YES, ASK QUESTION B BEFORE MOVING TO NEXT CONDITION.

818

	A. Have you ever been told by a doctor or health worker that you have any of the following chronic health conditions? Y N DK R	B. Are you currently taking medication for any of the following chronic health conditions? Y N DK R
a)	High blood sugar or diabetes? 1 2 8 9	a) 1 2 8 9
b)	High blood pressure or hypertension? 1 2 8 9	b) 1 2 8 9
c)	Heart disease or chronic heart condition? 1 2 8 9	c) 1 2 8 9
d)	Kidney disease? 1 2 8 9	d) 1 2 8 9
e)	Cancer or tumor? 1 2 8 9	e) 1 2 8 9
f)	Lung disease or chronic lung condition? 1 2 8 9	f) 1 2 8 9
g)	Depression or mental health condition? 1 2 8 9	g) 1 2 8 9
x)	Other? _____ (SPECIFY) 1 2 8 9	x) 1 2 8 9

SKIP TO 900

MODULE 9: ALCOHOL USE			
900	The next few questions will be on your use of alcohol. Remember, all the answers you provide will be kept confidential.		
NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
901	How often do you have a drink containing alcohol?	NEVER . . . 0 MONTHLY OR LESS . . . 1 2-4 TIMES A MONTH . . . 2 2-3 TIMES A WEEK . . . 3 4 OR MORE TIMES A WEEK . . . 4 DON'T KNOW . . . 8 REFUSED . . . 9	→ 904 → 904
902	How many drinks containing alcohol do you have on a typical day?	1 or 2 . . . 0 3 or 4 . . . 1 5 or 6 . . . 2 7 to 9 . . . 3 10 OR MORE . . . 4 DON'T KNOW . . . 8 REFUSED . . . 9	
903	How often do you have six or more drinks on one occasion?	NEVER . . . 0 LESS THAN MONTHLY . . . 1 MONTHLY . . . 2 WEEKLY . . . 3 DAILY OR ALMOST DAILY . . . 4 DON'T KNOW . . . 8 REFUSED . . . 9	
904	How often do you use injectable drugs for recreational purposes?	NEVER . . . 0 LESS THAN MONTHLY . . . 1 MONTHLY . . . 2 WEEKLY . . . 3 DAILY OR ALMOST DAILY . . . 4 DON'T KNOW . . . 8 REFUSED . . . 9	

MODULE 10: EXPOSURE TO PREVENTION INTERVENTION, 15-24 YEARS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1000	CHECK 103: AGE 15-24 ☐ ↓ AGE 25 OR OLDER ☐ →		→ 1008
1000A	We will now ask you about your experience with HIV prevention programs.		
1001	Where can you get condoms? SELECT ALL THAT APPLY. Anywhere else?	CLINIC/HOSPITAL . . . . . A KIOSK/SHOP . . . . . B PHARMACY . . . . . C LOCAL FREE DISPENSER . . . . . D FRIENDS/PEER . . . . . E SEXUAL PARTNER(S) . . . . . F OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Y REFUSED . . . . . Z	
1002	If you wanted a condom, would it be easy for you to get one?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 1004 → 1004
1003	Why is it not easy for you to get a condom? SELECT ALL THAT APPLY.	CONDOMS NOT AVAILABLE/TOO FAR . . . . . A NOT CONVENIENT . . . . . B COSTS TOO MUCH . . . . . C EMBARASSED TO GET CONDOMS . . . . . D DO NOT WANT OTHERS TO KNOW . . . . . E DO NOT KNOW WHERE TO GET CONDOMS F CORONA LOCKDOWN . . . . . G OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Y REFUSED . . . . . Z	
1004	Have you ever talked with a parent or guardian about sex?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
1005	Have you ever discussed HIV with your parents or guardian?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
1006	Have you taken part in any of the following prevention or treatment programs? a) DREAMS? b) Social asset building? c) Di Palametse? d) Life skills training? e) Peer Mothers? x) Other?	Y N DK R a) DREAMS . . . . . 1 2 8 9 b) SOCIAL ASSET BUILDING . . . . 1 2 8 9 c) DI PALAMETSE . . . . . 1 2 8 9 d) LIFE SKILLS TRAINING . . . . . 1 2 8 9 e) PEER MOTHERS . . . . . 1 2 8 9 x) OTHER _____ 1 2 8 9 (SPECIFY)	
1007	In the past 12 months, how many times have you participated in a school meeting or class period where they talked about HIV/AIDS? If you are not certain, give your best guess.	NONE . . . . . 0 1-4 TIMES . . . . . 1 5-9 TIMES . . . . . 2 10 OR MORE TIMES . . . . . 3 DID NOT ATTEND SCHOOL IN PAST 12 MONTHS . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	
1008	From what source(s) did you receive information about HIV and AIDS?	YOUTH PROGRAM . . . . . A TELEVISION/ VIDEO . . . . . B	

	SELECT ALL THAT APPLY.	RADIO . . . . . C NEWSPAPER . . . . . D HOSPITAL/CLINIC/VCT . . . . . E POSTERS / BANNERS / BOOKLET . . . . . F TRADITIONAL/SPIRITUAL HEALER . . . . . G WORKSHOP / SEMINAR . . . . . H INDIVIDUAL . . . . . I CHURCH . . . . . J WORKPLACE PROGRAMME (PEER EDUCATION, COUNSELLOR, CO_WORKER K PEER EDUCATOR . . . . . L SCHOOL . . . . . M OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Y REFUSED . . . . . Z	
1009	How can people prevent becoming infected with HIV? SELECT ALL THAT APPLY.	USE CONDOMS . . . . . A HAVE FEWER PARTNERS . . . . . B BOTH PARTNERS HAVE NO OTHER PARTNERS . . . . . C NO CASUAL SEX . . . . . D NO COMMERCIAL SEX . . . . . E AVOID INJECTIONS WITH CONTAMINATED . . . . . F AVOID BLOOD TRANSFUSIONS . . . . . G OTHER _____ X (SPECIFY) DON'T KNOW . . . . . Y REFUSED . . . . . Z	
1010	Is it possible for a healthy looking person to have HIV?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
1011	Can people reduce their chances of getting HIV and AIDS by using a condom correctly every time they have sex?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
1012	Do you think that a person can get infected with HIV through mosquito bites?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
1013	Can people reduce their chances of getting HIV and AIDS by having only one uninfected sex partner who has no other partners?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
1014	Can a person get infected with HIV by sharing a meal (from the same plate) with a person who has HIV or AIDS?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
1015	If you knew that a shopkeeper or food shelter had HIV or AIDS, would you buy vegetables from them?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
1016	Do you think that children living with HIV should attend school with children who are HIV negative?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	

APPENDIX G. CHILD QUESTIONNAIRE

6APRIL2021 Version 3.2

BOTSWANA POPULATION-BASED HIV IMPACT ASSESSMENT SURVEY - CHILD MODULE QUESTIONNAIRE

IDENTIFICATION

01 EA NUMBER . . . . . [ ][ ][ ][ ]

02 HOUSEHOLD NUMBER . . . . . [ ][ ][ ][ ]

03 LINE NUMBER OF CHILD . . . . . [ ][ ]

04A NAME OF THE CHILD _____

04B NAME OF THE PARENT/GUARDIAN _____

05 SEX OF THE CHILD (MALE = 1, FEMALE = 2) . . . . . [ ]

INTERVIEWER VISITS

	FIRST VISIT	SECOND VISIT	THIRD VISIT	FINAL VISIT
DATE				DAY [ ][ ]
				MONTH [ ][ ]
INTERVIEWER'S NAME				YEAR [2][0][2][1]
RESULT*				INT. NO. [ ][ ][ ][ ]
USE CODES BELOW				RESULT* [ ]
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS [ ]
TIME				

*RESULT CODES:

01 COMPLETED
02 NOT AT HOME
03 POSTPONED
04 REFUSED
05 INCAPACITATED _____ (SPECIFY)
06 WITHDRAWN
07 INELIGIBILE/COGNITIVELY IMPAIRED
08 STOP SURVEY
09 AT HOME, RESCHEDULE VISIT
10 TEAM IN ISOLATION/QUARANTINE FOR COVID-19
11 NOT AT HOME, NO FURTHER VISITS PLANNED
OTHER _____ (SPECIFY)

06 SUPERVISOR _____ NAME [ ][ ][ ][ ] NUMBER

07 TEAM NUMBER [ ][ ]

NATIVE LANGUAGE OF RESPONDENT** [0][1] LANGUAGE OF INTERVIEW** [ ][ ] LANGUAGE OF QUESTIONNAIRE** [ ][ ] TRANSLATOR USED (YES = 1, NO = 2) [ ]

LANGUAGE OF QUESTIONNAIRE** **ENGLISH**

**LANGUAGE CODES:
01 ENGLISH
02 SETSWANA
96 OTHER (SPECIFY)

1. CHILD MODULE			
NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
100	Thank you for agreeing to participate in this survey. The first set of questions is about your life in general. Afterwards, we will move on to other topics.		
101	WHAT IS THE SEX OF CHILD?	MALE . . . . . 1 FEMALE 2	
101A	CHECK HH ROSTER Q7:	0 YEARS . . . . . 1 1-14 YEARS 2	→ 103
102	In what day, month and year was [CHILD] born?	DAY ☐☐ DON'T KNOW DAY . . . . . 98 REFUSED . . . . . 99 MONTH ☐☐ DON'T KNOW MONTH . . . . . 98 REFUSED . . . . . 99 YEAR ☐☐☐☐ DON'T KNOW YEAR . . . . . 9998 REFUSED 9999	→ 104
103	In what month and year was [CHILD] born?	MONTH ☐☐ DON'T KNOW MONTH . . . . . 98 REFUSED . . . . . 99 YEAR ☐☐☐☐ DON'T KNOW YEAR . . . . . 9998 REFUSED 9999	
104	IS CHILD LESS THAN 6 WEEKS OLD?	YES . . . . . 1 NO 2	→ CHILD NOT ELIGBILE
105	IS CHILD OLDER THAN 14 YEARS?	YES . . . . . 1 NO 2	→ INDIVIDUAL INTERVIEW
320	Now I will ask you some questions about [CHILD]'s HIV testing history.		
321	After [CHILD] was born, was he/she tested for HIV?	YES . . . . . 1 NO, NOT TESTED FOR HIV . . . . . 2 NO, CHILD DIED BEFORE TESTING . . . . . 3 DON'T KNOW . . . . . 8 REFUSED 9	→ 326E
322	How old was [CHILD] when he/she first tested for HIV?	WEEKS . . 1 ☐☐ MONTHS . . 2 ☐☐ YEARS . . 3 ☐☐ DON'T KNOW . . . . . 998 REFUSE 999	
323	What was the result of [CHILD]'s first HIV test?	POSITIVE, CHILD HAS HIV . . . . . 1 NEGATIVE, CHILD DOES NOT HAVE HIV 2	

1. CHILD MODULE			
NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
		UNKNOWN/INDETERMINATE . . . . . 3 DID NOT RECEIVE RESULTS . . . . . 4 DON'T KNOW . . . . . 8 REFUSE 9	
325	How old was [CHILD] when he/she last tested for HIV?	WEEKS . . 1 ☐☐ MONTHS . . 2 ☐☐ YEARS . . 3 ☐☐ ONLY TESTED ONCE . . . . . 993 DON'T KNOW . . . . . 998 REFUSE 999	
325A	CHECK 323: WHAT WAS THE RESULT OF CHILD'S FIRST HIV TEST?	OTHER ☐ POSITIVE ☐ → 326A	
325B	CHECK 325: WAS CHILD ONLY TESTED ONCE?	NO ☐ YES ☐ → 326D	
326	What was the result of [CHILD]'s most recent HIV test?	POSITIVE, CHILD HAS HIV . . . . . 1 NEGATIVE, CHILD DOES NOT HAVE HIV . . . . 2 UNKNOWN/INDETERMINATE . . . . . 3 DID NOT RECEIVE RESULTS . . . . . 4 DON'T KNOW . . . . . 8 REFUSE 9	→ 326D
326A	Was [CHILD] given ARVs?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
326B	Is [CHILD] currently taking ARVs?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
326C	You told me that [CHILD] is HIV-positive. Can you please show me documentation of [CHILD]'s HIV status? This may be anything that you have received from a health facility or doctor that has [CHILD]'s name and indicates [CHILD]'s HIV status. PROOF OF DIOCUMENTATION CAN INCLUDE HEALTH CARD, PILL POTTLE, OR HIV TEST CARD FROM TESTING SERVICES, EACH IDENTIFIED WITH CHILD'S NAME.	YES, DOCUMENTATION SHOWN . . . . . 1 NO DOCUMENTATION 2	
326D	Thank you for the information regarding [CHILD].		

APPENDIX H. SURVEY CONSENT FORMS

Flesch-Kincaid: 8.2

Informed Consent Form for Household Interview

What language do you prefer for our discussion today?

___ English ___ Setswana

Title of Study: This study is called the **FIFTH BOTSWANA HIV/AIDS IMPACT SURVEY V (BAIS V)**

Interviewer reads:

Hello. My name is_____. I would like to invite you and your household to take part in this study about HIV in Botswana. The Ministry of Health and Wellness is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), University of Maryland Baltimore (UMB), Statistics Botswana and National AIDS and Health Promotion Agency (NAHPA).

Purpose of study

HIV is a virus that causes an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly.

This study will help us know how many people in Botswana have HIV and need health services. We expect about 28,000 total participants from about 13,500 households throughout Botswana to take part in the study. This will include over 24,000 adolescents and adults aged 15 to 64 years and about 4,000 children aged 6 weeks to 14 years.

If you take part, you will help the Ministry of Health and Wellness improve HIV services in the country.

This form might have some words in it that are not familiar to you. Please ask me to explain anything that you do not understand.

Study procedures

- If you join this study, we will ask you questions. In the household interview, we would like to ask you some questions about the people who live here. We will also ask you about the support you receive and some of the things you have or own. After the household interview, we will invite you and others living in your household to take part in individual interviews. The questions will be about your age, the work you do, your health and experience with health services, and social and sexual behavior. The interview may take about 20 to 30 minutes.

- The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff. The interview will take place in private, here in your house, or a nearby private area of your choosing.
- We will ask each person to give permission to take part before joining the study. Study procedures also include a blood draw, HIV testing, and storage of that blood for future testing if you agree to this. The testing and counseling will take about 45 minutes. If a household member does not take part in the study, he/she will be not tested for HIV, but we can refer him/her to a health facility where these services are provided.

Alternatives to taking part

You can decide not to take part in this study. If you decide not to take part, it will not affect your healthcare in any way. We can tell you where to go for HIV services and learn about your HIV status. If you choose to take part in the study, you may change your mind at any time and stop taking part. If you decide to leave the study, no more information will be collected from you, however, you will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you for being in the study, apart from your time.

Benefits

The main benefit for you to be in the study is the chance to learn more about your health today. Additionally, the information you provide to us will be used to improve healthcare services in Botswana.

Risks

The risks of taking part in the household interview are small. You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any specific question. We will do everything we can to keep your information confidential. As with all studies, there is a chance that someone could find out you participated in the study. We are doing everything possible to ensure confidentiality and minimize this risk.

Confidentiality and access to your health information

We will do everything we can to keep your answers confidential. The information we collect from you will be identified by a number and not by your name. Your name will not appear when we share study findings and study data. The data from this study will be released to the public without any identifiers, and this will not require another consent from you. Your name and contact information will not be released outside of the study groups listed unless there is an issue of safety.

The following individuals and/or agencies will be able to look at your interview records to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a person taking part in a study, including:
    - The Health Research and Development Committee (HRDC)
    - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
    - University of Maryland Baltimore (UMB; Baltimore, MD, USA)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors

All collaborating institutions; National AIDS and Health Promotion Agency (NAHPA); Statistics Botswana (SB); Ministry of Health and Wellness (MOHW)-Botswana; Botswana Harvard Partnership; African Comprehensive HIV/AIDS Partnerships (ACHAP); UNAIDS; University of Botswana; Centers for Disease Control and Prevention (CDC)-Botswana, Centers for Disease Control and Prevention (CDC)-Atlanta; University of Maryland, Baltimore (UMB); ICF; Botswana University of Maryland School of Medicine Health Initiative; will access, maintain, review, and analyze survey data.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the HRDC and the Institutional Review Boards of the U.S. Centers for Disease Control and Prevention (CDC) and University of Maryland Baltimore (UMB).

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

Susan Matroos, Statistics Botswana

Landline: +267 367 1336; Mobile: +267 727 73711

Email: sumatroos089@gmail.com

[INTERVIEWER: READ FROM HERE]

For issues related to injuries or other harms, or for questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

S. Mosweunyane, Health Research and Development Committee

Landline: +267 363 2018/+267 363 2500

Email: smosweunyane@gov.bw

Do you want to ask me anything about the study?

Consent Statement

By answering the question below, you confirm that any questions have been answered satisfactorily and you have been offered a copy of this consent form.

Do you agree to do the household interview?

If you agree to take part in the household interview, please say the following statement:

"I agree to take part in the household interview."

____Interviewer to check this box if participant agrees to participate in the household interview

If you refuse to take part in the household interview, please say the following statement:

"I do not wish to take part in the household interview."

____Interviewer to check this box if participant refuses to participate in the household interview

[Tablet summary statement]

To confirm, you have agreed to [INSERT ALL OPTIONS MARKED YES: HOUSEHOLD INTERVIEW]. Is this correct?

_____Yes _____No

PRINTED NAME OF HOUSEHOLD HEAD (completed by interviewer) _____

HH ID Number _____

BAIS V INTERVIEWER SIGNATURE _____ Date: ___/___/___

BAIS V INTERVIEWER NAME _____

BAIS V INTERVIEWER ID NUMBER _____

BAIS V Individual Consent for Adults 18 to 64 and emancipated minors 14–17 years: Interview, Blood Testing, Blood Storage, and Contact for Future Research

Flesch-Kincaid Level: 8.0

Informed Consent Form for Individual Interview, Blood Testing, Blood Storage, and Contact for Future Research

What language do you prefer for our discussion today?

___ English ___ Setswana

Title of Study: This study is called the **FIFTH BOTSWANA HIV/AIDS IMPACT SURVEY V (BAIS V)**

(SKIP THIS SECTION IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD CONSENT)

Interviewer reads:

Hello. My name is_____. I would like to invite you to take part in this study about HIV in Botswana. The Ministry of Health and Wellness is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), University of Maryland Baltimore (UMB), Statistics Botswana and National AIDS and Health Promotion Agency (NAHPA).

Purpose of study

HIV is a virus that causes an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly.

This study will help us know how many people in Botswana have HIV and need health services. We expect about 28,000 total participants from about 12,500 households throughout Botswana to take part in the study. This will include over 24,000 adolescents and adults aged 15 to 64 years and about 4,000 children aged 6 weeks to 14 years.

If you take part, you will help the Ministry of Health and Wellness improve HIV services in the country.

This form might have some words in it that are not familiar to you. Please ask me to explain anything that you do not understand.

BAIS V Individual Consent for Adults 18 to 64 and emancipated minors 14–17 years: Interview, Blood Testing, Blood Storage, and Contact for Future Research

Study Procedures

- The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff. The interview will take place in private, here in your house, or an acceptable nearby private area of your choosing.

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD CONSENT)

- If you join this study, we will ask you questions about your age, the work you do, your health and experience with health services, and your social and sexual behavior. The interview will take about 20 to 30 minutes. The interview will take place in a private area in or around your home.
- Study procedures also include a blood draw, HIV testing, and storage of any leftover blood for future testing if you agree to this. The testing and counseling will take about 45 minutes.
    - If you agree to the HIV testing, a study staff member who has been trained to draw blood will take about 14 milliliters (about a tablespoonful) of blood from your arm into two tubes. If it is not possible to take blood from your arm, then we will try to take a few drops of blood from your finger. The blood test will take place here in or around your household. We will give you the results of your HIV test and provide counseling on the same day. If you already have documentation that you are HIV-positive, the blood test will take place in a laboratory instead of in your household.
    - If you are positive for HIV, we will give you a referral form and information so you can go to a health facility and consult with a doctor or nurse to learn more about the test results.
    - If you are positive for HIV, we will send your blood to a laboratory to measure your viral load and CD4 count. Viral load is the amount of HIV in your blood. CD4 cells are the part of the immune system that fights HIV infection and other diseases. These results will be sent to a health facility of your choosing in about 8 to 12 weeks. You will be able to talk to a nurse or doctor at that facility about your results. Some of your blood will be sent to a laboratory out of the country for additional tests related to HIV. If we have test results that might help guide your treatment, we will return them to a clinic. If you have given us your contact information, we will contact you to tell you how you and your doctor or nurse may get these results.
    - We would also like to ask you to allow us to store your leftover blood for future research tests. These tests may be related to HIV or other health issues important to people living in Botswana. The sample will not have your name on it so we will not be able to tell you the results of these future research tests. Your leftover blood will not be sold or used for profit but may be shared with outside investigators after removal of all identifiers,

without asking for your consent again. If you do not agree to long-term storage of your blood samples, you can still take part in the study and we will destroy your blood samples after this study-related testing is complete. If you agree today to store your blood but change your mind later in the next three years, you can call the number provided at the end of this consent form and have your stored specimen destroyed. If you change your mind after three years, we will not be able to destroy your sample. Any future studies conducted using your blood sample will be approved by the appropriate institutions overseeing those studies.

- Additionally, you may be eligible to take part in future studies related to health in Botswana. We are asking for your permission to contact you in the next three years if such an opportunity occurs. To do this, approved researchers will be able to request access to your contact information. If they contact you, they will give you details about the new study and invite you to join the study. You may decide at that time that you do not want to take part in that study. If you do not wish to be contacted about future studies, it does not affect your taking part in this study.

(SKIP THIS SECTION ONLY IF PARTICIPANT ALREADY WENT THROUGH HOUSEHOLD CONSENT FORM)

Alternatives to taking part

You can decide not to take part in this study. If you decide not to take part, it will not affect your healthcare in any way. We can tell you where to go for HIV services and learn about your HIV status. If you choose to take part in the study, you may change your mind at any time and stop taking part. If you decide to leave the study, no more information will be collected from you; however, you will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you for being in the study, apart from your time.

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD CONSENT)

Benefits

The main benefit for you to be in the study is the chance to learn more about your health today. Some people who take part will test HIV positive. If you test HIV positive for the first time, you will learn your

HIV-positive status and where to go for HIV services. HIV care and treatment provided by the Ministry of Health and Wellness is free and you will be offered assistance in enrolling in care. If you already know you have HIV and are not on treatment, you will be referred to a health facility to enable you to start treatment as soon as possible. If you are HIV positive and on HIV treatment, the viral load tests that will be done can help your nurse or doctor judge how well your treatment is working. If you test HIV negative, you will learn about what you can do to stay HIV negative.

Your taking part in this study could help us learn more about HIV in Botswana. It can help us learn about how HIV prevention and treatment programs are working in the country.

Risks

The risks involved with taking part in the study are small. You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question. The risks to you from having your blood drawn are also minor. They include brief pain from the needle stick, bruising, lightheadedness, bleeding and, rarely, infection where the needle enters the skin. The study staff member who will perform the blood draw has received training on how to draw blood. If you experience any discomfort or any of the symptoms mentioned above, please let us know, especially if there is any bleeding or swelling.

Learning you have HIV may cause some emotional distress. If you test HIV positive, you will receive counseling on how to cope with learning that you have HIV. We will explain options for care and help you identify where to go for treatment. Care and treatment is available at government facilities free of charge.

As with all studies, there is a chance that someone could find out you participated in the study. We are doing everything possible to ensure confidentiality and minimize this risk.

(SKIP IF PARTICIPANT ALREADY WENT THROUGH HOUSEHOLD CONSENT)

Confidentiality and access to your health information

We will do everything we can to keep your answers confidential. The information we collect from you will be identified by a number and not by your name. Your name will not appear when we share study findings and study data. The data from this study will be released to the public without any identifiers, and this will not require another consent from you. Your name and contact information will not be released outside of the study groups listed unless there is an issue of safety.

The following individuals and/or agencies will be able to look at your interview records to help oversee the conduct of this study:

BAIS V Individual Consent for Adults 18 to 64 and emancipated minors 14–17 years: Interview, Blood Testing, Blood Storage, and Contact for Future Research

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a person taking part in a study, including:
  - The Health Research and Development Committee (HRDC)
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - University of Maryland Baltimore (UMB; Baltimore, MD, USA)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors

All collaborating institutions; National AIDS and Health Promotion Agency (NAHPA); Statistics Botswana (SB); Ministry of Health and Wellness (MOHW)-Botswana; Botswana Harvard Partnership; African Comprehensive HIV/AIDS Partnerships (ACHAP); UNAIDS; University of Botswana; Centers for Disease Control and Prevention (CDC)-Botswana, Centers for Disease Control and Prevention (CDC)-Atlanta; University of Maryland, Baltimore (UMB); ICF; Botswana University of Maryland School of Medicine Health Initiative; will access, maintain, review, and analyze survey data.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the HRDC and the Institutional Review Boards of the U.S. Centers for Disease Control and Prevention (CDC), and University of Maryland Baltimore (UMB).

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

Susan Matroos, Statistics Botswana

Landline: +267 367 1336; Mobile: +267 727 73711

Email: sumatroos089@gmail.com

[INTERVIEWER: READ FROM HERE]

For issues related to injuries or other harms, or for questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

S. Mosweunyane, Health Research and Development Committee

Landline: +267 363 2018/+267 363 2500

Email: smosweunyane@gov.bw

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED HOUSEHOLD CONSENT)

Do you want to ask me anything about the study?

Consent Statement

By answering the questions below, you confirm that any questions have been answered satisfactorily and you have been offered a copy of this consent form.

1. Do you agree to take part in the individual interview? If you agree to take part in the individual interview, please state the following statement:

   "I agree to take part in the individual interview."

   ____Check this box if participant agrees to participate in the individual interview

   If you refuse to take part in the individual interview, please state the following statement:

   "I do not wish to take part in the individual interview."

   ____Check this box if participant refuses to participate in the individual interview

   (IF PARTICIPANT DOES **NOT** AGREE, THEN STOP)

2. Do you agree to give blood for HIV testing and related testing? If you agree to give blood for HIV testing and related testing and to receive the result of your HIV test, please state the following statement:

   "I agree to give blood for HIV testing and related testing and receiving the results of my HIV test."

   ____Check this box if participant agrees to give blood for HIV testing and related testing.

   If you refuse to give blood for HIV testing and related testing, please state the following statement:

   "I do not wish to take part in blood testing today."

   ____Check this box if participant refuses blood testing and related testing.

   (IF PARTICIPANT DOES **NOT** AGREE, THEN SKIP TO 4)

3. Do you agree to have your leftover blood stored for future research? If you agree to have your leftover blood stored for future research, please state the following statement.

   "I agree to have my leftover blood stored for future research."

   ____Check this box if participant agrees to have his/her leftover blood stored for future research.

   If you refuse to have your blood stored for future research, please state the following statement:

   "I do not wish to have my leftover blood stored for future research."

   ____Check this box if participant refuses to have his/her leftover blood stored for future research.

4. Do you agree to be contacted for future research? If you agree to be contacted for future research, please state the following statement:

   "I agree to be contacted for future research."

   ____Check this box if participant agreed to be contacted for future research.

BAIS V Individual Consent for Adults 18 to 64 and emancipated minors 14–17 years: Interview, Blood Testing, Blood Storage, and Contact for Future Research

If you refuse agree to be contacted for future research, please state the following statement:

"I do not wish to be contacted for future research."

____Check this box if participant refuses be contacted for future research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: INTERVIEW, BLOOD TESTING, BLOOD STORAGE, FUTURE RESEARCH >. Is this correct?

_____Yes _____No

Name of Participant (completed by interviewer) _____

PTID _____

BAIS V INTERVIEWER SIGNATURE _____ Date: ___/___/___

BAIS V INTERVIEWER NAME _____

BAIS V INTERVIEWER ID number _____

Appendix B3: BAIS V Parental or Guardian Permission for Participants 15 years: Interview, Blood testing, Blood Storage, and Contact for Future Research

Flesch-Kincaid: 9.8

Parent-Guardian Informed Permission Form for Minor aged 15 years: Interview, Blood testing, Blood Storage, Contact for Future Research

Title of Study: This study is called the **FIFTH BOTSWANA HIV/AIDS IMPACT SURVEY V (BAIS V)**

What language do you prefer for our discussion today?

___ English ___ Setswana

Interviewer reads:

Hello. My name is_____. I would like to invite your child to take part in this study about HIV in Botswana. The Ministry of Health and Wellness is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), University of Maryland Baltimore (UMB), Statistics Botswana and National AIDS and Health Promotion Agency (NAHPA).

(SKIP THIS SECTION IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Purpose of study

HIV is a virus that causes an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly.

This study will help us know how many people in Botswana have HIV and need health services. We expect about 28,000 total participants from about 12,500 households throughout Botswana to take part in the study. This will include over 24,000 adolescents and adults aged 15 to 64 years and about 4,000 children aged 6 weeks to 14 years.

If your adolescent takes part, he/she will help the Ministry of Health and Wellness improve HIV services in the country.

This form might have some words in it that are not familiar to you. Please ask me to explain anything that you do not understand.

Study procedures

- The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff. The interview will take place in private, here in your house, or an acceptable nearby private area of your adolescent's choosing.

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

- If both you and your adolescent agree for him/her to join the study, we will ask your adolescent some questions. The interview questions will be the same as the ones that we ask adults who agree to take part in the study. The questions will be about what kind of work he/she does, whether he/she has had any experience with health services, and his/her social and sexual behaviors. We will ask your adolescent about their HIV status and whether they are on treatment if HIV positive. Your adolescent's answers will not be shared with you. The interview will take about 20 to 30 minutes. The interview will be conducted in private with only the adolescent and a study staff member.
- Study procedures also include blood draw, HIV testing, and storage of any leftover blood for future testing if you and your adolescent agree to this. The testing and counseling will take about 45 minutes.
    - A study staff member, who has been trained to draw blood, will take about 14 milliliters (about a tablespoonful) of blood from your adolescent's arm into two tubes. If it is not possible to take blood from your adolescent's arm, then we will try to take a few drops of blood from your adolescent's finger and then perform the tests for HIV in your home. We will give you the results of these tests and provide counseling about the results on the same day as the test. If you agree, we will also help you to tell your child about their HIV test results. If your adolescent already has documentation that he/she is HIV-positive, the blood test will take place in a laboratory instead of in the household.
    - For adolescents who are positive for HIV, we will also send his/her blood to a laboratory to measure his or her viral load and CD4 count. Viral load is the amount of HIV in the blood. CD4 cells are the part of the immune system that fights HIV infection and other diseases. These results will be sent to a health facility of your choosing in about 8 to 12 weeks. Some of your adolescent's blood will be sent to a laboratory out of the country for some additional tests related to HIV. If we have test results that might guide your adolescent's care or treatment, we will return them to a clinic. If you provide us with contact information, we will contact you about how a doctor or nurse at the preferred health facility may get these results.
    - Additionally, we would like to ask your permission to store your adolescent's leftover blood for future research tests. These tests may be about HIV or other health issues important for the health of people living in Botswana. The sample will not have your adolescent's name on it and so we will not be able to tell your adolescent the results of

the future research tests. Your adolescent's leftover blood samples will not be sold or used for profit but may be shared with outside investigators after removal of all identifiers, without asking for your permission again. If you do not agree to long term storage of your adolescent's blood samples, your adolescent can still take part in the study, and we will destroy your adolescent's blood samples after study-related testing is complete. If you agree today to store your adolescent's blood but change your mind later in the next three years, you can call the number provided at the end of this consent form and have your child's stored specimen destroyed. If you change your mind after three years, we will not be able to destroy his or her sample. Any future studies conducted using your child's blood sample will be approved by the appropriate institutions overseeing those studies.

- Finally, your adolescent may be eligible to take part in future studies related to health in Botswana. We are asking for your permission to contact you in the next three years if such an opportunity occurs. To do this, approved researchers will be able to request access to your contact information. If they contact you, they will give you details about the new study and invite your adolescent to join the study. Your adolescent may decide at that time that he/she does not want to take part in that study. If he/she does not wish to be contacted about future studies, it does not affect him/her taking part in this study.

Alternatives to taking part

You or your adolescent can decide not to take part in this study. If you or s/he decides not to take part, it will not affect his/her healthcare in any way. We can tell you and him/her where to go for HIV services and learn about his/her HIV status. If you and your adolescent choose to take part in the study, you or he/she may change your/his/her mind at any time and stop taking part. If you or he/she decides to leave the study, no more information will be collected from him/her. However, your adolescent will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you or your adolescent for being in the study, apart from his/her time.

Benefits

The main benefit for your adolescent to be in the study is the chance to learn more about his/her health today. If your adolescent tests HIV positive, the benefit is that you will learn where to go for HIV services.

HIV care and treatment provided by the Ministry of Health and Wellness is free. If you or your adolescent already know he/she has HIV and is not on treatment, your adolescent will be referred to a health facility to enable him/her to start treatment. If you or your adolescent already know he/she is HIV positive and on HIV treatment, the viral load tests can help your adolescent's nurse or doctor judge how well the treatment is working. If your adolescent tests HIV negative, you will learn about how he/she can stay HIV negative.

Your adolescent's taking part in this study could help us learn more about HIV in Botswana. It can help us learn about how HIV prevention and treatment programs are working in the country.

Risks

The risks involved with taking part in the study are small. Your adolescent may feel uncomfortable answering some of the questions. Your adolescent does not have to answer questions he/she feels are too personal or that make him/her feel uncomfortable.

The risks to your adolescent from having his/her blood drawn are also minor. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. The study staff member who will perform the blood draw has received training on how to draw blood. If he/she has any discomfort or any of the symptoms mentioned above, please let us know, especially if there is any bleeding or swelling.

Your adolescent may learn that he/she is HIV positive. Learning that he/she has HIV may cause some emotional distress. If he/she tests positive for HIV, you will receive counseling on how to cope with learning that he/she has HIV. We will explain the options available for care and treatment and help you to identify a clinic where your adolescent can go to receive treatment. Care and treatment is available at government facilities free of charge.

As with all studies, there is a chance that someone could find out your adolescent participated in the study. We are doing everything possible to ensure confidentiality and minimize this risk.

Confidentiality and access to your health information

We will do everything we can to keep your adolescent's answers confidential. The information we collect from your adolescent will be identified by a number and not by your adolescent's name. Your adolescent's name will not appear when we share study findings and study data. The data from this study will be released to the public without any identifiers, and this will not require another permission from you. Your adolescent's name and contact information will not be released outside of the study groups listed unless there is an issue of safety.

Appendix B3: BAIS V Parental or Guardian Permission for Participants 15 years: Interview, Blood testing, Blood Storage, and Contact for Future Research

Anyone in the household under 18 years of age, who reports having experienced violence, whether they participated in the study or not, will be provided with a referral to the nearest facility which offers services for all forms of violence, and to the police where necessary.

(SKIP THIS SECTION IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

The following individuals and/or agencies will be able to look at your adolescent's interview records to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a person taking part in a study, including:
  - The Health Research and Development Committee (HRDC)
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - University of Maryland Baltimore (UMB; Baltimore, MD, USA)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors

All collaborating institutions; National AIDS and Health Promotion Agency (NAHPA); Statistics Botswana (SB); Ministry of Health and Wellness (MOHW)-Botswana; Botswana Harvard Partnership; African Comprehensive HIV/AIDS Partnerships (ACHAP); UNAIDS; University of Botswana; Centers for Disease Control and Prevention (CDC)-Botswana, Centers for Disease Control and Prevention (CDC)-Atlanta; University of Maryland, Baltimore (UMB); ICF; Botswana University of Maryland School of Medicine Health Initiative; will access, maintain, review, and analyze survey data.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the HRDC and the Institutional Review Boards of the U.S. Centers for Disease Control and Prevention (CDC), and University of Maryland Baltimore (UMB).

Who should you contact if you have questions?

Appendix B3: BAIS V Parental or Guardian Permission for Participants 15 years: Interview, Blood testing, Blood Storage, and Contact for Future Research

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

Susan Matroos, Statistics Botswana

Landline: +267 367 1336; Mobile: +267 727 73711

Email: sumatroos089@gmail.com

[INTERVIEWER: READ FROM HERE]

For issues related to injuries or other harms, or for questions about the process of agreeing to take part in this study or for more information about your adolescent's rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

S. Mosweunyane, Health Research and Development Committee

Landline: +267 363 2018/+267 363 2500

Email: smosweunyane@gov.bw

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Do you want to ask me anything about the study?

Permission Statement

By answering the questions below you confirm that any questions have been answered satisfactorily and you have been offered a copy of this permission form.

1. Do you agree that we can ask this adolescent to do the interview?

If you agree for us to ask this adolescent to do the interview, please state the following statement:

"I give permission to the study team to ask this adolescent to take part in the interview."

____Check this box if parent/guardian agrees to allow us to ask this adolescent to take part in the interview

If you refuse for us to ask your adolescent to do the interview, please state the following statement:

"I do not wish for the study team to ask this adolescent to take part in the interview."

____Check this box if parent/guardian refuses to allow the study team to ask this adolescent to take part in the interview

(IF PARENT/GUARDIAN DOES **NOT** AGREE, THEN STOP)

2. Do you agree that we can approach this adolescent to give blood for HIV testing and related testing?

   If you agree for us to ask this adolescent to give blood for HIV testing and related testing and to receive the result of the HIV test, please state the following statement:

   "I give permission for the study team to ask this adolescent to give blood for HIV testing and related testing and receiving the results of the HIV test."

   ____Check this box if parent/guardian agrees for study team to ask this adolescent to take part in the blood draw

   If you refuse for us to ask your adolescent to give blood for HIV testing and related testing, please state the following statement:

   "I do not wish for the study team to ask this adolescent to take part in blood testing today."

   ____Check this box if parent/guardian refuses to allow the study team to ask this adolescent to take part in the blood draw

   (IF PARENT/GUARDIAN DOES **NOT** AGREE, THEN SKIP TO 4)

3. Do you agree to allow us to ask this adolescent to have his/her leftover blood stored for future research?

If you agree for us to ask this adolescent to have his/her leftover blood stored for future research, please state the following statement:

"I give permission for the study team to ask this adolescent to have his/her leftover blood stored for future research."

____Check this box if parent/guardian agrees for study team to ask this adolescent to have his/her leftover blood stored for future research.

If you refuse for us to ask this adolescent to have his/her leftover blood stored for future research, please state the following statement:

"I do not wish for the study team to ask this adolescent to have his/her leftover blood stored for future research."

____Check this box if parent/guardian refuses to have study team ask this adolescent to have his/her leftover blood stored for future research.

(IF PARENT/GUARDIAN DOES **NOT** AGREE, THEN SKIP TO 4)

4. Do you agree for us to ask this adolescent to be contacted for future research?

If you agree for us to ask this adolescent to be contacted for future research, please state the following statement:

"I give permission to the study team to ask this adolescent to be contacted for future research."

____Check this box if parent/guardian agrees to allow us to ask this adolescent to be contacted for future research.

If you refuse for us to ask this adolescent if he/she is willing to be contacted for future research, please state the following statement:

"I do not wish the study team to ask this adolescent if he/she wants to be contacted for future research."

____Check this box if parent/guardian refuses to allow the study team to ask this adolescent if he/she wants to be contacted for future research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: APPROACH ADOLESCENT FOR INTERVIEW, APPROACH ADOLESCENT FOR BLOOD TESTING, APPROACH ADOLESCENT FOR BLOOD STORAGE, AND APPROACH ADOLESCENT FOR FUTURE RESEARCH, >, is this correct?

Appendix B3: BAIS V Parental or Guardian Permission for Participants 15 years: Interview, Blood testing, Blood Storage, and Contact for Future Research

_____Yes _____No

Printed name of Parent/Guardian (to be completed by interviewer) _____

BAIS V INTERVIEWER SIGNATURE _____ Date: ___/___/___

BAIS V INTERVIEWER NAME _____

BAIS V INTERVIEWER ID number _____

Adolescent's name (print) _____

BAIS V Individual Assent for Participants 15 Years: Interview, Blood testing, Blood Storage, and Contact for Future Research

Flesch-Kincaid: 7.0

Individual Assent Form for Minor aged 15 years: Interview, Blood testing, Blood Storage, Contact for Future Research

What language do you prefer for our discussion today?

___ English ___ Setswana

Title of Study: This study is called the **FIFTH BOTSWANA HIV/AIDS IMPACT SURVEY V (BAIS V)**

Interviewer reads:

Hello. My name is_____. I would like to invite you to take part in this study about HIV in Botswana. The Ministry of Health and Wellness is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), University of Maryland Baltimore (UMB), Statistics Botswana and National AIDS and Health Promotion Agency (NAHPA).

Why are we doing this study?

HIV is a virus. Being infected with HIV can lead to an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly. This study will help us know how many people in Botswana have HIV and need health services. We expect about 28,000 total participants from about 12,500 households throughout Botswana to take part in the study. This will include over 24,000 adolescents and adults and about 4,000 children aged 6 weeks to 14 years.

Your parent/guardian said it was okay for us to ask you to join.

This form might have some words that you may not have heard before. Please ask me to explain anything that you do not understand.

What would happen if you join this study?

If you decide to join the study, here is what would happen:

- If you join this study, we will ask you questions about your age, the work you do, your health and experience with health services, and your social and sexual behavior.
- The interview will take about 20 to 30 minutes.

- The interview will take place in private here in your house or a nearby area around your house.
- After we ask you the questions, if you agree, we will take some of your blood to test for HIV.
- We will use a needle to take about 14 milliliters (about a tablespoonful) of blood from your arm into two tubes. If it is not possible to take blood from your arm, then we will try to take a few drops of blood from your finger.
- It will take about 45 minutes to do the test and to talk to your parents/guardians about the results. If your parent/guardian agrees, we will also talk to you about your results.
- Not everyone will have an HIV test in the household. For these individuals from whom a blood sample is drawn, the blood test will take place in a laboratory instead of in your household.
- If you are positive for HIV:
    - We will send your blood to a laboratory to measure your viral load and CD4 count. Viral load is the amount of HIV in your blood. CD4 cells are the part of the immune system that fights HIV infection and other diseases.
    - We will send your viral load and CD4 test results to a health facility of your parent/guardian's choice in about 8 to 12 weeks. At the health facility, your parent/guardian will be able to talk to a nurse or doctor about your results. You may also be able to talk to a nurse of doctor about your results, if your parent/guardian agrees.
    - Some of your blood will be sent to a laboratory out of the country for additional tests related to HIV. If we have test results that might help guide your treatment, we will return them to a clinic. If your parent/guardian has given us his/her contact information, we will contact your parent/guardian to tell them how they and your doctor or nurse may get these results.
- We will ask you if we can store some of your leftover blood for future testing. These tests will help us learn about the health of people in Botswana. The sample will not have your name on it and so we will not be able to tell you the results of the future research tests. Your leftover blood will not be used for anything other than these tests. Your blood will not be sold. After removing your personal information, the results of these tests may be shared with people outside the study, without asking for your permission again. If you do not agree to future storage and testing of your blood, we will destroy your blood after study-related testing has finished and you can still receive your test results. If you agree today to store your blood but change your mind later in the next three years, you can call the number provided at the end of this consent form and have your blood destroyed. If you change your mind after three

years, we will not be able to destroy your sample. Any future tests done with your blood sample will be approved by the appropriate institutions overseeing those studies.

- You may be eligible to take part in future studies related to health in Botswana. We are asking for your permission to contact you or your parent/guardian in the next three years if such an opportunity occurs. To do this, approved researchers will be able to request access to your parent/guardian's contact information. If they contact you or your parent/guardian, they will give you details about the new study and invite you to join the study. You may decide at that time that you do not want to take part in that study. If you do not wish to be contacted about future studies, it does not affect your taking part in this study.

Alternatives to taking part

If you decide not to take part in this study, it will not affect your healthcare in any way. We can tell you where to go for HIV services and learn about your HIV status.

You can leave the study at any time for any reason. If you decide to leave the study, no more information will be collected from you; however, you will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you for being in the study apart from your time.

Could the study help me?

Being in the study may help you learn whether or not you have HIV. We will share the results with your parent/guardian. If you test positive for HIV your parent/guardian will learn about it and where to go for care and treatment of HIV. If your parent/guardian agrees, we will also talk to you about your results. Care and treatment provided by the Government of Botswana is free. Your taking part in this study will help us learn more about HIV in Botswana.

Could bad things happen if you join this study?

You may feel uncomfortable answering some of the questions we will ask. You can refuse to answer any question at any time and you can stop the interview at any time.

The needle may hurt when it is put into your arm. This pain will go away quickly. Sometimes the needle can leave a bruise on the skin. You might bleed a little or feel a little dizzy. Rarely, an infection might occur where the needle enters the skin. We will do our best to make it as painless as possible.

You may learn that you have HIV. Learning that you have HIV may cause you to feel worried. We will talk to your parent/guardian to help you find a clinic where you can receive treatment.

We will not tell anyone else what we talk about, but there is a small chance other people might find out. We will do everything we can to prevent this from happening.

What else should you know about this study?

If you do not want to be in the study, you do not have to be. Nobody will get upset with you if you do not want to join the study.

It is also OK to say 'Yes' and change your mind later. You can stop being in the study at any time. If you want to stop, please tell us.

Confidentiality and access to your health information

We will do everything we can to keep your answers confidential. The blood we collect from you will be identified by a number and not by your name. Besides your parent/guardian, no one else will know your personal test results except the people working on the study and people your parent/guardian may decide to tell. The data from this study will be released to the public without any identifiers, and this will not require permission from you. Your name and contact information will not be released outside of the study groups listed unless there is an issue of safety.

The following individuals and/or agencies will be able to look at your interview records to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a person taking part in a study, including:
    - The Health Research and Development Committee (HRDC)
    - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
    - University of Maryland Baltimore (UMB; Baltimore, MD, USA)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study

- Selected study staff and study monitors

All collaborating institutions; National AIDS and Health Promotion Agency (NAHPA); Statistics Botswana (SB); Ministry of Health and Wellness (MOHW)-Botswana; Botswana Harvard Partnership; African Comprehensive HIV/AIDS Partnerships (ACHAP); UNAIDS; University of Botswana; Centers for Disease Control and Prevention (CDC)-Botswana, Centers for Disease Control and Prevention (CDC)-Atlanta; University of Maryland, Baltimore (UMB); ICF; Botswana University of Maryland School of Medicine Health Initiative; will access, maintain, review, and analyze survey data.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the HRDC and the Institutional Review Boards of the U.S. Centers for Disease Control and Prevention (CDC), and University of Maryland Baltimore (UMB).

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

Susan Matroos, Statistics Botswana

Landline: +267 367 1336; Mobile: +267 727 73711

Email: sumatroos089@gmail.com

[INTERVIEWER: READ FROM HERE]

For issues related to injuries or other harms, or for questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

S. Mosweunyane, Health Research and Development Committee

Landline: +267 363 2018/+267 363 2500

Email: smosweunyane@gov.bw

BAIS V Individual Assent for Participants 15 Years: Interview, Blood testing, Blood Storage, and Contact for Future Research

Do you want to ask me anything about the study?

Assent Statement

By answering the questions below, you confirm that any questions have been answered satisfactorily and you have been offered a copy of this assent form.

5. Do you agree to take part in the individual interview? If you agree to take part in the individual interview, please state the following statement:

   "I agree to take part in the individual interview."

   ____Check this box if participant agrees to participate in the individual interview

   If you refuse to take part in the individual interview, please state the following statement:

   "I do not wish to take part in the individual interview."

   ____Check this box if participant refuses to participate in the individual interview

   (IF PARTICIPANT DOES **NOT** AGREE, THEN STOP)

6. Do you agree to give blood for HIV testing and related testing? If you agree to give blood for HIV testing and related testing, please state the following statement:

   "I agree to give blood for HIV testing and related testing."

   ____Check this box if participant agreed to blood testing and related testing.

   If you refuse to give blood for HIV and related testing, please state the following statement:

   "I do not wish to take part in blood testing today."

   ____Check this box if participant refuses blood testing and related testing.

   (IF PARTICIPANT DOES **NOT** AGREE, THEN SKIP TO 4)

7. Do you agree to have your leftover blood stored for future research? If you agree to have your leftover blood stored for future research, please state the following statement.

   "I agree to have my leftover blood stored for future research."

____Check this box if participant agrees to have his/her leftover blood stored for future research.

If you refuse to have your leftover blood stored for future research, please state the following statement:

"I do not wish to have my leftover blood stored for future research."

____Check this box if participant refuses to have his/her leftover blood stored for future research.

8. Do you agree to be contacted for future research? If you agree to be contacted for future research, please state the following statement:

   "I agree to be contacted for future research."

   ____Check this box if participant agrees to be contacted for future research.

   If you refuse to be contacted for future research, please state the following statement:

   "I do not wish to be contacted for future research."

   ____Check this box if participant refuses be contacted for future research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: INTERVIEW, BLOOD TESTING, BLOOD STORAGE, FUTURE RESEARCH >. Is this correct?

_____Yes _____No

Printed name of adolescent (completed by interviewer) _____

PTID _____

Printed name of parent or guardian (completed by interviewer) _____

BAIS V INTERVIEWER SIGNATURE _____ Date: ___/___/___

BAIS V INTERVIEWER NAME _____

BAIS V Individual Assent for Participants 15 Years: Interview, Blood testing, Blood Storage, and Contact for Future Research

BAIS V INTERVIEWER ID number _____

BAIS V Consent to Share Contact Information for Active Linkage to Care of BAIS V Participants, 16-64 years, English

Flesch-Kincaid: 7.9

Informed Consent Form for Active Linkage to Care

What language do you prefer for our discussion today?

___ English ___ Setswana

Title of Study: This study is called the **FIFTH BOTSWANA HIV/AIDS IMPACT SURVEY V (BAIS V)**

Interviewer reads:

Hello. My name is_____. I would like to help you in accessing the healthcare that you need. The Ministry of Health and Wellness is leading the BAIS V study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), University of Maryland Baltimore (UMB), Statistics Botswana and National AIDS and Health Promotion Agency (NAHPA).

Purpose of consent

You had a positive HIV test today or are HIV-positive and not in care. We have provided you with counseling regarding the results and/or your status. We have also provided a referral form to bring to a health clinic and seek HIV treatment and care and/or retesting for HIV. We would like to help you in accessing the healthcare that you need. If you agree, we may be able to provide your contact information and HIV test results to healthcare workers or counselors from a relevant social service organization. This counselor will contact you to talk to you about HIV and help you go for HIV care. Anyone who is provided with your details will be experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

What do you have to do if you agree to take part?

If you agree for your information to be shared and to be contacted, we will provide your name, and your phone number and address (if you provided it to us) to those providers and organizations to provide you with support. The provider of care may contact you by SMS, phone, WhatsApp or in person.

BAIS V Consent to Share Contact Information for Active Linkage to Care of BAIS V Participants, 16-64 years, English

What about confidentiality?

Your HIV test results and your contact information will not be shared with any other parties aside from those specified in the other consent forms and with this support organization. They will also do their utmost to maintain your confidentiality; however, we cannot guarantee complete confidentiality.

What are the potential risks?

As with all studies, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

A healthcare worker or counselor will assist you in accessing the healthcare that you need.

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

Susan Matroos, Statistics Botswana

Landline: +267 367 1336; Mobile: +267 727 73711

Email: sumatroos089@gmail.com

[INTERVIEWER: READ FROM HERE]

For issues related to injuries or other harms, or for questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

S. Mosweunyane, Health Research and Development Committee

Landline: +267 363 2018/+267 363 2500

Email: smosweunyane@gov.bw

Do you want to ask me anything about the study?

BAIS V Consent to Share Contact Information for Active Linkage to Care of BAIS V Participants, 16-64 years, English

Consent Statement

By answering the questions below you confirm that any questions have been answered satisfactorily and you have been offered a copy of this consent form.

9. Do you agree to allow the study team to share your contact information with trained healthcare workers or counselors?

   If you agree to share your contact information with a trained healthcare worker or counselor, please state the following statement:

   "I give permission for the study team to share my contact information."

   ____Check this box if participant agrees to share his/her contact information

   If you refuse to share your contact information, please state the following statement:

   "I do not wish for the study team to share my contact information."

   ____Check this box if participant refuses to share his/her contact information

   (IF PARTICIPANT DOES **NOT** AGREE, THEN STOP)

10. Do you agree to be contacted by:

SMS?	_____Yes	_____No
WhatsApp?	_____Yes	_____No
Phone call?	_____Yes	_____No
In person?	_____Yes	_____No

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: SHARE, SMS, WHATSAPP, PHONE, IN-PERSON>. Is this correct?

BAIS V Consent to Share Contact Information for Active Linkage to Care of BAIS V Participants, 16-64 years, English

_____Yes _____No

Name of Participant (completed by interviewer) _____

BAIS V INTERVIEWER SIGNATURE _____ Date: ___/___/___

BAIS V INTERVIEWER NAME _____

BAIS V INTERVIEWER ID number _____

BAIS V Parental or Guardian Informed Consent to Share Contact Information for Active Linkage to Care of BAIS V Children, 6 weeks to 15 years

Flesch-Kincaid: 8.0

Parental/Guardian Informed Consent Form for Active Linkage to Care of Children 6 weeks to 15 years

What language do you prefer for our discussion today?

___ English ___ Setswana

Title of Study: This study is called the **FIFTH BOTSWANA HIV/AIDS IMPACT SURVEY V (BAIS V)**

Interviewer reads:

Hello. My name is_____. I would like to help your child(ren) in accessing the healthcare that he/she (they) needs. The Ministry of Health and Wellness is leading the BAIS V study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), University of Maryland Baltimore (UMB), Statistics Botswana and National AIDS and Health Promotion Agency (NAHPA).

Purpose of consent

[READ ONLY IF CHILD IS 18 MONTHS TO 15 YEARS] Your child(ren) had a positive HIV test today or is HIV-positive and not in care. We have provided you with counseling regarding the results and/or status. We have also provided a referral form to bring to a health clinic and seek HIV treatment and care and/or retesting for your child(ren). We would like to help your child(ren) in accessing the healthcare that he/she (they) need. If you agree, we may be able to provide your contact information and your child(ren)'s HIV test results to healthcare workers or counselors from a relevant social service organization. This counselor will contact you to talk to you about HIV and help your child(ren) go for HIV care. Anyone who is provided with your child(ren)'s details will be experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

[READ ONLY IF CHILD IS 6 WEEKS TO UNDER 18 MONTHS] Your child(ren)'s specimen will be tested for HIV, and results will be returned to you in 8-12 weeks. If your child tests positive, we would like to help him/her (they) in accessing the healthcare that he/she (they) need. If you agree, we may be able to provide your contact information and your child(ren)'s HIV test results to healthcare workers or counselors from a relevant social service organization. This counselor will contact you to talk to you about HIV and help your child(ren) go for HIV care. Anyone who is provided with your child(ren)'s details will be experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

BAIS V Parental or Guardian Informed Consent to Share Contact Information for Active Linkage to Care of BAIS V Children, 6 weeks to 15 years

What do you have to do if you agree to take part?

If you agree for your information to be shared and to be contacted, we will provide your name, and your phone number and address (if you provided it to us) to those providers and organizations to provide you and your child(ren) with support. The provider of care may contact you by SMS, phone, WhatsApp or in person.

What about confidentiality?

Your child(ren)'s HIV test results and your contact information will not be shared with any other parties aside from those specified in the other consent forms and with this support organization. They will also do their utmost to maintain your child(ren)'s confidentiality; however, we cannot guarantee complete confidentiality.

What are the potential risks?

As with all studies, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

A healthcare worker or counselor will assist you in accessing the healthcare that your child(ren) needs.

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

Susan Matroos, Statistics Botswana

Landline: +267 367 1336; Mobile: +267 727 73711

Email: sumatroos089@gmail.com

[INTERVIEWER: READ FROM HERE]

For issues related to injuries or other harms, or for questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

BAIS V Parental or Guardian Informed Consent to Share Contact Information for Active Linkage to Care of BAIS V Children, 6 weeks to 15 years

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

S. Mosweunyane, Health Research and Development Committee

Landline: +267 363 2018/+267 363 2500

Email: smosweunyane@gov.bw

Do you want to ask me anything about the study?

Consent Statement

By answering the questions below you confirm that any questions have been answered satisfactorily and you have been offered a copy of this consent form.

11. Do you agree to allow the study team to share your contact information with trained healthcare workers or counselors?

    If you agree to share your contact information with a trained healthcare worker or counselor, please state the following statement:

    "I give permission for the study team to share my contact information."

    ____Check this box if participant agrees to share his/her contact information

    If you refuse to share your contact information, please state the following statement:

    "I do not wish for the study team to share my contact information."

    ____Check this box if participant refuses to share his/her contact information

12. (IF PARTICIPANT DOES **NOT** AGREE, THEN STOP Do you agree to be contacted by:

SMS? _____Yes _____No

WhatsApp? _____Yes _____No

Phone call? _____Yes _____No

BAIS V Parental or Guardian Informed Consent to Share Contact Information for Active Linkage to Care of BAIS V Children, 6 weeks to 15 years

In person? _____Yes _____No

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: SHARE, SMS, WHATSAPP, PHONE, IN-PERSON>. Is this correct?

_____Yes _____No

Name of Participant (completed by interviewer) _____

Printed name of parent or guardian (completed by interviewer) _____

BAIS V INTERVIEWER SIGNATURE _____ Date: ___/___/___

BAIS V INTERVIEWER NAME _____

BAIS V INTERVIEWER ID number _____

BAIS V Parental or Guardian Permission for Participants 16-17 years: Interview, Blood Storage, and Contact for Future Research

Flesch-Kincaid: 9.7

Parent-Guardian Informed Permission Form for Minor aged 16-17 years: Interview, Blood Storage, Contact for Future Research

Title of Study: This study is called the **FIFTH BOTSWANA HIV/AIDS IMPACT SURVEY V (BAIS V)**

What language do you prefer for our discussion today?

___ English ___ Setswana

Interviewer reads:

Hello. My name is_____. I would like to invite your adolescent to take part in this study about HIV in Botswana. The Ministry of Health and Wellness is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), University of Maryland Baltimore (UMB), Statistics Botswana and National AIDS and Health Promotion Agency (NAHPA).

(SKIP THIS SECTION IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Purpose of study

HIV is a virus that causes an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly.

This study will help us know how many people in Botswana have HIV and need health services. We expect about 28,000 total participants from about 12,500 households throughout Botswana to take part in the study. This will include over 24,000 adolescents and adults aged 15 to 64 years and about 4,000 children aged 6 weeks to 14 years.

If your adolescent takes part, he/she will help the Ministry of Health and Wellness improve HIV services in the country.

This form might have some words in it that are not familiar to you. Please ask me to explain anything that you do not understand.

Study procedures

- The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff. The interview will take place in private, here in your house, or an acceptable nearby private area of your adolescent's choosing.

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

- If both you and your adolescent agree for him/her to join the study, we will ask your adolescent some questions. The interview questions will be the same as the ones that we ask adults who agree to take part in the study. The questions will be about what kind of work he/she does, whether he/she has had any experience with health services, and his/her social and sexual behaviors. Your adolescent's answers will not be shared with you. The interview will take about 20 to 30 minutes. The interview will be conducted in private with only the adolescent and a study staff member.
- We will also do an HIV test and related tests on your adolescent. If your child already has documentation that he/she is HIV-positive, the blood test will take place in a laboratory instead of in the household. According to the national guidelines, your adolescent can test for HIV without your permission; however, we would like to ask your permission to store your adolescent's leftover blood for future research tests. These tests may be about HIV, or other health issues important for the health of people living in Botswana. The sample will not have your adolescent's name on it and so we will not be able to tell your adolescent the results of the future research tests. Your adolescent's leftover blood samples will not be sold or used for profit but may be shared with outside investigators after removal of all identifiers, without asking for your permission again. If you do not agree to long term storage of your adolescent's blood samples, your adolescent can still take part in the study, and we will destroy your adolescent's blood samples after study-related testing is complete. If you agree today to store your child's blood but change your mind later in the next three years, you can call the number provided at the end of this consent form and have your child's stored specimen destroyed. If you change your mind after three years, we will not be able to destroy his or her sample. Any future studies conducted using your child's blood sample will be approved by the appropriate institutions overseeing those studies.
- Finally, your adolescent may be eligible to take part in future studies related to health in Botswana. We are asking for your permission to contact your adolescent in the next three years if such an opportunity occurs. To do this, approved researchers will be able to request access to his/her contact information. If they contact him/her, they will give your adolescent details about the new study and invite him/her to join the study. Your adolescent may decide at that time that he/she does not want to take part in that study. If he/she does not wish to be contacted about future studies, it does not affect him/her taking part in this study.

Alternatives to taking part

You or your adolescent can decide not to take part in this study. If you or s/he decides not to take part, it will not affect his/her healthcare in any way. We can tell him/her where to go for HIV services and learn about his/her HIV status. If you and your adolescent choose to take part in the study, you or he/she may change your/his/her mind at any time and stop taking part. If you or he/she decides to leave the study, no more information will be collected from him/her. However, your adolescent will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you or your adolescent for being in the study, apart from his/her time.

Benefits

The main benefit for your adolescent to be in the study is the chance to learn more about his/her health today. If your adolescent tests HIV positive, the benefit is that your adolescent will learn where to go for HIV services. HIV care and treatment provided by the Ministry of Health and Wellness is free. If your adolescent already knows he/she has HIV and is not on treatment, you or your adolescent will be referred to a health facility to enable your adolescent to start treatment. If your adolescent already knows he/she is HIV positive and on HIV treatment, the viral load tests can help your adolescent's nurse or doctor judge how well the treatment is working. If your adolescent tests HIV negative, your adolescent will learn about how he/she can stay HIV negative.

Your adolescent's taking part in this study could help us learn more about HIV in Botswana. It can help us learn about how HIV prevention and treatment programs are working in the country.

Risks

The risks involved with taking part in the study are small. Your adolescent may feel uncomfortable answering some of the questions. Your adolescent does not have to answer questions he/she feels are too personal or that make him/her feel uncomfortable.

The risks to your adolescent from having his/her blood drawn are also minor. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. The study staff member who will perform the blood draw has received training on how to draw blood. If your adolescent has any discomfort or any of the symptoms mentioned above, please let us know, especially if there is any bleeding or swelling.

Your adolescent may learn that he/she is HIV positive. Learning that he/she has HIV may cause some emotional distress. If he/she tests positive for HIV, he/she will receive counseling on how to cope with

learning that he/she has HIV. We will help your adolescent identify where to go and explain the options available for care and treatment. Care and treatment are available at government facilities free of charge.

As with all studies, there is a chance that someone could find out your adolescent participated in the study. We are doing everything possible to ensure confidentiality and minimize this risk.

Confidentiality and access to your health information

We will do everything we can to keep your adolescent's answers confidential. The information we collect from your adolescent will be identified by a number and not by your adolescent's name. Your adolescent's name will not appear when we share study findings and study data. The data from this study will be released to the public without any identifiers, and this will not require another permission from you. Your adolescent's name and contact information will not be released outside of the study groups listed unless there is an issue of safety.

Anyone in the household under 18 years of age, who reports having experienced violence, whether they participated in the study or not, will be provided with a referral to the nearest facility which offers services for all forms of violence, and to the police where necessary.

(SKIP THIS SECTION IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

The following individuals and/or agencies will be able to look at your adolescent's interview records to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a person taking part in a study, including:
  - The Health Research and Development Committee (HRDC)
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - University of Maryland Baltimore (UMB; Baltimore, MD, USA)

- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors

All collaborating institutions; National AIDS and Health Promotion Agency (NAHPA); Statistics Botswana (SB); Ministry of Health and Wellness (MOHW)-Botswana; Botswana Harvard Partnership; African Comprehensive HIV/AIDS Partnerships (ACHAP); UNAIDS; University of Botswana; Centers for Disease Control and Prevention (CDC)-Botswana, Centers for Disease Control and Prevention (CDC)-Atlanta; University of Maryland, Baltimore (UMB); ICF; Botswana University of Maryland School of Medicine Health Initiative; will access, maintain, review, and analyze survey data.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the HRDC and the Institutional Review Boards of the U.S. Centers for Disease Control and Prevention (CDC), and University of Maryland Baltimore (UMB).

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

Susan Matroos, Statistics Botswana

Landline: +267 367 1336; Mobile: +267 727 73711

Email: sumatroos089@gmail.com

[INTERVIEWER: READ FROM HERE]

For issues related to injuries or other harms, or for questions about the process of agreeing to take part in this study or for more information about your adolescent's rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

S. Mosweunyane, Health Research and Development Committee

Landline: +267 363 2018/+267 363 2500

Email: smosweunyane@gov.bw

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Do you want to ask me anything about the study?

Permission Statement

By answering the questions below you confirm that any questions have been answered satisfactorily and you have been offered a copy of this permission form.

5. Do you agree that we can ask this adolescent to do the interview?

   If you agree for us to ask this adolescent to do the interview, please state the following statement:

   "I give permission to the study team to ask this adolescent to take part in the interview."

   ____Check this box if parent/guardian agrees to allow us to ask this adolescent to take part in the interview

   If you refuse for us to ask your adolescent to do the interview, please state the following statement:

   "I do not wish for the study team to ask this adolescent to take part in the interview."

   ____Check this box if parent/guardian refuses to allow the study team to ask this adolescent to take part in the interview

   (IF PARENT/GUARDIAN DOES **NOT** AGREE, THEN STOP)

6. Do you agree to allow us to ask this adolescent to have his/her leftover blood stored for future research?

   If you agree for us to ask this adolescent to have his/her leftover blood stored for future research, please state the following statement:

BAIS V Parental or Guardian Permission for Participants 16-17 years: Interview, Blood Storage, and Contact for Future Research

"I give permission for the study team to ask this adolescent to have his/her leftover blood stored for future research."

____Check this box if parent/guardian agrees for study team to ask this adolescent to have his/her leftover blood stored for future research.

If you refuse for us to ask this adolescent to have his/her leftover blood stored for future research, please state the following statement:

"I do not wish for the study team to ask this adolescent to have his/her leftover blood stored for future research."

____Check this box if parent/guardian refuses to have study team ask this adolescent to have his/her leftover blood stored for future research.

7. Do you agree for us to ask this adolescent to be contacted for future research?

If you agree for us to ask this adolescent for us to retain his/her contact information for future research, please state the following statement:

"I give permission to the study team to ask this adolescent to be contacted for future research."

____Check this box if parent/guardian agrees to allow us to ask this adolescent to be contacted for future research.

If you refuse for us to ask this adolescent if he/she is willing to be contacted for future research, please state the following statement:

"I do not wish the study team to ask this adolescent if he/she wants to be contacted for future research."

____Check this box if parent/guardian refuses to allow the study team to ask this adolescent if he/she wants to be contacted for future research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: APPROACH ADOLESCENT FOR INTERVIEW, APPROACH ADOLESCENT FOR BLOOD STORAGE, AND APPROACH ADOLESCENT FOR FUTURE RESEARCH>, is this correct? _____Yes _____No

BAIS V Parental or Guardian Permission for Participants 16-17 years: Interview, Blood Storage, and Contact for Future Research

Printed name of Parent/Guardian (to be completed by interviewer) _____

BAIS V INTERVIEWER SIGNATURE _____ Date: ___/___/___

BAIS V INTERVIEWER NAME _____

BAIS V INTERVIEWER ID number _____

Adolescent's name (print) _____

BAIS V Parental or Guardian Consent for Participants 6 Weeks-14 years: Child module, Blood testing and Blood storage

Flesch-Kincaid: 8.9

Parent-Guardian Informed Consent Form for Minor aged 6 weeks-14 years:

Child module, Blood testing and Blood storage

Title of Study: This study is called the **FIFTH BOTSWANA HIV/AIDS IMPACT SURVEY V (BAIS V)**

What language do you prefer for our discussion today?

___ English ___ Setswana

Interviewer reads:

Hello. My name is_____. I would like to invite your child to take part in this study about HIV in Botswana. The Ministry of Health and Wellness is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), University of Maryland Baltimore (UMB), Statistics Botswana and National AIDS and Health Promotion Agency (NAHPA).

(SKIP THIS SECTION IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Purpose of study

HIV is a virus that causes an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly.

This study will help us know how many people in Botswana have HIV and need health services. We expect about 28,000 total participants from about 12,500 households throughout Botswana to take part in the study. This will include over 24,000 adolescents and adults aged 15 to 64 years and about 4,000 children aged 6 weeks to 14 years.

If your child takes part, he/she will help the Ministry of Health and Wellness improve HIV services in the country.

This form might have some words in it that are not familiar to you. Please ask me to explain anything that you do not understand.

Study procedures

- The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff. The blood testing will take place in private, here in your house, or an acceptable nearby private area of your choosing.

  (READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

- If your child is between 6 weeks and under 10 years of age, and you agree for him/her to participate in the study, we will ask you a series of questions about your child, take a blood draw from your child, and conduct HIV testing if you agree to this. If your child is between 10 and 14 years of age, and both you and your child agree for him/her to participate in the study, we will ask you questions about your child, take a blood draw from your child, and conduct HIV testing if you agree to this. The testing and counseling will take about 45 minutes.
    - If your child is aged 6 weeks to under 24 months, a study staff member, who has been trained to draw blood, will take about 1 milliliter (about a quarter of a teaspoon) of blood from your child's foot or finger into a small tube.
    - If your child is aged 2 years to 14 years, a study staff member, who has been trained to draw blood, will take about 6 milliliters (about a teaspoon) of blood from your child's arm into a small tube. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger and then perform the tests for HIV in your home.
    - We will give you the results of these tests and provide counseling about the results on the same day as the test. If you agree, we will also help you to tell your child about their HIV test results for children aged 10 to 14years. If your child already has documentation that he/she is HIV-positive, the blood test will take place in a laboratory instead of in the household.
    - For children who test positive for HIV, we will also send his/her blood to a laboratory to measure his or her viral load and CD4 count. Viral load is the amount of HIV in the blood. CD4 cells are the part of the immune system that fights HIV infection and other diseases. These results will be sent to a health facility of your choosing in about 8 to 12 weeks. Some of your child's blood will be sent to a laboratory out of the country for some additional tests related to HIV. If we have test results that might guide your child's care or treatment, we will return them to a clinic. If you provide us with contact information, we will contact you about how a doctor or nurse at the preferred health facility may get these results.
    - Additionally, we would like to ask your permission to store your child's leftover blood for future research tests. These tests may be about HIV or other health issues important for the health of people living in Botswana. The sample will not have your child's name on it

and so we will not be able to tell your child the results of the future research tests. Your child's leftover blood samples will not be sold or used for profit but may be shared with outside investigators after removal of all identifiers, without asking for your permission again. If you do not agree to long term storage of your child's blood samples, your child can still take part in the study, and we will destroy your child's blood samples after study-related testing is complete. If you agree today to store your child's blood but change your mind later in the next three years, you can call the number provided at the end of this consent form and have your child's stored specimen destroyed. If you change your mind after three years, we will not be able to destroy his or her sample. Any future studies conducted using your child's blood sample will be approved by the appropriate institutions overseeing those studies.

Alternatives to taking part

You can decide not to allow your child to take part in this study. If your child is between 10-14 years of age, he/she can decide not to take part in this study. If you or your child decide not to take part, it will not affect his/her healthcare in any way. We can tell you and him/her where to go for HIV services and learn about his/her HIV status. If you choose to allow your child to take part in the study, you may change your mind at any time and stop taking part. If you decide to leave the study, no more blood will be collected from him/her. However, your child will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you or your child for being in the study, apart from his/her time.

Benefits

The main benefit for your child to be in the study is the chance to learn more about his/her health today. If your child tests HIV positive, the benefit is that you will learn where to go for HIV services. HIV care and treatment provided by the Ministry of Health and Wellness is free. If you already know that your child has HIV and is not on treatment, your child will be referred to a health facility to enable him/her to start treatment. If you already know your child is HIV positive and on HIV treatment, the viral load tests can help your child's nurse or doctor judge how well the treatment is working. If your child tests HIV negative, you will learn about how he/she can stay HIV negative.

Your child's taking part in this study could help us learn more about HIV in Botswana. It can help us learn about how HIV prevention and treatment programs are working in the country.

Risks

The risks to your child from having his/her blood drawn are small. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. The study staff member who will perform the blood draw has received training on how to draw blood. If your child has any discomfort or any of the symptoms mentioned above, please let us know, especially if there is any bleeding or swelling.

For older children, your child may learn that he/she is HIV positive. Learning that he/she has HIV may cause some emotional distress. If he/she tests positive for HIV, you will receive counseling on how to cope with learning that he/she has HIV. We will help you identify where to go for care and explain the options available for care and treatment. Care and treatment are available at government facilities free of charge.

As with all studies, there is a chance that someone could find out your child participated in the study. We are doing everything possible to ensure confidentiality and minimize this risk.

Confidentiality and access to your health information

We will do everything we can to keep your child's information confidential. The information we collect from your child will be identified by a number and not by your child's name. Your child's name will not appear when we share study findings and study data. The data from this study will be released to the public without any identifiers, and this will not require another consent from you. Your child's name and contact information will not be released outside of the study groups listed unless there is an issue of safety. Anyone in the household under 18 years of age, who reports having experienced violence, whether they participated in the study or not, will be provided with a referral to the nearest facility which offers services for all forms of violence, and to police where necessary.

(SKIP THIS SECTION IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

The following individuals and/or agencies will be able to look at your child's interview records to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a person taking part in a study, including:

- The Health Research and Development Committee (HRDC)
- The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
- University of Maryland Baltimore (UMB; Baltimore, MD, USA)

- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors

All collaborating institutions; National AIDS and Health Promotion Agency (NAHPA); Statistics Botswana (SB); Ministry of Health and Wellness (MOHW)-Botswana; Botswana Harvard Partnership; African Comprehensive HIV/AIDS Partnerships (ACHAP); UNAIDS; University of Botswana; Centers for Disease Control and Prevention (CDC)-Botswana, Centers for Disease Control and Prevention (CDC)-Atlanta; University of Maryland, Baltimore (UMB); ICF; Botswana University of Maryland School of Medicine Health Initiative; will access, maintain, review, and analyze survey data.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the HRDC and the Institutional Review Boards of the U.S. Centers for Disease Control and Prevention (CDC), and University of Maryland Baltimore (UMB).

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

Susan Matroos, Statistics Botswana

Landline: +267 367 1336; Mobile: +267 727 73711

Email: sumatroos089@gmail.com

[INTERVIEWER: READ FROM HERE]

For issues related to injuries or other harms, or for questions about the process of agreeing to take part in this study or for more information about your child's rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

S. Mosweunyane, Health Research and Development Committee

Landline: +267 363 2018/+267 363 2500

Email: smosweunyane@gov.bw

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Do you want to ask me anything about the study?

Consent/Permission Statement

By answering the questions below you confirm that any questions have been answered satisfactorily and you have been offered a copy of this permission form.

8. Do you agree to answer a series of questions about your child?

   If you agree to answer questions about your child, please state the following statement:

   "I agree to answer questions about my child."

   ____Check this box if parent/guardian agrees to answer questions about the child.

   If you refuse to answer questions about this child, please state the following statement:

   "I do not wish to answer questions about my child."

   ____Check this box if parent/guardian refuses to answer questions about the child.

   (IF PARENT/GUARDIAN DOES **NOT** AGREE, THEN STOP)

9. Do you agree that we can approach this child to give blood for HIV testing and related testing?

   If you agree for us to approach this child to give blood for HIV testing and related testing and to receive the result of the HIV test, please state the following statement:

   "I give permission for the study team to approach this child to give blood for HIV testing and related testing and receiving the results of the HIV test."

____Check this box if parent/guardian agrees for study team to approach this child to take part in the blood draw

If you refuse for us to approach your child to give blood for HIV testing and related testing, please state the following statement:

"I do not wish for the study team to approach this child to take part in blood testing today."

____Check this box if parent/guardian refuses to allow the study team to approach this child to take part in the blood draw

(IF PARENT/GUARDIAN DOES **NOT** AGREE, THEN STOP)

10. [READ ONLY IF CHILD IS 6 WEEKS TO UNDER 10 YEARS OF AGE] Do you agree to have your child's leftover blood stored for future research?

    If you agree to have your child's leftover blood stored for future research, please state the following statement:

    "I agree to have my child's leftover blood stored for future research."

    ____Check this box if parent/guardian agrees to have child's leftover blood stored for future research.

    If you refuse to have your child's leftover blood stored for future research, please state the following statement:

    "I do not wish to have my child's leftover blood stored for future research."

    ____Check this box if parent/guardian refuses to have child's leftover blood stored for future research.

    [READ ONLY IF CHILD IS 10 TO 14 YEARS OF AGE] Do you agree to allow us to ask this child to have his/her leftover blood stored for future research?

    If you agree for us to ask this child to have his/her leftover blood stored for future research, please state the following statement:

    "I give permission for the study team to ask this child to have his/her leftover blood stored for future research."

    ____Check this box if parent/guardian agrees for study team to ask this child to have his/her leftover blood stored for future research.

If you refuse for us to ask this child to have his/her leftover blood stored for future research, please state the following statement:

"I do not wish for the study team to ask this child to have his/her leftover blood stored for future research."

____Check this box if parent/guardian refuses to have study team ask this child to have his/her leftover blood stored for future research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: CHILD MODULE, BLOOD TESTING, BLOOD STORAGE>, is this correct?

_____Yes _____No

Printed name of Parent/Guardian (to be completed by interviewer) _____

BAIS V INTERVIEWER SIGNATURE _____ Date: ___/___/___

BAIS V INTERVIEWER NAME _____

BAIS V INTERVIEWER ID number _____

Child's name (print) _____

Child's PTID _____

Flesch-Kincaid: 6.9

Individual Assent/Consent Form for Minor aged 16-17 years: Interview, Blood draw, Blood storage, Contact for Future Research

What language do you prefer for our discussion today?

___ English ___ Setswana

Title of Study: This study is called the **FIFTH BOTSWANA HIV/AIDS IMPACT SURVEY V (BAIS V)**

Interviewer reads:

Hello. My name is_____. I would like to invite you to take part in this study about HIV in Botswana. The Ministry of Health and Wellness is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), University of Maryland Baltimore (UMB), Statistics Botswana and National AIDS and Health Promotion Agency (NAHPA).

Why are we doing this study?

HIV is a virus. Being infected with HIV can lead to an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly. This study will help us know how many people in Botswana have HIV and need health services. This study involves an interview, blood draw and HIV testing. The national guidelines allow for you to test for HIV without your parent's permission; however, we asked your parent/guardian for permission for you to be interviewed. Your parent/guardian said it was okay for us to ask you to join.

We expect about 28,000 total participants from about 12,500 households throughout Botswana to take part in the study. This will include over 24,000 adolescents and adults aged 15 to 64 years and about 4,000 children aged 6 weeks to 14 years.

This form might have some words that you may not have heard before. Please ask me to explain anything that you do not understand.

What would happen if you join this study?

If you decide to join the study, here is what would happen:

- If you join this study, we will ask you questions about your age, the work you do, your health and experience with health services, and your social and sexual behavior.
- The interview will take about 20 to 30 minutes.
- The interview will take place in private here in your house or a nearby area around your house.
- After we ask you the questions, if you agree, we will take some of your blood to test for HIV.
- We will use a needle to take about 14 milliliters (about a tablespoonful) of blood from your arm into two tubes. If it is not possible to take blood from your arm, then we will try to take a few drops of blood from your finger.
- It will take about 45 minutes to do the test and to talk to you about the results. If you already have documentation that you are HIV-positive, the blood test will take place in a laboratory instead of in your household.
- If you are positive for HIV:
    - We will send your blood to a laboratory to measure your viral load and CD4 count. Viral load is the amount of HIV in your blood. CD4 cells are the part of the immune system that fights HIV infection and other diseases.
    - We will send your viral load and CD4 test results to a health facility of your choice in about 8 to 12 weeks. At the health facility, you will be able to talk to a nurse or doctor about your results.
    - Some of your blood will be sent to a laboratory out of the country for additional tests related to HIV. If we have test results that might help guide your treatment, we will return them to a clinic. If you have given us your contact information, we will contact you to tell you how you and your doctor or nurse may get these results.
- We will ask you if we can store some of your leftover blood for future testing. These tests will help us learn about the health of people in Botswana. The sample will not have your name on it and so we will not be able to tell you the results of the future research tests. Your leftover blood will not be used for anything other than these tests. Your blood will not be sold. After removing your personal information, the results of these tests may be shared with people outside the study, without asking for your permission again. If you do not agree to future storage and testing of your blood, we will destroy your blood after study-related testing has finished and you can still receive your test results. If you agree today to store your blood but change your mind later in the next three years, you can call the number provided at the end of this consent form and have your specimen destroyed. If you change your mind after three

years, we will not be able to destroy your sample. Any future tests done with your blood sample will be approved by the appropriate institutions overseeing those studies.

- You may be eligible to take part in future studies related to health in Botswana. We are asking for your permission to contact you in the next three years if such an opportunity occurs. To do this, approved researchers will be able to request access to your contact information. If they contact you, they will give you details about the new study and invite you to join the study. You may decide at that time that you do not want to take part in that study. If you do not wish to be contacted about future studies, it does not affect your taking part in this study.

Alternatives to taking part

If you decide not to take part in this study, it will not affect your healthcare in any way. We can tell you where to go for HIV services and learn about your HIV status.

You can leave the study at any time for any reason. If you decide to leave the study, no more information will be collected from you; however, you will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you for being in the study, apart from your time.

Could the study help me?

Being in the study may help you learn whether or not you have HIV. We will give you the results of your HIV test and provide counseling to you. If you test positive for HIV, you will learn about it and where to go for care and treatment of HIV. Care and treatment provided by the Government of Botswana is free. Your taking part in this study will help us learn more about HIV in Botswana.

Could bad things happen if you join this study?

You may feel uncomfortable answering some of the questions we will ask. You can refuse to answer any question at any time and you can stop the interview at any time.

The needle may hurt when it is put into your arm. This pain will go away quickly. Sometimes the needle can leave a bruise on the skin. You might bleed a little or feel a little dizzy. Rarely, an infection might occur where the needle enters the skin. We will do our best to make it as painless as possible.

You may learn that you have HIV. Learning that you have HIV may cause you to feel worried. We will talk to you to help you find a clinic where you can receive treatment.

We will not tell anyone else what we talk about but there is a small chance other people might find out. We will do everything we can to minimize this risk.

What else should you know about this study?

If you do not want to be in the study, you do not have to be. Nobody will get upset with you if you do not want to join the study.

It is also OK to say 'Yes' and change your mind later. You can stop being in the study at any time. If you want to stop, please tell us.

Confidentiality and access to your health information

We will do everything we can to keep your answers confidential. The blood we collect from you will be identified by a number and not by your name. Besides you, no one else will know your personal test results except the people working on the study and people you may decide to tell. The data from this study will be released to the public without any identifiers, and this will not require permission from you. Your name and contact information will not be released outside of the study groups listed unless there is an issue of safety.

The following individuals and/or agencies will be able to look at your interview records to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a person taking part in a study, including:
    - The Health Research and Development Committee (HRDC)
    - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
    - University of Maryland Baltimore (UMB; Baltimore, MD, USA)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors

All collaborating institutions; National AIDS and Health Promotion Agency (NAHPA); Statistics Botswana (SB); Ministry of Health and Wellness (MOHW)-Botswana; Botswana Harvard Partnership; African Comprehensive HIV/AIDS Partnerships (ACHAP); UNAIDS; University of Botswana; Centers for Disease Control and Prevention (CDC)-Botswana, Centers for Disease Control and Prevention (CDC)-Atlanta; University of Maryland, Baltimore (UMB); ICF; Botswana University of Maryland School of Medicine Health Initiative; will access, maintain, review, and analyze survey data.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the HRDC and the Institutional Review Boards of the U.S. Centers for Disease Control and Prevention (CDC), and University of Maryland Baltimore (UMB).

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

Susan Matroos, Statistics Botswana

Landline: +267 367 1336; Mobile: +267 727 73711

Email: sumatroos089@gmail.com

[INTERVIEWER: READ FROM HERE]

For issues related to injuries or other harms, or for questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

S. Mosweunyane, Health Research and Development Committee

Landline: +267 363 2018/+267 363 2500

Email: smosweunyane@gov.bw

Do you want to ask me anything about the study?

BAIS V Individual Assent/Consent for Participants 16-17 Years: Interview, Blood draw, Blood storage, Contact for Future Research

Assent/Consent Statement

By answering the questions below, you confirm that any questions have been answered satisfactorily and you have been offered a copy of this assent form.

13. Do you agree to take part in the individual interview? If you agree to take part in the individual interview, please state the following statement:

    "I agree to take part in the individual interview."

    ____Check this box if participant agrees to participate in the individual interview

    If you refuse to take part in the individual interview, please state the following statement:

    "I do not wish to take part in the individual interview."

    ____Check this box if participant refuses to participate in the individual interview

    (IF PARTICIPANT DOES **NOT** AGREE, THEN STOP)

14. Do you agree to give blood for HIV testing and related testing? If you agree to give blood for HIV testing and related testing and to receive the result of your HIV test, please state the following statement:

    "I agree to give blood for HIV testing and related testing and receiving the results of my HIV test."

    ____Check this box if participant agreed to blood testing and related testing.

    If you refuse to give blood for HIV and related testing, please state the following statement:

    "I do not wish to take part in blood testing today."

    ____Check this box if participant refuses blood testing and related testing.

    (IF PARTICIPANT DOES **NOT** AGREE, THEN SKIP TO 4)

15. Do you agree to have your leftover blood stored for future research? If you agree to have your leftover blood stored for future research, please state the following statement.

"I agree to have my leftover blood stored for future research."

____Check this box if participant agrees to have his/her leftover blood stored for future research.

If you refuse to have your leftover blood stored for future research, please state the following statement:

"I do not wish to have my leftover blood stored for future research."

____Check this box if participant refuses to have his/her leftover blood stored for future research.

16. Do you agree to be contacted for future research? If you agree to be contacted for future research, please state the following statement:

"I agree to be contacted for future research."

____Check this box if participant agrees to be contacted for future research.

If you refuse to be contacted for future research, please state the following statement:

"I do not wish to be contacted for future research."

____Check this box if participant refuses be contacted for future research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: INTERVIEW, BLOOD TESTING, BLOOD STORAGE, FUTURE RESEARCH >. Is this correct?

_____Yes _____No

Printed name of adolescent (completed by interviewer) _____

BAIS V Individual Assent/Consent for Participants 16-17 Years: Interview, Blood draw, Blood storage, Contact for Future Research

PTID _____

Printed name of parent or guardian (completed by interviewer) _____

BAIS V INTERVIEWER SIGNATURE _____ Date: ___/___/___

BAIS V INTERVIEWER NAME _____

BAIS V INTERVIEWER ID number _____

Flesch-Kincaid: 6.4

BAIS V Individual Assent Form for Minor aged 10-14 years:

Blood testing and Blood Storage

What language do you prefer for our discussion today?

___ English ___ Setswana

Title of Study: This study is called the **FIFTH BOTSWANA HIV/AIDS IMPACT SURVEY V (BAIS V)**

Interviewer reads:

Hello. My name is_____. I would like to invite you to take part in this study about HIV in Botswana. The Ministry of Health and Wellness is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), University of Maryland Baltimore (UMB), Statistics Botswana and National AIDS and Health Promotion Agency (NAHPA).

Why are we doing this study?

HIV is a virus. Being infected with HIV can lead to an illness often called AIDS. HIV and AIDS can be treated by taking medicines regularly. This study will help us know how many people in Botswana have HIV and need health services. This study involves a blood draw and HIV testing.

Your parent/guardian said it was okay for us to ask you to join.

This form might have some words that you may not have heard before. Please ask me to explain anything that you do not understand.

What would happen if you join this study?

If you decide to join the study, here is what would happen:

- If you join this study, we will take some of your blood to test for HIV.
- We will use a needle to take about 6 milliliters (about a teaspoonful) of blood from your arm into one tube. If it is not possible to take blood from your arm, then we will try to take a few drops of blood from your finger.
- It will take about 45 minutes to do the test and to talk to your parents/guardians about the results. If your parent/guardian agrees, we will also talk to you about your results.

- Not everyone will have an HIV test in the household. For these individuals from whom a blood sample is drawn , the blood test will take place in a laboratory instead of in your household.
- If you are positive for HIV:
    - We will send your blood to a laboratory to measure your viral load and CD4 count. Viral load is the amount of HIV in your blood. CD4 cells are the part of the immune system that fights HIV infection and other diseases.
    - We will send your viral load and CD4 test results to a health facility of your parent/guardian's choice in about 8 to 12 weeks. At the health facility, your parent/guardian will be able to talk to a nurse or doctor about your results. You may also be able to talk to a nurse of doctor about your results, if your parent/guardian agrees.
    - Some of your blood will be sent to a laboratory out of the country for additional tests related to HIV. If we have test results that might help guide your treatment, we will return them to a clinic. If your parent/guardian has given us his/her contact information, we will contact your parent/guardian to tell them how they and your doctor or nurse may get these results.
- We will ask you if we can store some of your leftover blood for future testing. These tests will help us learn about the health of people in Botswana. The sample will not have your name on it and so we will not be able to tell you the results of the future research tests. Your leftover blood will not be used for anything other than these tests. Your blood will not be sold. After removing your personal information, the results of these tests may be shared with people outside the study, without asking you again. If you do not agree to future storage and testing of your blood, we will destroy your blood after study-related testing has finished. If you agree today to store your blood but change your mind later in the next three years, your parent/guardian can call the number provided at the end of this consent form and have your blood destroyed. If you change your mind after three years, we will not be able to destroy your sample. Any future tests done with your blood sample will be approved by the appropriate institutions overseeing those studies.

Alternatives to taking part

If you decide not to take part in this study, it will not affect your healthcare in any way. We can tell your parent/guardian where to take you for HIV services to learn about your HIV status.

You can leave the study at any time for any reason. If you decide to leave the study, no more information will be collected from you; however, you will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you for being in the study apart from your time.

Could the study help me?

Being in the study may help you learn whether or not you have HIV. We will share the results with your parent/guardian. If you test positive for HIV, your parent/guardian will learn about it and where to go for care and treatment of HIV. If your parent/guardian agrees, we will also talk to you about your results. Care and treatment provided by the Government of Botswana is free. Your taking part in this study will help us learn more about HIV in Botswana.

Could bad things happen if you join this study?

The needle may hurt when it is put into your arm. This pain will go away quickly. Sometimes the needle can leave a bruise on the skin. You might bleed a little or feel a little dizzy. Rarely, an infection might occur where the needle enters the skin. We will do our best to make it as painless as possible.

You may learn that you have HIV. Learning that you have HIV may cause you to feel worried. We will talk to your parent/guardian to help you find a clinic where you can receive treatment.

We will not tell anyone else except your parent/guardian about your test result, but there is a small chance other people might find out. We will do everything we can to prevent this from happening.

What else should you know about this study?

If you do not want to be in the study, you do not have to be. Nobody will get upset with you if you do not want to join the study.

It is also OK to say 'Yes' and change your mind later. You can stop being in the study at any time. If you want to stop, please tell us.

Confidentiality and access to your health information

We will do everything we can to keep your answers confidential. The blood we collect from you will be identified by a number and not by your name. Besides your parent/guardian, no one else will know your personal test results except the people working on the study and people your parent/guardian may decide to tell. The data from this study will be released to the public without any identifiers, and this will not require permission from you. Your name and contact information will not be released outside of the study groups listed unless there is an issue of safety.

The following individuals and/or agencies will be able to look at your results to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a person taking part in a study, including:
  - The Health Research and Development Committee (HRDC)
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - University of Maryland Baltimore (UMB; Baltimore, MD, USA)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors

All collaborating institutions; National AIDS and Health Promotion Agency (NAHPA); Statistics Botswana (SB); Ministry of Health and Wellness (MOHW)-Botswana; Botswana Harvard Partnership; African Comprehensive HIV/AIDS Partnerships (ACHAP); UNAIDS; University of Botswana; Centers for Disease Control and Prevention (CDC)-Botswana, Centers for Disease Control and Prevention (CDC)-Atlanta; University of Maryland, Baltimore (UMB); ICF; Botswana University of Maryland School of Medicine Health Initiative; will access, maintain, review, and analyze survey data.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the HRDC and the Institutional Review Boards of the U.S. Centers for Disease Control and Prevention (CDC), and University of Maryland Baltimore (UMB).

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

Susan Matroos, Statistics Botswana

Landline: +267 367 1336; Mobile: +267 727 73711

Email: sumatroos089@gmail.com

BAIS V Individual Assent for Participants 10-14 Years: Blood draw and Blood Storage

[INTERVIEWER: READ FROM HERE]

For issues related to injuries or other harms, or for questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT - DO NOT READ ALOUD]

S. Mosweunyane, Health Research and Development Committee

Landline: +267 363 2018/+267 363 2500

Email: smosweunyane@gov.bw

Do you want to ask me anything about the study?

Assent Statement

By answering the questions below, you confirm that any questions have been answered satisfactorily and you have been offered a copy of this assent form.

17. Do you agree to give blood for HIV testing and related testing? If you agree to give blood for HIV testing and related testing, please state the following statement:

"I agree to give blood for HIV testing and related testing."

____Check this box if participant agreed to blood testing and related testing.

If you refuse to give blood for HIV and related testing, please state the following statement:

"I do not wish to take part in blood testing today."

____Check this box if participant refuses blood testing and related testing.

(IF PARTICIPANT DOES **NOT** AGREE, THEN STOP)

18. Do you agree to have your leftover blood stored for future research? If you agree to have your leftover blood stored for future research, please state the following statement.

"I agree to have my leftover blood stored for future research."

____Check this box if participant agrees to have his/her leftover blood stored for future Research.

If you refuse to have your leftover blood stored for future research, please state the following statement:

"I do not wish to have my leftover blood stored for future research."

____Check this box if participant refuses to have his/her leftover blood stored for future Research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: BLOOD TESTING, BLOOD STORAGE>. Is this correct?

_____Yes _____No

Printed name of child (completed by interviewer) _____

PTID _____

Printed name of parent or guardian (completed by interviewer) _____

BAIS V INTERVIEWER SIGNATURE _____ Date: ___/___/___

BAIS V INTERVIEWER NAME _____

BAIS V INTERVIEWER ID number _____

A future without HIV