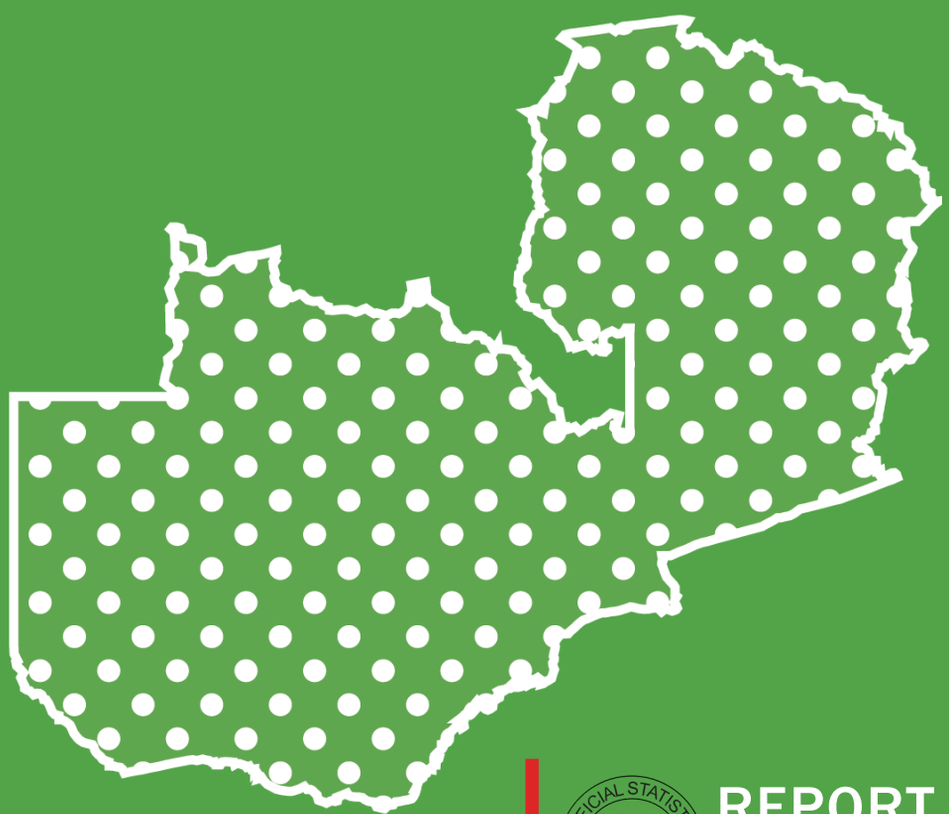
REPUBLIC OF ZAMBIA
MINISTRY OF HEALTH

ZAMPHIA

ZAMBIA POPULATION-BASED HIV IMPACT ASSESSMENT 2021



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Zambia Population-based HIV Impact Assessment (ZAMPHIA 2021)

ZAMPHIA COLLABORATING INSTITUTIONS
Ministry of Health, Government of the Republic of Zambia
Zambia Statistics Agency
University of Zambia
University Teaching Hospital, Virology Laboratory

The United States (US) President's Emergency Plan for AIDS Relief (PEPFAR)
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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 years and older.

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.

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): The smallest geographic area used in census of populations and other types of surveys as defined by National Statistics Office and the primary sampling unit for the Population-based HIV Impact Assessment (PHIA) surveys.

Head of Household: The head of household is defined as an individual (adult) who is recognized within the household as being the head and is 18 years and older or is considered an emancipated minor (any adolescent aged 15-17 years who is free from parental/guardian control and who may be married, pregnant, or be a parent or a head of household.

Household: A person or group of persons currently living together under the same building or compound, sharing the same cooking/eating arrangement, who identify themselves as a unit and recognize one adult/emancipated minor as a Head. These persons may or may not be related by blood but make common provision for food or other essentials for living and they have only one person whom they all regard as head of the household.

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.

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.

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 women 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 women of childbearing age; (2) preventing unintended pregnancies among women living with HIV; (3) preventing HIV transmission from women 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 women and young men.

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 women aged 20-24 years and older adolescent boys aged 15-19 years and young men aged 20-24 years.

LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARV	Antiretroviral
CDC	US Centers for Disease Control and Prevention
CD4	CD4+ T Cell
CI	Confidence Interval
DBS	Dried Blood Spot
EA	Enumeration Area
HBTC	Home-Based Testing and Counseling
HIV	Human Immunodeficiency Virus
INI	Integrase Inhibitor
LAg	Limiting Antigen
ZAMPHIA	Zambia Population-based HIV Impact Assessment
mL	Milliliter
µL	Microliter
MOH	Ministry of Health
MOS	Measure of Size
MTCT	Mother-to-Child Transmission
ODn	(normalized) Optical Density
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
TNA	Total Nucleic Acid
TWG	Technical Working Group
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

Zambia has made remarkable progress towards HIV epidemic control. The country has adopted the Joint United Nations Programme on HIV and AIDS (UNAIDS) vision to end AIDS by 2030 and is part of the global alliance to end childhood AIDS by 2030. To achieve this goal, our national strategic plan prioritizes the use of data to measure progress and continuously identify areas that need intervention. We strongly believe that for us to make further progress towards the last mile of HIV epidemic control, our interventions should be data driven and the 2021 Zambia population HIV impact assessment (ZAMPHIA 2021) provides some of these important data elements which are missing from our routine programmatic monitoring systems. It is for this reason that I am delighted to present this ZAMPHIA 2021 final report.

The ZAMPHIA 2021 survey follows the first ZAMPHIA that was conducted in 2016. These surveys provide critical information and data on the impact of the HIV program scale-up used for policy direction and strategic planning for our response to the HIV epidemic. The ZAMPHIA 2016 helped us to monitor key indicators such as national HIV incidence, national and provincial viral load suppression (VLS) as well as to measure progress toward the achievement of the UNAIDS 90-90-90 targets. The 2016 survey, however, further exposed weaknesses in the country's HIV response at that time. The key challenges and limitations identified included: low awareness of HIV positive serostatus in all populations but more so among men, high incidence of HIV and low national viral load suppression. Further, weaknesses in the process for provision of health services such low provision of HIV testing services were highlighted.

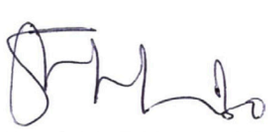
Several findings of ZAMPHIA 2021 suggest that our policies and strategies implemented after ZAMPHIA 2016 have worked well. These include:

- meeting the second and third 95 of the UNAIDS 95-95-95 targets set for 2025
- falling incidence of HIV from 0.61% in 2016 to 0.31 in 2021 corresponding to 28,000 annual new HIV infections in 2021 compared to 43,000 in 2016
- improved HIV testing service for men from 65.1% in 2016 to 79.8% in 2021
- increased viral load suppression among adults from 59.2% in 2016 to 86.2% in 2021

This ZAMPHIA 2021 survey has also reviewed some key areas where our efforts should be enhanced. For instance, the Zambia HIV response is still behind in reaching the first 95 target for adults. This gap in case identification is even bigger among adolescents and young people (AYP) aged 20-24 years old. This is an important gap, and the Ministry of Health has devised strategies to improve it. Some of the strategies include differentiated services for HIV testing as addition to targeted HIV testing services. Further consideration in altering the testing strategies for specific populations will need to be done. For AYP, network testing, out-of-school boys testing strategies, and others will be important.

Additionally, this study has shown that HIV incidence is twice as high among women than men. This gap in HIV prevention services among women requires concerted efforts from all stakeholders in the HIV response. To this effect, the Ministry of Health has approved the use of a new injectable antiretroviral drug, long-acting Cabotegravir (CAB-LA) for HIV pre-exposure prophylaxis (PrEP). This is in addition to the scale up of other HIV prevention strategies such as oral PrEP and social support service for adolescents and young people such the DREAMS project. Finally, the age group 15-29 years continues to lag behind in the HIV treatment cascade in this survey. Focus must be shifted to this age group in implementation of HIV services from testing to viral load services. We will need tailor-made differentiated service delivery models for this sub-population.

Overall, the ZAMPHIA 2021 findings are encouraging and suggest that Zambia is well poised to achieve the 95-95-95 targets by 2025. Paying particular attention to the gaps reviewed in this survey would help with focusing the resources with appropriate intervention for high impact and value for money.



Hon. Sylvia T. Masebo, MP
MINISTER OF HEALTH

PREFACE

The Zambia Population-based HIV Impact Assessment (ZAMPHIA 2021) was a household-based national survey among adults, defined as individuals aged 15 years and older, conducted between April and December 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.

ZAMPHIA 2021 was led by the Government of Zambia through the Zambian Ministry of Health and supported by the Zambia Statistics Agency (ZAMSTATS). The survey was conducted with funding from the United States (US) President's Emergency Plan for AIDS Relief (PEPFAR) and through technical assistance and partnership with the US Centers for Disease Control and Prevention (CDC). ZAMPHIA 2021 was implemented by University of Maryland, Baltimore in collaboration with the Government of Zambia institutions. The Government of Zambia, local civil society organizations, and international development partners participated in the Technical Working Group to provide input on survey planning and survey implementation.

This was the second survey to estimate national HIV incidence, national and province-level prevalence, and viral load suppression (VLS), defined as HIV RNA <1,000 copies per milliliter (mL) among adults living with HIV, and progress toward achievement of the UNAIDS 95-95-95 targets by 2025. The first ZAMPHIA was conducted between March and August 2016.[1] The results of these two surveys provide critical information on national and province-level progress toward control of the HIV epidemic.

ZAMPHIA 2021 used a two-stage, stratified cluster sample design, that first selected census enumeration areas (EAs) and then selected households within each EA. The first stage selected 403 EAs and the second stage selected with an average of approximately 30 households per EA (Table 2.1). The overall sample size and allocation by province was determined by (1) viral load suppression (VLS) among persons living with HIV ages 15-49 years at the rural-urban and province level with a 95% confidence interval (CI) +/- 10%; and (2) HIV incidence among persons ages 15-49 at the national level with a relative standard error (RSE) < 0.2. To reach the target sample size, the survey planned to include approximately 20,299 participants, ages 15 years and older of whom 17,417 were expected to participate in the interviews and 15,623 were expected to participate in blood draw and HIV testing.

Of 11,553 occupied eligible households, 91.8% completed a household interview (Table 2.2). Among 25,483 eligible adults aged 15 years and older (13,871 eligible women and 11,612 eligible men), a total of 22,262 (87.4%) adults participated in the individual interview. Among those interviewed, 18,804 (10,584 women and 8,220 men; 84.5%) also had their blood drawn for testing. (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 antiretroviral medications (ARVs) (efavirenz, nevirapine, lopinavir, atazanavir and dolutegravir). 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 World Health Organization Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays. Survey weights were utilized for all estimates.

[1] Ministry of Health, Zambia. Zambia Population-based HIV Impact Assessment (ZAMPHIA) 2016: Final Report. Lusaka, Ministry of Health. February 2019.

EXECUTIVE SUMMARY

TOPLINE FINDINGS

- The annual HIV incidence among adults (defined as individuals 15+ years) was 0.3% in Zambia, which corresponds to approximately 28,000 new cases of HIV annually.
- Prevalence of HIV among adults aged 15+ years in Zambia was 11.0%. HIV prevalence was 13.9% among women and 8.0% among men.
- Prevalence of VLS among all adults aged 15+ years living with HIV in Zambia was 86.2%
- The prevalence of VLS among adults aged 15+ years living with HIV aware of their status and on ART in Zambia was 96.3%.
- Zambia exceeded the second and third UNAIDS 95-95-95 targets; 98.0% of adults (15+ years) who know their status were receiving ART, and 96.3% of adults who were receiving ART had VLS.

TOPLINE FINDINGS IN FOCUS

- The annual HIV incidence among adults (those aged 15+ years) in Zambia was 0.3%, which corresponds to approximately 28,000 new cases of HIV annually among adults in Zambia.
  HIV incidence was 0.6% among women and 0.1% among men (Tables 5.1 and 5.2).
- Annual incidence of HIV among young people aged 15-24 years was 0.4%, among adults aged 25-34 years was 0.4%, among adults aged 35-49 years was 0.1% and among adults 50+ was 0.1%. (Table 5.1).
- Prevalence of HIV among adults in Zambia was 11.0%, which corresponds to approximately 1,108,000 adults living with HIV. HIV prevalence was markedly higher among women, at 13.9% (95% CI: 12.8%-15.1%)* than among men, at 8.0% (95% CI: 7.0%-9.0%) (Tables 5.2 and 6.2).
- Prevalence of VLS among all adults living with HIV in Zambia was 86.2%: 86.6% among women and 85.5% among men. 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 province level, prevalence of VLS among all adults living with HIV ranged from 77.5% in North-Western to 92.6% in Southern (Table 8.1, Figure 8.1.1 and 8.1.2).

Approximately 28,000 new cases of HIV annually among adults in Zambia.

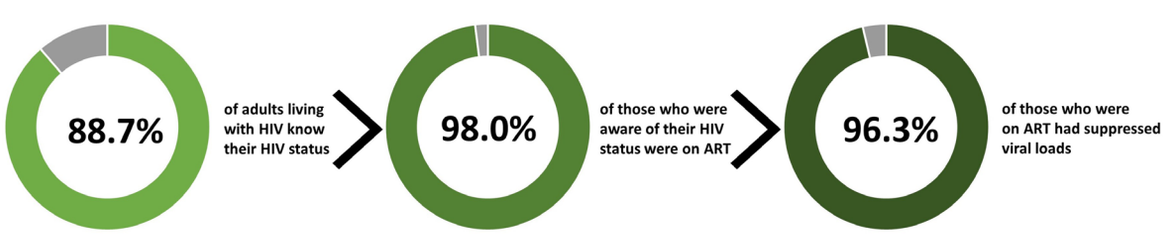
UNAIDS 95-95-95 TARGETS

UNAIDS set the 95-95-95 targets with the aim that by 2025, 95% of all people living with HIV 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. Zambia's progress towards achieving these targets is presented in two ways: the conditional 95-95-95 and the overall 95-95-95.

Prevalence of HIV among adults in Zambia was 11%.

- **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:** 88.7% of adults living with HIV were aware of their HIV-positive status: 89.9% of women and 86.6% of men living with HIV.
- **On treatment:** Among those who were aware of their HIV-positive status, 98.0% were on ART: 98.0% of women and 98.1% of men.
- **With viral load suppression:** Among those aware of their HIV-positive status and on treatment, 96.3% had VLS: 95.7% of women living with HIV and 97.3% of men 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.

Prevalence of VLS among adults aged 15+ years living with HIV in Zambia was 86%.

For the overall 95-95-95, the denominator for all three 95s is the overall population of adults living with HIV in Zambia (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:** 88.7% of adults living with HIV were aware of their HIV-positive status: 89.9% of women and 86.6% of men living with HIV.
- **On treatment:** Among all adults living with HIV in Zambia, 87.0% were on ART: 88.1% among women and 84.9% among men.
- **With viral load suppression:** Among all adults living with HIV in Zambia, 83.8% had achieved VLS on treatment: 84.4% among women and 82.6% among men.

(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).

The highest HIV prevalence among adults aged 15+ years was found in Lusaka Province at 14%, the lowest was in Northern at 6%.

Young people (ages 15-24 years)†* 95-95-95, based on self-report and antiretroviral (ARV) detection in blood:

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

- **Diagnosed:** 72.8% of young people living with HIV were aware of their HIV-positive status: 72.7% among young women and 73.0%‡ among young men.
- **On treatment:**Among young people who were aware of their HIV-positive status, 98.4% were on ART: 98.0% among young women and 99.2%‡ among young men.
- **With viral load suppression:** Among young people who were aware of their HIV-positive status and on treatment, 93.0% had achieved VLS: 93.7% among young women and 91.6%‡ among young men.

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

Zambia progress towards the UNAIDS 95-95-95 targets stand at 89%, 98%, and 96% among adults (15+) living with HIV.

- **Diagnosed:** 72.8% of young people living with HIV were aware of their HIV-positive status: 72.7% among young women and 73.0% among young men.
- **On treatment:** Among all young people living with HIV in Zambia, 71.7% were on ART: 71.3% among young women and 72.4% among young men.
- **With viral load suppression:** Among all young people† living with HIV in Zambia, 66.6% had achieved VLS on treatment: 66.8% among young women and 66.3% among young men.

95-95-95 analyses at the province level

- At the province 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 93%-100%-99% and 92%-98%-98% in Southern and Eastern respectively (Table 9.3.B).
- None of the provinces attained more than 95% of PLHIV aware of their HIV status. The province with the lowest percentage of PLHIV aware of their status was Muchinga (76.5%) (Table 9.3.A, Table 9.3.B).
- All provinces attained more than 95% of adults living with HIV aware of their HIV status on treatment. Muchinga had the lowest percentage of adults living with HIV aware of their HIV status on treatment at 96.2% (Table 9.3.B).
- In six of the ten provinces (60%), more than 95% of those on treatment were virally suppressed (Table 9.3.B).
- The provinces with the lowest percentages of viral suppression among adults who were on treatment were North-Western (90.4%) and Northern (92.6%) (Table 9.3.B).

Among young people†, the estimated progress toward achievement of the UNAIDS 95-95-95's targets were 73%, 98%, 93%.

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* 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 women aged 15-24 years" and "young men 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

- Among all households, 59.6% were headed by men and 40.4% were headed by women (Table 3.1).
- In Zambia, 20.9% of households had at least one HIV-positive member (Table 3.4, Figure 3.4).
- The proportion of households headed by a person living with HIV was higher in urban households, at 26.3% (95% CI: 24.7%-27.9%), than in rural households, at 17.1% (95% CI: 15.2%-19.1%)* (Table 3.4, Figure 3.4).
- The proportion of households headed by a person living with HIV was higher among female-headed households, at 23.1% (95% CI: 21.2%-25.0%), than among male-headed households, at 12.5% (95% CI: 10.8%-14.1%)* (Table 3.5, Figure 3.5).

84% of women who delivered a child in the 12 months before the survey reported knowing their HIV status when they were pregnant.

Survey population characteristics

- The largest proportion of the population was located in Lusaka Province (16.9%) and the smallest in Muchinga Province (5.0%) (Table 4.1).
- More than a third (36.7%) of the survey respondents were young people aged 15-24, while 14.6% were aged 50 years or older (Table 4.1).

HIV incidence

- Annual incidence of HIV among adults aged 15-49 years was 0.3% (95% CI: 0.1%-0.5%): higher at 0.6% (95% CI: 0.2%-1.0%) among women than 0.1% (95% CI 0.00 %-0.2%) among men (Table 5.1).
- The annual incidence of HIV among young people aged 15-24 years was 0.4% (95% CI: 0.05%- 0.75%): 0.8% (95% CI: 0.08%- 1.45%) among young women and 0.0% among young men (95% CI: 0.00%- 0.15%). Among adults aged 25-34 years, HIV incidence was 0.4% (95% CI: 0.08%- 0.73%): 0.8% (95% CI 0.15%- 1.40%) among women and 0.0% among men (95% CI: 0.00%- 0.21%). 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 years and older ranged from 5.8% in Northern Province to 14.4% in Lusaka Province; and was lower in rural areas, 9.2% (95% CI: 7.9%- 10.4%) than in urban areas, 13.5% (95% CI: 12.7%- 14.4%) (Table 6.2, Figure 6.2.1 and Figure 6.2.2).
- HIV prevalence was higher among women compared to men from the 20-24 age group to the 35-39 age group and the 45-49 age group. The largest difference was seen in the 30-34 age group with a prevalence of 19.4% (95% CI 14.5-24.3%) in women and 7.0% (95% CI 4.6%- 9.4%) in men (Table 6.3).
- By age group, HIV prevalence peaked at 29.1% among those aged 50-54 years (Table 6.3).

HIV testing, diagnosis, and treatment status

- Among adults aged 15 years and older, 79.8% reported that they had ever received an HIV test (Table 7.1 .C), with a higher percentage among women: 85.5% (95% CI: 84.6%- 86.4%) than men: 73.9% (95% CI: 72.5%-75.3%) (Tables 7.1.A-B).
- Young men aged 15-19 and 20-24 were less likely to report having received an HIV test in the 12 months before the survey (17.3%, 95%: CI 14.8%- 19.8% and 43.5%, 95% CI: 40.4%- 46.6% respectively) compared to men aged 25-29 (52.3%, 95% CI: 48.6%-56.0%) (Table 7.1.A, Figure 7.1.A).
- Older adolescents girls aged 15-19 were less likely to report having received an HIV test in the 12 months before the survey (37.9%, 95%: CI 35.1%- 40.7%) compared to young women aged 20-24 (59.9%, 95% CI:56.4%-63.4%) and women aged 25-29 (66.3%, 95% CI:63.3%-69.3%) (Table 7.1.B, Figure 7.1.A).
- Based upon self-report and ARV-detection data, 11.3% of adults 15+ years who tested positive in Zambia were unaware of their HIV status. Despite the relatively high rates reported for receiving an HIV test in the 12 months before the survey, 12.6% of adults aged 15-49 years and 6.8% of adults aged 50+ years who tested positive in Zambia were unaware of their status (Table 7.2.C).
- Based upon self-report and ARV-detection data, 27.2% of young people aged 15-24 years who tested positive in Zambia were unaware of their HIV status (Table 7.2.C).
- Of adults living with HIV aged 15 years and older who self-reported being previously diagnosed with HIV and on ART, 3.7% did not have detectable ARVs in their blood. Among adults who self-reported being previously diagnosed and not on ART, 29.9% had detectable ARVs in their blood. Of individuals who self-reported that they were negative or unaware of their status, 28.8% had detectable ARVs in their blood (Table 7.3.C).

94% of women living with HIV who delivered in the 12 months before the survey reported they were taking ART.

Viral load suppression

- Among young people living with HIV aged 15-24, prevalence of VLS was 70.9% (95% CI: 62.1%- 79.6%) which was markedly lower than for the HIV positive adult population aged 35-44 at 88.5% (95% CI: 85.2%-91.8%) (Table 8.1, Table 8.2).
- Population viremia (prevalence of unsuppressed viral load, defined as >1,000 copies) among adults aged 15 and above regardless of HIV status showed some variation by province. Central province had the highest percentage with VL >1,000 copies at 1.8%; Eastern Province with the lowest at 0.9% (Table 8.3, Figure 8.3).
- Among all adults living with HIV, 83.4% had a VL below 200 copies/mL: 83.7% among women, and 82.7% among men. Among those who were aware of their HIV-positive status and on ART (based on self-report and ARV-detection data), 93.6% had a viral load below 200 copies/mL. For the overall population, the prevalence of VL below 200 copies/mL was highest in the 65+ age group, 93.9%, while lowest among young people aged 20-24 years, 64.6% (Table 8.4).
- The percentage of HIV-positive adults aged 15 years and older who reported that they ever had a viral load test was 85.2%. Of those, only 35.8% reported having ever received the results from their last test (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 382 cells per microliter (μL) among those who were unaware of their status, 310 cells/μL among those who were aware of their status but not on ART, and 549 cells/μL among those who were taking ART. Among the population of adults aged 15-49 living with HIV overall, the median CD4 count was 538 cells/μL, 582 cells/μL among women and 438 among men (Table 10.1 and Figure 10.1).
- The proportion of adults aged 15 years and older who tested HIV positive in the survey but reported an HIV-negative status and had no antiretroviral detectable in blood with a CD4 count of <200 cells/μL was 18.7% and a CD4 count 200-349 cells/μL was 26.7% (Table 10.2).

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

- Among women of childbearing age (ages 15-49 years, referred to as WCA) who delivered a child in the 3 years before the survey, 98.5% reported attending at least one antenatal care (ANC) visit for her most recent birth (Table 11.1).
- Among WCA who delivered in the 12 months before the survey, 83.8% reported that they knew their HIV status: 4.8% already knew they were HIV positive, 77.6% tested HIV negative, and 1.4% tested positive during ANC testing (Table 11.2 and Figure 11.3).

HIV risk factors and Prevention Interventions

- Among adults, a lower proportion of women, (7.6% [95% CI: 6.8%- 8.3%]) than men, (12.2% [95% CI: 11.2%- 13.1%]), reported that they had had sexual intercourse before the age of 15 years (early sexual debut) (Table 12.1).
- Having more than one lifetime sexual partner was associated with a higher prevalence of HIV, (14.4% [95% CI: 13.3%- 15.5%]) than having one lifetime partner, (6.6% [95% CI: 5.6%- 7.6%]) (Table 12.2).
- Among young people aged 15-24 years, a greater proportion residing in rural areas (16.3% [95% CI: 14.5%- 18.0%]) reported sex before the age of 15 years compared to urban residents (8.8% [95% CI: 7.1%-10.5%]) (Table 12.3).
- Among adults aged 15 years and older, 34.5% reported sex with a nonmarital, noncohabitating partner in the 12 months before the survey and among these 42.4% reported using a condom (Table 12.4.C, Figure 12.4).
- Among adult men aged 15-49, 35.6% reported a medical circumcision and 6.3% reported a nonmedical circumcision (Table 12.5).
- A smaller proportion of men aged 15 years and older who tested HIV positive, 18.4% (95% 13.5%- 23.3%) were medically circumcised compared to 33.3% (95% CI 31.1%- 35.5%) of those who tested HIV negative (Table 12.5, Figure 12.5).
- Based upon self-reported knowledge of pre-exposure prophylaxis (PrEP), 21.2% of adults aged 15 years and older reported they had heard of PrEP; 23.5% (95% CI 22.2%- 24.8%) of women and 18.9% (95% CI 17.5%- 20.2%) of men (Table 12.6).
- Among adults aged 15 years and older who are HIV negative 60.6% reported they would take PrEP to prevent HIV; 62.0% of women and 59.2% of men (Table 12.7).

- Adults aged 15 years and older who were HIV negative and had heard of PrEP were more likely to report they would take PrEP to prevent HIV, 76.9% (95% CI 72.8%- 81.0%), compared to those who had not heard of PrEP, 56.6% (95% CI 54.6%- 58.5%) (Table 12.7).
- Based upon self-report, 4.2% of adults aged 15 years and older who were HIV negative reported they had ever taken PrEP; 4.7% of women and 3.6% of men (Table 12.8).

Among adults who tested HIV-negative and had heard of PrEP, 63% said that they would be willing to take it.

Tuberculosis, cervical cancer screening, and other chronic conditions

- Among women living with HIV aged 15 years and above, there were variations and disparities in the self-reported receipt of cervical cancer screening services by province and wealth quintile:
  - At the province level, the prevalence of cervical cancer screening ranged from 34.5% in Luapula province to 71.6% in Lusaka province (Table 13.1).
  - In the lowest wealth quintile, the prevalence of cervical cancer screening was 41.5% (95% CI: 34.5%-48.5%), increasing in each group to the highest wealth quintile at 67.8% (95% CI: 61.3%- 74.2%) (Table 13.1).
- According to adults who reported that they attended a tuberculosis (TB) clinic in the 12 months before the survey, 57.2% were tested for HIV, 11.1% reported that they already knew they were HIV-positive, and 31.7% did not know their status (Table 13.3).

GAPS AND UNMET NEEDS

While recognizing the remarkable accomplishments of Zambia in controlling HIV at the national level, key gaps remain. Overall, Zambia has not yet reached the first 95 target among adults aged 15+ years and opportunities to improve VLS exist in particular sub-groups. VLS prevalence among men aged 15-34 years and women aged 15-24 years is lagging behind other age groups. Geographic variation in VLS prevalence indicates some provinces (including Muchinga, Northern, North-western and Luapula) are below targets. Of adults who were HIV positive and reported having a previous viral load test, only 36% ever received the results from their last viral load test.

Unmet needs exist particularly around AYP and women. Only 73% of young people aged 15-24 were aware of their HIV status. However, among those that were aware, a large majority were on treatment, 98%; suggesting that AYP have access and are willing to engage in treatment provided they know their status. Young men in particular were less likely to have reported an HIV test in the past 12 months and this difference was particularly pronounced among those aged 15-19 years, reporting 35% percentage points less than aged 25-29 years. Older adolescent girls aged 15-19, were also less likely than young women aged 20-24 and women aged 25-29 to report an HIV test in the past 12 months. Almost 30% of young people aged 15-24 years who tested positive were unaware of their status.

HIV incidence was significantly higher among women than men and prevalence was higher in most age groups. The highest incidence groups by sex and age were women aged 15-24 and 25-34.

Almost all women of child-bearing age (99%) who delivered in the three years before the survey reported attending at least one antenatal care visit, a sub-target percentage, about 84%, of women of child-bearing age who delivered a child within the 12 months prior to the survey reported knowing their HIV status.

The proportion of late HIV diagnosis among adults aged 15 years and older who tested HIV positive in the survey but reported an HIV-negative status and had no antiretroviral detectable in blood was relatively high with almost half (45%) with a CD4 result less than 350 cells/μL. Among PLHIV who were unaware of their HIV status median CD4 count was 382 cells/μL. These results suggest the prevalence of advanced HIV disease (AHD) is an ongoing gap.

ZAMPHIA 2021 found several significant results among reported HIV risk factors. Those reporting having more than one lifetime sexual partner had a higher prevalence of HIV compared to those having one lifetime partner, 14% vs. 7% respectively. Individuals in rural areas were more likely to engage in sex before the age of 15 years compared to those in urban areas. Among adults aged 15 years and older, over one third reported sex with a with nonmarital, noncohabitating partner in the 12 months before the survey and among these only 42% reported using a condom.

Opportunities exist among HIV preventive services. Approximately a fifth of adults reported they had heard of PrEP, though slightly more women than men. Despite this, a majority of respondents who tested HIV negative reported that they would take PrEP to prevent HIV and 77% of those that

were HIV negative and had heard of PrEP before reported they would take PrEP to prevent HIV. An opportunity exists for VMMC programs, as only 18% of men aged 15 years and older who tested HIV positive were medically circumcised compared to 33% of those who tested HIV negative.

PROGRAMMATIC RESPONSES AND RECOMMENDATIONS

As Zambia continues to make progress towards reaching 95-95-95, the ZAMPHIA 2021 results inform existing programs and data driven strategies to address gaps and unmet needs.

To support increasing access to testing, prevention, treatment and care among AYP, a renewed focus is placed on effective mechanisms to reach these subpopulations. Continued support of differentiated service delivery (DSD) models which serve adolescents and harmonizing efforts of the caregiver, peers and healthcare providers contribute towards orienting services to meet specialized needs of AYP. There is need to maximize the availability of devoted environments such as status neutral adolescent health safe spaces and women's sexual and reproductive health services to promote improvements in access and retention in these services. Other strategies include ensuring access to prevention and sexual reproductive health services at colleges and universities, in male clinics, and particularly providing decentralized services such as community posts (CPs) in peri-urban and urban areas where men and AYP reside.

Gaps exist within the system of optimizing care among people living with HIV. Given the CD4 count results among PLHIV there is a need for a multiprong strategy to diagnose and manage AHD. This includes CD4 testing scale-up, provision of tuberculosis preventative therapy, and more widely available cryptococcal infection screening. Opportunities also include increasing the return of viral load results to recipients of care through increasing awareness of knowledge of viral load utilizing mobile technology such as text messaging, educational campaigns, and demand creation among PLHIV. Zambia continues to focus on consistently improving health informatics technology to integrate laboratory information systems with the national SmartCare electronic health record; ensuring results are not siloed within systems and easily accessible.

From a prevention perspective, ZAMPHIA 2021 highlighted promising findings with regards to receptivity to PrEP; showing that increased knowledge and awareness could contribute to continued gains in PrEP uptake particularly with the roll-out of new modalities such as the injectable long-acting PrEP (CAB-LA)– including the potential benefits of prioritizing CAB-LA to the AYP group first.

There were demonstrated geographic differences in attainment of 95-95-95 by province. Northern, North-western, Muchinga and Luapula provinces lagged behind others and would benefit from an increased focus for the HIV service packages including replicating best practices that have been effective in other areas, such as leveraging provincial and district health to directly deliver
HIV services.

Moving forward, Zambia is well-positioned to achieve the UNAIDS 95-95-95 targets by closing the programmatic gaps in diagnosis, treatment, and adherence. The country can ensure that all people benefit from these achievements by improving identification of HIV infection among people who are unaware that they are living with HIV and helping younger people achieve viral load suppression.

CONCLUSION

Zambia has met the 2nd and 3rd 95 targets of people (15+ years) who know their HIV status receiving ART and having VLS. The country is approaching the overall 95-95-95 target of 86% (95*95*95) with nearly 84% of all adults achieving VLS with ART use.

ZAMPHIA 2021 highlights many achievements as well as opportunities for improvement in prevention, care, and treatment across the population of Zambia, leaving no one behind. Among all adults living with HIV, VLS prevalence was 86%, suggesting that Zambia is well-positioned to achieve the UNAIDS goal of ending the AIDS epidemic as a public health threat by 2030.

1. INTRODUCTION

1.1 BACKGROUND

The Population-based HIV Impact Assessment is a multicountry project funded by the United States (US) 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 Zambia Population-based HIV Impact Assessment ZAMPHIA 2021 was led by the Government of Zambia through the Zambian Ministry of Health and supported by the Zambia Statistics Agency (ZAMSTATS). The survey was conducted with funding from the US President's Emergency Plan for AIDS Relief (PEPFAR) with technical assistance through the US Centers for Disease Control and Prevention (CDC), ICF, and the University of Maryland, Baltimore (UMB). The Government of Zambia, 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 ZAMPHIA 2021

ZAMPHIA 2021 was a household-based national survey among adults (defined as those 15 years and above) that measured the status of Zambia's national HIV response. Conducted from April through December 2021, Zambia offered HIV 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. This was the second survey in Zambia to estimate national HIV incidence, prevalence, and national and province-level viral load suppression (VLS), defined as HIV RNA <1,000 copies per milliliter (mL), among adults living with HIV. The first ZAMPHIA was conducted between March and August 2016.

With its focus on measuring key biological endpoints in a nationally representative sample of the population, ZAMPHIA 2021 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 Zambia'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 Zambia 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.

The main objectives of the survey were:

- To estimate the subnational-level prevalence of VLS among adults living with HIV
- To measure national and subnational HIV prevalence
- To generate national HIV incidence estimates
- To collect high quality data on HIV-related risk behaviors, knowledge, and attitudes
- To explore the behavioral and demographic determinants of HIV incidence and prevalence
- 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 produce estimates of the prevalence of primary and secondary antiretroviral (ARV) drug resistance (DR) in adults living with HIV; and
- To document the country's progress towards achievement of UNAIDS 95-95-95 targets.

[*] 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

ZAMPHIA 2021 was a nationally representative, cross-sectional, two-stage, population-based survey of households across Zambia. Its target population corresponded to adults (defined as individuals aged 15 years and older for the purposes of the survey).

2.1 SAMPLE FRAME AND DESIGN

ZAMPHIA 2021 used a two-stage, stratified cluster sample design. The sampling frame was comprised of all households in the 25,631 EAs of Zambia delineated for the 2010 census. As of the 2010 census, there were 2,513,768 households and 13,092,666 persons in Zambia, with an average number of 98 households per EA and 511 persons per EA1 (2010 Census of Population and Housing of the Republic of Zambia). Following first stage sampling, cartographic materials and household listings of selected EAs were updated by the Zambia Statistics Agency. During the household listing, global positioning system (GPS) coordinates of all dwelling units were collected for use during the survey to help field staff identify and relocate selected households for data collection. The updated list of households served as the sampling frame for the selection of households in the second stage of sampling. During the second stage, a sample of households was randomly selected within each EA, or cluster, using an equal probability method, where the average number of households selected per cluster was 30 (Table 2.1). Urban areas were defined by the Zambia Statistics Agency, and 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 stratum-level sub-national units (i.e., rural-urban and 10 provinces) are determined by precision requirements for (1) viral load suppression (VLS) among HIV-positive persons ages 15-49 years at the rural-urban and province level with a 95% confidence interval (CI) +/- 10%; and (2) HIV incidence among persons ages 15-49 at the national level with a relative standard error (RSE) < 0.2. To reach the target sample size, the study planned to enroll 17,106 eligible adults aged 15-49 years and 3,579 eligible adults aged 50 years and older.

Table 2.1 Distribution of sampled enumeration areas and households by Province

Distribution of sampled enumeration areas and households by province, ZAMPHIA 2021

	Enumeration Areas			Households		
Province	Urban	Rural	Total	Urban	Rural	Total
Central	9	21	30	319	798	1,117
Copperbelt	37	5	42	1,038	177	1,215
Eastern	14	26	40	372	932	1,304
Luapula	8	33	41	193	912	1,105
Lusaka	36	4	40	1,054	105	1,159
Muchinga	9	48	57	280	1,473	1,753
Northern	8	31	39	196	886	1,082
North-Western	14	34	48	422	898	1,320
Southern	17	12	29	485	342	827
Western	5	32	37	226	1,137	1,363
Total	157	246	403	4,585	7,660	12,245

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 ZAMPHIA 2021, individuals aged 15 years and older were eligible to participate in the survey. The inclusion criteria included:

- Being a usual household member who slept in the household the night before the survey, or a visitor who slept in the household the night before the survey; and
- Self-reported age 15 years or older; and
- For those 18 years and older, able and willing to provide verbal informed consent in English, Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja, or Tonga;
- For minors aged 15-17 years, able and willing to provide verbal assent and parent/guardian able and willing to provide verbal informed consent/permission in English, Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja or Tonga;
- For emancipated minors, i.e., those aged 15-17 years who were married or living in independent households without parents or guardians, able and willing to provide verbal informed consent in English, Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja or Tonga.

A survey interviewer administered the informed consent process using electronic consent forms (see Appendix G) on survey tablets 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 individual 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 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 refusal and their interview was concluded. The interviewer also asked participants for verbal consent to store their blood samples in a repository to perform additional tests in the future and noted this consent electronically. After the return of HIV rapid test results during the biomarker component of the survey, the interviewer asked all participants who tested HIV positive to provide consent for their viral load and CD4 test results returned with the participant's temporary ID, his or her name and age to a health facility of their choice. If the participant did not agree to the return of results with their name and age to the health facility, the auto-generated temporary identification number was provided to the participant on the referral form and it was explained to the participant that they would need their temporary identifier for their results to be given back to them. The interviewer also asked for their consent to share their contact information with a trained healthcare worker or counselor to facilitate active linkage to HIV care at their chosen health facility.

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 15-17 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.

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 were otherwise able to give verbal consent were offered survey participation.

All PHIA survey protocols, consent forms, screening forms, refusal forms, referral forms, recruitment materials and questionnaires were reviewed and approved by in-country ethics and regulatory bodies, including local institutional reviews boards when available, and the institutional review boards of the University of Zambia, the National Health Research Authority, the U.S. 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
- 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 trainings: 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, HIV confirmatory testing, and HIV recency testing using the limiting antigen (LAg) avidity enzyme immunoassay (see below). In addition, laboratory staff received trainings on COVID-19 risk mitigation within the laboratory setting.

COVID-19 mitigation

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 trainings for survey and laboratory staff, community sensitization materials (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.

Refresher trainings were conducted which emphasized COVID-19 mitigation strategies trainings for survey and laboratory staff. All staff were tested before gathering for trainings and prior to deployment to the field. Additionally, all staff were required to submit a symptom screen through a mobile application at the beginning of each day for the duration of the training. Staff testing positive attended the training virtually while in isolation.

Survey staff were required to reduce their own coronavirus COVID-19 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-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 that were close contacts of COVID-19 cases, and providing virtual refresher training for those in isolation or quarantine. The Government of Zambia considered ZAMPHIA survey staff to be healthcare workers; enabling the provision of COVID-19 vaccination. 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 April 2021 and was completed in December of 2021. There was a brief pause of data collection in August and September during the Zambian Presidential election of 2021. Fieldwork was conducted by 36 locally-hired field teams with 9 members each, composed of a team leader, 2 male and 2 female interviewers who were certified HIV counselors, and 2 field laboratory technicians who performed interviews, phlebotomy, and 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. The survey was implemented in English, Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja, and Tonga. Overall, over 400 field staff comprised of 5 regional field coordinators, 26 field team leads, 11 mapping and listing facilitators, 42 field implementation monitors, 28 community mobilization facilitators, 168 counselors and interviewers, and 120 drivers participated in data collection. The field teams were supervised by 26 team leaders, and the five regional coordinators, 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, field laboratory officers, supervisors, satellite laboratory managers, satellite/mobile lab technicians, and satellite lab logisticians). Overall, 5 laboratory monitors, 74 field

laboratory technologists, 44 satellite laboratory technicians, 4 satellite laboratory supervisors, and 7 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

To maximize community support and participation in the survey, the survey also employed community mobilization teams to mobilize communities before data collection. A community mobilization coordinator (CMC) formed each community mobilization team to work in an EA with members drawn from the EA or surrounding ones. The mobilization began before fieldwork commenced with a high-level national launch meeting that included key national and regional leaders, mass media, and other stakeholders. Community mobilization teams visited each EA before initiation of data collection and partnered with community mobilizers to meet key gatekeepers in the communities (chiefs, local government officials,
and religious and community leaders). 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.

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. Electronic 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 ZAMPHIA 2021 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 PHIA server daily and reports were available to the survey team and PI institutions weekly. 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 (RRs), 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. Women were interviewed by female staff, and men by male staff, whenever possible. The questionnaire was administered in English, Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja, and Tonga. Versions of the questionnaires in each language 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: approximately 14 mL of venous blood or 1 mL of capillary blood using finger-stick from individuals who either refused to give venous blood or for whom venous blood
draw failed.

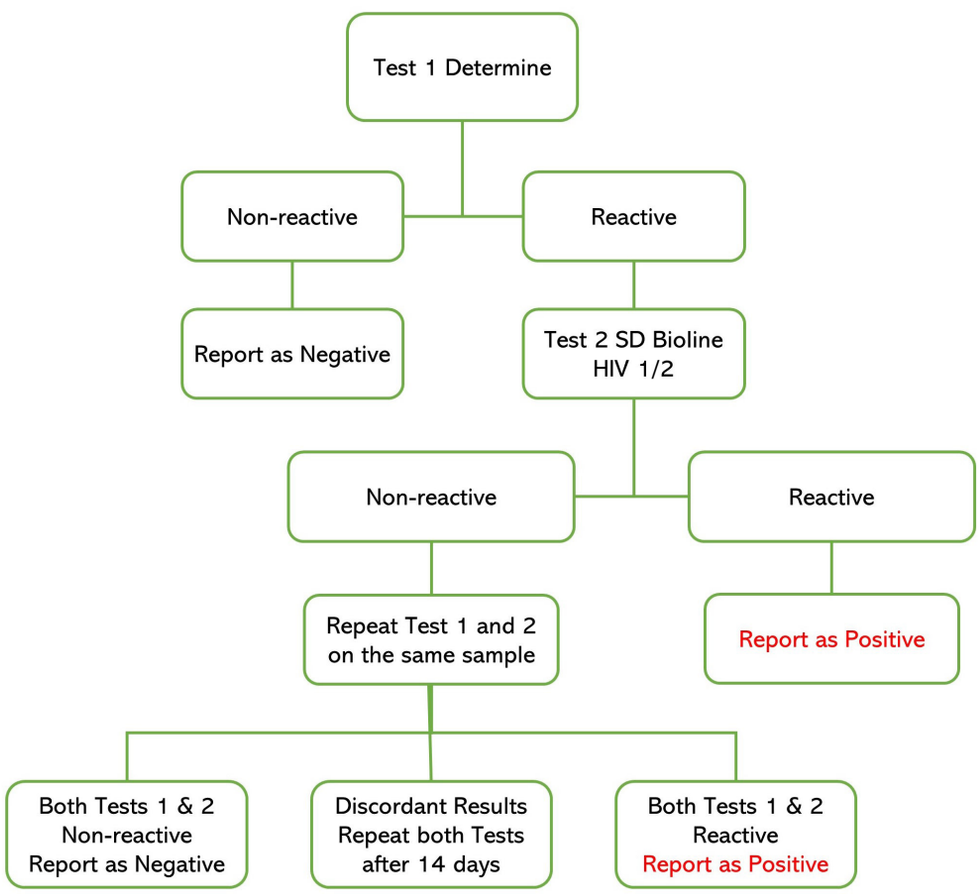
Blood samples were labeled with a unique barcoded participant identification number and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for processing into plasma aliquots and dried blood spots (DBS) and were frozen within 24 hours 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 (Figure 2.1). As per these guidelines, the survey used a sequential rapid-testing algorithm in the field.

The Zambia HIV rapid testing algorithm applies two tests in sequence: A screening test by DetermineTM and a confirmatory test with SD BiolineTM. Individuals with a non-reactive result on the screening test were reported as HIV-negative. Individuals with a reactive first test result underwent subsequent testing with SD BiolineTM. Those with a reactive result on both tests were classified as HIV-positive for the purposes of the survey and were referred to a health facility for enrollment into care. Individuals with a reactive first test result followed by a non-reactive second test result had both tests repeated on the same sample. Those with discordant results on the repeat tests were classified as inconclusive and were referred to the nearest facility for retesting in two weeks as per national guidelines (Zambia Consolidated Guidelines for Treatment and Prevention of HIV Infection 2018).

Figure 2.1: Household-based HIV testing algorithm, ZAMPHIA 2021



Participants who tested HIV positive who reported not being on ART 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 so the participant could be given a referral form and offered a physical escort to the facility of their choice accompanied by a linkage assistant. Participants with a phone were enrolled in an SMS notification for ATLC and facility focal point persons also received an SMS on the participants to be actively followed up. 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.

For the purposes of the survey, samples with inconclusive results from the national algorithm will received further testing and evaluation to allow for final classification of HIV status using the Geenius™ HIV 1/2 confirmatory test or equivalent.

For participants who self-reported being HIV-positive but tested HIV-negative in the household at the time of the survey, an additional HIV RT test was conducted at the satellite lab (following the same national algorithm) to resolve any discrepancies. Additional tests such as HIV total nucleic acid (TNA) polymerase chain reaction (PCR) were conducted for confirmation of HIV status. Survey staff were trained on how to interpret the initial discrepant RT results for these participants and provide counseling as appropriate. Survey staff returned to the household for these participants, to provide counseling on the final confirmed result after consultation with the Ministry of Health. The survey team visiting these participants were trained to interpret the final results and to provide counseling accordingly.

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

Twenty-five satellite laboratories for the survey were established. One central reference laboratory at University Teaching Hospital in Lusaka was chosen for more specialized tests. At each satellite laboratory,

trained technicians performed HIV confirmatory 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.

Central laboratory procedures included HIV viral load testing, HIV TNA PCR for confirmation of status of those who self-reported an HIV-positive status but tested negative in HBTC, HIV recency testing, HIV drug resistance (HIVDR) testing and long-term storage of samples at -80°C.

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® 4800/9600 platforms. For testing performed using the Roche CAP/CTM or 4800 instruments, plasma was tested using the HIV-1 Test (version 2.0 for CAP/CTM) and DBS were tested using the Free Virus Elution (FVE) assay on the same test, the HIV-1 Test (version 2.0 for CAP/CTM) but using a separate test definition file (TDF) from the TDF used for plasma, which is optimized by Roche for DBS on the instrument. Specimen preparation was automated using COBAS AmpliPrep with amplification and detection using TaqMan.

Return of CD4 and Viral Load Results

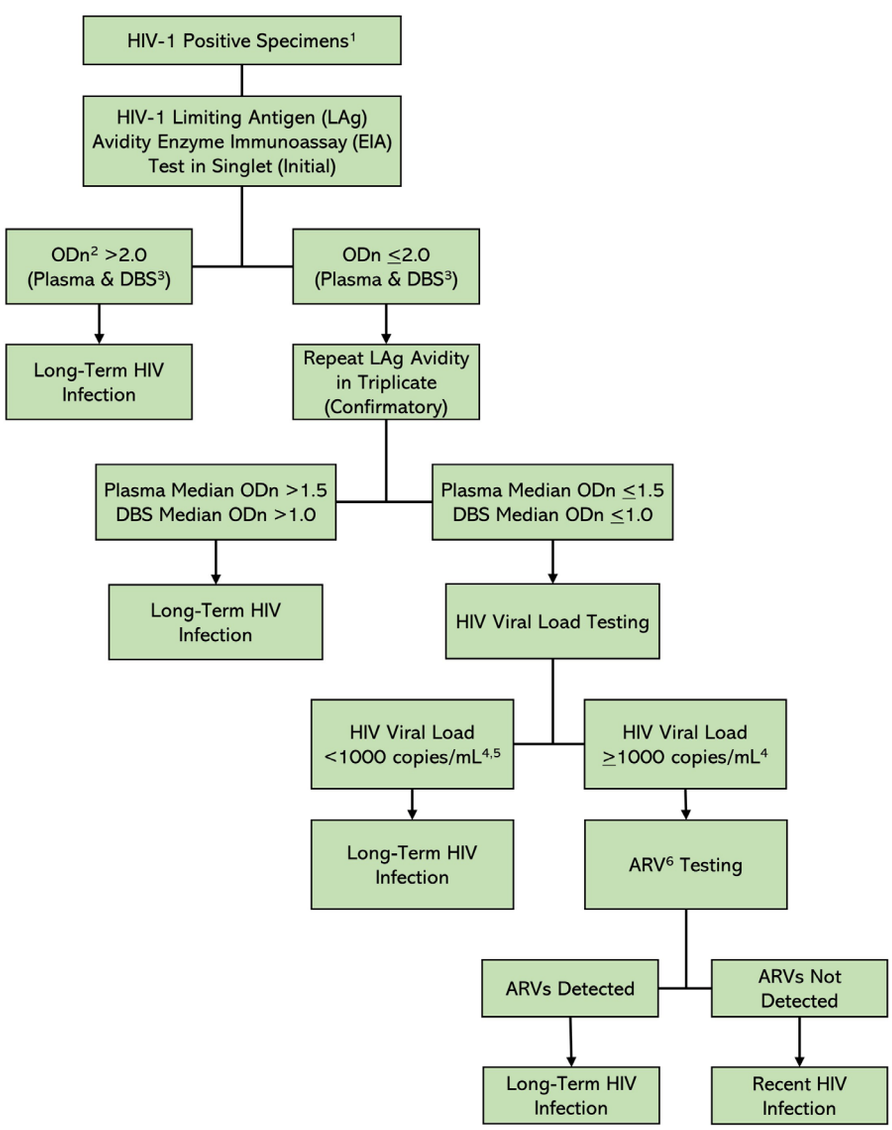
The return of results coordinator delivered CD4 and viral load results within 8 to 12 weeks to the health facility chosen by each HIV-positive participant. HIV-positive participants were provided with a referral form during HBTC for subsequent retrieval of their results. For participants with a phone, the participant received an automated SMS notification when the results were ready. Participants who did not respond to the SMS notification were called by survey staff to inform them their test results were available at the health facility. For participants that did not have a phone, they were told to present the referral form at the health facility of their choice in the 13th week on a given date following testing.

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), ZAMPHIA 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 released separately.

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 developed and validated at the International Laboratory Branch, CDC (Atlanta, Georgia, United States). This qualitative assay was highly specific, as it separates the parent compound from the fragments, and highly sensitive, with a qualitative cut-off concentration of 20 ng/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, nevirapine, lopinavir, atazanavir and dolutegravir were selected as markers for the most prescribed first- and second-line regimens in Zambia. 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 cut-off concentration 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 International Laboratory Branch, CDC Atlanta, Georgia, United States.

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 = 0.00.2

In this report, denominators for a characteristic in a table may differ from the overall table totals due to nonresponse, missing data, and conditional responses. Also, 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 package will provide instructions to calculate the CIs, once it is available on the https://nada.zamstats.gov.zm.

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 2021 release of the indicators, available at: https://www.aidsdatahub.org/sites/default/files/resource/unaids-2020-gam-guidelines-2019.pdf and the 2021 Monitoring, Evaluation, and Reporting (MER) indicators are available at: https://www.state.gov/wp-content/uploads/2021/01/FY21-MER-2.5-Indicator-Reference-Guide.pdf.

2.7 RESPONSE RATES

Household RRs were calculated using the American Association for Public Opinion Research Response Rate method3 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 and adjusted unless otherwise specified.

Of the 12,245 selected households, 11,553 and 10,627 were occupied and interviewed, respectively. The overall household RR (unweighted) was 91.8%. After adjusting for differential sampling probabilities and nonresponse, the overall weighted household RR was 92.0% (Table 2.2).

A total of 25,483 individuals (11,612 men and 13,871 women) were eligible to participate in the survey. A total of 22,262 adults participated in the individual interview: interview RRs were 83.4% among men and 90.7% among women. Among those interviewed, 84.9% of men and 84.1% of women also had their blood drawn (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, ZAMPHIA 2021

	Residence		Total
Result	Urban	Rural	
Household interviews			
Households selected	4,585	7,660	12,245
Households occupied	4,383	7,170	11,553
Households interviewed	4,084	6,543	10,627
Household response rate[1] (unweighted)	92.8	91.1	91.8
Household response rate[1] (weighted)	92.8	91.5	92.0

[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 interviews1 and blood draws2 (unweighted and weighted) by residence and sex, ZAMPHIA 2021

	Residence				Total by Sex		Total
	Urban		Rural				
Result	Men	Women	Men	Women	Men	Women	
Eligible individuals, aged 15-24 years					4,116	4,776	
Number of eligible individuals	1,612	1,924	2,504	2,852	78.7	86.2	8,892
Interview response rate (unweighted)	78.3	85.9	79.0	86.4	76.7	84.6	82.7
Interview response rate (weighted)	76.5	84.9	76.7	84.4	84.9	85.3	80.9
Blood draw response rate (unweighted)	87.2	87.5	83.3	83.8	82.8	84.1	85.1
Blood draw response rate (weighted)	85.9	86.2	80.6	82.5			83.5
Eligible individuals, aged 15-49 years					9,654	11,586	
Number of eligible individuals	3,881	4,807	5,773	6,779	82.0	90.1	21,240
Interview response rate (unweighted)	77.4	89.0	85.2	91.0	79.8	88.9	86.5
Interview response rate (weighted)	75.5	88.0	82.8	89.6	84.3	84.3	84.7
Blood draw response rate (unweighted)	85.4	85.4	83.7	83.5	82.4	83.0	84.3
Blood draw response rate (weighted)	83.3	83.7	81.7	82.4			82.7
Eligible individuals, ages 15+ years					11,612	13,871	
Number of eligible individuals	4,520	5,610	7,092	8,261	9,683	12,579	25,483
Number of interviewed individuals	3,544	5,013	6,139	7,566	8,220	10,584	22,262
Number of individuals with blood draw	3,039	4,267	5,181	6,317	83.4	90.7	18,804
Interview response rate (unweighted)	78.4	89.4	86.6	91.6	81.4	89.5	87.4
Interview response rate (weighted)	76.6	88.4	84.6	90.3	84.9	84.1	85.7
Blood draw response rate (unweighted)	85.8	85.1	84.4	83.5	82.9	83.2	84.5
Blood draw response rate (weighted)	83.7	83.9	82.4	82.6	65.0	70.0	83.1
Overall response rate (unweighted)[4]	61.7	69.8	67.1	70.2			67.7

[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

1. Zambia Statistics Agency. Central Statistical Office. 2010 Census of Population and Housing: National Analytical Report. Lusaka, Zambia, 2012. https://www.zamstats.gov.zm/download/5648/?tmstv=1676303508&v=5660. Accessed February 12, 2023.

2. World Health Organization. WHO Working Group On HIV Incidence Measurement And Data Use. Geneva: WHO; 2018. https://www.who.int/diagnostics_laboratory/links/180622_boston_meeting_report.pdf?ua=1. Accessed October 10, 2021.

3. American Association for Public Opinion Research (AAPOR). Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 9th edition. AAPOR; 2016. http://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf. Accessed July 20, 2021.

3. SURVEY HOUSEHOLD CHARACTERISTICS

3.1 BACKGROUND

This chapter presents characteristics of households surveyed in ZAMPHIA 2021. 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., persons who slept in the household the night before the household questionnaire) is described by sex as well as urban/rural residence. This chapter also describes the prevalence and composition of households impacted by HIV, described as households with one or more HIV-positive members.

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) size of household and median (Q1, Q3) number of children under 18 years of age, by residence, ZAMPHIA 2021

	Residence					
	Urban		Rural		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Head of household						
Male	52.3	2,202	64.5	4,164	59.6	6,366
Female	47.7	1,882	35.5	2,379	40.4	4,261
Total	100.0	4,084	100.0	6,543	100.0	10,627

	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	4	(2, 5)	4	(3, 6)	4	(2, 6)
	1	(0, 3)	2	(0, 3)	2	(0, 3)

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, ZAMPHIA 2021

	Men		Women		Total	
Age	Percent	Number	Percent	Number	Percent	Number
0-4	7.1	3,382	7.0	3,340	14.1	6,722
5-9	7.4	3,615	7.6	3,630	15.1	7,245
10-14	7.7	3,669	7.7	3,662	15.4	7,331
15-19	5.2	2,392	5.4	2,531	10.6	4,923
20-24	3.9	1,724	4.9	2,245	8.7	3,969
25-29	3.3	1,506	4.2	1,969	7.6	3,475
30-34	2.7	1,187	3.2	1,451	5.8	2,638
35-39	2.4	1,110	3.0	1,417	5.4	2,527
40-44	2.0	914	2.4	1,075	4.4	1,989
45-49	1.8	821	1.9	898	3.7	1,719
50-54	1.3	581	1.4	616	2.7	1,197
55-59	0.9	425	1.2	541	2.2	966
60-64	0.7	335	0.8	395	1.5	730
65-69	0.5	222	0.5	256	1.0	478
70-74	0.4	171	0.4	201	0.8	372
75-79	0.2	96	0.3	153	0.5	249
80+	0.3	128	0.2	123	0.5	251
Total	47.8	22,278	52.2	24,503	100.0	46,781

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

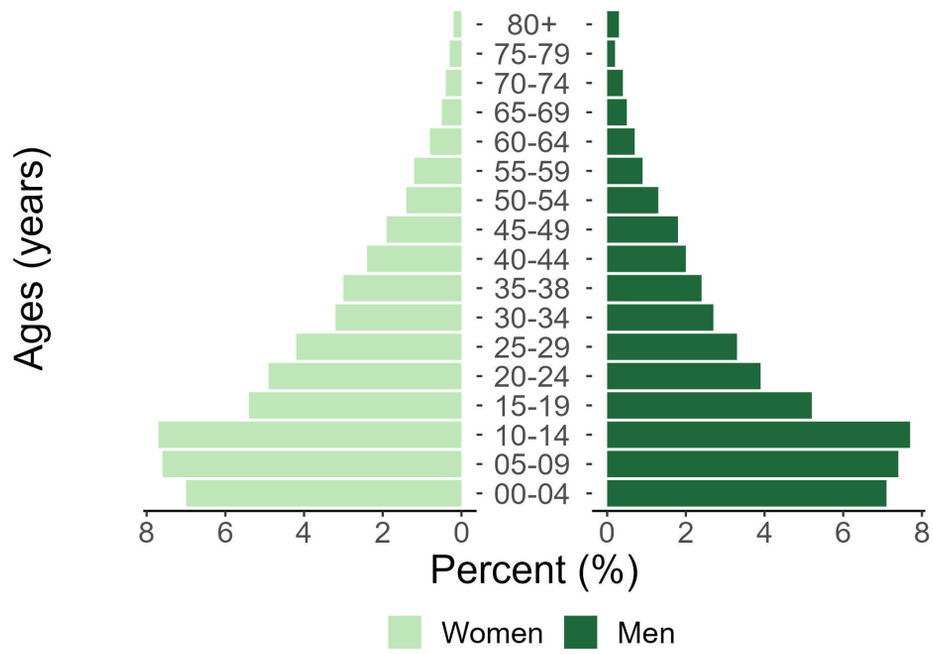


Table 3.3: Household population by age, sex, and residence

Percent distribution of the household population by age, sex, and residence, ZAMPHIA 2021

	Urban					
	Men		Women		Total	
Age	Percent	Number	Percent	Number	Percent	Number
0-4	13.9	1,088	11.3	1,051	12.5	2,139
5-14	28.3	2,287	26.3	2,407	27.2	4,694
15-49	49.3	3,881	53.6	4,807	51.6	8,688
50-64	8.5	639	8.8	803	8.7	1,442
Total	100.0	7,895	100.0	9,068	100.0	16,963

	Rural					
	Men		Women		Total	
Age	Percent	Number	Percent	Number	Percent	Number
0-4	15.4	2,294	14.7	2,289	15.0	4,583
5-14	33.6	4,997	31.3	4,885	32.4	9,882
15-49	41.7	5,773	44.2	6,779	43.0	12,552
50-64	9.3	1,319	9.8	1,482	9.6	2,801
Total	100.0	14,383	100.0	15,435	100.0	29,818

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

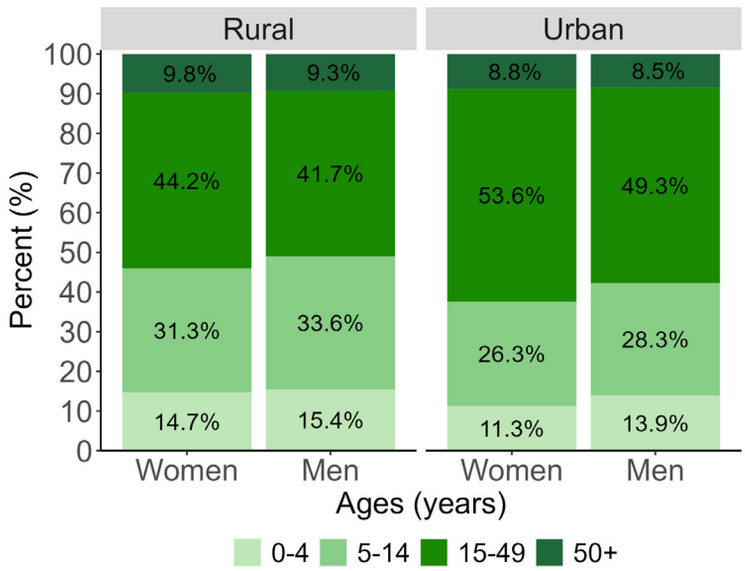


Table 3.4: Prevalence of HIV-affected households

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

Residence	Percent	Number
Urban	26.3	3,519
Rural	17.1	5,513
Total	20.9	9,032

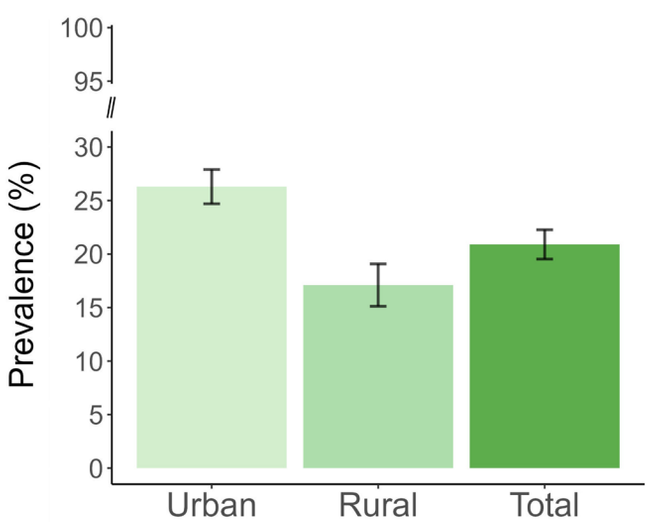


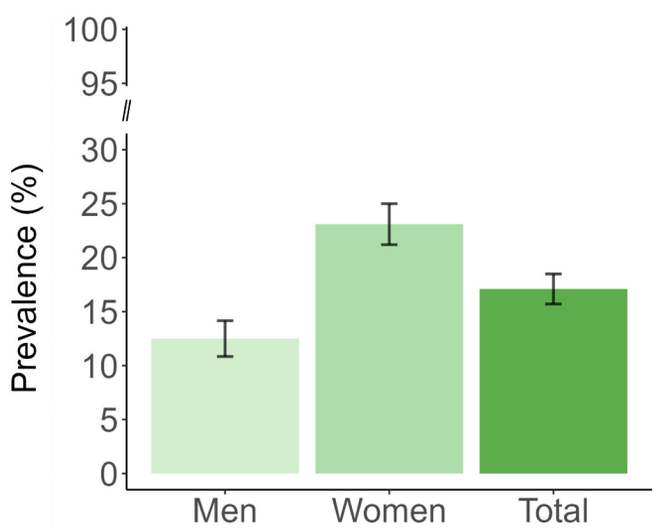
Figure 3.4: Prevalence of HIV-affected households by residence, ZAMPHIA 2021

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, ZAMPHIA 2021

Sex of head of household	Percent	Number
Male	12.5	4,373
Female	23.1	3,309
Total	17.1	7,682

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



4. SURVEY RESPONDENT CHARACTERISTICS

4.1 BACKGROUND

ZAMPHIA 2021 assessed key indicators and outcomes for adults (defined as those aged 15 years and older). To provide context for these outcomes, this chapter summarizes the basic demographic and socioeconomic characteristics of survey respondents. Most key indicators in this report are stratified according to these characteristics.

4.2 RESULTS

Table 4.1 presents the demographic characteristics of ZAMPHIA 2021 respondents.

Table 4.1: Demographic characteristics of the adult population

Percent distribution of the population aged 15 years and older by sex and selected demographic characteristics, ZAMPHIA 2021

	Men		Women		Total	
Residence	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Urban	40.3	3,544	43.4	5,013	41.9	8,557
Rural	59.7	6,139	56.6	7,566	58.1	13,705
Province						
Central	12.4	1,008	10.9	1,160	11.7	2,168
Copperbelt	17.7	1,106	18.3	1,470	18.0	2,576
Eastern	12.0	978	11.3	1,213	11.6	2,191
Luapula	8.0	902	8.3	1,185	8.2	2,087
Lusaka	16.9	748	16.9	1,139	16.9	1,887
Muchinga	5.1	1,236	5.0	1,567	5.0	2,803
Northern	6.0	885	6.6	1,170	6.3	2,055
North-Western	5.3	1,081	5.5	1,310	5.4	2,391
Southern	8.9	586	8.9	794	8.9	1,380
Western	7.7	1,153	8.3	1,571	8.0	2,724
Marital status						
Never married	42.3	3,571	30.0	3,426	36.0	6,997
Married or living together	52.2	5,577	52.6	6,873	52.4	12,450
Divorced or separated	4.6	408	10.0	1,237	7.4	1,645
Widowed	0.9	109	7.3	1,023	4.2	1,132
Education						
No education	5.4	585	9.8	1,448	7.7	2,033
Primary	34.1	3,586	40.3	5,452	37.3	9,038
Secondary	50.8	4,699	43.6	5,006	47.1	9,705
More than secondary	9.7	804	6.3	662	7.9	1,466
Wealth quintile						
Lowest	17.2	2,362	19.1	3,301	18.1	5,663
Second	19.4	2,138	18.3	2,558	18.9	4,696
Middle	20.1	1,758	18.6	2,070	19.3	3,828
Fourth	21.0	1,690	21.0	2,229	21.0	3,919
Highest	22.3	1,735	23.0	2,421	22.6	4,156

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

Percent distribution of the population aged 15 years and older by sex and selected demographic characteristics, ZAMPHIA 2021

	Men		Women		Total	
Age	Percent	Number	Percent	Number	Percent	Number
15-19	20.1	1,789	19.1	2,046	19.6	3,835
20-24	17.4	1,452	16.9	2,071	17.1	3,523
25-29	14.7	1,257	14.6	1,829	14.6	3,086
30-34	10.6	1,002	11.7	1,367	11.2	2,369
35-39	8.9	929	9.9	1,307	9.4	2,236
40-44	7.5	778	7.4	982	7.5	1,760
45-49	6.3	714	5.8	842	6.0	1,556
50-54	4.4	518	4.0	576	4.2	1,094
55-59	3.2	372	3.2	510	3.2	882
60-64	2.3	299	2.5	375	2.4	674
65+	4.5	573	5.0	674	4.8	1,247
Total 15-24	37.5	3,241	36.0	4,117	36.7	7,358
Total 15-49	85.5	7,921	85.3	10,444	85.4	18,365
Total 50+	14.5	1,762	14.7	2,135	14.6	3,897
Total 15+	100.0	9,683	100.0	12,579	100.0	22,262

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

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 that are most vulnerable to recent infection and to measure the impact of HIV prevention programs. This chapter presents annual estimates of HIV incidence among adults (ages 15 years and older) 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 ZAMPHIA 2021 was not powered to estimate incidence at the regional 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. Survey weights are utilized for all estimates. All HIV-positive participants with viral loads ≥ 1,000 copies/mL 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.[1,2,3] 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.[4]

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 testing 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 years and older, by sex and age, using the recent infection testing algorithm (limiting antigen plus viral load plus antiretroviral biomarker testing), ZAMPHIA 2021

	Men		Women		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 - 0.15)	0.8	(0.08 - 1.45)	0.4	(0.05 - 0.75)
25-34	**0.0**	(0.00 - 0.21)	0.8	(0.15 - 1.40)	0.4	(0.08 - 0.73)
35-49	**0.1**	(0.00 - 0.33)	0.2	(0.00 - 0.48)	0.1	(0.00 - 0.32)
50+	**0.1**	(0.00 - 0.50)	0.1	(0.00 - 0.43)	0.1	(0.00 - 0.40)
15-49	**0.1**	(0.00 - 0.15)	0.6	(0.24 - 1.02)	0.3	(0.14 - 0.53)
15+	**0.1**	(0.00 - 0.16)	0.6	(0.22 - 0.90)	0.3	(0.14 - 0.48)

[1]1Relates to Global AIDS Monitoring 2020 indicator 3.1: HIV incidence.

Table 5.2: Adults living with HIV and number of new HIV infections per year using the recent infection testing algorithm

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

Age	People living with HIV[2]	95% CI	Number of new infections per year	95% CI
15-24	**105,000**	(82,000 - 127,000)	14,000	(1,000 - 27,000)
25-34	**265,000**	(234,000 - 297,000)	9,000	(2,000 - 17,000)
35-49	**476,000**	(429,000 - 523,000)	2,000	(0 - 6,000)
50+	**262,000**	(211,000 - 314,000)	2,000	(0 - 5,000)
15-49	**846,000**	(777,000 - 915,000)	26,000	(11,000 - 41,000)
15+	**1,108,000**	(1,031,000 - 1,186,000)	28,000	(12,000 - 43,000)

[1]People living with HIV 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 adults aged 15 years and older at the national and province level by selected demographic and behavioral characteristics. It also presents estimates of the number of people living with HIV in Zambia. HIV testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Zambia's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. Appendix B describes the PHIA 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, ZAMPHIA 2021

	Men		Women		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	7.4	2,567	16.5	3,652	12.2	6,219
Rural	5.5	4,113	10.5	5,152	8.0	9,265
Province						
Central	7.7	680	13.0	787	10.2	1,467
Copperbelt	4.7	779	14.6	1,059	9.9	1,838
Eastern	5.3	636	10.5	779	7.9	1,415
Luapula	4.8	701	11.1	927	8.1	1,628
Lusaka	8.4	505	17.5	784	13.1	1,289
Muchinga	4.5	731	8.3	957	6.4	1,688
Northern	4.3	643	5.9	897	5.2	1,540
North-Western	4.1	776	8.1	941	6.1	1,717
Southern	8.4	380	14.5	505	11.4	885
Western	8.1	849	18.2	1,168	13.4	2,017
Marital status						
Never married	2.1	2,998	6.3	2,832	3.9	5,830
Married or living together	9.5	3,372	13.0	4,828	11.4	8,200
Divorced or separated	17.2	274	27.0	872	24.1	1,146
Widowed	*	20	50.4	257	50.9	277
Education						
No education	6.8	353	13.7	723	10.9	1,076
Primary	7.0	2,271	13.8	3,580	10.8	5,851
Secondary	5.9	3,529	12.7	4,028	9.2	7,557
More than secondary	6.1	524	13.6	470	9.2	994

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, ZAMPHIA 2021

	Men		Women		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Wealth quintile						
Lowest	4.9	1,611	8.8	2,259	7.0	3,870
Second	6.1	1,423	10.4	1,738	8.3	3,161
Middle	6.1	1,202	15.6	1,403	10.6	2,605
Fourth	9.0	1,242	17.3	1,676	13.3	2,918
Highest	5.2	1,202	13.4	1,728	9.5	2,930
Pregnancy status						
Currently pregnant	NA	NA	9.7	669	NA	NA
Not currently pregnant	NA	NA	13.6	8,078	NA	NA
Total 15-49	6.3	6,680	13.2	8,804	9.9	15,484

*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: HIV prevalence by demographic characteristics: Adults aged 15 years and older

Prevalence of HIV among adults aged 15 years and older, by sex and selected demographic characteristics, ZAMPHIA 2021

	Men		Women		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	9.3	3,039	17.3	4,267	13.5	7,306
Rural	7.1	5,181	11.3	6,317	9.2	11,498
Province						
Central	9.4	854	14.1	970	11.7	1,824
Copperbelt	7.5	963	16.0	1,289	11.9	2,252
Eastern	6.9	795	11.5	944	9.2	1,739
Luapula	5.3	860	10.9	1,117	8.2	1,977
Lusaka	10.1	589	18.6	897	14.4	1,486
Muchinga	5.2	894	7.9	1,125	6.6	2,019
Northern	5.3	828	6.3	1,090	5.8	1,918
North-Western	5.3	932	8.2	1,112	6.8	2,044
Southern	10.8	455	15.5	608	13.2	1,063
Western	8.8	1,050	17.9	1,432	13.6	2,482
Marital status						
Never married	2.2	3,057	6.9	2,984	4.1	6,041
Married or living together	11.5	4,691	12.9	5,653	12.2	10,344
Divorced or separated	19.3	359	27.1	1,082	24.8	1,441
Widowed	23.7	97	31.1	850	30.3	947
Education						
No education	8.6	499	12.5	1,149	11.1	1,648
Primary	8.8	3,009	14.5	4,586	11.9	7,595
Secondary	7.3	4,065	13.5	4,311	10.2	8,376
More than secondary	8.1	639	16.3	530	11.5	1,169
Wealth quintile						
Lowest	5.5	1,992	9.5	2,748	7.6	4,740
Second	7.5	1,812	11.2	2,148	9.4	3,960
Middle	7.7	1,521	15.9	1,757	11.7	3,278
Fourth	11.7	1,468	17.9	1,930	14.9	3,398
Highest	6.9	1,427	14.6	2,001	10.9	3,428
Pregnancy status						
Currently pregnant	NA	NA	9.6	671	NA	NA
Not currently pregnant	NA	NA	14.3	9,854	NA	NA
Total 15+	8.0	8,220	13.9	10,584	11.0	18,804

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 years and older by province, ZAMPHIA 2021 (map)

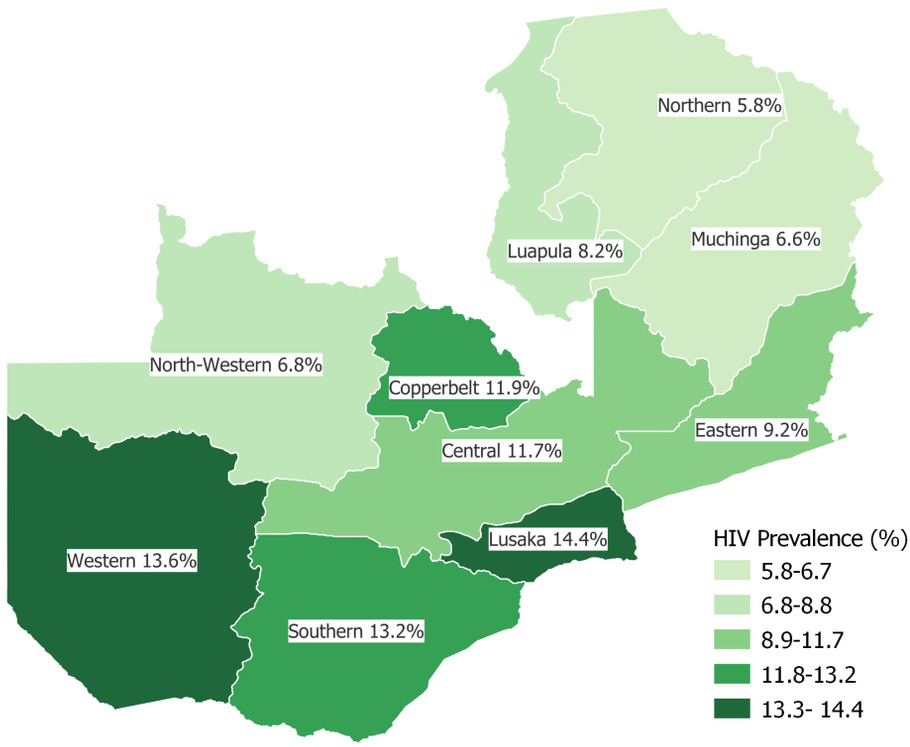


Figure 6.2.2: HIV prevalence among adults aged 15 years and older by province, ZAMPHIA 2021 (bar graph)

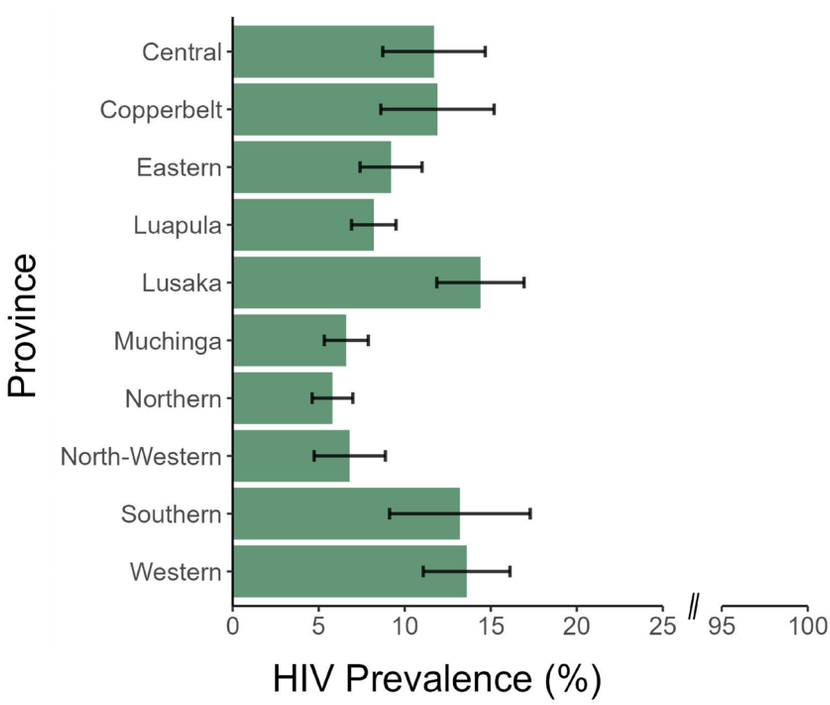
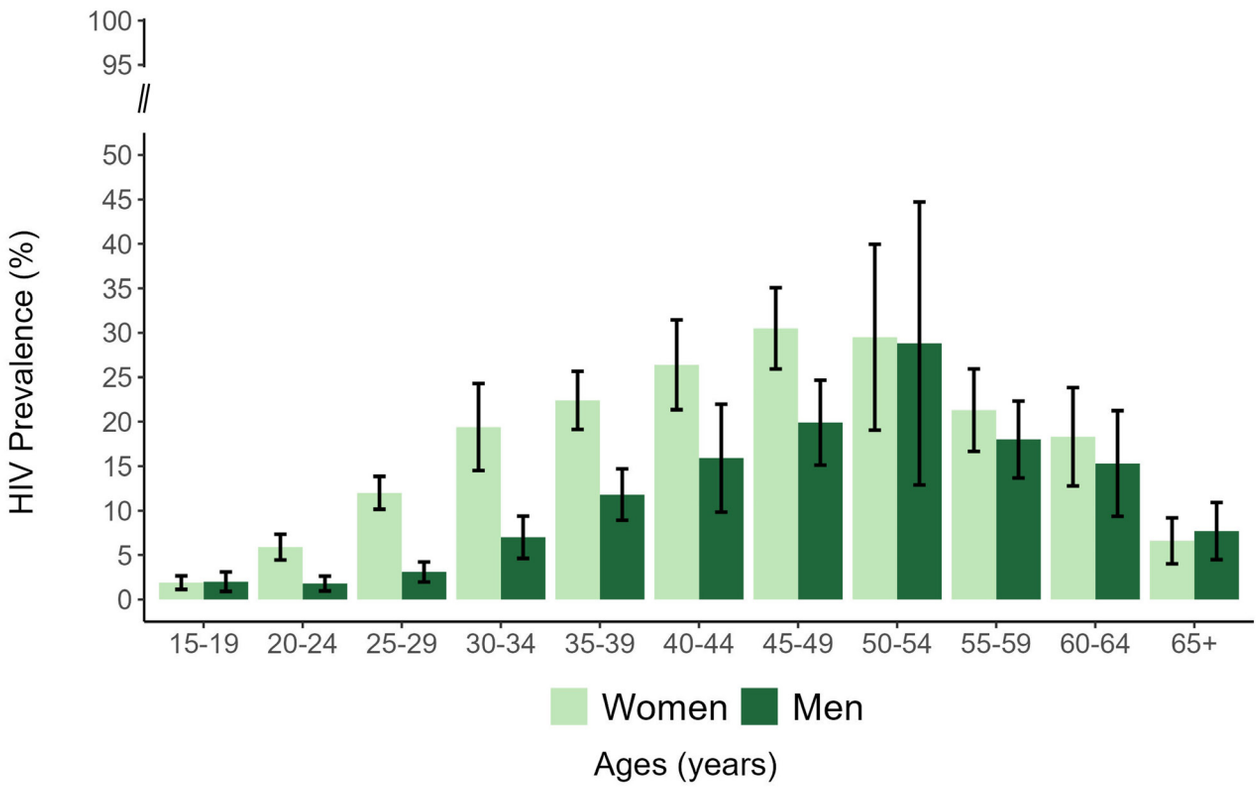


Table 6.3: HIV prevalence by age

Prevalence of HIV among adults aged 15 years and older, by sex and age, ZAMPHIA 2021

	Men		Women		Total	
Age	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
15-19	2.0	1,527	1.9	1,764	1.9	3,291
20-24	1.8	1,223	5.9	1,748	3.9	2,971
25-29	3.1	1,062	12.0	1,520	7.7	2,582
30-34	7.0	815	19.4	1,143	13.6	1,958
35-39	11.8	774	22.4	1,105	17.4	1,879
40-44	15.9	658	26.4	813	21.2	1,471
45-49	19.9	621	30.5	711	25.1	1,332
50-54	28.8	458	29.5	493	29.1	951
55-59	18.0	333	21.3	445	19.7	778
60-64	15.3	257	18.3	324	16.9	581
65+	7.7	492	6.6	518	7.1	1,010
Total 15-24	1.9	2,750	3.8	3,512	2.8	6,262
Total 15-49	6.3	6,680	13.2	8,804	9.9	15,484
Total 50+	17.7	1,540	18.0	1,780	17.9	3,320
Total 15+	8.0	8,220	13.9	10,584	11.0	18,804

Figure 6.3: HIV prevalence by age and sex, ZAMPHIA 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. 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. While many countries have expanded uptake of HIV testing services, making certain that everyone knows their current HIV status remains a challenge. ZAMPHIA 2021collected 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 service options such as self-testing, mobile testing, partner notification/testing, and index case testing.

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 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. 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 men, women, and adults aged 15 years and older 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 positive in ZAMPHIA 2021 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, ZAMPHIA 2021 determined whether they were taking ART, by screening their blood for the presence of selected ARVs (efavirenz, nevirapine, lopinavir, 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: Men

Percentage of men aged 15 years and older who reported they had ever received an HIV test, and percentage who reported they had received an HIV test in the 12 months before the survey, by result of ZAMPHIA HIV test and selected demographic characteristics, ZAMPHIA 2021

Characteristic	Among all men			Among men 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	94.9	28.8	661	70.5	34.2	121
HIV negative	70.2	36.0	7,246	70.1	36.0	7,233
Not tested	81.8	57.7	1,419	81.2	58.4	1,374
Residence						
Urban	78.1	42.0	3,398	76.2	42.9	3,104
Rural	71.1	37.5	5,928	69.4	38.1	5,624
Province						
Central	74.6	38.0	966	72.7	39.1	889
Copperbelt	72.0	36.8	1,065	70.2	36.3	990
Eastern	75.8	43.7	937	74.1	45.5	858
Luapula	67.7	27.9	877	66.3	27.6	837
Lusaka	79.0	50.3	709	77.1	51.5	646
Muchinga	68.4	34.7	1,189	67.4	35.0	1,146
Northern	67.6	27.1	853	66.2	27.0	818
North-Western	65.8	28.1	1,049	64.7	28.3	1,010
Southern	82.0	49.3	563	80.3	52.6	503
Western	74.3	37.2	1,118	72.1	38.3	1,031
Marital status						
Never married	57.5	29.7	3,466	56.9	29.7	3,420
Married or living together	86.5	46.8	5,366	85.1	48.8	4,899
Divorced or separated	84.1	44.6	378	80.3	46.7	307
Widowed	78.7	37.3	101	75.0	39.7	88
Education						
No education	67.7	31.7	547	65.4	33.4	512
Primary	67.9	34.9	3,439	65.5	35.0	3,216
Secondary	75.1	40.7	4,547	73.6	41.5	4,273
More than secondary	92.0	51.9	784	91.4	53.4	719

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

Percentage of men aged 15 years and older who reported they had ever received an HIV test, and percentage who reported they had received an HIV test in the 12 months before the survey, by result of ZAMPHIA HIV test and selected demographic characteristics, ZAMPHIA 2021

Characteristic	Among all men			Among men 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
Wealth quintile						
Lowest	69.1	34.0	2,279	67.8	34.5	2,190
Second	72.4	36.9	2,057	70.7	37.8	1,937
Middle	72.8	39.7	1,697	71.0	40.5	1,580
Fourth	75.4	41.6	1,614	72.7	42.4	1,463
Highest	78.4	43.1	1,679	77.2	43.7	1,558
Age						
15-19	39.8	17.3	1,739	39.4	17.3	1,724
20-24	74.3	43.5	1,399	74.0	43.7	1,387
25-29	84.9	52.3	1,225	84.7	52.8	1,206
30-34	88.6	53.0	968	87.8	54.3	918
35-39	87.3	46.1	895	85.9	46.9	814
40-44	89.6	44.3	748	87.8	45.8	643
45-49	87.2	38.8	680	84.8	42.5	574
50-54	85.3	40.5	491	80.2	42.9	393
55-59	82.7	37.1	355	79.5	41.1	303
60-64	79.5	36.2	289	76.2	38.5	258
65+	63.3	28.3	537	60.8	28.1	508
Total 15-24	55.7	29.4	3,138	55.3	29.4	3,111
Total 15-49	73.4	40.0	7,654	72.0	40.5	7,266
Total 50+	77.1	35.4	1,672	72.9	36.8	1,462
Total 15+	73.9	39.3	9,326	72.1	40.0	8,728

[1]Relates to PEPFAR indicator 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.B: Self-reported HIV testing: Women

Percentage of women aged 15 years and older 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 ZAMPHIA HIV test and selected demographic characteristics, ZAMPHIA 2021

Characteristic	Among all women			Among women 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 ZAMPHIA HIV Test						
HIV positive	98.5	25.0	1,439	90.9	49.1	212
HIV negative	82.8	49.9	8,556	82.8	49.9	8,545
Not tested	87.4	67.3	1,908	86.7	68.9	1,820
Residence						
Urban	87.5	52.5	4,760	85.4	56.9	3,999
Rural	84.0	48.1	7,143	82.4	51.0	6,578
District						
Central	86.4	54.2	1,103	84.6	58.7	954
Copperbelt	85.4	46.6	1,398	83.0	49.6	1,197
Eastern	85.6	51.9	1,125	84.2	54.7	983
Luapula	78.6	38.4	1,135	76.9	39.9	1,042
Lusaka	90.7	58.6	1,073	89.3	63.4	906
Muchinga	79.1	44.5	1,478	78.0	45.4	1,399
Northern	75.7	38.8	1,101	74.6	39.6	1,047
North-Western	77.8	38.1	1,255	76.6	38.4	1,176
Southern	94.9	61.1	748	94.1	69.9	617
Western	87.3	51.7	1,487	84.9	59.2	1,256
Marital status						
Never married	70.1	42.2	3,295	68.5	43.3	3,095
Married or living together	94.1	57.8	6,512	93.4	61.7	5,877
Divorced or separated	93.9	47.6	1,157	92.1	55.1	900
Widowed	76.3	28.7	920	68.0	32.6	687
Education						
No education	76.3	41.6	1,320	73.5	44.4	1,197
Primary	84.7	46.0	5,104	82.7	49.4	4,547
Secondary	86.4	54.0	4,828	84.8	57.4	4,267
More than secondary	97.9	59.1	641	97.6	64.8	556

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

Percentage of women aged 15 years and older 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 ZAMPHIA HIV test and selected demographic characteristics, ZAMPHIA 2021

Characteristic	Among all women			Among women 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
Wealth quintile						
Lowest	81.5	44.6	3,103	80.1	46.8	2,891
Second	83.7	47.6	2,419	82.1	50.6	2,206
Middle	86.3	51.2	1,966	84.5	55.5	1,725
Fourth	88.3	55.0	2,116	86.3	59.3	1,776
Highest	87.0	50.7	2,299	85.1	54.8	1,979
Age						
15-19	59.3	37.9	1,960	58.9	38.2	1,937
20-24	92.7	59.9	1,995	92.5	61.0	1,928
25-29	97.1	66.3	1,760	96.8	70.4	1,595
30-34	98.0	61.4	1,317	97.6	67.0	1,122
35-39	96.7	55.6	1,233	96.0	63.0	1,016
40-44	95.9	46.3	934	94.7	53.8	723
45-49	93.0	39.3	788	90.4	48.4	612
50-54	91.0	39.1	520	88.1	42.6	413
55-59	83.8	32.4	457	80.1	36.7	376
60-64	81.7	31.3	341	77.9	35.8	293
65+	47.6	19.2	598	44.4	19.6	562
Total 15-24	75.0	48.3	3,955	74.5	48.8	3,865
Total 15-49	87.5	53.3	9,987	86.0	56.8	8,933
Total 50+	73.2	29.6	1,916	68.2	31.6	1,644
Total 15+	85.5	50.0	11,903	83.7	53.5	10,577

[1] Relates to PEPFAR indicator 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 years and older 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 ZAMPHIA HIV test and selected demographic characteristics, ZAMPHIA 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 ZAMPHIA						
HIV positive	97.2	26.4	2,100	82.5	43.0	333
HIV negative	76.4	42.8	15,802	76.3	42.8	15,778
Not tested	84.6	62.6	3,327	83.9	63.7	3,194
Residence						
Urban	83.0	47.5	8,158	80.9	50.1	7,103
Rural	77.4	42.7	13,071	75.7	44.3	12,202
Province						
Central	80.3	45.8	2,069	78.3	48.2	1,843
Copperbelt	78.9	41.9	2,463	76.5	42.9	2,187
Eastern	80.6	47.7	2,062	79.0	49.9	1,841
Luapula	73.3	33.3	2,012	71.7	33.8	1,879
Lusaka	84.9	54.5	1,782	83.1	57.3	1,552
Muchinga	73.8	39.6	2,667	72.7	40.1	2,545
Northern	71.9	33.3	1,954	70.7	33.6	1,865
North-Western	72.0	33.3	2,304	70.8	33.5	2,186
Southern	88.6	55.3	1,311	87.1	61.2	1,120
Western	81.1	44.8	2,605	78.5	48.7	2,287
Marital status						
Never married	62.8	35.0	6,761	61.7	35.3	6,515
Married or living together	90.4	52.4	11,878	89.3	55.3	10,776
Divorced or separated	90.9	46.7	1,535	88.4	52.5	1,207
Widowed	76.5	29.6	1,021	68.8	33.4	775
Education						
No education	73.3	38.1	1,867	70.6	40.5	1,709
Primary	77.1	41.0	8,543	74.6	42.7	7,763
Secondary	80.5	47.0	9,375	78.7	48.8	8,540
More than secondary	94.4	54.8	1,425	93.8	57.8	1,275

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

Percentage of adults aged 15 years and older 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 ZAMPHIA HIV test and selected demographic characteristics, ZAMPHIA 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
Wealth quintile						
Lowest	75.7	39.6	5,382	74.2	40.9	5,081
Second	78.0	42.2	4,476	76.2	44.0	4,143
Middle	79.4	45.3	3,663	77.4	47.6	3,305
Fourth	82.0	48.4	3,730	79.4	50.8	3,239
Highest	82.8	47.0	3,978	81.1	49.2	3,537
Age						
15-19	49.4	27.5	3,699	49.1	27.6	3,661
20-24	83.6	51.8	3,394	83.2	52.3	3,315
25-29	91.1	59.4	2,985	90.6	61.4	2,801
30-34	93.6	57.5	2,285	92.9	60.8	2,040
35-39	92.3	51.1	2,128	91.0	55.0	1,830
40-44	92.8	45.3	1,682	91.1	49.6	1,366
45-49	90.0	39.1	1,468	87.3	45.2	1,186
50-54	87.9	39.8	1,011	83.9	42.8	806
55-59	83.2	34.8	812	79.8	39.0	679
60-64	80.6	33.6	630	77.0	37.1	551
65+	55.0	23.5	1,135	52.1	23.6	1,070
Total 15-24	65.3	38.8	7,093	64.8	39.0	6,976
Total 15-49	80.5	46.7	17,641	78.9	48.5	16,199
Total 50+	75.2	32.5	3,588	70.6	34.2	3,106
Total 15+	79.8	44.7	21,229	77.8	46.7	19,305

[1] Relates to PEPFAR indicator 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 reported having received an HIV test in the 12 months before the survey by age and sex, ZAMPHIA 2021

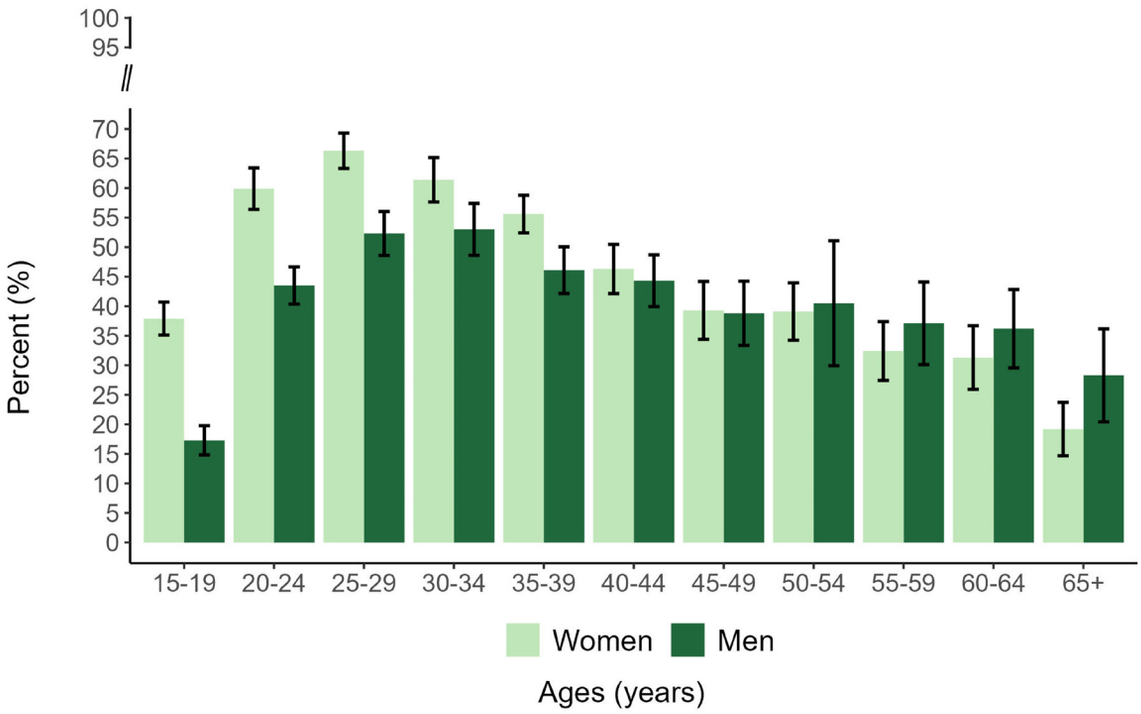


Figure 7.1.B: Proportion of adults who did not report having received an HIV test in the last 12 months by age and sex, ZAMPHIA 2021

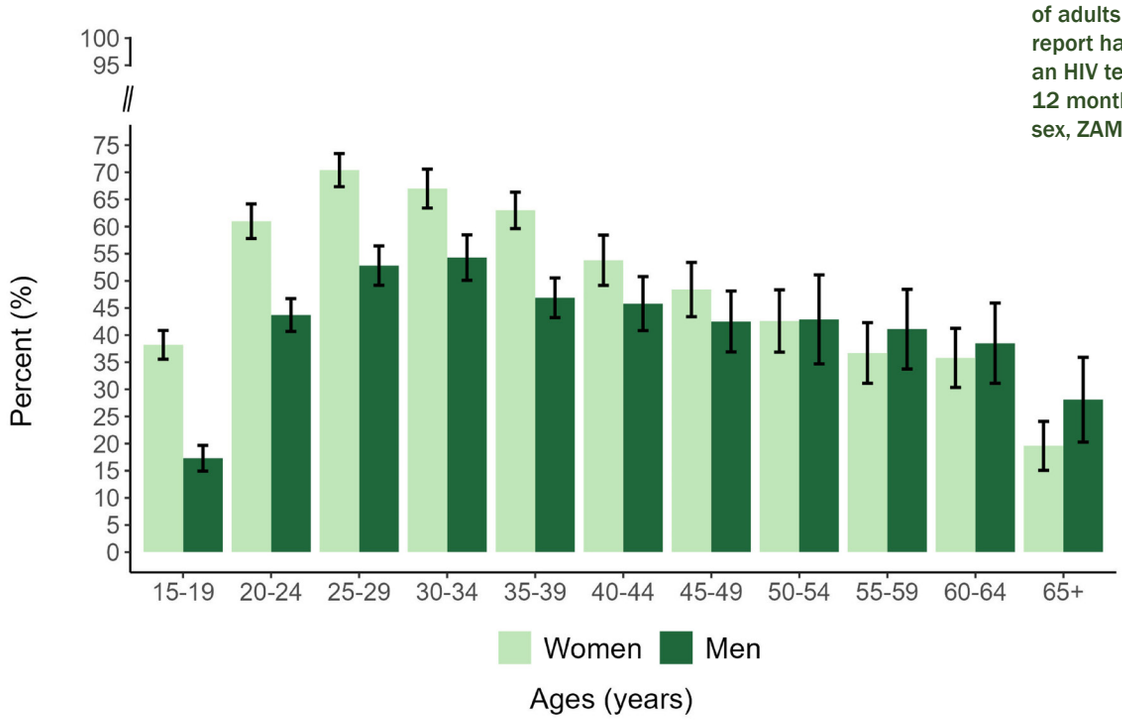


Table 7.2.A: HIV diagnosis and treatment status: Men

Percent distribution of HIV-positive men aged,15 years and older, 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, ZAMPHIA 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	13.3	2.3	84.4	100.0	322
Rural	13.5	1.1	85.4	100.0	366
Province					
Central	21.2	0.0	78.8	100.0	91
Copperbelt	13.5	3.0	83.6	100.0	86
Eastern	8.0	2.7	89.3	100.0	80
Luapula	21.1	2.5	76.4	100.0	54
Lusaka	10.6	1.4	88.0	100.0	63
Muchinga	29.6	3.8	66.6	100.0	54
Northern	10.8	3.0	86.2	100.0	47
North-Western	23.4	0.0	76.6	100.0	50
Southern	4.9	0.0	95.1	100.0	66
Western	12.1	2.2	85.6	100.0	97
Marital status					
Never married	20.8	0.0	79.2	100.0	69
Married or living together	11.5	1.4	87.0	100.0	525
Divorced or separated	13.5	4.7	81.8	100.0	71
Widowed	*	*	*	100.0	22
Education					
No education	(21.3)	(2.0)	(76.7)	(100.0)	46
Primary	11.9	1.9	86.2	100.0	258
Secondary	14.9	1.2	83.9	100.0	314
More than secondary	7.8	2.6	89.6	100.0	69
Wealth quintile					
Lowest	25.4	3.5	71.1	100.0	118
Second	12.8	0.5	86.7	100.0	138
Middle	13.4	1.0	85.6	100.0	139
Fourth	9.4	1.6	89.0	100.0	166
Highest	13.3	2.4	84.3	100.0	127

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

Percent distribution of HIV-positive men aged,15 years and older, 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, ZAMPHIA 2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Age					
15-19	(28.3)	(0.0)	(71.7)	(100.0)	27
20-24	(25.4)	(1.4)	(73.2)	(100.0)	25
25-29	(50.2)	(1.1)	(48.7)	(100.0)	35
30-34	18.4	4.4	77.2	100.0	55
35-39	11.3	3.3	85.4	100.0	89
40-44	7.6	1.6	90.9	100.0	110
45-49	8.8	0.0	91.2	100.0	118
50-54	6.2	1.8	91.9	100.0	106
55-59	9.2	2.0	88.7	100.0	55
60-64	(10.6)	(0.0)	(89.4)	(100.0)	34
65+	(6.6)	(0.0)	(93.4)	(100.0)	34
Total 15-24	27.0	0.6	72.4	100.0	52
Total 15-49	16.2	1.8	82.0	100.0	459
Total 50+	7.6	1.4	91.0	100.0	229
Total 15+	13.4	1.7	84.9	100.0	688

[1]Relates to Global AIDS Monitoring 2020 indicator 1.2: People living with HIV on ART; and PEPFAR indicator TX_CURR_NAT / SUBNAT: Percentage of adults and children currently receiving ART.

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

( ) 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.B: HIV diagnosis and treatment status: Women

Percent distribution of HIV-positive women, aged 15 years and older, 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, ZAMPHIA 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	10.0	2.3	87.7	100.0	835
Rural	10.1	1.2	88.6	100.0	682
Province					
Central	10.2	3.0	86.8	100.0	160
Copperbelt	6.0	2.3	91.7	100.0	216
Eastern	8.4	1.6	90.0	100.0	156
Luapula	20.0	0.0	80.0	100.0	133
Lusaka	10.1	1.9	87.9	100.0	179
Muchinga	19.5	2.3	78.2	100.0	99
Northern	24.0	1.7	74.3	100.0	80
North-Western	20.0	0.7	79.3	100.0	107
Southern	8.6	0.4	91.1	100.0	134
Western	5.5	1.9	92.6	100.0	253
Marital status					
Never married	18.7	1.7	79.6	100.0	249
Married or living together	8.1	1.0	90.9	100.0	714
Divorced or separated	9.8	3.1	87.1	100.0	293
Widowed	8.7	2.5	88.8	100.0	260
Education					
No education	4.5	3.7	91.8	100.0	144
Primary	8.3	1.6	90.0	100.0	640
Secondary	12.5	1.9	85.6	100.0	643
More than secondary	12.0	0.0	88.0	100.0	90
Wealth quintile					
Lowest	12.7	2.1	85.2	100.0	263
Second	11.7	1.9	86.4	100.0	248
Middle	10.4	1.5	88.0	100.0	300
Fourth	8.9	2.5	88.6	100.0	373
Highest	8.7	0.9	90.4	100.0	333

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

Percent distribution of HIV-positive women, aged 15 years and older, 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, ZAMPHIA 2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Age					
15-19	(19.8)	(0.0)	(80.2)	(100.0)	39
20-24	29.9	2.0	68.1	100.0	109
25-29	16.3	2.3	81.4	100.0	193
30-34	9.7	1.9	88.4	100.0	228
35-39	6.5	3.4	90.1	100.0	243
40-44	7.0	1.0	92.0	100.0	218
45-49	4.9	1.2	93.8	100.0	184
50-54	7.4	0.6	92.0	100.0	122
55-59	5.4	1.5	93.0	100.0	91
60-64	5.9	0.7	93.4	100.0	53
65+	(3.3)	(3.2)	(93.6)	(100.0)	37
Total 15-24	27.3	1.4	71.3	100.0	148
Total 15-49	11.0	1.9	87.1	100.0	1,214
Total 50+	6.1	1.2	92.7	100.0	303
Total 15+	10.1	1.8	88.1	100.0	1,517

[1] Relates to Global AIDS Monitoring 2020 indicator 1.2: People living with HIV on ART; and PEPFAR indicator TX_CURR_NAT / SUBNAT: Percentage of adults and children currently 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 years and older, 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, ZAMPHIA 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	11.1	2.3	86.6	100.0	1,157
Rural	11.5	1.2	87.4	100.0	1,048
Province					
Central	14.8	1.7	83.4	100.0	251
Copperbelt	8.2	2.5	89.2	100.0	302
Eastern	8.2	2.0	89.8	100.0	236
Luapula	20.3	0.8	78.9	100.0	187
Lusaka	10.3	1.8	88.0	100.0	242
Muchinga	23.5	2.9	73.7	100.0	153
Northern	18.5	2.3	79.3	100.0	127
North-Western	21.3	0.4	78.3	100.0	157
Southern	7.1	0.2	92.7	100.0	200
Western	7.5	2.0	90.5	100.0	350
Marital status					
Never married	19.3	1.2	79.5	100.0	318
Married or living together	9.7	1.2	89.1	100.0	1,239
Divorced or separated	10.6	3.5	85.9	100.0	364
Widowed	10.9	2.5	86.7	100.0	282
Education					
No education	9.3	3.2	87.5	100.0	190
Primary	9.5	1.7	88.8	100.0	898
Secondary	13.4	1.6	85.0	100.0	957
More than secondary	10.3	1.1	88.6	100.0	159
Wealth quintile					
Lowest	17.0	2.6	80.5	100.0	381
Second	12.1	1.3	86.6	100.0	386
Middle	11.4	1.4	87.2	100.0	439
Fourth	9.1	2.2	88.7	100.0	539
Highest	10.1	1.4	88.5	100.0	460

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

Percent distribution of HIV-positive adults, aged 15 years and older, 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, ZAMPHIA 2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Age					
15-19	24.1	0.0	75.9	100.0	66
20-24	28.9	1.8	69.3	100.0	134
25-29	23.1	2.0	74.9	100.0	228
30-34	11.8	2.5	85.7	100.0	283
35-39	8.0	3.3	88.7	100.0	332
40-44	7.2	1.2	91.6	100.0	328
45-49	6.5	0.7	92.8	100.0	302
50-54	6.8	1.2	91.9	100.0	228
55-59	7.1	1.8	91.1	100.0	146
60-64	7.9	0.4	91.7	100.0	87
65+	4.9	1.6	93.5	100.0	71
Total 15-24	27.2	1.2	71.7	100.0	200
Total 15-49	12.6	1.9	85.5	100.0	1,673
Total 50+	6.8	1.3	91.9	100.0	532
Total 15+	11.3	1.7	87.0	100.0	2,205

[1] Relates to Global AIDS Monitoring 2020 indicator 1.2: People living with HIV on ART; and PEPFAR indicator TX_CURR_NAT / SUBNAT: Percentage of adults and children currently receiving ART.

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, ZAMPHIA 2021

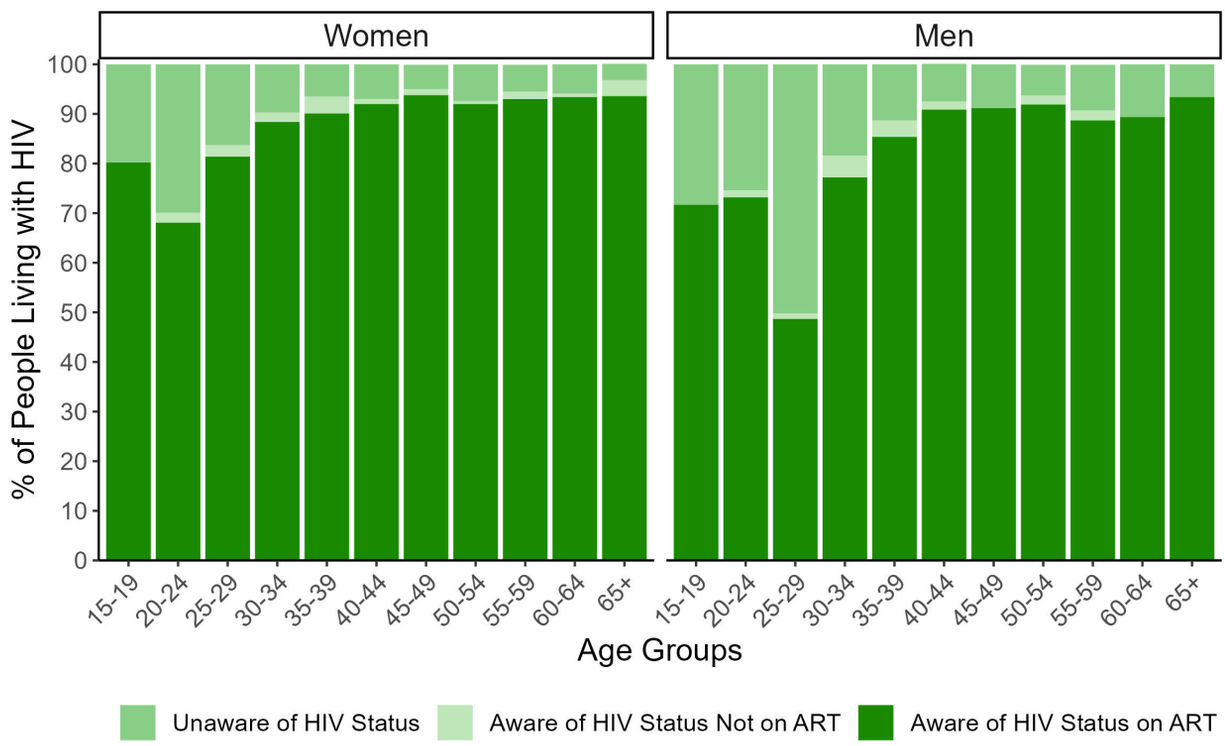


Table 7.3.A: Concordance of self-reported treatment status versus presence of detectable antiretrovirals: Men

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

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	71.6	28.4	100.0	128
Previously diagnosed, not on ART	(47.7)	(52.3)	(100.0)	28
Previously diagnosed, on ART	2.9	97.1	100.0	532
Total 15-24	32.5	67.5	100.0	52
Total 15-49	20.8	79.2	100.0	459
Total 50+	9.9	90.1	100.0	229
Total 15+	17.3	82.7	100.0	688

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

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

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

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	71.0	29.0	100.0	227
Previously diagnosed, not on ART	(91.9)	(8.1)	(100.0)	29
Previously diagnosed, on ART	4.1	95.9	100.0	1,259
Total 15-24	32.3	67.7	100.0	148
Total 15-49	16.6	83.4	100.0	1,213
Total 50+	9.5	90.5	100.0	303
Total 15+	15.3	84.7	100.0	1,516

( ) 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 men aged 15 years and older by presence of detectable antiretrovirals (ARVs) versus self-reported HIV treatment status, ZAMPHIA 2021

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	71.2	28.8	100.0	355
Previously diagnosed, not on ART	70.1	29.9	100.0	57
Previously diagnosed, on ART	3.7	96.3	100.0	1,791
Total 15-24	32.4	67.6	100.0	200
Total 15-49	18.0	82.0	100.0	1,672
Total 50+	9.7	90.3	100.0	532
Total 15+	16.0	84.0	100.0	2,204

7.3 REFERENCES

1. World Health Organization. Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach. Geneva: World Health Organization; 2021. https://www.who.int/publications/i/item/9789240031593. Accessed July 20, 2021.

2. 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 HIV-positive adults by age, sex, region, and other demographic characteristics.

Recent research suggests other potential programmatic uses for viral load data. This chapter presents estimates, by province, 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. Subnational areas with higher population viremia could be at risk of higher incidence.

ZAMPHIA 2021 also reports on the proportion of people living with HIV with viral load of less than 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] WHO guidelines recommend enhanced adherence support for those with low level viremia, as well as repeat viral load monitoring at three months.[4]

Finally, ZAMPHIA 2021 also evaluated access to viral load tests and receipt of results among people living with HIV in Zambia. 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.8 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 Zambia, population viremia by province, and other viral load data at the time of the ZAMPHIA 2021 survey.

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* When the U=U strategy was conceived, less than 200 copies/mL was commonly referred to as an undetectable viral load. Now, WHO defines the threshold for undetectable viral load as below 50 copies/mL; but for the purposes of U=U, maintaining a viral load below 200 copies/mL, or even below 1,000 copies/mL, is sufficient to prevent HIV transmission. Having an undetectable viral load remains the goal for clinical care.

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

Among HIV-positive adults aged 15 years and older, 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, ZAMPHIA 2021

	Men		Women		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	20.5	98	17.9	158	19.0	256
Aware of HIV status and not on ART	*	16	(22.1)	26	(17.3)	42
Aware of HIV status and on ART	97.3	574	95.7	1,332	96.3	1,906
Residence						
Urban	82.6	322	85.6	834	84.6	1,156
Rural	88.2	366	87.8	682	87.9	1,048
Province						
Central	81.8	91	85.9	160	84.1	251
Copperbelt	81.9	86	86.8	216	85.3	302
Eastern	88.3	80	90.6	155	89.7	235
Luapula	76.4	54	80.7	133	79.4	187
Lusaka	88.7	63	87.4	179	87.9	242
Muchinga	81.6	54	76.1	99	78.3	153
Northern	(87.4)	47	75.0	80	80.2	127
North-Western	73.0	50	80.3	107	77.5	157
Southern	95.1	66	90.9	134	92.6	200
Western	85.5	97	88.9	253	87.9	350
Marital status						
Never married	73.8	69	79.1	249	77.5	318
Married or living together	88.8	525	89.4	714	89.1	1,239
Divorced or separated	81.9	71	84.5	292	83.9	363
Widowed	*	22	87.3	260	85.2	282
Education						
No education	(72.8)	46	93.2	144	87.5	190
Primary	87.8	258	87.6	639	87.7	897
Secondary	85.2	314	84.3	643	84.7	957
More than secondary	86.1	69	85.5	90	85.7	159

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

Among HIV-positive adults aged 15 years and older, 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, ZAMPHIA 2021

Characteristic	Men		Women		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
Wealth quintile						
Lowest	79.3	118	83.3	263	81.9	381
Second	89.8	138	86.8	248	88.0	386
Middle	82.5	139	88.0	300	86.1	439
Fourth	89.1	166	86.3	372	87.4	538
Highest	82.6	127	87.3	333	85.8	460
Total 15-24	70.1	52	71.2	148	70.9	200
Total 15-49	82.0	459	85.4	1,213	84.3	1,672
Total 50+	93.0	229	91.7	303	92.3	532
Total 15+	85.5	688	86.6	1,516	86.2	2,204

[1]Relates to Global AIDS Monitoring 2020 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 less than 25 have been suppressed.

( ) 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 8.1.1 Viral load suppression among HIV-positive adults aged 15 years and older by province, ZAMPHIA 2021

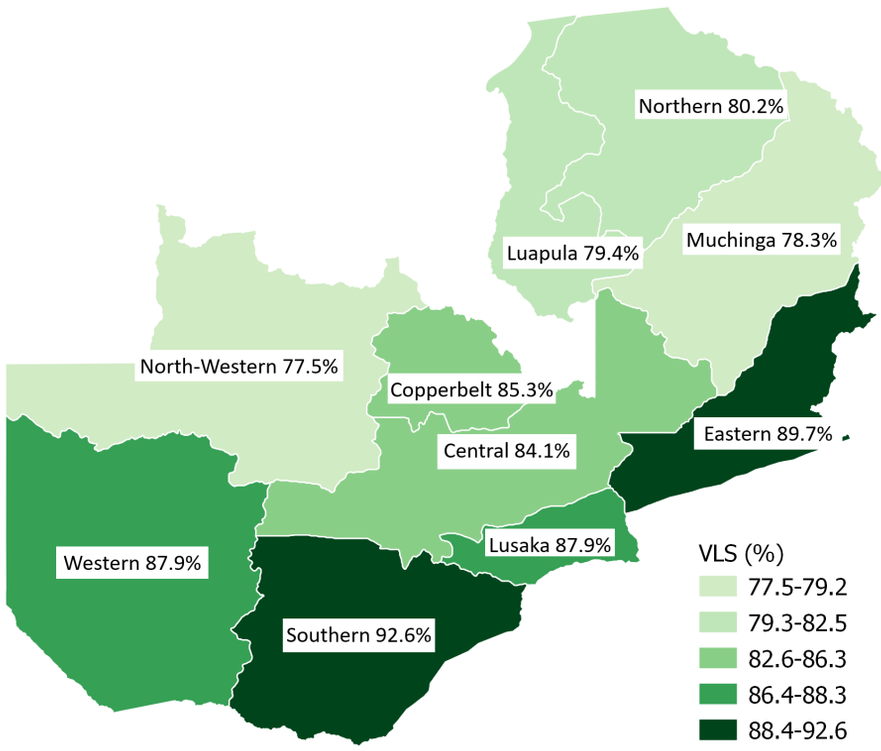

Figure 8.1.2 Viral load suppression among HIV-positive adults aged 15 years and older by province, ZAMPHIA 2021

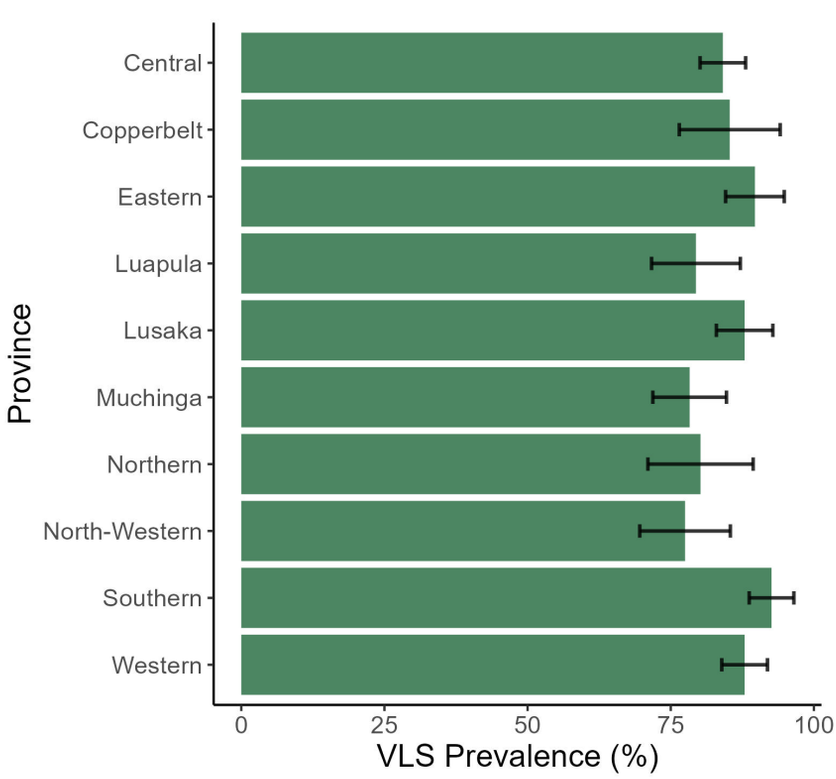

Table 8.2: Viral load suppression (HIV RNA < 1,000 copies per milliliter) by age and sex

Among HIV-positive adults aged 15 years and older, percentage with viral load suppression (VLS), by sex and age, ZAMPHIA 2021

	Men		Women		Total	
Age	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
15-19	(74.5)	27	(79.2)	39	76.8	66
20-24	(64.7)	25	68.4	109	67.5	134
25-29	(66.2)	35	82.3	193	79.1	228
30-34	76.5	55	84.2	228	82.3	283
35-39	84.8	89	88.8	242	87.6	331
40-44	91.9	110	88.1	218	89.5	328
45-49	86.0	118	93.4	184	90.4	302
50-54	95.4	106	90.3	122	92.9	228
55-59	88.3	55	93.0	91	90.9	146
60-64	(88.8)	34	93.4	53	91.4	87
65+	(96.3)	34	(91.5)	37	93.9	71
15-24	70.1	52	71.2	148	70.9	200
25-34	72.6	90	83.4	421	81.0	511
35-44	88.6	199	88.5	460	88.5	659
45-54	90.8	224	92.2	306	91.5	530
55-64	88.5	89	93.1	144	91.1	233
Total 15-49	82.0	459	85.4	1,213	84.3	1,672
Total 50+	93.0	229	91.7	303	92.3	532
Total 15+	85.5	688	86.6	1,516	86.2	2,204

[1]Relates to Global AIDS Monitoring 2020 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.

Figure 8.2: Viral load suppression among adults aged 15 years and older living with HIV by age and sex, ZAMPHIA 2021

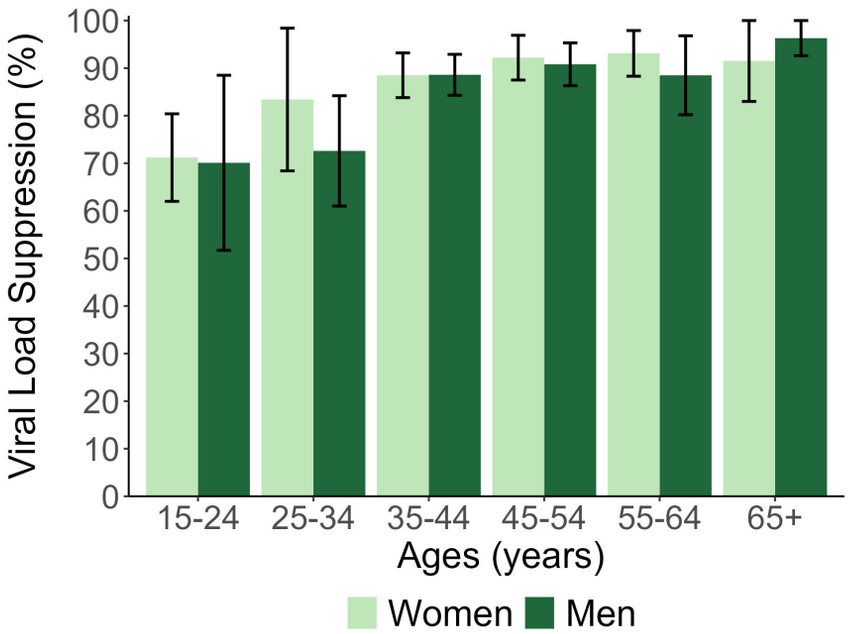

Table 8.3: Population viremia among the adult population in Zambia, by province

Population viremia[1] (unsuppressed viral load [VL], defined as HIV RNA ≥ 1,000 copies per milliliter) among adults aged 15 years and older, by province, ZAMPHIA 2021

Province	Percentage with VL ≥ 1,000[1]	Number of adults tested for HIV	Mean log_{10} VL	Number of HIV-positive adults with VL results
Central	1.8	1,824	1.7	251
Copperbelt	1.8	2,252	1.6	302
Eastern	0.9	1,739	1.5	235
Luapula	1.7	1,977	2.0	187
Lusaka	1.8	1,486	1.6	242
Muchinga	1.4	2,019	2.0	153
Northern	1.2	1,918	1.9	127
North-Western	1.5	2,044	1.9	157
Southern	1.0	1,063	1.5	200
Western	1.7	2,482	1.6	350
Total 15+	1.5	18,804	1.7	2,204

[1]Population viremia is defined with a numerator of those with unsuppressed VL (≥1,000 copies/mL) and denominator of all adults tested (regardless of HIV status).

Figure 8.3: Population viremia (proportion of unsuppressed viral load in the adult population) by province, ZAMPHIA 2021

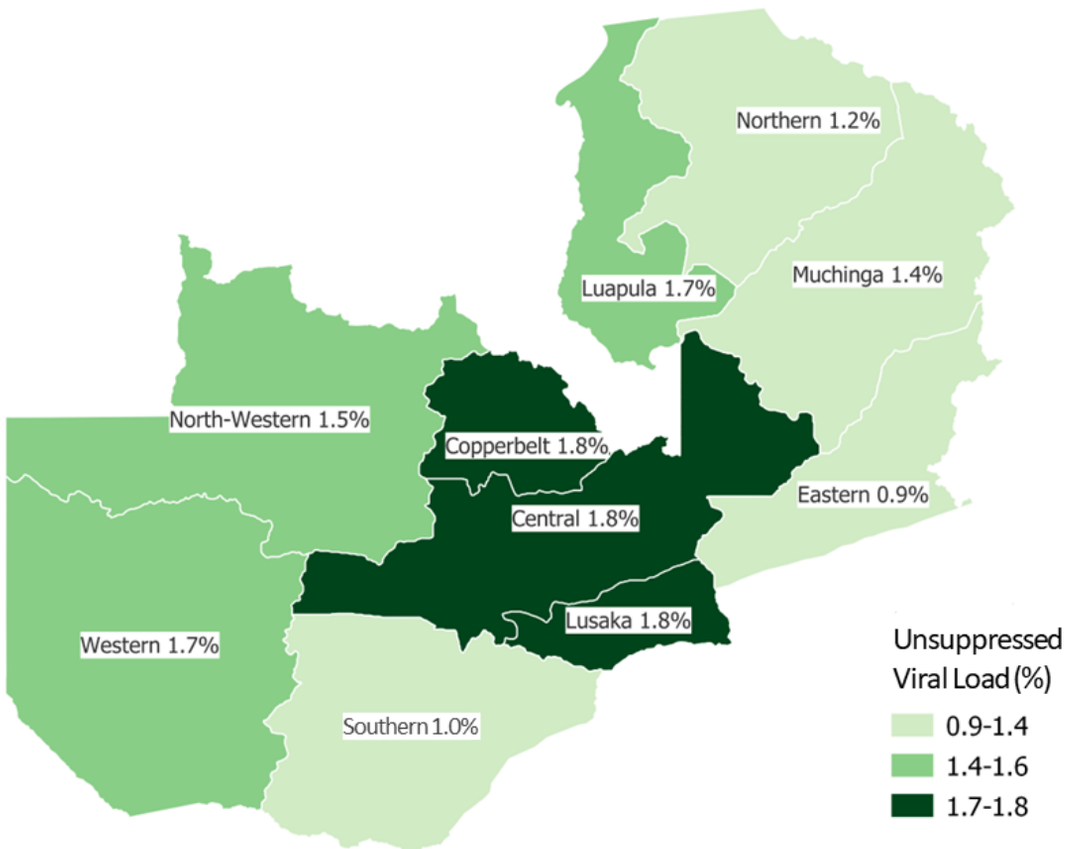

Table 8.4: Viral load < 200 HIV RNA copies per milliliter by demographic and treatment characteristics

Among HIV-positive adults aged 15 years and older, 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, ZAMPHIA 2021

Characteristic	Men		Women		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	16.7	98	13.4	158	14.8	256
Aware of HIV status and not on ART	*	16	(21.1)	26	(16.7)	42
Aware of HIV status and on ART	94.6	574	93.1	1,332	93.6	1,906
Number of years since initiating ART						
Less than 12 months	(96.5)	43	88.8	116	91.6	159
12 months or more	94.6	477	93.6	1,108	93.9	1,585
1 to less than 5 years	94.5	175	92.4	396	93.2	571
5 to less than 10 years	94.4	133	92.1	346	92.8	479
10 years or more	95.6	156	95.7	331	95.7	487
Residence						
Urban	80.2	322	83.3	834	82.3	1,156
Rural	85.0	366	84.3	682	84.6	1,048
Province						
Central	78.9	91	84.2	160	82.0	251
Copperbelt	78.3	86	86.5	216	84.0	302
Eastern	86.9	80	88.7	155	88.1	235
Luapula	65.0	54	75.0	133	71.9	187
Lusaka	87.1	63	84.1	179	85.1	242
Muchinga	74.3	54	70.7	99	72.1	153
Northern	(84.0)	47	73.3	80	77.8	127
North-Western	73.0	50	78.1	107	76.2	157
Southern	92.5	66	84.6	134	87.7	200
Western	85.5	97	85.2	253	85.3	350
Marital status						
Never married	72.5	69	75.9	249	74.9	318
Married or living together	85.2	525	85.4	714	85.3	1,239
Divorced or separated	81.9	71	83.5	292	83.1	363
Widowed	*	22	86.1	260	84.1	282
Education						
No education	(68.5)	46	88.0	144	82.5	190
Primary	83.7	258	85.3	639	84.8	897
Secondary	83.0	314	81.2	643	81.9	957
More than secondary	86.1	69	85.0	90	85.5	159

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	Men		Women		Total	
	Percentage with VL < 200 copies/mL	Number	Percentage with VL < 200 copies/mL	Number	Percentage with VL < 200 copies/mL	Number
Wealth quintile						
Lowest	74.2	118	80.0	263	78.1	381
Second	88.5	138	83.4	248	85.5	386
Middle	79.4	139	83.8	300	82.4	439
Fourth	86.0	166	84.1	372	84.8	538
Highest	80.5	127	85.5	333	84.0	460
Age						
15-19	(74.5)	27	(73.2)	39	73.9	66
20-24	(62.4)	25	65.3	109	64.6	134
25-29	(62.5)	35	78.8	193	75.6	228
30-34	76.5	55	81.7	228	80.5	283
35-39	82.6	89	85.4	242	84.5	331
40-44	89.2	110	84.3	218	86.1	328
45-49	83.1	118	91.8	184	88.3	302
50-54	89.5	106	89.4	122	89.5	228
55-59	86.1	55	90.1	91	88.3	146
60-64	(82.9)	34	90.9	53	87.5	87
65+	(96.3)	34	(91.5)	37	93.9	71
Total 15-24	69.1	52	67.3	148	67.9	200
Total 15-49	79.9	459	82.3	1,213	81.5	1,672
Total 50+	88.7	229	90.1	303	89.4	532
Total 15+	82.7	688	83.7	1,516	83.4	2,204

[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 less than 25 have been suppressed.

( ) 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 8.5: Self-reported viral load testing

Percentage of HIV-positive adults aged 15 years and older 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, ZAMPHIA 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	83.3	527	35.3	434
Female	86.2	1,230	36.0	1,049
Residence				
Urban	86.5	950	39.2	821
Rural	83.8	807	31.8	662
Province				
Central	90.8	203	30.3	184
Copperbelt	92.1	253	41.6	228
Eastern	89.1	206	49.3	187
Luapula	74.5	131	29.4	98
Lusaka	80.5	200	36.8	163
Muchinga	66.4	110	21.7	76
Northern	75.2	93	49.4	73
North-Western	74.5	106	27.4	81
Southern	87.0	168	25.6	146
Western	85.3	287	28.4	247
Marital status				
Never married	83.1	225	34.0	187
Married or living together	86.4	1,001	38.3	857
Divorced or separated	79.6	295	30.0	232
Widowed	89.3	234	33.3	205
Education				
No education	79.8	148	40.4	119
Primary	83.1	727	32.2	595
Secondary	86.5	749	37.0	646
More than secondary	93.6	132	40.7	122

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

Percentage of HIV-positive adults aged 15 years and older 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, ZAMPHIA 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
Wealth quintile				
Lowest	79.0	277	25.4	219
Second	81.2	300	33.5	239
Middle	84.9	340	31.8	283
Fourth	86.1	451	39.3	388
Highest	90.1	389	40.6	354
Age				
15-19	(80.2)	35	(26.4)	26
20-24	81.8	77	35.6	60
25-29	82.7	157	34.3	128
30-34	88.4	216	39.4	186
35-39	81.2	277	33.5	233
40-44	82.0	277	39.9	231
45-49	87.0	264	35.7	223
50-54	90.0	195	35.6	173
55-59	87.3	127	34.3	110
60-64	83.6	72	33.6	59
65+	93.3	60	29.4	54
Total 15-24	81.4	112	33.1	86
Total 15-49	84.0	1,303	36.4	1,087
Total 50+	88.8	454	34.2	396
Total 15+	85.2	1,757	35.8	1,483

( ) 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.

8.3 REFERENCES

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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]

ZAMPHIA 2021 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 levels, individuals were defined as 'aware' of their HIV-positive status if they reported knowing they were HIV positive before testing as part of ZAMPHIA 2021 or if they had a detectable ARV in their blood. Individuals were categorized as 'on treatment' if they 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 living with HIV in the country. However, in the conditional 95-95-95 cascade (shown in Tables 9.1.B and 9.2.B), 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 and 9.2.A), the denominator is the same for each 95 indicator: the overall population of adults 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 Zambia.

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 figure describe progress towards the 95-95-95 targets overall and by demographic characteristics.

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 years and older 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, ZAMPHIA 2021

	Diagnosed					
	Men		Women		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	73.0	52	72.7	148	72.8	200
25-34	69.5	90	87.4	421	83.4	511
35-49	90.9	317	93.8	644	92.7	961
15-49	83.8	459	89.0	1,213	87.4	1,672
50+	92.4	229	93.9	303	93.2	532
15+	86.6	688	89.9	1,516	88.7	2,204

	On Treatment					
	Men		Women		Total	
Age	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
15-24	72.4	52	71.3	148	71.7	200
25-34	66.3	90	85.3	421	81.1	511
35-49	89.3	317	91.8	644	90.9	961
15-49	82.0	459	87.1	1,213	85.5	1,672
50+	91.0	229	92.7	303	91.9	532
15+	84.9	688	88.1	1,516	87.0	2,204

	Viral Load Suppression (VLS)					
	Men		Women		Total	
Age	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number
15-24	66.3	52	66.8	148	66.6	200
25-34	64.2	90	80.2	421	76.6	511
35-49	86.6	317	88.5	644	87.8	961
15-49	79.0	459	82.9	1,213	81.7	1,672
50+	90.4	229	90.3	303	90.4	532
15+	82.6	688	84.4	1,516	83.8	2,204

[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 2020 indicator (GAM 2020) 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 2020 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 2020 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.

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 years and older 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, ZAMPHIA 2021

Diagnosed

Age	Men		Women		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	73.0	52	72.7	148	72.8	200
25-34	69.5	90	87.4	421	83.4	511
35-49	90.9	317	93.8	644	92.7	961
15-49	83.8	459	89.0	1,213	87.4	1,672
50+	92.4	229	93.9	303	93.2	532
15+	86.6	688	89.9	1,516	88.7	2,204

On Treatment Among Those Diagnosed

Age	Men		Women		Total	
	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
15-24	(99.2)	36	98.0	103	98.4	139
25-34	95.4	62	97.7	366	97.2	428
35-49	98.3	283	97.9	604	98.1	887
15-49	97.9	381	97.8	1,073	97.8	1,454
50+	98.5	209	98.7	285	98.6	494
15+	98.1	590	98.0	1,358	98.0	1,948

Viral Load Suppression (VLS) Among Those on Treatment

Age	Men		Women		Total	
	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number
15-24	(91.6)	35	93.7	101	93.0	136
25-34	96.9	59	93.9	357	94.5	416
35-49	97.0	276	96.4	594	96.6	870
15-49	96.3	370	95.3	1,052	95.6	1,422
50+	99.3	204	97.5	280	98.3	484
15+	97.3	574	95.7	1,332	96.3	1,906

[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 2020 indicator (GAM 2020) 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 2020 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 2020 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.

( ) 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 and older) living with HIV by sex, ZAMPHIA 2021

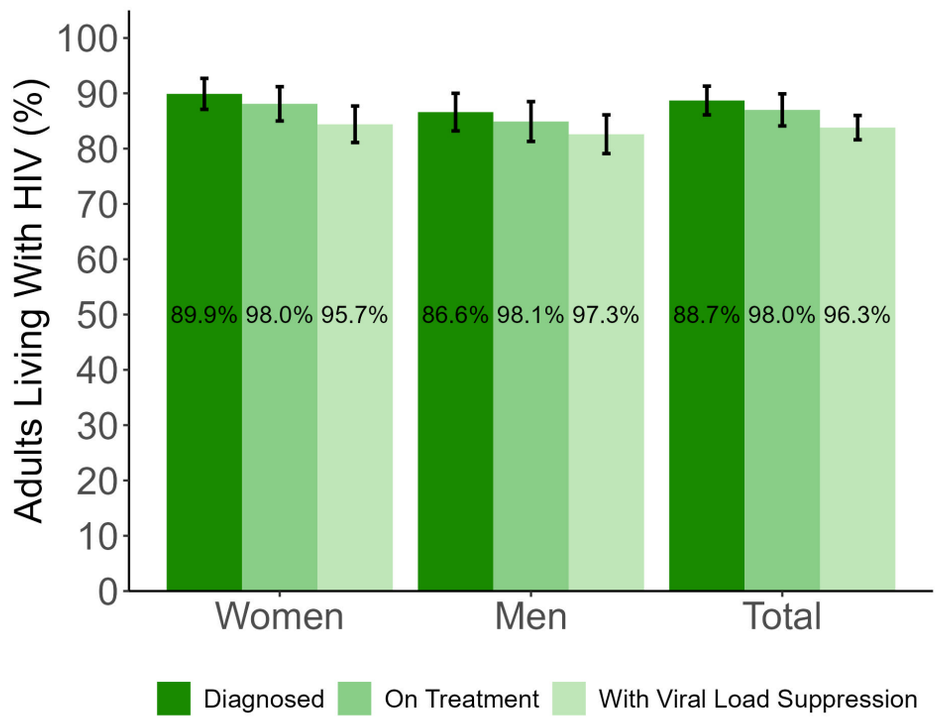


Table 9.2.A: Adult 95-95-95 (self-reported data adjusted for a viral load < 200 HIV RNA copies per milliliter); overall percentages

95-95-95 targets among adults living with HIV aged 15 years and older, 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, ZAMPHIA 2021

Age	Diagnosed					
	Men		Women		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	75.9	52	73.6	148	74.4	200
25-34	76.3	90	89.4	421	86.5	511
35-49	91.5	317	94.5	644	93.4	961
15-49	86.1	459	90.2	1,213	88.9	1,672
50+	93.4	229	94.2	303	93.8	532
15+	88.4	688	90.9	1,516	90.1	2,204

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 years and older, 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, ZAMPHIA 2021

	On Treatment					
	Men		Women		Total	
Age	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
15-24	75.3	52	72.1	148	74.4	200
25-34	73.6	90	87.9	421	86.5	511
35-49	90.1	317	93.0	644	93.4	961
15-49	84.5	459	88.7	1,213	88.9	1,672
50+	92.1	229	93.1	303	93.8	532
15+	86.9	688	89.5	1,516	90.1	2,204

	Viral Load Suppression (VLS)					
	Men		Women		Total	
Age	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number
15-24	70.1	52	68.3	148	68.9	200
25-34	72.6	90	83.0	421	80.7	511
35-49	87.7	317	89.7	644	89.0	961
15-49	82.0	459	84.8	1,213	83.9	1,672
50+	91.4	229	91.0	303	91.2	532
15+	85.0	688	86.0	1,516	85.6	2,204

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a VL < 200 copies/mL;

[2]Relates to Global AIDS Monitoring 2020 Indicator (GAM 2020) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed);

[3]Relates to GAM 2020 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy;

[4]Relates to GAM 2020 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.

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 years and older, 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, ZAMPHIA 2021

	Diagnosed					
	Men		Women		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	75.9	52	73.6	148	74.4	200
25-34	76.3	90	89.4	421	86.5	511
35-49	91.5	317	94.5	644	93.4	961
15-49	86.1	459	90.2	1,213	88.9	1,672
50+	93.4	229	94.2	303	93.8	532
15+	88.4	688	90.9	1,516	90.1	2,204

	On Treatment Among Those Diagnosed					
	Men		Women		Total	
Age	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
15-24	(99.2)	38	98.0	106	98.4	144
25-34	96.4	67	98.3	376	97.9	443
35-49	98.5	285	98.5	609	98.5	894
15-49	98.2	390	98.3	1,091	98.3	1,481
50+	98.5	214	98.9	286	98.7	500
15+	98.3	604	98.5	1,377	98.4	1,981

	Viral Load Suppression (VLS) Among Those On Treatment					
	Men		Women		Total	
Age	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number	Percentage with VLS [4]	Number
15-24	(93.2)	37	94.6	104	94.1	141
25-34	98.6	65	94.4	369	95.3	434
35-49	97.3	279	96.4	602	96.7	881
15-49	97.1	381	95.6	1,075	96.0	1,456
50+	99.3	209	97.8	282	98.5	491
15+	97.8	590	96.0	1,357	96.6	1,947

[1]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a VL < 200 copies/mL;

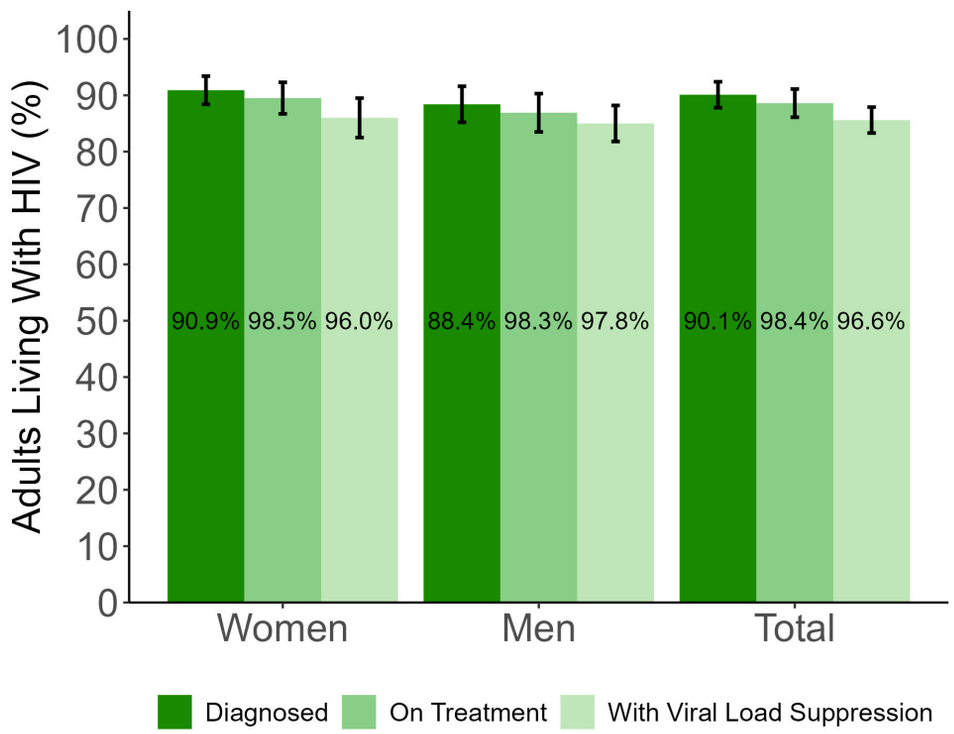
[2]Relates to Global AIDS Monitoring 2020 Indicator (GAM 2020) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed);

[3]Relates to GAM 2020 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy;

[4]Relates to GAM 2020 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.

( ) 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 years and older) living with HIV by sex, ZAMPHIA 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 ZAMPHIA 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 years and older 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 province, ZAMPHIA 2021

Geography	Diagnosed					
	Men		Women		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	86.7	322	90.0	834	88.9	1,156
Rural	86.5	366	89.9	682	88.5	1,048
Province						
Central	78.8	91	89.8	160	85.2	251
Copperbelt	86.5	86	94.0	216	91.8	302
Eastern	92.0	80	91.6	155	91.8	235
Luapula	78.9	54	80.0	133	79.7	187
Lusaka	89.4	63	89.9	179	89.7	242
Muchinga	70.4	54	80.5	99	76.5	153
Northern	(89.2)	47	76.0	80	81.5	127
North-Western	76.6	50	80.0	107	78.7	157
Southern	95.1	66	91.4	134	92.9	200
Western	87.9	97	94.5	253	92.5	350

Geography	On Treatment					
	Men		Women		Total	
	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
Residence						
Urban	84.4	322	87.7	834	86.6	1,156
Rural	85.4	366	88.6	682	87.4	1,048
Province						
Central	78.8	91	86.8	160	83.4	251
Copperbelt	83.6	86	91.7	216	89.2	302
Eastern	89.3	80	90.0	155	89.7	235
Luapula	76.4	54	80.0	133	78.9	187
Lusaka	88.0	63	87.9	179	88.0	242
Muchinga	66.6	54	78.2	99	73.7	153
Northern	(86.2)	47	74.3	80	79.3	127
North-Western	76.6	50	79.3	107	78.3	157
Southern	95.1	66	91.1	134	92.7	200
Western	85.6	97	92.6	253	90.5	350

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 years and older 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 province, ZAMPHIA 2021

	Viral Load Suppression (VLS) on Treatment					
	Men		Women		Total	
Geography	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number
Residence						
Urban	81.2	322	83.1	834	82.5	1,156
Rural	83.9	366	85.9	682	85.1	1,048
Province						
Central	77.2	91	84.9	160	81.7	251
Copperbelt	81.9	86	86.3	216	85.0	302
Eastern	86.5	80	88.2	155	87.6	235
Luapula	70.4	54	75.9	133	74.2	187
Lusaka	87.1	63	84.3	179	85.3	242
Muchinga	62.4	54	73.2	99	68.9	153
Northern	(81.6)	47	67.4	80	73.4	127
North-Western	65.8	50	73.7	107	70.8	157
Southern	94.3	66	89.5	134	91.4	200
Western	83.8	97	87.8	253	86.6	350

[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 2020 indicator (GAM 2020) 1.1: People living with HIV who know their HIV status; and PEPFAR indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed).

[3] Relates to GAM 2020 1.2: People living with HIV on ART; and PEPFAR indicator TX_CURR_NAT / SUBNAT: Percentage of adults and children currently receiving ART.

[4] Relates to GAM 2020 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.

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

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

95-95-95 targets among people living with HIV aged 15 years and older 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 province, ZAMPHIA 2021

Geography	Diagnosed					
	Men		Women		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	86.7	322	90.0	834	88.9	1,156
Rural	86.5	366	89.9	682	88.5	1,048
Province						
Central	78.8	91	89.8	160	85.2	251
Copperbelt	86.5	86	94.0	216	91.8	302
Eastern	92.0	80	91.6	155	91.8	235
Luapula	78.9	54	80.0	133	79.7	187
Lusaka	89.4	63	89.9	179	89.7	242
Muchinga	70.4	54	80.5	99	76.5	153
Northern	(89.2)	47	76.0	80	81.5	127
North-Western	76.6	50	80.0	107	78.7	157
Southern	95.1	66	91.4	134	92.9	200
Western	87.9	97	94.5	253	92.5	350

Geography	On Treatment Among Those Diagnosed					
	Men		Women		Total	
	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number	Percentage on ART [1,3]	Number
Residence						
Urban	97.4	285	97.5	751	97.5	1,036
Rural	98.8	305	98.6	607	98.7	912
Province						
Central	100.0	75	96.6	145	98.0	220
Copperbelt	96.6	74	97.5	202	97.3	276
Eastern	97.1	76	98.2	143	97.8	219
Luapula	(96.8)	43	100.0	109	99.0	152
Lusaka	98.4	56	97.8	161	98.0	217
Muchinga	(94.6)	42	97.2	84	96.2	126
Northern	(96.6)	40	97.7	66	97.2	106
North-Western	(100.0)	39	99.2	84	99.5	123
Southern	100.0	61	99.6	126	99.7	187
Western	97.4	84	98.0	238	97.8	322

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

95-95-95 targets among people living with HIV aged 15 years and older 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 province, ZAMPHIA 2021

	Viral Load Suppression (VLS) on Treatment					
	Men		Women		Total	
Geography	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number
Residence						
Urban	996.3	276	94.7	736	95.2	1,012
Rural	98.3	298	96.9	596	97.4	894
Province						
Central	98.1	75	97.8	141	97.9	216
Copperbelt	98.0	71	94.1	197	95.2	268
Eastern	96.9	74	98.0	141	97.6	215
Luapula	(92.1)	41	94.9	109	94.1	150
Lusaka	99.0	55	95.9	157	97.0	212
Muchinga	(93.6)	39	93.6	81	93.6	120
Northern	(94.7)	38	90.8	64	92.6	102
North-Western	(86.0)	39	92.9	83	90.4	122
Southern	99.2	61	98.3	125	98.7	186
Western	97.9	81	94.8	234	95.7	315

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

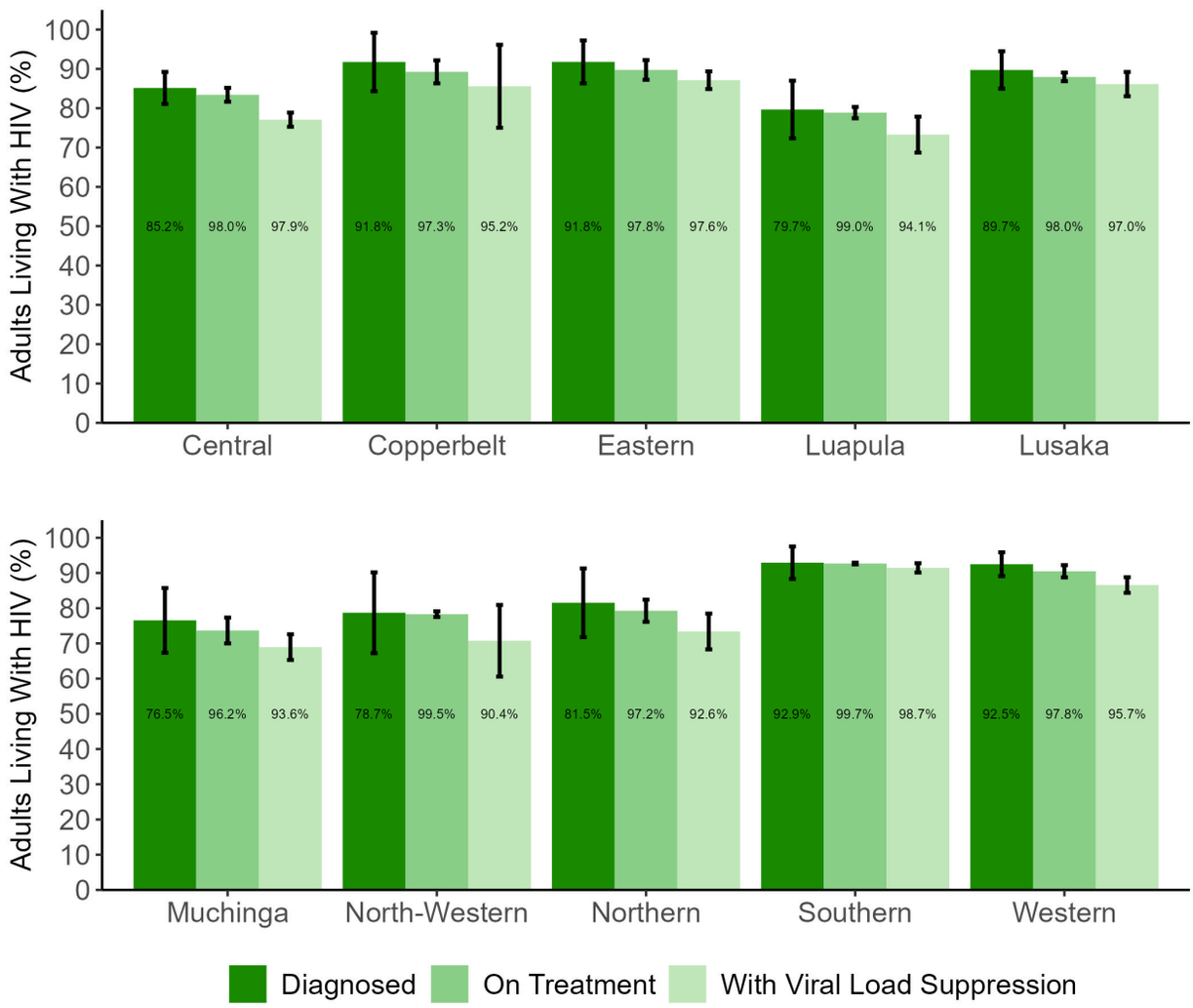
[2] Relates to Global AIDS Monitoring 2020 indicator (GAM 2020) 1.1: People living with HIV who know their HIV status; and PEPFAR indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed).

[3] Relates to GAM 2020 1.2: People living with HIV on ART; and PEPFAR indicator TX_CURR_NAT / SUBNAT: Percentage of adults and children currently receiving ART.

[4] Relates to GAM 2020 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.

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

Figure 9.3: Adult 95-95-95 by geography (self-reported and antiretroviral biomarker data), ZAMPHIA 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 ZAMPHIA 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.

9.3 REFERENCES

1. Joint United Nations Programme on HIV/AIDS (UNAIDS). 95-95-95: An ambitious treatment target to help end the AIDS epidemic. Geneva: UNAIDS; 2014. http://www.unaids.org/sites/default/files/media_asset/95-95-95_en_0.pdf. Accessed July 20, 2021.

2. 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. Accessed February 9, 2023

3. Young PW, Zielinski-Gutierrez E, Wamicwe J, Mukui I, Kim AA, Waruru A, Zeh C, Kretzschmar ME, De Cock KM. Use of viral load to improve survey estimates of known HIV-positive status and antiretroviral treatment coverage. AIDS. 2020 Mar 15;34(4):631-636. doi: 10.1097/QAD.0000000000002453. PMID: 31794520.

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.

ZAMPHIA 2021 provided a unique opportunity to gauge progress in the expansion of HIV clinical services in Zambia, 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 figure present clinical and mobility characteristics of people living with HIV.

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

Among HIV-positive adults aged 15 years and older, 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 therapy (ART) in blood, ZAMPHIA 2021

		Men	
Characteristic	**Median (Q1, Q3)**	**Range**	**Number**
HIV diagnosis and treatment status[1]			
Unaware of HIV status	324 (206,502)	55 - 1,339	98
Aware of HIV status and not on ART	*	*	16
Aware of HIV status and on ART	444 (310,628)	16 - 1616	573
Total 15-24	507 (368,600)	90 - 1,061	52
Total 15-49	438 (316,639)	16 - 1,616	458
Total 50+	406 (256,561)	55 - 1,369	229
Total 15+	429 (290,601)	16 - 1,616	687

		Women	
Characteristic	**Median (Q1, Q3)**	**Range**	**Number**
HIV diagnosis and treatment status[1]			
Unaware of HIV status	422 (282,607)	15 - 1,503	158
Aware of HIV status and not on ART	[260(113,347)]	(78-1,075)	26
Aware of HIV status and on ART	600 (445,771)	14 - 1,938	1332
Total 15-24	625 (406,811)	105 - 1,938	148
Total 15-49	582 (426,759)	15 - 1,938	1213
Total 50+	570 (418,765)	14 - 1,634	303
Total 15+	581 (425,759)	14 - 1,938	1516

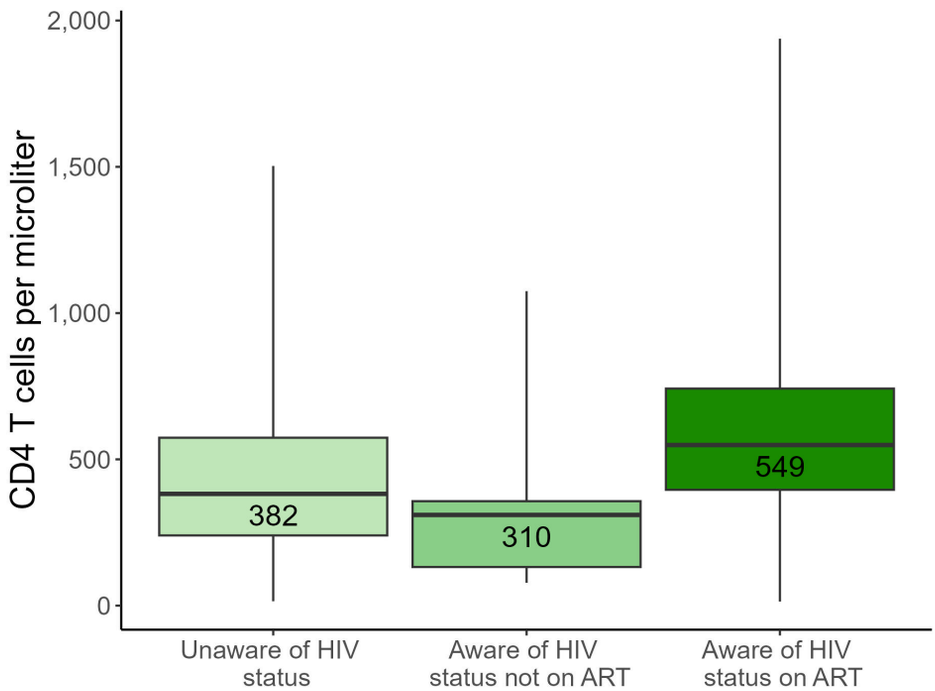
		Total	
Characteristic	**Median (Q1, Q3)**	**Range**	**Number**
HIV diagnosis and treatment status[1]			
Unaware of HIV status	382 (240,574)	15 - 1,503	256
Aware of HIV status and not on ART	[310(132,357)]	(78-1,075)	42
Aware of HIV status and on ART	549 (396,742)	14 - 1,938	1905
Total 15-24	574 (398,763)	90 - 1,938	200
Total 15-49	538 (376,738)	15 - 1,938	1671
Total 50+	481 (324,672)	14 - 1,634	532
Total 15+	525 (361,717)	14 - 1,938	2203

[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 less than 25 have been suppressed.

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

Figure 10.1: CD4 count distribution among adults (aged 15 and above) living with HIV by HIV diagnosis and ART status, ZAMPHIA 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 years and older 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, ZAMPHIA 2021

	CD4 Count				Number
Characteristic	**< 200 cells/μL[1]**	**200-349 cells/μL**	**350-499 cells/μL**	**≥ 500 cells/μL**	
Sex					
Men	22.3	30.6	21.2	25.9	98
Women	16.0	23.8	22.1	38.1	158
Residence					
Urban	20.6	32.0	23.2	24.2	120
Rural	16.6	21.0	20.1	42.3	136
Province					
Central	(4.2)	(20.8)	(22.8)	(19.3)	31
Copperbelt	(11.2)	(17.0)	(24.0)	(31.7)	26
Eastern	*	*	*	*	16
Luapula	(6.7)	(16.2)	(13.7)	(22.7)	35
Lusaka	(7.2)	(8.5)	(47.5)	(19.3)	25
Muchinga	(3.8)	(10.9)	(22.0)	(26.5)	27

Table 10.2: CD4 count distribution (continued)

Percent distribution of CD4 count among adults aged 15 years and older 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, ZAMPHIA 2021

	CD4 Count				Number
Characteristic	< 200 cells/µL[1]	200-349 cells/µL	350-499 cells/µL	≥ 500 cells/µL	
Northern	*	*	*	*	21
North-Western	(4.5)	(9.8)	(21.6)	(16.0)	34
Southern	*	*	*	*	13
Western	(10.4)	(2.6)	(31.8)	(8.0)	28
Age					
15-24	3.1	34.4	15.9	46.7	61
25-34	8.4	28.6	25.8	37.1	83
35-44	40.7	18.1	19.7	21.5	54
45-54	(16.8)	(21,7)	(24.3)	(19.1)	37
55-64	*	*	*	*	16
65+	*	*	*	*	5
Total 15-24	3.1	34.4	15.9	46.7	61
Total 15-49	16.9	29.1	20.9	33.1	218
Total 50+	(12.3)	(19.9)	(10.8)	(24.0)	38
Total 15+	18.7	26.7	21.7	33.0	256

[1]Relates to Global AIDS Monitoring 2020 indicator 1.4: Late HIV Diagnosis

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

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

Table 10.3: Retention on antiretroviral therapy

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

	Men		Women		Total	
Characteristic	Percentage still taking ART	Number	Percentage still taking ART	Number	Percentage still taking ART	Number
Number of years since initiating ART						
Less than 12 months	(100.0)	43	100.0	116	100.0	159
12 months or more	100.0	477	100.0	1,109	100.0	1,586
1 to less than 5 years	100.0	175	100.0	397	100.0	572
5 to less than 10 years	100.0	133	100.0	346	100.0	479
10 years or more	100.0	156	100.0	331	100.0	487
Total 15-24	(100.0)	25	98.0	91	98.5	116
Total 15-49	96.6	349	98.8	1,004	98.2	1,353
Total 50+	96.7	202	98.8	270	97.8	472
Total 15+	96.7	551	98.8	1,274	98.1	1,825

( ) 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 years and older, percent distribution of HIV care and antiretroviral therapy (ART) status and receipt characteristics, by extended stay away from home, based upon self-report, ZAMPHIA 2021

	Lived away from home for more than one month at a time in the year before the survey			
Characteristic	**Yes**	**Number**	**No**	**Number**
HIV diagnosis and treatment status[1]				
Unaware of HIV status	12.6	41	11.0	213
Aware of HIV status and not on ART	2.4	7	1.6	35
Aware of HIV status and on ART	85.1	279	87.3	1,612
Viral load suppression (VLS)				
Yes	86.7	279	86.0	1,592
No	13.3	48	14.0	267
Treatment interrupted				
Yes	12.2	17	NA	NA
No	86.9	207	NA	NA
Never on ART	0.9	2	NA	NA
Was ART changed				
Yes	53.6	132	43.5	663
No	45.7	126	55.4	842
Never on ART	0.7	2	1.1	22
How was ART normally received at time of survey				
Pick up at local clinic	72.3	192	71.4	1,110
Pick up at hospital	17.3	56	22.6	346
From the community support group/adherence club	2.8	1	2.0	26
Delivery	3.3	6	2.1	29
A family member or friend collects them	1.7	3	0.3	8
Not currently on ART	2.7	6	1.7	26
Total 15+	100.0	327	100.0	1,860

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

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, ZAMPHIA 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	
Characteristic	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
HIV diagnosis and treatment status[1]								
Unaware of HIV status	(21.2)	3	11.1	251	(14.0)	2	11.2	253
Aware of HIV status and not on antiretroviral therapy (ART)	(0.0)	0	1.8	42	(0.0)	0	1.7	41
Aware of HIV status and on ART	(78.8)	22	87.1	1,879	(86.0)	29	87.1	1,874
Presence of a detectable antiretroviral (ARV)								
Detectable	(75.5)	20	84.1	1,803	(83.3)	27	84.1	1,798
Not detectable	(24.5)	5	15.9	368	(16.7)	4	15.9	369
Viral load suppression (VLS)								
Yes	(84.0)	22	86.2	1,858	(90.2)	29	86.2	1,854
No	(16.0)	3	13.8	313	(9.8)	2	13.8	313
Ever on ART								
Yes	*	21	98.9	1,798	(100.0)	28	99.0	1,793
No	*	0	1.1	24	(0.0)	0	1.0	23
Retention (among those who reported ever initiating ART)								
Reported current ART use[1]	*	21	98.0	1,765	(100.0)	28	98.0	1,760
Reported initiating but not on ART at time of the survey[1]	*	0	2.0	33	(0.0)	0	2.0	33
Adherence (among those who reported current ART use)								
Adherent	*	18	91.2	1,605	(84.4)	5	91.3	1,600
Non-adherent	*	3	8.8	153	(15.6)	3	8.7	153
Total 15+	(100.0)	25	100.0	2,172	(100.0)	31	100.0	2,168

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11. PREVENTION OF MOTHER-TO-CHILD TRANSMISSION

11.1 BACKGROUND

Pregnant women 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 women of childbearing age (ages 15-49 years, referred to as women in this chapter); (2) preventing unintended pregnancies among women living with HIV; (3) preventing HIV transmission from women 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 women 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 women need to be on ART and 95% need to achieve VLS.[3] With such high targets, countries can ill-afford to miss any women need of these services.

11.2 RESULTS

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

Table 11.1: 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, ZAMPHIA 2021

Characteristic	Percentage who attended at least one ANC visit	Number
Residence		
Urban	98.7	1,132
Rural	98.4	2,280
Province		
Central	98.1	330
Copperbelt	99.7	305
Eastern	99.1	346
Luapula	99.1	365
Lusaka	99.1	253
Muchinga	99.2	446
Northern	98.1	298
North-Western	98.0	405
Southern	98.1	202
Western	95.2	462

Table 11.1: 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, ZAMPHIA 2021

Characteristic	Percentage who attended at least one ANC visit	Number
Residence		
Marital status	98.8	546
Never married	98.5	2,564
Married or living together	98.1	244
Divorced or separated	97.2	55
Widowed		
Education	97.3	294
No education	98.6	1,530
Primary	98.6	1,440
Secondary	98.1	146
More than secondary		
Wealth quintile	97.9	1,099
Lowest	98.0	756
Second	98.2	540
Middle	99.8	563
Fourth	98.7	454
Highest		
Age		
15-19	98.7	380
20-24	98.4	952
25-29	99.0	839
30-34	98.3	555
35-39	98.1	455
40-44	98.0	192
45-49	(95.0)	39
Total 15-24	98.5	1,332
Total 15-49	98.5	3,412

( ) 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 11.2: Prevention of mother-to-child transmission: Known HIV status

Among women 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, ZAMPHIA 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 women who gave birth within the 12 months before the survey
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Residence					
Urban	1.9	79.3	6.8	88.0	418
Rural	1.2	76.8	3.8	81.8	924
Province					
Central	0.5	81.5	4.4	86.3	148
Copperbelt	0.6	68.4	5.8	74.8	99
Eastern	0.0	79.0	3.2	82.2	138
Luapula	0.9	68.5	4.4	73.8	164
Lusaka	3.0	79.6	8.0	90.6	99
Muchinga	0.8	71.3	3.0	75.1	179
Northern	0.0	77.7	2.5	80.2	122
North-Western	3.2	77.7	2.9	83.8	127
Southern	0.0	91.7	4.5	96.2	79
Western	5.9	77.9	6.1	89.8	187
Marital status					
Never married	1.3	73.5	2.3	77.1	247
Married or living together	1.2	79.6	4.7	85.4	1,007
Divorced or separated	3.9	69.4	10.7	84.0	72
Widowed	*	*	*	*	16
Education					
No education	0.4	73.0	4.3	77.8	120
Primary	1.5	78.6	4.1	84.2	566
Secondary	1.5	77.1	4.7	83.3	602
More than secondary	1.4	81.9	11.8	95.1	53
Wealth quintile					
Lowest	1.7	75.3	3.2	80.2	446
Second	0.8	76.6	2.8	80.2	302
Middle	1.3	80.9	6.2	88.4	227
Fourth	1.6	76.3	7.6	85.5	206
Highest	1.7	79.9	5.2	86.8	161

Table 11.2: Prevention of mother-to-child transmission: Known HIV status (continued)

Among women 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, ZAMPHIA 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 women who gave birth within the 12 months before the survey
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Age					
15-19	0.2	81.0	0.0	81.3	214
20-24	1.7	77.8	2.8	82.3	380
25-29	1.2	74.7	3.7	79.6	331
30-34	1.5	79.2	10.6	91.4	212
35-39	1.2	73.7	11.6	86.5	137
40-44	7.0	78.3	6.4	91.8	54
45-49	*	*	*	*	14
Total 15-24	1.2	79.1	1.7	81.9	594
Total 15-49	1.4	77.6	4.8	83.8	1,342

[1]Relates to PEPFAR indicator PMTCT_STAT_NAT / SUBNAT: Percentage of pregnant women with known HIV status and Global AIDS Monitoring 2020 indicator 2.6: HIV testing in pregnant women.

* 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: HIV-positive pregnant women who received antiretroviral therapy

Among self-reported HIV-positive women 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, ZAMPHIA 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 women who gave birth within the 12 months before the survey
Residence				
Urban	(56.3)	(30.2)	(86.5)	41
Rural	(69.7)	(30.3)	(100.0)	44
Province				
Central	*	*	*	8
Copperbelt	*	*	*	7
Eastern	*	*	*	7
Luapula	*	*	*	10
Lusaka	*	*	*	11
Muchinga	*	*	*	8
Northern	*	*	*	1
North-Western	*	*	*	5
Southern	*	*	*	6
Western	*	*	*	22
Marital status				
Never married	*	*	*	13
Married or living together	64.6	29.0	93.6	55
Divorced or separated	*	*	*	10
Widowed	*	*	*	7
Education				
No education	*	*	*	5
Primary	(59.2)	(31.9)	(91.2)	34
Secondary	(70.1)	(29.9)	(100.0)	40
More than secondary	*	*	*	6
Wealth quintile				
Lowest	*	*	*	22
Second	*	*	*	12
Middle	*	*	*	21
Fourth	*	*	*	18
Highest	*	*	*	12

Table 11.3: Prevention of mother-to-child transmission: HIV-positive pregnant women who received antiretroviral therapy (continued)

Among self-reported HIV-positive women 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, ZAMPHIA 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 women who gave birth within the 12 months before the survey
Age				
15-19	*	*	*	1
20-24	*	*	*	16
25-29	*	*	*	19
30-34	(67.0)	(33.0)	(100.0)	26
35-39	*	*	*	15
40-44	*	*	*	8
45-49	*	*	*	0
Total 15-24	*	*	*	17
Total 15-49	63.5	30.3	93.8	85

[1]Relates to Global AIDS Monitoring 2020 indicator 2.3: Preventing mother-to-child transmission of HIV; and PEPFAR indicator PMTCT_ARV_NAT / SUBNAT: Number and percentage of HIV-positive pregnant women who received antiretroviral medicine during pregnancy to reduce the risk of mother-to-child transmission.

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

( ) 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 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, ZAMPHIA 2021

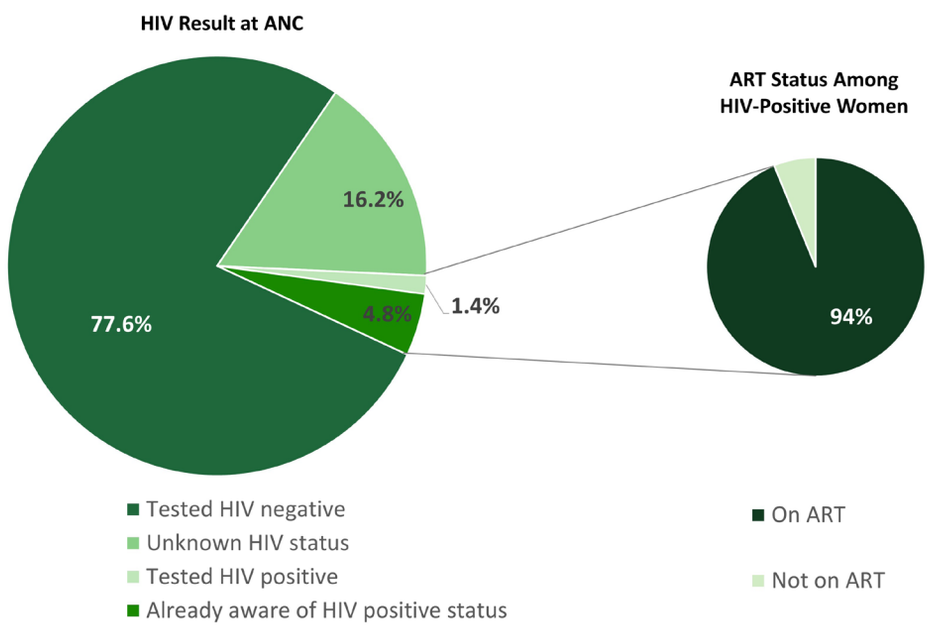


Table 11.4: Breastfeeding status by child's age and mother's HIV status

Percent distribution of last-born children born to women 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, ZAMPHIA 2021

Characteristic	Never breastfed	Ever breastfed, but not currently breastfeeding	Currently breastfeeding	Total	Number
Child's age (months)					
0-1	2.8	5.4	91.7	100.0	245
2-3	3.8	3.5	92.7	100.0	251
4-5	0.7	5.5	93.8	100.0	190
6-8	0.6	6.1	93.3	100.0	311
9-11	0.3	7.6	92.1	100.0	309
12-17	1.1	15.8	83.1	100.0	566
18-23	2.1	57.1	40.8	100.0	482
24-36	1.4	89.5	9.1	100.0	984
Result of mother's ZAMPHIA 2021 HIV test					
HIV positive	1.6	54.5	43.9	100.0	323
HIV negative	1.1	37.9	61.1	100.0	2,508
Not tested	3.4	37.3	59.3	100.0	538
Total	1.5	39	59.1	100.0	3,369

Table 11.5: 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, ZAMPHIA 2021

Characteristic	Percentage of infants who had an HIV test done at 2 months 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 3 years before the survey to HIV-positive women[3]
Result of infant's HIV test			
HIV positive	*	*	5
HIV negative	69.8	17.5	231
Don't know/other	*	*	17
Total	70.0	16.4	253

[1]Relates to Global AIDS Monitoring 2020 indicator 2.1: Early infant diagnosis.

[2]Relates to PEPFAR indicator PMTCT_EID: Percentage of infants born to HIV-positive women 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 less than 25 have been suppressed.

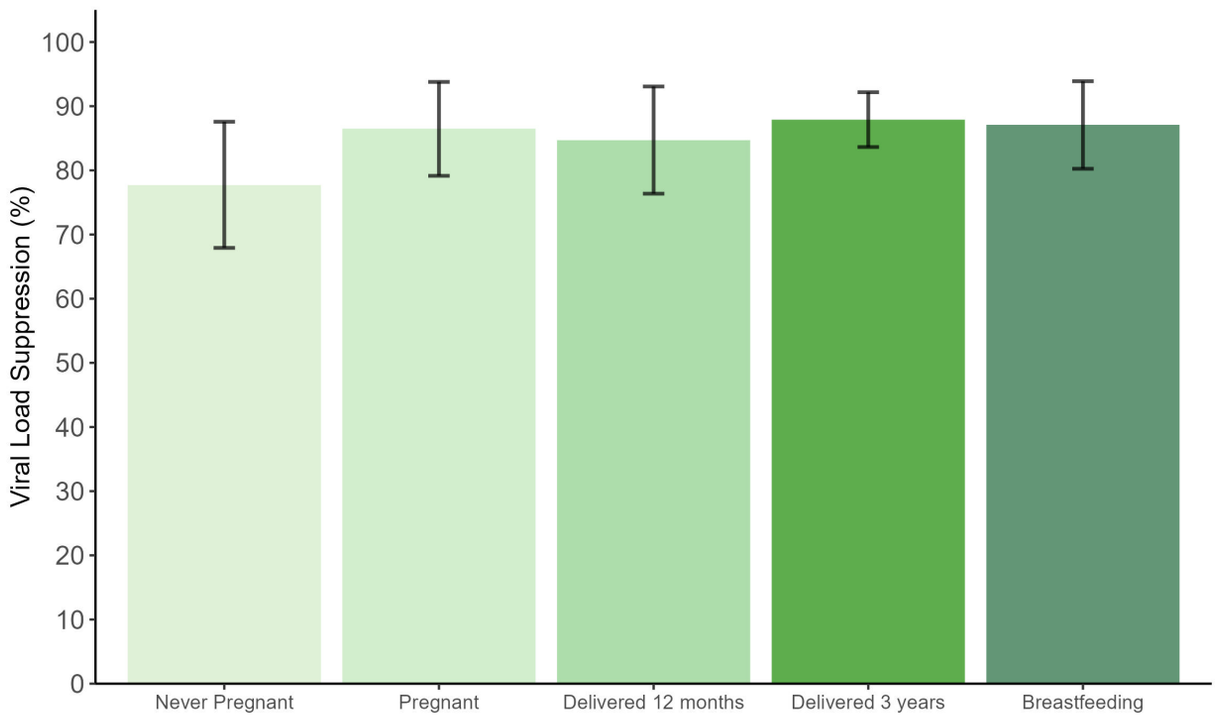
Table 11.6: Viral load suppression in HIV-positive women of childbearing age (aged 15-49 years), by pregnancy status and postpartum-related characteristics

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

	Women	
Characteristic	**Percentage with VLS**	**Number**
Ever Pregnant		
Yes	86.0	1,110
No	77.7	103
Pregnancy status		
Pregnant at time of the survey	86.5	63
Not pregnant at time of the survey	85.5	1,144
Delivered in the 12 months before the survey		
Delivered in the 12 months before the survey	84.7	109
Did not deliver in the 12 months before the survey	86.2	997
Delivered in the 3 years before the survey		
Delivered in the 3 years before the survey	87.9	329
Did not deliver in the 3 years before the survey	85.3	778
Breastfeeding status		
Never breastfed	*	9
Ever breastfed, but not currently breastfeeding	89.0	218
Currently breastfeeding	87.1	141

* 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, ZAMPHIA 2021



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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. ZAMPHIA 2021 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 Zambia. 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 (ages 10-14 years) and young people (ages 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 ZAMPHIA 2021, Table 12.3 shows the prevalence of early sexual debut before 15 years of age self-reported by young people in Zambia, by sex, < SNU >,province, 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. ZAMPHIA 2021 asked participants about their condom use at last sexual intercourse, particularly with nonmarital, noncohabitating 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, ZAMPHIA 2021 asked men whether they had been medically or traditionally circumcised (Table 12.5). Finally, PrEP has become an important prevention tool among some populations and in regions with the highest HIV prevalence.[4] Tables 12.6, 12.7, and 12.8 describe the knowledge levels and acceptability of and update of PrEP among adults in Zambia 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 ZAMPHIA 2021 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 years and older by sex, ZAMPHIA 2021

	Men		Women		Total	
Characteristic	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
Ever had sex						
Yes	86.1	8,505	89.5	11,476	87.8	19,981
No	12.7	1,088	10.5	1,097	11.5	2,185
Had sex in the 12 months before the survey						
Yes	68.4	6,940	70.5	8,995	69.5	15,935
No	29.4	2,593	29.1	3,542	29.2	6,135
Had sexual intercourse before the age of 15 years						
Yes	12.2	1,181	7.6	989	9.8	2,170
No	80.4	7,718	85.9	10,661	83.2	18,379
Total 15-24	37.5	3,241	36.0	4,117	36.7	7,358
Total 15-49	85.5	7,921	85.3	10,444	85.4	18,365
Total 50+	14.5	1,762	14.7	2,135	14.6	3,897
Total 15+	100.0	9,683	100.0	12,579	100.0	22,262

Table 12.2: HIV prevalence by sexual behavior

Prevalence of HIV among adults aged 15 years and older by sex and self-reported sexual behavior characteristics, ZAMPHIA 2021

	Men		Women		Total	
Characteristic	**Percentage HIV positive**	**Number**	**Percentage HIV positive**	**Number**	**Percentage HIV positive**	**Number**
Age at first sexual intercourse						
Under 15	6.0	1,010	15.5	852	9.8	1,862
15-19	8.7	3,745	13.9	6,503	11.8	10,248
20-24	10.0	1,372	18.8	1,370	14.0	2,742
25+	9.2	553	13.7	225	10.4	778
Number of lifetime sexual partners						
0	3.5	902	2.6	933	3.1	1,835
1	3.2	1,188	7.8	4,215	6.6	5,403
2+	9.8	5,644	20.4	5,303	14.4	10,947
Number of sexual partners in the 12 months before the survey						
0	7.2	1,308	21.6	2,063	15.0	3,371
1	9.2	4,381	13.2	7,271	11.5	11,652
2+	9.3	1,502	20.0	291	10.8	1,793
Condom use at last sexual intercourse in the 12 months before the survey						
Used condom	11.5	1,257	23.9	1,123	16.9	2,380
Did not use condom	8.5	4,622	11.3	6,424	10.0	11,046
No sexual intercourse in the 12 months before the survey	5.6	2,190	15.2	2,975	10.5	5,165
Total 15-24	1.9	2,750	3.8	3,512	2.8	6,262
Total 15-49	6.3	6,680	13.2	8,804	9.9	15,484
Total 50+	17.7	1,540	18.0	1,780	17.9	3,320
Total 15+	8.0	8,220	13.9	10,584	11.0	18,804

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, ZAMPHIA 2021

Characteristic	Men		Women		Total	
	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	13.6	1,208	4.5	1,628	8.8	2,836
Rural	21.4	1,894	11.0	2,376	16.3	4,270
Province						
Central	15.9	314	9.2	376	12.6	690
Copperbelt	11.4	371	4.8	439	8.2	810
Eastern	25.1	282	6.9	358	16.0	640
Luapula	15.2	295	3.6	416	9.0	711
Lusaka	14.1	236	4.3	362	9.0	598
Muchinga	9.1	378	7.2	487	8.2	865
Northern	12.8	269	6.2	377	9.2	646
North-Western	32.0	374	17.5	451	24.5	825
Southern	17.4	184	14.0	258	15.8	442
Western	37.9	399	17.5	480	27.9	879
Marital status						
Never married	17.7	2,620	6.9	2,454	13.0	5,074
Married or living together	22.4	431	10.7	1,393	13.9	1,824
Divorced or separated	(15.7)	37	9.8	138	11.4	175
Widowed	*	0	*	9	*	9
Education						
No education	17.7	100	12.4	171	14.6	271
Primary	23.2	1,029	13.8	1,329	18.5	2,358
Secondary	16.4	1,876	5.5	2,395	10.8	4,271
More than secondary	6.9	95	1.0	109	4.1	204

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, ZAMPHIA 2021

	Men		Women		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**
Wealth quintile						
Lowest	23.9	665	13.4	1,034	18.0	1,699
Second	20.8	653	11.3	786	16.1	1,439
Middle	20.4	580	9.0	645	14.9	1,225
Fourth	18.1	598	7.3	735	12.8	1,333
Highest	10.9	606	1.7	804	6.3	1,410
Age						
15-19	21.0	1,735	8.4	2,009	14.7	3,744
20-24	14.9	1,367	7.9	1,995	11.3	3,362
Total 15-24	18.2	3,102	8.2	4,004	13.1	7,106

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

( ) 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 12.4.A: Condom use at last sex with a nonmarital, non-cohabitating partner: Men

Among men aged 15 years and older, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey by selected demographic characteristics, ZAMPHIA 2021

Characteristic	Among men who reported having sex in the 12 months before the survey		Among men who reported having sex with a nonmarital, non-cohabitating partner in the 12 months before the survey	
	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	48.5	2,350	54.8	934
Rural	39.2	4,562	42.6	1,276
Province				
Central	42.6	709	48.2	227
Copperbelt	43.7	644	50.1	224
Eastern	39.9	724	42.2	223
Luapula	35.8	629	43.4	174
Lusaka	47.9	493	54.2	199
Muchinga	25.4	926	50.7	164
Northern	24.6	584	42.4	117
North-Western	45.8	904	49.1	317
Southern	49.5	417	50.8	174
Western	54.0	882	38.8	391
Marital status				
Never married	96.5	1,774	51.1	1,430
Married or living together	14.9	4,864	42.7	560
Divorced or separated	94.9	248	38.2	198
Widowed	*	20	*	18
Education				
No education	25.7	428	35.0	77
Primary	36.4	2,574	40.2	665
Secondary	48.6	3,270	50.3	1,240
More than secondary	45.9	634	59.7	227
Wealth quintile				
Lowest	32.7	1,789	38.1	445
Second	35.8	1,626	42.5	438
Middle	44.3	1,280	44.5	439
Fourth	51.0	1,152	48.5	456
Highest	49.9	1,065	61.3	432

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

Among men aged 15 years and older, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey by selected demographic characteristics, ZAMPHIA 2021

	Among men who reported having sex in the 12 months before the survey		Among men 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
Age				
15-19	96.6	691	48.4	563
20-24	72.3	1,032	54.5	592
25-29	48.3	1,015	44.4	378
30-34	28.8	848	43.9	210
35-39	25.3	792	41.8	149
40-44	22.4	642	46.9	111
45-49	22.7	595	45.2	101
50-54	15.8	420	(40.4)	45
55-59	11.1	302	(33.0)	27
60-64	9.8	227	*	16
65+	7.2	348	*	18
Total 15-24	82.0	1,723	51.6	1,155
Total 15-49	48.3	5,615	48.3	2,104
Total 50+	11.5	1,297	35.0	106
Total 15+	42.7	6,912	47.8	2,210

[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 2020 indicator 3.18: Condom use at last high-risk sex.

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

( ) 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 12.4.B: Condom use at last sex with a nonmarital, non-cohabitating partner: Women

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

	Among women who reported having sex in the 12 months before the survey		Among women 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	34.2	3,410	35.3	897
Rural	21.8	5,554	33.5	931
Province				
Central	24.8	859	37.4	165
Copperbelt	28.5	974	34.4	214
Eastern	20.1	917	45.3	165
Luapula	21.7	830	29.2	130
Lusaka	34.8	774	36.5	224
Muchinga	12.3	1,129	33.7	102
Northern	15.1	815	18.3	95
North-Western	25.6	974	22.5	193
Southern	31.5	561	38.0	164
Western	39.4	1,131	29.1	376
Marital status				
Never married	91.7	1,603	36.7	1,219
Married or living together	1.9	6,625	36.8	69
Divorced or separated	92.3	591	26.9	448
Widowed	81.1	138	42.0	88
Education				
No education	11.6	947	30.1	91
Primary	18.5	4,027	28.4	554
Secondary	37.2	3,498	37.4	1,046
More than secondary	36.6	484	35.7	136
Wealth quintile				
Lowest	21.9	2,376	26.4	421
Second	20.1	1,912	34.5	293
Middle	25.6	1,496	33.6	297
Fourth	29.8	1,584	35.4	369
Highest	36.1	1,596	38.7	448

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

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

	Among women who reported having sex in the 12 months before the survey		Among women 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
Age				
15-19	63.4	918	40.4	498
20-24	37.5	1,695	32.9	489
25-29	23.9	1,604	30.8	302
30-34	19.5	1,194	34.8	175
35-39	17.4	1,123	30.9	141
40-44	16.2	804	28.6	106
45-49	14.8	652	27.3	77
50-54	7.9	384	*	19
55-59	3.9	264	*	7
60-64	8.7	166	*	10
65+	4.5	160	*	4
Total 15-24	47.5	2,613	36.9	987
Total 15-49	29.1	7,990	34.4	1,788
Total 50+	6.4	974	(33.1)	40
Total 15+	26.9	8,964	34.4	1,828

[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 2020 indicator 3.18: Condom use at last high-risk sex.

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

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

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

Characteristic	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	
	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	40.7	5,760	45.9	1,831
Rural	30.4	10,116	39.3	2,207
Province				
Central	33.8	1,568	44.4	392
Copperbelt	35.4	1,618	43.6	438
Eastern	29.7	1,641	43.4	388
Luapula	28.4	1,459	37.8	304
Lusaka	41.1	1,267	46.3	423
Muchinga	18.8	2,055	45.1	266
Northern	19.4	1,399	32.6	212
North-Western	35.9	1,878	40.0	510
Southern	40.3	978	45.7	338
Western	46.5	2,013	34.5	767
Marital status				
Never married	94.5	3,377	45.3	2,649
Married or living together	7.8	11,489	42.1	629
Divorced or separated	93.2	839	31.1	646
Widowed	82.5	158	43.3	106
Education				
No education	16.8	1,375	32.7	168
Primary	26.2	6,601	35.6	1,219
Secondary	43.1	6,768	44.9	2,286
More than secondary	42.2	1,118	51.3	363
Wealth quintile				
Lowest	27.0	4,165	32.9	866
Second	28.0	3,538	39.7	731
Middle	35.0	2,776	40.6	736
Fourth	39.7	2,736	43.4	825
Highest	42.3	2,661	50.6	880

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

Among adults aged 15 years and older, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey by selected demographic characteristics, ZAMPHIA 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
Age				
15-19	78.6	1,609	44.9	1,061
20-24	53.0	2,727	46.1	1,081
25-29	35.2	2,619	39.5	680
30-34	23.7	2,042	39.9	385
35-39	21.0	1,915	36.9	290
40-44	19.2	1,446	39.0	217
45-49	19.0	1,247	38.6	178
50-54	12.3	804	37.6	64
55-59	8.2	566	(37.3)	34
60-64	9.4	393	(32.9)	26
65+	6.3	508	*	22
Total 15-24	63.0	4,336	45.5	2,142
Total 15-49	38.0	13,605	42.7	3,892
Total 50+	9.4	2,271	34.6	146
Total 15+	34.5	15,876	42.4	4,038

[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 2020 indicator 3.18: Condom use at last high-risk sex.

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

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

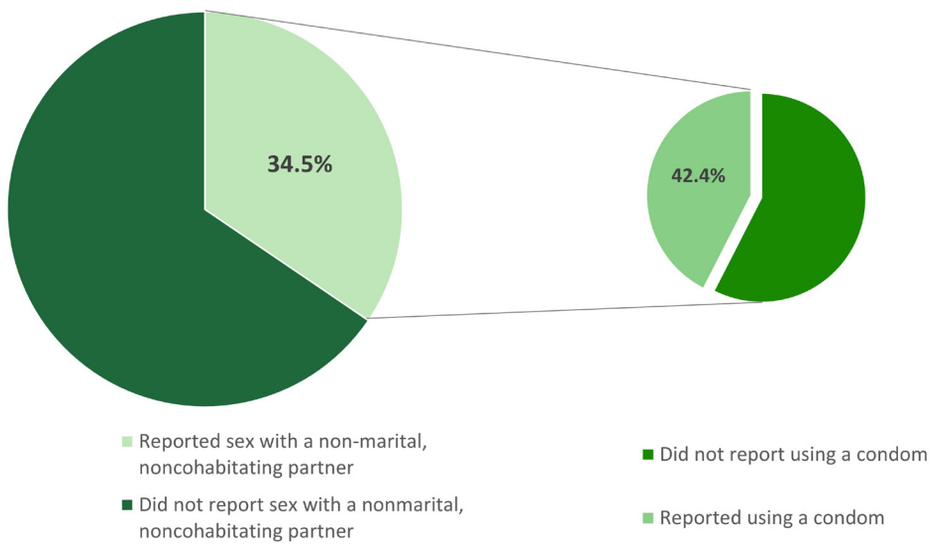

Table 12.5: Male circumcision

Percent distribution of men aged 15 years and older by self-reported circumcision status, by result of ZAMPHIA HIV test and selected demographic characteristics, ZAMPHIA 2021

	Circumcised[1]		Uncircumcised	Total	Number
Characteristic	Medical circumcision	Non-medical circumcision			
Result of ZAMPHIA 2021 HIV test					
HIV positive	18.4	6.2	75.4	100.0	682
HIV negative	33.3	6.7	60.0	100.0	7471
Not tested	34.5	7.6	57.9	100.0	1438
Age of circumcision					
0-4	63.5	36.5	NA	100.0	154
5-9	59.9	40.1	NA	100.0	532
10+	87.9	12.1	NA	100.0	3039
Residence					
Urban	42.5	5.1	52.4	100.0	3513
Rural	25.7	8.0	66.3	100.0	6078
Province					
Central	26.3	3.2	70.5	100.0	1003
Copperbelt	42.7	6.9	50.4	100.0	1095
Eastern	17.2	1.3	81.4	100.0	971
Luapula	32.8	3.5	63.7	100.0	891
Lusaka	38.2	3.0	58.8	100.0	737
Muchinga	22.8	1.3	75.9	100.0	1216
Northern	14.8	1.8	83.5	100.0	871

Table 12.5: Male circumcision (continued)

Percent distribution of men aged 15 years and older by self-reported circumcision status, by result of ZAMPHIA HIV test and selected demographic characteristics, ZAMPHIA 2021

	Circumcised[1]		Uncircumcised	Total	Number
Characteristic	Medical circumcision	Non-medical circumcision			
North-Western	37.7	48.5	13.8	100.0	1078
Southern	31.6	3.2	65.2	100.0	583
Western	46.9	16.0	37.1	100.0	1146
Marital status					
Never married	44.9	5.0	50.0	100.0	3547
Married or living together	23.5	8.2	68.3	100.0	5518
Divorced or separated	23.6	5.4	71.0	100.0	402
Widowed	9.2	16.6	74.2	100.0	106
Education					
No education	13.3	8.7	78.0	100.0	577
Primary	20.4	8.6	71.0	100.0	3548
Secondary	39.5	5.7	54.7	100.0	4661
More than secondary	48.8	5.3	45.9	100.0	796
Wealth quintile					
Lowest	22.1	11.1	66.8	100.0	2333
Second	24.6	7.7	67.7	100.0	2119
Middle	28.2	7.2	64.6	100.0	1745
Fourth	35.1	5.2	59.7	100.0	1678
Highest	48.8	4.0	47.1	100.0	1716
Age					
15-19	43.8	3.8	52.4	100.0	1779
20-24	43.6	6.4	50.0	100.0	1446
25-29	39.6	6.5	53.9	100.0	1248
30-34	32.0	7.7	60.2	100.0	993
35-39	24.9	7.5	67.6	100.0	919
40-44	20.6	7.9	71.4	100.0	769
45-49	16.6	7.2	76.2	100.0	706
50-54	18.1	11.0	70.9	100.0	511
55-59	15.1	7.8	77.1	100.0	367
60-64	9.8	9.5	80.7	100.0	294
65+	10.6	11.5	78.0	100.0	559
Total 15-24	43.7	5.0	51.3	100.0	3225
Total 15-49	35.6	6.3	58.1	100.0	7860
Total 50+	13.8	10.2	76.0	100.0	1731
Total 15+	32.5	6.8	60.7	100.0	9591

[1]Relates to Global AIDS Monitoring 2020 indicator 3.16: Prevalence of male circumcision; and PEPFAR indicator VMMC_TOTALCIRC NAT / SUBNAT: Total number of men ever circumcised.

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, ZAMPHIA 2021

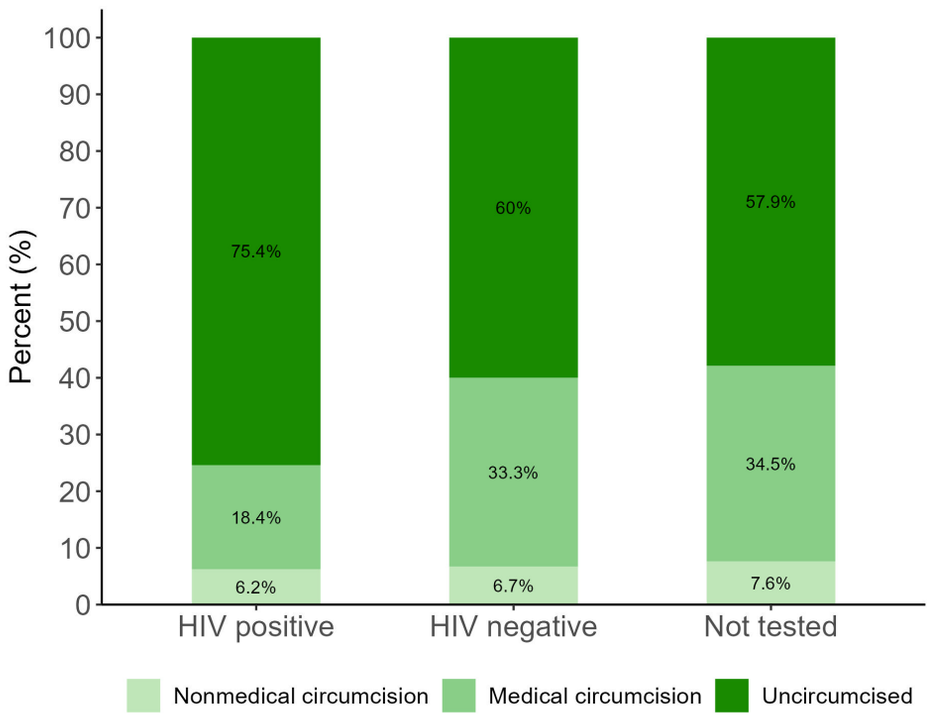

Table 12.6: Self-reported knowledge of pre-exposure prophylaxis

Among adults aged 15 years and older, percentage who reported they had heard of pre-exposure prophylaxis (PrEP) by selected demographic characteristics, ZAMPHIA 2021

Characteristic	Men		Women		Total	
	Percentage who had heard of PrEP	Number	Percentage who had heard of PrEP	Number	Percentage who had heard of PrEP	Number
Residence						
Urban	27.3	3,528	32.9	5,006	30.3	8,534
Rural	13.1	6,119	16.3	7,530	14.7	13,649
Province						
Central	15.4	1,008	22.4	1,155	18.7	2,163
Copperbelt	24.6	1,104	30.9	1,468	27.9	2,572
Eastern	15.0	977	16.8	1,206	15.9	2,183
Luapula	16.5	902	13.9	1,182	15.2	2,084
Lusaka	23.2	748	33.2	1,137	28.3	1,885
Muchinga	12.3	1,233	17.8	1,565	15.1	2,798
Northern	13.6	885	13.7	1,166	13.7	2,051
North-Western	21.7	1,055	14.1	1,310	17.7	2,365
Southern	18.9	584	28.5	793	23.8	1,377
Western	16.6	1,151	19.8	1,554	18.2	2,705

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

Among adults aged 15 years and older, percentage who reported they had heard of pre-exposure prophylaxis (PrEP) by selected demographic characteristics, ZAMPHIA 2021

Characteristic	Men		Women		Total	
	Percentage who had heard of PrEP	Number	Percentage who had heard of PrEP	Number	Percentage who had heard of PrEP	Number
Marital status						
Never married	17.8	3,553	22.6	3,412	19.9	6,965
Married or living together	19.5	5,561	24.5	6,859	22.1	12,420
Divorced or separated	21.7	408	25.9	1,231	24.6	1,639
Widowed	10.9	107	16.6	1,014	16.0	1,121
Education						
No education	7.6	582	11.3	1,439	10.0	2,021
Primary	10.1	3,571	16.1	5,427	13.4	8,998
Secondary	19.8	4,681	27.1	4,998	23.2	9,679
More than secondary	50.9	804	65.2	661	56.7	1,465
Wealth quintile						
Lowest	10.1	2,351	11.1	3,280	10.6	5,631
Second	11.1	2,129	14.9	2,548	13.0	4,677
Middle	14.7	1,749	19.6	2,062	17.1	3,811
Fourth	21.7	1,685	29.6	2,225	25.8	3,910
Highest	33.4	1,733	38.1	2,421	35.9	4,154
Age						
15-19	10.5	1,777	14.9	2,034	12.7	3,811
20-24	20.0	1,447	25.8	2,065	22.9	3,512
25-29	21.8	1,256	31.6	1,827	26.8	3,083
30-34	25.6	1,001	31.0	1,367	28.5	2,368
35-39	21.6	927	25.7	1,305	23.8	2,232
40-44	23.9	777	27.7	979	25.8	1,756
45-49	22.3	712	22.3	840	22.3	1,552
50-54	17.0	516	22.5	574	19.7	1,090
55-59	20.1	367	17.3	507	18.7	874
60-64	18.9	297	19.1	372	19.0	669
65+	8.1	570	5.3	666	6.6	1,236
Total 15-24	14.9	3,224	20.0	4,099	17.5	7,323
Total 15-49	19.5	7,897	25.0	10,417	22.3	18,314
Total 50+	15.3	1,750	14.9	2,119	15.1	3,869
Total 15+	18.9	9,647	23.5	12,536	21.2	22,183

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 years and older who are HIV negative, percentage who reported they would take pre-exposure prophylaxis (PrEP) to prevent HIV by selected demographics characteristics, ZAMPHIA 2021

	Men		Women		Total	
Characteristic	**Percentage who would take PrEP**	**Number**	**Percentage who would take PrEP**	**Number**	**Percentage who would take PrEP**	**Number**
Heard of PrEP						
Yes	74.9	1,261	78.7	1,681	76.9	2,942
No	55.7	6,030	57.5	7,009	56.6	13,039
Residence						
Urban	55.6	2,603	62.0	3,280	58.8	5,883
Rural	61.5	4,714	62.0	5,424	61.8	10,138
Province						
Central	60.0	745	62.7	781	61.3	1,526
Copperbelt	59.8	853	63.4	1,026	61.5	1,879
Eastern	69.5	708	63.9	736	66.9	1,444
Luapula	72.8	796	60.0	943	66.4	1,739
Lusaka	44.6	491	64.9	679	54.5	1,170
Muchinga	37.3	815	52.7	995	45.0	1,810
Northern	60.4	767	58.1	958	59.2	1,725
North-Western	74.7	858	57.7	999	65.9	1,857
Southern	55.4	380	69.0	463	62.1	843
Western	62.2	904	57.1	1,124	59.6	2,028
Marital status						
Never married	57.7	2,912	58.6	2,614	58.1	5,526
Married or living together	60.1	4,047	65.8	4,750	63.0	8,797
Divorced or separated	67.7	274	63.9	758	65.1	1,032
Widowed	42.7	69	45.4	568	45.1	637
Education						
No education	52.4	446	52.5	964	52.5	1,410
Primary	59.1	2,682	61.6	3,794	60.4	6,476
Secondary	60.1	3,646	63.6	3,518	61.7	7,164
More than secondary	58.2	536	69.0	420	62.5	956

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

Among adults aged 15 years and older who are HIV negative, percentage who reported they would take pre-exposure prophylaxis (PrEP) to prevent HIV by selected demographics characteristics, ZAMPHIA 2021

	Men		Women		Total	
Characteristic	Percentage who would take PrEP	Number	Percentage who would take PrEP	Number	Percentage who would take PrEP	Number
Wealth quintile						
Lowest	59.5	1,827	59.1	2,398	59.3	4,225
Second	62.5	1,642	62.7	1,831	62.6	3,473
Middle	63.8	1,347	59.9	1,387	62.0	2,734
Fourth	56.5	1,260	63.7	1,497	60.1	2,757
Highest	54.2	1,241	64.2	1,591	59.2	2,832
Age						
15-19	54.0	1,470	56.5	1,637	55.2	3,107
20-24	62.4	1,176	67.0	1,577	64.7	2,753
25-29	60.0	997	67.6	1,278	63.7	2,275
30-34	65.8	730	68.3	886	67.1	1,616
35-39	64.0	672	67.2	819	65.6	1,491
40-44	63.3	523	66.7	569	64.9	1,092
45-49	61.1	481	67.1	503	63.8	984
50-54	56.9	342	60.4	360	58.6	702
55-59	60.6	268	54.8	347	57.7	615
60-64	46.1	213	47.8	260	47.0	473
65+	40.8	445	32.2	468	36.1	913
Total 15-24	57.9	2,646	61.4	3,214	59.6	5,860
Total 15-49	60.5	6,049	64.7	7,269	62.5	13,318
Total 50+	50.4	1,268	46.1	1,435	48.2	2,703
Total 15+	59.2	7,317	62.0	8,704	60.6	16,021

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 years and older who are HIV negative, percentage who reported they had ever taken pre-exposure prophylaxis (PrEP) to prevent HIV by selected demographic characteristics, ZAMPHIA 2021

Characteristic	Men		Women		Total	
	Percentage who had ever taken PrEP	Number	Percentage who had ever taken PrEP	Number	Percentage who had ever taken PrEP	Number
Residence						
Urban	4.4	728	4.8	1051	4.6	1779
Rural	2.5	612	4.5	752	3.5	1364
Province						
Central	3.1	115	5.3	172	4.3	287
Copperbelt	2.6	226	7.1	342	5.1	568
Eastern	1.1	133	4.3	135	2.7	268
Luapula	6.0	121	2.2	135	4.3	256
Lusaka	5.3	110	2.9	231	3.9	341
Muchinga	5.4	121	3.5	192	4.3	313
Northern	1.6	100	4.3	122	2.9	222
North-Western	3.2	183	2.0	128	2.7	311
Southern	2.2	93	4.6	150	3.5	243
Western	6.2	138	6.1	196	6.1	334
Marital status						
Never married	2.4	513	3.2	562	2.8	1075
Married or living together	4.5	756	5.3	1003	5.0	1759
Divorced or separated	2.4	57	5.4	163	4.5	220
Widowed	*	10	7.3	73	9.3	83
Education						
No education	(0.0)	32	1.5	89	1.1	121
Primary	2.4	268	6.2	526	4.7	794
Secondary	3.5	749	4.5	908	4.0	1657
More than secondary	5.0	291	3.8	280	4.4	571
Wealth quintile						
Lowest	2.6	191	4.7	252	3.7	443
Second	3.4	201	5.9	243	4.7	444
Middle	4.3	210	4.2	247	4.3	457
Fourth	3.9	289	5.6	425	4.9	714
Highest	3.4	449	3.9	636	3.6	1085

Table 12.8 Ever taken pre-exposure prophylaxis (continued)

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

Characteristic	Men		Women		Total	
	Percentage who had ever taken PrEP	Number	Percentage who had ever taken PrEP	Number	Percentage who had ever taken PrEP	Number
Age						
15-19	0.9	166	2.3	244	1.7	410
20-24	2.3	220	5.0	376	3.8	596
25-29	4.8	229	4.9	366	4.8	595
30-34	5.6	198	2.3	238	3.8	436
35-39	3.3	150	8.9	200	6.4	350
40-44	5.0	126	6.1	134	5.5	260
45-49	6.1	86	6.4	89	6.2	175
50-54	4.5	50	13.7	64	9.5	114
55-59	(0.0)	46	(0.0)	44	0.0	90
60-64	(1.5)	28	(0.0)	28	0.8	56
65+	(1.0)	41	*	20	0.6	61
Total 15-24	1.7	386	3.9	620	3.0	1006
Total 15-49	3.8	1175	4.7	1647	4.3	2822
Total 50+	1.8	165	5.1	156	3.4	321
Total 15+	3.6	1340	4.7	1803	4.2	3143

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

( ) 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.

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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 women, TB, and common noncommunicable chronic health conditions that can also complicate their clinical care.

Women 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 women.[1] Among women 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 women living with HIV aged 50-65 years, those in that age bracket who have never been screened should also be prioritized. ZAMPHIA 2021 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, ZAMPHIA 2021 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] The First National TB Prevalence Survey was conducted in 2013-2014 and estimated a prevalence of 455 per 100,000 population for all age groups.[7] According to the 2022 UNAIDS data, in Zambia there were an estimated 23,000 incident cases of tuberculosis among people living with HIV in 2020. They estimated over 300,000 people living with HIV who had started TB preventative therapy.[8]

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 Zambia. In Zambia, anyone with symptoms indicative of TB is referred to a chest clinic (TB clinic) for evaluation and management. 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 women 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 women living with HIV

Among HIV-positive women aged 15+ years, percentage who reported they had ever received a cervical cancer screening test by selected demographic characteristics, ZAMPHIA 2021

	Among HIV-positive women		Among HIV-positive women 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	65.1	835	5.5	524
Rural	48.6	682	2.3	313
Province				
Central	59.2	160	0.8	94
Copperbelt	51.4	216	1.1	122
Eastern	63.2	156	2.4	103
Luapula	34.5	133	(4.2)	49
Lusaka	71.6	179	10.8	125
Muchinga	40.3	99	(0.0)	45
Northern	39.7	80	(0.0)	36
North-Western	42.6	107	(7.9)	43
Southern	70.6	134	1.6	88
Western	50.4	253	2.2	132
Marital status				
Never married	42.0	249	1.3	113
Married or living together	62.1	714	4.9	409
Divorced or separated	54.1	293	5.7	166
Widowed	62.4	260	3.0	148
Education				
No education	58.3	144	4.7	76
Primary	54.9	640	3.2	343
Secondary	58.3	643	4.8	361
More than secondary	69.2	90	6.5	57
Wealth quintile				
Lowest	41.5	263	0.9	110
Second	53.8	248	0.6	118
Middle	54.7	300	3.9	165
Fourth	60.8	373	7.9	230
Highest	67.8	333	3.8	214

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

Among HIV-positive women aged 15+ years, percentage who reported they had ever received a cervical cancer screening test by selected demographic characteristics, ZAMPHIA 2021

Characteristic	Among HIV-positive women		Among HIV-positive women who reported they had received a cervical cancer screening test	
	Percentage who reported they had ever received a cervical cancer screening test	Number	Percentage with an abnormal result	Number
Age				
15-19	(18.9)	39	*	7
20-24	36.1	109	(4.3)	37
25-29	52.4	193	2.4	100
30-34	58.2	228	3.9	134
35-39	61.6	243	8.8	148
40-44	64.8	218	2.5	136
45-49	71.4	184	4.4	116
50-54	63.2	122	7.0	76
55-59	43.7	91	(0.0)	39
60-64	58.4	53	(0.0)	27
65+	(54.6)	37	*	17
Total 15-24	31.6	148	(3.6)	44
Total 15-49	58.0	1214	4.5	678
Total 30-49	63.5	873	4.9	534
Total 50+	56.3	303	3.5	159
Total 15+	57.7	1517	4.3	837

[1]Relates to Global AIDS Monitoring 2020 indicator 10.8: Cervical cancer screening among women living with HIV; and PEPFAR indicator CXCA_SCRN NAT/SUBNAT: Percentage of HIV-positive women on antiretroviral therapy screened for cervical cancer.

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

Among HIV-positive and HIV-negative adults aged 15 years and older, percentage indicating that they have ever been told by a doctor or health worker that they have chronic health conditions, by self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral [ARV] in blood), ZAMPHIA 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	2.5	359	2.0	5	(5.7)	3	2.9	51	2.9	59
No	97.4	16212	97.7	250	(93.4)	38	97.1	1856	97.1	2144
High blood pressure or hypertension										
Yes	7.0	1164	11.3	28	(9.0)	5	12.0	219	11.9	252
No	92.9	15408	88.7	228	(90.1)	36	87.9	1687	88.0	1951
Heart disease or chronic heart condition										
Yes	1.4	198	1.3	3	(4.6)	1	0.6	16	0.8	20
No	98.5	16379	98.7	253	(94.5)	40	99.2	1889	99.1	2182
Kidney disease										
Yes	0.5	85	0.0	0	(0.0)	0	0.6	11	0.5	11
No	99.3	16484	100.0	256	(99.1)	41	99.3	1894	99.4	2191
Cancer or tumor										
Yes	0.4	53	0.0	0	(0.0)	0	1.9	29	1.6	29
No	99.5	16532	100.0	256	(99.1)	41	98.1	1878	98.4	2175
Lung disease or chronic lung condition										
Yes	0.4	66	1.2	2	(0.0)	0	1.1	19	1.1	21
No	99.5	16516	98.8	254	(100.0)	42	98.8	1887	98.8	2183
Depression or mental health condition										
Yes	0.8	13	1.2	2	(4.7)	2	1.1	20	1.2	24
No	99.1	16468	98.8	254	(95.3)	40	98.8	1885	98.8	2179
Total 15+	100.0	16599	100.0	256	(100.0)	42	100.0	1907	100.0	2205

[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.

Table 13.3: HIV testing in tuberculosis clinics

Among adults aged 15 years and older 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, ZAMPHIA 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	57.5	13.3	29.2	100.0	284
Female	57.0	9.8	33.2	100.0	561
TB diagnosis in the 12 months before the survey					
Diagnosed with TB	73.0	13.8	13.2	100.0	96
Not diagnosed with TB	55.4	10.8	33.8	100.0	745
Total 15+	57.2	11.1	31.7	100.0	845

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

Among self-reported HIV-positive adults aged 15 years and older, 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, ZAMPHIA 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	10.9	614	19.0	60	*	14
Female	9.0	1394	11.2	116	*	14
Residence						
Urban	10.6	1100	19.2	103	*	21
Rural	8.7	908	7.4	73	*	7
Province						
Central	11.4	232	(28.7)	25	*	6
Copperbelt	8.4	282	*	22	*	3
Eastern	14.8	231	(10.9)	32	*	3
Luapula	6.5	138	*	9	*	4
Lusaka	12.0	246	(9.0)	29	*	3
Muchinga	7.6	133	*	9	*	0
Northern	4.0	100	*	5	*	1
North-Western	7.6	120	*	8	*	2
Southern	8.9	201	*	18	*	3
Western	5.5	325	*	19	*	3
Age						
15-24	9.5	129	*	12	*	1
25-34	8.4	444	(19.5)	34	*	7
35-44	7.3	634	(12.0)	49	*	6
45-54	13.0	510	10.8	51	*	7
55-64	12.4	219	(23.0)	25	*	7
65+	7.2	72	*	5	*	0
Pregnancy status						
Currently pregnant	3.7	56	*	2	*	0
Not currently pregnant	9.2	1334	11.4	114	*	14
Total 15-24	9.5	129	*	12	*	1
Total 15-49	8.6	1501	15.6	123	*	20
Total 50+	13.0	507	11.5	53	*	8
Total 15+	9.7	2008	14.3	176	(87.2)	28

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

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

Table 13.5: Tuberculosis symptom screening in HIV clinics

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

Characteristic	Percentage screened for TB symptoms[1]	Number
Sex		
Male	58.6	535
Female	63.0	1248
Total 15+	61.5	1783

[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 ZAMPHIA 2021. In-depth details are provided in the ZAMPHIA 2021 Sampling and Weighting Technical Report, which may be found on the https://nada.zamstats.gov.zm.

A.1 SAMPLE DESIGN

Household characteristics

The sample design for the ZAMPHIA 2021 is a stratified multistage probability sample design, with strata defined by the ten provinces of the country, first-stage sampling units defined by EAs within strata, second-stage sampling units defined by households within EAs, and finally eligible persons within households. Within each district, the first-stage sampling units [also referred to as primary sampling units (PSUs)] were selected with probabilities proportionate to the updated number of households in the PSU derived from the Zambia 2010 Population and Housing Census.1 The allocation of the sample PSUs to the ten provinces was made in a manner designed to achieve specified precision levels for national estimates of the HIV incidence among adults aged 15-49 years, national and subnational-level estimates of VLS among adults aged 15-49 years living with HIV and national estimates of VLS among young women aged 15-24 years living with HIV.

The second-stage sampling units were selected from lists of dwelling units/households compiled by trained staff for each of the sampled PSUs. Upon completion of the listing process, a random systematic sample of dwelling units/households was selected from each PSU at rates designed to yield self-weighting (ie, equal probability) samples within each district to the extent feasible.

Within the sampled households, all eligible adults, defined as those aged 15 years and above, who were present in the household on the night prior to the interview were included in the study sample for data collection.

Population of Inference

The population of inference for the ZAMPHIA 2021 is comprised of the de facto household population. The de facto population is comprised of individuals who were present in households (ie, slept in the household) on the night prior to the household interview as opposed to the usual residents of the household who may not have slept there the night before the survey.

Precision Specifications and Assumptions

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

- Province-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 ZAMPHIA 2021.

- Provincial-level VLS for HIV-positive persons aged 15-49 years = 0.5
- National-level and provincial-level HIV prevalence estimates for persons aged 15-49 years as specified in Table 1, which are based on the ZAMPHIA 2016 survey (Ministry of Health, Zambia 2019)
- National-level annual HIV incidence for persons aged 15-49 years = 0.64%, which is based on the ZAMPHIA 2016 survey (Ministry of Health, Zambia 2019)
- Intraclass correlation coefficient (ICC) for VLS = 0.061, which is based on the ZAMPHIA 2016 survey and is the ICC associated with VLS, discounting the effect of differential weighting (Ministry of Health, Zambia 2019)
- ICC for HIV prevalence = 0.017, which is based on the ZAMPHIA 2016 survey and is the ICC associated with HIV prevalence, discounting the effect of differential weighting (Ministry of Health, Zambia 2019)
- ICC for HIV incidence = 0.0, which is based on the ZAMPHIA 2016 survey and is the ICC associated with HIV incidence, discounting the effect of differential weighting (Ministry of Health, Zambia 2019)
- Mean duration of recent infection = 130 days
- Probability false recent = 0.000001%
- An adjustment factor = 1.018 to account for mean duration of recent infection and probability false recent is included for national HIV incidence estimation and associated variance calculations
- Average number of selected dwelling units per cluster = 30, which should yield an average of approximately 24 responding HHs per cluster

- Actual number of selected dwelling units per cluster will reflect changes in the measure of size between the sampling frame and HH listing
- Average number of de facto HH household members aged 15-49 years = 2.07, based on the ZAMPHIA 2016 survey (Ministry of Health, Zambia 2019)
- Provincial-level average number of de facto HH members aged 15-49 years as specified in Table 3 based on the ZAMPHIA 2016 survey (Ministry of Health, Zambia 2019)
- Provincial-level HH occupancy rates, based on the ZAMPHIA 2016 survey (Ministry of Health, Zambia 2019)
- Provincial-level HH interview, individual interview, and HIV testing response rates, based on the ZAMPHIA 2016 survey (Ministry of Health, Zambia 2019)

Selection of the Primary Sampling Units

The first stage ZAMPHIA 2021 sample was selected from a sampling frame of EAs that originally had been created for the 2010 Zambia Population and Housing Census. The EAs in the updated sampling frame were generally the same as in the 2010 census, except that the measures of size of EAs had been updated to reflect current information. The updated sampling frame consisted of 25,631 EAs containing an estimated 2,513,768 households as of 2010.

A stratified sample of 404 EAs was selected with probability proportional to the EA measure of size and with independent selection in each sampling stratum. The measure of size is the number of residential households residing in the EA based on the 2010 Zambia 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 ZAMPHIA 2021 Sampling and Weighting Technical Report available on the https://nada.zamstats.gov.zm.

Selection of Households

For both sampling and analysis purposes, a household was defined as a group of individuals who reside in a physical structure such as a house, apartment, compound, or homestead, and share in housekeeping arrangements. The physical structure in which people reside was referred to as the dwelling unit, which may have contained more than one household meeting the above definition. Households were eligible for participation in the study if they were located within the sampled EA.

The selection of households for the ZAMPHIA 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 ZAMPHIA 2021 Sampling and Weighting Technical Report on the https://nada.zamstats.gov.zm.

Selection of households utilized an equal probability design. In order to achieve equal probability samples of households within each of the 10 provinces of Zambia, the sampling rates required to select dwelling units/households within an EA depended on the difference between the MOS used in sampling and the actual number of dwelling units/households found at the time of listing. Thus, application of these within-EA sampling rates could have yielded more or less than the desired number of households in EAs where the sampling MOS differs from the actual listing count. The ZAMPHIA 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 the ZAMPHIA 2021 involved (1) compiling a list (the household roster) 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. Those who met the eligibility requirements (individuals aged 15 and above who slept in the household the night before) were offered survey enrollment. Only eligible individuals who were able to provide verbal informed consent/assent to participate in the survey were retained for subsequent weighting and analysis.

The ZAMPHIA 2021 Sampling and Weighting Technical Report provides a brief description of the process for listing and selecting individuals for participation in the ZAMPHIA 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 (eg, 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 ZAMPHIA 2021, nonresponse could have occurred at different stages of data collection, for example, (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 viable blood sample.

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 ZAMPHIA 2021 included several steps. Methods and results for each of the steps below are detailed in the ZAMPHIA 2021 Sampling and Weighting Technical Report.

Initial checks: Checks of the data files were carried out as part of the survey and data QC, 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 PSU base weights: The weighting process began with the calculation and checking of the sample PSU (EA) base weights as the reciprocals of the overall PSU probabilities of selection.

Calculation of household weights: The next step was to calculate household weights. The household base weights were calculated as the PSU weights times the reciprocal of the within-PSU household selection probabilities. The household base weights were adjusted first to account for dwelling units for which it could not be determined whether the dwelling unit contained an eligible household and then the responding households had their weights adjusted to account for nonresponding eligible households. This adjustment was made based on the EA the households were in, and the resulting weight was the final household weight.

Calculation of person-level interview weights: Once the household weights were determined, they were used to calculate the individual base weights. The individual base weights were then adjusted for nonresponse among the eligible individuals, with a final adjustment for the individual weights to compensate for under-coverage in the sampling process by post-stratifying (ie, weighting up) to 2021 population projections.

Calculation of person-level HIV testing weights: The individual weights adjusted for nonresponse were in turn the initial weights for the HIV testing data sample, with a further adjustment for nonresponse to HIV testing, and a final post-stratification adjustment to compensate for under-coverage.

Application of weighting adjustments to jackknife replicates: All of 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 accounted for the complex sample design and every step of the weighting process.

A.3 REFERENCES

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APPENDIX B. HIV TESTING METHODOLOGY

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SPECIMEN COLLECTION AND HANDLING

Qualified survey staff collected blood from consenting participants: approximately 14 mL of venous blood or 1 mL of capillary blood using finger-stick from individuals who either refused to give venous blood or for whom venous blood draw failed.

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.

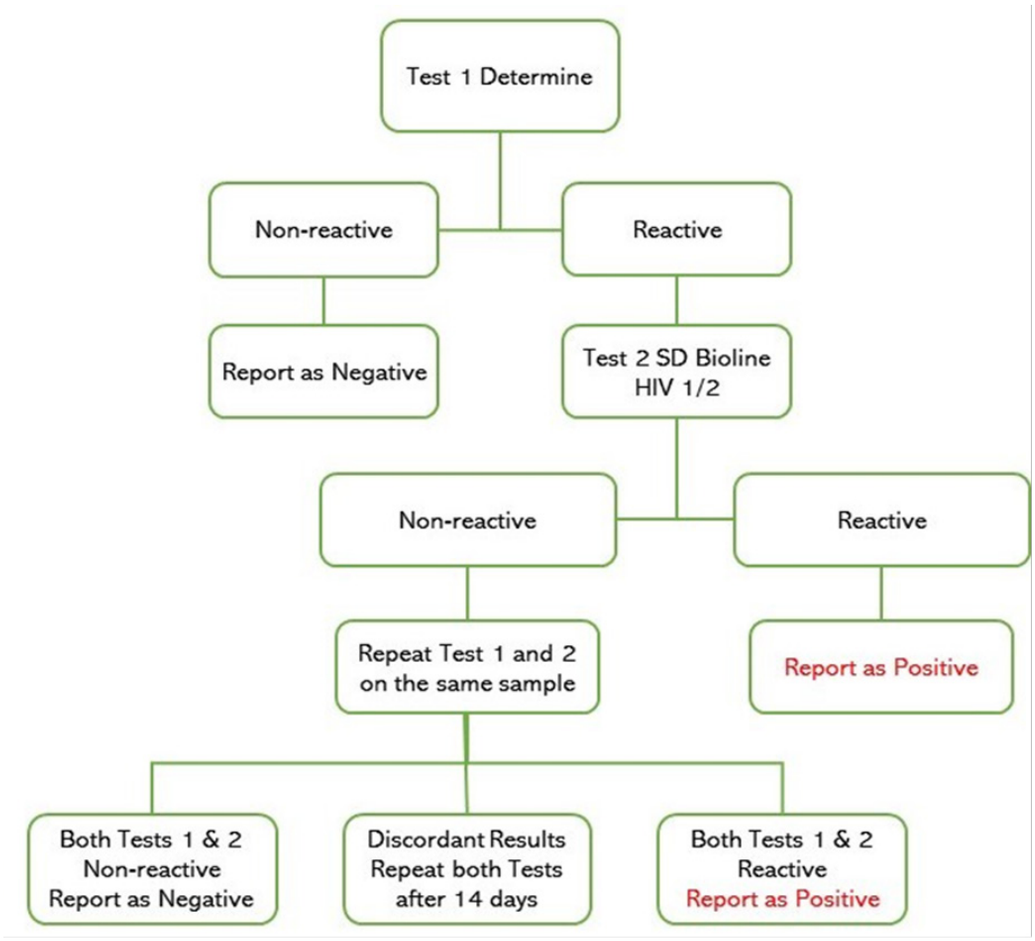
HOUSEHOLD-BASED PROCEDURES

HIV Rapid Testing

HIV rapid testing was conducted in each household in accordance with Zambia'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.

The Zambia HIV rapid testing algorithm applies two tests in sequence: A screening test by DetermineTM and a confirmatory test with SD BiolineTM. Individuals with a non-reactive result on the screening test were reported as HIV-negative. Individuals with a reactive first test result underwent subsequent testing with SD BiolineTM. Those with a reactive result on both tests were classified as HIV-positive for the purposes of the survey and were referred to a health facility for enrollment into care. Individuals with a reactive first test result followed by a non-reactive second test result had both tests repeated on the same sample. Those with discordant results on the repeat tests were classified as inconclusive and were referred to the nearest facility for retesting in two weeks as per national guidelines (Zambia Consolidated Guidelines for Treatment and Prevention of HIV Infection 2018).

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



Counseling, Referral to Care, and Active Linkage to Care

Pre- and post-test counseling were conducted in each household in accordance with Zambia's national guidelines. In Zambia, the age of consent for HIV testing is 16 years. For minors ages 16 -17 years, results were received by the adolescent without their parents present unless requested by the minor. The post-counseling session for minors ages 16-17 years may have included a parent/ guardian based on the choice of the minor participant. For minors 15 years old, results were received by their parent/guardian without the minor present unless the parent/guardian requested that the minor be present. The post-test counseling session for minors aged 15 years may have included the minor based on the choice of the parent/guardian.

All participants who consented to HIV testing selected a referral health facility prior to testing. Those with an HIV-positive test result were referred to HIV care and treatment at the health facility of their choice. Further, HIV-positive participants who were not on ART were asked for their consent to be contacted by qualified healthcare personnel to facilitate active linkage to HIV care and treatment in Zambia's healthcare system.

For participants who self-reported being HIV-positive but who tested HIV-negative in the household at the time of the survey, an additional HIV RT test was conducted at the satellite/mobile lab (following the same national algorithm) to resolve any discrepancies. Additional tests such as HIV total nucleic acid (TNA) polymerase chain reaction (PCR) were conducted for confirmation of HIV status. Survey staff were trained on how to interpret the initial discrepant rapid test results for these participants and provide counseling as appropriate. Survey staff returned to the household for these participants, to provide counseling on the final confirmed result after consultation with the Ministry of Health. The survey team visiting these participants were trained to interpret the final results and to provide counseling accordingly. 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.

LABORATORY-BASED PROCEDURES

Satellite laboratories for the survey were established in 25 existing health facility laboratories. The University Teaching Hospital central reference laboratory in Lusaka was chosen for more specialized tests.

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.

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) (Figure B.2). 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 evaluated for participants who reported an HIV-positive status but tested HIV negative during the survey, as well as for samples that were HIV positive by the rapid testing algorithm but were HIV negative or indeterminate by Geenius testing (Figure B.2). HIV TNA PCR was conducted using the COBAS® AmpliPrep/COBAS® TaqMan® (CAP/CTM) (Roche Molecular Systems, Inc., Branchburg, New Jersey) at University Teaching Hospital in Lusaka, Zambia in accordance with the manufacturer-specified protocol.

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 HIV-positive participants with plasma samples was measured using the COBAS® AmpliPrep/COBAS® TaqMan® (CAP/CTM), COBAS® 4800/9600, Hologic® Panther or Abbott m2000 platforms. For testing performed using the Roche CAP/CTM or 4800 instruments, plasma was tested using the HIV-1 Test (version 2.0 for CAP/CTM) and DBS were tested using the Free Virus Elution (FVE) assay on the same test, the HIV-1 Test (version 2.0 for CAP/CTM) but using a separate test definition file (TDF) from the TDF used for plasma, which is optimized by Roche for DBS on the instrument. For testing performed using the Abbott m2000 platform (m2000sp and m2000rt) plasma and DBS samples will be tested using the RealTime HIV-1 assay. Trained staff performed testing based on approved SOPs and manufacturer's SOP.

Return of CD4 and Viral Load Results

The return of results coordinator delivered CD4 and viral load results within 8 to 12 weeks to the health facility chosen by each HIV-positive participant. HIV-positive participants were provided with a referral form during HBTC for subsequent retrieval of their results. For participants with a phone, the participant received an automated SMS notification when the results were ready. Participants who did not respond to the SMS notification were called by survey staff to inform them their test results were available at the health facility. For participants that did not have a phone, they were told to present the referral form at the health facility of their choice in the 13th week on a given date following testing.

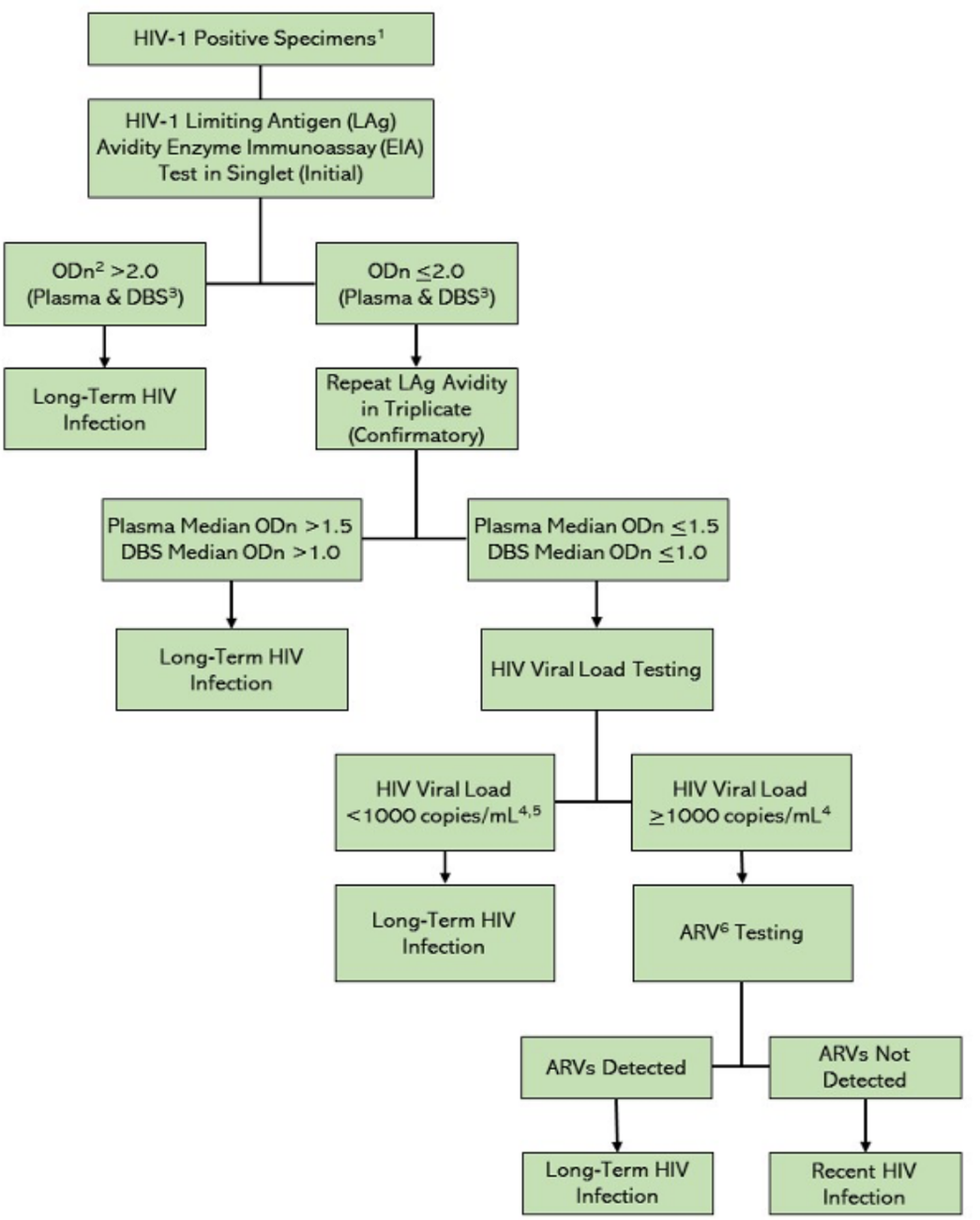
HIV Recency Testing

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 detection of antiretrovirals (ARV).

The LAg testing protocol required the assay to be performed twice: the initial screening test, followed by a confirmatory test in triplicate for specimens suggesting recent infection. Specimens with a normalized optical density (ODn) value ≤2.0 during initial testing were confirmed by further testing of the sample in triplicate. The ODn was calculated by dividing the OD for each specimen by the median OD of the calibrator in each test plate. For specimens that underwent confirmatory testing, the final ODn value for that specimen was determined by the median ODn value from the triplicate results. Plasma specimens with ODn values >1.5 were classified as long-term infections. For those specimens where plasma was not available for LAg testing, comparable testing was done on DBS specimens, using a cutoff of 1.0. All remaining specimens with ODn values ≤1.5 (or DBS with ODn value ≤1.0) and VL ≥ 1000 cp/mL were classified as preliminary recent infections.

The recent infection testing algorithm also considered ARV detection results, – if ARVs were present in the plasma or DBS specimen classified as recent by LAg and VL results, the specimen was removed from the number of recent specimens and included in the number of long-term specimens. Specimens with HIV RNA < 1000 cp/mL were classified as long term. The final recent classification included LAg (plasma ODn ≤1.5; DBS ODn ≤ 1.0) + VL (≥ 1000 cp/mL) and absence of detectable ARV (Figure B.2).

Figure B.2 HIV-1 Recent Infection Testing Algorithm, ZAMPHIA 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) = 0.00; time cutoff (T) = 1 year. In-depth details are provided in the ZAMPHIA Technical Report, which may be found online on https://nada.zamstats.gov.zm.

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

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

	Men			
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	2,697.99	52.01	52.01	0.34
25-34	1,787.66	89.34	89.34	0.28
35-49	1,737.30	315.70	315.70	0.57
50+	1,267.21	272.79	272.79	0.66
15-49	6,257.65	422.35	422.35	1.15
15+	7,564.77	655.23	655.23	1.72
	Women			
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	3,379.65	132.35	132.35	9.29
25-34	2,255.50	407.50	407.50	6.29
35-49	1,953.27	675.73	675.42	1.13
50+	1,459.89	320.11	320.11	0.67
15-49	7,637.72	1,166.28	1,166.00	17.24
15+	9,108.04	1,475.96	1,475.67	18.26
	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	6,084.66	177.34	177.34	8.68
25-34	4,074.83	465.17	465.17	5.90
35-49	3,712.99	969.01	968.73	1.67
50+	2,727.28	592.72	592.72	1.33
15-49	13,957.40	1,526.60	1,526.34	16.79
15+	16,730.51	2,073.49	2,073.23	18.51

[1]Weighted number.

Note: mean duration recent infection (MDRI) = [130 days (95% CI: 118-142 days) or country-specific]; proportion 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 using a validated high-resolution liquid chromatography tandem mass spectrometry (LC-MS/MS) method. Briefly, ARVs were extracted from DBS specimen and chromatographically separated on a Zorbax RRHD Eclipse Plus C18 LC column (95Å, 3.0 x 50 mm, 1.8 µm) (Agilent Technologies, Torrance, California, United States) using a gradient elution. ARVs were detected using an Agilent 6495B triple quadrupole mass spectrometer (Agilent Technologies, Torrance, California, United States). Internal standards and in-house ARV-positive and -negative quality control (QC) samples were utilized in each run.

This qualitative assay was highly specific, as it provides chromatographic separation and distinct mass detection of all ARVs. It is highly sensitive, with a qualitative cut-off concentration of 20 ng/mL for each drug, and a signal-to-noise ratio of at least 5:1 for all drugs. Samples with ARV concentrations ≥20 ng/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. 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 International Laboratory Branch, CDC Atlanta, Georgia, United States.

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 ZAMPHIA 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 ZAMPHIA 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.

ZAMPHIA 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 ZAMPHIA 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 197 variance-estimation strata were created by pairing (or occasionally tripling) the sample clusters in the systematic order in which they had been selected. Hence, 197 replications were created. The variance of a sample-based statistic, y, was calculated as follows:

$$var(y) = \sum_{k=1}^{K} (y_k - y)^2$$

where y is the full-sample estimate, and y_k 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 ZAMPHIA 2021 are presented in tables C.1 through C.8, and sampling errors for all survey estimates may be found online on the https://nada.zamstats.gov.zm. For each variable, sampling error tables include the weighted estimate, unweighted denominator, standard error, design effect, or lower and upper 95% confidence limits.

Table C1: Sampling errors: Annual HIV incidence by age, ZAMPHIA 2021

Age (years)	Weighted estimate (%)	Standard error	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Men			
15-24	0.0	0.01	0.3	1.0	0.000	0.153
25-34	0.0	0.01	0.3	1.0	0.000	0.206
35-49	0.1	0.03	0.6	1.0	0.000	0.331
50+	0.1	0.04	0.7	1.0	0.000	0.497
15-49	0.1	0.01	0.2	0.4	0.000	0.145
15+	0.1	0.01	0.3	0.4	0.000	0.159
			Women			
15-24	0.8	0.12	2.1	0.5	0.288	1.248
25-34	0.8	0.10	1.1	0.4	0.171	1.384
35-49	0.2	0.04	1.1	1.0	0.000	0.461
50+	0.1	0.04	0.7	1.0	0.000	0.434
15-49	0.6	0.06	1.7	0.3	0.331	0.932
15+	0.6	0.05	1.7	0.3	0.301	0.821
			Total			
15-24	0.4	0.06	1.8	0.5	0.138	0.661
25-34	0.4	0.05	0.9	0.4	0.078	0.732
35-49	0.1	0.03	0.9	0.7	0.000	0.317
50+	0.1	0.04	1.3	1.0	0.000	0.369
15-49	0.3	0.03	1.4	0.3	0.174	0.500
15+	0.3	0.03	1.4	0.3	0.167	0.453

Table C2: Sampling errors: HIV prevalence by age, ZAMPHIA 2021

Age (years)	Weighted estimate (%)	Unweighted Number	Standard error %	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Men			
15-19	2.0	1,527	0.531	2.2458	0.272	0.86	3.04
20-24	1.8	1,223	0.409	1.1410	0.224	0.98	2.66
25-29	3.1	1,062	0.547	1.0499	0.175	2.00	4.25
30-34	7.0	815	1.156	1.6660	0.165	4.64	9.40
35-39	11.8	774	1.401	1.4626	0.119	8.87	14.64
40-44	15.9	658	2.943	4.2647	0.186	9.80	21.92
45-49	19.9	621	2.320	2.0899	0.116	15.16	24.72
50-54	28.8	458	7.731	13.3252	0.269	12.86	44.70
55-59	18.0	333	2.096	0.9875	0.116	13.70	22.33
60-64	15.3	257	2.886	1.6413	0.188	9.40	21.29
65+	7.7	492	1.559	1.6835	0.203	4.47	10.89
Total 15-24	1.9	2,750	0.368	2.0085	0.195	1.13	2.65
Total 15-49	6.3	6,680	0.665	4.9890	0.105	4.95	7.69
Total 50+	17.7	1,540	2.198	5.1032	0.124	13.19	22.24
Total 15+	8.0	8,220	0.486	2.6411	0.061	6.97	8.97
				Women			
15-19	1.9	1,764	0.368	1.2996	0.197	1.11	2.63
20-24	5.9	1,748	0.697	1.5252	0.118	4.49	7.36
25-29	12.0	1,520	0.898	1.1579	0.075	10.18	13.88
30-34	19.4	1,143	2.380	4.1392	0.123	14.49	24.30
35-39	22.4	1,105	1.581	1.5907	0.071	19.10	25.61
40-44	26.4	813	2.454	2.5155	0.093	21.36	31.47
45-49	30.5	711	2.221	1.6515	0.073	25.95	35.10
50-54	29.5	493	5.069	6.0733	0.172	19.10	39.98
55-59	21.3	445	2.254	1.3470	0.106	16.62	25.90
60-64	18.3	324	2.684	1.5596	0.147	12.73	23.79
65+	6.6	518	1.252	1.3087	0.189	4.06	9.21
Total 15-24	3.8	3,512	0.348	1.1724	0.092	3.05	4.49
Total 15-49	13.2	8,804	0.517	2.0481	0.039	12.18	14.31
Total 50+	18.0	1,780	1.534	2.8381	0.085	14.82	21.14
Total 15+	13.9	10,584	0.556	2.7298	0.040	12.80	15.09

Table C2: Sampling errors: HIV prevalence by age, ZAMPHIA 2021 (continued)

Age (years)	Weighted estimate (%)	Unweighted Number	Standard error %	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Total			
15-19	1.9	3,291	0.358	2.2497	0.187	1.17	2.65
20-24	3.9	2,971	0.388	1.1945	0.100	3.09	4.69
25-29	7.7	2,582	0.516	0.9699	0.067	6.60	8.73
30-34	13.6	1,958	1.311	2.8568	0.096	10.93	16.33
35-39	17.4	1,879	1.192	1.8511	0.068	15.00	19.90
40-44	21.2	1,471	1.452	1.8541	0.068	18.23	24.21
45-49	25.1	1,332	1.708	2.0643	0.068	21.61	28.64
50-54	29.1	951	6.233	17.8733	0.214	16.31	41.99
55-59	19.7	778	1.620	1.2915	0.082	16.33	23.00
60-64	16.9	581	1.918	1.5198	0.114	12.94	20.84
65+	7.1	1,010	0.965	1.4217	0.136	5.13	9.10
Total 15-24	2.8	6,262	0.290	1.9153	0.102	2.23	3.43
Total 15-49	9.9	15,484	0.390	2.6491	0.040	9.06	10.66
Total 50+	17.9	3,320	1.705	6.5800	0.096	14.34	21.36
Total 15+	11.0	18,804	0.374	2.6802	0.034	10.26	11.80

Table C3: Sampling errors: HIV prevalence by residence and subnational area, ZAMPHIA V 2021

	Weighted estimate (%)	Unweighted Number	Standard error %	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Men			
Residence							
Urban	9.3	3,039	0.6	1.3739	0.066	8.01	10.55
Rural	7.1	5,181	0.7	3.5980	0.096	5.67	8.45
Province							
Central	9.4	854	1.6	2.6142	0.171	6.11	12.78
Copperbelt	7.5	963	1.3	2.2030	0.168	4.89	10.08
Eastern	6.9	795	0.7	0.6457	0.104	5.44	8.43
Luapula	5.3	860	0.7	0.7503	0.125	3.96	6.69
Lusaka	10.1	589	1.7	1.9032	0.170	6.57	13.63
Muchinga	5.2	894	0.7	0.7755	0.125	3.89	6.60
Northern	5.3	828	1.0	1.5262	0.182	3.28	7.23
North-Western	5.3	932	1.0	1.7260	0.182	3.30	7.27
Southern	10.8	455	2.7	3.5071	0.252	5.21	16.46
Western	8.8	1,050	0.9	1.0983	0.104	6.94	10.72
				Women			
Residence							
Urban	17.3	4,267	0.6	1.1063	0.035	16.09	18.60
Rural	11.3	6,317	0.9	5.2817	0.081	9.38	13.15
Province							
Central	14.1	970	1.6	1.9314	0.110	10.88	17.27
Copperbelt	16.0	1,289	2.8	7.3620	0.173	10.33	21.76
Eastern	11.5	944	1.2	1.2779	0.102	9.07	13.91
Luapula	10.9	1,117	0.9	0.8360	0.078	9.12	12.63
Lusaka	18.6	897	1.4	1.2091	0.077	15.63	21.52
Muchinga	7.9	1,125	0.9	1.2818	0.115	6.01	9.76
Northern	6.3	1,090	0.7	0.8849	0.110	4.90	7.75
North-Western	8.2	1,112	1.3	2.4393	0.157	5.51	10.79
Southern	15.5	608	1.7	1.4118	0.112	11.94	19.14
Western	17.9	1,432	1.8	3.0393	0.099	14.25	21.52
				Total			
Residence							
Urban	13.5	7,306	0.4	1.0455	0.030	12.70	14.39
Rural	9.2	11,498	0.6	5.0914	0.066	7.91	10.41
Province							
Central	11.7	1,824	1.4	3.7032	0.124	8.68	14.64
Copperbelt	11.9	2,252	1.6	5.4491	0.134	8.65	15.22
Eastern	9.2	1,739	0.9	1.5828	0.095	7.41	11.00
Luapula	8.2	1,977	0.6	1.0276	0.076	6.93	9.51
Lusaka	14.4	1,486	1.2	1.8263	0.085	11.89	16.96
Muchinga	6.6	2,019	0.6	1.2699	0.094	5.30	7.87
Northern	5.8	1,918	0.6	1.1466	0.098	4.65	7.01
North-Western	6.8	2,044	1.0	3.2704	0.148	4.70	8.85
Southern	13.2	1,063	2.0	3.6436	0.150	9.15	17.33
Western	13.6	2,482	1.2	3.1609	0.090	11.11	16.15

Table C4: Sampling errors: Viral load suppression by age, ZAMPHIA 2021

Age (years)	Weighted estimate (%)	Unweighted Number	Standard error %	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Men			
15-19	(74.5)	27	(11.437)	(1.7908)	(0.153)	(50.96)	(98.07)
20-24	(64.7)	25	(12.265)	(1.5803)	(0.190)	(39.42)	(89.94)
25-29	(66.2)	35	(9.524)	(1.3777)	(0.144)	(46.56)	(85.79)
30-34	76.5	55	5.642	0.9559	0.074	64.87	88.11
35-39	84.8	89	3.224	0.7102	0.038	78.17	91.45
40-44	91.9	110	2.563	0.9605	0.028	86.61	97.16
45-49	86.0	118	2.956	0.8508	0.034	79.95	92.12
50-54	95.4	106	2.562	1.5583	0.027	90.09	100.00
55-59	88.3	55	4.822	1.2146	0.055	78.36	98.22
60-64	(88.8)	34	(4.945)	(0.8106)	(0.056)	(78.60)	(98.97)
65+	(96.3)	34	(2.692)	(0.6727)	(0.028)	(90.76)	(100.00)
15-24	70.1	52	8.818	1.8931	0.126	51.97	88.29
25-34	72.6	90	5.603	1.4031	0.077	61.02	84.10
35-44	88.6	199	2.053	0.8249	0.023	84.35	92.81
45-54	90.8	224	2.091	1.1620	0.023	86.45	95.06
55-64	88.5	89	4.029	1.4016	0.046	80.18	96.78
Total 15-49	82.0	459	2.236	1.5510	0.027	77.40	86.61
Total 50+	93.0	229	2.187	1.6663	0.024	88.46	97.47
Total 15+	85.5	688	1.536	1.3086	0.018	82.36	88.69
				Women			
15-19	(79.2)	39	(6.148)	(0.8714)	(0.078)	(66.52)	(91.85)
20-24	68.4	109	5.129	1.3136	0.075	57.80	78.93
25-29	82.3	193	2.741	0.9919	0.033	76.69	87.98
30-34	84.2	228	13.234	29.8427	0.157	56.92	100.00
35-39	88.8	242	2.364	1.3560	0.027	83.94	93.68
40-44	88.1	218	3.993	3.2950	0.045	79.85	96.30
45-49	93.4	184	2.021	1.2164	0.022	89.26	97.58
50-54	90.3	122	3.998	2.2132	0.044	82.09	98.56
55-59	93.0	91	1.686	0.3912	0.018	89.49	96.44
60-64	93.4	53	4.915	2.0293	0.053	83.25	100.00
65+	(91.5)	37	(4.909)	(1.1214)	(0.054)	(81.44)	(100.00)
15-24	71.2	148	4.246	1.2932	0.060	62.47	79.97
25-34	83.4	421	7.055	15.0779	0.085	68.84	97.90
35-44	88.5	460	2.239	2.2543	0.025	83.86	93.08
45-54	92.2	306	2.230	2.1028	0.024	87.59	96.77
55-64	93.1	144	2.243	1.1238	0.024	88.51	97.75
Total 15-49	85.4	1,213	2.175	4.5885	0.025	80.87	89.84
Total 50+	91.7	303	1.995	1.5755	0.022	87.57	95.79
Total 15+	86.6	1,516	1.647	3.5337	0.019	83.16	89.95

Table C4: Sampling errors: Viral load suppression by age, ZAMPHIA 2021 (continued)

Age (years)	Weighted estimate (%)	Unweighted Number	Standard error %	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Total			
15-19	76.8	66	6.636	1.6063	0.086	63.13	90.46
20-24	67.5	134	4.705	1.3425	0.070	57.82	77.20
25-29	79.1	228	2.996	1.2331	0.038	72.93	85.28
30-34	82.3	283	9.947	19.1806	0.121	61.85	100.00
35-39	87.6	331	1.741	0.9184	0.020	83.98	91.15
40-44	89.5	328	2.513	2.1928	0.028	84.30	94.65
45-49	90.4	302	1.506	0.7892	0.017	87.33	93.53
50-54	92.9	228	3.033	3.1612	0.033	86.65	99.14
55-59	90.9	146	2.436	1.0360	0.027	85.84	95.87
60-64	91.4	87	3.395	1.2631	0.037	84.42	98.41
65+	93.9	71	2.856	0.9968	0.030	88.02	99.78
15-24	70.9	200	4.115	1.6317	0.058	62.38	79.33
25-34	81.0	511	5.474	9.9159	0.068	69.69	92.24
35-44	88.5	659	1.573	1.5996	0.018	85.27	91.74
45-54	91.5	530	1.817	2.2527	0.020	87.79	95.28
55-64	91.1	233	2.187	1.3656	0.024	86.57	95.58
Total 15-49	84.3	1,672	1.721	3.7383	0.020	80.76	87.85
Total 50+	92.3	532	1.744	2.2719	0.019	88.70	95.89
Total 15+	86.2	2,204	1.097	2.2258	0.013	83.94	88.45

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

Table C5: Sampling errors: HIV prevalence by residence and subnational area, ZAMPHIA V 2021

	Weighted estimate (%)	Unweighted Number	Standard error %	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Men			
Residence							
Urban	82.6	322	2.566	1.4732	0.031	77.36	87.92
Rural	88.2	366	1.922	1.2936	0.022	84.22	92.13
Province							
Central	81.8	91	3.484	0.7325	0.043	74.59	88.94
Copperbelt	81.9	86	7.034	2.8383	0.086	67.42	96.40
Eastern	88.3	80	2.897	0.6416	0.033	82.33	94.26
Luapula	76.4	54	6.997	1.4413	0.092	62.04	90.86
Lusaka	88.7	63	4.676	1.3563	0.053	79.11	98.37
Muchinga	81.6	54	5.093	0.9145	0.062	71.08	92.06
Northern	(87.4)	47	(4.414)	(0.8114)	(0.051)	(78.27)	(96.45)
North-Western	73.0	50	11.754	3.4323	0.161	48.76	97.18
Southern	95.1	66	2.036	0.5825	0.021	90.95	99.33
Western	85.5	97	3.619	1.0165	0.042	78.09	93.00
				Women			
Residence							
Urban	85.6	834	3.939	10.4691	0.046	77.46	93.68
Rural	87.8	682	2.256	3.2237	0.026	83.11	92.40
Province							
Central	85.9	160	2.642	0.9152	0.031	80.44	91.32
Copperbelt	86.8	216	8.080	12.2428	0.093	70.15	100.00
Eastern	90.6	155	2.934	1.5612	0.032	84.59	96.67
Luapula	80.7	133	3.473	1.0211	0.043	73.52	87.82
Lusaka	87.4	179	2.878	1.3381	0.033	81.47	93.32
Muchinga	76.1	99	3.777	0.7692	0.050	68.34	83.90
Northern	75.0	80	6.791	1.9442	0.091	61.03	89.00
North-Western	80.3	107	4.553	1.3879	0.057	70.90	89.65
Southern	90.9	134	3.104	1.5440	0.034	84.47	97.26
Western	88.9	253	2.268	1.3129	0.026	84.22	93.56
				Total			
Residence							
Urban	84.6	1,156	2.847	7.1941	0.034	78.76	90.49
Rural	87.9	1,048	1.873	3.4590	0.021	84.06	91.77
Province							
Central	84.1	251	1.935	0.7014	0.023	80.16	88.13
Copperbelt	85.3	302	4.279	4.4001	0.050	76.51	94.13
Eastern	89.7	235	2.485	1.5698	0.028	84.63	94.86
Luapula	79.4	187	3.765	1.6095	0.047	71.61	87.12
Lusaka	87.9	242	2.395	1.2955	0.027	82.92	92.79
Muchinga	78.3	153	3.120	0.8697	0.040	71.84	84.69
Northern	80.2	127	4.460	1.5778	0.056	71.01	89.38
North-Western	77.5	157	3.841	1.3220	0.050	69.64	85.46
Southern	92.6	200	1.894	1.0380	0.020	88.67	96.47
Western	87.9	350	1.939	1.2318	0.022	83.88	91.87

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

Table C6: Sampling errors: ARV-adjusted 95-95-95 by age (conditional percentages), ZAMPHIA 2021

Age (years)	Weighted estimate (%)	Unweighted Number	Standard error %	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Men				
			Diagnosed				
15-24	73.0	52	8.11	1.6989	0.111	56.28	89.67
25-34	69.5	90	5.46	1.2537	0.079	58.24	80.75
35-49	90.9	317	1.54	0.9094	0.017	87.69	94.06
50+	92.4	229	2.44	1.9470	0.026	87.40	97.47
15-49	83.8	459	2.03	1.3894	0.024	79.58	87.95
15+	86.6	688	1.67	1.6457	0.019	83.11	89.99
			On Treatment				
15-24	(99.2)	36	(0.88)	(0.3254)	(0.009)	(97.34)	(100.00)
25-34	95.4	62	2.81	1.1075	0.029	89.64	100.00
35-49	98.3	283	0.83	1.1603	0.008	96.62	100.00
50+	98.5	209	0.73	0.7429	0.007	97.00	100.00
15-49	97.9	381	0.80	1.1584	0.008	96.24	99.52
15+	98.1	590	0.60	1.1174	0.006	96.87	99.32
			Viral Load Suppression				
15-24	(91.6)	35	(6.98)	(2.1627)	(0.076)	(77.25)	(100.00)
25-34	96.9	59	1.93	0.7110	0.020	92.90	100.00
35-49	97.0	276	0.87	0.6993	0.009	95.18	98.75
50+	99.3	204	0.51	0.7084	0.005	98.21	100.00
15-49	96.3	370	1.18	1.4659	0.012	93.89	98.77
15+	97.3	574	0.69	1.0632	0.007	95.91	98.77
			Women				
			Diagnosed				
15-24	72.7	148	4.55	1.5339	0.063	63.38	82.12
25-34	87.4	421	2.16	1.7728	0.025	82.96	91.84
35-49	93.8	644	1.15	1.4731	0.012	91.42	96.17
50+	93.9	303	1.68	1.4767	0.018	90.43	97.33
15-49	89.0	1,213	1.40	1.3894	0.016	86.10	91.88
15+	89.9	1,516	1.35	3.0292	0.015	87.15	92.70
			On Treatment				
15-24	98.0	103	1.74	1.5770	0.018	94.43	100.00
25-34	97.7	366	0.84	1.1194	0.009	95.93	99.38
35-49	97.9	604	0.84	2.1058	0.009	96.19	99.66
50+	98.7	285	0.63	0.9007	0.006	97.43	100.00
15-49	97.8	1,073	0.58	1.7184	0.006	96.64	99.04
15+	98.0	1,358	0.49	1.6893	0.005	97.00	99.03

Table C6: Sampling errors: ARV-adjusted 95-95-95 by age (conditional percentages), ZAMPHIA 2021 (continued)

Age (years)	Weighted estimate (%)	Unweighted Number	Standard error %	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Women				
			Viral Load Suppression				
15-24	93.7	101	2.44	1.0072	0.026	88.66	98.71
25-34	93.9	357	9.70	58.9224	0.103	73.96	100.00
35-49	96.4	594	1.23	2.5787	0.013	93.85	98.92
50+	97.5	280	0.92	0.9632	0.009	95.57	99.37
15-49	95.3	1,052	3.24	24.4671	0.034	88.60	100.00
15+	95.7	1,332	2.52	20.5562	0.026	90.52	100.00
			Total				
			Diagnosed				
15-24	72.8	200	4.32	1.8738	0.059	63.93	81.71
25-34	83.4	511	2.34	2.0096	0.028	78.60	88.22
35-49	92.7	961	0.89	1.1276	0.010	90.91	94.57
50+	93.2	532	1.62	2.1813	0.017	89.86	96.51
15-49	87.4	1,672	1.26	2.3883	0.014	84.76	89.94
15+	88.7	2,204	1.25	3.4252	0.014	86.16	91.30
			On Treatment				
15-24	98.4	139	1.20	1.2520	0.012	95.93	100.00
25-34	97.2	428	0.84	1.1150	0.009	95.52	98.96
35-49	98.1	887	0.45	0.9405	0.005	97.14	98.99
50+	98.6	494	0.52	0.9723	0.005	97.56	99.69
15-49	97.8	1,454	0.41	1.1334	0.004	97.02	98.68
15+	98.0	1,948	0.36	1.2937	0.004	97.31	98.78
			Viral Load Suppression				
15-24	93.0	136	2.95	1.8054	0.032	86.92	99.07
25-34	94.5	416	8.03	51.2755	0.085	77.94	100.00
35-49	96.6	870	0.82	1.7851	0.009	94.90	98.29
50+	98.3	484	0.57	0.9422	0.006	97.15	99.49
15-49	95.6	1,422	2.55	21.8651	0.027	90.34	100.00
15+	96.3	1,906	1.81	17.4486	0.019	92.54	100.00

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

Table C7: Sampling errors: ARV-adjusted 95-95-95 by age (overall percentages), ZAMPHIA 2021

Age (years)	Weighted estimate (%)	Unweighted Number	Standard error %	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Men				
			Diagnosed				
15-24	73.0	52	8.11	1.6989	0.111	56.28	89.67
25-34	69.5	90	5.46	1.2537	0.079	58.24	80.75
35-49	90.9	317	1.54	0.9094	0.017	87.69	94.06
50+	92.4	229	2.44	1.9470	0.026	87.40	97.47
15-49	83.8	459	2.03	1.3894	0.024	79.58	87.95
15+	86.6	688	1.67	1.6457	0.019	83.11	89.99
			On Treatment				
15-24	72.4	52	8.18	1.7045	0.113	55.52	89.19
25-34	66.3	90	5.76	1.3218	0.087	54.46	78.18
35-49	89.3	317	1.66	0.9179	0.019	85.92	92.77
50+	91.0	229	2.67	1.9894	0.029	85.55	96.54
15-49	82.0	459	2.12	1.3880	0.026	77.63	86.34
15+	84.9	688	1.76	1.6664	0.021	81.27	88.53
			Viral Load Suppression				
15-24	66.3	52	9.33	1.9851	0.141	47.09	85.51
25-34	64.2	90	5.80	1.3019	0.090	52.31	76.19
35-49	86.6	317	1.82	0.9051	0.021	82.88	90.39
50+	90.4	229	2.75	1.9757	0.030	84.71	96.02
15-49	79.0	459	2.36	1.5427	0.030	74.11	83.85
15+	82.6	688	1.70	1.3856	0.021	79.14	86.15
			Women				
			Diagnosed				
15-24	72.7	148	4.55	1.5339	0.063	63.38	82.12
25-34	87.4	421	2.16	1.7728	0.025	82.96	91.84
35-49	93.8	644	1.15	1.4731	0.012	91.42	96.17
50+	93.9	303	1.68	1.4767	0.018	90.43	97.33
15-49	89.0	1,213	1.40	2.4341	0.016	86.10	91.88
15+	89.9	1,516	1.35	3.0292	0.015	87.15	92.70
			On Treatment				
15-24	71.3	148	4.65	1.5546	0.065	61.72	80.88
25-34	85.3	421	2.36	1.8731	0.028	80.48	90.21
35-49	91.8	644	1.41	1.7030	0.015	88.94	94.75
50+	92.7	303	1.84	1.5102	0.020	88.90	96.48
15-49	87.1	1,213	1.57	2.6431	0.018	83.84	90.30
15+	88.1	1,516	1.50	3.2625	0.017	85.05	91.23

Table C7: Sampling errors: ARV-adjusted 95-95-95 by age (overall percentages), ZAMPHIA 2021 (continued)

Age (years)	Weighted estimate (%)	Unweighted Number	Standard error %	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Women				
			Viral Load Suppression				
15-24	66.8	148	4.77	1.5054	0.071	56.99	76.62
25-34	80.2	421	6.90	12.5881	0.086	65.96	94.39
35-49	88.5	644	1.95	2.4103	0.022	84.51	92.54
50+	90.3	303	2.21	1.6953	0.024	85.79	94.91
15-49	82.9	1,213	2.09	3.7606	0.025	78.64	87.26
15+	84.4	1,516	1.62	3.0011	0.019	81.03	87.69
			Total				
			Diagnosed				
15-24	72.8	200	4.32	1.8738	0.059	63.93	81.71
25-34	83.4	511	2.34	2.0096	0.028	78.60	88.22
35-49	92.7	961	0.89	1.1276	0.010	90.91	94.57
50+	93.2	532	1.62	2.1813	0.017	89.86	96.51
15-49	87.4	1,672	1.26	2.3883	0.014	84.76	89.94
15+	88.7	2,204	1.25	3.4252	0.014	86.16	91.30
			On Treatment				
15-24	71.7	200	4.40	1.8953	0.061	62.59	80.71
25-34	81.1	511	2.47	2.0367	0.030	76.01	86.20
35-49	90.9	961	1.06	1.3206	0.012	88.75	93.14
50+	91.9	532	1.82	2.3564	0.020	88.16	95.64
15-49	85.5	1,672	1.36	2.5013	0.016	82.67	88.28
15+	87.0	2,204	1.39	3.7489	0.016	84.14	89.85
			Viral Load Suppression				
15-24	66.6	200	4.68	1.9611	0.070	56.99	76.27
25-34	76.6	511	5.23	7.7907	0.068	65.86	87.40
35-49	87.8	961	1.38	1.7178	0.016	85.00	90.69
50+	90.4	532	2.07	2.6031	0.023	86.10	94.61
15-49	81.7	1,672	1.67	3.1268	0.020	78.26	85.15
15+	83.8	2,204	1.08	1.8819	0.013	81.53	85.97

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

Table C8: Sampling errors: Number of new infections annually and number of people living with HIV by age, ZAMPHIA 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	14,337	6,231.46	1.7711	0.451	1478.08	27,195.30
25-34	9,438	3,729.38	0.9077	0.392	1742.29	17,133.42
35-49	2,299	1,113.92	0.8854	0.729	0.00	5,800.36
50+	1,647	798.25	1.3346	1.003	0.00	4,903.29
15-49	26,082	7,368.09	1.4206	0.291	10878.06	41,286.18
15+	27,731	7,512.20	1.4377	0.279	12229.15	43,232.01
			People living with HIV			
15-24	104,501	10,706.07	1.9153	0.102	82450.98	126,550.11
25-34	265,494	15,350.28	1.7321	0.058	233879.13	297,108.12
35-49	476,051	22,794.68	2.8009	0.048	429104.39	522,997.44
50+	262,066	25,029.87	6.5800	0.096	210515.68	313,615.62
15-49	846,045	33,462.22	2.6491	0.040	777128.36	914,961.81
15+	1,108,111	37,580.21	2.6802	0.034	1030712.84	1,185,508.63

APPENDIX D.
SURVEY PERSONNEL

APPENDIX D: SURVEY PERSONNEL

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Innocent Chiboma
Tony Chikwanda
Lutunti Chilwesa
Mando Chitondo
Michelo Choongo
Ovost Chooye
Chola Nakazwe Daka
Rokaya Ginwala
Nyakutaipa M. Kanyiki
Etambuyu Lukonga
Juliet Malambo
Obby Milambo
Bubala Moonga
Nkuye Moyo
Wellington Moyo
Humphrey Mpimpa
Sikufele Mubita
Muzala S. Muchanga
Lubinda Mukata
Chibesa Musamba
Herold Musonda
John Mutukwa
Jonathan Mwanza
Joseph Mweetwa
Harriet Namukoko Zimbizi
Chonde Namutowe
Albertina Ngomah-Moraes
Friday Nsalamo
Phillip Nyirenda
George M. Phiri
Bruce Sianyeuka
Chimuka Sianyinda
Palver Sikanyiti
Joshua Siuluta
Gloria I. Songolo
Emmanuel Tembo

Community Mobilization Facilitators

Mwai M Banda
Norah Banda
Getrude Zulu Chasaya
Tony Chikwanda
Evelyn Chirwa
Felix Chola
Fred Chungu
David Chutu
Abel Kabalo
Kalangwa Kalangwa
Raphael Kumwenda
Winfridah Liwoyo
Emmanuel Kapenda Lutelo
Micheal Machamanda
Rose Masilani
Ellen Mubanga
Justine Munga
Wilson Kapenda Mwape
Justin Mwiinga
Stanslous Ngosa
Anthony Nkole
Victoria Nsofu
Yusuf Ayami Phiri
Alice Sayi
Mwaka Simpamba
Willie S Sitali
Isaac Zimba
Micheal Zulu

Mapping and Listing Monitors

Nasilele Amatende
Ngawo Banda
Vesper Chisumpa
Clymore Kaliyangile
Juliet Milambo
Costain Munsaka
Harriet Namukoko Zimbizi
Humphery Pimpa
Titus Sinyemba

Linkage to Care Focal Persons

Province
Aloysius Kakungu
Onesimous Kalaba
Francis Liywali
Andrew Matafwali
Kasoka Moffat
Wilson Mumba
Phelunah K Musungu
Vernon Mwangala
Ton Mwanza
Jacob Sakala
Kizito Sampa
Lisulo Walubita
District

Phyllis Chikampa
Francine Chewe Mubanga
Samanga Acred
Emmanuel Banda
Eric Banda
Faith Banda
Likundo Brian
Chungu Bupe
Josephine Chabala
Christian Chanda
Mwansa Chanda
Clacious Chandwa
Maybin Chiba
Prudence Chibwe
Biemba Chihinga
Hakayobe Chilala
Stanley Chileshe
Hillard Chinuka
Martin Chongo
Christone Christone
Monica Chumbe
James Chungulo
Ireen Daka
Philemone Galufu
Cheepa Habeenzu
Agrin Hadente
Nicholas Hamapande
Jimmy Hayinde
Maria Jere
Erick Kabaso
Felix Kabongwe
Lynnah Kabosha
Muhamubi Kabuku
Phostina Kalangwa
Audrey Kalunga
Shadreck Kamwengo
Gwendoline Kapembwa
Agness Kapembwa
Angella Mutale Kasanda
Andrew Katakwe
Howard Katapila
Sandra Kaumba
Matthews Kiyembe
Desayi Kolala
Mirriam Kombe
Benny Koyi
Chisapalele Kunda
Chikubi Kuyondela
Benson Lingandwe
Lewis Lubungo
Rhodah Lungu
David Makai
Bonny Makondo
Miyanda Masaka
Foster Matakala
Patience Mazala
Harrison Mbao
Kelvin Mbewe
Lilian Mfula Mutale
Gershom Miti
Robert Mukhala
Innocent Mukupa
Sydney Mukwela
Sydney Mulai Mulai
Mable Mulenga
Mwansa Mulondo
Kebby Mulongo
Power Muma
Evan Mumanga
Elias Mumbo
Diana Muneka
Vernon Mungala
Pax Munyakasa
Christabel Mushiba
Patrick Musuku
Liywali Muyambango
Muyabango Muyambango
Alfred Mvula
Philip Mwale
Martin Mwale
Dennis Mwangata
Mwansa Mwanguluka
Oliver Mwelwa
Oscar Mwenda
Joyce Mwenya
Arthur Mwimbu
Mercy Nalungwe
Enid Namakobo
Glory Namfukwe
Muchibelo Nangala
Robert Ngambi
Patricia Ngulube
Peter Ngúni
Geoffrey Nguvulu
Leonard Nkhata
James Nsofwa
Bernard Nyirenda
Taonga Nyirenda

Harriet Phiri
Davies Phiri
Nauka Phiri
Nathan Phiri
Derrick Phiri
Yambani Phiri
Steven Pinyolo
Happy Samutale
Moffat Kasoka Sanzhing'a
Daisy Sesa
Christabel Shibalatani
Bridget Shuwa
Sera Mulenga Sibeso
Amos Kaluya Sikombe
Norious Simunene
Precious Sombo
Violet Yamba
Mukela Yusiku
Mayambu Zambo
Esaya Ziba
Lydia Zulu
Health Facility
Mumba Alec
Chanda Alex
Matantani Alexiria
Erick Angella Kasanda
Lizeta Banda
Rosaria Banda
Misheck Banda
Charity B.M Banda
Eric Banda
John Banda
Patricia Banda
Yvonne Bonny
Catherine Bota
Nkhata Brenda
Mulenga Bridget
Musamba Bright
Cynthia Bwalya
Joseph Bwalya
Diana Bwinobwino
Mweshi Cephas
Mwansa Chalwe
Della Chamawe
Emmanuel Chanda
Annastacia Chanda
Ireen Chanda
Robert Chanda
Norious Chanda
Scholastica Changwe
Chiwila Charity
Richard Chewe
Chibenga Chibenga
Fewdays Chibuye
Biemba Chihinga
Mwaka Chikote
Bonaventure Chilambwe
Gostavis Chilamo
Gershom Chilekwa
Veronica Chilengi
Lilian Chileshe
Priscilla Chilufya
Hilard Chimuka
Mirriam Chinjili
Kelvin Chinyanta
Prisca Chinyingi
Cecilla Chione
Rose Chipala
Brian Chipatela
Mildred Chipulu
Mercy Chipupa
Chansa Chisha
Gerald Chishitu
Eusta Chisulo
Luckness Chitengi
Ngulube Chiwila
Getrude Chiyangi
Daniel Chungu
James Shadreck Chungulo
Gift Chuumbwe
Jones Dailofa
Alex Daka
Ngandwe Damalesi
Aklass Dennis
Beauty Dula
Mwanakaba Elvis
Musonda Esther
Himoonde Godfrey
Thaza Godfridah
Hellings Goma
Baseya Goretti
Leonard Hadente
Nathan Hamoonga
Hamunyangwa Hang'umba
Jimmy Hayinde
Mizinga Himoonga
Chitema Jacqueline
Maria Jere

Mulenga Josephine
Maloba Julius
Kelvin Kabaso
Mirriam Kabosha
Muhamubi Kabuku
Charles Kabunda
Charles Kabunda
Mpoya M Kabwe
Mwansa Kabwe
Danny Kabwe
Robert Kabwe
Donald Kachulu
Rosaria Kafula
Sibongíle Kakungu
Isaac Kakwenda
Namakau Kalaluka
Beauty Kalembo
Yotam Kaluba
John Kaluba
Constance Kalumba
Mildred Kalumbi
Marrian Kalunga
Theresa Kalunga
Glory Kalunga
Agness kameta kalima
Nasilele Kamona
Esaya Kamwengo
Getrude Kangwa
Finely Kantit
Prudence Kapembwa
Rabecca Kapenda
Mwata Kapinga
Winstone Kapota
Edgar Kapuru
Rabecca Kasanga
Veronical Kasila
Gift Kasompe
Donald Kasuko
Maliliwe Kasune
Howard Katapila
Davies Katapila
Chama Katebe
Thomas Katebe
Davies Kateule
Constance Katongo
Gladys Kaunda
Fredrick Kaunda
Christopher Kawana
Chisenga Kawina
Mazinga Kayembe
Kannel Kayoba
Ruth Kayombo
Rabecca Kazanga
Dorcus Kazembe
Cholwe Kazetu Dannis
Chishimba Kennedy
Lombe Kirkwood
Mutale Kombe
Gift Konibantu
Sandra Kuchaya
Charles Kumwenda
Philip Kunda
Miyoba Kwalombota
Ruth Lambakasa
Kabwe Laston
Anastasia Nasseh Likangala
Memory Smakando Likukela
Brian Likundo
Lynnah Lingandwe
Sharon Liomba
Simasiku Lishomwa
Kelvin Litonga
Ireen Liwali
Muyambango Liywali
Patrica Lombe
Bervin Longwe
Grace Lubinda
Kamamo Lucky
Tusankine Lufwendo
Lesfold Lukuma
David Lukwipa
Walenga Lungu
Tridah Lungu
Esther Lungu
John Lungu
Anthony Lupiya
Manjetah Lushjto
Mbewe Luyando
Annie Lwando Mutinta
Gloria Maibiba
Ophebia Mainga
David Makai
Nelly Makasa
Eness Malambo
Chilufya Maloba
Steward Mambwe
Abigail Mambwe
Phiri Manase

Oliver Mapachi
Darius Mapala
Mulenga Mapenzi
Kanguya Mapulanga
Miyanda Masaka
Chiba Maybin
Patience Mazala
Donerah Mazhamo
Sunduzwayo Mbeba
Angela Mbewe
Rabson Mbewe
Zenas Mbewe
Lydia Mbewe
Margaret Mbuzi
Siamumba Meleki
Nakomba Memory
Hatambwa Mercy
Gwendoline Mfula Mutale
Chibanga Mirriam
Miyoba Miyoba
Cleopatra Miyoba
Lungowe Mooka
Moonde Moonde
Chuulu Moonga
Champo Moses
Brian Dumisani Moyo
Progress Mpasa
Banda Mpenya
Melvin Mulyakubinda Mtine
Benjamin Mubanga
Juliet Mubanga
Diana Leah Mubanga
Lungowe Mubiana
Hebron Mubiana
Kelvin Mubita
Jane Nyamba Mubuyaeta
Tresor Mudakikwa
Bomba Mudolo
Jean Muka
Brodrick Mukamambo
Justine Mukate
Mable Mukhala
Mildred Mukonchi
Bridget Mulala
Emmanuel Mulala
Rhoda Mulauzi
Alex Mulela
Eddie Mulenga
Violet Mulenga
Phyllis Mulenga
Stanley Mulenga
Daniel Mulenga
Innocent Muleta
Evans Mulevu
Sylvanna Mulikita
Mwansa Mulondo
Bruce Mulope
Makani Mulungwe
Power Muma
James Muma
Evan Mumanga
Priscilla Mumba
Emmanuel Mumbi
Elias Mumbo
Steward Munakanze
Elizabeth Munguza
Mwansa Munyakasa
Jeremiah Musa
James Musokeli
Agness C Musonda
Esnart Musonda
Richard Musonda
Innocent Musonda
Emmanuel Musumba
Chiti Mutale
Bwalya Mutale
Joyce Muthiya
Beatrice Mutobola
Lubasi Lubinda Mutumwenu
Muyabango Muyambango
Violet Mvula
Terri Mwaba
Loveness Mwaisaka
Mary Mwale
Annie Mwale
Joseph Mwale
Benson Mwale
Evelyn Mwamba
Chiza Mwanangombi
Fridah Mwananshiku
Susan Mwansa
Kennedy Mwansa
Ephraim Mwansa
Simwangala Mwansa
Lewis Mwansa
Jenala Mwanza
Naomi Mwanza
Natasha Mwape

Chongo Mwape
Purity Mweemba
Muzyamba Mweemba
Lloyd Mwelwa
Zachariah Mwenda
Sylvia Mwendapole
Chikonde Mwenya
Alfred Mwenya
Mumba Mwenya
Progress Mwewa
Mutibo Mwiinga
Oliver Mwikisa
Richard Mwila
Chota Mwila
Christopher Mwila
Bridget Mwila
Precious Mwiya
Leyah Nachela
Sandra Nalikando
Astridah Nalungwe
Mercy Nalungwe
Geoffrey Namfukwe
Dora Nampemba
Charity Dainess Nawakasa
Precious Nawakwi
Shemmy Ndama
Lindiwe Ndhlovu
Oziya Ngolofwana
Penelope Ngonga
Veronica Mumbi Ngosa
Elizabeth Ngulube
Patricia Ngulube
Christian Nguvulu
Kamfwa Olivia Ngwira
Malambo Nickson
Steven Njamba
Danny Nkandu
Victor Nkandu
Howard Nkhata
Fenina Nkomesha
Doris Nkowani
Francis Nkumbula
Chansa Nkumbula
Assylum Nkuna
Helga Nkuwa
Kharam Nseluka
Chisapalele Nsofwa
Dinah Nyau
Clarence Nyumayo
Chiasngano Patricia
Justine Pelembe
Anold Pezulu
Richard Phiri
Matilda Phiri
Jonahs Phiri
John Phiri
Tinogze Phiri
Lillian Phiri
Manase Phiri
Zacharia Phiri
Samaiah Phiri
Kopiwe Phiri
Kalewa Phiri
Power Phiri
Makondo Phiri
Friday Phiri
Everlyn Phiri
Yambani Phiri
Musonda Prescious
Melody Pungwa
Charity Sakala
Joseph Sakala
Acred Samanga
Mumba Samson
Happy Samutale
Musonda Saviour
Harriet Sesa
Beatrice Shankanga
Shadreck Siachunka
Silumesi Sibeso
George Sichembe
Tina Sikalinde
Happy Sikazwe
Kaluya Amos Sikombe
Amos Kaluya Sikombe
Chiluba Sikwaze
Daniel Silavwe
Kebby Sililo
Peter Silwamba
Yvonne Simasiku
Chiwala Simasiku
Daisy Simunene
Luneta Simunyeu
Richard Simutowe
Elvis Simyemba
Penaulo Sipanje
Binea Sisoko
Aongola Situmbeko

Abraham Soko
Precious Sombo
Kapema Songwe
Selina Songweje
Regina Sukwa
Sunday Sunday
Mukwela Sydney
Abija Tamba
Otria Tazibeyi
Prisca N Tembo
Mutukwa Tembo
Humphrey Tembo
Doreen Tembo
Grace Tembo
Nokutula Tomati
Karlyn Uwituze
Precious Vinkumbu
Njovu Voneta
Fair Walenda
Kambole Wesley
Teddy Wishikoti
Mukela Yusiku
Phiri Zacharia
Mayambu Zambo
Audrey Ziba
Lenny Zimba
Progress Zimba
John Zulu
Florence Zulu
Chembo Zulu
Godfrey Zulu
Pax Zulu

Chiefs
Chief Chamuka
Chief Chibwika
Chief Chikonde
Chief Chinawangala
Chief Chipalo
Chief Chitambo
Chief Chitina
Chief Chizela
Chief Gwaw
Chief Ingwee
Chief Kaaasa
Chief Kadake
Chief Kakoma
Chief Kalilele
Chief Kalunga
Chief Kamaba
Chief Kambwali
Chief Kapijimpanga
Chief Kaputa
Chief Kasoma
Chief Kasomalwela
Chief Katuta
Chief Kisengwe
Chief Litia
Chief Luchembe
Chief Kalasa Lukangaba
Chief Matebo
Chief Matipa
Chief Micheal
Chief Mpamba
Chief Mukumbi
Chief Mulonga
Chief Mungule
Chief Munjimazonvu
Chief Mupezeni
Chief Musele
Chief Mwenda
Chief Mwininyilamba
Chief Mwisa
Chief Nakalangwa
Chief Ndake
Chief Nkana
Chief Nkolemfumu
Chief Nondo
Chief Nsama
Chief Nsefu
Chief Nyakulenga
Chief Puta
Chief Victoria
Paramount Chief Mupezeni
Senior Chief Chizela
Senior Chief Kabazwa
Senior Chief Kalidawalo
Senior Chief Kanongesha
Senior Chief Kasempa
Senior Chief Iweemba
Senior Chief Mumena
Senior Chief Mwamba
Senior Chief Ndungu
Senior Chief Nshindi
Senior Chief Nsokolo
Senior Chief Serenje
Senior Chief Sikufele

Community Mobilizers and Stakeholders

Mukunta Abrham, Namachila Adrian, Kangwa Agness, Mwila Agness, Phiri Agness, Teleka Agness, Frank Agyapong, Sikwela Akalemwa, Kabukabu Akamana, Mulanguluka Albertina, Vuumbe Albina, Chanda Alex , Mwanza Alice, Mpenge Amos, Sindwa Amukusana, Loyce Andele, Mulima Anderson, Sichula Angel, Kanynanda Annie, Silengo Annn, Chipili Anold, Chinyama Anthony, Muyinda Anthony, Aron Aron, Chilembi Aron, Chipupila Aron, Mwananya Aubrey, Simfukwe Augustine, Soko Babra, Jevison Baloni, Lushiku Bananga, Agness Banda, Alliness Banda, Charity Banda, Dailess Banda, Danny Banda, Derick Banda, Edwin Banda, Euphrasia Banda, Evans Banda, Jonathan Banda, Luwiza Banda, Mapopa Banda, Mattew Banda, Moses Banda, Peggy Banda, Raphael Banda, Rodgfers Banda, Thomas Banda, Wilfred Banda, Zacharia Banda, Brian Banda, Christopher Bayela, Bbuna Bbuna, Mutapuka Beauty, Simenda Beauty, Sober Beenzu, Viswwamo Benard, Mvula Benjamain, Musiwa Benjamin, Soneka Benjamin, Chibiya Benson, Kapanga Benson, Pelete Bertha, Lulumbi Betty, Mbewe Betty, Gistavo Beuda, Kapokosa Bicks , Njaleko Biemba, Banda Bikiwe, Dominic Bikumba, Daniel Billy, Biseba Bipanda, Lungu Blessing, Kalengamambo Boas, Nchimunya Bobby, Nshamba Bodwin, Yvonne Bonny , Kazomba Bonwell, Munganga Born, Mwendaleji Bornface, Catherine Bota , Banda Boyd, Chanda Brian, Mwangala Bridget, Chewe Bruce, Buumba Bubala, Peggy Bubala, Musanje Bukowa, Happy Bulaya, Soviour Bulaya, Carlos Bund, Mwelwa Bupe, Nkonde Busiku, Emeldah Bwali, Chishala Bwalya, Hellen Bwalya, Hope Bwalya, Jonathan Bwalya, Katongo Bwalya, Mongeni Bwalya, Mwila Bwalya, Nason Bwalya, Paul Bwalya, Peter Bwalya, Robby Bwalya, Rosemary Bwembya, Sabenzu Bwendo, Chileshe Bweupe, Kambeu Caphas, Kapalu Carol, Chimowa Catherine, Mpande Catherine, Kalenga Cathreen, Mwanatesha Cephas, Shilika Chabalenga, Emmanuel Chabe, Rafeal Chabinga, Beverly Chainda, Marth Chakulimba, Raymond Chalata, Emmanuel Chama, Aggripa Chanda, Annie Chanda, Brian Chanda, Chileshe Chanda, Ethel Chanda, Eunice Chanda, John Chanda, Joseph Chanda, Racheal Chanda, Sampa Chanda, Pual Changachanga, Maxwell Changala, Grant Changwe, Joyce Chansa, Penlope Chansa, Augustine Chapasuka, Benson Chaponda, Aaron Chapupira, Chiwila Charity , Chibule Charles, Kabwe Charles, Kaumba Charles, Lubelenga Charles, Sangombo Charles, Getrude Chasaya, Ievin Chasemena, Keniard Chavula, Crispin Cheetika, Doreen Chembe, Grace Chewe, Patrick Chewe, Aid Chibale, Major Chibamba, Mark Chibesa, Annie Chibesakunda, Reuben Chibiya, Cecilia Chibobo, Chiboola Chiboola, Kennedy Chiboola, Charles Chibuye, George Chibwana, Francis Chibwe, Jacqueline Chibwe, Shadrick Chifengi, Rhoidah Chifulo, Mary Chifuna, Chomba Chifwembe, Lucky Chifweshe, Betty Chihinga, Gift Chihinga, Ferinado Chijika, Robert Chijikwa, Jonathan Chikanga, Joseph Chikanku, Kautu Chikelete, Caroline Chikolokoso, Paul Chikuwa, Stephen Chikwali, Joseph Chilapala , Pauline Chilapala, Gershom Chilekwa , Night Chilekwa, John Chilembo, Kuwanda Chilemu, Frank Chileshe, Lauren Chileshe, Mushimwa Chileshe, Norah Chileshe, Oliver Chileshe , Victoria Chileshe, Emmanuel Chileya, Molly Chilinga, Pamela Chilo, Mark Chilombe, Collins Chilongo, Angelina Chilube, Benson Chilufya, Golden Chilufya, Marrion Chilufya, Vincent Chilufya, Judith Chilumba, Musanide Chilundu, Philips Chimanga, Fred Chimbamba, Evans Chimbwete, Leah Chimoba, Charllotte Chimuli, Benard Chimungu, Chinyata Chimunya, John Chimwana, Mutakela Chimwanga , Jinga Chindumba, Shadrick Chingangu, Mavis Chinganya, Mervis Chinganya, Malichi Chingenge, Henry Chingungu, Bridget Chinjile, Gletywine Chinjili, Chimbinga Chinoya, Alex Chinyama, Livingi Chinyama, Paul Chinyama, Robson Chinyama, Daisy Chinyana, Rhoda Chinyeka, Mukyu Chinyemba, Rodgers Chinyemba, Sara Chipa, Getrude Chipampe, Charles Chipasha, Johnston Chipasu, Pasmall Chipasu, Kayamba Chipatela, Mweene Chipego, Elias Chipele, Steven Chipeso, Mackford Chipili, Manongo Chipipa, Bruno Chipoya, Magret Chipoya, Miniva Chipoya, Robby Chipoya, Shenny Chipulu, Gabriel Chirwa, Jim Chirwa, Maggie Chirwa, Pauline Chirwa, Thresa Chirwa, Agness Chisakaila, Wendy Chisala, Lusale Chisale, Sylvester Chisamba, Kennedy Chisanga, Lawrence Chisanga, Mildred Chisanga, Mwenge Chisani, Danies Chisenda, Evonny Chisenga, Kennedy Chisenga, Ruth Chisenga, Shidah Chisenga, Kapenda Chisengo, Chileshe Chishimba, Victor Chishimba, Yowanu Chishinga, Christopher Chisi, Bright Chisupa, Lewis Chitaila, Kedrick Chitalu, Body Chitambala, Maximo Chitambi, Jean Chitembu, Godfrey Chitengi, Joseph Chiteshi, Chinyama Chiteta, Paul Chitonge, Patrick Chitula, Everisto Chitumba, Melise Chitwa, Mathews Chivunda, Rickson Chiwaya, Daniel Chiweka, Ngulube Chiwila , Methrine Chiyangi, Kenneth Chiyesu, Patrick Chizawu, Joe Chizuza, Martin Chola, Bishop Chomba, Collins Chombo, John Chompu, Allan Chongo, Gerald Chongo, Mutandalike Choonga, Thandiwe Choongwa, Marthin Chowa, Mwiya Chris, Chideda Chrispin, Chola Christine, Daka Christine, Nakonga Christine, Phiri Christine, Christone Christone , Chipwepo Christopher, Chishala Christopher, Kaole Christopher, Kapeshi Christopher, Saviye Christopher, Nelson Chuba, Monica Chumbe , Marlon Chunda, Yotam Chundu, Maxwell Chusu, Daviea Chutu, Davies Chutu, Client Chuugwe, Keith Chuumpu, Phiri Clara, Lucky clarmonde, Malambo Clement, Biemba Collins, Kachiza Collins, Musonda Cornelius, Emmanuel Cosamu, Kashenda Crispin, Sichipamba Cryford, Mitelo Daimani, Mukonde Daimon, Cleopatra Daka, Elizabeth Daka, Likelwwile Daka, Katoka David, Mkadawire David, Mpundu David, Mulamata David, Njovu David, Silweya David, Siyumbwa David, Longa Davy, Malunda Deborah, Chibuye Delis, Ian Dembozhi, Ipako Dennis, Kawewe Dennis, Matowe Dennis, Tembo Dennis, Chinjenge Derrick, Tailosh Deward, Sibote Dexter, Chikango Dickson, Simutala Dickson, Daka Dingani, Ndapisha Dingani, Thomas Diole, Jackson Dizhim, Chisuta Donica, Mumba Dorothy, Joshua Dube, Joseph Duma, Allan Dumiwa, Chimowa Eddie, Njamba Eden, Mutimushi Edgar, Samakanda Edgar, Nawakwi Edith, Chibesa Edward, Banda Edwin, Mwewa Edwin, Nkanza Edwin, Kabuyana Edwina, Tembo Eletina, Sandar Eli, Sandra Eli, Chileshe Elias, Kazhimu Elias, Mwaba Elias, Kazhiya Elimas, Phiri Elina, Banda Elisha, Chitambo Elizaberth, Kunda Elizaberth, Liyali Elizabeth, Sachingezhi Elson, Mfula Elvis, Mwanakaba Elvis , Banda Emeldah, Singuma Emeldah, Litho Emmanuel , Musowe Emmanuel, Kanyanda Enest, Nyirenda Enia, Dingombi Enock, Nkhata Esnart, Malunga Ester, Kunda Ethel, Munanyanga Eunester , Masi Eunice, Witika Evance, Mubanga Evans, Zhinga

Evaristo, Kangwa Evelyn, Banda Ezzylon, Nkomesha Fabina, Mwaanga Faides , Charles Fanaka, Mwale Fanny, Kailo Fatima, Mono Felin, Mumba Felitus, Chiteta Fenn, Chitambala Fidelis, Simwinga Field, Chiteta Foloshi, Siandizya Fostina, Masamba Fostinba, Chishiba Francis, Mubanga Francisca, Chipili Frazier, Chingi Fred, Frelimo Fred, Sakuwaha Fred, Chimanga Fredrick, Foloshi Fredrick, Kalaba Fredrick, Katongi Fredrick, Mubanga Fredrick, Mulenga Freza, Mwauluka Friday, Goodson Fulai, Anthony Fulwe, Danny Fumbelo, Musole Fumbelo, Raymond Fungula, Christopher Fwaalanga, Alex Fwataki, Kachaka Gabriel, Philemone Galufu , Lubasi Garries, Sinsungwe Gasto, Sungwe Gausto, Mukusa Geofrey, Mutiti Geofrey, Konkosholo George, Samulozanga George, Tapisha George, Mushimba Gilbert, Kamalamba Given, Njobvu Gladys, Chinjili Gletywine, Kanyamuna Gloria, Chikonde Godfrey, Salumau Godfrey, Simwanza Godfrey, Phiri Golden, Salumahi Golden, Lukama Goldon, Kazinda Goma, Simon Goma, Agness Gondwe, Brigton-Thom Gondwe, Fanny Gondwe, Laura Gondwe, Hapoma Goodson, Mwau Goodson, Chapawa Grace, Chikungulu Grace, Katemo Grace, Musonda Grace, Maseka Graham, Peggy Gutiniyu, Kalonga Gwaw, Mutinta Haamununki, Kenny Habazoka, Sandra Hachandi, Lister Hachanga, Vincent Hachibala, Chipo Hachija, Moonga Hachikara, Moonga Hachile, Joseph Hachimena, Michelo Hachizibe, Alex Hafwembu, Kingsley Hakalenge, Jacob Hakaloba, Biton Halinga, Joseph Halubinda, Pephenia Haluuma, Mary Hamaambo, Sivers Hamukoma, Alfred Hamuzya, Adron Hamwiinga, Onard Handindo, Madabishi Handison, Milimo Handoondo, Stanford Hangombe, Obby Hansengo, Cliff Hara, Chanda Harmerschield, Kaluba Harriet, Mafulo Harrison, Zimba Harrison, Kandumba Hastings, Nanzaluka Hatontola, Given Hatoyoka , Jennipher Hazanda, Chinyama Hebby, Mbewe Hector, Nangogo Hellen, Wachata Hellen, Kaluluma Henry, Maambwe Henry, Katasefa Hezron, chizyuka Hildah, Malen Himabilo, Nkolola Himaninga, Christopher Himanyati, Henry Himoonde, Kankung'a Humphery , Mweetwa Humphery, Chitu Ian, Kabunda Idah, Kennedy Ilunga, Mwangala Imasiku, Situmbeko Imasiku, Like Imbula, Christine Imbuwa, Patrick Inambo, Lungu Iness, Lipupo Inonge, Matutu Ireen, Nambule Ireen, Nganga Ireen, Kakwende Isaac, Phiri Isaac, Zyam Isaka, Nkulu Jack, Phiri Jackson, Hakaloba Jacob, Chibwe Jacqueline, Mashime Jade, Moyo Jairos, Mumbuzi James, Mwanza Janet, Sand Janet, Sambawulu Jasman, Zombe Jeffy, Nawila Jennipher, Mulenga Jere, Roster Jere, Edwin Jilala, Melanie Jimu, Philip Jisomona, Finson Jivumina, Chihinga Joe, Lumayi Joe, Kakoma Joel, Phiri Joel, Lumayi John, Malisa John, Mumba John, Mwanza John, Paundi Jonas, Chinyimba Jonathan, Kajoba Jonathan, Maine Jones, Hagwena Joram, Chilapala Joseph, Chitalu Joseph, Kivuma Joseph, Ndumba Joseph, Salachi Joseph, Mulenga Josephine , Mulenga Josphat, Zulu Joyce, Chishina Jubeck, Lombe Julia, Muteta Julia, Samboko Julius, Tonga Julius, Juma Juma, Stephen Juma, Steven Juma, Rabson Kabalika, Misheck Kabamba, Pamela Kabamba, Kenneth Kabanji, Remmy Kabela, Timothy Kabelela, John Kabembele, Robinson Kabinda, Martin Kabinga, Martin Kabinga , Felix Kabongwe , Diana Kabui, Akamana Kabukabu, Moonga Kabunda, Sishwashwa Kabunda, Joseph Kabungo, Kennedy Kabuswe, Mercy Kabwata, Cardson Kabwe, Memory Kabwe, Mpoya Kabwe, Sydney Kabwe, Godfrey Kabwita, Nora Kacha, Bertha Kachamba, Leah Kachawa, Dorothy Kachaza, Annie Kachenda, Meyani Kachengwa, Abraham Kachipasi, Alan Kachuka, Samuel Kachungu, Richard Kaela, Ignitius Kafuchi, Lillian Kafuli, Shedrick Kafumbo, Edwin Kafumwa, Godfrey Kafwaka, Francina Kafwanda, Mary Kahana, Faith Kahanji, Jackson Kahilu, Selester Kahilu, Samunyina Kahinga, Denis Kaindu, Lewis Kaindu, Christopher Kaira, Clement Kaira, Osward Kajamba, Kenneth Kajilambinga, Sarah Kajoba , Kerrison Kajunde, Samuntu Kakaula, Elizabeth Kakesi, Fwelu Kakinga, Godwin Kakinga, Edwin Kakom, Cephas Kakoma, Kelly Kakompe, Amon Kakóngmba, Yopa Kakongo, Super Kakonkanya, Christoper Kakumba, Aldysius Kakunga , Ackim Kakungu, Siyumbi Kakungu, Mirriam Kakwenya, John Kakwete, Onesimus Kalaba, Syrus Kalaba, Titus Kalaba, John Kalamba, Favourite Kalando, Esther Kalasa, Jackson Kaleji, Emmanuel Kalela, Patrick Kalelemba, Jedo Kalenga, Ellis Kalengo, Wisdom Kalepa, Kaleya Kaleya, Liomba Kalimukwa, Joel Kalipa, Moses Kaliya, Pidon Kalnvu, Kelvin Kalobwe, Hagai Kalota, Robson Kalota, Moses Kaloza, John Kaluba , Liwilu Kalubi, Bentry Kalufyanya, Jobbicks Kalumba, Mable Kalumbeta, Alex Kalunga, Justina Kalunga, Amon Kalunjika, Chola Kalusa, Albert Kalutwa, Kayawi Kalyata, Kennedy Kama , Hendricks Kamalamba, Jonathan Kamalamba, Evans Kamana, Michael Kamanga, Simon Kamanga, Antonie Kamanzi, Gift Kambangu, Paul Kambangu, Pual Kambangu, Charles Kambanzhi, David Kambaya, Eshlon Kambilikiti, Collins Kambita, Wesley Kambobe, Kingsley Kamemfu, Agness kameta-kalima, Joe Kamiza, Evans Kampale, Alick Kampamba, Hildah Kampamba, Kennedy Kampemba, William Kamwana, Muhau Kamwango, Given Kamwasha, Precious Kandala, Patricia Kandela, Owen Kaneta, Thandiwe Kangaga, Noah Kangali, Given Kanganjo, Bellington Kangaya, Berlingtone Kangaya, Pethias Kangaya, Kangende Kangende, Jamu Kangungu, George Kangwa, Bwalya Kaniki, Charles Kanjungu, Elias Kankeli, Patrick Kantomoya, Lovemore Kanyama, Enwell Kanyanya, Busiwa Kanyata, Katungu Kanyepa, Kantu Kanyezi, Nyakutaipa Kanyiki, Christopher Kaole, Richard Kaole , Dickson Kaonga, Gift Kaonga, Toaster Kaoyi, Rwedison Kapaila, Grace Kapaipi, Patrick Kapaipi, Leonard Kapale, Uzie Kapami, Mwata Kapanga, Bwalya Kapapula, Agness Kapembwa , Harry Kapempe, Creg Kapenda, Gilbert Kapenda, Given Kapenda, Justin Kapenda, Given Kapende, Kenedy Kapepa, Methias Kapila, Charles Kapinga, Greenford Kapita, Prince Kapita, Yawexa Kapita, Ruth Kapitango, Josephine Kapli, Kanoka Kaposhi, Brian Kapulu, Kasweka Kapusu, Tony Kapwanya, Kelvin Kasaba, Vincent Kasaba, Humphrey Kasabo, Chinyema Kasaka, Sunday Kasaka, Fight Kasambala, Zuze Kasana, Angella Kasanda , Erick Angella Kasanda , Levy Kaseki, Keneth Kasekwa, Mwalo Kasemuka, Chipoya Kashenda, Shikila Kashipale, Mumba Kashitu, Rachael Kashweka, Simwanza Kasichila, Zuze Kasito, Evance Kasoka, Patrick Kasoka, Sara Kasoka, Leonard Kasoma, Christopher Kasonde , Kasonde Kasonde , Raffael Kasonde, Siyester Kasonde, Davies Kasongole, Komani Kasoro, Martha Kasosh, Maliliwe Kasune , Elijah Kasungu, Steven Kasweka, Hezron Katasefa, Chisha Katayi, Moses Katebe, Silvester Katenga, Benny Kateti, Bervin Katoka, Patricia Katoka, Laureen Katolomba, Sarah Katonga, Bridget Katongo, Edwin Katongo, Law Katongo , Muyombo Katongo, Bwalya Katontoka,

Mambwe Katontonka, Moses Katota, Machai Katsangu, Charles Katunga, Charles Katungu, Martin Katyetye, Morris Kaumba, Chola Kaunda, Likundo Kaunda, Jully Kaushika, Adiud Kawangu, Innocent Kawangu, Kenedy Kawanu, Evans Kawengo, Fredrick Kawengo, Doris Kawewe, Chisenga Kawina , Kayomba Kawina, Wisdom Kawina, Harrison Kawisha, Efisesa Kawishi, Hebron Kawishi, Joseph Kayama, Isaac Kayando, Johns Kayanga, Nalumino Kayawe, Mazinga Kayembe, Bornface Kayombo, Gilbert Kayombo, Nalisisi Kayombo, Kaywala Kaywala, Samuel Kaywala, Kennedy Kazanda, Oliver Kazangalale, Gift Kazembe, Joseph Kazezi, Kapaipi Kazhimbala, Sington Kazila, Enock Kazomba, Stanley Kazuzu, Kalaunda Kelies, Friday Keliso, Kambeu Kelvin, Mubita Kelvin, Muyelu Kelvin, Nsofwa Kelvin, Siamunyanga Kelvin, Mwale Kelyzer, Ricky Kembo, Chiponde Kennedy, Chisanga Kennedy, Mukambu Kennedy, Museluu Kennedy, Mwansa Kennedy, Chinyangi Kenneth, Deewe Kenneth, Miyato Kenneth, Ireen Khajibaki, Cassias Kibenda, Stanely Kifimbo, Phiness Kiliboyi, Senechi Kinaka, Grigory Kingalika, Gibson Kintembe, Beauty Kipasa, Desayi Kolala , Aaron Kolosa, Anastasia Kooma, Michael Krugar, Liywali Kufanga, Muyambango Kufanga , Evans Kufranga, Daniel Kulovwe, Benson Kumeka, Munalula Kumoyo, Rapheal Kumwenda, Saraphina Kumwenda, Catherine Kunda, Ethel Kunda, Mupeta Kunda, Peter Kunda, Prince Kunda, Thelma Kunda, Musalu Kunnedy, Madyenke Kunyemwa, Judith Kutaipa, Kangule Kwalombota, Miyoba Kwalombota , Masika Kwandu, Mubita Kwibisa, Partson Kyaba, Patson Kyaba, Kobby Kyangala, Clive Kyanguba, Stanley Kyembe, Clara Kyolande, Changala Ladness, Katolo Lambe, Lambwe Lambwe, Kawangu Lani, Kyabankanga Lano, Kaumba Lasmody, Katongo Law, Maimbo Lawrence, Mwila Lembalemba, Kalyata Lemmy, Chipili Lengwe, Christopher Lengwe, Malobo Leonard, Mumbi Lesah, Kazhiya Lesman, Namangolwa Levy, Chijiba Lewis, Chitaila Lewis, Michael Libala, Liywalii Liholosi, Anastasia Likangala, Kazungo Likonge, Memory Likukela , Musonda Likukela, Phiri Lilian, Sikapila Lina, Mwila Linda, Moses Lingoma, Liwoyo Lishandu , Mukoma Liswaniso, Francis Liywali , Victor Loloji, Fredrick Lolonji, Prudence Lolozhi, Bupe Lombanya, Redson Lombanya, Richard Lombe, Lilian Longo, Bervin Longwe , Makuwalo Lowo, Trevor Lubala, Chibiibi Lubasi, Godfrey Lubasi, Lubinda Lubasi, Abel Lubinda, Rosalyn Lubinda, Memory Lubita, Richard Lubumba, Chola Luchembe, Kafunda Lucky, Mwamba Luka, Christopher Lukama, Lieto Lukama, Derrick Lukonga, Simwaba Lukundo, Simwawa Lukundo, Chola Lukwesa, Prisca Lumingu, Victor Lungu, Dieudonne Lupasha, Mary Lupata, Javis Lupheoh, Patrick Luponda, Museke Lupula, Chisale Lusale, Bweupe Lusambo, Ekenia Lusuko, Catherine Lusulo, Neboth Luvelenga, Mbewe Luyando , Vasco luyanga, Enock Lwambula, Kabunda Lwando, Annie Lwando-Mutinta, Lyson Lwinga, Mwansa Lydia, Lumbeya Lyness, Joshua Maaba, Eveleen Maambo, Jerinah Maambo, Chingulo Mable, Timmy Mabuku, Mwendalubi Macha, Herman Machacha, Macmillian Machama, Michael Machamanda, Pauson Machayi, Julient Machona, Macha Macmillan, Macha Macmillian, Nasilele Macwani, Lungu Madalitso, Hamaleka Maggie, Judith Mainda, Coster Mainza, Fordison Maishala, Jabias Majabula, Abiud Majenda, Kachana Makadauko, Allen Makai, Kennedy Makala, Michael Makalu, Foggy Makamisa, Raymond Makangu, Esther Makatale, Dorothy Makayi, Fridah Makayi, Juliano Makayi, Alex Makazo, Memory Makena, Patrick Makesa, Harrison Makina, Thomas Makina, Shila Makosa, Martin Makukishi, Willie Makuya, Graness Maladi, Godwin Malali, Anne Malama, Donald Malama, Violet Malama, Andrew Malambo, Eneless Malambo, Hellen Malambo, Jacob Malambo, Pathias Malambo, Clena Malambwa, Lawrence Malanji, Morris Malasa, Peter Malasa, Lydia Malasha, Green Malata, Jonathan Malawo, Geofrey Malayiti, Patricia Male, Ireen Malezhi, Chilufya Maloba , Enedy Maloza, Musonda Maltidah, Vivian Malumbe, Lubinda Malumo, Amos Malupenga, David Malyatela, Envance Mambwe, Tammy Mambwe, Phiri Manase , Chilekwa Mandaleni, Chrispin Mandumbwa, Queen Manela, Labson Maneowayi, Pethias Mangala, Willies Mangimela, Enock Mangowa, Kennedy Manjimela, Pethias Manjoni, Musa Manyando, Anot Mapulanga, Lucy Mapuna, Chirwa Marggie, Kibenda Marntero, Kombe Maron, Musonda Martha, Musepa Marthin, Chipoya Martin, Nyambe Marvin, Mudenda Mary, Miyanda Masaku, Christabel Maseba, Anna Maseka, Sitali Masene, Gilson Masengo, Brian Mashata, Ackin Mashiketi, Raphael Masitatu, Mary Masiye, Kajoba Masobwe, Shadrick Masoya, Andrew Masulo, Chimanda Masumba, Mervis Masumba, Prudence Masumba, Jane Masuwa, Johnathan Masuwa, Benson Matabala , Author Mataka, Benson Matambala, Nalukui Matauka, Kahare Mate, Mukamba Mate , Margaret Matente, Margrate Matente, Charles Matesu, Nguni Matilda, Phiri Matildah, Chipango Matiya, Mervis Matondo, Munkanta Maureen, Simwinga Maurice, Ntambu Mavis, Manuel Mavulye, Felix Mavwanda, Kankomba Maximo, Lewis Mayanga, Oscar Mayembi, Mayaba Mayiba, Mildred Mayondi, Lukonga Mayungo, Monde Mayungo, Sombo Mazeze, Mwanakanje Mazuba, Patrick Mbalama, Mary Mbayo, Fabson Mbemba, Esther Mbewe, Martin Mbewe, Patrick Mbewe, Romadinga Mbewe, Collins Mbilishi, Kimms Mbozi, Destiny Mbuyi, Mulopa Mcpherson, Siamumba Meleki , Chanda Melvis, Nambela Memory, Ngoma Memory, Violet Mengo, Wenson Mepuzho, Hatamba Mercy, Hatambwa Mercy , Mulwanda Mercy, Chipote Mervis, Fwalanga Mervis, Master Mfula, Ireen Michelo, Mweemba Michelo, Sikazwe Mike, Zulu Mike, Hebron Milambo, Hatobola Milimo, Hawinda Milimo, Sahando Milner, Victor Milomo, Namata Milton, Njamba Milton, Botha Miriam, Bwalya Miriam, Gershom Miti , Tobias Miti, Sitali Miyayo, Juliet Miyoba, Angel Miyombo, Adolphina Mkandawire, David Mkandawire, Rhoda Mkandawire, Rodah Mkandawire, Tanasho Moddy, Sangandalo Modric, Chikoku Moffat, Mwenya Mofya, Mumba Monde, Violet Mongeza, Nkhoma Monica, Lungowe Mooka , Mushiba Mooka, Chambwe Moonga, Hachikara Moonga , Lemmy Moonga, Loveness Moonga, Nambuli Moonga, Sikombe Moonga, Mulopa Mopherson, Lusamba Morgan, Kaumba Morris, Brian Moyo, Joel Moyo, Ngoni Moyo, Valenis Moyo, Kambole Mpande, Janet Mpande , Roy Mpanga, Ivao Mpaso, Banda Mpenya , Miles Mphande, Leakson Mponda, Bridget Mpundu, Jonathan Mpundu, Lackson Mpundu, Charles Msiska, Chima Msozi, Ireen Mteuka, Melvin Mtine, Johans Mtomga, Charity Mtonga, Mary Mtonga, Mutinta Mubagwe, Diana Mubanga, Evans Mubanga, Francine Mubanga, Francisca Mubanga, Fransica Mubanga , Matilda Mubanga, Miyanda Mubanga, Moses Mubanga, Oscar Mubanga, Sandra Mubanga, Kanunga Mubiana, Maimbolwa Mubiana, Kamayoyo

Mubita, Mate Mubita, Mwangala Mubita, Mubukwanu Mubukwanu, Jane Mubuyaeta , Muleta Mubuyaeta, Oscar Muchana, Muleya Muchanga, Joy Muchapa, Godfrey Muchemwa, Nchimunya Muchidu, Danny Muchimba, Shovina Muchimba, Agent Mudenda, Boyd Mudidi, Chisengo Mufalai, Iilungwe Mufalo, Benjamin Mufunga, Grey Mufuza, Pitson Mufwampa, George Mufwebesha, Charles Mugala, Beatrice Muhone, Limbembe Mukabo, Cosmas Mukakata, William Mukangala, Nawa Mukanwa , Caroline Mukatamwene, Austony Mukazu, Brenda Muke, Franswa Muke, Vena Muke, Ferdley Mukele, Brian Mukinda, Maston Mukisha, John Mukoma, Munjile Mukonde , Thomas Mukosati, Grevious Mukosayi, Nyakutaipa Mukosu, Ndafili Mukubwe, Humphrey Mukuka, Justine Mukuka, Duncan Mukuma, Kunda Mukungule, Innocent Mukupa , Jonathan Mukupa, Malama Mukupa, Boston Mukuyumo, Eugene Mukuyungwa, Sinjenge Mukwa, Japhat Mukwakwa, Idah Mukwato, Fred Mukwita, Henry Mukwita, Daniel Mulanguluke, Geofrey Mulefwe, Getrude Mulefwe, Kennedy Mulele, Malikana Mulele, Richard Mulemena, Nawa Mulemwa, Lawrence Mulende, Bavin Mulenga, Christine Mulenga, Dominic Mulenga, Evans Mulenga, Friday Mulenga, Hilary Mulenga, Joyce Mulenga, Lufungulo Mulenga, Maria Mulenga, Natasha Mulenga, Peter Mulenga, Richard Mulenga, Robby Mulenga, Robbyson Mulenga, Ronald Mulenga, Royce Mulenga, Thomas Mulenga, Vincent Mulenga, Franklin Muleya, Oleti Muleya, Richard Muleya, Sharon Muleya, Stella Muleya, Patricicia Muleza, Oaul Mulimba, Sepiso Mulimbwa, Midnite Muloba, Humphram Mulobela, Lubinda Mulonda, Charles Mulongwe, Mcpherson Mulopa, James Mulota, Spantom Mulumbi, Weston Mulumbi, Haward Mulunda, Trison Mulunda, Martin Mulundika, Rhodes Muluwa, Mercy Mulwanda, Nelson Muma, Chinyanta Mumba, Esther Mumba, Francis Mumba, Garthy Mumba, Mukanso Mumba, Christopher Mumbi, Martin Mumbi, Ephad Mumboshi, Namasiku Mumbuwa, Richard Mumbwala, Bupela Mumena, Fridah Mumumena, Mushekwa Munalula, Daniel Munangwa, Eunester Munanyanga, Gift Mundanya, Phanuel Mundenda, David Mundia, Joyce Mundia, Libita Mundia, Louson Mundundu, Vernon Mungala , Namushi Mungela, Dasty Mungoni, Dusty Mungoni, Alfred Mungwa, Cliff Munjile, Patricia Munkombue, Philips Munkonge, James Munkupa, Choolwe Munsanje, Godwin Munsanje, Kezia Muntanga, Daniel Muntemba, Amos Munyuki, Mulenga Muonga, Manuel Mupanchi, Jacob Mupapanga, Osward Mupatayi, Linda Mupemo, Regan Mupenda, Daniel Mupeta, Cannia Mupingo, Regina Musa, Phiri Musainkuni, Margret Musakanya, Noah Musamba, Musambo Musambo, Chilundi Musanide, Godwin Musanje, Edify Musanka, Smith Musavu, Misheck Museka, Ntemba Musekiwa, Peason Musele, Betty Musenga, Wistone Musese, Karren Mushenywa, Christabel Mushiba , Felix Mushikangombe, Gilbert Mushimba, Bupe Mushimwe, Melborne Mushitu, Kawana Musho, Luhamba Mushongo, Wamunyima Musiwa, Lukonga Musiyalela, Cyrus Musokoshi, Monica Musokotwane, Agness Musonda, Alarm Musonda, Chibwe Musonda, Cornelius Musonda, Cornielius Musonda, Enerst Musonda, Eusebious Musonda, Gladys Musonda, Helda Musonda, Likukela Musonda, Wangu Musonda, Moses Musongole, Barnabas Musopelo, Shadrick Musoya, Ignatius Musukuma, Eziah Musumali, Kegan Musumali, Phelunah Musungu , Eucred Muswema, Lubasi Mutafela, Allan Mutale, Aquino Mutale, Churchchill Mutale, Josephine Mutale, Macphersson Mutale, Maybin Mutale, Patricia Mutale, Dominic Mutambo, Elias Mutambo, Evenwell Mutambo, Joyce Mutambo, Mercy Mutambo, Elias Mutamboa, Azariya Mutanuka, Brain Muteba, Namonda Mutendew, Muti Muti, Victor Mutila, Rosemary Mutinta, John Mutobola, Julius Mutobola, Bryson Mutombo, Lubinda Mutumba, Stellah Mutumbu, Lubasi Mutumwenu, Kingsley Mutupa, Boston Muvwanga, Peace Muyachi, Chilembo Muyalma, Clement Muyanga, Mathews Muyapi, Kaluka Muyatwa, Milimo Muyatwa, Simasiku Muyatwa, Jackson Muyinda, Keagan Muyoba, Trevia Muyumba, Irilw Muyumbwa, Bright Muyunda, Dyness Muyuni, George Muyuni, Moses Muyupi, Martin Muyutu, Andrew Muzeya, Muzeya Muzeya, Jackson Muzhama, Alex Muzundu, Darius Muzwenga, Given Muzyamba, Onnety Muzyamba, Ben Mvula, Benjamin Mvula, Lwimbo Mvula, Sandford Mvula, Emmanuel Mwaamba, Esther Mwaanga, Benasho Mwaba, Chalwe Mwaba, Vivian Mwaba, Lewsis Mwabesa, Patrick Mwachindalo, Brian Mwachisowa, Monti Mwaikaka, Felix Mwaimbi, Mulonda Mwakamui, Allan Mwala, Benson Mwale , Bibian Mwale, Consity Mwale, Engwase Mwale, Felix Mwale, Francis Mwale, Grey Mwale, Innocent Mwale, Joseph Mwale , Martin Mwale , Philip Mwale , Ruth Mwale, Stardy Mwale, Lemison Mwalongo, Jacob Mwalunyunje , Joshua Mwalusamba, Charles Mwamba, Matimba Mwamba, Patrick Mwamba, Jobbry Mwambola, Arthur Mwambu, Josephine Mwanachungu, Mazuba Mwanakanje, Innoncent Mwananyambe, Tabo Mwananyambe, Freza Mwanaute, Sitamulaho Mwandamena, Abina Mwandila, Constance Mwanga, Mwepu Mwanga, Mumbulwa Mwangala, Racheal Mwangala, Dennis Mwangata , Francis Mwangata, Muyatwa Mwangelwa, Alice Mwango, Faith Mwango, Mwansa Mwangula, Alfred Mwansa, Hellen Mwansa, Josephine Mwansa, Kenndy Mwansa , Nathan Mwansa, Lizzy Mwansando, Caroline Mwanza, Emmanuel Mwanza, Enerst Mwanza, Felix Mwanza, Florence Mwanza, Frank Mwanza, Langson Mwanza, Weston Mwanza, Colias Mwape, Galon Mwape, Juliet Mwape, Yande Mwape, Mwauluka Mwauluka, Eness Mweemba, Gibson Mweemba, James Mweemba, Levant Mweemba, Malindi Mweemba, Last Mweenda, Chipego Mweene, Sydney Mweete, Joseph Mwelaizha, Derick Mwelwa, Nancy Mwelwa , James Mwenda, Jane Mwenda, Namebo Mwenda, Saasa Mwenda, Mwiya Mwendende, Mwiya Mwendendede, Hurton Mwendo, Mumba Mwenya , Davis Mwewa, Edwin Mwewa, Thandiwe Mwewa, Peter Mwiinde, Chimuka Mwiinga, Lindunda Mwikisa, Agness Mwila, Bridget Mwila , Christopher Mwila , Rigan Mwila, Saviour Mwila, Charles Mwinuna, Idi Mwinyi, Precious Nabita, Stephania Nakamba, Nakaonga Nakaonga, Kelvin Nakowa, Edson Nakumwenda, Kufamuyeke Nalishuwa, Mukeba Nalukui, Mulenga Naluzyambo, Carol Nalwendo, Adrian Namachila, Kwalombota Namakau, Mooka Namakau, Yeta Namasiku, Wilfred Namata, Akakondo Namataa, Namasiku Namataa, Lester Nambale, Precious Nambeye, Nasilimwe Nambula, Leah Namonje, Mwesa Namoonga, Imbula Namoyo, Like Namuchana, Monde Namuchana, Nayoto Namuchana, Belvan Namugala, Beauty Namukoko, Simataa Namungi, Vivian Namwai, Muwanei Namwaka, Idah Namwawa, Elizabeth Namwinga, Chama Nancy, Pumulo Nancy, Mulako Nangana, Patricia Nanyangwe, Mercy Nanyiza, Kanombola Nasiba, Lisulo Nasilele, Mubukwanu Nasilele, Nakalangwe Natasha,

Mukelabai Nawa, Mukubesa Nawa, Charity Nawakasa, Zulu Naza, Agatha Ndala, Emmanuel Ndalameta, Brian Ndandamina, Rodwell Ndembi, Siphwile Ndhlovu, Patrica Ndlovu, Jacob Ndumba, Lister Ndumba, Msamba Ndumba, Shatewa Ndumba, Eness Ngambe, Florina Ngandu, Garthy Ngandu , Mwiinde Ngandu, Mwiinde Ngandu , Wesly Ngandu, Kingsley Ngazhi, David Ngenda, Merry Ngimbu, Lizzy Ngobeka, Headson Ngolofwani, Gladwell Ngoma, Leonard Ngoma, Mirriam Ngombe, Trovin Ngombe, Champa Ngonga, Fanwell Ngo'Nga, Veronica Ngosa, Mulyata Ngule, Kennedy Nguluba, Chinyama Ngundu, Susan Ngunga, John Nguvulu, Kep Ngwane, Kamfwa Ngwira, Tembo Nixon, Jonathan Njamba, Milton Njamba, Peggy Njamba, Milton Njammba, Agness Njeck, Eliot Njobvu, Rosemary Njombo, Jeremiah Njovu, Bonwell Njungu, Dickson Nkanga, Puta Nkata, Ireen Nkeete, Violet Nkhoma, Frank Nkhonjera, Oscar Nkhuwa, Athony Nkole, James Nkoma, Jamia Nkoma, Yopa Nkomesha, Busiku Nkonde, Leza Nkonde, Mahlon Nkotashi, Shipikile Nkunkia, Kenneth Noaba, Mweemba Noel, Kabinga Nondo, Ivonny Noombo, Getrude Nosiku, Namangolwa Nosiku, Nyambe Notulu, Kharam Nseluka , Fridah Nshimbi, Gibson Nshimbiya, Esnart Nsingo, Mulenga Nsomfwa, Evance Ntambakuwa, Konga Ntanga, Kelvin Ntatala, Manuel Ntuluba, Jane Ntulukila, Boston Nyambe, Jonathan Nyambe, Muhas Nyambe, Daphine Nyemba, James Nyenjele, Kambita Nyichiu, Adams Nyimbiri, Godfrey Nyinzhi, Jacob Nyirenda, Joseph Nyirongo , Robert Nyirongo, Florence Nyundo, Astone Nyungwe, Lijim Obed, Chiya O'Nniel, Shindola Onole, Mafuta Ortis, Connie Osborne, Mugala Oscar, Phulu Oscar, Mudibbwi Otiria, Mirriam Palata, Janet Palukani, Bwalya Partrick, Kakoma Pathias, Nawale Patience, Chibuye Patrick, Lazarous Pearce, Shwana Pelekelo , Mercy Penda, Elias Pengele, Richard Pepala, Chikata Peter, Kombe Peter, Mpanga Peter, Muzangisa Peter, Lzhi Petulu, Kennedy Pezo, Ngolofwana Philip, Chandamali Philosopher, Abraham Phiri, Agness Phiri, Bathlomeo Phiri, Betty Phiri, Bisael Phiri, Charity Phiri, Christopher Phiri, Clement Phiri, Clementina Phiri, Clementina Phiri , Dulani Phiri, Edwin Phiri, Elita Phiri, Elium Phiri, Emmanuel Phiri, Fred Phiri, Geofrey Phiri , George Phiri, Gift Phiri, Jackson Phiri, Josephine Phiri, Langwe Phiri, Lawernce Phiri, Margaret Phiri , Mary Phiri, Mercy Phiri, Roberta Phiri, Sainedi Phiri, Sam Phiri, Taonga Phiri, Tobias Phiri, Soneka Pocevamin, Lungowe Precious, Mwiche Precious, Nambeye Precious, Chilolo Presley, Lubasi Prince, Banda Prisca, Monde Priscilla, Yombwe Priscilla, Kakoho Prudence, Siyambango Prudence, Danstan Pule, Gerald Puleni, Matilda Pumulo, Walubita Puteho, Sketi Queen, Chanda Racheal, Mutinta Ranolds, Masumba Rebecca, Chimwanga Renneas, Nasilele Rex, Lubemba Ribson, Phiri Richard, Kakumba Robby, Mvula Robert, Kankung'a Rodgers, Katiki Rodgers, Kamunga Rodrigue, Chola Rose, Mukabe Rose, Loloji Roy, Mushala Roy, Chisanga Ruth, Phiri Ruth, Victor Sachiyenge, Namiluko Sackson, Alick Sahando, Milner Sahando, Brenda Saidi, Musa Saidi, Morgan Sain, Morris Sakachaka, Katooka Sakachala, George Sakahande, Douglas Sakala, Eddie Sakala, Hillary Sakala, Luwiza Sakala, Paradious Sakala, Samuel Sakala, Winnie Sakala, Christopher Sakapanga, Davy Sakaumba, Gileni Sakeni, Edwin Sakeyokabuswe, Samuel Sakisa, Teddy Sakufola, Chibe Sakunda, Moses Sakutemba, Fred Sakuwaba, Charles Sakuwaha, Fred Sakuwaha, Johnson Salachi, Bridget Salukatula, Benjamin Salupaku, Velady Samakayi, Pathias Samalesu, Dimus Samanenga, Acred Samanga , Boyd Sambeyi, Christina Samboji, Julis Samboko, John Samiselo, Seth Samkoko, Moses Samondela, Chanda Sampa, Phiri Samson, Kaywala Samuel, Alick Samushibi, Patrick Samwimbila, Simuchimba Sanderson, Mushwaule Sandume, Godwin Sangalanga, Webby Sangambo, Jack Sangasile, Moses Sangondola, Mirriam Sangwa, Steven Sanjolomba, John Sanka, Negela Sankalimba, Charles Sankunguya, Karen Sanleji, Kadansa Sansakuwa, Martha Sansele, Moffat Sanzhing'a , George Satepa, Moses Satulo, Likalau Sazoza, Philina Sefuka, Violet Sekeleti, Masela Sekeseke, Lukas Selenge, Phiri Sera, Starford Seta, Victor Shabukali , Phiri Shadreck, Kambinda Shadrick, Fielder Shamazongo, Filder Shamazongo, Mushamba Shandrick, Baldwin Shanzambwe, Leah Shapi, Sampa Sharon, Sankalimba Shelly, Sakuwaha Shen, Chilowekwa Shike, Njamba Shikunda, Ireen Shilili, Mweemba Shimbeza, Gibson Shimbiya, Gibson Shimbiya , Paul Shimo, Oswell Shimpande, Palita Shindani, Duncan Shingandu, Malich Shinsu, Royd Shivunda, Jomes Showa, Niza Shumba, Prudence Siabana, Riches Siabbwalo, Lilian Siabene, Charles Siabo, Mapezeni Siadunka, Emmanuel Siakabole, Joseph Siakasili, Grey Siakumbila, George Siambelele, Kayula Siame, wilford Siamufunde, Litah Siamunsale, Hudson Siamunyano, Kahinga Siamunyima, Reuben Siamunyima, Obrian Sianga, Paul Siansala, Nchimunya Siantanga, Makani Siatwiinda, Edwin Siazilo, Sera Sibeso, George Sichande, Sebastian Sichikolo, Lister Sichilenge, Micheal Sichings, Olice Sichipamba, Daliso Sichivula, Ginno Sichone, Kephas Sichone, Modester Sichone, Flyson Sichula, Levy Sichula, Nicholas Sikanyika, Best Sikapizye, Teddy Sikaswe, Grace Sikayasa, Amos Sikombe , Kaluya Sikombe, Kenan Sikombe, Aongola Sikopo, Simamuna Sikwa, Muwa Silema, Jwau Sililo, Martin Sililo, Timothy Sililo, Dizet Sillah, Agriper Silumbwe, Siyanga Silumesi, Charles Silungwe, Dominic Silwanga, David Silweya, Gift Simalimbika, Clinty Simango, Collins Simbangu, Brown Simbeye, Susan Simenda, Kanema Simeon, Julius Simfukwe, Mwale Simon, Samutala Simon, Saviye Simon, Jeanivah Simubembe, Sanderson Simuchimba, Goodson Simukoko, Melody Simukoko, Anold Simumba, Felix Simumba, Niza Simumba, Lushomo Simunyama, Benard Simutowe, Betty simwanza, Editor Simweene, Lesley Simwinga, Dexter Simwizi, Dorice Sinakoba, Lutaka Sinaswana, Naomi Sineene, Jambi Sinikwe, Aaron Sinkala, Daniel Sinkala, Erick Sinkala, Geofrey Sinkala, Kelvin Sinkala, Memory Sinkala, Mike Sinkala, Christopher Sinkamba, Gideon Sinkamba, Margret Sinoya, Jerry Sinyangwe, Peter Sinyangwe, Richard Sinyangwe, Kelvin Sinyinda, Friday Sinyiza, Sipalo Sipalo, Sishau Sishau, Doreen sitali, Mukuti Sitali, Willie Sitalia, Crebby Siteta, Catherine Sitululwa, Likando Situmbo, Naomi Sitwala, Hope Siwale, Wilson Siwanzi, Christopher Siwazeze, Emmanuel Siwela, Sydney Siwila, Mushokabanji Siyanga, Namamba Siywa, Leonard Soko, James Sokoni, James Sokoni , Emannuel Solochi, Japhet Solochi, Vumbi Solochi, Paison Solomon, Birth Sondashi, Likando Sondo, Rabbeca Soneka, Nakabowa Songiso, Monde Songolo, Sianga Songolo, Siantobolo Stainley, Mututo Stanford, Mununga Steney, Kanga Stephen, Mashata Steven, Njamba Steven, Sendwe Steven, Steven Subakanya, Musiyebo Sumbwa, Chomba Susan, Mutwale Susan, Danny Suya, Joseph Syanzila, Kaututa Sykvia,

Chishimba Sylvester, Stephen Tabalasa, Staford Taipi, Mambwe Tammy, Banda Taonga, Mumbe Tauzeni, Evans Tawila, Mangongo Tembelwa, Charles Tembo, Dabwitso Tembo, Ezekiel Tembo, Florence Tembo, Ketty Tembo, Makelel Tembo, Odris Tembo , Ords Tembo, Prisca Tembo, Tobias Tembo, Shaaba Tendai, Geofrey Tepa, Lungu Terina, Dube Thandiwe , Kaminsa Theresa, Kalinga Timothy, Kalaba Titus, Tembo Tobias, Ivyn Tolopo, Henry Tongwe, Sauleji Tony, Nkulie Toza, Syasulwe Trevor, Josias Twasane, Clyde Ushibantu, Mike Uvuya, Manya Valerio, Kaluba Victor, Shabukali Victor, Mulenga Victoria, Simfukwe Villy, Chilufya Vincent, Sampa Vincent, Namiluko Violet, Ndala Violet, Ngosa Violet, Twendepi Virginia, Mwaba Vivian , Ngoma Vivian, Nelson Waitolo, Christine Wakupela, Walieta Walieta, Mpande Waliko, Mwilaba Wamunyima, Mutale Webster, Chitenge Wesley, Kambole Wesley , Godfrey Wevwa, Mvula Whiteson, Namata Wilfred, Kapaba William, Mwela Winfred, Bwalya Winfridah, Banda Wisdom, Teddy Wishikoti , Benson Witika, Charles Wotela, Violet Yamba , Kashiba Yamfwa, Ruth Yamukwanda, Annie Yona, Hendrick Yona, Hendrix Yona, Lungu Zaccheus, Phiri Zacharia , Kamanga Zakeyo, Sam Zeko, Bwengo Zenko, Esther Zimba, Hellen Zimba, Charles Zulu, Francis Zulu, Gideon Zulu, Imonda Zulu, James Zulu, Kalunga Zulu, Luciano Zulu, Lydia Zulu ,Michael Zulu, Pax Zulu , Polite Zulu, Robert Zulu, Samahenga Zuze,

APPENDIX E. HOUSEHOLD QUESTIONNAIRE

FORMATTING DATE: 28 March, 2021

ZAMBIA POPULATION-BASED HIV IMPACT ASSESSMENT SURVEY

HOUSEHOLD IDENTIFICATION

01	CLUSTER NUMBER	
02	HOUSEHOLD NUMBER	
03	LOCALITY CODE AND NAME	
04	CONSTITUENCY	
05	DISTRICT	
06	PROVINCE	
07	GPS COORDINATES OF HOUSEHOLD	
07a	LATITUDE	° ` "
07b	LONGITUDE	° ` "
08	URBAN/RURAL (URBAN = 1, RURAL = 2)	

INTERVIEWER VISITS

	FIRST VISIT	SECOND VISIT	THIRD VISIT	FINAL VISIT
DATE				DAY
				MONTH
INTERVIEWER'S NAME				YEAR 2021
				INT. NO.
RESULT* USE CODES BELOW				RESULT*
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
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	01

13 TEAM LEAD _____ NAME _____ NUMBER

14 TEAM NUMBER _____

NATIVE LANGUAGE OF RESPONDENT** 01 | LANGUAGE OF INTERVIEW** _____ | LANGUAGE OF QUESTIONNAIRE** _____

LANGUAGE OF QUESTIONNAIRE** ENGLISH

**LANGUAGE CODES:

01 ENGLISH 03 KAONDE 05 LUNDA 07 NYANJA 08 TONGA
02 BEMBA 04 LOZI 06 LUVALE 96 OTHER _____ (SPECIFY)

							IF Q.7 IS LESS THAN 2 YEARS	IF Q.7 IS 15-17 YEARS			
1	2	3	4	5	6	7	8	9	10	11	11A
LINE NO.	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household. LIST ALL HOUSEHOLD MEMBERS. AFTER LISTING THE NAMES AND ASKING REMAINING QUESTIONS FOR EACH HOUSEHOLD MEMBER, ASK QUESTIONS 2A-2C TO BE SURE THAT THE LISTING IS COMPLETE.	What is the relationship of [NAME] to the head of the household? SEE CODES BELOW	Is [NAME] male or female?	Does [NAME] usually live here?	Did [NAME] sleep here last night?	How old is [NAME] in years? RECORD AGE IN COMPLETED YEARS.	How old is [NAME] in months? IF LESS THAN 1 MONTH, ENTER '00'	Is [NAME] emancipated? EMANCIPATED MINOR IS AGE 15-17, FREE FROM PARENTAL/GUARDIAN CONTROL.	CIRCLE LINE NUMBER OF ALL WOMEN AGE 15 OR OLDER, WHO SLEPT IN HOUSEHOLD LAST NIGHT	CIRCLE LINE NUMBER OF ALL MEN AGE 15 OR OLDER, WHO SLEPT IN HOUSEHOLD LAST NIGHT	COVID-19 is the name given to the disease caused by a coronavirus. It is a respiratory disease that is easily contagious and in most cases presents itself as the common flu. In a few cases, the disease can be serious. Has [NAME] ever had COVID-19 or ever suspected to have had COVID-19?
01		0 1	M F 1 2	Y N 1 2	Y N 1 2			Y N DK R 1 2 8 9	01	01	Y N DK R 1 2 8 9
02			M F 1 2	Y N 1 2	Y N 1 2			Y N DK R 1 2 8 9	02	02	Y N DK R 1 2 8 9
03			M F 1 2	Y N 1 2	Y N 1 2			Y N DK R 1 2 8 9	03	03	Y N DK R 1 2 8 9

2A	Thank you for completing the household roster. The next step will be to ask some confirmation questions. Just to make sure that I have a complete listing: are there any other people such as small children or infants that we have not listed?	YES → ADD TO TABLE	NO
2B	Are there any other people who may not be members of your family, such as domestic workers, lodgers, or friends who usually live here?	YES → ADD TO TABLE	NO
2C	Are there any guests or temporary visitors staying here, or anyone else who stayed here last night, who have not been listed?	YES → ADD TO TABLE	NO

moreppl

morefriends

moreguests

CODES FOR Q. 3:
RELATIONSHIP TO THE HEAD OF THE HOUSEHOLD

HEAD	01	BROTHER/SISTER	08
WIFE/HUSBAND/PARTNER	02	CO-WIFE	09
SON/DAUGHTER	03	OTHER RELATIVE	10
SON-IN-LAW/DAUGHTER-IN-LAW	04	ADOPTED/FOSTER /STEPCHILD	11
GRANDCHILD	05	NOT RELATED	12
PARENT	06	DON'T KNOW	98
PARENT-IN-LAW	07		

HOUSEHOLD ROSTER

IF DID NOT SLEEP IN HOUSEHOLD LAST NIGHT (Q.6 IS NO)			IF Q.7 IS 18 OR OLDER OR EMANCIPATED	MINOR HOUSEHOLD ROSTER: ONLY ASKED FOR MEMBERS AGE 0-17 (Q.7)							
12	13	14	15	16	17	18	19	20	21	22	23
When was the last time [NAME] slept the night in the household? IF [NAME] LAST SLEPT IN HH IN CURRENT MONTH/YEAR, SKIP TO 15 AFTER RECORDING DATE.	Is [NAME] in another province or country?	Which province or country is [NAME] in currently? SEE CODES BELOW	Has [NAME] been very sick for at least 3 months during the past 12 months, that is [NAME] was too sick to work or do normal activities?	Is [NAME] currently enrolled in school?	Is [NAME]'s natural mother alive?	Does [NAME]'s natural mother usually live in this household or was a guest last night?	PLEASE SELECT [NAME]'S NATURAL MOTHER FROM THE LIST OF HOUSEHOLD MEMBERS BELOW.	Does [NAME] have a female guardian who usually lives in this household or was a guest last night?	PLEASE SELECT [NAME]'S FEMALE GUARDIAN FROM THE LIST OF HOUSEHOLD MEMBERS BELOW.	Is [NAME]'s natural father alive?	Does [NAME]'s natural father usually live in this household or was a guest last night?
MONTH ☐☐ YEAR ☐☐☐☐ DK . . 98 R . . . 99 → GO TO 15 DK . . . . . 9998 R . . . . . 9999 → GO TO 15	Y N DK R 1 2 8 9 GO TO 15	☐☐	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 20	Y N DK R 1 2 8 9 GO TO 20	LINE NO. ☐☐ (GO TO 22)	Y N DK R 1 2 8 9 GO TO 22	LINE NO. ☐☐	Y N DK R 1 2 8 9 GO TO 25	Y N DK R 1 2 8 9 GO TO 25
MONTH ☐☐ YEAR ☐☐☐☐ DK . . 98 R . . . 99 → GO TO 15 DK . . . . . 9998 R . . . . . 9999 → GO TO 15	Y N DK R 1 2 8 9 GO TO 15	☐☐	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 20	Y N DK R 1 2 8 9 GO TO 20	LINE NO. ☐☐ (GO TO 22)	Y N DK R 1 2 8 9 GO TO 22	LINE NO. ☐☐	Y N DK R 1 2 8 9 GO TO 25	Y N DK R 1 2 8 9 GO TO 25
MONTH ☐☐ YEAR ☐☐☐☐ DK . . 98 R . . . 99 → GO TO 15 DK . . . . . 9998 R . . . . . 9999 → GO TO 15	Y N DK R 1 2 8 9 GO TO 15	☐☐	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 20	Y N DK R 1 2 8 9 GO TO 20	LINE NO. ☐☐ (GO TO 22)	Y N DK R 1 2 8 9 GO TO 22	LINE NO. ☐☐	Y N DK R 1 2 8 9 GO TO 25	Y N DK R 1 2 8 9 GO TO 25

CODES FOR Q. 14: COUNTRY OR PROVINCE

CENTRAL	01	ANGOLA	11	CHINA	21
COPPERBELT	02	BOTSWANA	12	INDIA	22
EASTERN	03	CONGO DR	13	UK	23
LUAPULA	04	MALAWI	14	USA	24
LUSAKA	05	MOZAMBIQUE	15	CANA	25
MUCHINGA	06	TANZANIA	16	AUSTRALIA	26
NORTHERN	07	ZIMBABWE	17	NETHERLANDS	27
NORTH-WESTERN	08	SOUTH AFRICA	18	UAE	28
SOUTHERN	09	KENYA	19	FRANCE	29
WESTERN	10	SWAZILAND	20	BELGIUM	30

MAURITIUS	31	
SEYCHELLES	32	
OTHER	96	
		(SPECIFY)
DON'T KNOW	98	
REFUSED	99	

MINOR HOUSEHOLD ROSTER (CONT...): ONLY ASKED FOR MEMBERS AGE 0-17 (Q.7)									MINOR HOUSEHOLD ROSTER (CONT...): ONLY ASKED FOR MEMBERS AGE 0-17 (Q.7)	
			AGE 15-17, NOT EMANCIPATED		IF NATURAL MOTHER ALIVE (Q. 17)		IF NATURAL FATHER ALIVE (Q. 22)			
24	25	26	27	28	29	30	31	32	33	34
PLEASE SELECT [NAME]'S NATURAL FATHER FROM THE LIST OF HOUSEHOLD MEMBERS BELOW.	Does [NAME] have a male guardian who usually lives in this household or was a guest last night?	PLEASE SELECT [NAME]'S MALE GUARDIAN FROM THE LIST OF HOUSEHOLD MEMBERS BELOW.	SELECT AN ADULT OR PARENT/GUARDIAN WHO CAN GIVE PERMISSION FOR [NAME] TO PARTICIPATE IN THE SURVEY.	You said that there is no adult or parent/guardian in the household who can give permission for [NAME] to participate in the survey. Is this correct?	Has [NAME]'s natural mother been very sick for at least 3 months during the past 12 months, that is she was too sick to work or do normal activities?	Does [NAME]'s natural mother have HIV/AIDS?	Has [NAME]'s natural father been very sick for at least 3 months during the past 12 months, that is he was too sick to work or do normal activities?	Does [NAME]'s natural father have HIV/AIDS?	FILTER: IS EITHER NATURAL PARENT OF [NAME] DEAD (Q.17, Q.22), SICK (Q.29, Q.31), OR HAVE HIV (Q.30, Q.32)?	FILTER: HAS ANY MEMBER OF THE HOUSEHOLD BEEN VERY SICK FOR AT LEAST 3 MONTHS DURING THE PAST 12 MONTHS (Q. 15)?
LINE NO. ☐☐ (GO TO 27)	Y N DK R 1 2 8 9 GO TO 27	LINE NO. ☐☐	LINE NO. ☐☐ (GO TO 29) NONE ... 00	YES 1 NO 2 RE-ENTER 27	Y N DK R 1 2 8 9 GO TO 31	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 33	Y N DK R 1 2 8 9	YES 1 GO TO 35 NO 2	YES 1 NO 2 GO TO NEXT
LINE NO. ☐☐ (GO TO 27)	Y N DK R 1 2 8 9 GO TO 27	LINE NO. ☐☐	LINE NO. ☐☐ (GO TO 29) NONE ... 00	YES 1 NO 2 RE-ENTER 27	Y N DK R 1 2 8 9 GO TO 31	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 33	Y N DK R 1 2 8 9	YES 1 GO TO 35 NO 2	YES 1 NO 2 GO TO NEXT
LINE NO. ☐☐ (GO TO 27)	Y N DK R 1 2 8 9 GO TO 27	LINE NO. ☐☐	LINE NO. ☐☐ (GO TO 29) NONE ... 00	YES 1 NO 2 RE-ENTER 27	Y N DK R 1 2 8 9 GO TO 31	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 33	Y N DK R 1 2 8 9	YES 1 GO TO 35 NO 2	YES 1 NO 2 GO TO NEXT

MINOR HOUSEHOLD ROSTER (CONT...): ONLY ASKED FOR MEMBERS AGE 0-17 (Q.7)							
							ONLY AGE 5-17 (Q.7)
35	36	37	38	39	40	41	42
Now I would like to ask you about any formal, organized help or support for children that your household may have received for which you did not have to pay. By formal, organized support, I mean help provided by someone working for a program. This program could be government, private, religious, charity, or community-based. In the last 12 months, has your household received any medical support for [NAME], such as medical care, supplies, or medicine, for which you did not have to pay?	In the last 12 months, has your household received any emotional or psychological support for [NAME], such as companionship, counseling from a trained counselor, or spiritual	Did your household receive any of this emotional or psychological support for [NAME in the past 3 months?	In the last 12 months, has your household received any material support for [NAME], such as clothing, food, or financial support, for which you did not have to pay?	Did your household receive any of this material support for [NAME] in the past 3 months?	In the last 12 months, has your household received any social support for [NAME] such as help in household work, training for a caregiver, or legal services, for which you did not have	Did your household receive any of this social support for [NAME] in the past 3 months?	In the last 12 months, has your household received any support for [NAME]'s schooling, such as allowance, free admission, books, or supplies, for which you did not have to pay?
Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 38	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 40	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 42	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9
Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 38	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 40	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 42	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9
Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 38	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 40	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9 GO TO 42	Y N DK R 1 2 8 9	Y N DK R 1 2 8 9

HOUSEHOLD DEATHS

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, 2018?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 109a
102	How many usual household residents died since January 1, 2018?	NUMBER OF DEATHS IF LESS THAN 10 . . . . . [0] 10 OR MORE DEATHS 10	

103	104	105	106	107	107A	107B	107C	108
NO.	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.	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'.	Was [NAME] male or female?	How old was [NAME] when (he/she) died?	Do you think [NAME] died from complications of HIV or AIDS?	Did [NAME] have COVID-19 or was suspected to have had COVID-19?	Do you think [NAME] died from COVID-19?	CHECK 102: HAS ANYONE ELSE DIED?
01	_____	DAY [ ][ ] MONTH [ ][ ] YEAR [ ][ ][ ][ ]	M.. 1 F.. 2	AGE [ ][ ] DAY . 1 MONTH 2 YEAR . 3 DK 998 R 999	Y 1 N 2 DK 8 R 9	Y 1 N 2 DK 8 R 9 GO TO 108	Y 1 N 2 DK 8 R 9	YES 1 → NEXT DEATH NO . . . 2 → 109a
02	_____	DAY [ ][ ] MONTH [ ][ ] YEAR [ ][ ][ ][ ]	M.. 1 F.. 2	AGE [ ][ ] DAY . 1 MONTH 2 YEAR . 3 DK 998 R 999	Y 1 N 2 DK 8 R 9	Y 1 N 2 DK 8 R 9 GO TO 108	Y 1 N 2 DK 8 R 9	YES 1 → NEXT DEATH NO . . . 2 → 109a
03	_____	DAY [ ][ ] MONTH [ ][ ] YEAR [ ][ ][ ][ ]	M.. 1 F.. 2	AGE [ ][ ] DAY . 1 MONTH 2 YEAR . 3 DK 998 R 999	Y 1 N 2 DK 8 R 9	Y 1 N 2 DK 8 R 9 GO TO 108	Y 1 N 2 DK 8 R 9	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.	

HOUSEHOLD DEATHS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
DRINKING WATER			
109	What is the main source of drinking water for your household?	**PIPED WATER** PIPED INTO DWELLING . . . . . 11 PIPED TO YARD/PLOT . . . . . 12 PUBLIC TAP/STANDPIPE . . . . . 13 TUBE WELL OR BOREHOLE . . . . . 21 **DUG WELL** 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:	Y N DK R	
	a) Electricity?	a) ELECTRICITY 1 2 8 9	
	b) A working radio?	b) RADIO 1 2 8 9	
	c) A working television?	c) TELEVISION 1 2 8 9	
	d) A working fixed phone?	d) FIXED PHONE 1 2 8 9	
	e) A working refrigerator?	e) REFRIGERATOR 1 2 8 9	
	f) Internet?	f) INTERNET 1 2 8 9	
	g) A computer?	g) COMPUTER 1 2 8 9	
	h) A bed?	h) BED 1 2 8 9	
	i) A table?	i) TABLE 1 2 8 9	
	j) A sofa?	j) SOFA 1 2 8 9	
	k) A hammer mill?	k) HAMMER MILL 1 2 8 9	
	l) A microwave?	l) MICROWAVE 1 2 8 9	

HOUSEHOLD DEATHS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
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	
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/PORCELAINE 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/GRASS/LEAF . . . . . 12 DUNG / MUD . . . . . 13 **RUDIMENTARY ROOF** CORRUGATED IRON . . . . . 21 TIN CANS . . . . . 22 SACK . . . . . 23 **FINISHED ROOF** ASBESTOS SHEET . . . . . 31 CONCRETE . . . . . 32 TILES . . . . . 33 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	

HOUSEHOLD DEATHS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
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	
116A	How many rooms do you have in your home? INCLUDE ALL TYPES OF ROOMS.	ROOMS	
117	How many rooms in this household are used for sleeping?	ROOMS	
118	Does any member of your household own:	Y N DK R	
	a) A bicycle?	a) BICYCLE 1 2 8 9	
	b) A working motorcycle or motor scooter?	b) MOTORCYCLE/SCOOTER 1 2 8 9	
	c) A working car or truck?	c) CAR/TRUCK 1 2 8 9	
	d) A working boat with a motor?	d) BOAT WITH MOTOR 1 2 8 9	
	e) A canoe?	e) CANOE 1 2 8 9	
	f) An ox-cart?	f) OX-CART 1 2 8 9	
	g) A tractor?	g) TRACTOR 1 2 8 9	
	h) A plough?	h) PLOUGH 1 2 8 9	
	i) A grain-grinder?	i) GRAIN-GRINDER 1 2 8 9	
	j) A feature (mobile) phone?	j) FEATURE PHONE 1 2 8 9	
	k) A smart phone?	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?	a) COWS	
	#N/A	b) GOATS/SHEEP	
	#N/A	c) CHICKENS	
	#N/A	d) DOGS	
	#N/A	e) HORSES	

HOUSEHOLD DEATHS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
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 lima, acres, or hectares of agricultural land do members of this household own? IF MORE THAN 95 LIMA, ENTER IN ACRES. IF MORE THAN 95 ACRES, ENTER IN HECTARES. IF MORE THAN 95 HECTARES, ENTER '9950'. PROVIDE CONVERSION TABLE/APPLICATION.	LIMA . . . . . 1 ☐☐.☐ ACRES . . . . . 2 ☐☐.☐ HECTARES . . . . . 3 ☐☐.☐ 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, PROBE FOR THE THREE MOST IMPORTANT SOURCES.	NOTHING . . . . . A CASH TRANSFER (E.G. SOCIAL DISABILITY GRANTS, CHILD GRANTS, SOCIAL PENSIONS) . . B ASSISTANCE FOR SCHOOL FEES . . . . . C MATERIAL SUPPORT FOR EDUCATION (E.G. UNIFORMS, SCHOOL BOOKS, EDUCATION, TUITION SUPPORT, BURSARIES) . . . . . D INCOME GENERATION SUPPORT IN CASH OR KIND (E.G. AGRICULTURAL INPUTS) . . . . . E FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD / EXTERNAL INSTITUTION (E.G. SCHOOL FEEDING PROGRAM) . . . . . F MATERIAL OR FINANCIAL SUPPORT FOR SHELTER . . . . . G PENSION . . . . . H REMITTANCES . . . . . I OTHER _____ X (SPECIFY) 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	COVID-19 is the name given to the disease caused by a coronavirus. It is a respiratory disease that is easily contagious and in most cases presents itself as the common flu. In a few cases, the disease can be serious. Was any of this external economic support related to COVID-19?	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

FORMATTING DATE: March 28 2021

ZAMBIA POPULATION-BASED HIV IMPACT ASSESSMENT SURVEY - INDIVIDUAL QUESTIONNAIRE

IDENTIFICATION

01 CLUSTER 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 2021
RESULT* USE CODES BELOW	_____	_____	_____	INT. NO. [ ][ ][ ][ ] RESULT* [ ]
NEXT VISIT: DATE	_____	_____		TOTAL NUMBER OF VISITS [ ]
TIME	_____	_____		

*RESULT CODES:

01	COMPLETED	06	WITHDRAWN
02	NOT AT HOME	07	COGNITIVELY IMPAIRED (INELIGIBILE)
03	POSTPONED	08	STOP SURVEY
04	REFUSED	09	AT HOME, RESCHEDULE VISIT
05	INCAPACITATED _____ (SPECIFY)	10	TEAM IN ISOLATION/QUARANTINE FOR COVID-19
		96	OTHER _____ (SPECIFY)

06 TEAM LEAD _____ NAME [ ][ ][ ][ ] NUMBER

07 TEAM NUMBER [ ][ ]

NATIVE LANGUAGE OF RESPONDENT** 01

LANGUAGE OF INTERVIEW** [ ][ ]

LANGUAGE OF QUESTIONNAIRE** [ ][ ]

LANGUAGE OF QUESTIONNAIRE** ENGLISH

**LANGUAGE CODES:

01 ENGLISH 03 KAONDE 05 LUNDA 07 NYANJA 08 TONGA
02 BEMBA 04 LOZI 06 LUVALE 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	
106A	What is the highest level of school you attended: primary, secondary, or higher?	PRIMARY . . . . 1 SECONDARY . . . . . 2 HIGHER . . . . . 3 DON'T KNOW . . . . . 8 REFUSED 9	
106B	What is the highest [GRADE/YEAR] you completed at that level?	GRADE/YEAR [ ][ ] DON'T KNOW . . . . . 98 REFUSED 99	
107	How long have you lived in this area or community? IF LESS THAN ONE YEAR, ENTER TIME IN MONTHS	MONTHS . . . . . 1 [ ][ ] YEARS . . . . . 2 [ ][ ] ALWAYS LIVED HERE . . . . . 993 DON'T KNOW . . . . . 998 REFUSED 999	→110

1. RESPONDENT BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
108	Just before you moved here, did you live in a city, in a town, or in a rural area?	CITY . . . . . 1 TOWN . . . . . 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 Zambia, which country did you live in?	MALAWI . . . . . 20 MOZAMBIQUE . . . . . 21 ZIMBABWE . . . . . 22 NAMIBIA . . . . . 23 BOTSWANA . . . . . 24 ANGOLA . . . . . 25 DRC . . . . . 26 TANZANIA . . . . . 27 SOUTH AFRICA . . . . . 28 UAE . . . . . 29 CHINA . . . . . 30 NIGERIA . . . . . 31 INDIA . . . . . 32 [DISTRICT 1] . . . . . 101 [DISTRICT 118] . . . . . 218 OTHER _____ 996 (SPECIFY) DON'T KNOW . . . . . 998 REFUSED 999	
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	2, 8, 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 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		

1. RESPONDENT BACKGROUND			
NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
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 COMMUNITY IN THIS DISTRICT . . 01 ANOTHER DISTRICT IN THIS PROVINCE . . . . 02 CENTRAL . . . . . 10 COPPERBELT . . . . . 11 EASTERN . . . . . 12 LUAPULA . . . . . 13 LUSAKA . . . . . 14 MUCHINGA . . . . . 15 NORTHERN . . . . . 16 NORTH-WESTERN . . . . . 17 SOUTHERN . . . . . 18 WESTERN . . . . . 19 MALAWI . . . . . 20 MOZAMBIQUE . . . . . 21 ZIMBABWE . . . . . 22 NAMIBIA . . . . . 23 BOTSWANA . . . . . 24 ANGOLA . . . . . 25 DRC . . . . . 26 TANZANIA . . . . . 27 SOUTH AFRICA . . . . . 28 UAE . . . . . 29 CHINA . . . . . 30 NIGERIA . . . . . 31 INDIA . . . . . 32 OTHER _____ 96 (SPECIFY) 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 CONFLICT OR NATURAL DISTASTER (FLOODS, DROUGHT, FIRE, WAR) . . . . . 05 COVID-19 SHUTDOWN . . . . . 06 COVID-19 RESTRICTIONS . . . . . 07 TAKE CARE OF SICK RELATIVE . . . . . 08 FUNERAL . . . . . 09 OVERNIGHT PRAYERS . . . . . 10 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	

1. RESPONDENT BACKGROUND			
NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
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 WORK . . . . . 09 STUDENT . . . . . 10 PROFESSIONAL/TECHNICAL/ MANAGERIAL/CLERICAL . . . . . 11 SERVICE AND SALE WORKERS . . . . . 12 CRAFT AND RELATED TRADES WORKERS . . 13 PLANT AND MACHINE OPERATORS, AND ASSEMBLERS . . . . . 14 UNSKILLED MANUAL . . . . . 15 ELEMENTARY OCCUPATIONS . . . . . 16 OTHER _____ (SPECIFY) 96 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 COMMUNITY . . . . . 1 SAME COUNTRY, DIFFERENT COMMUNITY . . 2 OUTSIDE THE COUNTRY . . . . . 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 _____ 00 (SPECIFY NAME) DON'T KNOW . . . . . 98 REFUSED 99	

2. MARRIAGE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
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, SAME COMMUNITY . . . . . 1 STAYING IN A DIFFERENT COMMUNITY, SAME PROVINCE . . . . . 2 STAYING IN A DIFFERENT PROVINCE . 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 COMMUNITY . . . . . 2 STAYING IN A DIFFERENT COMMUNITY, SAME PROVINCE . . . . . 3 STAYING IN A DIFFERENT PROVINCE . 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 _____ 00 (SPECIFY NAME) 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 PREGNANCIES THAT RESULTED IN A LIVE BIRTH . . . . ☐☐ NONE . . . . . 00 DON'T KNOW . . . . . 98 REFUSED 99	→ 326A
302	How many times have you had a pregnancy that resulted in a live birth since the 1st of January, 2017?	NUMBER OF LIVE BIRTHS . . . . ☐☐ NONE . . . . . 00 DON'T KNOW . . . . . 98 REFUSED 99	→ 326A
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, 2017.		
303	Did your last pregnancy result in birth to twins or more?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 305
304	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".	BIRTH ORDER / NAME(S) 1 _____ 2 _____ 3 _____ 4 _____	→ 306
304A	Was there another multiple born alive? IF YES, RECORD NAME OF NEXT CHILD BORN ALIVE.		
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 8 REFUSED 9 9	→ 314
311	What was the result of your last HIV test during your last pregnancy with [LAST CHILD]?	POSITIVE . . . . . 1 NEGATIVE . . . . . 2 UNKNOWN/ INDETERMINATE . . . . . 3 8 DID NOT RECEIVE RESULTS . . . . . 4 9 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 8 REFUSED 9 9	→ 316 → 316
313	What was the main reason you did not take ARVs while you were pregnant with [LAST CHILD]?	WAS NOT PRESCRIBED . . . . . 01 FELT HEALTHY/NOT SICK . . . . . 02 COST OF MEDICATIONS . . . . . 03 COST OF TRANSPORT . . . . . 04 RELIGIOUS REASONS . . . . . 05 TAKING TRADITIONAL MEDICATIONS . . . . . 06 MEDICATIONS OUT OF STOCK . . . . . 07 DID NOT WANT PEOPLE TO KNOW HIV STATUS . . 08 DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY . . . . . 09 COVID-19 SHUTDOWN . . . . . 10 COVID-19 RESTRICTIONS . . . . . 11 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 MONT . . . . . [ ][ ] DON'T KNOW MONTH . . . . . 98 REFUSED MONTH . . . . . 99 YEAR . . . . . [ ][ ][ ][ ] DON'T KNOW YEAR . . . . . 9998 REFUSED YEAR 9999	
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 321	YES . . . . . 1 NO, NEVER BREASTFED 2 NO, CHILD DIED BEFORE BREASTFEEDING 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 → SKIP TO 321	YES . . . . . 1 NO, NEVER BREASTFED 2 NO, CHILD DIED BEFORE BREASTFEEDING . . 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 → SKIP TO 321
319A	CHECK 317:	YES → NO/DK/R → 321	YES → NO/DK/R → 321	YES → NO/DK/R → 321
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
321	After [CHILD] was born, was he/she tested for HIV?	YES . . . . . 1 NO, NOT TESTED FOR HI 2 NO, CHILD DIED BEFORE TESTING . . 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 → SKIP TO 326A	YES . . . . . 1 NO, NOT TESTED FOR HIV 2 NO, CHILD DIED BEFORE TESTING . . . . 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 → SKIP TO 326A	YES . . . . . 1 NO, NOT TESTED FOR HIV 2 NO, CHILD DIED BEFORE TESTING . . 3 DON'T KNOW . . . . . 8 REFUSED . . . . . 9 → SKIP TO 326A

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 ☐☐ MONTHS . . 2 ☐☐ YEARS . . 3 ☐☐ ONLY TESTD ONCE 993 DON'T KNOW . . . . . 998 REFUSED 999	WEEKS . . . . 1 ☐☐ MONTHS . . . . 2 ☐☐ YEARS . . . . 3 ☐☐ ONLY TESTD ONCE . . 993 DON'T KNOW . . . . . 998 REFUSED 999	WEEKS . . . . 1 ☐☐ MONTHS . . . . 2 ☐☐ YEARS . . . . 3 ☐☐ ONLY TESTD 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 → 326A	NO → YES → 326A	NO → YES → 326A
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 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

326A	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/CYCLE . . . . . 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 → 402A 8,9 → 500
402	Are you planning to get circumcised within the next 6 months?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	→ 500
402A	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
403A	How old were you when you were circumcised by the traditional practitioner? Please give your best guess. ENTER, '00' IF LESS THAN ONE YEAR.	AGE IN YEARS . . . . . ☐☐ LESS THAN ONE YEAR . . . . . 00 DON'T KNOW . . . . . 98 REFUSED 99	
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	→ 500
405	How old were you when you were circumcised by the medical provider? Please give your best guess. ENTER, '00' IF LESS THAN ONE YEAR.	AGE IN YEARS . . . . . ☐☐ LESS THAN ONE YEAR . . . . . 00 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?	AGE ☐☐ NEVER HAD SEX ..... 95 DON'T KNOW ..... 98 REFUSED 99	→ 600
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
504	Now I would like to ask you some questions about the people you have had sex with 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 RESPODNENT 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 PARTNER, NOT LIVE-IN 03 EX-SPOUSE/ EX-PARTNER . . . . . 04 FRIEND/ ACQUAINTANCE . . 05 SEX WORKER . . . . . 06 SEX WORKER CLIENT 07 STRANGER . . . . . 08 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	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 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	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 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	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9
513	The last time you had sex with [INITIALS], did either of you drink alcohol beforehand?	ONLY I WAS DRINKING . . . . . 1 ONLY PARTNER WAS DRINKING . . . . . 2 BOTH WERE DRINKING 3 NEITHER . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	ONLY I WAS DRINKING . . . . . 1 ONLY PARTNER WAS DRINKING . . . . . 2 BOTH WERE DRINKING 3 NEITHER . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9	ONLY I WAS DRINKING . . . . . 1 ONLY PARTNER WAS DRINKING . . . . . 2 BOTH WERE DRINKING 3 NEITHER . . . . . 4 DON'T KNOW . . . . . 8 REFUSED 9
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]?	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 MONTHS?	YES . . . . . 1 → SKIP TO NEXT 505 NO . . . . . 2 → 600	YES . . . . . 1 → SKIP TO NEXT 505 NO . . . . . 2 → 600	

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 healthcare provider 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 healthcare provider 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 COVID-19 SHUTDOWN . . . . . M COVID-19 RESTRICTIONS . . . . . N 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 MCH CLINIC ..... 11 VMMC CLINIC ..... 12 COMMUNITY/OUTREACH/PEER ..... 13 HEALTH POST ..... 14 SELF-TEST ..... 15 OTHER _____ 96 (SPECIFY) DON'T KNOW ..... 98 REFUSED 99	
607	When you last tested for HIV, what was the main reason you tested?	WAS OFFERED TEST BY HEALTH 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 HEALTH CARE VISITED HOME TO TEST .. 08 RECEIVED A CALL TO GET TESTED/ PARTNER NOTIFICATION SERVICES .. 09 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		
609B	Has a health care provider ever asked you for sexual partner(s) name(s) for partner notification?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW . . . . . 8 REFUSED 9	
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: 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, 611: 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) Healthcare provider? c) Friend? d) Family member? x) Other?	Y N DK R a) SPOUSE/SEX PARTNER . . . . 1 2 8 9 b) HEALTHCARE PROVIDER . . . . 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	Why did you take PrEP?	FEMALE SEX WORKER . . . . . 01 MEN WHO HAVE SEX WITH MEN . . . . . 02 PEOPLE WHO INJECT DRUGS . . . . . 03 PARTNER POSITIVE . . . . . 04 DON'T KNOW PARTNER'S STATUS 05 THINK I AM AT RISK . . . . . 06 OTHER _____ 96 (SPECIFY) DON'T KNOW . . . . . 98 REFUSED 99	
618B	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 healthcare provider?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	→ 703 → 709
702	What is the main reason why you have never received care or treatment for HIV from a healthcare provider?	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 ..... 05 FEAR PEOPLE WILL KNOW HAVE HIV IF I GO TO A CLINIC ..... 06 NOT AWARE OF NEED TO RECEIVE TREATMENT ..... 07 AFRAID OF SIDE EFFECTS ..... 08 RELIGIOUS REASONS ..... 09 TAKING TRADITIONAL MEDICINE ..... 10 TAKING HERBAL MEDICINE ..... 11 DO NOT TRUST THE STAFF/QUALITY OF CARE ..... 12 COVID-19 SHUTDOWN ..... 13 COVID-19 RESTRICTIONS ..... 14 OTHER _____ (SPECIFY) 96 DON'T KNOW ..... 98 REFUSED 99	→ 709
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
705A	When you changed health facilities, did you let your new health care providers know that you were already receiving treatment?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 REFUSED 9	→ 706 → 706
705B	What are the reasons you did not tell your new facility that you were already receiving treatement? SELECT ALL THAT APPLY	TRANSFER OUT TOO DIFFICULT ..... A PRIVACY CONCERNS ..... B DISTANCE ..... C HOPE FOR NEGATIVE RESULT ..... D DISLIKED HEALTH CARE WORKERS/FACILITY ..... E LOST CARE CARD ..... F UNCLEAR ABOUT THE PROCESS/DIDN'T KNOW I HAD TO TELL THEM ..... G OTHER _____ (SPECIFY) X DON'T KNOW ..... Y REFUSED ..... Z	

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 healthcare provider 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 ☐		→ 800
710	What is the main reason you have never taken ARVs for treatment of HIV?	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 TAKING HERBAL MEDICATIONS . . . . . 08 AFRAID OF SIDE EFFECTS . . . . . 09 DO NOT NEED . . . . . 10 NOT AWARE OF ARVS . . . . . 11 NOT ATTENDING HIV CLINIC . . . . . 12 CLINIC IS TOO FAR . . . . . 13 FEAR PEOPLE WILL KNOW HIV POSITIVE . . . . . 14 COVID-19 SHUTDOWN . . . . . 10 COVID-19 RESTRICTIONS . . . . . 11 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 TAKING HERBAL MEDICATIONS ..... 09 FEAR PEOPLE WILL KNOW HIV POSITIVE ..... 10 NEGATIVE ATTITUDES OF HEALTHCARE PROVIDERS ..... 11 LONG WAIT TIMES/LONG QUEUES ..... 12 STOPPED BY HEALTHCARE PROVIDER ..... 13 COVID-19 SHUTDOWN ..... 14 COVID-19 RESTRICTIONS ..... 15 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 CLUB ..... 3 THEY ARE DELIVERED TO MY HOME ..... 4 A FAMILY MEMBER/FRIEND COLLECTS THEM ..... 5 DON'T KNOW ..... 8 REFUSED 9	
714A	Since March 2020, the COVID-19 pandemic has affected many medical services including HIV testing 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?	YES ..... 1 NO ..... 2 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 disposition 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 COVID-19 shutdown or COVID-19 restrictions?	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 GUIDELINE CHANGED ..... 5 OTHER _____ 6 (SPECIFY) DON'T KNOW ..... 8 REFUSED 9	

717A	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 COVID-19 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 COVID-19 shutdown or COVID-19 restrictions?	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	→ 723
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	→ 723
722A	What was the result of your last viral load test?	UNDETECTABLE ..... 1 SUPPRESSED ..... 2 UNSUPPRESSED ..... 3 DON'T KNOW ..... 8 REFUSED 9	
723	At your last HIV medical care visit, were you asked if you had any of the following tuberculosis or TB symptoms: Cough? Fever? Night sweat? Weight loss?	Y N DK R a) 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	→ 726 → 800
725A	How many months did you take IPT/TPT the last time you were taking it?	NUMBER OF MONTHS ☐☐ DON'T KNOW ..... 98 REFUSED 99	→ 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 I 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	→ 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	→ 807A
804	In the last 12 months, were you treated for TB?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 807A
805	Are you currently on treatment for TB?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8 REFUSED . . . 9	→ 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 (human papillomavirus) test and VIA (visual inspection with acetic acid) 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	→ 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	→ 812 → 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 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.

	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
818	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, not including TB?	1	2	8	9		f)	1	2	8	9
	g) Depression or mental health condition?	1	2	8	9		g)	1	2	8	9
	h) Epilepsy?	1	2	8	9		h)	1	2	8	9
	x) Other? _____ (SPECIFY)	1	2	8	9		x)	1	2	8	9

SKIP TO 900

MODULE 9: ALCOHOL USE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
900	The next few questions will be on your use of alcohol. Remember, all the answers you provide will be kept confidential.		
901	How often do you have a drink containing alcohol?	NEVER . . . 00 MONTHLY OR LESS . . . 01 2-4 TIMES A MONTH . . . 02 2-3 TIMES A WEEK . . . 03 4 OR MORE TIMES A WEEK . . . 04 DON'T KNOW . . . 98 REFUSED . . . 99	→ 1000 → 1000
902	How many drinks containing alcohol do you have on a typical day?	1 or 2 . . . 01 3 or 4 . . . 02 5 or 6 . . . 03 7 to 9 . . . 04 10 OR MORE . . . 05 DON'T KNOW . . . 98 REFUSED . . . 99	
903	How often do you have six or more drinks on one occasion?	NEVER . . . 00 LESS THAN MONTHLY . . . 01 MONTHLY . . . 02 WEEKLY . . . 03 DAILY OR ALMOST DAILY . . . 04 DON'T KNOW . . . 98 REFUSED . . . 99	

MODULE 10: EXPOSURE TO PREVENTION INTERVENTION, 15-24 YEARS

1000	CHECK 103: AGE 15-24 ☐ AGE 25 OR OLDER ☐		→ 1008
1000A	I will now ask you about your experience with HIV prevention programs.		
NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1001	Where can you get condoms? SELECT ALL THAT APPLY.	CLINIC/HOSPITAL . . . . . A KIOSK/SHOP . . . . . B PHARMACY . . . . . C LOCAL FREE DISPENSER . . . . . D FRIENDS/PEERS . . . . . 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 COVID-19 SHUTDOWN . . . . . G COVID-19 RESTRICTIONS . . . . . H 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?	Y N DK R	
	a) Safe Spaces (Stepping Stones Curriculum)?	a) SAFE SPACES 1 2 8 9	
	b) Condom?	b) CONDOM 1 2 8 9	
	c) HIV Testing	c) HIV TESTING 1 2 8 9	
	d) Family planning?	d) FAMILY PLANNING 1 2 8 9	
	e) Families Matter Program (parent/caregiver program)?	e) FMP 1 2 8 9	
	f) PrEP?	f) PREP 1 2 8 9	
	g) Educational subsidies?	g) ED. SUBSIDIES 1 2 8 9	
	h) Enrollment in savings group?	h) SAVINGS GROUP 1 2 8 9	
	x) Other?	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	

APPENDIX G. SURVEY CONSENT FORMS

Appendix B1: Consent for Household Interview (Adults 18+ and Emancipated Minors 15-17 Years) - Version 1.7, 21 May 2021

Flesch-Kincaid Level: [6]

What language do you prefer for our discussion today?

___ English

___ [Bemba, Kaonde, Lunda, Luvale, Lozi, Nyanja and Tonga]

Title of Study: This study is called the Zambia Population-based HIV Impact Assessment (ZAMPHIA).

Interviewer reads:

Hello. My name is_____. I would like to invite you to take part in this study about HIV in Zambia. The Government of Zambia through the Ministry of Health and the Zambia Statistics Agency is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), and The University of Maryland, Baltimore.

Why are we doing this 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 Zambia have HIV and need health services. We expect about 20,000 men, women, and adolescents 15 years and older from 12,000 household throughout Zambia to take part in the study. If your household takes part, your taking part will help Zambia improve HIV services.

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.

What would happen if you join this study?

If you join this study:

•We will ask you questions. In the household interview, we will ask you some questions about the people who live here. We will also ask you about 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 in the individual interview 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 interview will take place in private, here in your house or a nearby area around your house of your choice.

The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff.

We will ask each person in your household to give permission to take part before joining the study. The study procedures also include HIV testing and blood draw in the home by a trained health worker and storage of that blood in a laboratory for future testing if you agree to this. The testing and counseling will take about 45 minutes. The HIV test results will be given back immediately. If a household member does not take part in the study, he/she will not be tested for HIV. However, we can refer him/her to a health facility where those services are provided.

What else should you know about this study?

You and any member of your household can decide not to take part in this study. If you choose to take part in the study, you may change your mind at any time and stop taking part. If you decide not to take part, it will not affect your healthcare in any way. We can tell you or any member of your household where to go for HIV services and learn about your HIV status. 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.

Is there a cost for being in the study?

There is no cost to you or anyone in your household for being in the study, apart from your time.

What are the benefits of the study?

The main benefit for you or any member of your household 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 Zambia.

What are the risks of the study?

The risks of taking part in the household interview are few. You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any specific question. As with all studies, there is a chance that someone could find out your household 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. You 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 household and person taking part in this study are:

- The University of Zambia, Bio-medical Research and Ethics Committee;
- The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA); and
- The University of Maryland, Baltimore

•The Zambian National Health and Research Authority and 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.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the National Health and Research Authority and the University of Zambia, Bio-medical Research and Ethics Committee and the Institutional Review Boards of the Centers for Disease Control and Prevention and University of Maryland, Baltimore.

Whom should you contact if you have questions?

If you have issues related to injuries or other harms or 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]

Professor Lloyd Mulenga,
Director of Infectious Diseases,
Ministry of Health,
Ndeke House,
Haile Selassie Avenue, Lusaka
Cellphone number: +260957867154

Chola Nakazwe-Daka
Principal Statistician
Zambia Statistics Agency
Nationalist Road, Lusaka
Cellphone number: +260957867200

[INTERVIEWER: READ FROM HERE]

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]

The Secretary
University of Zambia Bio-medical Research Committee
Telephone Number: +260-211-256067
University of Zambia Ridgeway Cumpus
P.o Box 50110
Email: unzarec@unza.zm

[INTERVIEWER: READ FROM HERE]

Do you want to ask me anything about the study?

Consent Statement

By answering the question below, you confirm that any questions you had, have been answered satisfactorily and you have been offered a copy of this consent form.

1.Do you agree to do the household interview?
☐Yes, go to 1a
☐No, go to 1b

1a. Please state the following statement:

"I agree to take part in the household interview."

____Check this box if participant agrees to participate in the household interview

1b. Please state the following statement:

"I do not wish to take part in the household interview."

____Check this box if participant refuses to participate in the household interview

(IF PARTICIPANT DOES **NOT** AGREE, THEN STOP DO NOT PROCEED WITH COMPLETING THE CONSENT FORM)

(IF YES TO 1 CONTINUE)

[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_____

HH ID number _____

Signature of person obtaining consent_____Date: ___/___/___

Printed name of person obtaining consent_____

Study staff ID number _____

Appendix B2: Individual Consent for Adults 18+ and Emancipated Minors 15-17 Years: Interview, Blood Testing, and Blood Storage - Version 1.7, 21 May 2021

Flesch-Kincaid Level: [6]

(SKIP IF PARTICIPANT ALREADY COMPLETED HOUSEHOLD CONSENT)

What language do you prefer for our discussion today?

___ English

___ [Bemba, Kaonde, Lunda, Luvale, Lozi, Nyanja and Tonga]

Title of Study: This study is called the Zambia Population-based HIV Impact Assessment (ZAMPHIA).

Interviewer reads:

Hello. My name is_____. I would like to invite you to take part in this study about HIV in Zambia. The Government of Zambia through the Ministry of Health and the Zambia Statistics Agency is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), and The University of Maryland, Baltimore.

Why are we doing this study?

HIV is a virus and being infected with HIV 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 Zambia have HIV and need health services. We expect about 20,000 men, women, and adolescents 15 years and older from 12,000 household throughout Zambia to take part in the survey. If you take part, you will help the Ministry of Health improve HIV services in the country. This study involves an interview, blood draw and HIV testing.

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.

What would happen if you join this study?

- The information you will give is collected on this tablet. The information is stored securely and can only be accessed by selected study staff.

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD CONSENT)

If you join this study:

- We will ask you questions, and your answers will be kept between us. The questions will be 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 private area of your choosing.
- Study procedures also include blood draw, HIV testing, and storage of that blood for other tests that will be of public health benefit in Zambia.
- If you agree to the HIV testing, you will receive a pre-test information and then 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 HIV 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 as the test.
- The testing and counseling will take about 45 minutes.
- We would also like to ask you to allow us to keep your blood for other tests that will be of public health benefit in Zambia. These tests may be related to HIV or other health issues important to people living in Zambia. We would like your permission to keep your blood for up to 10 years. If a test result is important for your health we will return the results to the facility of your choice. We will use the contact information you have already provided us, to send you a message when we have sent any such results to your chosen health facility. After 3 years, your sample will no longer have your name on it, so we will no longer be able to tell you the results of any other tests done after the 3 year period. If you do not agree to storage of your blood samples and other tests, you can still take part in the study and we will destroy your blood samples after this study-related testing is complete.
- If you test positive for HIV:
    - We will give you a referral form and information so you can consult with a health care provider to learn more about the test results.
    - 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 health care provider at that facility about your results.
    - Some of your blood may 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 health care facility of your choice. If you have given us your contact information, we will contact you to tell you how you and your health care provider may get these additional results.

(SKIP IF PARTICIPANT ALREADY WENT THROUGH THE HOUSEHOLD CONSENT)

What else should you know about this study?

You can decide not to take part in this study. If you choose to take part in the study, you may change your mind at any time and stop taking part. 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 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.

Is there a cost 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)

What are the benefits of the study?

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 is free and you will be referred and linked to a health care facility of your choice to receive treatment. If you already know that you have HIV and are not on treatment, you will also be referred and linked to a health care facility of your choice and enroll into care to receive treatment. If you are HIV positive and on HIV

treatment, the viral load tests can help your health care provider 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 Zambia. It can help us learn about how HIV prevention and treatment programs are working in the country.

What are the risks of the study?

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 that you have HIV may cause worry. You will receive counseling on how to cope with learning that you have HIV and we will refer you to a health care facility of your choice where you can receive treatment.

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. Your name and contact information will not be released outside of the study groups listed unless there is an issue of safety. 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.

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 University of Zambia Bio-medical Research Ethics Committee
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - The University of Maryland, Baltimore
- The Zambian National Health and Research Authority and 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 in a study.
- Selected study staff and study monitors.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the National Health and Research Authority and the University of Zambia, Bio-medical Research and Ethics Committee and the Institutional Review Boards of the Centers for Disease Control and Prevention, and University of Maryland, Baltimore.

Whom should you contact if you have questions?

If you have issues related to injuries or other harms, or 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]

Professor Lloyd Mulenga,
Director of Infectious Diseases,
Ministry of Health,
Ndeke House,
Haile Selassie Avenue, Lusaka
Cellphone number: +260957867154

Chola Nakazwe-Daka
Principal Statistician
Zambia Statistics Agency
Nationalist Road, Lusaka
Cellphone number: +260957867200

[INTERVIEWER: READ FROM HERE]

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]

The Secretary
University of Zambia Bio-medical Research Committee
Telephone Number: +260-211-256067
University of Zambia Ridgeway Cumpus
P.o Box 50110
Email: unzarec@unza.zm

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED HOUSEHOLD CONSENT)

Do you want to ask me anything about the study?

- The interview?
- Drawing blood for HIV testing?
- Testing in the laboratory?
- Storage of blood for other testing?

Consent Statement

By answering the questions below, you confirm that any questions you had 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?
   ☐Yes, go to 1a
   ☐No, go to 1b

1a. 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.

1b. 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 DO NOT PROCEED WITH COMPLETING THE CONSENT FORM)

2. Do you agree to give blood for HIV testing and related testing and receive the results of your HIV test?
☐Yes, go to 2a
☐No, go to 2b

2a 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.

2b. Please state the following statement:
"I do not wish to take part in blood testing and related testing today."
____Check this box if participant refuses blood testing.

3. (IF YES TO 2 CONTINUE) Do you agree to have your leftover blood stored for other testing that will be of public health benefit in Zambia?
☐Yes, go to 3a
☐No, go to 3b

3a. Please state the following statement:

"I agree to have my blood stored for other testing that will be of public health benefit in Zambia."
____Check this box if participant agrees to have his/her blood stored for other testing

3b. Please state the following statement:
"I do not wish to have my blood stored for other testing that will be of public health benefit in Zambia."

____Check this box if participant refuses to have his/her blood stored for other testing.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: INTERVIEW, BLOOD TESTING, BLOOD STORAGE FOR OTHER TESTING THAT WILL BE OF PUBLIC HEALTH BENEFIT IN ZAMBIA>. Is this correct?

_____Yes _____No

Printed name of participant _____

PTID: _____

Signature of person obtaining consent_____Date: ___/___/___

Printed name of person obtaining consent_____

Study staff ID number _____

Appendix B3: Parental or Guardian Permission for Participants 15 Years: Allow Interview, Blood Testing, and Blood Storage

- Version 1.7, 21 May 2021

Flesch-Kincaid Level: [6]

What language do you prefer for our discussion today?

___ English

___ [Bemba, Kaonde, Lunda, Luvale, Lozi, Nyanja and Tonga]

Title of Study: This study is called the Zambia Population-based HIV Impact Assessment (ZAMPHIA).

Interviewer reads:

Hello. My name is_____. I would like to invite you to take part in this study about HIV in Zambia. The Government of Zambia through the Ministry of Health and the Zambia Statistics Agency is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), and The University of Maryland, Baltimore.

(SKIP IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Why are we doing this study?

HIV is a virus and being infected with HIV 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 Zambia have HIV and need health services. We expect about 20,000 men, women, and adolescents 15 years and older from 12,000 household throughout Zambia to take part in the study. If your adolescent takes part, he/she will help the Ministry of Health improve HIV services in the country. This study involves an interview, blood draw and HIV testing.

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.

What would happen if your adolescent joined this study?

- The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff.

  (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 in your house or a nearby private area with only the adolescent and a study staff member.
- Study procedures also include blood draw, HIV testing, and storage of that blood for If you and your adolescent agree to HIV testing, they will receive pre-test information and then 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.

- The HIV test will take place here in or around your household. We will give you the result of the test and provide you counselling about your adolescent's results on the same day as the test.
- The testing and counseling will take about 45 minutes.
- We would also like your permission to allow us to keep your adolescent's blood for other tests that will be of public health benefit in Zambia. These tests may be related to HIV or other health issues important to people living in Zambia. We would like your permission to keep your adolescent's blood for up to 10 years. If a test result is important for your adolescent's health we will return the results to the healthcare facility of your choice. We will use the contact information you have already provided us, to send you a message when we have sent any such results to your chosen health facility. After 3 years, their sample will no longer have their name on it, so we will no longer be able to tell you the results of any other tests done after the 3 year period. If you do not agree to storage of your adolescent's blood samples and other tests, they can still take part in the study and we will destroy their blood samples after this study-related testing is complete.

- If your adolescent tests positive for HIV:
    - We will provide you information to help you to tell your adolescent about their HIV positive test result.
    - We will give you a referral form and information to you so can consult with a health care provider to learn more about your adolescent's test results.
    - 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. If you provide us with the name of a health facility, we can send his/her viral load and CD4 results there in about 8 to 12 weeks from now.
    - Some of your adolescent's blood may 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 your chosen healthcare facility. If you provide us with your contact information, we will contact you about how you and a health care provider at the preferred health facility may get these results.

What else should you know about this study?

Your adolescent can decide not to take part in this study. If your adolescent chooses to take part in the study, he/she may change his or her mind at any time and stop taking part. If he/she decides not to take part, it will not affect his/her healthcare in any way. We can tell you where he/she can go for HIV services and learn about his/her HIV status. If 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.

Is there a cost for being in the study?

There is no cost to you or your adolescent for being in the study, apart from his/her time.

What are the benefits of the study?

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 is free. If you or your adolescent already know he/she has HIV and is not on treatment, you or your adolescent will also be referred and linked

to a health care facility of your choice. If you or your adolescent already know he/she is HIV positive and is on HIV treatment, the viral load tests can help your adolescent's health care provider judge how well the treatment is working. If your adolescent tests HIV negative, you or 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 Zambia. It can help us learn about how HIV prevention and treatment programs are working in the country.

What are the risks of the study?

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 experiences any discomfort or any of the symptoms mentioned above, please let us know, and 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 worry. 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.

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 taking part in the study and his/her answers private. Your adolescent's name or contact information will not be released outside of the study groups listed unless there is an issue of safety. The information we collect from your adolescent will be identified by a number and not by his/her name. His/her name will not appear when we share study results or 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.

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 a Victim Support Unit or an organization which offers services for all forms of violence.

(SKIP 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 adolescent's rights as a person taking part in a study, including:
    - The University of Zambia Bio-medical Research Ethics Committee
    - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
    - The University of Maryland, Baltimore
- The Zambian National Health and Research Authority and 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 adolescent's rights as a person taking part in this study.
- Selected study staff and study monitors.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the National Health and Research Authority and the University of Zambia, Research and Ethics Committee and the Institutional Review Boards of the Centers for Disease Control and Prevention, and University of Maryland, Baltimore.

Whom should you contact if you have questions?
If you have issues related to injuries or other harms, or f 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]

Professor Lloyd Mulenga,
Director of Infectious Diseases,
Ministry of Health,
Ndeke House,
Haile Selassie Avenue, Lusaka
Cellphone number: +260957867154

Chola Nakazwe-Daka
Principal Statistician
Zambia Statistics Agency
Nationalist Road, Lusaka
Cellphone number: +260957867200

[INTERVIEWER: READ FROM HERE]

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]

The Secretary
University of Zambia Bio-medical Research Committee
Telephone Number: +260-211-256067
University of Zambia Ridgeway Cumpus
P.o Box 50110
Email: unzarec@unza.zm

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Do you want to ask me anything about the study?

- The interview?
- Drawing blood for HIV testing?
- Testing in the laboratory?
- Storage of blood for other testing?

Permission Statement

By answering the questions below, you confirm that any questions you had 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?
   ☐Yes, go to 1a

   ☐No, go to 1b

   1a. 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.

   1b. 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 PARTICIPANT DOES **NOT** AGREE, THEN STOP DO NOT PROCEED WITH COMPLETING THE CONSENT FORM)

2. Do you agree that we can approach this adolescent to give blood for HIV testing and related testing and to give you the results of his/her HIV test?
   ☐Yes, go to 2a
   ☐No, go to 2b

   2a. 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 to give me the results of his/her HIV test."

   ____Check this box if parent/guardian agrees for study team to ask this adolescent to take part in the blood draw.

   2b. 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.

3. Do you agree to allow us to ask this adolescent to have his/her leftover blood stored for other testing that will be of public health benefit in Zambia?
   ☐Yes, go to 3a
   ☐No, go to 3b

   3a. Please state the following statement:

"I give permission for the study team to ask this adolescent to have his/her leftover blood stored for other testing that will be of public health benefit in Zambia."

_____Check this box if parent/guardian agrees for study team to ask this adolescent to have his/her leftover blood stored for other tests.

3b. 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 other testing that will be of public health benefit in Zambia."

_____Check this box if parent/guardian refuses to have study team ask this adolescent to have his/her leftover blood stored for other tests.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: APPROACH ADOLESCENT FOR INTERVIEW, BLOOD TESTING, AND BLOOD STORAGE FOR OTHER TESTS THAT WILL BE OF PUBLIC HEALTH BENEFIT IN ZAMBIA>. Is this correct? _____Yes _____No

Printed name of parent/guardian_____

Signature of person obtaining permission_____Date: ___/___/___

Printed name of person obtaining permission_____

Study staff ID number _____

Adolescent's name (print) _____

Appendix B4: Parental or Guardian Permission for Participants 16-17 Years: Allow Interview, Blood Testing, Blood Storage - Version 1.7, 21 May 2021

Flesch-Kincaid Level: [6]

What language do you prefer for our discussion today?

___ English

___ [Bemba, Kaonde, Lunda, Luvale, Lozi, Nyanja and Tonga]

Title of Study: This study is called the Zambia Population-based HIV Impact Assessment (ZAMPHIA).

Interviewer reads:

Hello. My name is_____. I would like to invite your adolescent to take part in this study about HIV in Zambia. The Government of Zambia through the Ministry of Health and Zambia Statistics Agency is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), the University of Maryland, Baltimore.

(SKIP IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Why are we doing this study?

HIV is a virus and being infected with HIV 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 Zambia have HIV and need health services. We expect about 20,000 men, women, and adolescents 15 years and older from 12,000 household throughout Zambia to take part in the study. If your adolescent takes part, he/she will help the Ministry of Health improve HIV services in the country. This study involves an interview, blood draw and HIV testing.

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.

What would happen if your adolescent joined this study?

- The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff.

  (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 in your house or a nearby private area with only the adolescent and a study staff member.
- Study procedures also include blood draw, HIV testing, and storage of that blood for other tests that will be of public health benefit in Zambia. If you and your adolescent agree to HIV testing, they will receive pre-test information and then 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.

- The HIV test will take place here in or around your household. We will give your adolescent the results of these tests and provide counseling about the results on the same day as the test.
- The testing and counseling will take about 45 minutes.
- We would also like your permission to allow us to keep your adolescent's blood for other tests that will be of public health benefit in Zambia. These tests may be related to HIV or other health issues important to people living in Zambia. We would like your permission to keep your adolescent's blood for up to 10 years. If a test result is important for your adolescent's health we will return the results to the facility of their choice. We will use the contact information your adolescent has already provided us, to send a message when we have sent any such results to their chosen health facility. After 3 years, their sample will no longer have their name on it, so we will no longer be able to tell them the results of any other tests done after the 3 year period. If you do not agree to storage of your adolescent's blood samples and other tests, they can still take part in the study and we will destroy their blood samples after this study-related testing is complete.
- If your adolescent tests positive for HIV:
    - We would like your permission to help your adolescent access the healthcare that he or she needs. We will give your adolescent a referral form and information for him/her to consult with a health care provider to learn more about his/her test results.
    - 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. If he/she provides us with the name of a health facility, we can send his/her viral load and CD4 results there in about 8 to 12 weeks from now.
    - Some of your adolescent's blood may 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 health facility of their choice. If he/she provides us with his/her contact information, we will contact him/her about how he/she and a health care provider at the preferred health facility may get these results.
    - We would like to help your adolescent access the healthcare that he or she needs. If your adolescent agrees, we will provide your child's contact information and HIV results to healthcare workers or counselors from a trained social service organization. Specifically, we will provide your adolescent's name, phone number (if provided to us) and address to the healthcare workers or counselors. These counselors and healthcare workers will contact your adolescent, talk to him or her about HIV, and help your child go for HIV care. Anyone who is provided with your adolescent's details will be experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

What else should you know about this study?

Your adolescent can decide not to take part in this study. If your adolescent chooses to take part in the study, he/she may change his or her mind at any time and stop taking part. If he/she decides not to take part, it will not affect his/her healthcare in any way. We can tell you where he/she can go for HIV services and learn about his/her HIV status. If 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.

Is there a cost for being in the study?

There is no cost to you or your adolescent for being in the study, apart from his/her time.

What are the benefits of the study?

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 is free. If you or your adolescent already know he/she has HIV and is not on treatment, your adolescent will also be referred and linked to a health care facility of his/her choice. If you or your adolescent already know he/she is HIV positive and is on HIV treatment, the viral load tests can help your adolescent's health care provider judge how well the treatment is working. If your adolescent tests HIV negative, you or 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 Zambia. It can help us learn about how HIV prevention and treatment programs are working in the country.

What are the risks of the study?

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 experiences any discomfort or any of the symptoms mentioned above, please let us know, and 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 worry. 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.

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 taking part in the study and his/her answers private. Your adolescent's name or contact information will not be released outside of the study groups listed unless there is an issue of safety. The information we collect from your adolescent will be identified by a number and not by his/her name. His/her name will not appear when we share study results or 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.

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 a Victim Support Unit or an organization which offers services for all forms of violence.

(SKIP 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 adolescent's rights as a person taking part in a study, including:
    - The University of Zambia Bio-medical Research Ethics Committee
    - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
    - The University of Maryland, Baltimore

- The Zambian National Health and Research Authority and 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 adolescent's rights as a person taking part in this study.
- Selected study staff and study monitors.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the National Health and Research Authority and the University of Zambia, Bio-medical Research and Ethics Committee and the Institutional Review Boards of the Centers for Disease Control and Prevention, University of Maryland, Baltimore, and ICF.

Whom should you contact if you have questions?
If you have issues realted to injuries or other harms, or 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]

Professor Lloyd Mulenga,
Director of Infectious Diseases,
Ministry of Health,
Ndeke House,
Haile Selassie Avenue, Lusaka
Cellphone number: +260957867154

Chola Nakazwe-Daka **Principal Statistician**
Zambia Statistics Agency
Nationalist Road, Lusaka
Cellphone number: +260957867200

[INTERVIEWER: READ FROM HERE]

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]

The Secretary
University of Zambia Bio-medical Research Committee
Telephone Number: +260-211-256067
University of Zambia Ridgeway Cumpus
P.o Box 50110
Email: unzarec@unza.zm

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Do you want to ask me anything about the study?

- The interview?
- Drawing blood for HIV testing?

- Testing in the laboratory?
- Storage of blood for other testing?

Permission Statement

By answering the questions below, you confirm that any questions you had 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?
   ☐Yes, go to 1a
   ☐No, go to 1b

   1a. 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.

   1b. 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 PARTICIPANT DOES **NOT** AGREE, THEN STOP DO NOT PROCEED WITH COMPLETING THE CONSENT FORM)

2. Do you agree that we can approach this adolescent to give blood for HIV testing and related testing and receiving the result of his/her HIV test?
   ☐Yes, go to 2a
   ☐No, go to 2b

   2a. 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 result of his/her HIV test."

   ____Check this box if parent/guardian agrees for study team to ask this adolescent to take part in the blood draw.

   2b. 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.

3. Do you agree to allow us to ask this adolescent to have his/her leftover blood stored for other testing that will be of public health benefit in Zambia?
   ☐Yes, go to 3a
   ☐No, go to 3b

   3a. Please state the following statement:

   "I give permission for the study team to ask this adolescent to have his/her leftover blood stored for other testing that will be of public health benefit in Zambia."

   ____Check this box if parent/guardian agrees for study team to ask this adolescent to have his/her leftover blood stored for other tests.

   3b. 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 other testing that will be of public health benefit in Zambia."

   ____Check this box if parent/guardian refuses to have study team ask this adolescent to have his/her leftover blood stored for other tests.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: APPROACH ADOLESCENT FOR INTERVIEW, BLOOD TESTING, AND BLOOD STORAGE FOR OTHER TESTS THAT WILL BE OF PUBLIC HEALTH BENEFIT IN ZAMBIA >.

Is this correct? _____Yes _____No

Printed name of parent/guardian_____

Signature of person obtaining permission_____Date: ___/___/___

Printed name of person obtaining permission_____

Study staff ID number _____

Adolescent's name (print) _____

Appendix B5: Individual Assent for Participants 15 Years:

Interview, Blood Testing, and Blood Storage - Version 1.7, 21 May 2021

Flesch-Kincaid Level: [6]

What language do you prefer for our discussion today?

___ English

___ [Bemba, Kaonde, Lunda, Luvale, Lozi, Nyanja and Tonga]

Title of Study: This study is called the Zambia Population-based HIV Impact Assessment (ZAMPHIA).

Interviewer reads:

Hello. My name is_____. I would like to invite you to take part in a study. As a part of this study, we are asking people questions about themselves and also giving people a chance to learn if they have HIV. We are also asking people to draw blood and if we can keep some of their blood for other tests that will be of public health benefit in Zambia.

This form talks about our study and the choice that you have to take part in it. You can ask questions any time.

Why are we doing this study?

HIV is a virus and 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 Zambia have HIV and need health services. This study involves an interview, blood draw and HIV testing.

Your parent/guardian said it was okay for us to ask you to join in the study.

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:

- We will ask you questions and your answers will be kept between us and will not be shared with your parent or guardian. 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 of your choosing.
- 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 up to 45 minutes to do the test.
- We will give the test results to your parent or guardian.

- We would also like to ask you to allow us to store your leftover blood for other tests that will be of public health benefit in Zambia. These tests may be related to HIV or other health issues important to people living in Zambia. The sample will not have your name on it, so we will not be able to tell you the results of these other tests. 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 test positive for HIV:
  - We will give your parent or guardian information to help them talk about the result with you and support you.
  - We will give your parent or guardian a referral form and information so you and your parent or guardian can consult a health care provider to learn more about the test results.
  - 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's or guardian's choice in about 8 to 12 weeks. At the health facility, you and your parent or guardian will be able to talk to a health care provider about your results.
  - Some of your blood may 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 the health facility selected by your parent or guardian. If your parent or guardian has given us contact information, we will contact them to tell them how to get these results.

What else should you know about this study?

You can decide not to take part in this study. You can leave the study at any time for any reason. If you choose to take part in the study, you may change your mind at any time and stop taking part. If you decide not to take part, it will not affect your healthcare in any way. 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.

Is there a cost for being in the study?

There is no cost to you for being in the study, apart from your time.

Could the study help you?

Being in the study may help you by learning whether or not you have HIV. We will give you the results of your HIV test and provide counseling to you. We will discuss with you how to share these results with your parent/guardian, if you decide to do so. If you test positive for HIV, you will learn about it and where to go for care and treatment of HIV. We will refer and link a health care facility of your choice and treatment provided by the Government of Zambia is free. Your taking part in this study will help us learn more about HIV in Zambia.

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. If you experience any

discomfort or any of the symptoms mentioned above, please let us know; especially if there is any bleeding or swelling.

You may learn that you have HIV which may cause you to feel worried. We will talk to you to help you cope and we will refer you to a health facility of their choice 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.

Confidentiality and access to your health information

We will do everything we can to keep your test results confidential. The blood we collect from you will be identified by a number, not by your name. Besides you, no one else will know your test results except the people working on the study and people you may decide to tell.

Your 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 University of Zambia Bio-medical Research Ethics Committee
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - The University of Maryland, Baltimore
- The Zambian National Health and Research Authority and 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.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the National Health and Research Authority and the University of Zambia, Research and Ethics Committee and the Institutional Review Boards of the Centers for Disease Control and Prevention, University of Maryland, Baltimore, and ICF.

Whom should you contact if you have questions?

If you have issues related to injuries or other harms, or 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]

Professor Lloyd Mulenga,
Director of Infectious Diseases,
Ministry of Health,
Ndeke House,
Haile Selassie Avenue, Lusaka
Cellphone number: +260957867154

Chola Nakazwe-Daka
Principal Statistician
Zambia Statistics Agency

Nationalist Road, Lusaka
Cellphone number: +260957867200

[INTERVIEWER: READ FROM HERE]

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]

The Secretary
University of Zambia Bio-medical Research Committee
Telephone Number: +260-211-256067
University of Zambia Ridgeway Cumpus
P.o Box 50110
Email: unzarec@unza.zm

Do you want to ask me anything about:

- The interview?
- Drawing blood for HIV testing?
- Testing in the laboratory?
- Storage of blood for other testing?

Assent Statement

By answering the questions below, you confirm that all of your questions have been answered satisfactorily and you have been offered a copy of this assent form.

1. Do you agree to take part in the individual interview?
   ☐Yes, go to 1a

   ☐No, go to 1b

   1a. 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.

   1b. 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 DO NOT PROCEED WITH COMPLETING THE CONSENT FORM)

2. Do you agree to give blood for HIV testing and related testing and for your parent or guardian to receive the result of your HIV Test?
   ☐Yes, go to 2a
   ☐No, go to 2b

   2a. Please state the following statement:

   "I agree to give blood for HIV testing and related testing and for my parent or guardian to receive the result of my HIV test.

   ____Check this box if participant agrees to HIV testing and related testing.

   2b. Please state the following statement:

   "I do not wish to take part in blood testing today."

   ____Check this box if participant refuses blood testing.

3. (IF YES TO 2 CONTINUE) Do you agree to have your leftover blood stored for other tests?
   ☐Yes, go to 3a
   ☐No, go to 3b

   3a. Please state the following statement:

   "I agree to have my leftover blood stored for other testing that will be of public health benefit in Zambia."

   ____Check this box if participant agrees to have his/her leftover blood stored for other tests.

   3b. Please state the following statement:

   "I do not wish to have my leftover blood stored for other testing that will be of public health benefit in Zambia."

   ____Check this box if participant refuses to have his/her leftover blood stored for other tests.

[Tablet summary statement]

To confirm, you have agreed to < INTERVIEW, BLOOD TESTING, BLOOD STORAGE FOR OTHER TESTING THAT WILL BE OF PUBLIC HEALTH BENEFIT IN ZAMBIA >. Is this correct?

_____Yes _____No

Printed name of adolescent _____

Adolescent's PTID number _____

Printed name of parent/guardian_____

Signature of person obtaining assent_____Date: ___/___/___

Printed name of person obtaining assent_____

Study staff ID number _____

Appendix B6: Individual Assent for Participants 16-17 Years: Interview, Blood Testing, and Blood Storage - Version 1.7, 21 May 2021

Flesch-Kincaid Level: [6]

What language do you prefer for our discussion today?

___ English

___ [Bemba, Kaonde, Lunda, Luvale, Lozi, Nyanja and Tonga]

Title of Study: This study is called the Zambia Population-based HIV Impact Assessment (ZAMPHIA).

Interviewer reads:

Hello. My name is_____. I would like to invite you to take part in a study. As a part of this study, we are asking people questions about themselves and also giving people a chance to learn if they have HIV. We are also asking people to draw blood and if we can keep some of their blood for other tests that will be of public health benefit in Zambia .

This form talks about our study and the choice that you have to take part in it. You can ask questions any time.

Why are we doing this study?

HIV is a virus and 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 Zambia have HIV and need health services. This study involves an interview, blood draw and HIV testing.

Your parent/guardian said it was okay for us to ask you to join in the study.

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:

- We will ask you questions and your answers will be kept between us and will not be shared with your parent/guardian. 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 of your choosing.
- 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.
- We would also like to ask you to allow us to keep your blood for other tests that will be of public health benefit in Zambia. These tests may be related to HIV or other health issues important to

people living in Zambia. We would like your permission to keep your blood for up to 10 years. If a test result is important for your health we will return the results to the facility of your choice. We will use the contact information you have already provided us, to send you a message when we have sent any such results to your chosen health facility. After 3 years, your sample will no longer have your name on it, so we will no longer be able to tell you the results of any other tests done after the 3 year period. If you do not agree to storage of your blood samples and other tests, you can still take part in the study and we will destroy your blood samples after this study-related testing is complete.

If you test positive for HIV:

- We will give you a referral form and information so you can consult with a health care provider to learn more about the test results.
- 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 health care provider about your results.
- Some of your blood may 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 health facility of their choice. If you have given us your contact information, we will contact you to tell you how you and your health care provider may get these results.

What else should you know about this study?

You can decide not to take part in this study. You can leave the study at any time for any reason. If you choose to take part in the study, you may change your mind at any time and stop taking part. 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 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.

Is there a cost for being in the study?

There is no cost to you for being in the study, apart from your time.

Could the study help you?

Being in the study may help you by learning whether or not you have HIV. We will give you the results of your HIV test and provide counseling to you. We will discuss with you how to share these results with your parent/guardian, if you decide to do so. If you test positive for HIV, you will learn about it and where to go for care and treatment of HIV. We will refer and link a health care facility of your choice and treatment provided by the Government of Zambia is free. Your taking part in this study will help us learn more about HIV in Zambia.

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. If you experience any discomfort or any of the symptoms mentioned above, please let us know; especially if there is any bleeding or swelling.

You may learn that you have HIV which may cause you to feel worried. We will talk to you to help you cope and we will refer you to a health facility of their choice 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.

Confidentiality and access to your health information

We will do everything we can to keep your test results confidential. The blood we collect from you will be identified by a number, not by your name. Besides you, no one else will know your test results except the people working on the study and people you may decide to tell.

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 University of Zambia Bio-medical Research Ethics Committee
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - The University of Maryland, Baltimore
- The Zambian National Health and Research Authority and 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.

[INTERVIEWER: READ FROM HERE]

This study has received approval from the National Health and Research Authority and the University of Zambia, Research and Ethics Committee and the Institutional Review Boards of the Centers for Disease Control and Prevention, and University of Maryland, Baltimore.

Whom should you contact if you have questions?

If you have issues realted to injuries or other harms, or 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]

Professor Lloyd Mulenga,
Director of Infectious Diseases,
Ministry of Health,
Ndeke House,
Haile Selassie Avenue, Lusaka
Cellphone number: +260957867154

Chola Nakazwe-Daka
Principal Statistician
Zambia Statistics Agency
Nationalist Road, Lusaka
Cellphone number: +260957867200

[INTERVIEWER: READ FROM HERE]

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]

The Secretary
University of Zambia Bio-medical Research Committee
Telephone Number: +260-211-256067
University of Zambia Ridgeway Cumpus
P.o Box 50110
Email: unzarec@unza.zm

Do you want to ask me anything about:

- The interview?
- Drawing blood for HIV testing?
- Testing in the laboratory?
- Storage of blood for other testing?

Assent Statement

By answering the questions below, you confirm that all of your questions have been answered satisfactorily and you have been offered a copy of this assent form.

1. Do you agree to take part in the individual interview?
   ☐Yes, go to 1a
   ☐No, go to 1b

1a. 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.

1b. 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 DO NOT PROCEED WITH COMPLETING THE CONSENT FORM)

2. Do you agree to give blood for HIV testing and related testing?
   ☐Yes, go to 2a
   ☐No, go to 2b

2a. 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 HIV testing and related testing.

2b. Please state the following statement:

"I do not wish to take part in blood testing and related testing today."
____Check this box if participant refuses blood testing.

3. (IF YES TO 2 CONTINUE) Do you agree to have your leftover blood stored for other tests?
☐Yes, go to 3a
☐No, go to 3b

3a. Please state the following statement:

"I agree to have my blood stored for other testing that will be of public health benefit in Zambia."

_____Check this box if participant agrees to have his/her leftover blood stored for other tests.

3b. Please state the following statement:

"I do not wish to have my blood stored for other testing that will be of public health benefit in Zambia."

____Check this box if participant refuses to have his/her leftover blood stored for other tests.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: INTERVIEW, BLOOD TESTING, BLOOD STORAGE FOR OTHER TESTING THAT WILL BE OF PUBLIC HEALTH BENEFIT IN ZAMBIA >. Is this correct?

_____Yes _____No

Printed name of adolescent _____

Adolescent's PTID: _____

Printed name of parent/guardian_____

Signature of person obtaining assent_____Date: ___/___/___

Printed name of person obtaining assent_____

Study staff ID number _____

Appendix B7: Consent/Assent to Share Contact Information for Active Linkage to Care of Participants 15 Years - Version 1.7, 21 May 2021

Flesch-Kincaid Level: [6]

What language do you prefer for our discussion today?

___ English ___ [Bemba, Kaonde, Lunda, Luvale, Lozi, Nyanja and Tonga]

Title of Study: This study is called the Zambia Population-based HIV Impact Assessment (ZAMPHIA).

Interviewer reads:

What is the purpose of this consent?

Your adolescent had a positive HIV test today. We have provided you with counseling regarding their results. We have also provided you a referral form for you to take your adolescent to a health care facility for HIV treatment and care. As we mentioned earlier, your child's viral load and CD4 results will be returned to a clinic of your choice. If you agree, we will include your child's name and age when we share those results with your preferred health facility. If you do not want to share your adolescent's name with the facility but you allow us to use a number instead, the results will be shared with your preferred facility using the number we give your adolescent. Without using your adolescent's name and age or a number that we assign you may not be able to access your adolescent's results from the facility. We would like to help you and your adolescent in accessing the healthcare that they need. If you agree, we may be able to provide your contact information and HIV test results to healthcare workers or counselors from a health facility of your choice. This counselor will contact you to talk to you about HIV and help you take your adolescent to 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, phone number (if you provided it to us), and your address to those providers to provide you with support. The provider of care may contact you by SMS, WhatsApp, phone, or in person.

What about confidentiality?

Your adolescent's HIV test results and your contact information will not be shared with any other parties aside from those specified in the study team and the health facility. They will also do their utmost to maintain 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 your adolescent in accessing the healthcare that they need.

Whom 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]

Professor Lloyd Mulenga,
Director of Infectious Diseases,
Ministry of Health,
Ndeke House,
Haile Selassie Avenue, Lusaka
Cellphone number: +260957867154

Chola Nakazwe-Daka
Principal Statistician
Zambia Statistics Agency
Nationalist Road, Lusaka
Cellphone number: +260957867200

[INTERVIEWER: READ FROM HERE]

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]

The Secretary
University of Zambia Bio-medical Research Committee
Telephone Number: +260-211-256067
University of Zambia Ridgeway Cumpus
P.o Box 50110
Email: unzarec@unza.zm

[INTERVIEWER: READ FROM HERE]

Do you want to ask me anything about the study?

Consent/Assent Statement

By answering the questions below, you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent/assent form.

1. Returning these results with your adolescent's name and age will make it easier for the clinic to return the results to you and your adolescent. Do you agree for the results of your adolescent's CD4 and viral load testing to be returned to the health facility accompanied by his or her name and age? If you do not agree the results will be returned to the health facility using the number we assign to your adolescent's that will link your adolescent to his or her results.

☐Yes, go to 1a
☐No, go to 1b

1a. Please state the following statement:

"I give permission for the study team to return my adolescent's results with their name and age to the health facility."

____Check this box if participant agrees to return their adolescent's result with name and age.

1a. Please state the following statement:

"I do not wish for the study team to return my adolescent's results with their name and age to the health facility."

____Check this box if participant refuses to return their adolescent's result with name and age.

2. Do you agree to allow the study team to share your or your adolescent's contact information with a trained healthcare worker or counselor?

☐Yes, go to 2a
☐No, go to 2b

2a. 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.

2b. 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.

3. (IF YES TO QUESTION 2 ASK) 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: RETURN RESULTS WITH NAME AND AGE, BE CONTACTED BY, SMS, WHATSAPP, PHONE, IN-PERSON>. Is this correct?

_____Yes _____No

Printed name of participant_____

Signature of person obtaining consent/assent_____

Date: ___/___/___

Printed name of person obtaining consent/assent_____

Study staff ID number _____

Appendix B8: ZAMPHIA Consent/Assent to Share Contact Information for Active Linkage to Care of Participants 16+ Years - Version 1.7 21 May 2021

Flesch-Kincaid Level: [6]

What language do you prefer for our discussion today?

___ English ___ [Bemba, Kaonde, Lunda, Luvale, Lozi, Nyanja and Tonga]

Title of Study: This study is called the Zambia Population-based HIV Impact Assessment (ZAMPHIA).

Interviewer reads:

What is the purpose of this consent?

You had a positive HIV test today. We have provided you with counseling regarding the results. We have also provided a referral form to take to a health clinic for HIV treatment and care. As we mentioned earlier, your viral load and CD4 results will be returned to a clinic of your choice. If you agree, we will include your name and age when we share those results with your preferred health facility. If you do not want to share your name with the facility we will use a number instead, and the results will be shared with your preferred facility using the number we give to you. Without using your name and age or a number that we assign you will not be able to access your results from the facility. 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 health facility of your choice. 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, phone number (if you provided it to us), and your address to those providers to provide you with support. The provider of care may contact you by SMS, WhatsApp, phone, or in person.

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 study team and the health facility. They will also do their utmost to maintain your 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.

Whom 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]

Professor Lloyd Mulenga,
Director of Infectious Diseases,
Ministry of Health,
Ndeke House,
Haile Selassie Avenue, Lusaka
Cellphone number: +260957867154

Chola Nakazwe-Daka
Principal Statistician
Zambia Statistics Agency
Nationalist Road, Lusaka
Cellphone number: +260957867200

[INTERVIEWER: READ FROM HERE]

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]

The Secretary
University of Zambia Bio-medical Research Committee
Telephone Number: +260-211-256067
University of Zambia Ridgeway Cumpus
P.o Box 50110
Email: unzarec@unza.zm

[INTERVIEWER: READ FROM HERE]

Do you want to ask me anything about the study?

Consent/Assent Statement

By answering the questions below, you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent/assent form.

1. Returning these results with your name and age will make it easier for the health facility to return the results to you. Do you agree for the results of your CD4 and viral load testing to be returned to the health facility accompanied by your name and age? If you do not agree the results will be returned to the health facility using the number we assign to you that will link you to your results.

☐Yes, go to 1a
☐No, go to 1b

1a. Please state the following statement:

"I give permission for the study team to return my results with my name and age to the health facility."

____Check this box if participant agrees to return their result with name and age.

1b. Please state the following statement:

"I do not wish for the study team to return my results with my name and age to the health facility."

____Check this box if participant refuses to return their result with name and age.

2. Do you agree to allow the study team to share your contact information with a trained healthcare worker or counselor?
☐Yes, go to 2a
☐No, go to 2b

2a. 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.

2b. 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.

3. (IF YES TO QUESTION 2 ASK) 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: RETURN RESULTS WITH NAME AND AGE, BE CONTACTED BY SMS, WHATSAPP, PHONE, IN-PERSON, >. Is this correct?

_____Yes _____No

Printed name of participant_____

Signature of person obtaining consent/assent_____

Date: ___/___/___

Printed name of person obtaining consent/assent_____

Study staff ID number _____

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(ZAMPHIA 2021)