

Biobehavioral Survey among Men Who Have Sex with Men in Zambia, 2021

Zambia MSM BBS 2021



Zambia National HIV/AIDS/STI/TB Council (NAC)

Zambia Ministry of Health (MoH)

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Zambia MSM BBS 2021 COLLABORATING INSTITUTIONS

Zambia National HIV/AIDS/STI/TB Council (NAC)

Zambia Ministry of Health (MoH)

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 should know their HIV status; 95% of all people with diagnosed HIV should receive sustained antiretroviral therapy (ART); and 95% of all people receiving ART should achieve viral load 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.

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.

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. The denominator is the population at risk; the numerator is the number of new cases that occur during a given time.

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

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

HIV Viral Load Suppression (VLS): An HIV RNA measurement 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.

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

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.

LIST OF ABBREVIATIONS AND ACRONYMS

3S-CRC	Three-Source Capture-Recapture
ADS	Associate Director of Science
AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
BBS	Biobehavioral Survey
CDC	US Centers for Disease Control and Prevention
CD4	CD4+ T Cell
DEC	Drug Enforcement Commission
FGD	Focus Group Discussion
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
IDI	In-Depth Interview
IQR	Interquartile Range
IRB	Institutional Review Board
KP	Key Population
LA _g	Limiting Antigen
mL	Milliliter
μL	Microliter
MOH	Ministry of Health
MSM	Men Who have Sex with Men
NAC	National HIV/AIDS/STI/TB Council
NHRA	National Health Research Authority
OD _n	(normalized) Optical Density
PEPFAR	United States President's Emergency Plan for AIDS Relief
PrEP	Pre-Exposure Prophylaxis
POC	Point of Care
PSAF	Panos Institute of Southern Africa
PSE	Population Size Estimation
RDS	Respondent Driven Sampling
RDS _{CM}	Respondent Driven Sampling Coupon Manager
SAG	Survey Advisory Group
SID	Survey ID
STI	Sexually Transmitted Infection
TB	Tuberculosis
TDRC	Tropical Diseases Research Centre
UNAIDS	Joint United Nations Programme on HIV and AIDS
UPC	Unique Participant Code
VLS	Viral Load Suppression
WHO	World Health Organization
ZAMPHIA	Zambia Population-based HIV Impact Assessment

FOREWORD

Zambia is making progress towards attaining Vision 2030, which is an initiative of the Zambian Government to provide a high quality of life to all its citizens by leaving no one behind. Zambia is experiencing a generalized HIV epidemic, with a national HIV prevalence of 11.0% and an annual HIV incidence of 0.31% among adults aged 15-59 years despite significant progress (88.7% of adults (15+ years) living with HIV were aware of their HIV status, 98.0% were on ART & 96.3% had suppressed HIV viral load) towards reaching the UNAIDS 95-95-95 targets (ZAMPHIA 2021).

Addressing the HIV prevention, care, and treatment needs of key populations (KP) as defined by UNAIDS, including men who have sex with men (MSM), who are disproportionately affected by HIV will be essential to reach the goal of achieving 95-95-95 by 2025.

The Zambia National HIV/AIDS/STI/TB Council (NAC) acknowledges the financial and technical support from the United States (US) Centers for Disease Control and Prevention (CDC), the technical assistance of the ICAP at Columbia University, Tropical Diseases Research Centre (TDRC), Key Populations (KP) Consortium and participants who were integral to the success of Zambia MSM Biobehavioral Survey (BBS) 2021.

This report highlights the prevalence of HIV, hepatitis B and hepatitis C, and syphilis infection among MSM in the four surveyed towns (Livingstone, Lusaka, Kitwe, and Solwezi), including risk and preventive behaviors, and factors promoting and impeding engagement in care and prevention programs. Additionally, the survey estimated the number of MSM residing in the survey towns and documented the experiences of stigma and discrimination encountered by MSM. The survey further provides a foundation of evidence upon which to improve the effectiveness of our programs and interventions tailored to reaching MSM. Data obtained from this survey would be cardinal for programming and planning.

NAC recognizes that we will not end the HIV epidemic unless we address the needs of our most vulnerable communities, including MSM. We are confident that the information contained in this report will be useful to people contributing to the health and well-being of our society. The report provides a valuable window on information assurance and covers the necessary components of key population challenges and opportunities for public health interventions. Recognizing the room for improvement, Zambia will continue to require assistance from cooperating partners, with a particular emphasis on assistance that contributes to the sustainability of programs and systems relating to key populations.

As a result, I would like to express my gratitude to all the stakeholders who have worked together in the national AIDS response to this point, and I would like to solicit their continued partnership as we get closer to a pivotal point in the process of irreversibly altering the trajectory of the AIDS response.

Director General
National AIDS/STI/TB/STI Council

PREFACE

Zambia has a generalized HIV epidemic with a national HIV prevalence of 11.0% among adults aged 15 years and older and an annual incidence of 0.31% but has made substantial progress toward reaching the 95-95-95 goals. To achieve the goal of achieving 95-95-95 by 2025, addressing the HIV prevention, care, and treatment needs of key populations (KP), including men who have sex with men (MSM), that are disproportionately affected by HIV will be essential. While there have been other MSM studies in Zambia, limitations of the sampling strategy warranted additional research to establish population-level estimates of key health and behavioral indicators among MSM. For instance, available data on population prevalence and incidence of HIV among MSM in Zambia was nonexistent and gaps in accurate population size estimates (PSE) remained. Quantification of the size of the population of MSM through improved PSE methods, assessment of their demographic characteristics, and prevalence of risk behavior and service uptake among this KP is essential to enable effective health policy planning.

The 2021 HIV and Sexually Transmitted Infections (STIs) Biological and Behavioral Survey among MSM in Selected Towns in Zambia 2021 (Zambia MSM BBS 2021) was conducted from May to November 2021 to measure the prevalence of HIV and STIs and risk behaviors among MSM in four towns in Zambia (Lusaka, Livingstone, Kitwe, and Solwezi), to estimate their population size in the survey sites, and gauge progress toward reaching the Joint United Nations Programme on HIV and AIDS (UNAIDS) 95-95-95 targets.

Zambia MSM BBS 2021 was led by the Zambian Ministry of Health (MoH) and the NAC, in collaboration with the TDRC and ICAP at Columbia University. The BBS was conducted with funding from the US President's Emergency Plan for AIDS Relief (PEPFAR) and through technical assistance and partnership with the CDC. Local civil society organizations, and international development partners participated in the survey advisory group (SAG) facilitated by NAC during survey implementation.

To standardize methods for KP HIV surveillance, a protocol was adapted from the 2017 WHO Biobehavioural Survey Guidelines for Populations at Risk for HIV (The Blue Book).^{*} A formative assessment was conducted with MSM, as well as individuals assigned male at birth but who identified as transgender women (TGW) or non-binary individuals, to inform the design and implementation of the BBS. In each survey site, the goal was to hold 3 focus group discussions (FGDs) with 6-8 participants, 5 in-depth interviews (IDIs) with health service providers, and 15 IDIs with the participants. Across all survey sites, 20 health service providers and 60 individuals participated in IDIs and up to 96 individuals participated in FGDs.

Following the formative assessment, a cross-sectional BBS was conducted at the survey sites using respondent driven sampling (RDS) to recruit participants. Up to 9 seeds per site were identified through formative assessment and community mobilizers working with KP partners. Individually coded referral coupons were used by the seeds, and later, by other enrolled participants. A structured behavioral questionnaire adapted from the one in the Blue Book was used to collect information on risk behaviors and access to services, as well as information to estimate the population size of the community. Population size estimation was based on the consensus estimated based on two robust methods, 3-source capture-recapture and successive sampling-PSE methods.

Verbal informed consent was obtained by interviewers trained in human participant protection and good clinical practice. The standardized questionnaire adapted from the Blue Book^{*} was programmed with SurveyCTO for electronic data collection and administered by trained interviewers. After completing the questionnaire, consenting participants received rapid testing for HIV, hepatitis B virus (HBV), hepatitis C virus (HCV), and active syphilis. HIV prevalence testing was conducted using a serological rapid diagnostic testing algorithm based on Zambia's national

^{*} World Health Organization (WHO), US Centers for Disease Control (CDC), Joint United Nations Programme on HIV/AIDS (UNAIDS), Family Health International 360 (FHI 360). Biobehavioral survey guidelines for Populations at Risk for HIV. Geneva: WHO, CDC, UNAIDS, FHI 360; 2017. Licence: CC BY-NC-SA 3.0 IGO. <https://apps.who.int/iris/rest/bitstreams/1088520/retrieve>. Accessed May 5, 2023.

guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. Those who tested positive for HIV received testing for HIV viral load and HIV recency per the recent infection testing algorithm (RITA; recency test results in combination with viral load) at the TDRC laboratory. Test results for HIV, HBV, HCV, and viral load were returned to participants; referrals for care were provided to those testing positive or who reported symptoms of STIs. HIV recency results were not returned to participants. HIV-negative individuals were referred to KP-friendly clinics for HIV pre-exposure prophylaxis (PrEP) services.

The survey enrolled 457 individuals in Lusaka, 466 in Livingstone, 351 in Kitwe and 300 in Solwezi, all but 4 of whom were tested on biomarkers. When asked their gender identity, roughly between a quarter to a little over a third at each site identified as TGW or non-binary. Unless otherwise noted, the findings in this report pertain to those who identified as MSM. Survey weights were utilized for all estimates.



EXECUTIVE SUMMARY

KEY FINDINGS

- Consensus estimates by site found that the population of individuals who were assigned male at birth and who reported having anal or oral sex with a man in the 6 months before the survey accounted for 1.0%-2.1% of the population of each of their districts. Among the four sites, the estimated population was largest in Lusaka, where it was between 3,900-13,100 people, representing 1.1% of the district population. In Livingstone, the estimated population was between 300-2,100 people, which represents 1.7% of the district population. In Kitwe, the estimated population was between 1,500-2,800 people, representing 1.0% of the district population. In Solwezi, the estimated population was between 200-2,100 people, representing 2.1% of the district population. Aside from the consensus estimates and sample and respondent statistics, all further estimates in this report are restricted to the population of MSM (Table 3.1).
- Lusaka had the highest HIV prevalence among MSM at 22.8% compared to the other sites (range: 6.0%-11.0%). HIV prevalence was highest among MSM aged 30 and older across all sites, although it was markedly higher in Lusaka, at 40.7%, and Solwezi, at 41.0%, than in Kitwe, at 20.5% (Table 3.4.1).
- Viral load suppression (VLS) among MSM living with HIV ranged across the sites from 50.7% in Solwezi and 54.9% in Lusaka, to 82.7% in Livingstone, and to 91.0% in Kitwe (markedly higher compared with the other sites). Note that this VLS finding is regardless of HIV awareness and treatment status (Table 3.4.1).
- Based upon the recent infection testing algorithm (see section 2.6), there were no recent infections among MSM who tested positive in the survey in Kitwe and Livingstone, but 4.6% of those who tested positive in Lusaka and 10.6% in Solwezi had been recently infected (Table 3.4.2).
- Hepatitis B virus (HBV) infection: The prevalence of HBV infection among MSM ranged from 3.4% in Lusaka to 7.3% in Kitwe. HBV infection was defined as testing positive for hepatitis B surface antigen (HBsAg), which indicates having either an acute or chronic infection (Table 3.6.1).
- Hepatitis C virus (HCV) infection: Across the four sites, no individual tested positive for HCV. Laboratory-based testing confirmed that no individual had ever been infected with HCV (Table 3.6.1).
- Active syphilis: Across the four sites, the prevalence of active syphilis among MSM varied from 3.4% in Solwezi to 7.4% in Lusaka (Table 3.6.1)

“HIV prevalence among MSM ranged from 6.0-22.8% across the sites”

“Viral load suppression among MSM living with HIV ranged across the sites from 50.7% to 91.0%”

PROGRESS TO THE 95-95-95 TARGETS

The Joint United Nations Programme on HIV and AIDS (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.

95-95-95 among MSM, based on self-report and adjusted for viral loads below 200 copies per mL, by site

For the conditional 95-95-95, the denominator for the second and third 95 is the value of the preceding 95 (Table 3.5.1):

“The majority of MSM who enrolled in the survey defined themselves as gay”

“Most MSM who enrolled in the survey were under 30 years old”

- **In Kitwe**, 91.0% of MSM living with HIV were aware of their HIV-positive status, 99.6% of those who were aware of their HIV-positive status were on ART, and 100.0% of those on ART had VLS.
- **In Livingstone**, 81.6% of MSM living with HIV were aware of their HIV-positive status, 97.4% of those who were aware of their HIV-positive status were on ART, and 97.4% of those on ART had VLS.
- **In Lusaka**, 60.7% of MSM living with HIV were aware of their HIV-positive status, 94.4% of those who were aware of their HIV-positive status were on ART, 95.1% of those on ART had VLS.
- **In Solwezi**, 50.7% of MSM living with HIV were aware of their HIV-positive status; 100.0% of those who were aware of their HIV-positive status were on ART; 100.0% of those on ART had VLS.

OTHER SELECTED KEY FINDINGS FROM EACH TOPIC AREA

Sample and network characteristics

- All MSM who were eligible enrolled in the survey, except for Kitwe where 99.7% enrolled, and almost all were tested for biomarkers (Table 3.2.1).

Demographics

- The majority of MSM who enrolled in the survey defined themselves as gay: 59.8% in Kitwe, 51.1% in Livingstone, 60.7% in Lusaka, and 50.6% in Solwezi (Table 3.3).
- Most MSM who enrolled in the survey were young — 65.0% to 89.2% of MSM across the sites were less than 30 years of age. The median age ranged from 22 in Livingstone and Solwezi up to 27 in Kitwe (Table 3.3).
- Over 80% of respondents were single, with no more than 3% (in Lusaka) reporting being married to one or more women (range 1.3%-3.0%; Table 3.3).

HIV prevalence, viral load suppression and recent infection findings

- Most of the MSM who tested positive during their first survey visit had long-term HIV infections (Table 3.4.2).
- Most of MSM who tested HIV-positive in the survey did not report that they had a HIV-positive status (ranging from 52.1% in Livingstone to 87.1% in Solwezi). However, most (ranging from 51.8% in Solwezi up to 91.1% in Kitwe) are presumed to have been aware of their HIV-positive status on account of their having a viral load below 200 copies/mL (which typically occurs when someone is aware of their status and consistently taking ART)[†] (Table 3.4.3)

Other 95-95-95, HIV and TB care findings

- For the overall 95-95-95 target, the key target is VLS among all the MSM living with HIV. This is the product of 95% of those living with HIV diagnosed, 95% of those diagnosed on treatment, and 95% of those on treatment achieving VLS (95x95x95), which is 85.7% or greater. Based on viral load-adjusted awareness, Kitwe reached this target, with 90.7% of MSM living with HIV on treatment with VLS. The other sites did

[†] Young PW, Zielinski-Gutierrez E, Wamcwe J, et al. Use of viral load to improve survey estimates of known HIV-positive status and antiretroviral treatment coverage. *AIDS*. 2020;34(4):631-636. doi:10.1097/QAD.0000000000002453.

not reach the target, with 79.5% in Livingstone, 54.6% in Lusaka and 50.7% in Solwezi of the MSM living with HIV with VLS (Table 3.5.2).

- At all sites, all the MSM who acknowledged that they have an HIV diagnosis had been on ART at some time, and most (range: 95.4%-100.0%) were still on ART (Table 3.5.3).
- Among MSM self-reporting an HIV-positive status, the majority were screened for tuberculosis (TB) in the 12 months before the survey in Livingstone, Lusaka, and Solwezi (range: 80.3%-100.0%) but in Kitwe, only 23.1% were screened. Among those screened, 55.6% in Livingstone and 16.8% in Lusaka reported that they had experienced TB symptoms in the 12 months before the survey (Table 3.5.4).

Hepatitis B, hepatitis C, active syphilis, and HIV coinfection

- Among MSM living with HIV, 6.7% in Lusaka, 14.0% in Kitwe, and 20.6% in Livingstone also had HBV infection. HIV and syphilis co-infection among MSM living with HIV was 11.7% in Lusaka, 12.5% in Kitwe, 17.8% in Livingstone, and 45.2% in Solwezi. Co-infection with HIV, HBV, and active syphilis was uncommon among MSM living with HIV (Table 3.6.2).

Sexual behavior

- The majority of MSM have had vaginal or anal sex with a female partner (range: 61.1%-73.8%). Early sexual debut (before the age of 15 years) among young MSM with a female partner ranged from 21.2%-55.7%. The median number of lifetime female partners among MSM was 3 in Kitwe, Livingstone, and Lusaka, and 4 in Solwezi (Table 3.7.1).
- Early sexual debut among MSM with a male partner ranged from 14.7% to 25.3% across sites. The median number of lifetime male partners among MSM was 4 in Livingstone and Solwezi, 5 in Kitwe, and 7 in Lusaka (Table 3.7.1).
- Use of condoms at last sex with main and casual partners was similar among MSM regardless of the sex of their partner, ranging from 46.7%-72.6% with their main female partner to 42.7%-65.5% with their main male partner, and from 55.6%-77.7% with their casual female partners to 60.1%-74.6% with a casual male partner (Tables 3.6.2 and 3.7.3).
- Some of the MSM at all four sites had engaged in transactional sex (giving or receiving money/goods or services for sex). MSM in Livingstone were more likely to have given money, goods, or services in exchange for sexual services (were clients) in the 6 months before the survey compared with MSM in Solwezi (21.8% vs 9.0%). Engagement in sex work (receiving money, goods, or services in exchange for sex) in the 6 months before the survey among MSM at the four sites ranged from 13.0%-19.1%. (Table 3.7.5)

Sexually transmitted infections

- About one-third of MSM in Lusaka (30.0%) had one or more symptoms of sexually transmitted infections compared with Solwezi (20.9%), Livingstone (20.1%), and Kitwe (9.4%; Table 3.8).
- Among those who reported STI symptoms, health-seeking behavior seemed inconsistent. Only 37.3% in Kitwe sought healthcare, compared to 58.4% in Livingstone, 59.7% in Solwezi, and 64.9% in Lusaka (Table 3.8).

“Although hepatitis B and syphilis was found among MSM at each site (range 3.4%-7.4%), no hepatitis C was found”

“The majority of MSM have had vaginal or anal sex with a female partner”

“Among those who were aware of PrEP in the four towns, 18%-25% had ever taken it but interest in taking it was high”

Alcohol and drug use

- In Lusaka, 72.7% of MSM were alcohol dependent, followed by Livingstone (60.8%), Solwezi (52.0%), and Kitwe (27.7%; Table 3.9.1).
- MSM in Solwezi (42.3%) and Livingstone (41.0%) were most likely to have used non-injection drugs in the 6 months before the survey, followed by MSM in Kitwe (29.1%), and Lusaka (19.0%). Tobacco and marijuana were the mostly commonly reported drugs used by MSM across all four sites. Injection drug use was much less common among MSM across all sites (range: 0.4%-7.2%; Table 3.9.2).

HIV knowledge, prevention, outreach

- MSM in Livingstone (65.0%), Lusaka (62.8%), and Solwezi (65.6%) had higher comprehensive knowledge of HIV than MSM in Kitwe (52.9%). MSM aged 25 years and older had higher comprehensive knowledge of HIV compared with MSM under the age of 25 years within each site (Table 3.10.1).
- MSM at most of the sites thought that, when performed without a condom, vaginal sex put them at greater risk of HIV acquisition than having anal sex (Table 3.10.1).
- Interaction with peer educators were common across sites, ranging from 62.8%-79.9%. The most received item from peer educators was male condoms for all sites (range: 65.5%-78.6%). At the four sites, 65.2%-84.4% reported that the HIV messages they received “were not about MSM” (Table 3.10.2).

Utilization of HIV prevention services

- There was variation in the proportion of MSM who had ever been tested for HIV at the different sites. Those in Lusaka (95.8%) were most likely to report that they had ever been tested for HIV, followed by those in Livingstone (92.2%), Solwezi (86.7%), and Kitwe (78.7%; Table 3.11.1).
- A higher proportion of MSM in Lusaka (16.1%) reported they had ever self-tested than at the other sites (range 1.9%-6.6%; Table 3.11.1).
- Among MSM who tested HIV negative, many had tested within the 6 months before the survey (range 48.1%-61.5%). A higher proportion of MSM with HIV in Lusaka thought it was possible that they already had an HIV diagnosis (42.2%), than in Solwezi (21.1%), Kitwe (19.7%), and Livingstone (15.9%). However, most MSM at the four sites thought their risk of becoming positive in the next 12 months was low (range: 61.9%-70.0%; Table 3.11.2).
- Although over 80% of all MSM across sites reported that they could access condoms from a health facility, circumstances in which they did not wear condoms were common, such as when they were having sex with a regular partner (range: 43.6%-65.2%), or when they were drunk or high (range: 34.7%-48.2%; Table 3.11.3).
- Among MSM who self-reported an HIV-negative or unknown status, those in Lusaka (84.6%) were most likely to have ever heard of pre-exposure prophylaxis (PrEP), followed by those in Livingstone (65.2%), Solwezi (59.0%), and Kitwe (53.5%). Among those who were aware of PrEP, 18.2%-25.4% had ever taken it though interest was high (Table 3.11.4).
- Among MSM who self-reported an HIV-negative or unknown status, those in Lusaka (53.2%) were most likely to have ever heard of post-exposure prophylaxis (PEP), followed by those in Solwezi (42.0%), Livingstone (27.1%), and Kitwe (19.7%). Among those who were aware of PEP, 1.9%-13.2% had ever taken PEP (Table 3.11.5).

- At the second survey visit, HIV-negative MSM in Solwezi were most likely to report that they had sought PrEP (72.8%) compared with 19.5%-42.5% at other sites (Table 3.11.6).

Social cohesion and stigma

- Social cohesion was generally high among MSM across sites; 51.3%-72.7% agreed or strongly agreed they could count on other MSM/TGW if they needed to borrow money, 66.6%-74.1% agreed or strongly agreed they could count on other MSM/TGW to accompany them to the doctor or hospital, 69.2%-83.5% agreed or strongly agreed they could count on other MSM/TGW to talk about their problems, and 64.3%-69.5% agreed or strongly agreed they could count on other MSM/TGW if they needed somewhere to stay (Table 3.12.1).
- A low proportion of MSM across the four sites had ever been arrested for being MSM (0.4%-3.4%). The proportion of MSM who were ever treated unfairly or denied healthcare for being MSM varied across sites, from a high of 15.1% in Lusaka, followed by Solwezi at 7.6%, then finally 3.6% in Livingstone and 2.9% in Kitwe. Almost half of MSM in Lusaka (46.7%) and two fifths in Solwezi (42.2%) ever avoided seeking healthcare services for fear of being identified as MSM compared with 17.2% in Livingstone and 8.8% in Kitwe (Table 3.12.2).
- MSM in Lusaka (29.9%) were most likely to screen positive for depression, followed by MSM in Solwezi (20.6%), then Kitwe (6.2%) and Livingstone (5.2%). Suicide ideation among MSM was more common in Lusaka (13.7%) compared with 4.1% in Solwezi and 1.3% in Kitwe (Table 3.12.2).
- Among the MSM who acknowledged their HIV-positive status at the first survey visit, those in Lusaka (50.7%) and Livingstone (30.5%) were more likely to agree or strongly agree that they think less of themselves because of their HIV status compared with 2.4% in Kitwe (Table 3.12.3).

COVID-19

- At all four sites, COVID-19 resulted in a decrease in the number of MSM/TGW sex partners and a decrease in the number of opportunities to have sex, but the degree of the impact varied across sites (range 29.1%-52.9%; Table 3.13.1).
- MSM engaged in sex work reported fewer clients due to COVID-19 at most sites (Solwezi, 72.4%; Lusaka, 62.5%; and Livingstone, 56.2%; Table 3.13.2).
- The COVID-19 epidemic had an impact on access to and uptake of prevention services that varied by site. MSM in Solwezi (33.7%) reported the largest decrease in access to condoms due to COVID-19 compared with the other three sites (range: 24.3%-29.6%). MSM at all sites reported a decrease in use of condoms due to the COVID-19 pandemic (range: 22.5%-23.9%). MSM also experienced a decrease in STI testing or treatment due to COVID-19 (range 7.7%-34.4%). MSM in Lusaka (19.1%) were more likely to have difficulty getting an HIV test due to COVID-19 compared with MSM in Livingstone (8.2%) and Kitwe (2.4%). There was a decrease in availability of PrEP due to COVID-19 at all sites (range: 13.9%-27.4%) experienced by MSM (Table 3.13.3).
- According the MSM who acknowledged their HIV-positive status and who were on treatment, access to HIV care and treatment was not greatly impacted by COVID-19. Only some of these on treatment in Lusaka (13.0%) and Livingstone (9.7%) reported difficulty getting HIV medications due to COVID-19 (Table 3.13.4).

“The COVID-19 epidemic had an impact on access to and uptake of prevention services that varied by site”

“Most MSM were unaware of the greater risk of HIV acquisition associated with unprotected anal sex”

DISCUSSION

This survey, which was the first to use multiple independent and probability-based methods for PSE, found that MSM make up a small but substantial proportion of the population in these urban centers in Zambia, and most identify as gay. The young skew to the age of the respondents may be an artifact of the RDS sampling but may also indicate more openness to acknowledging sexual orientation among the youth. Most respondents were single with a few married to women, but it is difficult to say whether there may be a population of MSM who identify as straight that the survey did not reach. The MSM at the four sites came from all tribes, education levels and employment statuses. Many were under-employed and suffering some economic hardship possibly because they were relatively young or due to the impact of COVID-19 and its aftereffects.

HIV prevalence among MSM at these four sites was relatively high compared to HIV prevalence among comparably aged men in the general population, with particularly high rates in Lusaka and among MSM aged 30 and older. It is possible to identify recent infections in the community, although they were not common in the survey, possibly because of the recent impact of the COVID-19 epidemic (see below).

Most of the MSM living with HIV had long-term infections and a large proportion of these seemed unwilling to disclose their status to the survey counsellors—particularly in Kitwe. This makes it difficult to reliably assess access to and uptake of HIV treatment and care services, or TB services for the population of MSM living with HIV.

While no site has achieved the first 95 target, diagnosis, Kitwe was approaching it, but the other sites fell substantially short of the testing target. However, Kitwe, Livingstone and Solwezi achieved the 2nd 95 target, and all four sites have achieved the 3rd 95 target.

Although 50%-60% of the MSM in the survey considered themselves to be gay, the majority have also had vaginal or anal sex with a female partner and the median number of lifetime female and male partners among MSM was similar. However, inconsistent condom use was widely reported. This is problematic, particularly as a substantial proportion of MSM reported symptoms of STIs and inconsistent health-seeking behavior to diagnose and treat those symptoms.

Transactional sex, both buying and selling, was reported by approximately 10%-20% of MSM. MSM engaged in sex work experience abuse and forced sex—and their engagement in sex work makes it more difficult for them to seek help from police. Alcohol dependency and drug use, particularly marijuana, was common among MSM.

While about half to two-thirds of respondents had comprehensive HIV knowledge, most MSM were unaware of the greater risk of HIV acquisition associated with unprotected anal sex. This suggests a major gap in prevention education services tailored to the needs of the community. In fact, most noted that the message they received from outreach services were not specific to MSM. This may be why most of those who were HIV-negative perceived their risk of acquiring HIV in the next 12 months to be low. Interest in biomedical prevention was high and could potentially be higher if MSM were better aware of their risk of HIV acquisition.

Reported access to HIV testing services varied by site, but between three quarters to 95% of MSM said they had ever been tested for HIV. Curiously, MSM in Kitwe reported the lowest uptake of testing services; however, Kitwe had the best performance of the first 95 target with over 90% of MSM living with HIV aware of their HIV-positive status. The reasons for this discrepancy merit further study.

Condom access from health facilities was high but many MSM had trouble accessing condoms in the year before the survey. In addition, there were situations where MSM reported they were less likely to wear condoms, including when they were drunk or high.

Most reported that members of MSM community were supportive of one another. Few reported being arrested for being MSM or facing stigma or discrimination in employment opportunities or healthcare access. However, many reported that fear of their identity as MSM kept them from accessing health services. While MSM living with HIV who disclosed their status to the survey counsellors reported little HIV stigma, most MSM living with HIV participating in the survey did not acknowledge their HIV-positive status.

Finally, the COVID-19 epidemic had several confounding effects on the ability of the survey to assess the status or progress of the HIV control program in the MSM community. On one hand, COVID-19 impacted sexual risk behavior, as MSM reported having fewer sexual partners and fewer sexual opportunities. However, access to and uptake of HIV prevention services was reduced. While there were fewer impacts on HIV care and treatment access reported by those who disclosed their HIV-positive status, any treatment interruption can be a health emergency for a person living with HIV.

CONCLUSION

Zambia MSM BBS 2021 provided critical data on the primary outcomes of HIV prevalence, HIV recency, viral load suppression, 95-95-95 achievements, as well as demographics, risk taking behaviors, HIV knowledge, and uptake of testing and prevention services among MSM in four large urban centers. The survey also explored MSM community cohesiveness and stigma levels. Finally, the survey explored the impact of the COVID-19 epidemic on risk taking behavior and access to services among MSM. MOH encourages public health staff, programmers, epidemiologists, and policy makers to examine the data for their respective program areas and utilize the data to inform program planning.

***“Most
members of
MSM
community
were
supportive of
one another”***

1. INTRODUCTION

1.1 BACKGROUND

HIV epidemic in Zambia

Zambia has a generalized HIV epidemic, with a national HIV prevalence of 12.0% among adults aged 15-59 years and an annual incidence of 0.61%.¹ High HIV incidence in Zambia is attributed to several factors, including multiple and concurrent sexual partnerships, inconsistent use of condoms, low uptake of voluntary medical male circumcision, migration, and mobility, marginalized and underserved populations, and high prevalence of other sexually transmitted infections (STIs).²

Recent data highlight Zambia's progress toward reaching the 95-95-95 goals set by the Joint United Nations Programme on HIV and AIDS (UNAIDS). Among adults, 71% of individuals living with HIV reported knowing their status, 87% of individuals aware of their status were on antiretroviral therapy (ART), and 89% of individuals on ART achieved viral load suppression (VLS; defined as an HIV RNA < 1,000 copies per mL).¹ To achieve the enhanced goal of achieving 95-95-95 by 2030, addressing the HIV prevention, care, and treatment needs of key populations (KP), populations disproportionately affected by HIV, will be essential.

Men who have sex with men (MSM)

Zambia has an estimated HIV prevalence of 9.3% among male adults aged 15-59 years and an annual incidence of 0.32%.¹ However, HIV prevalence is higher in KPs and among men who have sex with men (MSM).

In sub-Saharan Africa, HIV prevalence among MSM is estimated to be 18%.³ Behavioral risk factors for HIV among MSM in sub-Saharan Africa included having engaged in receptive anal intercourse,⁴⁻⁷ having a higher number of sexual partners,^{8,9} having been paid for sex,^{8,10,11} having experienced violence,^{10,12} and excessive alcohol drinking.¹³ HIV infection among MSM is also associated with social vulnerability, including lower levels of education,^{5,14} and being unemployed or having a low income.^{4,15}

In 2013, a multi-country HIV Prevention for Sexual Minorities study was commissioned in Zambia, Zimbabwe, and Botswana. In Zambia, the Panos Institute of Southern Africa (PSAF), TDRC, and NAC coordinated and implemented this study.¹⁶ A sample size of 332 MSM were recruited using snowball sampling in Lusaka, Livingstone, Chingola, and Kitwe. HIV prevalence among the sample was 17.5%. HIV prevalence among MSM ranged across sites, including 15.5% in Lusaka, 25.6% in Livingstone, 23.5% in Chingola, and 19.2% in Kitwe. While these data provide insight into the high burden of HIV among MSM in Zambia, limitations of the sampling strategy warrant additional research to establish population-level estimates of key health and behavioral indicators among MSM.

Between 2013-2015, Population Council conducted a population size estimation (PSE) study with MSM in Lusaka, Ndola, Kitwe, Livingstone, and Solwezi.¹⁷ Size estimation methods included mapping of potential venues where MSM congregated, followed by direct counting at each site. Limitations with this method include double counting of MSM and underestimation of those less visible, eg, those who don't attend venues or attend infrequently. To strengthen estimates, other PSE methods including the service multiplier and 3-source capture recapture (3S-CRC) methods should be employed and triangulated.

1.2 KEY POPULATIONS SURVEILLANCE AND EPIDEMIC CONTROL

The high burden of HIV among KP groups demands more rigorous and data-driven responses, and the implementation of strategies to address the biological and behavioral risks have important implications for public health. In the past decade, surveillance capacity, including KP surveillance, has been enhanced across many low- and middle-income countries. Targets for reductions in HIV in KP have been developed, making data on KP crucially important.

The review and understanding of sociodemographic characteristics, behavioral risk factors, HIV burden, HIV recency and VLS among KP and subsequent initiation of appropriate public health interventions, are key to HIV epidemic control in Zambia and may contribute toward the goal of zero HIV transmissions by 2030. However, despite the

earlier studies, the available data on population prevalence and incidence of HIV among MSM in Zambia have been limited and gaps in accurate PSE have remained. Quantification of the size of the population of MSM through improved PSE methods, as well as their demographic characteristics, and prevalence of risk behavior and service uptake is essential to enable effective health policy planning.

1.3 ZAMBIA BIOBEHAVIORAL SURVEY IN MSM (ZAMBIA MSM BBS 2021)

The HIV and STI Biological and Behavioral Survey among MSM in Selected Towns in Zambia 2021 (Zambia MSM BBS 2021) was conducted from May to November 2021 to measure the prevalence of HIV and sexually transmitted infections (STIs) and risk behaviors among a selected high-risk male population (specifically MSM) in four towns in Zambia, Lusaka, Livingstone, Kitwe, and Solwezi, to estimate their population size in the survey sites, and gauge progress toward reaching UNAIDS 95-95-95 targets. Its findings will help guide policy and funding priorities.

Zambia MSM BBS 2021 was led by the Zambian Ministry of Health (MOH) and the Zambia National HIV/AIDS/STI Council (NAC), in collaboration with the Tropical Diseases Research Centre (TDRC) and ICAP at Columbia University. The BBS was conducted by ICAP at Columbia University 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). Local civil society organizations, and international development partners participated in the survey advisory group (SAG) facilitated by NAC during survey implementation.

1.4 OVERVIEW OF ZAMBIA MSM BBS 2021

Zambia MSM BBS 2021 was a biobehavioral survey (BBS) among MSM and transgender women (TGW) in four towns in Zambia. The overall goal of this survey was to measure the prevalence of HIV/STIs and risk behaviors, to estimate the population size and assess progress toward reaching 95-95-95 targets among MSM in Zambia.

The specific objectives of the survey included:

- To estimate the HIV care cascade (95-95-95) for MSM living with HIV, including proportion aware of their status, proportion on treatment and the proportion with VLS,
- To measure the prevalence of HIV, syphilis, hepatitis B (HBV infection) and hepatitis C (HCV infection) among MSM in survey sites as well as prevalence of co-infection,
- To assess sexual risk behaviors and access to HIV prevention and care services among MSM,
- To estimate the proportion of MSM living with recent HIV infection,
- To estimate the population size of MSM in four towns in Zambia.

Secondary objectives included:

- To link participants living with HIV to HIV care and treatment,
- To link HIV-negative participants to pre-exposure prophylaxis (PrEP) services and prevention programs,
- To link those testing positive for syphilis or with STI symptoms to STI treatment,
- To link HBV infected participants to care and treatment and HCV infected participants to care.

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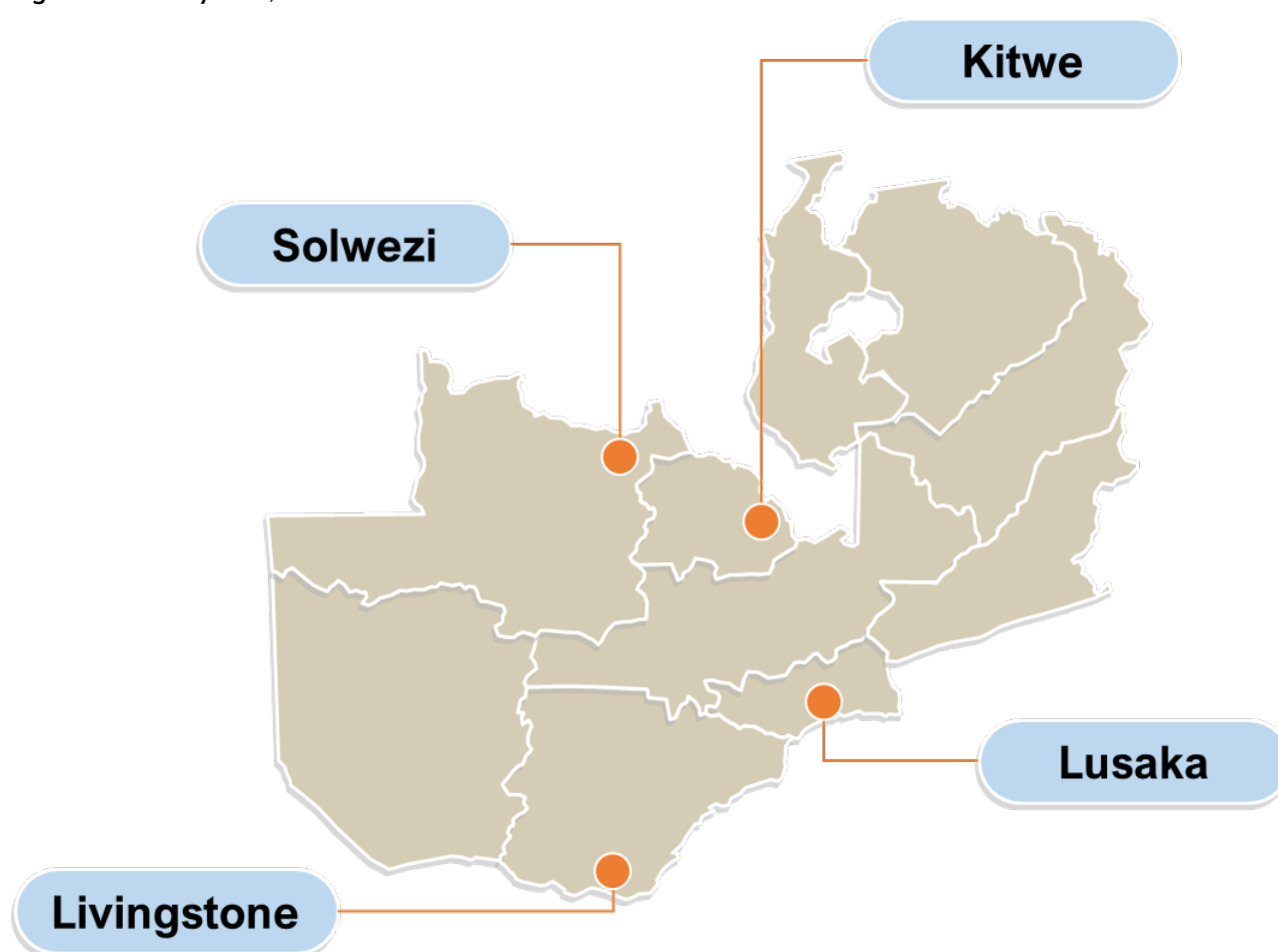
2. SURVEY METHODS

2.1 SURVEY DESIGN

Zambia MSM BBS 2021 adapted a protocol from the 2017 WHO Biobehavioural Survey Guidelines for Populations at Risk for HIV to used standardized methods for KP surveillance.¹ Data collection was implemented in two-phases, sequentially, in four Zambian towns. The formative assessment (phase 1) utilized qualitative methods to identify perceptions, experiences, and contextual factors unique to MSM in Zambia and informed the design and implementation of a descriptive cross-sectional BBS (phase 2).

Four towns (Lusaka, Livingstone, Kitwe, and Solwezi) were included as survey sites based on the Population Council's previous formative assessment (Figure 2.1).² The precise geographic boundaries for the survey areas were determined prior to survey implementation based on information from the formative assessment.

Figure 2.1: Survey sites, Zambia MSM BBS 2021



The sample size for the qualitative component of the assessment (the formative assessment) was not set in advance, but rather determined once the survey population reached data saturation—the point at which further inquiry was not expected to yield any additional information. For the biobehavioral component of the survey, the Blue Book sample size calculator for survey-based viral load suppression was used for sample size calculation, using the formula below:

$$n_a = \frac{DEFF \times n_u}{1 - NR}$$

n_a = minimum adjusted target sample size for all respondents, regardless of HIV status

n_u = minimum unadjusted target sample size for all respondents, regardless of HIV status, above

$DEFF$ = design effect (the BBS used 2)

NR = nonresponse rate (the BBS used 5%)

Among people living with HIV 15-59 years of age in Zambia, the prevalence of VLS (defined as an HIV viral load of less than 1,000 copies/mL) was 59.2%. Using the Blue Book's sample size calculator for survey-based VLS (above) and assuming a 25% HIV prevalence, a design effect of 2, a nonresponse rate of 5%, a sample size of 1,588 MSM participants (397 HIV-positive) would be needed to detect 60% VLS with a 95% confidence interval ranging from 53-67%. Given this sample size, the survey would be powered sufficiently to detect a 60% VLS among the entire (aggregated) MSM sample but not at the site-level. The anticipated sample size was divided across the four towns according to the population: Lusaka (n=500), Livingstone (n=450), Kitwe (n=350), and Solwezi (n=300), for a total of 1,600 participants.

2.2 FORMATIVE ASSESSMENT

Formative assessment procedures

The formative assessment phase allowed investigators to understand MSM's networks, practices, health care and other service availability and service seeking behavior. The formative assessment was also performed to identify the operational and logistical needs of conducting the BBS, including information on:

- Identifying and selecting seeds (individuals from MSM networks who helped start the recruitment of other network members to participate in the survey)
- Survey sites to conduct survey operations and distribution locations to distribute unique objects
- Appropriate type and value of incentive for survey participation
- Areas of the survey instrument requiring fine tuning or revisions
- Appropriate unique objects to be distributed
- Other potential barriers and facilitators of the survey
- Inventory of existing health and social welfare services and identification of gaps
- Providers/clinics interested in being trained to provide appropriate services and existing KP-friendly health referral services

Focus group discussions

The focus group discussions (FGDs) used purposeful sampling techniques to recruit participants well-suited to provide a description of the MSM community. The composition of each focus group was stratified by age (ie, <25, 25-40 and >40 years old) to encourage individuals to freely share their ideas and perceptions. All participants in each focus group spoke the same language.

A FGD guide was created that outlined objectives of the sessions including determining the feasibility of conducting the BBS, the acceptability of the proposed survey procedures and sampling method, the availability and willingness of MSM to participate in the survey and provide biological specimens for health tests, and potential barriers to participation. The FGD guides also provided instructions to help elicit individual responses about sensitive subjects within the context of a group.

After a brief introduction of the survey to the group, the interviewers obtained verbal informed consent from each participant using a consent form. Two trained interviewers (a moderator and a note taker) used the guide to ask the participants about their sociodemographic characteristics; their access to healthcare and other services; and, critically, how they talk about their sexual relationships including the terminologies and language used to describe their sexual behaviors.

The interviewers instructed the participants not to use their name, the name of other participants, or people who could suffer negative consequences if they were identified (eg, they were told not use the names of friends; however, they could use an alias). During the FGDs, the interviewer took notes (without identifying information) and highlighted key points as the discussion unfolded to help formulate follow-up questions and probes. At the end of each session, the interviewers analyzed the responses and wrote up their impressions about the session, its main themes and the comments and reactions of the participants. Participants were reimbursed K240 (~US\$ 13) to cover transportation costs and time.

In-depth interviews

In-depth interviews (IDIs) were conducted with MSM and service providers providing healthcare and other services to KP groups in the proposed survey sites. After a brief introduction to the survey, the interviewer obtained verbal informed consent from each participant. Trained staff (a notetaker and interviewer) performed all IDIs using interview guides: one for service providers and one for MSM. The IDIs were semi-structured and open-ended, allowing for detailed and in-depth discussions.

These interviews helped determine a reasonable and realistic reimbursement amount for survey participants; the availability, quality, and relevance of healthcare and other services in meeting the needs of MSM; and the perceptions of peer recruitment, information to be included on the coupon, and other survey logistics.

The information collected through IDIs was exploratory in nature; for example, they explored the health concerns of MSM, variability in the demographic characteristics of MSM, and characteristics of social networks between MSM. Interviewers also focused on topics (eg, healthcare services sought by KP groups, barriers to healthcare provision, social assistance provided to KP groups, identification of local HIV prevention programs for KP groups, and the potential to test and treat MSM for other STI or bloodborne diseases). Participants were reimbursed K130 (~US \$7) to cover transportation costs and time.

2.3 SURVEY POPULATION

The eligible survey population of Zambia MSM BBS 2021 included:

- Individuals aged 16 years and older who were biologically male at birth and reported they had anal or oral sex with a man within the 6 months before the survey
- Lived in surveyed city for past 3 months
- Spoke English or other designated local language (Chitonga, Chinyanja, Cibemba, Silozi, and Kikaonde)
- Capable and willing to provide verbal informed consent
- In possession of valid survey coupon

2.4 SELECTION OF SEEDS AND RDS RECRUITMENT

Participants at the four survey sites were recruited through respondent-driven sampling (RDS). RDS is a type of chain referral method or link-tracing/adaptive sampling design used to access hard-to-reach populations. The method is based on the principle that members of the target population refer other members of the same population to participate so that the sample is established by successive “generations” of recruitment referrals. RDS builds on a mathematical model (Markov chain theory) which provides a theoretical basis for estimation of population proportions and their variances through statistical adjustment.^{3,4} The survey used RDS to recruit participants in two

ways: a) the survey team selected “seeds” to start the recruitment waves and b) previously enrolled survey participants used individually coded coupons to refer their peers.

During the formative assessment phase, the survey team identified up to 6 eligible individuals (seeds) who could start the chains of recruitment among their social networks. The survey team selected individuals who were well-regarded by their peers with diverse, large (10-20 person) social networks as seeds to make sure that the survey moved forward within a reasonable period. Seeds were also selected to represent the diverse range of ages, languages spoken, gender identities and sociodemographic characteristics of the network at each survey site. Other considerations were affiliation with a KP organization and access to HIV services.

Additional seeds were added when recruitment speed was slower than anticipated, chains discontinued, or elements of the populations were deemed as missing from the sample. Ultimately, up to 9 seeds per site were identified through formative assessments and community mobilizers working with KP partners at each site.

The survey team gave each seed an orientation to motivate them and promote a feeling of survey ownership and enthusiasm about the survey, along with three coupons and instructions on how to use them to refer their peers. These individually coded referral coupons were used by the seeds and later, by other enrolled participants, who were asked to contact three of their peers to tell them about the survey. Survey participants who indicated they were not interested in referring their friends were still encouraged to take the peer recruitment coupons in case they changed their mind. As the survey approached the needed sample size and crude sample stability, the number of peer recruitment coupons was reduced to two, then one, then none.

Data collection sites

The network of MSM and other key stakeholders helped select suitable centrally located, easily accessible private office spaces that were quiet and secure where the interviews, surveys, and HIV counseling, testing and referral services could be administered. Only survey staff, investigators, and potential participants with valid peer recruitment coupons were granted access beyond the reception area for the survey site. The outer appearance of the office building did not reveal any information about the survey activities to avoid stigma from the public. The survey office remained after the last enrollment until all participants could receive results, referrals, and secondary reimbursement.

Coupon management

Issuance and receipt of coupons was monitored electronically using an RDS Coupon Management (RDSCM) spreadsheet. Initially, each participant was provided with three coupons. Recruitment monitoring of key socially salient and outcome variables, including HIV, HBV, HCV, active syphilis, VLS, socio-economic status, and other demographic information, occurred weekly until sample size and convergence was reached. Recruitment monitoring also ensured that complete information was collected on all participants needed to develop RDS weights. Coupon distribution was discontinued once 95% of the sample was reached, and recruitment continued one week after the sample size was reached.

Paper-based coupons were designed and created in consultation with community representatives to appeal to the population, with a consistent survey logo and images recognizable by the community members but without any information that would divulge the MSM focus of the survey. The coupons also contained the survey name and a unique coupon code (UCC). This number was pre-printed on the coupon of the referring participant to link information about recruits and their recruiters. The activation and expiration dates were flexible but were typically valid for two weeks from the date of activation.

If a coupon had expired, was tampered with, unreadable, photocopied, or already used, it was deemed invalid. Invalid coupons were retained and stamped “VOID” while the valid coupons of potential participants who underwent screening for eligibility were retained and stamped “USED.” The coupons were made with special ink or paper so that they could not be falsified or duplicated and were stored in a locked cabinet. Participants who were re-

scheduled for a future visit had their coupons returned to them. Rescheduled visit dates could be past the coupon expiration date without rendering the coupon invalid.

2.5 SURVEY IMPLEMENTATION

Staffing and staff training

All staff participated in a multi-day training. The curriculum included:

- Overview of HIV among MSM
- Protocol implementation and standard operating procedures (SOPs)
- Design and sampling methodology
- Review of data collection tools (qualitative guides, questionnaires, consent forms, and other forms)
- Steps in the survey implementation process and related tasks
- Roles and responsibilities of staff involved in the survey
- Laboratory procedures
- Data collection and management
- Coupon management
- Professional conduct (eg, reducing stigma and discrimination, cultural competency, and sensitivity training specific to the MSM community)
- Ethics
- Safety
- Human participants
- Confidentiality and data security

Interviewers and counselors were also trained in open and non-judgmental interviewing techniques and accurate recording responses. Laboratory technicians and HIV counselors participated in laboratory-specific sessions that included practical sessions and competency assessments for all point-of-care (POC) rapid tests. The training methods employed included role-play and survey procedure simulation. Survey interviewers received additional training on the administration of the behavioral questionnaires. Skip patterns were programmed in the questionnaire to ensure appropriate questions were asked to participants during the interview.

The survey team included a site coordinator, receptionist, coupon manager, interviewers, an HIV counselor/nurse, laboratory technician, and support staff (driver, cleaner, peer educator, and guard). The site coordinator provided site-level leadership and managed all data collection procedures. The receptionist managed participant flow, participant checklists, and appointments. The coupon manager verified coupons, managed the RDSCM, and screened for eligibility. Interviewers administered informed consent and survey questionnaires. The HIV counselor/nurse provided pre- and post-test counselling. The laboratory technician conducted venous blood draw, administered rapid tests for HIV, HBV, HCV, and syphilis and entered rapid test results into a tablet. Support staff transported samples, escorted participants to referral facilities, and cleaned the site.

Centralized laboratory-based testing and data entry of lab results was conducted by TDRC national lab technicians. The tablet was programmed with internal data checks to avoid any illogical data values. Additionally, throughout each interview, verification of completeness and internal consistency was performed.

Screening

When each recruit visited the office for the first time, the receptionist made certain they followed the proper intake procedure. First, the coupon manager examined the coupon presented by the recruit for validity and the unique coupon code demonstrating that the recruit had not previously enrolled. The eligibility screening form, covering the survey eligibility criteria, was then used to confirm the participants eligibility. If doubts about eligibility remained, staff posed additional questions to confirm accurate eligibility.

Informed consent

Eligible participants could read the informed consent form or have it read to them depending on their preference. The informed consent covered all procedures, potential risks, benefits, and who to contact to report complaints or concerns. The document allowed for separate consent for the participant to consent or decline to participate in components of the survey, including:

- Completion of the questionnaire (required for inclusion)
- Testing for HIV, STI, HBV, HCV, and viral load suppression
- Testing for recency
- Collection and storage of blood specimens for possible future testing

Participants were informed that if they provided consent for surveillance testing and blood storage, they would not be able to have their stored specimen removed and destroyed after the blood had been sent to the TDRC laboratory. At each stage of the consent process, once the participant indicated that they clearly understood the content of the informed consent form and provided verbal consent, the interviewer recorded on the consent form on their tablet whether verbal consent was indicated to ensure anonymity. Survey staff were instructed to not ask for identification (ie, a government issued ID) from any participant. A printed copy of the consent was then provided to the participant.

Interview administration

Standardized data collection instruments adapted from the Blue Book supplemental material handbook were used for quantitative data collection.¹ Data items included indicators needed to track the HIV epidemic and the national response for MSM, conforming to international standards (eg, local key performance indicators), national program needs, and comparability with similar surveys in the region. The first visit questionnaire collected data on demographics, behaviors potentially correlated with HIV, syphilis, HBV, and HCV infection among MSM, as well as on HIV-related knowledge, attitudes, practices, stigma, discrimination, and risk perceptions. The training of interviewers included a question-by-question discussion and consensus-building process on how to appropriately ask each question to the participants. Interviews were conducted in English or one of the local languages (Chitonga, Chinyanja, Cibemba, Silozi, or Kikaonde).

2.6 LABORATORY-BASED BIOMARKER TESTING

Pre-test counseling for biomarker testing

Upon completion of the survey, participants who consented to testing received pre-test/risk reduction counseling for HIV and other tests following national guidelines. Pre-test counseling included an explanation of HIV, STI, HBV, and HCV infections and transmission, the meaning of test results, risks associated with sexual and injection behaviors, as well as means to prevent and treat HIV, STI, HBV, and HCV infections. While participants were free to opt out of HIV and other biomarker testing, they were appropriately counseled on the benefits of knowing their health status as well as the importance of testing for the purposes of the survey, if previously diagnosed with HIV. Further, the importance of early HIV diagnosis and treatment for participants who obtained a positive result for HIV or maintaining an HIV-negative status through prevention interventions such as PrEP was emphasized. The rate of HIV testing uptake was closely tracked during the survey and if the rate fell below 90%, debriefing meetings were held with survey staff to discuss how to address perceived testing barriers.

Rapid testing was conducted using venous blood at the survey site after completion of pre-test counseling (see laboratory section). The HIV counselor/nurse recorded the results of the rapid tests in the laboratory register using the survey ID as identification. All participants received their HIV, syphilis, HBV, and HCV results during their first visit according to the national standards of care. Participants testing positive for HIV were tested for HIV recency and viral load.

Blood collection, storage, transport, and processing

As described above, participants provided separate consent for separate components of the survey. Blood specimens were collected from consenting participants for HIV, HIV recency, HIV viral load, syphilis, HBV, and HCV testing. A trained laboratory technologist collected venous blood from each participant. During venous blood draw, the laboratory technologist adhered to standard biosafety procedures and good clinical laboratory practice. A specimen identification number (SID) was assigned to each participant blood specimens. The SID was entered on the tablet for the questionnaire administered to the participant, and the same number was affixed on the blood container. The SID was used to link biologic data and questionnaire data from the same participant.

15 mL of venous blood was collected into EDTA tubes labelled with the SID and date of collection. The laboratory technologist performed HIV, syphilis, HBV, and HCV rapid testing at the survey site as described below. If venous blood draw failed during the first visit (eg, not able to find vein), the laboratory technologist documented this in the testing register and proceeded to conduct rapid testing using capillary blood.

Daily, the remaining whole blood was processed to collect plasma and stored at -20°C at the survey site until the shipment to the TDRC lab. On a weekly basis, a TDRC-trained driver transported the specimens to TDRC for additional testing (HIV viral load, recency, and HCV confirmatory testing, and quality control purposes) and long-term storage at -80°C in a biorepository for potential future testing (such as HIV genotyping).

HIV testing

HIV rapid testing was conducted at the survey site after completion of pre-test counselling by certified personnel. Determine™ HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States) was used as a screening test, and, if reactive, SD BIOLINE HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States) was used as a confirmatory test. Those with a nonreactive result on the screening test were classified as HIV negative. Those with reactive results on both screening and confirmatory tests were classified as HIV positive. Individuals with a reactive screening test result followed by a non-reactive confirmatory test result were immediately retested (re-bled by finger stick and retested sequentially with Determine and SD Bioline in accordance with national guidelines) during the first survey visit. Individuals with discordant results on retest were retested via venipuncture again during the second visit, according to the national testing guidelines.

Post-testing and counseling

Counseling of HIV-positive participants included an assessment of psychosocial needs, a discussion of living with HIV-infection, treatment and care (viral load, U=U, etc.), and issues related to stigma and discrimination. HIV transmission to partners was also discussed and strategies for behavioral change were addressed. For all participants, condoms and lubricants were made available and provided free of charge.

HIV viral load testing

HIV-1 viral load (HIV RNA copies per mL) of confirmed HIV-positive participants was measured on the Roche COBAS AmpliPrep Instrument using the COBAS AmpliPrep/COBAS TaqMan HIV-1 Test, v2.0 (Roche Molecular Diagnostics). On a weekly basis, TDRC produced a copy of the viral load results for all participants to date, entered it in the survey dataset and shared it with the site supervisor. Viral load results were provided to the participants during the second visit (typically two weeks later). Participants were counseled appropriately and instructed to take the results to their treatment clinic.

Viral load testing results were also used in a recent infection testing algorithm (RITA; see below) to identify any long-term infections potentially misclassified as recent infections due to being on ART or elite controllers (a very small percentage of people living with HIV whose immune systems are able to maintain VLS without treatment).

In addition, viral load results <200 copies/mL were used to adjust survey estimates of awareness of HIV status and ART coverage status. Self-reported awareness of HIV status or treatment status can be subject to negative or positive bias due to HIV related stigma, or due to poor understanding of biomedical terminology.⁵ Use of a very low (<200 copies/mL or undetectable) viral load has been shown to be a biometric indicator of a participant's awareness of HIV-positive status at the time of blood collection, since individuals living with HIV are unlikely to achieve a viral load below 200 copies per mL if they are not using an effective ART regimen.⁶

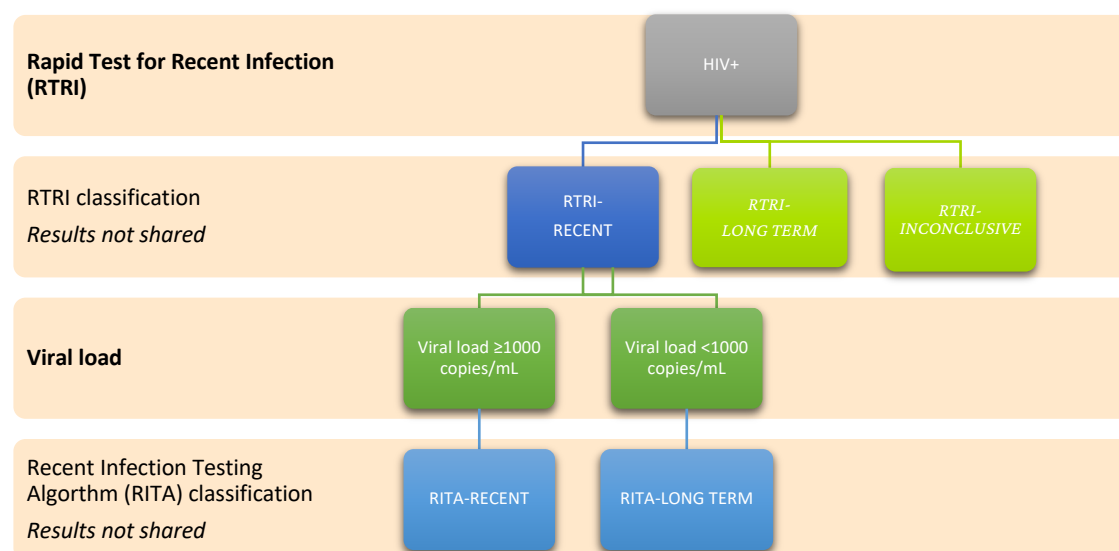
HIV recency testing

HIV recency is an important estimate in tracking the recent spread of HIV and in identifying specific areas where more infections are currently being acquired.⁷ For this reason, all plasma specimens classified serologically as containing HIV-1 specific antibodies were subjected to Asanté™ HIV-1 Rapid Recency™ Assay (Sedia Biosciences Corporation, Portland, Oregon, United States), an experimental POC rapid test used to differentiate recent from long-term HIV-1 infections in combination with viral load testing (Figure 2.2).

HIV recent infection testing algorithm

Participants were classified as having a recent infection if the HIV-1 rapid test for recent infection (RTRI) result indicated recent infection and they had a viral load ≥ 1000 copies/mL. Those identified by the RTRI as recent infection but with a viral load <1000 copies/mL may represent elite controllers or individuals on ART. These were classified as long-term infections (see Figure 2.2).

Figure 2.2: HIV-1 recent infection testing algorithm, Zambia MSM BBS 2021



Syphilis testing

Syphilis testing was conducted using the DPP Syphilis Screen and Confirm Assay (ChemBio, Medford, NY) for the simultaneous detection of antibodies against non-Treponemal and Treponema pallidum antigens, with confirmatory testing using the SD BIOLINE Syphilis 3.0 (Abbott Molecular Inc., Chicago, Illinois, United States). SD BIOLINE is approved by the Zambian Government and the result were returned to the participant according to the standard of care.

HBV and HCV testing

The Determine HBsAg (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere) was used to test for HBV surface antigen, which is indicative of acute or chronic HBV infection. SD BIOLINE HCV (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere) was used to test for HCV antibody. Both tests have been pre-qualified by the World Health Organization. HBsAg positive indicates infection, either acute or chronic carrier. The reactive test for HCV antibody indicates whether the participant has ever been infected as it cannot distinguish between current or resolved infections. Diagnostic testing on all specimens reactive for HCV antibody on the rapid test were conducted at the TDRC laboratory.

Return of results

The HIV counselor/nurse provided participants with test results for HIV, active syphilis, HBV, and HCV at the first visit. Participants anti-HCV+ on the rapid test were referred for clinical services. Post-test counseling messages were tailored to participants' test results and risk profiles (see section below) and included goals, means, and strategies for behavioral risk reduction, maintenance of risk reduction, and explanation of risk reduction methods (eg, condom use). Participants received their HIV viral load results during their second visit.

Eligible clients (ie, those testing positive for HIV) were informed that the RTRI would be conducted to test for recent infection. Recognizing that an individual has a right to know their test results, results of approved HIV-related tests are typically returned. Because the HIV RTRI was under evaluation, not yet prequalified by the World Health Organization, and results were used for surveillance purposes only, the survey did not return the results of recency testing. Results of this test did not affect clients' HIV diagnosis and clinical care.

Post-testing and counseling

Counseling of participants living with HIV included an assessment of psychosocial needs, a discussion of living with HIV-infection, treatment and care (viral load, U=U, etc.), and issues related to stigma and discrimination. HIV transmission to partners was also discussed and strategies for behavioral change were addressed. For all participants, condoms and lubricants were made available and provided free of charge.

Counseling of participants with an HIV-negative status included discussion around maintaining a negative status, strategies for behavioral risk reduction, and risk reduction methods including PrEP. The 2018 Zambia Consolidated Guidelines for Prevention and Treatment of HIV Infection recommend that before starting PrEP, individuals should be tested for creatinine and ALT. For this reason, initiation of PrEP at the study site was not feasible, and all HIV-negative participants were referred for PrEP services at KP-friendly clinics previously identified.

Participants who tested HBsAg+ (current HBV infection) were counseled on the importance of receiving treatment and were referred for care and treatment at a facility identified to offer KP-friendly services. Participants who tested HBsAg-negative were informed that they did not have current infection. As the HBV vaccine was not routinely available in Zambia, no referrals for HBsAg-negative participants were made.

Participants who tested anti-HCV+ may have had active HCV infection or resolved past HCV infection. Any participants who tested positive on the HCV rapid test was informed that they might have a current HCV infection or a past infection that had cleared on its own and carries no health implications. We referred all participants with anti-HCV+ on the rapid test to a facility for follow-up. Treatment for HCV Infection is unavailable in Zambia.

Linkages to care

At all locations conducting HIV testing for this survey, collaborations were developed between the survey team, local clinics, and NGOs that can provide appropriate HIV, syphilis, HBV, and HCV services and linkage to care. Referrals were conducted as follows:

- Participants testing positive for HIV, syphilis, HBV, or HCV infection were escorted by a peer educator to the collaborating clinics where they could receive health services. As the treatment of HCV was rapidly evolving, we

evaluated treatment options for HCV in each of the regions during the formative assessment to ensure participants could receive the best treatment options available.

- Participants reporting symptoms of STIs (eg, urethral discharge, genital ulcer, anal sores, and warts) were referred to collaborating clinics for treatment.
- HIV-negative individuals were referred to KP-friendly clinics to initiate PrEP.

Participants were offered active linkage via a peer educator to access referrals. Participants were referred to healthcare facilities where healthcare personnel had been sensitized about KP and the importance of providing friendly and non-discriminatory services to this population. Referrals were done using a referral form and contained the SID, the name of the survey, the name of the counselor, the name of the healthcare facility to which referral was being made, and the reasons for referral. Collaborating clinics were asked to keep numerical counts (to de-identify participant information) of referrals from this survey. Survey investigators followed-up with the collaborating providers at regular intervals to determine whether participants were accessing care and treatment.

2.7 SECOND VISIT

All survey participants were asked to return to the survey office to provide information about the number and characteristics of peers they approached and to collect their second incentive, and, if they had tested HIV positive in the survey, to collect their viral load results. The second visit was scheduled when referral coupons had already been collected, typically two weeks after the initial visit. Participants were allowed to attend the second visit before the scheduled appointment date; however, reimbursement for transportation would only be given once. Participants arriving late (after the scheduled date/time) were accepted; however, the scheduled appointments of other recruits were given priority, or a new date/time was arranged. The participant's remaining coupons were collected, marked 'VOID', and filed. The interviewer confirmed the identity of the participant using a unique participant code (UPC). The interviewer used the second visit form to ask the participant how many eligible recruits he/she approached, how many referral coupons he/she handed out, and why the people who refused did not accept the coupons. Basic information was collected on those who refused the coupon.

2.8 PARTICIPANT INCENTIVES

Survey participants received K240 (~US \$13) in cash for transportation compensation. The secondary incentive was K55 (~US \$3) for each referred peer who completed a survey. Participants also received K92 (US \$5) in cash for one-way transportation costs to return to the survey office for their secondary incentives. The maximum incentive for the second visit was therefore K257 (~US \$14). The combined maximum value of primary and secondary compensation including transportation was K497 (~US \$27) per RDS participant.

2.9 RECRUITMENT MONITORING

On a weekly basis, the survey team in collaboration with co-investigators monitored recruitment and discussed any issues related to coupon management. Internal weekly reports were developed to analyze recruitment and included recruitment trees stratified by HIV status as well as bar charts of recruits by wave, which helped to identify non-productive seeds. Recruitment effectiveness and differential recruitment between groups (ie, homophily) was also analyzed, as well as convergence plots to evaluate when the sample reached convergence and bottleneck plots to identify potential bottlenecks. Key variables assessed included prevalence of HIV, HBV, HCV, syphilis, VLS, socio-economic status, and other socially salient information. The weekly analyses and monitoring provided information on whether the number of coupons distributed needed to be changed or whether new seeds were needed to achieve the sample size while ensuring reaching diverse social networks. Results were shared with NAC, TDRC, and CDC.

2.10 DATA MANAGEMENT AND ANALYSIS

Population size estimates

All paper-based distributor's logs were kept in a secure locked cabinet in a locked office at the survey site and brought to the central survey office at the end of each capture. Data from each log was entered into Excel databases stored on password-protected computers.

Formative assessment

Electronic data from the formative assessment was stored on a password-protected computer after the completion of each FGD and IDI. Original paper-based forms from the formative phase were kept in a secure locked cabinet in a locked office at the survey site and brought to the central survey office at the end of the formative phase. Access to data was limited to research assistants, data analysts, and investigators. Data will be stored for up to five years after data collection and will then be destroyed.

The qualitative data obtained from the FGDs and IDIs was transcribed by the ICAP Zambia team, summarized for immediate use, and stored in a common word processing format to ease the analysis process. The data was then coded and analyzed using key themes from the interview guide. Other thematic categories that emerged from the data were also included in the analysis and themes uniting the categories were identified. Data was organized and analyzed with the aid of qualitative research software such as Dedoose or Atlas.ti.

The formative assessment data aided in identifying the operational and logistical needs of conducting RDS in each location (eg, identification of potential survey sites and determination of appropriate compensations). The formative assessment preceded launching recruitment chains but continued to update information as the survey progressed (eg, the need for new seeds, revision of size estimates, and improvements to field logistics).

Biological behavioral survey

Survey data was directly entered by the interviewer into password-protected tablets programmed in Open Data Kit language (SurveyCTO). To ensure quality of data, built in checks were programmed into SurveyCTO and verification of completeness and internal consistency was performed.

No participant identifying information was documented on survey tools; participants were only identified by the SID and UPC. All completed paper screening forms, consent forms, coupons and survey logs were kept in secure locked files during data collection at the survey sites. The team used the RDSCM for data management, to link the UPC and SID, and to track recruitment processing and coupons.

Merging of data sources (ie, laboratory, rapid test, and survey results) was conducted by ICAP Analysts using SAS or Stata. All databases were password protected and data was encrypted before transmission over public networks.

Specialized analyses were conducted to produce population prevalence estimates and confidence intervals (CIs) of variables adjusting for unequal probabilities of inclusion, due to varying social network sizes and the similarities in characteristics of persons within their social networks. The analysis of RDS data required adjustment for social network size and homophily (a diagnostic statistic that describes the mixing patterns in networks and is calculated by RDS software) within networks. RDS Analyst (RDS-A) was used to produce population point prevalence estimates and 95% CI for key indicator variables. The data (along with the individual survey weights) were exported into SAS or Stata for more complex analyses not possible with RDS-A.

2.11 ETHICAL CONSIDERATIONS

Enrollment of minors

In Zambia, the legal age of consent is 16 years. The inclusion of minors aged 16-17 years in the formative assessment and BBS was a priority for NAC, given high incidence of HIV among these populations and little available data.

Therefore, they were included in these activities. All participation was confidential, with referrals to local resources provided to all emancipated minor participants who reported sex work or trafficking.

Potential risks

There was a slight risk of loss of privacy for participants. Disclosure of information may have subjected persons to discrimination and potential harm. To minimize this, all survey staff were trained in Good Clinical Practices and signed a confidentiality agreement. Additionally, survey locations were selected so that confidentiality was maintained. Participants could refuse to answer any questions and discontinue participation at any time.

During the formative phase, investigators took all necessary precautions to protect IDI and FGD participants and avoided putting them in danger of harassment or arrest. Thus, letters of permission and support from Ministry of Home Affairs (police) and Drug Enforcement Commission (DEC) were obtained for assurance to not prosecute researchers and MSM and TGW participants during the survey period. Prior to initiating the survey, a community sensitization event was held whereby key members of the community, including law enforcement, were informed of the survey.

Diagnosis of HIV infection may also subject participants to psychological and emotional stress and self-stigma. To minimize these harms, the investigators provided trained counselors to offer consenting participants with pre- and post-test counseling. Participants who tested HIV positive and received their result or who needed syphilis treatment were linked to care at a health facility appropriate for MSM. The survey engaged and worked in collaboration with the health facility to meet any increased demands of health services due to the survey.

Potential benefits

The primary benefit of the survey was to produce reliable data on the HIV epidemic and social welfare needs of MSM and TWG communities in Zambia, and to inform program and policy managers. While HIV counseling and testing is available to all persons free of charge in Zambia, survey participants still had individual benefits that include the provision of counseling and testing for HIV, active syphilis, HBV, and HCV infection at the survey site, as well as linkage to further care and treatment for participants with these conditions. Free condoms, lubricants, health information, and referral services (ie, PrEP referrals for HIV-negative participants) were also provided. Participants may have benefited from meaningfully contributing to survey efforts and gaining knowledge on how to improve HIV prevention, health services and social protections for their communities. Lastly, those with drug withdrawal syndromes or victims of abuse were linked to appropriate services.

Approvals and administrative support

This protocol was submitted for administrative and ethical approvals to the CDC Center for Global Health Associated Director for Science (ADS), Columbia University Medical Center Institutional Review Board (IRB), TDRC and the Zambia MOH (NHRA).

Permission and administrative approval from the Zambia MoH NHRA were obtained prior to data collection. Letters of support from the Ministry of Home Affairs (Police) and DEC was obtained to ensure that researchers and participants were not prosecuted during the survey period.

2.12 POPULATION SIZE ESTIMATIONS

Two independent methods were used to estimate the population size of individuals who were assigned male at birth and who reported having anal or oral sex with a man in the 6 months before the survey at each site.

3-source capture-recapture

3-source capture-recapture (3S-CRC) involves iteratively capturing population members and identifying how many were recaptured in each successive capture. There are four main assumptions that must hold for this method to produce accurate results: individual captures are independent from one another, the population is closed (ie, no in-

or out-migration), homogeneity in capture probabilities, and accurate capture history of each population member. The first assumption, independence of captures, can be relaxed when three or more sources are used, as interaction can be addressed during analysis.

A fixed number of two different unique objects was distributed to MSM at each survey location. The goal was to distribute twice as many of each unique object as the sample size in each location. Appropriate unique objects, distributors, locations, and times were determined during the formative assessment and through discussions with stakeholders. Potential objects were deemed to be acceptable among the key population and have intrinsic value.

Investigators identified 10-30 MSM in each survey location to serve as volunteer object distributors. Distributors were different for each capture to facilitate independence between captures. All distributors participated in a half-day training where they were trained on assessment of eligibility prior to giving out unique objects, guidance on offering unique objects to MSM, maintaining anonymity, confidentiality, and safety in the field, and instructions on completing the distributor's log. Distributors for each distribution were split into at least two training groups to limit their interaction.

Each distributor was assigned a time and location where they distributed unique objects while wearing a memorable article of clothing. Distributors approached members of the population they believed met the eligibility criteria. For each capture round, distributors only offered one object per person and recorded the number of people approached, and, of those, the number of those who accepted or refused the unique object, and the number of objects distributed in a log.

To facilitate the assumption of a closed population the second capture was conducted 1 week after the completion of the first capture. During the second capture, in addition to distributing the second unique object, distributors asked individuals approached if they received a unique object from a person wearing a similar article of clothing as them. Individuals were asked whether they received any gift/unique object in the past 1 week. If yes, then they were asked to produce the object or describe it. To confirm, they were shown a sheet with pictures of different unique objects, one of which was distributed, and asked if they received any of these objects from someone wearing a similar article of clothing as them. Responses were recorded in the unique object distribution log for the second capture.

The final capture was the RDS survey. Questions regarding the unique objects in both captures were included in the survey to determine whether participants received either, both, or none of the unique objects distributed.

Sequential sampling PSE

The survey produced a PSE through a method called sequential sampling PSE (SS-PSE), which models the total number of persons in the population using RDS data. The method used the self-reported individual network size question asked in the survey and applied a Bayesian approach to estimate the probable size of the target population.

Population size estimation analyses

Using R (version 4.0.5), two independent methods were used to estimate the population size of MSM in the six months leading up to the survey at each site. 3S-CRC estimates were based on two sampling events approximately one week apart at community sites combined with data from the survey participants. Estimates and 95% credible intervals were calculated with Bayesian nonparametric latent-class models in the R shinyrecap package.⁸ SS-PSE figures were computed from the RDS recruitment and personal network size information using the sspse package (version 0.6) in R. Imputed visibility was used to help account for measurement errors in self-reported network size (See *Appendix A: Methodology and Technical Details*).

2.13 REFERENCES

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3. RESULTS

3.1 CONSENSUS ESTIMATES

Key findings

- Consensus estimates by site of individuals who were assigned male at birth and who reported having anal or oral sex with a man in the 6 months before the survey accounted for 1.0%-2.1% of the population of each of their districts. Among the four towns, the eligible survey population was largest in Lusaka, with an estimated population size between 3,900-13,100 people, representing 1.1% of the district population. In Livingstone, the estimated population size was between 300-2,100 people, which represents 1.7% of the district population. In Kitwe, the estimated population size was between 1,500-2,800 people, representing 1.0% of the district population. In Solwezi, the estimated population size was between 200-2,100 people, representing 2.1% of the district population (Table 3.1).
- When asked their gender identity, one quarter to one third (Kitwe: 27.7%; Livingstone: 24.5%; Lusaka: 29.8%; Solwezi: 35.3%) were TGW and small proportions (Kitwe: 0.6%; Livingstone: 2.6%; Lusaka: 2.2%; Solwezi: 1.3%) were non-binary.

Table 3.1: Population size estimates by site

Population size estimates of individuals who were assigned male at birth and who reported anal or oral sex with a man in the 6 months before the survey at four sites in Zambia, by site, Zambia MSM BBS 2021

Site	Consensus Estimate			3S-CRC			SS-PSE		
	Estimate (median)	95% credible interval	% of district population [†]	Estimate (median)	95% credible interval	% of district population [†]	Estimate (median)	95% credible interval	% of district population [†]
Kitwe	2,200	1,500-2,800	1.0%	2,400	1,900-3,000	1.1%	1,400	800-2,800	0.7%
Livingstone	1,000	300-2,100	1.7%	3,500	2,500-6,800	5.9%	1,100	700-2,400	1.9%
Lusaka	7,900	3,900-13,100	1.1%	9,700	6,700-16,500	1.3%	5,900	2,200-19,000	0.8%
Solwezi	1,000	200-2,100	2.1%	2,000	1,500-3,900	4.0%	1,000	500-2,800	2.0%

Abbreviations and Methods:

MSM - men who have sex with men.

[†] Based upon comparison with government of Zambia district population projections. Source: ZamStat 2021 Adjusted District Population Estimates (December 2021).

Note that this table includes individuals who were assigned male at birth who identified as men, women, or non-binary gender.

Consensus estimate: Calculated using a Bayesian Consensus Estimator from the results of the other estimation methods.

3S-CRC: Three-source capture-recapture using two capture events and the respondent-driven sampling (RDS) survey population.

SS-PSE: Sequential sampling population size estimation using the RDS survey data and recruitment records.

3.2 SAMPLE AND NETWORK CHARACTERISTICS

Key findings

- Overall, 6 to 9 seeds per site were used to recruit the full sample of participants. The average number of recruits per seed varied by site, with 49 in Solwezi compared with 75 in Lusaka. The mean number of waves also varied by site, with 5 in Kitwe and a high of 8 in Solwezi. The coupon return rate was similar in each town, ranging from 33.8%-38.1% (Table 3.2.1).
- The percent eligible among all potential participants screened, including all those assigned male at birth who had sex with men in the six months before the survey, ranged across sites, with 80.4% eligible in Solwezi, 87.8% in Livingstone, 88.4% in Lusaka, and 95.4% in Kitwe. All eligible participants were enrolled at the sites, except for Kitwe, where 99.7% enrolled, and almost all consented for biomarkers as well. The proportion of participants who returned for a second visit varied, with 48.1% returning in Lusaka, 53.9% in Livingstone, 63.4% in Kitwe, and 72.7% in Solwezi (Table 3.2.2).

Table 3.2.1: Recruitment statistics by site

Recruitment statistics among individuals who were assigned male at birth and who had sex with men in the 6 months before the survey, by site, Zambia MSM BBS 2021					
Site	Number of seeds	Mean number of recruits by seed*	Mean number of waves	Longest wave	Coupon return rate (%)†
Kitwe	6	57	5	6	36.6
Livingstone	9	51	6	10	38.1
Lusaka	8	75	5	17	33.8
Solwezi	6	49	8	16	35.1

Abbreviations: MSM - men who have sex with men.

†Coupon return rate: proportion of coupons distributed which were returned to study sites by potential participants.

*The mean number has been rounded to the nearest whole number.

Note that this table includes individuals who were assigned male at birth who identified as men, women, or non-binary gender.

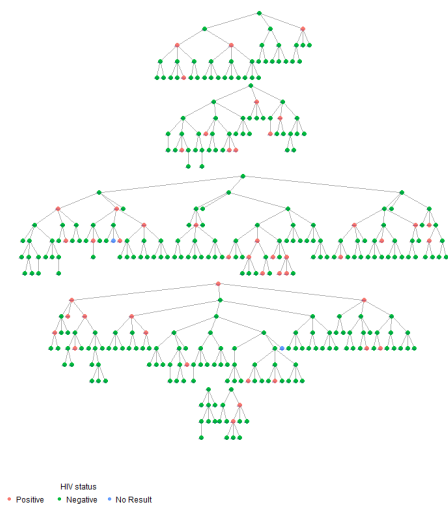
Table 3.2.2: Screening, enrollment, and testing statistics by site

Screening, enrollment, and testing statistics among individuals who were assigned male at birth and who had sex with men in the 6 months before the survey, by site, Zambia MSM BBS 2021										
	Screened		Eligible		Enrolled		Tested for biomarkers		Returned for second visit	
Site	n	n	% of those screened	n	% of those eligible	n	% of those enrolled	n	% of those enrolled	
Kitwe	368	351	95.4	350	99.7	348	99.4	222	63.4	
Livingstone	531	466	87.8	466	100.0	465	99.8	251	53.9	
Lusaka	517	457	88.4	457	100.0	456	99.8	220	48.1	
Solwezi	373	300	80.4	300	100.0	300	100.0	218	72.7	
Note that this table includes individuals who were assigned male at birth who identified as men, women, or non-binary gender.										

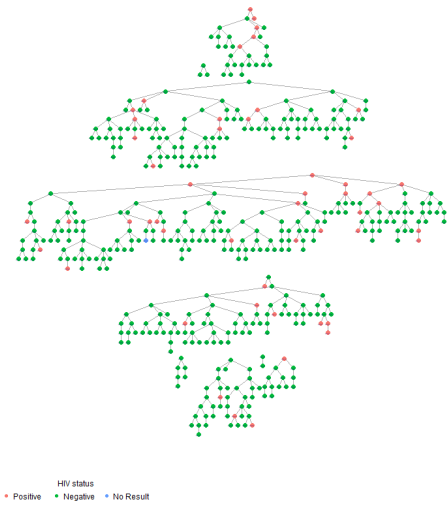
Note that this table includes individuals who were assigned male at birth who identified as men, women, or non-binary gender.

Figure 3.2: Recruitment trees by HIV status and site, Zambia MSM BBS 2021

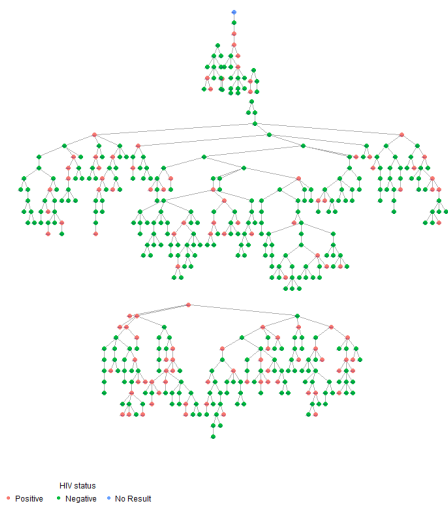
Kitwe:



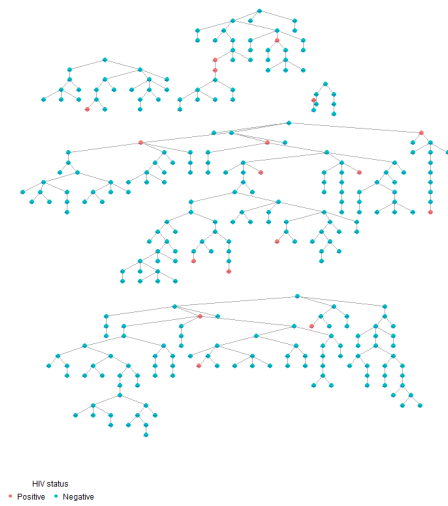
Livingstone:



Lusaka:



Solwezi:



3.3 DEMOGRAPHIC CHARACTERISTICS

Key findings

- The majority of MSM who enrolled in the survey defined themselves as gay: 59.8% in Kitwe, 51.1% in Livingstone, 60.7% in Lusaka, and 50.6% in Solwezi. Most of the MSM who did not identify as gay defined themselves as bisexual (Table 3.3).
- Most MSM who enrolled in the survey were young — less than 30 years of age across all sites. The median age was 22 years in both Livingstone and Solwezi, 24 years in Solwezi, and 27 years in Kitwe. A higher proportion of MSM aged 30 years and older enrolled in Kitwe (35.0%) relative to those enrolled in other sites (range: 10.8%-14.6%; Table 3.3).
- MSM came from a range of educational, tribal backgrounds and employment statuses—although across towns, close to half of participants reported that they were unemployed or never employed. Among the employed, the median income at each site was in the second lowest quintile, ranging from 700-1,500 Kwacha sites (Table 3.3).
- Over 80% of MSM reported that they were single, with no more than 3% (in Lusaka) reporting being married to one or more women (range 1.3%-3.0%; Table 3.3).
- Most MSM, from 97.3% in Kitwe to 100.0% in Solwezi, reported having a regular place to sleep at night (Table 3.3).

Table 3.3: Demographic characteristics by site

Demographic characteristics among men who have sex with men (MSM) by site, Zambia MSM BBS 2021								
Characteristic	Kitwe (N = 251)		Livingstone (N = 340)		Lusaka (N = 311)		Solwezi (N = 190)	
	%	n	%	n	%	n	%	n
Age in years								
16-19	12.4	24	23.2	74	11.4	29	26.5	40
20-24	30.5	82	41.1	142	45.5	152	42.2	88
25-29	22.2	52	21.1	77	30.3	88	20.6	41
30 or older	35.0	93	14.6	47	12.8	42	10.8	21
Median (IQR)	27 (21-31)		22 (20-27)		24 (21-27)		22 (20-26)	
Highest level of education completed								
No formal education	3.8	5	0.5	*	2.2	*	2.3	*
Primary	32.0	76	20.4	75	16.6	52	6.6	9
Secondary	39.9	104	66.7	217	52.8	160	71.3	129
Tertiary	22.1	58	10.1	39	26.4	90	18.1	42
Vocational†	2.3	6	2.3	*	2.1	*	1.6	*
Ethnic group/tribe								
Lozi	2.6	5	27.6	89	5.1	15	3.2	*
Tonga	3.9	8	21.3	75	5.7	17	5.4	12
Nsenga/Ngoni	10.3	31	12.6	41	19.0	59	3.4	8
Bemba	58.9	127	17.5	60	27.6	87	23.2	52
Lala	2.1	7	0.2	*	1.2	*	0.5	*
Lamba	2.5	8	0.5	*	3.3	*	4.6	8
Kaonde	1.1	7	1.3	5	2.0	6	15.2	25
Bantu	5.7	20	10.9	36	18.4	56	37.2	63
Other	12.9	36	8.3	30	17.6	62	7.1	14
Country of origin								
Zambia	99.5	*	100.0	340	94.8	294	98.9	*
Other African country	0.5	*	0.0	0	5.2	17	1.1	*

Table 3.3: Demographic characteristics by site (continued)

Demographic characteristics among men who have sex with men (MSM) by site, Zambia MSM BBS 2021								
Characteristic	Kitwe (N = 251)		Livingstone (N = 340)		Lusaka (N = 311)		Solwezi (N = 190)	
	%	n	%	n	%	n	%	n
Employment status								
Self employed	20.6	56	14.4	47	17.2	53	24.3	47
Employed full-time	16.6	39	6.1	*	9.4	26	10.2	26
Employed part-time	11.9	35	17.0	58	12.4	40	9.8	22
Unemployed	45.0	106	50.2	165	32.1	106	37.1	61
Never employed	2.1	*	1.2	*	17.8	53	8.1	16
Retired	0.0	0	0.0	0	0.0	0	0.0	0
Full-time student	4.0	*	11.1	38	11.2	33	10.5	15
Income earned last month, Kwacha‡								
Not employed	6.5	11	12.2	20	18.2	24	10.4	10
0-500	14.8	18	37.2	58	12.4	18	28.8	23
501-1500	40.3	54	29.9	55	32.3	45	26.5	26
1501-3000	29.8	43	12.1	22	12.4	25	20.2	28
3001-4500	2.0	5	3.3	*	8.6	10	9.1	11
4501+	6.1	11	5.2	*	16.0	20	5.1	8
Median (IQR)	1500 (700-2500)		700 (200-1500)		1100 (400-2800)		1300 (400-2800)	
Marital status								
Single, never married	80.2	190	92.0	312	90.5	283	93.9	175
Married (to one or more women)	2.5	*	1.8	7	3.0	5	1.3	*
Married (to one or more men)	5.6	22	1.8	*	1.4	5	1.0	*
Separated/divorced	5.4	14	3.6	13	2.6	12	1.0	*
Widowed	0.1	*	0.0	0	0.0	0	0.0	0
Cohabiting	6.3	18	0.8	*	2.5	6	2.7	5
Religion								
Traditional	0.6	*	0.0	0	0.0	0	0.6	*
Christian	92.2	233	92.6	316	96.0	297	94.5	176
Islam	0.9	*	0.9	*	0.7	5	2.2	*
None	6.4	10	6.6	*	3.3	8	2.7	5
Sexual orientation								
Gay/homosexual	59.8	162	51.1	186	60.7	202	50.6	100
Bisexual	40.3	88	48.8	153	37.8	105	48.8	*
Straight/heterosexual	0.0	0	0.0	0	1.5	*	0.6	*
Regular place to sleep at night								
Yes	97.3	243	98.9	*	99.1	*	100.0	190
No	2.7	8	1.1	*	1.0	*	0.0	0
Shelter type								
House	61.9	147	95.8	325	85.1	269	76.0	150
Apartment	36.2	*	1.2	*	10.6	25	21.2	35
Dormitory	1.9	*	1.3	*	3.2	14	2.8	5
Community center	0.0	0	0.4	*	0.5	*	0.0	0
Street/homeless	0.0	0	1.3	5	0.7	*	0.0	0

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

[†]Vocational training refers to skills training qualifications mainly in construction such as carpentry, plumbing, brick laying, and tailoring.

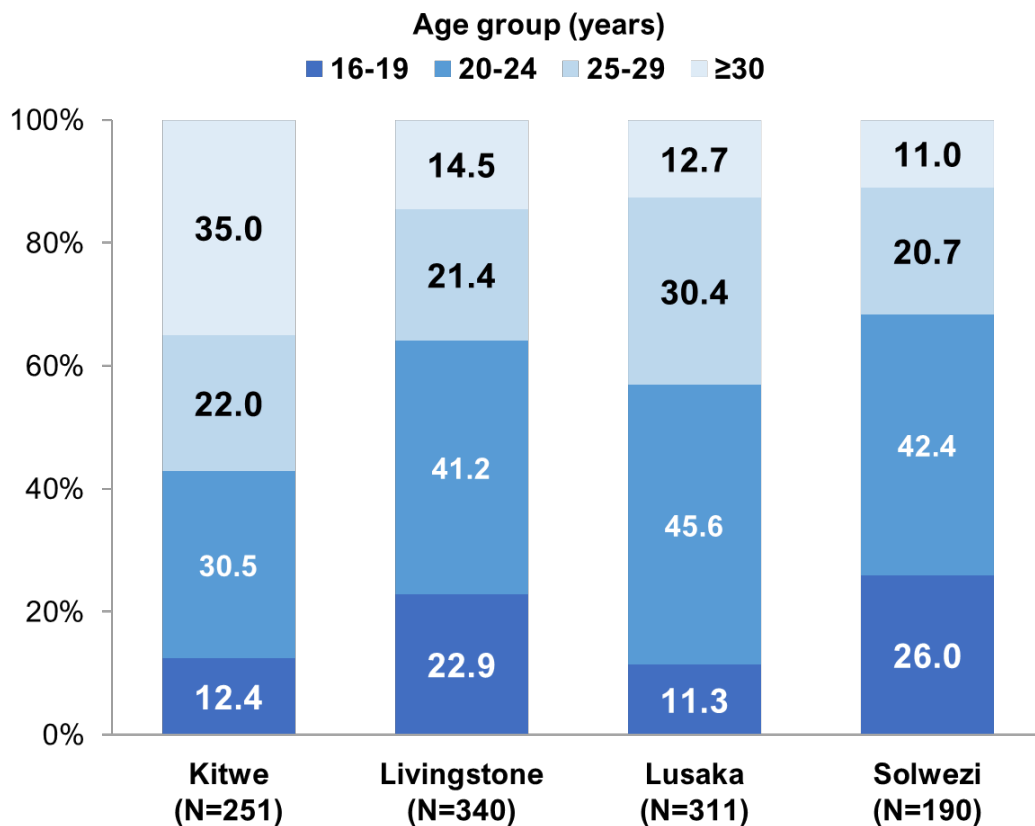
[‡]Question was not asked to retired or unemployed participants.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Figure 3.3 Age group distribution among MSM enrolled at each site, Zambia MSM BBS 2021



3.4 HIV PREVALENCE, VIRAL LOAD SUPPRESSION, AND RECENT INFECTION

Key findings

- Lusaka had the highest HIV prevalence among MSM at 22.5% compared to the other sites (range: 6.0%-11.0%). HIV prevalence was highest among MSM aged 30 and older across all sites, although the prevalence among this group in Lusaka (40.7%) and Solwezi (41.0%) was significantly higher than among those in Kitwe (20.5%; Table 3.4).
- VLS among MSM living with HIV ranged across the sites from 50.7% in Solwezi and 54.9% in Solwezi, to 82.7% in Livingstone and 91.0% in Kitwe (Table 3.4).
- Based upon the RITA (see section 2.6), there were no recent infections among MSM who tested positive in the survey in Kitwe and Livingstone, but 4.6% of those who tested positive in Lusaka and 10.6% in Solwezi had been recently infected. Most of those who tested positive in the survey had long-term HIV infections (Table 3.4).
- Most of those who tested HIV positive during their first survey visit did not report that they had tested positive before (ranging from 52.1% in Livingstone to 87.1% in Solwezi). However, most (ranging from 51.8% in Solwezi to 91.1% in Kitwe), were presumed to be aware of their HIV-positive status. This presumption is based on their having a viral load below 200 copies/mL, which is highly unlikely unless someone has tested HIV positive and is receiving ART (Table 3.4).¹

Table 3.4.1: HIV prevalence and viral load suppression by age and site

HIV prevalence among men who have sex with men (MSM) and viral load suppression among MSM living with HIV by age and site, Zambia MSM BBS 2021												
	Kitwe (N = 249)			Livingstone (N = 339)			Lusaka (N = 310)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
HIV prevalence												
16-19	6.5	1.0-11.9	*	3.8	0.6-6.8	*	7.2	3.5-11.5	*	0.0	-	0
20-24	3.0	0.0-6.8	*	7.6	5.2-10.1	11	20.1	17.2-23.3	28	0.8	0.0-1.6	*
25-29	2.4	0.0-5.9	*	8.8	4.2-13.2	*	24.7	22.0-27.5	22	5.9	0.2-11.6	*
30 or older	20.5	16.7-23.6	27	35.4	22.9-47.8	15	40.7	38.4-44.5	*	41.0	32.6-47.9	5
Total	9.3	4.7-13.9	34	11.0	7.4-14.6	35	22.8	19.1-26.5	69	6.0	2.2-9.8	9
Viral load suppression												
16-19	100.0	-	*	100.0	-	*	100.0	-	*	0.0	-	0
20-24	87.0	76.7-97.3	*	46.2	17.7-74.9	6	57.7	47.0-68.3	16	100.0	-	*
25-29	7.4	0.0-83.8	*	98.4	97.7-99.0	*	41.7	34.3-49.2	*	0.0	-	0
30 or older	96.4	95.3-97.4	25	95.5	93.6-97.7	14	62.4	61.5-63.2	12	60.1	60.1-60.1	*
Total	91.0	88.1-94.0	30	82.7	81.2-83.6	28	54.9	50.3-59.4	39	50.7	19.4-82.0	5

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.4.2: Recent HIV infection and viral load distribution by site

Recent HIV infection and viral load distribution among all men who have sex with men (MSM) living with HIV, by site, Zambia MSM BBS 2021												
	Kitwe (N = 34)			Livingstone (N = 35)			Lusaka (N = 69)			Solwezi (N = 9)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Recent infection testing algorithm (RITA)												
Recent infection	0.0	-	0	0.0	-	0	4.6	0.0-13.5	*	10.6	0.0-40.3	*
Long-term infection	100.0	-	34	97.4	96.4-98.4	*	89.1	86.0-92.2	62	89.4	83.9-94.9	*
Inconclusive	0.0	-	0	2.7	0.0-6.1	*	6.3	0.0-14.6	*	0.0	-	0
Viral load result												
<1,000 copies/mL	91.0	88.2-93.9	*	82.4	81.8-83.9	28	54.9	50.3-59.5	39	50.7	18.5-82.9	*
≥1,000 copies/mL	9.0	0.0-25.3	*	17.3	13.8-21.0	7	45.1	38.7-51.5	29	49.3	27.3-71.3	*

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.4.3: HIV testing history, risk perception, and awareness of HIV-positive status by testing during the first survey visit, by site

HIV testing history, perceived risk of having HIV, awareness of HIV-positive status among men who have sex with men (MSM) who received an HIV-positive result during the first survey visit, by site, Zambia MSM BBS 2021												
	Kitwe (N = 34)			Livingstone (N = 35)			Lusaka (N = 69)			Solwezi (N = 9)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Ever tested for HIV												
Yes	84.4	72.0-96.7	27	90.7	79.0-100.0	*	97.0	85.6-100.0	*	88.8	54.6-100.0	*
No	15.7	3.4-28.0	7	9.1	0.0-20.3	*	3.0	0.0-14.3	*	10.7	0.0-43.5	*
Among those ever tested, timing of last HIV test												
In the 6 months before the survey	17.0	0.0-36.9	7	64.4	42.3-86.5	19	42.9	22.9-63.0	37	67.0	22.2-100.0	5

Table 3.4.3: HIV testing history, risk perception, and awareness of HIV-positive status by testing during the first survey visit, by site (continued)

HIV testing history, perceived risk of having HIV, awareness of HIV-positive status among men who have sex with men (MSM) who received an HIV-positive result during the first survey visit, by site, Zambia MSM BBS 2021												
	Kitwe (N = 34)			Livingstone (N = 35)			Lusaka (N = 69)			Solwezi (N = 9)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Among those ever tested, timing of last HIV test												
6-12 months before the survey	22.0	4.2-39.9	5	19.6	4.2-34.9	6	40.8	20.3-61.3	18	6.1	0.0-24.3	*
More than 12 months before the survey	60.1	31.6-88.6	14	16.3	4.7-27.8	7	16.4	6.8-26.0	13	27.1	0.0-80.5	*
Thought it was possible that they might have HIV before receiving HIV test in the survey												
Yes	15.0	5.0-24.9	5	53.7	30.5-77.0	19	70.9	54.3-87.5	46	39.6	0.0-100.0	*
No	49.3	14.4-84.3	10	36.3	10.6-61.9	*	26.0	9.4-42.6	*	59.5	0.0-100.0	*
Already knew that they were HIV positive	36.3	3.6-69.1	5	9.7	0.0-20.1	*	2.9	0.1-5.7	*	0.0	-	0
Among those who reported an HIV-negative status, self-perceived risk of becoming HIV positive in the 12 months after the survey												
High	7.0	0.0-18.4	*	42.7	23.7-61.8	12	19.9	6.7-33.1	17	16.6	0.0-43.5	*
Medium	15.6	1.3-29.8	*	23.0	7.4-38.6	11	27.7	11.9-43.4	21	39.5	24.8-54.2	*
Low	77.7	58.3-97.2	11	34.5	5.6-63.3	10	52.3	31.4-73.2	26	44.3	7.8-80.8	*
Aware of HIV-positive status[†]												
Yes	25.9	4.4-47.4	6	48.0	26.7-69.4	12	29.7	13.3-46.1	22	12.8	0.0-45.5	*
No	74.3	53.0-95.6	19	52.1	30.8-73.4	19	70.4	53.8-87.0	46	87.1	55.2-100.0	*
Viral load-adjusted awareness of HIV-positive status[‡]												
	91.1	74.0-100.0	30	80.4	67.1-93.7	27	61.2	42.1-80.3	45	51.8	24.3-79.2	5

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

[†]Awareness of HIV-positive status based upon self-report during survey interview.

[‡]Viral-load awareness of HIV-positive status was based upon self-report or having a viral load < 200 copies/mL.

Survey weights were utilized for all estimates.

3.5 UNAIDS 95-95-95 ACHIEVEMENTS, HIV, AND TB CARE

The Joint United Nations Programme on HIV and AIDS (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 are on ART would have VLS.

Key findings

95-95-95 among MSM, based on self-report and adjusted for viral loads below 200 copies per mL, by site

For the conditional 95-95-95, the denominator for the second and third 95 is the value of the preceding 95 (Table 3.5.1).

- **In Kitwe**, 91.0% of MSM living with HIV were aware of their HIV-positive status, 99.6% of those who were aware of their HIV-positive status were on ART, and 100.0% had VLS.
- **In Livingstone**, 81.6% of MSM living with HIV were aware of their HIV-positive status, 97.4% of those who were aware of their HIV-positive status were on ART, and 97.4% had VLS.
- **In Lusaka**, 60.7% of MSM living with HIV were aware of their HIV-positive status, 94.4% of those who were aware of their HIV-positive status were on ART, and 95.1% had VLS.
- **In Solwezi**, 50.7% of MSM living with HIV were aware of their HIV-positive status, 100.0% of those who were aware of their HIV-positive status were on ART, and 100.0% had VLS.

For the overall 95-95-95, the denominator for the second and third 95 is all the MSM living with HIV participating at each site. The overall 95-95-95 target of VLS among all the MSM living with HIV (the product of 95% of those living with HIV diagnosed, 95% of those diagnosed on treatment, and 95% of those on treatment achieving VLS [95x95x95]) is 85.7% or greater (Table 3.5.2).

- **In Kitwe**, 91.0% of all the MSM living with HIV were aware of their HIV-positive status, 90.7% were on ART, and 90.7% had VLS.
- **In Livingstone**, 81.6% of all the MSM living with HIV were aware of their HIV-positive status, 79.5% were on ART, and 79.5% had VLS.
- **In Lusaka**, 61.5% of all the MSM living with HIV were aware of their HIV-positive status, 57.6% were on ART, and 54.6% had VLS.
- **In Solwezi**, 50.7% of all MSM living with HIV were aware of their HIV-positive status, 50.7% were on ART, and 50.7% had VLS.
- At all sites, almost all of those who acknowledged their HIV-positive status had seen a provider about HIV (range: 88.6%-100.0%). While most MSM who reported they were HIV-positive are still in care for HIV, a small proportion in Kitwe, Livingstone, and Lusaka were no longer in care (range: 4.6%-8.3%). All the self-reported HIV-positive MSM said they had been on ART at some time, and most were still on ART (range: 95.4%-100.0%; Table 3.5.3).
- Among self-reported HIV-positive MSM, the majority were screened for tuberculosis (TB) in the past 12 months in Livingstone, Lusaka, and Solwezi (range: 80.3%-100.0%) but in Kitwe, only 23.1% were screened. Among those screened, 55.6% in Livingstone and 16.8% in Lusaka reported that they had experienced TB symptoms in the 12 months before the survey (Table 3.5.4).

Table 3.5.1: 95-95-95 targets (conditional) by site

Conditional achievements toward the 95-95-95 targets (viral load-adjusted)[†] among men who have sex with men (MSM) living with HIV, by site and age, Zambia MSM BBS 2021

	Kitwe (N = 34)			Livingstone (N = 35)			Lusaka (N = 69)			Solwezi (N = 9)		
	Diagnosed†											
Age in years	% aware of HIV status	95% CI	n	% aware of HIV status	95% CI	n	% aware of HIV status	95% CI	n	% aware of HIV status	95% CI	n
16-19	100.0	-	*	100.0	-	*	100.0	-	*	-	-	0
20-24	87.0	17.4-100.0	*	40.3	2.8-77.8	5	67.8	43.1-92.5	19	100.0	0.0-0.0	*
25-29	7.4	7.4-7.4	*	89.1	36.8-100.0	*	45.8	16.0-75.7	*	-	-	0
30 or older	96.4	86.5-100.0	25	100.0	-	15	63.9	44.2-83.6	13	60.1	39.1-81.2	*
Total	91.0	72.3-100.0	30	81.6	64.6-98.6	27	60.7	43.0-78.5	45	50.7	19.7-81.7	5
	Kitwe (N = 30)			Livingstone (N = 27)			Lusaka (N = 45)			Solwezi (N = 5)		
	On Treatment Among Those Diagnosed†											
Age in years	% on ART	95% CI	n	% on ART	95% CI	n	% on ART	95% CI	n	% on ART	95% CI	n
16-19	100.0	-	*	100.0	-	*	100.0	-	*	-	-	0
20-24	100.0	-	*	100.0	-	5	89.0	55.1-100.0	18	100.0	-	*
25-29	100.0	-	*	100.0	-	*	97.9	93.7-100.0	9	-	-	0
30 or older	99.6	98.7-100.0	24	95.6	88.8-100.0	15	100.0	-	13	100.0	-	*
Total	99.6	99.1-100.0	29	97.4	94.8-99.9	27	94.4	71.4-100.0	43	100.0	-	5
	Kitwe (N = 29)			Livingstone (N = 27)			Lusaka (N = 43)			Solwezi (N = 5)		
	Viral Load Suppression (VLS) Among Those on Treatment											
Age in years	% with VLS	95% CI	n	% with VLS	95% CI	n	% with VLS	95% CI	n	% with VLS	95% CI	n
16-19	100.0	-	*	100.0	-	*	100.0	-	*	-	-	0
20-24	100.0	-	*	100.0	-	5	95.8	89.7-100.0	16	100	-	*
25-29	100.0	-	*	100.0	-	*	91.3	64.5-100.0	*	-	-	0
30 or older	100.0	-	24	100.0	-	14	97.1	90.4-100.0	12	100	-	*
Total	100.0	-	29	100.0	-	26	95.1	89.6-100.0	39	100	-	5

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk. The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

[†]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a viral load < 200 copies/mL.

Survey weights were utilized for all estimates.

Table 3.5.2: HIV cascade (overall) by site

Overall achievements toward the 95-95-95 targets (viral load-adjusted)[†] among men who have sex with men (MSM) living with HIV, by site and age, Zambia MSM BBS 2021

	Kitwe (N = 34)			Livingstone (N = 35)			Lusaka (N = 69)			Solwezi (N = 9)		
	Diagnosed†											
Age in years	% aware of HIV status	95% CI	n	% aware of HIV status	95% CI	n	% aware of HIV status	95% CI	n	% aware of HIV status	95% CI	n
16-19	100.0	-	*	100.0	-	*	100.0	-	*	-	-	0
20-24	87.0	17.4-100.0	*	40.3	2.8-77.8	5	67.8	43.1-92.5	19	100.0	0.0-0.0	*
25-29	7.4	7.4-7.4	*	89.1	36.8-100.0	*	45.8	16.0-75.7	*	-	-	0
30 or older	96.4	86.5-100.0	25	100.0	-	15	63.9	44.2-83.6	13	60.1	39.1-81.2	*
Total	91.0	72.3-100.0	30	81.6	64.6-98.6	27	60.7	43.0-78.5	45	50.7	19.7-81.7	5
	On Treatment†											
Age in years	% on ART	95% CI	n	% on ART	95% CI	n	% on ART	95% CI	n	% on ART	95% CI	n
16-19	100.0	-	*	100.0	-	*	100.0	-	*	-	-	0
20-24	87.0	17.4-100.0	*	40.3	2.8-77.8	11	59.7	30.4-88.9	18	100.0	-	1
25-29	7.4	7.4-7.4	*	89.1	36.8-100.0	*	44.8	14.9-74.8	9	0.0	-	0
30 or older	95.9	85.8-100.0	24	95.6	88.8-100.0	15	63.9	44.4-83.4	13	60.1	39.1-81.2	4
Total	90.7	71.9-100.0	29	79.5	61.7-97.3	35	57.6	38.9-76.3	43	50.7	19.7-81.7	5

Table 3.5.2: HIV cascade (overall) by site (continued)

Overall achievements toward the 95-95-95 targets (viral load-adjusted) [†] among men who have sex with men (MSM) living with HIV, by site and age, Zambia MSM BBS 2021												
Age in years	Kitwe (N = 34)			Livingstone (N = 35)			Lusaka (N = 69)			Solwezi (N = 9)		
	Viral Load Suppression (VLS) on Treatment											
	% with VLS	95% CI	n	% with VLS	95% CI	n	% with VLS	95% CI	n	% with VLS	95% CI	n
16-19	100.0	-	*	100.0	-	*	100.0	-	*	-	-	0
20-24	87.0	17.4-100.0	*	40.3	2.8-77.8	5	57.9	29.0-86.8	16	100.0	-	1
25-29	7.4	7.4-7.4	*	89.1	36.8-100.0	*	40.5	11.2-69.9	*	0.0	-	0
30 or older	95.9	85.8-100.0	24	95.6	88.8-100.0	14	63.6	44.4-82.8	12	60.1	39.1-81.2	4
Total	90.7	71.9-100.0	29	79.5	61.7-97.3	26	54.6	36.0-73.2	39	50.7	19.7-81.7	5

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk. The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

[†]Both awareness of HIV-positive status and on treatment status were based upon self-report or having a viral load < 200 copies/mL. Survey weights were utilized for all estimates.

Table 3.5.3: HIV care and treatment and HIV disclosure by site

HIV care and treatment and disclosure among men who have sex with men (MSM) living with HIV, [†] by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 6)			Livingstone (N = 12)			Lusaka (N = 22)			Solwezi (N = *)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Had seen a provider related to HIV												
Yes	100.0	-	6	95.2	90.1-100.0	*	88.6	43.9-100.0	*	100.0	-	*
No	0.0	-	0	4.8	0.0-9.9	*	11.6	0.0-57.8	*	0.0	-	0
Among those who had seen a provider, those currently in care for HIV												
Yes	95.4	78.5-100.0	*	91.7	83.6-99.7	*	95.0	88.6-100.0	*	100.0	-	*
No, I stopped receiving care/going to checkups	4.6	0.0-21.5	*	8.3	0.3-16.4	*	4.9	0.0-11.4	*	0.0	-	0
Among those who had seen a provider, those who had a viral load test												
Yes	100.0	-	6	70.4	28.1-100.0	*	85.2	71.7-98.7	*	100.0	-	*
No	0.0	-	0	29.6	0.0-71.9	*	14.7	1.1-28.3	*	0.0	-	0
Among those who had a viral load test, when was last test												
In the 12 months before the survey	90.8	57.7-100.0	*	100.0	-	7	91.7	74.8-100.0	*	100.0	-	*
More than 12 months before the survey	9.2	0.0-42.3	*	0.0	-	0	8.8	0.0-25.9	*	0.0	-	0
Among those who had seen a provider, those ever on ART												
Yes	100.0	-	6	100.0	-	11	100.0	-	20	100.0	-	*
No	0.0	-	0	0.0	-	0	0.0	-	0	0.0	-	0
Among those ever on ART, those currently on ART												
Yes	95.4	78.5-100.0	*	100.0	-	11	95.4	89.6-100.0	*	100.0	-	*
No	4.6	0.0-21.5	*	0.0	-	0	4.7	0.0-10.5	*	0.0	-	0

Table 3.5.3: HIV care and treatment and HIV disclosure by site (continued)

HIV care and treatment and disclosure among men who have sex with men (MSM) living with HIV, [†] by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 6)			Livingstone (N = 12)			Lusaka (N = 22)			Solwezi (N = *)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Had disclosed HIV-positive status to[‡]												
No one	0.0	-	0	4.8	0.0-9.9	*	2.7	0.0-5.9	*	0.0	-	0
Spouse/Sex partner	63.1	45.1-81.1	*	44.1	15.9-72.3	5	38.6	16.0-61.2	7	100.0	-	*
Doctor/healthcare provider	35.4	0.0-87.7	*	13.8	0.0-30.3	*	45.7	11.7-79.7	8	50.0	0.0-100.0	*
Friend	58.5	30.7-86.3	*	16.7	0.0-42.6	*	29.3	8.6-50.0	*	50.0	0.0-100.0	*
Family member	100.0	-	6	80.5	50.0-100.0	9	75.8	59.8-91.8	17	100.0	-	*

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

[†] The number of MSM living with HIV was based upon self-report during the survey interview.

[‡] Responses not mutually exclusive.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.5.4: TB services among those living with HIV by site

Among men who have sex with men (MSM) living with HIV,[†] percentage who had been screened for TB symptoms or had experienced TB symptoms in the 12 months before the survey; among those with TB symptoms in the 12 months before the survey, percentage who received a sputum test or chest x-ray, by site, Zambia MSM BBS 2021

Characteristics	Kitwe (N = 6)			Livingstone (N = 11)			Lusaka (N = 20)			Solwezi (N = *)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Screened for TB symptoms in the 12 months before the survey												
Yes	23.1	0.0 – 52.1	*	80.3	61.3 – 99.3	*	81.8	65.1 – 98.4	15	100.0	-	*
No	76.9	47.9 – 100.0	*	19.7	0.7 – 38.7	*	17.9	1.1 – 34.7	5	0.0	-	0
Experienced TB symptoms (night sweats, cough, fever, or weight loss) in the 12 months before the survey												
Yes	0.0	-	0	55.6	26.9 – 84.2	6	16.8	2.7 – 30.9	*	50.0	0.0 – 100.0	*
No	100.0	-	6	44.4	15.8 – 73.1	5	83.3	69.2 – 97.3	*	50.0	0.0 – 100.0	*
Among those with TB symptoms, percentage who had received a sputum test or chest x-ray, in the 12 months before the survey												
Yes	0.0	-	0	77.8	42.2-100.0	*	61.9	15.8-100.0	*	100.0	-	*
No	0.0	-	0	22.2	0.0-57.8	*	38.1	0.0-84.2	*	0.0	-	0

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

[†] The number of MSM living with HIV was based upon self-report during the survey interview.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

3.6 HEPATITIS, SYPHILIS, AND COINFECTION

Key findings

- Among MSM, HBV infection was similar across sites, 3.4% in Lusaka, 4.8% in Solwezi, and 7.3% in Kitwe and Livingstone, respectively. No HCV infection was found at any site. Syphilis was found among MSM at all sites, 3.4% in Solwezi, 3.8% in Livingstone, 4.0% in Kitwe, and 7.4% in Lusaka (Table 3.6.1)
- Among MSM living with HIV, 6.7% in Lusaka, 14.0% in Kitwe, and 20.6% in Livingstone also had HBV infection. HIV and syphilis co-infection among HIV-positive MSM was 11.7% in Lusaka, 12.5% in Kitwe, 17.8% in Livingstone, and 45.2% in Solwezi. Co-infection with HIV, HBV, and syphilis was uncommon among MSM living with HIV, at just 2.4% in Kitwe (Table 3.6.2).

Table 3.6.1: Hepatitis B, hepatitis C, syphilis, and HIV co-infections by site

Prevalence of hepatitis B virus (HBV), hepatitis C virus (HCV), active syphilis, and HIV co-infections among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 249)			Livingstone (N = 338)			Lusaka (N = 310)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
HBV												
Positive	7.3	1.5-13.2	18	7.3	3.5-11.2	21	3.4	1.6-5.3	11	4.8	1.7-7.9	12
Negative	92.7	86.8-98.6	231	92.7	88.8-96.5	317	96.6	94.7-98.4	299	95.2	92.0-98.3	178
HCV												
Positive	0.0	-	0	0.0	-	0	0.0	-	0	0.0	-	0
Negative	100.0	-	249	100.0	-	339	100.0	-	310	100.0	-	190
Active syphilis												
Yes	4.0	1.0-6.9	13	3.8	1.8-5.8	11	7.4	1.4-13.3	18	3.4	2.3-4.6	5
No	96.0	93.1-98.9	236	96.2	94.1-98.2	328	92.7	86.7-98.6	292	96.7	95.5-97.8	185
HIV/HBV co-infection	1.3	0.0-5.0	*	2.3	0.9-3.6	*	1.4	0.0-3.0	*	0.0	-	0
HIV/syphilis co-infection	1.2	0.0-2.6	*	2.0	0.2-3.9	*	2.8	1.8-3.8	*	2.5	1.6-3.4	*
HIV/HBV/syphilis co-infection	0.2	0.0-0.6	*	0.0	-	0	0.0	-	0	0.0	-	0

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.6.2: Hepatitis B, hepatitis C, syphilis, and HIV co-infections by site among men living with HIV

Prevalence of hepatitis B, hepatitis C, syphilis, and HIV co-infections among HIV-positive men who have sex with men (MSM), by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 34)			Livingstone (N = 35)			Lusaka (N = 69)			Solwezi (N = 9)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
HIV/HBV co-infection	14.0	0.0-46.6	*	20.6	1.9-39.3	*	6.7	0.0-19.3	*	0.0	-	0
HIV/HCV co-infection	0.0	-	0	0.0	-	0	0.0	-	0	0.0	-	0
HIV/syphilis co-infection	12.5	0.0-29.9	*	17.8	0.0-36.1	*	11.7	4.2-19.3	*	45.2	0.0-93.2	2
HIV/HBV/syphilis co-infection	2.4	0.0-8.4	*	0.0	-	0	0.0	-	0	0.0	-	0

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

3.7 SEXUAL BEHAVIOR

Key findings

- The majority of MSM have had vaginal or anal sex with a female partner (range: 61.1%-73.8%). Early sexual debut among young MSM with a female partner ranged from 21.2%-55.7%. The median number of lifetime female partners among MSM was three in Kitwe, Livingstone, and Lusaka and 4 in Solwezi. Use of condoms at last sex with their main female partner among MSM ranged from 46.7%-72.6%, while condom use at last sex with a casual female partner ranged from 55.6%-77.7% (Tables 3.7.1 and 3.7.2).
- Early sexual debut among young MSM with a male partner ranged from 14.7% to 25.3% across sites. The median number of lifetime male partners among MSM was 4 in Livingstone and Solwezi, 5 in Kitwe, and 7 in Lusaka. Among MSM, it was more common for the first sex with a male partner to be transactional (involving giving or receiving money/goods for sex) in Livingstone compared with Solwezi (18.7% vs 6.5%, respectively). Across all sites, it was most common for the first male partner to be a boyfriend/partner or friend/acquaintance/coworker. Use of condoms at last sex with their main male partner among MSM ranged from 42.7%-65.5%, while condom use at last sex with a casual male partner ranged from 60.1%-74.6% (Tables 3.7.1, and 3.7.3).
- Among MSM who reported having anal sex in the 6 months before the survey, more MSM in Kitwe (51.3%) reported having two or more TGW sexual partners compared to Solwezi (17.0%), with Livingstone and Lusaka in between (20.7% and 33.1%). Use of condoms at last sex with their main TGW partner among MSM who had anal sex in the 6 months before the survey ranged from 50.8%-75.7%, while condom use at last sex with a casual TGW partner ranged from 21.4%-74.8% (Tables 3.7.4).
- Some MSM at all four sites had engaged in transactional sex. MSM in Livingstone were more likely to have given money, goods, or services in exchange for sexual services (were clients) in the 6 months before the survey compared with MSM in Solwezi (21.8% vs 9.0%). Engagement in sex work (receiving money, goods, or services in exchange for sex) in the 6 months before the survey among MSM at the four sites ranged from 13.0%-19.1% (Table 3.7.5).
- Among those who had been paid for sex within the 6 months before the survey, the median age when they first engaged in sex work ranged from 18-19 years, and the median length of time they had been engaged in sex work ranged from 2-3.5 years. Across all four sites, most of those engaged in sex work reported exchanging sex for money (range: 81.9%-95.0%); however, most of those engaged in sex work (range: 66.8%-85.3%) said that that was not their only source of income (Table 3.7.5).
- Some of those involved in sex work at each site said that they had been abused or threatened by a client in the 6 months before the survey (range: 7.8%-24.3%); 3.7%-36.3% reported that they had been forced to have sex with a client. In addition, many felt that police would not protect them because of their being engaged in sex work, ranging from 12.0% in Kitwe to 57.7% in Solwezi (Table 3.7.5).

Table 3.7.1: Sexual history by site

Sexual history among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Ever had vaginal/anal sex with a female partner												
Yes	67.2	56.9-77.6	174	68.2	58.3-78.1	226	61.1	52.2-70.1	178	73.8	62.4-85.2	139
No	32.8	22.5-43.1	77	31.8	21.8-41.8	114	38.8	30.0-47.7	133	26.3	14.7-37.8	51

Table 3.7.1: Sexual history by site (continued)

Sexual history among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
Characteristics	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Among those who ever had vaginal/anal sex with a female partner, age, in years, at first vaginal/anal sex with a female partner												
Under 15	20.5	7.3-33.6	35	29.6	20.1-39.0	68	12.9	5.3-20.6	24	26.0	13.1-38.8	32
15-19	52.0	38.3-65.6	92	58.2	47.5-69.0	127	65.9	53.0-78.8	119	63.4	49.8-77.0	88
20-24	23.6	13.4-33.8	29	9.7	5.4-13.9	24	15.2	3.7-26.7	24	9.3	0.7-17.9	*
25 and older	3.9	0.0-7.8	5	2.5	0.9-4.0	6	6.1	0.0-12.6	9	1.5	0.2-2.8	*
Median (IQR)	17 (15-19)			16 (14-18)			17 (16-19)			16 (15-18)		
Early sexual debut (before the age of 15 years) with a female partner reported by young MSM (aged 16-24 years)												
	27.4	11.0-43.8	19	55.7	39.5-72.0	72	21.2	5.9-36.5	22	41.8	24.9-58.8	36
Among those who ever had vaginal/anal sex with a female partner, lifetime number of female partners												
1	27.5	14.3-40.7	45	13.7	4.1-23.3	35	23.4	10.6-36.2	34	13.1	2.6-23.6	18
2	19.4	8.3-30.6	24	17.2	9.7-24.6	38	21.2	10.9-31.4	40	17.0	6.9-27.2	25
3-5	33.8	20.4-47.2	57	43.7	32.3-55.0	93	40.8	27.0-54.6	63	36.2	22.2-50.2	42
6+	19.1	9.9-28.4	39	25.6	15.2-36.0	60	14.7	8.4-21.1	34	33.7	21.0-46.4	52
Median (IQR)	3 (1-5)			3 (2-6)			3 (2-5)			4 (2-10)		
Age, in years, at first sexual intercourse with a male partner												
Under 15	11.5	6.3-16.6	33	12.3	7.4-17.1	45	13.0	8.1-17.9	40	7.8	0.0-16.3	12
15-19	42.9	32.1-53.6	113	57.1	47.6-66.5	188	55.9	46.7-65.2	177	61.2	50.0-72.4	116
20-24	30.5	19.5-41.4	59	21.0	13.2-28.8	75	24.5	16.3-32.7	75	23.9	14.4-33.4	48
25 and older	15.2	6.1-24.3	45	9.8	4.0-15.6	31	6.6	0.9-12.2	17	7.1	2.3-11.9	14
Median (IQR)	18 (16-23)			18 (16-20)			18 (16-20)			18 (17-20)		
Early sexual debut with a male partner report by young MSM												
	25.0	12.4-37.6	28	25.3	16.3-34.4	60	24.1	14.1-34.1	47	14.7	0.0-29.5	20
Among those who have had anal sex with a male partner, lifetime number of male partners												
1-2	29.5	18.3-40.7	48	33.7	24.8-42.7	95	16.9	7.3-26.6	35	31.5	19.5-43.5	50
3-4	28.8	18.1-39.6	64	31.8	21.6-41.9	101	24.7	15.2-34.2	63	36.6	24.9-48.3	65
5-9	21.8	13.8-29.9	62	22.7	14.9-30.6	83	27.5	19.5-35.5	84	19.2	12.3-26.2	38
10+	19.7	11.5-28.0	72	11.7	7.5-16.0	61	30.9	24.1-37.7	128	12.6	7.0-18.3	32
Median (IQR)	5 (3-10)			4 (2-7)			7 (4-19.5)			4 (2-7)		
First sex with male partner transactional†												
Yes	12.2	4.9-19.6	37	18.7	10.4-27.0	59	13.6	7.4-19.8	49	6.5	3.4-9.6	19
No	87.7	80.5-95.0	214	81.3	73.0-89.6	281	86.4	80.2-92.7	262	93.5	90.4-96.6	171
First male sexual partner												
Boyfriend/partner	52.5	41.3-63.6	130	25.6	17.6-33.5	87	38.4	29.4-47.3	118	27.9	17.5-38.3	55
Friend/acquaintance/coworker	38.2	27.2-49.1	94	55.6	45.8-65.5	189	41.3	32.2-50.4	129	66.2	54.7-77.7	116
Relative	3.9	0.0-9.5	11	4.2	1.5-7.0	19	4.9	2.6-7.2	17	1.7	0.0-7.5	*
Stranger	5.5	1.4-9.6	16	10.8	2.6-19.0	34	12.6	4.3-20.9	38	3.9	0.0-9.3	11
Authority figure‡	0.0	-	0	0.0	-	0	2.8	0.8-4.8	8	0.3	0.2-0.4	*

Table 3.7.1: Sexual history by site (continued)

Sexual history among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
First male sexual partner (cont.)												
Prison inmate	0.0	-	0	3.7	0.0-9.1	11	0.0	-	0	0.0	-	0
Neighbor	0.0	-	0	0.0	-	0	0.0	-	0	0.0	-	0
Had both male/female sexual partnerships in the 6 months before the survey												
Yes	45.6	33.1-58.0	97	60.7	49.9-71.5	139	49.9	36.6-63.2	89	76.5	62.8-90.1	121
No	54.2	41.7-66.6	87	39.3	28.6-50.1	99	50.1	36.9-63.2	93	23.6	9.8-37.4	32

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

† Participant reported receiving money or goods from first male sexual partner.

‡ Authority figures include government official, religious leader, teacher, employer, military, police, prison guard.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.7.2: Recent female sexual partners and condom use by site

Recent, within the 6 months before the survey, female sexual partners and condom use among men who have sex with men (MSM) who reported ever having sex with a female partner, by site, Zambia MSM BBS 2021												
	Kitwe (N = 173)			Livingstone (N = 226)			Lusaka (N = 178)			Solwezi (N = 139)		
Characteristics	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Number of female sexual partners in the 6 months before the survey												
0	70.5	59.2-81.8	118	44.3	33.1-55.6	109	51.9	38.6-65.2	97	31.7	17.5-45.9	43
1	17.9	8.0-27.9	30	23.2	11.8-34.6	49	22.1	10.3-34.0	33	28.9	17.9-39.8	35
2	3.7	0.0-8.6	8	13.3	6.2-20.4	24	13.6	4.1-23.1	25	19.0	8.8-29.2	26
3+	7.9	3.6-12.2	17	19.2	11.2-27.2	44	12.1	5.2-19.0	23	20.5	10.4-30.6	35
Median (IQR)	0 (0-1)			1 (0-2)			0 (0-2)			1 (0-2.5)		
Used condom at last sex with main female partner												
Yes	60.9	39.0-82.8	28	72.6	60.5-84.7	82	46.7	25.8-67.6	35	64.3	51.1-77.6	55
No	39.6	17.8-61.4	24	27.4	15.3-39.5	35	53.2	32.5-73.8	44	35.5	22.1-48.9	41
Used condom at last sex (casual female partner)												
Yes	77.7	55.7-99.8	19	67.9	50.8-85.1	52	55.6	26.5-84.8	24	74.9	52.0-97.7	37
No	22.3	0.2-44.3	13	32.1	14.9-49.2	23	44.5	15.2-73.8	17	25.1	2.5-47.7	21
Consistent condom use in the 6 months before the survey (main female partner)												
Always	27.9	5.6-50.1	17	46.4	29.4-63.4	48	16.3	8.7-23.9	15	38.5	21.7-55.4	33
Sometimes	50.8	24.8-76.9	22	41.9	27.8-56.1	54	67.5	53.1-81.9	47	44.3	28.6-60.0	44
Never	21.6	2.5-40.7	13	11.7	1.8-21.5	15	16.1	6.7-25.4	17	17.1	7.6-26.6	19
Consistent condom use in the 6 months before the survey (casual female partner) ²												
Always	23.7	2.0-45.4	10	43.5	23.8-63.3	31	35.0	6.4-63.6	16	39.5	17.6-61.4	20
Sometimes	63.7	33.7-93.8	15	38.9	23.0-54.9	33	55.4	26.4-84.4	20	50.5	28.5-72.6	29
Never	12.6	0.0-32.9	7	17.5	1.0-34.1	11	9.1	0.0-30.0	5	10.4	0.0-33.7	8

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%. Survey weights were utilized for all estimates.

Table 3.7.3: Recent male sexual partners and condom use by site

Male sexual partners and condom use among men who have sex with men (MSM) reporting recent, in the 6 months before the survey anal sex with a male partner, by site, Zambia MSM BBS 2021												
	Kitwe (N = 247)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
Characteristics	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Number of male anal or oral sexual partners in the 6 months before the survey												
1	38.9	27.4-50.5	81	49.2	39.3-59.0	146	28.9	19.9-37.9	74	41.6	29.0-54.2	65
2	24.7	15.8-33.6	45	25.1	16.3-33.9	83	24.3	15.1-33.6	62	23.6	13.1-34.2	48
3	12.3	5.6-19.1	39	12.5	5.1-19.8	46	16.0	8.7-23.3	53	19.7	10.8-28.5	35
4	7.7	0.8-14.7	19	4.6	2.4-6.9	19	6.0	3.7-8.3	22	6.0	0.6-11.5	14
5+	16.4	10.0-22.7	63	8.7	5.3-12.0	46	24.6	18.7-30.5	100	9.1	5.2-12.9	28
Median (IQR)	2 (1-5)			2 (1-3)			3 (2-5)			2 (1-3)		
Used condom at last anal sex with main male partner												
Yes	57.1	45.6-68.7	139	64.7	55.3-74.2	215	42.7	33.2-52.3	128	65.5	53.8-77.2	117
No	42.8	31.2-54.4	108	35.3	25.9-44.7	122	57.2	47.7-66.8	173	34.6	22.7-46.4	72
Used condom at anal sex (casual male partner)												
Yes	63.8	51.0-76.6	92	60.1	46.6-73.5	118	61.7	50.5-73.0	113	74.6	58.0-91.3	82
No	36.1	23.3-48.9	62	40.0	26.5-53.5	76	38.3	27.0-49.6	94	25.3	8.9-41.6	31
Consistent condom use in the 6 months before the survey (main male partner)												
Always	26.1	17.3-35.0	60	34.1	25.0-43.3	111	22.3	14.2-30.3	61	37.2	26.6-47.9	65
Sometimes	53.9	42.4-65.4	143	49.6	39.7-59.5	164	61.1	52.2-70.0	188	52.2	40.6-63.8	101
Never	19.8	7.9-31.7	44	16.3	11.0-21.6	62	16.8	11.3-22.3	52	10.5	0.9-20.0	23
Consistent condom use in the 6 months before the survey (casual male partner)												
Always	22.7	12.7-32.6	37	33.2	18.7-47.7	64	35.8	24.4-47.2	66	41.5	26.9-56.1	44
Sometimes	59.0	46.0-72.0	93	46.8	32.7-60.9	94	62.1	50.6-73.6	133	48.3	31.6-65.1	60
Never	18.1	7.3-29.0	25	20.1	9.4-30.7	36	2.1	1.1-3.1	9	10.2	0.0-27.6	9
* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories The denominator for a characteristic may differ from the site total due to nonresponse or missing data. Due to rounding, estimate total sums may not equal 100.0%. Survey weights were utilized for all estimates.												

Table 3.7.4: Recent transgender sexual partners and condom use by site

Transgender sexual partners among men who have sex with men (MSM) reporting recent, in the 6 months before the survey, anal sex, with a transgender woman, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 66)			Livingstone (N = 34)			Lusaka (N = 28)			Solwezi (N = 51)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Number of TGW sexual partners in the 6 months before the survey (aside from main partner)												
0	13.7	2.5-24.9	11	38.5	12.5-64.5	15	66.0	36.3-95.6	15	60.0	37.1-82.9	27
1	35.1	17.6-52.6	16	40.8	6.4-75.1	10	0.7	0.0-2.0	*	22.5	0.0-46.0	9
2+	51.3	32.4-70.3	39	20.7	4.2-37.3	9	33.1	3.8-62.4	*	17.0	7.6-26.3	15
Median (IQR)	2 (1-4)			1 (0-1.75)			0 (0-2)			0 (0-2)		
Used condom at last anal sex with main TGW partner												
Yes	52.3	33.3-71.3	38	50.8	21.5-80.1	21	52.2	11.9-92.5	16	75.7	58.4-93.0	36
No	48.0	29.1-66.9	28	49.2	19.9-78.5	13	47.8	7.0-88.6	12	24.3	6.9-41.6	17

Table 3.7.4: Recent transgender sexual partners and condom use by site (continued)

Transgender sexual partners among men who have sex with men (MSM) reporting recent, in the 6 months before the survey, anal sex, with a transgender woman, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 66)			Livingstone (N = 34)			Lusaka (N = 28)			Solwezi (N = 51)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Used condom at last anal sex with a casual TGW partner												
Yes	62.3	43.2-81.4	30	55.7	21.7-89.6	11	21.4	0.0-52.2	5	74.8	52.2-97.5	17
No	37.2	18.2-56.2	24	44.3	10.4-78.3	8	77.9	49.8-100.0	8	25.3	2.5-48.1	7
Consistent condom use in the 6 months before the survey with main TGW partner												
Always	25.8	9.9-41.7	*	16.6	3.0-30.1	8	25.2	0.0-54.9	*	27.3	5.2-49.5	15
Sometimes	64.1	47.2-81.1	43	50.6	20.4-80.7	20	73.4	43.0-100.0	18	59.6	35.5-83.6	30
Never	10.4	0.9-19.9	*	32.9	5.6-60.2	6	1.0	0.0-2.9	*	13.5	0.0-28.7	8
Consistent condom use in the 6 months before the survey with a casual TGW partner												
Always	19.2	4.2-34.2	11	14.2	2.1-26.4	*	15.9	0.0-36.2	*	45.0	0.0-94.1	*
Sometimes	68.5	51.2-85.7	39	48.5	10.2-86.8	10	75.4	38.8-100.0	7	53.8	7.6-100.0	14
Never	12.1	2.2-21.9	5	37.3	5.7-68.9	*	7.8	0.0-26.1	*	1.3	0.0-3.5	*

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.7.5: Transactional sex and sex work by site

Transactional sex (giving or receiving money/goods/services for sex) and sex work (receiving only) experiences among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Transactional sex												
Have given money, goods, or services for sex in the 6 months before the survey												
Yes	19.4	10.3-28.5	57	21.8	13.3-30.2	80	13.2	9.4-17.0	51	9.0	5.4-12.6	23
No	80.5	71.5-89.6	194	78.2	69.8-86.7	260	86.9	83.1-90.6	260	91.0	87.4-94.6	167
Have received money, goods, or services for sex in the 6 months before the survey (engaged in sex work)												
Yes	17.0	11.1-23.0	49	19.1	10.5-27.7	65	19.0	12.6-25.4	69	13.0	8.4-17.7	31
No	82.9	76.9-88.9	202	80.9	72.3-89.5	275	81.0	74.5-87.4	242	87.0	82.4-91.7	159
Sex work												
Age, in years, when first received money/goods for sex (engaged in sex work), median (IQR)												
	19 (17-24)			18 (17-20)			18 (16.25-20)			19 (17-22)		

Table 3.7.5: Transactional sex and sex work by site (continued)

Transactional sex (giving or receiving money/goods/services for sex) and sex work (receiving only) experiences among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Among those engaging in sex work in the six months before the survey:												
Main reason for first engaging in sex work												
Needed money, goods, or services to help the family	9.0	0.0-18.5	13	61.6	33.9-89.3	44	27.3	4.3-50.4	26	44.1	14.7-73.6	10
Needed money to pay a debt	3.8	0.6-6.9	*	10.4	0.0-34.6	*	20.1	0.0-40.6	9	11.5	0.0-23.2	4
Was forced	18.2	1.7-34.6	*	3.6	0.0-9.6	*	3.7	0.0-10.5	2	14.9	0.0-40.9	2
Like to do it/pleasure/self-esteem	64.7	43.8-85.7	27	16.4	0.0-41.1	7	48.2	23.8-72.6	30	16.8	0.0-34.6	8
Friends/family were doing it	3.4	0.0-7.8	*	4.0	0.0-8.9	*	0.3	0.0-0.5	1	6.6	0.0-28.9	*
Other	1.0	0.0-4.9	*	4.0	0.0-8.5	*	0.0	-	0	6.1	0.0-17.0	*
Years in sex work, median (IQR)	2 (1-4)			3 (1-5)			3.5 (2-5.75)			3 (1-5)		
What did they receive in exchange for sex†												
Money	90.0	79.3-100.0	46	95.0	89.5-100.0	59	90.7	83.4-98.0	65	81.9	73.7-90.1	28
Goods	28.5	12.9-44.2	22	23.7	7.7-39.7	22	42.3	20.5-64.1	31	50.1	25.1-75.1	13
Services	15.8	6.8-24.7	12	4.3	0.2-8.5	*	11.3	0.0-25.8	7	15.3	0.0-36.9	*
Other	0.0	-	0	0.0	-	0	0.0	-	0	2.0	0.0-5.7	*
Sex work venues†												
School/university campus	4.5	0.0-12.1	*	11.1	0.0-23.2	5	8.1	0.0-25.1	3	8.2	0.0-16.6	*
Concert, club, bar, restaurant	71.4	51.5-91.3	33	59.5	38.5-80.5	42	59.0	36.3-81.8	37	61.9	34.7-89.1	22
Private place	4.8	0.1-9.5	*	17.9	0.0-41.4	11	1.9	0.8-3.0	*	2.8	0.0-6.4	*
Hotel/lodge	23.7	7.6-39.7	7	11.6	0.0-33.2	8	0.2	0.0-0.4	*	15.4	0.0-35.0	7
Religious organization	0.0	-	0	0.2	0.0-0.5	*	0.0	-	0	1.5	0.0-3.6	*
Spa/fitness center/beauty salon	0.0	-	0	1.5	0.0-4.2	*	0.0	-	0	3.2	0.0-6.8	*
Internet	12.8	0.5-25.0	11	18.9	7.5-30.4	16	35.4	14.8-56.0	40	57.1	30.4-83.8	17
Street	12.7	0.0-32.9	7	18.7	7.4-29.9	13	9.8	2.7-16.9	7	9.0	0.0-22.3	*
Are they able to refuse a client?												
Yes	80.4	67.6 – 93.1	43	80.5	67.6 – 93.4	51	85.3	67.3 – 100.0	58	90.6	74.7-100.0	*
No	19.7	7.0 – 32.5	6	19.5	6.6 – 32.4	14	15.0	0.0 – 33.8	10	9.3	0.0 – 25.1	*
Who controls how much they are paid sex?												
Self	69.4	50.7 – 88.1	26	67.5	43.4 – 91.5	49	82.4	61.9 – 100.0	59	95.1	89.4-100.0	*
Someone else	30.7	12.0 – 49.5	23	32.5	8.5 – 56.6	16	17.8	0.0 – 38.5	9	4.9	0.0 – 10.6	*
Who controls services they provide to client?												
Self	65.1	48.5 – 81.8	38	57.3	33.9 – 80.7	41	90.1	74.3 – 100.0	59	76.6	46.4-100.0	24
Someone else	35.1	18.4 – 51.8	11	42.7	19.3 – 66.1	24	10.0	0.0 – 26.0	9	23.5	0.0 – 54.4	6
Who controls where to have sex?												
Self	35.0	12.8 – 57.2	20	42.7	17.5 – 67.9	28	37.0	11.7 – 62.3	18	42.9	18.1 – 67.7	*
Client	16.5	2.8 – 30.2	*	25.7	9.7 – 41.7	14	42.8	18.8 – 66.8	32	12.6	0.0 – 29.2	*
Both self and the client	34.8	14.1 – 55.6	20	31.6	8.4 – 54.8	23	17.9	8.5 – 27.3	*	44.7	18.7 – 70.7	14
Pimp	14.0	9.2 – 18.8	*	0.0	-	0	2.0	0.0 – 7.0	*	0.0	-	0

Table 3.7.5: Transactional sex and sex work by site (continued)

Transactional sex (giving or receiving money/goods/services for sex) and sex work (receiving only) experiences among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Is sex work their primary source of income												
Yes	15.2	0.1 – 30.3	11	25.4	10.4 – 40.3	19	33.1	8.0 – 58.2	17	16.3	0.0 – 32.8	7
Were they abused or threatened by client in the 6 months before they survey?												
Yes	8.2	0.0 – 16.9	7	9.2	0.0 – 30.0	7	24.3	3.0 – 45.7	19	7.8	0.0 – 17.2	*
No	91.7	82.9 – 100.0	42	90.8	70.0 – 100.0	58	75.5	54.2 – 96.8	49	92.4	82.9–100.0	*
Were they forced to have sex by client in the 6 months before survey?												
Yes	3.7	0.0 – 7.5	7	25.4	4.0 – 46.7	17	36.3	9.3 – 63.3	24	19.7	1.6 – 37.9	6
No	96.3	92.5 – 100.0	42	74.6	53.3 – 96.0	48	64.2	36.9 – 91.4	44	80.0	61.8 – 98.2	25
Did they feel that the police refused to protect them due to their being involved in sex work?												
Yes	12.0	0.0 – 24.5	10	17.9	0.0 – 41.6	12	40.2	13.5 – 66.9	25	57.7	31.0 – 84.3	15
No	87.6	75.0 – 100.0	38	82.1	58.4 – 100.0	53	60.1	33.8 – 86.4	43	43.0	16.2 – 69.8	16

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

† Responses not mutually exclusive.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

3.8 SEXUALLY TRANSMITTED INFECTIONS

Key findings

- MSM in Lusaka (30.0%) were most likely to report having one or more symptoms of STIs compared with 20.9% in Solwezi, 20.1% in Livingstone, and 9.4% in Kitwe (Table 3.8).
- Among those who reported STI symptoms, only 37.3% in Kitwe sought healthcare, compared to 58.4% in Livingstone, 59.7% in Solwezi, and 64.9% in Lusaka. However, a greater proportion said that they sought treatment of some sort, ranging from 59.2%–72.7% (Table 3.8).

Table 3.8: Sexually transmitted infections by site

Self-reported sexually transmitted infection (STI) symptoms and diagnoses among men who have sex with men (MSM), by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 309)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Abnormal discharge from penis												
Yes	5.7	1.3–10.3	19	13.0	9.5–16.5	43	14.4	10.6–18.2	44	7.0	1.7–12.4	16
No	94.2	93.2–95.4	232	87.0	85.9–88.2	297	85.6	84.3–86.9	265	93.0	91.5–94.5	174
Ulcer/sore on or near penis												
Yes	2.3	0.0–6.4	6	6.4	3.5–9.3	21	2.9	0.0–6.4	9	6.3	1.4–11.3	13
No	97.7	97.5–97.9	245	93.6	92.9–94.3	319	97.1	96.5–97.7	302	93.6	92.3–95.1	177

Table 3.8: Sexually transmitted infections by site (continued)

Self-reported sexually transmitted infection (STI) symptoms and diagnoses among men who have sex with men (MSM), by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 309)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Ulcer/sore on or near anus												
Yes	3.1	0.0-6.9	7	1.0	0.0-3.5	*	5.8	1.9-9.7	28	5.8	0.9-10.6	14
No	96.9	95.8-97.8	244	99.0	98.7-99.3	*	94.2	93.3-95.1	282	94.3	92.8-95.8	176
Abnormal discharge from anus												
Yes	1.2	0.0-5.3	5	0.7	0.0-3.0	*	5.0	1.0-8.9	17	2.3	0.0-6.0	5
No	98.8	98.5-99.1	246	99.3	99.1-99.4	*	95.1	94.2-96.0	294	97.7	97.1-98.2	185
Pain on urination												
Yes	3.9	0.0-7.9	15	13.5	10.2-16.7	49	19.0	15.3-22.6	69	14.5	9.6-19.3	31
No	96.1	95.5-96.7	235	86.5	85.2-87.8	291	81.0	79.6-82.5	242	85.4	83.5-87.5	159
Anal warts												
Yes	0.3	0.0-4.3	*	0.9	0.0-3.4	*	2.6	0.0-6.7	6	0.3	0.0-4.1	*
No	99.7	99.5-99.9	*	99.1	98.8-99.5	*	97.4	97.2-97.6	305	99.7	99.5-99.8	*
Reported one or more STI symptoms												
Yes	9.4	4.9-13.7	32	20.1	16.8-23.4	69	30.0	26.9-33.3	106	20.9	16.1-25.7	47
No	90.6	89.3-92.0	219	79.9	78.4-81.4	271	70.0	68.0-71.8	205	79.1	76.7-81.5	143
Among those who experienced symptoms within the 12 months before the survey												
Sought healthcare for STI symptoms												
Yes	37.3	29.6-45.0	16	58.4	55.4-61.4	44	64.9	63.1-66.6	65	59.7	53.1-66.7	28
No	62.7	55.4-70.0	16	41.4	37.8-45.3	25	35.1	33.1-37.2	41	40.1	27.5-52.7	19
Sought treatment for STI symptoms												
Yes	59.2	51.8-66.6	21	72.7	70.3-75.2	53	66.4	64.8-67.9	69	72.3	65.4-78.6	34
No	40.8	33.0-48.7	11	27.4	23.7-30.7	16	33.6	31.5-35.8	36	27.9	15.1-40.8	13
Among those who sought treatment, location where treatment was sought												
Public clinic/hospital	46.4	36.4-56.4	14	60.2	52.4-67.5	31	65.6	60.2-71.0	38	32.8	15.1-50.0	12
Private clinic/hospital	26.5	15.5-37.5	5	13.4	1.2-24.8	9	13.2	5.0-21.5	18	34.5	24.6-43.8	10
Pharmacy	10.8	0.0-23.3	*	15.4	0.5-29.4	6	18.8	12.1-25.6	10	23.7	6.1-41.9	*
KP center/organization	0.0	-	0	6.4	0.0-17.1	*	1.3	0.0-10.8	*	0.0	-	0
Other	16.3	0.0-33.0	*	5.3	0.0-12.5	*	1.0	0.0-10.7	*	9.1	0.0-26.5	*
Abstained from sex or always used condoms during STI symptoms												
Yes	93.0	91.1-94.9	*	90.2	88.2-91.9	61	87.8	86.8-88.9	93	97.6	96.5-98.7	*
No	7.0	0.0-19.6	*	8.5	4.4-12.2	7	12.2	9.9-14.5	13	2.4	0.0-5.2	*
Diagnosed with STI in the 12 months before the survey												
Yes	3.8	0.0-8.6	16	9.8	6.2-13.3	34	16.3	12.5-20.0	53	8.3	3.0-13.6	19
No	96.2	95.5-96.9	235	90.2	89.2-91.2	306	83.8	82.4-85.1	258	91.8	90.5-93.1	171

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

3.9 ALCOHOL AND DRUG USE

Key findings

- Among MSM, those in Lusaka (72.7%) were most likely to be alcohol dependent followed by Livingstone (60.8%), Solwezi (52.0%), and Kitwe (27.7%; Table 3.9.1).
- MSM in Solwezi (42.3%) and Livingstone (41.0%) were most likely to have used non-injection drugs in the 6 months before the survey, followed by MSM in Kitwe (29.1%) and Lusaka (19.0%). Tobacco and marijuana were the mostly commonly reported drugs used by MSM across all four sites. Marijuana use was more common in Kitwe and Solwezi (78.3% and 72.7%, respectively) than in Livingstone (59.7%), and was least common in Lusaka (43.5%; Table 3.9.2).
- Use of different drugs such as cocaine, Blue Mash and Atan was less frequently reported, although use of other drugs than listed in the survey questionnaire appeared to be common in Livingstone (25.2%), Kitwe (39.1%), and Solwezi (46.9%) but was less so in Lusaka (7.1%). Injection drug use was much less common among MSM across all sites (range: 0.4%-7.2%; Table 3.9.2).

Table 3.9.1: Alcohol use by site

Alcohol use among men who have sex with men (MSM) by site, Zambia MSM BBS 2021						
Site	Alcohol dependence ¹					
	Yes			No		
	%	95% CI	n	%	95% CI	n
Kitwe (N = 164)	27.7	23.7-31.5	54	72.3	68.5-76.3	110
Livingstone (N = 182)	60.8	57.3-62.8	118	39.2	37.2-42.7	64
Lusaka (N = 176)	72.7	70.4-75.3	126	27.3	24.7-29.6	50
Solwezi (N = 115)	52.0	47.4-55.9	65	48.0	44.1-52.6	50

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

¹Alcohol Use Disorders Identification Test (AUDIT) score of ≥ 15 . The range of possible scores is from 0 to 40 where 0 indicates an abstainer who has never had any problems from alcohol. A score of 1 to 7 suggests low-risk consumption according to World Health Organization (WHO) guidelines. Scores from 8 to 14 suggest hazardous or harmful alcohol consumption and a score of 15 or more indicates the likelihood of alcohol dependence (moderate-severe alcohol use disorder). <https://auditscreen.org/about/scoring-audit>.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.9.2: Non-injection and injection drug use by site

Non-injection and injection drug use among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 250)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Used drugs in the 6 months before the survey (non-injection)												
Yes	29.1	25.2-32.9	84	41.0	38.4-43.4	142	19.0	15.3-22.7	68	42.3	38.4-46.3	79
No	70.9	67.1-74.8	166	59.0	56.6-61.6	198	81.0	77.3-84.7	243	57.7	53.7-61.6	111
Used drugs in the 6 months before the survey (non-injection, non-tobacco)												
Yes	26.3	22.3-30.3	72	30.2	27.3-33.1	110	9.5	5.5-13.4	39	35.3	30.8-39.9	66
No	73.7	69.7-77.7	178	69.8	66.9-72.7	230	90.5	86.6-94.5	272	64.7	60.1-69.2	124
Ever injected drugs with a syringe												
Yes	0.4	0.0-4.5	*	7.2	3.4-11.0	24	2.9	0.0-6.4	8	4.5	0.7-8.4	9
No	99.6	95.5-1.0	*	92.8	89.0-96.6	316	97.1	93.6-1.0	303	95.5	91.6-99.3	181

Table 3.9.2: Non-injection and injection drug use by site (continued)

Non-injection and injection drug use among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 250)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Of those who had ever injected drugs, injected in the 6 months before the survey												
Yes	87.4	84.4-97.0	*	51.9	35.1-68.5	12	15.3	7.0-23.6	*	27.3	0.0-64.9	*
No	12.6	3.0-15.6	*	48.1	31.5-64.9	12	84.7	76.4-93.0	*	72.7	35.1-1.0	*
Among those who injected in the 6 months before the survey, shared a needle or syringe												
Yes	100.0	-	*	50.9	24.1-79.2	7	0.0	-	0	47.4	4.9-90.0	*
No	0.0	-	0	49.1	20.8-75.9	5	100.0	-	*	52.6	10.0-95.1	*
Type of drugs used†												
Glue (sniffing)	8.5	1.2-16.0	*	2.2	0.3-3.8	*	4.1	0.0-12.2	*	2.0	0.0-7.8	*
Tobacco	36.6	30.6-42.5	36	54.6	46.7-62.0	79	80.3	77.8-82.9	54	74.4	70.8-78.0	59
Petrol (sniffing)	0.4	0.0-6.9	*	4.7	0.0-11.1	7	0.1	0.0-7.6	*	3.9	0.0-9.7	*
Marijuana (daga)	78.3	74.8-81.6	60	59.7	50.1-67.1	92	43.5	37.8-49.1	33	72.7	69.5-76.1	58
Heroin (nono)	1.6	0.0-8.3	*	7.5	0.7-14.2	11	1.4	0.0-9.3	*	7.0	1.4-12.2	7
Cocaine	1.0	0.0-8.0	*	3.4	0.6-5.8	6	6.1	0.0-14.0	6	11.0	3.5-18.3	9
Amphetamine	0.0	0.0-0.0	0	5.8	0.0-13.8	8	3.7	0.0-12.0	*	2.5	0.0-8.3	*
Mandrax	0.3	0.0-7.3	*	1.7	0.0-4.7	*	0.5	0.0-8.4	*	4.7	0.0-11.8	5
Cocaine (Rock)	1.0	0.0-7.7	*	3.4	0.7-5.8	6	6.1	0.0-14.0	6	11.0	3.7-18.1	9
Blue Mash	0.6	0.0-7.4	*	16.5	7.3-26.3	22	1.0	0.0-8.9	*	2.6	0.0-8.2	*
Atan	15.8	9.3-22.2	15	2.2	0.0-4.7	*	0.0	0.0-0.0	0	1.5	0.0-7.8	*
Other	39.1	33.2-44.9	35	25.2	17.0-34.4	32	7.1	0.0-14.7	8	46.9	41.7-51.9	39

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

† Responses not mutually exclusive.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

3.10 HIV KNOWLEDGE AND OUTREACH SERVICES

Key findings

- MSM in Livingstone (65.0%), Lusaka (62.8%), and Solwezi (65.6%) had higher comprehensive knowledge of HIV than MSM in Kitwe (52.9%). Within each site, MSM aged 25 year or older had higher comprehensive knowledge of HIV compared with MSM under the age of 25 years (Table 3.10.1).
- MSM at most of the sites thought that, when performed without a condom, vaginal sex put them at greater risk of HIV acquisition than having anal sex, except for the MSM in Lusaka; 53.0% of MSM in Lusaka said that anal sex was the riskiest sex act. In addition, only 9.0%-23.9% of MSM were aware that receptive anal sex put them at greater risk of HIV acquisition than insertive anal sex (most thought they were equally risky; Table 3.10.1).
- Interaction with peer educators was common across sites, ranging from 62.8%-79.9%. The most received item from peer educators was male condoms for all sites (range: 65.5%-78.6%). At the last encounter with a peer educator among MSM, the most reported service received was counseling on risk in Lusaka (80.3%) and Solwezi (77.0%), whereas in Kitwe (60.4%) and Livingstone (72.1%), HIV testing was the most reported service received. MSM in Livingstone and Solwezi were more likely to disagree that available HIV messages apply to MSM compared with MSM in Kitwe and Lusaka (68.5% and 46.0% vs 11.1% and 12.1%, respectively). However, at all sites, most reported that the HIV messages they received “were not about MSM” (range: 65.2%-84.4%; Table 3.10.2).

Table 3.10.1: HIV knowledge and attitudes by site

Knowledge, opinions, and attitudes toward HIV/AIDS by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Correctly responded to: Can the risk of HIV transmission be reduced by having sex with only one uninfected sex partner who has no other partners?												
Correct	75.1	73.6-77.0	199	93.6	92.8-94.5	316	86.0	85.0-87.1	279	91.3	90.0-92.6	172
Incorrect	24.9	20.5-29.0	52	6.3	3.4-9.3	24	13.9	10.1-17.8	32	8.7	4.1-13.2	18
Correctly responded to: Can a person reduce the risk of getting HIV by using a condom every time they have sex?												
Correct	85.5	84.4-86.8	217	94.9	94.2-95.5	324	92.1	91.5-92.7	291	97.2	96.6-97.7	182
Incorrect	14.5	9.8-19.1	34	5.1	2.3-8.0	16	7.9	4.4-11.5	20	2.8	0.0-6.7	8
Correctly responded to: Can a healthy-looking person have HIV or AIDS?												
Correct	82.5	81.2-83.7	221	88.8	87.8-89.7	304	92.0	91.2-92.9	290	93.2	92.0-94.6	176
Incorrect	17.5	13.1-22.0	30	11.2	8.0-14.4	36	7.9	4.1-11.8	21	6.7	2.8-10.6	14
Correctly responded to: Can a person get HIV from mosquito bites?												
Correct	80.4	79.0-81.9	204	80.5	79.0-82.0	273	84.8	83.7-85.9	260	77.5	75.2-80.2	146
Incorrect	19.5	15.2-23.8	47	19.5	16.2-22.8	67	15.3	11.4-19.2	51	22.4	17.5-27.1	44
Correctly responded to: Can a person get HIV by sharing food with someone who is infected?												
Correct	96.4	95.7-97.0	235	93.3	92.7-94.0	316	95.0	94.2-95.8	291	95.4	94.1-96.7	179
Incorrect	3.6	0.0-8.2	16	6.7	2.8-10.5	24	5.0	1.4-8.7	20	4.6	0.9-8.3	11
Comprehensive knowledge of HIV†												
Yes	52.9	50.3-55.2	140	65.0	62.9-67.0	221	62.8	60.8-64.9	195	65.6	62.5-68.6	123
No	47.3	44.2-50.3	111	35.0	32.3-37.7	119	37.3	34.0-40.2	116	34.5	30.1-38.6	67
Comprehensive knowledge of HIV (among those under 25 years of age)†												
Yes	42.7	40.5-45.7	54	62.7	60.3-65.1	136	56.9	54.6-59.2	107	60.9	54.9-66.8	77
No	57.3	54.4-60.4	52	37.3	34.4-40.1	80	43.1	40.4-45.7	74	39.1	30.9-47.3	51
If a condom is not used, what kind of sex puts you most at risk for HIV?												
Fingering/hand job	1.3	0.0-5.3	*	1.2	0.0-3.7	*	3.9	0.4-7.4	9	4.3	0.6-8.1	9
Oral sex	4.1	0.1-8.0	*	3.3	0.7-5.9	*	12.1	8.4-16.0	30	8.0	4.2-11.8	14
Vaginal sex	59.1	55.8-62.0	97	73.7	71.9-75.4	240	30.9	27.8-34.1	87	63.0	59.9-66.3	113
Anal sex	35.7	32.4-38.8	90	21.8	18.7-24.9	84	53.0	50.7-55.2	179	24.7	19.7-29.3	48
If a condom is not used, what kind of anal sex puts you most at risk for HIV?												
Insertive anal sex	26.4	22.5-30.9	63	12.6	9.3-16.0	43	8.3	4.4-12.4	*	10.5	6.0-15.0	22
Receptive anal sex	21.4	17.2-25.5	42	23.9	20.9-26.9	82	13.9	10.0-18.1	38	9.0	5.3-12.6	17
Both have the same risk	45.4	41.9-48.7	120	61.3	59.1-63.4	206	77.3	75.7-78.6	248	77.6	75.5-79.9	141
Both have no risk	6.8	2.3-11.2	9	2.2	0.0-4.8	7	0.5	0.0-4.1	*	2.8	0.0-6.6	5

Table 3.10.1: HIV knowledge and attitudes by site (continued)

Knowledge, opinions, and attitudes toward HIV/AIDS by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Compared to vaginal sex, how important is it to use condoms for anal sex?												
Less important	13.6	9.1-18.1	36	20.6	17.3-23.9	64	2.5	0.0-6.1	8	6.6	2.8-10.4	13
Equally important	67.3	64.9-69.7	166	43.1	40.7-45.6	155	39.8	36.8-42.7	125	37.1	32.9-41.1	70
More important	19.2	14.7-23.5	38	36.2	33.3-39.1	118	57.7	55.4-60.2	175	56.3	52.6-59.9	99
Does male circumcision alone reduce the risk, or chance, of a man getting HIV completely?												
Protects completely	18.9	14.8-23.0	46	3.7	1.0-6.5	14	6.1	2.5-9.8	22	8.2	3.3-13.3	17
Protects somewhat	45.9	43.1-49.1	105	58.3	56.2-60.7	186	43.9	41.2-46.6	141	84.5	82.5-86.5	155
Not at all	35.0	31.4-38.6	84	37.9	35.3-40.5	139	49.8	47.1-52.7	144	7.2	3.4-11.0	15
Men who are circumcised do not need to use condoms to protect themselves from HIV.												
Agreed	8.7	4.3-13.0	22	2.8	0.0-6.5	12	1.7	0.0-5.2	6	2.4	0.0-6.2	*
Disagreed	91.3	90.2-92.4	214	97.1	96.6-97.7	325	98.3	98.1-98.5	305	97.6	96.9-98.3	*
Men who are circumcised can have multiple sexual partners and not be at risk for HIV.												
Agreed	12.2	7.9-16.6	26	1.9	0.0-4.6	8	2.0	0.0-5.5	6	3.8	0.1-7.6	8
Disagreed	87.7	86.5-89.0	211	98.1	97.5-98.6	331	98.0	97.5-98.4	304	96.2	95.1-97.2	181
I am not as careful about HIV and sex now because there is better treatment for AIDS.												
Agreed	31.3	27.3-35.2	63	21.1	17.8-24.5	69	35.5	32.6-38.5	122	18.5	13.9-23.0	38
Disagreed	68.7	66.7-70.7	167	78.8	77.5-80.3	268	64.6	62.5-66.7	185	81.5	79.3-83.8	144

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

†According to the UNAIDS definition, see https://dhsprogram.com/data/Guide-to-DHS-Statistics/Comprehensive_Knowledge_about_HIV_Total_and_Youth.htm.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.10.2: Outreach services and HIV information by site

Outreach services and HIV information by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 309)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Ever received HIV messaging from peer educator/outreach worker												
Yes	62.8	60.4-65.2	167	79.9	78.4-81.4	270	69.2	67.5-70.9	221	63.2	59.9-66.5	121
No	37.2	33.3-41.1	84	20.1	16.9-23.4	70	30.8	27.6-34.2	88	36.7	32.8-40.9	69
Of those who had received HIV messaging from a peer educator/outreach worker, received messaging												
0-3 months before the survey	35.6	32.7-38.7	60	43.3	40.7-45.9	117	37.9	35.1-40.5	85	39.8	35.6-44.1	53
4-6 months before the survey	20.6	17.2-24.5	34	18.4	15.4-21.5	55	13.6	10.4-16.9	46	16.1	11.5-20.8	21

Table 3.10.2: Outreach services and HIV information by site (continued)

Outreach services and HIV information by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 309)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Of those who had received HIV messaging from a peer educator/outreach worker, received messaging (cont.)												
7-12 months before the survey	30.0	26.7-33.5	47	16.9	13.8-20.0	43	27.5	23.9-30.8	49	18.8	14.5-23.2	22
Longer than a year before the survey	13.5	10.1-17.2	25	21.4	18.2-24.5	55	21.2	17.6-24.6	40	25.2	20.9-29.6	25
Of those who had received HIV messaging from a peer educator/outreach worker, items received at last encounter†												
Nothing	30.8	27.0-34.4	44	22.5	19.4-25.6	58	16.0	12.5-19.3	33	14.0	9.4-18.6	18
Male condoms	65.5	63.3-67.6	112	67.0	65.3-68.7	186	78.6	77.0-80.3	169	77.5	75.0-80.0	91
Female condoms	0.1	0.0-3.8	*	3.7	1.5-5.8	7	0.6	0.0-4.0	*	1.0	0.0-5.9	*
Lubricants	14.9	11.5-18.2	36	16.0	12.9-19.1	48	40.4	37.4-43.0	109	19.7	15.0-24.3	24
Pamphlet or brochure	5.2	1.7-8.7	13	16.2	13.0-19.3	44	24.7	21.2-28.1	46	27.2	22.9-31.4	30
Medicines	2.8	0.0-6.4	*	2.8	0.0-6.1	7	5.9	2.3-9.4	25	3.7	0.0-8.7	6
HIV self-test	3.6	0.0-7.2	7	8.1	5.1-11.1	24	20.8	17.5-24.0	43	33.7	29.3-37.8	36
Voucher for HIV self-test	1.4	0.0-4.9	*	0.6	0.0-2.9	*	7.5	3.8-11.2	13	10.3	5.5-15.0	12
Offer to escort to a health facility	0.0	-	0	0.3	0.0-2.6	*	10.6	7.3-14.0	18	4.4	0.6-8.2	6
Of those who had received HIV messaging from a peer educator/outreach worker, services received at last encounter†												
Nothing	33.3	30.0-36.4	48	14.6	11.4-17.7	43	3.5	0.3-6.7	12	7.1	3.3-10.8	8
HIV testing	60.4	58.1-62.3	105	72.1	70.2-73.9	190	73.9	72.1-75.7	163	68.6	65.4-71.6	87
STI testing	2.9	0.0-6.7	5	12.4	9.2-15.6	37	25.1	21.6-28.3	48	26.2	21.8-30.6	30
STI screening	3.0	0.0-6.3	5	9.4	6.1-12.6	25	14.1	10.7-17.6	30	20.0	15.3-24.5	24
TB screening	0.7	0.0-4.1	*	5.6	3.4-7.7	16	8.9	5.7-12.4	15	8.5	4.8-12.2	13
Referral	0.1	0.0-3.7	*	0.6	0.0-2.8	*	8.1	4.9-11.4	14	7.1	3.2-11.0	7
Training on condom use	4.8	0.8-8.6	11	28.6	25.5-31.6	78	50.9	48.1-53.7	102	68.0	65.3-70.8	83
Counseling on risk	3.6	0.1-7.2	8	32.4	29.5-35.3	93	80.3	78.7-81.9	174	77.0	74.0-79.9	90
Other	0.3	0.0-3.9	*	1.5	0.0-3.7	*	1.0	0.0-4.3	*	2.3	0.0-7.1	*
Available HIV messages apply to MSM												
Agree	88.9	87.6-90.3	197	31.5	28.6-34.4	108	87.9	86.7-89.1	267	54.0	50.7-57.3	101
Disagree	11.1	6.9-15.2	28	68.5	66.7-70.4	228	12.1	8.4-15.8	40	46.0	41.9-49.9	84
Among those who did not agree that messages apply to MSM, reasons why they do not apply†												
They are not about MSM	84.4	83.1-86.5	37	66.4	64.5-68.3	149	84.1	82.1-86.6	30	65.2	62.5-67.8	54
They are not about anal sex	55.4	52.8-57.6	21	35.7	33.3-38.2	81	29.5	24.7-34.3	11	61.0	58.5-63.8	49
There is a woman in the message/picture	8.0	5.3-10.4	*	3.8	1.7-5.9	9	2.7	0.0-8.7	*	41.9	38.2-45.4	33
They are about pregnant women	0.0	-	0	0.0	-	0	0.0	-	0	24.4	21.3-28.0	18
MSM is against the law	0.0	-	0	7.4	4.4-10.3	15	0.0	-	0	5.9	2.1-9.5	*
Other	5.1	2.4-6.9	*	3.6	1.5-5.7	9	0.0	-	0	0.0	-	0

Table 3.10.2: Outreach services and HIV information by site (continued)

Outreach services and HIV information by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 309)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Preferred source(s) to receive HIV information†												
Radio	49.2	46.4-52.2	126	49.4	46.9-51.9	160	38.9	36.1-42.0	118	51.6	47.9-55.5	95
Television	12.8	8.3-17.2	42	25.0	21.8-28.1	78	18.0	14.6-21.4	72	16.0	11.3-20.7	30
Newspaper	3.0	0.0-7.6	12	3.0	0.0-6.8	11	2.0	0.0-5.3	6	2.7	0.0-6.4	7
Internet	7.3	2.5-11.7	23	24.2	21.0-27.3	81	28.2	24.7-31.4	91	29.2	24.6-33.7	55
Mobile Apps	3.1	0.0-7.3	11	4.1	0.7-7.5	18	13.3	9.6-16.9	44	7.9	2.8-13.0	17
Telephone/SMS/WhatsApp	0.2	0.0-4.2	*	1.7	0.0-5.7	7	5.5	2.1-8.8	22	2.4	0.0-6.2	*
Brochure	5.2	0.4-10.0	9	8.0	4.4-11.5	27	8.8	5.1-12.5	32	1.4	0.0-5.1	*
Friends	12.5	8.1-17.2	29	22.5	19.3-25.8	76	19.7	16.1-23.3	61	21.9	17.1-26.8	39
Family	0.8	0.0-4.9	*	6.7	3.0-10.5	21	6.2	2.7-9.8	27	4.6	0.7-8.4	9
Sex partners	5.2	1.1-9.2	18	8.5	5.0-12.1	33	3.4	0.0-6.9	21	1.7	0.0-5.6	*
Health care providers	81.9	80.2-83.6	195	82.5	81.3-83.8	277	73.9	72.3-75.6	221	76.2	73.9-78.4	151
Peer educator/outreach worker	43.5	40.3-46.7	118	42.9	40.4-45.5	145	28.3	25.2-31.5	98	50.7	47.0-54.5	93
Religious leader	0.0	-	0	0.5	0.0-2.8	*	2.5	0.0-5.9	9	0.6	0.0-4.3	*
School/NGO	6.9	2.7-10.8	13	4.3	1.5-7.1	16	10.6	6.8-14.3	25	10.9	6.4-15.6	16
Other	2.6	0.0-6.8	7	0.6	0.0-2.9	*	2.4	0.0-6.4	5	1.5	0.0-5.3	6
What HIV-related topics do you want to learn more about?†												
How HIV is transmitted	44.9	41.8-48.2	108	44.4	41.8-47.0	150	26.2	22.6-29.7	73	44.9	41.1-48.9	83
Anal sex and transmission risk	34.1	30.4-37.9	87	51.8	49.6-53.9	180	21.5	17.9-25.3	58	27.4	22.6-32.4	43
How to prevent HIV	41.5	37.8-45.2	94	43.5	40.9-46.2	146	24.8	21.1-28.3	69	39.7	35.3-44.0	68
How to treat HIV	21.6	17.3-26.1	51	26.8	23.9-29.8	95	10.8	6.8-14.7	32	21.3	16.6-26.1	38
How to use a condom	5.3	0.4-9.9	13	10.1	6.6-13.5	39	2.8	0.0-6.9	12	17.3	12.7-21.7	27
Talking to partner about condom use	4.3	0.2-8.4	15	6.0	2.5-9.6	25	1.0	0.0-4.6	5	14.2	9.7-18.9	22
Abstinence	4.6	0.0-9.4	8	3.9	0.6-7.2	15	0.7	0.0-4.3	*	12.5	7.5-17.3	17
Monogamy	0.2	0.0-4.2	*	0.7	0.0-3.1	*	0.1	0.0-3.9	*	12.2	8.1-16.0	15
PrEP	8.9	4.4-13.3	21	16.8	13.5-20.0	63	19.8	15.9-23.4	65	14.2	9.6-18.7	20
Treatment	17.4	13.0-21.9	37	17.6	14.3-20.9	63	13.7	9.9-17.5	50	17.5	12.4-22.5	29
Other	14.9	10.6-19.2	50	12.2	9.0-15.3	35	9.6	5.6-13.6	36	22.8	18.0-27.5	44
None	14.1	9.6-18.7	37	8.9	5.3-12.5	37	23.6	20.1-27.2	80	12.1	7.6-16.7	21

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

†Responses not mutually exclusive.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

3.11 UTILIZATION OF HIV TESTING AND PREVENTION SERVICES

Key findings

- There was marked variation in the proportion of MSM reporting to have been tested for HIV at the different sites. Those in Lusaka (95.8%) were most likely to report that they had ever been tested for HIV, followed by those in Livingstone (92.2%), Solwezi (86.7%), and Kitwe (78.7%). MSM in Lusaka (81.7%) were most likely to report that they had received an HIV test in the past year and knew the results, compared with MSM in Solwezi (75.4%) and Livingstone (78.5%), and Kitwe (65.5%; Table 3.11.1).
- A higher proportion of MSM in Lusaka reported that they had self-tested (16.1%) compared to the other sites (range 1.9%-6.6%; Table 3.11.1).
- Among MSM who tested HIV negative during the survey, there were similar patterns in ever testing across the four sites (range: 77.8%-95.5%). Many had tested within the 6 months before the survey (range 48.1%-61.5%). A higher proportion of HIV-negative MSM in Lusaka thought it was possible that they were already HIV positive (42.2%) than in Kitwe (19.7%), Livingstone (15.9%), and Solwezi (21.1%). However, most MSM thought their risk of becoming positive in the next 12 months was low (range: 61.9%-70.0%; Table 3.11.2).
- Over 80% of MSM across sites reported that they could access condoms from a health facility. However, MSM reported that there were times when they had difficulty accessing condoms (range: 20.2%-24.5%) or water-based lubricants (range: 16.2%-41.8%) in the year before the survey. Circumstances in which they did not wear condoms were common, such as when they were having sex with a regular partner (range 43.6%-65.2%), or when they were drunk or high (34.7%-48.2%; Table 3.11.3).
- Among HIV-negative MSM or MSM of unknown status, those in Lusaka (84.6%) were most likely to have ever heard of PrEP, followed by those in Livingstone (65.2%), Solwezi (59.0%), and Kitwe (53.5%). Among those who were aware of PrEP, 18.2%-25.4% had ever taken PrEP. Among those who had ever taken PrEP, 53.0%-76.1% took PrEP in the 6 months before the survey. Among those who had never taken PrEP, 63.1%-79.2% were willing to take PrEP (Table 3.11.4).
- Among HIV-negative MSM or MSM of unknown status, those in Lusaka (53.2%) were most likely to have ever heard of post-exposure prophylaxis (PEP), followed by those in Solwezi (42.0%), Livingstone (27.1%), and Kitwe (19.7%). Among those who were aware of PEP, 1.9%-13.2% had ever taken PEP (Table 3.11.5).
- At the second survey visit, among HIV-negative MSM, those living in Solwezi were most likely to report that they had sought PrEP (72.8%) compared with other sites (range: 19.5%-42.5%; Table 3.11.6).

Table 3.11.1: HIV testing by site

HIV testing experiences and preferences among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Ever tested for HIV												
Yes	78.7	77.2-80.2	208	92.2	91.5-93.0	316	95.8	95.4-96.3	298	86.7	84.9-88.5	168
No	21.4	17.4-25.4	43	7.8	4.5-11.0	24	4.1	0.6-7.7	13	13.3	8.3-18.4	22
Among those never tested, reason for not testing												
I feel I am not at risk for HIV	48.1	38.1-59.0	18	53.1	39.1-66.5	13	6.0	0.0-15.0	*	18.9	0.0-43.4	5
Fear of positive result	14.3	0.0-31.1	7	32.6	16.2-49.8	8	77.2	51.7-100.0	10	32.0	14.0-49.9	5
No money to get tested	0.0	-	0	0.0	-	0	0.0	-	0	0.0	-	0
No time to get tested	36.8	24.5-48.6	12	4.7	0.0-21.9	*	18.1	0.0-39.6	*	27.0	0.0-59.9	5
Confidentiality concerns	0.0	-	0	0.0	-	0	0.0	-	0	5.4	0.0-16.5	*
Stigma by health care workers	0.0	-	0	9.4	0.0-25.9	*	0.0	-	0	15.6	0.0-38.7	*

Table 3.11.1: HIV testing by site (continued)

HIV testing experiences and preferences among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Preferred HIV testing site†												
Home visit	9.9	5.4-14.4	27	15.6	12.1-18.9	56	10.6	6.7-14.6	41	25.5	21.0-30.0	52
Home self-test	7.2	2.7-11.7	16	13.8	10.4-17.3	53	10.6	6.6-14.4	32	50.3	46.5-54.3	90
KP clinic/organization/center	29.8	26.1-33.4	84	56.6	54.5-58.8	202	36.5	33.4-39.5	133	84.8	82.6-86.8	161
Hospital	8.2	4.1-12.3	19	37.4	34.6-40.2	134	46.7	44.0-49.2	155	72.9	70.7-75.2	141
Clinic	65.2	62.9-67.3	161	55.3	53.0-57.6	183	66.6	64.6-68.5	207	75.6	72.9-78.0	148
HTC health facility	4.1	0.0-8.8	17	3.8	1.0-6.6	11	1.8	0.0-5.3	9	61.6	58.4-64.9	115
By my normal doctor	0.0	-	0	2.2	0.0-4.6	5	0.2	0.0-3.9	*	24.0	19.2-28.7	51
Where I socialize	2.5	0.0-6.4	5	3.0	0.4-5.7	8	0.0	-	0	19.3	14.8-24.1	35
Other	4.5	0.0-9.4	9	1.3	0.0-3.6	*	1.9	0.0-5.4	*	0.0	-	0
Among those who tested, timing of last HIV test												
In 6 months before survey	45.9	43.1-49.1	96	60.1	58.1-62.1	197	54.1	51.8-56.3	173	61.7	58.3-65.2	100
Between 7-12 months before the survey	19.6	15.8-23.4	41	18.3	15.1-21.6	52	27.5	24.2-31.1	70	13.7	8.9-18.4	25
More than 12 months before the survey	34.5	31.1-38.0	69	21.6	18.4-24.7	67	18.3	14.6-22.1	54	24.6	20.1-29.2	43
Reason for last HIV test‡												
Health care/outreach worker offered test	4.3	0.5-8.0	7	6.4	3.2-9.6	20	4.6	0.5-8.6	15	5.4	1.7-9.1	7
I just wanted to know	3.7	0.0-7.9	15	11.9	8.8-15.0	40	18.8	15.1-22.3	64	24.1	19.6-28.6	43
Someone I had sex with was recently diagnosed	0.0	-	0	2.5	0.0-5.0	5	2.1	0.0-5.7	5	0.0	-	0
Someone I share needles/syringes with was recently diagnosed	0.0	-	0	0.0	-	0	0.0	-	0	0.2	0.0-3.8	*
Felt at risk	9.5	5.6-13.4	26	18.7	15.6-21.9	58	26.1	22.7-29.4	82	29.1	24.8-33.4	52
Felt sick	7.3	3.6-11.0	20	11.8	8.3-15.2	37	8.7	4.7-12.7	29	8.4	5.0-11.9	14
Got a new partner	1.2	0.0-5.3	*	1.4	0.0-3.7	6	2.7	0.0-6.2	8	5.4	0.3-10.6	9
Child diagnosed	0.8	0.0-4.6	*	0.0	-	0	0.0	-	0	0.0	-	0
Employer asked me to test	0.6	0.0-4.5	*	0.0	-	0	0.7	0.0-4.2	*	2.7	0.0-6.5	5
Pre-marital testing	0.6	0.0-4.6	*	0.0	-	0	0.0	-	0	0.0	-	0
Partner asked me to test	2.2	0.0-6.1	*	1.4	0.0-3.7	*	4.0	0.5-7.6	8	0.4	0.0-4.0	*
Other	0.4	0.0-4.2	*	2.0	0.0-4.2	*	0.0	-	0	0.0	-	0
Last HIV test location												
I went there	87.2	85.9-88.6	176	67.2	65.2-69.1	205	73.1	71.2-75.1	205	81.6	79.5-83.5	138
They came to me	10.9	6.5-15.0	*	27.7	24.7-30.5	96	10.6	6.7-14.5	42	12.1	7.4-16.7	19
I tested myself	1.9	0.0-6.1	*	5.2	2.7-7.7	15	16.1	12.2-20.0	50	6.6	2.9-10.0	11
Received HIV test in the 12 months before the survey and know the results‡												
Yes	65.5	63.6-67.7	137	78.5	77.0-79.9	249	81.7	80.3-83.0	243	75.4	72.6-78.0	125
No	34.6	31.1-38.0	69	21.5	18.5-24.6	67	18.3	14.4-22.2	54	24.6	20.2-29.1	43

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

†Responses not mutually exclusive.

‡Excludes known positives who were tested more than 12 months ago.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.11.2: HIV testing history and perceptions of risk among those who tested HIV negative during the survey, by site

HIV testing history and perceptions of risk of HIV acquisition among men who have sex with men (MSM) who tested HIV negative during the survey, by site, Zambia MSM BBS 2021												
	Kitwe (N = 215)			Livingstone (N = 304)			Lusaka (N = 241)			Solwezi (N = 181)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Ever tested for HIV												
Yes	77.8	67.0-88.6	179	92.4	89.0-95.8	283	95.5	89.5-100.0	229	86.4	77.5-95.3	160
No	22.1	11.4-32.8	36	7.6	4.2-11.0	21	4.5	0.0-10.6	12	13.6	4.7-22.5	21
Among those ever tested, timing of last HIV test												
In the 6 months before the survey	48.1	34.7-61.6	87	59.5	50.8-68.2	177	57.3	44.8-69.8	135	61.5	48.9-74.2	95
6-12 months before the survey	19.6	12.9-26.2	36	18.3	11.6-25.0	46	23.7	12.6-34.8	52	14.1	6.1-22.2	24
More than 12 months before the survey	32.3	19.7-45.0	55	22.2	14.0-30.4	60	19.0	8.1-29.9	41	24.4	13.9-34.9	41
Thought it was possible that they might have HIV at the time of the first survey visit												
Yes	19.7	12.9-26.5	*	15.9	12.1-19.6	51	42.2	29.9-54.5	94	21.1	9.7-32.5	34
No	76.1	66.5-85.7	117	84.1	80.3-87.9	233	57.8	45.5-70.1	130	78.8	67.5-90.1	118
Already knew (or believed) that they were HIV positive	4.1	0.0-11.9	*	0.0	-	0	0.0	-	0	0.0	-	0
Self-perceived risk of becoming HIV positive in the next 12 months												
High	7.4	3.7-11.1	22	13.6	7.5-19.7	39	9.5	3.0-15.9	31	9.9	0.5-19.3	21
Medium	22.6	9.0-36.1	29	24.4	18.5-30.4	76	23.0	13.8-32.2	55	25.2	16.1-34.3	44
Low	70.0	57.1-83.0	115	61.9	54.5-69.4	184	67.6	57.0-78.1	154	65.0	53.5-76.4	100

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.11.3: Condoms and lubricants by site

Condom and lubricant use and access among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 246)			Livingstone (N = 339)			Lusaka (N = 309)			Solwezi (N = 188)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Where can one access condoms†												
Shop or supermarket	55.1	52.6-58.0	136	66.7	65.0-68.4	230	61.6	59.5-63.8	188	59.2	55.9-62.5	113
Pharmacy	60.5	58.3-62.7	159	37.9	34.9-40.8	122	40.1	37.3-42.9	130	48.3	44.2-52.3	87
Health facility	80.9	79.2-83.0	183	93.9	93.3-94.4	320	86.6	85.5-87.8	266	81.4	78.9-83.8	152
Hotel room	1.7	0.0-5.6	*	8.2	4.7-11.6	27	0.8	0.0-4.3	6	8.9	4.4-13.4	19
NGO/organization	31.6	27.9-35.5	83	27.2	24.3-30.2	101	23.4	19.9-26.8	90	20.0	15.3-24.7	37
Friends	11.8	7.3-16.4	29	19.6	16.3-22.9	69	15.7	12.0-19.5	34	9.3	4.6-13.8	19
Sex partner	7.5	3.2-11.8	18	11.4	7.9-14.9	40	1.1	0.0-5.1	11	7.9	4.3-11.6	14
Street vendor	11.1	6.7-15.6	31	14.7	11.2-18.1	49	3.0	0.0-6.5	8	18.6	13.9-23.1	32
Bars and nightclubs	5.7	1.6-9.8	15	12.4	9.0-15.8	51	9.8	5.9-13.5	29	5.1	1.4-8.8	9
Preferred condom brand†												
Protector Plus	0.2	0.0-4.3	*	0.0	-	0	0.0	-	0	0.0	-	0
Free condoms from the Ministry of Health	0.3	0.0-4.4	*	1.7	0.0-4.2	6	0.6	0.0-3.8	*	1.0	0.0-5.0	*
Free condoms (LOVE)	18.2	14.0-22.6	35	20.4	17.0-23.6	66	13.9	10.8-17.4	43	23.0	18.7-27.7	43

Table 3.11.3: Condoms and lubricants by site (continued)

Condom and lubricant use and access among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 246)			Livingstone (N = 339)			Lusaka (N = 309)			Solwezi (N = 188)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Preferred condom brand†												
(cont.)												
Maximum Durex	10.8	6.2-15.2	25	8.4	4.9-12.0	29	6.5	3.0-9.9	25	7.8	4.1-11.5	16
Rough Raider	39.5	36.2-42.7	97	49.9	47.4-52.3	163	53.6	51.4-55.7	135	53.0	49.3-56.7	92
Choice	2.0	0.0-7.1	5	5.6	1.9-9.3	21	9.8	6.4-13.2	24	4.0	0.0-8.7	9
Contempo	2.5	0.0-6.7	6	1.1	0.0-3.4	*	0.9	0.0-4.0	*	1.9	0.0-5.6	5
Moods	0.2	0.0-4.3	*	0.4	0.0-2.7	*	0.2	0.0-3.4	*	0.0	-	0
Trust	18.1	13.7-22.6	38	11.2	7.8-14.6	41	7.5	4.2-10.9	23	20.4	15.4-25.3	33
Condomize	2.3	0.0-6.3	6	0.1	0.0-3.9	*	0.3	0.0-3.2	*	1.2	0.0-4.8	*
Icon	6.3	2.4-10.2	15	10.6	7.0-14.1	34	13.5	10.2-16.7	28	31.6	27.3-35.6	63
Ultimate	5.0	0.3-9.7	13	2.7	0.0-6.2	15	8.8	5.5-12.3	18	4.6	0.0-9.9	7
Other	0.4	0.0-4.4	*	7.2	3.7-10.6	24	2.5	0.0-5.7	10	4.3	0.7-8.0	7
N/A: do not use condoms	0.4	0.0-4.5	*	0.8	0.0-3.2	*	3.0	0.0-6.5	8	5.2	0.0-10.3	8
Received free condoms in the year before the survey												
Yes	69.6	67.4-71.9	173	74.8	73.5-76.0	267	66.2	64.3-68.0	227	66.2	63.4-68.7	125
No	30.4	27.0-33.6	78	25.2	21.8-28.6	73	33.9	30.5-37.4	84	33.9	29.6-38.2	65
Preferred free or branded condoms, among those who received free condoms in the year before the survey												
Free	36.7	33.5-39.9	62	35.7	32.9-38.6	91	34.3	31.4-37.0	88	28.5	24.2-32.7	37
Branded	29.2	25.7-32.9	54	36.7	34.1-39.4	102	32.6	29.5-35.6	68	28.2	23.9-32.5	35
No preference	33.9	30.4-37.1	57	27.5	24.3-30.8	74	33.2	30.2-36.1	70	43.4	39.2-47.6	53
Difficulty accessing condoms in the past year												
Yes, I have sometimes had difficulty	20.2	15.8-24.7	47	24.2	20.9-27.5	75	23.9	20.3-27.5	77	24.5	20.0-29.1	52
No, I have always found them	79.8	78.0-81.7	184	75.8	74.3-77.3	259	76.1	74.4-77.6	231	75.4	72.8-78.1	138
Reasons for difficulty accessing condoms in the past year†												
Costs too much	32.0	28.7-35.2	15	12.1	9.8-14.4	8	20.3	17.8-23.3	12	11.8	3.5-19.7	8
Not convenient	10.5	7.1-14.1	6	39.4	36.7-42.3	29	16.1	13.3-18.7	18	7.6	0.7-14.3	*
Clinic does not provide them	27.0	24.2-30.6	14	3.5	1.2-5.8	*	2.9	0.1-5.7	*	21.4	15.9-27.4	12
Embarrassed to get condoms	1.3	0.0-5.2	*	2.1	0.0-4.9	*	13.1	10.5-16.2	16	11.0	3.9-17.4	5
Do not know where to get condoms	5.0	1.4-8.8	*	4.0	1.6-6.3	5	1.7	0.0-4.6	*	2.6	0.0-9.7	*
Condoms not available	47.6	44.6-49.6	20	28.9	26.3-31.3	30	61.0	58.9-63.0	49	60.5	54.3-65.8	25
Other	3.3	0.0-7.0	6	7.1	4.7-9.5	9	5.7	2.8-8.8	*	24.1	16.7-30.8	15
Received information on condom use and safe sex in the past year												
Yes	55.4	52.3-58.1	130	66.2	64.4-68.2	223	50.9	48.6-53.4	173	50.6	47.1-54.2	98
No	44.5	41.8-47.6	120	33.7	30.9-36.6	117	49.0	46.5-51.7	138	49.3	45.6-53.1	92
Use of more than one condom at a time in the last 6 months												
Yes	39.3	36.1-42.7	89	39.0	36.3-41.6	126	43.6	40.6-46.4	129	36.3	32.1-40.6	70
No	60.5	58.0-62.9	162	61.1	59.1-63.0	213	56.5	54.0-58.7	180	63.7	60.5-66.8	120

Table 3.11.3: Condoms and lubricants by site (continued)

Characteristics	Kitwe (N = 246)			Livingstone (N = 339)			Lusaka (N = 309)			Solwezi (N = 188)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Circumstances where condoms were not used during anal sex†												
When drunk or high	41.9	39.2-45.1	109	34.7	32.0-37.3	120	48.2	45.7-50.5	160	37.5	33.1-42.0	74
When afraid to ask partner to use a condom or they refuse	17.0	12.9-21.0	58	9.6	6.3-12.8	35	41.0	38.0-43.8	123	36.3	32.1-40.5	72
When having sex with a regular partner	63.4	61.0-65.8	162	53.2	50.8-55.5	182	65.2	63.0-67.2	204	43.6	39.7-47.5	91
When having sex with a non-regular partner	13.4	8.9-17.9	44	18.5	15.1-21.8	65	22.2	18.6-25.8	78	13.5	8.5-18.6	26
When being the insertive (top) partner	21.2	17.1-25.2	66	29.4	26.6-32.3	106	20.6	17.0-24.3	62	17.6	12.9-22.5	37
When being the receptive (bottom) partner	5.5	1.6-9.5	21	17.4	14.3-20.6	65	23.7	20.2-27.3	75	22.0	17.3-26.5	43
When partner does not ejaculate inside them	3.8	0.0-8.1	14	5.6	2.6-8.5	24	22.9	19.4-26.4	64	23.7	19.2-28.1	45
When offered or offer money for sex without a condom	14.1	9.7-18.3	51	11.5	8.2-14.8	38	17.5	13.9-21.1	60	24.0	19.6-28.5	42
Other	28.0	23.4-32.1	54	2.8	0.0-6.5	12	0.3	0.0-3.8	*	5.2	0.1-10.3	10
More likely to use a condom during receptive or insertive sex												
Receptive anal sex	6.1	2.5-9.7	21	25.2	22.0-28.4	81	19.1	15.4-22.7	58	8.3	3.4-13.3	20
Insertive anal sex	58.5	55.7-61.5	129	46.6	44.0-49.1	163	27.6	24.2-31.1	86	41.8	37.9-46.0	79
Equally likely to use during receptive or insertive sex	35.5	31.8-39.2	74	28.3	25.2-31.3	91	53.3	50.9-55.8	163	49.8	45.9-53.7	87
Used lubricant during anal sex in the 6 months before the survey												
Yes	78.7	77.0-80.3	212	59.1	57.0-61.3	213	87.0	86.1-87.9	285	67.1	64.3-70.1	129
No	21.3	17.1-25.6	39	40.9	38.2-43.6	126	13.1	9.0-16.9	26	32.8	28.2-37.3	60
Main reason for not using lubricants in the 6 months before the survey†												
Can't get them easily/too expensive	60.4	57.0-63.7	23	34.8	27.0-42.7	45	24.9	23.8-26.6	9	39.1	35.0-42.3	20
Do not like lubricants	5.8	2.0-9.2	*	7.5	1.8-13.4	9	30.5	27.3-32.2	*	12.3	7.8-16.8	8
Partner doesn't like lubricants	0.2	0.0-4.0	*	3.4	0.0-7.7	*	0.0	-	0	2.2	0.0-6.9	*
I've never heard of lubricants	33.2	30.1-36.8	11	49.7	41.5-57.9	58	39.7	37.6-41.6	10	36.9	33.2-41.3	16
I'm ashamed/embarrassed to buy lubricants because it is associated with homosexuals	0.0	-	0	0.0	-	0	0.0	-	0	0.0	-	0
Other	1.0	0.0-4.8	*	4.6	0.0-9.2	*	5.9	3.6-8.2	*	9.8	5.1-14.2	*
Among those who used lubricants during anal sex in the 6 months before the survey, type of lubricant used†												
Saliva	25.9	22.5-29.5	64	29.1	26.3-32.0	68	18.9	15.2-22.5	55	49.1	45.4-52.4	70
Petroleum jelly (Vaseline, pomade)	64.9	63.0-67.0	152	39.0	36.4-41.6	85	47.1	44.0-50.0	132	59.2	56.0-62.5	77
Water based lubricant	83.8	82.5-85.0	184	68.4	66.8-70.1	150	79.3	78.1-80.5	238	38.7	35.1-42.5	50
Shea butter/hand	0.1	0.0-3.9	*	1.5	0.0-3.9	*	4.5	1.0-8.0	14	2.8	0.0-7.8	6
Vaginal gel	0.2	0.0-4.1	*	5.1	2.8-7.4	*	6.0	2.2-9.8	21	19.1	14.6-23.6	24
Baby oil	4.6	0.4-8.7	13	5.6	2.4-8.7	16	13.2	9.3-17.2	38	27.3	22.5-31.8	33
Butter, blue band, cooking oil	10.7	6.7-15.0	28	7.5	5.2-9.9	20	4.3	0.7-7.9	17	12.9	8.2-17.4	16
Other	7.7	4.2-11.3	20	5.7	3.3-8.0	10	2.9	0.0-6.3	12	6.1	1.2-11.0	12

Table 3.11.3: Condoms and lubricants by site (continued)

Condom and lubricant use and access among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 246)			Livingstone (N = 339)			Lusaka (N = 309)			Solwezi (N = 188)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Among those who used lubricants during anal sex in the 6 months before the survey, able to get water-based lubricants when needed												
Yes	67.5	65.0-70.0	119	58.2	56.0-60.4	93	62.2	59.6-64.8	151	83.6	79.1-88.4	41
No	32.4	28.9-36.3	64	41.8	38.8-44.9	57	37.9	34.5-41.0	84	16.2	4.6-28.3	8
Among those who used lubricants during anal sex in the 6 months before the survey, accessed water-based lubricants from[†]												
Shop or supermarket	17.3	13.6-21.2	35	8.4	5.5-11.3	13	7.0	3.2-10.8	17	25.0	14.2-35.9	11
Pharmacy	39.7	36.6-42.6	74	12.2	8.6-15.8	15	7.8	3.8-11.9	22	41.5	30.9-52.7	21
Health facility	26.6	22.4-30.8	34	28.7	25.6-31.8	44	20.3	16.4-24.1	45	38.0	24.8-50.9	20
Hotel/Lodge	0.0	-	0	0.0	-	0	0.5	0.0-4.4	*	0.4	0.1-0.6	*
NGO/organization	25.6	21.7-29.2	53	24.2	21.1-27.4	43	22.2	18.6-25.8	75	33.5	21.3-44.7	16
Friends	35.2	31.4-39.0	63	33.5	30.3-36.8	46	36.4	33.0-39.8	90	21.6	7.1-36.5	11
Sex partner	7.4	2.7-11.9	22	9.6	6.8-12.3	14	16.8	12.8-20.7	30	20.0	5.9-33.7	13
Other	0.1	0.0-4.1	*	0.6	0.0-3.5	*	0.0	-	0	1.1	0.0-2.7	*
Among those who used lubricants during anal sex in the 6 months before the survey, frequency of using water-based lubricants												
Always	57.4	54.6-60.6	99	27.2	23.9-30.6	38	48.5	45.7-51.2	124	36.2	24.6-48.4	18
Most of the time	16.0	11.7-20.0	30	19.2	16.1-22.4	33	19.3	15.4-23.2	41	19.2	6.5-31.9	*
Sometimes	21.5	17.5-25.7	47	30.8	27.6-34.1	48	27.4	23.8-31.4	65	35.9	23.9-47.4	17
Rarely	5.0	1.1-8.9	8	21.5	18.2-25.1	*	4.5	0.6-8.4	7	0.0	-	0
Never	0.0	-	0	1.1	0.0-4.0	*	0.0	-	0	8.7	0.0-20.6	*
Received lubricants for free in the 6 months before the survey												
Yes	40.9	37.5-44.4	108	20.5	17.5-23.6	85	34.7	31.8-37.7	135	22.0	17.3-26.5	39
No	59.1	56.7-61.4	142	79.5	78.0-80.9	255	65.2	63.3-67.4	175	78.1	75.6-80.5	151

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

[†] Responses not mutually exclusive.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.11.4: Pre-exposure prophylaxis (PrEP) by site

Pre-exposure prophylaxis (PrEP) use and access among men who have sex with men (MSM) who self-reported HIV-negative or unknown statuses by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 244)			Livingstone (N = 326)			Lusaka (N = 287)			Solwezi (N = 188)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Ever heard of PrEP												
Yes	53.5	50.7-56.3	140	65.2	63.3-67.1	216	84.6	83.2-85.7	246	59.0	55.9-62.0	113
No	46.6	43.5-49.6	104	34.7	32.0-37.5	110	15.4	12.6-18.4	41	41.0	37.0-44.9	75
Among those who had heard of PrEP, those who have taken it												
Yes	25.4	21.7-29.6	47	21.8	18.7-24.9	52	20.9	18.0-23.9	78	18.2	13.3-23.2	21
No	74.5	72.5-76.8	93	78.2	76.6-79.9	164	78.9	77.7-80.6	168	81.7	78.9-84.1	92

Table 3.11.4: Pre-exposure prophylaxis (PrEP) by site (continued)

Pre-exposure prophylaxis (PrEP) use and access among men who have sex with men (MSM) who self-reported HIV-negative or unknown statuses by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 244)			Livingstone (N = 326)			Lusaka (N = 287)			Solwezi (N = 188)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Among those who have taken PrEP, have taken it in the 6 months before the survey												
Yes	76.1	73.7-77.6	33	57.7	53.5-62.3	30	53.0	50.0-55.8	36	69.4	64.0-74.3	13
No	24.3	19.3-29.5	14	42.3	37.1-47.7	22	47.3	43.3-51.1	42	30.7	22.6-39.5	8
Among those who have taken PrEP in the 6 months before the survey, last time used PrEP												
The day of or before the survey	19.4	14.1-24.9	6	44.3	38.6-50.1	13	61.9	59.2-63.3	23	44.8	34.5-56.0	*
2-3 days before the survey	6.9	1.4-12.8	*	0.0	-	0	0.0	-	0	3.4	0.0-19.0	*
4-7 days before the survey	4.9	0.0-10.6	*	1.8	0.0-8.5	*	0.0	-	0	7.8	0.0-24.0	*
1-2 weeks before the survey	6.9	1.4-12.4	*	0.0	-	0	0.3	0.0-5.9	*	8.6	0.0-21.8	*
> than 2 weeks before survey	61.7	57.4-66.8	20	53.7	48.0-58.9	16	37.7	32.6-42.9	*	35.2	25.5-44.7	6
Among those who have not taken PrEP, willing to take PrEP												
Yes	71.0	69.2-73.3	51	72.0	70.0-74.0	122	79.2	77.9-80.6	133	63.1	60.2-66.0	64
No	29.0	26.0-31.8	42	28.0	25.4-30.6	42	20.9	18.3-23.6	35	36.8	32.2-41.2	28
Reason for not taking PrEP among those have not taken it												
Embarrassed to talk about it with doctor/nurse	1.2	0.0-4.1	*	0.0	-	0	0.4	0.0-3.0	*	3.2	0.0-7.5	*
Don't feel at risk for HIV	31.1	28.5-33.5	25	15.4	12.7-18.0	24	26.5	23.9-29.1	33	36.8	32.1-40.9	31
Not available where I live	15.5	12.8-18.1	13	11.0	8.1-14.0	17	7.7	5.4-10.2	9	13.3	9.3-17.2	11
Don't know where to get it	13.1	10.4-16.4	9	20.9	18.5-23.2	32	14.0	11.4-16.4	21	11.2	7.3-14.9	10
Don't want it	20.1	17.1-23.1	21	13.9	11.7-16.0	27	17.0	14.5-19.5	28	12.6	8.8-16.6	13
Afraid of side effects	4.1	1.1-7.0	8	10.5	8.6-12.6	18	18.7	16.2-21.4	42	7.9	3.2-12.7	9
Don't want others to know	0.1	0.0-3.0	*	0.6	0.0-3.3	*	2.6	0.1-5.3	*	0.0	-	0
Do not have enough information about PrEP	12.3	9.4-15.0	12	23.3	20.7-25.8	34	10.5	7.9-13.0	21	13.1	8.4-17.7	11
Other	2.4	0.0-5.4	*	4.4	2.2-6.7	*	2.7	0.1-5.2	5	1.9	0.0-6.1	*
Among those who stopped taking PrEP, reason for stopping												
I trust my partners	18.5	10.7-26.6	*	12.0	1.3-22.0	*	3.5	0.0-7.9	*	0.0	-	0
Can't get PrEP anymore	17.5	8.8-26.0	*	41.0	33.0-50.0	8	33.6	28.1-37.6	12	25.0	0.0-74.6	*
Had side effects	37.1	27.2-47.3	*	7.1	0.0-16.5	*	34.5	31.2-38.8	16	6.3	0.0-16.1	*
Don't want others to know	9.6	0.3-17.7	*	0.0	-	0	15.4	11.3-18.9	*	22.9	6.7-39.1	*
Busy/lazy	0.0	-	0	5.1	0.0-15.2	*	0.7	0.0-5.5	*	0.0	-	0
I do not feel at risk	11.1	2.6-20.0	*	14.0	3.9-24.4	*	10.2	5.3-13.6	*	19.3	0.0-47.5	*
Completed regime/no desire to continue regime	0.0	-	0	7.6	0.0-16.5	*	3.0	0.0-7.4	*	26.5	0.0-57.0	*
Other	5.8	0.0-15.7	*	12.9	3.8-21.1	*	0.0	-	0	0.0	-	0

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.11.5: Post-exposure prophylaxis (PEP) by site

Post-exposure prophylaxis (PEP) among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 243)			Livingstone (N = 322)			Lusaka (N = 288)			Solwezi (N = 188)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Ever heard of PEP												
Yes	19.7	15.5-23.9	47	27.1	24.1-30.1	99	53.2	51.1-55.4	172	42.0	37.9-45.9	82
No	80.3	78.9-81.9	196	72.9	71.3-74.6	223	46.9	44.2-49.4	116	58.1	54.6-61.4	106
Among those who had heard of PEP, those who had taken it												
Yes	1.9	0.6-3.1	*	10.1	7.1-12.9	14	13.2	10.3-16.1	24	5.9	1.6-10.0	7
No	98.1	97.2-98.9	*	90.0	88.7-91.1	85	86.8	85.7-88.0	148	94.2	92.3-96.2	75
Of those who had taken PEP, those who took it in the 6 months before the survey												
Yes	0.0	-	0	46.3	23.2-70.1	7	40.8	29.6-51.9	6	7.8	0.0-23.3	*
No	100.0	-	*	53.1	32.9-73.2	7	59.2	37.1-81.4	18	92.2	88.8-95.5	*
Reason for taking PEP among those who had taken it in the 6 months before the survey												
I had unprotected sex	NA	-	NA	95.2	91.2-99.2	*	100.0	-	6	100.0	-	*
I share needles	NA	-	NA	4.8	0.0-14.7	*	0.0	-	0	0.0	-	0

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.11.6: Survey linkage to PrEP by site

Linkage to PrEP among HIV-negative men who have sex with men (MSM) at second survey visit, by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 215)			Livingstone (N = 304)			Lusaka (N = 241)			Solwezi (N = 181)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Sought PrEP (among HIV-negative participants)												
Yes	42.5	31.5-53.5	108	19.5	12.0-27.0	68	28.4	19.1-37.7	87	72.8	62.6-83.1	127
No	18.3	6.5-30.0	40	34.5	25.2-43.7	107	20.2	13.9-26.6	52	5.4	1.8-8.9	11
Unknown†	39.2	27.4-51.1	67	46.0	35.5-56.4	129	51.4	40.4-62.3	102	21.8	12.0-31.6	43
Main reason for not seeking PrEP												
I have not had time	51.2	22.7-79.8	21	14.8	0.0-29.6	21	5.6	0.0-22.7	*	11.6	0.0-43.4	*
Not ready yet	28.0	7.1-48.9	14	20.0	4.5-35.4	21	56.1	35.3-77.0	43	28.8	1.7-55.9	*
Feel healthy/ low risk	7.0	2.4-11.6	5	39.0	22.3-55.8	41	16.2	0.0-32.7	10	43.7	12.5-75.0	6
Stigma, don't want others to know	0.1	0.0-0.4	*	0.9	0.0-2.2	*	3.6	0.0-19.4	*	0.0	-	0
Cost or transportation problems	0.0	-	0	0.9	0.0-2.5	*	0.0	-	0	0.0	-	0
Poor attitude of health care workers	3.9	0.0-8.6	*	0.0	-	0	0.0	-	0	0.0	-	0
Waiting time or clinic hours not good	0.0	-	0	0.2	0.0-0.4	*	0.2	0.0-0.4	*	5.1	0.0-16.6	*
Side effects	6.7	1.1-12.4	5	0.5	0.0-1.1	*	0.4	0.0-0.9	*	11.4	0.0-54.0	*
Low risk / do not think they need it	3.2	0.0-7.1	*	12.0	5.2-18.8	19	17.8	4.5-31.1	16	0.0	-	0
Other	0.0	-	0	11.8	0.1-23.4	16	0.0	-	0	0.0	-	0
Don't know	0.0	-	0	0.0	-	0	0.0	-	0	0.0	-	0

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

† Participant did not return for second visit.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.
Due to rounding, estimate total sums may not equal 100.0%. Survey weights were utilized for all estimates.

Table 3.11.7: Internet and social media application use by site

Internet and social media application access and use among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N=251)			Livingstone (N=340)			Lusaka (N=311)			Solwezi (N=190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Has account or profile on website/social media application												
Facebook	56.09	55.32-56.83	140	73.44	72.86-73.98	251	94.05	93.80-94.36	291	86.51	86.04-87.21	171
Grindr	3.72	2.56-4.97	12	4.50	3.42-5.58	20	24.86	24.10-25.84	98	3.79	1.78-5.90	9
Instagram	17.22	16.25-18.30	52	17.04	16.00-18.15	65	52.66	51.88-53.29	170	39.56	38.09-41.20	79
SnapChat	2.99	1.80-4.13	14	7.94	6.78-9.07	26	28.29	27.42-29.25	91	24.99	23.22-26.72	51
Twitter	4.82	3.58-5.97	*	5.12	3.91-6.23	15	7.70	6.69-8.74	31	10.12	8.32-12.03	21
TikTok	1.47	0.30-2.68	*	2.61	1.48-3.75	7	1.97	0.87-3.04	8	16.37	14.58-18.11	27
WhatsApp	34.43	33.61-35.32	84	43.98	43.10-44.88	149	76.37	75.96-76.91	244	72.34	71.38-73.20	139
None	40.65	39.70-41.63	104	23.56	22.60-24.62	79	1.84	0.81-2.86	9	10.93	9.08-12.89	16
Other	7.35	6.17-8.42	18	2.25	1.11-3.39	11	5.09	4.12-6.03	20	2.74	0.89-4.59	8
Uses internet to:												
Find sex partners	7.91	6.85-9.12	33	19.04	17.99-20.11	69	11.85	10.81-12.82	58	32.85	31.35-34.40	66
Find clients	3.41	2.27-4.55	15	13.70	12.66-14.78	52	3.39	2.33-4.43	17	23.65	21.81-25.24	47
Learn about HIV	0.31	0.00-1.52	*	1.46	0.32-2.62	*	0.62	0.00-1.67	*	38.94	37.54-40.35	75
Transfer money	0.48	0.00-1.70	*	1.38	0.23-2.54	*	0.12	0.00-1.16	*	20.04	18.34-21.55	41
Stay in touch with friends/family	53.96	53.16-54.68	132	53.36	52.69-54.12	189	48.61	47.66-49.20	154	73.02	72.09-73.79	145
Access news/academics	8.95	7.78-10.16	20	16.13	15.08-17.15	55	35.54	34.70-36.42	92	12.50	10.75-14.29	24
Access social media applications	0.48	0.00-1.64	*	3.07	1.97-4.16	11	14.34	13.38-15.33	35	0.91	0.00-2.90	*
Watch pornography	1.34	0.16-2.53	6	8.44	7.32-9.59	31	4.59	3.56-5.52	12	1.21	0.00-3.16	*
Watch movies/music/sports entertainment	4.51	3.30-5.68	10	10.57	9.50-11.62	37	11.14	10.07-12.11	40	3.23	1.35-5.13	7
No internet access	41.48	40.59-42.43	108	27.93	26.97-28.93	93	8.15	7.18-9.18	25	15.37	13.72-17.22	26
Other	1.03	0.00-2.27	*	3.49	2.34-4.62	10	8.59	7.52-9.42	29	0.29	0.00-2.22	*
Uses social media applications to:												
Find sex partners	15.05	13.66-16.27	37	30.23	29.19-31.28	85	32.81	31.89-33.55	115	41.86	40.21-43.39	77
Find clients	4.56	2.96-6.05	13	16.15	14.93-17.26	50	7.85	6.89-8.96	29	30.27	28.42-31.76	57
Learn about HIV	0.46	0.00-2.09	*	3.72	2.42-5.01	9	0.00	0.00-0.00	0	43.71	42.33-45.29	79
Transfer money	0.00	0.00-0.00	0	1.01	0.00-2.31	*	0.00	0.00-0.00	0	17.31	15.29-19.31	33
Stay in touch with friends/family	97.22	96.96-97.67	143	98.02	97.85-98.21	254	91.97	91.81-92.27	283	91.20	90.79-91.63	162
Access business/marketing	2.90	1.74-4.09	7	1.33	0.15-2.50	*	9.04	7.95-10.07	25	0.29	0.00-2.20	*
Access news/academics	0.62	0.00-1.77	*	1.71	0.54-2.87	7	6.22	5.20-7.29	16	1.38	0.00-3.31	*
Not on social media	1.32	0.05-2.40	*	0.00	0.00-0.00	0	0.00	0.00-0.00	0	0.34	0.00-2.20	*
Other	1.08	0.00-2.63	*	2.20	0.97-3.44	7	0.85	0.00-1.94	5	0.00	0.00-0.00	0
Main way of accessing social media applications												
Own tablet or phone	81.82	81.01-82.63	121	79.11	78.52-79.64	207	85.69	85.29-86.16	265	83.24	82.42-84.05	141
Friend's tablet or phone	16.95	15.44-18.34	25	19.86	18.69-21.02	51	14.08	13.09-15.13	34	14.11	12.02-16.13	27
Tablet or phone at work	0.21	0.00-1.84	*	0.38	0.00-1.64	*	0.05	0.00-1.16	*	0.40	0.00-2.68	*
Public computer or tablet (school, library, internet cafe)	1.04	0.00-2.63	*	0.69	0.00-2.01	*	0.14	0.00-1.21	*	2.34	0.11-4.57	*

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The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

3.12 SOCIAL COHESION AND STIGMA

Key findings

- Social cohesion was generally high among MSM across sites; 51.3%-72.7% agreed or strongly agreed they could count on other MSM/TGW if they needed to borrow money, 66.6%-74.1% agreed or strongly agreed they could count on other MSM/TGW to accompany them to the doctor or hospital, 69.2%-83.5% agreed or strongly agreed they could count on other MSM/TGW to talk about their problems, and 64.3%-69.5% agreed or strongly agreed they could count on other MSM/TGW if they needed somewhere to stay (Table 3.12.1).
- A low proportion of MSM across the four sites had ever been arrested for being MSM (0.4%-3.4%). The proportion of MSM who were ever treated unfairly or denied healthcare for being MSM varied across sites, from a high of 15.1% in Lusaka, followed by 7.6% in Solwezi, 3.6% in Livingstone, and 2.9% in Kitwe. Almost half of MSM in Lusaka (46.7%) and two fifths in Solwezi (42.2%) had ever avoided seeking healthcare services for fear of being identified as MSM, compared with 17.2% in Livingstone and 8.8% in Kitwe. MSM in Lusaka (25.5%) and Livingstone (25.2%) were more likely to ever be forced to have sex than MSM in Kitwe (17.3%; Table 3.12.2).
- MSM in Lusaka (29.9%) were most likely to screen positive for depression, followed by MSM in Solwezi (20.6%), Kitwe (6.2%), and Livingstone (5.2%). Suicide ideation among MSM was more likely in Lusaka (13.7%) compared with 4.1% in Solwezi and 1.3% in Kitwe (Table 3.12.2).
- Among MSM with HIV who reported their HIV-positive status, those in Lusaka (50.7%) and Livingstone (30.5%) were more likely to agree or strongly agree that they thought less of themselves because of their HIV status compared with Kitwe (2.4%). No self-reported MSM with HIV in Kitwe and Solwezi reported being verbally insulted or harassed, whereas 18.6% of those in Lusaka and 25.9% of those in Livingstone reported being insulted or harassed. In Lusaka, 10.4% of self-reported MSM with a HIV-positive status reported being denied health services because of their HIV status, with no reports at other sites (Table 3.12.3).

Table 3.12.1: Social cohesion by site

Experiences of social cohesion with men who have sex with men (MSM) or transgender women among MSM by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 239)			Livingstone (N = 340)			Lusaka (N = 308)			Solwezi (N = 181)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
I can count on MSM/TGW if I need to borrow money												
Strongly agree/agree	60.1	55.8-64.7	154	58.6	54.6-62.5	203	51.3	46.6-56.5	171	72.7	68.5-76.7	132
Neutral	11.6	10.3-12.8	18	11.0	7.1-14.8	36	12.2	10.9-13.4	38	11.4	9.8-13.0	20
Strongly disagree/disagree	28.2	23.9-32.6	67	30.4	28.7-32.2	101	36.5	31.6-41.1	99	16.0	12.2-19.8	29
I can count on MSM/TGW to accompany me to the doctor or hospital												
Strongly agree/agree	69.6	65.2-74.0	174	66.6	62.7-70.4	229	74.1	70.6-77.6	247	67.7	63.0-72.8	133
Neutral	5.3	4.5-6.2	15	6.9	3.2-10.8	26	5.3	4.5-6.2	14	7.1	5.4-8.5	13
Strongly disagree/disagree	25.0	20.7-29.4	55	26.5	24.9-28.1	85	20.6	17.1-24.0	50	25.3	20.4-29.9	41
I can count on MSM/TGW if I need to talk about my problems												
Strongly agree/agree	69.2	65.4-72.8	182	70.0	65.9-74.2	237	83.5	80.2-86.9	270	82.7	79.6-85.7	160
Neutral	5.9	5.2-6.8	11	8.1	3.9-12.2	30	2.6	1.9-3.2	11	7.1	6.4-7.9	9
Strongly disagree/disagree	24.9	21.2-28.5	54	21.9	20.5-23.3	73	14.0	10.6-17.2	30	10.2	7.2-13.2	19

Table 3.12.1: Social cohesion by site (continued)

Experiences of social cohesion with men who have sex with men (MSM) or transgender women among MSM by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 239)			Livingstone (N = 340)			Lusaka (N = 308)			Solwezi (N = 181)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
I can count on MSM/TGW if I need somewhere to stay												
Strongly agree/agree	67.5	63.0-72.0	169	64.3	60.3-68.3	223	69.5	65.4-73.6	231	69.1	64.0-73.9	141
Neutral	5.1	4.3-5.5	14	11.0	7.1-14.8	37	10.1	9.1-11.0	26	9.1	7.5-10.7	14
Strongly disagree/disagree	27.5	23.1-32.1	57	24.7	23.3-26.2	80	20.4	16.4-24.3	54	21.8	17.1-26.9	32
Negotiated with or stood up against a non-MSM/non-TGW to help a fellow MSM/TGW in the 6 months before the survey												
Yes	21.7	18.0-25.5	80	27.0	24.0-30.0	100	34.6	31.8-37.8	122	46.0	42.0-49.6	95
No	78.3	74.5-82.0	165	73.0	70.0-76.0	239	65.4	62.2-68.2	188	54.0	50.4-58.0	93
Attended a support group for gay men, MSM/TGW in the 6 months before the survey												
Never	84.9	83.3-86.4	191	87.8	86.7-89.1	292	76.9	75.1-78.5	228	80.7	78.3-83.0	149
Once or twice	12.6	11.2-14.0	45	8.4	7.3-9.5	33	18.9	17.6-20.3	62	15.1	13.2-17.0	30
About 6 times	2.3	1.6-3.1	*	3.3	2.9-3.7	12	3.1	2.2-3.9	18	3.7	2.5-5.0	8
About 12 times	0.2	0.1-0.3	*	0.3	0.1-0.4	*	0.1	0.1-0.1	*	0.4	0.1-0.8	*
More than 12 times	0.0	-	0	0.1	0.1-0.2	*	1.0	0.8-1.3	*	0.1	0.1-0.1	*

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk. The denominator for a characteristic may differ from the site total due to nonresponse or missing data. Due to rounding, estimate total sums may not equal 100.0%. Survey weights were utilized for all estimates.

Table 3.12.2: Stigma, violence, and mental health by site

Stigma, violence, and mental health among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Ever arrested for being MSM												
Yes	1.7	0.0-5.7	*	0.4	0.0-4.4	*	3.4	0.0-7.5	20	3.0	0.0-6.8	*
In the last 6 months	0.9	0.0-3.5	*	0.0	0.0-0.0	0	0.8	0.0-3.2	5	0.6	0.0-5.9	*
Not in the last 6 months	0.8	0.0-2.2	*	0.4	0.0-4.1	*	2.6	1.8-3.3	15	2.5	1.8-3.0	*
No	98.3	95.3-1.0	248	99.6	95.9-1.0	338	96.6	94.1-99.1	291	96.9	91.7-1.0	186
Ever rejected by family for being MSM												
Yes	8.6	4.1-13.0	31	12.0	8.6-15.5	41	20.2	16.9-23.5	82	15.3	10.3-20.3	28
In the last 6 months	3.2	0.0-9.6	15	6.9	3.1-10.7	23	10.3	3.6-17.0	42	3.6	0.0-9.5	8
Not in the last 6 months	5.2	4.5-6.0	16	5.1	0.4-9.8	18	9.8	8.2-11.5	40	11.6	9.0-14.2	20
No	91.5	85.1-98.0	220	88.0	84.4-91.5	299	79.8	72.9-86.8	229	84.8	78.3-91.3	162
Ever terminated from a job for being MSM												
Yes	2.5	0.0-6.4	6	0.8	0.0-3.3	*	5.7	1.5-10.0	25	1.4	0.0-5.2	*
In the last 6 months	1.0	0.0-2.1	*	0.3	0.0-0.7	*	3.3	0.0-8.5	8	0.2	0.0-0.5	*
Not in the last 6 months	1.4	0.0-2.9	*	0.5	0.0-2.9	*	2.5	1.6-3.3	17	1.2	0.0-2.5	*
No	97.6	95.7-99.4	245	99.2	96.8-1.0	336	94.2	88.8-99.7	286	98.6	97.3-99.8	185
Ever denied a job for being MSM												
Yes	0.5	0.0-4.5	*	1.8	0.0-4.3	6	6.3	2.3-10.2	31	2.9	0.0-6.7	8
In the last 6 months	0.5	0.0-4.4	*	1.4	0.0-3.3	*	2.9	0.3-5.6	12	1.8	0.3-3.3	*
Not in the last 6 months	0.0	0.0-0.0	0	0.3	0.0-3.1	*	3.3	2.3-4.4	19	1.1	0.1-2.1	*
No	99.5	95.6-1.0	249	98.2	95.8-1.0	334	93.8	90.8-96.6	279	97.1	95.3-98.9	182

Table 3.12.2: Stigma, violence, and mental health by site (continued)

Stigma, violence, and mental health among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Ever blackmailed for being MSM												
Yes	11.6	7.3-16.1	36	11.0	7.5-14.5	38	29.1	25.9-32.4	96	12.7	7.8-17.6	31
In the last 6 months	6.1	0.1-12.3	19	6.9	3.6-10.1	24	14.2	7.6-20.7	47	8.4	4.3-12.4	20
Not in the last 6 months	5.5	3.6-7.3	17	4.1	0.5-7.7	14	15.1	13.6-16.6	49	4.2	2.1-6.3	11
No	88.4	81.7-94.9	214	89.0	86.1-92.0	302	70.7	64.2-77.4	215	87.3	82.5-92.4	159
Ever treated unfairly/denied healthcare for being MSM												
Yes	2.9	0.0-6.8	12	3.6	0.0-7.2	13	15.1	11.4-18.8	46	7.6	3.9-11.3	14
In the last 6 months	2.3	0.0-5.6	*	2.7	0.8-4.5	*	5.3	0.0-11.8	25	3.4	0.0-8.7	8
Not in the last 6 months	0.6	0.2-1.0	*	0.9	0.0-3.8	*	9.8	8.7-10.9	21	4.2	2.9-5.4	6
No	97.1	93.7-1.0	239	96.4	93.9-99.0	327	84.9	78.4-91.3	265	92.4	87.0-97.9	176
Ever avoided seeking healthcare services for fear of being identified as MSM												
Yes	8.8	4.3-13.4	31	17.2	13.7-20.8	55	46.7	43.8-49.4	149	42.2	38.2-46.2	85
In the last 6 months	6.6	1.5-11.6	22	12.9	9.0-16.7	42	23.0	17.0-29.0	81	23.9	17.3-30.6	50
Not in the last 6 months	2.2	1.6-2.9	9	4.3	0.4-8.2	13	23.6	21.8-25.5	68	18.3	15.3-21.4	35
No	91.2	86.0-96.3	220	82.8	79.7-85.9	285	53.3	47.4-59.3	161	57.8	50.5-64.9	105
Ever physically/sexually/verbally abused for having sex with men												
Yes	20.1	15.9-24.1	73	19.1	16.0-22.3	74	26.5	23.3-29.8	99	17.5	12.7-22.2	35
In the last 6 months	16.0	10.8-21.1	56	12.3	9.3-15.4	50	17.7	11.3-24.0	66	8.3	1.3-15.2	20
Not in the last 6 months	4.1	2.2-6.0	17	6.8	2.6-10.9	24	8.8	7.7-10.0	33	9.1	7.1-10.9	15
No	80.0	74.5-85.5	177	80.9	77.9-83.9	266	73.5	67.0-79.9	212	82.6	75.6-89.9	155
Physically/sexually/verbally abused for having sex with men by¹												
Family member	17.0	7.7-26.3	14	13.7	6.6-22.2	9	28.3	23.6-32.8	33	12.4	0.0-24.6	6
Sexual partner	4.4	0.0-15.6	*	6.7	0.0-13.3	6	11.8	4.8-18.8	13	7.2	0.0-16.3	*
Friends or other people they know	61.1	52.9-69.2	46	81.6	78.4-84.7	60	69.9	66.3-73.6	67	72.6	63.0-82.8	26
Authority figure ²	2.8	0.0-13.8	*	3.1	0.0-12.2	*	9.0	3.5-14.2	14	10.2	3.4-15.9	6
Healthcare worker	2.7	0.0-13.7	*	1.9	0.0-11.0	*	4.9	0.0-11.8	8	11.9	0.0-22.9	6
Stranger	56.3	48.4-64.6	40	21.6	14.5-25.1	20	49.0	44.7-52.8	59	48.7	36.2-62.7	14
Prison inmate	3.0	0.0-16.7	*	7.9	2.0-15.8	*	7.5	0.4-14.6	7	1.2	0.2-2.0	*
Uniformed services personnel	4.7	0.0-15.0	*	2.6	0.0-9.0	*	6.9	0.0-13.8	12	1.2	0.2-2.0	*
Ever forced to have sex												
Yes	17.3	13.2-21.4	55	25.2	21.9-28.4	82	25.5	21.9-28.9	99	20.8	16.1-25.4	44
In the last 6 months	10.0	3.2-16.7	28	6.5	1.3-11.7	28	12.7	6.1-19.4	42	10.1	3.4-16.9	22
Not in the last 6 months	7.3	5.6-9.0	27	18.7	13.3-24.1	54	12.8	11.1-14.2	57	10.6	8.0-13.2	22
No	82.7	75.7-89.9	196	74.8	71.6-78.0	258	74.6	67.9-81.3	212	79.3	72.1-86.4	146
Forced to have sex by[†]												
Family member	6.3	0.0-17.8	*	2.8	0.0-7.5	*	2.6	0.0-8.7	6	3.5	0.0-7.9	*
Sexual partner	26.8	16.8-35.8	18	21.4	13.3-27.6	21	33.3	28.1-38.5	34	42.4	28.3-56.4	19
Friends	56.0	50.3-62.0	29	46.0	34.8-57.7	37	41.6	36.8-46.4	37	47.8	37.8-58.5	20
Authority figure [‡]	4.0	0.0-14.5	*	0.5	0.0-0.4	*	1.3	0.0-8.1	*	2.0	0.0-4.6	*
Healthcare worker	0.0	0.0-0.0	0	0.0	0.0-0.0	0	0.0	0.0-0.0	0	0.0	0.0-0.0	0
Stranger	12.9	3.2-22.7	7	16.1	1.7-30.4	13	26.9	22.2-31.6	29	5.2	0.0-14.8	*
Prison inmate	0.0	0.0-0.0	0	15.0	6.4-25.3	10	0.0	0.0-0.0	0	0.0	0.0-0.0	0
Uniformed service personnel	0.0	0.0-0.0	0	0.0	0.0-0.0	0	0.9	0.0-7.7	*	0.0	0.0-0.0	0

Table 3.12.2: Stigma, violence, and mental health by site (continued)

Stigma, violence, and mental health among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 251)			Livingstone (N = 340)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Little interest or pleasure in activities												
Not at all	72.6	70.8-74.5	176	59.9	57.8-62.0	209	41.9	37.9-45.9	145	44.3	38.9-49.7	82
Several days	24.1	22.4-25.7	62	39.1	37.1-41.1	127	39.8	37.6-42.0	112	39.9	36.3-43.5	81
More than half the days	2.6	2.0-3.2	*	0.4	0.0-0.9	*	5.6	3.4-7.9	17	9.2	5.8-12.7	15
Nearly every day	0.7	0.4-1.0	*	0.7	0.4-0.9	*	12.7	9.6-15.7	37	6.5	2.9-10.2	11
Feeling low/sad, depressed, or hopeless												
Not at all	73.7	71.0-76.6	171	45.5	43.2-47.9	160	28.9	24.0-33.6	106	46.1	41.3-51.0	75
Several days	22.7	20.7-24.5	71	49.0	46.8-51.2	162	49.5	47.0-52.1	137	37.3	33.6-40.9	79
More than half the days	3.0	1.0-5.1	*	3.9	3.5-4.4	12	11.5	7.5-15.5	25	10.5	7.8-13.3	26
Nearly every day	0.6	0.3-0.9	*	1.6	1.0-2.1	6	10.1	7.6-12.6	43	6.0	2.9-9.3	10
Screened positive for likely depression[§]												
Yes	6.2	1.6-10.8	17	5.2	1.8-8.5	17	29.9	26.6-33.3	89	20.6	15.6-25.8	37
No	93.8	89.2-98.4	234	94.8	91.5-98.2	322	70.1	66.7-73.4	222	79.4	74.2-84.4	152
Suicidal ideation^{**}												
Yes	1.3	0.0-5.5	7	7.5	4.5-10.4	25	13.7	9.8-17.7	44	4.1	0.0-9.4	11
No	98.7	94.5-100	243	92.5	89.6-95.5	315	86.3	82.3-90.2	264	95.9	90.6-100	179

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

† Responses not mutually exclusive

‡ Authority figures include government official, religious leader, teacher, employer, military, police, prison guard.

§ Screened likely for depression based on a PHQ-2 score of 3 or greater (<https://www.hiv.uw.edu/page/mental-health-screening/phq-2>)

** Suicidal ideation based on SBQ-R diagnostic scoring. A score of 8 or higher indicates evidence of suicidal ideation. (<http://youthsuicideprevention.nebraska.edu/wp-content/uploads/2019/09/SBQ-R.pdf>).

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.12.3: HIV-related stigma by site

HIV-related stigma and discrimination reported by men who have sex with men (MSM) who reported that they were living with HIV, by site Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 7)			Livingstone (N = 14)			Lusaka (N = 23)			Solwezi (N = *)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Lost respect or standing in the community because of my HIV status												
Strongly agree/agree	2.4	0.0-15.7	*	0.0	-	0	11.6	3.3-20.0	*	50.0	50.0-50.0	*
Strongly disagree/disagree	97.6	84.3-100.0	*	100.0	-	14	88.4	82.1-94.6	*	50.0	50.0-50.0	*
Think less of myself because of my HIV status												
Strongly agree/agree	2.4	0.0-15.7	*	30.5	15.8-45.2	*	50.7	27.7-73.7	14	0.0	-	0
Strongly disagree/disagree	97.6	84.3-100.0	*	69.3	65.7-73.2	*	49.3	31.9-66.7	9	100.0	-	*
Felt ashamed because of my HIV status												
Strongly agree/agree	2.4	0.0-15.7	*	35.5	24.9-45.7	*	39.2	19.5-59.0	12	0.0	-	0
Strongly disagree/disagree	97.6	84.3-100.0	*	64.7	55.5-72.9	*	60.8	48.5-73.0	11	100.0	-	*

Table 3.12.3: HIV-related stigma by site (continued)

HIV-related stigma and discrimination reported by men who have sex with men (MSM) who reported that they were living with HIV, by site Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 7)			Livingstone (N = 14)			Lusaka (N = 23)			Solwezi (N = *)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
People have talked badly about me because of my HIV status												
Never	96.8	84.3-100.0	*	65.4	57.8-73.7	10	53.5	36.9-70.0	10	50.0	50.0-50.0	*
Ever	3.2	0.0-15.7	*	23.8	10.7-37.7	*	31.4	7.4-55.5	8	50.0	50.0-50.0	*
N/A: no one knows my HIV status	0.0	-	0	9.9	0.0-23.2	*	15.1	5.0-25.2	5	0.0	-	0
I have been verbally insulted, harassed and/or threatened because of my HIV status												
Never	96.8	84.3-100.0	*	69.0	62.7-75.7	10	67.7	52.7-82.7	15	100.0	-	*
Ever	0.0	-	0	25.9	13.2-38.3	*	18.6	0.0-42.4	*	0.0	-	0
N/A: no one knows my HIV status	3.2	0.0-15.7	*	4.3	0.0-18.4	*	13.7	3.9-23.5	*	0.0	-	0
Someone else disclosed my HIV status without my permission												
Never	94.4	68.9-100.0	5	75.8	65.2-85.4	10	56.9	43.9-70.0	10	100.0	-	*
Ever	2.4	0.0-15.7	*	20.6	13.0-30.2	*	29.3	14.6-44.1	*	0.0	-	0
N/A: no one knows my HIV status	3.2	0.0-15.7	*	4.9	0.0-19.3	*	13.7	4.2-23.2	*	0.0	-	0
I have been denied health services because of my HIV status												
Never	100.0	-	7	95.6	91.9-98.5	*	84.7	71.6-97.9	21	100.0	-	*
Ever	0.0	-	0	0.0	-	0	10.4	0.0-34.9	*	0.0	-	0
N/A: no one knows my HIV status	0.0	-	0	4.5	0.0-18.6	*	4.8	0.0-11.9	*	0.0	-	0
Healthcare workers talked badly about me because of my HIV status												
Never	100.0	-	7	95.3	92.9-98.2	*	95.2	91.2-99.1	*	100.0	-	*
Ever	0.0	-	0	0.0	-	0	4.8	0.0-11.9	*	0.0	-	0
N/A: no one knows my HIV status	0.0	-	0	4.6	0.0-19.2	*	0.0	-	0	0.0	-	0
A health worker disclosed my HIV status without my permission												
Never	100.0	-	7	87.7	80.9-94.3	12	87.6	80.6-94.6	*	100.0	-	*
Ever	0.0	-	0	7.7	0.0-21.5	*	12.4	2.7-22.1	*	0.0	-	0
N/A: no one knows my HIV status	0.0	-	0	4.3	0.0-19.3	*	0.0	-	0	0.0	-	0

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

3.13 COVID-19

Key findings

- At all four sites, COVID-19 resulted in a decrease in the number of MSM/TGW sex partners and a decrease in the number of opportunities to have sex, but the degree of the impact varied across sites. For instance, MSM in Solwezi (52.9%) and Lusaka (49.7%) were most likely to have a decrease in the number of MSM/TGW sex partners, followed by Livingstone (41.1%) and Kitwe (29.1%). There were decreased opportunities to have sex due to COVID-19 according to 63.6% of MSM in Solwezi, 51.1% in Lusaka, 47.4% in Livingstone, and 26.7% in Kitwe. After government plans to manage COVID-19 were instituted, between 5.1%-10.5% of MSM suffered an increase in physical, sexual, or verbal harassment or abuse (Table 3.13.1).
- MSM engaged in sex work had fewer clients due to COVID-19 at most sites (Solwezi, 72.4%; Lusaka, 62.5%; and Livingstone, 56.2%). MSM engaged in sex work at these sites also experienced a loss of income due to COVID-19 or government plans to manage COVID-19 (Solwezi, 67.3%; Lusaka, 59.8%; and Livingstone, 59.1%; Table 3.13.2).
- Similarly, the COVID-19 epidemic had impacts on access to and uptake of prevention services that varied by site. More MSM in Solwezi (33.7%) reported a decrease in access to condoms due to COVID-19 compared with the other three sites (range: 24.3%-29.6%). MSM at all sites reported a decrease in use of condoms due to the COVID-19 pandemic (range: 22.5%-23.9%). MSM in Livingstone (34.4%) and Solwezi (31.0%) were more likely to report a decrease in STI testing or treatment due to COVID-19, followed by Lusaka (22.5%) and Kitwe (7.7%). MSM in Lusaka (19.1%) were more likely to report difficulty getting an HIV test due to COVID-19 compared with MSM in Livingstone (8.2%) and Kitwe (2.4%). MSM at all sites reported a decrease in availability of PrEP due to COVID-19 (range: 13.9%-27.4%; Table 3.13.3).
- According to HIV-positive MSM on treatment, access to HIV care and treatment was not substantially impacted by COVID-19. Some in Lusaka (13.0%) and Livingstone (9.7%) had difficulty getting HIV medications due to COVID-19. Among HIV-positive MSM receiving care, 19.2% in Lusaka, 6.3% in Livingstone, and 2.5% in Kitwe had difficulty getting viral load or other labs done while at the clinic due to COVID-19 (Table 3.13.4).
- Almost all MSM across all four sites knew the COVID-19 virus could spread when an infected person touches someone's hand/face, kisses them, or sneezes/coughs near them (range: 95.4%-98.1%); that washing hands helps prevent infection (range: 93.8%-98.5%); and that avoiding touching your eyes, nose, and mouth with unwashed hands helps prevent infection (range: 90.4%-94.0%; Table 3.13.5).

Table 3.13.1: Impacts of COVID-19 on risk behavior and experiences of violence by site

Impacts of COVID-19 on risk behavior and experiences of violence by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 244)			Livingstone (N = 336)			Lusaka (N = 310)			Solwezi (N = 186)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
COVID-19 impact on the number of MSM/TGW sex partners												
Fewer partners	29.1	25.4-32.9	83	41.1	38.5-43.7	145	49.7	47.3-52.5	164	52.9	49.2-56.3	97
Same number	56.1	53.1-58.9	119	54.5	52.3-56.8	175	46.5	43.8-49.4	127	43.3	39.3-47.5	81
More partners	14.9	10.8-18.9	42	4.3	1.0-7.7	16	3.7	0.0-7.5	19	3.8	0.0-7.5	8
COVID-19 impact on opportunities to have sex												
Fewer opportunities	26.7	23.2-30.3	77	47.4	45.0-49.8	162	51.1	48.4-53.8	148	63.6	60.5-66.6	119
Same amount	56.4	53.6-59.3	122	46.2	43.7-48.7	154	43.0	40.3-45.9	142	30.4	26.0-34.9	58
More opportunities	16.9	12.9-20.7	49	6.4	3.0-9.8	23	5.8	2.3-9.5	21	5.9	0.8-10.9	13

Table 3.13.1: Impacts of COVID-19 on risk behavior and experiences of violence by site (continued)

Impacts of COVID-19 on risk behavior and experiences of violence by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 244)			Livingstone (N = 336)			Lusaka (N = 310)			Solwezi (N = 186)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
COVID-19 impact on use of hook-up apps												
Decreased	19.0	14.6-23.4	45	34.6	31.9-37.4	125	38.8	35.9-41.8	119	48.9	45.0-52.9	92
Unchanged	73.1	70.9-75.2	171	59.9	57.8-62.1	194	53.6	51.1-56.2	154	45.2	41.3-49.0	75
Increased	8.0	3.4-12.5	26	5.5	2.1-8.8	14	7.5	3.9-11.1	34	5.8	2.0-9.6	11
COVID-19 impact on recreational drug use												
Decreased	20.4	16.9-23.8	43	22.6	19.4-25.7	77	6.2	2.3-10.1	19	15.9	11.2-20.7	30
Unchanged	20.8	17.2-24.3	46	40.1	37.4-42.8	132	12.4	8.5-16.1	41	33.0	28.6-37.3	60
Increased	9.1	5.9-12.4	24	3.5	0.7-6.4	15	4.7	1.0-8.3	20	5.3	0.1-10.4	10
Never used drugs	49.6	46.9-52.3	112	33.8	30.9-36.7	116	76.9	75.4-78.4	229	45.9	42.0-49.8	88
COVID-19 impact on alcohol consumption												
Decreased	18.7	14.5-22.7	46	35.0	32.2-37.8	120	42.7	39.9-46.0	117	50.9	47.3-54.7	92
Unchanged	38.8	35.6-41.8	99	35.3	32.6-38.0	119	22.0	18.4-25.5	89	21.4	16.7-26.3	48
Increased	25.0	21.0-28.5	57	8.3	4.8-11.8	28	12.0	8.3-15.7	47	8.9	5.0-12.6	16
Never drank alcohol	17.9	14.3-21.3	36	21.4	18.0-24.7	73	23.2	19.4-26.9	58	18.7	14.2-23.4	33
Suffered an increase in physical, sexual, or verbal harassment or abuse since government plans to manage COVID-19 were instituted												
Yes	10.5	6.0-14.9	39	6.8	3.8-9.8	24	9.4	5.8-13.0	32	5.1	0.1-10.0	16
No	89.5	87.9-91.0	212	93.2	92.5-93.9	316	90.6	89.6-91.6	279	94.9	93.8-96.0	174
Suffered an increase in physical/sexual/verbal abuse by†												
Family member	20.9	9.2-33.2	7	19.1	8.6-29.2	*	32.1	27.1-35.0	12	18.4	2.9-34.2	*
Sexual partner	15.8	6.5-25.9	*	2.2	0.0-4.4	*	20.8	16.5-24.3	7	25.1	6.1-43.5	*
Friends	51.2	41.5-61.0	21	88.2	82.8-93.2	21	51.2	49.1-55.7	16	50.1	28.0-71.1	9
Authority figure‡	8.8	0.0-23.5	*	2.1	0.0-4.8	*	10.8	6.9-15.5	*	17.9	5.9-30.7	*
Healthcare worker	3.4	0.0-18.3	*	0.0	-	0	7.0	2.9-11.6	*	4.2	0.0-9.9	*
Stranger	64.5	61.7-70.2	25	33.9	21.3-46.9	10	68.6	66.5-71.5	20	62.9	44.3-81.2	11
Prison inmate	3.4	0.0-18.1	*	0.0	-	0	0.0	-	0	4.2	0.0-9.6	*
Uniformed services personnel	4.4	0.0-17.3	*	2.1	0.0-4.5	*	7.7	3.5-12.3	5	22.7	6.0-39.2	*
Other	0.0	-	0	0.0	-	0	1.6	0.0-5.8	*	0.0	-	0

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

† Responses not mutually exclusive.

‡ Authority figures include government official, religious leader, teacher, employer, military, police, prison guard.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.13.2: Impacts of COVID-19 on sex worker experiences by site

Impacts of COVID-19 on sex worker experiences by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 49)			Livingstone (N = 65)			Lusaka (N = 68)			Solwezi (N = 31)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
How does the number of clients you've had during COVID-19 compare to the number of clients you typically have?												
Fewer clients because of COVID-19	41.2	38.9-43.0	23	56.2	47.2-64.9	38	62.5	59.4-65.9	45	72.4	64.1-80.0	22
Similar number of clients before and during COVID-19	47.5	45.4-50.9	17	41.6	31.6-51.5	*	33.8	30.8-36.9	17	28.0	12.3-43.3	9
More clients because of COVID-19	11.2	8.1-13.6	9	2.2	0.7-3.7	*	3.6	0.0-7.6	6	0.0	-	0
Has the price that you charge clients decreased, not changed, or increased because of COVID-19?												
Decreased because of COVID-19	24.1	21.3-26.1	16	36.0	26.8-44.9	23	38.7	35.0-42.2	28	46.8	37.2-55.1	13
Not changed or changed for reasons other than COVID-19	53.6	50.8-55.7	18	56.9	46.9-67.0	37	54.4	51.6-56.8	32	28.1	13.3-43.9	8
Increased because of COVID-19	22.6	20.0-25.5	14	7.4	2.8-11.9	5	7.0	3.3-11.2	8	25.9	9.4-41.5	9
Have you lost income because of COVID-19 or government plans to manage COVID-19?												
Yes	38.9	35.2-40.8	17	59.1	51.1-66.9	40	59.8	57.2-63.0	42	67.3	59.0-74.5	21
No	62.2	61.0-63.4	32	41.0	30.7-51.1	25	39.9	36.7-43.2	26	33.1	18.9-47.4	10
Have you met clients in less risky, equally risky, or more risky locations because of COVID-19 or government plans to manage COVID-19?												
Less risky	34.9	29.8-40.0	14	48.9	40.5-57.3	30	39.3	35.7-42.6	24	46.2	31.6-60.1	14
Equally risky	51.4	45.9-56.2	22	34.8	24.5-45.0	21	40.1	36.6-43.2	27	13.3	7.2-19.5	7
More risky	13.7	6.7-20.9	10	16.5	10.7-22.1	13	20.6	16.8-24.4	18	41.3	30.1-51.8	10
Have you had sex with clients in less risky, equally risky, or more risky locations because of COVID-19 or government plans to manage COVID-19?												
Less risky	33.8	31.3-37.1	18	55.6	48.4-62.9	34	50.6	47.7-54.1	25	63.4	50.4-77.2	21
Equally risky	54.8	52.0-57.5	19	33.2	23.2-42.8	22	30.1	26.3-33.2	28	25.6	14.0-37.2	*
More risky	11.7	7.9-15.1	10	11.2	6.7-15.2	9	19.3	15.0-23.5	16	11.1	0.3-21.8	*
Has your use of condoms with clients decreased, not changed, or increased because of COVID-19?												
Decreased because of COVID-19	13.3	9.3-15.8	6	21.0	12.8-29.2	*	20.9	17.3-25.0	13	9.1	0.0-19.6	*
Not changed or changed for reasons other than COVID-19	74.5	73.7-77.0	37	78.2	72.7-83.7	49	65.9	63.4-67.8	48	67.9	60.4-74.5	21
Increased because of COVID-19	11.9	9.5-14.8	6	0.7	0.0-1.6	*	13.2	9.2-16.6	8	22.0	6.5-38.7	*

Table 3.13.2: Impacts of COVID-19 on sex worker experiences by site (continued)

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk. The denominator for a characteristic may differ from the site total due to nonresponse or missing data. Due to rounding, estimate total sums may not equal 100.0%. Survey weights were utilized for all estimates.

Table 3.13.3: Impacts of COVID-19 on access to and use of HIV prevention services by site

Impacts of COVID-19 on access to and use of HIV prevention services by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021

Characteristics	Kitwe (N = 234)			Livingstone (N = 339)			Lusaka (N = 339)			Solwezi (N = 189)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
COVID-19 impact on access to condoms												
Decreased	29.6	25.4-33.9	58	24.3	21.4-27.3	91	24.8	21.2-28.3	79	33.7	29.3-37.9	67
Unchanged	56.9	54.2-59.3	143	70.8	69.0-72.7	232	65.2	63.1-67.2	203	57.2	53.7-60.6	103
Increased	13.5	9.1-18.1	33	4.8	1.1-8.5	16	10.1	6.7-13.6	26	9.2	4.5-13.9	19
COVID-19 impact on use of condoms												
Decreased	22.8	18.5-26.8	46	23.9	20.8-27.0	86	22.5	18.9-26.1	60	23.5	19.0-28.3	49
Unchanged	63.4	61.3-65.2	162	72.6	70.8-74.3	241	72.2	70.5-73.9	233	64.7	61.5-68.0	116
Increased	14.0	9.6-18.3	29	3.5	0.8-6.2	12	5.3	1.8-8.7	17	11.7	7.3-16.1	24
COVID-19 impact on access to lubricants												
Decreased	21.9	17.8-26.0	46	35.1	32.5-37.8	120	25.0	21.6-28.4	85	21.9	17.7-26.3	52
Unchanged	63.8	61.1-66.3	134	63.1	61.1-65.1	194	71.6	69.7-73.6	205	73.0	70.0-76.2	115
Increased	14.4	9.9-18.7	34	1.7	0.0-4.1	5	3.4	0.0-7.5	14	5.1	0.0-10.2	10
COVID-19 impact on access to STI testing or treatment												
Decreased	7.7	3.9-11.8	16	34.4	31.8-37.1	117	22.5	18.8-25.9	70	31.0	26.6-35.6	58
Unchanged	88.5	87.1-89.9	157	63.4	61.3-65.5	210	69.7	67.7-71.7	220	64.7	61.7-67.6	112
Increased	3.8	0.1-7.6	10	2.1	0.0-4.5	6	7.8	4.1-11.5	19	4.3	0.5-8.1	10
Difficulty getting STI test due to COVID-19												
Yes	2.1	0.0-6.3	7	7.8	4.5-11.2	25	20.9	17.1-24.6	63	8.8	4.3-13.4	19
No	12.9	8.6-17.4	38	38.6	35.5-41.6	122	42.7	40.1-45.4	150	33.6	29.4-37.9	68
Have not tried to get a test since COVID-19	84.8	83.6-86.3	206	53.7	51.6-55.6	193	36.4	33.3-39.7	98	57.7	54.3-60.8	103
COVID-19 impact on access to HIV testing												
Decreased	11.8	7.5-16.2	26	28.9	25.9-32.0	89	23.6	20.1-27.0	61	26.0	21.4-30.8	49
Unchanged	77.6	76.1-79.2	164	68.4	66.6-70.2	223	70.4	68.6-72.0	209	67.9	65.1-70.7	116
Increased	10.5	6.4-14.8	26	2.6	0.2-5.1	10	6.1	2.7-9.5	17	6.2	1.0-11.3	13
COVID-19 impact on testing for HIV												
Tested less than usual	32.7	29.2-36.6	75	40.0	37.4-42.7	128	52.3	49.9-54.9	137	44.4	40.3-48.3	79
Tested same as usual	50.0	47.2-52.9	126	55.3	53.0-57.6	178	44.0	41.5-46.6	130	51.3	47.5-55.1	83
Tested more than usual	17.5	12.6-21.6	27	4.7	1.9-7.4	18	3.7	0.1-7.3	19	4.4	0.9-7.9	8

Table 3.13.3: Impacts of COVID-19 on access to and use of HIV prevention services by site (continued)

Impacts of COVID-19 on access to and use of HIV prevention services by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 234)			Livingstone (N = 339)			Lusaka (N = 339)			Solwezi (N = 189)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Difficulty getting HIV test due to COVID-19												
Yes	2.4	0.0-6.4	7	8.2	4.8-11.5	28	19.1	15.7-22.5	60	13.7	9.0-18.5	29
No	69.2	67.0-71.5	162	75.0	73.5-76.6	248	67.9	66.1-69.9	194	63.3	60.0-66.8	111
Have not tried to get a test since COVID-19	28.5	24.9-32.3	75	16.8	13.6-20.1	50	12.9	9.5-16.6	34	22.8	18.3-27.3	46
Among those who had taken PrEP in the six months before the survey, COVID-19 impact on access to PrEP¹												
Decreased	13.9	8.5-18.6	*	20.7	14.2-27.3	*	27.4	20.3-32.2	*	20.4	6.2-35.8	*
Unchanged	79.9	77.5-82.7	21	66.3	62.3-70.5	19	72.2	71.5-74.5	26	79.6	73.5-86.1	*
Increased	6.3	1.1-12.0	*	12.8	6.2-19.7	*	1.1	0.0-7.5	*	0.0	-	0
Difficulty taking PrEP daily due to COVID-19¹												
Yes	20.8	15.0-24.6	8	17.0	10.9-22.7	7	23.7	17.6-28.3	*	19.8	7.0-31.4	*
No	80.1	76.6-82.9	25	83.2	79.5-86.6	23	76.6	75.5-79.5	*	80.5	72.1-89.7	*

* To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.13.4: Impacts of COVID-19 on access to and use of HIV care services among those living with HIV

Impacts of COVID-19 on access to and use of HIV care services among men who have sex with men (MSM) who self-reported as HIV positive by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 7)			Livingstone (N = 14)			Lusaka (N = 23)			Solwezi (N = *)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
HIV care experiences in response to COVID-19 or government plans to manage COVID-19†												
Been unable to get medicine I need because of COVID-19	0.0	-	0	5.6	0.0-15.4	*	16.2	6.0-26.3	5	0.0	-	0
I cancelled a clinic or doctor's appointment to avoid being around others	14.4	0.0-30.4	*	15.6	0.0-40.7	*	29.3	7.5-51.2	6	0.0	-	0
A clinic or doctor closed or cancelled my appointment because of COVID-19	0.0	-	0	0.0	-	0	25.9	2.8-49.0	6	50.0	50.0-50.0	*
None	0.0	-	0	62.3	24.8-99.8	7	31.4	8.5-54.3	8	0.0	-	0
Other	51.2	5.1-97.3	*	63.3	25.0-100.0	7	31.4	7.9-55.0	8	0.0	-	0
Among those on treatment, had difficulty getting HIV medications due to COVID-19												
Yes	0.0	-	0	9.7	0.0-28.3	*	13.0	0.0-26.2	*	0.0	-	0
No	100.0	-	6	90.8	72.9-100.0	*	87.0	73.8-100.0	*	100.0	-	*

Table 3.13.4: Impacts of COVID-19 on access to and use of HIV care services among for those living with HIV (continued)

Impacts of COVID-19 on access to and use of HIV care services among men who have sex with men (MSM) who self-reported as HIV positive by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 7)			Livingstone (N = 14)			Lusaka (N = 23)			Solwezi (N = *)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Among those who reported being on ART currently, had difficulty taking HIV medications daily due to COVID-19												
Yes	0.0	-	0	0.0	-	0	8.0	0.0-23.6	*	0.0	-	0
No	100.0	-	6	100.0	-	11	92.0	76.4-100.0	*	100.0	-	*
Among those receiving HIV care, had difficulty getting to a clinic appointment due to COVID-19												
Yes	0.0	-	0	10.3	0.0-30.3	*	21.5	0.0-45.5	5	0.0	-	0
No	100.0	-	6	90.3	70.8-100.0	*	78.5	54.5-100.0	14	100.0	-	*
Among those receiving HIV care, had difficulty getting viral load or other labs done while at the clinic due to COVID-19												
Yes	2.5	0.0-15.0	*	6.3	0.0-22.2	*	19.2	0.0-43.7	*	0.0	-	0
No	97.5	85.0-100.0	*	93.6	77.7-100.0	*	80.8	56.3-100.0	*	100.0	-	*
Among those receiving HIV care, had difficulty getting viral load or other labs done while at the clinic due to COVID-19												
Yes	2.5	0.0-15.0	*	6.3	0.0-22.2	*	19.2	0.0-43.7	*	0.0	-	0
No	97.5	85.0-100.0	*	93.6	77.7-100.0	*	80.8	56.3-100.0	*	100.0	-	*

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

†Responses not mutually exclusive.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

Table 3.13.5: Knowledge and attitudes about COVID-19 by site

Perceptions of COVID-19 by site among men who have sex with men (MSM) by site, Zambia MSM BBS 2021												
Characteristics	Kitwe (N = 247)			Livingstone (N = 339)			Lusaka (N = 311)			Solwezi (N = 190)		
	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI	n
Infected people may not show symptoms for 3-14 days												
True	71.6	69.2-74.1	152	52.3	50.1-54.5	173	69.9	68.2-71.8	199	67.0	64.0-70.0	114
False	28.4	24.2-32.4	52	47.7	45.3-50.2	152	30.0	26.7-33.4	84	33.0	28.7-37.4	68
Virus can spread when an infected person touches someone's hand/face, kisses them, or sneezes/coughs near them												
True	97.4	97.1-97.8	239	95.4	94.7-96.1	324	96.5	95.9-97.2	300	98.1	97.1-99.1	*
False	2.5	0.0-6.3	5	4.6	1.8-7.4	15	3.5	0.0-7.1	9	1.9	0.0-5.7	*
Washing hands helps prevent infection												
True	98.5	98.1-98.8	*	94.8	94.1-95.4	325	93.8	93.0-94.6	295	95.1	94.1-96.0	181
False	1.5	0.0-5.5	*	5.2	2.4-8.1	14	6.2	2.2-10.2	16	5.0	1.3-8.7	9
Avoiding touching your eyes, nose, and mouth with unwashed hands helps prevent infection												
True	90.4	89.3-91.6	225	93.2	92.4-93.9	315	93.1	92.2-93.9	289	94.0	92.6-95.3	175
False	9.6	5.6-13.6	20	6.8	3.9-9.7	24	7.0	3.4-10.5	19	6.0	2.1-10.0	14
Perceived risk of infection												
Very low	36.1	33.0-39.5	84	11.4	8.0-14.8	37	18.3	14.6-22.0	42	8.0	3.5-12.5	14
Low	27.2	22.8-31.4	61	33.8	31.1-36.6	115	23.0	19.5-26.5	75	40.5	36.1-44.7	69
Medium	15.8	11.5-20.1	40	24.4	21.2-27.6	82	34.1	30.9-37.1	109	31.6	27.3-35.9	61
High	5.4	1.5-9.2	22	13.5	10.4-16.5	48	15.2	11.4-18.9	54	17.7	13.0-22.3	37

*To protect the identity of survey respondents, numerators greater than 0 but less than 5 are suppressed with an asterisk. In addition, in categories where a numerator that was greater than 0 but less than 5 could be guessed, the next lowest numerator is also suppressed with an asterisk.

The denominator for a characteristic may differ from the site total due to nonresponse or missing data.

Due to rounding, estimate total sums may not equal 100.0%.

Survey weights were utilized for all estimates.

3.14 REFERENCES

1. Young PW, Zielinski-Gutierrez E, Wamicwe J, et al. Use of viral load to improve survey estimates of known HIV-positive status and antiretroviral treatment coverage. *AIDS*. 2020;34(4):631-636. doi:10.1097/QAD.0000000000002453.

4. DISCUSSION

4.1 POPULATION SIZE ESTIMATES, PARTICIPATION, AND DEMOGRAPHICS OF MSM AT FOUR TOWNS IN ZAMBIA

This survey was the first to use multiple independent and probability-based methods for PSE to demonstrate that MSM make up a small but substantial proportion (0.8%-1.5%) of the population in these urban centers in Zambia. Civil society organizations can use these data to advocate for the resources the MSM community needs for HIV services. It should be noted that the population skewed young, with median ages ranging from 22-27 years, which may reflect the survey RDS methodology, but also may also reflect a greater willingness on the part of youth to acknowledge their sexual orientation.

In addition, the vast majority considered themselves to be either gay or bisexual. Very few were married to women. However, it is unclear the extent to which there may be a hidden population of MSM who consider themselves straight that the survey did not reach.

The MSM population is diverse in terms of education and tribal origins. The high rate of under-employment and unemployment may be an artifact of the young age of the survey population, as well as economic hardship related to COVID-19 and its aftereffects.

4.2 HIV DIAGNOSIS, PREVALENCE, RECENCY, CARE AND TREATMENT AND VIRAL LOAD SUPPRESSION

Consistent with other data sources, HIV prevalence among MSM at these four sites was high compared to HIV prevalence among comparably aged men in the general population,¹ with particularly high rates in Lusaka and among MSM aged 30 and older.

While the survey did not identify many recent infections, those that were found provide evidence that it is possible to identify these individuals early in the course of their infection. However, most MSM living with HIV had long-term infections, and a large proportion of these did not disclose their status to the survey counsellors (based upon adjustment of self-reported status with viral load < 200 copies/mL). This was especially evident in some sites such as Kitwe, where only 1 in 5 disclosed their HIV-positive status to the counsellor. This hinders the reliable assessment of access to and uptake of HIV treatment, care, and TB services among the MSM population living with HIV.

Most sites fell substantially short of the first 95 target; however, Kitwe and Livingstone achieved the second 95 target, and all four sites have achieved the third 95 target. Still, because of the shortfall in diagnosis, achievement of the overall 95-95-95 target of VLS among all the MSM living with HIV was only achieved in Kitwe. Reaching this target signals that a program is effectively reaching the KP with testing, treatment, and support to achieve VLS.

4.3 HIV RISK FACTORS

Although 50%-60% of the MSM in the survey considered themselves to be gay, the majority have also had vaginal or anal sex with a female partner—in fact, the rates of reported early sexual debut with a female partner were comparable if not slightly higher than with a male partner. However, the median number of lifetime male partners among MSM was at least as high, and condom use at last sex was only reported by about one half to three quarters of the time regardless of the sex of their partner. The substantial proportion of participants who reported STI symptoms and inconsistent health-seeking behavior to diagnose and treat those symptoms may need to be addressed by KP programs.

Transactional sex was not uncommon in the community, both buying and selling, ranging from approximately 10%-20% of MSM participating in transactional sex. MSM engaged in sex work experienced abuse and forced sex—and their engagement in sex work makes it more difficult for them to seek help from police.

Alcohol dependency and drug use was common among MSM. Alcohol dependency varied markedly by site but was particularly common in Lusaka and Livingstone, while marijuana use was more commonly reported in Kitwe and Solwezi. In addition, substantial proportions reported using other drugs.

4.4 HIV KNOWLEDGE, OUTREACH SERVICES, AND ACCESS TO AND UPTAKE OF PREVENTION SERVICES

About half to two-thirds of MSM had comprehensive HIV knowledge, but boys and men under 25 years of age were less likely to answer all the questions correctly. Most MSM were unaware that unprotected anal sex puts them at greater risk of HIV acquisition and that unprotected receptive anal intercourse was riskier than insertive anal intercourse. This suggests a major gap in prevention education services tailored to the needs of the community, which was reflected in the HIV messages MSM received from outreach services, which most said were not specific to MSM. Notably, while many were concerned that they might be HIV positive before testing in the survey, their perceived risk of acquiring HIV in the next 12 months was relatively low.

Reported access to HIV testing services varied by site, but the majority of MSM had ever been tested for HIV. MSM in Kitwe reported the lowest uptake of testing services (both ever and in the 6 months before the survey); however, Kitwe had the best performance of the first 95 target, with over 90% of MSM living with HIV aware of their HIV-positive status.

Condom access from health facilities was over 80% but many (approximately 20-25%) MSM had trouble accessing condoms in the year before the survey. In addition, there were many situations where they reported they were less likely to wear condoms, including when they were drunk or high—which is concerning considering the high rates of alcohol dependency as well as reported marijuana and other drug use in the community.

Awareness of PrEP varied among HIV-negative MSM, but reported interest in taking PrEP was high—in fact, many of the HIV-negative individuals who came back for the second survey visit reported that they had sought out PrEP services. Awareness of PEP was lower, although a small proportion of the community had accessed it. Demand creation activities for both PEP and PrEP may need to address the perception of low risk of HIV acquisition in the community.

4.5 COMMUNITY COHESIVENESS, STIGMA AND DISCRIMINATION

The survey also indicates that the MSM community in Zambia is resilient and cohesive, with most MSM believing that the community would provide financial, health related, psychosocial, and even housing support to one another. Although same sexual activity is illegal in Zambia, a low proportion reported being arrested for being MSM, and less than 15% reported ever being treated unfairly or denied healthcare because of being MSM. However, more than 40% in Lusaka and Solwezi reported that they avoided seeking healthcare because they were afraid of being identified as MSM. Both Lusaka and Solwezi also had higher rates of screening positive depression (over 20%).

Rates of HIV-related stigma among the HIV-positive MSM are difficult to interpret due to many not disclosing their HIV-positive status during the survey interview.

4.6 COVID-19 IMPACTS

The survey demonstrated contradictory ways in which COVID-19 epidemic complicated the assessment on progress on HIV related indicators. On one hand, it was possibly associated with a decrease in the opportunities to acquire HIV (a reduced number of partners, sexual acts, and transactional clients) among MSM; however, access to and uptake of prevention services (related to condoms, STI testing and treatment, HIV testing and PrEP) also decreased. HIV treatment and care services appear to have been impacted as well, though to a lesser extent. However, any interruption in treatment can lead to adverse health outcomes for a person living with HIV.

4.7 REFERENCES

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5. CONCLUSIONS AND NEXT STEPS

5.1 REACHING THOSE HARDEST TO REACH

To achieve PEPFAR's enhanced goal of achieving 95-95-95 by 2030, addressing the HIV prevention, care, and treatment needs of KP including MSM, who are disproportionately affected by HIV, will be essential. The Zambia MSM BBS 2021 characterized the demographics of the population of MSM in Zambia and provided critical data on the primary outcomes of HIV prevalence, HIV recency, access to HIV treatment and care and VLS among those living with HIV. The survey also provided critical insights into risk-taking behaviors, HIV knowledge, and uptake of testing and prevention services among MSM in four large urban towns.

HIV prevalence among MSM was higher than that of men in the general population, particularly among those 30 years and older. Achievement of the UNAIDS 95-95-95 goals varied, though of those who were aware of their HIV-positive status, most were on ART and achieved VLS. While many MSM expressed interest in receiving HIV prevention services, particularly PrEP, many were not aware of the risk for HIV acquisition associated with receptive anal intercourse.

The survey also found substantial levels of the community cohesiveness. Finally, the survey explored the impact of the COVID-19 epidemic on risk taking behavior and access to services among MSM.

MOH encourages public health staff, programmers, epidemiologists, and policy makers, working together with civil society organizations for MSM, to explore the data for their respective program areas and utilize the data to inform strategic planning for HIV treatment and prevention programs and other services to support the health of the MSM population.

Appendices

APPENDIX A METHODOLOGY AND TECHNICAL DETAILS

This document provides a brief explanation of the statistical software and methods used to generate population size estimates and analytic tables for the 2021 Zambia MSM and TGW Biobehavioral Survey.

Population Size Estimation

Three independent methods were used to estimate the population size for MSM and TGW. Due to the sample size of the study, separate estimates for the MSM and TGW populations were deemed not to be sufficiently accurate, so only the total population size is reported.

Three-Source Capture-Recapture

Survey staff visited selected locations in each survey site where the formative assessment indicated that MSM and TGW congregate. At each site, they approached potential participants, confirmed they met eligibility criteria, and offered them small gifts (bracelets). This process was repeated approximately one week later at a different set of locations, and a second small gift was offered. Staff also recorded whether the eligible participants had previously received one of the gifts from the first round.

The Respondent-Driven Sample (RDS) include questions on whether participants had received either or both capture event gifts. The resulting data was combined with that collected from the first two captures to generate capture histories. These were input into the shinyrecap web app¹ and estimates were produced using a Bayesian Latent Class model.

Successive Sampling

The successive sampling recruitment patterns and participants' self-reported network sizes were used to compute population size estimates using the sspse R package². The imputed visibility option was used to help account for measurement errors in reported network sizes.

Service Multipliers

Two providers of services to the target population, Open Doors, and The Planned Parenthood Association of Zambia (PPAZ) were approached for the study. Each provided data on the number of MSM and TGW they had provided services to during 2020. Participants recruited into the RDS were also asked whether they had received services from either of these providers during 2020. RDS methods (see below) were used to estimate the proportion of the target population in each site who received services from each provider, with confidence intervals. The service provider counts were divided by the estimated proportion to produce service multiplier population size estimates. In Lusaka and Solwezi, PPAZ data was not available.

Consensus Estimation

To generate a single estimate from the independent population size estimates in each site, we used a Bayesian synthesis model for consensus estimation³. Design confidence parameters were determined through discussion with stakeholders and interest groups as well as technical experts to determine realistic priors and to evaluate the level of bias or measurement error present in each estimate. The service multiplier estimates were found to be too inconsistent with the other methods, so were not included in the consensus estimates.

Analytic Tables

Data cleaning and preparation

Before beginning estimation, the RDS response data from each site was cleaned to remove duplicate or erroneous records and combined into a single dataset which included supplemental lab test data not captured on the interview form. Various recodes were programmed and tested to allow for estimation of outcomes such as viral load suppression and 95-95-95 goals, and scores computed for alcohol dependence, anxiety, and suicidal ideation from the corresponding question sets. Responses to variables with an “Other specify” category were examined and where necessary were upcoded: either re-assigned to existing response options or combined into new categories.

Adjustment for the effect of COVID-19 on reported network size

Because the survey was paused due to the COVID-19 epidemic and resulting government-ordered shutdowns and restrictions within Zambia, we adjusted the network size used in RDS estimation. These adjustments were intended to account for the change in distribution of reported network sizes of participants before and after the study was paused due to the COVID-19 restrictions. Participants had smaller network sizes in the later period, so to reduce bias in the weights an adjustment factor was applied to the network sizes of participants enrolled during each period. This factor for each period j was computed for as

$$m_j = \frac{n_j}{\sum_{i=1}^{n_j} \frac{1}{d_{ji}}}$$

where n_j is the sample size in period j , and d_{ji} is the reported network size of participant i . The adjusted network size for person i in sample period j was then calculated as d_{ji}/m_j . The effect of this adjustment is that the probability of selection should be the same, on average, for participants with the same adjusted network size.

Data analysis and estimation

Estimates of proportions for the analytic tables were generated from the RDS data using the RDS package in R⁴. Estimates were generally computed using Gile’s bootstrap method as implemented in the function `RDS.bootstrap.intervals`. In some cases where the number of cases included was very small the bootstrap function failed to give reasonable results, and the sequential sampling estimate using Gile’s estimator was used via the function `RDS.SS.estimates`.

To validate coding and estimation, estimates were also computed using weights generated with Gile’s sequential sampling estimator via the `gile.ss.weights` function. These weights were exported and appended to the data and used as input to SAS survey procedures to estimate proportions and CIs with Taylor series variances. Generally, the point estimates computed this way are very close to the bootstrap estimates, but confidence intervals can differ by several percentage points, especially in small cells.

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**Biobehavioral Survey among Men Who Have Sex with Men in Zambia, 2021
(Zambia MSM BBS 2021)**

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