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SAHMS Final Report

Survey on female sex workers in South Africa

2013-2014

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South African Health Monitoring Survey (SAHMS): An Integrated Biological and Behavioural Survey among Female Sex Workers, South Africa 2013 – 2014

Final Report

Partners

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1. Preface

We are pleased to be able to present this Final Report of the South African Health Monitoring Survey with Female Sex Workers (SAHMS-FSW, 2013-14). The SAHMS-FSW survey represents the first attempt to conduct behavioural and HIV disease surveillance with the female sex worker populations in South Africa's largest metropolitan areas of Johannesburg, Cape Town, and Durban, and provide data on the epidemiology of HIV, behavioural risk factors, and targeted prevention and treatment programme coverage and uptake in this critical key affected population in nearly a decade.

The SAHMS-FSW complements other HIV surveillance efforts, particularly the South African National HIV Prevalence, Incidence and Behaviour Survey, 2012 National Household Survey (NHS). While the NHS has provided critical data about South Africa's general population needs, the 2012-2016 National Strategic Plan called for additional, targeted surveillance surveys that utilize specialized sampling methods to gather the data required to inform the national HIV strategy in key affected populations including FSW, men who have sex with men (MSM) and persons who inject drugs (PWID). Through the SAHMS-FSW, we have responded directly to the NSP, and have built the capacity and infrastructure in the health sector to continue targeted HIV surveillance activities with key populations.

The data from the SAHMS-FSW confirm what has long been assumed: South Africa's FSW carry an enormous burden of HIV disease. At least one-third of FSW will seroconvert by the age of 24; among those 25 and older, as many as 4 in 5 are HIV-positive. Fortunately, the vast majority of FSW have tested for HIV, and more than three-quarters of HIV-positive FSW are aware of their status. Most FSW have access to reproductive health services, including contraception and prevention of mother-to-child transmission PMTCT interventions. But coverage and uptake of other programmes need urgent attention. Despite consistent efforts by several health, welfare, and advocacy organisations to meet HIV prevention and treatment needs of FSW, the data indicate that most FSW are not being reached through peer education; knowledge of and access to water-based lubrication is poor. Moreover, very few HIV-positive FSW are currently on antiretroviral therapy (ART). Now that South Africa has prioritized early treatment of HIV, we must ensure that FSW are not excluded or left behind in these efforts.

NDOH welcomes this important contribution to South Africa's efforts to "know your epidemic." It is our hope that the findings of the SAHMS-FSW will inform ongoing discussions and build consensus among all stakeholders, from health, judicial and social service officials, and civil society advocates to funders and implementing partners, on the way forward. The data make clear that there are multiple areas requiring attention and investment. Even as South Africa moves towards improving outcomes across the continuum of care, including linkage, retention, and ART adherence, we need to ensure access to the basic tools of behavioural HIV prevention. These include dissemination of information, education, and communication (IEC) materials, peer-based outreach to promote condom and lubrication use and HIV counseling and testing, and adoption of emerging biomedical prevention interventions, including Pre-Exposure Prophylaxis. We must also address the high prevalence of psychological and social issues that complicate efforts to prevent HIV transmission and treatment, including hazardous alcohol consumption and other non-medical drug use, and the high levels of physical and sexual violence that FSW experience.

2. Executive Summary

The South African National Strategic Plan on HIV, STIs and TB 2012-2016 (NSP) prioritizes Key Affected Populations, including Female Sex Workers (FSW), for targeted efforts to screen, diagnose, and provide HIV, STI, and TB services. The NSP has identified the need for routine HIV and sexually transmitted infections (STI) surveillance, to provide data to inform and monitor the national HIV response. The South African National Health Monitoring Study (SAHMS) with Female Sex Workers was the first integrated biological and behavioural surveillance survey (IBBS) to be undertaken with the South African FSW population in its three largest metropolitan areas: Johannesburg, Cape Town and eThekwini (Durban). The objectives of the SAHMS were a) to estimate the prevalence of HIV, syphilis, and associated risk factors among FSW in each metro; b) to identify and assess determinants of access and utilization of health and social welfare programmes by FSW in the three metros; c) to estimate the size of the FSW population in each metro; and d) to enhance the national capacity to conduct routine IBBS for key populations in South Africa as a key component of a strengthened second generation national HIV surveillance system.

The SAHMS used respondent driven sampling (RDS) to recruit members of the FSW population into the IBBS sample in each metro. RDS is a specialized sampling methodology that has been used effectively to recruit key populations who are often stigmatized and hidden into peer-referred survey samples. More recently, RDS has been used in a number of Sub-Saharan African settings as the basis for a second generation HIV and STI surveillance system for key populations to complement ongoing general HIV surveillance efforts through national household surveys.

FSW were eligible to participate in the SAHMS if they were 16 years of age or older; had exchanged sex for money with someone other than a main partner in the prior 30 days; and who lived, worked, or socialised in the urban area where they were recruited for at least the past six months. Between July 2013 and February 2014, the SAHMS recruited 764 FSW in the Johannesburg Metro, 650 in the Cape Metro, and 766 in the eThekwini Metro areas.

This Executive Summary focuses on HIV and syphilis prevalence and key HIV behavioural and social indicators.

HIV and syphilis prevalence

We estimate that the prevalence of HIV among FSW is 71.8% (95% confidence interval [CI]: 56.5%-81.2%) in Johannesburg; 39.7% (95% CI 30.1%-49.8%) in Cape Town, and 53.5% (95% CI 37.5%-65.5%) in Durban. In Johannesburg and Durban we observed marked differences in HIV prevalence among FSW aged 25 and older compared to the 16-24 age group (Johannesburg, 78.8% v. 59.0%; Durban 71.2% v. 29.4%). It is encouraging that the overwhelming majority of FSW report having previously tested for HIV (over 90% in each site), and most HIV-positive FSW were already aware of their infection. The estimated proportion of unrecognized HIV infections among FSW who had not tested within the last year, or who had never tested, is 15.6% in Johannesburg, 21.0% in Cape Town, and 12.7% in Durban. Of additional concern is the relatively high proportion of HIV infection observed among FSW who had tested HIV-negative within the 12 months prior to the survey (8.8% in Johannesburg, 18.3% in Cape Town, 8.7% in Durban), suggesting high incidence in the FSW population; and the relatively low proportions of HIV-infected FSW who were currently taking ART (26.9% in Johannesburg, 23.6% in Cape Town, 35.3% in Durban). Prevalence of syphilis in Johannesburg and Cape Town is among the highest measured in the southern African region among FSW, with 16.2% (95% CI 1.9%-37.7%) in Johannesburg and 19.6% (95% CI 13.4%-27.3%) in Cape Town having a reactive rapid plasma regain (RPR) sample, compared to 3.3% (95% CI 1.4%-6.9%) in Durban.

Sexual risk behaviours, access to health and prevention services, and other health problems

FSW self-reported condom use with their clients is relatively high; more than three-quarters of FSW used condoms with their last client: 76.4% (95% CI 60.9%-90.2%) in Johannesburg, 89.4% (95% CI 84.0%-93.8%) in Cape Town, and 84.5% (95% CI 73.2%-92.0%) in Durban.

However, condom use among non-paying partners is considerably lower. As a proxy measure for prevention programming to disseminate information, education, and communication materials, contact with HIV peer educators shows that the majority of FSW are not being reached with general HIV information or with sex worker-specific information. Only in Johannesburg were at least one-third of FSW reached; in Cape Town and Durban, less than 1 in 7 had contact with HIV peer educators in the preceding 12 months.

We also found that large proportions of FSW are "hazardous" consumers of alcohol as measured by the AUDIT-C scale (81.5% in Johannesburg, 58.4% in Cape Town, and 43.0% in Durban); in addition, nearly half of FSW in Cape Town have used drugs for a non-medical purpose in the last 12 months. Half of FSW in Johannesburg and Cape Town experienced at least one incident of physical assault in the prior year. And in all three cities, nearly 1 in 5 FSW had been sexually assaulted in the prior year.

Conclusions and Recommendations

1. Results show an extraordinarily high burden of HIV among FSW, and suggest that HIV is still spreading rapidly among those FSW who are not HIV-infected. This requires scaling up a comprehensive package of HIV prevention and treatment services. While there are a number of service providers operating in each metro and providing these services to FSW, the results show the need for additional resources to expand outreach beyond those FSW networks currently utilizing available services. Existing service delivery groups should review their current approach to service delivery to try and increase coverage.
2. Results show that many FSW do not have correct information and knowledge about HIV prevention and treatment which will contribute to poor uptake of services. Furthermore, risk perception was poor among at least one third of the women.
3. Results demonstrate the general and targeted efforts to encourage uptake of HIV testing among FSW have been largely successful. However, they also demonstrate FSW are not effectively linked to care, and fewer still are accessing ART. It will be necessary to implement effective targeted programming to promote linkage and retention in care.
4. FSW experience high rates of alcohol and non-medical drug use, and physical and sexual assault. These psychosocial factors are known to enhance risk of acquiring HIV and may also interfere with care and treatment efforts. HIV prevention, care, and treatment for FSW must incorporate interventions to address these psychosocial co-morbidities to the greatest extent possible.
5. The SAHMS demonstrates the feasibility of conducting second generation HIV and STI surveillance with FSW in South Africa. Moreover, FSW appeared to be highly mobilized and enthusiastic participants in the survey: the survey recruited well over its target of 500 at each site. IBBS using specialized sampling methodologies like RDS should be implemented at routine intervals (every 2-3 years) with the FSW population to monitor progress against the epidemic, and the reach and effectiveness of expanded programming.

3. List of Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Treatment
ARV	Antiretrovirals
AUDIT-C	Alcohol Use Disorders Identification Test-Consumption
BARC	Bio Analytical Research Corporation
CAPI	Computer-Assisted Personal Interview
CDC	Centers for Disease Control and Prevention of the United States of America
CI	Confidence Interval
CHR	Committee on Human Research
CITI	Collaborative Institutional Training Initiative
ELISA	Enzyme-Linked Immunosorbent Assay
FSW	Female Sex Workers
HIV	Human Immunodeficiency Virus
HREC	Human Research Ethics Committee
IBBS	Integrated Biological and Behavioural Surveillance
IRB	Institutional Review Board
LIS	Laboratory Information Systems
NDOH	National Department of Health
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PWID	People Who Inject Drugs
QDS™	Questionnaire Development System
RDS	Respondent Driven Sampling
RDSAT	RDS Analysis Tool
RPR	Rapid Plasma Reagin
SANAC	South African National AIDS Council
SST	Stabilized Serum Tubes
STI	Sexually Transmitted Infection
SW	Sex Worker
SWEAT	Sex Workers Education & Advocacy Task Force
THCA	TB HIV Care Association
UCSF	University of California, San Francisco
UCT	University of Cape Town
VCT	Voluntary Counseling and Testing
WRHI	Wits Reproductive Health and HIV Institute

4. Introduction

Southern Africa bears the greatest burden of the HIV epidemic in the world, displaying the highest infection rates and nearly half of all AIDS-related deaths that occurred in 2010[1, 2]South Africa has more people living with HIV (PLHIV) than any other country, estimated at a population of 5.6 million[1]. In 2009, HIV prevalence among the adult population aged 15-49, was estimated at 17.8%[2]. Epidemiological data indicates that the highest prevalence estimates can be found in KwaZulu-Natal (15.8%) and Mpumalanga (15.4%) and among black Africans (13.6%)[3]. Women aged 15-49 have a higher disease burden, estimated at 23.2% compared to males at 14.5%[4]. While there have been recent indications that incidence rates among certain groups within the country are declining, among key populations such as young women aged 15-24, men who have sex with men (MSM), injecting drug users (IDUs), and sex workers and their clients, the risk of HIV infection remains disproportionately high[3, 5]. A more comprehensive understanding of HIV key affected populations generally, and female sex workers (FSW) in particular, is limited by poor representation of statistics in national HIV surveillance systems[6]. Several studies have indicated that poverty, level of formal education, and low economic status have reduced women's ability to negotiate safer sex practices, including condom use[7, 8]. Additionally, research has also shown that gender inequalities, including traditional gender roles that emphasize male domination, may increase South African women's risk to violence, victimization, and HIV infection[9, 10]. Other studies have explored the relationship between substance abuse, violence, and HIV risk among women in South Africa[5, 11-14]. These studies, however, do not focus on female sex workers and due to deeply-entrenched stigma and discrimination, along with the illegal status of sex work, sex workers in South Africa are often an "invisible" population. Although there are a number of active service delivery interventions with sex worker populations across the country, accurate and comprehensive data on the number of sex workers, HIV prevalence and incidence estimates, and behavioural indicators remains scarce[6, 15, 16].

4a. The HIV Epidemic in South African Metro Areas:

Most published research on sex workers in South Africa has primarily focused on these urban settings, specifically in the three major metro regions – Johannesburg, Cape Town, and Durban. A 2013 study commissioned by the South African National AIDS Council (SANAC) and conducted by the Sex Worker Education Advocacy Taskforce (SWEAT) to ascertain the population size of female sex workers in South Africa, estimated that a majority (51%) of female sex workers in the country work in large metro regions [17]. Below we review the main findings of research with FSW in the last two decades.

Johannesburg:
According to Pettifor et al., it was estimated that there were between five to ten thousand female sex workers living and working in Johannesburg's inner city[18], and more recently SWEAT estimated the number of FSW in Johannesburg to be 11,000, the equivalent to 0.69% of the adult female population [17]. While a majority of female sex workers in Johannesburg are estimated to be from South Africa, a study by Richter estimated that 11% of the population migrated from neighbouring countries[15]. Female sex workers generally operate in hotels, bars, brothels, and on the streets[19, 20]and the primary reasons for engaging in sex work stem from financial need, economic gain, and unemployment[21]. Survey research has consistently found high HIV prevalence among FSW in Johannesburg. Of the 247 sex workers tested in a 1997 study, 45% tested HIV positive[22]. Additionally, 46.4% of the 295 female sex workers in a cross-sectional survey of female sex workers in Hillbrow tested HIV positive[23].

Cape Town:
Work by Gould and Fick estimated that in 2007, there were 1209 sex workers working in the Cape Town and its surroundings, including 964 brothel-based workers and 245 street-based sex workers.The size estimation conducted by SWEAT in 2013 approximated 7,500 women who were sex workers in and around Cape Town, roughly 0.56% of the adult female population, and accounted for half of all the sex workers in the Western Cape[17]. Sex work in Cape Town takes place primarily within these two settings. Other places of work for sex workers in Cape Town include massage parlours, strip clubs and night clubs[24]. Most of the street-based workers were women (88%), black, and originated from South Africa. They also had very little schooling, and on average spent six and a half years in the industry, moving in and out based on their individual circumstances. Gould and Flick also found that 76% of the street-based sex workers in their study reported entering the industry for financial reasons[25]. Little current data HIV prevalence among Cape Town sex workers exists. A 2008 study by Parry et al. estimated HIV prevalence among male and female sex workers in Cape Town at 34%[26].

Durban:
Much of the research to date on Durban's sex workers has focused on barriers to condom use among commercial sex workers[27]; coping mechanisms of sex workers [28], or drug use among sex workers[11, 27]. As a consequence, there remains limited information on the numbers of sex workers in eThekwini and its surrounding areas. However, analysis conducted in 2013 estimated the size of the female sex worker population in KwaZulu-Natal between 19,335 and 42,994, with 28% of these coming from the eThekwini Metro region[17]. Research conducted by Trotter in 2007 found a diverse population including members of all South African ethnic groups, as well as women from Mozambique, Angola, Zambia, Nigeria, and Ghana. They also found that sex work in Durban is conducted both in the inner city and the suburban areas, including both indoor and outdoor work, and that FSW live in brothels, quasi-brothels, boarding houses, and flats[29]. No previous HIV prevalence estimates exist for the eThewkini/Durban metro. However, it is believed to be significantly higher than the 2012 National Household Survey of 14.5% for the eThekwini metro, which is itself the highest among South African urban areas[4].

4b. Epidemiological importance of HIV surveillance among FSW in South Africa:

Sex work is prevalent in South Africa, specifically in the metro regions. While the majority of prevention focus has been directed at the general population, key populations, including female sex workers, may have higher rates of HIV infection than in the general populous[30, 31]. Furthermore, without greater knowledge regarding how many individuals sell sex in South Africa, it is hard to evaluate the impact of sex work on national HIV prevalence or the necessary scope of programmes designed to meet the needs of sex workers. Continued IBBS with FSW, will aid in the further understanding of this sub-epidemic, and enable evaluation of targeted programmes for this population.

4c. Survey Objectives

To this end, the South African Health Monitoring Survey (SAHMS) with Female Sex Workers had four specific aims:

1. To estimate the prevalence of HIV and syphilis, and associated risk behaviours among FSW in Johannesburg, Cape Town, and Durban, South Africa.
2. To estimate the population size and distribution of FSW at these three locations.
3. To identify and assess determinants of access and utilization of health and social welfare programmes in South Africa among FSW.
4. To enhance the national capacity to conduct IBBS for key populations in South Africa as a key component of a strengthened second generation national HIV surveillance system.

5. Methodology

5a. Respondent Driven Sampling (RDS)

Throughout Sub-Saharan Africa, FSW remain a relatively hidden and stigmatized population at high risk for HIV infection. Conventional population-based surveillance methods fail to adequately capture true characteristics of this population. As a response, specific sampling methods have been developed to approximate a population-based sample through other systematic and rigorous means. Respondent-driven sampling (RDS) is a specialized surveillance method that has been developed to approximate probability-based sampling through peer referral, and when implemented and appropriately analyzed, produces data that are representative of the target population. RDS employs theoretical and mathematical techniques from various disciplines (such as social network theory, physics, and statistics). These techniques help mitigate the biases generally associated with chain referral methods. The principles of RDS are well established in the literature[32]. Specific to this report, RDS has been an effective sampling tool for recruiting FSW for surveys conducted in other sub-Saharan African locations, including published literature from Zanzibar,[33] Sudan[34], Somalia[35], and Mauritius[31, 36];and reports from Kenya[30] and Mozambique[37].

To inform the development of the survey protocol and its implementation, a formative assessment was conducted in Johannesburg, Cape Town, and Durban. This initial formative assessment phase used qualitative methods and ethnographic tools, including in-depth key informant interviews, focus group discussions, and ethnographic mapping. The findings from the formative assessment confirmed that within each of the three urban areas, RDS was an appropriate sampling methodology to conduct IBBS surveillance among female sex workers. In addition, the findings aided the investigators in determining the specific logistical needs of each of the IBBS sites, specifically the appropriate location of the survey office, referrals of FSW to specific clinical and social welfare agencies, and the identification of "seed" participants who began the RDS peer-referral recruitment chains.

RDS began with the selection of "seeds" that were known to staff at each site to be members of the FSW population, who were willing to participate in the survey and recruit FSW from their social networks to participate. After seed participants completed the survey and HIV testing, they were asked to randomly refer three more FSW from within their social networks to the study. These FSW formed the first wave of recruitment. After participating, they were in turn instructed to refer three more FSW to participate in the survey, forming the second wave of recruitment, and so on.

Each participant was asked survey questions about the size of her FSW social network. These network size questions can be found in the survey questionnaire located in Appendix 11c. The social network size reported by each participant and homophily between recruits formed the sampling base used during data analysis to produce survey weights in order to derive unbiased population estimates for demographic and behavioural characteristics and for HIV and syphilis prevalence for each city's FSW population.

The number of potential enrollees per person was restricted to three in order to ensure that RDS chains progress through diverse social networks. Referrals to the study were initiated through invitation via a study coupon (see Figure 1). Each participant received a primary incentive of R100 for her own survey participation and a Pick n' Pay grocery store voucher valued at R30 a secondary incentive for each person she successfully recruited into the survey.

Figure 1: Survey coupon from the IBBS-FSW, 2013-14

Management of Referral Coupons

The coded referral coupon was essential to link enrolled participants to those whom they refer to the project and is necessary for the analysis of RDS data to adjust for network size and homogeneity within social circles. Being in possession of a valid coupon was an eligibility criterion. Issuance and receipt of coupons were monitored electronically using a site-specific customized MS Excel spreadsheet tailored specifically for RDS sampling and manually using a coupon logbook.

Initially, participants were given three coupons each to refer peers. Once the sample size approached the target and equilibrium was achieved on key variables (that is, when the distribution of participants across all key variables stabilized and did not change with additional recruitment), coupon dispersal to additional members of the FSW population was reduced and then slowly phased out.

Study staff collected coupons when FSW presented in the study office and voided them in order to prevent re-use. Additional measures to prevent FSW from duplicating their participation included the use of fingerprint scanners to uniquely and anonymously identify participants entering the study office, hiring staff familiar with the FSW community and its members, and maintaining stability in the study staff, particularly in the coupon manager, in order to maximize the possibility of staff recognizing previous participants by face.

5b. Survey sites and implementation training

Survey sites

The survey was conducted in three metropolitan areas: Johannesburg, the largest city in South Africa and the wealthiest in all of sub-Saharan Africa; Cape Town, the second-most populous city in South Africa; and eThekwini, the busiest port in South Africa and Africa. These locations were identified through consultation with South African stakeholders, who informed the investigator team that these areas account for a large majority of sex workers in South Africa. There is geographic and cultural diversity at each site, and each has a population large enough to be likely to have sufficient numbers of sex workers to meet the needed sample size for RDS. Furthermore, at all three urban areas, programmes were in place to provide referrals to FSW-friendly STI and HIV services as well as social welfare agencies.

Training of the implementation team

Before launching the quantitative data collection, survey team members took part in a one-week training, including an overview of the HIV epidemic in South Africa, sensitization to working with female sex workers, principles and ethics of research, use of netbooks for data collection, overview of RDS methodology, review of blood collection and serum preparation for the study phlebotomists, and rapid testing for HIV and syphilis. The training contained a mixture of didactic and practical simulations of

research procedures. During this training, team members also completed online certified training in human subjects research and ethics through the University of Miami's Collaborative Institutional Training Initiative (CITI) Program.

Team members from all three survey sites were trained simultaneously. Each site team consisted of a site supervisor, a coupon manager, two phlebotomists/counselors, three interviewers, a receptionist, and a flow manager. The teams were supervised by the study investigators as well as the National Surveillance Coordinator and the UCSF South African Program Manager.

5c. Eligibility Criteria

Eligibility criteria for the South African Health Monitoring Survey for FSW included the following:

1. Biologically female
2. 16 years of age or greater
3. Received money for sex in the last 30 days, from someone other than her main sexual partner
4. In possession of a valid referral coupon
5. Resided, worked or socialized in the surveillance area for at least the last six months
6. Capable and willing to provide written informed consent to participate

Exclusion criteria:

1. Previous participation in the survey (in any of the cities)
2. Inability to provide written informed consent (which included persons under the influence of alcohol or drugs)

Nationality and citizenship were not exclusion criteria, because stakeholder consultations suggested that foreigners coming from neighboring countries (e.g., Zimbabwean women) living in South Africa form part of the FSW population in the survey areas.

Inclusion of 16-17 year old FSW. In South Africa as in most other settings, the age of consent to participate in research is 18. FSW between the ages of 16 and 17 were included in the sample because the investigators and stakeholders agreed that gathering behavioural and epidemiological data from younger sex workers was critical to understanding the HIV and social welfare needs of this particularly vulnerable population. Additionally, there is evidence from other countries where behavioural and biological data are collected on minors that suggests a decline in HIV prevalence among young, recently initiated PWIDs in Ukraine and sex workers in Cambodia [38], and where targeted age-specific programmes can facilitate behaviour change to lower HIV prevalence, which may in turn help to shift the trajectory of the HIV epidemic in the country. The exclusion of this age group from surveillance would have restricted the collection valuable data to be used for programmatic purposes, potentially causing more harm to the population and the progression of the epidemic.

In recruiting participants aged 16 and 17, researchers allowed minors to provide "consent unassisted" to take part in the behavioural survey as well as the HIV test. The South African Children's Amendment Act No 41 of 2007, Section 130—HIV Testing of Children states that *"If the child is over 12 years the child can give consent. If the child is under 12 years and is sufficiently mature enough to understand the benefits, risks and social implications of the test, then the child can consent him or herself."* The Children's Act also makes provisions related to health care decisions, including consent to medical treatment. Section 129—Consent to medical treatment and surgical operations: Consent by a child, states that *"a child may consent to his or her own medical treatment or to the medical treatment of his or her child if (a) the child is over 12 years; and (b) the child is of sufficient maturity and has the mental capacity to understand the benefits, risks, social and other implications of the treatment."*

Additionally, the researchers allowed adolescents aged 16 and 17 years to provide consent unassisted to take part in the research as there was evidence of tacit emancipation[1]. Tacit emancipation, according to South African law, occurs when the capacity of a minor to act without parental consent is 'enlarged' to encompass certain key areas that will enable him or her to be viewed by the law as a major. To establish tacit emancipation, the prime consideration used was the degree of financial independence achieved. In this respect and with specific regards to this study, having an occupation (e.g. sex work) that brings in a salary was essential. Residence outside the parental home was also regarded as further proof of emancipation. As such, per South African law regarding tacit emancipation and the above cited sections of the Children's Amendment Act of 2007, 16-17 year old participants in this study were considered to be tacitly emancipated.

Recognizing that 16-17 year old minors are especially vulnerable members of the key population, minors involved in sex work who were referred to the surveillance office as potential participants were provided with referrals to relevant social welfare NGO or government agencies and encouraged to contact those organizations for assistance, regardless of whether they agree to participate in the IBBS survey. Additionally, those minors who consented to survey participation were provided with pre and post-test counseling specific to their individual needs and risk factors for HIV and other STIs.

In preparation for this surveillance work, the investigators worked with the Human Research Ethics Committees of the University of Cape Town and the University of the Witwatersrand, the University of California, San Francisco Committee on Human Research, and the CDC Associate Director of Science to balance the needs of the surveillance study with acting in the best interests of the social welfare of FSW who were minors. Additionally, the researchers consulted extensively with two stakeholder groups: Sex Workers Education and Advocacy Taskforce (SWEAT), a South African NGO that provides health, advocacy, and welfare services to sex workers in Cape Town; and WRHI, a Johannesburg-based NGO and academic research institution, which provides clinical services to sex workers in Hillbrow, Johannesburg, and who have conducted extensive research into the health and welfare needs of the sex worker population in South Africa. Our referral protocol for minors engaged in sex work included an initial referral to these two organizations that had the expertise to conduct appropriate needs assessment and provide referral to specific services. Based on this, our referral protocol included the following steps:

1. Referral of minors by project staff to FSW stakeholder partner entities (e.g. SWEAT, WRHI)
2. Counselling and onward referral of minors by our partners to local governmental welfare agencies (e.g. Cape Town Child Welfare) as appropriate

5d. Sample Size

The sample size estimates were based on the surveillance purpose of tracking important changes in the epidemic over time; that is, between rounds of surveillance estimates of HIV prevalence. In the current survey, each site constituted a separate survey with the sample size needed to track changes at each location. Prior to data collection, the size required for the sample was determined to be 500 FSW per site, totaling 1500 FSW across all three sites.

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[1]*Cairncross v De Vos* (1876) 6 Buch 5; *Steenkamp v Kampfer* 1914 CPD 877; *Venter v De Burghersdorp Stores* 1915 CPD 252; *Pleat v Van Staden* 1921 OPD 91; *Ambaker v African Meat Co* 1927 CPD 326; *Ochberg v Ochberg's Estate* 1941 CPD 15; *Ahmed v Coovadia* 1944 TPD 364; *Dickens v Daley* 1956 1 All SA 329 (N); 1956 2 All SA 197 (N); 1956 2 SA 11 (N); *Grand Prix Motors WP (Pty) Ltd v Swart* 1976 3 All SA 480 (C); 1976 3 SA 221 (C); Heaton *The South African Law of Persons* (3 ed) (2008) 115 et seq; Van Heerden, Cockrell and Keightley (eds) *Boberg's Law of Persons and the Family* (2 ed) (1999) 474; Van der Vyver and Joubert *Persone- en Familiereg* 131 et seq; Steyn 1927 *SALJ* 313; Spiro *Parent and Child* 249 et seq; De Wet and Van Wyk *Kontraktereg en Handelsreg* 64–66.

This estimate is based on the needed sample size to detect 51% prevalence of HIV among FSW with a precision of 0.0620 (i.e. ± 6.20%) with a design effect of 2.0. Recent sample size estimates and simulations project that a larger design effect may be required in RDS. However, data from nine studies across six countries among PWID, FSW, MSM, and MTF persons demonstrated a mean design effect across all studies of 2.3, and effect slightly higher than 2.0 [39]. Therefore, a design effect of 2.0 was considered reasonable for this study, and produced a feasible sample size (adjusted for the design effect, N = 250) to recruit via RDS within the metropolitan areas of Cape Town, Durban, and Johannesburg.

Using the expected prevalence of HIV to be 51% for FSW, the sample size was calculated to be 392 FSW, which is the ability to detect an expected HIV prevalence in FSW (51%) with a desired level of precision to be 0.07 (i.e. ± 7%). However, to allow for missing data (particularly because in previous settings, experience has indicated that participants often refuse to participate in HIV testing), our sample size goal was set at 500 for each metro area, for a total of 1,500 participants.

Note, however, that RDS methodology requires that crude sample stability with respect to key variables be achieved(i.e. equilibrium, where the composition of the sample with respect to, for example, demographics and/or key behavioural indicators does not change with additional recruitment; see also Section 5a above)before ending recruitment.RDS theoretical literature[32, 40] suggests that 4 to 5 waves of recruitment and 500 subjects are usually sufficient to reach equilibrium on most variables.

The sample size of at least 500 participants per location also provides 80% power to detect a significant ($p<0.05$) 15% absolute change in self-reported condom use with last client between the proposed survey and future rounds of IBBS among sex workers at each site using a chi-square test and assuming a design effect of 2.0. Routine monitoring of condom use behaviours of sex workers with their last client will help assess progress in preventing risk exposure to HIV among sex workers through unprotected sex with clients as per UNGASS indicator 18[41].

This surveillance study monitored sample stability on key variables including age, education, nationality, type of sex worker (e.g. street-based, brothel-based), and had a previous HIV test. Investigators monitored these variables for stability on a weekly basis throughout recruitment. We initially planned to enroll FSW until we reached at least 500 completed interviews and achieved equilibrium on the above listed variables; however, owing to the early success of peer-recruitment, the availability of funds, and analysis of the composition of the sample, the investigators extended recruitment beyond the required sample size at all sites. With respect to stability on key variables, the weekly monitoring data suggested that equilibrium had not been reached on all variables even though we attained a sample size of 500. For example, in Johannesburg, the proportion of FSW with foreign citizenship had not stabilized among the first 500 FSW participants; in Cape Town, we determined that brothel-based sex FSW were not adequately represented among the first 500 participants; and in Durban, there was not as many younger FSW age 16 to 17 among the first 500 participants as our formative assessment had indicated might be available for recruitment. With additional recruitment, we observed stability in all key variables at all sites.

5e. Informed Consent

After screening for eligibility, all survey participants aged 18 and older gave written informed consent to participate in the survey and to provide a serum blood sample through venipuncture for laboratory testing for HIV and syphilis rapid testing. Because 16 and 17 year old FSW met the key criteria for consideration as tacitly emancipated minors, the IRBs allowed them to provide written consent unassisted for study participation (section section 5c).In addition, participants who wanted to know their HIV results provided separate written consent for voluntary HIV counseling and rapid testing with results returned. All study

objectives and survey procedures were explained to participants, who were also afforded an opportunity to ask questions for clarification. Once research staff were confident participants fully understood the study procedures, participants were asked to sign or place their mark upon the consent document. The consent process allowed participants to provide separate consent for each of the study procedures, including:

1. Completion of the behavioural survey
2. Venipuncture for blood draw to conduct laboratory tests for HIV and syphilis
3. Preparation of stabilized serum tubes (SST) for HIV and syphilis testing for surveillance purposes
4. Rapid syphilis testing, with results returned to participant and referral to clinical care as appropriate
5. HIV Counseling and Testing via Rapid HIV testing, with results returned to participants and referral to clinical care as appropriate

At no point did research staff ask for participants' identification. During the consent process, participants also had the option to accept or decline any component of the study. Participants who initially declined any part of the biological testing were offered an opportunity to opt back in at the conclusion of the behavioural survey. All participants were offered a copy of the consent forms.

5f. Behavioural data collection

Behavioural data were collected using a standardized questionnaire based on models successfully used across Sub-Saharan African countries and adapted to the South African context. Input from collaborating partners and findings from the Formative Assessment resulted in modifications to the final survey instrument. The questionnaire included indicators needed for tracking the HIV epidemic and the national response among FSW, conforming to international standards (e.g. UNGASS indicators), National Strategic Plan indicators, and comparability with similar surveillance surveys in the region. Survey domains comprised data on demographics, behaviours potentially correlated with HIV infection and other STIs, symptoms of STIs among FSW, as well as on HIV-related knowledge, attitude, practices, stigma, discrimination, perceptions of risk, access to HIV care, and HIV testing behaviour.

The questionnaire was available in English, and the training of interviewers entailed a question-by-question discussion and consensus building process on how to ask each question based on intent and current terms in each South African language. The questionnaire was tested and reviewed by study investigators and members of the survey team prior to data collection and during training on the implementation of the IBBS-FSW. The questionnaire was programmed for electronic data capture using Questionnaire Development System (QDS™) version 2.6.1 and administered by interviewers using Computer-Assisted Personal Interview (CAPI) software on a netbook computer.

5g. Laboratory Procedures

Serological testing for HIV and syphilis followed nationally approved standards. The study's serological HIV antibody rapid testing and HIV surveillance testing algorithms are presented in Figure 2.

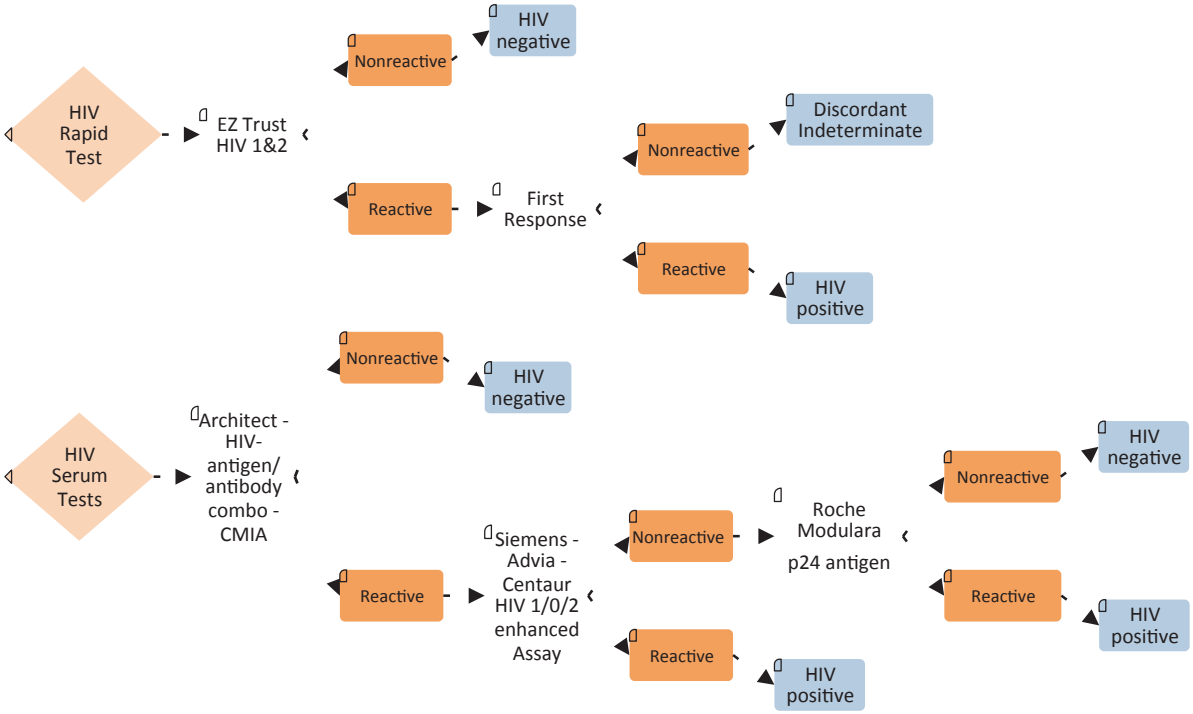
Participants consented to a venipuncture for blood draw to conduct biological testing, and consented separately for Rapid HIV testing and counseling with results return, Rapid Syphilis testing with results return, and HIV and syphilis testing for surveillance purposes. A venous blood draw collected approximately ~ 5 ml of blood for each participant, distributed in two tubes: 1-2 ml EDTA tube for doing the on-site rapid tests, and 3 ml SST for BARC laboratory collection, centrifugation and surveillance testing of processed serum samples for HIV and syphilis.

Rapid HIV and syphilis testing: After informed consent was obtained, on-site rapid testing for HIV consent was obtained and was conducted using a serial testing scheme based on the South Africa national HIV testing algorithm and with approved commercial kits. Samples were first screened on EZ Trust HIV 1&2 rapid test kits (Nexus Laboratories, UK). Non-reactive results were considered negative, and reactive results were confirmed with First Response HIV rapid test kits (PMC Medical, India). Reactive samples were interpreted as positive. If rapid test results were discordant, participants were referred to a facility that could perform confirmatory testing and return results to participants. Participants were tested for syphilis using SD Bioline 3.0 (Standard Diagnostics, South Korea), a solid phase immunochromatographic assay for the qualitative detection of antibodies of all isotypes (IgG, IgM, IgA) against *Treponema pallidum*. Those testing positive for *T. pallidum* antibodies were referred to collaborating clinics for initiation of treatment and care.

Serum Testing: Specimens of participants who consented to venipuncture were shipped daily to the local BARC laboratory for HIV ELISA and syphilis rapid plasma reagin testing. Specimens were centrifuged, and the serum aliquoted and stored by BARC for HIV and syphilis testing and for quality assurance purposes. Samples were stored for the duration of the survey and data analysis, after which they were destroyed.

All specimens shipped to BARC laboratories had a unique barcode, the survey code, which the study recorded and used as the primary link to coupon/study code. The laboratory used the survey code as the primary link for the results. These were all linked via a laboratory number that was allocated to each sample upon receipt at the laboratory in the Laboratory Information System (LIS).

Figure 2: Flowchart of HIV testing, FSW-IBBS, 2013-2014



HIV testing on serum samples was performed using a HIV ELISA 4th generation, and third generation HIV ELISA assay was performed for confirmatory samples where required for discordant results. HIV-1 and HIV-2 Western blot (Bio-Rad Laboratories, USA) were run on samples when required for a definitive

diagnosis. Serum samples were screened for syphilis using the qualitative rapid plasma reagin (RPR) method, and quantified if appropriate. Confirmatory testing on RPR positive tests was reflexed to *T. pallidum* particle agglutination (TPPA). Furthermore, all positive RPRs had a syphilis ELISA (*T. pallidum* ELISA IgG and *T. pallidum* ELISA IgM) if required.

5h. Population Size Estimation procedures

As FSW in South Africa are considered a hard-to-reach or hidden population, one objective of the FSW-IBBS was to estimate the size of the female sex worker population in South Africa's three largest metros. Reliable estimates of FSW population size are required for advocacy, resource allocation, planning the provisions of appropriate services, and programme evaluation. Currently no gold standard exists to determine the true size of the FSW population in South Africa.

The FSW-IBBS used a combination of methods to estimate the FSW population size in Johannesburg, Cape Town and Durban. These methods included three multipliers (unique event multiplier, unique object multiplier and service data multiplier), a "Wisdom of the Crowds" estimation, and an estimate based on literature (or document analysis), including previous FSW population size estimation activities conducted by SWEAT in 2013. The use of multiple methods strengthens confidence in estimates, provides upper and lower plausibility bounds, and reduces the likelihood that biases of any single method will substantially alter results. After obtaining FSW population size estimates for each method in each location, a consensus meeting was held to present the findings to key stakeholders. In addition, the estimates from the FSW-IBBS were compared which stakeholders evaluated to reach a consensus estimate with upper and lower plausibility bounds (the highest and lowest reasonable estimate) for each city.

Method 1. Modified Delphi, or "Wisdom of the Crowds."

The FSW-IBBS produced an estimate of the number of female sex workers in South Africa through the synthesis of survey participant opinion, also called the "Wisdom of the Crowds" method[42].

Participants were asked their best estimate of the number of FSW in their location. Such an approach produces a measure of the perception of community members of the population size of FSW. The Wisdom of the Crowds method theorizes that members of the population have specialized information on the population and that personal opinion formulated in private will not be influenced by others' responses. The estimate examined the median, mode, and mean responses and these were compared to the other size estimation methods. For each city, the median estimate appeared to be most plausible in comparison to estimates derived from other methods, and was adopted as the WOTC estimate for each city.

Method 2. Multiplier methods

Multiplier methods used two basic sources of target population data. The first source was an unduplicated count that included the number of FSW who attended a specific event, received an object before the launch of the survey, or utilized specific programme services within a specific time frame before the launch of the survey.

The second source involved the inclusion of some specific questions within the IBBS questionnaire.

$N = n / p$

Where **N** is the estimated SW population size, **n** is a count derived from data sources external to the IBBS, and **p** is the proportion of IBBS participants counted in **n**.

1) Unique Object Multiplier. Procedures for unique object multipliers entail two basic steps:

1. Distribution of a fixed number of memorable, unique objects (e.g., a bracelet) to members of the survey population in the geographic areas of the survey shortly before the survey launch. **(n)**

2. Including questions in the survey instrument asking about whether survey participants received the unique object. **(p)**

Formative assessment with FSW stakeholders and key informants determined that make-up kits (Johannesburg and Cape Town) and lavender-colored rubber bracelets (Durban) would be memorable and appropriate unique objects (see Appendix 11b). Objects did not have any logos or markings to associate the objects specifically with sex work or with the study. Study staff and FSW outreach volunteers wearing distinctive clothing (in Johannesburg, black polo shirts branded with WHRI logo; in Cape Town and Durban, turquoise t-shirts branded with Anova logo) distributed the objects to FSW in the six weeks prior to the launch of the survey in order to ensure that objects were distributed only to FSW, and to maximize accurate recall of having received an object among FSW who were recruited into the survey. These are standard methods unique object distribution for population size estimation and are intended to provide a reasonable degree of confidentiality for participants and scientific rigor for estimates. Acceptance of objects was voluntary, and outreach workers instructed FSW who received the unique objects not to give them away to anyone else.

2) Unique Event Multiplier. Similar to the Unique Object method, rather than "tagging" FSW with an object, the study sponsored a memorable event, the type and format of which was chosen during the Formative Assessment by sex worker stakeholders and population members at each site. In Johannesburg, FSW held a beauty pageant; in Cape Town, a talent show; and in Durban, a braai. At each event, study staff recorded the number of unique individual FSW in attendance. As is standard for the unique event multiplier method, the event was planned and executed jointly by study staff, stakeholders, and population member volunteers. FSW peer outreach workers publicized the event and counted sex workers at the event itself, under the assumption that target population members know and can recognize one another. Further, the event was publicized by word of mouth by FSW through their personal networks, and was not advertised to the general public. Attendance at the event was voluntary. The event was followed by the IBBS survey itself that asked if the respondent attended the event. The number of FSW counted attending the event and the proportion reporting attending in the full survey provide the parameters for the formula above, where **n** is the total number of event attendees, and **p** is the proportion of IBBS participants who report having attended the event.

3) Service Data Multiplier. A third multiplier method utilized existing service data from stakeholder service provider organizations. The first part of this multiplier approach gathered de-identified and de-duplicated counts of visits by population members to specific programmes or services, e.g. utilization of VCT services, at a specific site. The second part of the multiplier inquired in the IBBS survey about prior participation in the service during a specified time period. The parameters of the estimate are based on those who complete the survey and reported accessing or participating in the service. With reference to the formula presented above, **n** is the total number of FSW who accessed the service in a given time period, and **p** is the proportion of IBBS participants who reported accessing the service.

Determination of sex worker population size point estimates and upper/lower plausibility bounds took place through a consensus meeting of all stakeholder experts with the sex worker population in each city, following three steps. First, estimates were initially calculated as the median of the PSE point estimates collected through the survey. Second, any additional literature estimates or estimates

collected independently of this study were considered and compared to data collected through this study. Finally, stakeholders and investigators triangulated all data collected through this study with other available data to reach consensus on a point estimate, and upper and lower plausibility bounds for each city. The full description of this stakeholder consensus process and its results appears in Section 8 of this report.

5i. Data management

Data entry: Survey data were entered in electronic format in a Computer-Assisted Personal Interview (CAPI) directly by the interviewer during the interview process using QDS™ software. To ensure quality of data, built in checks were programmed into the QDS™ control file and verification of completeness and internal consistency was performed automatically. Coupon distribution data were entered by the coupon manager using Microsoft Excel. The results of on-site rapid tests were entered by the site supervisors on a weekly basis using Microsoft Excel.

The site supervisor copied all QDS™ and Coupon Manager data from the individual netbooks onto a password-protected computer at the study office. Electronic copies of these files in addition to the on-site rapid testing database were emailed as encrypted files to the project Data Manager based in Johannesburg. HIV results from BARC Laboratories were entered into a Microsoft Excel file and sent to the research team at the end of the survey.

Data Analysis: All survey data were captured using five different databases. The behavioural questionnaire was entered into a QDS™ database, rapid test results were recorded in a customized Microsoft Excel spreadsheet, each participant coupon was registered in a Microsoft Excel spreadsheet, HIV test result data from BARC were received from the laboratory in an Excel spreadsheet, and the PersonID software generated another Excel spreadsheet. The different databases were merged, checked, and cleaned in SPSS software version 18.0. Cleaned and recoded data from SPSS were exported for data analysis using the RDS Analysis Tool (RDSAT) (Version 7.1, www.respondentdrivensampling.org) software. RDSAT version 7.1 uses the RDS-II estimator[43]. The specialized analyses within RDSAT were used to adjust for social network size and homophily within networks, and were used to produce population point prevalence estimates and 95% confidence intervals of key variables, adjusting for unequal probabilities of inclusion. In RDSAT the number of re-samples for bootstrap was set to 15,000 and the algorithm type as "enhanced data-smoothing". Network size was determined by the following set of questions: "How many women who exchange sex for money in <Study Area: Cape Town, Durban, or Johannesburg> do you know by name and they know yours?"; "Of those FSW, about how many of them would you say are 16 years of age or older?" The answer to the last question was used as the network size question.

RDSAT also produced survey weights. The data along with the individual RDSAT-generated survey weights were exported into standard statistical packages for determining individual associations between HIV prevalence and demographic and risk behaviour variables. P-values from Wald tests are reported. P-values less than 0.05 are considered statistically significant and those between 0.05 and 0.10 as marginally significant. The recruitment network figures were developed using RDS Analyst[44].

5j. Ethical considerations

All recommended ethical considerations were taken to protect participants, as they belong to a socially marginalized group and the survey included questions about HIV. The study protocol was reviewed and approved by the Human Research Ethics Committee (HREC) at the University of Cape Town (UCT), the HREC at the University of the Witwatersrand, and the Committee on Human Research (CHR) at the University of California, San Francisco (UCSF). The Center for Global Health (CGH) at CDC also

reviewed the study protocol and designated the research activity as involving human subjects but in which CDC involvement does not constitute "engagement in human subject research". All data collection staff completed training on human subjects research and signed a confidentiality agreement before commencing survey duties. Any adverse event was reported to all ethnics committees using a formal report.

Participation in the behavioural survey required written informed consent. Additionally, separate written informed consent for rapid HIV testing was required to comply with South African law. FSW aged 16 and 17 who were referred to the surveillance study were allowed to consent unassisted as they were tacitly emancipated due to their financial independence (see sections 5c and 5e). To protect the identity of participants and to ensure anonymity they were not required, nor were they requested, to show an identification document. For participants who consented to rapid HIV testing, pre- and post-test counseling was given by certified counselors, and all of the participants who tested HIV positive at the survey offices were referred to participating local health facilities. Similarly, any FSW with a positive rapid test result for syphilis was referred to a participating health facility for clinical treatment.

Participant anonymity and data confidentiality were protected in the collection, transmission, and processing of data by using an electronic finger print scanner coupled with commercially available software (PersonID, 360Biometrics, San Jose, CA) which translates a fingerprint into a randomly generated alphanumeric code by using an algorithm and a specific combination of participant's fingerprints. The same combination of fingerprints yields the same code at subsequent occasions in more than 99.9% of cases. The code is not a personal identifier as it cannot be used to recreate a fingerprint, and the actual images of the fingerprints were not recorded or stored. These codes were also stored separately from interview and laboratory data. For participants uncomfortable with fingerprint technology, we asked them to create a unique testing code created by elements of information known only to the participant, which together would not reveal any personal identifying information. Primary incentives of R100 and secondary incentives of R30 were approved in consultation with stakeholders and South African Institutional Review Boards. (See Section 5a for a description of RDS incentive structure.) Participants were also reimbursed for their transportation costs incurred to attend their initial office visit for survey participation. This incentive and reimbursement structure was deemed to be appropriate enough to motivate participation yet modest enough so as not to encourage non-sex workers to participate.

6. Results

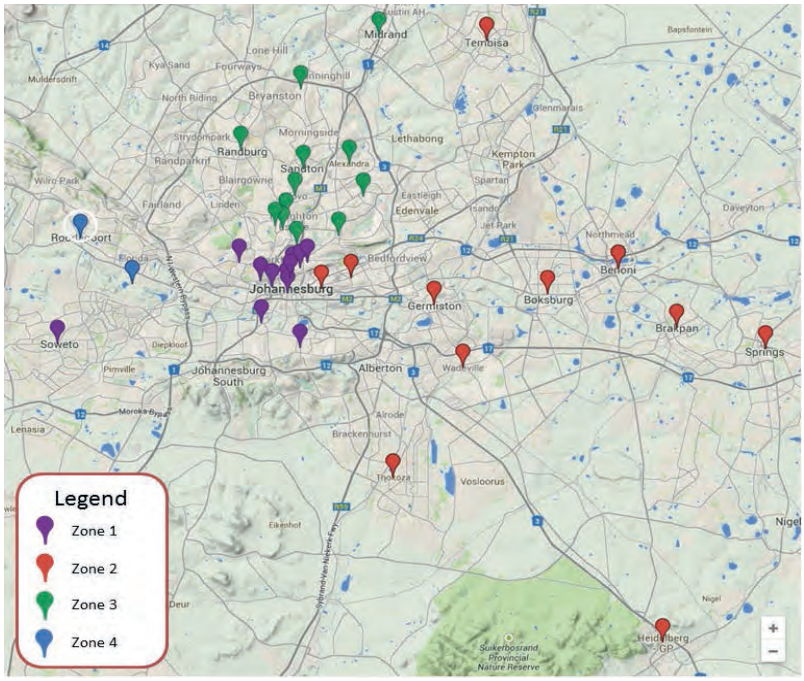
6a. Survey Population

Over 2,100 FSW enrolled into the IBBS. In Johannesburg, recruitment began with 5 seeds and reached a sample size of 764. In Cape Town, beginning with 6 seeds, 650 FSW were recruited and enrolled. In Durban, 3 seeds yielded a sample of 766. In order for the study teams to be able to assess whether FSW from throughout each metro were being reached with coupons, each metro was divided into four geographic "zones of residence". The assigning of suburban communities to a particular zone was based on formative assessment discussions with key informants and stakeholders. Figure 3 shows the four zones of residence for each metro area, and Figure 4 shows the recruitment chains. Note that in Figure 3, the pinpoints refer only to a suburban community, and do not represent any particular number or concentration of FSW. In Figure 4, each dot represents a single FSW, with lines connecting her to her recruiter, and to those she recruited. Each dot is color coded to the FSW zone of residence to show how networks were not confined to specific geographic spaces.

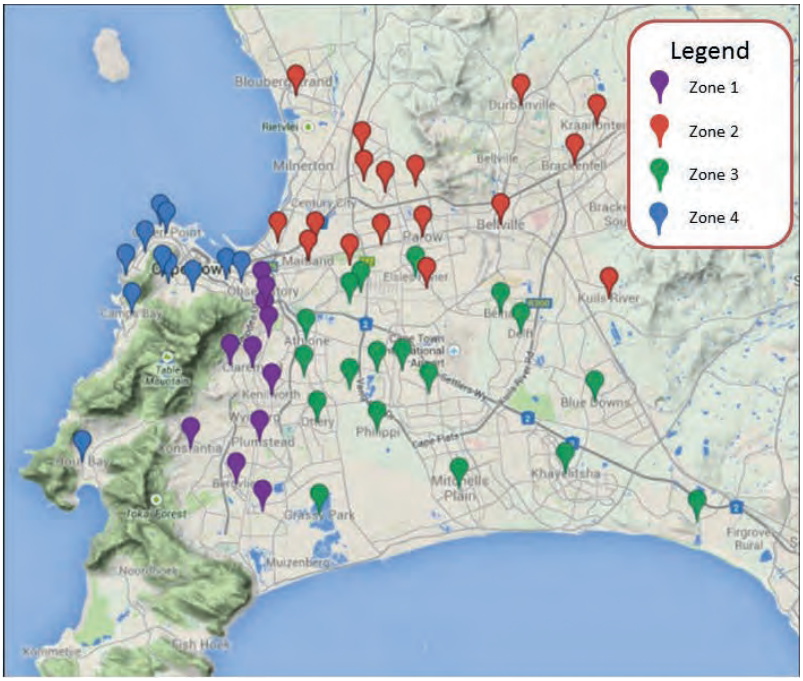
The study teams also monitored the age of FSW who were recruited into the sample. Figure 5 depicts recruitment chains by age. Note that many younger FSW were recruited by older FSW, and that younger FSW tended to recruit older FSW more than those nearer to their own age. This in part explains the low number of 16-17 year old FSW recruited into the survey.

Figure 3: Geographic Locations of Zones of Residence, FSW-IBBS, 2013-2014

A. Johannesburg



B. Cape Town



C. Durban

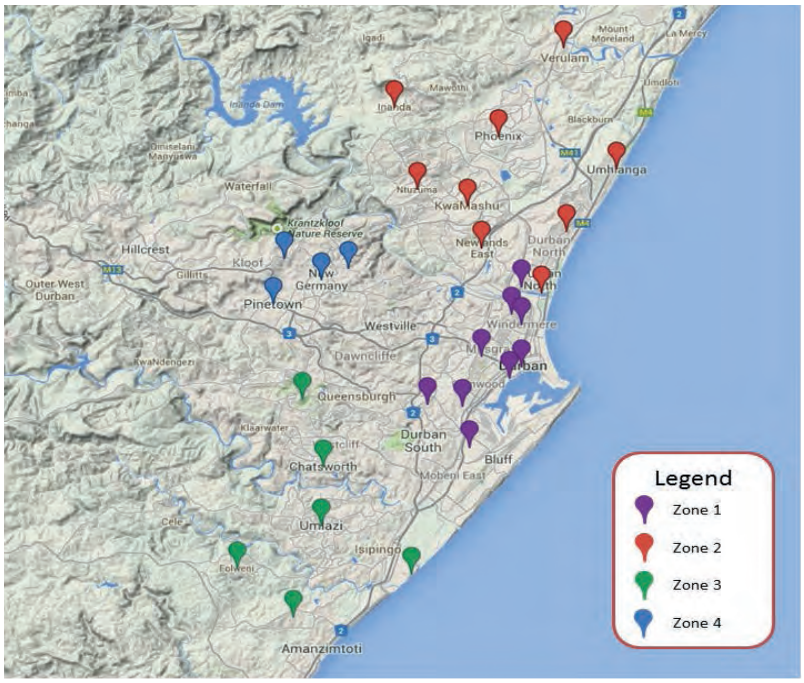
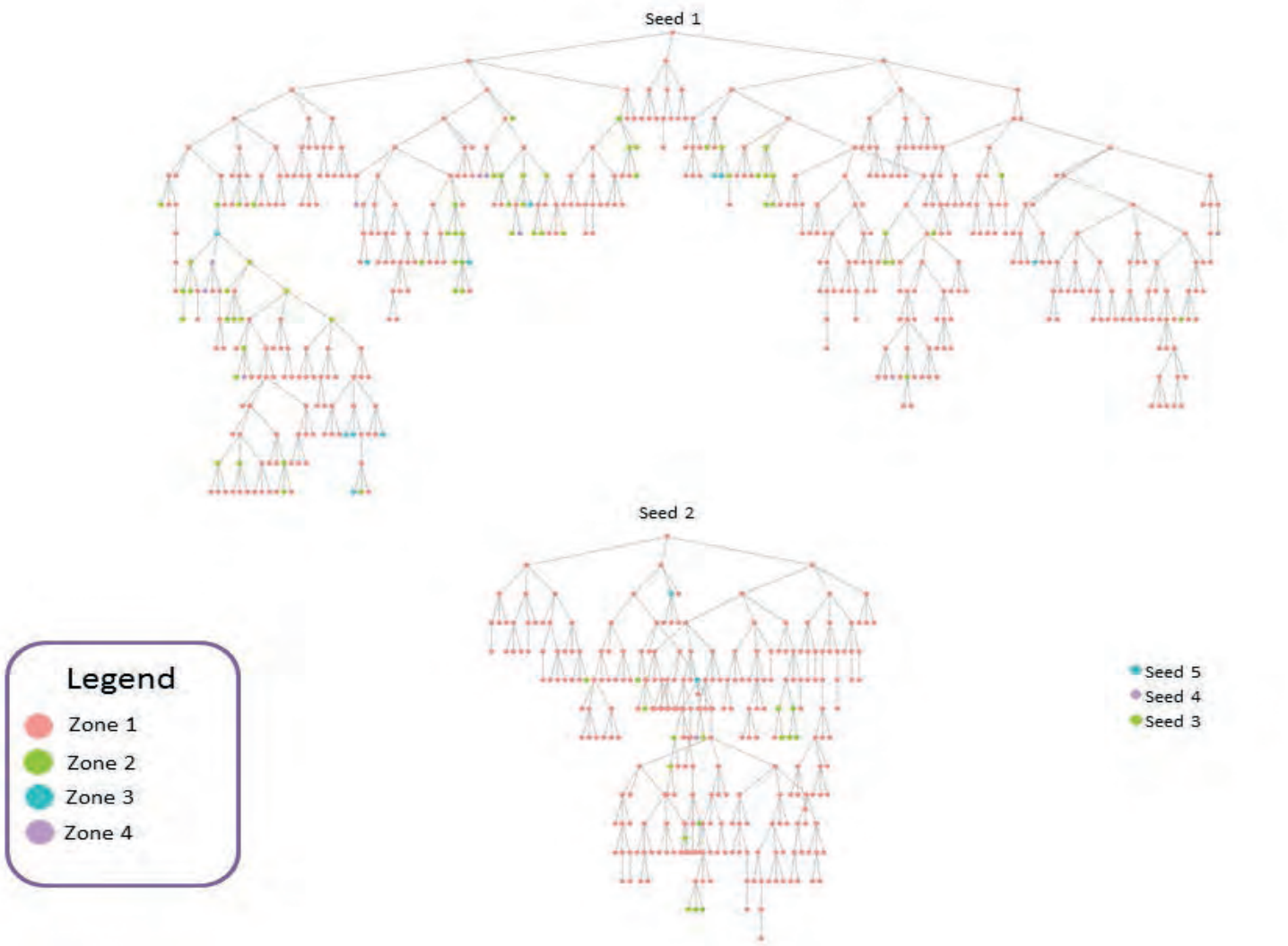
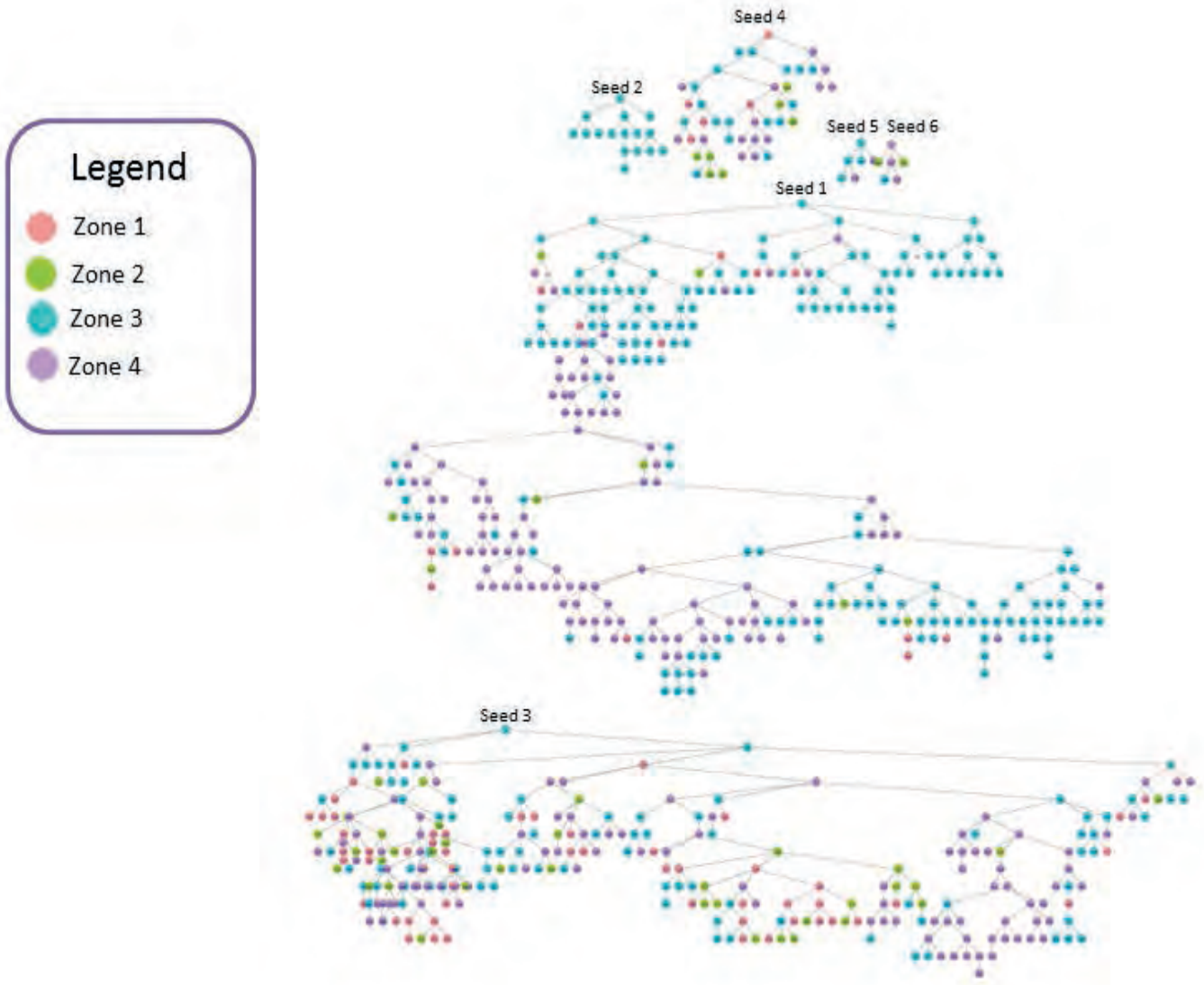


Figure 4a-c. Recruitment Chains Diagram by Zone of Residence, FSW-IBBS, 2013-2014

4a. Johannesburg



4b. Cape Town


Legend
Zone 1
Zone 2
Zone 3
Zone 4
Seed 4
Seed 2
Seed 5
Seed 6
Seed 1
Seed 3

4c. Durban

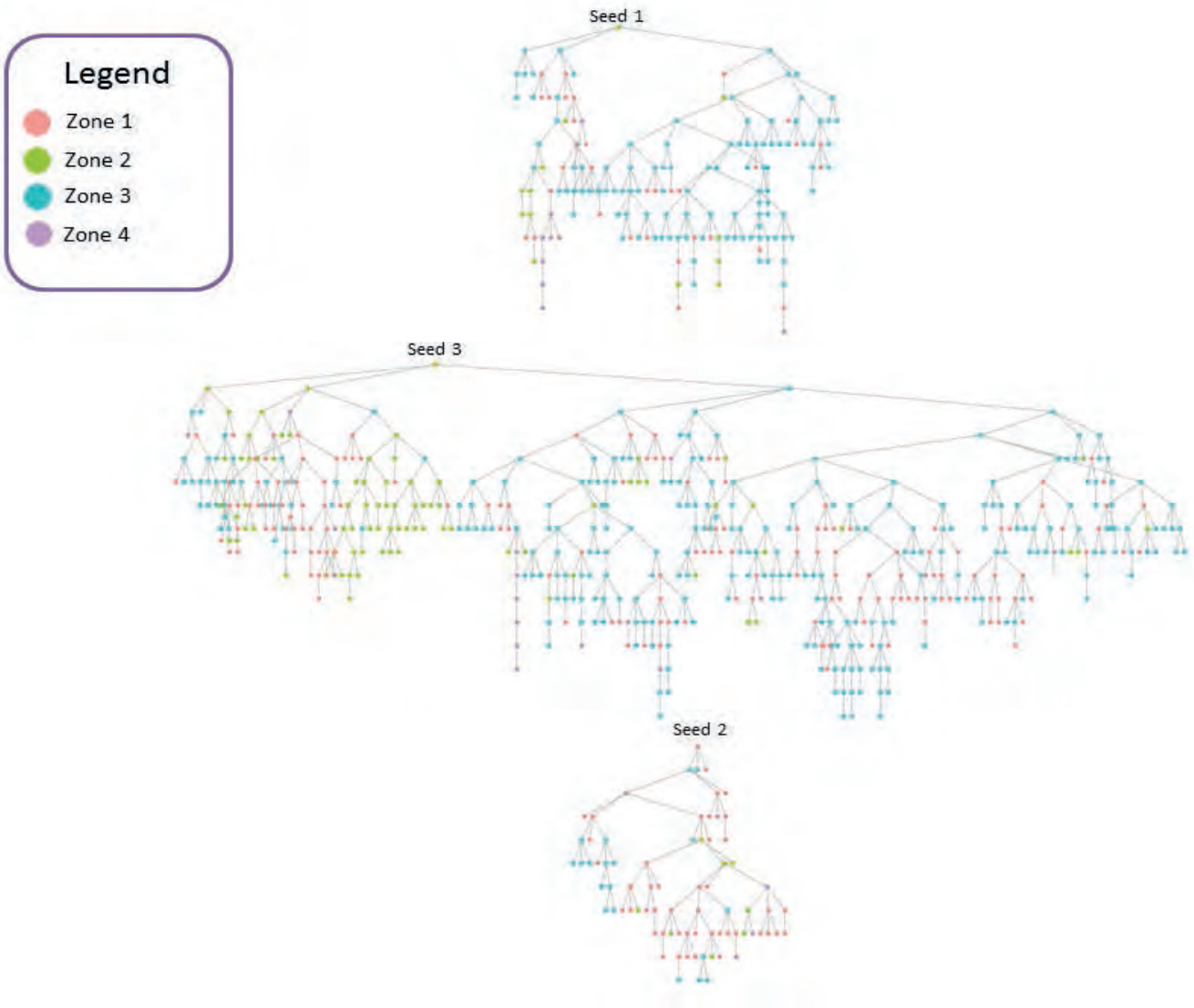
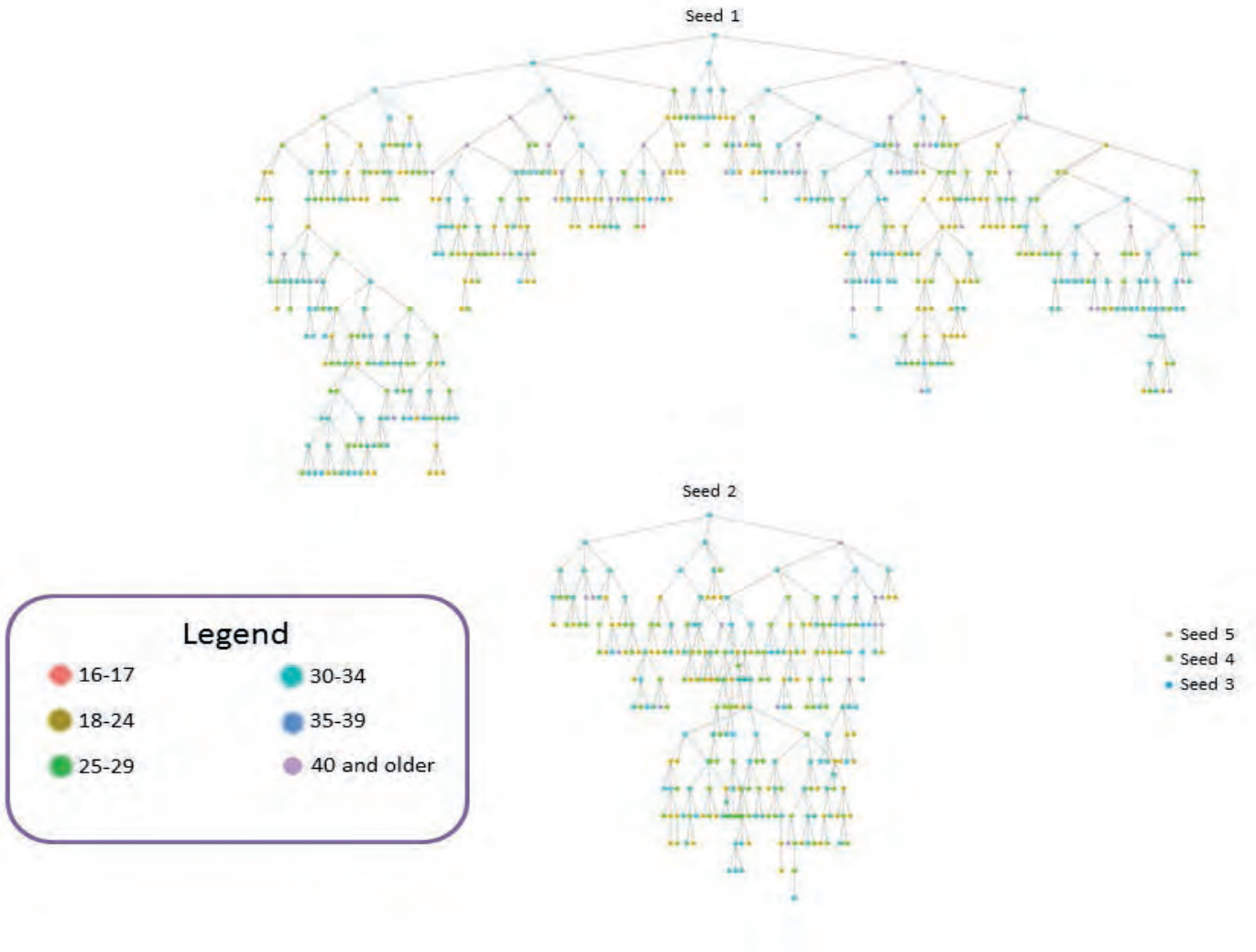
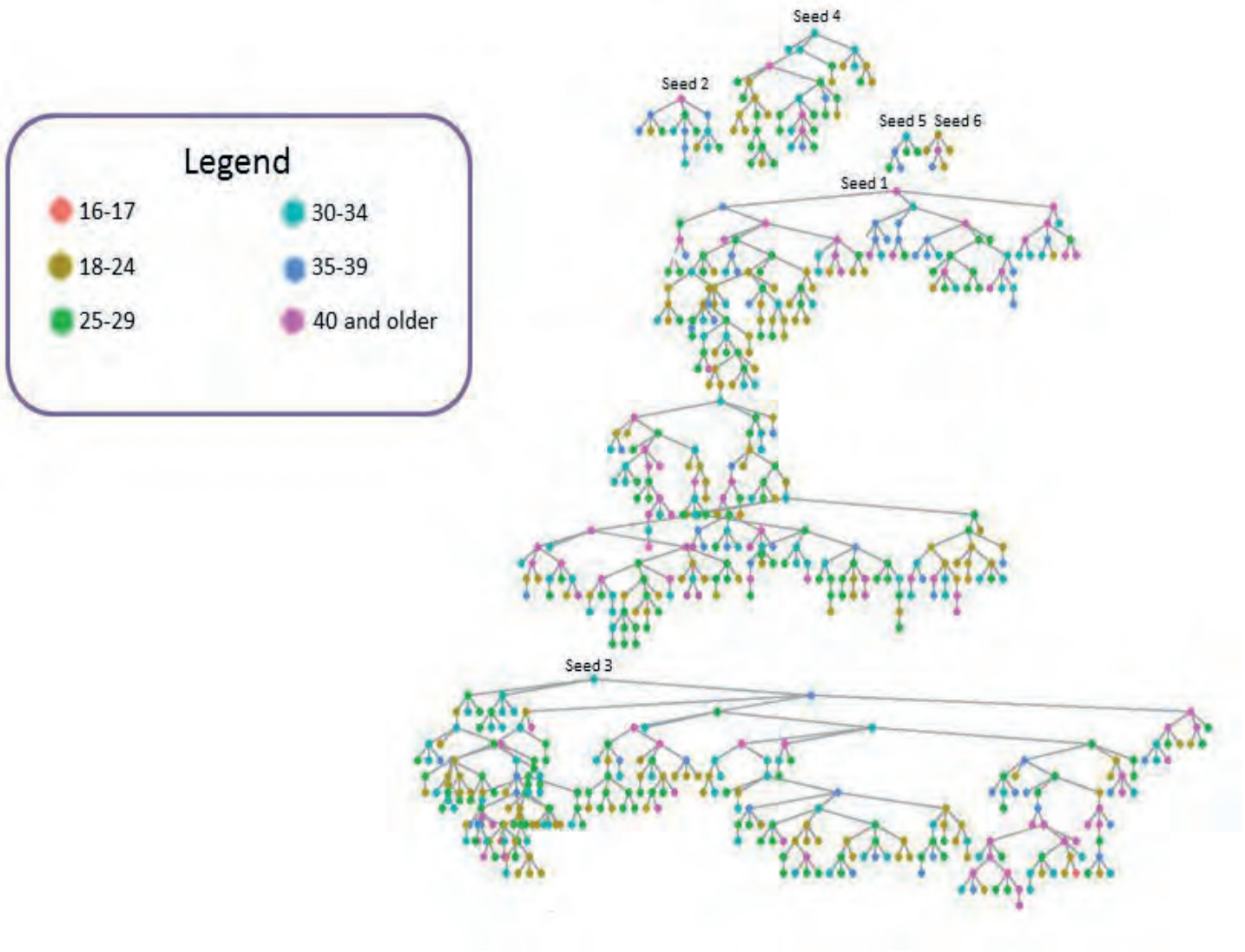


Figure 5a-c. Recruitment Chains Diagram by Age of FSW.

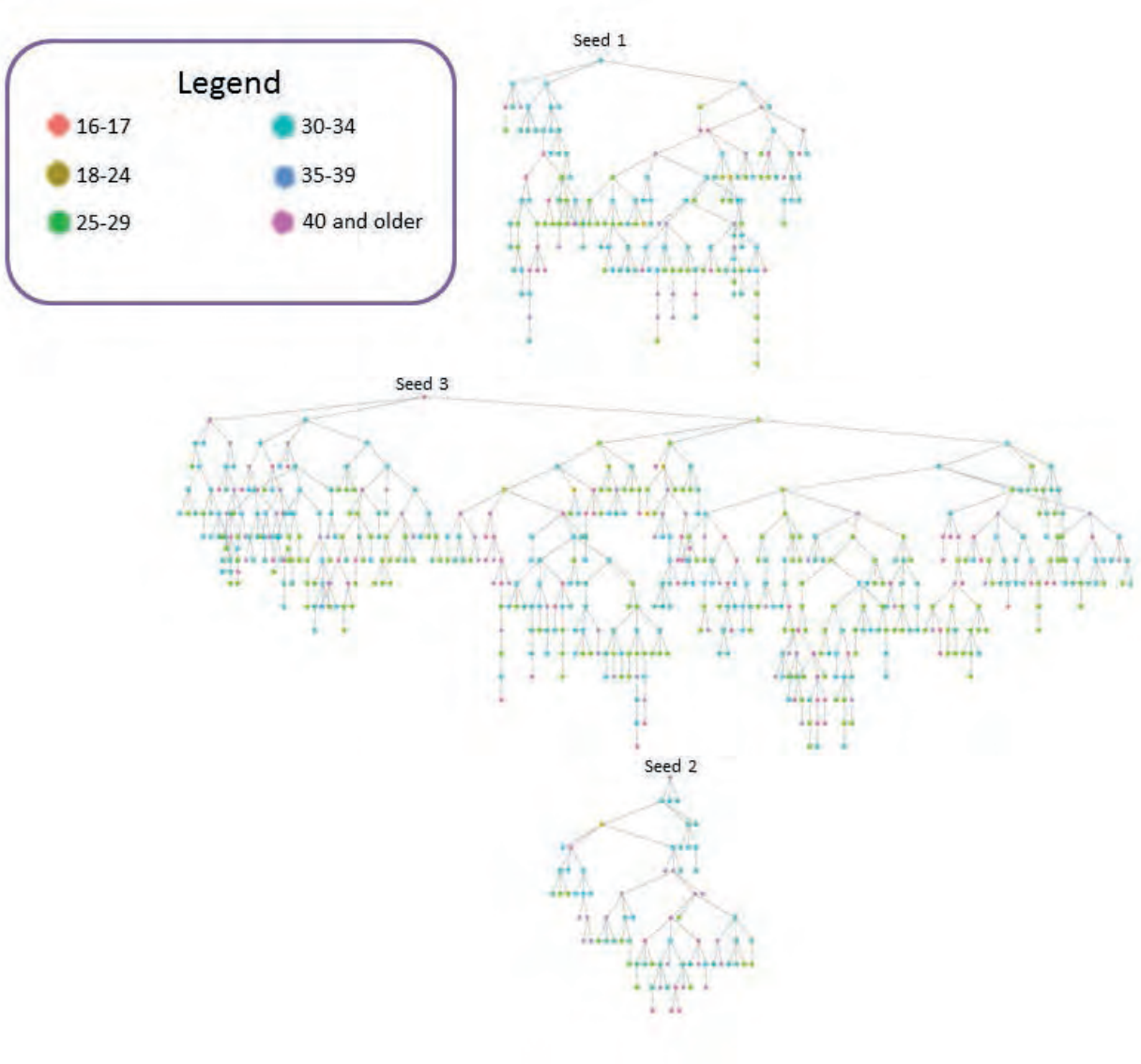
5a. Johannesburg



5b. Cape Town


Legend
16-17
18-24
25-29
30-34
35-39
40 and older
Seed 4
Seed 2
Seed 5
Seed 6
Seed 1
Seed 3

5c. Durban


Legend
16-17
18-24
25-29
30-34
35-39
40 and older
Seed 1
Seed 3
Seed 2

6b. Demographic and Socioeconomic Indicators

Demographic characteristics of the Female Sex Worker population in each city are presented in Table 1. We estimate that over one-third of Female Sex Workers in Johannesburg, Cape Town, and Durban are between the ages of 16 and 24 (36.5% in Johannesburg; 30.5% in Cape Town; 40.8% in Durban). There is more variation in the percentage of sex workers estimated to be 35 years of age or older (12.1% in Johannesburg; 17.3% in Cape Town; and a little over a quarter, 27.4%, in Durban).

Table 1: Demographics of FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Age												
16-24	193	25.3	36.5	17.5-48.1	163	25.1	30.5	22.8-40.3	240	31.3	40.8	27.1-61.0
25-29	214	28.0	16.2	9.9-27.7	194	29.8	34.0	24.2-45.6	202	26.4	19.9	10.3-32.4
30-34	208	27.2	35.2	16.3-58.7	133	20.5	18.3	12.2-25.4	140	18.3	11.9	6.9-19.6
35+	148	19.4	12.1	7.0-19.6	158	24.3	17.3	10.3-23.0	183	23.9	27.4	7.3-48.8
Don't Know	1	0.1	--	--	0	0.0	--	--	0	0.0	--	--
Missing	0	0.0	--	--	2	0.3	--	--	1	0.1	--	--
Citizenship												
South Africa	576	75.4	67.7	50.3-87.6	639	98.3	99.8	99.7-1.0	764	99.7	100	1.0-1.0
Mozambique	1	0.1	--	--	1	0.2	--	--	0	0.0	--	--
Zimbabwe	177	23.2	31.5	11.4-48.8	1	0.2	--	--	0	0.0	--	--
Other	10	1.3	--	--	7	1.1	--	--	1	0.1	--	--
Missing	0	0.0	--	--	2	0.3	--	--	1	0.1	--	--
Race												
Black/African	747	97.8	96.9	91.8-99.4	265	40.8	29.5	20.1-40.0	761	99.3	97.1	89.9-100.0
Coloured	14	1.8	--	--	351	54.0	66.7	55.9-76.4	4	0.5	--	--
White	1	0.1	--	--	10	1.5	--	--	0	0.0	--	--
Indian/Asian	1	0.1	--	--	3	0.5	--	--	0	0.0	--	--
Other	1	0.1	--	--	5	0.8	--	--	0	0.0	--	--
Missing	0	0.0	--	--	16	2.5	--	--	1	0.1	--	--
Marital Status												
Married/Living with someone as married	122	16.0	10.9	6.3-17.7	120	18.5	19.3	12.4-26.2	24	3.1	2.9	0.7-6.9
Not in a union	642	84.0	89.1	82.3-93.7	528	81.2	80.7	73.8-87.6	741	96.7	97.1	93.1-99.3
Missing	0	0.0	--	--	2	0.3	--	--	1	0.1	--	--

The survey data indicate that most sex workers are citizens of South Africa (67.7% in Johannesburg; 99.8% in Cape Town; >99.9% in Durban). However, in Johannesburg, we estimate roughly a third of the female sex worker population holds Zimbabwean citizenship (31.5%).

In Johannesburg and Durban the vast majority of FSW are Black (96.9% and 97.1%, respectively). In Cape Town, two-thirds of the FSW population is Coloured (66.7%), and roughly one-third is Black (29.5%).

The vast majority of female sex workers in the three cities are neither married nor not living with someone in a domestic union as if married (89.1% in Johannesburg; 80.7% in Cape Town; 97.1% in Durban).

Socioeconomic indicators are presented in Table 2. With respect to educational attainment, most female sex workers are not currently enrolled as students (99.5% in Johannesburg; 98.4% in Cape Town; 95.6% in Durban), and had never attended a tertiary educational institution (87.0% in Johannesburg; 89.3% in Cape Town; 72.1% in Durban). Most derived their income primarily from sex work (89.4% in

Johannesburg; 90.0% in Cape Town; 86.1% in Durban). Most had not earned money outside of the sex industry in the month preceding their survey participation (87.4% in Johannesburg; 88.3% in Cape Town; 95.6% in Durban).

Roughly two-thirds of female sex workers in all three sites had not been away from their primary residence for a month or more within the previous twelve months (59.0% in Johannesburg; 69.1% in Cape Town; 79.4% in Durban). However, the number of FSW who are mobile is substantial: 37.5% in Johannesburg, 30.9% in Cape Town, and 20.6% in Durban had spent at least a month away from their primary residence in the last year.

Table 2: Education Level, Employment, and Mobility of FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Current Student Status												
Currently Studying	7	0.9	--	--	9	1.4	--	--	25	3.3	4.4	1.4-9.7
Not Studying	757	99.1	99.5	98.8-100.0	639	98.3	98.4	96.5-99.9	740	96.6	95.6	90.3-98.6
Missing	0	0.0	--	--	2	0.3	--	--	1	0.1	--	--
Highest Education Attended												
≤ Secondary School	617	80.8	87	77.8-93.3	541	83.2	89.3	85.0-92.7	502	65.5	72.1	56.1-83.4
>Secondary School	145	19.0	13	6.7-22.2	107	16.5	10.7	7.3-15.0	263	34.3	27.9	16.6-43.9
Missing	2	0.3	--	--	2	0.3	--	--	1	0.1	--	--
Main Source of Income												
Sex work	713	93.3	89.4	80.0-95.7	589	90.6	90.0	84.4-94.1	700	91.4	86.1	75.4-93.3
Other work	50	6.5	10.6	4.3-20.1	59	9.1	10.0	5.9-15.6	65	8.5	13.9	6.7-24.6
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
Non-sex work employment in month preceding survey												
Yes	93	12.2	12.5	6.3-21.4	71	10.9	11.7	5.9-18.9	43	5.6	4.4	1.7-8.8
No	669	87.6	87.4	78.6-93.6	577	88.8	88.3	81.1-94.1	722	94.3	95.6	91.2-98.3
Missing	2	0.3	--	--	2	0.3	--	--	1	0.1	--	--
Away from primary residence for >=1 month in the 12 months preceding the survey												
Yes	232	30.4	37.5	23.5-56.1	194	29.8	30.9	22.2-39.6	157	20.5	20.6	10.2-33.6
No	493	64.5	59.0	39.2-73.0	454	69.8	69.1	60.4-77.8	608	79.4	79.4	66.4-89.8
Missing	39	5.1	--	--	2	0.3	--	--	1	0.1	--	--

6c. Sexual history, behaviours, and safer sex behaviours

We present sexual history indicators in Table 3. Sexual debut for the majority of female sex workers in all three sites took place at age 15 or older. In Johannesburg, 45.7% are estimated to have debuted between the ages of 15 and 17 and 47.8% are estimated to have debuted at age 18 or greater. In Cape Town 47.2% are estimated to have debuted between the ages of 15 and 17, with 36.2% debuting at age 18 or greater. In Durban, 56.6% of female sex workers are estimated to have debuted between the ages of 15 and 17, with 33.2% estimated to have debuted at age 18 and older. Nonetheless, a substantial proportion of FSW in each city, sexual debut occurred younger than age 15, ranging from 6% (in Johannesburg) to 17% (in Cape Town).

In Johannesburg and Durban, a majority of FSW are estimated to have sold sex for the first time at age 21 or older (59.2% in Johannesburg; 56.9% in Durban); just under half (44.1%) of Cape Town FSW entered the sex industry at the age of 21 or later. A substantial minority of FSW in each city entered the sex industry under the age of 18: 1 in 10 in Johannesburg, and 1 in 4 in Cape Town and Durban began sex work as minors.

The survey also assessed whether FSW had ever engaged in receptive anal intercourse, as this sexual behaviour carries a high risk of HIV transmission. The data show approximately half the female sex

workers in Johannesburg and Cape Town (52.5% and 46.2%, respectively) and nearly one-third in Durban (30.2%) have ever had anal intercourse.

Table 3: Sexual History of FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Age at sexual debut												
< 15	90	11.8	6.0	3.2-11.0	120	18.5	16.6	11.1-23.6	76	9.9	10.2	2.4-24.4
15-17	396	51.8	45.7	28.3-62.5	321	49.4	47.2	37.5-57.4	344	44.9	56.6	36.0-72.4
≥ 18	275	36.0	47.8	29.7-66.0	206	31.7	36.2	25.4-46.7	345	45.0	33.2	20.9-51.0
No vaginal sex	3	0.4	--	--	1	0.2	--	--	0	0.0	--	--
Missing	0	0.0	--	--	2	0.3	--	--	1	0.1	--	--
Age when had sex for money for the first time												
< 18	101	13.2	8.2	4.5-13.9	161	24.8	27.2	19.5-35.8	110	14.4	26.8	14.4-43.6
18-20	187	24.5	32.6	16.7-48.8	172	26.5	28.7	21.5-37.1	210	27.4	16.3	9.3-27.1
≥ 21	475	62.2	59.2	42.3-75.5	315	48.5	44.1	33.6-54.5	445	58.1	56.9	37.1-73.0
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
Ever had anal sex												
Yes	281	36.8	52.5	34.5-69.2	297	45.7	46.2	36.2-57.2	293	38.3	30.2	18.0-47.9
No	483	63.2	47.5	30.8-65.5	351	54.0	53.8	42.9-63.8	472	61.6	69.8	52.1-82.0
Missing	0	0.0	--	--	2	0.3	--	--	1	0.1	--	--

We present indicators related to recent sexual behaviours of FSW in Table 4. At each site, the majority of FSW had less than 100 clients in the prior six months; however we observed variation in the overall distribution of paying partners between the sites. In Johannesburg we estimate that 32.7% had between 1 and 50 partners; a small proportion (6.6%) had more than 200 partners. About one third (36.8%) of female sex workers in Cape Town had between 1 and 50 partners in the preceding 6 months, and another third are estimated to have over 200 partners (30.2%). We estimate over two thirds of the population in Durban is estimated to have between 1 and 50 partners.

The majority of FSW at each site had 4 or fewer non-paying partners; in Cape Town and Durban, more than 60% had no non-paying partners.

In all three cities, most female sex workers meet clients in a public setting, defined as street, park, library, or public transit (61.0% in Johannesburg; 81.4% in Cape Town; 74.3% in Durban). The second most prevalent venue for meeting clients is a bar/café/nightclub in all three sites (48.1% in Johannesburg; 46.0% in Cape Town; 32.5% in Durban). In Durban 13.2% (95% CI: 7.5-21.8) meet clients at truck stops and border crossings; by contrast, few sex workers in Johannesburg and Cape Town meet clients at these locations.

We present condom and lubrication use indicators in Table 5. The majority of FSW across all three sites used a condom the last time they had sex with a client; however a significant minority in each site did not (23.4% in Johannesburg, 10.6% in Cape Town, and 15.5% in Durban). Most FSW perceive condoms to be somewhat or very affordable (80.4% in Johannesburg, 96.5% in Cape Town, and 86.9% in Durban). Additional lubrication is not widely utilized by FSW; moreover, the vast majority do not know what water-based lubricant is (77.5% in Johannesburg, 62.9% in Cape Town, and 82.5% in Durban).

Table 4: Sexual Behaviour of FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Total Number of Paying Sexual Partners in Past 6 Months												
1-50	232	30.4	35.8	23.1-51.8	201	30.9	37.0	28.2-48.7	381	49.7	73.6	58.6-83.0
51-100	99	13.0	14.7	6.5-25.8	96	14.8	13.9	8.8-19.7	141	18.4	14.1	8.3-23.4
101-200	106	13.9	27.0	5.4-48.2	139	21.4	25.0	15.2-36.1	80	10.4	5.2	2.5-9.4
>200	262	34.3	6.4	4.1-10.4	209	32.2	24.0	16.7-30.6	163	21.3	7.1	3.9-13.5
Don't Know	65	8.5	16.1	2.5-34.2	0	0.0	--	--	0	0.0	--	--
Missing	0	0.0	--	--	5	0.8	--	--	1	0.1	--	--
Total Number of Non-Paying Sexual Partners in Past 6 Months												
0	302	39.5	21.4	10.7-37.1	416	64.0	62.1	52.0-72.2	524	68.4	70.7	56.1-84.7
1-4	334	43.7	45.9	29.0-64.6	178	27.4	31.9	21.8-42.3	225	29.4	27.5	14.2-41.9
≥ 5	120	15.7	32.0	16.1-48.6	51	7.8	6.0	3.4-9.5	16	2.1	--	--
Don't Know	8	1.0	--	--	0	0.0	--	--	0	0.0	--	--
Missing	0	0.0	--	--	5	0.8	--	--	1	0.1	--	--
Where usually meet clients (Multiple Response)												
Brothel/hotel	176	23.0	22.6	11.8-37.4	31	4.8	4.9	1.6-8.9	84	11.0	13.5	6.2-24.9
Bar/café/nightclub	396	51.8	48.1	30.3-65.7	263	40.5	46.0	34.7-57.0	311	40.6	32.5	21.3-51.4
Street/park/library/public transit	474	62.0	61.0	41.3-73.6	497	76.5	81.4	72.8-87.9	543	70.9	74.3	59.7-85.3
Introduced by friends	7	0.9	--	--	42	6.5	5.4	2.3-9.3	27	3.5	6.3	1.0-16.1
Internet	7	0.9	--	--	7	1.1	--	--	9	1.2	--	--
Work/School	15	2.0	--	--	2	0.3	--	--	0	0.0	--	--
Through an intermediary (pimp/bartender/taxi driver)	9	1.2	--	--	0	0.0	--	--	6	0.8	--	--
Private party/social club	7	0.9	--	--	10	1.5	--	--	24	3.1	4.8	0.5-14.4
Truck stop/border crossing	1	0.1	--	--	10	1.5	--	--	164	21.4	13.2	7.5-21.8
Dating services or newspaper ads	1	0.1	--	--	6	0.9	--	--	8	1.0	--	--
Other	0	0.0	--	--	45	6.9	--	--	3	0.4	--	--

Table 5: Condoms and Lubricant Use Among FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Condom Use at Last Sex With Client												
Yes	646	84.6	76.4	60.9-90.2	579	89.4	89.4	84.0-93.8	651	85.0	84.5	73.2-92.0
No	117	15.3	23.4	9.7-38.9	69	10.6	10.6	6.2-16.0	114	14.9	15.5	8.0-26.8
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
Condom Use at Last Sex With Non-Paying Partner												
Yes	169	22.1	34.5	17.3-54.8	102	15.7	13.6	8.7-18.9	96	12.5	8.9	3.5-17.4
No	234	30.6	26.9	14.2-43.0	122	18.8	22.7	13.4-33.7	124	16.2	14.9	7.2-27.0
No non-paying partners	358	46.9	38.6	23.4-55.7	422	64.9	63.7	53.3-73.7	545	71.1	76.2	61.5-87.1
Missing	3	0.4	--	--	4	0.6	--	--	1	0.1	--	--
Perception about affordability of condoms												
Very affordable	355	46.5	34.0	23.6-50.8	344	52.9	60.2	50.6-69.1	455	59.4	41.9	25.0-63.5
Somewhat affordable	202	26.4	46.4	24.2-61.9	268	41.2	36.3	27.8-45.6	218	28.5	45.0	21.6-65.6
Not affordable	174	22.8	18.3	8.0-32.3	33	5.1	3.5	1.0-7.4	62	8.1	13.0	5.7-24.3
Don't Know	30	3.9	1.3	0.3-2.8	0	0.0	--	--	3	0.4	--	--
Missing	3	0.4	--	--	5	0.8	--	--	28	3.7	--	--
Ever used lubricant												
Ever used lube during vaginal or anal sex	273	35.7	19.3	8.9-34.9	284	43.7	44.4	35.1-55.3	199	26.0	13.0	7.1-22.0
Never used lube	489	64.0	80.6	65.1-91.0	360	55.4	55.4	44.5-64.8	540	70.5	80.4	69.0-89.5
Missing	2	0.3	--	--	6	0.9	--	--	27	3.5	--	--
Frequency of lubricant use												
Never/Rarely/ Sometimes	730	95.5	97.7	94.7-99.3	570	87.7	85.5	73.5-94.5	678	88.5	97.7	95.4-99.0
Usually/Always	32	4.2	2.3	0.7-5.3	74	11.4	14.5	5.5-26.5	60	7.8	2.3	1.0-4.6
Missing	2	0.3	--	--	6	0.9	--	--	28	3.7	--	--
Knowledge of Water-based lubricant												
Know what water-based lubricant is	134	17.5	22.5	8.4-43.6	278	42.8	37.1	28.1-48.0	162	21.1	17.5	8.9-32.7
Do not know what water-based lubricant is	627	82.1	77.5	56.4-91.6	367	56.5	62.9	52.0-71.9	577	75.3	82.5	67.3-91.1
Missing	3	0.4	--	--	5	0.8	--	--	27	3.5	--	--

6d. HIV, PMTCT, and ART knowledge indicators

We present results of UNGASS HIV knowledge indicators in Table 6[45]. About half or more of FSW across all three sites (67.2% in Johannesburg, 69.4% in Cape Town, and 49.2% in Durban) lack comprehensive knowledge of HIV transmission (i.e., cannot correctly answer the five HIV knowledge questions). A sizeable proportion of FSW (48.7% in Johannesburg, 37.8% in Cape Town, and 32.3% in Durban) believed that people can become infected with HIV by a mosquito bite. Furthermore, almost one in five FSW (16.2% in Johannesburg, 18.3% in Cape Town, and 23.7% in Durban) did not know that condoms can reduce the risk of HIV transmission.

Table 6: Knowledge of HIV Among FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Responded correctly to the five HIV knowledge questions listed below												
All answers correct	315	41.2	32.8	19.4-49.6	197	30.3	30.6	21.6-39.4	373	48.7	50.8	31.0-68.4
Not all answers correct	448	58.6	67.2	50.5-80.6	451	69.4	69.4	60.6-78.4	392	51.2	49.2	31.6-69.0
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
1) Having sex with only one faithful, uninfected partner can reduce the risk of HIV transmission												
Answered correctly	541	70.8	65.8	48.4-80.3	406	62.5	61.2	50.1-70.0	533	69.6	67.7	50.6-81.1
Answered incorrectly	222	29.1	34.2	19.7-51.6	242	37.2	38.8	30.0-49.9	232	30.3	32.3	18.9-49.4
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
2) Condoms can reduce the risk of HIV transmission												
Answered correctly	696	91.1	83.8	66.2-94.7	554	85.2	81.7	74.2-87.9	661	86.3	76.3	60.8-88.6
Answered incorrectly	67	8.8	16.2	5.3-33.6	94	14.5	18.3	12.1-25.8	104	13.6	23.7	11.4-39.2
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
3) A healthy-looking person can have HIV												
Answered correctly	691	90.5	71.5	51.6-93.0	607	93.4	91.9	86.4-95.9	733	95.7	88.5	74.0-98.0
Answered incorrectly	72	9.4	28.5	6.9-48.6	41	6.3	8.1	4.1-13.7	32	4.2	11.5	2.0-26.0
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
4) People can become infected with HIV by a mosquito bite												
Answered correctly	493	64.5	51.3	34.9-70.9	374	57.5	62.2	53.9-70.5	568	74.2	67.7	50.9-82.6
Answered incorrectly	270	35.3	48.7	28.5-65.2	273	42.0	37.8	29.5-46.1	197	25.7	32.3	17.4-49.1
Missing	1	0.1	--	--	3	0.5	--	--	1	0.1	--	--
5) People can become infected by sharing a meal with someone who is infected												
Answered correctly	712	93.2	92.8	85.0-97.7	609	93.7	91.8	86.2-96.2	722	94.3	93.9	86.0-98.5
Answered incorrectly	51	6.7	7.2	2.3-14.9	39	6.0	8.2	3.8-13.8	43	5.6	6.1	1.5-14.0
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--

UNGASS mother-to-child transmission and antiretroviral treatment knowledge indicators are presented in Table 7. A notable proportion of FSW (57.8% in Johannesburg, 21.2% in Cape Town, and 55.5% in Durban) did not have accurate comprehensive knowledge of mother-to-child transmission (i.e., cannot correctly answer the three knowledge questions).

Table 7: Knowledge About PMTCT and ART Among FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Responded correctly to all three PMTCT questions below												
All answers correct	489	64.0	37.2	24.5-55.2	494	76.0	78.1	71.2-84.4	530	69.2	44.5	28.4-65.2
Not all answers correct	274	35.9	57.8	36.3-73.0	154	23.7	21.2	11.6-32.4	235	30.7	55.5	34.8-71.6
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
1) HIV can be transmitted from mother to child during pregnancy												
Answered correctly	593	77.6	60.0	42.0-81.8	572	88	90.5	85.3-94.5	562	73.4	51.5	32.3-73.2
Answered incorrectly	170	22.3	40.0	18.0-57.6	76	11.7	9.5	5.5-14.7	203	26.5	48.5	26.8-67.7
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
2) HIV can be transmitted from mother to child during delivery												
Answered correctly	627	82.1	64.4	47.1-80.4	556	85.5	86.4	80.2-91.9	680	88.8	74.2	57.5-87.1
Answered incorrectly	136	17.8	35.6	19.5-52.8	92	14.2	13.6	8.1-19.8	85	11.1	25.8	12.9-42.5
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
3) HIV can be transmitted from mother to child during breastfeeding												
Answered correctly	615	80.5	67.4	49.8-82.6	551	84.8	87.7	82.4-92.4	685	89.4	76.6	59.4-87.9
Answered incorrectly	148	19.4	32.6	17.0-50.0	97	14.9	12.3	7.6-17.6	80	10.4	23.4	12.1-40.6
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
Ever heard about special drugs (antiretrovirals) that people infected with the AIDS virus can get from a doctor that can help them live longer												
Have Heard	702	91.9	89.6	82.1-94.6	561	86.3	81.8	74.7-88.2	748	97.7	85.6	70.8-96.8
Have Not	61	8.0	10.4	5.4-17.8	87	13.4	18.2	11.8-25.3	17	2.2	14.4	3.2-29.2
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
Special drugs exists that a doctor or nurse can give a woman infected with AIDS to reduce the risk of transmission to the baby												
Answered correctly	713	93.3	85.8	69.6-96.9	549	84.5	78.8	67.6-88.4	690	90.1	73.4	56.7-87.3
Answered incorrectly	50	6.5	14.2	3.1-30.7	99	15.2	21.2	11.6-32.4	75	9.8	26.6	12.7-43.3
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--

In particular, 40.0% and 48.5% of FSW in Johannesburg and Durban did not know that HIV can be transmitted from mother to child during pregnancy while 9.5% of those in Cape Town did not know. Although a majority of FSW across all three sites have heard about antiretroviral drugs, a substantial proportion of them (14.2% in Johannesburg, 21.2% in Cape Town, and 26.6% in Durban) did not know that the drugs can prevent HIV transmission from HIV-infected mothers to their babies.

6e. Coverage of HIV prevention, health care access, and reproductive health services

We present selected HIV programme coverage indicators in Table 8. Overall, very few FSW report being reached by prevention service programmes. A majority of FSW across the three urban areas has had no contact with peer educators. Contact with peer educators was best in Johannesburg (41.0%), but particularly low in Durban and Cape Town (15.8% and 10.4%). Even fewer FSW have had contact with an HIV peer educator who is also an FSW (35.7% in Johannesburg, 12.2% in Cape Town, and 9.2% in Durban). Participation in HIV-related discussions was comparable in Cape Town (32%) and Johannesburg (26.3%), but substantially lower in Durban (12.1%). A majority of FSW (77.7%) in Cape Town had received free condoms, lubricant, or pamphlets, however, less than half of those (44.6%) in Johannesburg and only about a quarter (28.5%) in Durban had.

Table 8: Coverage of Prevention Services Among FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Had contact with an HIV peer educator in the 12 months preceding the survey												
Yes, contact with FSW peer educator	292	38.2	35.7	20.3-58.9	92	14.2	12.2	5.8-18.8	87	11.4	9.2	3.4-19.3
Yes, but peer educator was not an FSW	39	5.1	4.3	1.9-8.6	22	3.4	1.8	0.5-3.6	12	1.6	--	--
No contact with peer educator	394	51.6	58.2	35.1-72.9	511	78.6	84.0	77.0-91.1	649	84.7	90.1	79.8-96.0
Don't Know	22	2.9	1.8	0.4-5.4	17	2.6	--	--	17	2.2	0.5	0.2-1.2
Missing	17	2.2	--	--	8	1.2	--	--	1	0.1	--	--
Participated in an HIV-related talk in the 12 months preceding the survey												
Yes	333	43.6	26.2	17.4-39.7	256	39.4	32.0	24.3-41.2	239	31.2	12.1	6.6-18.9
No	429	56.2	73.7	60.1-82.5	392	60.3	68.0	58.8-75.7	526	68.7	87.9	81.1-93.4
Missing	2	0.3	--	--	2	0.3	--	--	1	0.1	--	--
Received condom, lube, or pamphlets for free in previous 12 months												
Yes	399	52.2	44.6	26.4-61.4	549	84.5	77.7	66.3-88.0	378	49.3	28.5	16.2-42.9
No	364	47.6	55.4	38.6-73.7	99	15.2	22.3	12.0-33.7	387	50.5	71.5	57.1-83.8
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--

The survey also inquired about access and utilization of health care services in the preceding 12 months. We present these results in Table 9. Sizeable proportions of FSW (53.8% in Johannesburg; 36.2% in Cape Town; 58.8% in Durban) sought care for a health-related problem. Generally those who sought care in the past 12 months did so once (23.3% in Johannesburg; 9.2% in Cape Town; 26.1% in Durban), though a notable number sought services multiple times.

Table 9: Access and Utilization of Health Care Services Among FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Sought care from a doctor, nurse or other health professional for a health-related problem in the 12 months preceding the survey												
Yes	395	51.7	53.8	35.2-69.9	245	37.7	36.2	27.6-45.5	507	66.2	58.8	40.5-75.9
No	368	48.2	46.2	30.1-64.8	402	61.8	63.8	54.5-72.4	258	33.7	41.2	24.1-59.5
Missing	1	0.1	--	--	3	0.5	--	--	1	0.1	--	--
Number of times have sought care in 12 months preceding the survey												
1	98	12.8	23.3	7.1-43.6	68	10.5	9.2	5.0-14.0	64	8.4	26.1	5.4-50.5
2	91	11.9	13.9	4.7-28.0	36	5.5	6.9	3.3-11.5	95	12.4	7.3	3.7-12.9
3	71	9.3	1.7	0.9-2.9	29	4.5	6.8	1.9-14.5	121	15.8	9.8	4.3-19.0
4	50	6.5	3.4	1.5-6.2	26	4.0	3.5	1.8-5.9	70	9.1	1.8	1.0-3.2
≥ 5	85	11.1	12.0	2.8-25.7	86	13.2	9.6	5.7-14.4	157	20.5	12.4	6.6-25.7
Have not sought care	368	48.2	45.7	29.8-64.4	402	61.8	64.0	54.4-72.1	258	33.7	41.6	25.0-60.1
Missing	1	0.1	--	--	3	0.5	--	--	1	0.1	--	--

Another series of questions in the survey sought to better understand the reproductive health of FSW across the three cities; we present these results in Tables 10 and 10a. Overall, most FSW (97.5% in Johannesburg; 93.0% in Cape Town; 97.3% in Durban) are not currently pregnant, although more than half across all three cities had at least one pregnancy in their lifetime. Of note, in Durban, nearly 1 in 4 (22.3%) have had 4 or more pregnancies, compared to 4.3% in Johannesburg and 11.1% in Cape Town. A notable number of women (24.0% in Johannesburg; 17.8% in Cape Town; 7.5% in Durban) have ever had an abortion or miscarriage. Contraception, including condom use to prevent pregnancy, is widely utilized by FSW. Durban FSW have the highest rate of contraceptive use (73.4%), followed by Johannesburg (57.3%); in Cape Town less than half (48.3%) are using contraception. Injectable contraceptives are most commonly used in Johannesburg (44.0%) and Cape Town (36.1%), followed by condoms (8.9% and 13.6% respectively). In Durban, condoms are most commonly used (43.5%) followed closely by injectables (36.1%).

Table 10: Reproductive Health of FSW													
Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)				
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted		
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI	
Currently Pregnant													
Yes	19	2.5	--	--	25	3.8	3.8	1.4-7.5	17	2.2	--	--	
No	729	95.4	97.5	94.9-99.1	595	91.5	93.0	88.6-96.1	742	96.9	97.3	94.3-99.2	
Don't know	15	2.0	--	--	28	4.3	3.2	1.3-5.8	6	0.8	--	--	
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--	
Births in the past 5 years													
Has had at least one birth in the past 5 years	288	37.7	37.8	20.8-56.6	283	43.5	47.9	37.9-57.9	194	25.3	22.7	11.6-38.5	
No births in the past 5 years	475	62.2	62.2	43.4-79.2	365	56.2	52.1	42.1-62.1	571	74.5	77.3	61.5-88.4	
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--	
Number of Pregnancies													
0	96	12.6	20.5	7.8-34.2	99	15.2	18.5	12.8-25.9	133	17.4	21.1	12.2-35.7	
1	263	34.4	31.3	15.9-44.4	212	32.6	36.2	27.0-45.8	282	36.8	27.7	15.9-43.9	
2	220	28.8	36.3	21.5-59.6	168	25.8	24.8	15.6-35.7	201	26.2	23.5	13.1-38.0	
3	119	15.6	7.7	4.1-13.4	89	13.7	9.3	5.8-12.9	95	12.4	5.3	2.7-10.0	
≥ 4	65	8.5	4.3	1.8-7.2	80	12.3	11.1	5.8-18.4	54	7.0	22.3	2.2-46.9	
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--	
Ever had an abortion or miscarriage													
Yes	215	28.1	24	10.9-38.6	155	23.8	17.8	13.0-24.2	126	16.4	7.5	4.3-12.8	
No	452	59.2	55.5	41.5-75.9	394	60.6	64	54.6-71.9	506	66.1	71.5	55.5-82.4	
Never had a pregnancy	96	12.6	20.5	7.1-33.2	99	15.2	18.2	12.1-25.3	133	17.4	21.0	11.9-34.8	
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--	
Using some sort of birth control (including condoms) to prevent pregnancy													
Yes	406	53.1	57.3	39.0-74.4	392	60.3	48.3	38.8-58.0	516	67.4	73.4	58.0-84.5	
No	357	46.7	42.7	25.6-61.0	256	39.4	51.7	42.0-61.2	249	32.5	26.6	15.5-42.0	
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--	
Types of Contraceptives Utilized (Multiple Response)													
Female Sterilization	25	3.3	0.6	0.3-1.1	36	5.5	2.6	1.2-4.5	14	1.8	--	--	
Male Sterilization	0	0.0	--	--	1	0.2	--	--	0	0.0	--	--	
IUD	4	0.5	--	--	4	0.6	--	--	18	2.3	--	--	
Injectables	240	31.4	44.0	27.1-61.7	247	38.0	36.1	27.6-45.6	310	40.5	30.1	17.7-46.2	
Implants	11	14.4	--	--	1	0.2	--	--	1	0.1	--	--	
Pill	63	8.2	6.9	2.1-14.6	24	3.7	2.2	1.1-3.9	32	4.2	2.2	0.7-4.7	
Condom	84	11.0	8.9	4.4-16.5	139	21.4	13.6	8.4-19.5	180	23.5	43.5	20.6-62.8	
Female Condom	3	0.4	--	--	2	0.3	--	--	0	0.0	--	--	
Diaphragm	0	0.0	--	--	0	0.0	--	--	0	0.0	--	--	
Foam/Jelly	0	0.0	--	--	0	0.0	--	--	0	0.0	--	--	
Lactational Amenorrhea Method	0	0.0	--	--	0	0.0	--	--	0	0.0	--	--	
Rhythm Method	0	0.0	--	--	0	0.0	--	--	0	0.0	--	--	
Withdrawal	0	0.0	--	--	1	0.2	--	--	0	0.0	--	--	
Other Modern Method	1	0.1	--	--	0	0.0	--	--	22	2.9	19.7	0.4-46.0	
Other Traditional Method	1	0.1	--	--	0	0.0	--	--	1	0.1	--	--	

In Table 10a we present adjusted estimates for antenatal care (ANC) indicators for the subset of FSW who had given birth in the previous 5 years. The majority had visited an ANC clinic and were offered HIV testing. These results are presented below in Table 10a.

Table 10a: ANC Utilization by FSW who had births in the previous 5 years

Measure	Johannesburg (N=288)				Cape Town (N=283)				Durban (N=194)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Visited ANC for prenatal care												
Yes, visited ANC	265	92.0	87.2	66.6-96.6	231	81.6	81.8	71.3-91.0	180	92.8	94.4	84.8-99.0
No, did not visit ANC	23	8.0	12.8	3.5-33.8	43	15.2	16.3	7.6-26.3	14	7.2	--	--
Don't know	0	0.0	--	--	9	3.2	--	--	0	0.0	--	--
Offered an HIV test during pregnancy												
Participant was offered HIV test	274	95.1	97.8	92.3-99.8	276	97.5	97.4	93.8-99.6	187	96.4	98.4	96.0-99.6
Participant was not offered HIV test	14	4.9	--	--	7	2.5	--	--	7	3.6	--	--

6f. Physical and Sexual Assault among Female Sex Workers

The survey asked participants if they had ever experienced physical or sexual assault and whether this occurred in the last year. We present data related to assault in the last year in Table 11. Approximately half of FSW in Johannesburg (50.9%) and Cape Town (47.3%) have been physically assaulted at least once in the preceding 12 months. While slightly lower in Durban, still nearly 1 in 6 (14.1%) were physically assaulted in the past year. Around 1 in 5 FSW in all three cities have been sexually assaulted in the past year.

Table 11: Physical and Sexual Assault Among FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Was physical assaulted in the 12 months preceding the survey												
≥ 1 time	388	50.8	50.9	33.7-68.9	314	48.3	47.3	37.8-57.0	206	26.9	14.1	8.0-23.4
No	357	46.7	48.4	30.5-65.7	332	51.1	52.5	42.9-62.1	559	73.0	85.9	76.6-92.0
Don't Know	18	2.4	--	--	2	0.3	--	--	0	0.0	--	--
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
Was sexually assaulted or raped in the 12 months preceding the survey												
≥ 1 time	167	21.9	21.9	12.8-35.4	78	12.0	16.2	9.6-22.9	138	18.0	16.6	7.3-30.9
No	589	77.1	77.3	63.7-86.6	569	87.5	83.8	77.1-90.4	627	81.9	83.4	69.1-92.7
Don't Know	7	0.9	0.8	0.1-1.9	0	0.0	--	--	0	0.0	--	--
Missing	1	0.1	--	--	3	0.5	--	--	1	0.1	--	--

6g. Alcohol and non-medical drug use

We present results of alcohol and non-medical drug use behaviours in Table 12. The survey assessed alcohol use using the AUDIT-C screening test (See Figure 6). As measured by the AUDIT-C indicator, an overwhelming majority of FSW in Johannesburg (81.5%) and a simple majority of FSW in Cape Town (58.4%) can be classified as hazardous drinkers while fewer FSW in Durban (43.0%) are similarly classified.

Most FSW in Durban and Johannesburg have not used any non-medical drugs in the past 12 months, 86.9% and 81.5% respectively; however, almost half of the FSW in Cape Town (47.9%) have used at least one recreational drug in the preceding 12 months. The types of drugs consumed by FSW vary across the three urban areas. The drug most commonly consumed by FSW in Cape Town is methamphetamine (18.7%) followed by cannabis (18.4%). Most drug use in Johannesburg is cannabis (6.5%), while ecstasy is most commonly used in Durban (7.9%). Less than 1% of FSW in Johannesburg and Durban, and 2% in Cape Town, have a history of non-medical injection drug use. *N.B. Non-medical drug use presented in the Table 12 (next page) is of a proportion of the entire FSW sample at each site; multiple answers were possible.*

Figure 6. AUDIT-C Indicator

The AUDIT-C is a 3-item alcohol screening test that can help identify persons who are hazardous drinkers or who have active alcohol use disorders. The AUDIT-C is a modified version of the 10-item AUDIT instrument developed by the WHO. The reduce scale comprises of three questions with possible scores of 0-4 on each item. The sum of the scores across the three questions results in a possible AUDIT-C scores of 0-12 points. The recommended screening threshold and the one used in the SAHMS was ≥ 3 points for women (Frank et al, 2008).

1. How often do you have a drink containing alcohol?
    - Never (0 points), Monthly or less (1 point), Two to four times a month (2 points), two to three times a week (3 points), Four or more times a week (4 points)
2. How many drinks containing alcohol do you have on a typical day when you are drinking?
    - 1 or 2 (0 points, 3 or 4 (1 point), 5 or 6 (2 points), 7 to 9 (3 points), 10 or more (4 points)
3. How often do you have five or more drinks on one occasion?
    - Never (0 points), Less than monthly (1 point),Monthly (2 points), Weekly (3 points), Daily or almost daily (4 points)

Table 12: Alcohol and Drug Use Among FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Combined AUDIT-C score												
AUDIT-C 'hazardous drinker' classification	581	76.0	81.5	70.1-88.8	426	65.5	58.4	48.5-67.8	492	64.2	43	28.1-63.7
Not a 'heavy drinker'	61	8.0	5.1	2.5-8.8	19	2.9	6.2	1.6-11.8	35	4.6	3.1	1.0-6.9
Did not drink	121	15.8	13.5	7.3-23.4	202	31.1	35.4	27.2-44.7	238	31.1	53.9	32.2-69.8
Missing	1	0.1	--	--	3	0.5	--	--	1	0.1	--	--
Drug use in past 12 months												
Has used drugs for a non-medical reason in past 12 months	187	24.5	20.5	9.8-35.3	259	39.8	47.9	37.5-58.8	193	25.2	13.1	7.7-21.0
Has not used drugs for a non-medical reason in past 12 months	576	75.4	81.5	70.1-88.8	389	59.8	52.1	41.2-62.5	572	74.7	86.9	79.0-92.3
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--
Non-medical drugs used in past 12 months (Multiple Response)												
Cannabis	133	17.4	6.5	3.8-10.5	88	13.5	18.4	9.6-30.0	52	6.8	4.1	1.9-7.5
Mandrax	3	0.4	--	--	27	4.2	3.9	1.3-7.6	9	1.2	--	--
Heroin, "Brown sugar"	8	1.0	--	--	49	7.5	9.7	5.2-14.8	1	0.1	--	--
Cocaine "Crack"	15	2.0	--	--	10	1.5	0.6	0.2-1.2	13	1.7	--	--
Ecstasy	20	2.6	1.7	0.5-3.6	1	0.2	0.0	0.0-0.0	132	17.2	7.9	4.1-13.4
Prescription Medications	7	0.9	--	--	0	0.0	--	--	0	0.0	--	--
Tik	0	0.0	--	--	123	18.9	18.7	12.4-25.1	1	0.1	--	--
Whoonga	5	0.7	--	--	7	1.1	2.9	0.2-7.5	2	0.3	--	--
Other	21	2.7	3.2	1.2-6.3	5	0.8	0.3	0.0-0.8	10	1.3	--	--
Injection drug use												
Ever Injected Drugs	4	0.6	--	--	21	3.2	2.0	0.8-3.5	3	0.4	--	--
Never Injected Drugs	759	99.3	99.8	99.1-100.0	627	96.5	98.0	96.5-99.2	762	99.5	99.7	98.8-100.0
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--

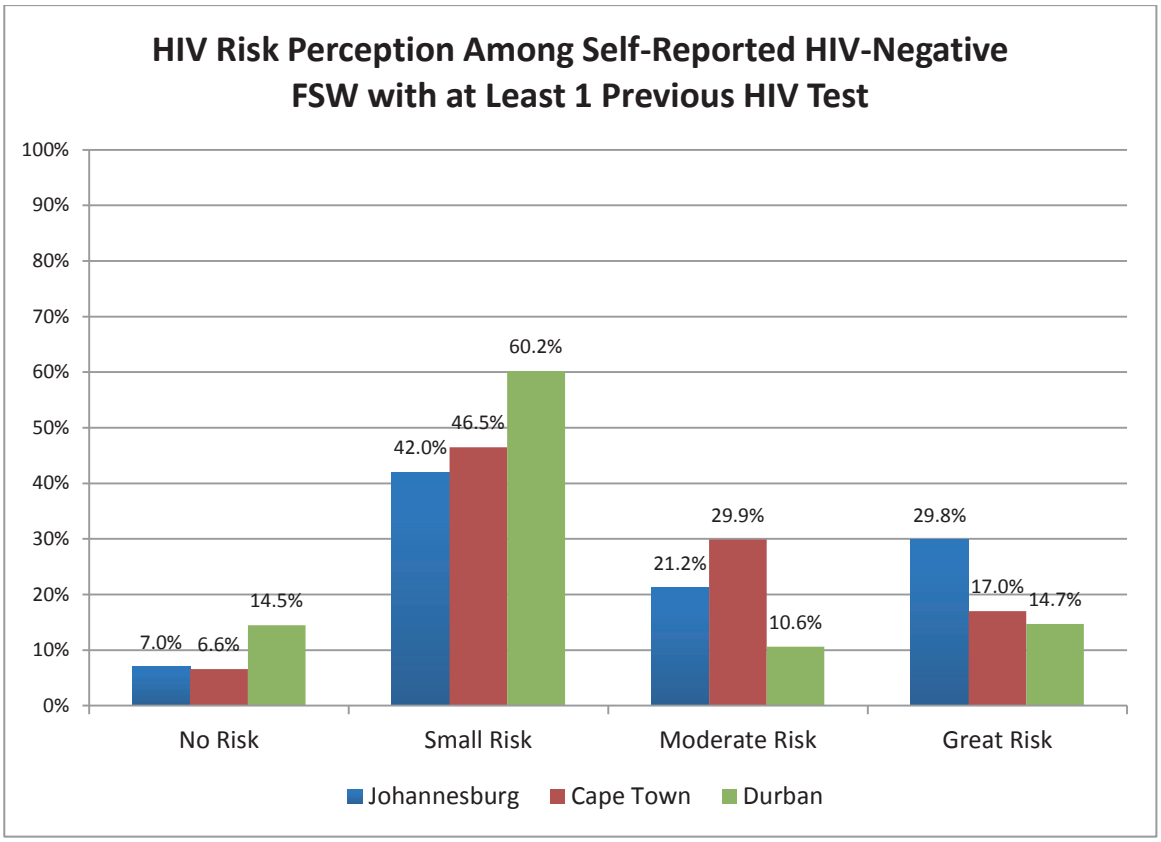
6h. Previous HIV testing and STI Symptomology

HIV testing behaviours and STI symptomology are presented in Table 13. An overwhelming majority of FSW have tested for HIV at least once in their lifetime (96.1% in Johannesburg, 96.7% in Cape Town, and 96.4% in Durban). We estimate that about half of all FSW in both Johannesburg (46.2%) and Durban (50.7%) and approximately three quarters of all FSW in Cape Town (71.2%) tested for HIV in the 12 months prior to the survey. We estimate that half of all FSW in Johannesburg (50.7%) and a quarter of all FSW in Durban (29.5%) and Cape Town (24.8%) are aware that they are HIV positive. Furthermore, we estimate that a little over one in five of all FSW in Johannesburg (22.7%) and approximately one in ten FSW in both Cape Town (9.8%) and Durban (7.9%) have received a positive diagnosis within the past year.

Table 13: Previous HIV Testing Experience and STI symptomology Among FSW													
Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)				
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted		
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI	
Ever tested for HIV													
Has tested for HIV/AIDS	706	92.4	96.1	93.1-98.0	626	96.3	96.7	93.4-98.9	741	96.7	96.4	91.7-99.1	
Has never tested for HIV/AIDS	57	7.5	3.9	2.0-6.9	22	3.4	3.3	1.1-6.6	24	3.1	3.6	0.9-8.3	
Missing	1	0.1	--	--	2	0.3	--	--	1	0.1	--	--	
Last time participant was tested for HIV													
< 12 Months	305	39.9	46.2	28.8-65.1	442	68.0	71.2	62.8-79.1	415	54.2	50.7	31.9-70.6	
≥ 12 Months	400	52.4	49.9	31.3-67.0	183	28.2	25.4	18.0-33.7	326	42.6	45.7	25.4-65.3	
Never tested	57	7.5	3.9	2.0-7.0	22	3.4	3.3	1.1-6.7	24	3.1	3.6	0.8-8.6	
Missing	2	0.3	--	--	3	0.5	--	--	1	0.1	--	--	
Result of most recent HIV Test													
Positive	343	44.9	50.7	31.1-66.4	126	19.4	24.8	15.2-33.6	397	51.8	29.5	17.7-45.0	
Negative	352	46.1	44.1	29.3-62.4	488	75.1	70.0	61.7-80.3	328	42.8	66.1	49.0-79.3	
Indeterminate	3	0.4	--	--	1	0.2	--	--	1	0.1	--	--	
Did not receive results/Don't Know	8	1.0	--	--	10	1.5	--	--	13	1.7	--	--	
Never tested	57	7.5	4	2.1-7.1	22	3.4	3.9	1.3-6.7	24	3.1	3.7	0.9-8.7	
Missing	1	0.1	--	--	3	0.5	--	--	3	0.4	--	--	
How long ago was your first positive result?													
< 12 Months	84	11.0	22.7	5.6-42.8	50	7.7	9.8	4.3-17.3	102	13.3	7.9	3.7-14.3	
12-23 Months	46	6.0	10.3	1.4-29.8	24	3.7	4.3	1.7-7.5	50	6.5	2.6	0.9-6.2	
2 years	22	2.9	1.6	0.6-3.6	8	1.2	--	--	37	4.8	3.4	1.1-7.3	
3 years	28	3.7	1	0.4-2.3	9	1.4	--	--	35	4.6	6.2	1.6-13.1	
4 years	47	6.2	3.1	1.3-5.4	2	0.3	--	--	31	4.0	1.5	0.6-2.8	
5 or more years	115	15.1	11.6	4.8-22.0	32	4.9	2.2	0.9-3.7	142	18.5	7.9	4.1-12.8	
Not self ID'd positive	420	55.0	49.7	32.8-68.0	522	80.3	75.6	65.6-84.3	368	48.0	70.4	55.3-82.8	
Missing	2	0.3	--	--	3	0.5	--	--	1	0.1	--	--	
Had an STI symptom in the 12 months preceding the survey													
Yes	455	59.6	56.6	40.0-74.1	248	38.2	38.7	30.0-48.9	281	36.7	23.3	13.1-.8.0	
No	306	40.1	43.4	25.9-60.0	398	61.2	58.4	49.2-68.3	483	63.1	76.6	62.0-86.9	
Don't Know	1	0.1	0.0	0.0-0.1	2	0.3	--	--	1	0.1	--	--	
Missing	2	0.3	--	--	2	0.3	--	--	1	0.1	--	--	

The survey asked all those who self-reported their last HIV test result as negative how they perceive their risk for HIV infection. These results are presented in Figure 7.

Figure 7: HIV Risk Perception among FSW HIV-negative at last test, FSW-IBBS, 2013-2014

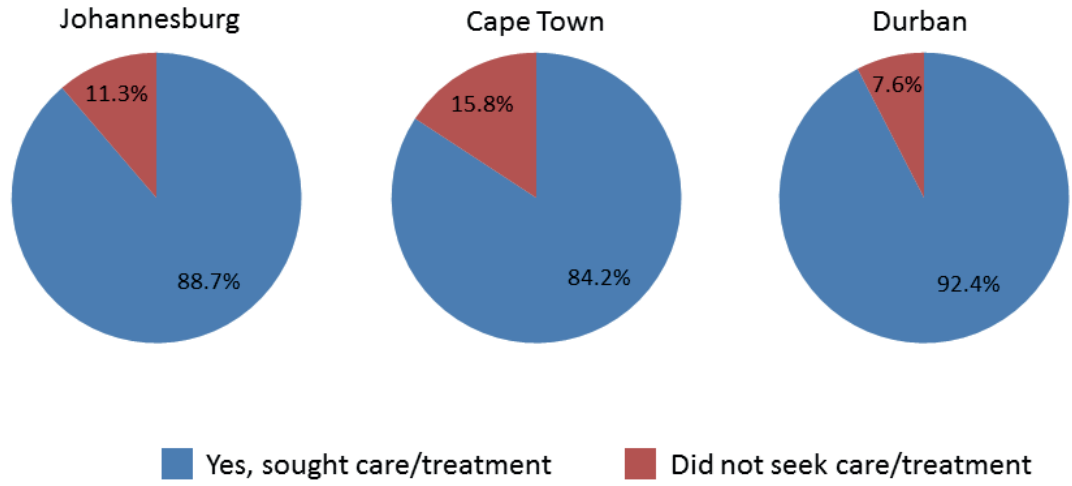


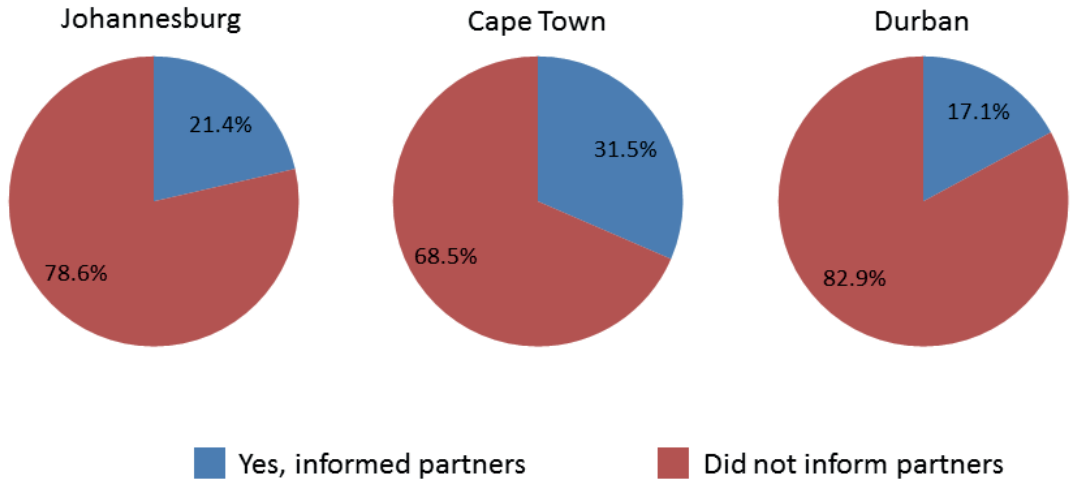
The majority of self-reported HIV-negative FSW in Durban (60.2%) perceive their risk for HIV infection as small; in Johannesburg and Cape Town, just under half perceive their risk as small. Less than a third of Johannesburg FSW, less than 20% of Cape Town and Durban FSW, perceive themselves at great risk for HIV infection.

The survey also asked whether participants had experienced symptoms of an STI (asked in the survey as symptoms of vaginal or anal ulcer or discharge), and if they had sought treatment, in the previous 12 months.

While prevalence of these STI symptoms is high (56.6% in Johannesburg, 38.7% in Cape Town, and 23.3% in Durban), most who experience symptoms seek and receive treatment (88.7% in Johannesburg, 84.2% in Cape Town, and 92.4% in Durban), but very few inform some or all of their sexual partners (21.4% in Johannesburg, 31.5% in Cape Town, and 17.1% in Durban) [see Figure 8].

Figure 8. STI Symptom Treatment and Partner Disclosure Behaviours of FSW, 2013-2014





6i. HIV care and treatment behaviours among HIV-positive FSW

In Table 15 we present HIV care and treatment behaviours of the subset of FSW who reported that they were aware of their HIV status in each city prior to participating in the survey. In all three cities, the majority had consulted a medical professional in relation to their HIV infection. The proportion of previously diagnosed HIV-positive FSW taking ART varied widely among cities: nearly half of those in Cape Town (45.3%) and a third in Durban (35.9%) were on ART, but less than a quarter (23.4%) of Johannesburg sex workers were on ART.

Table 15: Access to HIV Care and Treatment Services Among Known HIV-Positive FSW

Measure	Johannesburg (N=343)				Cape Town (N=126)				Durban (N=397)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
Seen a medical professional related to HIV + status (Among self-disclosed HIV+)												
Has ever seen a medical professional	276	36.1	82.3	59.4-93.5	117	18.0	95.0	88.0-99.0	368	48.0	82.8	71.1-92.2
Has not seen a medical professional	67	8.8	17.7	6.6-40.6	9	1.4	--	--	29	3.8	17.2	7.6-29.2
Current Status of ART (Among self-disclosed HIV+)												
Is currently taken ART	134	17.5	23.4	8.8-50.6	58	8.9	45.3	25.8-68.6	181	23.6	35.9	26.3-51.7
Is not currently taking ART, but has in the past	2	0.3	--	--	10	1.5	--	--	6	0.8	--	--
Not taken ART	207	27.1	76.3	49.1-91.0	58	8.9	38.2	19.5-59.5	210	27.4	63.7	47.9-73.2

7. HIV and Syphilis prevalence among FSW

The serologic results show that female sex workers in South Africa's three major cities carry an extraordinarily high burden of HIV infection. We estimate HIV prevalence at 39.7% in Cape Town, 53.5% in Durban, and 71.8% in Johannesburg. Prevalence of syphilis in Johannesburg and Cape Town is also extraordinarily high, at 16.2% and 19.6% respectively. This data is presented in Table 16.

Table 16. Results of HIV and Syphilis Testing Among FSW

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	N	%	%	95% CI	N	%	%	95% CI	N	%	%	95% CI
HIV Surveillance (Blood) Test Results												
Positive	499	65.3	71.8	56.5-81.2	246	37.8	39.7	30.1-49.8	513	67.0	53.5	37.5-65.6
Negative	261	34.2	28.2	18.8-43.6	403	62.0	60.3	50.2-69.9	228	29.8	46.5	34.4-62.5
Indeterminate	0	0.0	--	--	0	0.0	--	--	0	0.0	--	--
Missing*	4	0.5	--	--	1	0.2	--	--	25	3.3	--	--
Syphilis Surveillance (Blood) Test Results												
Positive	45	5.9	16.2	1.8-37.6	125	19.2	19.9	13.8-27.7	40	5.2	4.6	2.0-8.5
Negative	624	81.7	76.8	56.5-92.4	423	65.1	67.8	58.1-75.4	620	80.9	90.2	85.2-94.2
Indeterminate	84	11.0	6.9	3.3-12.4	92	14.2	12.4	7.6-18.8	73	9.5	5.2	2.6-8.5
Missing*	11	1.4			10	1.5			33	4.3		

*"Missing" includes FSW for whom it was impossible to prepare a blood sample for serological testing. Reasons for failing to prepare a blood sample include inability of phlebotomist to find a vein for venipuncture, or to collect sufficient serum for testing. FSW without blood samples who self-reported HIV-positive status in the survey were assigned this status for purposes of estimating HIV prevalence. FSW who self-reported HIV-negative status or no history of HIV testing remained classified as "missing."

7a. Demographic and Socioeconomic Characteristics of HIV-positive FSW

The demographic characteristics of HIV-positive FSW are presented in Table 16a.We observed the expected relationship of increasing HIV prevalence by age group in the female sex worker population in each city. In contrast to the general population of women, sex worker prevalence estimates begin from a markedly higher baseline—roughly one-third of 16-24 year olds (29.2% in Durban) to over one-half (59.1% in Johannesburg) are HIV infected—and peaks at over 80% among 30-34 year olds in each city. By comparison, the distribution of HIV infection among sex workers in Cape Town is less dramatic, ranging from 38.5% among 16-24 year olds, to 48.1% among those aged 35 and older.

As described previously in Table 1, Johannesburg was the only city where we observed a significant proportion of foreign-born sex workers, primarily of Zimbabwean origin. HIV prevalence among this group is markedly higher than among FSW who are South African citizens—86.6%, versus 66.0%.

Table 16a: Prevalence of HIV Among FSW by Demographics Characteristics

Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	# HIV+	%	%	95% CI	# HIV+	%	%	95% CI	# HIV+	%	%	95% CI
Age												
16-24	97	51.3	59.1	23.9-74.7	54	33.1	38.5	22.8-52.7	106	46.9	29.2	13.9-47.5
25-29	128	59.8	49.2	30.0-68.2	70	36.1	33.2	14.6-47.7	145	73.6	56.2	28.8-81.4
30-34	168	80.8	93.0	74.4-97.7	65	48.9	44.6	28.8-67.8	116	84.7	86.3	69.7-97.5
35 and older	106	71.6	75.9	57.5-91.8	56	35.7	48.1	29.7-65.9	146	81.1	79.0	54.0-93.6
Don't Know	0	0.0	--	--	0		--	--	0		--	--
Age Groups												
16-24	97	51.3	59.0	26.1-77.2	54	33.1	39.7	22.6-52.5	106	46.9	29.4	15.0-49.3
25 and older	402	70.5	78.8	62.8-89.3	191	39.5	40.4	29.1-53.2	407	79.2	71.2	51.9-84.2
Highest Education Attended												
≤ Secondary School	429	69.8	76.8	61.7-85.8	208	38.4	40.0	29.1-50.8	372	91.0	59.4	39.2-76.0
>Secondary School	69	48.3	37.5	16.2-64.7	37	34.9	38.4	22.8-54.6	141	56.4	42.3	22.4-59.3
Citizenship												
South Africa	375	65.3	66.0	48.3-78.6	245	38.4	40.5	30.7-50.9	512	69.3	53.5	37.6-65.8
Other	117	66.5	86.6	57.9-93.7	0	0.0	--	--	0	--	--	--
Race												
Black/African	490	65.9	73.6	59.2-83.2	151	57.0	48.5	36.4-62.7	511	69.4	51.7	36.1-62.6
Coloured	8	57.1	--	--	80	22.8	32.0	19.2-45.9	2	50.0	--	--
White	0	0.0	--	--	0		--	--	0		--	--
Indian/Asian	0	0.0	--	--	0		--	--	0		--	--
Other	1	100.0	--	--	2	40.0	--	--	0		--	--
Marital Status												
Married or living with someone as if married	84	68.9	68.9	47.4-87.7	45	37.8	50.2	30.3-69.0	16	69.6	--	--
Not in a union	415	70.0	72.2	54.8-82.3	200	37.9	36.9	26.3-47.9	497	69.3	52.9	36.4-65.9

The distribution of HIV by educational attainment does not appear markedly different between those with matric or less education versus tertiary education in either Cape Town or Durban; however, in Johannesburg prevalence was more than 2 times greater among the former group.

7b. HIV prevalence by sexual behaviours

HIV prevalence among FSW according to anal intercourse experiences and condom use practices are presented in Table 16b. Despite the fact that anal sex and unprotected sex with paying and non-paying partners were relatively prevalent among FSW (see tables 3 and 5), there is no clearly identifiable trend in HIV prevalence estimates with respect to these risk behaviours. In Johannesburg and Durban, there do not appear to be substantial differences in HIV prevalence among those who have had receptive anal intercourse versus those who have not (72.8% vs. 70.7% in Johannesburg and 55.2% vs. 54.2% in Durban). In Cape Town and in Durban, there were not marked differences in prevalence between those who used a condom with their last client, and those who did not (39.0% vs. 46.4% in Cape Town and 53.3% vs. 54.9% in Durban). However, in Johannesburg, HIV prevalence among those not using condoms with clients and non-paying partners is very high—here, we observed that almost all sex workers (93.8%) who did *not* use a condom with their most recent client are HIV-infected, with almost three quarters of those not using a condom during the most recent sex with a non-paying partner being HIV-infected (71.2%).

Table 16b: Prevalence of HIV among FSW by Sexual Behaviour													
Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)				
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted		
	# HIV+	%	%	95% CI	# HIV+	%	%	95% CI	# HIV+	%	%	95% CI	
Ever had anal sex													
Yes	180	64.3	72.8	46.8-86.8	88	29.7	33.3	20.2-47.9	186	66.0	55.2	32.2-76.9	
No	319	66.5	70.7	52.6-82.9	157	44.7	45.8	33.0-57.8	327	71.4	54.2	35.6-70.6	
Condom Use at Last Sex With Client													
Yes	415	64.6	65.1	45.5-77.7	218	37.7	39.0	28.6-49.2	428	68.3	53.3	34.9-66.8	
No	84	71.8	93.8	82.3-98.1	27	39.1	46.4	21.4-69.0	85	75.2	54.9	30.8-83.6	
Condom Use at Last Sex With Non-Paying Partner													
Yes	107	63.7	69.5	32.6-86.3	47	46.1	49.8	30.2-68.4	63	68.5	81.7	57.3-96.1	
No	146	62.7	71.2	43.5-85.7	33	27.3	19.4	8.1-38.8	89	74.2	39.4	17.3-66.3	
No non-paying partners	245	68.6	75.0	57.5-88.2	163	38.6	44.7	33.7-56.0	361	68.4	53.0	33.3-67.0	

7c. HIV prevalence by access to prevention and reproductive health services

As shown in Table 16c, HIV prevalence does not differ greatly between FSW who have had contact with an HIV peer educator compared to those who have not across all three sites: 79.9% vs. 70.5% in Johannesburg, 59.3% vs. 34.8% in Cape Town, and 34.1% vs. 55.8% in Durban, respectively.

Regarding access to care, HIV prevalence is markedly higher among FSW who have sought care for a health-related problem compared to those who have not in Johannesburg (86.0% vs. 54.9%), but it does not differ significantly among FSW in Cape Town (46.5% vs. 36.1%) and Durban (55.9% vs. 50.9%).

HIV prevalence appears to be higher among FSW who have not given birth in the past 5 years compared to those who have in Cape Town (50.3% vs. 28.5%), but it does not differ as greatly among FSW in Johannesburg (69.7% vs. 74.9%) and Durban (56.2% vs. 47.7%).

Table 16c: Prevalence of HIV by Prevention and Reproductive Services Among FSW												
Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	# HIV+	%	%	95% CI	# HIV+	%	%	95% CI	# HIV+	%	%	95% CI
Had contact with an FSW HIV peer educator in the 12 months preceding the survey												
Yes	204	69.9	79.9	57.8-92.1	36	39.6	59.3	29.8-79.9	67	79.8	34.1	11.8-76.7
Yes, but peer educator was not a FSW	25	64.1	53.8	28.1-94.2	14	63.6	--	--	8	66.7	--	--
No contact with peer educator	247	63.2	70.5	49.0-84.0	184	36.0	34.8	25.6-46.3	423	67.5	55.8	39.2-69.3
Don't Know	15	68.2	--	--	10	58.8	--	--	15	88.2	--	--
Sought care from a doctor, nurse or other health professional for a health-related problem in the 12 months preceding the survey												
Yes	273	69.3	86.0	71.3-93.1	110	44.9	46.5	30.8-60.2	342	69.2	55.9	36.6-70.4
No	226	61.7	54.9	34.6-70.9	135	33.7	36.1	25.1-48.0	171	69.5	50.9	30.6-74.3
Currently Pregnant												
Yes	13	68.4	--	--	12	50.0	--	--	10	58.8	--	--
No	474	65.3	72.1	56.3-81.6	222	37.3	38.9	28.6-49.4	497	69.3	53.2	35.3-63.8
Births in the past 5 years												
Has had at least one birth in the past 5 years	188	65.5	74.9	44.8-88.5	101	35.7	28.5	17.2-41.8	122	64.2	47.7	21.8-77.7
No births in the past 5 years	311	65.8	69.7	51.9-81.8	144	39.6	50.3	38.1-62.1	391	71.1	56.2	39.6-68.4
Visited ANC for prenatal care												
Yes, visited ANC	176	66.4	83.2	55.5-92.3	80	34.6	28.4	15.9-44.2	114	64.8	45.7	20.1-77.2
No, did not visit ANC	12	54.5	--	--	18	41.9	--	--	8	57.1	--	--
No births in past 5 years	311	65.8	69.8	52.2-82.0	144	39.6	50.3	37.2-61.5	391	71.1	56.2	39.7-68.5

7d. HIV comorbidity with alcohol and other drug abuse, physical and sexual assault

Data on HIV and co-morbidities with alcohol and other drug abuse, and physical and sexual assault are presented in Table 16d.The survey data indicate high HIV co-morbidity with problematic alcohol consumption, and to a lesser but nonetheless notable extent with non-injection drug use. In Johannesburg, HIV prevalence among FSW who are classified as heavy drinkers is higher than among those who did not drink in the past 12 months (79.0% vs. 37.0%), but in the other two metropolitan areas, HIV prevalence does not differ according to alcohol consumption.

HIV prevalence does not differ among FSW who use drugs for non-medical reasons compared to those who do not in Johannesburg (71.8% vs. 71.8%) and Durban (68.6% vs. 51.0%), however, in Cape Town, HIV prevalence is higher among FSW who do *not* use drugs for non-medical reasons compared to those who do in Cape Town (54.5% vs. 23.0%).

While we observed high prevalence among those with a history of non-medical injection drug use at all sites, there does not appear to be a high burden of co-morbidity of HIV and injection drug use in the FSW population.

We observed high HIV prevalence among FSW who had been physically assaulted in Cape Town (47.7%) and Durban (72.0%), and among those sexually assaulted across all sites. Although both factors are known to be associated risk factors for HIV infection among women, the differences observed here between those who have and who have not been assaulted are not likely to present significant difference given the extraordinarily high HIV prevalence in the FSW population. It is nonetheless important to note that between one-half and three-quarters of HIV-positive FSW have recently experienced some kind of assault.

Table 16d: Prevalence of HIV by Physical and Sexual Abuse and Alcohol and Drug Use Among FSW													
Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)				
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted		
	# HIV+	%	%	95% CI	# HIV+	%	%	95% CI	# HIV+	%	%	95% CI	
Combined AUDIT-C score													
AUDIT-C 'heavy drinker' classification	386	66.8	79.0	63.8-87.7	175	41.1	41.6	28.7-56.4	332	69.5	62.8	46.8-75.1	
Not a 'heavy drinker'	32	53.3	44.7	21.4-70.5	7	38.9	--	--	26	74.3	37.1	13.4-90.7	
Did not drink	80	66.1	37.0	20.0-65.6	63	31.2	33.4	22.0-46.5	155	68.3	42.2	20.5-68.8	
Drug use in past 12 months													
Has used drugs for a non-medical reason in past 12 months	110	59.1	71.8	43.5-87.0	57	22.0	23.0	13.6-34.7	123	66.1	68.6	49.8-84.1	
Has not used drugs for a non-medical reason in past 12 months	389	67.8	71.8	53.0-82.2	188	48.5	54.5	41.6-65.6	390	70.4	51.0	33.3-64.7	
Injection drug use													
Ever Injected Drugs	4	100.0	--	--	3	14.3	--	--	1	33.3	--	--	
Never injected drugs	495	63.0	71.7	56.4-81.4	242	38.7	40.1	29.9-49.9	512	69.5	53.9	37.8-66.4	
Was physically assaulted in the 12 months preceding the survey													
≥ 1 time	257	66.6	68.4	46.2-81.6	112	35.7	47.7	34.8-60.1	140	70.4	72.0	50.6-89.3	
No	229	64.3	74.2	51.5-86.4	131	39.6	32.8	21.5-47.4	373	68.9	49.9	32.9-64.6	
Don't Know	13	72.2	--	--	2	100.0	--	--	0	--	--	--	
Was sexually assaulted or raped in the 12 months preceding the survey													
≥ 1 time	117	70.5	59.2	36.6-78.7	29	37.2	49.9	28.3-71.0	99	73.9	53.9	23.2-92.6	
No	377	64.2	75.2	57.5-85.1	215	37.9	37.0	26.9-48.5	414	68.3	53.6	38.6-65.7	
Don't Know	5	71.4	--	--	0		--	--	0		--	--	

7e. HIV prevalence by testing history and STI symptomology

HIV prevalence estimates for FSW according to HIV testing history and STI symptomology are presented in Table 16e. Prevalence among FSW who had previously tested for HIV were roughly comparable to overall prevalence estimates, and as noted previously, most sex workers have tested for HIV at least once. In Johannesburg, we did observe HIV prevalence among FSW who have ever tested for HIV to be higher than among those who have not (72.2% vs. 56.8%), although given the extraordinarily high HIV prevalence among FSW in Johannesburg, this is not likely to represent a statistically significant difference. HIV prevalence does not appear to be associated with HIV testing history among FSW in Cape Town and Durban.

Table 16e: HIV Prevalence by Testing History and STI Symptomatology Among FSW

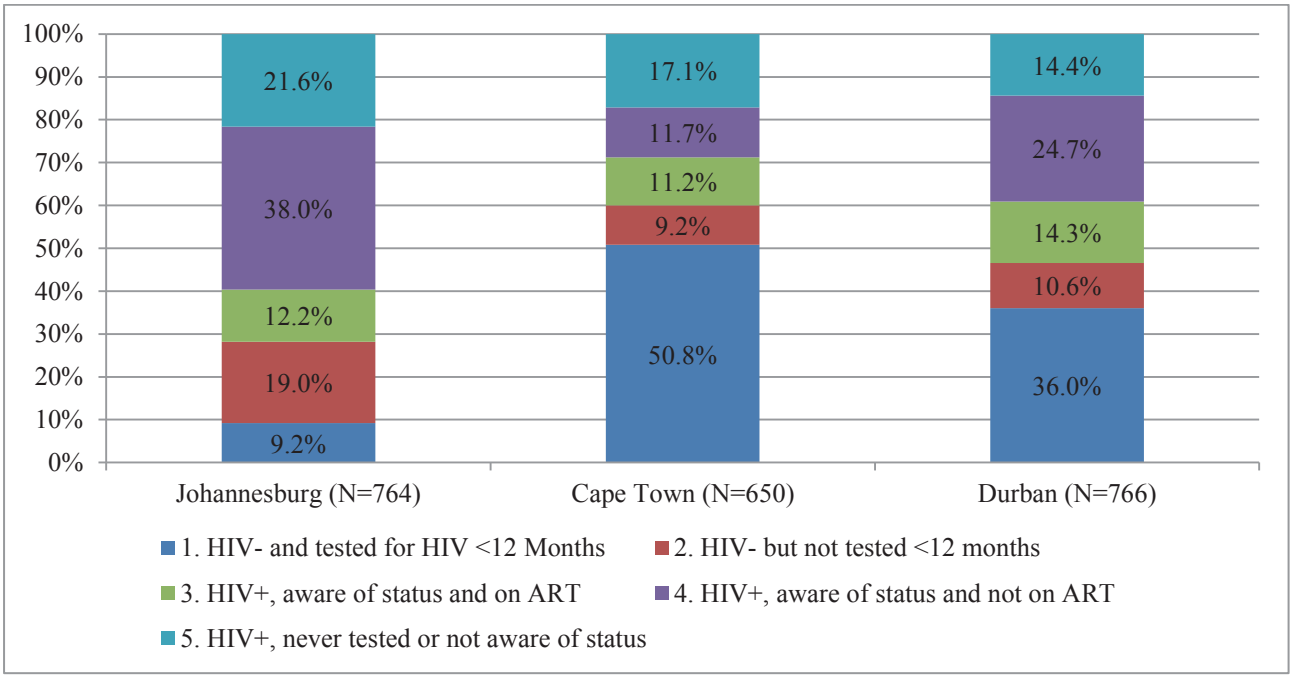
Measure	Johannesburg (N=764)				Cape Town (N=650)				Durban (N=766)			
	Crude		Adjusted		Crude		Adjusted		Crude		Adjusted	
	# HIV+	%	%	95% CI	# HIV+	%	%	95% CI	# HIV+	%	%	95% CI
Ever tested for HIV/AIDS												
Has tested for HIV/AIDS	465	66.1	72.2	56.5-82.2	233	37.3	38.6	28.6-48.5	495	69.0	51.7	35.7-64.2
Has never tested for HIV/AIDS	34	59.6	56.8	29.3-80.1	12	54.5	--	--	18	75.0	--	--
Had an STI symptom in the 12 months preceding the survey												
Yes	325	71.6	74.6	53.2-86.6	122	49.2	58.5	43.9-71.5	204	73.9	55.9	30.4-77.7
No	173	56.9	67.9	46.2-82.9	122	30.7	28.7	19.2-39.8	309	66.6	52.7	34.8-67.5
Don't Know	1	100.0	--	--	1	50.0	--	--	0	0.0	--	--

HIV prevalence is markedly higher among FSW who have had an STI symptom in the past 12 months compared to those who have not in Cape Town (58.5% vs. 28.7%).This estimate of STI-HIV co-morbidity is also markedly higher than the overall HIV prevalence estimate for Cape Town sex workers (39.7%) presented in Table 17. Prevalence among those who had an STI symptom in the prior 12 months does not differ significantly among FSW in Johannesburg (74.6% vs. 67.9%) and Durban (55.9% vs. 52.7%).

7f. Prevalence of Undiagnosed HIV Infection, Untreated HIV Infection, and Recent HIV Infection among FSW

Because timely diagnosis and linkage to care is critical to efforts to control the HIV epidemic, we analyzed the surveillance data to explore the burden of undiagnosed, untreated, and recent HIV infection in the FSW population in these cities. To explore the burden of undiagnosed and untreated HIV infection as a proportion of all sex workers, we categorized the entire FSW population in each city by HIV serology and previous testing behaviour as: 1) HIV-negative and tested within the last year; 2) HIV-negative, previously tested, but not within the last year; 3) HIV-positive, previously aware of status, and on ART; 4) HIV-positive, previously aware of status, and not on ART; and 5) HIV-positive, never tested or not aware of their status (i.e. previously tested more than 1 year ago). We present these results in Figure 9a.

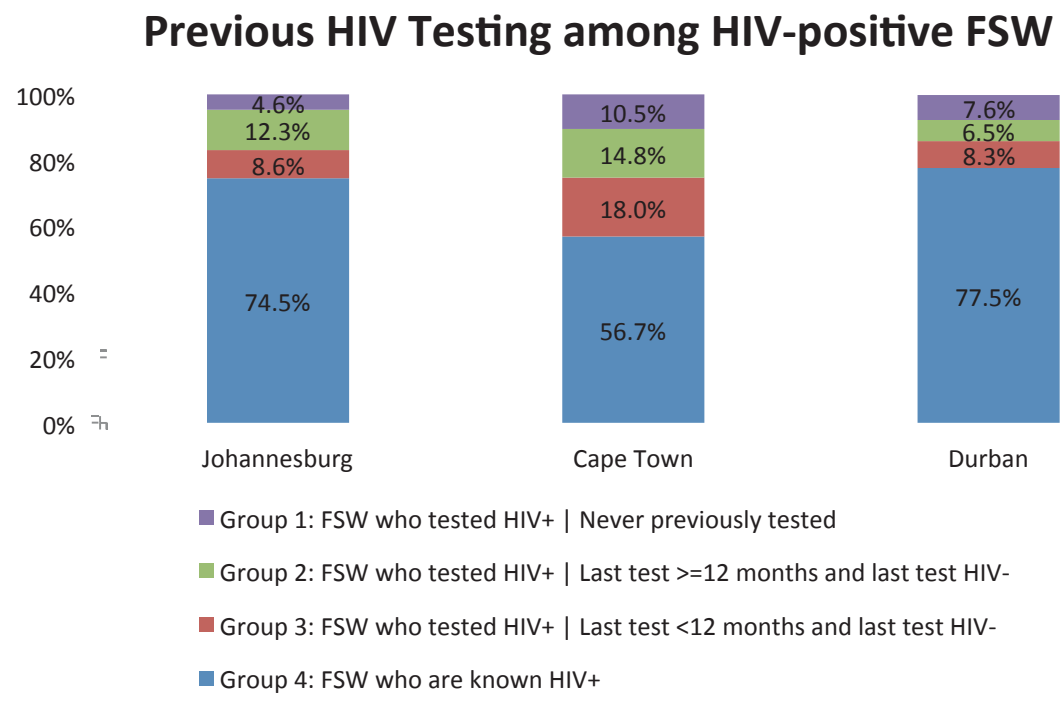
Figure 9a. Previous HIV testing, knowledge of HIV-status, and utilization of ART among FSW in Johannesburg, Cape Town and Durban, 2013-14.



There are three important observations in this data. First, most FSW have tested for HIV at least once, and as a result the burden of undiagnosed HIV infection is relatively small, ranging from a low of 14.4% in Durban to 21.6% in Johannesburg. However, among South African FSW who have never tested or not tested within the last year, more are HIV-positive than HIV-negative (21.6% vs. 19.0% in Johannesburg; 17.1 vs. 9.2% in Cape Town; 10.6% vs. 14.4% in Durban). Finally, despite the relatively low burden of undiagnosed HIV, there is a high burden of untreated HIV among FSW aware of their HIV infection, particularly in Johannesburg (38.0%) and Durban (24.7%). The survey did not collect CD4 cell count data from FSW; however, as South Africa moves to early treatment of HIV infection in 2015, the proportion of untreated HIV infections combined with proportion of unknown HIV infections shows that FSW do not currently access ART in proportion to their need.

We also explored recency of HIV infection as the proportion of all HIV-infections that occurred among FSW who self-reported an HIV-negative test result within the last year. We classified all sero-positive FSW according to their self-reported testing behaviour: 1) never previously tested; 2) previously tested more than 1 year ago, last test result negative; 3) previously tested within the last year, last test result negative; 4) previously diagnosed HIV positive. Between 9% and 19% of HIV-positive FSW had received an HIV-negative test result within the last year. These results are presented in Figure 9b.

Figure 9b. Previous testing and Recent HIV infection among HIV-positive FSW in Johannesburg, Cape Town, and Durban, 2013-2014.



8. FSW Population Size Estimates

Methods for Population Size estimation are described in detail in Section 5h. Below, we briefly summarize each method employed, present results from each method, and describe the process by which we arrived at final population size point estimates and upper and lower plausibility boundaries for each metro.

Table 17 summarizes the RDS-adjusted population size estimate calculations obtained using these multiplier methods.

8a.Unique event multiplier

A 'Unique Event' was organized in each of the three cities just prior to launching the survey. Members of the study team invited women to a party, marketing it through existing social networks via SMS and word-of-mouth. The date, time and location of the event were decided upon after consultation with population stakeholders and from past experiences hosting such events in other sub-Saharan Africa contexts. Women were counted as they entered the event and asked a short set of screening questions, including whether they were FSW, and ensuring they were not double counted. This information was tallied throughout the event. In Johannesburg, several women attended the event, however only 27 identified themselves as FSW. In Durban 56 FSW were counted and in Cape Town 75. In the IBBS-FSW questionnaire, participants were asked if they attended the event, specifying the date, time and venue, intended for clarification. Based on the number of attendees at the event and the proportion of FSW reporting on the survey they attended the event, RDS-adjusted estimates of the population size using the unique event multiplier are as follows: Johannesburg 4500; Durban 747; Cape Town 7,500. The unique event population size estimate from Durban was judged to be highly implausible and therefore excluded from the final analysis. This is very likely attributable to a misunderstanding of the unique event attendance question among Durban survey participants.

8b. Unique object multiplier

The unique object multiplier involves the distribution of a large number of objects to FSW throughout the survey area. Similar to the unique event, this component of the multiplier method meant the objects were distributed just prior to survey launch. The team ensured distribution of objects was thorough, including diversity in locations, dates and times. Each brief interaction with women was recorded including screening to ensure they were FSW and whether they previously received the object at another location or time. A total of 1,351 objects were distributed throughout Johannesburg, 952 in Durban and 950 in Cape Town. Participants in the IBBS-FSW survey were asked whether they received the object from a member of the study team in the preceding months. A total of 123 FSW at the Johannesburg site reporting receiving the objects, meanwhile 64 reported this in Durban and 58 in Cape Town.

8c. Population size estimates based on service-provider data

The study collaborated with organizations providing health services to FSW in each of the three survey cities. In reaching a population size estimate for this method, each organization provided de-duplicated counts of FSW seeking services between January 1 and June 16, 2013. In the IBBS-FSW survey, participants were asked if they received services from the organization during the same time period, To limit recall bias, participants were provided references to the New Year holiday and Youth Day (June 16). The proportion of those reporting receiving services was compared with service-provider data on total FSW served to form a population size estimate. In Johannesburg, Esselen Clinic (WRHI) data were used, producing a size estimate of 765. Given more participants reported attending Esselen during the specified timeframe than Esselen reported to the study, this size estimate was considered implausible for Johannesburg and was excluded from consideration. In Cape Town, the TB-HIV Care data produced an estimate of 4,579 FSW, and SWEAT's Creative Space data produced an estimate of 2,551. In Durban,

TB/HIV Care data produced an estimate of 12,840 FSW, while SWEAT's Creative Space data estimates 2,551.

8d. Wisdom of the Crowds (WOTC) method

The Wisdom of the Crowds Method measures the perception of community members on the population size of FSW. To accomplish this, we embedded within the IBBS-FSW survey, a question asking FSW to provide a best estimate of how many FSW there are in their location (i.e.: Johannesburg). To ensure response reliability, the question was asked twice within the survey. For analysis, where there was difference between the two an average of two median estimates was used. In Johannesburg the WOTC method estimates 3,000 FSW, in Cape Town, 1,500, and in Durban 4,000.

8e. Population size estimates based on literature review

Limited data exists on the population size of FSW in South Africa. Existing data in published literature for southern and eastern Africa provide a range of relevant estimates from 2-12% of the adult female population[46].More recently, in 2013 SWEAT commissioned a mixed-method, rapid assessment of the sex worker population size in South Africa. Their national findings estimated between 0.8% and 1.1% of the adult female population in South Africa are sex workers, with all three IBBS-FSW cities providing population size estimates near the lower range of these estimates. This study adopted SWEAT's proportions for each site to arrive at a literature estimate: 0.69% in Johannesburg to arrive at a FSW size estimate of 10,894; Cape Town a multiplier of 0.56% was used for a size estimate of 7,351;0.51% was used in Durban producing a FSW population size estimate of 6,145.

8f. Stakeholder feedback and consensus

A meeting of local stakeholders was convened in September 2014, including representation from the National Department of Health (NDOH), NGOs, and other members of civil society knowledgeable about the FSW population. During the meeting, UCSF technical advisors presented the estimates produced by each method outlined above, and a triangulated point estimate for each of the three cities. Lower and upper plausibility bounds accompanied the point estimate. These are not 95% Confidence Intervals, rather, they are based largely on the upper and lower point estimates among the methods and refer to intervals that make "plausible sense" in the local context.

Table 17: Population Size Estimates of FSW

	Population Size Estimates		
	Johannesburg	**Cape Town**	**Durban**
Wisdom of the Crowds	3,000	1,500	4,000
Literature	10,894	7,351	6,145
***Unique Object**	10,895	23,750	11,200
***Unique Event**	4,500	7,500	747
***Esselen (Johannesburg only)**	765	--	--
***TB/HIV Care**	--	4,579	12,840
***Creative Space**	--	2,551	9,323
Final Estimate	7,697	6,500	9,323
Plausibility Bounds of Final Estimate (Lower | Upper)	5,000 | 10,895	4,579 | 9,000	4,000 | 10,000

*Denotes estimates is RDSAT adjusted

During the discussion, a brief overview of each method was presented, recognizing strengths and limitations to each, and in particular, how no single method is considered a "gold standard." Questions and comments from stakeholders varied from the technical process of arriving at each point estimate to how certain methods were implemented in the field. In particular, UCSF technical advisors provided an

explanation for recommending exclusion of two point estimates (service multiplier in Johannesburg and unique event in Durban) from the analysis, which was adopted by stakeholder consensus. Some stakeholders inquired and compared recent population size estimates published by SWEAT. The group recognized the value of size estimates presented for each method, but some stakeholder organizations requested additional time to discuss the final estimates for each city. Feedback and expert opinion from this group of stakeholders concluded with consensus on the population size estimates, including lower and upper plausibility bounds, for each city.

9. Conclusions

The South African Health Monitoring Survey with FSW in South Africa's three largest cities is, to our knowledge, the first attempt to conduct second generation HIV surveillance with this population, and provides the first comprehensive data on HIV prevalence, associated risk factors, and programme coverage for FSW in over 10 years. Using RDS methodology allowed for recruitment of a diverse sample of FSW in each metro, particularly with respect to age; it also allowed for recruitment of women from social networks that have, up to this point, been beyond the reach of sex worker stakeholder and health services organizations. The method was acceptable to the FSW population—indeed, in all three metros FSW responded enthusiastically to this opportunity to participate in HIV surveillance research. This IBBS has demonstrated the feasibility and benefits of using RDS to conduct routine HIV surveillance with the FSW population.

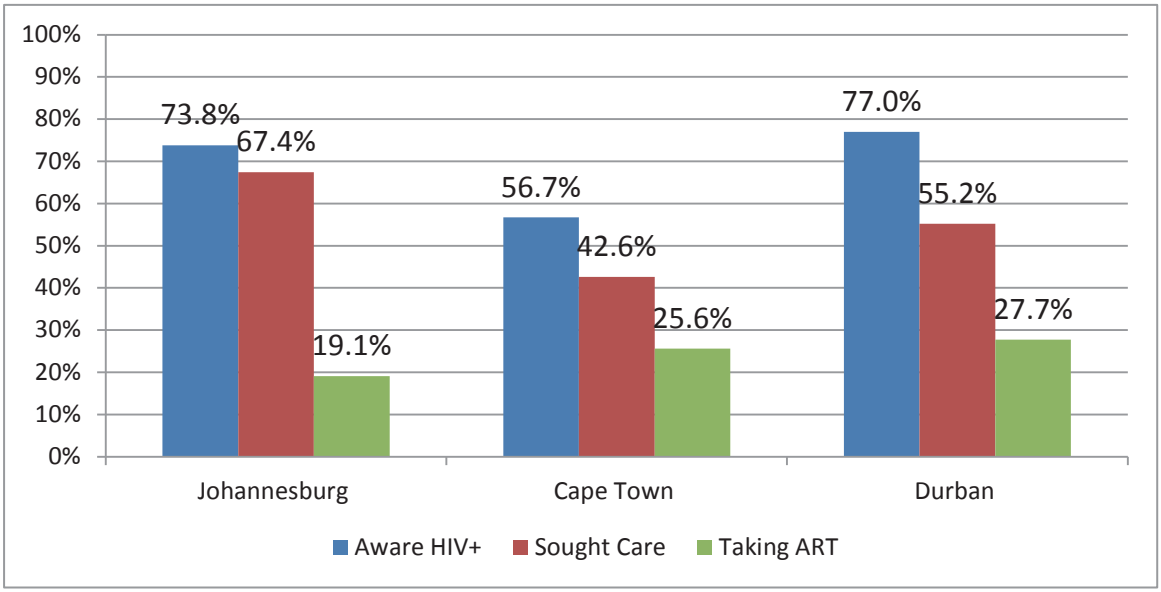
9a. Key Findings

High burden of HIV and Syphilis in the FSW population

Female sex workers in South Africa's three major metropolitan areas carry an extraordinarily high burden of HIV disease: in Cape Town, 2 in 5 are infected; in Durban, more than one-half are infected; and in Johannesburg nearly three-quarters are infected. Moreover, in Johannesburg and Durban, nearly 8 in 10 sex workers between the ages of 30-34 are HIV infected. Compared to survey findings of a decade ago,[23]this survey's results suggest that the HIV epidemic has continued to grow in the FSW population, even as South Africa has begun to realize some progress in its fight against the epidemic in its general population[47]. This extreme burden of disease, particularly in Johannesburg, is comparable to recent findings from Swaziland[48]. Despite the relatively promising data on high condom use with clients, comparatively low condom use with non-paying partners provides ample opportunity for new infections among FSW, and onward transmission to partners.

It is encouraging that a large proportion of the FSW population has ever tested for HIV, that many FSW were aware of and had sought care for their HIV infection. These findings suggest that efforts of health research, service, advocacy, and government health programmes have made important advances in meeting some of the HIV prevention, testing, and care needs of this key affected population [see "Programme Coverage," below]. Their success in promoting access to testing and care is particularly notable for having taken place without the benefit of a coordinated national strategy for addressing the HIV epidemic in this population. The development and implementation of a National Sex Worker Strategy will undoubtedly help to strengthen these programme initiatives.

Figure 10. Selected Continuum of Care Indicators for HIV-Positive FSW in Johannesburg, Cape Town, and Durban, 2013-14



However, these results also demonstrate the need for additional efforts and resources to achieve and maintain optimal levels of engagement with the FSW population in order to reverse the trajectory and severity of the epidemic. Figure 10 presents data reported previously on the numbers of HIV-positive FSW who were aware of their status, had sought care, and are currently on ART (See Tables 14 and 16e) as adjusted proportions of the HIV-positive FSW population in a continuum of care model. While the proportions of those aware of their HIV infection and those who sought care begin from a relatively good baseline, the proportion on ART is substantially lower. *N.B.* This surveillance survey did not collect viral load data; even if one assumes the optimal scenario of those who sought care are engaged in care, and that all those being treated are adherent and virally suppressed, the data nonetheless indicate the need to strengthen efforts to improve linkage to and engagement in care, particularly as South Africa implements the WHO's 2013 recommendation to treat HIV-infected individuals with CD4<500 beginning in January 2015.

This survey's findings of high syphilis prevalence in both Durban and Johannesburg is also of concern. Moreover, syphilis prevalence in South Africa's three major cities is markedly higher in comparison to high-prevalence epidemics among FSW elsewhere in the region, including 0.9% in Nairobi[49] and 1.2% in Swaziland[50].

Programme Coverage

We conclude from this surveillance data that most FSW are able to access HIV testing, and that most FSW have utilized available testing services. However, we also note that substantial portions of the FSW population exist outside of current programme networks.

We are encouraged by the findings on several indicators that, in addition to the large proportion of FSW who have ever tested, and who are aware of their HIV infection, demonstrated the seriousness and relative effectiveness of the HIV response on the part of civil society organizations, medical professionals, and government agencies. The data indicated that a majority of those FSW who had contact with peer

educators in both Johannesburg and Cape Town were HIV-positive, as were the majority of those who used condoms with their last paying partners in Johannesburg and Durban. We also note as a corollary to the large numbers of FSW tested prior to the survey, the relatively low rates of undiagnosed HIV infection—nearly 8 in 10 HIV-positive FSW were either already aware of their HIV positive status, or had tested and received an HIV-negative test result within the 12 months prior to their survey participation. By comparison, 25-36% of FSW in Zimbabwe have undiagnosed HIV infections[51].

However, although the absolute number of FSW who have never or not recently tested is low, more than half of these FSW are HIV-positive. From a prevention standpoint this is cause for grave concern, as it indicates that most of those who are beyond the reach of current programming to promote uptake of HIV testing, and probably of other targeted HIV prevention efforts, are HIV-positive. Also, that between 9% and 18% of HIV-positive FSW were uninfected as recently as 12 months prior to this surveillance survey is cause for grave concern: as a proxy measure for recent HIV infection, it suggests a rapidly advancing HIV epidemic in this population.

Other indicators also point to important and currently unmet targets that must be addressed in programme expansion. HIV knowledge indicators suggest that dissemination and uptake of basic "HIV 101" information is an important priority for programming and a necessary (though not sufficient) prerequisite to the adoption of HIV prevention behaviours. In light of this survey's finding that between half and three-quarters of FSW in the two highest-prevalence cities of Johannesburg and Durban had not received free condoms, water-based lubrication, or pamphlets in the 12 months prior to this surveillance round, it is critical to allocate appropriate resources to expand access to these basic tools of HIV prevention. In particular, low awareness and utilization of water-based lubrication in the FSW population is potentially easily addressed by expanded IEC dissemination. Although absolute numbers of FSW in the surveillance sample who are not consistently using condoms with clients or with non-paying partners (as measured through self-reported condom use at last sex with each type of partner, see Section 7.2 and Table 16b) are small, the majority of these are also HIV infected. When considered in light of the relatively low number of FSW who are currently on treatment, this provides evidence of ample opportunity for onward transmission.

Psychosocial Co-morbidities

This survey revealed high levels of co-morbidity with psychosocial health problems; substance use, particularly alcohol abuse, and recent experiences of physical and sexual assault, are of epidemic proportions in the FSW population. Each of these has been shown to increase the risk of HIV infection among women [52-63]; with FSW these appear to increase their already high level of social vulnerability. We also note regional variations with respect to non-injection drug use and HIV infection: Cape Town is notable in this regard, likely as a result of the well-documented, widespread use crystal methamphetamine ("tik") in the Cape metro's poorest communities, where many Cape Town FSW reside[53, 54, 58]. Each of these behavioural and social factors demand additional investigation with respect to their impact on the HIV epidemic in the FSW population, and the best ways to address these co-morbidities in the context of HIV prevention and treatment programming.

Although previous qualitative rapid assessment studies suggested that there could be significant overlap between the FSW population and the population of persons who inject drugs (PWID),[11] the data presented here suggests the opposite, that FSW who also inject drugs is a very small proportion of the population. Although we did not select seeds who were FSW who inject drugs, it has been the experience of the National Health Behavioral Surveillance (NHBS) survey in the USA that when PWID enter a RDS recruitment chain for any population, there is a high probability of continued recruitment of PWID (H. F.

Raymond, San Francisco Department of Public Health, personal communication, 29 Sept 2014). We did not observe this in our recruitment chains. It is possible that surveillance work focused on PWID would show significant numbers of male, female, and transgender sex workers, or individuals who trade sex for injection drugs. But for the current survey and its implications, we conclude that substance use programming focused on harm reduction with those abusing alcohol and drugs, particularly methamphetamine, would be of greatest benefit to comprehensive FSW health programming.

9b. Survey Limitations

This survey's findings are limited to the FSW population in each of the three metropolitan areas, and may not adequately represent the FSW populations in provincial and rural communities. For example, our finding across sites that the majority of the FSW population had not spent more than 30 days away from their place of residence within the last year suggests a lesser degree of mobility in the FSW population than might be expected among FSW populations based in less densely populated rural areas who may be working along transportation corridors. It is also critical to understand the dynamics of the epidemic in these FSW populations to adequately target testing, prevention, and treatment programming. HIV surveillance with more mobile FSW populations is likely to require separate studies with alternate sampling methodologies (e.g. time-location sampling).

Although the survey used a robust sampling method to achieve a sample that is largely representative of the FSW population as a whole in each city, it is possible that certain sub-populations are under-represented in the sample. For example, FSW of higher socio-economic backgrounds, many of whom may meet clients on the Internet, may be underrepresented. These challenges are common in cross-sectional surveys with RDS recruitment. Particular to this survey, our Cape Town site had limited success in bringing brothel-based sex workers into the sample, despite multiple and creative attempts to facilitate their participation in the survey, including taking the survey site mobile into some brothels with the consent of their proprietors. The challenges of operating a survey in these settings include time restrictions placed on survey activity by proprietors, and the financial incentive for proprietors and sex workers to prioritize seeing clients over participating in the survey.

Additionally, although IRBs approved the inclusion of 16-17 year old minors engaged in sex work, very few were recruited into the study. Consequently, this age group was underrepresented in each site's sample, limiting this survey's ability to provide specific information about this particularly vulnerable age group in the FSW population. The investigators and study teams made multiple attempts to increase the probability of minors being recruited into the sample, including attempts to recruit them as seeds and increasing the number of coupons given to those who did successfully enroll. Through this, we observed that FSW in this age group were not well networked to each other; when they entered the sample, they tended to recruit FSW older than themselves (See Figures 5a-c). It is therefore possible that RDS may not be the most efficient or successful method of recruiting this key demographic. Our findings should *not* be interpreted to conclude that this age group is neither heavily involved in sex work, nor that it has no distinct needs of its own. On the contrary, other data points within this survey do provide important clues to the needs of the youngest sex workers. In particular, we observed high HIV prevalence among the youngest age group for FSW, and the young age at which many FSW debut into sex work(at least 1 in 10 FSW entered the sex industry prior to the age of 18; see Section 6c., Table 3). Even these limited findings support the considered opinion of international experts who have highlight the potential negative impact of ignoring this group in the epidemic response (see McClure, 2014)[64], and indicate a critical need to gather additional information that can guide targeted programming for South African FSW under the age of 18. In future surveillance rounds, or in between rounds, it may be necessary to consider alternate and

complementary methodologies, including qualitative rapid assessments[65]and targeted ethnography[66], to provide more detailed information this age group.

Our report does not include multivariate analysis, which can control for interaction between various factors, nor does it present significance tests for bivariate analyses. This is in part due to the analytical limitations of RDS analysis methodology, and in part due to the survey investigators' preference for presentation of univariate and bivariate analyses in this National Report that are most easily understood and translated into the context of national programming priorities. The investigators will rigorously explore bivariate and multivariate associations in future analyses.

Finally, these findings may not be generalizable to other populations of sex workers, including MSM and transgender female sex workers. Stakeholders and investigators recognized at the outset of our work together that there was a particular dearth of data related to these sex worker populations; that in many cases they may be well-networked to the FSW population; but that their experiences and needs may be distinct from those of FSW. It was therefore reluctantly decided to limit the study's inclusion criteria to FSW in order to avoid the possibility of fracturing the study samples into multiple sub-populations that may have provided very limited, scientifically sound data on any one of the sub-populations. We emphatically call for additional HIV surveillance studies with each of these sub-populations.

9c. Recommendations

The SAHMS-FSW clearly demonstrates South Africa's urgent need to identify and implement effective HIV prevention and treatment programming for FSW. We offer the recommendations below with an understanding that a community empowerment approach to sex worker programming is not only consistent with human rights principles as articulated in the Melbourne 2014 Declaration[67]; but consistent with the evidence base for effective prevention and treatment interventions for sex workers[68]. Based on the findings of the SAHMS-FSW, we make the following recommendations for the epidemic response among FSW.

1. Scale-up of a comprehensive package of combination prevention and treatment programmes and interventions. The need for combination prevention—the integration of behavioural, biomedical, and structural approaches to HIV[69, 70] —are clearly indicated in the SAHMS-FSW data. While the survey data indicate there was a solid foundation for testing services and that many FSW have already availed themselves to these services, the data also clearly indicate that additional efforts are needed to reach beyond the network of those FSW currently engaging with service providers on a regular basis. It is encouraging that the National Sex Worker Strategy[71] has identified such expansion of services as a priority, and we encourage stakeholders to be guided by the surveillance data as they allocate resources and target services for FSW. This may include:

> *a. Programming to increase contact with FSW peer educators*. Some studies have noted an association between key population peer educator contact and uptake of testing and risk reduction behaviours[72, 73].The current survey found that peer educator contact was low, and FSW peer educator contact lower still. WHO recommends FSW-led outreach as one component of a comprehensive approach to empowering, human-rights based HIV programming with sex workers[74].Increased investment in FSW peer education and outreach has the potential to address several coverage gaps noted in the surveillance data, including dissemination of information, education, and communication (IEC) materials to increase correct knowledge of HIV transmission and prevention, increase access to and usage of latex-compatible lubrication, and increase consistent condom use with both paying and non-paying partners.

b. Expand mobile HIV testing to promote frequent testing at regular intervals and early identification of HIV infection, and biomedical prevention strategies. Data have shown that increasing access to mobile HIV testing services can increase uptake of testing, including among populations like men and youth who may perceive barriers to accessing HIV testing in clinic settings[75, 76]. While there is not currently specific data about mobile HIV testing with the South African FSW population, current efforts at targeted mobile service provision by FSW stakeholder organizations should be continued and where there is evidence of expanded utilization of services by FSW, augmented with additional resources. Such funding may be more effectively utilized by disseminating information and encouraging uptake of services through FSW social networks, in a manner similar to how RDS peer recruitment functions through established social networks. Furthermore, SAHMS-FSW data showed that as many as 22% of FSW are unaware of their HIV infection. In a presumed high incidence population like FSW, it is important to promote voluntary HIV testing at regular intervals. Although there are not specific guidelines on what constitutes testing at "routine" intervals, we recommend at least once every six months for the FSW population.

c. Promote biomedical prevention technologies and early treatment. It is acknowledged that condom promotion and distribution have cut HIV transmission associated with sex work by as much as 70%, but may not by itself lower transmission rates further. Modeling suggests that the combination of promoting voluntary early treatment of HIV and expanding access to Pre-Exposure Prophylaxis (PrEP) would potentially have great benefit to reducing sex work associated HIV transmission further[69]. Although the number of HIV-negative FSW is relatively low, the high proportion of HIV infections which occur among FSW each year demonstrate how efforts to expand access and utilization of HIV testing to identify HIV-positive FSW and link them to care would benefit further by promoting access to PrEP for HIV-negative FSW.

d. Implementation research on linkage and retention in care programmes. Despite the large proportion of FSW who have ever tested and who are aware of their HIV-positive status, additional efforts and resources are needed to link and retain HIV-positive FSW in care. Unfortunately, there are at present few effective models for interventions to increase linkage and retention for any population in low- and middle-income country settings[77]. This presents an opportunity for South African FSW stakeholder organizations and academic researchers to collaborate on studies and demonstration projects that will increase the evidence base for scalable programming. Recent statistical modeling has suggested that effective scale-up of treatment programming among sex workers could avert between 20-34% of new HIV infections among FSW and their clients over the next decade[78]. Such efforts must also identify and address specific obstacles FSW may experience in accessing care or remaining adherent to ART when prescribed.

2. Address psychosocial co-morbidities in the context of HIV prevention and treatment.
Substance abuse contributes to HIV vulnerability and poor HIV outcomes, and the data indicate that FSW would benefit from access to psychosocial interventions addressing substance use in order to reduce risk of HIV infection and onward transmission. Although injection drug use does not appear to be common in this population, hazardous alcohol consumption is very common. An integrated approach to substance use in the context of HIV prevention and treatment for FSW[79] is therefore potentially of great benefit to South Africa. Additionally, the high levels of violence experienced by FSW demand medical and psychological intervention as well as access to justice via the police services and judicial system. Statistical modeling suggests that elimination of violence by client, police, and stranger

perpetrators could avert between 17-20% of new infections among FSW and their clients over the next decade[78].

3. Promote reforms to provide an enabling legal and human rights environment to address HIV among FSW. The last two NSPs have specifically called for South Africa to address legal barriers to promoting HIV prevention and treatment efforts with key populations, and particularly with sex workers[80, 81]. Current efforts by civil society organizations advocating for the decriminalization of sex work would be a significant step toward providing an enabling legal environment in which to address substance use, violence, and HIV prevention and treatment for FSW as described above in Recommendation 2. Moreover, statistical modeling suggests that decriminalization of sex work could have the largest effect on the course of the HIV epidemic, potentially averting between one-third and one half of incident infections through its combined effects on combating violence, curbing abusive behaviour in the context of law enforcement, promoting safer work environments for sex workers, and boosting the reach and effectiveness prevention and treatment programmes[78].

4. Finally, the SAHMS demonstrates the feasibility of conducting second generation HIV & STI surveillance with FSW in South Africa. Moreover, FSW appeared to be highly mobilized and enthusiastic participants in the survey: the survey recruited well over its target of 500 at each site. IBBS using specialized sampling methodologies like RDS should be implemented at routine intervals (every 2-3 years) with the FSW population to monitor progress against the epidemic, and the reach and effectiveness of expanded programming.

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11. Appendices

11a. Full Survey team

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Coupon Managers
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Durban: Thomo, NA
Johannesburg: Mary Dlamini

Receptionists
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Durban: Mthembu, SI
Johannesburg: Elizabeth Nage

Flow Managers
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Johannesburg: Vhutshilo Phungo

Community Outreach Workers
Cape Town: Mukumba, PS
Durban: Cele, PP
Johannesburg: Daphney Majojo

11b. Pictures of Unique Objects

Rubber Bracelet for Durban

Make-Up Kit for Johannesburg and Cape Town

11c. Survey Instrument for SAHMS-FSW, 2013-14[2]

Interviewer ID	[__|__] id number
Please enter Today's Date. (The date of the interview)	mm / dd / yy
What survey city is this?	1. Cape Town 2. Johannesburg 3. Durban
What is the participant's coupon code?	[__|__|__|__] coupon code number
Did the participant provide informed consent for the questionnaire?	1. Yes 2. No
Did the participant provide informed consent to have blood drawn from a nurse for serum preparation for HIV and syphilis surveillance testing?	1. Yes 2. No
Did the participant provide informed consent for a rapid HIV test?	1. Yes 2. No
Did the participant provided consent for a rapid syphilis test?	1. Yes 2. No
Is this participant a SEED?	1. Yes 2. No
REFERENCE	
Now I am going to ask you some questions about your participation in this survey.	
Now, think about the person who gave you your referral coupon. What is your relationship with her? Is she a:	01. Friend, who has sex for money 02. Friend, who does not have sex for money 03. Stranger/Don't know person 04. Casual acquaintance, who is not a friend 05. Co-worker or fellow student 06. Family member 96. Other: _____ 98. Don't Know 97. Refuse to Answer
How long have you known the person who gave you the referral coupon? *(Choose one)*	1. Less than 6 months 2. 6 months to 1 year 3. More than 1 year 98. Don't Know 97. Refuse to Answer
DEMOGRAPHIC DATA	
Now I am going to ask you some basic information about you.	
In what month and year were you born?	__ __ / __ __ __ __ mm / yyyy 9998. Don't Know (Year)
How old did you turn on your last birthday?	[__|__] age 98. Don't Know
What is your citizenship? *(Choose one)*	01. South Africa 02. Mozambique 03. Zimbabwe 04. Botswana 05. Namibia 96. Other: _____ 97. Refuse to Answer

[2] Skip patterns programmed into the QDS™ CAPI survey are not shown. Electronic survey available upon request.

What is your race/ethnicity? *(Choose one)*	1. Black/African 2. Coloured 3. White 4. Indian/Asian 5. Other: _____ 7. Refuse to Answer
Do you currently or have you ever attended school? *(Choose one)*	1. Yes, currently go 2. Yes, went in the past 3. No 8. Don't Know 7. Refuse to Answer
What is the highest level of school you attended? *(Choose one)*	1. Primary 2. Secondary (High School) 3. Matric 4. Tertiary (Technikon) 5. University 6. Post-Graduate 8. Don't Know 7. Refuse to Answer
What language do you speak most commonly at home? *(Home is the participant's current place of residence)* *(Choose one)*	01. Zulu 02. Afrikaans 03. Xhosa 04. English 96. Other: _____ 97. Refuse to Answer
What is your religion? **DO NOT READ OUT ANSWERS.** *(Choose one)*	01. Christian 02. Muslim 03. African Traditional 04. No Religion/Don't Believe/Atheist/Agnostic 05. Hindu 06. Buddhist 96. Other: _____ 97. Refuse to Answer
In what city do you have your primary residence? *(**READ DEFINITION OF PRIMARY RESIDENCE:** a primary residence is defined as the unit that you have occupied for the largest part of the calendar year) (Choose one)*	1. Zone 1 2. Zone 2 3. Zone 3 4. Zone 4 8. Don't Know 7. Refuse to Answer 9. Not Applicable
In what neighbourhood is your primary residence?	Open-Ended:
How long have you lived in above place? *Enter "0" If less than 1 year*	[__| __] years 98. Don't Know 97. Refuse to Answer
In the last 12 months, have you been away from your primary residence for more than one month at a time?	1. Yes 2. No 7. Refuse to Answer
In the last week, did you spend one or more nights away from your primary residence?	1. Yes 2. No 7. Refuse to Answer
In the last week, how many nights did you spend away from your primary residence?	[__] Nights 8. Don't Know 99. Valid Skip

Approximately how many other women who have sex for money do you think live in and around *[Study Area: Cape Town, Durban, Or Johannesburg]*? *Enter in "0" for none*	[__|__|__|__|__|__|__] number of FSW 9999998. Don't Know 9999997. Refuse to Answer 9999999. Not Applicable
MARITAL HISTORY	
Now I am going to ask you some questions about your marital status. These may or may not apply to you.	
Are you currently married or living together with a person as if married? *(Choose one)*	1. Yes, Currently Married 2. Yes, Living With A Person as if Married 3. No, Not In Union 7. Refuse to Answer
What gender is your partner? *(Choose one)*	1. Male 2. Female 3. Transgender 7. Refuse to Answer
Have you ever been married or lived together with a person as if married? *(Choose one)*	1. Yes, Formerly Married 2. Yes, Lived With A Partner as if married 3. No 7. Refuse to Answer
What gender was/is this person? *(Choose one)*	1. Male 2. Female 3. Transgender 7. Refuse to Answer
What is your current marital status: widowed, divorced, or separated? *(Choose one)*	1. Widowed 2. Divorced 3. Separated 7. Refuse to Answer
How many years have you been widowed, divorced or separated?	[__|__] number of years 97. Refuse to Answer 99. Not Applicable
Is your partner living with you now or staying elsewhere? *(Choose one)*	1. Living together 2. Staying Elsewhere 7. Refuse to Answer
Does your partner have more than one wife/live in partner?	1. Yes 2. No 7. Refuse to Answer
Including yourself, in total, how many partners does your partner live with now as if married?	[__|__] number of women 97. Refuse to Answer
SEXUAL HISTORY	
Now I am going to ask you some questions about sexual history. These questions can be sensitive. Please remember that you do not have to provide answers to questions you do not feel comfortable answering.	
Have you ever had vaginal sex?	1. Yes 2. No 7. Refuse to Answer
At what age did you first have vaginal sex?	[__|__] age 98. Don't Know 97. Refuse to Answer
Have you ever had anal sex?	1. Yes 2. No 7. Refuse to Answer
At what age did you first have anal sex?	[__|__] age 98. Don't Know 97. Refuse to Answer
How many different men have you had vaginal or anal sex with in the past 6 months? This includes non-paying sexual partners (such as lovers, boyfriends, and husbands) as well as paying clients.	[__|__|__|__] number of partners 9998. Don't Know 9997. Refuse to Answer

How many of these men were paying partners?	[__|__|__|__] 9997. Don't Know 9998. Refuse to Answer 9999. Not Applicable
How many of these were non-paying partners?	[__|__|__|__] 9997. Don't Know 9998. Refuse to Answer 9999. Not Applicable
I am now going to ask you to tell me whether these paying clients were: "Main/regular", "Occasional" or "One Time" partners	
Of these paying men, how many were main/regular sexual partners?	[__|__|__|__] number of partners 9998. Don't Know 9997. Refuse to Answer
Of these paying partners, how many were occasional sexual partners?	[__|__|__] number of partners 998. Don't Know 997. Refuse to Answer
Of these Paying men, how many were one-time sexual partners?	[__|__|__] number of partners 998. Don't Know 997. Refuse to Answer
I am now going to ask you to tell me whether the non-paying men were: "Main/regular", "Occasional" or "One Time" partners	
Of these non-paying partners, how many were main/regular sexual partners?	[__|__|__|__] number of partners 9998. Don't Know 9997. Refuse to Answer
Of these non-paying partners, how many were occasional sexual partners?	[__|__|__] number of partners 998. Don't Know 997. Refuse to Answer
Of these non-paying men, how many were one-time sexual partners?	[__|__|__] number of partners 998. Don't Know 997. Refuse to Answer
Now, can you tell me how many male partners (paid or unpaid) you gave ONLY oral sex to in the past 6 months? That means you did not have vaginal or anal sex with these partners.	[__|__|__] number of partners 998. Don't Know 997. Refuse to Answer
Of these [*oral sex only*] partners, how many were paying sexual partners?	[__|__|__] number of partners 998. Don't Know 997. Refuse to Answer
PAYING-PARTNER SEXUAL MATRIX (Asked about the last three paying clients)	
Now I'm going to ask you a series of questions about the last three clients you had who paid you for sex in the last 6 months. We will start with the last client you had.	
How old is this person? (Best estimate if you don't know)	[__|__] age
What was your relationship to this person? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Permanent/Main (Boyfriend, Husband but pays you for Sex) __ Occasional (See regularly, but casually) __ Hit and Run (one night stand) __ Don't Know __ Refuse to Answer
What is the nationality of this person? *(Choose one)*	1. South Africa 6. Other: _____ 8. Don't Know 7. Refuse to Answer

Where and how did you two meet? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Brothel/Hotel __ Bar, café, nightclub or restaurant __ Street, park, library, public transportation __ Introduced by friends __ Internet __ Work or school __ Through an intermediary (pimp, bartender, taxi driver) __ Private party or social club __ Truck stop / border crossing __ Dating services or newspaper advertisements __ A real/General hotel __ Other: _____ __ Don't Know __ Refuse to Answer
When did you first have sex with this person?	[__|__|__] YEARS [__|__|__] MONTHS [__|__|__] WEEKS
When did you last have sex with this person?	[__|__|__|__] MONTHS [__|__|__|__] WEEKS [__|__|__|__] DAYS
Do you plan on having sex with this person again in the future?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
The last time you had sex with this person did you know his HIV status?	1. Yes 2. No 7. Refuse to Answer
What did you know or believe this persons HIV status to be? *(Interviewer: Participant should try and answer positive or negative - have them think about it. Only respond "don't know" if participant truly doesn't know). (Choose one)*	1. HIV Negative 2. HIV Positive 8. Don't Know 7. Refuse to Answer
During the past 6 months, how many times did you have vaginal intercourse with this person?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had vaginal intercourse, did you NOT use a male or female condom?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had vaginal intercourse and did not use a condom were you high or drunk?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
During the past 6 months, how many times did you have anal intercourse with this person?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had anal intercourse, did you NOT use a male or female condom?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had anal intercourse and did not use a condom were you high or drunk?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
The last time you had sex (vaginal or anal) with this person was a condom used?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer

Who suggested condom use? *(Choose one)*	1. I did 2. Partner did 8. Don't Know 7. Refuse to Answer
Could you tell me why you did not use a condom? **RECORD ALL MENTIONED** *(Check all that apply)*	__ No Condom Available __ Partner Refused __ Use Other Contraceptives __ Condom Reduces Sexual Pleasure __ Trust Partner __ I Am Married __ I Am Faithful __ My partner is faithful __ Other: _____ __ Don't Know __ Refuse to Answer
Could you tell me why you used a condom? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Prevent STI/HIV __ Do Not Trust Partner __ Messages Advising Use Of Condom __ Prevent Pregnancy __ Other: _____ __ Don't Know __ Refuse to Answer
The last time you had sex with this individual, how much money did this partner give you in exchange for sex?	[__|__|__|__] ZAR 9998. Don't Know 9997. Refuse to Answer 9999. Not Applicable
Now we will move to the second most recent client.	
How old is this person? (Best estimate if you don't know)	[__|__] age
What was your relationship to this person? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Permanent/Main (Boyfriend, Husband but pays you for Sex) __ Occasional (See regularly, but casually) __ Hit and Run (one night stand) __ Don't Know __ Refuse to Answer
What is the nationality of this person? *(Choose one)*	1. South Africa 6. Other: _____ 8. Don't Know 7. Refuse to Answer
Where and how did you two meet? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Brothel/Hotel __ Bar, café, nightclub or restaurant __ Street, park, library, public transportation __ Introduced by friends __ Internet __ Work or school __ Through an intermediary (pimp, bartender, taxi driver) __ Private party or social club __ Truck stop / border crossing __ Dating services or newspaper advertisements __ A real/General hotel __ Other: _____ __ Don't Know __ Refuse to Answer
When did you first have sex with this person?	[__|__|__] YEARS [__|__|__] MONTHS [__|__|__] WEEKS
When did you last have sex with this person?	[__|__|__|__] MONTHS [__|__|__|__] WEEKS [__|__|__|__] DAYS

Do you plan on having sex with this person again in the future?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
The last time you had sex with this person did you know his HIV status?	1. Yes 2. No 7. Refuse to Answer
What did you know or believe this persons HIV status to be? *(Interviewer: Participant should try and answer positive or negative - have them think about it. Only respond "don't know" if participant truly doesn't know). (Choose one)*	1. HIV Negative 2. HIV Positive 8. Don't Know 7. Refuse to Answer
During the past 6 months, how many times did you have vaginal intercourse with this person?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had vaginal intercourse, did you NOT use a male or female condom?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had vaginal intercourse and did not use a condom were you high or drunk?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
During the past 6 months, how many times did you have anal intercourse with this person?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had anal intercourse, did you NOT use a male or female condom?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had anal intercourse and did not use a condom were you high or drunk?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
The last time you had sex (vaginal or anal) with this person was a condom used?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Who suggested condom use? *(Choose one)*	1. I did 2. Partner did 8. Don't Know 7. Refuse to Answer
Could you tell me why you did not use a condom? **RECORD ALL MENTIONED** *(Check all that apply)*	__ No Condom Available __ Partner Refused __ Use Other Contraceptives __ Condom Reduces Sexual Pleasure __ Trust Partner __ I Am Married __ I Am Faithful __ My partner is faithful __ Other: _____ __ Don't Know __ Refuse to Answer
Could you tell me why you used a condom? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Prevent STI/HIV __ Do Not Trust Partner __ Messages Advising Use Of Condom __ Prevent Pregnancy __ Other: _____ __ Don't Know __ Refuse to Answer

The last time you had sex with this individual, how much money did this partner give you in exchange for sex?	[__|__|__|__] ZAR 9998. Don't Know 9997. Refuse to Answer 9999. Not Applicable
Now we will move to the third most recent client.	
How old is this person? (Best estimate if you don't know)	[__|__] age
What was your relationship to this person? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Permanent/Main (Boyfriend, Husband but pays you for Sex) __ Occasional (See regularly, but casually) __ Hit and Run (one night stand) __ Don't Know __ Refuse to Answer
What is the nationality of this person? *(Choose one)*	1. South Africa 6. Other: _____ 8. Don't Know 7. Refuse to Answer
Where and how did you two meet? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Brothel/Hotel __ Bar, café, nightclub or restaurant __ Street, park, library, public transportation __ Introduced by friends __ Internet __ Work or school __ Through an intermediary (pimp, bartender, taxi driver) __ Private party or social club __ Truck stop / border crossing __ Dating services or newspaper advertisements __ A real/General hotel __ Other: _____ __ Don't Know __ Refuse to Answer
When did you first have sex with this person?	[__|__|__] YEARS [__|__|__] MONTHS [__|__|__] WEEKS
When did you last have sex with this person?	[__|__|__|__] MONTHS [__|__|__|__] WEEKS [__|__|__|__] DAYS
Do you plan on having sex with this person again in the future?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
The last time you had sex with this person did you know his HIV status?	1. Yes 2. No 7. Refuse to Answer
What did you know or believe this persons HIV status to be? (Interviewer: Participant should try and answer positive or negative - have them think about it. Only respond "don't know" if participant truly doesn't know). *(Choose one)*	1. HIV Negative 2. HIV Positive 8. Don't Know 7. Refuse to Answer
During the past 6 months, how many times did you have vaginal intercourse with this person?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had vaginal intercourse, did you NOT use a male or female condom?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer

How many of those times that you had vaginal intercourse and did not use a condom were you high or drunk?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
During the past 6 months, how many times did you have anal intercourse with this person?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had anal intercourse, did you NOT use a male or female condom?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had anal intercourse and did not use a condom were you high or drunk?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
The last time you had sex (vaginal or anal) with this person was a condom used?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Who suggested condom use? *(Choose one)*	1. I did 2. Partner did 8. Don't Know 7. Refuse to Answer
Could you tell me why you did not use a condom? **RECORD ALL MENTIONED** *(Check all that apply)*	__ No Condom Available __ Partner Refused __ Use Other Contraceptives __ Condom Reduces Sexual Pleasure __ Trust Partner __ I Am Married __ I Am Faithful __ My partner is faithful __ Other: _____ __ Don't Know __ Refuse to Answer
Could you tell me why you used a condom? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Prevent STI/HIV __ Do Not Trust Partner __ Messages Advising Use Of Condom __ Prevent Pregnancy __ Other: _____ __ Don't Know __ Refuse to Answer
The last time you had sex with this individual, how much money did this partner give you in exchange for sex?	[__|__|__|__] ZAR 9998. Don't Know 9997. Refuse to Answer 9999. Not Applicable
NON-PAYING PARTNER SEXUAL MATRIX (Asked about the last two non-paying sexual partners)	
Now I m going to ask you a series of questions about the last two non-paying men you had sex with in the last 6 months. This would be any man you have had sex with in the past 6 months, who did not pay you in cash.	
Have you had any non-paying partners in the past 6 months?	1. Yes 2. No 7. Refuse to Answer
How old is this person? (Best estimate if you don't know)	[__|__] age
What was your relationship to this person? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Permanent __ Occasional __ Exchange (Sex for goods but NOT money) __ Hit and Run (one night stand) __ Don't Know __ Refuse to Answer

What type of partner was this non-paying partner? *(Choose one)*	1. Husband 2. Boyfriend 3. Friend 4. Pimp/Controller 5. Casual Acquaintance 6. Other: _____ 8. Don't Know 7. Refuse to Answer 9. Not Applicable
What is the nationality of this person? *(Choose one)*	1. South Africa 6. Other: _____ 8. Don't Know 7. Refuse to Answer
Where and how did you two meet? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Brothel/Hotel __ Bar, café, nightclub or restaurant __ Street, park, library, public transportation __ Introduced by friends __ Internet __ Work or school __ Through an intermediary (pimp, bartender, taxi driver) __ Private party or social club __ Truck stop / border crossing __ Dating services or newspaper advertisements __ A real/general hotel __ Other: _____ __ Don't Know __ Refuse to Answer
When did you first have sex with this person?	[__|__|__] YEARS [__|__|__] MONTHS [__|__|__] WEEKS
When did you last have sex with this person?	[__|__|__|__] MONTHS [__|__|__|__] WEEKS [__|__|__|__] DAYS
Do you plan on having sex with this person again in the future?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
The last time you had sex with this person did you know his/her HIV status?	1. Yes 2. No 7. Refuse to Answer
What did you know or believe this persons HIV status to be? (Interviewer: Participant should try and answer positive or negative - have them think about it. Only respond "don't know" if participant truly doesn't know). *(Choose one)*	1. HIV Negative 2. HIV Positive 8. Don't Know 7. Refuse to Answer
During the past 6 months, how many times did you have vaginal intercourse with this person?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had vaginal intercourse, did you NOT use a male or female condom?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had vaginal intercourse and did not use a condom were you high or drunk?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
During the past 6 months, how many times did you have anal intercourse with this person?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer

How many of those times that you had anal intercourse, did you NOT use a male or female condom?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had anal intercourse and did not use a condom were you high or drunk?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
The last time you had sex (vaginal or anal) with this person was a condom used?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Who suggested condom use? *(Choose one)*	1. I did 2. Partner did 8. Don't Know 7. Refuse to Answer
Could you tell me why you did not use a condom?	__ No Condom Available __ Partner Refused __ Use Other Contraceptives __ Condom Reduces Sexual Pleasure __ Trust Partner __ I Am Married __ I Am Faithful __ My partner is faithful __ Other: _____ __ Don't Know __ Refuse to Answer
Could you tell me why you used a condom?	__ Prevent STI/HIV __ Do Not Trust Partner __ Messages Advising Use Of Condom __ Prevent Pregnancy __ Other: _____ __ Don't Know __ Refuse to Answer __ Not Applicable

Thank you! Now let's move onto the second most recent non-paying man you had sex with.

*Interviewer (***DO NOT ASK THIS QUESTION***): Does participant have a 2nd most recent non-paying partner? Only answer no, if participant states to you that they do not have a 2nd non-paying partner after you have read the instructions.*	1. Yes 2. No 8. Don't Know 7. Refuse to Answer 9. Not Applicable
How old is this person? (Best estimate if you don't know)	[__|__] age
What was your relationship to this person? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Permanent __ Occasional __ Exchange (Sex for goods but NOT money) __ Hit and Run (one night stand) __ Don't Know __ Refuse to Answer
What type of partner was this non-paying partner? *(Choose one)*	1. Husband 2. Boyfriend 3. Friend 4. Pimp/Controller 5. Casual Acquaintance 6. Other: _____ 8. Don't Know 7. Refuse to Answer 9. Not Applicable

What is the nationality of this person? *(Choose one)*	1. South Africa 6. Other: _____ 8. Don't Know 7. Refuse to Answer
Where and how did you two meet? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Brothel/Hotel __ Bar, café, nightclub or restaurant __ Street, park, library, public transportation __ Introduced by friends __ Internet __ Work or school __ Through an intermediary (pimp, bartender, taxi driver) __ Private party or social club __ Truck stop / border crossing __ Dating services or newspaper advertisements __ A real/general hotel __ Other: _____ __ Don't Know __ Refuse to Answer
When did you first have sex with this person?	[__|__|__] YEARS [__|__|__] MONTHS [__|__|__] WEEKS
When did you last have sex with this person?	[__|__|__|__] MONTHS [__|__|__|__] WEEKS [__|__|__|__] DAYS
Do you plan on having sex with this person again in the future?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
The last time you had sex with this person did you know his/her HIV status?	1. Yes 2. No 7. Refuse to Answer
What did you know or believe this persons HIV status to be? (Interviewer: Participant should try and answer positive or negative - have them think about it. Only respond "don't know" if participant truly doesn't know). *(Choose one)*	1. HIV Negative 2. HIV Positive 8. Don't Know 7. Refuse to Answer
During the past 6 months, how many times did you have vaginal intercourse with this person?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had vaginal intercourse, did you NOT use a male or female condom?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had vaginal intercourse and did not use a condom were you high or drunk?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
During the past 6 months, how many times did you have anal intercourse with this person?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had anal intercourse, did you NOT use a male or female condom?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
How many of those times that you had anal intercourse and did not use a condom were you high or drunk?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer

The last time you had sex (vaginal or anal) with this person was a condom used?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Who suggested condom use? *(Choose one)*	1. I did 2. Partner did 8. Don't Know 7. Refuse to Answer
Could you tell me why you did not use a condom?	__ No Condom Available __ Partner Refused __ Use Other Contraceptives __ Condom Reduces Sexual Pleasure __ Trust Partner __ I Am Married __ I Am Faithful __ My partner is faithful __ Other: _____ __ Don't Know __ Refuse to Answer
Could you tell me why you used a condom?	__ Prevent STI/HIV __ Do Not Trust Partner __ Messages Advising Use Of Condom __ Prevent Pregnancy __ Other: _____ __ Don't Know __ Refuse to Answer __ Not Applicable
CONDOMS & LUBRICANTS	
What was the brand of condom that you used the last time you had sex with a condom? *(Choose one)*	00. No condom used ever 01. Lovers Plus 02. Durex 03. Trust 04. Doctor Long 05. Femidom 06. Glow in the dark 07. Casanova 08. Heat 09. Choice 10. Rough Rider 11. Health4Men 12. Tattoo 13. Wet Wet Wet 66. No Name 96. Other: _____ 98. Don't Know 97. Refuse to Answer

Where do you usually obtain condoms? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Hospital __ Private Clinic __ Pharmacy __ Shop/Supermarket __ Café/Bar/Disco __ Filling Station __ Hotel __ Market/Stand __ At Work __ Street Vendor __ Friends __ AIDS Organizations __ School __ Other: _____ __ Don't Know __ Refuse to Answer
Have you ever had a male condom break during sex?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
How often do you experience condom breakage? *(Choose one)*	01. Always 02. Sometimes 03. Rarely 08. Don't Know 07. Refuse to Answer
In the last 6 months when you had sexual intercourse, did you or your partner ever put the condom on after you already started having sex?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
In the last 6 months when you had sexual intercourse, did you or your partner ever take the condom off before you were finished having sex?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
In the last 6 months when you had sexual intercourse, did the condom ever break/leak during sex or while he was pulling out?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
In the last 6 months when you had sexual intercourse, did the condom ever slip off during sex or while he was pulling out?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
When you want condoms do you buy them or get them for free? *(Choose one)*	1. Buy Them 2. Free 8. Don't Know 7. Refuse to Answer 9. Not Applicable
Do you find condoms to be very affordable (price), somewhat affordable, or not affordable? *(Choose one)*	1. Very affordable 2. Somewhat affordable 3. Not affordable 8. Don't Know 7. Refuse to Answer
Have you ever used lubricant during vaginal or anal sex?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer

How often do you use lubrication during vaginal or anal sex?	1. Always 2. Usually 3. Sometimes 4. Rarely 5. Never 88. Don't Know 99. Refuse to Answer
What type of lubricant do you usually use?	__ Butter __ Saliva or water __ Vaseline __ Baby oil __ Shea butter __ Other oil __ Soap __ Other type of lubricant: _____ __ Don't Know __ Refuse to Answer
Do you know what water-based lubricant is?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
How easy would you say it is to obtain water-based lubricant? **READ OUT ANSWERS. CIRCLE ONLY ONE.** *(Choose one)*	1. Very easy 2. Somewhat easy 3. Not easy 8. Don't Know 9. Refuse to Answer
Where can somebody obtain water-based lubricants? **DO NOT READ OUT. CIRCLE ALL THAT APPLY.** *(Check all that apply)*	__ Government hospital or clinic __ Family planning clinic __ Mobile clinic or mobile outreach __ HIV counselling and testing site (VCT site) __ Private hospital or clinic __ Shop/supermarket __ Pharmacy/chemist/drug store __ From peer educator or NGO __ Market/stand __ From friends __ From sexual partner(s) __ Brothel Manager/Pimp __ Other: _____ __ Don't Know __ Refuse to Answer
PREVENTION PROGRAMS	
Now I am going to ask you some questions about your experience with social programmes.	
During the last 12 months, have you attended any meetings or groups to discuss HIV and/or AIDS?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
What organization sponsored this meeting? *(Choose one)* *[For participants from Cape Town]*	1. SISONKE 2. SWEAT 3. TB/HIV Care Association 4. Woman's Legal Centre 5. Other: _____ 8. Don't Know 7. Refuse to Answer 9. Not Applicable

What organization sponsored this meeting? *(Choose one)* *[For participants from Johannesburg]*	1. WRHI 2. SWEAT 3. SISONKE 4. TLAC 5. Other: _____ 8. Don't Know 7. Refuse to Answer 9. Not Applicable
What organization sponsored this meeting? *(Choose one)* *[For participants from Durban]*	1. SISONKE 2. TB/HIV Care Association 3. LifeLine Durban 4. Other: _____ 8. Don't Know 7. Refuse to Answer 9. Not Applicable
How many times did you attend the meetings - only once, a few times, at least once a month? *(Choose one)*	1.Once 2. A few times 3. At least once a month 8. Don't Know 7. Refuse to Answer
In the last 12 months, you receive any of these items for free? **DO NOT READ OUT. CIRCLE ALL THAT APPLY.** *(Check all that apply)*	__ Condoms __ Lubricants __ Pamphlets __ None __ Other: _____ __ Don't Know __ Refuse to Answer
Which organization gave you these? *(Check all that apply)* *[For participants from Cape Town]*	__ SWEAT __ SISONKE __ TB/HIV Care Association __ Other: _____ __ Don't Know __ Refuse to Answer __ Not Applicable
Which organization gave you these? *(Check all that apply)* *[For participants from Johannesburg]*	__ WRHI __ SWEAT __ SISONKE __ Other: _____ __ Don't Know __ Refuse to Answer __ Not Applicable
Which organization gave you these? *(Check all that apply)* *[For participants from Durban]*	__ SISONKE __ TB/HIV Care Association __ LifeLine Durban __ Other: _____ __ Don't Know __ Refuse to Answer
Have you been in contact with any health peer educator in the community in the last 12 months?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Have any of the peer educators you have been in contact with been female sex workers?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer

Which organization was sponsoring the peer educator? *(Check all that apply)* *[For participants from Cape Town]*	__ SWEAT __ SISONKE __ TB/HIV Care Association __ Other: _____ __ Don't Know __ Refuse to Answer __ Not Applicable
Which organization was sponsoring the peer educator? *(Check all that apply)* *[For participants from Johannesburg]*	__ WRHI __ SWEAT __ SISONKE __ Other: _____ __ Don't Know __ Refuse to Answer __ Not Applicable
Which organization was sponsoring the peer educator? *(Check all that apply)* *[For participants from Durban]*	__ SISONKE __ TB/HIV Care Association __ LifeLine Durban __ Other: _____ __ Don't Know __ Refuse to Answer
How many times have you been in contact with the peer educator in the last 12 months?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
What services or information did you receive from the peer educator?	__ General HIV/STI prevention/transmission information __ Condoms __ Referral for STI Treatment __ Referral for VCT __ Other: _____ __ Don't Know __ Refuse to Answer

HIV KNOWLEDGE

Now I am going to ask you some questions about your knowledge about HIV. Please be honest with your answers.

Can having sex with only one faithful, uninfected partner reduce the risk of HIV transmission?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Can using condoms reduce the risk of HIV transmission?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Can a healthy-looking person have HIV?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Can a person get HIV from mosquito bites?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Can a person get HIV by sharing a meal with someone who is infected?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Can the virus that causes AIDS be transmitted from a mother to her baby…	
…During pregnancy?	1. Yes 2. No

…During delivery?	1. Yes 2. No
…By breastfeeding?	1. Yes 2. No
Have you heard about special antiretroviral drugs that people infected with the AIDS virus can get from a doctor or a nurse to help them live longer?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Are there any special drugs that a doctor or a nurse can give to a woman infected with the AIDS virus to reduce the risk of transmission to the baby?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
SEX WORK HISTORY	
At what age did you first receive money for sex?	[__|__] age 98. Don't Know 97. Refuse to Answer
Why do you exchange sex for money? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Need money for daily life __ Didn't know any other work to do __ Grew up in sex work environment __ Was forced/pressured __ Like to do/pleasure/hobby __ Friends/family encouragement __ Well paid __ Abandoned by parents/sibling __ Abandoned by husband __ Extra income for luxuries __ To pay for education __ Other: _____ __ Don't Know __ Refuse to Answer
In the past month, how many times did you have sex for money?	[__|__|__|__] times 9998. Don't Know 9997. Refuse to Answer
In the past month, what was the smallest amount of money you received for sex?	[__|__|__|__|__] rand 99998. Don't Know 99997. Refuse to Answer
In the past month, what was the largest amount of money you received for sex?	[__|__|__|__|__] rand 99998. Don't Know 99997. Refuse to Answer
Where do you usually find clients? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Brothel/hotel __ Bar, café, nightclub or restaurant __ Street, park, library, public transportation __ Introduced by friends __ Internet __ Work or school __ Through an intermediary (pimp, bartender, taxi driver) __ Private party or social club __ Truck stop / border crossing __ Dating services or newspaper advertisements __ A real/general hotel __ Other: _____ __ Don't Know __ Refuse to Answer
Do you consider receiving money for sex to be your main source of income?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer

In the past month have you earned money for doing work other than sex?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
What was this work? **RECORD ALL MENTIONED** *(Check all that apply)*	__ Street vendor/Casual Labour __ Factory Worker __ Professional/teacher/banker/accountant __ Business Woman __ Hairdresser __ Masseur __ Waitress/bar manager/hotel employee __ Musician/dancer/performer __ Tourism/travel agent/tour guide __ Farmer/Agricultural worker __ Driver __ Other: _____ __ Don't Know __ Refuse to Answer
STIs	
Now I am going to ask you some questions about sexually transmitted diseases. These are diseases you can get from having sex with someone.	
Apart from HIV, have you heard about other infections that can be transmitted through sexual contact?	1. Yes 2. No 7. Refuse to Answer
Could you describe the symptoms of STI?	1. Yes 2. No
IF YES: What are these symptoms? Any other symptoms? **RECORD ALL MENTIONED, DO NOT READ OUT** *(Check all that apply)*	__ Genital Discharge __ Pain On Urination __ Inflammation In Genital Area __ Abdominal Pain __ Irritation Of Genital Area __ Genital Ulcer __ Blood In Urine __ Loss Of Weight __ Erectile Dysfunction __ Other: _____ __ Don't Know __ Refuse to Answer
Sometimes women experience an abnormal discharge from their vagina. During the last 12 months, have you had an abnormal discharge from your vagina?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Sometimes women have a sore or ulcer on or near their vagina. During the last 12 months, have you had a sore or ulcer on or near your vagina?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
IF HAD DISCHARGE, SORE OR ULCER: The last time you had this problem did you seek any kind of advice or treatment?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer

IF HAD DISCHARGE, SORE OR ULCER: The last time you had this problem where did you go? Any other place? **DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED** *(Check all that apply)*	__ Public Hospital/Clinic __ Private Clinic __ Pharmacy __ Religious Pastor/Healer __ Traditional Doctor/Healer __ Other: _____ __ Don't Know __ Refuse to Answer
IF HAD DISCHARGE, SORE OR ULCER: Did you notify any of your sexual partners of your STI problem? *(Choose one)*	1. Yes, all of them 2. Yes, some of them 3. No, no of them 8. Don't Know 7. Refuse to Answer
Can you tell me the name of the clinic or drop in centre you last went to?	Open-ended
Why did you go there instead of somewhere else? **DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED** *(Check all that apply)*	__ Cost __ Convenience __ Where I always go __ Quality of care __ Privacy __ Welcoming/FSW-friendly/Friendly Health personnel __ It was indicated/referred __ Other: _____ __ Don't Know __ Refuse to Answer
Did you receive any of the following services there? **READ OUT ANSWERS. RECORD ALL MENTIONED** *(Check all that apply)*	__ Received condoms __ Received lubricants __ Info on STI/HIV Prevention/Transmission __ Gen counselling from female peer counsellor __ Gen counselling from male peer counsellor __ VCT counselling from female peer counsellor __ VCT counselling from male peer counsellor __ An HIV Test __ Other: _____ __ Don't Know __ Refuse to Answer
HEALTH CARE ULITIZATION	
Now I am going to ask you some questions about your experience with the health care system.	
During the last twelve months have you sought medical care for any reason?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
How many times have you sought medical care in the last 12 months?	[__|__|__] number of times 998. Don't Know 997. Refuse to Answer
During the past year, have you had difficulty getting medical care when you sought it?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
What difficulty did you have? **DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED** *(Check all that apply)*	__ Too expensive __ Too far away __ Could not take time from work __ Long waiting times __ Other: _____ __ Don't Know __ Refuse to Answer

During the past year, were you prescribed a medicine but were unable to get it?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Why were you unable to get it? **DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED** *(Check all that apply)*	__ Too expensive __ Too far away __ Could not take time from work __ Long waiting times __ Were not for sale __ Other: _____ __ Don't Know __ Refuse to Answer
Where do you normally go for healthcare? *(Check all that apply)*	__ Public Hospital/Clinic __ Private Clinics __ Pharmacy __ Religious Pastor/Healer __ Traditional Doctor/Healer __ Other: _____ __ Don't Know __ Refuse to Answer
Are you pregnant now?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Have you ever been pregnant? If so, how many times were you pregnant?	[__|__] number of times 98. Don't Know 97. Refuse to Answer
Have you ever given birth? If so, how many times have you ever given birth?	[__|__] number of times 98. Don't Know 97. Refuse to Answer
The last time you got pregnant, did you want to get pregnant at that time?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Have you ever had a pregnancy that miscarried or was aborted in the last five years?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Are you currently doing something or using any method to prevent pregnancy?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer

Which method are you using? *(Check all that apply)*	__ Female sterilization __ Male sterilization __ IUD (Loop) __ Injectibles __ Implants __ Pill __ Condom __ Female condom __ Diaphragm __ Foam/jelly __ Lactational Amenorrhea Method __ Rhythm method __ Withdrawal __ Other modern method __ Other traditional method __ Don't Know __ Refuse to Answer
How long have you been using this method without interruption?	[__|__] YEARS [__|__] MONTHS 98. Don't Know (Months) 97. Refuse to Answer (Months)
Where did you obtain this method last time? *(Check all that apply)*	__ Public Hospital/Clinic __ Private Clinics __ Pharmacy __ Religious Pastor/Healer __ Traditional Doctor/Healer __ Other: _____ __ Don't Know __ Refuse to Answer

HIV TESTING HISTORY

Now I am going to ask you some questions about HIV testing and your experience. Remember that you do not have to answer any questions you do not feel comfortable answering.

Do you know of a place where people can go to get tested for HIV?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Where is that? Any other place? **DO NOT READ OUT ANSWERS.** **RECORD ALL MENTIONED** *(Check all that apply)*	__ Public Hospital/Clinic __ Private Clinic/Lab __ NGO or Local Organization __ Pharmacy __ Blood Donation __ Other: _____ __ Don't Know __ Refuse to Answer
Have you been tested for HIV?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer

IF NOT TESTED: Why have you not had an HIV test? Any other reason? **DO NOT READ OUT ANSWERS.** **RECORD ALL MENTIONED** *(Check all that apply)*	__ Don't Know Where To Go __ I Am Not Infected __ Not At Risk Of Getting HIV __ I Trust My Partner __ Fear To Discover That I Am Positive __ I Am Not Ready To Get The Test __ Lack Of Confidentiality __ Don't Want To Be Stigmatized __ Fear To Lose Job __ Other: _____ __ Don't Know __ Refuse to Answer
IF TESTED: When was the last time you were tested? *(Choose one)*	1. Less Than 12 Months 2. 12 - 23 Months 3. 2 Years 4. 3 Years 5. 4 Years 6. 5 Years Or More 8. Don't Know 7. Refuse to Answer
IF TESTED: Where was the test done? *(Check all that apply)*	__ Public Hospital/Clinic __ Private Clinic/Lab __ NGO or Local Organization __ Pharmacy __ Blood Donation __ Other: _____ __ Don't Know __ Refuse to Answer
IF TESTED: For what reason did you get this last test? Any other reason? **DO NOT READ OUT ANSWERS.** **RECORD ALL MENTIONED** *(Check all that apply)*	__ Wanted To Know My HIV Status __ My Partner Asked Me To Get __ Wanted To Start Sexual Relations With A New Partner __ Wanted To Get Married __ Need For Insurance Coverage __ Asked For A Loan __ Employer Requested The Test __ I Felt Sick __ Advised By A Health Worker __ I Was Pregnant __ Other: _____ __ Don't Know __ Refuse to Answer __ Not Applicable
IF TESTED: What was the result of your most recent HIV test? *(Choose one)*	1. Positive 2. Negative 3. Indeterminate 4. Didn't get results 8. Don't Know 7. Refuse to Answer 9. Not Applicable
IF NEVER TESTED or ANY RESPONSE OTHER THAN HIV-POSITIVE PREVIOUSLY: What do you think your HIV status is today? *(Choose one)*	1. HIV Positive 2. HIV Negative 3. I don't know 7. Refuse to Answer

IF POSITIVE: How long ago was your first positive test result? *(Choose one)*	1. Less Than 12 Months 2. 12 - 23 Months 3. 2 Years 4. 3 Years 5. 4 Years 6. 5 Years Or More 8. Don't Know 7. Refuse to Answer
IF NOT POSITIVE: Do you think your chances of getting HIV are small, moderate, great, or no risk at all? *(Choose one)*	1. No Risk 2. Small Risk 3. Moderate Risk 4. Great Risk 8. Don't Know 7. Refuse to Answer
IF NOT POSITIVE: Why do you think that you have no risk/small risk of getting HIV? Any other reason? **DO NOT READ OUT ANSWERS.** **RECORD ALL MENTIONED** *(Check all that apply)*	__ Never had Sex __ Currently Abstaining from Sex __ Fidelity to Partner/Trust in The Partner __ Use Condoms __ No Sharing Needles or Puncturing Instruments __ Know That My Partner and I Aren't Infected __ My Ancestors Protect Me __ God Protects Me __ It is a Rural Disease __ It is a Urban Disease __ It is a Women's Disease __ It is a Men's Disease __ No HIV In My Community __ It Is A Black Disease __ It Is A White Disease __ Other: _____ __ Don't Know __ Refuse to Answer
IF NOT POSITIVE: Why do you think that you have a moderate/great risk of getting HIV? **DO NOT READ OUT ANSWERS.** **RECORD ALL MENTIONED** *(Check all that apply)*	__ Blood Transfusion __ Don't Use Condoms __ Don't Trust Partner __ Had Injuries/Cuts __ Multiple Partners __ Prostitutes/Prostitution __ Other: _____ __ Don't Know __ Refuse to Answer
IF PREVIOUSLY TESTED: Were you very satisfied, satisfied, a little satisfied, or not satisfied with the quality of services provided at the place where you got the last test? *(Choose one)*	1. Very satisfied 2. Satisfied 3. A little satisfied 4. Not satisfied 8. Don't Know 7. Refuse to Answer
HIV CARE AND TREATMENT	
Because you have said you know your HIV status to be positive, I am now going to ask you some questions about HIV treatment.	
Have you seen a nurse, doctor or other health care provider for a medical evaluation or care related to your HIV infection?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer

Have you ever taken or are currently taking Antiretroviral (ARV) drugs? *(Choose one)*	1. Yes, currently taking 2. Yes, no longer taking 3. No 8. Don't Know 7. Refuse to Answer
Have you taken ARVs during the past 12 months?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Why did you stop taking ARVs? **READ OUT ANSWERS.** **RECORD ALL MENTIONED** *(Check all that apply)*	__ They made me sick __ They did not work __ I could not afford them __ Distance to get them is far __ I was feeling better and did not need them __ A doctor/nurse told me to stop taking them __ The pharmacy ran out of the medicine __ Other: _____ __ Don't Know __ Refuse to Answer
If taking ARV, where do you go for ARVs? **READ OUT ANSWERS.** **RECORD ALL MENTIONED** *(Check all that apply)*	__ Public Hospital/Clinic __ Private Clinics __ Pharmacy __ Day Hospital __ Traditional Doctor __ Other: _____ __ Don't Know __ Refuse to Answer
If no longer taking, where did you go for ARVs? **READ OUT ANSWERS.** **RECORD ALL MENTIONED** *(Check all that apply)*	__ Public Hospital/Clinic __ Private Clinics __ Pharmacy __ Religious Pastor/Healer __ Traditional Doctor/Healer __ Other: _____ __ Don't Know __ Refuse to Answer
If never took ARV, where could you go for ARVs? **READ OUT ANSWERS.** **RECORD ALL MENTIONED** *(Check all that apply)*	__ Public Hospital/Clinic __ Private Clinics __ Pharmacy __ Religious Pastor/Healer __ Traditional Doctor/Healer __ Other: _____ __ Don't Know __ Refuse to Answer
Have you had any births in the past 5 years?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Did you visit an antenatal clinic (ANC) for your prenatal care?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Were you offered an HIV test?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer

Did you receive a course of treatment that can prevent your baby from infection?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Did your baby receive a dose/course of treatment to prevent infection?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
STIGMA, DISCRIMINATION, AND VIOLENCE	
Now I am going to ask you some questions about your personal experience with violence. These questions can be sensitive and you can refuse to answer any question that makes you uncomfortable.	
In the past 12 months, how many times have you been hit, kicked, or beaten? *Enter in "0" for never*	[__|__] number of times 98. Don't Know 97. Refuse to Answer
Who was the person who last hit, kicked, or beat you? *(Check all that apply)*	__ Do not know the person __ Social acquaintance __ Friend __ Family/relative __ Client __ Sexual partner __ Other: _____ __ Don't Know __ Refuse to Answer
In the past 12 months, how many times did anyone force you to have sex with them by sexually assaulting or raping you? *Enter in "0" for never*	[__|__] number of times 98. Don't Know 97. Refuse to Answer
Who was the person who last forced you to have sex with them? *(Check all that apply)*	__ Do not know the person __ Social acquaintance __ Friend __ Family/relative __ Client __ Sexual partner __ Other: _____ __ Don't Know __ Refuse to Answer
Did you seek medical treatment after this happened?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Did you report this incident to the police?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Was a condom used the last time someone forced you to have sex?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
DRUGS AND ALCOHOL	
Now I am going to ask you some questions about drug and alcohol use. Remember that everything you say here is confidential and nobody will know it was you that gave the answers.	

How often have you had alcohol in the last 12 months? *(Choose one)*	1. Did not drink 2. Once a months or less 3. 2-4 times a month 4. 2-3 times per week 5. 4 + times per week 8. Don't Know 7. Refuse to Answer
How many drinks containing alcohol do you have on a typical day when you are drinking?	[__|__] number of drinks 98. Don't Know 97. Refuse to Answer 99. Not applicable
How often do you have six or more drinks on one occasion? *(Choose one)*	0. Never 1. Monthly or less 2. Two to four times a month 3. Two to three times per week 4. Four or more times a week 8. Don't Know 7. Refuse to Answer 9. Not Applicable
During the last 12 months have you consumed any drugs without having a medical reason?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Which drugs did you use? **RECORD ALL MENTIONED** *(Check all that apply)*	__ None __ Cannabis (Dagga or Marijuana)? __ Mandrax __ Heroin, "Brown sugar" __ Cocaine "Crack" __ Ecstasy, LSD __ Prescription medications (amphetamines, benzodiazepines, morphine, codeine) __ Tik __ Whoonga __ Other: _____ __ Don't Know __ Refuse to Answer
Have you ever injected drugs? IF YES: Did you inject within the last 12 months? *(Choose one)*	1. No, Never 2. Yes, But Not During Last 12 Months 3. Yes, During Last 12 Months 8. Don't Know 7. Refuse to Answer
Have you ever shared the needle or syringe? IF YES: Did you share within the last 12 months? *(Choose one)*	1. No, Never 2. Yes, But Not During Last 12 Months 3. Yes, During Last 12 Months 8. Don't Know 7. Refuse to Answer

SOCIAL NETWORKS

Now I am going to ask you some questions about your network.

Please take your time to carefully think about these questions. Please give me your best estimates.

Interviewer READ for all of the above: *You do not need to give me their names. They may or may not identify themselves as being female sex workers. This includes anyone that has sex for money. Please give me your best estimate.* **IF PARTICIPANT DOESNT KNOW OR DOESNT REMEMBER, PROBE FOR AN APPROXIMATE NUMBER OR RANGE.**

How many women who exchange sex for money in [*Study Area: Cape Town; Johannesburg; or Durban*] do you know by name and they know yours? If you don't know, take your best guess. *Answer should not be 0*	[__|__|__|__|__|__|__] number of FSW 9999998. Don't Know 9999997. Refuse to Answer 9999999. Not Applicable
Of those FSW, about how many of them would you say are 16 years of age or older? *Enter in "0" for none*	[__|__|__|__|__|__|__] number of FSW 9999998. Don't Know 9999997. Refuse to Answer 9999999. Not Applicable
Of those FSW, about how many are street based? *Enter in "0" for none*	[__|__|__|__|__|__|__] number of FSW 9999998. Don't Know 9999997. Refuse to Answer 9999999. Not Applicable
Of those FSW, about how many would you consider recruiting into this study? *Enter in "0" for none*	[__|__|__|__|__|__|__] number of FSW 9999998. Don't Know 9999997. Refuse to Answer 9999999. Not Applicable
In the previous 6 months, did you receive an object, like the one I am showing you now (*INTERVIEWER, show participant the object*)?	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
If so, can you show me? *(Choose one)*	1. Yes , here it is 2. I have it, but don't have it with me. I remember where it is though. 8. Don't Know 7. Refuse to Answer
Can you please tell me about how you received it? **DO NOT READ OPTIONS.** **CHOOSE ONE RESPONSE AND WRITE IN ANSWER BELOW.** *(Choose one)*	1. Received it from a Community outreach worker 2. Received it from someone, but I do not remember if s/he was an outreach worker 3. Received it at a social event. 6. Other: _____ 8. Don't Know 7.Refuse to Answer
Please specify city and location where you received it	Open-ended:
Please specify name of organization sponsoring the Outreach Worker. If you don't remember the name of the organization, please describe the shirt she/he was wearing:	Open-ended:
On the 12th of July, 2013 did you attend an event hosted by ANOVA held at Seapoint Hall Civic Centre? *[Asked of Cape Town participants]*	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
On the 12th of July, 2013 did you attend an event hosted by ANOVA held at the Blue Lagoon? *[Asked of Durban participants]*	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
On the 19th of July, 2013 did you attend an event hosted by WRHI held at the Hillbrow Theatre? *[Asked of Johannesburg participants]*	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Between January 1st and June 16th (Youth Day) 2013 did you attend a creative space at SWEAT? *[Asked of Cape Town participants]*	1. Yes 2. No 8. Don't Know 7. Refuse to Answer

Between January 1st and June 16th (Youth Day) 2013 did you receive HIV screening/testing from a TB/HIV Care Association mobile van? *[Asked of Cape Town participants]*	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Between January 1st and June 16th (Youth Day) 2013 did you attend a creative space at LifeLine Durban? *[Asked of Durban participants]*	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Between January 1st and June 16th (Youth Day) 2013 did you receive HIV screening/testing from a TB/HIV Care Association mobile van? *[Asked of Durban participants]*	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Between January 1st and June 16th (Youth Day) 2013 did you ever visit Esselen Clinic (WRHI)? *[Asked of Johannesburg participants]*	1. Yes 2. No 8. Don't Know 7. Refuse to Answer
Were almost done. Now, let me ask you again, what is your best guess about how many other women that have sex for money do you think live in and around ? *Enter in "0" for none*	[__|__|__|__|__|__|__] number of FSW 9999998. Don't Know 9999997. Refuse to Answer 9999999. Not Applicable
IF INITIALLY DID NOT CONSENT TO THIS: Before we close, would you like the opportunity to modify your consent to have your blood tested centrally for HIV and syphilis?	1. Yes 2. No 9. Not applicable
IF INITIALLY DID NOT CONSENT TO THIS: Would you like the opportunity to modify your consent to receive your rapid HIV test results?	1. Yes 2. No 9. Not applicable
IF INITIALLY DID NOT CONSENT TO THIS: Would you like the opportunity to modify your consent to receive your rapid syphilis test results?	1. Yes 2. No 9. Not applicable
INTERVIEWER: Re-enter the participant's coupon code?	[__|__|__|__|__] coupon code number