



East Africa Cross-Border Integrated Health Study

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ABBREVIATIONS

ANC	antenatal care
ART	antiretroviral therapy
CB-HIPP	Cross-Border Health Integrated Partnership Project
CHW	community health worker
DBS	dried blood spot
EAC	East African Community
EAHRC	East African Health Research Commission
FSW	female sex worker
HMIS	health management information system
IUD	intrauterine device
KEMRI	Kenya Medical Research Institute
MakSPH	Makerere University School of Public Health
MSM	men who have sex with men
NGO	nongovernmental organization
NIMR	National Institute for Medical Research
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PLACE	Priorities for Local AIDS Control Efforts
PMTCT	prevention of mother-to-child transmission
RNEC	Rwanda National Ethics Committee
SMS	short message service
STI	sexually transmitted infection
TB	tuberculosis
USAID	U.S. Agency for International Development

EXECUTIVE SUMMARY

This report presents the results of a cross-sectional study describing the health status and behaviors of mobile and vulnerable populations living in and/or traveling through 12 cross-border sites in the East African countries of Kenya, Rwanda, Tanzania, and Uganda. Findings will be used to better focus interventions to increase survival, improve quality of life, and reduce HIV transmission at cross-border sites.

Mobile and vulnerable populations of interest include:

- Women, especially young women ages 15–24
- Female sex workers (FSWs), defined as women who reported exchanging sex for money in the past 12 months
- Fisherfolk
- Workers at public spots (e.g., bars, pubs, hotels) where people socialize in cross-border sites
- Truck drivers
- Men who have sex with men (MSM), defined as men who have had sex with at least one man in the past 12 months; and
- People who inject drugs

Cross-border sites include traditional land border posts—such as Busia, Uganda/Busia, Kenya—as well as “lake border” sites. Lake border sites are defined as fishing communities where fisherfolk from different countries in the region are known to intermingle. The land and lake cross-border study sites are shown in Figure E1.

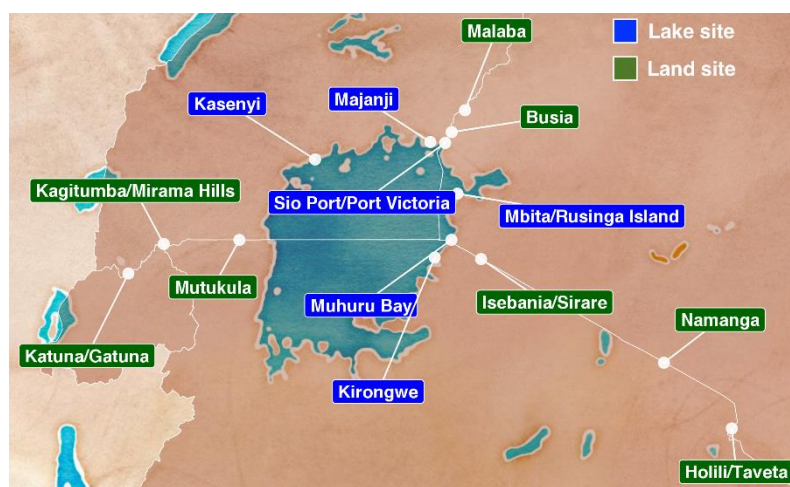
Methods

The study employed a mixed-methods approach combining quantitative and qualitative research techniques. Health and service delivery outcomes were measured at 12 cross-border sites through two data collection components:

- 1) Priorities for Local AIDS Control Efforts (PLACE), a venue-based, cross-sectional technique that recruits patrons and workers from public spots where populations of interest socialize for participation in a biobehavioral survey
- 2) A health facility survey consisting of a quantitative survey focused on services provided, a qualitative interview exploring experiences of healthcare workers based at facilities located in cross-border sites, and abstraction of clinical data to measure health indicators for HIV care and treatment, antenatal care (ANC), immunizations, prevention of mother-to-child transmission (PMTCT), and tuberculosis (TB)

Over the course of data collection, the study team conducted quantitative and qualitative interviews at 23 health facilities, constructed a cohort of 3,646 people first enrolled in HIV care and treatment at a cross-border site in 2014, and interviewed 11,567 participants sampled from public places (“spots”) about their health behaviors and access to health services. Participants in the study were offered an HIV test and, if they tested positive, were asked to provide dried blood spots (DBS) for viral load testing.

Figure E1. Cross-border study sites



KEY FINDINGS AND RECOMMENDATIONS

The findings of the study were presented to regional stakeholders at a dissemination meeting held in Kampala, Uganda on June 8–9, 2017. Stakeholders included representatives from the U.S. Agency for International Development (USAID)/East Africa, the East African Health Research Commission (EAHRC), Makerere University (Uganda), Kenya Medical Research Institute, National Institute for Medical Research (Tanzania), Rwanda Military Hospital, FHI 360, and the International AIDS Vaccine Initiative, among others. Their input helped identify the most relevant key findings for policymakers and implementers, and allowed for refinement of the recommendations presented below.

1. There is a need to develop a mechanism for communication among health facilities on neighboring sides of borders and to develop systems for patient referral and defaulter tracing among these facilities.

Loss to follow-up plagues care and treatment programs at cross-border health facilities. Across all programs examined—HIV, ANC, immunizations, PMTCT, and TB treatment—health facilities could not easily distinguish loss to follow-up from silent transfers to a new health facility, particularly if the health facility was on the other side of an international border. Healthcare workers at the facilities included in the study reported that the main barrier to communication with facilities in neighboring countries is the lack of a mechanism or platform to support such communication.

Healthcare workers further reported that such communication could improve confirmation of patient referral and retention in care, as well as defaulter tracing and continuity of care.

What prevents communication is there is not a system in place. You cannot communicate with systems you don't know and institutions you have not been to. There is a need to enable these institutions close to the border to come together, sit together, and plan together how they can manage conditions around the border.

–Healthcare worker

2. Not knowing one's HIV status is a major barrier to accessing care and treatment in cross-border sites. While testing coverage is high, routine testing at shorter intervals is needed in cross-border sites to identify new infections and link individuals testing positive to care and treatment.

Of the people who tested positive for HIV during the study, almost all had been tested previously, and over half had been tested in the past year. Nevertheless, more than half of the people testing positive for HIV during the study did not know of their positive HIV status.

Among the subgroups of women who tested positive during the study, only 22 percent of young women ages 15–24 knew they were HIV positive. Approximately half of FSWs and female workers at spots knew their HIV-positive status, as did 72 percent of female fisherfolk. Only 39 percent of men who tested HIV positive knew their status. Among the male subgroups examined, just over 60 percent of male fisherfolk and male workers at spots knew their status.

Figures E2 and E3 show the care and treatment cascades among respondents by subgroup.

Figure E2. HIV care and treatment cascade among women

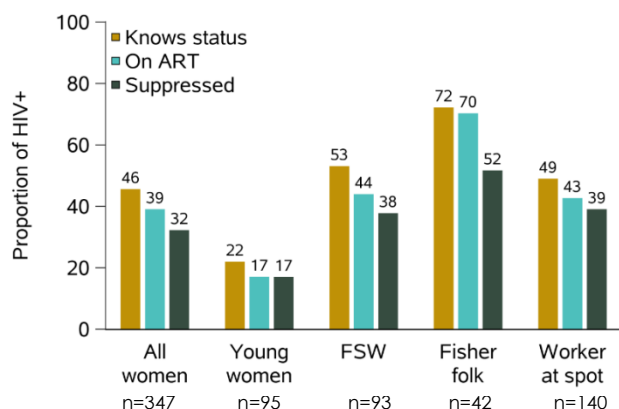
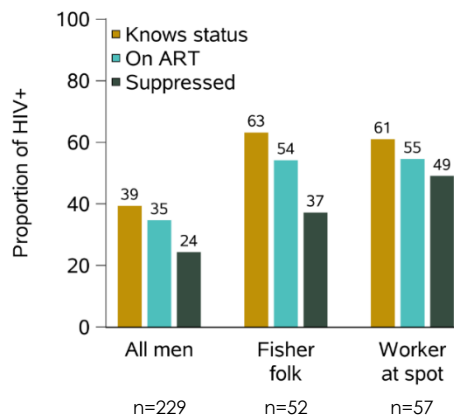


Figure E3. HIV care and treatment cascade among men



3. Venue-based testing is an effective way to identify new, previously unidentified cases of HIV. However, the number needed to test to find new cases varies among population subgroups.

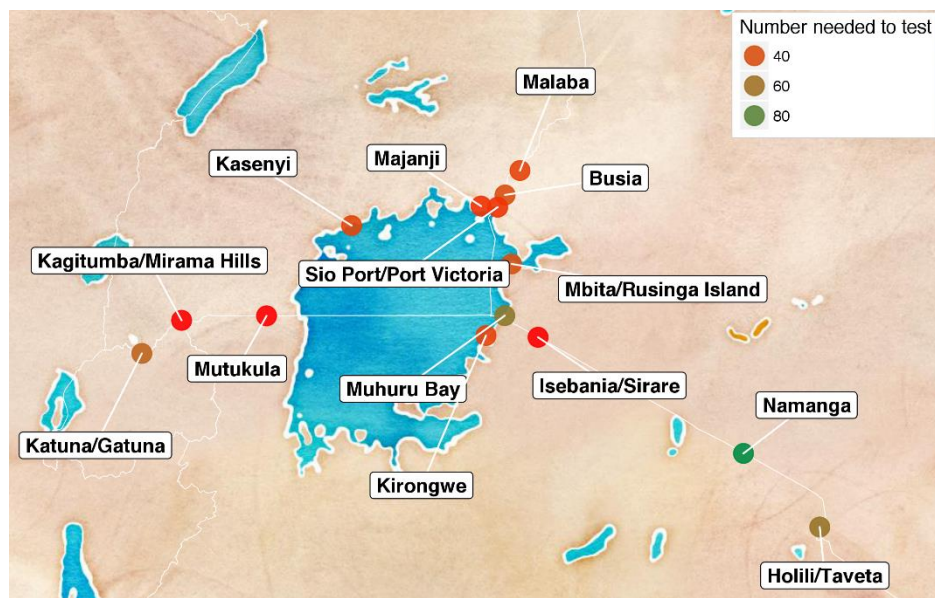
The biobehavioral study successfully identified over 300 new cases of HIV in cross-border sites. This success indicates that spot-based (or “venue”-based) HIV testing may be an effective strategy to find people with HIV who are unaware of their status. For example, in land cross-border sites, one new (i.e., previously unidentified) case of HIV would be expected for every 13 FSWs tested, every 14 female workers at spots tested, and every 19 young women tested. In lake cross-border sites, one new case of HIV would be expected for every 22 women tested (Table E1).

The overall number needed to test to find one new case varied by cross-border site. Site-specific numbers are shown in Figure E4.

Figure E4. Number needed to test by cross-border site

Table E1. Number needed to test by population group

	Land Sites	Lake Sites
Overall	34	36
All women	20	22
Young women	19	29
FSWs	13	37
Fisherfolk	18	26
Workers at spots	14	22
Patrons at spots	26	22
All men	53	53
Fisherfolk	67	53
Workers at spots	100	50
Patrons at spots	50	53
Truck drivers	56	45



4. The highest levels of HIV prevalence were found among specific subgroups of women at certain cross-border sites. Notably, female workers at spots emerged as a subgroup with one of the highest prevalence levels.

Table E2 presents prevalence data for women by population. While not typically considered a key population, female workers at spots had some of the highest HIV prevalence levels across the study sites. As female workers at spots interact with both mobile and host populations, interventions focused on female workers at spots may benefit both groups. Among female workers, prevalence was highest in Mbita and Rusinga Island, Kenya (23.5%), Malaba, Kenya/Malaba, Uganda (18.1%), and Mutukula, Tanzania/Mutukula, Uganda (14.6%). Prevalence among female workers at spots exceeded 10 percent at four other cross-border sites (Figure E5).

Table E2. HIV prevalence among women at spots in cross-border sites, by population

Site	Young Women		FSWs		Female Fisherfolk		Female Workers at Spots	
	n	%	n	%	n	%	n	%
Land sites								
Malaba, KE/Malaba UG	127	6.3	94	17.8			99	18.1
Busia, KE/Busia, UG	186	6.2	105	9.4			136	8.7
Katuna, UG/Gatuna, RW	98	3.4	32	6.9			36	2.4
Holili, TZ/Taveta, KE	44	5.1	18	0			70	10.5
Isebania, KE/Sirari, TZ	126	4.8	91	11.8			75	10.9
Mutukula, UG/Mutukula, TZ	179	6.9	62	23.9			138	14.6
Namanga, KE/ Namanga, TZ	102	2.1	50	12.9			104	6.9
Kagitumba, RW/Mirama Hills, UG	107	9.6	50	15.2			72	13.8
Lake sites								
Sio Port/Port Victoria, KE/Majanji, UG	170	5.0	32	2.1	55	5.9	121	8.7
Muhuru Bay, KE	63	1.6	30	16.9	97	15.1	106	12.2
Kirongwe, TZ	60	1.5	*	*	18	0.0	30	3.3
Mbita and Rusinga, KE	145	15.0	38	23.0	89	21.3	96	23.5
Kasenyi, UG	207	5.2	46	14.1	82	5.6	95	8.7

*Data is suppressed where n<10. All percentages are weighted.

HIV prevalence among FSWs was highest at Mutukula, Tanzania/Mutukula, Uganda (23.9%), Mbita and Rusinga Island, Kenya (23.0%), and Malaba, Kenya/Malaba, Uganda (17.8%). Prevalence among FSWs was over 11 percent at six other cross-border sites (Figure E6).

Among young women ages 15–24, the highest HIV prevalence was found in Mbita and Rusinga Island, Kenya (15.0%), followed by Kagitumba, Rwanda/Mirama Hills, Uganda (9.6%), and Mutukula, Tanzania/Mutukula, Uganda (6.9%) (Figure E7).

Among female fisherfolk at lake cross-border sites, HIV prevalence was highest in Mbita and Rusinga Island, Kenya, (21.3%), Muhuru Bay, Kenya (15.1%), Sio Port/Port Victoria, Kenya (5.9%), and Majanji, Uganda (5.9%) (Figure E8).

Figure E5. HIV prevalence among female workers at spots in cross-border sites

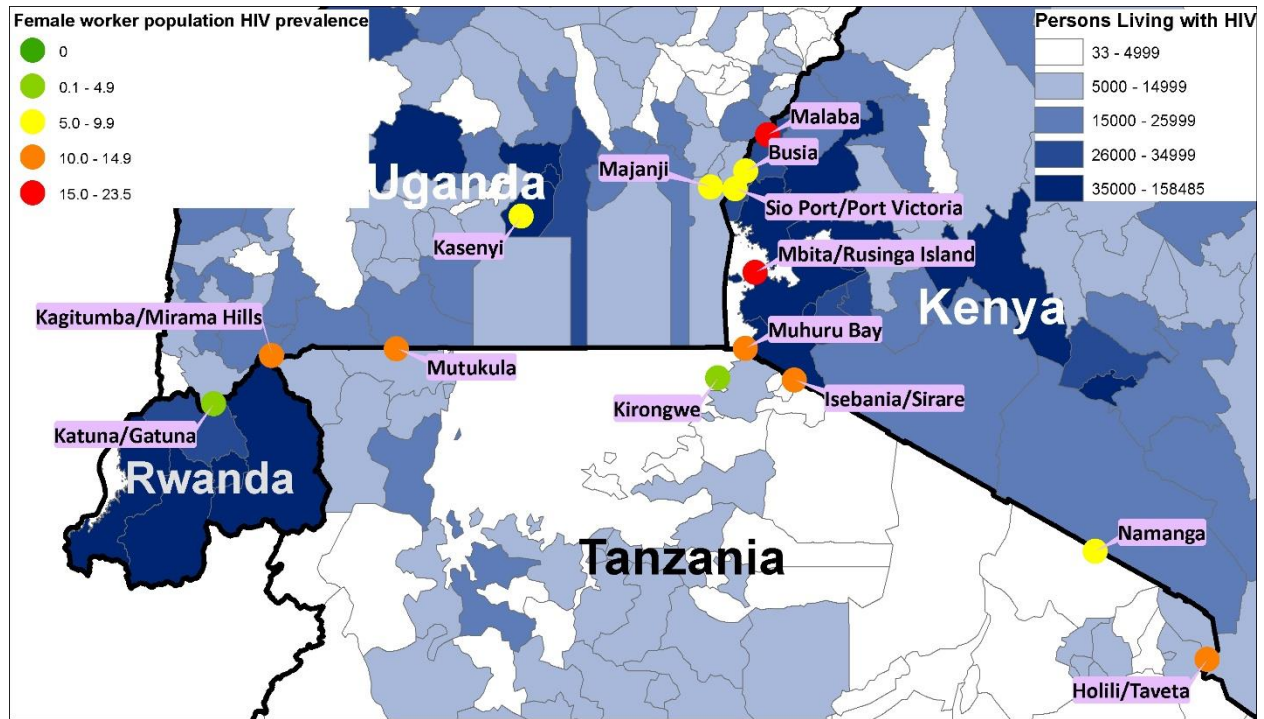


Figure E6. HIV prevalence among FSWs at spots in cross-border sites

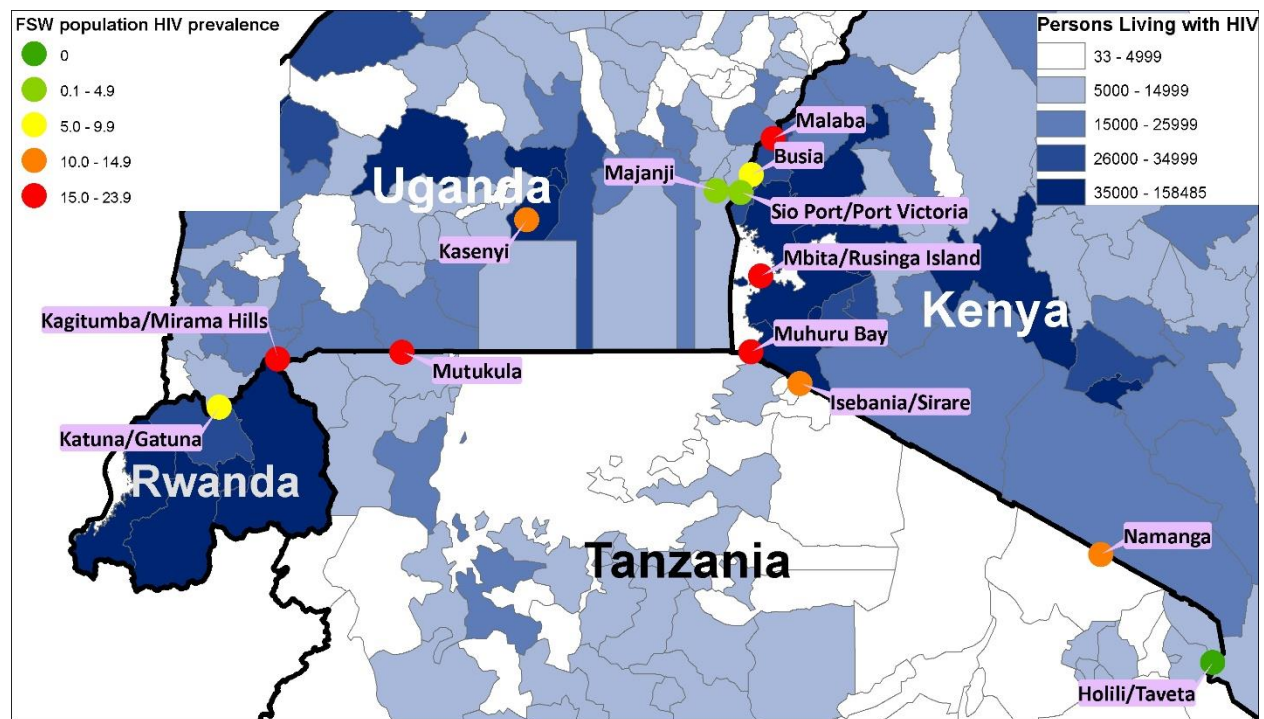


Figure E7. HIV prevalence among young women at spots in cross-border sites

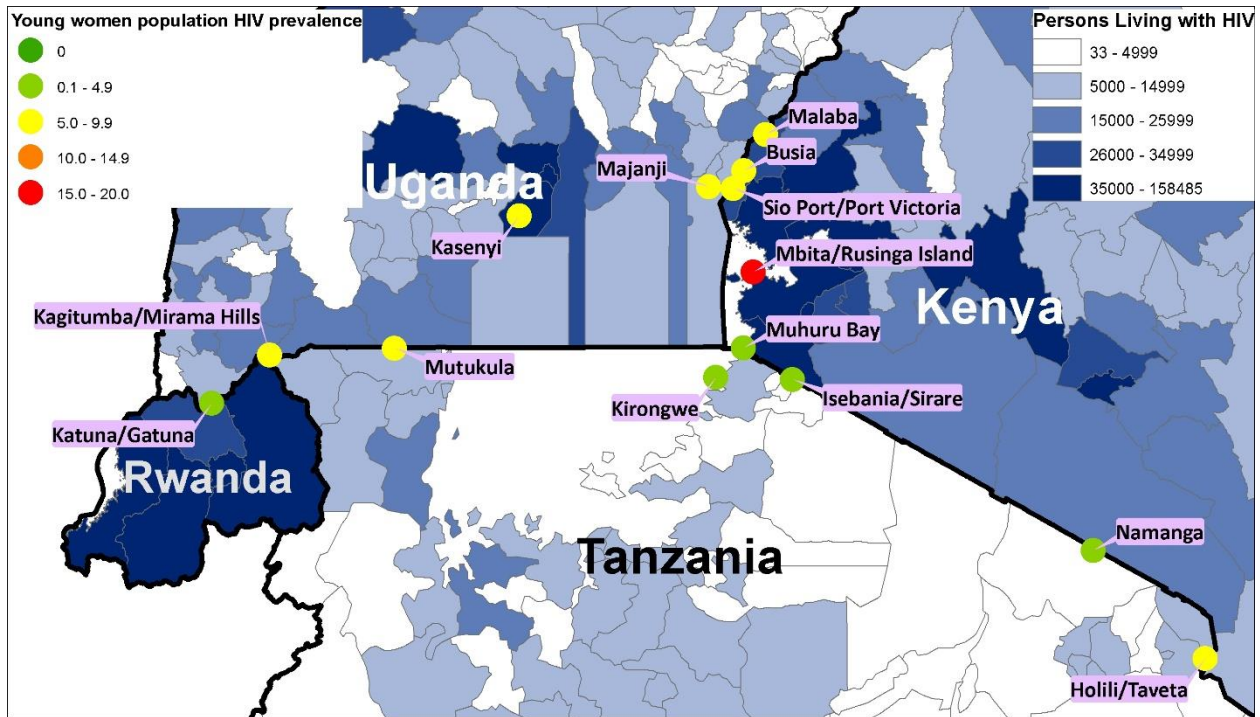
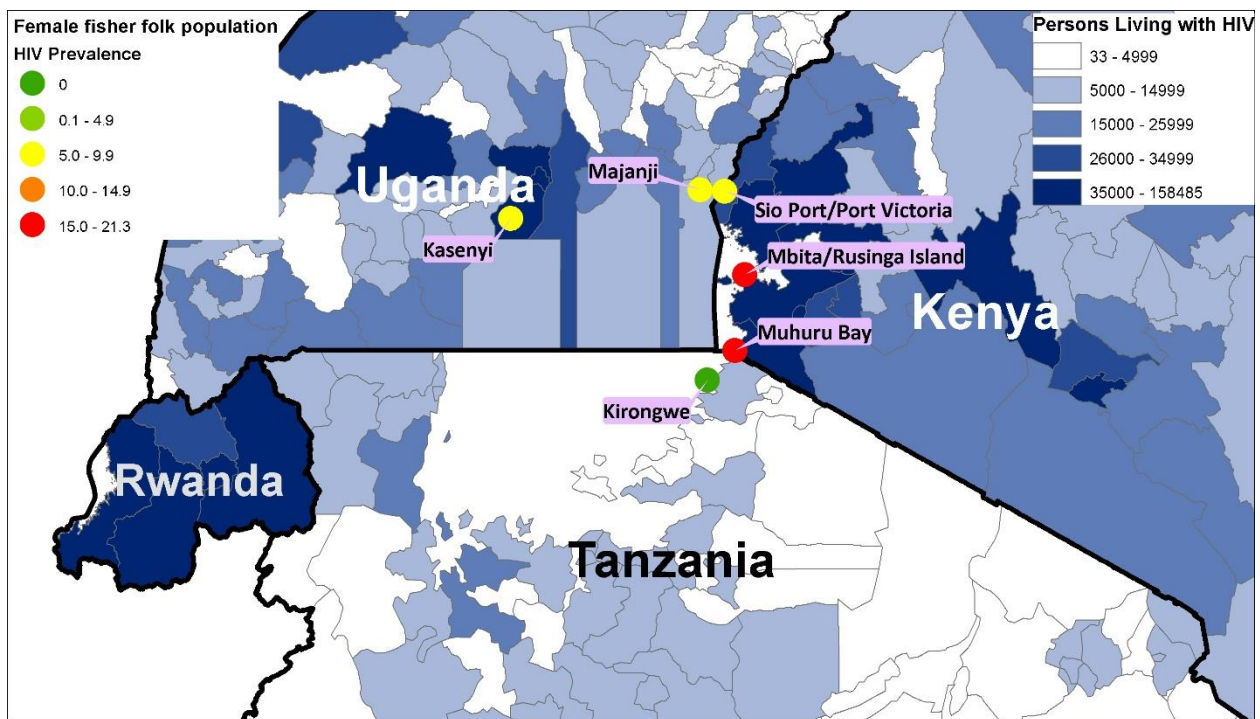


Figure E8. HIV prevalence among female fisherfolk at spots in lake cross-border sites



5. At some cross-border sites, HIV prevalence was higher in the host (resident) population than in the mobile (nonresident) population. At other sites, the opposite was true.

Cross-border sites are important spaces where host populations and mobile populations interact. Approximately three-quarters of respondents were residents of the cross-border site where they were interviewed (the host population), while one-quarter resided outside the bounds of the cross-border site (the mobile population).

Cross-border sites with the highest HIV prevalence in the host population were Mbita and Rusinga Island, Kenya (11.0%), Kirongwe, Tanzania (9.2%), and Kagitumba, Rwanda/Mirama Hills, Uganda (6.1%) (Table E3 and Figure E9).

Among mobile populations, the highest HIV prevalence was found in Muhuru Bay, Kenya (14.7%), followed by Mutukula, Tanzania/Mutukula, Uganda (7.1%), and Mbita and Rusinga Island, Kenya (7.0%) (Figure E10).

As illustrated by Figures E4–E10, the dynamics of the HIV epidemic vary among cross-border sites in East Africa. It is important that programming be informed by the unique prevalence patterns at each site among mobile, host, and vulnerable population groups.

Table E3. HIV prevalence among mobile and host populations at cross-border sites

	Mobile Populations			Host Populations*		
	n	%	95% CI	n	%	95% CI
Land cross-border sites						
Malaba, KE/Malaba, UG	276	4.1	0.7, 7.6	684	4.8	2.7, 6.9
Busia, KE/Busia, UG	444	5.0	2.9, 7.1	522	2.4	0.3, 4.6
Katuna, UG/Gatuna, RW	363	1.9	0.6, 3.1	613	4.1	1.0, 7.3
Holili, TZ/Taveta, KE	76	1.2	0.0, 3.8	795	3.1	1.1, 5.1
Isebania, KE/Sirari, TZ	464	4.4	2.6, 6.1	516	4.8	0.5, 9.0
Mutukula, UG/Mutukula, TZ	157	7.1	3.0, 11.3	828	7.2	4.7, 9.8
Namanga, KE/Namanga, TZ	350	3.2	1.8, 4.5	632	4.0	2.1, 5.9
Kagitumba, RW/Mirama Hills, UG	281	3.2	1.6, 4.8	465	6.1	4.2, 7.9
Lake cross-border sites						
Sio Port/Port Victoria, KE/Majanji, UG	68	6.2	0.0, 17.8	900	5.1	2.7, 7.5
Muhuru Bay, KE	51	14.7	3.7, 25.6	482	9.2	3.8, 14.5
Kirongwe, TZ	117	2.4	0.0, 7.1	355	3.6	1.1, 6.2
Mbita and Rusinga, KE	77	7.0	0.6, 13.3	903	11.0	7.5, 14.4
Kasenyi, UG	37	0.0	NA	972	4.8	2.8, 6.8

*Residents of the same geographic locality as the cross-border site. In Kenya and Uganda: sub-county; in Rwanda: parish; in Tanzania: ward. All percentages are weighted.

Figure E9. HIV prevalence among mobile (nonresident) populations at spots in cross-border sites

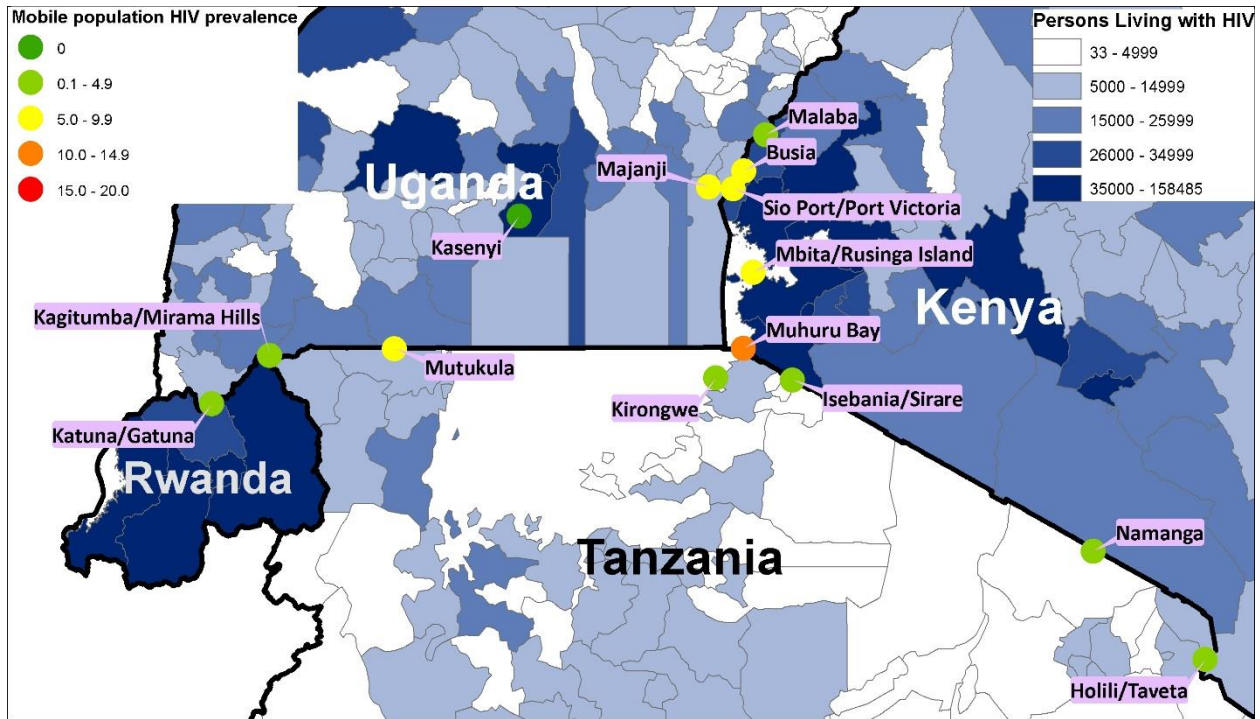
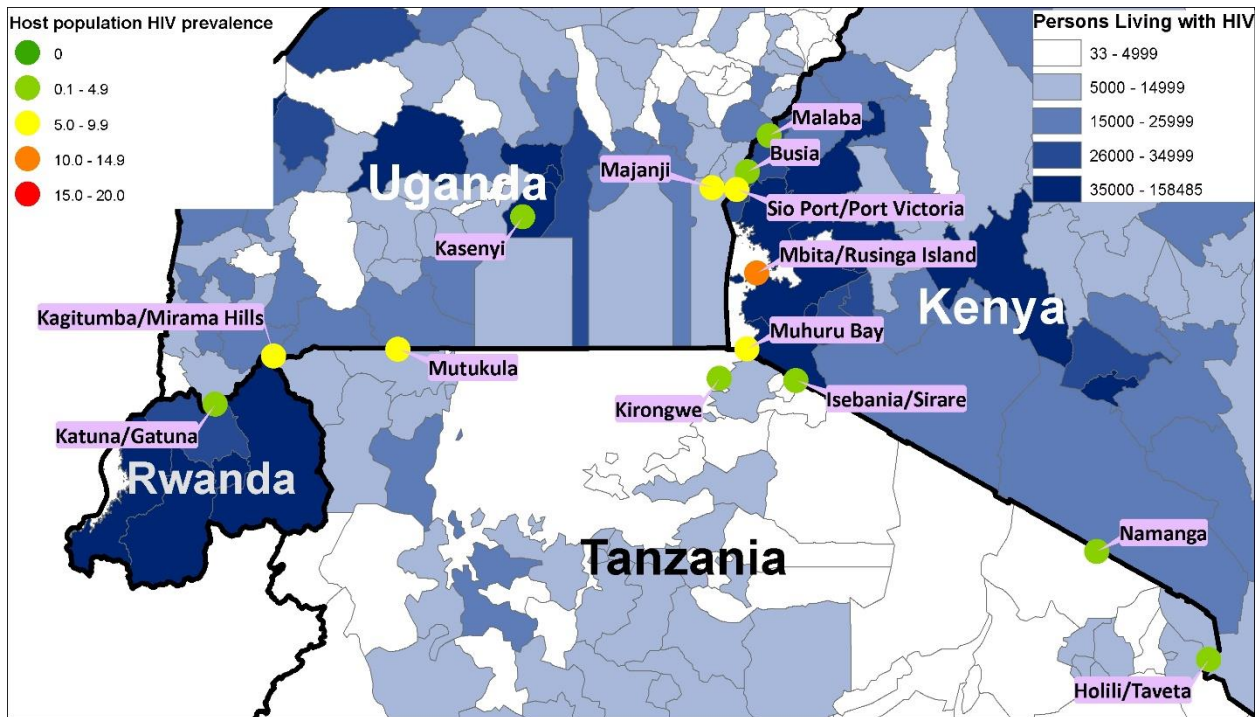


Figure E10. HIV prevalence among host (resident) populations at spots in cross-border sites



6. There is a need to increase capacity for viral load measurement in cross-border sites.

Viral load monitoring is an important component of ongoing HIV care after treatment initiation. Viral load testing was not common at the health facilities included in the study. The overall proportion of patients (n=1,904) in care with at least one viral load measure by two years after entry into HIV care was only approximately 20 percent. This proportion was much higher among patients at lake cross-border site facilities (42%, n=1,201) than among those at land cross-border site facilities (9%, n=703), likely because those at land sites had a much higher risk of becoming lost to follow-up at the health facility (see below).

7. People seeking HIV care and treatment at lake cross-border sites were retained in care longer than those seeking care at land cross-border sites. Reasons for disengagement from care at cross-border sites need to be identified and addressed.

Patients in care for HIV in selected facilities at land cross-border sites were more likely to be lost to follow-up at the clinic where they received care, as compared to those at lake cross-border sites. At land cross-border site facilities, patients (n=1,201) spent an average of 4.7 months retained in care and on antiretroviral therapy (ART), while patients (n=703) at lake cross-border site facilities spent an average of 10.2 months retained in care and on ART.

By two years after enrollment at a selected health facility, 54 percent of patients had at least one gap in care that was six or more months in length. These patients are referred to as “disengaged” from care. Disengagement in care could result from a patient’s dropping out of care at the facility, transferring care to another facility without documenting the transfer, or the patient’s death. Patients at land cross-border site facilities (68%, n=1,201) had a higher two-year probability of disengaging from care than those at lake cross-border site facilities (32%, n=703)).

8. FSWs and MSM were found at every cross-border site. Size estimates of these and other mobile and vulnerable population groups at cross-border sites can help inform programming.

The estimated number of FSWs that could be found in each cross-border site over a one-week period varied by site, ranging from 1,077 to 10,244. The mean estimated number of FSWs in one week was generally higher at land cross-border sites than at lake cross-border sites. Estimates of the number of MSM present at public spots on Saturday nights ranged from 0 to 241 across the 12 cross-border sites, and the mean estimate was higher at land cross-border sites than at lake cross-border sites.

Visiting all spots for a period of two hours each at one of the selected land cross-border sites is estimated to result in, on average, 566 contacts with young women, 89 contacts with fisherfolk, 109 contacts with truck drivers, and 34 contacts with people who inject drugs. Visiting all spots at one selected lake cross-border site is estimated to result in, on average, 556 contacts with young women, 1,127 contacts with fisherfolk, 23 contacts with truck drivers, and 8 contacts with people who inject drugs.

9. Key population groups socialize at a diverse range of public spots in cross-border sites, and mixing between mobile, host, and vulnerable populations is common. There is an opportunity for increased HIV prevention efforts at these spots.

Members of all mobile and vulnerable populations of interest were found at spots, including young women, FSWs, fisherfolk, workers at spots, truck drivers, MSM, and people who inject drugs. However, few MSM and people who inject drugs were identified, indicating either underreporting of stigmatizing behaviors or low numbers of MSM and people who inject drugs visiting public spots in cross-border sites (Table E4).

Most spots that people visit to socialize or meet new sex partners were bars/pubs, followed by hotels/guest houses/lodges that were situated near truck stops, landing sites, or hotel complexes. Many of these spots served alcohol, offered opportunities for sex on-site, and/or were visited by people looking to buy or sell sex (Table E5).

Table E4. Presence of mobile and vulnerable populations at spots in cross-border sites

	All Sites n=11,428	Land Sites n=7,466	Lake Sites n=3,962
Female	33.8	33.2	35.2
Young women	13.0	12.6	14.1
FSWs	5.3	6.4	3.0
Fisherfolk	9.9	1.7	28.5
Workers at spots	21.4	19.1	26.7
Truck drivers	1.9	2.4	0.6
MSM	0.8	1.0	0.4
People who inject drugs	0.6	0.8	0.2

Table E5. Important characteristics of spots in cross-border sites

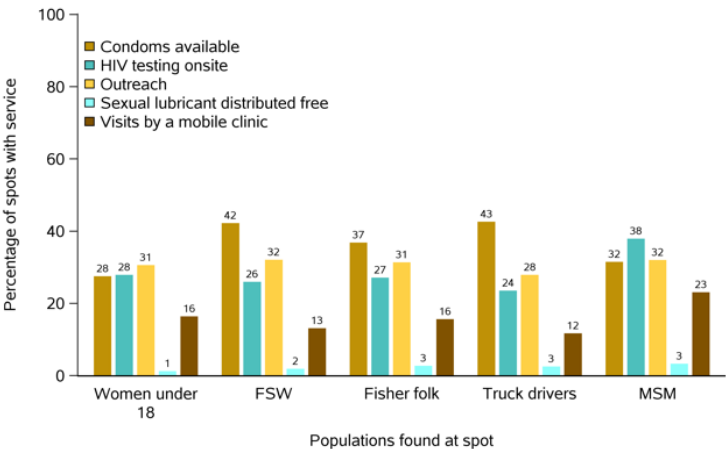
	All Sites n=883	Land Sites n=746	Lake Sites n=137
Alcohol sold on-site	63.8	64.6	59.1
FSWs live at spot	17.9	18.7	12.7
People have sex on-site	48.3	49.1	43.5
Spot Environs			
Truck stop	28.4	21.1	11.7
Landing site	13.7	7.9	49.4
Hotel complex	18.7	20.1	9.7

10. HIV prevention services were found at all cross-border sites, but gaps remain. Among these gaps is very low access to sexual lubricants. If access is increased, the efficacy of condom distribution programs could be enhanced.

Public spots offer opportunities to provide HIV prevention services directly to populations that may be underserved by traditional programs. While availability of prevention services at spots in the last six months seemed to be associated with the prevalence of high-risk behaviors at the spot (e.g., sex work, sex on-site, or alcohol use), gaps remain. For example, condoms were available at only 28 percent of spots visited by women under 18, 32 percent of spots visited by MSM, 37 percent of spots visited by fisherfolk, and just over 40 percent of spots visited by FSWs or truck drivers.

In addition, while many respondents reported that it was “easy to get condoms,” few respondents had a

Figure E11. Percentage of 833 spots in cross-border sites visited by mobile and vulnerable populations that offered specific HIV prevention services in the past 6 months



condom with them at the time of the interview and under one-third reported using a condom at last vaginal sex.

Only 3.4 percent of respondents reported that it was easy to get sexual lubricants, and distribution of free sexual lubricants in the last six months was reported at less than 3 percent of spots visited by women under 18, FSWs, fisherfolk, truck drivers, and MSM (Figure E11).

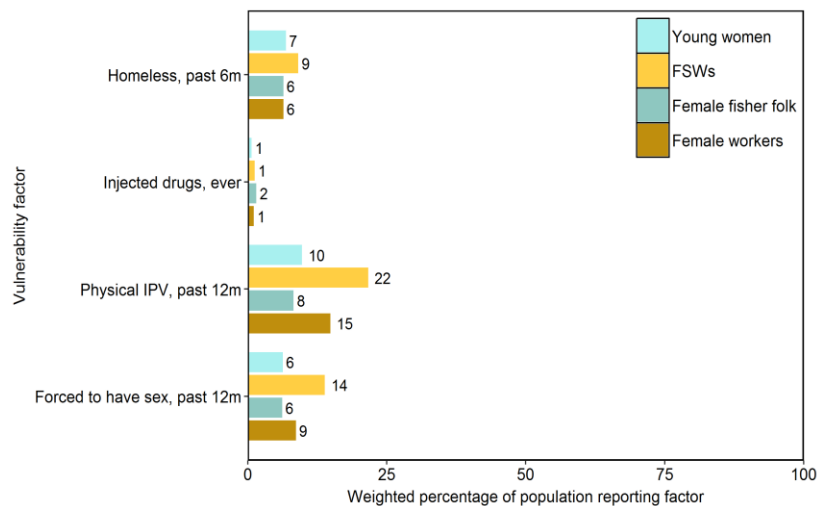
11. Mobile and vulnerable populations experienced homelessness, violence, and barriers to accessing routine health services.

Among the subgroups of women examined, FSWs and workers at spots were more likely than other women to report physical intimate partner violence in the past 12 months (22% and 15%, respectively), and forced sex in the past 12 months (14% and 9%, respectively).

Female fisherfolk were much more likely than other women to report experiencing barriers to accessing routine health care. Distance to services was the main barrier for female fisherfolk, experienced by 46 percent. Over 40 percent of female fisherfolk also reported barriers of time to get services, cost of services, cost of transport, and concerns about provider trustworthiness.

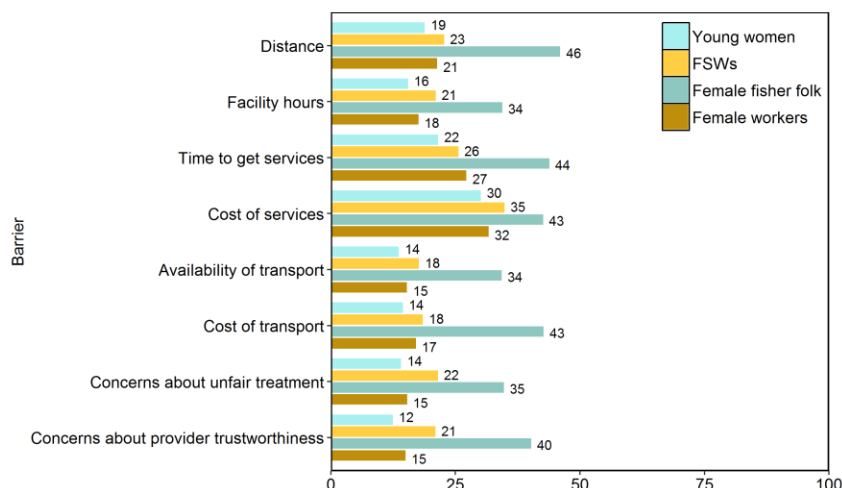
For young women, FSWs, and female workers at spots, the most frequently reported barrier was cost of services, followed by time to get services, and distance to services (Figure E13).

Figure E12. Vulnerability factors among women



Young women: n=1,654; FSWs, n=655; female fisherfolk, n=378; female workers, n=1,178

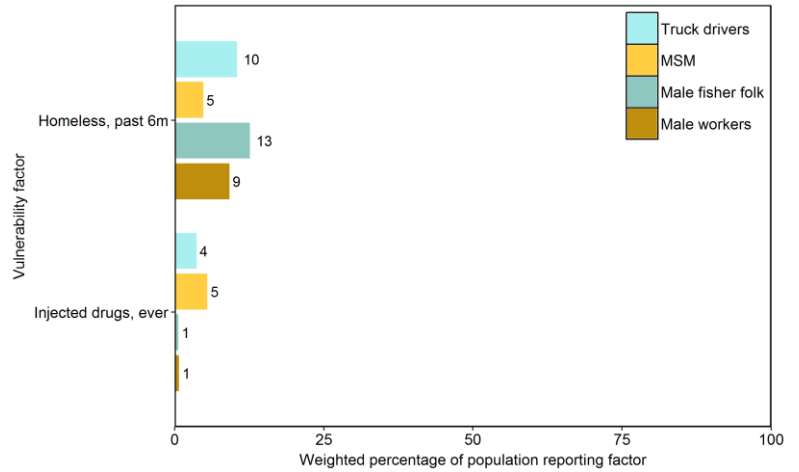
Figure E13. Barriers to accessing routine healthcare among women



Young women: n=1,654; FSWs, n=655; female fisherfolk, n=378; female workers, n=1,178

Among the subgroups of men examined, homelessness in the past six months was reported most frequently by male fisherfolk (13%), followed by truck drivers (10%), male workers at spots (9%), and MSM (5%). While 5 percent of MSM and 4 percent of truck drivers reported ever injecting drugs, only 1 percent of male fisherfolk and male workers at spots reported the same (see Figure E14).

Figure E14. Vulnerability factors among men

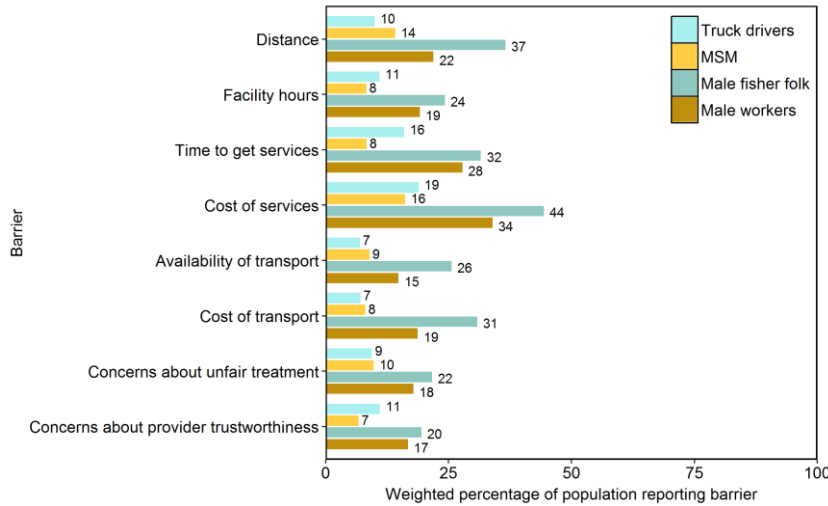


Truck drivers: n=192; MSM: n=92; male fisherfolk: n=903; male worker: n=1,287

Male fisherfolk were more likely than the other subgroups of men examined to report experiencing barriers to accessing routine healthcare services. The most frequently reported barriers among male fisherfolk were cost of services (44%), distance to services (37%), time to get services (32%), and cost of transport (31%). Between 20–26 percent also reported barriers of facility hours, availability of transport, and concerns about unfair treatment or provider trustworthiness.

As compared to truck drivers and MSM, a higher proportion of male workers at spots reported experiencing all of the eight barriers to accessing routine healthcare included in the survey. The most commonly reported barrier for all three groups was cost of services (Figure E15).

Figure E15. Barriers to accessing routine healthcare among men



Truck drivers: n=192; MSM: n=92; male fisherfolk: n=903; male worker: n=1,287

12. Mobile and vulnerable populations in cross-border sites also face gaps in non-HIV-related services, including family planning, maternal and child health, and TB control.

Family planning: Among women who were not currently pregnant and who did not want children in the next two years, only 64.4 percent reported using a modern family planning method. Notably, however, FSWs appear to have greater access to family planning than other women (Table E6).

Immunizations: Approximately 90 percent of children at facilities based at land cross-border sites and 80 percent of children at facilities based at lake cross-border sites who initiated the DPT sequence were estimated to have completed the sequence.

ANC: Among women at spots who were pregnant between January 2014 and May 2015, about two-thirds of young women and female fisherfolk completed the recommended four ANC visits, as compared to only 58 percent of FSWs (Figure E16).

Table E6. Of women who are not pregnant and do not want children in the next 2 years, percent using family planning

Population	n	Using a Modern Family Planning Method (Weighted %)
All women	1,545	64.4
Young women	617	56.3
FSWs	245	87.2
Female fisherfolk	146	62.4

Pregnancy outcomes: Among women at spots who were pregnant between January 2014 and May 2015, a lower proportion of FSWs reported a live birth outcome compared to other groups of women examined. Across the groups, a higher proportion of FSWs reported a stillbirth, miscarriage, or elective abortion. The proportion of female fisherfolk at spots reporting stillbirths, miscarriages, or elective abortions was lower than among women overall (Table E7).

Figure E16. ANC visits among women pregnant between January 2014 and May 2015

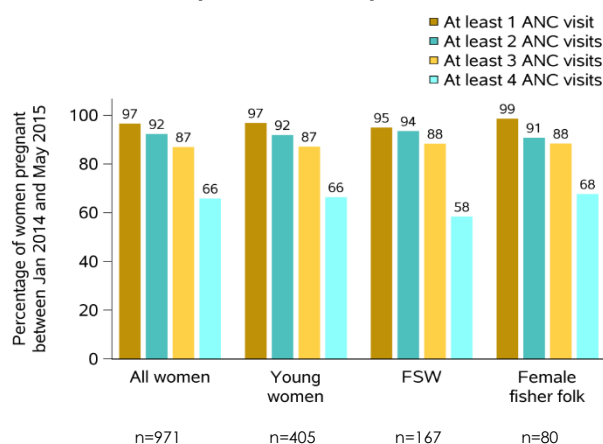


Table E7. Pregnancy outcomes among women pregnant between January 2014 and May 2015

	All Women n=971	FSWs n=405	Young Women n=167	Female Fisherfolk n=80
Live birth	88.5	77.3	87.8	95.4
Stillbirth	4.6	10.8	4.3	1.0
Miscarriage at <20 weeks	5.1	6.8	6.2	3.6
Elective abortion	1.8	5.1	1.8	0.0

PMTCT: Among 1,090 HIV-exposed infants enrolled in PMTCT programs at the 23 selected cross-border health facilities from June 2013 to May 2014, DBS samples were less likely to be collected at facilities based in land cross-border sites than those in lake cross-border sites. Nearly all exposed infants who had DBS taken by two months were confirmed negative. Among HIV-exposed infants *not* confirmed negative at 18 months

of age (n=526), those at land cross-border sites were more likely than those at lake cross-border sites to be confirmed positive, in care but never tested, or lost to follow-up.

TB: Over 10 percent of patients enrolling in TB treatment programs in 2014 (n=550) were lost to follow-up or had unknown outcomes at health facilities based at both land and lake cross-border sites.

Approximately 14 percent of people at spots living with HIV in cross-border sites (n=546) reported symptoms consistent with TB infection. FSWs with HIV (n=87) had the highest prevalence of TB-related symptoms (nearly 24%).

CONCLUSION

Cross-border sites in East Africa contain many interconnected populations of interest. Land and lake cross-border sites face distinct, but related, challenges to improve health for mobile, host, and vulnerable populations. Spot-based recruitment allowed for inclusion of all of these important groups in this study and consideration of contextual determinants of HIV risk and other health outcomes. Programs to improve health in cross-border sites should include components addressing community, facility, venue, and individual-level factors.

I. INTRODUCTION

MEASURE Evaluation, led by the University of North Carolina at Chapel Hill, conducted a cross-sectional study aimed at describing the health status and behaviors of mobile and vulnerable populations living in and/or travelling through 12 cross-border sites in the East African countries of Kenya, Rwanda, Tanzania, and Uganda. Mobile and vulnerable populations of interest include:

- Women, especially young women ages 15–24
- Female sex workers (FSWs), defined as women who reported exchanging sex for money in the past 12 months
- Fisherfolk
- Workers at “spots” (e.g., bars, pubs, hotels) where people socialize at cross-border sites
- Truck drivers
- Men who have sex with men (MSM), defined as men who had sex with at least one man in last 12 months
- People who inject drugs

Cross-border sites include traditional land border posts—such as Busia, Uganda/Busia, Kenya—as well as “lake border” sites. Lake border sites are defined as fishing communities where fisherfolk from different countries in the region are known to intermingle.

Over the course of data collection, the study team conducted quantitative and qualitative interviews at 23 health facilities; constructed a cohort of 3,646 people first enrolled in HIV care and treatment at a cross-border site in 2014; and interviewed 11,567 participants sampled from public places (spots) about their health behaviors and access to health services through a venue-based survey. Participants in the survey were offered an HIV test and, if positive, asked to provide dried blood spots (DBS) for viral load testing.

Results of the study will be used to characterize the health status and needs of mobile and vulnerable populations living and working in cross-border sites in East Africa, and to identify gaps in existing services for these groups. Learning about current health challenges, access to services, and risk behaviors in mobile and vulnerable populations is an important step in focusing interventions to increase survival, improve quality of life, and reduce HIV transmission at cross-border sites.

A. Background

Regional economic integration and trade are high on the political and development agendas of East African leaders who consider the development of transport corridors to be paramount to the success of regional trade and economic growth. Greater regional integration and increased trade are expected to enhance opportunities for income generation and employment, resulting in increased movement of people as they look for new and expanded opportunities in the region. However, as history has repeatedly shown, increased movement of humans, animals, and goods across nations leads to intensified transmission of infectious diseases, including HIV/AIDS. Infectious diseases do not respect political boundaries, and unless specifically addressed in health programming, more HIV infections throughout the region, especially in cross-border communities, may be an unintended consequence of increased integration and trade. Infectious diseases have the potential to dampen trade and even reverse economic growth. Health affects peoples’ ability to work, the type of work they can perform, and how long they can work. When a population experiences poor health outcomes, productivity can be reduced, leading to decreased trade and stunted economic development.

East and Southern Africa are the two regions most affected by the HIV/AIDS epidemic worldwide. East Africa alone is home to more than six million people living with HIV/AIDS. Although rates of HIV

prevalence in the East Africa region have been relatively stable for years, between 5 and 7 percent in the region's most affected countries, recent data from Uganda is beginning to show worrisome upward trends of HIV infection rates (Uganda Ministry of Health and ICF International, 2012; UNAIDS, 2013).

Women and vulnerable girls are a key population particularly affected by HIV. In several East, Central, and Southern African countries, HIV prevalence among young women is up to five times higher than among men in the same age cohort. Women have increased biological vulnerability but are also more vulnerable to infection due to social, economic, and cultural factors that limit their control over decisions related to their sexual and reproductive health (Quinn & Overbaugh, 2005).

Paid sex also contributes to the current HIV epidemic in East Africa—specifically in hotspot communities along major transport routes. Unemployment along these transport corridors approaches 70 percent (USAID, 2013) and in some communities, 78 percent of young females turn to sex work (Nzyuko, et al., 1997). An estimated 14 percent of new HIV infections in Kenya and 10 percent in Uganda are associated with sex work (World Bank, 2009; Wabwire-Mangen, Odiit, Kirungi, Kisitu, & Wanyama, 2009). Furthermore, these same women are affected by high rates of unintended pregnancies and must be reached with integrated family planning, reproductive health, and maternal health services, including prevention of mother-to-child transmission (PMTCT) (Ikamari, Izugbara, & Ochako, 2013; Elmore-Meegan, Conroy, & Agala, 2004).

Fisherfolk in low- and middle-income countries worldwide constitute the highest risk group for HIV/AIDS (Kissling, et al., 2005). Some of the earliest recorded cases of HIV/AIDS were in fishing communities on Lake Victoria in 1982 (Serwadda, et al., 1985). Recent data from studies around lakes in the region indicate higher HIV prevalence among fisherfolk compared to the general population and with other groups generally considered at high risk of HIV infection (Opio, Muyonga, & Mulumba, 2013).

Mobile individuals comprise another key population with heightened risk for HIV. While Africa's transport corridors serve as its economic lifelines, they are also significant routes of HIV transmission (Morris & Ferguson, 2006). Studies have documented high rates of HIV infection among truck drivers in East, Central, and Southern Africa ranging from a low of 10 percent to a high of 56 percent (Bwayo, et al., 1994; Mbugua, et al., 1995; Ramjee & Gouws, 2002; Kissling, et al., 2005; Delany-Moretlwe, et al., 2014). High-risk sexual behavior, including frequent unprotected sex with sex workers, alcohol abuse, gender-based violence, and anal intercourse with both women and men make these groups highly vulnerable to HIV infection (Morris & Ferguson, 2007).

Finally, studies have also shown that marginalized communities, and those in transport corridors, continue to be deficient of adequate health services (International Organization for Migration, 2010; International Organization for Migration, 2011; East African Community, 2015a; East African Community, 2015b). The vulnerability of such groups to HIV has been associated with an increase in infections due to the formation of complex sexual networks along transport corridors.

B. Objectives of the Study

The goal of the study is to characterize the health status and needs of mobile and vulnerable populations living and working in cross-border sites in East Africa, and to identify gaps in existing services for these groups. Specific objectives are to:

- 1) Describe the characteristics of cross-border sites with regard to the presence of mobile and vulnerable population groups
- 2) Estimate the size of mobile and vulnerable populations that socialize at venues (e.g., bars, hotels) in cross-border sites

- 3) Create maps of public spots where selected mobile and vulnerable populations (young women, fisherfolk, truck drivers) meet new sexual partners¹
- 4) Determine HIV prevalence among mobile and vulnerable population groups at cross-border sites, and examine the HIV testing and care and treatment cascades
- 5) Examine care and treatment cascades for tuberculosis (TB) testing and treatment, PMTCT, antenatal care (ANC), immunizations, and family planning (FP) services
- 6) Determine rates of loss to follow-up for HIV testing and treatment, TB treatment, ANC attendance, and immunization programs at selected cross-border health facilities
- 7) Describe the health services provided by selected cross-border health facilities, including outreach activities targeted to mobile and vulnerable populations, and explore challenges faced by these facilities in retaining patients in care

Results of the study can be used inform interventions focused on improving health outcomes among mobile and vulnerable populations living in and traveling through land and lake cross-border sites in East Africa.

¹ For ethical reasons, maps will not be created for groups engaging in highly stigmatized or illegal behavior, such as FSWs, MSM, and people who inject drugs.

II. METHODS

The study employs a mixed-methods approach combining quantitative and qualitative research techniques. Methods include a venue-based, cross-sectional, biobehavioral survey of patrons and workers and a health facility survey. Health and service delivery outcomes were measured at 12 cross-border sites through two data collection components:

- 1) Priorities for Local AIDS Control Efforts (PLACE), a venue-based, cross-sectional technique that recruits patrons and workers from public spots where populations of interest socialize for participation in a biobehavioral survey
- 2) A health facility survey consisting of a quantitative survey focused on services provided, a qualitative interview exploring experiences of healthcare workers based at facilities located in cross-border sites, and abstraction of clinical data to measure health indicators for HIV care and treatment, ANC, immunizations, prevention of mother to child transmission (PMTCT), and TB.

The general PLACE protocol can be found at <http://www.cpc.unc.edu/measure/tools/hiv-aids/place>.

A. Study Sites

Criteria for the selection of study sites included presence of cross-border movement and trade; high HIV/sexually transmitted infection (STI) prevalence; gaps in services; presence of key and vulnerable populations including migrants; and recognition by the East Africa Community (EAC) and partner states as a priority underserved cross-border area. In addition, criteria for lake cross-border sites included a high dependence on fishing for livelihood and the presence of beach management units. The study sites are listed below and shown in Figure 1.

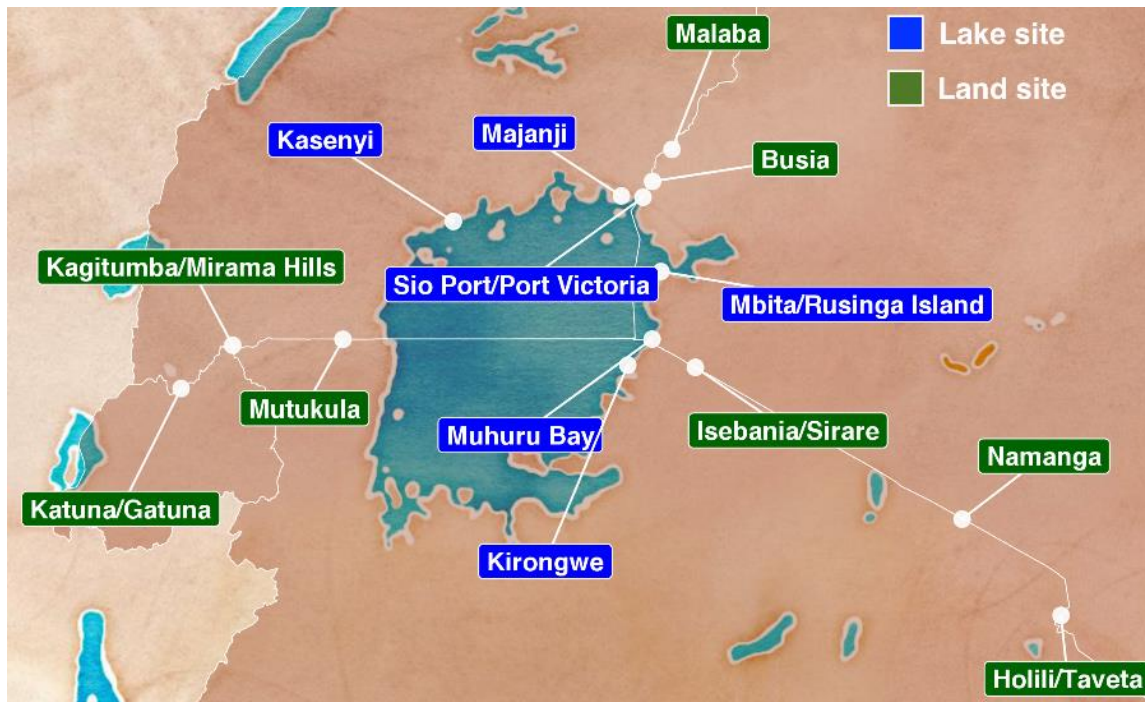
Land cross-border sites

- 1) Malaba, Kenya/Malaba, Uganda
- 2) Busia, Kenya/Busia, Uganda
- 3) Katuna, Uganda/Gatuna, Rwanda
- 4) Holili, Tanzania/Taveta, Kenya
- 5) Isebania, Kenya/Sirari, Tanzania
- 6) Mutukula, Uganda/Mutukula, Tanzania
- 7) Namanga, Kenya/Namanga, Tanzania
- 8) Kagitumba, Rwanda/Mirama Hills, Uganda

Lake cross-border sites

- 9) Sio Port/Port Victoria, Kenya/Majanji, Uganda
- 10) Muhuru Bay, Kenya/Kirongwe, Tanzania
- 11) Mbita and Rusinga Island, Kenya
- 12) Kasenyi, Uganda

Figure 1. Cross-border study sites



B. PLACE

The PLACE method identifies the public places or events known as spots (e.g., hotels, bars, markets, etc.) where populations of interest socialize and meet new sexual partners. These spots are potential intervention areas where the individuals most likely to transmit HIV can be accessed. Spots are identified by community members (community informants) and a knowledgeable person (spot informant) at a sample of spots interviewed about the spot. Next, patrons and workers at selected spots are interviewed about their sexual and health-seeking behaviors. Patrons and workers are also tested for HIV at that time using an HIV rapid test, and DBS samples are collected from HIV-positive participants for viral load testing. These three data collection steps of PLACE are described below in the context of this study.

PLACE Step 1: Community Informant Interviews

The data collection team interviewed up to 200 community informants at each of the 12 cross-border sites to identify spots where members of the populations of interest socialize and meet new sexual partners. Community informants are men and women knowledgeable about the movement and behavior of people in the area. Community informants included taxi drivers, food stand sellers, transport workers, truck drivers, and fisherfolk. The categories relevant to each site were determined in collaboration with local officials.

Community informants were recruited through purposive sampling, and research assistants were given targets for how many community informants from each category to interview. A minimal amount of information about the informant was collected in addition to the list of spots identified by the informant as places where mobile and vulnerable populations socialize and meet new sex partners.

PLACE Step 2: Spot Verification Interviews

For each cross-border site, a list of unique spots was generated from the community informant interviews. The list of spots was then sorted based on reported presence of FSWs, MSM, people who inject drugs, sex on-site, as well as the number of community informants reporting the spot. The sorted spots were assigned to priority categories for sampling (mandatory, high, medium, and lower priority) to facilitate oversampling of spots where community informants suggested that populations of interest were more likely to be found. At sites where community informants listed a total of 100 spots or fewer, all spots across all priority categories were visited for verification and spot informant interviews. At sites where more than 100 spots were listed, stratified random sampling was used to sample 100 spots for verification, with spots in the higher priority categories having a higher probability of selection.

At each of the 12 cross-border sites, research assistants visited sampled spots to verify their existence and gather information about the spot, such as the type of people who visit the spot, whether people meet new sexual partners at the spot, and if any HIV prevention activities occur at the spot. Spot informants were purposively selected based on their knowledge of the specific spot in question. Often the spot informant was the owner or manager of the spot. The geographic coordinates of the spot were also collected during the interview using global positioning system (GPS).

PLACE Step 3: Patron/Worker Interviews

Following spot verification and spot informant interviews, all spots that were found and operational were eligible to be sampled for patron/worker interviews, provided that management did not refuse participation. Forty spots across each site were sampled for patron/worker interviews. These 40 spots were distributed across the priority categories described above, again with spots in the higher priority categories having higher probabilities of selection. For each spot, an overall sampling probability was calculated using the known sampling fractions in each of the stratified random sampling stages.

As most spots were small, all patrons and workers were approached to participate in interviews. If more patrons or workers were present at a given venue than could feasibly be interviewed in the time allotted to research assistants, a systematic sample of patrons and a systematic sample of workers were approached and asked to participate. This process involved interval sampling, such that a large “X” was conceptually drawn through the venue and respondents were selected by using predetermined points in the physical space of the site along the X. An interval number, i , was calculated by counting the number along the X and dividing by the target number of interviews. The goal was to match the strategy to the layout of the venue so that a representative sample of patrons and workers was selected.

At each cross-border site, approximately 960 patrons/workers participated in interviews. Selected patrons and workers received HIV pretest counseling and a rapid HIV test if they consented (those that did not consent to an HIV test could still participate in an interview). While waiting for results, research assistants conducted an interview to gather sociodemographic information, health history, family information, sexual behavior, health-seeking behavior, and exposure to HIV prevention programs. After the interview, participants who were tested received their result and posttest counseling. Those with positive results were linked to care and offered viral load testing. Those who consented to viral load testing provided DBS samples that were sent to an in-country lab for viral load measurements. Viral load measurements were communicated back to the facility from which the local HIV counseling and testing staff were associated. Respondents were given a card with an identification (ID) code and facility name so they could obtain their viral load results.

C. PLACE Sample Size Determination

Quantitative data from approximately 960 participants in each cross-border site were used to estimate the prevalence of primary endpoints, including HIV prevalence, the prevalence of risk behaviors, and care-seeking behaviors. With an estimated lower bound on the population HIV prevalence of 6 percent, we expected to see a minimum of 57 cases of HIV per cross-border site, with most sites expected to have higher HIV prevalence. In addition, we expected to see more cases of HIV in each site than would have been expected under the general population prevalence, as the sampling strategy was optimized to recruit populations thought to be at high risk of HIV transmission. Given the lower bound on HIV prevalence (6%), we expected to be able to estimate the prevalence of HIV with a precision of +/- 2 percentage points, with precision of the estimates increasing with higher HIV prevalence in the study population.

Risk behaviors for HIV acquisition, health-seeking behaviors, and other behaviors of interest were expected to be very common in the populations of interest, therefore resulting in more precise estimates of the prevalence of these behaviors.

D. PLACE Response Rates

Across all sites, 11,567 patrons and workers were approached and asked to participate in the study. Overall, 11,428 (98.8%) agreed to participate in the survey and 10,549 (91.2%) agreed to an HIV test (Table 1).

Table 1. Number and proportion of people approached for patron/worker interviews at public spots who agreed to participate in a biobehavioral survey and HIV test (PLACE survey, 2016)

	N	%
Number approached	11,567	
Agreed to participate	11,428	98.8
Agreed to HIV test	10,549	91.2

E. Analysis of PLACE Baseline Data

To characterize key features of the populations of interest at cross-border sites, weighted proportions are reported. Except where noted otherwise, all percentages and proportions are fractions of the population of interest, rather than the study sample. The population of interest described here is the set of people who work in and/or socialize at public spots in the selected cross-border sites. Population proportions are estimated using survey sampling weights to account for the probability that a patron or worker was sampled to participate in the study and the frequency with which that person socializes in public spots. Weighted proportions and 95 percent confidence intervals accounted for clustering within spots and cross-border sites.

Sampling Weights

Sampling weights were used to weight the study sample to the population of interest: people visiting spots at the 12 cross-border sites. The weights were designed to account for variations in sampling probabilities across survey participants and spots. For example, individuals who were recruited at a spot that had a relatively low probability of selection were up-weighted to represent additional people who could have been recruited from similar spots had we visited all spots in the cross-border site.

Sampling weights were applied to spot-level and individual data. Unweighted, spot-level data reflect the distribution of spot characteristics in a sample of operational spots at the sites. Once weights are applied, results reflect the distribution of characteristics that would have been observed if all spots in a site had been visited or if a simple random sample of spots in the site had been assessed rather than a stratified random sample.

Sampling weights were also applied to the patron/worker data. Unweighted, patron/worker data reflect the distribution of population characteristics in a sample of male workers, female workers, male patrons, and female patrons present at a sample of spots at the time of data collection. With weights applied, the data reflect the distribution of population characteristics that would have been observed if a simple random sample of people at spots in cross-border sites has been taken, rather than a stratified random sample of people at a stratified random sample of spots.

Taken together, weighted data depict the characteristics of spots and populations at spots across the 12 cross-border sites included in the study.

Size Estimation

Key population size estimates were calculated from data collected in interviews of informants at the spots and of FSWs and MSM. Briefly, in addition to sampling weights, inputs for the estimates were:

- 1) The number of population members who come to the spot on a typical Saturday night between 8:00 p.m. and 12:00 a.m.
- 2) Among the population members who come to the spot on a typical Saturday night between 8:00 p.m. and 12:00 a.m., the number who go to more than one spot in the site during those hours
- 3) Among the population members who go to more than one spot in the site during those hours, the mean number of spots they visit in that time

Separately, for each cross-border site, the number of population member contacts at spots was estimated for FSWs, MSM, fisherfolk, truck drivers, young women, and people who inject drugs. This estimate describes the expected number of contacts that could be made with members of the defined population if all spots at the site were visited for a random two-hour period during the spots' hours of operation. The number of contacts was estimated as the sum of the sampling weights across respondents meeting the definition of the population of interest.

Size Estimation: Female Sex Workers

One objective of the study was to estimate the size of the FSW population. While sex work is a dynamic behavior rather than a static identity, to estimate the size of the FSW population, a female sex worker was defined as a woman who exchanged sex for cash in the preceding 12 months.

Because population members move in and out of the cross-border sites, population size estimates are expected to vary depending on the time dimension of the estimate. For this analysis, the FSW population size was first estimated for a typical Saturday night at each site, then additional data and assumptions were used to produce an estimate for a typical one-week period. Furthermore, estimates are expected to vary based on the inclusion or exclusion of population members who do not visit spots. Initial estimates of the FSW population size include only those at spots; however, additional data and assumptions allowed for inclusion of FSWs who do not visit spots in the site-specific size estimates.

Inputs for size estimation were given by spot informants at verified spots. They were also estimated by FSWs at a sample of spots where patrons and workers were interviewed and where FSWs were found among those interviewed.

At spots where estimates were provided by spot informants and FSWs, the estimate given by the FSW was used in the calculation, under the assumption that she was more likely to know the true number of FSWs coming to the spot. To account for FSWs who may be included in estimates at multiple spots on a Saturday

night, these spot-level estimates were then adjusted using estimates of the number of FSWs who go to other spots on Saturday nights and the mean number of other spots visited in the time frame. Inputs for this adjustment were provided by FSWs. Where multiple FSWs were found at a spot, the mean of their responses was used.

For spots where spot informants reported that FSWs visit the spot on Saturday nights, but where data were not collected from FSWs (either because the spot was not sampled for patron/worker interviews, or because no FSW was found during patron/worker interviews), the estimated number of FSWs provided by the spot informant was used in the size estimate. Given that FSWs did not provide data at these spots, the size estimates given by the spot informants were adjusted by a factor that described the mean discrepancy in the estimate observed at other spots where estimates from spot informants and FSWs were available. Using data from spots where spot informants and FSWs estimated the number of FSWs who visit the spot, for each spot, the size estimate given by the spot informant was divided by the size estimate given by FSWs. Across the site, the weighted mean of this factor was calculated. This adjustment factor was applied to the size estimates given by spot informants at spots where FSW did not provide an estimate. Due to concerns about sparse data, this adjustment factor was not applied to the FSW size estimates given by spot informants at sites where relevant data were collected from fewer than 10 FSWs. Spot estimates were then adjusted to account for FSWs who may be included in estimates at multiple spots on a Saturday night. Because these spots did not have data from FSWs, for each site, weighted mean values of the spot visit behavior variables were imputed to adjust estimates to account for FSWs visiting multiple spots on a Saturday night.

At spots that spot informants reported are not visited by FSWs on Saturday nights, and where data were collected from FSWs, the estimate given by the FSWs was used in the calculation. These spot-level estimates were adjusted to account for FSWs who may be included at multiple spots.

At spots that spot informants reported are not visited by FSWs on Saturday nights and, where spot-specific data were not collected from FSWs, a site-level, weighted mean estimate was calculated using data from similar spots but where FSWs data were available. This aims to account for FSWs who may be present at these spots but not recognized by spot informants.

The Saturday night estimates were summed for each site, and then two additional adjustment factors were applied. During patron/worker interviews, FSWs were asked to estimate the proportion of FSWs in the site who go to spots at least once a week but who do not go to spots on Saturday nights. These responses, along with the scaled patron/worker weights, informed a weighted adjustment factor to account for FSWs who could be found at spots during the course of a week but not typically on Saturday nights. In the interview, FSWs also estimated the proportion of FSWs who do not go to any spots during a typical one-week period. Responses were used to calculate a weighted adjustment factor to account for FSWs who are at the sites but would not be found at spots in a typical week. These stepwise adjustments produce an estimate of the total number of FSWs at a site during one week.

Size Estimation: Men Who Have Sex with Men

For this study, men who have sex with men was defined as men who had had sex with a man in the preceding 12 months. Inputs for size estimation were given by spot informants at verified spots. Due to sparse data, spot informant data were used to compute site-level size estimates. Estimates incorporated adjustment factors for MSM who visit more than one spot from Saturday from 8:00 p.m. to 12:00 a.m.

HIV Prevalence

To estimate HIV prevalence at cross-border sites, the weights described above were used in conjunction with a second set of weights to account for informative refusals of the HIV test. As noted in Table 1, HIV test refusals were not extensive. The second set of weights were used in all analyses describing HIV prevalence or that were restricted to people testing positive for HIV. This set of weights was designed to account for differences in measured characteristics between people who agreed to be tested for HIV during the study and those who declined to be tested. Weights were estimated as the stabilized inverse probability of agreeing to be tested, or $\pi = P(test)/P(test = 1|L)$, where L is a vector of measured participant characteristics including sex, age, cross-border site, country, whether the respondent was a worker or a patron at the spot, whether the respondent had reported previously testing positive for HIV, and whether the respondent had had an HIV test within the past 12 months. The numerator and denominator of the weights were estimated using logistic regression.

F. Health Facility Survey

The health facility survey was comprised of three components: 1) a quantitative survey, 2) a key informant interview, and 3) abstraction of medical record data. Each component is described in detail below.

Selection of Health Facilities

At each cross-border site, the main health facility on each side of the border was selected for inclusion in the study. The selection process involved discussion with district/county health officials to determine the health facility that offered the most comprehensive services of interest to the study (i.e., antiretroviral therapy [ART], PMTCT, TB, ANC, and immunization) and was perceived to be the most commonly used facility at the site. If ART/PMTCT services were not offered at the selected health facility during the periods of reference (2013–2014), the nearest health facility offering ART services for that period was included for abstraction of ART/PMTCT medical record data, and other supplementary data, should it be required.

Sample

A total of 23 public health facilities participated in the full health facility survey, with an additional two facilities participating in the abstraction of ART/PMTCT and TB medical record data only (Table 2).

Table 2. Type and location of facilities participating in the 2016 health facility survey

Type	Kenya	Rwanda	Tanzania [†]	Uganda	Total
Hospital	5	-	-	1	6
Health center	3	2	2	6	13
Dispensary	1	-	3	-	4
Total	9	2	5	7	23

[†]In addition, one hospital and one health center in Tanzania participated in abstraction of ART/PMTCT and TB data.

Quantitative Survey: Methods and Analysis

A brief quantitative survey was administered to a senior health official at each facility to determine the services currently provided by the facility, and if not provided, whether the facility referred clients to another nearby facility. The services included HIV and STI services; family planning, ANC/maternal and child health (MCH), and post-sexual and -gender-based violence care services; TB services; and drug abuse services. The survey included 42 unique services in total that were drawn from the *Minimum Package for HIV and AIDS and Other Health Services along the East African Community (EAC) Transport Corridors* (East African Community Technical Working Group on HIV and AIDS, TB, and STIs, 2015). Survey data were uploaded into Excel and the number of facilities offering or referring for each service was determined.

Key Informant Interviews: Methods and Analysis

Qualitative key informant interviews were held with a senior health facility staff member at each facility to explore outreach to key populations, retention in care, supply chain management, and cross-border communication. Interviews were recorded and transcribed into Microsoft Word. Interview transcripts were analyzed to identify relevant themes and patterns of responses related to the above topics.

Medical Records Review: Methods and Analysis

At each health facility, data were abstracted from registers, patient records, and monthly health management information system (HMIS) reports to calculate clinical HIV care and treatment indicators, as well as selected PMTCT, ANC, immunization, and TB indicators (Table 3).

Table 3. Health facility medical record data abstraction (Health facility survey, 2016)

Data	Population	Data Abstracted	Main Data Source
HIV	Patients entering HIV care in 2014	<ul style="list-style-type: none">• Visit dates through present• TB status on each visit• Whether on ART at each visit• CD4 and viral load at each visit, if available	<ul style="list-style-type: none">• Pre-ART register• Patient records
PMTCT	HIV-exposed infants born between June 1, 2013 and May 31, 2014	<ul style="list-style-type: none">• Number whose first DBS was collected by age 2 months• Outcomes at 18 months	<ul style="list-style-type: none">• PMTCT register• Patient records
ANC	Pregnant mothers having ANC visits in 2014 and 2015	<ul style="list-style-type: none">• Total number of first, fourth, and all ANC visits, at the facility, by month	<ul style="list-style-type: none">• Monthly HMIS report
Immunizations	Children immunized in 2014 and 2015	<ul style="list-style-type: none">• Total number of BCG, DPT-1/Pentavalent-1, DPT-3/Pentavalent-3 given by month	<ul style="list-style-type: none">• Monthly HMIS report
TB	Patients diagnosed with TB in 2014 by positive sputum	<ul style="list-style-type: none">• Number enrolled in treatment• Outcomes at one year	<ul style="list-style-type: none">• TB register

Analysis: Clinical HIV Care and Treatment Indicators

To estimate indicators related to HIV care and treatment from existing medical records, a cohort of people entering HIV care and treatment for the first time in 2014 was constructed. Using the pre-ART register at each health facility, research assistants recorded basic demographic information for 3,464 patients. This information included date of registration at the health facility, age at registration, sex, country of residence, and date of transfer out of the health facility or death, if available/applicable.

The health facility patient ID number was recorded to link information in the Pre-ART register with information from follow-up visits. Each patient was assigned a study ID number based on the cross-border site, health facility, and sequential order of registration. Patient data was abstracted in sequential order based on date of registration at the health facility. If more than 100 patients entered care in 2014, information was abstracted for at least 100 patients. Table 4 presents the counts of patients included in the cohort from each health facility.

Table 4. Counts of patients starting HIV care in 2014 with information abstracted from 23 health facilities at cross-border sites (Health facility survey, 2016)

Cross-border Site	Health Facility	Count
Malaba, Kenya	Malaba Dispensary	126
Malaba, Uganda	Malaba Health Center III	199
Busia, Kenya	Busia County Referral Hospital	100
Busia, Uganda	Busia Health Center IV	199
Katuna, Uganda	Kamuganguzi Health Centre	122
Gatuna, Rwanda	Rubaya Health Centre	5
Taveta, Kenya	Taveta Hospital	144
Holili, Tanzania	Holili Health Center	71
Sio Port/Port Victoria, Kenya	Port Victoria Sub-County Hospital	109
Majanji, Uganda	Lumino Health Center	141
Muhuru Bay, Kenya	Muhuru Health Centre	140
Kirongwe, Tanzania	Bubombi Dispensary	91
Isebania, Kenya	Isebania Health Center	149
Sirari, Tanzania	Sirari Health Center	88
Mutukula, Tanzania	Mutukula Dispensary	33
Mutukula, Uganda	Mutukula Health Center III	116
Namanga, Kenya	Namanga Health Center	160
Namanga, Tanzania	Namanga Dispensary	45
Kagitumba, Rwanda	Kagitumba Health Center	30
Mirama Hills, Uganda	Kitwe Health Center	100
Mbita and Rusinga Island, Kenya	Tom Mboya Level IV Hospital	113
Mbita and Rusinga Island, Kenya	Mbita Sub-County Hospital	100
Kasenyi, Uganda	Entebbe General Hospital	1,083
Total		3,464

For each patient identified in the pre-ART register, individual patient HIV care and treatment cards were examined. For each clinic visit, research assistants recorded the date; laboratory tests; CD4 cell counts and viral load measurements, if available; whether the patient received ART; and information on TB status (negative, suspected, or confirmed). Characteristics of patients registered at the health facility in 2014 were summarized using descriptive statistics. Specifically, the distribution of age, sex, and country of origin among eligible patients was summarized. Next, the time from entry into care at the health facility to each of several endpoints along the HIV care and treatment cascade (or continuum of care), including disengagement from care, ART initiation, first viral load, and time retained in care and on ART were estimated. For analyses of patient care over time, the cohort was limited to 1,904 patients who entered care in 2014 and had follow-up information recorded in the study database. Follow-up information was recorded for a subset of the cohort described.

Time to Disengagement from Care

Time to disengagement from care, defined as time to the first six-month gap in care, was examined by estimating the cumulative probability of having a six-month gap in care over time. It is important to note that disengagement in care could result from a patient's dropping out of care at the facility, transferring care to another facility without documenting the transfer, or the patient's death. Therefore, the cumulative probability of disengagement from care should be considered the sum of the cumulative probabilities of each of these events. For this analysis, patients were followed from entry into care until disengagement from care, documented transfer to another health facility, or administrative censoring on October 1, 2016.

Time to ART Initiation

Time to ART initiation was similarly examined by estimating the cumulative probability of initiating treatment over time since entry into care, treating disengagement from care at the health facility for any reason other than documented transfer to another facility (i.e., loss to care, undocumented transfer, or death) as a competing event. While it is possible that patients who were lost to care at the health facility where they were enrolled without a documented transfer later initiated treatment elsewhere, here the focus is on the cumulative probability of initiating treatment at the facility where they were enrolled. For this analysis, patients were followed from entry into care until treatment initiation, disengagement from care, or administrative censoring on October 1, 2016.

The times for the two outcomes (disengagement from care and ART initiation) were compared between strata of patients defined by patient and health facility characteristics using hazard ratios and 95 percent confidence intervals. To account for the competing risks identified above for each outcome, subdistribution hazard ratios were estimated using the Fine and Gray model (Fine & Gray, 1999; Lau, Cole, & Gange, 2009; Andersen, Geskus, de Witte, & Putter, 2012).

Viral Load Monitoring

Viral load monitoring is an important component of ongoing HIV care after treatment initiation, yet viral load assays are rarely available. To measure the capacity of the health system to monitor viral loads, the time to (and cumulative probability of having) a first viral load measurement was estimated.

Time Retained in Care and on ART

Finally, time retained in care and on ART was estimated by subtracting the probability of becoming disengaged from care after ART initiation from the cumulative probability of initiating ART.

Analysis: Selected PMTCT, ANC, immunization, and TB indicators

To evaluate the effectiveness of PMTCT programs at cross-border sites, frequencies of treatment outcomes were calculated for 1,592 HIV-exposed infants enrolled in PMTCT treatment programs from June 1, 2013–May 31, 2014 at the selected health facilities.

To examine access to ANC care at cross-border sites, data were gathered on first, fourth (the recommended number of visits), and total ANC visits at selected cross-border health facilities from January 1, 2014 to December 31, 2015. Total numbers of visits in this period are shown in Table 5.

Table 5. ANC visits at 23 cross-border health facilities from January 2014 to December 2015 (Health facility survey, 2016)

Visits	Number
Total ANC visits	150,817
First ANC visits	58,118
Fourth ANC visits	19,469

The study team developed a proxy measure to estimate the proportion of pregnant women who accessed ANC services who were retained in ANC for the full four recommended visits from aggregate health facility data. The proportion retained in ANC services was estimated as the number of fourth ANC visits during each month of the study period divided by the number of first ANC visits conducted six months prior. For example, the reported proportions for June 2014 are the total number of women seeking a fourth ANC visit in June 2014 divided by the total number of women seeking a first ANC visit in January 2014.

To examine loss to follow-up from immunization programs, data were gathered from the selected cross-border health facilities on the number of infants who received DPT-1 in 2014 and 2015, by month, and the number who received DPT-3 four months later. Individual-level data were not available, rather, the team collected counts, by month, of infants receiving the DPT-1 and DPT-3 immunizations. The proportion of infants completing the immunization sequence was estimated by dividing the number of infants receiving DPT-3 in each month by the number of infants receiving the DPT-1 vaccine at that health facility four months earlier. For example, the reported proportion of infants completing the DPT sequence in January 2015 is the total number of infants who received the DPT-3 vaccine in that month divided by the total number of infants who received the DPT-1 vaccine in September 2014.

For TB, frequencies of treatment outcomes were calculated for 1,419 persons who enrolled in TB treatment programs from January 1 to December 31, 2014 at the selected health facilities.

G. Fieldwork and Training

The study was implemented by Makerere University School of Public Health (MakSPH) under the guidance of MEASURE Evaluation. Country co-principal investigators were based at MakSPH, Kenya Medical Research Institute (KEMRI), the Rwanda Military Hospital, and the National Institute for Medical Research (NIMR), Tanzania.

Training of Site Supervisors and Pilot Test

MEASURE Evaluation and the MakSPH core team (comprised of the Principal Investigator, three co-investigators, and two field coordinators) trained 13 site supervisors on the survey protocol during a week-long training held in May 2016. Sessions included research ethics; interviewing techniques; team building; data management; use of tablets; supervisor responsibilities; and sampling; as well as sessions devoted to each step of data collection (PLACE Steps 1–3 and the three components of the health facility survey: the quantitative survey, qualitative interview, and data abstraction from clinical records).

MEASURE Evaluation and MakSPH then conducted a 12-day pilot of the full study protocol in Kisoro District, Uganda May 22–June 3, 2016 focused on the Kyanika border post with Rwanda and the Bunagana border post with the Democratic Republic of Congo. A team of six local research assistants (data collectors) and six HIV counselor and testers from Kisoro District were recruited and trained. Site supervisors worked in teams to practice supervising each step of data collection. Daily debriefs were held with the MakSPH core team and site supervisors to discuss experiences and challenges and agree on solutions and the way forward. Following the pilot, the study training manual, data collection tools, tablet forms, and data management forms were revised and finalized.

Inception Visits

Prior to data collection, the MakSPH field coordinators visited each of the 12 study sites to conduct half-day meetings with key stakeholders. Key stakeholders included local authorities (e.g., immigration, security, customs, and health) on both sides of the border. In most cases, the country co-principal investigator also attended. The inception visits aimed to create awareness about the study and gain the required approval and collaboration from site authorities; recruit a team of qualified research assistants and HIV counselors and testers; and secure local clearance for cross-border movement during data collection.

Training and Data Collection

Data collection occurred June 2016–January 2017. At each site, one to two field coordinators and two to three site supervisors trained a team of local research assistants and HIV counselors and testers on the PLACE method. Training occurred in phases. In the first phase, the local team was provided with an overview of the

protocol, trained on human subjects' protection, and PLACE—Step 1. Following this training, research assistants carried out PLACE—Step 1. The research assistants were then trained on tablet use and PLACE—Step 2, after which they implemented this step. The research assistants and HIV counselors and testers were then trained on PLACE—Step 3. They then implemented this final PLACE step.

Site supervisors generally administered the health facility quantitative survey and qualitative interview themselves. Site supervisors led the abstraction of medical record data, training a subset of research assistants on how to abstract HIV, PMTCT, TB, ANC, and immunization data using registers, medical records, and HMIS reports while at selected health facilities.

Data Quality Control

Data quality was ensured at several levels. At the tablet level, survey forms were programmed so that most questions could not be skipped. Data validation checks were also programmed into the survey, which required review of unlikely values or prevented research assistants from moving forward with the survey until errors were corrected. Site supervisors monitored research assistant performance by observing interviews and reviewing survey responses in the tablet for completeness and consistency with fieldwork data management forms before finalizing and transmitting questionnaires to a secure MEASURE Evaluation server.

Throughout data collection, a MEASURE team member carefully reviewed incoming PLACE data and communicated regularly with site supervisors to correct errors. Selected quality checks included:

- Ensuring correct execution of sampling of up to 100 spots per site for verification
- Communicating with supervisors to resolve discrepancies in spot ID codes
- Reviewing the outcomes of spot verification visits as entered by site supervisors in an Excel sampling workbook against tablet data, and addressing discrepancies with site supervisors
- Ensuring correct execution of sampling of up to 40 spots per site for patron/worker interviews
- Working with site supervisors to correct duplicate patron/worker ID codes and to address unexpected gaps in the sequence of ID codes
- Drawing site supervisors' attention to research assistants with high rates of interview refusals and/or high rates of HIV testing refusals among their respondents for retraining

A MEASURE team member also monitored medical record review data throughout data collection by reviewing incoming data for completeness and following with up with site supervisors to obtain complete data (if available at the health facility) and address errors. In addition, when viral load results were received, a MEASURE team member referenced paper-based data management forms obtained from the field team to verify that all DBS results were matched to the correct patron/worker.

H. Confidentiality

The tablets used for data collection were password protected and their hard drives were encrypted. Supervisors transmitted completed surveys (encrypted) to the secure MEASURE Evaluation server whenever they had Internet access. Once transferred, data were stored on a secure server at MEASURE Evaluation. To ensure data protection and confidentiality across the study, all field team members, including research assistants and HIV counselors and testers, signed a confidentiality agreement and committed to using reasonable data protection measures to protect the data. When data collection was complete, tablets were returned to MEASURE Evaluation, checked for completeness of data delivery, and cleared of all survey data. All paper forms used during implementation of the survey were stored in locked file cabinets.

I. Informed Consent

The study protocol was reviewed and approved by the University of North Carolina's institutional review board (study number 15-3234). The study protocol was also reviewed and approved by KEMRI in Kenya (Protocol Number NON-KEMRI 522 approved June 13, 2016); the Rwanda National Ethics Committee (RNEC) (Protocol Number 644/RNEC/2016 approved September 16, 2016); NIMR in Tanzania (Protocol Number NIMR/HQ/R.8a/Vol. IX/2187 approved May 4, 2016); and Makerere University in Uganda (Protocol Number HDREC 388 approved April 5, 2016). All data collection personnel (field coordinators, site supervisors, research assistants, and HIV counselors and testers) were trained on human subjects' protection. Informed consent was obtained from all participants prior to their participation in the study.

III. CHARACTERISTICS OF SPOTS WHERE MOBILE, VULNERABLE, AND HOST POPULATIONS SOCIALIZE IN CROSS-BORDER SITES

Cross-border land and lake sites are important mixing grounds for mobile and host populations. Due to their geographic location and economic activities, cross-border sites contain high numbers of mobile and vulnerable populations, including young women, FSWs, fisherfolk, people who work at spots, truck drivers, MSM, and people who inject drugs. These populations visit public places and events (spots) to socialize, meet new sex partners, buy or sell sex, and/or engage in commerce. These spots present excellent opportunities for interventions to improve health and limit HIV transmission. This section examines the characteristics of spots where mobile, vulnerable, and host populations socialize and describes coverage of HIV prevention activities at these spots.

At each cross-border site, approximately 200 community informants were asked to name spots people visit to socialize, meet new sex partners, or buy or sell sex. At each cross-border site, up to 100 spots were sampled for verification to determine if the spot was open/operational, how long it had been operational, its busiest days of operation, what populations visited the spot, and whether HIV prevention activities occurred at the spot. Of the 1,769 spots identified by community informants across all 12 cross-border sites, 1,161 spots were sampled for verification. Research assistants collected data at 883 of these spots; this is the subset of spots successfully located, in operation, and where a consenting spot informant was found. Results from the sampled spots were weighted to represent results from all identified spots in the 12 cross-border sites.

Approximately half of spot informants (50.7%) were men, and the average age was 32.8 years. Nearly all informants (94.2%) said that they worked at the spot that they were describing, and 90.9 percent reported that they either visited the spot daily or lived at the spot.

A. Characteristics of Spots

Most spots that people visit to socialize, meet new sex partners, or buy or sell sex were bars/pubs (39.7%), followed by hotels/guest houses/lodges (29.0%). At land cross-border sites, a larger proportion of spots were hotels/guest houses/lodges (31.3%) as compared to those at lake cross-border sites (14.9%). At lake cross-border sites, beaches, video/cinema, shopping centres/malls, and markets each comprised a higher proportion of spots than at land cross-border sites (Table 6).

The majority of spots (67.8%) have been in operation for more than two years. Saturday is the day when the greatest number of people reportedly visit spots (33.4%) at both land and lake cross-border sites. However, Saturdays were reported more frequently as the busiest day at land cross-border sites (35.0%) than lake cross-border sites (23.4%). At lake cross-border sites, Mondays and Thursdays were more frequently reported as busiest days (Table 7).

At land cross-border sites, most spots were situated at truck stops (31.1%) or hotel complexes (20.1%), while most spots at lake cross-border sites were situated near landing sites (49.4%). Alcohol was sold at just under two-thirds of all spots. FSWs were reported to live at 17.9 percent of spots, and people were reported to have sex on-site at approximately half of all spots (Table 7).

Table 6. Types of spots people visit at cross-borders sites to socialize, meet new sexual partners, or buy or sell sex (PLACE survey, 2016)

	Overall (n = 883) Weighted %	Land Sites (n = 746) Weighted %	Lake Sites (n = 137) Weighted %
Bar/pub	39.7	40.2	36.5
Night club/disco	2.2	2.6	0.0
Brothel	0.2	0.1	0.5
Truck stop	1.5	1.8	0.0
Lorry/railway station	0.1	0.0	0.6
Hotel/guest house/lodge	29.0	31.3	14.9
Sex worker street	0.6	0.7	0.0
Beach	2.4	0.8	12.5
Gym	0.1	0.1	0.0
Park	1.0	1.1	0.0
Construction site	0.6	0.6	0.5
Recreational/game centre	0.5	0.5	0.5
Video/cinema	2.0	1.6	4.7
Kiosk/store/shop	1.1	1.3	0.0
Hair salon	1.0	1.0	0.6
Market	2.6	2.3	4.4
Shopping centre/mall	0.6	0.7	5.3
Fast food/restaurant	4.1	3.9	0.0
Internet café	0.5	0.5	0.0
Church/temple/mosque	0.4	0.4	0.0
Campus/school	0.6	0.3	2.1
Tourist attraction	0.4	0.5	0.0
Private house	0.2	0.3	0.0
Cultural event	0.1	0.1	0.0
Party (event)	0.4	0.5	0.0
Other	8.2	6.8	16.9

Table 7. Characteristics of spots people visit at cross-border sites to socialize, meet new sexual partners, or buy or sell sex (PLACE survey, 2016)

	Overall (n = 883) Weighted %	Land Sites (n = 746) Weighted %	Lake Sites (n = 137) Weighted %
Length of time in operation			
Less than 1 year	12.4	12.7	10.3
1 to 2 years	17.3	17.7	15.3
More than 2 years	67.8	67.1	71.7
Busiest day			
Monday	7.8	6.6	15.2
Tuesday	3.6	3.6	3.7
Wednesday	5.5	5.8	3.3
Thursday	5.6	4.1	14.8
Friday	15.5	15.1	17.5
Saturday	33.4	35.0	23.4
Sunday	10.6	10.8	9.4
All days are equally busy	15.0	15.7	10.7
Spot environs			
Truck stop	28.4	31.1	11.7
Landing site	13.7	7.9	49.4
Hotel complex	18.7	20.1	9.7
Alcohol sold on-site	63.8	64.6	59.1
FSWs live at spot	17.9	18.7	12.7
People have sex at the spot	48.3	49.1	43.5

B. Percentage of Spots Visited by Mobile and Vulnerable Populations

During spot verification, informants reported on the presence of several groups of interest at the spots. Girls under age 18 were reported to visit 34.0 percent of all spots, including 47.9 percent of spots at lake sites. Men looking for women who will sell sex, and women looking to sell sex, were reported to visit just under half of spots overall. Women looking to exchange sex for gifts and favors were reported to visit 43.9 percent of spots, including 53.7 percent of spots at lake cross-border sites. Men looking to sell sex were reported to visit 14.0 percent of spots.

Fisherfolk were reported to visit 44.7 percent of all spots, including 91.8 percent of spots located at lake cross-border sites. Truck drivers were reported to visit 69.7 percent of spots, including 71.3 percent of spots at land cross-border sites and 60.2 percent of spots at lake cross-border sites. People who inject drugs were reported to visit 6.2 percent of spots, and people experiencing homelessness were reported to visit 35.2 percent of spots.

Men and women were reported to visit approximately two-thirds of spots to meet partners of the opposite sex, and men were reported to visit 6.7 percent of spots to meet male partners (Table 8).

Table 8. Percentage of spots visited by mobile and vulnerable populations at cross-border sites (PLACE survey, 2016)

	Overall (n = 883) Weighted %	Land Sites (n = 746) Weighted %	Lake Sites (n = 137) Weighted %
Girls under age 18	34.0	31.8	47.9
Women come to sell sex	45.4	44.5	50.9
Women looking for men who will give gifts/favors for sex	43.9	42.3	53.7
Men looking for women who sell sex	48.2	46.7	57.7
Fisherfolk	44.7	37.1	91.8
Truck drivers	69.7	71.3	60.2
People who inject drugs	6.2	6.5	4.4
People who are homeless	35.2	33.3	46.9
Women meet new male partners	61.3	60.1	69.3
Men meet new female partners	65.3	64.5	70.7
Men meeting male partners	6.7	6.9	5.5
Men come to sell sex	14.0	13.8	14.9

C. HIV Prevention Activities at Spots

Spot informants were asked about specific HIV prevention activities that had taken place at the spot in the past six months (Table 9). Across all spots, there was an average of 2.0 (95% CI: 1.8, 2.1) HIV prevention activities in the six months preceding the survey (Figure 2). There was a higher mean number of prevention activities in lake cross-border sites (2.3; 95% CI: 1.8, 2.8) as compared to land cross-border sites (1.9; 95% CI: 1.7, 2.1).

The most common HIV prevention activities in the past six months were distribution of free male condoms (37.5% of spots) and sale of condoms at the spot (30.3% of spots). The least common activities were distribution of free sexual lubricant (2.1% of spots), peer educators for MSM (1.6% of spots), and needle exchanges (0.5% of spots).

Several prevention activities were more commonly reported at lake than land cross-border sites—HIV testing, outreach workers, safe-sex education, mobile clinics, male circumcision, and other prevention activities.

Although in the past six months only 0.5 percent of spots had needle exchange programs, such programs were more likely to be reported in spots visited by people who inject drugs. Of spots visited by people who inject drugs, 5.2 percent (95% CI: 0.0%, 11.0%) had a needle exchange program in the past six months. By comparison, this figure was 0.1 percent at spots not visited by people who inject drugs.

Table 9. Percentage of spots in cross-border sites that have offered specific HIV prevention services in the past 6 months (PLACE survey, 2016)

	Overall (n = 883) Weighted %	Land Sites (n = 746) Weighted %	Lake Sites (n = 137) Weighted %
Free male condoms	37.5	37.9	35.0
Free female condoms	7.7	8.1	5.5
Free sexual lubricant	2.1	2.2	1.6
Condoms for sale	30.3	30.1	31.0
HIV testing	22.0	21.0	28.5
Safe sex education	21.0	20.5	24.2
Outreach workers	20.2	19.6	24.3
Peer educators for FSWs	14.4	14.9	11.5
Peer educators for MSM	1.6	1.2	3.9
Mobile clinic	11.7	10.2	20.9
Needle exchange	0.5	0.6	0.0
Male circumcision	10.4	8.6	21.2
Other prevention activities	17.9	16.9	23.8

Figure 2. Average number of HIV prevention services per spot in the past 6 months in cross-border sites (PLACE survey, 2016)

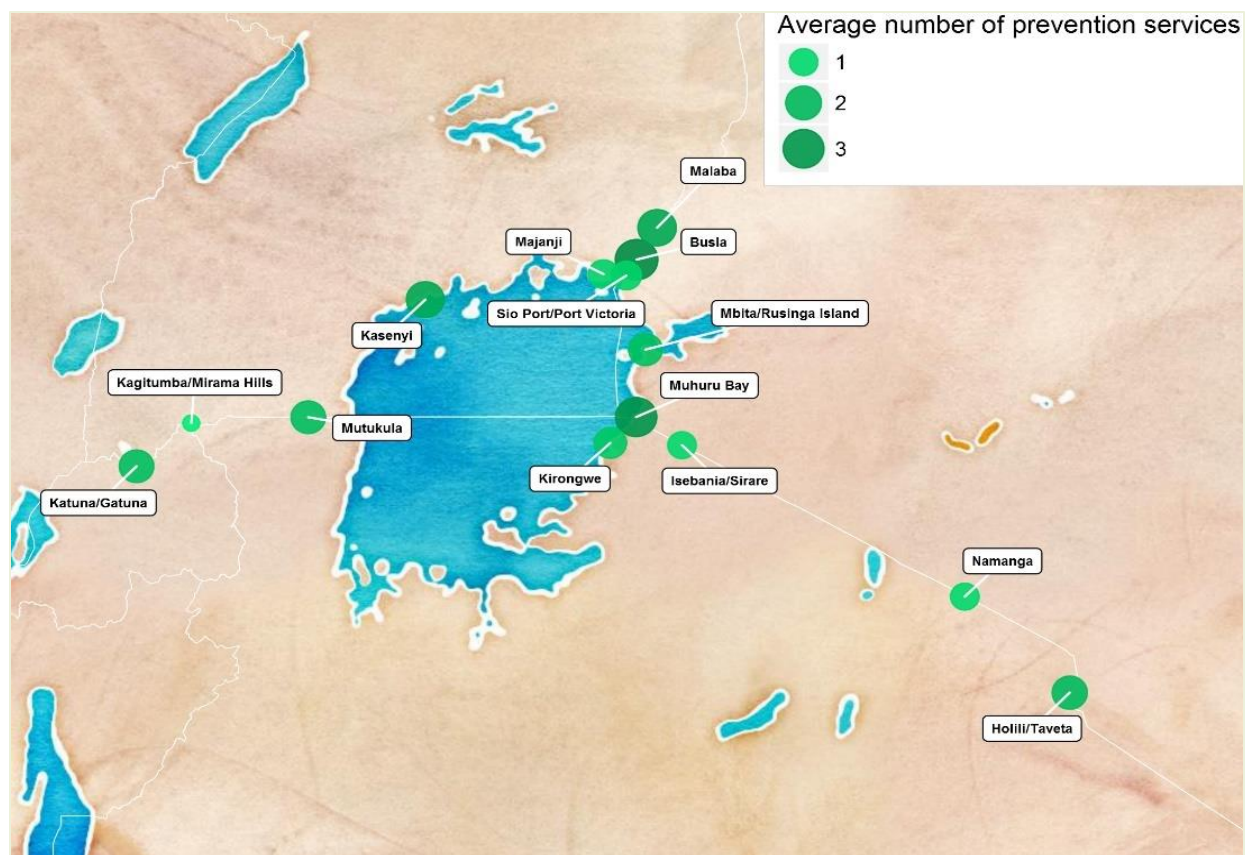


Figure 3 presents the percentage of spots visited by mobile and vulnerable populations that have offered specific prevention services in the past six months. Condoms were available at over 40 percent of spots visited by truck drivers and FSWs, 37 percent of spots visited by fisherfolk, 32 percent of spots visited by MSM, but only 28 percent of spots visited by girls under 18. Outreach was provided at approximately 30 percent of spots visited by all five of the mobile and vulnerable groups of interest. On-site HIV testing was provided at 38 percent of spots visited by MSM, but only at approximately one-quarter of spots visited by the other four mobile and vulnerable groups. Mobile clinics were found at a small percentage of spots and were more prevalent at spots visited by MSM than by other groups examined. Free sexual lubricant was only provided at a very small number of spots (3% or less).

Figure 4 shows the percentage of spots in cross-border sites offering prevention services in the past six months by important site characteristics. Condoms were reported to be available at nearly 60 percent of spots where FSWs live or where sex occurs onsite. They were also available at approximately 50 percent of sites located at hotel complexes or where alcohol was sold, but only at approximately 40 percent of spots located near truck stops and 32 percent of spots located near fish landing sites.

Outreach occurred at 37 percent of spots where FSWs live, and at approximately 25–30 percent of spots that had sex on-site, sold alcohol, or were located at hotel complexes, fish landing sites, or truck stop areas. On-site testing for HIV was more prevalent at spots where FSWs live. Just over 35 percent of these spots offered on-site testing, compared to only approximately one-quarter of spots that had sex on-site, sold alcohol, or were located near hotel complexes, fish landing sites, or truck stop areas.

Mobile clinics visited 20 percent of spots located near fish landing sites and 16 percent of spots where FSWs live, but only 12–13 percent of spots located at hotel complexes or near truck stops, or where there was sex on-site or alcohol was sold. Provision of free sexual lubricants was rare, and occurred at only 4 percent of spots where FSWs live or where there is sex on-site, 3 percent of spots that sell alcohol, 2 percent of spots located at near fish landing sites or truck sites, and only 1 percent of spots located near hotels.

Figure 3. Percentage of 833 spots in cross-border sites visited by mobile and vulnerable populations that have offered specific HIV prevention services in the past six months (PLACE survey, 2016)

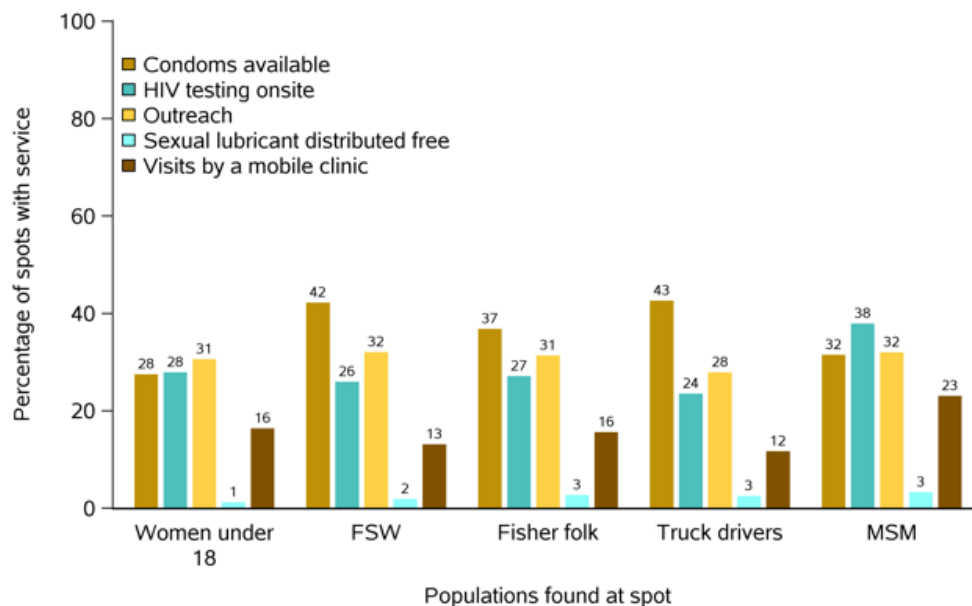
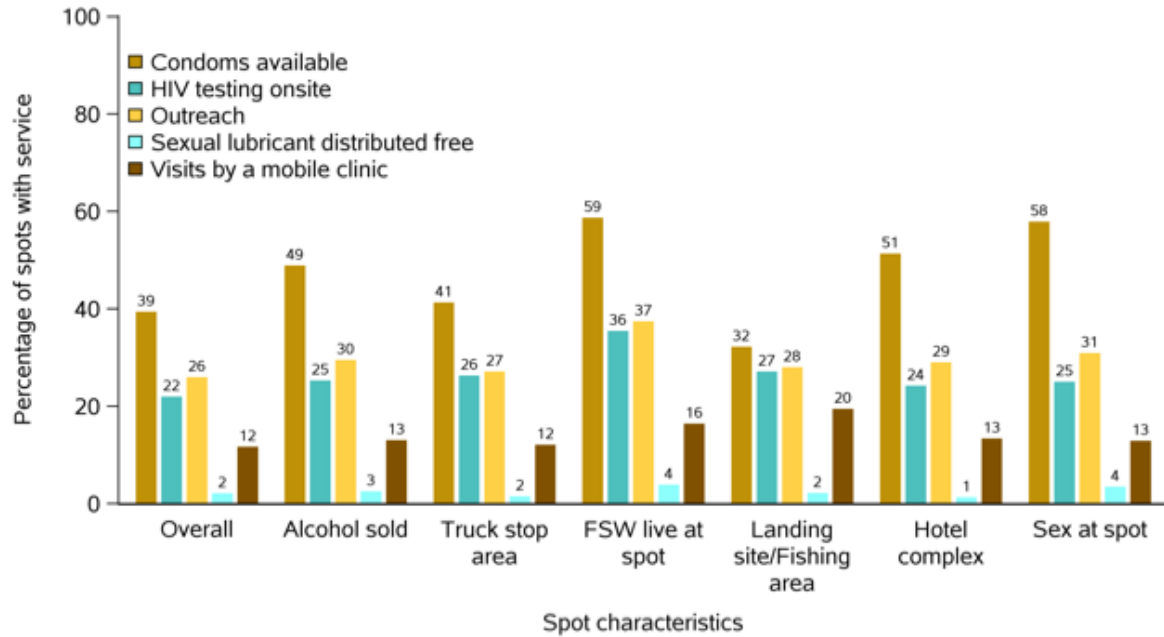


Figure 4. Percentage of 833 spots in cross-border sites offering HIV prevention services in the past 6 months by important site characteristics (PLACE survey, 2016)



Chapter 3 Key Points

- Key population groups socialize at a diverse range of public spots in cross-border sites, and mixing between mobile, host, and vulnerable populations is common.
- Many of these spots serve alcohol, offer opportunities for sex on-site, and/or are visited by people looking to buy or sell sex.
- Availability of prevention activities at spots seems to be associated with the prevalence of high-risk behaviors at the spot (e.g., sex work, sex on-site, or alcohol use).
- However, gaps remain. For example, over 40 percent of spots with sex on-site or FSWs living at the spot did not have condoms available, and access to sexual lubricants was very low.

IV. CHARACTERISTICS OF MOBILE, VULNERABLE, AND HOST POPULATIONS AT SPOTS IN CROSS-BORDER SITES

Because cross-border sites are important mixing grounds for host and mobile populations, patrons and workers socializing or working at spots in cross-border sites were interviewed to gather basic demographic information and information about their health, health-seeking behavior, mobility, and sexual behavior. This section describes the characteristics of people at spots overall and for specific populations of interest, including young women ages 15–24, FSWs, fisherfolk, workers at spots, truck drivers, MSM, and people who inject drugs. In addition, residents and nonresidents of the cross-border sites are compared. Results were weighted to estimate the populations of interest that would be found at spots (including those not sampled) across the 12 cross-border study sites.

A. Mobile and Vulnerable Populations at Land and Lake Cross-Border Sites

Approximately one-third of the people working or socializing at spots in the 12 cross-border study sites were female, and 13.0 percent were young women ages 15–24. Of people visiting spots, 5.3 percent were FSWs. At land cross-border sites, 6.4 percent of people at spots were FSWs, as compared to only 3.0 percent at lake cross-border sites. People who work at spots comprised 21.4 percent of people at spots.

At lake cross-border sites, 28.5 percent of people working/socializing at spots were fisherfolk, compared to only 1.7 percent of people at land sites. Overall, 1.9 percent of people at spots were truck drivers. Only 0.8 percent of people working/socializing at spots across the 12 cross-border sites were MSM. The percentage of people at spots who reported injecting recreational drugs was 0.6 percent (see Table 10.)

It is important to note that the populations of interest are not exclusive of one another. Nearly 40 percent of people working/socializing at spots in the 12 cross-border sites meet the definition of one or more of the seven populations of interest.

Table 10. Presence of mobile and vulnerable populations at spots in cross-border sites (PLACE survey, 2016)

	Overall (n=11,428)		Land Sites (n=7,466)		Lake Sites (n=3,962)	
	Weighted %	95% CI	Weighted %	95 % CI	Weighted %	95% CI
Young women	13.0	11.9, 14.1	12.6	11.2, 14.0	14.1	12.3, 15.8
FSWs	5.3	4.7, 6	6.4	5.5, 7.3	3.0	2.1, 3.8
Fisherfolk	9.9	7.7, 12.1	1.7	1.3, 2.2	28.5	22.1, 34.9
Workers at spots	21.4	18.4, 24.4	19.1	16.7, 21.5	26.7	19.0, 34.4
Truck drivers	1.9	1.3, 2.4	2.4	1.7, 3.1	0.6	0.1, 1.1
MSM	0.8	0.6, 1.0	1.0	0.7, 1.3	0.4	0.1, 0.7
People who inject drugs	0.6	0.4, 0.8	0.8	0.4, 1.1	0.2	0.1, 0.4

Demographic Characteristics

The distributions of demographic characteristics of people found at spots at cross-border sites are shown in Table 11. An estimated 46.2 percent of people at spots have completed at least some secondary school. Most people at spots across the 12 cross-border sites resided in Uganda (39.1%), Kenya (33.6%), Tanzania (21.8%), or Rwanda (5.4%). People at spots were most commonly in the age range of 20 to 24 years (23.6%), with a slightly lower proportion (22.2%) in the age range of 25 to 29 years. Only 5.8 percent of people at spots were 50 years of age or older. Among men at spots, the mean age was 31.2 years. Among women, the mean age was 28.9 years.

Table 11. Demographic characteristics of people at spots in cross-border sites (PLACE survey, 2016)

	Overall (n=11,428)	
	Weighted %	95% CI
Educational attainment		
Less than primary school	21.4	19.7, 23.0
Primary school	32.4	30.7, 34.1
Some secondary school or more	46.2	44.2, 48.3
Country of residence		
Kenya	33.6	28.2, 38.9
Rwanda	5.4	3.6, 7.2
Tanzania	21.8	18.3, 25.3
Uganda	39.1	34, 44.2
Age group		
15–19 years	9.3	8.1, 10.4
20–24 years	23.6	22.3, 24.9
25–29 years	22.2	21.1, 23.4
30–34 years	16.5	15.5, 17.4
35–39 years	11.1	10.4, 11.9
40–49 years	11.5	10.6, 12.4
50 years or older	5.8	5.1, 6.5
Age	Weighted mean	95% CI
Among women, age	28.9	28.4, 29.4
Among men, age	31.2	30.7, 31.7

Employment

Informal employment was the most common employment situation among people at spots in cross-border sites, with 33.9 percent of people being informally employed. This was followed by full-time employment among 29.1 percent of people at spots, with full-time employment being more common among people at land cross-border sites (31.7%) than lake cross-border sites (23.3%).

Of those employed, the most common type of employment was small business (31.0%), followed by other work (11.6%), and farming (10.5%) (fTable 12).

Table 12. Employment characteristics of people at spots in cross-border sites (PLACE survey, 2016)

	Overall (n=11,428)		Land Sites (n=7,466)		Lake Sites (n=3,962)	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Employment status						
Not employed, looking for work	13.1	11.8, 14.3	12.1	10.7, 13.5	15.3	12.9, 17.6
Not employed, not looking for work	11.4	10.0, 12.7	10.6	9.1, 12.1	13.1	10.4, 15.8
Informally employed	33.9	31.2, 36.6	33.5	30.8, 36.3	34.8	28.5, 41.1
Employed for occasional or part-time work	11.5	9.9, 13.1	11.4	9.6, 13.3	11.7	8.5, 14.9
Employed full-time	29.1	27.1, 31.1	31.7	29.2, 34.1	23.3	19.8, 26.7
Of those employed, job						
Farming	10.5	9.0, 12.0	11.3	9.5, 13.2	8.4	6.5, 10.4
Fishing	7.1	5.2, 9.0	0.1	0.0, 0.2	24.5	19, 30.1
Truck driving	2.5	1.8, 3.2	3.2	2.3, 4.1	0.8	0.2, 1.5
Construction work	3.8	3.0, 4.5	3.9	3.0, 4.9	3.3	2.3, 4.3
Other manual labor	4.6	4.0, 5.3	5.2	4.3, 6.0	3.2	2.5, 4.0
Security	1.7	1.4, 2.1	2.0	1.6, 2.5	0.9	0.6, 1.3
Military	0.5	0.3, 0.7	0.4	0.2, 0.6	0.8	0.2, 1.4
Entertainment	1.0	0.7, 1.3	1.1	0.7, 1.5	0.6	0.3, 0.9
Transportation (not truck driving)	5.2	4.3, 6.0	5.9	4.8, 7	3.3	2.0, 4.6
Office work	4.2	3.6, 4.8	4.3	3.6, 5.0	3.8	2.9, 4.8
Small business	31.0	29.1, 33.0	31.8	29.3, 34.2	29.2	26.2, 32.3
Nongovernmental/ nonprofit/ government work	2.6	1.9, 3.3	2.1	1.2, 2.9	4.0	2.9, 5.0
Cleaning	2.2	1.7, 2.7	2.5	1.9, 3.2	1.4	0.9, 1.8
Domestic work	2.7	2.1, 3.2	2.9	2.2, 3.6	2.1	1.2, 3.0
Bar attending	7.7	6.4, 8.9	9.2	7.6, 10.9	3.8	2.5, 5.0
Still in school	1.1	0.7, 1.4	0.6	0.3, 0.9	2.2	1.2, 3.2
Other work	11.6	10.5, 12.8	13.4	11.9, 14.8	7.3	5.8, 8.7

Barriers to Accessing Routine Health Care

Across the 12 cross-border sites, respondents were asked to indicate whether they experienced any of eight specific barriers to accessing routine healthcare (Table 13). Cost of services was the most commonly reported barrier, and was a barrier to accessing routine healthcare for 27.6 percent of people at spots. The next most common barrier was time to get services, affecting 21.4 percent of people at spots. This was followed by distance to services, affecting 19.7 percent of people at spots. A greater proportion of people at spots at lake cross-border sites reported they were affected by each of the eight barriers than people at spots at land cross-border sites. In particular, the proportions that experienced barriers of distance, transport availability, and cost of transport were more than twice as high at lake than land cross-border sites.

Table 13. Barriers to accessing routine health services at cross-border sites (PLACE survey, 2016)

	Overall (n=11,428)		Land Sites (n=7,466)		Lake Sites (n=3,962)	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Distance	19.7	17.9, 21.4	14.4	12.5, 16.2	31.8	27.9, 35.7
Facility hours	16.7	15.0, 18.3	13.1	11.3, 14.9	24.8	21.1, 28.5
Time to get services	21.4	19.6, 23.1	17.5	15.4, 19.5	30.3	26.6, 33.9
Cost of services	27.6	25.4, 29.7	22.5	20.0, 25.0	39.0	35.7, 42.4
Availability of transport	13.9	12.3, 15.4	9.5	7.8, 11.3	23.7	20.5, 27.0
Cost of transport	15.5	13.9, 17.1	10.4	8.6, 12.2	27.0	23.8, 30.2
Concern of unfair treatment	14.5	13.1, 15.9	12.3	10.4, 14.1	19.6	17.4, 21.8
Concern about provider trustworthiness	13.0	11.5, 14.5	10.8	8.9, 12.6	18.1	15.7, 20.5

Vulnerability Factors

Table 14 shows the prevalence of specific vulnerability factors among people at spots in cross-border sites. Overall, 7.8 percent of people at spots experienced homelessness in the past six months, 0.6 percent injected recreational drugs in the past 12 months, and 1.2 percent ever injected drugs. Among women at spots, 7.7 percent experienced intimate partner violence in the past three months, and 11.6 percent experienced intimate partner violence in the past 12 months. Also among women at spots, 7.8 percent were forced to have sex against their will in the past 12 months; for 5.6 percent of women, this occurred within the previous three months.

Table 14. Vulnerability factors among people at spots in cross-border sites (PLACE survey, 2016)

	Overall (n=11,428)		Land Sites (n=7,466)		Lake Sites (n=3,962)	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Homeless in past 6 months	7.8	6.5, 9.1	7.8	6.2, 9.4	7.9	5.9, 9.9
Injected recreational drugs						
In the past 12 months	0.6	0.4, 0.8	0.8	0.4, 1.1	0.2	0.1, 0.4
Ever	1.2	0.9, 1.6	1.4	1.0, 1.8	0.9	0.4, 1.4
Of women, experienced physical intimate partner violence						
In the past 3 months	7.7	6.4, 9	8.4	6.7, 10.1	6.1	4.1, 8.1
In the past 12 months	11.6	10, 13.3	12.2	10.2, 14.3	10.4	7.7, 13.1
Of women, forced to have sex against will						
In the past 3 months	5.6	4.6, 6.6	6.1	4.7, 7.4	4.6	3.2, 6.0
In the past 12 months	7.8	6.6, 9.1	8.2	6.7, 9.7	7.0	4.7, 9.3

Mobility

Table 15 shows the distributions of time living at current locality of residence and time spent away from current residence among people at spots in cross-border sites. While 10.6 percent of people at spots have lived

at the current locality of their residence for six months or less, 65.3 percent have lived at their current residence for five years or more.

The majority of people at spots at both the land and lake cross-border sites (62.2%) only spent two weeks or less away from their residence in the past 12 months. However, 21.1 percent of people spent more than one month away from their residence in the past 12 months.

Table 15. Mobility among people at spots in cross-border sites (PLACE survey, 2016)

	Overall (n=11,428)		Land Sites (n=7,466)		Lake Sites (n=3,962)	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence						
6 months or less	10.6	9.3, 11.9	11.9	10.1, 13.6	7.8	6.4, 9.2
More than 6 months, not more than 1 year	5.7	4.9, 6.5	6.3	5.3, 7.3	4.5	3.3, 5.7
More than 1 year, not more than 3 years	8.9	8.1, 9.7	9.4	8.4, 10.4	7.9	6.5, 9.2
More than 3 years, not more than 5 years	9.4	8.5, 10.3	9.6	8.4, 10.8	8.9	7.7, 10.0
More than 5 years, not entire life	27.3	25.7, 28.8	26.3	24.3, 28.3	29.4	27.2, 31.7
Entire life	38.0	35.8, 40.1	36.4	34.1, 38.8	41.4	37.3, 45.5
Time away from residence in past 12 months						
2 weeks or less	62.2	59.9, 64.5	63.9	60.8, 67.0	58.3	55.8, 60.7
More than 2 weeks, not more than 1 month	12.2	11.2, 13.2	11.1	9.8, 12.4	14.7	13.1, 16.3
More than 1 month, not more than 3 months	8.0	7.2, 8.7	7.7	6.7, 8.7	8.7	7.5, 9.8
More than 3 months	13.1	11.2, 15.0	13.6	11.0, 16.3	11.9	10.1, 13.6

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Sexual Behaviors

The proportions of people at spots in cross-border sites who engage in various sexual behaviors are shown in Table 16. Almost all people at spots (97.3%) have ever had sex and the mean age at first sex was 17.3 years. Over half (56.3%) of people at spots reported they were currently married or living with a sexual partner.

Approximately 85 percent of people at spots had sex with at least one person in the past 12 months. Of those, 44.2 percent had sex with at least one new person (someone with whom they had never had sex before) in that time. Among people at spots who had at least one partner in the past 12 months, the mean number of partners in the past 12 months was 3.5. Only 1.2 percent of men at spots had had sex with a man in the past 12 months.

In the past 12 months, 21.9 percent of men at spots had paid cash for sex and 15.9 percent of women had exchanged sex for cash. Transactional sex was more commonly reported by both men and women at land cross-border sites than lake cross-border sites.

Table 16. Sexual behaviors among people at spots in cross-border sites (PLACE survey, 2016)

	Overall (n=11,428)		Land Sites (n=7,466)		Lake Sites (n=3,962)	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Ever had sex	97.3	96.9, 97.7	97.5	97.0, 98.0	97.0	96.2, 97.7
Had 1 or more sexual partners in past 12 months	84.9	83.6, 86.1	86.5	85.3, 87.7	81.1	78.3, 84.0
Of those with 1 or more partner in past 12 months						
Had a new partner in that time	44.2	42.1, 46.3	43.9	41.3, 46.5	45.0	41.3, 48.8
Number of partners in past 4 weeks	1.4	1.3, 1.5	1.4	1.3, 1.5	1.4	1.3, 1.5
Number of partners in past 12 months	3.5	3.0, 4.1	3.6	2.9, 4.3	3.4	2.6, 4.2
Married or living with a sexual partner						
Currently	56.3	54.8, 57.9	55.8	54.1, 57.5	57.5	54.3, 60.6
Previously, but not now	12.2	11.2, 13.2	12.7	11.4, 13.9	11.1	9.7, 12.5
Of men						
Has a main female partner	84.5	83.0, 85.9	83.8	82.0, 85.6	86.0	83.7, 88.3
Paid money for sex in past 12 months	21.9	20.0, 23.8	24.2	21.8, 26.7	16.5	14.3, 18.7
Had sex with a man in past 12 months	1.2	0.8, 1.6	1.5	1.0, 1.9	0.6	0.1, 1.1
Of women						
Has a main male partner	84.3	82.8, 85.7	84.5	82.6, 86.4	83.8	81.7, 85.9
Any transactional sex in past 12 months*	19.8	17.5, 22.2	22.6	19.5, 25.8	13.8	10.9, 16.8
Exchanged sex for money in past 12 months	15.9	13.8, 18.0	19.4	16.5, 22.2	8.4	6.1, 10.8
Age at first sex	Weighted mean	95% CI	Weighted mean	95% CI	Weighted mean	95% CI
Age	17.3	17.2, 17.4	17.6	17.5, 17.7	16.7	16.5, 16.8

*Sex in exchange for money, gifts, goods, or favors

B. Young Women Ages 15–24

Demographic Characteristics of Young Women

Young women at spots (62.4%) were less likely to be employed (full-time, part-time, or informally) than other women at spots (76.8%). Young women had higher education than other women, with 55.3 percent completing some secondary school or more, compared to only 33.4 percent of other women. The mean age of young women at spots was 20.7 as compared to 34.0 for other women (Table 17).

Table 17. Demographic characteristics of young women at spots in cross-border sites (PLACE survey, 2016)

	Young Women (n=1,654)		Other Women (n=2,528)	
	Weighted %	95% CI	Weighted %	95% CI
Employed (full-time, part-time, or informally)	62.4	57.4, 67.5	76.8	73.7, 79.8
Education				
Less than primary school	17.4	14.5, 20.4	29.0	26.3, 31.7
Primary school	27.3	24.3, 30.3	37.6	34.8, 40.5
Some secondary school or more	55.3	51.1, 59.4	33.4	30.3, 36.6
Country of residence				
Kenya	27.3	21.2, 33.3	33.5	27.5, 39.6
Rwanda	2.8	1.4, 4.3	3.8	1.9, 5.7
Tanzania	20.1	15.9, 24.4	24.8	20.4, 29.2
Uganda	49.8	43.6, 56	37.8	32, 43.5
Age group				
15–19	28.9	25.6, 32.2	0.0	--
20–24	71.1	67.8, 74.4	0.0	--
25–29	0.0	--	37.7	34.8, 40.6
30–34	0.0	--	25.5	23.1, 27.9
35–39	0.0	--	14.4	12.6, 16.1
40–49	0.0	--	15.4	13.6, 17.3
50 and over	0.0	--	7.0	5.8, 8.2
Mean age	Weighted mean	95% CI	Weighted mean	95% CI
Age	20.7	20.5, 20.9	34.0	33.5, 34.5

Barriers to Accessing Routine Health Care among Young Women

Slightly lower proportions of young women at spots were affected by each of the eight barriers to accessing routine health services than other women. For both groups of women, the most frequently reported barriers were cost of services (29.8% of young women and 30.5% of other women), time to get services (21.3% of young women and 23.1% of other women), and distance to services (18.7% of young women and 22.4% of other women) (Table 18).

Vulnerability Factors among Young Women

Compared to other women at spots in cross-border sites, slightly lower proportions of young women experienced homelessness in the past six months (6.8%), ever injected drugs (0.7%), experienced physical intimate partner violence in the past three or 12 months (6.6% and 9.8% respectively), or were forced to have sex against their will in the past three or 12 months (5.0% and 6.3% respectively) (Table 19).

Table 18. Barriers to accessing routine health services among young women at spots in cross-border sites (PLACE survey, 2016)

	Young Women (n=1,654)		Other Women (n=2,528)	
	Weighted %	95% CI	Weighted %	95% CI
Distance	18.7	15.8, 21.6	22.4	19.5, 25.3
Facility hours	15.3	12.6, 18.1	18.5	15.6, 21.3
Time to get services	21.3	17.7, 24.9	23.1	20.4, 25.8
Cost of services	29.8	25.8, 33.8	30.5	27.2, 33.7
Availability of transport	13.5	11.0, 16.0	16.1	13.4, 18.9
Cost of transport	14.3	11.7, 16.9	17.8	15.3, 20.4
Concern of unfair treatment	13.9	11.3, 16.5	17.8	15.2, 20.4
Concern about provider trustworthiness	12.3	9.9, 14.7	16.8	13.9, 19.8

Table 19. Vulnerability factors among young women at spots in cross-border sites (PLACE survey, 2016)

	Young Women (n=1,654)		Other Women (n=2,528)	
	Weighted %	95% CI	Weighted %	95% CI
Homeless within the past 6 months	6.8	4.8, 8.8	8.1	6.1, 10.2
Injected recreational drugs				
In the past 12 months	0.3	0.0, 0.6	0.5	0.1, 0.9
Ever	0.7	0.2, 1.2	1.4	0.7, 2.0
Of women, experienced physical intimate partner violence				
In the past 3 months	6.6	4.7, 8.4	8.4	6.8, 9.9
In the past 12 months	9.8	7.4, 12.2	12.8	10.8, 14.8
Of women, forced to have sex against will				
In the past 3 months	5.0	3.4, 6.5	6.0	4.8, 7.3
In the past 12 months	6.3	4.6, 8.1	8.8	7.3, 10.3

Mobility among Young Women

The proportion of young women at spots (30.6%) who lived at the current locality of their residence for one year or less was more than twice that of other women at spots (14.6%). However, a slightly lower proportion of young women (16.3%) than other women (19.1%) spent more than one month away from their residence in the past 12 months (Table 20).

Table 20. Mobility among young women at spots in cross-border sites (PLACE survey, 2016)

	Young Women (n=1,654)		Other Women (n=2,528)	
	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence				
6 months or less	21.2	17.8, 24.6	9.4	7.8, 11.0
More than 6 months, not more than 1 year	9.4	6.3, 12.5	5.2	4.0, 6.5
More than 1 year, not more than 3 years	13.1	11.1, 15.1	8.5	7.1, 9.9
More than 3 years, not more than 5 years	11.5	9.4, 13.6	9.8	8.4, 11.3
More than 5 years, not entire life	19.5	16.8, 22.2	35.0	32.2, 37.8
Entire life	25.2	21.9, 28.6	31.9	29.3, 34.5
Time away from residence in past 12 months				
2 weeks or less	65.8	61.7, 69.9	62.3	58.9, 65.8
More than 2 weeks, not more than 1 month	12.5	9.7, 15.4	12.3	10.6, 13.9
More than 1 month, not more than 3 months	5.7	4.1, 7.3	7.4	6.1, 8.8
More than 3 months	10.6	8.1, 13.1	11.7	9.2, 14.3

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Sexual Behaviors among Young Women

Young women at spots (31.1%) were less likely to be currently married or living with a sexual partner than other women (61.7%). The mean age at first sex for young women was 16.4; for other women, it was 17.3.

While 72.8 percent of young women had one or more new sexual partners in the past 12 months, nearly 80 percent of other women at spots had one or more new sexual partners in the same time period. Of those with one or more partners in the past 12 months, the mean number of partners for young women was 3.6, as compared to 4.6 for other women.

Any transactional sex in the past 12 months was reported by 21.4 percent of young women, as compared to 18.8 percent of other women at spots. Approximately similar proportions of young women and other women at spots—16.6 percent and 15.4 percent, respectively—exchanged sex for cash in the past 12 months (Table 21).

Table 21. Sexual behaviors among young women at spots in cross-border sites (PLACE survey, 2016)

	Young Women (n=1,654)		Other Women (n=2,528)	
	Weighted %	95% CI	Weighted %	95% CI
Has a main male partner	85.1	83.0, 87.3	83.8	82.1, 85.4
Any transactional sex in the past 12 months*	21.4	18.3, 24.6	18.8	16.2, 21.5
Exchanged sex for cash in past 12 months	16.6	13.8, 19.4	15.4	12.9, 17.9
Had 1 or more new partners in past 12 months	72.8	69.5, 76.1	79.2	77.0, 81.3
Of those with 1 or more partner in past 12 months				
Number of partners in past 4 weeks	1.3	1.2, 1.5	1.5	1.3, 1.7
Number of partners in past 12 months	3.6	2.4, 4.8	4.6	2.6, 6.6
Married or living with a sexual partner				
Currently	31.1	27.6, 34.5	61.7	58.2, 65.2
Previously, but not now	16.3	13.4, 19.2	25.7	22.7, 28.7
Age at first sex	Weighted mean	95% CI	Weighted mean	95% CI
Age	16.4	16.2, 16.5	17.3	17.1, 17.4

*Sex in exchange for money, gifts, goods, or favors.

C. Female Sex Workers

Demographic Characteristics of FSWs

Educational attainment was similar among FSWs and other woman at spots at cross-border sites who are not sex workers, with approximately 42 percent of both groups completing some secondary school or more. The mean age among FSWs was 26.3 years, as compared to 29.3 years among other women at spots (Table 22).

Barriers to Accessing Routine Health Care among FSWs

For FSWs, the most common barriers to accessing routine health services were cost of services (34.5% of FSWs), time to get to services (25.3%), and distance to services (22.6%). A greater proportion of FSWs were affected by each of the eight barriers than other woman at spots. Notably, a greater proportion of FSWs reported concern of unfair treatment and concern about provider trustworthiness than other women at spots (Table 23).

Vulnerability Factors among FSWs

Table 24 shows the prevalence of specific vulnerability factors among FSWs at spots. FSWs (9.1%) were slightly more likely to report experiencing homelessness in the past six months than other women at spots (7.4%). The proportion that ever injected drugs was under 1.5 percent for both groups of women.

The proportions of FSWs who experienced physical intimate partner violence in the past three and twelve months—15.0 percent and 21.7 percent, respectively—were more than twice the proportions among other women at spots. Similarly, the proportions of FSWs that were forced to have sex against their will in the past three and 12 months—11.8 percent and 13.9 percent, respectively—were more than twice the proportions of other woman at spots (Table 24).

Table 22. Demographic characteristics of FSWs at spots in cross-border sites (PLACE survey, 2016)

	FSWs (n=655)		Other Women (n=3,496)	
	Weighted %	95% CI	Weighted %	95% CI
Employed (full-time, part-time, or informally)	77.2	71.8, 82.7	70.1	66.7, 73.5
Education				
Less than primary school	22.9	17.6, 28.2	24.8	22.2, 27.3
Primary school	34.6	29.5, 39.7	33.5	31.1, 36.0
Some secondary school or more	42.5	36.0, 49.0	41.7	38.2, 45.1
Country of residence				
Kenya	32.6	23.2, 42.1	30.7	25.3, 36.2
Rwanda	2.4	1.1, 3.6	3.6	1.8, 5.4
Tanzania	21.3	15.8, 26.9	23.2	19.2, 27.3
Uganda	43.7	35.3, 52.1	42.3	36.8, 47.8
Age group				
15–19 years	11.6	8.1, 15.0	11.1	24.9, 29.5
20–24 years	29.0	23.9, 34.1	27.2	19.8, 23.4
25–29 years	31.1	25.2, 37.0	21.6	13.5, 16.7
30–34 years	18.5	14.7, 22.3	15.1	8.1, 10.6
35–39 years	6.0	3.9, 8.1	9.3	9.1, 11.9
40–49 years	3.6	1.8, 5.3	10.5	4.1, 6.0
50 years or older	0.3	0.0, 1.0	5.1	24.9, 29.5
Mean age	Weighted mean	95% CI	Weighted mean	95% CI
Age	26.3	25.6, 27.0	29.3	28.7, 29.9

Table 23. Barriers to accessing routine health services among FSWs at spots in cross-border sites (PLACE survey, 2016)

	FSWs (n=655)		Other Women (n=3,496)	
	Weighted %	95% CI	Weighted %	95% CI
Distance	22.6	17.8, 27.3	20.7	18.1, 23.4
Facility hours	20.9	15.3, 26.4	16.7	14.3, 19.0
Time to get services	25.3	19.6, 31.1	21.9	19.4, 24.4
Cost of services	34.5	28.0, 41.0	29.4	26.6, 32.3
Availability of transport	17.5	12.5, 22.6	14.7	12.4, 17.0
Cost of transport	18.3	13.4, 23.3	16.2	14.1, 18.4
Concern of unfair treatment	21.2	15.9, 26.6	15.4	13.4, 17.4
Concern about provider trustworthiness	20.7	15.2, 26.2	14.1	12.0, 16.2

Table 24. Vulnerability factors among FSWs at spots in cross-border sites (PLACE survey, 2016)

	FSWs (n=655)		Other Women (n=3,496)	
	Weighted %	95% CI	Weighted %	95% CI
Homeless within the past 6 months	9.1	6.1, 12.0	7.4	5.4, 9.3
Injected recreational drugs				
In the past 12 months	1.1	0.0, 2.4	0.3	0.1, 0.5
Ever	1.3	0.0, 2.7	1.1	0.6, 1.6
Of women, experienced physical intimate partner violence				
In the past 3 months	15.0	11.2, 18.8	6.2	5.0, 7.5
In the past 12 months	21.7	16.7, 26.7	9.7	8.1, 11.3
Of women, forced to have sex against will				
In the past 3 months	11.8	8.8, 14.8	4.4	3.5, 5.3
In the past 12 months	13.9	10.5, 17.3	6.7	5.5, 7.8

Mobility among FSWs

FSWs were more likely to have been at the current locality of their residence for less than a year (29.3%) compared to other women at spots (19.2%). Conversely, other women at spots (60.3%) were more likely to have lived in the current locality of their residence for five years or more as compared to FSWs (48.8%).

The proportion of FSWs at spots (26.5%) who spent more than a month away from their residence in the past 12 months was higher than that of other women at spots (16.5%) (Table 25).

Table 25. Mobility among FSWs at spots in cross-border sites (PLACE survey, 2016)

	FSWs (n=655)		Other Women (n=3,496)	
	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence				
6 months or less	19.6	14.3, 24.9	12.9	11.0, 14.8
More than 6 months, not more than 1 year	9.7	6.4, 13.0	6.3	4.8, 7.8
More than 1 year, not more than 3 years	11.9	8.6, 15.3	9.9	8.6, 11.2
More than 3 years, not more than 5 years	10.0	7.1, 12.9	10.6	9.3, 12.0
More than 5 years, not entire life	25.0	21.1, 28.8	29.8	27.3, 32.2
Entire life	23.8	18.8, 28.9	30.5	28.2, 32.8
Time away from residence in past 12 months				
2 weeks or less	52.5	45.1, 60.0	65.8	63.2, 68.5
More than 2 weeks, not more than 1 month	17.6	13.6, 21.5	11.4	9.8, 12.9
More than 1 month, not more than 3 months	9.6	7.1, 12.2	6.2	5.1, 7.4
More than 3 months	16.9	11.9, 21.9	10.3	8.6, 12.0

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Sexual Behaviors among FSWs

While just under 85 percent of both FSWs and other women at spots had a main male partner, other women (53.6%) were more likely to be married or living with their current partner than FSWs (30.2%). The mean age at first sex for FSWs was 16.2, as compared to 17.1 for other women. While all FSWs have exchanged sex for money, gifts, goods, or favors in the past 12 months, only 4.7 percent of other women have done so. Of FSWs and other women who had one or more sexual partners in the past 12 months, FSWs had a mean of 15.5 partners, compared to only 1.8 partners reported by other women (Table 26).

Table 26. Sexual behaviors among FSWs at spots in cross-border sites (PLACE survey, 2016)

	FSWs (n=655)		Other Women (n=3,496)	
	Weighted %	95% CI	Weighted %	95% CI
Has a main male partner	83.2	79.8, 86.5	84.5	82.8, 86.1
Any transactional sex in the past 12 months*	100.0	--	4.7	3.7, 5.6
Of those with 1 or more partner in past 12 months				
Number of partners in past 4 weeks	3.3	2.6, 4.1	1.0	1.0, 1.1
Number of partners in past 12 months	15.5	8.7, 22.3	1.8	1.5, 2.2
Married or living with a sexual partner				
Currently	30.2	25.4, 35.1	53.6	50.8, 56.4
Previously, but not now	38.6	32.7, 44.5	19.0	16.7, 21.4
Age at first sex				
Age	16.2	16.0, 16.4	17.1	16.9, 17.2

*Sex in exchange for money, gifts, goods, or favors

D. Female Fisherfolk

Demographic Characteristics of Female Fisherfolk

Only 29.4 percent of female fisherfolk at spots had completed some secondary school or more, compared to 42.9 percent of other women at spots. The mean age of female fisherfolk was 31.8 as compared to 28.6 for other women (Table 27).

Barriers to Accessing Routine Health Care among Female Fisherfolk

A greater proportion of female fisherfolk at spots were affected by each of the eight barriers to accessing routine health services than other women at spots, with approximately 20–40 percent of female fisherfolk reporting they were affected by each barrier. The most frequently reported barriers were cost of services (42.2% of female fisherfolk), distance to services (33.6%), time to get services (33.2%), and cost of transport (30.5%) (Table 28).

Vulnerability Factors among Female Fisherfolk

Approximately similar proportions of female fisherfolk and other women at spots reported experiencing homelessness in the past six months (6.6% and 7.7%, respectively) and intimate partner violence in the past 12 months (12.1% and 11.6%, respectively). As compared to other women at spots, female fisherfolk were somewhat less likely to report being forced to have sex against their will in the past 12 months (6.8% vs. 7.9%), and they were somewhat more likely to have ever injected drugs (2.8% vs. 1.0%) (Table 29).

Table 27. Demographic characteristics of female fisherfolk at spots in cross-border sites (PLACE survey, 2016)

	Female Fisherfolk (n=378)		Other Women (n=3,804)	
	Weighted %	95% CI	Weighted %	95% CI
Fully, partially, or informally employed	100.0	--	68.8	65.5, 72.2
Education				
Less than primary school	28.9	22.8, 35.0	24.1	21.6, 26.6
Primary school	41.7	35.5, 47.9	33.0	30.6, 35.3
Some secondary school or more	29.4	22.3, 36.5	42.9	39.7, 46.1
Country of residence				
Kenya	60.6	52.7, 68.6	28.6	22.8, 34.4
Rwanda	0.2	0.0, 0.5	3.7	2.0, 5.5
Tanzania	9.3	6.9, 11.7	24.2	20.0, 28.3
Uganda	29.9	22.3, 37.5	43.5	37.7, 49.3
Age group				
15–19	5.3	2.9, 7.6	11.6	10.0, 13.2
20–24	23.6	18.8, 28.4	27.8	25.4, 30.1
25–29	19.0	15.3, 22.8	23.5	21.4, 25.6
30–34	17.4	11.6, 23.3	15.5	13.9, 17.1
35–39	10.7	7.3, 14.1	8.7	7.5, 9.9
40–49	16.6	13.2, 19.9	8.9	7.6, 10.1
50 and over	7.4	3.9, 10.9	4.0	3.3, 4.8
Mean age	Weighted mean	95% CI	Weighted mean	95% CI
Age	31.8	30.5, 33.0	28.6	28.1, 29.1

Table 28. Barriers to accessing routine health services among female fisherfolk at spots in cross-border sites (PLACE survey, 2016)

	Female Fisherfolk (n=378)		Other Women (n=3,804)	
	Weighted %	95% CI	Weighted %	95% CI
Distance	33.6	26.7, 40.6	19.9	17.4, 22.4
Facility hours	22.4	17.0, 27.8	16.8	14.3, 19.3
Time to get services	33.2	26.4, 40.1	21.5	18.8, 24.2
Cost of services	42.2	35.3, 49.0	29.2	26.2, 32.2
Availability of transport	25.9	19.4, 32.3	14.2	11.8, 16.7
Cost of transport	30.5	23.7, 37.4	15.3	13.1, 17.5
Concern of unfair treatment	20.0	13.1, 27.0	16.0	13.8, 18.2
Concern about provider trustworthiness	20.4	14.2, 26.6	14.6	12.3, 17.0

Table 29. Vulnerability factors among female fisherfolk at spots in cross-border sites (PLACE survey, 2016)

	Female Fisherfolk (n=378)		Other Women (n=3,804)	
	Weighted %	95% CI	Weighted %	95% CI
Homeless within the past 6 months	6.6	3.4, 9.8	7.7	5.8, 9.6
Injected recreational drugs				
In the past 12 months	0.5	0.4, 0.6	0.4	0.1, 0.7
Ever	2.8	0.8, 4.7	1.0	0.5, 1.4
Experienced physical intimate partner violence				
In the past 3 months	6.5	3.1, 9.8	7.8	6.4, 9.1
In the past 12 months	12.1	7.8, 16.4	11.6	9.9, 13.3
Forced to have sex against will				
In the past 3 months	4.3	2.7, 5.8	5.7	4.6, 6.8
In the past 12 months	6.8	4.5, 9.2	7.9	6.6, 9.3

Mobility among Female Fisherfolk

Female fisherfolk (63.0%) were more somewhat more likely to have been at the current locality of their residence for five years more compared to other women at spots (57.9%). The proportion of female fisherfolk who spent more than a month away from their residence in the past 12 months (15.5%) was slightly lower than other women at spots (18.3%) (Table 30).

Table 30. Mobility among female fisherfolk at spots at cross-border sites (PLACE survey, 2016)

	Female Fisherfolk (n=378)		Other Women (n=3,804)	
	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence				
6 months or less	6.7	4.1, 9.3	14.6	12.5, 16.6
More than 6 months, not more than 1 year	6.4	3.3, 9.6	6.9	5.1, 8.6
More than 1 year, not more than 3 years	11.9	6.3, 17.5	10.2	8.9, 11.4
More than 3 years, not more than 5 years	11.8	7.2, 16.4	10.4	9.2, 11.6
More than 5 years, not entire life	34.7	28.5, 41.0	28.5	26.2, 30.9
Entire life	28.3	22.1, 34.4	29.4	27.1, 31.8
Time away from residence in past 12 months				
2 weeks or less	68.4	62.5, 74.3	63.3	60.2, 66.3
More than 2 weeks, not more than 1 month	13.0	9.3, 16.7	12.3	10.7, 14.0
More than 1 month, not more than 3 months	6.9	3.6, 10.2	6.8	5.7, 7.8
More than 3 months	8.6	5.3, 12.0	11.5	9.5, 13.6

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Sexual Behaviors among Female Fisherfolk

While approximately 85 percent of both female fisherfolk and other women at spots had a main male partner, female fisherfolk (60.4%) were more likely to be married or living with their current partner than other women at spots (49.0%). The mean age at first sex for female fisherfolk was 16.2, as compared to 17.0 for other women.

A lower proportion of female fisherfolk (16.0%) reported any transactional sex in the past 12 months compared to other women at spots (20.2%). Of women who had one or more sexual partners in the past 12 months, female fisherfolk had a mean of 2.3 partners, compared to 4.4 reported by other women (Table 31).

Table 31. Sexual behaviors among female fisherfolk at spots in cross-border sites (PLACE survey, 2016)

	Female Fisherfolk (n=378)		Other Women (n=3,804)	
	Weighted %	95% CI	Weighted %	95% CI
Has a main male partner	86.5	83.2, 89.8	84.1	82.5, 85.6
Any transactional sex in the past 12 months*	16.0	11.7, 20.3	20.2	17.7, 22.6
Exchanged sex for money in past 12 months	11.7	7.8, 15.6	16.2	14.0, 18.5
Had 1 or more sexual partners in past 12 months	76.3	71.1, 81.6	76.8	74.8, 78.7
Of those with 1 or more partner in past 12 months				
Had a new partner in that time	34.4	26.8, 41.9	35.9	33.1, 38.6
Number of partners in past 4 weeks	1.2	1.1, 1.4	1.5	1.3, 1.6
Number of partners in past 12 months	2.3	1.7, 3.0	4.4	2.9, 5.9
Married or living with a sexual partner				
Currently	60.4	54.4, 66.4	49.0	46.1, 51.9
Previously, but not now	23.4	18.1, 28.7	22.0	19.7, 24.2
Age at first sex				
	Weighted mean	95% CI	Weighted mean	95% CI
Age	16.2	15.8, 16.5	17.0	16.9, 17.1

*Sex in exchange for money, gifts, goods, or favors

E. Male Fisherfolk

Demographic Characteristics of Male Fisherfolk

Only 39.6 percent of male fisherfolk at spots had completed some secondary school or more, compared to 49.5 percent of other men at spots. The mean age of male fisherfolk was 31.8, as compared to 31.1 for other men at spots (Table 32).

Barriers to Accessing Routine Health Care among Male Fisherfolk

A greater proportion of male fisherfolk at spots were affected by each of the eight barriers to accessing routine health services than other men at spots, with approximately 20 to 40 percent of male fisherfolk reporting that they were affected by each barrier. The most frequently reported barriers were cost of services (41.3% of male fisherfolk), distance to services (31.5%), time to get services (29.7%), and cost of transport (29.4%) (Table 33).

Table 32. Demographic characteristics of male fisherfolk at spots in cross-border sites (PLACE survey, 2016)

	Male Fisherfolk (n=903)		Other Men (n=6,342)	
	Weighted %	95% CI	Weighted %	95% CI
Fully, partially, or informally employed	100.0	--	74.6	72.5, 76.6
Education				
Less than primary school	24.5	19.5, 29.6	19.2	17.4, 21.0
Primary school	35.9	32.4, 39.4	31.3	29.3, 33.2
Some secondary school or more	39.6	35.2, 43.9	49.5	47.2, 51.9
Country of residence				
Kenya	60.8	48.4, 73.1	31.6	26.4, 36.8
Rwanda	0.0	--	7.2	4.9, 9.5
Tanzania	10.3	6.5, 14.1	22.5	18.5, 26.5
Uganda	28.9	18.7, 39.2	38.5	33.3, 43.8
Age group				
15–19	4.7	1.9, 7.5	8.8	7.4, 10.2
20–24	14.3	10.9, 17.7	22.5	21.0, 24.1
25–29	29.3	23.5, 35.1	20.8	19.6, 22.0
30–34	21.9	18.3, 25.6	16.3	15.1, 17.5
35–39	11.9	9.9, 13.9	12.4	11.2, 13.5
40–49	10.7	8.5, 13.0	12.8	11.6, 14.0
50 and over	7.2	3.7, 10.7	6.5	5.5, 7.4
Mean age	Weighted mean	95% CI	Weighted mean	95% CI
Age	31.8	30.6, 33.0	31.1	30.6, 31.6

Table 33. Barriers to accessing routine health services among male fisherfolk at spots in cross-border sites (PLACE survey, 2016)

	Male Fisherfolk (n=903)		Other Men (n=6,342)	
	Weighted %	95% CI	Weighted %	95% CI
Distance	31.5	23.9, 39.2	17.5	15.7, 19.3
Facility hours	23.6	17.7, 29.5	15.5	13.8, 17.2
Time to get services	29.7	24.7, 34.8	19.7	17.8, 21.6
Cost of services	41.3	36.9, 45.7	24.4	22.1, 26.6
Availability of transport	24.2	16.7, 31.6	11.9	10.4, 13.3
Cost of transport	29.4	21.5, 37.3	13.2	11.5, 14.8
Concern of unfair treatment	20.1	15.9, 24.3	12.8	11.3, 14.3
Concern about provider trustworthiness	20.3	16.3, 24.4	10.9	9.5, 12.3

Vulnerability Factors among Male Fisherfolk

A higher proportions of male fisherfolk (11.3%) reported experiencing homelessness in the past six months, compared to other men at spots (7.5%). Less than 1 percent of male fisherfolk at spots reported ever injecting drugs, compared to 1.4 percent of other men at spots (Table 34).

Table 34. Vulnerability factors among male fisherfolk at spots in cross-border sites (PLACE survey, 2016)

	Male Fisherfolk (n=903)		Other Men (n=6,342)	
	Weighted %	95% CI	Weighted %	95% CI
Homeless within the past 6 months	11.3	7.3, 15.4	7.5	6.2, 8.8
Injected recreational drugs				
In the past 12 months	0.3	0.0, 0.6	0.7	0.4, 1.1
Ever	0.9	0.3, 1.5	1.4	1.0, 1.8

Mobility among Male Fisherfolk

Male fisherfolk at spots (75.2%) were somewhat more likely to have lived at the current locality of their residence for five years more compared to other men at spots (68.0%). The proportion of male fisherfolk at spots (24.1%) who spent more than a month away from their residence in the past 12 months was only slightly higher than other men at spots (22.4%) (Table 35).

Table 35. Mobility among male fisherfolk at spots in cross-border sites (PLACE survey, 2016)

	Male Fisherfolk (n=903)		Other Men (n=6,342)	
	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence				
6 months or less	6.0	3.7, 8.3	9.3	7.9, 10.6
More than 6 months, not more than 1 year	2.8	1.6, 4.0	5.5	4.6, 6.4
More than 1 year, not more than 3 years	7.1	3.6, 10.6	8.4	7.5, 9.3
More than 3 years, not more than 5 years	8.8	6.0, 11.6	8.8	7.6, 10.0
More than 5 years, not entire life	28.3	23.2, 33.5	26.2	24.3, 28.0
Entire life	46.9	38, 55.9	41.8	39.4, 44.2
Time away from residence in past 12 months				
2 weeks or less	58.3	53.7, 63	61.8	59.3, 64.4
More than 2 weeks, not more than 1 month	14.1	11.5, 16.8	11.9	10.6, 13.2
More than 1 month, not more than 3 months	12.3	9.1, 15.6	8.1	6.9, 9.3
More than 3 months	11.8	9.2, 14.4	14.3	11.9, 16.6

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Sexual Behaviors among Male Fisherfolk

Male fisherfolk (72.0%) were more likely to be currently married or living with a sexual partner than other men at spots (58.1%), and 88.5 percent had a main female partner, as compared to only 83.9 percent of other men at spots. The mean age at first sex for male fisherfolk at spots was 16.8, as compared to 17.6 for other men.

Among male fisherfolk, 90.0 percent have had one or more sexual partners in the past 12 months. Of those with one or more partners in the past 12 months, 54.7 percent had a new partner in that time, compared to only 47.7 percent of other men at spots. The mean number of sexual partners in the past 12 months among male fisherfolk was 3.6 as compared to 3.1 for other men at spots. The proportion of male fisherfolk at spots (23.4%) who paid money for sex in the past 12 months was only slightly higher than that of other men at spots (21.7%) (Table 36).

Table 36. Sexual behaviors among male fisherfolk at spots in cross-border sites (PLACE survey, 2016)

	Male Fisherfolk (n=903)		Other Men (n=6,342)	
	Weighted %	95% CI	Weighted %	95% CI
Has a main female partner	88.5	85.5, 91.5	83.9	82.4, 85.5
Paid money for sex in the past 12 months	23.4	18.5, 28.2	21.7	19.8, 23.7
Had sex with a man in the past 12 months	0.2	0.0, 0.5	1.3	0.9, 1.7
Had 1 or more sexual partner in past 12 months	90.0	85.0, 95.0	88.9	87.7, 90.1
Of those with 1 or more partner in past 12 months				
Had a new partner in that time	54.7	50.3, 59.1	47.7	45.2, 50.2
Number of partners in past 4 weeks	1.6	1.5, 1.7	1.3	1.3, 1.4
Number of partners in past 12 months	3.6	3.1, 4.1	3.1	2.8, 3.3
Married or living with a sexual partner				
Currently	72.0	66.9, 77.1	58.1	56.0, 60.1
Previously, but not now	6.5	4.6, 8.4	7.2	6.3, 8.2
Age at first sex	Weighted mean	95% CI	Weighted mean	95% CI
Age	16.8	16.5, 17.1	17.6	17.5, 17.7

F. Women Who Work at Spots

This section compares women who work at spots in cross-border sites with female patrons who visit spots.

Demographic Characteristics of Women Who Work at Spots

As compared to women who work at spots, female patrons at spots were less likely to be employed; yet, 60.1 percent of patrons at spots were employed to some degree (full-time, part-time, or informally), though not at the spot where they were interviewed. Women who work at spots had a similar distribution of educational attainment as female patrons. Among women who work at spots, 41.5 percent had completed at least some secondary school, 35.1 percent had only a primary school education, and 23.4 percent did not complete primary school.

Among women who work at spots, the most common country of residence was Uganda (42.4% of female workers), followed by Kenya (35.7%), Tanzania (20.3%), and Rwanda (1.6%). The mean age among women who work at spots was 28.6 years. Overall, the age distribution was similar among women who work at spots and female patrons. Compared to female patrons, however, a larger proportion of women who work at spots were 20 to 24 years of age (Table 37).

Barriers to Accessing Routine Health Care among Women Who Work at Spots

Most barriers to accessing routine healthcare were reported by similar proportions of women who work at spots and female patrons. One exception was time to get services, which affected a larger proportion of women who work at spots (26.8%) than female patrons (20.7%). Among women who work at spots, cost of services was the most commonly reported barrier to accessing routine health services (Table 38).

Table 37. Demographic characteristics of women who work at spots in cross-border sites (PLACE survey, 2016)

	Female Workers (n=1,178)		Female Patrons (n=3,000)	
	Weighted %	95% CI	Weighted %	95% CI
Employed (full-time, part-time, or informally)	100.0	--	60.1	56.4, 63.9
Education				
Less than primary school	23.4	19.2, 27.6	24.9	22.1, 27.8
Primary school	35.1	31.0, 39.1	33.1	30.5, 35.7
Some secondary school or more	41.5	36.1, 47.0	42.0	38.3, 45.6
Country of residence				
Kenya	35.7	28.9, 42.4	29.4	23.4, 35.3
Rwanda	1.6	0.8, 2.5	4.1	2.2, 6.1
Tanzania	20.3	15.3, 25.2	24.0	19.6, 28.5
Uganda	42.4	35.1, 49.7	42.4	36.3, 48.5
Age group				
15–19	7.3	5.4, 9.2	12.6	10.8, 14.4
20–24	32.2	28.4, 35.9	25.6	23.2, 28.0
25–29	23.6	19.8, 27.3	23.0	20.9, 25.1
30–34	16.6	13.9, 19.3	15.3	13.7, 17.0
35–39	7.9	5.4, 10.3	9.2	7.9, 10.5
40–49	9.1	7.2, 11.1	9.6	8.1, 11.1
50 and over	3.3	2.0, 4.7	4.7	3.8, 5.6
Mean age	Weighted mean	95% CI	Weighted mean	95% CI
Age	28.6	27.8, 29.4	29.0	28.4, 29.5

Table 38. Barriers to accessing routine health services among women who work at spots in cross-border sites (PLACE survey, 2016)

	Female Workers (n=1,178)		Female Patrons (n=3,000)	
	Weighted %	95% CI	Weighted %	95% CI
Distance	21.0	16.9, 25.1	20.9	18.2, 23.7
Facility hours	17.3	13.8, 20.9	17.2	14.6, 19.9
Time to get services	26.8	23.2, 30.4	20.7	17.9, 23.5
Cost of services	31.1	27.5, 34.8	29.8	26.5, 33.2
Availability of transport	15.1	11.6, 18.5	15.2	12.3, 18.0
Cost of transport	16.8	13.5, 20.2	16.3	13.8, 18.9
Concern of unfair treatment	15.1	12.0, 18.2	16.8	14.2, 19.4
Concern about provider trustworthiness	14.8	10.9, 18.6	15.2	12.8, 17.7

Vulnerability Factors among Women Who Work at Spots

In the past six months, 6.4 percent of women who work at spots experienced homelessness. In the past 12 months, 0.5 percent injected recreational drugs, with 1.1 percent reporting they had ever injected drugs.

Women who work at spots were more likely than female patrons to have experienced physical intimate partner violence and forced sex, both in the past three and 12 months. Among women who work at spots, 11.0 percent and 14.9 percent experienced physical intimate partner violence in the past three and 12 months, respectively. In addition, 7.3 percent and 8.7 percent of women who work at spots were forced to have sex against their will in the past three and 12 months, respectively (Table 39).

Table 39. Vulnerability factors among women who work at spots in cross-border sites (PLACE survey, 2016)

	Female Workers (n=1,178)		Female Patrons (n=3,000)	
	Weighted %	95% CI	Weighted %	95% CI
Homeless within the past 6 months	6.4	4.6, 8.2	8.1	5.9, 10.3
Injected recreational drugs				
In the past 12 months	0.5	0.0, 1.2	0.3	0.1, 0.6
Ever	1.1	0.2, 2.1	1.1	0.6, 1.6
Of women, experienced physical intimate partner violence				
In the past 3 months	11.0	7.9, 14.2	6.4	5.2, 7.5
In the past 12 months	14.9	11.5, 18.3	10.4	8.9, 11.9
Of women, forced to have sex against will				
In the past 3 months	7.3	4.9, 9.7	5.0	3.9, 6.0
In the past 12 months	8.7	6.2, 11.1	7.5	6.2, 8.9

Mobility among Women Who Work at Spots

In general, women who work at spots have lived in their current locality of residence for a shorter duration than female patrons. Among women who work at spots, 20.0 percent lived in their current locality of residence for six months or less, while among female patrons, only 11.6 percent lived in their current locality for six months or less. While 32.9 percent of female patrons lived in their current locality of residence for their entire lives, this was the case for only 20.2 percent of women who work at spots.

In the past 12 months, women who work at spots spent similar amounts of time away from their residence as female patrons. Just under 17 percent of women who work at spots were away for more than one of the past 12 months, as were 18.5 percent of female patrons (Table 40).

Sexual Behaviors among Women Who Work at Spots

A smaller proportion of women who work at spots were currently married (43.7%), as compared to female patrons at spots (52.3%). The mean age at first sex for both groups of women was 16.9 years (Table 41).

Approximately three-quarters of women who work at spots had one or more sexual partners in the past 12 months. Of women who reported one or more sexual partners in the past 12 months, female workers had an average of 5.9 partners, as compared to an average of 3.6 among female patrons.

Over 25 percent of women who worked at spots engaged in transactional sex in the past 12 months. This proportion is about 60 percent higher than among female patrons. Similarly, a greater proportion of women who worked at spots (22.8%) exchanged cash for sex in the past 12 months as compared to female patrons (13.2%).

Table 40. Mobility among women who work at spots in cross-border sites (PLACE survey, 2016)

	Female Workers (n=1,178)		Female Patrons (n=3,000)	
	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence				
6 months or less	20.0	16.5, 23.5	11.6	9.7, 13.5
More than 6 months, not more than 1 year	9.5	5.4, 13.6	5.8	4.7, 6.9
More than 1 year, not more than 3 years	12.4	9.9, 14.8	9.5	8.2, 10.8
More than 3 years, not more than 5 years	9.1	7.0, 11.1	11.0	9.6, 12.5
More than 5 years, not entire life	28.7	24.4, 33.1	29.1	26.7, 31.5
Entire life	20.2	16.4, 24.0	32.9	30.3, 35.5
Time away from residence in past 12 months				
2 weeks or less	62.4	58.5, 66.4	64.2	60.7, 67.7
More than 2 weeks, not more than 1 month	13.8	11.1, 16.4	11.8	10.1, 13.6
More than 1 month, not more than 3 months	6.9	4.9, 8.8	6.7	5.5, 8.0
More than 3 months	10.0	7.7, 12.3	11.8	9.5, 14.1

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Table 41. Sexual behaviors among women who work at spots in cross-border sites (PLACE survey, 2016)

	Female Workers (n=1,178)		Female Patrons (n=3,000)	
	Weighted %	95% CI	Weighted %	95% CI
Has a main male partner	82.0	78.9, 85.0	85.2	83.6, 86.7
Any transactional sex in the past 12 months*	27.6	23.4, 31.7	16.9	14.3, 19.4
Exchanged sex for cash in past 12 months	22.8	19.0, 26.7	13.2	10.8, 15.6
Had 1 or more new partners in past 12 months	76.5	73.0, 80.0	76.8	74.7, 78.9
Of those with 1 or more partner in past 12 months				
Number of partners in past 4 weeks	1.7	1.2, 2.1	1.4	1.2, 1.5
Number of partners in past 12 months	5.9	2.0, 9.8	3.6	2.5, 4.6
Married or living with a sexual partner				
Currently	43.7	39.0, 48.5	52.3	49.5, 55.1
Previously, but not now	27.8	24.1, 31.4	19.9	17.2, 22.5
Age at first sex	Weighted mean	95% CI	Weighted mean	95% CI
Age	16.9	16.7, 17.1	16.9	16.8, 17.1

*Sex in exchange for money, gifts, goods, or favors.

G. Men Who Work at Spots

This section compares men who work at spots in cross-border sites with male patrons who visit spots.

Demographic Characteristics of Men Who Work at Spots

Educational attainment was similar among men who work at spots and male patrons. Nearly half of male workers at spots (46.9%) had completed at least some secondary school. Male workers at spots across the 12 sites most commonly resided in Kenya (50.5%), followed by Uganda (30.8%), Tanzania (15.7%), and Rwanda (2.9%). The average age was 31.5 years (Table 42).

Barriers to Accessing Routine Health Care among Men Who Work at Spots

A larger proportion of men who work at spots reported experiencing all eight barriers to accessing routine health services as compared to male patrons. The most common barrier among male workers was cost of services, experienced by 33.4 percent. The second most commonly reported barrier was time to get services (reported by 27.5% of male workers), followed by distance to services (21.7%) (Table 43).

Table 42. Demographic characteristics of men who work at spots at cross-border sites (PLACE survey, 2016)

	Male Workers (n=1,287)		Male Patrons (n=5,953)	
	Weighted %	95% CI	Weighted %	95% CI
Employed (full-time, part-time, or informally)	100.0	--	72.4	70.1, 74.7
Education				
Less than primary school	20.3	16.7, 23.8	19.7	17.9, 21.5
Primary school	32.9	29, 36.8	31.5	29.4, 33.6
Some secondary school or more	46.9	41.9, 51.8	48.8	46.5, 51
Country of residence				
Kenya	50.5	38.0, 63.0	31.3	26.7, 36.0
Rwanda	2.9	0.7, 5.1	7.2	5.1, 9.3
Tanzania	15.7	10.8, 20.6	22.4	18.4, 26.4
Uganda	30.8	21.1, 40.4	39.0	33.9, 44.0
Age group				
15–19	6.4	3.8, 9.1	8.7	7.3, 10.2
20–24	20.7	17.3, 24.2	21.8	20.3, 23.4
25–29	23.7	19.7, 27.7	21.3	20.0, 22.6
30–34	17.6	15.5, 19.7	16.8	15.4, 18.1
35–39	12.8	10.2, 15.5	12.2	11.1, 13.3
40–49	11.7	9.2, 14.2	12.8	11.5, 14.0
50 and over	7.0	4.7, 9.4	6.4	5.5, 7.4
Mean age	Weighted mean	95% CI	Weighted mean	95% CI
Age	31.5	30.5, 32.4	31.1	30.6, 31.7

Table 43. Barriers to accessing routine health services among men who work at spots in cross-border sites (PLACE survey, 2016)

	Male Workers (n=1,287)		Male Patrons (n=5,953)	
	Weighted %	95% CI	Weighted %	95% CI
Distance	21.7	17.4, 26.0	18.4	16.6, 20.2
Facility hours	18.9	15.3, 22.5	15.8	14.1, 17.5
Time to get services	27.5	23.6, 31.3	19.4	17.5, 21.3
Cost of services	33.4	29.3, 37.6	24.6	22.3, 26.9
Availability of transport	14.7	11.2, 18.1	12.9	11.3, 14.4
Cost of transport	18.5	14.7, 22.4	14.2	12.5, 15.8
Concern of unfair treatment	17.6	13.9, 21.3	12.7	11.2, 14.1
Concern about provider trustworthiness	16.5	13.4, 19.7	10.9	9.6, 12.3

Vulnerability Factors among Men Who Work at Spots

Just under 10 percent of men who work at spots were homeless in the past six months. Similar proportions of male workers and patrons at spots (less than 1% for each group) had injected recreational drugs in the past 12 months. Men who work at spots were, however, less likely than male patrons to have ever injected drugs (Table 44).

Table 44. Vulnerability factors among men who work at spots in cross-border sites (PLACE survey, 2016)

	Male Workers (n=1,287)		Male Patrons (n=5,953)	
	Weighted %	95% CI	Weighted %	95% CI
Homeless within the past 6 months	9.1	6.2, 12.1	7.7	6.3, 9.0
Injected recreational drugs				
In the past 12 months	0.5	0.1, 1.0	0.7	0.4, 1.1
Ever	0.7	0.2, 1.2	1.4	1.0, 1.9

Mobility among Men Who Work at Spots

In general, men who work at spots had a similar distribution of time at their current locality of residence as male patrons. Male workers (38.8%) were somewhat less likely to have resided in their current locality for their entire life than male patrons (43.1%).

The distribution of time spent away from one's residence was similar among men who work at spots and male patrons. Among men who work at spots, 22.6 percent spent more than one month away in the past 12 months, as did the same proportion of male patrons (Table 45).

Table 45. Mobility among men who work at spots in cross-border sites (PLACE survey, 2016)

	Male Workers (n=1,287)		Male Patrons (n=5,953)	
	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence				
6 months or less	9.8	6.4, 13.2	8.7	7.5, 9.9
More than 6 months, not more than 1 year	3.4	1.9, 4.8	5.6	4.6, 6.5
More than 1 year, not more than 3 years	8.9	5.8, 11.9	8.1	7.2, 9.0
More than 3 years, not more than 5 years	8.5	5.5, 11.6	8.9	7.8, 9.9
More than 5 years, not entire life	30.5	26.1, 34.9	25.5	23.6, 27.3
Entire life	38.8	31.2, 46.3	43.1	40.8, 45.5
Time away from residence in past 12 months				
2 weeks or less	59.7	54.2, 65.2	61.8	59.4, 64.2
More than 2 weeks, not more than 1 month	11.9	9.4, 14.4	12.2	10.8, 13.5
More than 1 month, not more than 3 months	9.1	6.8, 11.3	8.5	7.3, 9.6
More than 3 months	13.5	9.1, 17.8	14.1	12.1, 16.1

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Sexual Behaviors among Men Who Work at Spots

Over 60 percent of men who work at spots were married. Most (84.7%) had a main female partner, and the mean age at first sex was 17.3 years.

Most men who work at spots (87.5%) had at least one sexual partner in the past 12 months. For nearly half of men who had one or more sexual partners in that time, at least one of the partners was new. On average, men who work at spots and who had at least one partner in the past 12 months had 2.9 partners in that time. Nearly 20 percent of men who work at spots paid money for sex in the past 12 months, as did 22.5 percent of male patrons (Table 46).

Table 46. Sexual behaviors among men who work at spots in cross-border sites (PLACE survey, 2016)

	Male Workers (n=1,287)		Male Patrons (n=5,953)	
	Weighted %	95% CI	Weighted %	95% CI
Has a main female partner	84.7	81.7, 87.8	84.4	82.8, 86.0
Paid money for sex in the past 12 months	19.3	15.3, 23.3	22.5	20.8, 24.2
Had sex with a man in the past 12 months	0.7	0.2, 1.2	1.3	0.9, 1.8
Had 1 or more sexual partner in past 12 months	87.5	83.8, 91.3	89.4	88.3, 90.4
Of those with 1 or more partner in past 12 months				
Had a new partner in that time	48.7	44.7, 52.8	48.4	45.9, 50.9
Number of partners in past 4 weeks	1.3	1.2, 1.4	1.4	1.3, 1.4
Number of partners in past 12 months	2.9	2.6, 3.2	3.2	2.9, 3.4
Married or living with a sexual partner				
Currently	62.8	56.9, 68.7	58.9	56.7, 61.1
Previously, but not now	7.3	5.5, 9.2	7.1	6.1, 8.1
Age at first sex				
Age	17.3	17.1, 17.6	17.5	17.4, 17.6

H. Truck Drivers

Demographic Characteristics of Truck Drivers

Nearly 60 percent of truck drivers at spots had completed some secondary school or more, compared to only 48.1 percent of other men at spots. Most truck drivers resided in Uganda (39.3%), followed by Tanzania (32.2%), and Kenya (22.7%). The mean age of truck drivers was 33.3 as compared to 31.1 for other men at spots (Table 47).

Barriers to Accessing Routine Health Care among Truck Drivers

A smaller proportion of truck drivers at spots reported experiencing all eight barriers to accessing routine health services than other men at spots. For truck drivers at spots, the most commonly experienced barriers to accessing services were cost of services (18.7% of truck drivers) and time to get services (15.8%). Notably, cost of transport, availability of transport, and distance to services were experienced by only approximately half the proportion of truck drivers than other men at spots (Table 48).

Table 47. Demographic characteristics of truck drivers at spots at cross-border sites (PLACE survey, 2016)

	Truck Drivers (n=192)		Other Men (n=11,236)	
	Weighted %	95% CI	Weighted %	95% CI
Employed (full-time, part-time, or informally)	100.0	--	76.7	74.7, 78.7
Education				
Less than primary school	10.0	5.5, 14.5	20.1	18.2, 21.9
Primary school	30.3	22.2, 38.4	31.8	30.0, 33.7
Some secondary school or more	59.7	50.2, 69.2	48.1	45.8, 50.4
Country of residence				
Kenya	22.7	16.9, 28.5	35.2	29.6, 40.7
Rwanda	4.9	0.0, 12.4	6.5	4.4, 8.5
Tanzania	32.2	23.3, 41.2	20.9	17.2, 24.5
Uganda	39.3	30.0, 48.5	37.4	32.3, 42.6
Burundi	0.9	0.0, 2.7	0.0	--
Age group				
15–19	0.2	0.0, 0.6	8.6	7.1, 10.0
20–24	10.9	4.5, 17.3	21.9	20.6, 23.3
25–29	24.2	13.6, 34.7	21.7	20.2, 23.1
30–34	21.6	14.7, 28.5	16.8	15.7, 17.8
35–39	28.2	16.9, 39.5	11.8	10.8, 12.9
40–49	10.3	5.9, 14.6	12.6	11.5, 13.7
50 and over	4.7	1.4, 8.1	6.6	5.7, 7.5
Mean age	Weighted mean	95% CI	Weighted mean	95% CI
Age	33.3	31.7, 34.9	31.1	30.6, 31.6

Table 48. Barriers to accessing routine health services among truck drivers at spots in cross-border sites (PLACE survey, 2016)

	Truck Drivers (n=192)		Other Men (n=11,236)	
	Weighted %	95% CI	Weighted %	95% CI
Distance	9.8	6.5, 13.1	19.3	17.4, 21.1
Facility hours	10.8	6.2, 15.5	16.5	14.9, 18.2
Time to get services	15.8	8.3, 23.2	21.0	19.1, 22.8
Cost of services	18.7	12.1, 25.3	26.4	24.2, 28.7
Availability of transport	6.9	4.1, 9.7	13.4	11.9, 14.9
Cost of transport	7.0	3.8, 10.3	15.2	13.5, 16.9
Concern of unfair treatment	9.3	2.6, 16.1	13.7	12.2, 15.2
Concern about provider trustworthiness	10.9	5.5, 16.3	12.0	10.6, 13.4

Vulnerability Factors among Truck Drivers

Just over 10 percent of truck drivers at spots were homeless in the past six months, as compared to 7.9 percent of other men at spots. The proportion of truck drivers at spots who ever injected drugs, while only 3.6 percent, was still almost three times that of other men at spots. In addition, 2.8 percent injected drugs in the last 12 months, compared to only 0.6 percent of other men at spots (Table 49).

Table 49. Vulnerability factors among truck drivers at spots in cross-border sites (PLACE survey, 2016)

	Truck Drivers (n=192)		Other Men (n=11,236)	
	Weighted %	95% CI	Weighted %	95% CI
Homeless within the past 6 months	10.4	5.9, 14.9	7.9	6.5, 9.2
Injected recreational drugs				
In the past 12 months	2.8	2.4, 3.2	0.6	0.3, 0.9
Ever	3.6	2.4, 4.9	1.3	0.9, 1.6

Mobility among Truck Drivers

Truck drivers at spots (56.8%) were less likely to have lived in the current locality of their residence for five years or more than other men at spots (69.1%). The proportion of truck drivers (40.4%) who were away from their residence for more than one month in the past 12 months was almost twice that of other men at spots (22.1%) (Table 50).

Table 50. Mobility among truck drivers at spots in cross-border sites (PLACE survey, 2016)

	Truck Drivers (n=192)		Other Men (n=11,236)	
	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence				
6 months or less	17.7	8.1, 27.3	8.6	7.4, 9.9
More than 6 months, not more than 1 year	6.2	1.6, 10.9	5.1	4.3, 6.0
More than 1 year, not more than 3 years	9.1	5.0, 13.2	8.2	7.2, 9.2
More than 3 years, not more than 5 years	8.9	4.6, 13.2	8.8	7.7, 10.0
More than 5 years, not entire life	22.3	13.7, 30.9	26.5	24.7, 28.3
Entire life	34.5	27.0, 41.9	42.6	40.1, 45.1
Time away from residence in past 12 months				
2 weeks or less	41.5	33.6, 49.4	62.0	59.6, 64.5
More than 2 weeks, not more than 1 month	16.1	10.5, 21.6	12.0	10.8, 13.2
More than 1 month, not more than 3 months	19.3	11.1, 27.4	8.3	7.2, 9.3
More than 3 months	21.1	14.6, 27.6	13.8	11.5, 16.1

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Sexual Behaviors among Truck Drivers

Truck drivers (76.6%) were more likely to be currently married or living with a sexual partner than other men at spots (59.1%), and 94.0 percent had a main female partner, as compared to only 84.2 percent of other men at spots. The mean age at first sex for truck drivers at spots was 17.8.

Over 95 percent of truck drivers have had one or more sexual partners in the past 12 months. Of those with one or more partners in the past 12 months, 56.7 percent had a new partner in that time, compared to only 48.2 percent of other men at spots. Among those who had one or more sexual partners in the past 12 months, truck drivers had an average of 3.9 partners, as compared to 3.1 for other men at spots. The proportion of truck drivers (41.0%) at spots who paid money for sex in the past 12 months was nearly twice that of other men at spots (21.4%) (Table 51).

Table 51. Sexual behaviors among truck drivers at spots in cross-border sites (PLACE survey, 2016)

	Truck Drivers (n=192)		Other Men (n=11,236)	
	Weighted %	95% CI	Weighted %	95% CI
Has a main female partner	94.0	90.9, 97.0	84.2	82.7, 85.7
Paid money for sex in the past 12 months	41.0	31.8, 50.2	21.4	19.4, 23.3
Had sex with a man in the past 12 months	0.3	0.0, 0.7	1.2	0.9, 1.6
Had 1 or more sexual partner in past 12 months	95.1	92.6, 97.6	88.9	87.6, 90.1
Of those with 1 or more partner in past 12 months				
Had a new partner in that time	56.7	44.1, 69.2	48.2	45.8, 50.6
Number of partners in past 4 weeks	1.7	1.5, 1.8	1.4	1.3, 1.4
Number of partners in past 12 months	3.9	2.9, 4.9	3.1	2.9, 3.3
Married or living with a sexual partner				
Currently	76.6	67.3, 85.9	59.1	57.0, 61.2
Previously, but not now	6.5	2.6, 10.3	7.2	6.3, 8.1
Has a main female partner	94.0	90.9, 97.0	84.2	82.7, 85.7
Paid money for sex in the past 12 months	41.0	31.8, 50.2	21.4	19.4, 23.3
Had sex with a man in the past 12 months	0.3	0.0, 0.7	1.2	0.9, 1.6
Age at first sex	Weighted mean	95% CI	Weighted mean	95% CI
Age	17.8	17.4, 18.2	17.5	17.4, 17.6

I. Men Who Have Sex with Men

This section describes MSM at spots in cross-border sites. Note that the confidence intervals around the weighted percentages for MSM are generally wider than for other mobile and vulnerable populations discussed above. This is due, in part, to the small number of respondents in the MSM group (n=92).

Demographic Characteristics of MSM

Educational attainment was similar among MSM and other men at spots, with 46.4 percent and 48.5 percent respectively completing some secondary school or more. The proportion of MSM in the 15–19 age group (16.4%) was twice that of other men at spots (8.2%). However, the average age of MSM (30.4 years) was only slightly lower than that of other men (31.2 years) (Table 52).

Table 52. Demographic characteristics of MSM at spots at cross-border sites (PLACE survey, 2016)

	MSM (n=92)		Other Men (n=7,148)	
	Weighted %	95% CI	Weighted %	95% CI
Employed (full-time, part-time, or informally)	68.5	57.6, 79.3	77.5	75.5, 79.4
Education				
Less than primary school	23.9	13.6, 34.2	19.8	18.0, 21.5
Primary school	29.7	20.8, 38.6	31.8	29.9, 33.6
Some secondary school or more	46.4	36.6, 56.1	48.5	46.3, 50.7
Country of residence				
Kenya	19.3	14.6, 24.0	35.0	29.5, 40.5
Rwanda	4.6	3.1, 6.0	6.4	4.4, 8.5
Tanzania	46.0	35.9, 56.1	20.9	17.3, 24.5
Uganda	29.2	18.8, 39.6	37.6	32.4, 42.7
Age group				
15–19	16.4	7.7, 25.1	8.2	6.8, 9.6
20–24	23.9	12.1, 35.8	21.6	20.2, 23.0
25–29	15.7	4.6, 26.9	21.8	20.4, 23.2
30–34	10.0	3.5, 16.6	17.0	15.9, 18.1
35–39	11.6	0.8, 22.3	12.3	11.3, 13.3
40–49	18.5	14.9, 22.1	12.5	11.5, 13.5
50 and over	3.8	0.5, 7.1	6.6	5.7, 7.5
Mean age	Weighted mean	95% CI	Weighted mean	95% CI
Age	30.4	28.6, 32.3	31.2	30.7, 31.7

Barriers to Accessing Routine Health Care among MSM

For MSM at spots, the most commonly experienced barriers to accessing services were cost of services (16.1% of MSM) and distance to services (14.0%). A smaller proportion of MSM reported experiencing all eight barriers to accessing routine health services than other men at spots. For example, only 8.3 percent of MSM experienced time to get services as barrier, compared to 21.0 percent of other men at spots (Table 53).

Table 53. Barriers to accessing routine health services among MSM at spots in cross-border sites (PLACE survey, 2016)

	MSM (n=92)		Other Men (n=7,148)	
	Weighted %	95% CI	Weighted %	95% CI
Distance	14.0	8.0, 20.1	19.1	17.3, 20.9
Facility hours	8.2	3.7, 12.7	16.5	14.8, 18.1
Time to get services	8.3	4.8, 11.9	21.0	19.1, 22.8
Cost of services	16.1	9.4, 22.7	26.3	24.1, 28.5
Availability of transport	8.9	5.4, 12.4	13.3	11.8, 14.8
Cost of transport	8.1	4.4, 11.7	15.0	13.4, 16.7
Concern of unfair treatment	9.7	5.9, 13.5	13.6	12.1, 15.1
Concern about provider trustworthiness	6.7	3.2, 10.2	12.0	10.6, 13.4

Vulnerability Factors among MSM

A smaller proportion of MSM (4.8%) experienced homelessness in the past six months compared to other men at spots (8.0%). The proportion of MSM who ever injected drugs (5.4%) was over four times that of other men at spots (1.3%), and the proportion that injected drugs in the past 12 months (4.2%) was seven times that of other men at spots (Table 54).

Table 54. Vulnerability factors among MSM and other men at spots in cross-border sites (PLACE survey, 2016)

	MSM (n=92)		Other Men (n=7,148)	
	Weighted %	95% CI	Weighted %	95% CI
Homeless within the past 6 months	4.8	0.7, 8.9	8.0	6.6, 9.3
Injected recreational drugs				
In the past 12 months	4.2	0.0, 8.8	0.6	0.4, 0.9
Ever	5.4	0.6, 10.3	1.3	0.9, 1.6

Mobility among MSM

Mobility among MSM at spots were similar to other men at spots. Approximately two-thirds of both groups have lived at the current locality of their residence more than five years, and just over 60 percent spent only two weeks or less away from their residence in the past 12 months. However, the proportion of MSM (18.2%) who spent more than a month away from their current residence in the past 12 months was slightly lower than that of other men at spots (22.6%) (Table 55).

Table 55. Mobility among MSM and at spots in cross-border sites (PLACE survey, 2016)

	MSM (n=92)		Other Men (n=7,148)	
	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence				
6 months or less	9.3	0.9, 17.7	8.9	7.6, 10.2
More than 6 months, not more than 1 year	7.5	0.4, 14.6	5.2	4.3, 6.0
More than 1 year, not more than 3 years	5.4	0.0, 11.5	8.3	7.3, 9.3
More than 3 years, not more than 5 years	11.2	5.5, 16.9	8.8	7.7, 9.9
More than 5 years, not entire life	22.9	11.7, 34.1	26.4	24.7, 28.2
Entire life	43.7	31.6, 55.8	42.3	39.8, 44.8
Time away from residence in past 12 months				
2 weeks or less	63.8	52.4, 75.2	61.4	59.0, 63.8
More than 2 weeks, not more than 1 month	13.5	8.1, 18.9	12.1	10.9, 13.3
More than 1 month, not more than 3 months	6.9	1.0, 12.9	8.6	7.5, 9.7
More than 3 months	11.3	2.6, 20.1	14.0	11.8, 16.3

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Sexual Behaviors among MSM

Just over 60 percent of MSM had a main female partner, compared to 84.8 percent of other men at spots. MSM at spots were slightly more likely to be currently married or living with a sexual partner (63.0%) than other men at spots (59.6%). The mean age at first sex among MSM at spots was 18.1, as compared to 17.5 for other men at spots.

Equal proportions of MSM (21.5%) and other men at spots (21.9%) paid money for sex in the past 12 months. Of those with one or more partners in the past 12 months, MSM had a mean of 2.2 male partners and 1.6 female partners, while other men at spots had an average of 3.1 female partners. In the past four weeks, MSM at spots had a mean of 1.0 male partners at 0.7 female partners, while other men at spots had a mean of 1.4 female partners (Table 56).

Table 56. Sexual behaviors among MSM at spots in cross-border sites (PLACE survey, 2016)

	MSM (n=92)		Other Men (n=7,148)	
	Weighted %	95% CI	Weighted %	95% CI
Has a main female partner	60.5	53.1, 68.0	84.8	83.3, 86.2
Paid money for sex in the past 12 months	21.5	14.2, 28.9	21.9	20.1, 23.8
Of those with 1 or more partner in past 12 months				
Number of partners in past 4 weeks	1.6	1.3, 1.9	1.4	1.3, 1.4
Number of male partners in past 4 weeks	1.0	0.8, 1.1	0.0	--
Number of female partners in past 4 weeks	0.7	0.4, 0.9	1.4	1.3, 1.4
Number of partners in past 12 months	3.8	2.9, 4.7	3.1	2.9, 3.3
Number of male partners in past 12 months	2.2	1.8, 2.6	0.0	--
Number of female partners in past 12 months	1.6	0.8, 2.4	3.1	2.9, 3.3
Married or living with a sexual partner				
Currently	63.0	50.9, 75.2	59.6	57.5, 61.6
Previously, but not now	5.8	0.0, 11.6	7.2	6.3, 8.0
Age at first sex	Weighted mean	95% CI	Weighted mean	95% CI
Age	18.1	17.1, 19.0	17.5	17.4, 17.6

J. Mobile and Host Populations: Women

In addition to examining outcomes among each specific population of interest, this report explores differences in health outcomes between mobile and host populations in cross-border sites. Overall, 24.4 percent of people socializing in cross-border sites were mobile, defined as people who were not living in the same geographic locality as the cross-border site in which they were interviewed, and 75.6 percent were members of the host population, defined as people who were residents of the same geographic locality as the cross-border site. Geographic locality refers to sub-county in Kenya and Uganda, parish in Rwanda, and ward in Tanzania.

This section compares mobile women at spots in cross-border site sites with host women at spots.

Characteristics of Mobile and Host Women

Women traveling through cross-border sites were slightly more likely to be employed to some degree (72.9%) and to have completed some secondary school or more (46.9%) than women who lived at cross-border sites.

Mobile women were more likely to be from Kenya and Rwanda, and less likely to be from Tanzania and Uganda, than women who lived at cross-border sites. The mean age of both groups of women was just under 29 years (Table 57).

Table 57. Demographic characteristics of mobile and host women at spots in cross-border sites (PLACE survey, 2016)

	Mobile Women (n=951)		Host Women (3,231)	
	Weighted %	95% CI	Weighted %	95% CI
Employed (full-time, part-time, or informally)	72.9	66.8, 79.1	70.8	67.2, 74.4
Education				
Less than primary school	21.4	17.2, 25.6	25.4	22.7, 28.1
Primary school	31.7	27.3, 36.0	34.2	31.5, 36.9
Some secondary school or more	46.9	40.6, 53.2	40.4	36.9, 43.9
Country of residence				
Kenya	47.1	36.9, 57.3	26.5	21.6, 31.4
Rwanda	12.7	8.2, 17.3	0.8	0.3, 1.3
Tanzania	14.7	10.5, 18.9	25.4	21.3, 29.5
Uganda	25.2	18.2, 32.2	47.3	41.9, 52.8
Age group				
15–19	9.8	7.1, 12.5	11.5	9.8, 13.2
20–24	25.5	21.1, 29.8	28.0	25.7, 30.3
25–29	26.7	22.2, 31.2	22.1	20.1, 24.2
30–34	17.3	14.8, 19.8	15.2	13.3, 17.1
35–39	7.9	5.4, 10.4	9.1	7.9, 10.3
40–49	8.4	6.0, 10.7	9.8	8.4, 11.2
50 and over	4.4	2.7, 6.1	4.3	3.4, 5.2
Mean age	Weighted mean	95% CI	Weighted mean	95% CI
Age	28.9	28.1, 29.8	28.8	28.3, 29.4

Barriers to Accessing Routine Health Care among Mobile and Host Women

Similar proportions of mobile and host women reported experiencing each of the eight barriers to accessing routine healthcare services. For both groups of women, cost of services was the main barrier to accessing care (experienced by approximately 30% of women), followed by time to get services and distance to services (Table 58).

Vulnerability Factors among Mobile and Host Women

Just under 7 percent of mobile women at spots experienced homelessness in the past six months, and 1.6 percent ever injected drugs. Over 10 percent of mobile women experienced physical intimate partner violence in the past 12 months, as did 11.9 percent of host women. Among mobile women, 7.0 percent were forced to have sex against their will in the past 12 months, as were 8.1 percent of host women (Table 59).

Table 58. Barriers to accessing routine health services among mobile and host women at spots in cross-border sites (PLACE survey, 2016)

	Mobile Women (n=951)		Host Women (n=3,231)	
	Weighted %	95% CI	Weighted %	95% CI
Distance	21.6	17.0, 26.2	20.8	18.2, 23.4
Facility hours	16.8	12.0, 21.7	17.4	14.8, 19.9
Time to get services	21.6	17.0, 26.2	22.6	19.9, 25.4
Cost of services	30.7	23.7, 37.6	30.1	27.0, 33.1
Availability of transport	14.8	10.2, 19.5	15.2	12.7, 17.8
Cost of transport	14.1	10.5, 17.7	17.2	14.6, 19.7
Concern of unfair treatment	15.5	9.8, 21.2	16.6	14.3, 18.8
Concern about provider trustworthiness	15.5	9.4, 21.7	15.0	12.8, 17.2

Table 59. Vulnerability factors among mobile and host women at spots in cross-border sites (PLACE survey, 2016)

	Mobile Women (n=951)		Host Women (n=3,231)	
	Weighted %	95% CI	Weighted %	95% CI
Homeless within the past 6 months	6.8	3.4, 10.3	7.9	6.0, 9.7
Injected recreational drugs				
In the past 12 months	0.3	0.0, 0.6	0.4	0.1, 0.8
Ever	1.6	0.4, 2.9	1.0	0.4, 1.5
Experienced physical intimate partner violence				
In the past 3 months	7.2	4.9, 9.4	7.8	6.3, 9.3
In the past 12 months	10.9	8.1, 13.6	11.9	10.0, 13.7
Forced to have sex against will				
In the past 3 months	5.0	3.4, 6.6	5.8	4.6, 6.9
In the past 12 months	7.0	5.0, 9.1	8.1	6.6, 9.5

Mobility among Mobile and Host Women

Mobile women at spots (65.1%) were more likely to have lived in the locality of their current residence for five or more years than host women at spots (56.4%). Mobile women (21.5%) were somewhat more likely to have spent more than one month away from their residence in the past 12 months than host women at spots (17.1%) (Table 60).

Table 60. Mobility among mobile and host women at spots in cross-border sites (PLACE survey, 2016)

	Mobile Women (n=951)		Host Women (n=3,231)	
	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence				
6 months or less	10.2	7.5, 13.0	15.0	12.7, 17.3
More than 6 months, not more than 1 year	6.6	4.6, 8.6	6.9	5.0, 8.8
More than 1 year, not more than 3 years	9.6	6.3, 12.9	10.5	9.2, 11.7
More than 3 years, not more than 5 years	8.4	6.3, 10.4	11.1	9.7, 12.5
More than 5 years, not entire life	30.5	26.4, 34.6	28.6	26.0, 31.1
Entire life	34.6	30.1, 39.2	27.8	25.5, 30.2
Time away from residence in past 12 months				
2 weeks or less	61.1	52.1, 70.2	64.4	61.9, 66.9
More than 2 weeks, not more than 1 month	12.6	9.4, 15.9	12.3	10.6, 14.0
More than 1 month, not more than 3 months	7.8	5.6, 10.1	6.5	5.3, 7.6
More than 3 months	13.7	8.1, 19.3	10.6	8.9, 12.4

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Sexual Behaviors among Mobile and Host Women

Over 45 percent of mobile women at spots were currently married or living with a sexual partner, as were 51.0 percent of host women at spots. Over 80 percent of both groups of women had a main male partner, and the mean age at first sex for both groups was 16.9 years.

Nearly 80 percent of mobile women, and 75.8 percent of host women had one or more sexual partners in the past 12 months. Of mobile women who had one or more sexual partners in this time, 41.4 percent had a new partner, as did 34.0 percent of host women. Of women with one or more sexual partners in the past 12 months, mobile women had a mean of 5.2 partners, as compared to 3.9 for host women.

A greater proportion of mobile women at spots engaged in transactional sex or sex for money in the past 12 months as compared to host women. Among mobile women at spots, 26.8 percent engaged in transactional sex and 23.8 percent exchanged sex for money in the past 12 months, as compared to 17.9 percent and 13.6 percent of host women at spots, respectively (Table 61).

Table 61. Sexual behaviors among mobile and host women at spots in cross-border sites (PLACE survey, 2016)

	Mobile Women (n=951)		Host Women (n=3,231)	
	Weighted %	95% CI	Weighted %	95% CI
Has a main male partner	82.0	78.7, 85.2	84.9	83.4, 86.5
Any transactional sex in the past 12 months*	26.8	20.7, 33.0	17.9	15.7, 20.0
Exchanged sex for money in past 12 months	23.8	17.7, 29.9	13.6	11.7, 15.5
Had 1 or more sexual partner in past 12 months	79.9	76.8, 83.0	75.8	73.6, 78.0
Of those with 1 or more partner in past 12 months				
Had a new partner in that time	41.4	36.1, 46.7	34.0	31.2, 36.9
Number of partners in past 4 weeks	1.6	1.2, 1.9	1.4	1.3, 1.6
Number of partners in past 12 months	5.2	1.7, 8.7	3.9	2.7, 5.2
Married or living with a sexual partner				
Currently	45.9	40.7, 51.0	51.0	47.9, 54.2
Previously, but not now	22.8	19.2, 26.3	21.9	19.2, 24.6
Age at first sex				
Age	16.9	16.7, 17.1	16.9	16.8, 17.1

*Sex in exchange for money, gifts, goods, or favors

K. Mobile and Host Populations: Men

This section compares men who were residents of the cross-border site where they were interviewed (host men) with men who were not residents of the site (mobile men).

Demographic Characteristics of Mobile and Host Men

A greater proportion of mobile men at spots (81.0%) were employed (full-time, part-time, or informally) than host men at spots (76.2%), and a greater proportion (51.4%) completed some secondary school or more, as compared to host men (47.4%).

Mobile men were more likely to be from Kenya and Rwanda, and less likely to be from Tanzania and Uganda, than host men. The mean age of mobile men at spots was 31.8 years, as compared to 31.0 years for host men at spots (Table 62).

Barriers to Accessing Routine Health Care among Mobile and Host Men

A lower proportion of mobile men at spots as compared to host men reported experiencing each of the eight barriers to accessing routine health services. Cost of services was the most commonly reported barrier, experienced by 24.8 percent of mobile men and 26.7 percent of host men. Time to get services and distance to services were the next most commonly reported barriers to accessing routine health services for both groups of men (Table 63).

Table 62. Demographic characteristics of mobile and host men at spots in cross-border sites (PLACE survey, 2016)

	Mobile Men (n=1,809)		Host Men (n=5,436)	
	Weighted %	95% CI	Weighted %	95% CI
Employed (full-time, part-time, or informally)	81.0	78.1, 83.8	76.2	73.8, 78.5
Education				
Less than primary school	19.4	15.4, 23.5	19.9	18.2, 21.6
Primary school	29.2	26.0, 32.4	32.6	30.4, 34.9
Some secondary school or more	51.4	45.8, 57.0	47.4	45.1, 49.8
Country of residence				
Kenya	38.9	28.9, 48.9	33.4	27.8, 39.0
Rwanda	17.9	11.2, 24.6	2.5	1.0, 4.0
Tanzania	13.6	10.5, 16.8	23.8	19.4, 28.2
Uganda	29.1	22.6, 35.5	40.3	34.6, 46.0
Age group				
15–19	5.7	4.0, 7.3	9.2	7.5, 10.9
20–24	20.4	17.7, 23.2	22.0	20.4, 23.6
25–29	22.1	19.8, 24.3	21.6	19.9, 23.3
30–34	16.8	14.9, 18.8	16.9	15.7, 18.2
35–39	15.5	13.4, 17.6	11.2	10.1, 12.3
40–49	13.6	11.4, 15.7	12.2	11.0, 13.5
50 and over	5.9	4.0, 7.9	6.8	5.7, 7.8
Mean age	Weighted mean	95% CI	Weighted mean	95% CI
Age	31.8	31.0, 32.6	31.0	30.4, 31.5

Table 63. Barriers to accessing routine health services among mobile and host men at spots in cross-border sites (PLACE survey, 2016)

	Mobile Men (n=903)		Host Men (n=6,342)	
	Weighted %	95% CI	Weighted %	95% CI
Distance	15.5	12.3, 18.8	20.2	18.2, 22.2
Facility hours	13.5	10.7, 16.3	17.4	15.4, 19.3
Time to get services	17.0	14.2, 19.9	22.1	19.9, 24.3
Cost of services	24.8	19.9, 29.6	26.7	24.2, 29.2
Availability of transport	10.9	8.2, 13.6	14.0	12.3, 15.7
Cost of transport	10.7	7.6, 13.9	16.4	14.5, 18.3
Concern of unfair treatment	12.6	9.2, 16.0	13.9	12.3, 15.5
Concern about provider trustworthiness	9.7	7.0, 12.5	12.7	11.2, 14.2

Vulnerability Factors among Mobile and Host Men

A lower proportion of mobile men at spots (4.8%) as compared to host men at spots (9.0%) were homeless in the past six months. Less than 1 percent of mobile men ever injected drugs, as compared to 1.4 percent of host men (Table 64).

Table 64. Vulnerability factors among mobile and host men at spots in cross-border sites (PLACE survey, 2016)

	Mobile Men (n=903)		Host Men (n=6,342)	
	Weighted %	95% CI	Weighted %	95% CI
Homeless within the past 6 months	4.8	3.0, 6.6	9.0	7.5, 10.5
Injected recreational drugs				
In the past 12 months	0.4	0.1, 0.7	0.8	0.4, 1.2
Ever	0.9	0.5, 1.4	1.4	1.0, 1.9

Mobility among Mobile and Host Men

Nearly 73 percent of mobile men at spots have lived in the locality of their current residence for five or more years, as compared to 67.3 percent of host men at spots. While over 27 percent of mobile men spent more than a month away from their residence in the past 12 months, only 20.8 percent of host men reported the same (Table 65).

Table 65. Mobility among mobile and host men at cross-border sites (PLACE survey, 2016)

	Mobile Men (n=903)		Host Men (n=6,342)	
	Weighted %	95% CI	Weighted %	95% CI
Length of time in current locality* of residence				
6 months or less	8.2	5.4, 10.9	9.2	7.9, 10.4
More than 6 months, not more than 1 year	4.3	2.7, 6.0	5.5	4.5, 6.5
More than 1 year, not more than 3 years	6.7	5.3, 8.2	8.7	7.5, 10.0
More than 3 years, not more than 5 years	7.9	5.7, 10.0	9.1	7.9, 10.4
More than 5 years, not entire life	28.2	25.2, 31.2	25.8	23.8, 27.7
Entire life	44.7	40.4, 49.0	41.5	38.5, 44.5
Time away from residence in past 12 months				
2 weeks or less	55.5	50.1, 60.8	63.5	61.1, 65.9
More than 2 weeks, not more than 1 month	14.5	12.2, 16.9	11.3	10.0, 12.6
More than 1 month, not more than 3 months	8.4	6.0, 10.9	8.6	7.4, 9.9
More than 3 months	19.2	12.7, 25.7	12.2	10.6, 13.8

*Kenya and Uganda: sub-county; Rwanda: parish; Tanzania: ward

Sexual Behaviors among Mobile and Host Men

Among mobile men at spots, 62.0 percent were currently married or living with a sexual partner, and 85.0 percent had a main female partner. The mean age at first sex among mobile men was 17.7 years.

Approximately 90 percent of both mobile and host men at spots had one or more sexual partners in the past 12 months. While nearly 55 percent of mobile men had a new sexual partner in that time, only 46.4 percent

of host men reported the same. Of those with one or more sexual partners in the past 12 months, mobile men had an average of 3.6 partners as compared to 3.0 for host men.

A greater proportion of mobile men (26.3%) paid money for sex in the past 12 months, as compared to host men at spots (20.4%) (Table 66).

Table 66. Sexual behaviors among mobile and host men at spots in cross-border sites (PLACE survey, 2016)

	Mobile Men (n=903)		Host Men (n=6,342)	
	Weighted %	95% CI	Weighted %	95% CI
Has a main female partner	85.0	82.5, 87.5	84.3	82.6, 85.9
Paid money for sex in the past 12 months	26.3	22.0, 30.6	20.4	18.5, 22.3
Had sex with a man in the past 12 months	0.9	0.3, 1.6	1.3	0.9, 1.7
Had 1 or more sexual partner in past 12 months	90.8	88.7, 92.9	88.4	86.9, 89.9
Of those with 1 or more partner in past 12 months				
Had a new partner in that time	54.4	49.8, 59.0	46.4	43.9, 48.8
Number of partners in past 4 weeks	1.4	1.3, 1.6	1.4	1.3, 1.4
Number of partners in past 12 months	3.6	2.9, 4.3	3.0	2.8, 3.1
Married or living with a sexual partner				
Currently	62.0	58.6, 65.3	58.8	56.4, 61.2
Previously, but not now	5.9	4.6, 7.1	7.6	6.5, 8.6
	Weighted mean	95% CI	Weighted mean	95% CI
Age at first sex				
Age	17.7	17.5, 18.0	17.4	17.3, 17.5

Chapter 4 Key Points

- Specific populations of interest can be identified at spots in cross-border sites, including young women, FSWs, fisherfolk, workers at spots, truck drivers, MSM, and people who inject drugs.
- Few MSM and people who inject drugs were identified, indicating either underreporting of stigmatizing behaviors or low numbers of MSM and people who inject drugs at public spots in cross-border sites.
- Fisherfolk were more likely to face barriers to receiving health services than their nonfisherfolk male and female counterparts.
- Female workers at spots and FSWs were more likely to experience intimate partner violence and forced sex than other women.

V. SIZES OF KEY POPULATIONS AT CROSS-BORDER SITES

The size of key population groups socializing at cross-border sites are important to inform public health programming.

A. Female Sex Workers

The number of FSWs present at each site was estimated using data collected from 883 spot informants and 616 FSWs interviewed at spots. The main output of the FSW size estimation process was the estimated number of FSWs who could be found at each cross-border site over a one-week period. The site-specific FSW size estimates and relevant inputs are shown in Table 67. Because FSWs were defined as women who reported exchanging sex for cash in the preceding 12 months, estimates include women who engaged in this behavior with varying degrees of formality and frequency.

One-week size estimates ranged from 1,077 FSWs in Isebania, Kenya/Sirari, Tanzania to 10,244 FSWs in Busia, Kenya/Busia, Uganda. The mean estimated number of FSWs in one week was generally higher at land cross-border sites (with a mean of 4,020 FSWs) than at lake cross-border sites (mean of 2,265 FSWs).

One assumption inherent in these estimates is that survey respondents described the intended population of FSWs. Given that size estimates incorporate data reported by spot informants, spot informants' ability to recognize FSWs is expected to be an important factor in the accuracy of FSW size estimates. While spot informants may not be aware of all FSWs who come to the spot, many FSWs need to be known or recognizable to attract potential clients. At locations such as cross-border sites where clients of FSWs are expected to be mobile and may be less familiar with the spots they visit, it is possible that FSWs make additional efforts to be recognized.

Size estimates also assume that survey respondents described FSWs present within the boundaries of the cross-border site, and not beyond the boundaries or in smaller or different areas. This assumption is expected to hold most true for cross-border sites with recognized boundaries. When asking respondents about FSW behaviors, interviewers specified that they were interested in knowing about FSWs who were present locally.

Adjustment factors also assume that FSWs who were interviewed at spots accurately reported on the behaviors of other FSWs at the cross-border site. This assumption may be most valid at sites where FSWs are more likely to know of one another and know of other FSWs' visiting behaviors. This may be expected, for example, at cross-border sites with the least stigma around sex work, or at sites where there is greater social interaction among women and in turn, FSWs. If women who visit spots are not likely to know women who do not go to spots, the FSW respondents may have underestimated the proportion of FSWs that do not visit spots. In such a case, the no-visit adjustment factor is expected to be an underestimate of the true parameter, and in turn, the one-week size estimates are expected to be lower than the true population size.

Using the number of FSWs identified in patron/worker interviews and the sampling weights of these respondents, site-specific estimates were produced for the number of contacts that would be made with FSWs if visiting all spots at a cross-border site during a random two-hour period. Findings suggest that on average, a higher number of FSW contacts would be made by visiting all spots at one of the selected land cross-border sites (mean of 287 contacts) than by visiting all spots at one of the selected lake cross-border sites (mean of 117 contacts).

Estimates of spot visit contacts differ from the Saturday night estimates because the Saturday night estimates describe FSWs present at a consistent period of time at anticipated peak hours, whereas the spot visit contact

estimates are for random operational hours during the week. Unlike the Saturday night estimates, the contact estimates do not necessarily represent unique FSWs, as the inconsistent time periods prevent adjustment of the contact estimates for potential multiple-counting of FSWs. It is expected that contacts are more likely to represent unique individuals at random two-hour periods at sites where FSWs are less likely to visit multiple spots and therefore be captured in multiple spot estimates. Another difference between the spot visit contact estimates and the Saturday night estimates is that the spot visit contact estimates are calculated for random two-hour periods during operational hours at the spots, rather than for the generally anticipated peak hours of 8:00 p.m. to 12:00 a.m. (a period of four hours) on Saturday nights.

Table 67. Estimated number of women who exchanged sex for money in the past 12 months at cross-border sites (PLACE survey, 2016)

	Saturday Night Estimate at Spots*	One-Week Adjustment Factor†	One-Week Estimate at Spots‡	No-Visit Adjustment Factor§	One-Week Estimate¶	Estimated Spot Visit Contacts‡
Malaba, Kenya/ Malaba, Uganda	855	2.3	2,000	2.0	4,049	320
Busia, Kenya/ Busia, Uganda	1,719	2.2	3,854	2.7	10,244	722
Katuna, Uganda/ Gatuna, Rwanda	755	1.5	1,163	2.3	2,722	114
Holili, Tanzania/ Taveta, Kenya	370	1.7	644	3.8	2,472	64
Isebania, Kenya/ Sirari, Tanzania	293	1.4	414	2.6	1,077	490
Mutukula, Uganda/ Mutukula, Tanzania	722	2.4	1,750	3.8	6,661	328
Namanga, Kenya/ Namanga, Tanzania	378	2.7	1,027	3.1	3,210	149
Kagitumba, Rwanda/ Mirama Hills, Uganda	237	2.3	554	3.1	1,726	110
Mutukula, Uganda/ Mutukula, Tanzania	722	2.4	1,750	3.8	6,661	328
Mean for land sites	666		1,426		4,020	287
Sio Port/Port Victoria, Kenya/ Majanji, Uganda	317	1.6	502	4.8	2,402	169
Muhuru Bay, Kenya/ Kironwe, Tanzania	293	1.9	564	3.2	1,820	119
Mbita and Rusinga, Kenya	259	2.7	696	3.7	2,596	107
Kasenyei, Uganda	438	1.6	709	3.2	2,242	73
Mean for lake sites	327		618		2,265	117

*Estimated number of FSWs who could be found at spots on a Saturday night

†Adjusts for FSWs who do not go out on Saturday nights, of those who go out during one week

‡Estimated number of FSWs who could be found at spots over the course of one week

§Adjusts for FSWs who do not go out to any spots in a typical week

¶Estimated number of FSWs who could be found (in and out of spots) over the course of one week

‡Estimated number of contacts with FSWs that could be made by visiting all spots for approximately two hours

B. Men Who Have Sex with Men

The size of the population of MSM was estimated for the subgroup of these men who could be found at public spots on Saturday nights. Data to inform these estimates were collected from 883 spot informants. Results are shown in Table 68. Estimates of the number of MSM present at spots on Saturday nights ranged from 0 to 241 MSM across the 12 cross-border sites. Across all sites, the mean Saturday night estimate was 45, with a mean of 58 at land cross-border sites and 18 at lake cross-border sites. Adjustment factors were not calculated for MSM due to limited numbers of MSM found at the sites.

Saturday night estimates of the number of MSM at spots share the assumptions of the FSW estimates: they are influenced by the accuracy with which respondents described the population and its visiting behaviors. Because the small MSM sample size precluded calculation of adjustment factors from MSM respondent data, the Saturday night size estimates are highly dependent on reports of MSM visiting behaviors by spot informants. Given challenges faced by the MSM community in the region, however, it is likely that many MSM conceal their behaviors and are therefore unknown to spot informants. Furthermore, it should be noted that while spots are generally expected to be busy on Saturday nights, this may not be the most popular time for MSM to visit spots. Therefore, estimates of the number of MSM present at spots on Saturday nights should not be viewed as the maximum number of MSM that could be found at spots. Notably, one or more MSM were found at every cross-border site during patron/worker interviews. On average, 5.5 MSM were interviewed per site. Across all sites, the number of MSM interviewed ranged from one to 23.

If all spots were visited at a site for approximately two random operational hours, at a selected land cross-border site, it is estimated that an average of 44 contacts would be made with MSM. At a selected lake cross-border site, it is estimated that on average, 16 MSM contacts would be made.

Table 68. Estimated number of men who had sex with men in the past 12 months at cross-border sites (PLACE survey, 2016)

	Saturday Night Estimate at Spots*	Estimated Spot Visit Contacts†
Malaba, Kenya/Malaba, Uganda	43	43
Busia, Kenya/Busia, Uganda	241	46
Katuna, Uganda/Gatuna, Rwanda	38	8
Holili, Tanzania/Taveta, Kenya	41	11
Isebania, Kenya/Sirari, Tanzania	58	66
Mutukula, Uganda/Mutukula, Tanzania	0	104
Namanga, Kenya/Namanga, Tanzania	44	47
Kagitumba, Rwanda/Mirama Hills, Uganda	2	30
Mean for land sites	58	44
Sio Port/Port Victoria, Kenya/Majanji, Uganda	2	16
Muhuru Bay, Kenya/Kirongwe, Tanzania	17	35
Mbita and Rusinga, Kenya	5	6
Kasenyei, Uganda	47	8
Mean for lake sites	18	16

*Estimated number of MSM who could be found at spots on a Saturday night

†Estimated number of contacts with MSM that could be made by visiting all spots for approximately two hours

C. Other Populations

The average number of contacts that could be made by visiting all spots at a cross-border site was estimated for young women, fisherfolk, truck drivers, and people who inject drugs. The estimated contacts assume that visits occur at random times during operational hours at each spot, and that the visits are approximately two hours in length. Results are shown in Table 69.

Visiting all spots at one of the selected land cross-border sites is estimated to result in, on average, 566 contacts with young women, 89 contacts with fisherfolk, 109 contacts with truck drivers, and 34 contacts with people who inject drugs. Visiting all spots at one selected lake cross-border site is estimated to result in, on average, 556 contacts with young women, 1,127 contacts with fisherfolk, 23 contacts with truck drivers, and eight contacts with people who inject drugs.

Table 69. Estimated number of contacts that would be made with young women, fisherfolk, truck drivers, and people who inject drugs by visiting all spots in each cross-border site* (PLACE survey, 2016)

	Young Women [§]	Fisherfolk [†]	Truck Drivers [‡]	People Who Inject Drugs
Malaba, Kenya/Malaba, Uganda	433	97	144	6
Busia, Kenya/Busia, Uganda	1500	185	156	111
Katuna, Uganda/Gatuna, Rwanda	294	25	74	6
Holili, Tanzania/Taveta, Kenya	200	46	108	13
Isebania, Kenya/Sirari, Tanzania	670	17	63	58
Mutukula, Uganda/Mutukula, Tanzania	879	97	237	57
Namanga, Kenya/Namanga, Tanzania	302	20	68	15
Kagitumba, Rwanda/Mirama Hills, Uganda	250	231	21	8
Mean for land sites	566	89	109	34
Sio Port/Port Victoria, Kenya/Majanji, Uganda	1011	1601	32	9
Muhuru Bay, Kenya/Kirongwe, Tanzania	423	1295	19	16
Mbita and Rusinga, Kenya	390	827	15	8
Kasenyi, Uganda	400	786	27	0
Mean for lake sites	556	1127	23	8

*Visits are assumed to be approximately 2 hours in length and to occur at random operational hours for each spot

[§]Women ages 15 to 24 years

[†]People who report doing work that is related to the fishing industry

[‡]People who report their work as truck driving

^{||}People who report injecting drugs in the past 12 months

Chapter 5 Key Points

- One-week size estimates for FSWs varied by cross-border site, ranging from 1,077 to 10,244. The mean estimated number of FSWs in one week was generally higher at land cross-border sites than lake cross-border sites.
- Estimates of the number of MSM present at spots on Saturday nights ranged from 0 to 241 across the 12 cross-border sites. The mean estimated number of MSM present at spots on Saturday nights was higher at land cross-border sites than lake cross-border sites.
- Visiting all spots for a period of two hours each at one of the selected land cross-border sites is estimated, on average, to result in 566 contacts with young women, 89 contacts with fisherfolk, 109 contacts with truck drivers, and 34 contacts with people who inject drugs.
- Visiting all spots for a period of two hours each at one selected lake cross-border site is estimated to result in, on average, 556 contacts with young women, 1,127 contacts with fisherfolk, 23 contacts with truck drivers, and eight contacts with people who inject drugs.

VI. POPULATION-BASED HIV INDICATORS AT CROSS-BORDER SITES

This section examines population-based HIV indicators, including prevention, the HIV testing cascade, prevalence, the care and treatment cascade, implications for HIV testing in cross-border sites, and TB coinfection.

A. HIV Prevention and Testing

Examining HIV prevention and testing in stages can refine and clarify potential needs. HIV prevention can be broken down into three sequential stages: risk perception and awareness, supply of preventative products, and interventions to support and sustain adoption of preventative behaviors. The HIV testing cascade includes being tested, obtaining results, and being confirmed HIV negative or diagnosed HIV positive.

Access to HIV Prevention Services

Slightly over three-fourths of all people at spots reported it was easy for them to get a condom. Only 40.2 percent of people at spots reported that they had been given a condom by an outreach worker in the past six months. Very few people at spots (4.2%) reported having a condom on them at the time of their interview. At lake cross-border sites, 4.7 percent of people at spots reported it was easy to access sexual lubricants, compared to 4.0 percent of people at spots at land cross-border sites. Of those who reported having anal or vaginal sex, a greater proportion of people at spots reported having used a condom at their last anal sexual encounter (62.9%) than last vaginal sexual encounter (38.1%) (Table 70).

Most people (92.2%) have received some information about HIV/AIDS in the past 12 months. Over 85 percent of people at spots reported receiving information about HIV/AIDS on the radio in the past 12 months. At lake cross-border sites, 54.7 percent of respondents reported that they had received information about HIV in the past 12 months at the spot where they were interviewed, compared to 46.8 percent of people at spots in land cross-border sites. While 76.8 percent of people at spots in lake cross-border sites reported they received information about HIV/AIDS from a health worker in the past 12 months, only 63.6 percent of people at land cross-border sites reported the same.

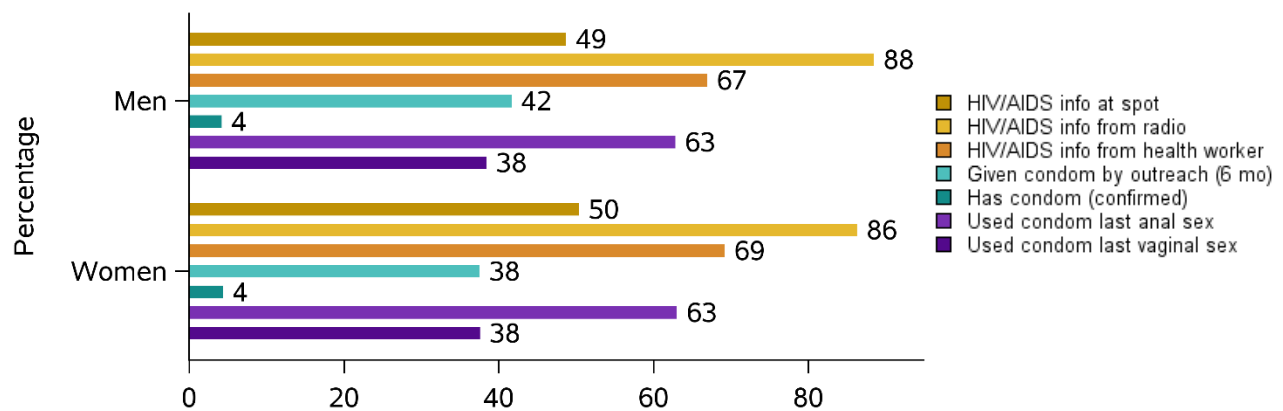
Similar proportions of women and men received HIV/AIDS information at the spot where they were interviewed, through the radio, and from health workers. Slightly more men than women were given condoms by outreach workers (42% vs. 38%) (Figure 5).

Just under 14 percent of men and 20 percent of women at spots reported having symptoms consistent with an STI in the past 12 months. Among those who reported STI symptoms in the past 12 months, 78.0 percent of women sought care at a health facility, compared to 72.7 percent of men (Table 70).

Table 70. Access to HIV prevention services at cross-border sites (PLACE survey, 2016)

	All Sites (n=11,428)		Land Sites (n=7,466)		Lake Sites (n=3,962)	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Condom access and use						
Respondents report that it is easy to get condom	77.1	75.6, 78.6	79.0	77.2, 80.9	72.7	70.0, 75.3
Given condom by outreach worker in past 6 months	40.2	37.6, 42.8	38.2	34.8, 41.7	44.8	41.8, 47.8
Has a condom (and seen by interviewer)	4.2	3.5, 4.9	5.0	4.0, 5.9	2.5	1.9, 3.1
Used condom at last anal sex (among those reporting anal sex)	62.9	56.5, 69.2	66.1	60.4, 71.8	52.6	34.6, 70.6
Used condom at last vaginal sex (among those reporting vaginal sex)	38.1	36.3, 39.9	37.9	35.6, 40.3	38.5	35.9, 41.2
Other prevention services						
Respondents report that it is easy to get sexual lubricants	4.2	3.2, 5.2	4.0	2.6, 5.3	4.7	3.6, 5.8
Percentage of male respondents who are circumcised	77.0	75.1, 78.9	77.7	75.7, 79.6	75.5	70.9, 80.0
Received information about HIV/AIDS at the venue (spot) in the past 12 months	49.2	46.5, 51.9	46.8	43.6, 50.1	54.7	50.0, 59.5
Received information about HIV/AIDS on the radio in the past 12 months	87.7	86.5, 88.8	86.6	85.2, 87.9	90.2	88.2, 92.3
Received information about HIV/AIDS from health worker in the past 12 months	67.7	65.4, 69.9	63.6	60.8, 66.5	76.8	74.1, 79.6
STI symptoms in past 12 months						
Men	13.3	11.8, 14.7	14.2	12.2, 16.1	11.1	9.3, 12.9
Women	19.3	17.4, 21.2	21.1	18.8, 23.5	15.4	12.4, 18.5
Among those who reported STI symptoms in past 12 months, percentage who sought care at a health facility						
Men	72.7	69.5, 75.8	73.2	69.4, 77.0	71.1	65.8, 76.4
Women	78.0	74.2, 81.8	79.9	75.5, 84.2	72.6	64.9, 80.4

Figure 5. Access to HIV prevention services at cross-border sites, by sex (PLACE survey, 2016) *



*Men: n=7,245; Women: n=4,182

§HIV/AIDS information received in the past 12 months.

"Has condom (confirmed)" refers to interviewer's visual confirmation that interviewee has a condom on their person.

Access to HIV Prevention Services among Mobile and Vulnerable Populations

Over 80 percent of young women, FSWs, fisherfolk, truck drivers, and MSM at spots received HIV/AIDS information in the past 12 months. The most common source of information for all groups was radio, reported by 84 percent of young women, 87 percent of FSWs, 90 percent of fisherfolk, 87 percent of truck drivers, 78 percent of MSM, and 80 percent of people who inject drugs. Among the key populations examined, 47 percent of young women, 55 percent of FSWs, 62 percent of fisherfolk, 51 percent of truck drivers, 62 percent of MSM, and 42 percent of people who inject drugs reported receiving HIV/AIDS information at the spot where they were interviewed (Figure 6).

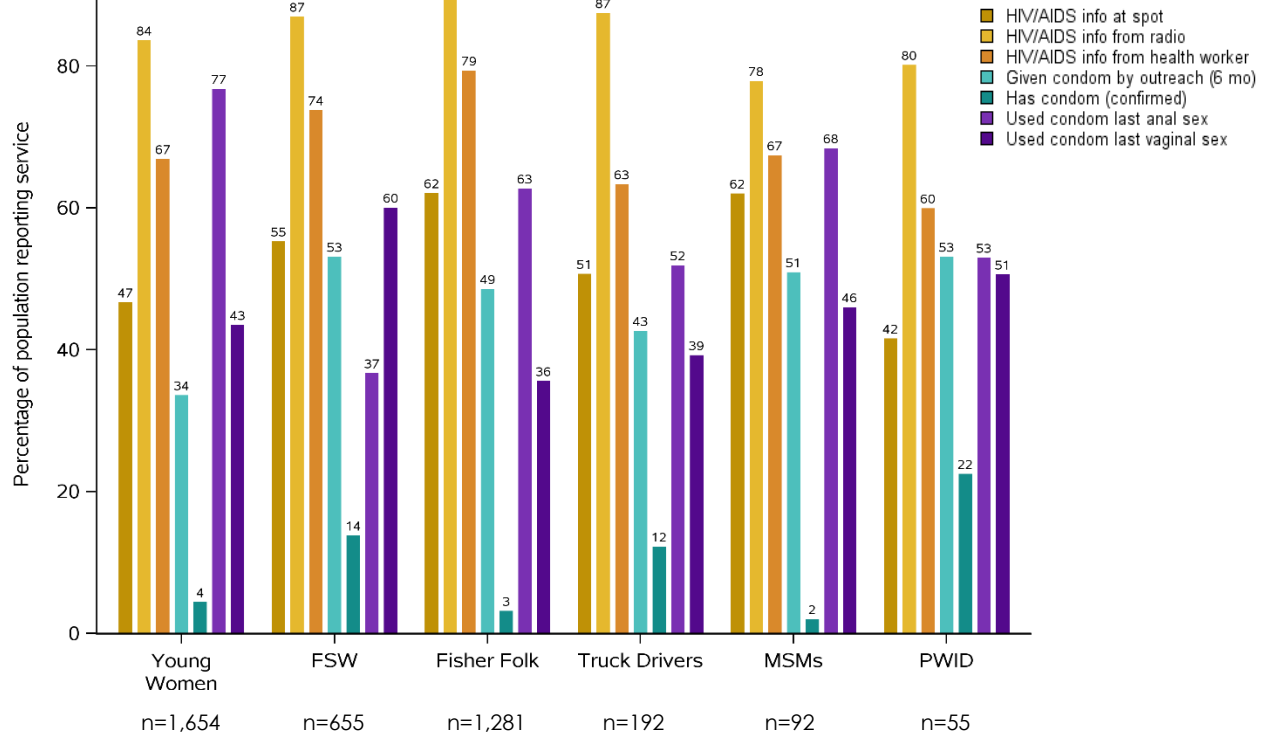
Approximately 50 percent of FSWs, fisherfolk, MSM, and people who inject drugs reported that they were given a condom by an outreach worker in the past six months. Only 43 percent of truck drivers and 34 percent of young women reported the same.

Of the populations examined, FSWs (60%) most commonly reported use of a condom at last vaginal sex encounter, followed by people who inject drugs (51%), MSM (46%), young women (43%), truck drivers (39%), and fisherfolk (36%). Among the groups examined, use of a condom at last anal sex was most frequently reported by young women (77%), followed by MSM (68%), fisherfolk (63%), people who inject drugs (53%), truck drivers (52%), and only 37% of FSWs.

Among the groups examined, easy access to condoms was most frequently reported by MSM (97%), followed by FSWs (89%), truck drivers (86%), people who inject drugs (81%), fisherfolk (75%), and young women (73%). Easy access to sexual lubricants was low overall, and was reported by 12 percent of people who inject drugs, 9 percent of FSWs, 4 percent of young women, fisherfolk, and truck drivers, and 2 percent of MSM (Figure 7).

Almost all men who inject drugs reported that they were circumcised (99%), as did 90 percent of truck drivers, 76 percent of male fisherfolk, and 67 percent of MSM.

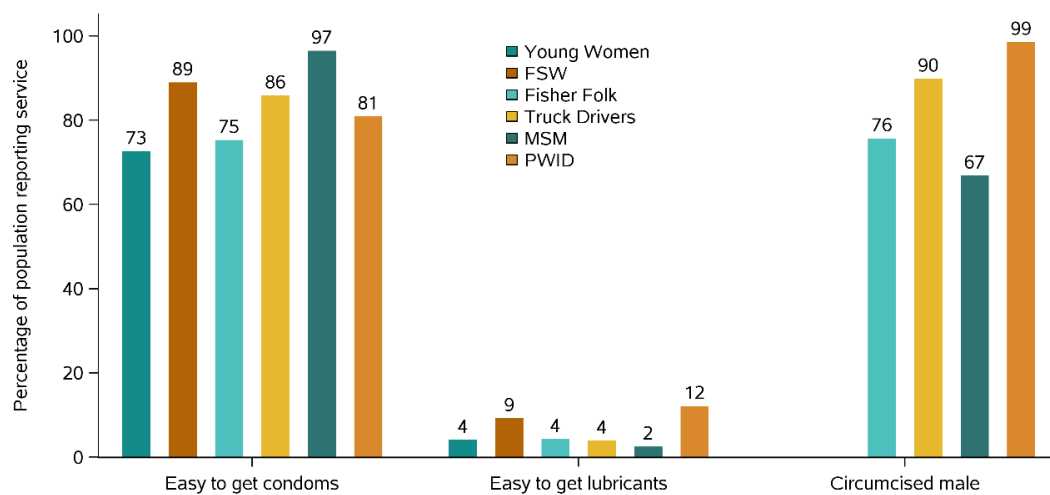
Figure 6. Access to HIV prevention services at cross-border sites, by population (PLACE survey, 2016)



*HIV/AIDS information received in the past 12 months

“Has condom (confirmed)” refers to interviewer’s visual confirmation that interviewee has a condom on their person.

Figure 7. Additional HIV prevention services at cross-border sites, by population (PLACE survey, 2016) *



*Young women: n=1654; FSW: n=655; Fisherfolk n=1281; Truck drivers: n=192; MSM: n=92; People who inject drugs: n=55.

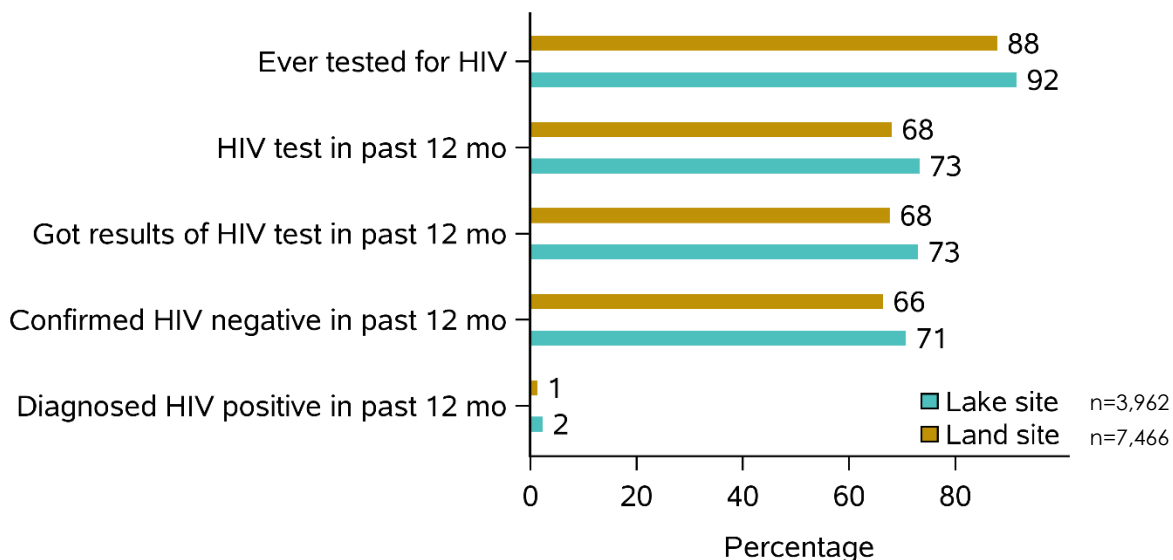
HIV Testing Cascade

Almost 90 percent of people at spots reported they had ever tested for HIV. Among those ever tested, over two-thirds reported that they had tested in the past 12 months, had received the results of an HIV test in the past 12 months, and had a confirmed negative result in the past 12 months. Approximately 1 percent of people at spots at land cross-order sites and 2 percent at lake cross-border sites reported they had been diagnosed HIV positive in the past 12 months (Table 71 and Figure 8).

Table 71. HIV testing among people at spots in cross-border sites (PLACE survey, 2016)

	All Sites (n=11,428)	
	Weighted %	95% CI
Ever tested for HIV	89.0	88.0, 90.0
Tested for HIV in past 12 months	69.6	68.0, 71.2
Received result of HIV test in past 12 months	69.2	67.7, 70.8
Confirmed HIV negative in past 12 months	67.7	66.1, 69.3
Diagnosed HIV positive in past 12 months	1.6	1.2, 1.9

Figure 8. HIV testing cascade among people at spots in cross-border sites (Health facility survey, 2016)

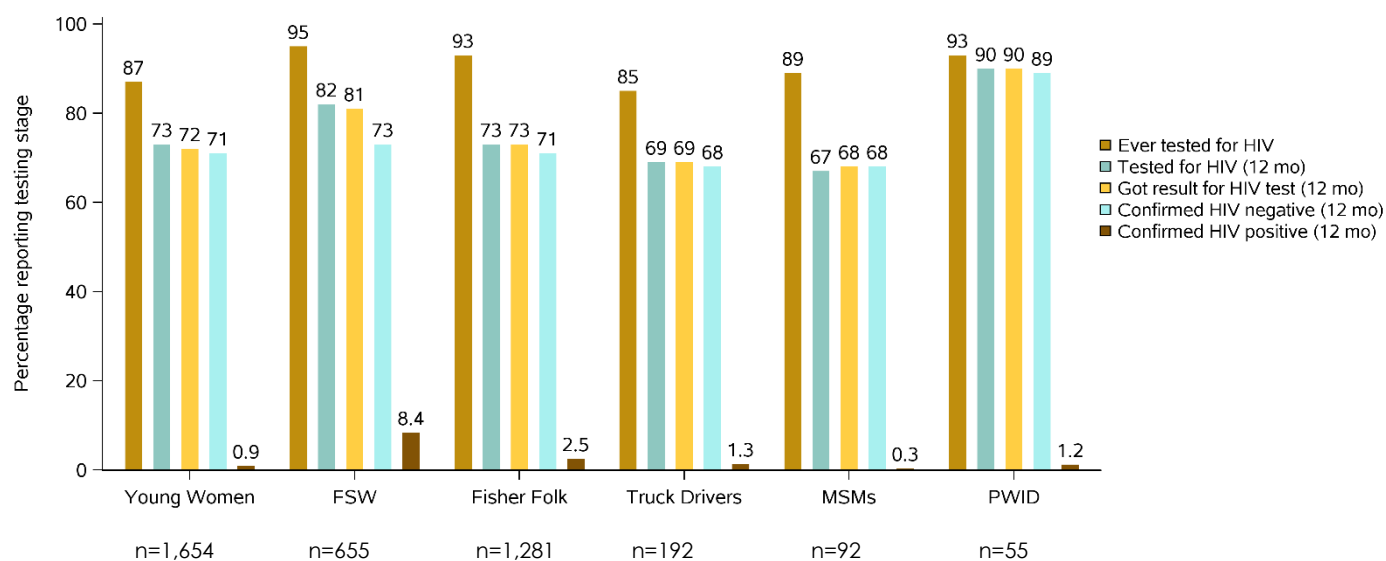


HIV Testing Cascade among Mobile and Vulnerable Populations

FSWs, fisherfolk, and people who inject drugs at spots more commonly reported ever being tested for HIV (93% and above) than other groups examined. Of the populations examined, testing in the past 12 months was most frequently reported by people who inject drugs, approximately 90 percent of whom tested, collected their report, and reported a negative result. Just under three-quarters of young women and fisherfolk tested in the past 12 months, collected the results, and reported a negative result, as did approximately two-thirds of truck drivers and MSM.

Less than 1.5 percent of young women, truck drivers, people who inject drugs, and MSM who collected their HIV test result in the last 12 months reported a positive result. Positive results in the past 12 months were most frequently reported by FSWs (8.4%) and fisherfolk (2.5%) (Figure 9).

Figure 9. HIV testing cascade among people at spots in cross-border sites, by population (PLACE survey, 2016)



B. HIV Prevalence

The highest levels of HIV prevalence were found among specific subgroups of women at certain cross-border sites. Notably, female workers at spots and FSWs emerged as subgroups with the highest prevalence levels (Table 72).

While not typically considered a key population, female workers at spots had some of the highest HIV prevalence levels across the study sites. Among female workers, prevalence was highest in Mbita and Rusinga Island, Kenya (23.5%), Malaba, Kenya/Malaba, Uganda (18.1%), and Mutukula, Tanzania/Mutukula, Uganda (14.6%). Prevalence among female workers at spots exceeded 10 percent at four other cross-border sites (Figure 10).

HIV prevalence among FSWs was highest at Mutukula, Tanzania/Mutukula, Uganda (23.9%), Mbita and Rusinga Island, Kenya (23.0%), and Malaba, Kenya/Malaba, Uganda (17.8%). Prevalence among FSWs was over 11 percent at five other sites (Figure 11).

Among young women ages 15–24, the highest HIV prevalence was found in Mbita and Rusinga Island, Kenya (15.0%), followed by Kagitumba, Rwanda/Mirama Hills, Uganda (9.6%), and Mutukula, Tanzania/Mutukula, Uganda (6.9%). Prevalence was over 5 percent or greater at five additional sites (Figure 12).

Among female fisherfolk at lake cross-border sites, HIV prevalence was highest in Mbita and Rusinga Island, Kenya, (21.3%), Muhuru Bay, Kenya (15.1%), Sio Port/Port Victoria, Kenya / Majanji, Uganda (5.9%) (Figure 13).

Table 72. HIV prevalence among women at spots in cross-border sites, by population (PLACE survey, 2016)

Site	Young Women		FSWs		Female Fisherfolk		Female Workers at Spots	
	n	Weighted %	n	Weighted %	n	Weighted %	n	Weighted %
Land sites								
Malaba, Kenya/ Malaba Uganda	127	6.3	94	17.8			99	18.1
Busia, Kenya/ Busia, Uganda	186	6.2	105	9.4			136	8.7
Katuna, Uganda/ Gatuna, Rwanda	98	3.4	32	6.9			36	2.4
Holili, Tanzania/ Taveta, Kenya	44	5.1	18	0			70	10.5
Isebania, Kenya/ Sirari, Tanzania	126	4.8	91	11.8			75	10.9
Mutukula, Uganda/ Mutukula, Tanzania	179	6.9	62	23.9			138	14.6
Namanga, Kenya/ Namanga, Tanzania	102	2.1	50	12.9			104	6.9
Kagitumba, Rwanda/ Mirama Hills, Uganda	107	9.6	50	15.2			72	13.8
Lake sites								
Sio Port/Port Victoria, Kenya/ Majanji, Uganda	170	5.0	32	2.1	55	5.9	121	8.7
Muhuru Bay, Kenya	63	1.6	30	16.9	97	15.1	106	12.2
Kirongwe, Tanzania	60	1.5	*	*	18	0.0	30	3.3
Mbita and Rusinga, Kenya	145	15.0	38	23.0	89	21.3	96	23.5
Kasenyi, Uganda	207	5.2	46	14.1	82	5.6	95	8.7

*Data suppressed for n=<10

Figure 10. HIV prevalence among female workers at spots in cross-border sites (PLACE survey, 2016)

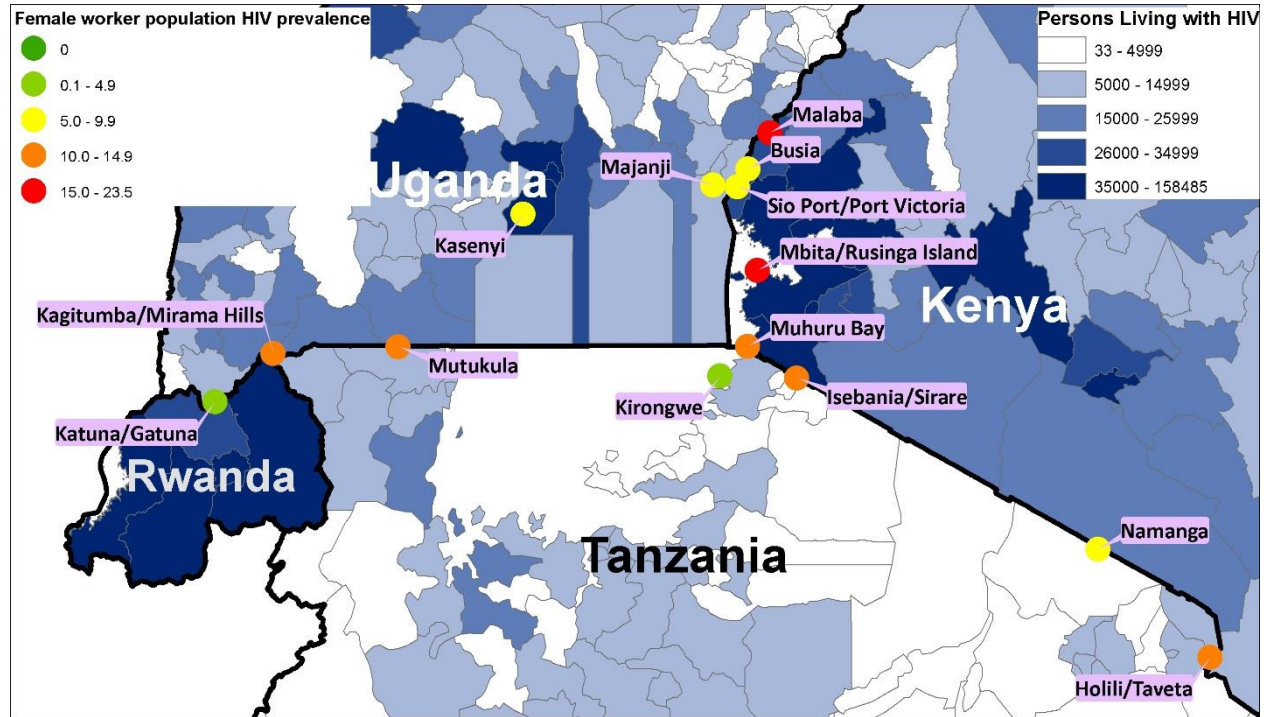


Figure 11. HIV prevalence among FSWs at spots in cross-border sites (PLACE survey, 2016)

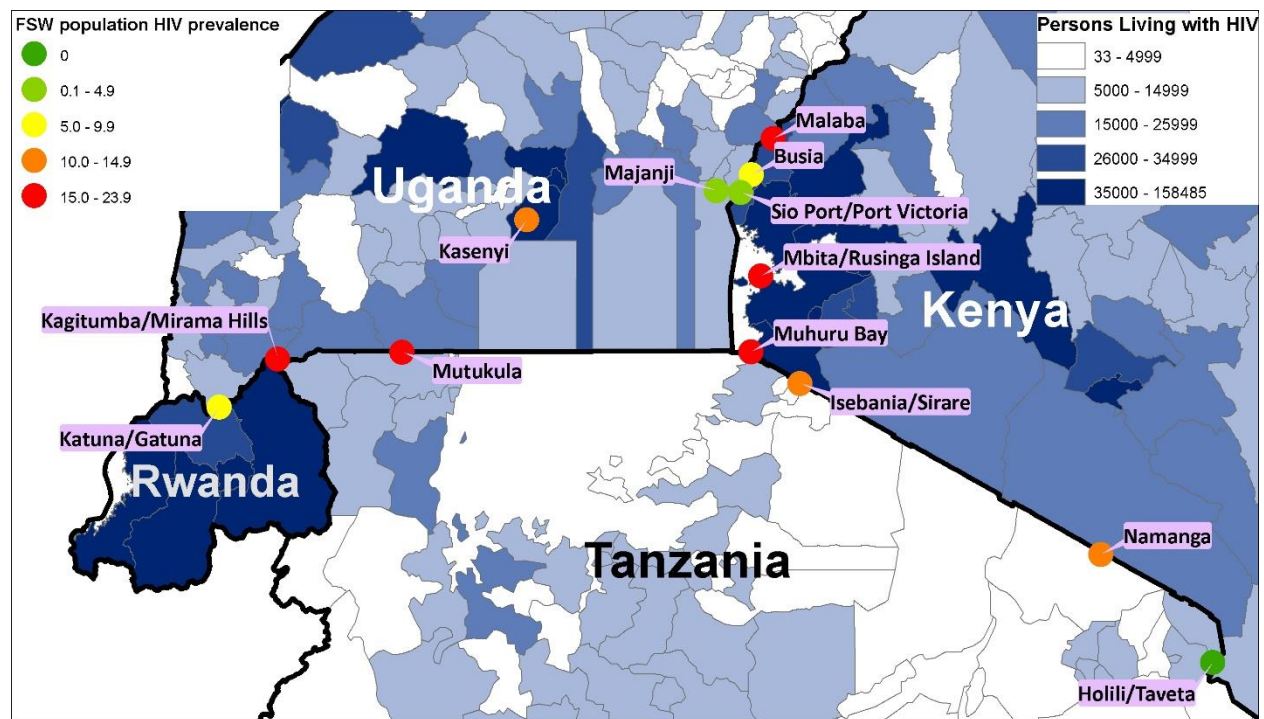


Figure 12. HIV prevalence among young women at spots in cross-border sites (PLACE survey, 2016)

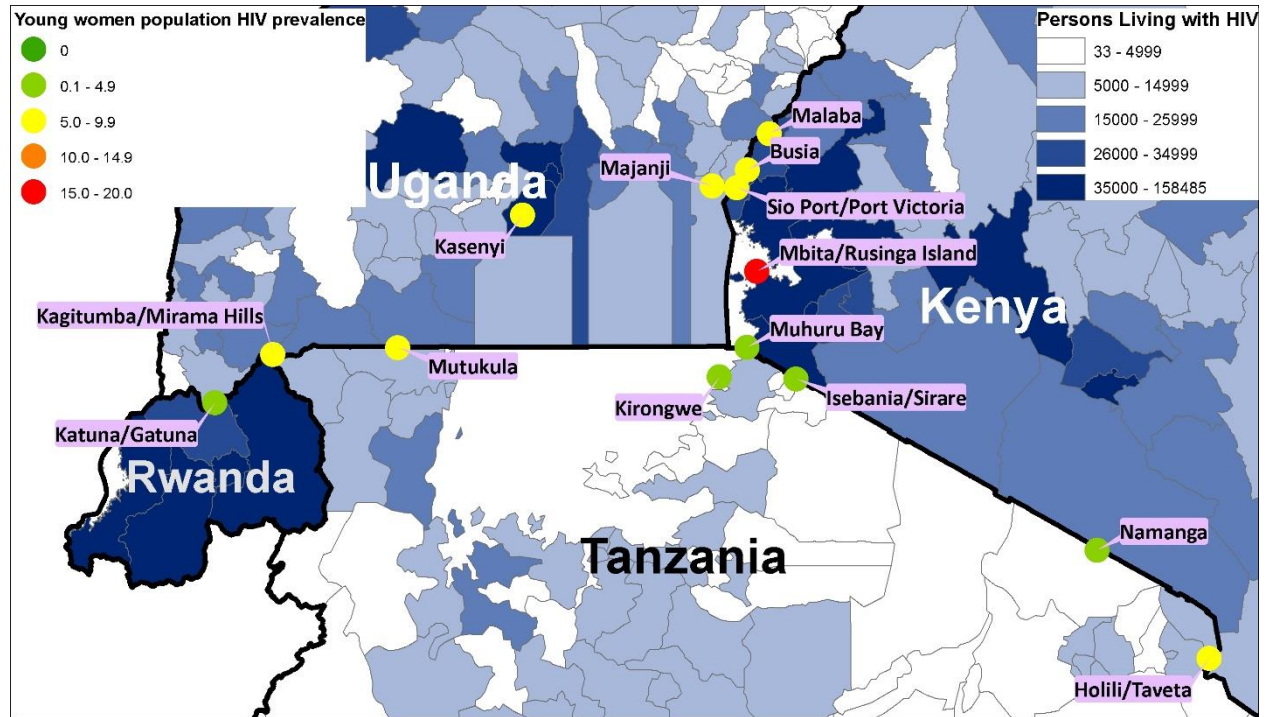
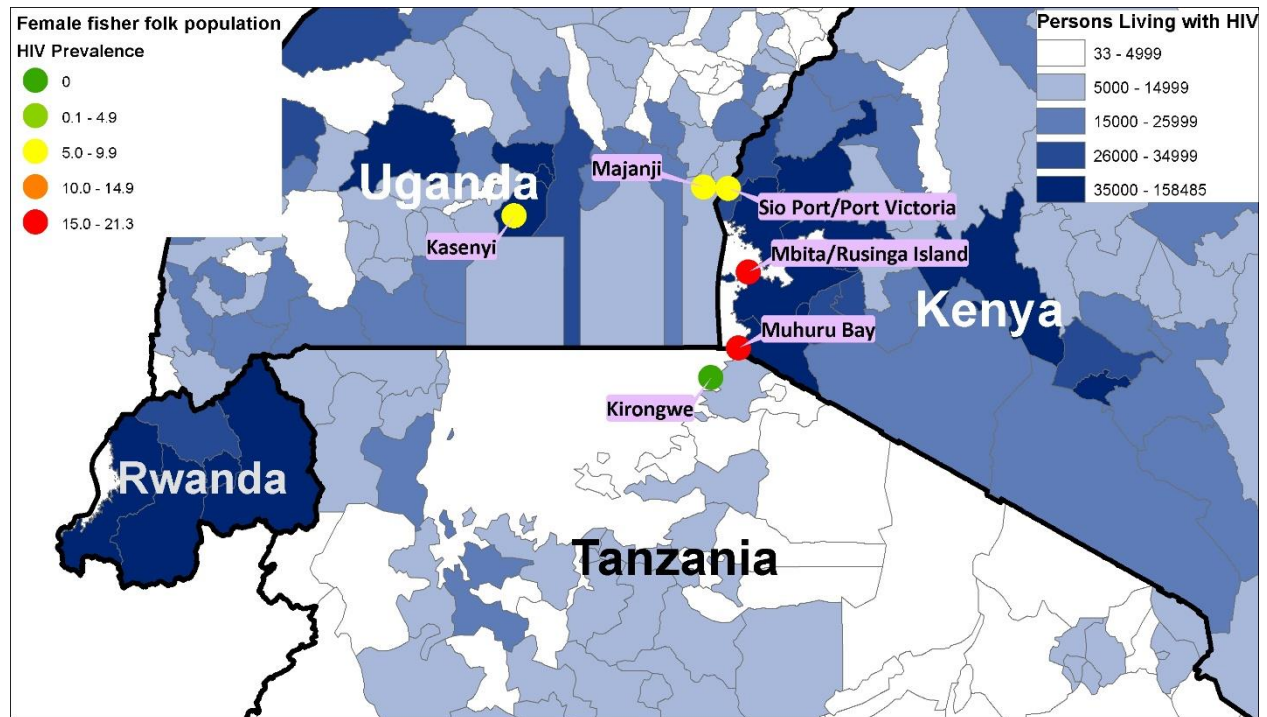


Figure 13. HIV prevalence among female fisherfolk at spots in lake cross-border sites (PLACE survey, 2016)



HIV Prevalence among Mobile and Host Populations

Table 73 and Figures 14 and 15 examine prevalence among host populations (residents of the same geographic locality as the cross-border site) and mobile populations (nonresidents) at cross-border sites.

Cross-border sites with the highest HIV prevalence in the host population were Mbita and Rusinga Island, Kenya (11.0%), Muhuru Bay, Kenya (9.2%), and Mutukula, Uganda/Mutukula, Tanzania (7.2%).

Among mobile populations, the highest HIV prevalence was found in Muhuru Bay, Kenya (14.7%), followed by Mutukula, Tanzania/Mutukula, Uganda (7.1%), and Mbita and Rusinga Island, Kenya (7.0%).

Table 73. HIV prevalence among mobile and host populations at cross-border sites (PLACE study, 2016)

	Mobile Populations			Host Populations*		
	n	Weighted %	95% CI	n	Weighted %	95% CI
Land cross-border sites						
Malaba, Kenya/ Malaba Uganda	276	4.1	0.7, 7.6	684	4.8	2.7, 6.9
Busia, Kenya/ Busia, Uganda	444	5.0	2.9, 7.1	522	2.4	0.3, 4.6
Katuna, Uganda/ Gatuna, Rwanda	363	1.9	0.6, 3.1	613	4.1	1.0, 7.3
Holili, Tanzania/ Taveta, Kenya	76	1.2	0.0, 3.8	795	3.1	1.1, 5.1
Isebania, Kenya/ Sirari, Tanzania	464	4.4	2.6, 6.1	516	4.8	0.5, 9.0
Mutukula, Uganda/ Mutukula, Tanzania	157	7.1	3.0, 11.3	828	7.2	4.7, 9.8
Namanga, Kenya/ Namanga, Tanzania	350	3.2	1.8, 4.5	632	4.0	2.1, 5.9
Kagitumba, Rwanda/ Mirama Hills, Uganda	281	3.2	1.6, 4.8	465	6.1	4.2, 7.9
Lake cross-border sites						
Sio Port/Port Victoria, Kenya/ Majanja, Uganda	68	6.2	0.0, 17.8	900	5.1	2.7, 7.5
Muhuru Bay, Kenya	51	14.7	3.7, 25.6	482	9.2	3.8, 14.5
Kirongwe, Tanzania	117	2.4	0.0, 7.1	355	3.6	1.1, 6.2
Mbita and Rusinga, Kenya	77	7.0	0.6, 13.3	903	11.0	7.5, 14.4
Kasenyi, Uganda	37	0.0	NA	972	4.8	2.8, 6.8

*Residents of the same geographic locality as the cross-border site. In Kenya and Uganda: sub-county; in Rwanda: parish; in Tanzania: ward.

Figure 14. HIV prevalence among mobile (nonresident) populations at spots in cross-border sites (PLACE survey, 2016)

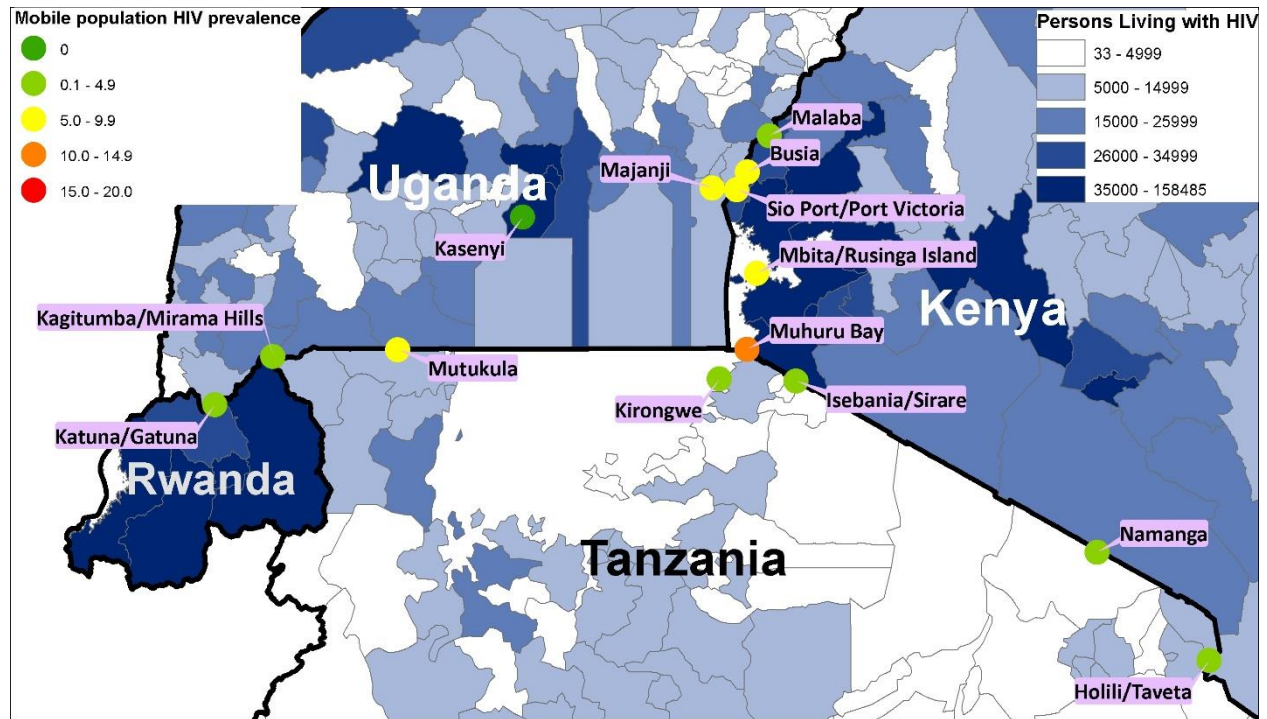
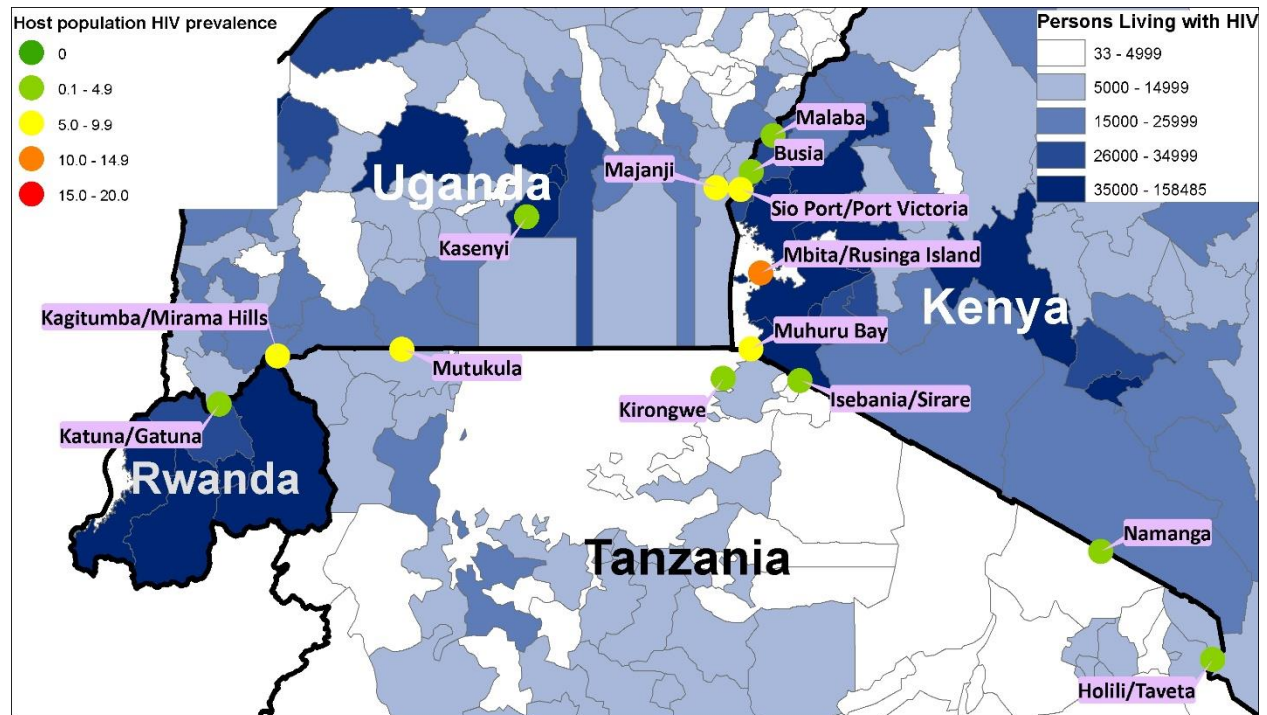


Figure 15. HIV prevalence among host (resident) populations at spots in cross-border sites (PLACE survey, 2016)



Sex Work and Prevalence Among Women

All FSWs were also members of the other female population groups examined during the study. Figures 16 and 17 examine prevalence among women engaged in sex work in more detail. Prevalence was higher among female workers, patrons, fisherfolk, and young women who also engaged in sex work than among members of those groups who did not engage in sex work. As shown in Figure 16, approximately 16 percent of female workers at spots who also engaged in sex work were HIV positive, as were approximately 12 percent of female fisherfolk, 11 percent of young women, and 9 percent of female patrons who engaged in sex work.

Figure 16. HIV prevalence among women, stratified by engagement in sex work (PLACE survey, 2016)

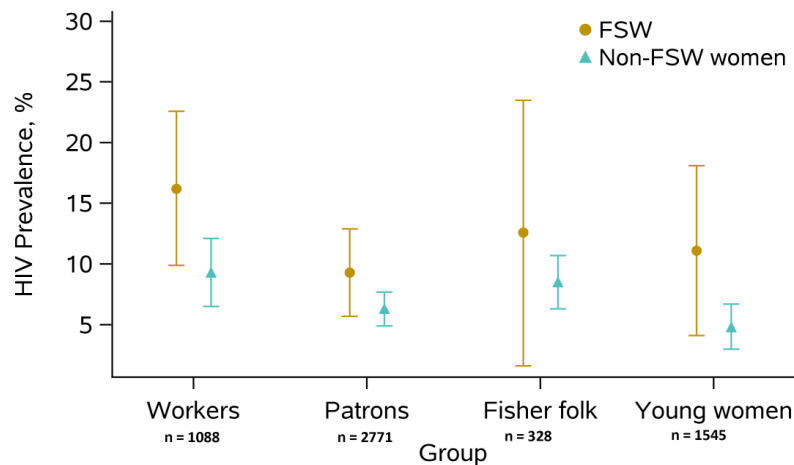
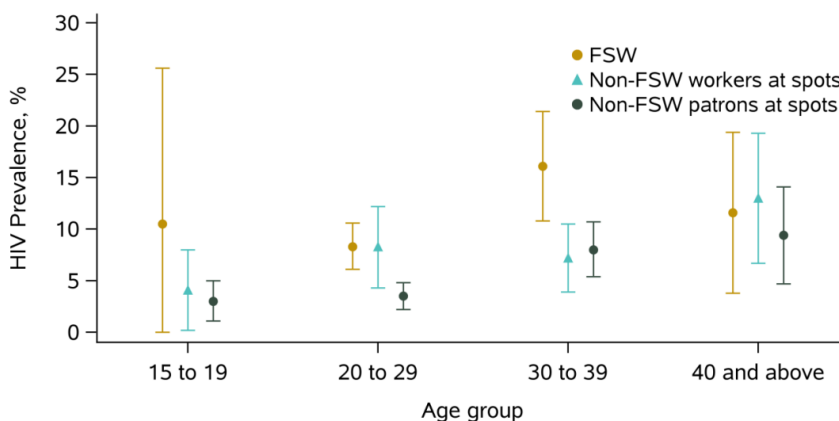


Figure 17 examines the relationship between age and HIV prevalence among FSWs, and compares FSWs with female patrons and workers at spots who are not engaged in sex work. Among those ages 15–19, approximately 11 percent of the 67 FSWs were HIV positive, compared to approximately 4 percent of the 73 workers and 3 percent of the 334 patrons who did not engage in sex work. Among women ages 20–29, similar proportions (approximately 8%) of the 363 FSWs and 458 non-FSW workers at spots were HIV positive, compared to only about 4 percent of the 1,081 non-FSW patrons. Prevalence was highest (16%) among the 143 FSWs ages 30–39. Among those ages 40 and above, non-FSW workers at spots (n=134) had the highest prevalence (12%).

Figure 17. HIV prevalence among FSWs, non-FSW workers at spots, and non-FSW patrons at spots, by age group (PLACE survey 2016)

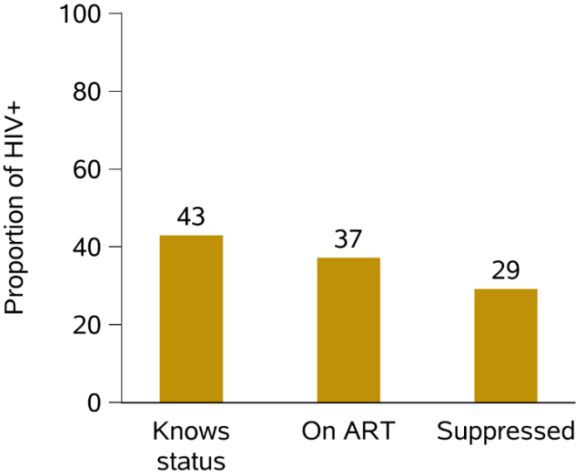


C. HIV Care and Treatment Cascade

Of the 11,567 respondents, 577 either tested positive for HIV during the bio-behavioral survey or reported being HIV positive in interviews with research assistants. This section examines access to HIV care and treatment services for these respondents.

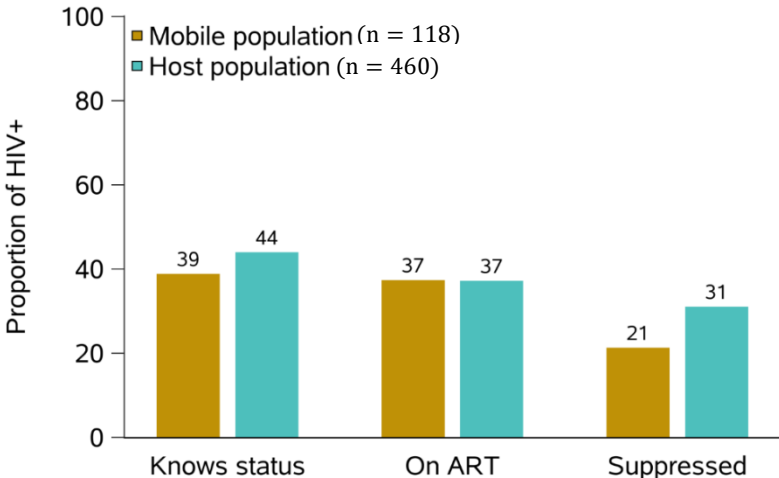
Of the 577 respondents who were living with HIV, 43 percent already knew they were HIV positive, 37 percent were on ART, and 29 percent were virally suppressed (Figure 18).

Figure 18. HIV care and treatment cascade among the 577 people testing positive for HIV during the study or not testing but self-reporting HIV-positive status (PLACE survey, 2016)



Members of mobile populations (39%) were somewhat less likely than members of the host population (44%) to know their status. They were also less likely to be virally suppressed (21% among members of the mobile population vs. 31% among members of the host population). Equal proportions (37%) of both populations were on ART (Figure 19).

Figure 19. HIV care and treatment cascade among people testing positive for HIV during the study or not testing but self-reporting HIV positive status, by mobile and host population (PLACE survey, 2016)



HIV Care and Treatment Cascade among Mobile and Vulnerable Populations

Figures 20 and 21 present the HIV care and treatment cascade among female and male members of the population groups examined. Of the subgroups of women testing positive for HIV or reporting that they were positive during the biobehavioral survey, female fisherfolk were most likely to already know their status (72%), be on ART (70%), and be virally suppressed (52%). Among HIV-positive FSWs, 53 percent knew their status, 44 percent were on ART, and 38 percent were virally suppressed. Results were similar for female workers at spots, with 49 percent of those who tested positive already aware of their status, 43 percent on ART, and 39 percent suppressed. In contrast, only 22 percent of young women who tested positive already knew their status, and only 17 percent were on ART and virally suppressed.

Among all men testing or reporting that they were HIV positive during the biobehavioral survey, only 39 percent knew their status, 35 percent were on ART, and 24 percent were virally suppressed. Among male fisherfolk, 63 percent knew their positive status, 54 percent were on ART, and 37 percent were virally suppressed. Similarly, 61 percent of male workers at spots knew their status and 53 percent were on ART. However, a larger proportion of male workers (49%) were suppressed.

Figure 20. HIV care and treatment cascade among women testing positive for HIV during the study or not testing but self-reporting HIV positive status, by population (PLACE survey, 2016)

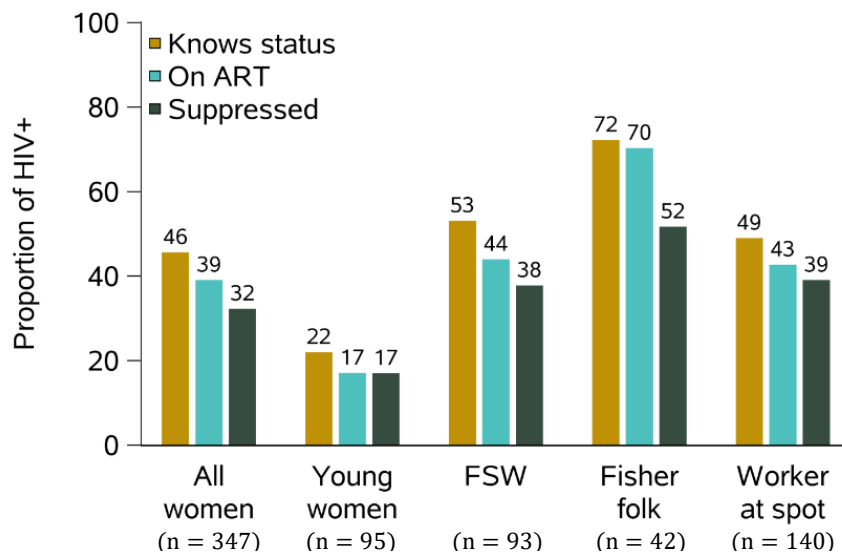
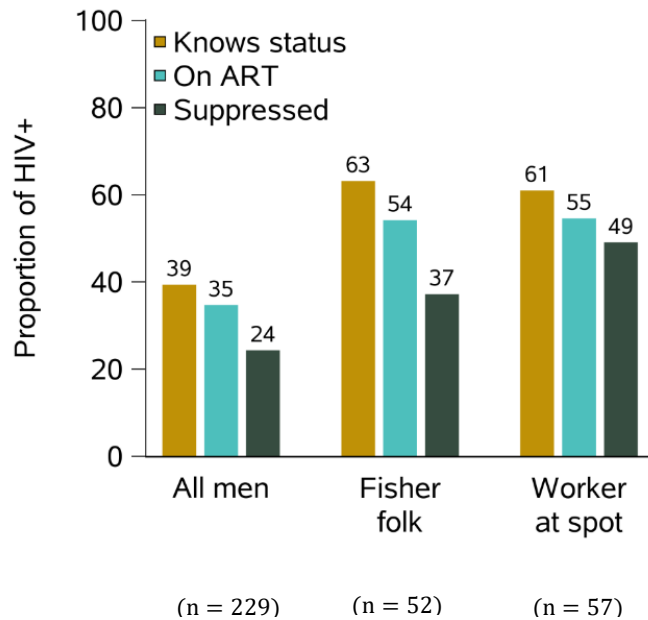


Figure 21. HIV care and treatment cascade among men* testing positive for HIV during the study or not testing but self-reporting HIV positive status, by population (PLACE survey, 2016)



*Results are not presented for MSM or truck drivers because few cases of HIV were identified among these groups.

Progress Towards 90-90-90 Goals

The UNAIDS 90-90-90 goals state that by 2020, 90 percent of all people living with HIV will know their HIV status, 90 percent of all people with diagnosed HIV infection will receive sustained ART, and 90 percent of all people receiving ART will have viral suppression (UNAIDS, 2014).

The largest gap in the HIV care and treatment cascade among those who were tested during the biobehavioral survey was initial diagnosis of new infections. Only 43.0 percent of people living with HIV in the cross-border sites study sites reported that they were HIV positive. Of those who knew their status, 86.6 percent were on ART and 79.9 percent of these were virally suppressed. Overall, a larger proportion of women (45.6%) knew their status as compared to men (39.4%).

However, the proportion of those who knew their status who were on treatment was high. Overall, 86.6 percent of those who knew their positive status were on ART. Overall, women who knew their status (85.7%) were slightly less likely to be on ART as compared to men who knew their status (88.2%). However, some subgroups of women were more likely to be on ART than men. Almost all female fisherfolk who knew their status were on treatment (97.4%), as were many female workers at spots (87.1%). FSWs and young women who knew their status were somewhat less likely to be on treatment (82.9% and 77.8%, respectively). While men overall were likely to be on ART if they knew their status, male fisherfolk were somewhat less likely to be on ART (85.2%), and male workers at spots were more likely to be on treatment (89.4%).

Of those on ART, approximately 80 percent were virally suppressed. The proportion of those on treatment who were suppressed was higher among women (84.7%) than men (72.2%). Among women on ART,

workers at spots and young women on ART had high levels of viral suppression (over 90% in both groups). FSWs and female fisherfolk were less likely to be suppressed (84.0% and 72.5%, respectively). Among men, fisherfolk and workers at spots were more likely to be suppressed than other men (75.9% and 87.1%, respectively). No subgroup examined met the threshold for the 90-90-90 target (Table 74).

Table 74. Progress towards the 90-90-90 goals among people testing positive for HIV during the study or not testing but self-reporting HIV positive status (PLACE survey, 2016)

	n	1 st 90: Knows Status		2 nd 90: Of Those Who Know Status, on ART		3 rd 90: Of Those on ART, Suppressed	
		Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Overall	576	43.0	38.2, 47.8	86.6	82.2, 91.1	79.9	72.0, 87.8
All women	347	45.6	39.5, 51.7	85.7	80.4, 90.9	84.7	75.3, 94.2
Young women	95	22.0	16.2, 27.7	77.8	60.2, 95.4	91.0	90.6, 91.3
FSW	93	53.1	43.7, 62.5	82.9	77.1, 88.7	84.0	83.5, 84.4
Fisherfolk	42	72.2	64.1, 80.3	97.4	96.9, 97.9	72.5	44.6, 100.0
Workers at spots	140	49.0	40.2, 57.8	87.1	80.7, 93.6	92.2	82.6, 100.0
All men	229	39.4	34.3, 44.4	88.2	80.2, 96.2	72.2	58.8, 85.6
Fisherfolk	52	63.2	49.7, 76.7	85.8	66.2, 100.0	75.9	75.1, 76.8
Workers at spots	57	61.0	51.5, 70.6	89.4	84.7, 94.1	87.1	63.1, 100.0

† People living with HIV were considered to know their status if they reported receiving a positive HIV test result prior to the study.

‡ ART use was self-reported during the biobehavioral survey.

§ Current viral suppression defined as a viral load below 1000 copies/mL.

Implications for HIV Testing in Cross-Border Areas

HIV counselling and testing programs aim to identify individuals with HIV who do not know their status. Among the 11,107 people reporting that they did not know their HIV status or reporting that they were HIV negative on the questionnaire, 10,328 agreed to be tested for HIV, and 307 tested HIV positive.

An HIV testing program using outreach testing at venues (similar to the HIV testing protocol used in this study) would need to test 34 people who thought they were HIV negative or did not know their status in land cross-border sites to diagnose one new case of HIV and 36 people in lake cross-border sites.

The number of people who would need to be tested to identify one new case of HIV varied by population group. Fewer women (20 at land cross-border sites and 22 at lake cross-border sites) would need to be tested to identify one new case than men (53 at both land and lake cross-border sites). Specific subgroups had higher HIV testing yield. Only 13 FSWs in land cross-border sites who did not know their status would need to be tested to identify one new case of HIV. Similarly, only 14 female workers at spots would need to be tested to identify one new case. In contrast, 100 male workers at land cross-border spots would need to be tested to identify one new case (Table 75).

Table 75. Number of people needed test to find one new case of HIV* (PLACE survey, 2016)

	Land Sites	Lake Sites
Overall	34	36
All women	20	22
Young women	19	29
FSWs	13	37
Fisherfolk	18	26
Workers at spots	14	22
Patrons at spots	26	22
All men	53	53
Fisherfolk	67	53
Workers at spots	100	50
Patrons at spots	50	53
Truck drivers	56	45

*One new case in which the person did not previously know he/she was infected

The number of people who do not know their status who would need to be tested for HIV to identify one new case is termed the number needed to test. This number is summarized for each cross-border site in Figure 22.

Figure 22. Number needed to test in each cross-border site to identify one new case of HIV (PLACE survey, 2016)



D. TB-HIV Coinfection

Overall, 13.5 percent (95% CI: 9.5, 17.1) of people living with HIV in cross-border sites reported symptoms consistent with TB infection (cough longer than two to three weeks and/or blood in sputum). TB-related symptoms were more common among people living with HIV in land cross-border sites than in lake cross-border sites and among mobile populations than among host populations. Among the populations examined, FSWs with HIV had the highest prevalence of TB-related symptoms (nearly 24%) (Table 76).

Table 76. TB symptoms among people living with HIV in cross-border sites (PLACE survey, 2016)

	Land Sites			Lake Sites		
	n	Weighted %	95% CI	n	Weighted %	95% CI
Overall	301	14.3	8.8, 19.8	245	11.8	6.9, 16.7
Men	118	12.6	6.7, 18.5	98	10.7	2.9, 18.5
Fisherfolk	2	NA		50	14.5	0.1, 28.9
Workers at spots	17	17.6	0.0, 44.9	38	16.2	5.4, 27.1
Patrons at spots	101	11.8	5.5, 18.1	60	7.9	2.9, 12.9
Women	183	15.5	7.3, 23.6	147	12.6	5.7, 19.6
Young women	57	16.4	13, 19.9	35	2.1	0.0, 4.7
FSW	66	23.8	13.5, 34.1	21	23.9	8.1, 39.8
Fisherfolk	6	NA		36	9.4	0.6, 18.2
Workers at spots	82	11.9	4.7, 19.0	50	17.6	9.2, 25.9
Patrons at spots	101	17.9	6.7, 29.2	97	10.0	0.4, 19.5
By residence						
Host	210	12.5	8.0, 17.1	228	11.3	6.0, 16.6
Mobile	91	19.0	14.7, 23.3	17	17.8	6.4, 29.3

Chapter 6 Key Points

- The highest levels of HIV prevalence were found among specific subgroups of women at certain cross-border sites. Women who work at spots emerged as a subgroup with one of the highest prevalence levels.
- Prevalence levels varied among mobile and host populations, and by cross-border site.
- Venue-based testing identified new, previously unidentified cases of HIV. The number needed to test to find new cases varied by subgroup.
- Under half of people infected with HIV at spots in cross-border sites knew their HIV-positive status.
- Of people who knew their status, many were on treatment. The probability of viral suppression varied by group, and mobile populations were less likely than host populations to have a suppressed viral load.

VII. CLINICAL INDICATORS OF HIV CARE AND TREATMENT AT CROSS-BORDER SITES

Data collected at health facilities also provide insight into the status of HIV care and treatment in cross-border sites. A cohort of 3,464 people entering HIV care and treatment for the first time in 2014 was constructed from data abstracted from pre-ART registers and individual patient HIV care and treatment cards at 23 selected cross-border health facilities. This section examines key steps on the HIV care and treatment curriculum—specifically, time to disengagement in care, time to ART initiation, viral load monitoring, and time in care and on ART.

A. Characteristics of People Seeking HIV Care and Treatment at Cross-Border Sites

Over two-thirds of patients entering HIV care in 2014 were women. Nearly 55 percent of patients entered HIV care at a hospital, while 37.5 percent entered care at health centers. The majority of enrolled patients were from Uganda (52.9%), followed by Kenya (33.8%), Tanzania (12.0%), and Rwanda (1.0%). Nearly all reported that they were resident of the country in which their health facility was based (Table 77).

B. Time to Steps on the HIV Care Continuum

Of the 3,464 patients in the study cohort, 1,904 had information on follow-up visits recorded, and thus were included in analysis related to the HIV continuum of care.

Time to Disengagement from Care

By two years after enrollment at a selected health facility, 54 percent of patients had had at least one six- or more-month gap in care. These patients are referred to as disengaged from care. Disengagement in care could result from a patient's dropping out of care at the facility, transferring care to another facility without documenting the transfer, or the patient's death. Patients at land cross-border site facilities (68%) had a higher two-year probability of disengaging from care than those at lake cross-border site facilities (32%). Overall, the two-year probability of disengagement from care was somewhat higher for females (55%) than males (51%), and for patients enrolled in Tanzania (62%), as compared to Kenya (50%) and Uganda (54%) (Table 78).

The two-year probability of disengagement from care was higher for patients who were residents of the country where the facility was located (68%), compared to those who were not (53%). Younger patients (ages 18 or younger at enrollment) also had a higher probability (67%) of disengaging from care within two years of enrollment, as did patients enrolled at dispensaries (82%) and health centers (60%) compared to those enrolled at hospitals (39%).

Figure 23 presents the cumulative probability of disengagement from care over time. Because disengagement from care is defined as a six- or more-month gap in care, no patients are considered disengaged from care within their first six months of enrollment. However, 19 percent of patients did not return to the health facility after their first follow-up visit, leading to the sudden rise in the proportion disengaged at six months in Figure 23. As illustrated by Figure 23, the cumulative probability of disengagement from care over time was higher for patients at land cross-border site facilities than for those at lake cross-border site facilities.

Table 77. Characteristics of 3,464 patients who entered care in 2014 at selected cross-border health facilities (Health facility survey, 2016)

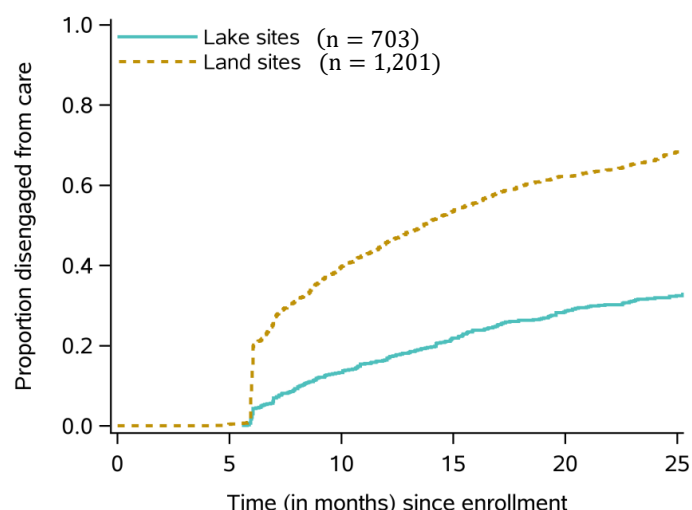
Characteristics	n	Percent
Sex		
Female	2,229	68.9
Male	1,006	31.1
Missing sex	229	
Age		
Under 18	264	8.4
18–29	1,259	40.1
30–44	1,238	39.4
Over 45	380	12.1
Missing age	323	
Facility type		
Dispensary	275	7.9
Health center	1,300	37.5
Hospital	1,889	54.5
Country of health facility		
Kenya	1,141	32.9
Rwanda	35	1.0
Tanzania	328	9.5
Uganda	1,960	56.6
Country of residence		
Kenya	1,095	33.8
Rwanda	40	1.2
Tanzania	390	12.0
Uganda	1,715	52.9
No information on country of residence	224	
Resident of country where health facility was located		
No	3,162	97.6
Yes	78	2.4
No information on country of residence	224	
Land sites	1,687	48.7
Lake sites	1,777	51.3

Table 78. Two-year probabilities of disengaging from care and initiating ART among 1,904 patients enrolled in care in 2014 at selected cross-border health facilities who had at least one follow-up visit (Health facility survey, 2016)

Characteristics	n	Disengagement from Care			ART Initiation		
		2-Year Probability	HR †	95% CI	2-Year Probability	HR	95% CI
Overall	1,904	0.54			0.47		
Land	1201	0.68	1.00		0.44	1.00	
Lake	703	0.32	0.35	0.30, 0.40	0.55	1.36	1.19, 1.56
Sex							
Female	1,216	0.55	1.00		0.45	1.00	
Male	682	0.51	0.88	0.77, 0.99	0.52	1.21	1.06, 1.38
Country of health facility							
Kenya	870	0.50	1.00		0.51	1.00	
Rwanda	35	Not compared			Not compared		
Tanzania	264	0.62	1.43	1.19, 1.72	0.28	0.46	0.36, 0.59
Uganda	735	0.54	1.19	1.05, 1.36	0.51	1.07	0.93, 1.22
Resident of country of health facility							
Yes	1,838	0.68	1.00		0.50	1.00	
No	62	0.53	1.53	1.17, 2.00	0.47	0.99	0.68, 1.41
Age at enrollment							
Under 18	148	0.67	1.34	1.10, 1.64	0.41	0.74	0.56, 0.97
18–29	625	0.54	1.10	0.97, 1.27	0.44	0.85	0.73, 0.99
30–44	795	0.51	1.00		0.50	1.00	
Over 45	287	0.47	0.91	0.76, 1.10	0.49	0.95	0.79, 1.14
Facility type							
Health center	943	0.60	1.00		0.44	1.00	0.96, 1.54
Dispensary	203	0.82	1.75	1.46, 2.09	0.41	0.83	0.65, 1.05
Hospital	758	0.39	0.50	0.44, 0.57	0.53	1.20	1.05, 1.37

† HR: Hazard ratio

Figure 23. Cumulative probability of disengagement from care among 1,904 patients enrolled in care in 2014 at selected cross-border health facilities who had at least one follow-up visit (Health facility survey, 2016)

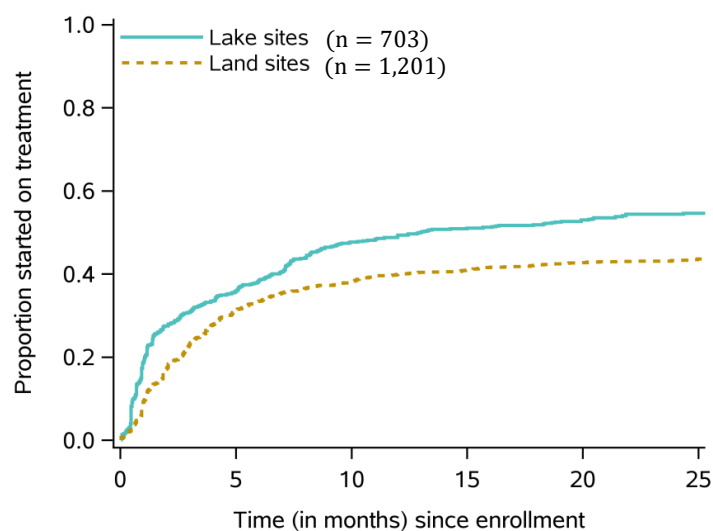


Time to ART Initiation

The time patients spent *not* on ART is a parameter of interest, as time not on ART is time that a patient is likely able to transmit infection to uninfected partners (Cohen, et al., 2011; Tanser, Bärnighausen, Grapsa, Zaidi, & Newell, 2013). The probability of initiating ART within two years of enrollment in care was 47 percent overall, with 10 percent initiating treatment within one month of enrollment. This two-year probability was higher among patients enrolled at lake cross-border site facilities (55%) than among patients enrolled at land cross-border sites facilities (44%) (Figure 24).

Overall, the two-year probability of ART initiation was somewhat higher for males (52%) than females (45%), and for patients enrolled in Kenya (51%) and Uganda (51%) as compared to Tanzania (28%). The two-year probability of ART initiation was similar for patients who were residents (50%) or nonresidents (47%) of the country where the facility where they were receiving care was located. Younger patients under age 18 had a lower two-year probability of ART initiation (41%) than older patients. Patients enrolled at hospitals (53%) had a higher two-year probability of ART initiation than those enrolled at dispensaries (41%) or health centers (44%) (Table 77).

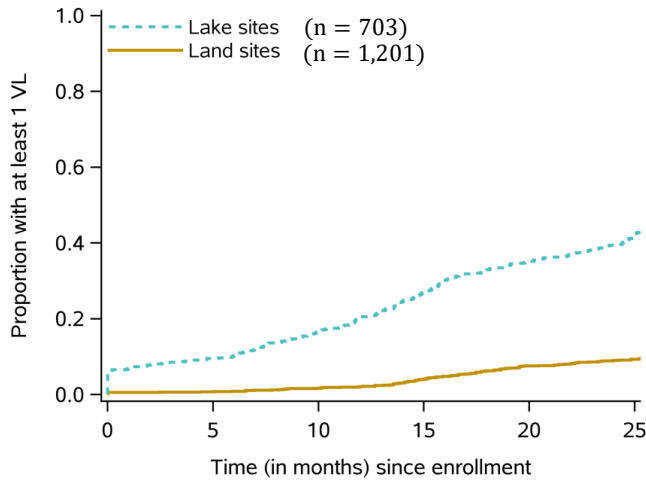
Figure 24. Cumulative probability of ART initiation among 1,904 patients enrolled in care in 2014 at selected cross-border health facilities who had at least one follow-up visit (Health facility survey, 2016)



Viral Load Monitoring

Viral load monitoring is an important component of ongoing HIV care after treatment initiation. To measure the capacity of the health system to monitor viral loads, the cumulative probability of having a first viral load measurement was estimated. Viral load testing was not common at selected health facilities. The overall proportion of patients in care with at least one viral load measure by two years after entry into HIV care was approximately 20 percent and was much higher among patients at lake cross-border site facilities (42%) than among patients at land cross-border site facilities (9%) (Figure 25).

Figure 25. Cumulative probability of having at least one viral load measurement among 1,904 patients enrolled in care in 2014 at selected cross-border health facilities who had at least one follow-up visit (Health facility survey, 2016)

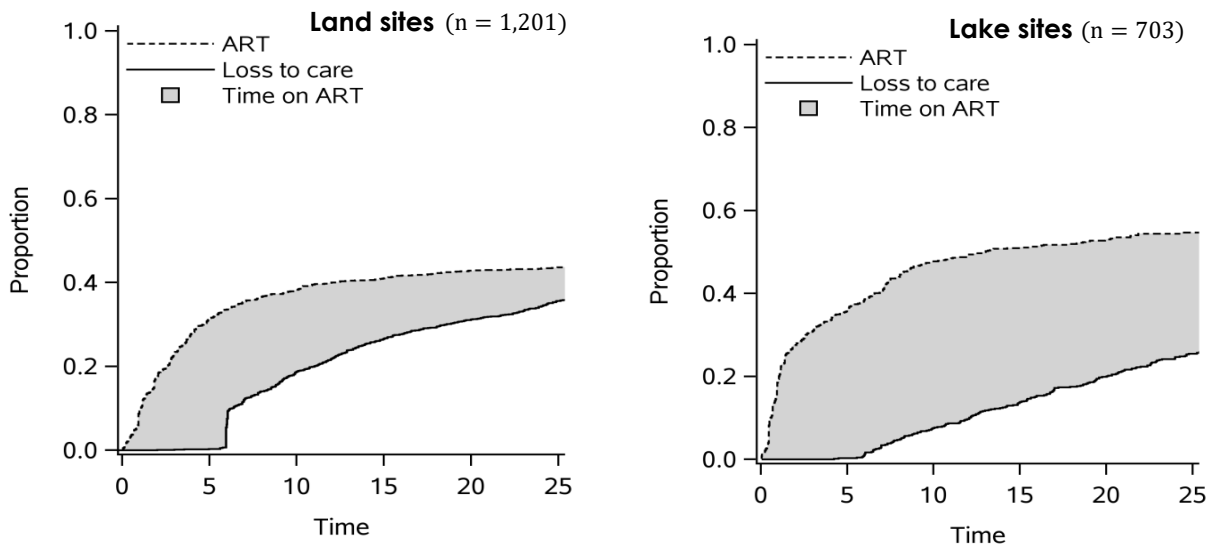


Time Retained in Care and on ART

The time a patient spends in care and on ART is an important driver of improving individual prognosis, as well as limiting onward transmission of HIV. The proportion of people in care and on ART at each time point was estimated by subtracting the probability of becoming disengaged from care given that the patient had already started ART from the cumulative probability of initiating ART.

The cumulative amount of time that patients spend in care and on ART is represented by the shaded region in Figure 26. At land cross-border site facilities, patients spent an average of 4.7 months over the two-year study period retained in care and on ART. In contrast, patients at lake cross-border site facilities spent an average of 10.2 months retained in care and on ART. Note that differences in the time retained on ART between land and lake cross-border sites could be due to differences in patient mobility and undocumented (silent) transfers to new health facilities rather than differences in quality of care.

Figure 26. Probability of being retained in care and on ART and total time spent on ART at selected cross-border health facilities in land and lake border sites (Health facility survey, 2016)



Chapter 7 Key Points

- Viral load testing was not common at the health facilities included in the study. The overall proportions of patients in care with at least one viral measure by two years after entry into HIV care was only about 20 percent.
- People in care for HIV in land cross-border sites were more likely to be lost to follow-up at the clinic where they received care and had slower rates of ART initiation than people in care at lake cross-border sites.
- The total time spent in care and on ART at the selected health facilities was shorter at land cross-border sites (4.7 months), compared to lake cross-border sites (10.2 months).

VIII. SELECTED HEALTH INDICATORS AT CROSS-BORDER SITES

This section presents results related to health indicators for family planning, pregnancy, PMTCT, immunizations, and TB at the 12 cross-border sites. Where possible, results have been disaggregated by mobile and vulnerable populations. Data sources include both the biobehavioral survey (patron/worker interviews) and the health facility survey.

A. Family Planning

This section examines use of modern family planning among women at spots in cross-border sites, including FSWs, young women, and female fisherfolk.

Figure 27 presents the proportions of all women, young women ages 15–24, FSWs, and female fisherfolk at spots who were not pregnant and who reported that they did not want children in the next two years and the proportion of each group using a modern family planning method. Modern methods include birth control pills, intrauterine devices (IUDs), injectables, implants, condoms, foam/jelly, diaphragm, lactation amenorrhea method, female sterilization, and male sterilization.

Overall, 74 percent of women at spots reported that they did not want children in the next two years, and 52 percent reported using a modern family planning method. Among FSWs, young women, and female fisherfolk at spots, 79 percent and 79 percent, respectively, reported that they did not want a child in the next two years. Of the total population of FSWs, young women, and female fisherfolk at spots, 69 percent, 52 percent, and 52 percent, respectively, reported using a modern family planning method.

Figure 27. Proportion of women not pregnant who do not want to have children in the next 2 years and proportion using a modern family planning method, by population (PLACE survey, 2016)

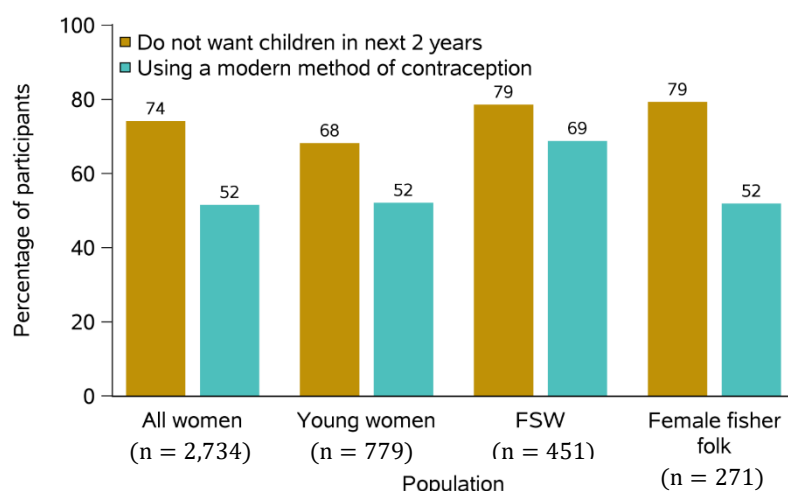


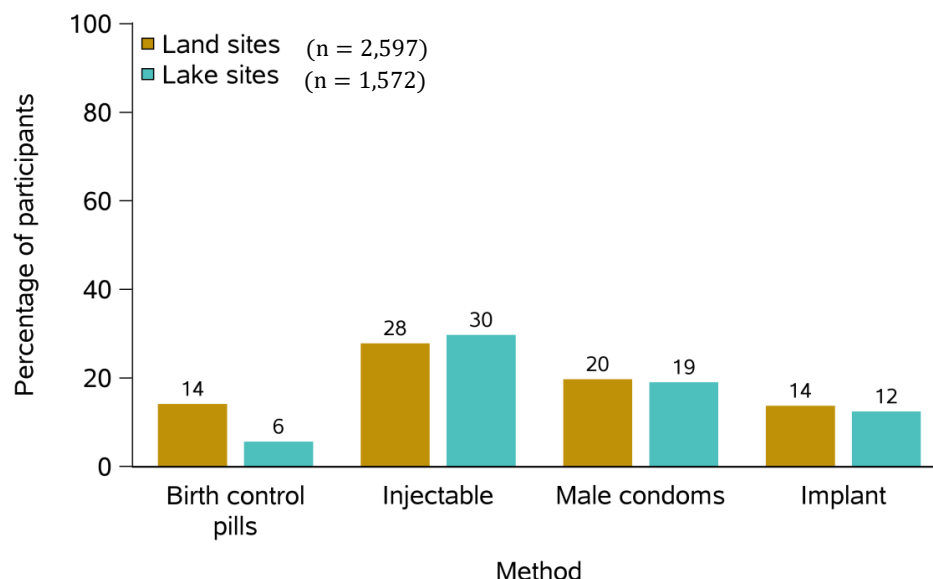
Table 79 presents the proportion of women at spots in cross-border sites who are not pregnant and reported that they did not want children in the next two years, and the proportion of these who also reported using a modern family planning method. Among those not pregnant who do not want children in the next two years, only 64.4 percent of all women are using a modern method, including 87.2 percent of FSWs, 62.4 percent of female fisherfolk, and 56.3 percent of young women.

Table 79. Of women not pregnant who reported that they did not want to have children in the next 2 years, proportion using a modern family planning method, by population (PLACE survey, 2016)

Population	n	Using a Modern Family Planning Method Weighted %	95% CI
All women	1,545	64.4	59.6, 69.2
Young women ages 15–24	617	56.3	49.1, 63.4
FSWs	245	87.2	81.3, 93.1
Female fisherfolk	146	62.4	52.4, 72.3

Figure 28 shows the types of modern family planning methods used by women at spots who were not pregnant and who reported that they did not want to have children in the next two years. Injectables were the most commonly used method among women at both land and lake cross-border sites, followed by male condoms, implants, and birth control pills. Proportions of women using each method were similar at land and lake cross-border sites, with the exception of birth control pills, used by 14 percent of women at spots in land cross-border sites but only 6 percent of women at lake cross-border sites.

Figure 28. Percentage of women not pregnant who reported that they did not want to have children in the next 2 years using each of 4 modern family planning methods, by land vss lake sites (PLACE survey 2016)



*Graph does not include nine individuals using female condoms, spermicide, a vaginal ring, or tubal ligation.

B. Antenatal Care

Retention in ANC services at cross-border sites was examined through both the biobehavioral survey and health facility survey.

Figure 29 shows the proportion of women at spots who were pregnant between January 2014 and May 2015 (weighted data, based on n=874) and reported completing at least 1, 2, 3, or 4 ANC visits. Approximately two-thirds of young women and female fisherfolk who were pregnant between January 2014 and May 2015 reported attending four or more ANC visits during their pregnancy, as compared to only 58 percent of FSWs who were pregnant during the same period.

Figure 29. Among women at spots in cross-border sites who were pregnant between January 2014 and May 2015, proportion who attended at least 1, 2, 3, and 4 ANC visits (PLACE survey, 2016)

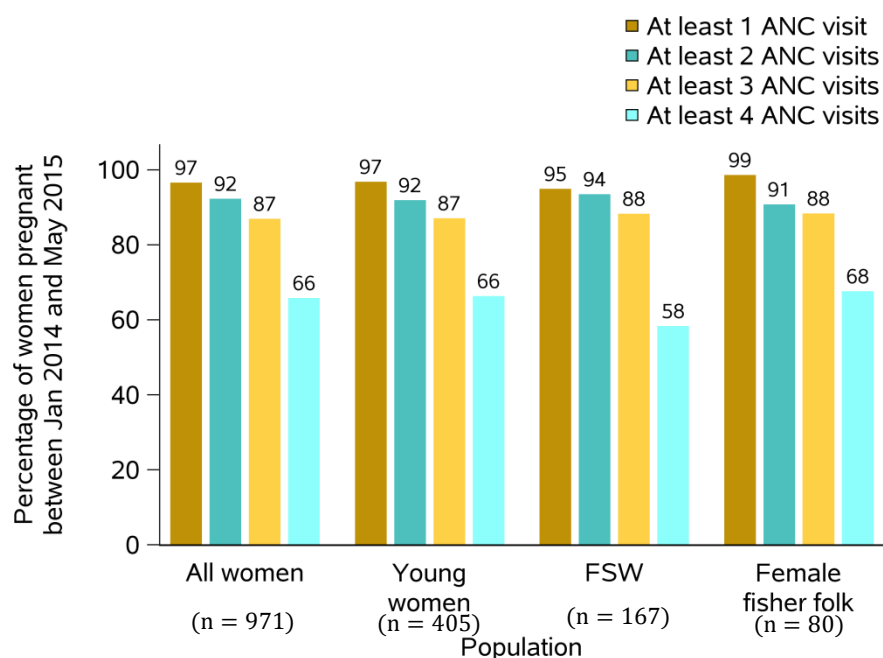


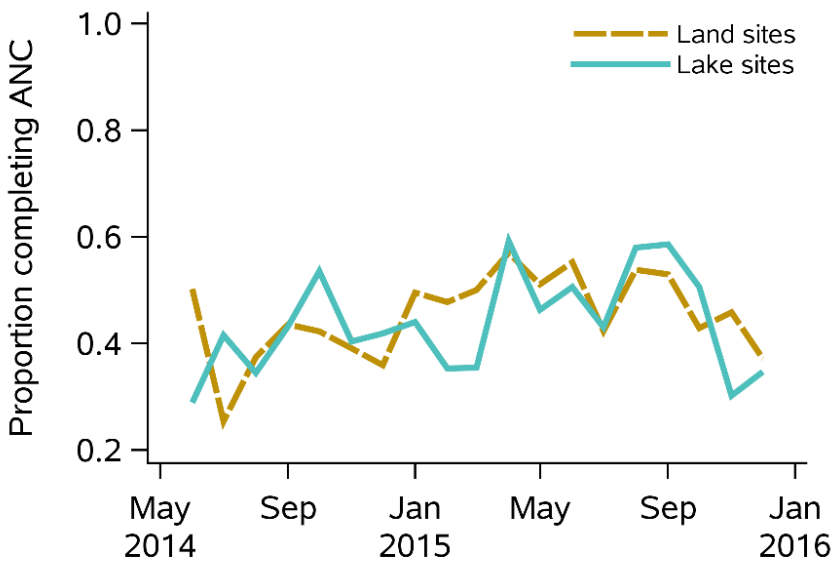
Table 80 presents data gathered on first and fourth ANC visits at the 23 selected cross-border health facilities for January 2014 to December 2015. To examine the proportion of pregnant women who had a first ANC visit and went on to complete four ANC visits at selected cross-border health facilities, a proxy measure was developed. The proportion retained in ANC services was estimated as the number of fourth ANC visits during each month of the study period divided by the number of first ANC visits conducted six months prior. Figure 30 presents this ratio by month for facilities based at both land and lake cross-border sites.

This proxy measure suggests that approximately 45 percent of women at land cross-border sites and 44 percent of women at lake cross-border sites were retained in ANC programs for four visits.

Table 80. Proportion of women who attended a first ANC visit between January 2014 and June 2015 at selected cross-border facilities who attended a fourth ANC visit six months later (Health facility survey, 2016)

	Land Sites	Lake Sites
Number of women attending a first ANC visit between January 2014 and June 2015	30,268	16,111
Number of women attending a fourth ANC visit between June 2014 and December 2015	12,917	6,552
Proportion of those who started ANC who finished ANC in this time period	45%	44%

Figure 30. Estimated proportion of pregnant women retained in ANC services from a first visit to a fourth visit 6 months later at selected cross-border health facilities in 2014 or 2015 (Health facility survey, 2016)



C. Pregnancy Outcomes

Approximately three-quarters of women at spots reported that they had ever been pregnant, with 8.2 percent reporting that they were currently pregnant. Young women ages 15–24 at spots were less likely to have ever been pregnant (54.8%), but slightly more likely to be currently pregnant (10.8%) than other women at spots.

Approximately one-third of women were pregnant between January 2014 and May 2015. Among these women, a lower proportion of FSWs (77.3%) reported a live birth outcome, compared to young women (87.8%) and female fisherfolk (95.4%). Across the groups, a higher proportion of FSWs reported a stillbirth (10.8%), miscarriage (6.8%), or elective abortion (5.1%). The proportion of female fisherfolk at spots reporting stillbirths, miscarriages, or elective abortions was lower than among women overall.

Women at spots reported a mean of 1.3 children born in the past five years. The mean number of births in the past five years for young women, FSWs, and female fisherfolk was 1.1, 1.2, and 1.4 respectively (Table 81).

Table 81. Pregnancy outcomes among women at spots at cross-border sites, by population (PLACE survey, 2016)

	All Women (n = 971) Weighted %	Young Women (n = 405) Weighted %	FSWs (n = 167) Weighted %	Female Fisherfolk (n = 80) Weighted %
Ever pregnant	73.6	54.8	77.8	79.5
Pregnant at time of interview	8.2	10.8	7.2	8.1
Pregnant between January 2014 and May 2015	33.1	47.9	34.4	30.2
Of women pregnant between January 2014 and May 2015, outcome				
Live birth	88.5	87.8	77.3	95.4
Stillbirth	4.6	4.3	10.8	1.0
Miscarriage at <20 weeks	5.1	6.2	6.8	3.6
Elective abortion	1.8	1.8	5.1	0.0
	Weighted mean	Weighted mean	Weighted mean	Weighted mean
Number of children born in past 5 years	1.3	1.1	1.2	1.4
Number of children born in past 5 years still living	1.3	1.1	1.1	1.4

D. Immunizations

To examine loss to follow up from immunization programs, data were gathered from the 23 selected cross-border health facilities on the number of infants who received DPT-1 and DPT-3 in 2014 and 2015, by month. Individual-level data were not available; rather, the team collected counts of infants receiving the DPT-1 dose and the DPT-3 dose by month. The proportion of infants completing the DPT sequence was estimated by dividing the number of infants receiving DPT-3 by the number of infants receiving DPT-1 at that health facility four months earlier.

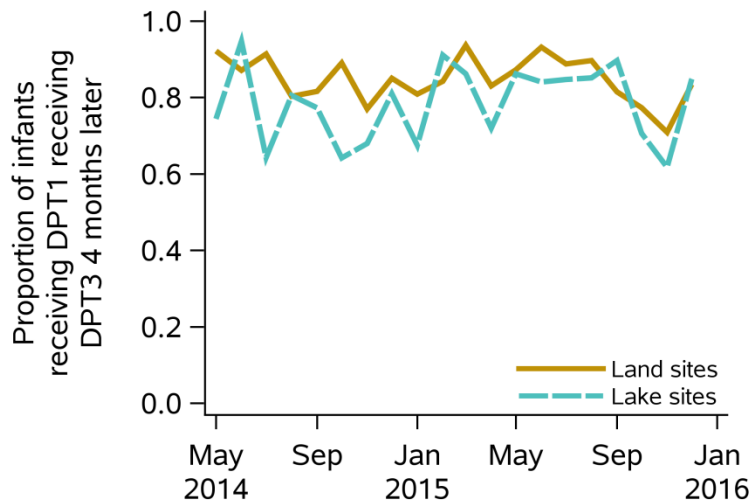
This proxy measure suggests that approximately 90 percent of children at facilities based at land cross-border sites and 80 percent of children at facilities based at lake cross-border sites who initiated the DPT sequence, completed the sequence (Table 82 and Figure 31.)

Table 82. Proportion of infants receiving DPT-1 in 2014 or 2015 at selected cross-border health facilities who received DPT-3 four months later (Health facility survey, 2016)

	Land	Lake
Number receiving DPT-1 between January 2014 and September 2015	23,944	9,774
Number receiving DPT-3 between May 2014 and December 2015	21,448	7,805
Proportion completing DPT sequence in 2014–2015†	89.6%	79.9%

†Proportion of infants completing DPT sequence was estimated as the total number receiving DPT-3 divided by the total number receiving the DPT-1 vaccine four months prior.

Figure 31. Proportion of infants receiving DPT-1 in 2014 or 2015 at selected cross-border health facilities who received DPT-3 four months later (Health facility survey, 2016)



E. Prevention of Mother-to-Child Transmission

To examine the efficacy of PMTCT programs and explore loss to follow-up, data on outcomes at 18 months of age were gathered for HIV-exposed infants enrolled in PMTCT programs at the 23 selected cross-border health facilities from June 2013 to May 2014.

International guidelines recommend that DBS samples are collected from HIV-exposed infants within two months of birth for early infant diagnosis. DBS by two months of age were more frequently collected at health facilities based in lake cross-border sites than land cross-border sites. At facilities based in lake cross-border sites, DBS were collected from 89 percent of HIV exposed infants, as compared to only 56 percent of exposed infants at facilities located in land cross-border sites. Nearly all exposed infants who had DBS taken by two months were confirmed negative (Figure 32.)

Of HIV exposed infants *not* confirmed negative at 18 months of age, those at facilities at land cross-border sites were more likely to be confirmed positive, in care but never tested, or lost to follow-up than those at lake cross-border sites. At land cross-border facilities, 21.6 percent of HIV-exposed infants enrolled in a PMTCT program were lost to follow-up, 13.9 percent were in care but never tested, and 4.7 percent tested positive, as compared to only 3.9 percent of exposed infants at lake cross-border site facilities who were lost to follow-up, less than 1 percent who were in care but never tested, and 1.9 percent who tested positive (Table 83).

Figure 32. HIV-exposed infants who enrolled in a PMTCT program, had DBS collected within 2 months of birth, and were confirmed negative at 18 months of age at selected cross-border health facilities from June 2013 to May 2014 (Health facility survey, 2016)

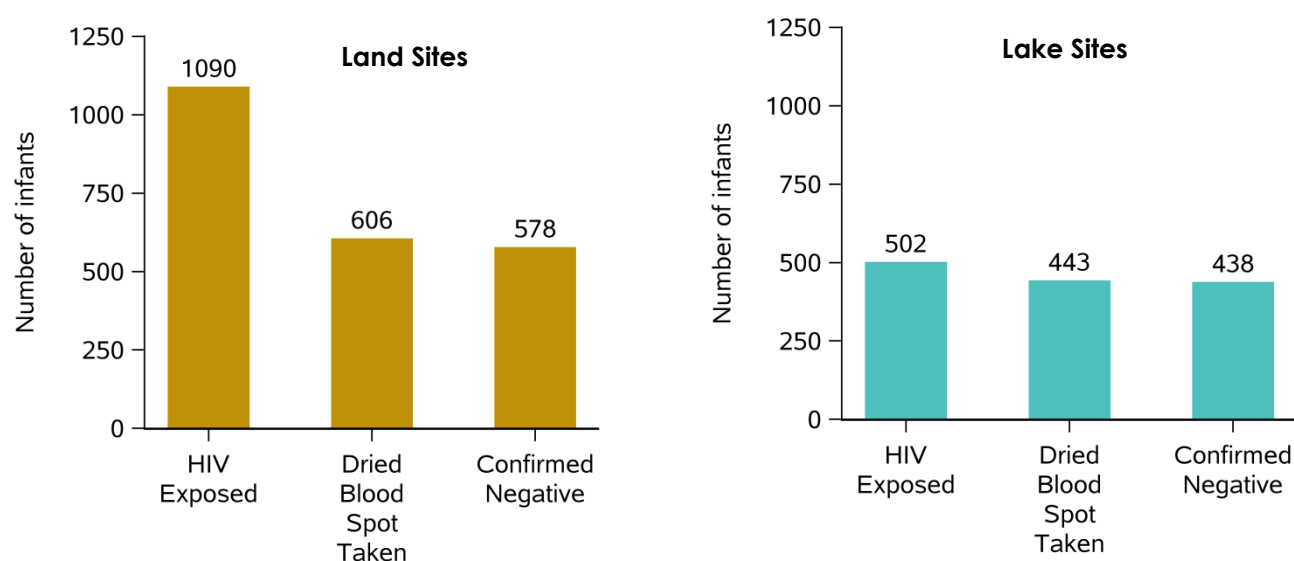


Table 83. Status of HIV-exposed infants not confirmed negative at 18 months of age at selected cross-border health facilities (Health facility survey, 2016)

Status	Land Sites		Lake Sites	
	Number	Percent of all HIV-exposed infants	Number	Percent of all HIV-exposed infants
HIV positive	51	4.7	21	1.9
Died	25	2.3	33	3.0
Transferred	54	5.0	46	4.2
Lost to follow-up	235	21.6	43	3.9
In care, but never tested†	151	13.9	0	0.0
Total	436		140	

†Note that infants in care but never tested were found at two of the lake site facilities only

F. Tuberculosis

To explore loss to follow-up from TB treatment programs, data were gathered on outcomes at one year for persons that started TB treatment at selected cross-border health facilities in 2014. At land cross-border site facilities, 66.4 percent of patients enrolling in TB treatment programs in 2014 had completed treatment one year later, as compared to 78.3 percent of patients entering TB treatment programs at lake cross-border site facilities. Just over 10 percent of patients enrolling in TB treatment programs in 2014 were lost to follow-up or had unknown outcomes at both land and lake cross-border site facilities (Table 84).

Table 84. Outcomes among people starting treatment for TB at selected cross-border health facilities in 2014 (Health facility survey, 2016)

	Land Sites		Lake Sites	
	Count	Percentage of Those Starting Treatment	Count	Percentage of Those Starting Treatment
Diagnosed with TB	309		439	
Started treatment at selected health facility†	550		869	
Completed treatment	365	66.4	680	78.3
Failed	8	1.5	3	0.3
Transferred	56	10.2	37	4.3
Defaulted	36	6.5	9	1.0
Died	28	5.1	46	5.3
Lost to follow-up	18	3.3	88	10.1
Unknown	39	7.1	6	0.7

†Two health facilities at land sites did not collect TB-related data in 2014.

‡Many facilities offered enrollment in treatment programs to people who had been diagnosed with TB in other health facilities.

Table 85 presents findings from the biobehavioral survey. At land cross-border sites, 6.5 percent of people at spots self-reported TB symptoms (cough longer than two to three weeks and/or blood in sputum) in the past six months, as did 4.0 percent of persons at spots at lake sites. Women and workers at spots were slightly more likely to report symptoms of TB than men or patrons at spots. Self-report of TB symptoms was highest among MSM (15.0%) at land cross-border sites, and FSWs at both land (11.3%) and lake (9.9%) cross-border sites. Less than 3 percent of truck drivers self-reported symptoms of TB in the last six months.

Table 85. Proportion of people at spots in cross-border sites who reported TB symptoms in the past six months (PLACE survey, 2016)

	Land Sites (n=7466)		Lake Sites (n=3962)	
	Weighted %	95% CI	Weighted %	95% CI
Self-reported TB symptomst in past 6 months†	6.5	5.1, 7.9	4.0	2.8, 5.2
Among:				
Women	7.2	5.3, 9.1	4.8	3.1, 6.5
Men	6.2	4.7, 7.7	3.6	2.1, 5.1
Workers at spots	7.3	4.6, 10.0	6.2	4.4, 7.9
Patrons at spots	6.3	4.9, 7.8	3.3	2.0, 4.6
FSW	11.3	6.3, 16.3	9.9	1.3, 18.5
Truck drivers	2.7	0.3, 5.0	2.8	2.8, 2.8
MSM	15.0	8.7, 21.4	0.0	NA

†Cough longer than two to three weeks and/or blood in sputum.

Chapter 8 Key Points

- Family planning: Among women who were not pregnant and who did not want children in the next two years, only 64.4 percent were using a modern family planning method.
- ANC: Approximately two-thirds of young women and female fisherfolk who were pregnant between January 2014 and May 2015 reported attending four or more ANC visits during their pregnancy, as compared to only 58 percent of FSWs who were pregnant during the same period.
- Pregnancy outcomes: Among women pregnant between January 2014 and May 2015, a lower proportion of FSWs reported a live birth outcome, compared to other groups of women examined. Across the groups, a higher proportion of FSWs reported a stillbirth, miscarriage, or elective abortion. The proportion of female fisherfolk at spots reporting still births, miscarriages, or elective abortions was lower than that of women overall.
- Immunizations: Approximately 90 percent of children at facilities based at land cross-border sites and 80 percent of children at facilities based at lake cross-border sites who initiated the DPT sequence, were estimated to have completed the sequence.
- PMTCT: DBS samples were less likely to be collected from HIV-exposed infants at facilities based in land cross-border sites than those in lake cross-border sites. Nearly all HIV-exposed infants who had DBS taken by two months were confirmed negative. Among HIV-exposed infants *not* confirmed negative at 18 months of age, those at facilities at land cross-border sites were more likely to be confirmed positive, in care but never tested, or lost to follow-up, as compared to those at lake cross-border sites.
- TB: Over 10 percent of patients enrolling in TB treatment programs in 2014 at selected health facilities based at both land and lake cross-border sites were lost to follow-up or had unknown outcomes.

IX. SERVICES OFFERED BY SELECTED HEALTH FACILITIES AND EXPERIENCES OF STAFF

This section describes the HIV, STI, family planning, ANC/MCH, post-sexual and -gender-based violence care, TB, and drug abuse services provided by the main health facilities at each cross-border site as reported by senior staff. It also presents the findings of qualitative interviews conducted with senior staff at each facility regarding facilities' experience conducting outreach to key populations, retaining patients in care, managing drugs and supplies, and communicating with facilities in neighboring countries.

A. Patients and Staffing

Seventeen of the 23 facilities that participated in the survey saw patients from more than one country. Respondents at five facilities did not know if patients came from other countries. Only one facility reported that all their patients came from just one country. On average, facilities reported having 5.7 clinicians, 14.6 nurses, and 19.2 other staff (Table 86).

Table 86. Patients and staffing (Health facility survey, 2016)

	Number
Number of facilities that see patients from more than one country	17
Average number of clinicians	5.7 (range: 1-25)
Average number of nurses	14.6 (range: 2-100)
Average number of other staff	19.2 (range: 0-90)

B. Services Provided

Of the 42 services included in the survey, just under half (19) were offered by all 23 facilities surveyed. Drug abuse services and provision of water-based lubricants were the least common services offered. When a service was not offered, referral was uncommon.

HIV and STI Services

All facilities surveyed offered HIV counseling and testing, including provider-initiated counseling and testing, HIV treatment and care, provision of male condoms, counseling on correct/consistent use of condoms, PMTCT, and provision of post-exposure prophylaxis. Approximately 70 percent or more facilities also offered demonstration of male condoms, provision and demonstration of female condoms, counseling on dual protection, counseling on condom negotiation skills, HIV risk assessment, HIV risk-reduction counseling, and psychosocial assessment and counseling. The least common HIV service offered was provision of water-based lubricants, offered by only four facilities (Table 87).

Diagnosis and treatment of STIs were offered by all facilities. All but one facility also offered education on STI prevention.

Table 87. Number of facilities providing HIV and STI services (Health facility survey, 2016)

	Provide Service	Refer Only
HIV services		
HIV counseling and testing	23	-
HIV treatment and care	23	-
Provider-initiated counseling and testing	23	-
Provision of male condoms	23	-
Demonstration of male condoms	22	-
Provision of water-based lubricants	4	2
Provision of female condoms	20	-
Demonstration of female condoms	16	-
Counseling on dual protection	20	-
Counseling on correct/consistent use of condoms	23	-
Counseling on condom negotiation skills	17	-
HIV risk assessment	21	-
HIV risk-reduction counseling	22	-
Psychosocial assessment and counseling	18	3
Provision of post-exposure prophylaxis	23	-
PMTCT services	23	-
STI services		
Diagnosis of STI	23	-
Treatment of STI	23	-
Education on prevention of STIs	22	1

Family Planning, ANC/MCH, and Post-Sexual and –Gender-Based Violence Care Services

Counseling on modern family planning methods and provision of short-term methods were offered by all facilities. Nearly all also offered long-acting and permanent methods and emergency contraception (Table 88).

All facilities surveyed also offered testing for pregnancy, ANC, delivery by a skilled birth attendant, postnatal care, and childhood immunizations.

Three-quarters or more of the facilities surveyed offered six services related to post-sexual and –gender-based violence care: physical examination, trauma counseling, management of soft tissue injury, collection of samples, psychosocial support, and referral for legal aid.

Table 88. Number of facilities providing family planning, ANC/MCH, and post-sexual and -gender-based violence care services (Health facility survey, 2016)

	Provide Service	Refer Only
Family planning services		
Counseling on modern family planning methods [†]	23	-
Provision of short-acting family planning methods [‡]	23	-
Provision of long-acting and permanent methods ^{‡‡}	21	1
Prevention of emergency contraception	20	-
ANC/MCH services		
Testing for pregnancy	23	-
Provision of antenatal care	23	-
Delivery by skilled birth attendant	23	-
Postnatal care	23	-
Provision of childhood immunizations	23	-
Post-sexual and -gender-based violence care		
Physical examination	21	1
Trauma counseling	18	1
Management of soft tissue injury	22	1
Collection of samples	16	3
Psychological support	18	1
Referral for legal aid	19	1

[†]Includes pill, IUD, injectables, implants, condoms, foam/jelly, diaphragm, lactation amenorrhea method, female sterilization, male sterilization

[‡]Includes pill, injectables, condoms, foam/jelly, diaphragm

^{‡‡}Includes IUD, implants, female sterilization, male sterilization

TB and Drug Abuse Services

Verbal screening and TB treatment were offered by all facilities surveyed, with nearly all also offering testing for TB (Table 89).

Drug abuse services were the least common services offered. Among facilities that did offer drug abuse services, the most commonly offered services were counseling on risk associated with substance abuse and abscess management. Only about one-quarter of the facilities surveyed offered counseling on sharing of drug-injecting paraphernalia, provision of risk-reducing commodities such as clean needles and syringes, and specialized counseling related to drug use and/or drug dependence treatment.

HIV Integrated Services

Twenty-two facilities offered integrated HIV and TB services. Twenty-one of these also integrated HIV services with family planning and STI services, while only 16 integrated HIV services with MCH services (Table 90).

Table 89. Number of facilities providing TB and drug abuse services (Health facility survey, 2016)

	Provide Service	Refer Only
TB services		
Verbal screening for TB	23	-
Testing for TB	20	3
Treatment for TB	23	-
Drug abuse services		
Counseling on risk associated with substance abuse	10	4
Counseling on sharing of drug-injecting paraphernalia	6	3
Provision of risk-reducing commodities such as clean needles and syringes	5	3
Abscess management	10	1
Specialized counseling related to drug use and/or drug dependence treatment	4	3

Table 90. Number of facilities offering integrated services (Health facility survey, 2016)

	Number
Number of facilities offering integrated services	22
Number offering the following integrated services	
HIV/TB	22
HIV/Family planning	21
HIV/STI	21
HIV/MCH	16

C. Outreach to Key Populations

Health facility staff most commonly reported that the key population groups targeted for outreach were FSWs and people living with HIV/AIDS (both land and lake cross-border sites), truck drivers (land sites), and fisherfolk (lake sites). Outreach to these groups was most commonly in the form of periodic mobile and/or moonlight clinics that offer some combination of HIV counseling and testing, health education, STI testing and treatment, and condom distribution. Less commonly reported mobile services included TB screening and family planning.

Vulnerable girls were also reached by some health facilities that conduct HIV/STI health education in schools, screen school children for malnutrition, and/or engage in community immunization clinics. Outreach targeted specifically to people who inject drugs and MSM was not reported, with the exception of two facilities that reported they had recently begun targeting most key population groups. No differences in types of outreach were noted by country.

Challenges

Healthcare workers across the 12 study sites reported similar challenges to providing outreach to key populations. The most frequently reported challenge was lack of resources—trained personnel, funds for per diems and transport, and shortages of supplies (e.g., condoms, HIV test kits, STI treatment drugs). Respondents reported that they often rely on partners (nongovernmental organizations [NGOs], donors) to fund outreach, as they do not have enough trained staff or funds for transport and per diems. As a result,

outreach can be irregular (e.g., every six months or only when funds are available), and even suspended for long periods when funding provided by NGO partners or donors dries up.

When partners pull out, there are sustainability issues that we are trying to address, but it isn't easy. – Healthcare worker

Sometimes you may plan to go for outreach, but you don't have the money and personnel. The money is for allowances and transport. We do not have enough personnel to go for outreach and leave adequate personnel at this facility. –Healthcare worker

Respondents reported that services must be brought to key population groups that are not easily reachable during the facility's normal hours of operation (such as FSWs and fisherfolk). While moonlight clinics and clinics offered in bars, guesthouses, and at beaches attempt to bring services to these populations, the problem of stigma hinders full utilization.

They don't want to be tested at the site where they work for fear of losing clients. –Healthcare worker

Even if you take services around the beach there is a lot of stigma. Some of the patients feel they should be seen alone. They shy off being tested when we take our outreaches out there because he knows the community will know he is HIV positive. –Healthcare worker

Less commonly reported challenges included difficulty in distinguishing key population members from the general population and not knowing where to find key population groups in the community. A challenge specific to lake cross-border sites is healthcare workers' fear of water transport to provide outreach on islands.

D. Retention in Care

Most respondents reported that efforts to retain patients in ART, PMTCT, and TB programs include taking contact numbers and calling patients when they fail to show up for an appointment and using adherence counselors to educate patients on the importance of treatment. Most facilities rely on community health workers or home-based care workers, when available, to trace defaulting patients using locator forms that map directions to patients' homes.

For ART patients who will be traveling for a short period of weeks or a couple of months, most facilities provide a supply of drugs. Some facilities also supply traveling TB patients with drugs; however, in countries that require directly observed therapy, this is problematic.

Respondents reported innovative ways their health facility supported retention in care. Most often partners (i.e., NGOs, donors) fund these innovations. Table 91 highlights these strategies.

Challenges

A frequently mentioned challenge to retaining clients in care is the mobile nature of many of the key population groups, especially fisherfolk, FSWs, and truck drivers.

Fisherfolk are the major group we have challenges with. They keep moving from one island to another. Sex workers are equally mobile. They both often miss appointments. –Healthcare worker

Another commonly reported challenge is an inability to close the loop on referrals for mobile clients. For example, when a healthcare worker is aware a patient plans to leave the area for an extended period, s/he will generally write a referral note that lists the client’s investigations, results, and current medications. However, healthcare workers reported they rarely refer these clients to a specific, known facility. Further, they almost never receive feedback regarding whether the patient used the referral note to continue treatment elsewhere.

If you referred this client and you have not gotten feedback you don't know whether he has reached or disappeared along the way. So, the mechanisms of linkage have not been put well. –Healthcare worker

Table 91. Strategies for retaining clients in care (Health facility survey, 2016)

Program	Strategies for Retention in Care
ART	<ul style="list-style-type: none"> • Operating a small clinic at the border to reduce stigma and long wait times at the facility's ART clinic • Using community health workers for sensitization to reduce stigma • Sending daily short message service (SMS) messages reminding patients to take their ARVs • In Tanzania, clients enrolled in ART must take classes twice a week for three weeks on the benefits of treatment
PMTCT	<ul style="list-style-type: none"> • Synchronizing mother and baby appointments to reduce the number of clinics the mother must attend • Triaging mothers in the ART clinic to reduce long wait times • Phoning or sending text messages to remind women of appointments • Providing mothers with funds to facilitate their transport • Conducting home visits • Filling locator forms by following a mother to her home and drawing a map
TB	<ul style="list-style-type: none"> • Establishing TB centers in the community to bring care closer • Enlisting a family member to support patients through treatment
ANC	<ul style="list-style-type: none"> • Offering ANC clinics daily • Using “mentor mothers” who follow up with pregnant mothers • Providing a mobile clinic for ANC
Immunizations	<ul style="list-style-type: none"> • Using “immunization mobilizers” who work in the community to register eligible children and follow up on immunization days with roll calls • Offering immunization clinics daily

Long wait times at the various clinics (ART, TB, ANC), which can be tied to inadequate staffing, also serve as a barrier to retention in care. For some key population groups, such as FSWs, truck drivers, and fisherfolk, clinic hours can also be a barrier. Additionally, specialized clinics for STI screening and treatment do not exist, and those coming for these services must wait in the very long lines of general outpatient clinics.

Stigma is a special challenge for ART retention, as some patients do not want to be seen at ART clinics. Respondents reported that some patients give false names and numbers because of stigma, and thus cannot be traced if they default. Stigma drives some patients to seek care on the opposite side of the border; when these patients default, tracing across country lines is a major challenge.

Sometimes because of issues of confidentiality, they want to go to a further facility.
–Healthcare worker

Some of them give us wrong numbers...also a wrong name, so following up becomes a problem. –
Healthcare worker

We have the referral forms only that we cannot refer this client there willingly because they also tend to want to take the medication from where they are not known. –Healthcare worker

Lack of finances to carry out retention-related activities was also reported as challenge. It is noteworthy that most of the innovative ways for retaining clients in care described in Table 91 above were reported to be partner-funded. Respondents noted that when funds for these activities dry up, retention in care is reduced.

Another reported challenge to retention in care was the different cell phone networks that are used by different countries—specifically the high cost involved in calling defaulting patients when they are on another country’s cell network.

Finally, alcohol abuse was also reported as a barrier to retention in care, both for patients who do not adhere to treatment, and for vulnerable children, whose parents or caretakers neglect their care due to their alcohol use.

E. Supply Chain Management

The most commonly reported stockouts were for STI treatment drugs, which were reported to be “often” out of stock. Stockouts were also reported by some facilities for ARVs; family planning, including male and female condoms; and TB testing supplies and treatment. Immunization stockouts were less commonly reported and usually associated with a countrywide shortage.

Some respondents reported that their facility had NGO or donor partners that supported them with drugs and commodities, while others rely strictly on government supply. In the event of stockouts, respondents stated that their facility might try to obtain drugs from nearby facilities. Otherwise, patients are instructed to either wait or buy drugs from the private sector.

Challenges

The most frequently reported reason for stockouts was orders not being filled by central or local government suppliers; being filled very late (three months or more); or being supplied with drugs that were not ordered.

You can forecast, you can order...and you are not given enough supply.
–Healthcare worker

Sometimes they give you something which you still have in plenty or something you may not need at that particular time, and yet the one you need so much may not be brought. –Healthcare worker

They bring what they have, but not what you want. –Healthcare worker

While most respondents felt the top reason for stockouts were orders not being filled properly or promptly by government, many respondents acknowledged that more training for facility staff on supply chain management could also help reduce stockouts. While some facilities have trained pharmacists, many do not. They instead rely on various staff to monitor consumption and stock, and funnel information to a point person who places orders.

Basically, our staff have not had any training in logistic management. –Healthcare worker

The responsible members of the different departments should be able to monitor and forecast drug consumption. They should be able to have buffer stocks. That is the teaching but not the practice... We need more people trained in commodity management. –Healthcare worker

Some respondents reported that stockouts were due (in part) to treatment of clients from across the border.

We have a designed kit for this facility. And supply is less than consumption. –Healthcare worker

Here there are about 35,000 and you cannot count other people coming in, you cannot count those ones. Because we get people coming from Rwanda to receive treatment. –Healthcare worker

Another cause for stockout can be overpopulation. I do not know if we should plan for the population of our neighbors because many of our patients are from Tanzania. Maybe the district never planned for them because this is a health center III ... I think they are not planning for them ... other health center IIIs ... are remote. –Healthcare worker

Only one respondent reported that stockouts were due to irrational use of drugs.

If I have an upper respiratory tract infection, instead of giving me ceftriaxone, give me amoxicillin and keep the ceftriaxone for a disease that needs it. –Healthcare worker

F. Cross-Border Communication

Only six respondents reported that their health facility communicated with a facility on the other side of the border. Three reported that they belonged to a committee that met quarterly to discuss disease surveillance and general health issues in their border area, and another respondent had recently been to a cross-border workshop focused on HIV and key populations. One respondent stated that their facility had contact with a facility across the border to which they referred clients, and another reported they were in contact with a facility across the border for tracing defaulters.

Of the remaining 17 respondents, only a few reported referring patients to facilities across the border despite not communicating with those facilities, while most reported they had no communication and did not refer patients to facilities outside the country.

There is no communication. There is nothing. Even if you wanted to refer a patient, you don't know where they are coming from or their facilities. So, it is a very big gap. We need inventory of these facilities and their contacts and how they can be reached. If you wanted to refer a patient, you can't know if this patient reached and so referral cannot be complete. And this is really a very big burden. – Healthcare worker

Most respondents further reported that they do not provide medical records to patients known to be traveling, but instead provide a referral note. However, most respondents stated they would have no objection to providing records, or a copy of a record, should they be asked.

Challenges

Respondents reported only one barrier to cross-border communication—lack of a mechanism or platform that supports and coordinates communication among facilities in border areas. Many went on to note a need

for communication and collaboration to improve health in the area. Potential benefits reported included better planning, improved defaulter tracing and continuity of care, confirmation of referrals and reduced loss to follow-up, and reduced duplication of services.

What prevents communication is there is not a system in place. You cannot communicate with systems you don't know and institutions you have not been to. There is a need to enable these institutions close to the border to come together, sit together, plan together how they can manage conditions around the border. –Healthcare worker

We do not have platforms to share information with fellow healthcare workers in the neighboring country...But this would be very great if we collaborated. –Healthcare worker

Chapter 9 Key Points

- Healthcare workers reported that the main barrier to communication with facilities on neighboring sides of a border was the lack of a mechanism or platform to support such communication. They further reported that such communication could improve confirmation of patient referrals and retention in care, as well as defaulter tracing and continuity of care.
- Senior health officials at the 23 selected health facilities reported that the majority of the health services in the standard package of services recommended by the EAC for transport corridors were provided. A more comprehensive facility assessment could better determine service availability and readiness for HIV, STI, family planning, ANC/MCH, post-sexual and -gender-based violence care, TB, and drug abuse services.
- Outreach activities provided by the selected facilities focused on a subset of mobile and vulnerable population groups and were limited by a lack of resources.

X. CONCLUSION

Cross-border sites in East Africa are important mixing grounds for the populations of interest, including host, mobile, and vulnerable populations. These populations include young women, FSWs, fisherfolk, workers at spots, truck drivers, MSM, and people who inject drugs.

The quantitative biobehavioral survey provided information on populations of interest and the places where they socialize at cross-border sites. Structured qualitative interviews and quantitative questionnaires provided information on the operation of health facilities, and medical record reviews described the current status of indicators related to the performance of various programs offered by selected health facilities, including HIV care and treatment, PMTCT, TB treatment, ANC, and immunization programs. Key findings are summarized below.

Mobility and loss to follow-up plague care and treatment programs at cross-border health facilities.

Across all health facility programs examined (HIV care and treatment, PMTCT, ANC, immunizations, and TB treatment), health facilities could not easily distinguish loss to follow-up from silent transfers to a new health facility, particularly if the health facility was on the other side of an international border. Estimates of retention in care should be interpreted as retention in care at the facility of enrollment at the cross-border site without a documented transfer. In the clinic records examined, few documented transfers were recorded. Documenting the intention to transfer care from one health facility to another is important not only to measuring retention in care but also to maintaining continuity of care for patients switching health facilities. Such continuity of care is especially important for people receiving ART or other treatments, particularly when treatment regimens may not be harmonized across international borders.

The mobile nature of many key population groups and the lack of communication with facilities in neighboring countries hinder retention in care.

Fisherfolk, truck drivers, and FSWs are highly mobile populations. While health facility staff reported they readily provide patients who are known to be traveling with a supply of medicine and/or a referral note, mobile patients often disappear from care, and health facilities have no way of knowing if they have enrolled in care in another country. These individuals become lost to follow-up. Staff at the health facilities included in the study further reported the main barrier to communication with facilities in neighboring countries (for referrals or defaulter tracing) is the lack of mechanism or platform to support such communication. These healthcare workers felt such communication could improve confirmation of referral and retention in care, as well as defaulter tracing and continuity of care.

Not knowing one's HIV status is a major barrier to accessing care and treatment in cross-border sites.

The PEPFAR/UNAIDS 90-90-90 goals state that by 2020, 90 percent of people with HIV should know their status, 90 percent of those who know their status should be on ART, and 90 percent of people on ART should have a suppressed viral load (UNAIDS, 2014). Results from this study indicate mixed progress towards achieving the 90-90-90 goals.

Of the people who tested positive for HIV during this study, almost all had been tested previously, and over half had been tested in the past year. Nevertheless, more than half of people testing positive for HIV during this study did not know their status. While testing coverage is high, routine testing at shorter intervals is needed to identify new infections and link individuals testing positive to care and treatment.

Young women were significantly less likely to know that they were HIV positive than older women, indicating that testing and outreach efforts should extend services for women under age 24. However, FSWs and fisherfolk were more likely to know their status than other men and women, suggesting success of HIV testing and outreach programs focused on these groups.

Among those who did know their status, the proportion linked to care and on ART was high, suggesting adequate access to care and treatment for those who test positive. Nearly all population subgroups of interest were close to achieving the “second 90,” or 90 percent of those who know their status being on ART. Again, young women who knew their status were less likely to be on ART than other groups. While ART access appeared high, it is possible that some respondents who knew their status declined to disclose that they knew they were HIV positive to the interviewer during the biobehavioral survey. If the proportion who declined to disclose their status, either by refusing to answer the question or by providing false information, was higher among people not linked to care than those who were linked to care, access to care and treatment could be overestimated in the survey results.

Despite high coverage of ART among those who knew their status, only 29 percent of people with HIV had a suppressed viral load (or 80% of those on ART). The gap between the proportion on ART and the proportion virally suppressed could be due to suboptimal adherence to ART, viral resistance to ART, or intermittent access to ART due to mobility or health facility stockouts. Viral suppression was highest among young women on ART and workers at spots on ART. Despite high proportions knowing their status and on ART, female fisherfolk on ART were less likely to be suppressed than other women. Male fisherfolk on ART were about as likely to be suppressed as other men on ART.

About 30 percent of all individuals testing positive during this study had been confirmed HIV negative in the past year, meaning that at least 30 percent of those testing positive for HIV during the study were new infections within the past year.

Spot-based testing identified new, previously unidentified, cases of HIV.

People with HIV are capable of transmitting infection through sexual contact, needle sharing, or from mother to infant. However, the probability of transmission is reduced to near 0 when a person living with HIV has a suppressed viral load (Cohen, et al., 2011; Tanser, et al., 2013). The goal of many interventions is to reduce HIV incidence. While such interventions may not reduce baseline HIV prevalence, they can reduce the proportion of the population capable of transmitting infection by reducing the proportion of people living with HIV with a detectable viral load.

The first step to such interventions is identifying people living with HIV who do not know their status. The biobehavioral study successfully identified over 300 such people in cross-border sites. This success indicates that spot-based HIV testing (or “venue”-based testing) may be an effective strategy to find people with HIV who are unaware of their status. For example, in land cross-border sites, one new (i.e., previously unidentified) case of HIV was identified for every 13 FSWs tested, every 14 female workers at spots tested, and every 19 young women tested. In lake cross-border sites, one new case of HIV would be expected for every 22 women tested. In both land and lake cross-border sites, around 50 men would need to be tested to identify one new case of HIV.

The study identified spots where mixing between population subgroups was common.

Members of all populations of interest were found in public spots at cross-border sites. While more than half of people socializing at spots were men, women were present at all spots. People socializing at spots represented a wide range of society: all levels of education and many occupations were represented. Notably,

mobile and nonmobile populations were found at all spots. Controlling the spread of infectious diseases such as HIV requires working at the interface of these populations to prevent spread of disease from mobile populations to host populations and vice versa (Vissers, et al., 2011).

Spots hosted both people looking to pay for sex and exchange sex for money, gifts, goods, or favors. About 10 percent of women in spots exchanged sex for money in the past 12 months, while between 15 and 20 percent of men paid for sex in the past 12 months. The average number of sexual partners among those who had had sex in the past 12 months was 3.5. However, some groups had higher averages. For example, FSWs, women who work at spots, and mobile women reported an average of 15.5, 5.9, and 5.2 partners, respectively.

Populations of interest socialize in a diverse range of public spots in cross-border sites.

Community informants named many spots where people socialize and meet new sexual partners at cross-border sites. Of the 883 spots sampled and verified during fieldwork, most were bars or places where people spend the night (such as hotels, guest houses, and lodges). Other types of spots included cinemas and restaurants, as well as community spaces such as beaches and markets. As expected, many of these spots were busiest on weekends. Most spot informants reported that at least one of the population groups of interest came to the spot in both land and lake cross-border sites.

As would be expected in cross-border sites, over 70 percent of spots reported that truck drivers visited the spot. Fisherfolk were reported to visit 44.7 percent of all spots, including 91.8 percent of spots at lake cross-border sites. About half of spot informants reported that men and women visited the spot to meet heterosexual partners, and most of these reported that men came looking to buy sex and women came looking to sell sex. A small, but notable, proportion of spots reported the presence of people who inject drugs and MSM. Presence of these population groups in identifiable public spots suggests that interventions could reach these populations at spots at cross-border sites.

However, fewer than one-third of spots had offered HIV prevention services (free male and female condoms, HIV testing, outreach workers, mobile clinics, and circumcision) in the past six months.

HIV prevalence was significantly elevated in key population subgroups.

The estimated prevalence of HIV was 7.9 percent among women in cross-border sites. This prevalence estimate is similar to prevalence estimated among women in East Africa from population-based surveys and antenatal care settings (Ndege, et al., 2016). However, prevalence was significantly elevated among key population subgroups, including FSWs, female fisherfolk, and female workers at spots. While truck drivers have historically been thought to be at high risk for acquiring and spreading HIV infection (Mbugua, et al., 1995), with the exception of three sites (Holili, Tanzania/Taveta, Kenya, Isebania, Kenya/Sirari, Tanzania, and Kasenyi, Uganda), HIV prevalence was not elevated among truck drivers compared to the general population in this study.

The elevated prevalence among workers at spots is important for several reasons. First, while some workers at spots may also be classified as FSWs or MSM, workers at spots are typically not considered a key population in need of additional services. However, many of these workers tested positive for HIV. Second, workers at spots likely interact with both mobile and host populations, meaning that interventions that prevent HIV among workers at sites may benefit both groups. Finally, workers at spots are not hidden, and could be reached through programs or interventions at the venue (Weir, et al., 2013).

TB remains an important driver of morbidity and mortality among people living with HIV in East Africa (Cox, et al., 2016). Among people testing positive for HIV in the biobehavioral survey, 14 percent reported

symptoms consistent with tuberculosis. Women with HIV were more likely to report symptoms consistent with being coinfecting with TB than men, and mobile populations were more likely to report symptoms than host populations. Notably, over 20 percent of FSWs with HIV in both land and lake cross-border sites reported symptoms consistent with TB.

People seeking HIV care and treatment at lake cross-border sites were retained in care longer than those seeking care at land cross-border sites.

A diverse group of people living with HIV sought care and treatment at health facilities in cross-border sites. People sought care for HIV at three types of health facilities, including hospitals, health centers, and dispensaries. At most sites, some people sought HIV care and treatment at health facilities outside their country of residence.

People receiving HIV care and treatment in land cross-border sites were more likely to be lost to follow-up at the health facilities included in the study and started on ART at a slower rate compared to lake cross-border sites. These apparent gaps in care are likely because populations in care at these facilities are more mobile. For example, truck drivers and other mobile populations may be more likely to seek care at a land cross-border health facility while passing through the border point than at a lake cross-border site. Therefore, land cross-border health facilities may benefit from programs that enhance their ability to work with mobile populations, while lake cross-border sites may also benefit from programs aimed at providing longer-term care for patients. However, it should be noted that both land and lake cross-border sites treated both mobile and host population patients.

Female sex workers and men who have sex with men were found at every cross-border site.

The size of the FSW population differed by site and ranged from about 1,000 sex workers in Isebania, Kenya/Sirari, Tanzania to over 10,000 sex workers in Busia, Kenya/Busia, Uganda. Based on responses from FSWs about their own behavior and the behavior of their peers, just under half of FSWs visited spots to socialize and meet new clients (including all types of spots included in the study). Of those who visited spots, over half could be found at a spot on a Saturday night. The high number of FSWs who do not visit spots has implications for intervention programming; these women may be difficult to reach through traditional outreach to known hotspots.

The number of MSM visiting spots on Saturday night as estimated by spot informants ranged from 0 in Mutukula, Tanzania/Mutukula, Uganda to 241 in Busia, Kenya/Busia, Uganda. However, the number of MSM may be difficult for spot informants to quantify because this group is heterogeneous and highly stigmatized. For example, while site informants reported that 0 MSM come to spots in Mutukula, the baseline survey indicated that nearly 5 percent of men who visited spots in Mutukula had had sex with another man in the past 12 months. The differences between the numbers of MSM estimated by spot informants and the prevalence of men having sex with other men suggested in interviews with MSM themselves suggest that the MSM population is not highly visible at most cross-border sites and that programs providing outreach to MSM will be most effective if they can tap into existing networks of MSM, rather than relying only on identification of MSM hotspots by non-MSM.

HIV prevention services were found in all cross-border sites, but gaps remain.

The World Health Organization (WHO) recommends a combination of interventions for HIV prevention among key populations and the general population (WHO, 2014), including access to HIV testing and counselling, accessibility of condoms and lubricants, voluntary medical male circumcision, behavioral interventions to educate people about HIV, and treatment as prevention.

HIV testing was prevalent in all cross-border sites. Nearly 90 percent of the population of interest had ever had an HIV test, and nearly two-thirds had had an HIV test in the past year. Of the people receiving an HIV test in the past year, nearly all received their results. Populations thought to be at higher risk of HIV (i.e., truck drivers, fisherfolk, FSWs, and MSM) were, in general, more likely to have received an HIV test in the past 12 months than the general population. Overall, testing services appear to target the populations thought to be at highest risk of HIV.

Consistent use of male condoms reduces the probability of sexual transmission of HIV (Carey, et al., 1992). While most participants reported that it is “easy to get a condom,” only about one-third of respondents had been given a condom by an outreach worker in the past year. Very few respondents had a condom with them at the time of the interview, and only about one-third reported using a condom at last vaginal sex. However, condom use at last vaginal sex was more common among FSWs than the general female population, suggesting that members of this population are aware of their higher HIV risk and strategies for HIV prevention.

Use of sexual lubricants reduces the risk of condoms breaking or slipping during intercourse, but very few respondents (under 5%) reported access to sexual lubricants. Recent work from a population-based study in Kenya found that about one-fifth of MSM and nearly one-third of FSWs reported condom breakage or slippage at last sex with any partner (Bhattacharjee, et al., 2015) indicating that access to lubricants could improve the efficacy of existing condom distribution programs. A recent study in Tanzania suggested that a higher proportion of MSM may have knowledge about and use lubricants (Romijnders, et al., 2016), though the present study was not powered to estimate this indicator among MSM at cross-border sites.

Behavioral interventions that educate people about their HIV risk and HIV prevention strategies may take many forms. This study examined exposure to HIV prevention messages at three levels: general population-level messages via radio, individual-level counseling at health facilities, and population subgroup-level messages at spots. Overall, exposure to HIV prevention messaging in the past year was common at cross-border sites. Over 80 percent of the populations of interest had received information about HIV on the radio in the past year, about 60 percent had received information on HIV from a health worker, and around 40 percent had received information about HIV at the spot where they were interviewed in the past 12 months. Importantly, some venue- or hotspot-based outreach occurs in all sites.

Medical male circumcision reduces the risk of acquiring HIV (Gray, et al., 2007; Bailey, et al., 2007; Auvert, et al., 2005). Around three-quarters of men in cross-border sites had been circumcised. Because presence of a sexually transmitted infection may increase the risk of acquiring HIV (Masson, et al., 2015), WHO recommends that people with symptoms of sexually transmitted infections be treated immediately, even if laboratory confirmation is not available. In this study, between 4 percent and 5 percent of men and between 8 percent and 10 percent of women reported symptoms consistent with a sexually transmitted infection in the past 12 months. Of these individuals, most (about 70%) had sought care or treatment at a health facility for these symptoms.

Access to sexual and reproductive health services varied by population group; birth outcomes among FSWs were poor.

Nearly three-quarters of women in cross-border sites reported that they did not want to have children in the next two years, but under half were using a modern method of contraception. Women who were using a modern method were most likely to use injectables or male condoms, though some women did use implants or birth control pills. While young women were less likely to report using a modern method of contraception than other women, they were more likely to attend all ANC visits when pregnant.

Among the 33 percent of women who were pregnant between January 2014 and May 2015, birth outcomes were most favorable among female fisherfolk. FSWs had significantly elevated rates of stillbirth, miscarriage, and elective abortion compared to other women. These findings suggest that, while FSWs have better-than-average access to contraception and HIV prevention services, they are not adequately served by the existing health system for maternal and child health.

The majority of the health services in the standard package of services recommended by the EAC for transport corridors were provided by the health facilities included in the study.

The majority of the 42 services included in the standard package were offered by the 23 health facilities included in the study. Thirteen of the 16 HIV services included in the package were offered by 87 percent or more facilities. Two of the remaining services (demonstration of female condoms and counseling on condom negotiation skills) were offered by 70 percent or more facilities, while the third, provision of water-based lubricants, was only offered by only four facilities. The 15 STI, TB, family planning, and ANC/MCH services included in the standard package were also offered by 87 percent or more facilities. Post-sexual and -gender-based violence care services were offered by 70 percent or more facilities. Drug abuse services were the least commonly offered services, with most services available at less than 50 percent of facilities.

Outreach activities target a subset of key population groups and are limited by a lack of resources.

Health facilities mostly target FSWs, people living with HIV/AIDS, truck drivers, and fisherfolk. Outreach to other key populations was rare among the facilities included in the study and had only recently begun at some facilities. Lack of resources—trained staff, funds for per diem and transport, and shortages of supplies—limit health facilities' ability to conduct outreach in the absence of a donor partner to support outreach.

Recommendations

The findings of the study were presented to regional stakeholders at a dissemination meeting held in Kampala, Uganda on June 8–9, 2017. Stakeholders included representatives from USAID/East Africa, the East African Health Research Commission (EAHRC), Makerere University (Uganda), Kenya Medical Research Institute, National Institute for Medical Research (Tanzania), Rwanda Military Hospital, FHI 360, and the International AIDS Vaccine Initiative, among others. Their input helped identify the most relevant key findings for policymakers and implementers, and allowed for refinement of the recommendations presented below.

- Develop a mechanism for communication among health facilities on neighboring sides of borders and to develop systems for patient referral and defaulter tracing among these facilities.
- Increase routine HIV testing at shorter intervals to more rapidly identify new cases of HIV.
- Use outreach HIV testing at spots where key populations socialize to increase HIV testing yield.
- Focus HIV prevention activities on key populations and spots where they socialize.
- Include both host and mobile populations in HIV prevention, care, and treatment programs.
- Address barriers to accessing care, particularly among fisherfolk and others in remote areas.
- Increase access to family planning and reproductive health services for all women in cross-border areas, particularly FSWs.
- Bolster resources for outreach activities conducted by cross-border health facilities.

Conclusion

Cross-border sites in East Africa contain many interconnected populations of interest. Land and lake cross-border sites faced distinct but related challenges to improve health for host and mobile populations. Spot-based recruitment allowed inclusion of both of these important groups in this study and consideration of contextual determinants of HIV risk and other health outcomes. Programs to improve health in cross-border sites should include components addressing community, facility, venue, and individual-level factors.

REFERENCES

- Andersen, P. K., Geskus, R. B., de Witte, T., & Putter, H. (2012). Competing risks in epidemiology: Possibilities and pitfalls. *International Journal of Epidemiology*, 41 (3),861-70.
- Auvert, B., Taljaard, D., Lagarde, E., Sobngwi-Tambekou, J., Sitta, R., & Puren, A. (2005). Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: The ANRS 1265 trial. *PLOS Medicine*, 2 (11), e298.
- Bailey, R. C., Moses, S., Parker, C. B., Agot, K., Maclean, I., Krieger, J. N., & Ndinya-Achola, J. O. (2007). Male circumcision for HIV prevention in young men in Kisumu, Kenya: A randomised controlled trial. *Lancet*, 369 (9562), 643-56.
- Bhattacharjee, P., McClarty, L. M., Musyoki, H., Anthony, J., Kioko, J., Kaosa, S., & Moses, S. (2015). Monitoring HIV prevention programme outcomes among key populations in Kenya: Findings from a national survey. *PloS ONE*, 10 (8), e0137007.
- Bwayo, J., Plummer F., Omari, M., Mutere, A., Moses, S., Ndinya-Achola, J., & Kreiss, J. (1994.) Human immunodeficiency virus infection in long-distance truck drivers in east Africa. *Archives of Internal Medicine*, 154 (12), 1391-6.
- Carey, R. F., Herman, W. A., Retta, S. M., Rinaldi, J. E., Herman, B. A., & Athey, T. W. (1992). Effectiveness of latex condoms as a barrier to human immunodeficiency virus-sized particles under conditions of simulated use. *Sexually Transmitted Diseases*, 19 (4), 230-4.
- Cohen, M. S., Chen, Y. Q., McCauley, M., Gamble, T., Hosseinipour, M. C., Kumarasamy, N., & Fleming, T. R. for the HPTN 052 Study Team. (2011). Prevention of HIV-1 infection with early antiretroviral therapy. *The New England Journal of Medicine*, 365 (6), 493-505.
- Cox, J. A., Kiggundu, D., Elpert, L., Meintjes, G., Colebunders, R., & Alamo, S. (2016). Temporal trends in death causes in adults attending an urban HIV clinic in Uganda: A retrospective chart review. *BMJ Open*, 6 (1), e008718.
- Delany-Moretlwe, S., Bello, B., Kinross, P., Oliff, M., Chersich, M., Kleinschmidt, I., & Rees, H. (2014). HIV prevalence and risk in long-distance truck drivers in South Africa: A national cross-sectional survey. *International journal of STD & AIDS*, 25 (6), 428-38.
- East African Community (EAC). (2015a.) *Health and HIV and AIDS along the East African Community (EAC) transport corridors: A situation analysis report*. Arusha, Tanzania: EAC.
- East African Community (EAC), (2015b). *Mapping of health services along major transport corridors in East Africa*. Arusha, Tanzania: EAC.
- East African Technical Working Group on HIV and AIDS, TB, and STIs, (2015). *Minimum package for HIV and AIDS and other health services along the East African Community (EAC) transport corridors*. Arusha, Tanzania: EAC.
- Elmore-Meegan, M., Conroy, R. M., & Agala, C. B. (2004). Sex workers in Kenya, numbers of clients and associated risks: An exploratory survey. *Reproductive Health Matters*, 12 (23), 50-7.
- Fine, J. P., & Gray, R. (1999). A proportional hazards model for the subdistribution of a competing risk. *Journal of the American Statistical Association*, 94 (446), 496-509.
- Gray, R. H., Kigozi, G., Serwadda, D., Makumbi, F., Watya, S., Nalugoda, F., & Wawer, M. J. (2007). Male circumcision for HIV prevention in men in Rakai, Uganda: A randomised trial. *Lancet*, 369 (9562), 657-66.

- Ikamari, L., Izugbara, C., & Ochako, R. (2013). Prevalence and determinants of unintended pregnancy among women in Nairobi, Kenya. *BMC Pregnancy and Childbirth*, 13, 69.
- International Organization for Migration. (2011). *An analysis of migration health in Kenya: Healthy migrants in healthy communities*. Nairobi, Kenya.
- International Organization for Migration. (2010). *Regional Assessment on HIV-prevention needs of migrants and mobile populations in Southern Africa*. Nairobi, Kenya.
- Kissling, E., Allison, E. H., Seeley, J. A., Russell, S., Bachmann, M., Musgrave, S. D., & Heck, S. (2005). Fisherfolk are among groups most at risk of HIV: Cross-country analysis of prevalence and numbers infected. *AIDS*, 19 (17), 1939-46.
- Lau, B., Cole, S. R., & Gange, S. J. (2009). Competing risk regression models for epidemiologic data. *American Journal of Epidemiology*, 170 (2), 244-56.
- Masson, L., Passmore, J. A., Liebenberg, L. J., Werner, L., Baxter, C., Arnold, K. B., ... Abdool Karim, S. S. (2015). Genital inflammation and the risk of HIV acquisition in women. *Clinical Infectious Diseases*, 61 (2), 260-269.
- Mbugua, G. G., Muthami, L. N., Mutura, C. W., Oogo, S. A., Waiyaki, P. G., Lindan, C. P., & Hearst, N. (1995). Epidemiology of HIV infection among long distance truck drivers in Kenya. *East African Medical Journal*, 72 (8), 515-8.
- Morris, C.N. & Ferguson, A. G. (2006). Estimation of the sexual transmission of HIV in Kenya and Uganda on the trans-Africa highway: The continuing role for prevention in high risk groups. *Sexually Transmitted Infections*, 82 (5), 368-71.
- Morris, C.N. & Ferguson, A. G. (2007). Sexual and treatment-seeking behaviour for sexually transmitted infection in long-distance transport workers of East Africa. *Sexually Transmitted Infections*, 83 (3), 242-5.
- Ndege, S., Washington, S., Kaaria A., Prudhomme-O'Meara, W., Were, E., Nyambura, M., ... Braitstein, P. (2016). HIV prevalence and antenatal care attendance among pregnant women in a large home-based HIV counseling and testing program in Western Kenya I. *PLoS ONE*, 11 (1), e0144618.
- Nzyuko, S., Lurie, P., McFarland, W., Leyden, W., Nyamwaya, D., & Mandel, J. S. (1997). Adolescent sexual behavior along the Trans-Africa Highway in Kenya. *AIDS*, 11 (Suppl 1), S21-6.
- Opio, A., Muyonga, M., & Mulumba, N. (2013). HIV infection in fishing communities of Lake Victoria Basin of Uganda: A cross-sectional sero-behavioral survey. *PloS ONE*, 8 (8), e70770.
- Quinn, T. C. & Overbaugh, J. (2005). HIV/AIDS in women: An expanding epidemic. *Science*, 308 (5728), 1582-3.
- Ramjee, G. & Gouws, E. (2002). Prevalence of HIV among truck drivers visiting sex workers in KwaZulu-Natal, South Africa. *Sexually Transmitted Diseases*, 29 (1), 44-9.
- Romijnders, K.A., Nyoni, J. E., Ross, M. W., McCurdy, S. A., Mbwambo, J., Kok, G., & Crutzen, R. (2016). Lubricant use and condom use during anal sex in men who have sex with men in Tanzania. *International Journal of STD & AIDS*, 27 (14), 1289-1302.
- Serwadda, D., Mugerwa, R. D., Sewankambo, N. K., Lwegaba, A., Carswell, J. W., Kirya, G. B., & Clayden, S. A. (1985). Slim disease: A new disease in Uganda and its association with HTLV-III infection. *Lancet*, 2 (8460), 849-52.

- Tanser, F., Bärnighausen, T., Grapsa, E., Zaidi, J., & Newell, M. L. (2013). High coverage of ART associated with decline in risk of HIV acquisition in rural KwaZulu-Natal, South Africa. *Science*, 339 (6122), 966-971.
- Uganda Ministry of Health and ICF International. (2012). *Uganda AIDS indicator survey: Key findings*. Calverton, Maryland, USA: MOH and ICF International.
- UNAIDS. (2013). *Getting to zero: HIV in Eastern & Southern Africa*. Geneva: UNAIDS.
- UNAIDS. (2014). *90-90-90: An ambitious treatment target to help end the AIDS epidemic*. Geneva: UNAIDS. Available from <http://www.unaids.org/en/resources/documents/2017/90-90-90>.
- USAID. (2013). *Advancing HIV/AIDS prevention and care*. Nairobi, Kenya.
- Vissers, D. C. J., de Vlas, S. J., Bakker, R., Urassa, M., Voeten, H. A., & Habbema, J. D. (2011). The impact of mobility on HIV control: A modelling study. *Epidemiology and Infection*, 139 (12), 1845-1853.
- Wabwire-Mangen, F., Odiit, M., Kirungi, W., Kisitu, D. K., & Wanyama, J. O. (2009). *Uganda - HIV modes of transmission and prevention response analysis*. Washington, D.C.: World Bank.
- Weir, S. S., Jing, L., Edwards, J. K., Gandhi, A. D., Yingying, H., Suchindran, C. M., & Chen, X. (2013). Exploring venue-associated risk: A comparison of multiple partnerships and syphilis infection among women working at entertainment and service venues. *AIDS and Behavior*, 18 (Suppl 2), S153-60.
- World Bank. (2009). Kenya: HIV prevention response and modes of transmission analysis. *Kenya National AIDS Control Council*, Washington, D.C.: World Bank.
- World Health Organization (WHO). (2014). *HIV prevention, diagnosis, treatment and care for key populations*.

ANNEX A. INDIVIDUAL SITE SUMMARIES

Site summaries are included for:

- Malaba, Kenya/Malaba, Uganda
- Busia, Kenya/Busia, Uganda
- Katuna, Uganda/Gatuna, Rwanda
- Holili, Tanzania/Taveta, Kenya
- Isebania, Kenya/Sirari, Tanzania
- Mutukula, Uganda/Mutukula, Tanzania
- Namanga, Kenya/Namanga, Tanzania
- Kagitumba, Rwanda/Mirama Hills, Uganda
- Sio Port/Port Victoria, Kenya/Majanji, Uganda
- Muhuru Bay, Kenya/Kirongwe, Tanzania
- Mbita and Rusinga Island, Kenya
- Kasenyi, Uganda

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