Technical Report

Size Estimation of Sex Workers, Men who have Sex with Men, and Drug Users in Liberia

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ABBREVIATIONS	
AIDS	Acquired immune deficiency syndrome
ANC	Antenatal clinic
ART	Antiretroviral therapy
ARV	Antiretroviral
BSS	Behavioral Surveillance Survey
CBO	Community-based organization
CSO	Civil society organization
DHS	Demographic and Health Survey
FCSW	Female Commercial Sex Workers
FBO	Faith-based organization
GFATM	The Global Fund to Fight AIDS, TB and Malaria
GoL	Government of Liberia
HCT	HIV counseling and testing
HIV	Human immunodeficiency virus
IBBSS	Integrated Behavioral and Biological Surveillance Survey
IDP	Internally displaced person
IDU	Injecting Drug User
INGO	International non-government organization
LDHS	Liberia Demographic Health Survey
LCM	Liberia Coordinating Mechanism
LISGIS	Liberian Institute for Statistics and Geo-Information Systems
MARPs	Most At Risk Populations
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal
MoG&D	Ministry of Gender and Development
MoHSW	Ministry of Health and Social Welfare
MSM	Men who have sex with men
NAC	National AIDS Commission
NACPNational	AIDS & STI Control Programme
NGO	Non-governmental organization
PITC	Provider-initiated testing and counseling
PLHIV	People living with HIV
SAIL	Stop AIDS In Liberia
STI	Sexually transmitted Infection
SGBV	Sexual and gender-based Violence
UNAIDS	United Nations Joint Programme on AIDS
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Foundation
USAID	United States Agency for International Development
USD	United States Dollar
VCT	Voluntary counseling and testing
WHO	World Health organization

MAP OF LIBERIA

I. BACKGROUND AND OBJECTIVES

1.1. The Epidemiology of HIV in Liberia

The National HIV Strategic Framework II of Liberia: 2010-2014 reveals the scarcity of reliable HIV-prevalence data, making it difficult to get an accurate picture of the state of the HIV epidemic in Liberia. To date, the 2007 population-based *Liberian Demographic and Health Survey* (LDHS) provides the most reliable data on HIV prevalence among the general population. LDHS results show an HIV rate of 1.5 percent (1.3% HIV-1; 0.2% HIV-2) among the general population aged 15-49, indicating a low-level, generalized epidemic. Overall, the HIV rate among women is higher (1.8%) than among men (1.2%), revealing women's higher vulnerability to HIV infection. The difference in HIV rates between women and men is particularly strong in the younger age groups, with HIV rates among women three times higher than among men in the 15-24 years age group. Furthermore, LDHS data reveal significant differences between urban and rural settings, with overall HIV rates in urban areas at 2.5 percent (and 2.9% in Monrovia) against only 0.8 percent in rural areas. LDHS data further show higher HIV rates in the eastern and western border regions, which may be associated with trans-border mobility. Thus, the overall HIV rate of 1.5 percent masks the fact that HIV is in fact *well established* among the general population in urban settings, with an average rate of 2.5 percent.

HIV prevalence among pregnant women declined from 5.7% in 2006 to 5.4% in 2007 and then to 4.0% in 2008, respectively.
The real extent of the HIV epidemic is further blurred by the lack of any HIV-prevalence data on most-at-risk populations, such as sex workers, MSM, young women and girls and mobile men. Future studies are likely to reveal much higher rates among these groups, as well as among bridge populations, such as clients of sex workers (including mobile men) and MSM who also have female sex partners. Furthermore, TB-HIV co-infection is a major problem, as evidenced by the fact that more than one-fifth of TB patients who underwent HIV testing were HIV-positive.

1.2. Drivers of the HIV Epidemic

A combination of socio-economic, cultural, and behavioral factors leaves specific population groups at particularly high risk or vulnerable to HIV infection, or to the impact of AIDS. Gender plays a cross-cutting role in all these factors, leaving women – in particular young women and girls – especially vulnerable, as is evidenced by HIV rates. Sexual and gender-based violence (SGBV) is widespread and constitutes a major risk for HIV infection. During the war, many (young) women and girls were victims of sexual violence, including rape, while 'transactional sex' – sex in exchange for goods, money and/or protection – was a survival strategy for many women. After the war, many forms of SGBV and domestic violence – including rape; sexual assault and harassment; incest and sexual child abuse; prostitution, child trafficking and criminal coercion; and intimate partner violence – continue to affect many women.

In addition, structural socio-economic and cultural factors increase people's vulnerability to HIV, thus driving the HIV epidemic. The impact of war, poverty and the breakdown of communities, the public health system and other government support systems, have left large parts of the population vulnerable to HIV infection. Women are particularly vulnerable to poverty, especially in rural areas, because of their more limited access to employment and basic services such as health and education. Poverty and economic dependency on men have driven many women and girls to engage in high-risk transactional sex or even sex work, which places them at high risk of HIV infection.

Poverty is also associated with high labour mobility, which increases the risk of men and women engaging in (often unprotected) sex with multiple sex partners. Furthermore, high percentages of children not living with their parents; large numbers of out-of-school youth; and early age of sexual debut for young women leave children and young people – especially girls – vulnerable to sexual abuse and violence, and HIV infection.

The collapse of the public health-care system during the war hampers people's overall access to health care, including key HIV prevention, care and treatment services. In addition, inadequate observance of universal precautions leaves patients vulnerable to nosocomial infections.

1.3. Key Populations at Risk or Affected by HIV

Socio-economic, cultural, and behavioral factors leave specific groups at higher risk or vulnerable to HIV infection, or to the impact of AIDS, in particular young women and girls. While unsafe sex is the dominant route of transmission, HIV is also spread from mother to child and through inadequate observance of universal precautions in health facilities. Key groups at risk include (female and male) sex workers and their clients; men who have sex with men; orphans and vulnerable children, including street children; men in incarceration; injecting drug users, mobile populations (e.g. long-distance bus and truck drivers); and uniformed personnel, including UN peacekeepers.

Unprotected sex with multiple partners is common, especially among the most sexually active young population, with many (young) women engaging in transactional sex to secure a livelihood. Several studies consistently show low condom use, partly due to women's inability to negotiate consistent condom use in a context of economic dependency, coercion or sexual and gender-based violence.

Women and girls involved in transactional sex or sex work are at particularly high risk. Female sex workers and their male clients are the most important at-risk and bridge populations for HIV transmission. Furthermore, transactional sex was a common survival strategy for many women and girls during the war, and has remained widespread after the war as a means of securing a livelihood.

While women are overall more vulnerable to HIV, *male clients of sex workers are also at high risk. (*Potential) *clients of sex workers* include mobile men who often spend time away from their families, such as truck and long-distance bus drivers, soldiers and UN peacekeepers, businessmen, and small miners. They form a key bridge population for the spread of HIV to the general population, as they also have sex with their own partners.

In Liberia, *men who have sex with men* (MSM) are an extremely marginalized population, who often marry and end up living "double" lives as a result of social pressure. While data on MSM in Liberia is very limited, research among MSM in West Africa reveals HIV rates from 13.5 to 25 percent, with high rates of unprotected anal sex with multiple partners, and many also engaging in (unprotected) sex with women, thus acting as a bridge population for spreading HIV to the general population.A special group is prisoners: unprotected sex among *male prison inmates* is common in most countries of the world, including West Africa. After their release from prison, former prisoners may transmit HIV to their wives and other female sexual partners.

In addition to sexual transmission, *HIV transmission from mother to child* is a major concern. Despite the increasing availability of PMTCT services, children born to HIV-infected mothers still face the risk of HIV infection, mainly due to weak health systems with inadequate VCT and referral.

People Living With HIV (PLHIV) – To date, most PLHIV are unaware of their HIV status, due to inadequate coverage and utilization of VCT and provider-initiated testing and counseling (PITC) services. Although HIV services are being scaled up, weak health systems and stigma and discrimination hamper PLHIV's access to these services, leaving them vulnerable to the development of AIDS.

II. Methods

2.1. Operational Definitions

The primary objectives of this size estimation were two-fold:
a) Identify the locations where MARPs congregate and meet sex partners and
b) Estimate the population size of MARPs in the project sites

Operational Definitions and eligibility criteria

i. **Commercial Sex Workers**: During this size estimation exercise, commercial sex workers were women and men who admit to selling sex in exchange for money and/or goods. To be eligible, the individual needed to have had a commercial sexual partner during the last 12 months. Only official or conventional sex workers were targeted. Clandestine sex workers were not targeted.

ii. **MSM**: During this SE, only men who self-declared to voluntarily have sex with other menwere counted. Those of them who admitted exchange of sex with other men for money during the last 12 months werecounted as male sex workers.

iii. **Drug**: In this SE exercise, local alcoholic brews; Italian white; marijuana (cannabis sativa),cocaine and heroinwere considered as drugs.

iv. **Drug Users**: During this SE exercise, drug users were women and men who admittedusing any of the above drugs any time during the past 12 months.

v. **Hotspots**: Venues where MARPs congregate and meet sex partners are identified by Key Informants/stakeholders/gatekeepers.

vi. **Key Informants/stakeholders/gatekeepers**: Individuals familiar with MARPs activities who are able to provide useful information and guidance to facilitate the SE exercise. Key informants were the peers of targeted populations. Gatekeepers were defined as waiters, security personnel and other staff employed at the hotspots as well as owners of these joints. In some case, taxi drivers, policemen, hawkers were also used as gatekeepers, key informants or facilitators.

2.2. Project Sites

The size estimation exercise was conducted in cities contained in the table below.For each targeted population, the list of "hot-spots" in each of these cities was established and key informants were identified to facilitate field work.

Table 1: Project sites by Target Populations

Main Sites(Hot Spots) by County	*Female Sex Workers*	*Men who have sex with men*	*Drug Users*
Bong	X		X
Grand Bassa	X	X	
Grand Gedeh	X	X	
Lofa	X	X	
Margibi		X	
Monrovia			
Montserrado	X	X	X
Nimba	X		X

The project sites were selected based on documentation of the presence of organizations working with MARPs as well as the following criteria:

- Distribution (geographic coverage);
- Population size;
- Economic activity; and
- HIV prevalence

Consideration was also given to the costs involved in conducting such a project as well as mobility of the populations.

Table 2: Cities selected per Target population

Counties	*Female Sex Workers*	*Men who have sex with men*	*Drug Users*
	Cities		
Montserrado	Monrovia Paynesville Bushrod Island Somalia Drive	Monrovia Paynesville Bushrod Island Somalia Drive	Monrovia Paynesville Bushrod Island Somalia Drive
Bong	Gbarnga		Palala
Grand Bassa	Buchanan	Buchanan	
Grand Gedeh	Zwedru	Zwedru	
Lofa			
Nimba	Ganta		Tappita
Margibi		Harbel	
		Kakata	

2.3. Size Estimation Method - Census and Enumeration

Census and enumeration methods were used to estimate the size of MARPs in the project sites. In cities where all hotspots were visited for a specific target population, a census was applied. Where only a sample of hotspots was visited, enumeration method was used. The choice of the final method was dependent on the number of hotspots identified for each target population. For census, each "hotspot"/venue was included and a direct count of each MARP was taken. In the case when enumeration was applied, a random number of "hotspots"/venues wereselected and a direct count of each MARP was taken.
Data collection in each city was conducted by a team of 4 people including 1 team leader and 3 field workers. Considering the specificities of MSM, a dedicated team of 4 were tasked with MSM size estimation in all the cities.
In brothels and similar venues where it was evident that women were only there to exchange sex for money (e.g"Old folks" in Paynesville) field workers did not interview each individual participant. They rather counted all the participants atthe venue and only interviewed a random sample of them. The number counted was entered on the log sheet for that venue as the size of female sex workers and the data collected wereused for the proxy analysis to improve understanding of behaviors and practices of these sex workers.

In each of the cities, an observational visit was conducted to map the hotspots. During this exercise, in consultation with key informants and stakeholders identified, a final list of hotspots where MARPs congregate was compiled for each site, peakdays and peakhours were also established. This list served as sample frame for data collection. Each venue/"hotspot" on the list was assigned a unique identification code.
The field team members visited each venue/"hotspot" only once at determined selected days and time slots. They spend 1 to 2 hours in each hotspot.

2.4. Field Teams and Training

Field teams were made of people with some level of expertise interacting with targeted populations. Because of the experience gathered in other countries like in Kenya[1] demonstrating that MSMs are very good to visually identify other MSMs by evaluating their appearance, their clothing and body languages, for the MSM target population, all field workers were active MSMs; for FCSW, some field staff had previous experience working with FCSWs during past survey activities. Some drug users were also identified as key informants.The field staff participated in a formalized two-day mandatory training on the data collection procedures and ethical considerations.

2.5. Data Collection

Data collection was conducted from December 1st to 17th, 2011. A 2-days observational visit was conducted in each of the cities by field teams prior to data collection. A short screening standardized questionnaire was used for screening MARPs met at hotspots (see annex).
The screening form was designed in a way to help in establishing sexual patterns of these MARPs and links with the general population. Using appropriate techniques, enumerators entered in casual conversation with potential MARPs identified at the hotspots. Once he/she was confident about the status of the person, the enumeratorcounted the participant.
The enumerators then administered the behavioral questionnaire to a random sample of MARPs and recorded the information on the screening form after receiving an informed consent from the participant. During their interactions with targeted populations, the interviewers had the means to

offer a drink to the interviewee as a way of ensuring his/her availability for the time of the interaction and interview which lasted about 5 minutes. Following the interview, the enumerator offered a list containing the addresses of health facilities available in the catchment area where the participant lived. He/she also invited the participant to visit his preferred site at his convenience for health related or prevention services.The interviewer also offeredmale condoms to each participant. Interviews wereconducted in Liberian common English.

To account for the possibility of duplicate counting of individuals who frequent multiple "hotspots", direct counts were conducted within a short time frame. To minimize mobility between venues and limit double-counting, SE in each Countywere conducted in a maximum of a week.
The field team managers and coordinators met with data collectors (field team members) daily to monitor progress and ensure quality of census and enumeration activities. A review of data collected was done in the field and during debriefing sessions at the end of each working day. Filled data collection forms were validated for quality assurance prior to data entry which was done in the field ona daily basis.

2.6. Ethical considerations

The field team memberswere trained and able to be as unobtrusive as possible to the regular dynamics of the venue/"hotspot". Verbal Informed consent was directly sought from targeted MARPs. This was an anonymous procedure and no names or any other personal identifiers were recorded in the screening questionnaires. All field workers were trained in keeping confidentiality of participants. .

III. DATA MANAGEMENT, STORAGE, ANALYSIS, AND DISSEMINATION

3.1. Data Entry, Management and Storage

Data collected on size estimation were entered using simple Excel sheet. Behavioral data wereentered using SPSS. Data entry was done after validation of the forms completed by the team leaders and/or project coordinators. Data analysis was done using Excel and SPSS.

3.2. MARP Size Calculation

When enumeration was used then the estimated size of targeted population was calculated as:

$$\text{MARP size } (S) = N \times \frac{\Sigma s_i}{n}$$

$$\text{Standard deviation} = \sqrt{\frac{\Sigma (s_i - \bar{s})^2}{n-1}}$$

$$\text{Standard error of the mean} = \text{standard deviation} / \sqrt{n}$$

where S is the MARP population size, N is the number of all venues, n is the number of venues sampled; $s_i$is the estimated number of MARPS in venues i; and $(\Sigma s_i)/n$ is the mean # of MARPS per venues (or $\bar{s}$).To compute the 95% CI, we added in the following formulas for: 1) standard deviation, 2) standard error, and 3) finite population correction.
A finite population correction (fpc) was calculated in order to generalize the population size estimates to the overall MARP population: $fpc = \sqrt{1 - (n/N)}$

Therefore, the formula for the 95% CI around the estimate was:

$$N \times \frac{(\Sigma si)}{n} \pm 1.96 \times \text{standard error of mean} \times \text{fpc}.$$

IV. Results

The results will be discussed for the estimated sizes, the corrected estimated size for drug users and lastly the findings from the behavioral questions which were asked to a sample of participants.

The corrected estimate for drug users is due to the fact that both FCSW and MSM, though not met in drug users hotspots, were found to be highlyinvolved in substance use.

4.1. Size estimation of CSW, MSM, DU

Figure 1: Number of hotspots visited per target population

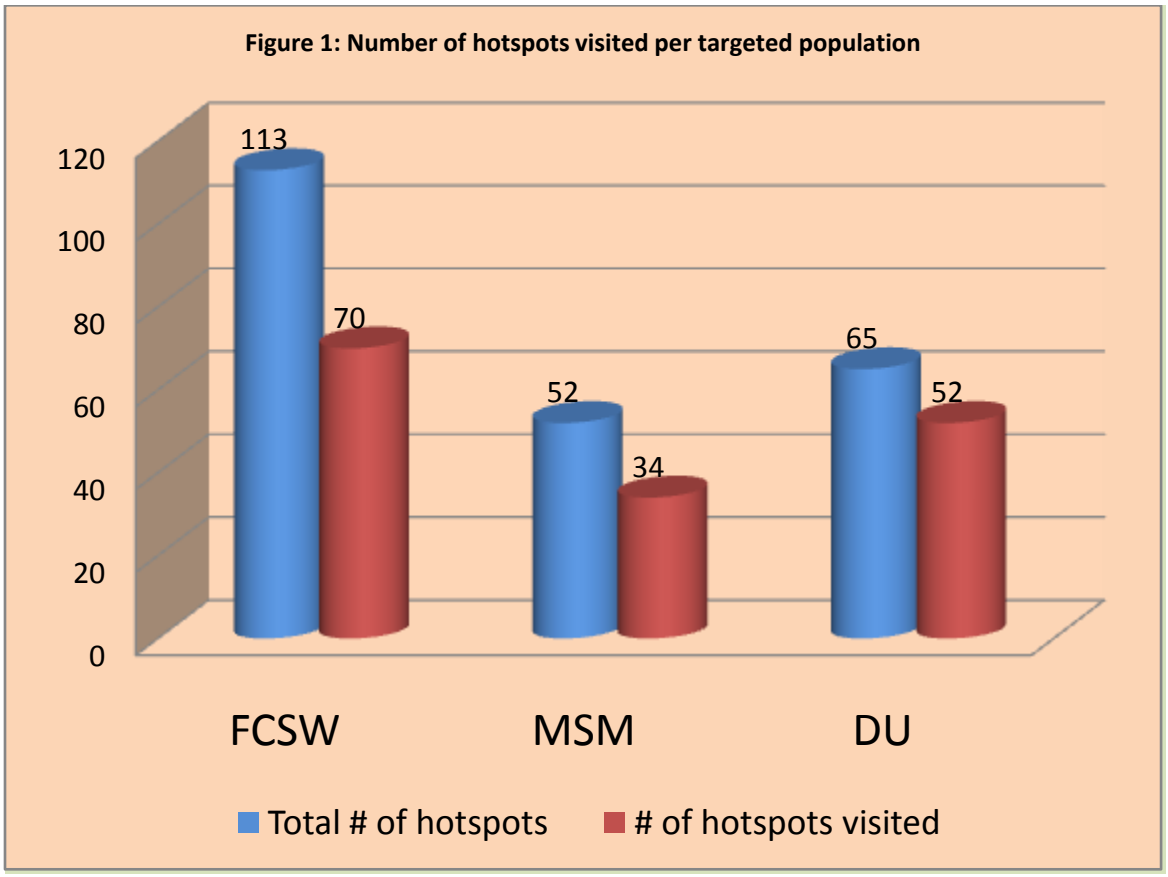


Figure 1 shows that a total of 70 hotspots were visited among the 113 hotspots identified and listed for FCSWs. The numbers were 34 over 52 for MSM and 52 over 65 for drug users.

4.1.1. Size estimation of FCSWs

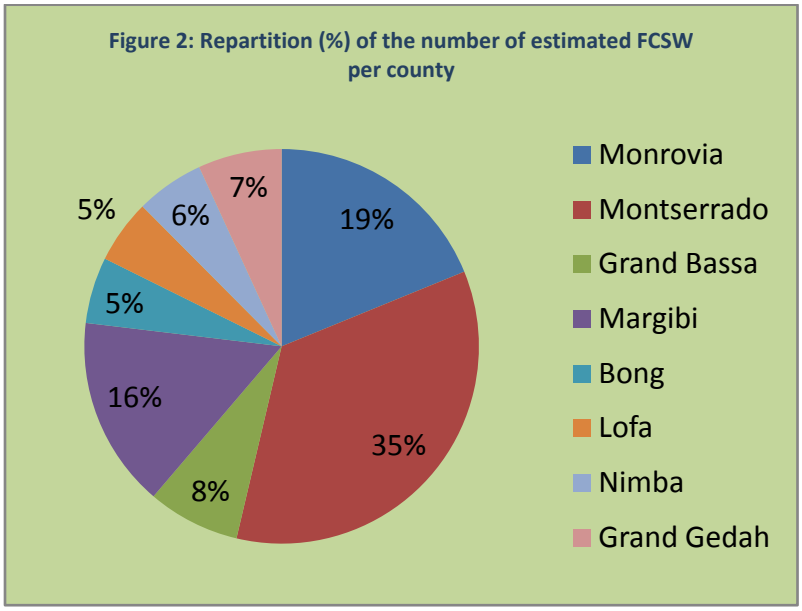
Table 3: Size Estimate (#) of FCSWs by County

FCSW									
Counties	Total # of hotspots	# of hotspots visited	Total Number enumerated	Mean number enumerated	Estimated population size	Standard Deviation	Standard Error	fpc	1.96 x standard error of mean x fpc
Monrovia	25	15	206	14	343	10.7	2.6	0.5	2.4
Montserado	36	11	194	18	635	12.4	4.1	0.7	5.8
Grand Bassa	6	5	115	23	138	8.2	3.4	0.0	0.0
Margibi	8	7	249	36	285	17.5	7.8	0.9	13.1
Bong	10	9	89	10	99	8.1	5.8	0.9	9.8
Lofa	19	15	75	5	95	4.0	1.1	0.5	1.1
Nimba	4	4	102	26	102	10.0	7.1	0.0	0.0
Grand Gedeh	5	4	100	25	125	17.7	7.9	0.4	6.9
Total	**113**	**70**	**1130**	**155**	**1822**	**15.9**	**1.9**	**0.6**	**2.0**

SD: Standard Deviation SE: Standard Error fpc: Finite population correction

Within the 70 hotspots visited for FCSWs, a total of 1130 participants were enumerated. After applying the size estimation formula as contained in the enumeration methodology, the size estimate for FCSWs in the 113 hotspots is 1822 (Table 3).

Figure 2: Repartition (%) of the number of estimated FCSW per County



As per figure 2, over half of FCSWs were estimated in Montserrado with 19% in Monrovia and 35% in other Montserrado counties. Margibi also shows a high proportion of estimated FCSWs at 16%.

Considering the challenges faced during the preparation and implementation of this survey, this estimated size can be considered as the lowest minimum possible. This is discussed under the study limitations and conclusions.

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4.1.2. Size estimation of MSM

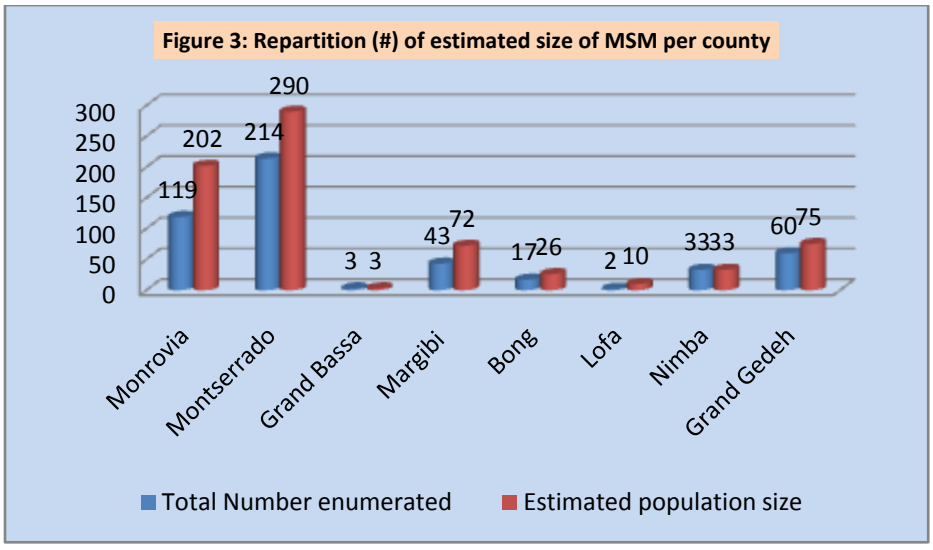
Table 4: Size Estimate (#) of MSM by County

MSM									
Counties	Total # of hotspots	# of hotspots visited	Total Number enumerated	Mean number enumerated	Estimated population size	Standard Deviation	Standard Error	fpc	1.96 x standard error of mean x fpc
Monrovia	17	10	119	12	202	7.4	2.3	0.6	2.9
Montserado	19	14	214	15	290	8.1	2.2	0.5	2.0
Grand Bassa	1	1	3	3	3	0.0	0.0	0.0	0.0
Margibi	5	3	43	14	72	12.9	5.8	0.8	9.1
Bong	3	2	17	9	26	0.0	0.0	0.9	0.0
Lofa	5	1	2	2	10	0.0	0.0	0.9	0.0
Nimba	0	0	33	33	33	n/a	n/a	n/a	n/a
Grand Gedeh	3	3	60	25	75	7.1	4.1	0.0	0.0
Total	**53**	**34**	**491**	**113**	**711**	**50.3**	**8.6**	**0.6**	10.0

fpc: Finite population correction

As per Table 4 above, a total of 53 hotspots for MSM were identified with a majority of 36 in Montserrado altogether, including 17 in Monrovia alone. No hotspots were identified in Nimba. Among the sites identified, a total of 34 were visited by field workers and a total of 491 MSM were enumerated in those sites. After applying the enumeration formula, the total number of MSM is 711.

Figure 3: Repartition (#) of estimated size of MSM per County



As per figure 3, the biggest size estimated of MSM was in Montserrado (492 altogether including 202 in Monrovia alone). Despite the fact that no MSM's hotspot was identified in Nimba, with help from key informants, a total of 33 MSM were identified in this County.

4.1.3. Size estimation of DUs

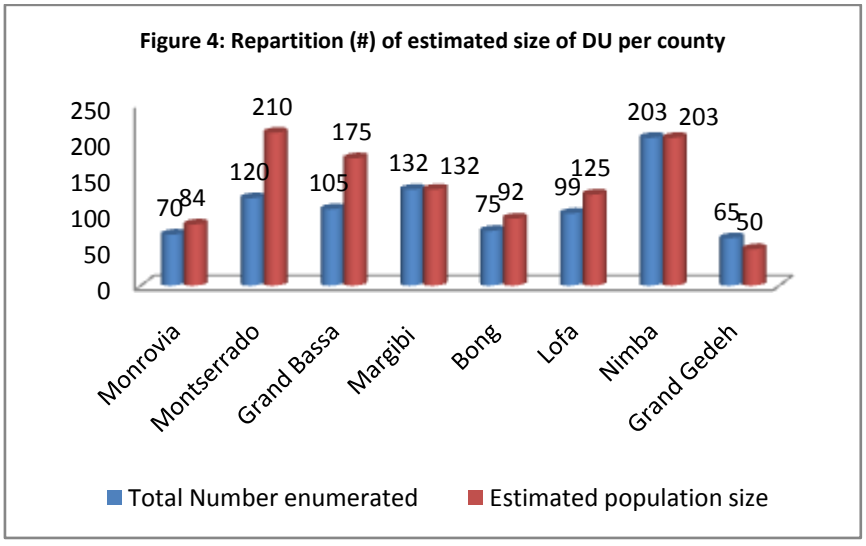
Table 5 : Size Estimate (#) of DUs by County

DU									
Counties	Total # of hotspots	# of hotspots visited	Total Number enumerated	Mean number enumerated	Estimated population size	Standard Deviation	Standard. Error	fpc	1.96 x standard error of mean x fpc
Monrovia	12	10	70	7	84	5.3	1.7	0.4	1.3
Montserrado	7	4	120	30	210	19.5	9.8	0.7	12.5
Grand Bassa	5	3	105	35	175	2.8	1.6	0.6	2.0
Margibi	4	4	132	33	132	40.2	15.2	0.7	21.8
Bong	11	9	75	8	92	12.1	7.0	0.9	11.7
Lofa	19	15	99	7	125	7.1	1.8	0.5	1.6
Nimba	5	5	203	41	203	11.7	6.8	0.0	0.0
Grand Gedeh	2	2	65	25	50	157.5	111.4	0.0	0.0
Total	**65**	**52**	**869**	**186**	**1071**	**12.2**	**1.7**	**0.4**	**1.5**

fpc: Finite population correction

As per Table 5 above, a total of 65 hotspots for DU were identified with a majority of 19 in Lofa, 12 in Monrovia and 11 in the Bong County. Among the sites identified, a total of 52 were visited by field workers and a total of 869 were enumerated in those sites. After applying the enumeration formula, the total number of DUs met in their hotspots is 1071.

Figure 4 Repartition (#) of estimated size of DU per County



As per figure 4, the biggest size estimated of DUs was in Montserrado (294 altogether including 84 in Monrovia alone). A total of 203 DUs were enumerated in Nimba, 175 in Grand Bassa and 132 in Margibi.

4.1.4. Adjusted Size estimation of DUs

As explained under the methods' section, after estimating the size of targeted populations, a random sample of them were interviewed. Four behavioral questions including use of specific drug as define in this study were asked to them.

Figure 5: Proportions (%) of MARPs who used at least 1 type of drugs last 12 months

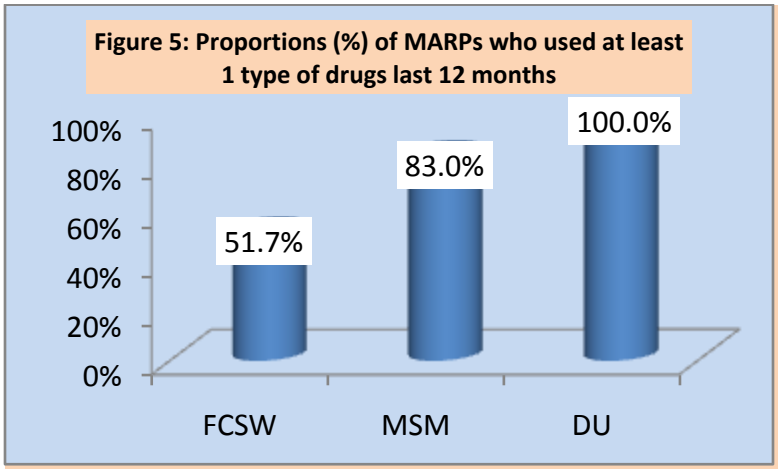


Table 6 : Adjusted size estimate of Drug Users

	SE	% using drugs	# of Drug Users
FCSW	1822	51.7%	**942**
MSM	711	83%	**590**
Total			**1532**
Adjusted estimated number of Drug Users would be 1071+1532			**2303**

Table 7 : Estimated size of Injecting Drug Users

	SE of drug users	Estimated Sizes
Adjusted SE of DU	2303	
% using hard	34.2%	**787**
% injecting Drug	58%	**457**
Estimated Number of IDU		**457**

As per figure 5, a total of 52% of the FCSWs and 83% of the MSM reported using at least type of investigated drug during the past 12 months. Therefore, if we were to apply these proportions to the estimated sizes of FCSWs and MSM to calculate the number of drug users among them, table 4.4 provides us with an adjusted size estimate of 2303 for drug users.

4.1.4.1. Size estimation of Injecting Drug Users (IDU)

Following data analysis of the behavioral component, as per figure 12 of this report, 34.2% of those who used substances reported the use of hard drug during the past 12 months.

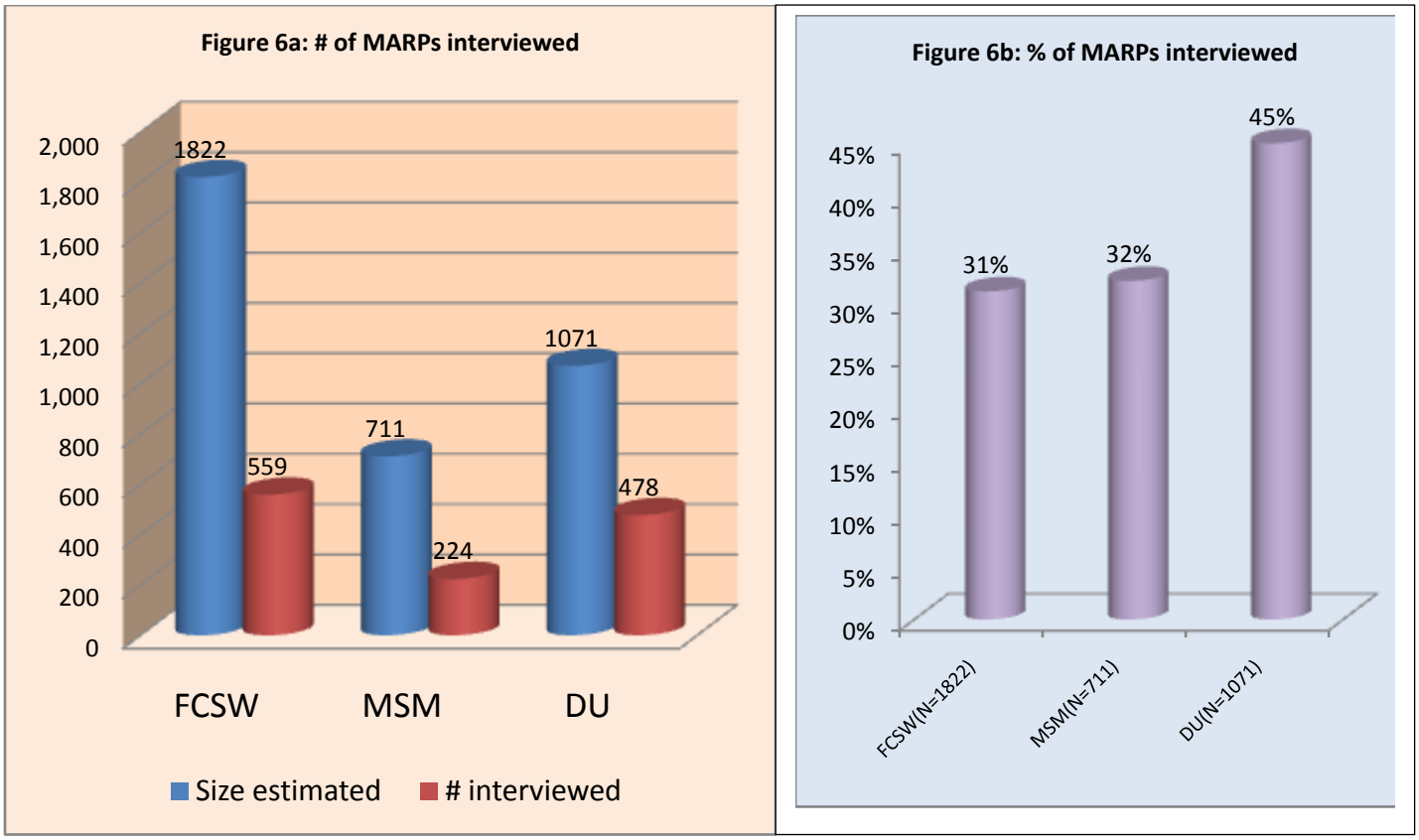
As per figure 13 of this report, among those who reported the use of hard drugs during the past 12 months, 58% can be considered as injecting drug users.

Therefore, we can estimate that 34.2% out of 2303 estimated drug users are involved with hard drugs and 58% of them inject. This leads us to a conclusion that about 457 drug users, representing 58% of hard drug users inject drugs.

4.2. Findings from behavioral component

As explained under the methods' section, following the size estimation of targeted populations, a random sample of them were interviewed[1]. Four behavioral questions including the use of specific drug as defined in this study were asked to them (See questionnaire in annex).

Figure 6: Number and proportion of MARPs interviewed



A total of 31% of FCSWs (figure 6a) were randomly interviewed making an absolute number of 559 (figure 4.6a). Among MSM these numbers are 32% (224 in absolute number) and for DUs, 45% or 478 in absolute numbers (figure 6a and 6b).

[1]During the analysis, all respondent men who declared having sex with men were classified under the MSM category even if they were found at hotspots initially targeted for drug users.

4.2.1. Demographics of targeted populations

4.2.1.1 Country of Origin

Figure 7: Repartition (%) of respondents by Country of origin

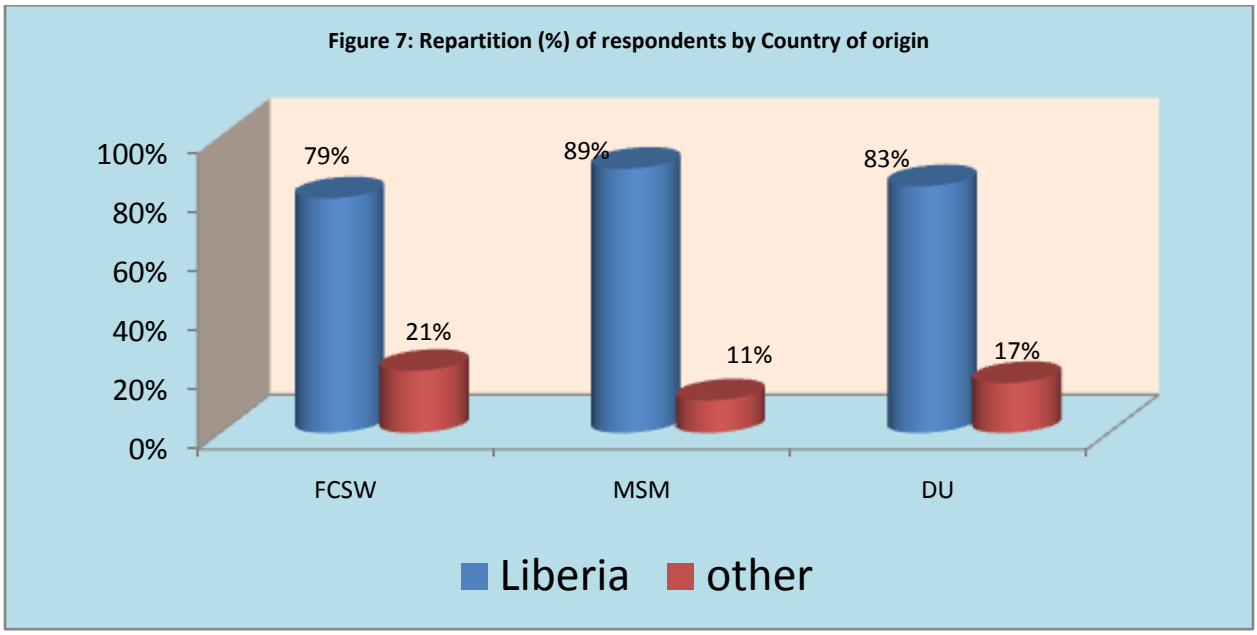


Figure 7 above shows that over 80% of targeted MARPs (79% for FCSWs, 89% for MSM and 83% for DU) are originally from Liberia. Those who reported other Countries of origin mainly cited Sierra Leone or Guinea. Very few of them reported being from the neighboring Côte-D'Ivoire.

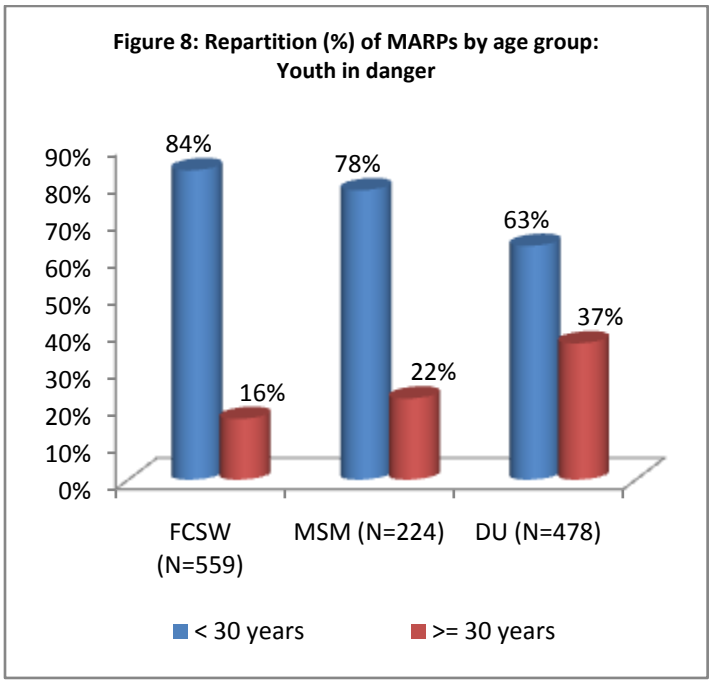
4.2.1.2 Age – Youth in Danger

Table 8: Distribution (%) of respondent MARPs by age

			MARP			Total
			FCSW	MSM	DU	
Agegroup	<= 15 years	Count	20	0	1	21
		% within MARP	3.6%	.0%	.2%	1.7%
	16-20 years	Count	188	45	57	290
		% within MARP	33.6%	20.1%	11.9%	23.0%
	21-29 years	Count	259	130	244	633
		% within MARP	46.3%	58.0%	51.0%	50.2%
	30-39 years	Count	84	43	151	278
		% within MARP	15.0%	19.2%	31.6%	22.0%
	>= 40 years	Count	8	6	25	39
		% within MARP	1.4%	2.7%	5.2%	3.1%
Total		Count	559	224	478	1261
		% within MARP	100.0%	100.0%	100.0%	100.0%

As per Table 8 above, 4% of FCSW are young-adolescents under the age of 15 years. The younger FCSWs were 13 years old. Among MSM, 20% are under the age old 21 years and the younger ones were 16 years old. Among initially targeted drug users (those met at drug use hotspots), while only 1 of them was 13 years old, 12% were under 21 years.

Figure 8: Repartition (%) of MARPs by age group: Youth in danger



As reported on figure 8, almost 9 FCSWs over 10 (84%) are under the age of 30 years with 4% of them being young-adolescent aged between 13 and 15 years. Similarly, 4/5 MSMs (78%) are within the same age range (under 30 years), including 20% who are between 16 and 20 years old. These trends among DUs are not significantly different as nearly 2/3rd of drug users (61%) are below the age of 30 years.

These data show that youths are highly represented among these specific MARP. This should quickly attract the attention of the Liberian Government and development partners as it a potential threat to HIV trends in the Country.

4.2.2. Sexual behaviors

4.2.2.1. Female Commercial Sex Workers

Figure 9: Proportion (%) of FCSWs who reported ever having sex with another woman

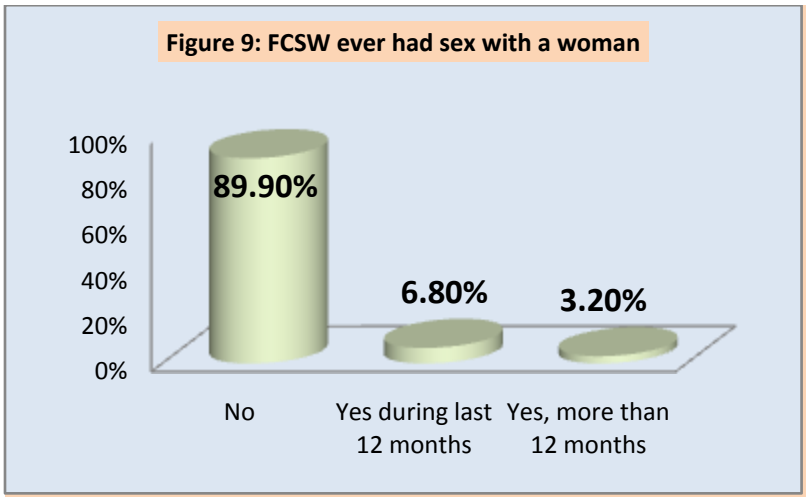
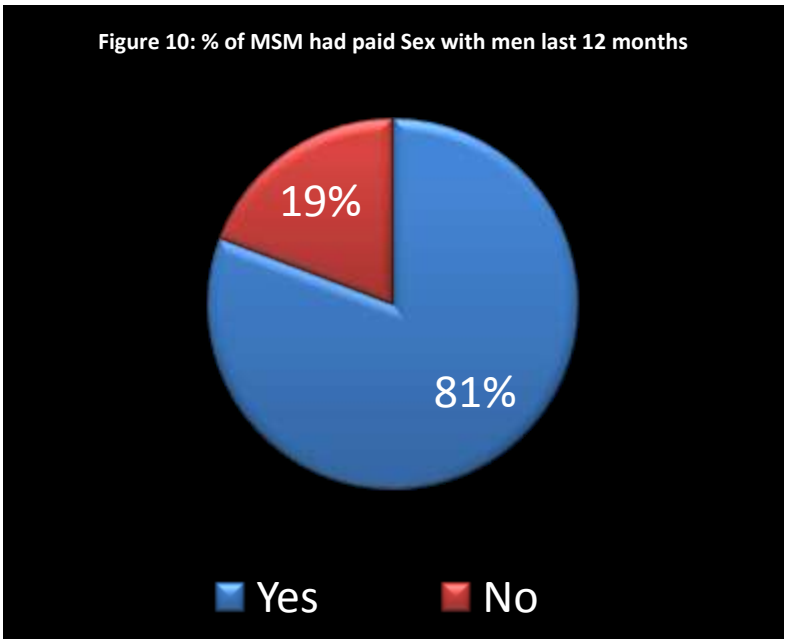


Figure 9 shows that one FCSW over 10 (10%) reported ever having sex with another woman. Though lesbianism does not seem to be a high mode of transmission, the question is to know

how far they could expose themselves to high HIV risk practices like unprotected sex or group sex if well paid. In fact, during field work, informally discussing with some FCSWs at a brothel inPaynesville, the price for a sexual shot was sometimes as low as 50 LD if with condom and as low as 100 LD if the client does not want to use a condom. Justifying the differencesincost, a participant said it was higher without a condom because she would then have to "*clean up before getting another client*". This justification is very disturbing as this raises a serious concern about the HIV/AIDS and other sexually transmitted diseases awareness, let alone prevention against unwanted pregnancies.

4.2.2.2. Transactional Sex among MSM

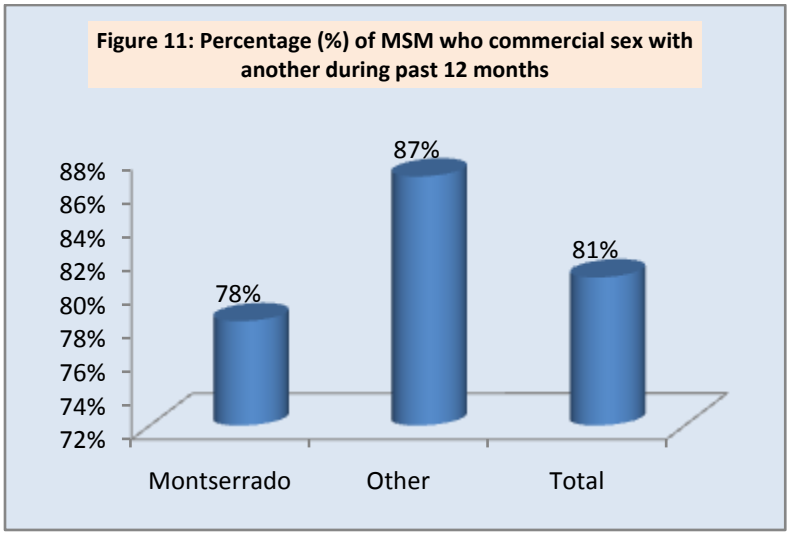
Figure 10: Proportion (%) of MSM who had commercial sex last 12 months



As per figure 10, it appears that MSM practice is very much "transactional". Actually, 4/5 MSM reported having had paid sex with another man during the last 12 months.

Figure 11 further revealed that proportionally more MSM exchange sex with other men for money or good in other counties (87%) than Montserrado (78%).

Figure 11: Percentage (%) of MSM who had commercial sex with another during past 12 months



4.2.2.3. MSM having sex with women

Table 9: Proportions (%) of MSM who have sex with women during last 12 months by Counties

Counties	MSM			
	Have sex with women			N
	Never	Sometimes	Regularly	
Montserrado	22.7%	60.4%	16.9%	**156**
Other	20.6%	55.9%	23.5%	**68**
Total	**22.1%**	**59.0%**	**18.9%**	**224**

Table 9 above clearly shows that majority of MSM are involve with having sex with women. While about 1/5th reported never having sex with a woman (22%), 59% said they sometimes have sex with women and for 19%, this was a regular practice. In total, 78% of MSM reported sexual practices with women. Therefore, 78% of MSM have sex with both men and women.

Table 10: Proportions (%) of MSM who reported sex with women during last 12 months by age

			Frequency of sex with women			
			Never	Sometimes	Regularly	Total
Agegroup	16-20 years	Count	17	20	8	45
		% within Frequency of sex with women	34.7%	15.3%	19.0%	20.3%
	21-29 years	Count	21	88	20	129
		% within Frequency of sex with women	42.9%	67.2%	47.6%	58.1%
	30-39 years	Count	10	19	13	42
		% within Frequency of sex with women	20.4%	14.5%	31.0%	18.9%
	>= 40 years	Count	1	4	1	6
		% within Frequency of sex with women	2.0%	3.1%	2.4%	2.7%
Total		Count	49	131	42	222
		% within Frequency of sex with women	100.0%	100.0%	100.0%	100.0%

As the table 10above shows, among MSM who never had sex with women, 35% are under 21 years of age, 43% are between 21 and 29 years while only 2% are over 39 years.

4.2.3. Drug use among MARPs

Respondents were asked about their use of identified drugs (Italian white; Marijuana; Cocaine and Heroin) during the past 12 months preceding the survey.

Figure 12: Proportion (%) MARPs used Drugs last 12 months

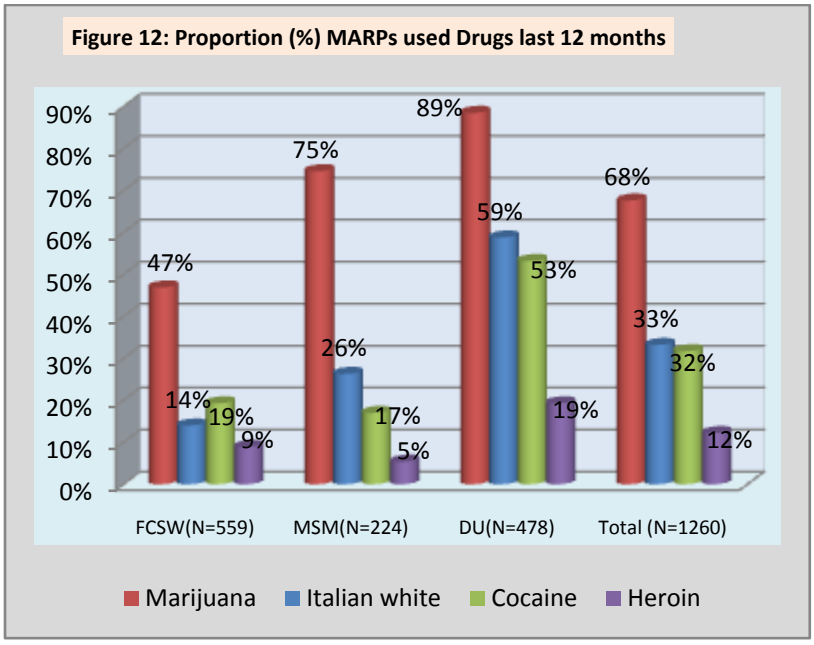


Figure 13: Used at least 1 type of drugs, used hard drugs last 12 months

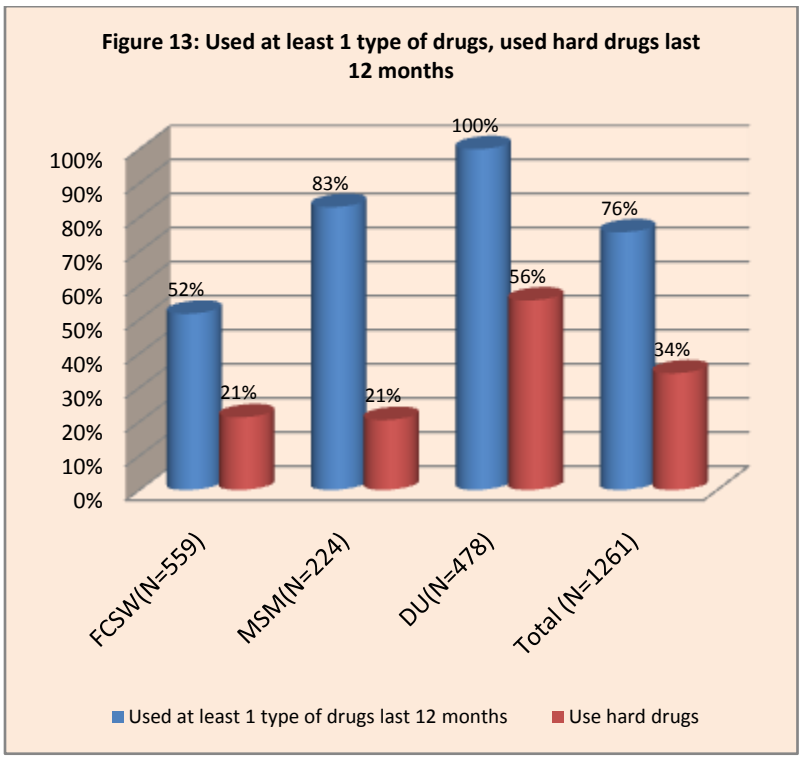


Figure 12 shows that marijuana is the most common drug used among targeted MARPs:

- 47% among FCSWs,
- 75% among MSMs
- 89% among initially targeted DU.

Use of hard drugs (cocaine and heroin) is also relatively high.

Initially targeted Drug users reported highest levels of consumption of cocaine (53%) and heroin (19%).
Use of hard drugs among MSM and FCSWs is not marginal. Taking the past 12 months as the reference period, respectively19% of FCSW and 17% of MSM reported the use cocaine while 9% of FCSWs and 5% of MSM reported the use of heroin.

In general, as demonstrated by figure 12, over ¾ (76%) of respondents reported the use of at least one type of investigated drugs during the past 12 months. This was the case for 52% of FCSWs, 83% of MSM and 100% of those who were initially targeted at drug users' hotspots.
This suggests that drug use is very high among MSM and FCSWs.

Figure 13 also shows that a total of 34% of respondents (21% of FCSWs and MSM as well as over half (56%) of initially targeted DU) reported hard drug use during the past 12 months.

4.2.4. Mode of administration of hard drugs

Figure 14:Repartition of hard drug users (N=409) by modes of administration

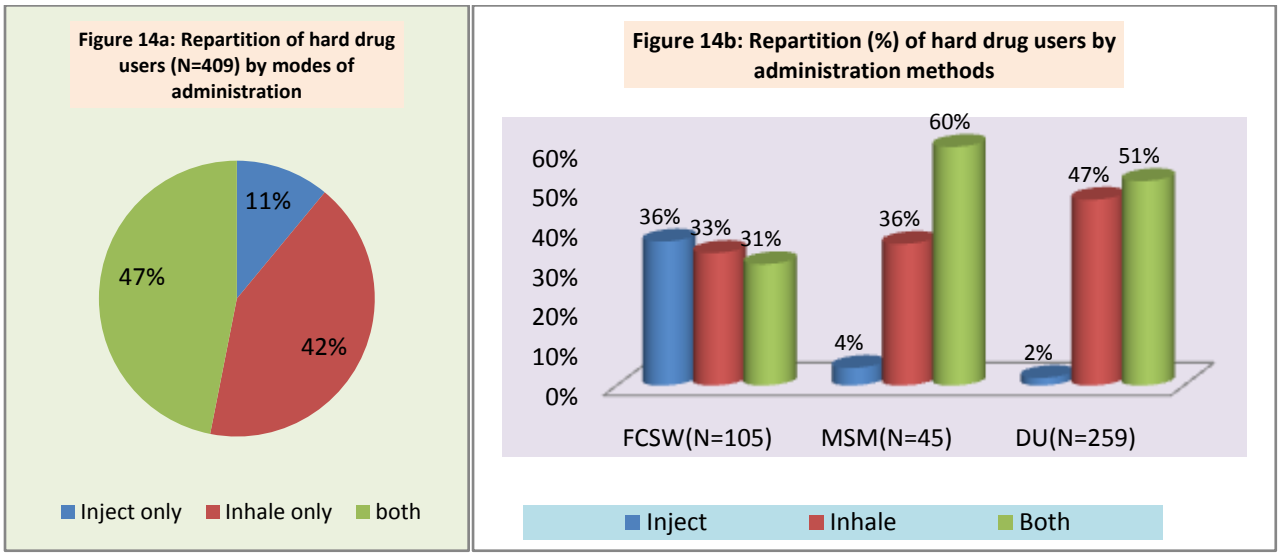


Figure 14a above shows that only 11% of hard drug users only inject the drug while 42% only inhale. This leads to the conclusion that a total of 58% of hard drug users can be considered as injecting drug users.

An analysis per specific targeted MARPs shows(figure 14b) that significantly more FCSWs only inject (36%) as compared to MSM (4%) and initially targeted drug users (2%). These results and particularly that of FCSWs are relatively interesting findings(too high for FCSWs and too low for MSM and DU)thatshould be explored during future surveys.

V. STUDY LIMITATIONS

The different issues listed below made this exercise particularly challenging and have probably had an impact on the findings:

- **The upstream formative work of identifying and establishing good working rapport with key informants, gatekeepers at hotspots was not properly done.**

Commercial sex workers, Men who have sex with men and drug users are illegal and stigmatized in Liberia. It was therefore anticipated that members of these groups may not be easily identified during the size estimation exercise. To address this, it was suggested that their peers should be identified ahead of time and adequately used as key informants to provide critical information on hotspots or where to interview participants. A group of MSM represented by Stop AIDS in Liberia (SAIL) was identified and to some extend played that role for MSM and DU targeting mainly those populations in MontserradoCounty. However, though the Global Fund supported programs reported training[2] of community peer educators, such representation and participation of female sex workers as key informants did not happen.

- **Difficulties interacting with FCSWs in the absence of key informants, facilitators, gatekeepers**

Despite the fact that round 10 HIV GF reported training 6549 community peer educator by June 2011, it was not possible forthe Technical Working Group to identify peer educators of FCSWs in order to involve them into this survey. The non-involvement of female sex workers' peer educators and gatekeepers made the field work very challenging as it was only informed by the brainstorming amongst the technical working group members and fieldworkers who listed the hotspots known to them. This could have drastically limited the number of existing hotspots in selected cities. It was also very difficult for the field workers to interact with FCSWs in such conditions. This weakness may suggest the limitations of the community component of the HIV prevention, education and communication activities.

- **Very low incentive was provided to be used as handouts to sex workers and other participants to motivate their participation (US$30 per field worker for the entire data collection).**

- **Police raids in several hotspots**

During data collection, there were police raids in several hotspots and particularly those of FCSW. As official letters were not provided to the field teams nor any administrative contacts made with the police department, work in several such venues was interrupted. Other venues could not be visited because of security concerns as police operating the raids were armed to war (ready to shoot fire arms in hands; bullet proof jackets; helmets).

- **Too wide scale of survey with very limited budget**

[2] Round 5 HIV program reported having trained 2403 community peers at P10 (October 2009)[2] and round 8 HIV reported having trained 6549 community peer educators at P5 (June 2011) [3]

The scale of this activity was too wide (7 counties and 3 MARPs) for a first try and under a very limited budget3. It would have probably been better to limit the survey to Monrovia or Montserrado as a maximum at this first stage, and later on expand if program activities require such expansion.

VI. Conclusions

Considering the technical and operational challenges raised above, the following conclusions and recommendations can be made:

- Considering that incentives were too low, gatekeepers not well involved, and peers of sex workers not involved at all in the preparatory stages, it was extremely difficult for field workers to establish rapport with FCSW. Therefore, the sizes estimated under this study and particularly that of FCSWs can be considered as the lowest minimum possible.

- 58% of hard drug users inject them. The estimated size of IDU inthis survey is 457.

- Adolescent girls, as young as 13 years old were found in numbers at different hotspots in all the counties, exchanging sex with a condom for as low as 50 LD or else for an amount around 100 LD for sex without a condom[4].

- Same sex practices in Liberia, and particularly among MSM, must be further explored.

- The quasi totality (78%) of MSMs interviewed reported also having sex with women during last 12 months.

- One FCSW over 10 (10%) reported ever having sex with another woman. Though this proportion seems low, it appeared that the phenomenon of women having sex with other women, though at an initial stage, does not seem to be a taboo and shows high potential of growthif “buyers” are available.

- The drug more widely used is Ganja/Marijuana (68%), followed by Italian white (33%) and cocaine (32%). The least used drug is heroin (12%). These findings may lead to the hypothesis of the accessibility (low cost) and availability of marijuana as the main drivers for its use.

- High proportions of targeted FCSW (52%) and MSM (83%) reported using at least one of the drugs investigated during the past 12 months.

[3] An operational budget of less than US$40k, thus having serious negative impact on the size of the field teams, the wide geographical coverage, low incentives to participants and potential key informants and gatekeepers.

[4] The question on the cost for a sexual intercourse was not formally assessed under this study. However, these amounts were repeated by several sex workers mainly in brothels during negotiations talks with field workers who pretended to be clients.

VII. Recommendations

All through this survey, there was a feeling of an exponential growth of young men and adolescents leaning towards same sex transactional relationships and young women being involve with commercial sex. The scope of this survey could not help confirm neither the trend nor underlying reasons favoring these behaviors. However, the Government of Liberia and its development partners should take this public health threat very seriously. While planning for more thorough surveys to better understand the phenomenon and develop adequate response, it should be recommended:

1. To urgently scale up the HIV prevention, education and communication program to the community level. Such programs should be strengthened with findings from future surveys.

2. Conduct a behavioral surveillance survey (BSS) as soon as possible among MARPs. If adequate funding, then combine with biological component for an Integrated Behavioral and Biological Surveillance Survey (IBBSS). This study should precede the mode of transmission (MoT) study being discussed in the country now. This is because the IBBSS will provide an accurate picture of the state of the HIV epidemic and provide some clarity on the level of knowledge, beliefs, behaviors and practices of the MARPs in Liberia. It would be recommended to also target in and out-of school youths during the IBBSS. Following the IBBSS, if still necessary, a MoT study could be done.

3. Repeat this size estimation in about 2 years' time. The future size estimation should be preceded by the following:
    - Community based education, communication and prevention program should be strengthened and fully involve local stakeholders, community based organization (CBO) and/or faith based organizations (FBO) and others. The existence of such institutions would ease the work of such exercises as they would greatly help in spotting-out the MARPs in their respective catchment areas.

    - A strong network of peer educators for each of the targeted MARPs should have been established within the program.

    - Peer educators from targeted populations should have been trained and delivering services (in view of the existing vacuum, some contacts were recorded during this exercise).

    - Peer educators should be part and parcel of service provision through identification of locations, hotspots, networking with their peers.
    - Stakeholders and gatekeepers should be identified and involved in program implementation.

    - Education and prevention activities should be effective in communities and among MARPs.

Annex 1: **Screening questionnaire**

UNICODE/__/__/__/__/

Counties		Venue Identification Number:_____
1- Montserado(without Monrovia) 2- Monrovia 3- Grand Bassa 4- Margibi	5- Bong 6- Lofa 7- Nimba 8- Grand Gedeh	Name of Venue:_____ Location of Venue:_____ Data Collector Name(s):_____ Date form is completed: ___/____/___ (dd/mm/yy)

Inform consent: I am a peer educator working with the National AIDS Commission (NAC). We are conducting an activity which will enable us provide better prevention and care services to the population and particularly those most at risk of sexually transmitted infections. We also refer them to service delivery points where they can seek for health services.
This activity is very confidential and no information provided to me will be shared with any other person. Neither your name nor any identifier will be recorded. All the data collected will be collated altogether and no one will be able to identify your specific answers.

Would you kindly allow me 5 minutes to respond to some questions?	**1=Yes**→Continue **0=No**→Kindly thank the person and leave
Q01: Gender of the MARP *(please ask if in doubt)*	1=Male2=Female
Q02: Have you been interviewed by someone wearing the same "identifier" as mine during the last 2 days?	1= Yes →*Record the answer and politely stop the interview* 0=No → Continue
For Males ↓	For Females ↓
Q03M: During the last 12 months did you have sex with a man? 1=yes; 0=No *(If "No", Go to Q05)*	**Q03F:** During the last 12 months did you have sex in exchange for money or goods? 1=yes; 0=No *(if "No" Go to Q06)*
Q04: During the last 12 months did you have sex with a man in exchange for money or goods? 1=yes; 0=No	**Q04F:**Have you ever had sex with a woman? 1= Yes during last 12 months 2= Yes, more than 12 months; 0=No, never
Q05: How often do you have sex with women? 0=Never; 1=sometimes; 2=regularly	**Q05:** How often do you have sex with women? 0=Never; 1=sometimes; 2=regularly

Q06: During the past 12 months, did you use	**Yes**	**No**	**Q06:** During the past 12 months, did you use	Yes	No
a. Italian white	1	0	Italian white	1	0
b. Marijuana	1	0	Marijuana	1	0
c. Cocaine	1	0	Cocaine	1	0
d. Heroin	1	0	Heroin	1	0

Q07: If ever used cocaine or heroin, how do you use it? 1=Inject; 2=Do not inject	**Q07:**If ever used cocaine or heroin, how do you use it? 1=Inject; 2=Do not inject
Q08: How old are you? /___/___/ Years	**Q08:** How old are you? /___/___/ Years
Q09: What is your country of origin? 1-Liberian 2- Sierra Leone 3- Guinean 4- Other (specify)_____	**Q09:** What is your country of origin? 1-Liberian 2- Sierra Leone 3- Guinean 4- Other (specify)_____
END of the interview. Kindly thank the participant and offer the package.	

References

[1] Scott Geibel, Elisabeth M. van der Elst, NziokiKingola, et al. **"Are you on the market?": A capture-recapture enumeration of men who sell sex to men in and around Mombasa, Kenya**. AIDS 2007, 21:1349-1354.

[2] LBR-607-G04-H Grant Performance Report
http://portfolio.theglobalfund.org/en/Grant/Index?grantNumber=LBR-607-G04-H

[3] LBR-810-G07-H Grant Performance Report
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[4] LDHS 2007:Population-based *Liberian Demographic and Health Survey* (LDHS)