MINISTRY OF HEALTH - VIETNAM

RESULTS FROM THE HIV/STI

INTEGRATED BIOLOGICAL AND BEHAVIORAL SURVEILLANCE

(IBBS) IN VIETNAM – ROUND II 2009

December, 2011

NIHE Viện VSDT TƯ USAID FROM THE AMERICAN PEOPLE CDC UNODC United Nations Office on Drugs and Crime fhi360

ORGANIZATIONAL INVOLVEMENT

National Institute of Hygiene and Epidemiology (NIHE)

Nguyen Tran Hien
Nguyen Anh Tuan
Bui Duc Thang
Tran Dai Quang
Le Anh Tuan
Duong Cong Thanh
Pham Hong Thang
Hoang Thi Thanh Ha
Tran Hong Tram
Ngo Thi Hong Hanh
Dao Thi Thanh Huyen
Nguyen Vi Thuy

FHI 360

Stephen J. Mills
Tran Vu Hoang (Now is with Partners in Health Research)
Tran Thi Thanh Ha
Mai Doan Anh Thi (Now is with HAIVN)
Le Thi Cam Thuy
Nguyen Cuong Quoc
Dan Levitt (Consultant)

Vietnam Authority of HIV/AIDS Control (VAAC)

Nguyen Thanh Long
Phan Thi Thu Huong

United States Centers for Disease Control and Prevention (CDC)

Le Nguyen Linh Vi
Bruce Struminger

United States Agency for International Development (USAID)

Nguyen Duc Duong

United Nations Office of Drugs and Crime (UNODC)

Patrick Griffiths
Tran Thi Thanh Ha (Now is with FHI 360)

DATA ANALYSIS AND REPORT PREPARED

Tran Vu Hoang
Nguyen Anh Tuan
Le Nguyen Linh Vi
Stephen J. Mills
Tran Thi Thanh Ha
Le Cam Thuy
Tran Dai Quang
Le Anh Tuan
Duong Cong Thanh
Nguyen Dinh Quan
Le Tong Giang
Nguyen Cuong Quoc

The authors would like to thank field supervisors, interviewers and lab staff from the Provincial Centers for AIDS control, Provincial AIDS Committee, and the Provincial Centers for Preventive Medicine in An Giang, Can Tho, Da Nang, Dien Bien, Dong Nai, Hai Phong, Hanoi, Ho Chi Minh City, Lao Cai, Nghe An, Quang Ninh, and Yen Bai for their support for the study team during field implementation. They also would like to express special thanks to Patrick Nadol (CDC) and Dang Vu Trung (USAID) for their invaluable comments on the report.

The IBBS publication has been produced with the generous support of the American people through the United States Agency for International Development (USAID) and the Centers for Disease Control and Prevention (CDC). The contents are the responsibility of the authors and do not necessarily reflect the views of USAID, CDC or the United States Government.

RESULTS FROM THE HIV/STI INTEGRATED BIOLOGICAL AND BEHAVIORAL SURVEILLANCE (IBBS) IN VIETNAM – ROUND II 2009

December, 2011

Table of Contents

Acronyms

AIDS	Acquired Immune Deficiency Syndrome
CDC	(United States) Centers for Disease Control and Prevention
CoPC	Continuum of Prevention to Care
DSEP	Department of Social Evils Prevention
DOLISA	Department of Labor, Invalid and Social Affairs
FSW	Female Sex Worker(s)
HCMC	Ho Chi Minh City
HIV	Human Immunodeficiency Virus
HSS	HIV Sentinel Surveillance
HTC	HIV Testing and Counseling
IBBS	Integrated Biological and Behavioral Surveillance
IDU	Injecting Drug User(s)
MARP	Most-at-risk population
MOLISA	Ministry of Labor, Invalid and Social Affairs
MSM	Men who have Sex with Men
NGO	Non-Government Organization
NIHE	National Institute of Hygiene and Epidemiology
PAC	Provincial AIDS Committee/Center
PCR	Polymerase Chain Reaction
PEPFAR	President's Emergency Plan for AIDS Relief
PPS	Probability Proportional to Size
PSU	Primary Sampling Unit
RDS	Respondent-Driven Sampling
RDSAT	Respondent-Driven Sampling Analysis Tool
RPR	Rapid Plasma Regain
SSW	Street-based Sex Worker(s)
STI	Sexually Transmitted Infection(s)
TLS	Time-Location Sampling
TPHA	Treponema Pallidium Hemaglutination Assay
TWG	Technical Working Group
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
USAID	United States Agency for International Development
VAAC	Vietnam Authority of HIV/AIDS Control
VND	Vietnam Dong
VSW	Venue-based Sex Worker(s)

Introduction

The HIV epidemic in Viet Nam is at the concentrated phase. However, individual provinces have taken on unique epidemiological characteristics, such that the epidemic can be characterized as a conglomerate of localized epidemics.

Surveillance systems enable governments and key stakeholders to trace the nature of epidemics and changes among target populations. The first National HIV/AIDS Surveillance System in Vietnam was established in 1994, with sentinel serological surveillance in 40 provinces/cities. Between 2000 and 2001, two rounds of behavioral surveillance were conducted in five provinces including Hanoi, Hai Phong, Quang Ninh, Ho Chi Minh City, and Can Tho. As part of an effort to improve epidemic tracking and program planning, the first Integrated Biological and Behavioral Surveillance was conducted between 2005 and 2006 in the five provinces above, with the addition of Da Nang and An Giang. This community-based systematic survey was designed to assess risk behaviors and HIV and other STI prevalence among most-at-risk populations, specifically injecting drug users, female sex workers, and men who have sex with men.

In 2009, the Ministry of Health, the Vietnam Authority of HIV/AIDS Control, and the National Institute of Hygiene and Epidemiology jointly collaborated on data collection for the HIV/AIDS IBBS Round II, with financial and technical support from the President's Emergency Plan for AIDS Relief and the United Nations Office on Drugs and Crime. Similar to Round I, the Round II IBBS focused on high-risk populations including injecting drug users, female sex workers and men who have sex with men. Round II data were also collected in five additional provinces including Nghe An, Yen Bai, Dong Nai, and for injecting drug users, Dien Bien and Lao Cai.

The joint collaborators would like to thank the Provincial AIDS Centers, regional Pasteur Institutes, program officers, data collectors and analysts, who were directly involved in surveillance and analysis, for their cooperation. Gracious thanks are also provided to the agencies of the President's Emergency Plan for AIDS Relief, including the United States Agency for International Development and the United States Centers for Disease Control and Prevention, and to FHI 360 and the United Nations Office on Drugs and Crime for financial and technical support.

A.Prof, NGUYEN THANH LONG, PhD, MD
Vice Minister, Ministry of Health
General Director, Vietnam Authority of HIV/AIDS Control

Executive Summary

From June 2009 to February 2010, Vietnam's second round of integrated HIV/STI biological and behavioral surveillance (IBBS) was conducted among select population groups in Hanoi, Hai Phong, Quang Ninh, Ho Chi Minh City, Can Tho, An Giang, Da Nang, Nghe An, Yen Bai, Dong Nai, Dien Bien and Lao Cai. The IBBS utilized community-based sampling to estimate the prevalence of HIV and other sexually transmitted infections (STI) and to provide indicators of risk behaviors and intervention exposure among most-at-risk populations (MARP). These included injecting drug users (IDU), female sex workers (FSW), and men who have sex with men (MSM). The cross-sectional surveys employed time-location sampling (TLS) and respondent-driven sampling (RDS) to recruit 3,638 IDUs in 12 provinces, 5,458 FSWs in 10 provinces, and 1,596 MSM in four provinces. Behavioral and other data were collected through individual face-to-face interviews, while the prevalence of HIV and STI were selectively measured by testing blood, urine, and rectal swab samples. Results were compared to the 2006 IBBS surveys to determine changes in HIV infection, risk and preventive behaviors, and service access among the MARPs.

KEY FINDINGS

Injecting drug users: *Potential stabilization of high HIV prevalence in some provinces, but needle sharing remain high, while condom use remains low*

In the seven provinces with surveys conducted in both 2006 and 2009, only Ho Chi Minh City had increased HIV prevalence, while the other six provinces have decreased or stabilized prevalence[1]. HCMC IDU prevalence increased from 34% to 46%, yet prevalence among recent injectors declined from 28% in 2006 to 5% in 2009, suggesting preliminary evidence for a decline in incidence. Hai Phong had the largest decrease in prevalence, from 66% to 48%. Although there has been overall decrease in HIV prevalence, infection levels remained high in all provinces surveyed, ranging from 16% prevalence in An Giang to 56% prevalence in Dien Bien, with the exception of Da Nang showing 1% prevalence.

Needle and syringe sharing was relatively high in most provinces surveyed, with a median 24% of IDUs reporting sharing in the last six months and 15% in the past one month. Over 20% of IDU reported sharing in the last six months in all but three provinces (Hai Phong, Can Tho and An Giang), and up to 37% in Da Nang and 35% in Lao Cai. As would be expected and concerning among HIV-positive IDU, the majority (up to 82% in Quang Ninh) reported having ever shared needles and syringes, except in An Giang and Hai Phong. Compared with data from 2006, in 2009 needle sharing in the last six months decreased in Hai Phong, HCMC, Can Tho, and An Giang, increased in Hanoi and Quang Ninh, and remained the same in Da Nang.

[1] The HIV prevalence for An Giang IDU was 13.3% and 15.7% in 2005 and 2009, respectively, but the difference may not have been statistically significant and true prevalence in this population most likely remained the same between the two survey rounds.

Consistent condom use, defined as having always used a condom in the past 12 months, were lower for sex with regular partners, i.e. wives and girlfriends (ranging 15% to 56%), than with FSW (ranging 39% to 84%). Among IDU who were HIV infected, sample sizes in several provinces were too small to conclude definitively, yet results indicated roughly one-third did not consistently use condoms with regular sex partners. Sexual risk practices with FSW have changed little since 2006, with the exception of an increase in consistent condom use in An Giang (45% to 73%), and a decrease in Quang Ninh (81% to 69%).

In all provinces but Hanoi, the proportion of IDU who were tested and were aware of their HIV status was significantly higher in 2009 than in 2006. Quang Ninh and Da Nang saw the largest increases, more than two-fold and three-fold, respectively. Despite these increases, fewer than 30% of IDU accessed counseling and testing services in the majority of provinces. Access to and/or utilization of free needle/syringe programs was limited. Fewer than half of the IDU in 8 of the 12 provinces surveyed had obtained free needles/syringes in the last six months and less than one-third in five of the provinces.

Female sex workers: *Critical risk factors such as Inconsistent condom use and drug injection are common*

HIV prevalence among FSW varied considerably by province and classification (street-based versus venue-based). In most provinces, street-based sex workers (SSW) had higher HIV prevalence than venue-based sex workers (VSW). Prevalence exceeded 10% in Hanoi, Hai Phong, and HCMC in both sex work subpopulations and in Can Tho and Yen Bai among street-based sex workers (SSW). Both SSW and VSW in Quang Ninh, Nghe An and Da Nang have prevalences 3% or below. SSW in Hai Phong had the highest prevalence at 23%. Although the reported number of drug users among study respondents were too small to detect statistical significance in most provinces, HIV infection remains strongly associated with drug injection among FSW (e.g. 78% of injecting SSW in Can Tho were HIV-positive, versus 8% of non-injecting SSW). Compared to the 2006 IBBS, HIV prevalence among FSW increased considerably for sub-groups in some provinces, and decreased for others. Prevalence increased in Hanoi, Hai Phong and HCMC among VSW, and increased in Hai Phong, HCMC and An Giang among SSW. The greatest decrease in prevalence among SSWs was in Quang Ninh, from 12% to 1%. Among VSW, An Giang saw the most dramatic decrease, from 11% to 3%.

STI prevalence differed between the two provinces for which full data were collected (Hanoi and HCMC). While N. gonorrhea and Chlamydia prevalence for both SSW and VSW in Hanoi in 2009 are lower than in 2006, Chlamydia prevalence for SSW in HCMC is higher in 2009 (11%) than in in 2006 (6%). Gonorrhea prevalence was low and relatively rare in both cities. Syphilis prevalence remains low among FSW, at less than 2% in all 10 provinces surveyed.

While condom use with regular clients at last sex was reportedly high in most provinces, consistent condom use in the last month varied considerably, and was particularly low in Hanoi, HCMC and Dong Nai. FSW reported using condoms more consistently with one-

time clients than with regular clients. Data from Hanoi and HCMC are concerning. For both SSW and VSW, consistent condom use dropped considerably both for one-time and regular clients. In HCMC, consistent condom use among SSW more than halved from 69% to 31% for one-time clients, and 64% to 27% for regular clients.

Drug injection is an increasingly critical risk factor for HIV transmission among FSW, and is considerably high in Hanoi, Hai Phong, HCMC, and Can Tho. SSW were much more likely to report drug injection than VSW. HIV prevalence for FSW who injected drugs was higher than for those who did not inject in all provinces surveyed, and injecting FSW prevalence figures were equal to or higher than those of male IDU in the same provinces.

HIV testing increased among FSW, but remained low in all provinces except a few e.g. Hai Phong, Da Nang and Nghe An. SSW were more likely to test for and receive their results than VSW. Testing in the newly surveyed provinces of Lao Cai and Yen Bai was significantly lower than other provinces. Disaggregation of data between VSW and SSW shows differences in access to cheap/free condoms for the two subgroups in a number of provinces. Overall, a higher proportion of SSW reported accessing cheap/free condoms. Over 80% of SSW in Hai Phong, An Giang, Can Tho and Nghe An reported accessing cheap/free condoms in the last six months.

Men who have sex with men: *HIV and STI infection remains high, risks remain multiple*

HIV prevalence among MSM was greater than 10% in three of the four provinces surveyed, and as high as 20% (MSM who had not sold sex - Hanoi). In Hanoi and HCMC, HIV prevalence among both groups of MSM who had and had not sold sex in 2009 was significantly higher than in 2006. STI infection among MSM remains high in three of the four provinces surveyed, despite a small decrease from 2006 to 2009 in Hanoi. One in five MSM in HCMC was infected with at least one STI, and nearly one in five in Can Tho and Hanoi.

MSM have a variety of sexual partnerships. Those who sold sex had more consensual sexual partnerships with women in the past year in three of the four provinces surveyed (48% to 56%) than those who did not sell sex (23% to 40%). MSM who sold sex were also more likely to report sex with FSW (up to 25% compared to 11% among those not selling sex in Can Tho). MSM who did not sell sex generally preferred consensual male sexual partners, though a substantial number reported sexual relations with consensual female partners (from 23-40%).

Consistent condom use in the last 12 months varied among MSM, but was concerningly low for MSM who sold sex - under 50% with any type of sex partners in all cities except Hanoi, where 64% reported consistent condom use with FSW. Condom use with consensual female partners was lower than with consensual male partners. Comparisons of data between IBBS Rounds I and II show diverse results for Hanoi and HCMC. Condom use among MSM who sold sex in Hanoi was higher in 2009 than in 2006 for all types of partners. Conversely, consistent condom use in HCMC dropped precipitously for male clients and consensual male partners, and from 26% to 19% for consensual female partners. Among MSM who did not sell sex in Hanoi, consistent condom use increased dramatically with consensual male sex partners (more than doubled).

Like FSW and IDU, MSM face drug-related risks that increase their chances of acquiring HIV. Drug use ranged from one in ten (Can Tho) to one in three (Hanoi). Reported drug injection was comparatively low (highest at 8% in HCMC). More than twice as many drug-injecting MSM were HIV-positive in Hanoi compared to those who did not inject. Data for Can Tho were similar, while MSM who injected in HCMC had slightly higher HIV prevalence than those who did not.

Testing for MSM was low (less than 30%) in all four MSM provinces surveyed. HCMC saw a substantial decrease (from 24% to 19%) in the proportion of MSM tested and returned their results from 2006 to 2009.

Forty-two to 65% of MSM surveyed in Hanoi, HCMC and Can Tho reported obtaining free condoms within the last six months. The proportion of MSM in Hai Phong was comparatively lower, especially among MSM who had sold sex for money (7%). A comparison of data from 2006 and 2009 shows that obtainment of free condoms among MSM has increase in either Hanoi or HCMC.

Objectives

- Measure and monitor changes in HIV/STI prevalence among most-at-risk populations including FSW, IDU, and MSM
- Measure and monitor changes in behaviors related to HIV/STI transmission, including safe and high-risk behaviors
- Estimate the coverage of HIV/AIDS interventions in study provinces

Methods

I. STUDY DESIGN

This study employed a cross-sectional design to sample participants from communities in select provinces. Data included information on behaviors and intervention exposure through direct, one-on-one interviews by trained interviewers, and biological data sampled by blood, urine, and rectal swabs. Cross-sectional surveys were repeated in target populations in study sites selected from Round I, which were conducted from December 2005 to June 2006. Sampling methods included time-location sampling (TLS) and respondent-driven sampling (RDS). Blood samples were collected for HIV and syphilis testing in all populations. Urine samples and rectal swabs were collected to test for N. gonorrhea and C.trachomatis among FSW and MSM in selected provinces.

The design was similar to the one conducted in 2006 to ensure the comparability of the two rounds.

II. TARGET POPULATIONS

Injecting drug users (IDU)

This study recruited men aged 18 years or older who reported injecting drugs in the last month, who were accessible at the time of the survey, who were willing to participate in the study, and who agreed to provide specimens for HIV/STI testing.

Female sex workers (FSW)

This study recruited women based on the following criteria: women who were aged 18 years or older, who reported exchanging sex for money at least once within one month prior to the survey, who worked on the street (as street-based sex workers) or in venues such as karaoke or massage bars (as venue-based sex workers), who were willing to participate into the study, and who agreed to provide specimens for HIV/STI testing. Although some sex workers were sampled at entertainment venues, they were characterized as street-based sex workers in this study based on the most common means of meeting clients. For example, in Hai Phong, some sex workers who were sampled at entertainment venues were characterized as street-based sex workers because they had moved off the street to avoid government campaigns against 'social evils'.

Men who have sex with men (MSM)

MSM who participated in this study were men aged 15 years or older, who engaged in sex with men at least once in the previous 12 months, who were willing to participate in the study, and who agreed to provide specimens for HIV/STI testing. MSM were sampled without targeting men who have sold sex. However, because a large proportion of the sample had reported selling sex in the past month (see section VIII.2.2 for potential sampling issues), this report provides two sets of results for those who have (MSW) and have not (non-MSW) received payment for sex in the past one month.

III. STUDY SITES

The 2009 IBBS added five additional provinces to the seven surveyed in 2006: Nghe An, Yen Bai, Lao Cai, Dien Bien and Dong Nai. These provinces were included because they have complicated epidemics and are the locations of comprehensive interventions supported by donors, including PEPFAR, the World Bank, and the Global Fund. See *Table* 1 for a complete list of provinces and districts surveyed.

Table 1: Participant recruitment sites by study population

Provinces	IDU	FSW	MSM	Districts/cities (study sites)
Hanoi	✓	✓	✓	Dong Da, Hai Ba Trung, Thanh Xuan, Cau Giay
Hai Phong	✓	✓	✓	Le Chan, Hong Bang, Ngo Quyen, Hai An
Quang Ninh	✓	✓		Bai Chay, Hon Gai, Cam Pha[2]
Nghe An*	✓	✓		Vinh City, Cua Lo Town, Dien Chau
Yen Bai*	✓	✓		Yen Bai City, Van Chan, Nghia Lo
Lao Cai*	✓	✓		Lao Cai City, Bat Xat, Bao Thang, Sa Pa
Dien Bien*	✓			Dien Dien Phu, Dien Dien, Tuan Giao, Muong Ang
Da Nang	✓	✓		Hai Chau, Thanh Khe, Lien Chieu
Dong Nai*	✓	✓		Bien Hoa City
HCM City	✓	✓	✓	Districts 1, 3, 8, Binh Thanh
Can Tho	✓	✓	✓	Ninh Kieu, Cai Rang, Binh Thuy
An Giang	✓	✓		Long Xuyen, Chau Doc

** New sites in 2009*

IV. STUDY INDICATORS

The basic indicators used in Round I were unchanged in Round II. Timeframes for some indicators were altered to match the national program or UNGASS indicators. The study indicators included the following:

- HIV/AIDS knowledge and attitudes
- Knowledge of STI and STI care-seeking behaviors
- Other practices related to condom use and safe sex
- Condom use with different types of sex partners

[2] In Quang Ninh: IDU were selected in Cam Pha; FSW were selected in Hon Gai and Bai Chay.

- Sexual behavior, including number and type of sex partners (i.e. commercial, regular, non-regular, male, and female)
- Prevalence of HIV, syphilis, gonorrhea and chlamydia
- Drug and substance use (including needle/syringe sharing)
- Perception of HIV and STI transmission risk
- Exposure to HIV/AIDS prevention interventions
- Questions on networks (RDS sampling only) including: network structure, relationships among participants, and knowledge about recruiters who recruited the respondents

V. SAMPLE SIZES AND SAMPLING METHODS

1. Sample sizes

Key indicators from the IBBS Round I were used to calculate sample sizes needed for target populations in Round II. Using design effects for cluster sampling, take-all sampling, and systematic random sampling in the IBBS II, sample sizes were calculated based on the following formula:

$$n = D * \frac{\left[Z_{1-\alpha}\sqrt{2\overline{P}(1-\overline{P})} + Z_{1-\beta}\sqrt{P1(1-P1)+P2(1-P2)}\right]^2}{(P_2-P_1)^2}$$

Where:
D = coefficient affecting the design
P_1 = estimated rate at the first survey time point
P_2 = estimated rate at the next survey time point, (P2 - P1) is the magnitude of the determinable change

$\overline{P}=(P1+P2)/2$
$Z_{1-\alpha}$ = coefficient z corresponding to the desired level of significance
$Z_{1-\beta}$ = coefficient z corresponding to the desired sampling efficiency

Indicators used for sample size calculation included HIV/STI prevalence and preventive or risk behaviors, such as needle/syringe sharing and condom use. Surveys in new provinces for Round II were considered initial investigations, and their basic indicators were made to match those of selected provinces from the Round I IBBS. Actual sample sizes for Round II are shown in Table 2 below. Please refer to *Appendix I* for further detail on sample size calculation.

Table 2: Actual sample sizes – IBBS round II, 2009

Provinces/cities	IDU	Venue-based (VB) FSW	Street-based (SB) FSW	MSM
Hanoi	300	300	300	399
Hai Phong	300	300	300	400
Quang Ninh	300	298	159	
Nghe An	300	274	282	
Yen Bai	360	123	151	
Lao Cai	300	160		
Dien Bien	300			
Da Nang	291	251	300	
Dong Nai	300	300	300	
HCM City	310	305	300	399
Can Tho	277	354	138	398
An Giang	300	263	300	
Total	**3638**	**2768**	**2690**	**1596**

2. Sampling methods

The sampling methods used for this study were respondent-driven sampling (RDS) and time-location sampling (TLS) using two-stage cluster sampling. Alternative sampling to TLS were applied where the estimated size of the population were small, including take-all sampling (recruiting all eligible members of the target population) and systematic random sampling (recruiting every other eligible member of the target population). These alternative methods were applied in very few provinces and populations, however, and include SSW in Quang Ninh, Nghe An, Yen Bai and Can Tho and VSW in Hai Phong, Quang Ninh, Da Nang, Yen Bai and Lao Cai. Chart 1 demonstrates sampling method selection using population characteristics. In order to ensure comparability between IBBS rounds, the sampling method, either RDS or TLS, applied in Round 1 were repeated in Round II.

Chart 1: Determination of sampling methods for the IBBS Round II

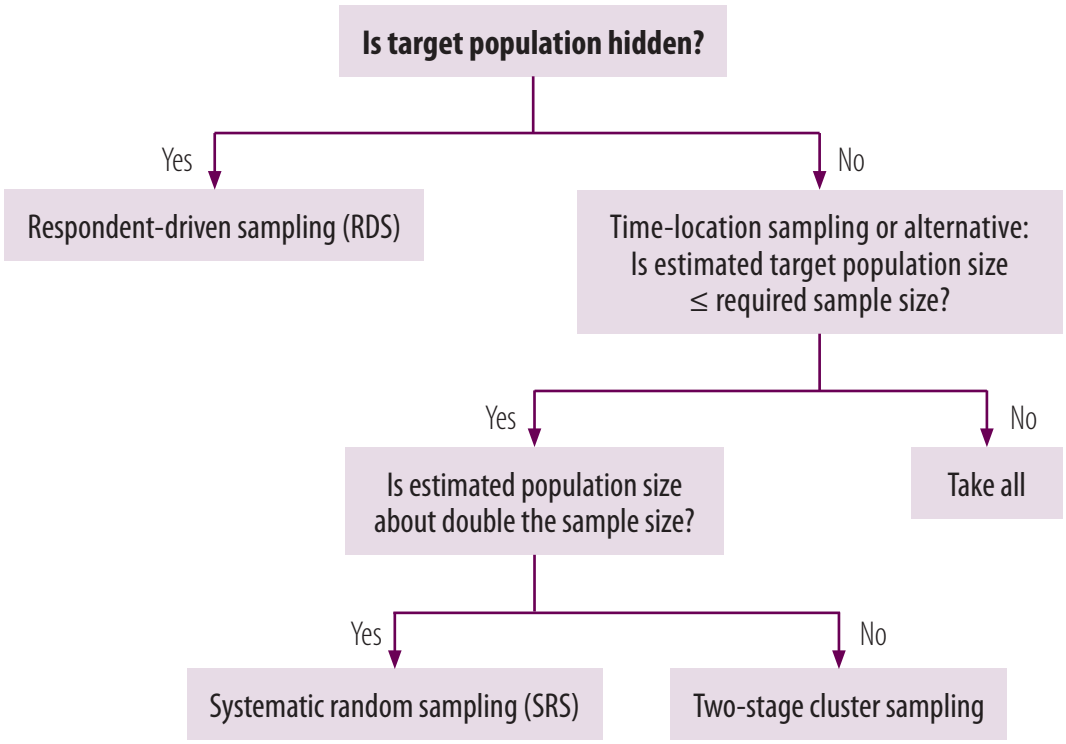


Table 3: Sampling methods used in the IBBS Round II

	Injecting Drug Users	Street-based Female Sex Workers	Venue-based Female Sex Workers	Men who have Sex with Men
Hanoi	RDS	TLS	TLS	RDS
Hai Phong	TLS	TLS	TLS	RDS
Quang Ninh	TLS	TLS *	TLS *	
Nghe An	TLS	TLS *	TLS *	
Yen Bai	TLS	TLS *	TLS *	
Lao Cai	TLS		TLS *	
Dien Bien	TLS			
Da Nang	RDS	TLS	TLS *	
Dong Nai	TLS	TLS	TLS	
HCMC	RDS	TLS	TLS	RDS
Can Tho	RDS	TLS *	TLS	RDS
An Giang	TLS	TLS	TLS	

RDS: *Respondent-driven sampling*

TLS: *Time-location sampling*

(*): *Take –all method*

2.1. Two-stage cluster sampling

The two sampling stages were as follows:

- ***Stage I:*** Development of sampling frames and selection of clusters
- ***Stage II:*** Recruitment of study participants

Stage 1: *Development of sampling frames and selection of clusters*

The team developed maps of the locations of target groups in each province where eligible and potential participants could be reached. Mapping took about two weeks for each population at selected sites (*see Table 1: Participant recruitment sites by MARP*). A three-day training was provided in each province/city before mapping. The trainings covered how to identify and reach members of target groups, how to estimate and record the population size at each venue, and how to conduct interviews. Map developers were selected by provincial AIDS authorities and included staff from Departments of Health, Provincial Centers for Preventive Medicine, Provincial Centers for AIDS Prevention and Control, health workers at district/ward levels, social workers, and Women's and Youth Union staff.

Map developers went to assigned geographic areas and identified all possible venues of target populations. They began by identifying initial venues through meetings with key informants, and then used a "snowball" technique to find other venues in their assigned areas. At each venue, information on population size and how to reach targeted individuals was collected by rapid interviews with security guards, establishment owners, and neighbors, or through direct counting. Information on each venue was recorded in a form that included the address, special signs for identification purposes, and three estimates of the target population size: high, medium, and low.

Data were updated and computerized daily during the mapping process. The mapping ended when there were no new venues introduced or identified. All information on detected venues and on population size at each site was then put together to develop a sampling frame for each target population.

In some sites, there were substantial differences in the number of individuals available for the survey, based on the time of day the sites were surveyed. For example, the number of IDU at one site was lowest at midday (average = 5) and highest in the morning (average = 10). A site like this was classified with two independent clusters in the sampling frame: morning and midday. This classification should have helped ensure inclusion of different IDUs whose attendance in the morning or at midday is influenced by their different characteristics.

A cluster or primary sampling unit (PSU) was defined as a group of 10 individuals from a target population. Thirty clusters of each MARP group were randomly selected to achieve probability proportional to size. Venues with low numbers of the target population (e.g. two or three FSW at each venue) were combined to create a cluster before being included in the sampling frame.

Stage 2: *Recruitment of study participants at selected sites/venues*

Recruiters were provided the addresses and the specific number of individuals to be surveyed at each of the venues from clusters that were randomly selected. During data collection, provincial supervisors visited selected sites accompanied by peer educators to identify and access eligible participants.

The study design allowed for more than one cluster to be recruited at a site. On a given survey visit, if there were more potential eligible subjects than the sample size required, participants were chosen at random. If not, all subjects present who satisfied the criteria were selected. If an insufficient number of participants were recruited on a given visit, study teams returned on other days and recruited participants until the requisite sample size was obtained.

All eligible participants were briefed on the study objectives and given invitation cards with information about the study, the addresses of data collection sites, and appointment dates. If a selected individual did not show for an appointment within two weeks, a recapture was made at the same site. If, after several efforts of recruiting, the desired sample size was not obtained, participants at nearby sites in the sampling frame were recruited. All replacement procedures were reviewed and approved by NIHE in consultation with local staff.

2.2. Take-all sampling

After mapping, if the population size estimate was smaller than required, the *take-all* method was used, in which all members of the target population at all mapped locations were recruited. Study teams visited designated sites, accessed eligible participants with the help of peer educators, explained the study objectives, and distributed invitation cards (as above).

2.3. Systematic random sampling

After mapping, if the population size estimate was approximately twice the required sample size, *systematic random sampling* was applied. The study team visited all mapped locations and selected one in two eligible individuals. In cases where the sample size was not obtained after all sites were visited, this procedure was repeated until the sample size was obtained.

2.4. Respondent-driven sampling

Respondent-driven sampling (RDS) is a chain-referral method in which recruitment is achieved through participant referral. However, unlike the "snowball" method, it gives unbiased estimates of population parameters (Heckathorn 1997). This method was used for IDU in Hanoi, Da Nang, HCMC and Can Tho, and for all MSM populations.

RDS was initiated by recruiting participants identified as "seeds". Seeds were selectively chosen to obtain diversity of the target population characteristics, geographic area, and large networks of target populations. Study investigators selected seeds who were

introduced by local staff. Seeds were interviewed as participants and given a limited number of referral coupons (2 or 3) and asked to invite into study peers from within their social network, which means peers who they know by name and who know them. Subsequent participants who completed the interviews were given additional coupons to invite additional peers from their social network. This process continued until sample size was reached, which usually required five to eight waves, or rounds, of referrals. The number of coupons was reduced to one and subsequently zero as the participant number neared the target sample size.

Each referral card was uniquely coded in order to link recruiters to their recruits for appropriate data adjustment in the analysis and for managing reimbursement for successful recruitment of peers. Receptionists at data collection centers were trained on the management of referral cards and coding.

VI. DATA COLLECTION

1. Research team

1.1. TLS recruiters

The field study team who implemented recruitment using TLS included staff who took part in site mapping and had experience in community outreach. These included outreach workers and peer educators from community-based interventions.

1.2. Interviewers

Staff from district/ward health centers, provincial Preventive Medicine Centers, provincial AIDS Prevention and Control Centers, and social workers were selected to conduct interviews.

1.3. Laboratory staff

The research team assigned laboratory staff from provincial Centers for Preventive Medicine and provincial Centers for AIDS Prevention and Control to collect biological samples. Counselors in charge of pre- and post-test counseling also assisted with specimen collection.

1.4. Training of staff

A 3-4 day training course was held in each province prior to data collection. The course covered HIV/AIDS and risk behaviors, study design, interview skills, use of the questionnaire, how to access target populations, data and specimen handling and transfer, and monitoring and supervision of data collection. Interviewers conducted role-plays and discussions with peer educators currently delivering intervention services in target sites. NIHE laboratory technicians trained laboratory staff on specimen collection, storage, and testing procedures based on the National Guidelines for HIV and STI testing.

2. Study centers and data collection

Study centers were set up for collection of biological specimens and behavioral data. Each study location had separate sites for different target populations. Sites were selected based on:

- ***Geographic convenience for target populations.*** If a locale was large (e.g. HCMC), data collection sites were located conveniently near common venues for participants.
- ***Sufficient rooms for reception, interviews, and specimen collection.*** Teams considered privacy, security, and respect for participants in site selection.
- ***Electricity, running water and toilet***
- ***Accessibility***

Each data collection center had three separate areas: a reception area, an interview room, and a room for collection of biological samples with a space for individual counseling.

Eligible participants were registered at the reception desk on arrival. The receptionist conducted primary screening of these individuals by asking questions according to the criteria for subject selection. Participants who did not meet the criteria were excluded from the survey, as were those who had already participated. The receptionist then read and provided an informed consent form to qualifying participants, answered any questions or concerns, and signed the consent form along with a witness.

After registration, qualified participants were ushered to a private interview room. Before each interview, the investigator checked to see that the individual met the selection criteria. Interviewers conducted individual interviews using structured questionnaires and assisted participants to understand the questions as required.Each interview lasted about 30-45 minutes.

After the interview, participants were guided to a room for pre-test counseling and collection of biological samples. Similar to the interview rooms, testing rooms were arranged to ensure participant privacy and security. Lab technicians (one for each center) collected biological specimens of blood, urine and/or rectal swabs. Participants were given a test tube and instructed how to collect urine samples for gonorrhea and Chlamydia testing.

Subjects' ID numbers were checked regularly at each step to ensure that the ID numbers on the questionnaires and specimen test tubes matched. Before subjects left the premises, receptionists rechecked all steps and associated data/specimens to ensure the process was completed correctly.

All participants were compensated for their time and traveling expenses with VND 50,000-100,000, equivalent to US$3.00–5.00, based on individual locales. RDS participants received additional incentives (secondary incentive) for recruiting their peers to participate in the study.

Data collection ran from June 2009 to February 2010 for all 12 provinces.

VII. QUALITY ASSURANCE AND SUPERVISION

National technical staff from NIHE, FHI, UNODC and US CDC were responsible for training provincial staff on data collection and providing direction and technical support during the survey. Technical staff from NIHE, HCMC Pasteur Institute, and the Tay Nguyen Institute of Hygiene and Epidemiology monitored field deployment. Staff from provincial Centers for AIDS Prevention and Control also provided supervision. Supervisors worked together on mapping, recruiting participants according to the sampling frame, interviewing, and clinical specimen collection at study sites. All significant issues which arose were managed by national supervisors with TA from FHI and US CDC.

VIII. DATA MANAGEMENT AND ANALYSIS

1. Data entry and cleaning

An independent data entry group entered the data into an EpiData databases developed by and maintained at NIHE. Double data entry was performed on 25% of the records as data entry took place to identify incorrect entries. If inconsistency was found in over 10% of the double data entries, an additional 25% of the records were randomly selected to be reviewed through a second entry.

Variable names applied in the datasets in Round II were matched to those in Round I. Upon data entry completion, all datasets were analyzed for validity and logical flow between the questions, and errors were checked directly against the questionnaires. It took roughly two months to enter and clean the data. Raw data were converted to STATA format for data analysis.

2. Data analysis

2.1. Time-location sampling

STATA 10.0 was used for analysis of TLS samples. For designs using two-stage cluster sampling, weighting was applied to adjust for different sampling probabilities among participants. In cluster sampling, differences in attendance patterns at the sampled venues introduces clustering of people with common characteristics and different sampling probabilities, and weighting adjusts for these biases. Although the two-stage cluster sampling method had been designed to obtain self-weighted samples by creating clusters with the same number of individuals (10), the actual number of recruitments in each cluster varied, both over and under 10, resulting in different probabilities of each person to be selected into the sample. A detailed review of data weighting is presented in *Appendix 2*.

2.2. Respondent-driven sampling

In order to obtain estimates (e.g., HIV prevalence) that are representative of the study population, data from samples obtained through RDS must be analyzed using RDS Analysis Tool (RDSAT). The tool was developed specifically to compute weights using recruitment

patterns and network sizes, and these weights adjust the sample population proportions to provide unbiased estimates that could be generalized to the larger population of interest. IBBS RDS data were first analyzed using RDSAT. However, the adjusted estimates for several key indicators were questionable, and most concerning was HIV prevalence among IDU in Hanoi. In the sampled Hanoi IDU population, 20.7% were HIV-infected. The adjusted HIV prevalence obtained in RDSAT was significantly lower at 11.5%. In addition, the resulting MSM population recruited in HCMC consisted of a large proportion (approximately 40%) who reported selling sex in both the 2006 and 2009 IBBS rounds. The MSM sample population in HCMC does not appear to have engaged random recruitment, or recruited a larger proportion of MSM subpopulation with higher risk than is truly present in the general MSM population.

The IBBS study investigators have been working with statisticians and RDS experts to determine the most appropriate approach for analyzing IBBS data sampled with RDS. The reviews have included exploring RDS theories and assumptions that are not applicable in the Vietnam context, analyzing subpopulations within the sample populations, and applying different models and statistical analysis software. This work is ongoing and may result in estimates different from both the sample population proportions and RDSAT adjusted estimates. For the interim period, the study investigators are providing unweighted sample population proportions in this report. The reported results should be interpreted not as representing the general IDU or MSM population, but as estimates for the populations of IDU sampled in Hanoi, Da Nang, HCMC, Can Tho and of MSM sampled in Hanoi, Hai Phong, HCMC, and Can Tho.

3. Testing techniques

3.1. HIV testing

HIV testing was performed using MOH Algorithm III, with two enzyme-linked immunosorbent assay (ELISA) tests and one rapid test using immunochromatography. HIV testing was performed at standardized HIV labs accredited for HIV-positive confirmation. Ten percent of negative samples and five percent of positive samples were randomly selected and re-tested for quality assurance at the National Reference HIV Laboratory at NIHE. Equivalent MOH algorithm is presented in Appendices 3 and 4.

3.2. Syphilis testing

Syphilis serologic testing was performed on serum samples using a rapid plasma regain (RPR) screening test and a treponema pallidium hemaglutination assay (TPHA) confirmation. A syphilis case was laboratory confirmed and treated when the serum sample was positive using both techniques.

3.3. N. gonorrhea and C. trachomatis testing

N. gonhorhea and *C. trachomatis* tests were performed using polymerase chain reaction (PCR). Specimens included urine from FSW and MSM and rectal swabs from MSM. They were collected at study centers and stored at -20°C in laboratories at the provincial Preventive Medicine Center or HIV/AIDS Prevention and Control Center. All were then

transported to the laboratory at NIHE and tested according to the manufacturer's directions.

Individuals who returned for their results and were positive with HIV or syphilis were offered or introduced to relevant care services. These included free treatment for syphilis and/or transfer to HIV care and support services. Pre- and post-test counseling proceeded as follows:

- Prior to testing, all participants received pre-test counseling. Additional counseling was available for those who requested it.
- The pre-test counseling sheet was signed by the counselor, appended to the consent form, and stored with the other documents or records.
- All participants were given an appointment card to return for HIV and syphilis results at the study center, which became available within two weeks of participation in the study. The appointment card contained the details of the counseling service center (address, telephone number and hours of business) and the address and telephone number(s) of the local supervisor(s) in case of any problems.

Trained counselors delivered the results verbally in person (never in writing or by telephone). No HIV status certificates or any other form of written results was given, and counselors provided individually appropriate counseling with each result. To receive their results, participants came in individually with their original appointment card. No results were given without this original card.

IX. ETHICAL CONSIDERATIONS

Participation of respondents in the study was strictly voluntary. Training for field staff emphasized the importance of obtaining signed, informed consent and maintaining complete confidentiality. Names and addresses of participants were not recorded.

The Ethics Review Board of NIHE, the Vietnamese MOH, the FHI Protection of Human Subjects Committee, and the CDC Internal Review Board jointly approved the study protocol, questionnaires, and consent forms obtained from the target groups.

The following general procedures were conducted to protect participants who may be vulnerable to societal pressures, coercion and control measures.

- Field staff held discussions with employers (such as bar and karaoke owners) to clarify the purposes of the study and the regulations. No personal identifiable information on participants was recorded or provided to employers, and participation of all individuals was completely voluntary. Interviewers were not involved in any way with the recruitment of participants.

- Non-governmental organizations (NGOs) provided study populations with information on the study prior to recruitment by working with specific groups, educational sessions at worksites, or peer-to-peer contacts. During these sessions, facilitators clarified the purpose of the study and answered questions clearly and directly.
- Prior to recruitment, research staff explained all procedures in detail to participants and answered their questions. Interviewers emphasized that should participants decide to withdraw from the study, their decision would not affect any services they were provided by agencies or clinics. A research staff member and a witness both signed the consent forms.
- The study was anonymous. No names or personal identifiers were recorded. All questionnaires and biological specimens were labeled with a unique ID number. Participants were given an appointment card with their unique ID number to identify them when they returned for results, counseling, and free STI treatment. Because there were no personal identifiers, it was impossible to trace positive results or to determine who participated in the study. Participants were asked to come at a specified appointment time with their appointment card to receive their results.
- Provincial and national staff closely monitored the implementation and completion of the consent procedures.

Results

I. DEMOGRAPHIC AND SOCIOLOGICAL CHARACTERISTICS OF STUDY POPULATIONS

The major characteristics of the study populations are presented in *Tables 4-7*. More details on each population can be found in *Appendices 5-8*.

Injecting drug users (IDU)

Characteristics of IDU for Round II are presented in *Table 4*. The mean age of IDU surveyed was from lowest in Da Nang (25 years) to highest in Lao Cai and Hai Phong (36 years). One-third of IDU in HCMC were younger than 25 years old.

Unemployment or employment in low-income/unstable jobs among IDU in all provinces was high: from 70 to 80% (*Appendix 5*). The median monthly income among this population was between 1-2.5 million VND.

Most IDU in provinces surveyed had been *using* drugs for over 8 years. This could represent a population that has a survival bias and highlights the need to look closely at populations injecting for less than 1 year. The overwhelming majority of IDU had been *injecting* drugs for over a year (from 73% in Da Nang to 96% in Quang Ninh). Provinces with a higher percentage of new injecting drug users (those who began using within a year of the survey) included Nghe An (16%), Da Nang (27%), Dong Nai (23%) and An Giang (20%).

In most provinces, at least one third of IDU surveyed had been to a governmental drug rehabilitation center, also known as 06 center. Percentages ranged from 16% in Nghe An to 47% in Lao Cai.

In comparing IDU populations between 2006 and 2009, the percentage of IDU who had ever been to a 06 center was much higher in Round II. The proportion changed from 31% to 47% in Hanoi, 26% to 37% in Hai Phong, and 24% to 36% in HCMC. In HCMC, the number of IDUs who were released from 06 centers increased dramatically between 2006 and 2009. The HCMC Department of Social Evils Prevention and Control reports that over 35,000 drug users left HCMC 06 centers between 2006 and the close of 2008, and another 20,000 drug users were released in 2009. The increase in the number of drug users released may have had a significant influence on the IBBS Round II epidemiological data in HCMC, discussed below.

Table 4: Characteristics of IDU - IBBS 2009

	Hanoi	Hai Phong	Quang Ninh	Da Nang	HCMC	Can Tho	An Giang	Nghe An	Lao Cai	Yen Bai	Dong Nai	An Giang
Age (years)	**300**	**300**	**300**	**300**	**360**	**300**	**300**	**291**	**300**	**310**	**277**	**300**
Mean	31.5	31.5	31.5	30.1	34.6	35.5	32.7	24.9	28.1	29.2	32.0	25.6
Monthly income (million VND)	**283**	**295**	**289**	**300**	**356**	**298**	**300**	**290**	**273**	**310**	**258**	**295**
Mean	3.9	2.0	2.7	1.9	1.6	2.3	2.1	1.1	1.6	2.0	2.5	1.7
Duration of drug use (non-injection and injection) (years)	**288**	**299**	**297**	**298**	**356**	**299**	**296**	**289**	**288**	**309**	**261**	**296**
Mean	9.6	11.3	8.7	6.1	9.3	11.1	9.6	4.7	6.6	7.6	8.7	5.6
Duration of drug use (non-injection and injection) (%)	**288**	**298**	**298**	**298**	**353**	**299**	**295**	**289**	**290**	**309**	**261**	**296**
< 1 year	4.5	1.3	1.0	9.1	3.4	0.7	2.7	11.4	17.2	3.6	3.5	14.5
≥ 1 year	95.5	98.7	99.0	90.9	96.6	99.3	97.3	88.6	82.8	96.4	96.6	85.5
Duration of drug injection (years)	**287**	**297**	**297**	**298**	**347**	**297**	**297**	**289**	**290**	**304**	**263**	**296**
Mean	6.0	7.4	7.2	4.4	6.7	5.7	4.3	3.6	5.7	5.4	7.1	4.7
Duration of drug injection (%)	**287**	**297**	**297**	**298**	**347**	**297**	**297**	**289**	**290**	**304**	**263**	**296**
< 1 year	14.3	5.7	3.7	16.1	5.5	8.4	11.8	26.6	22.8	12.5	8.4	19.6
≥ 1 year	85.7	94.3	96.3	83.9	94.5	91.6	88.2	73.4	77.2	87.5	91.6	80.4
Ever been to 06 center (%)	**47.0**	**37.3**	**32.7**	**15.7**	**38.7**	**85.6**	**78.7**	**30.9**	**19.7**	**35.6**	**46.2**	**30.1**

Femzale sex workers (FSW)

Some demographics differed between street-based sex workers (SSW) and venue-based sex workers (VSW). SSW were in general older than VSW, had sold sex for longer, and had lower income (although direct income from selling sex was higher at some sites). The mean age of SSW ranged from 25 years (Nghe An and Dong Nai) to 36 years in Da Nang, and for VSW from 24 years (Nghe An) to 30 years (Hanoi and Da Nang). Most SSW in large cities such as Hanoi, Hai Phong, Da Nang, HCMC, Can Tho, An Giang were over 30 years old (51%–73%), whereas the majority of VSW were under 30 (>50%).

The majority of FSW had sold sex for more than three years, which is compatible with results from the 2006 IBBS. Data in Table 5 show that although classified as street-based, SSW in Quang Ninh, Nghe An, Yen Bai, and Dong Nai most commonly waited for clients in bars and karaoke venues, indicating movement off the streets to avoid police round ups. Over 85% of self-identified SSW in Quang Ninh, Yen Bai, Dong Nai and An Giang reported that their most popular waiting points for clients were in bars or karaoke venues.

Men who have sex with men (MSM)

Most MSM surveyed in Round II were between 20 to 30 years old. Those who had received money for sex in the past month (MSW) tended to be about two years younger than those who did not, with the exception of Hai Phong. The age stratification is significantly different between the IBBS rounds, with the younger age group 20-25 fewer in 2009 (25%) than in 2006 (60%), which may have resulted from sampling issues (see section VIII.2.2 for a discussion on these issues). MSM participants in Round II also had relatively low income, averaging less than three million VND per month. Although average income comparison between the two rounds is not possible because only income ranges were collected in 2006, MSM have higher incomes today. Yet this may reflect monetary inflation rather than characteristic differences between the two years.

Except in Hai Phong, men who have not sold sex have stronger preference for sex with another man than their MSW counterparts. In Hai Phong, both groups preferred sex with men exclusively or over sex with women, at a combined proportion of over 80%, and no one reported preference for sex with only women. About one-third to one-half of MSM respondents preferred to have sex exclusively with men. However, a much lower proportion (13%) of Hanoi MSW had a preference for only male sexual partners. The population with the largest proportion preferring only women as sex partners was MSW in Can Tho.

Table 5: Characteristics of street-based sex workers - IBBS 2009

	Hanoi	Hai Phong	Quang Ninh	Da Nang	HCMC	Can Tho	An Giang	Nghe An	Lao Cai	Yen Bai	Dong Nai
Age group (n)	**300**	**299**	**297**	**250**	**305**	**353**	**263**	**274**	**160**	**123**	**299**
< 20	3.3	2.3	3.7	8.4	14.6	16.2	19.1	19.7	16.3	4.9	15.3
20 - 25	15.7	20.7	24.2	25.4	35.6	28.9	31.7	46.7	32.5	18.6	48.2
25 < 30	32.0	40.1	47.5	18.5	23.2	20.2	23.9	26.7	30.6	28.5	26.8
≥ 30	49.0	36.8	24.6	47.4	26.6	34.7	26.3	6.9	20.6	48.0	9.7
Age (years)	300	299	297	250	305	353	263	274	160	123	299
Mean	30.3	29.4	27.7	30.1	25.5	27.2	26.4	23.7	26	29.5	24.4
Duration of selling sex (years)	300	299	266	251	300	351	263	274	160	120	286
Mean	**5.3**	**4.0**	**3.7**	**4.3**	**4.2**	**3.4**	**3.0**	**2.1**	**2.4**	**4.6**	**3.3**
Duration of selling sex at study sites	**300**	**300**	**298**	**251**	**301**	**352**	**263**	**274**	**160**	**122**	**299**
Mean	4.9	3.6	2.6	3.3	3.6	2.5	2.6	1.9	2.0	4.0	2.1
Average monthly income (million VND)	7.4	5.5	6.8	4.5	5.4	5.6	5.0	9.3	6.5	4.6	7.1
Direct income from selling sex (million VND)	6.1	5.1	5.7	2.8	3.5	4.0	2.8	8.1	96.3	2.0	5.7
Most popular client waiting point	**300**	**300**	**298**	**251**	**305**	**353**	**263**	**274**	**160**	**121**	**299**
Restaurant, bar or karaoke venue	97.3	99.7	98.0	98.4	94.6	97.9	99.2	100.0	70.6	95.9	99.7
Street	2.7	0.3	2.0	1.6	5.4	2.1	0.8	0.0	3.8	4.1	0.3

Table 6: Characteristics of venue-based sex workers - IBBS 2009

	Hanoi	Hai Phong	Quang Ninh	Da Nang	HCMC	Can Tho	An Giang	Nghe An	Lao Cai	Yen Bai	Dong Nai
Age group (n)	**300**	**299**	**297**	**250**	**305**	**353**	**263**	**274**	**160**	**123**	**299**
< 20	3.3	2.3	3.7	8.4	14.6	16.2	19.1	19.7	16.3	4.9	15.3
20 - 25	15.7	20.7	24.2	25.4	35.6	28.9	31.7	46.7	32.5	18.6	48.2
25 < 30	32.0	40.1	47.5	18.5	23.2	20.2	23.9	26.7	30.6	28.5	26.8
≥ 30	49.0	36.8	24.6	47.4	26.6	34.7	26.3	6.9	20.6	48.0	9.7
Age (years)	**300**	**299**	**297**	**250**	**305**	**353**	**263**	**274**	**160**	**123**	**299**
Mean	30.3	29.4	27.7	30.1	25.5	27.2	26.4	23.7	26	29.5	24.4
Duration of selling sex (years)	**300**	**299**	**266**	**251**	**300**	**351**	**263**	**274**	**160**	**120**	**286**
Mean	5.3	4.0	3.7	4.3	4.2	3.4	3.0	2.1	2.4	4.6	3.3
Duration of selling sex at study sites	**300**	**300**	**298**	**251**	**301**	**352**	**263**	**274**	**160**	**122**	**299**
Mean	4.9	3.6	2.6	3.3	3.6	2.5	2.6	1.9	2.0	4.0	2.1
Average monthly income (million VND)	7.4	5.5	6.8	4.5	5.4	5.6	5.0	9.3	6.5	4.6	7.1
Direct income from selling sex (million VND)	6.1	5.1	5.7	2.8	3.5	4.0	2.8	8.1	96.3	2.0	5.7
Most popular client waiting point	**300**	**300**	**298**	**251**	**305**	**353**	**263**	**274**	**160**	**121**	**299**
Restaurant, bar or karaoke venue	97.3	99.7	98.0	98.4	94.6	97.9	99.2	100.0	70.6	95.9	99.7
Street	2.7	0.3	2.0	1.6	5.4	2.1	0.8	0.0	3.8	4.1	0.3

Table 7: Characteristics of MSM - IBBS 2009

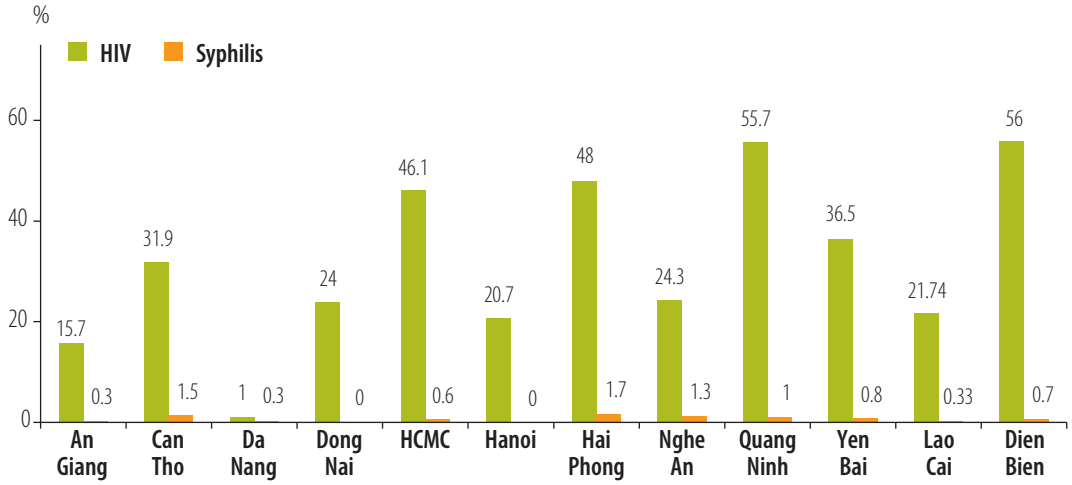
	Hanoi		Hai Phong		HCMC		Can Tho	
	MSW	**non MSW**	**MSW**	**non MSW**	**MSW**	**non MSW**	**MSW**	**non MSW**
Age (years)	**182**	**217**	**27**	**373**	**209**	**190**	**113**	**284**
Mean	25.1	27.5	31.4	30.5	25.8	27.9	22.7	24.8
Age group (%)	**182**	**217**	**27**	**373**	**209**	**190**	**113**	**284**
< 20	29.7	15.7	7.4	5.6	25.4	17.9	46.9	33.8
20 - 25	**28.6**	**30.4**	**11.1**	**24.2**	**33.0**	**26.3**	**29.2**	**31.0**
25 < 30	20.9	24.4	22.2	25.2	21.1	23.2	8.8	13.7
≥ 30	**20.8**	**29.5**	**59.3**	**45.0**	**20.5**	**32.6**	**15.1**	**21.5**
Married (%)	**15.4**	**17.5**	**22.2**	**27.4**	**12.9**	**8.9**	**9.0**	**9.9**
Average monthly income (million VND)	**3.3**	**3.0**	**1.9**	**2.5**	**2.0**	**2.0**	**1.9**	**1.8**
Income group	**181**	**217**	**27**	**372**	**206**	**187**	**112**	**284**
< 500.000 VND	0.6	4.1	0.0	1.9	4.9	3.7	1.8	3.2
500.000 - 1.000.000 VND	0.6	0.5	11.1	3.5	17.0	16.0	11.6	17.0
1.000.000 - < 2.000.000 VND	30.4	33.2	77.8	51.9	42.7	45.5	56.3	54.8
> 2.000.000 VND	68.4	62.2	11.1	42.7	35.4	34.8	30.3	25.0
Sexual preference	**182**	**217**	**27**	**373**	**209**	**190**	**113**	**284**
Prefers sex with men only	12.6	37.3	59.3	46.6	42.6	55.8	32.7	45.4
Prefers to have sex with men more than women	43.4	48.4	33.3	35.7	16.8	14.2	10.6	13.4
Bi-sexual	17.6	7.4	7.4	15.3	24.4	12.6	11.5	13.7
Prefers to have sex with women more than men	15.4	6.5	0.0	2.4	13.4	13.7	9.7	8.8
Prefers to have sex with women only	11.0	0.5	0.0	0.0	2.9	3.7	35.4	18.7
Self-identification	**182**	**216**	**27**	**372**	**209**	**190**	**113**	**284**
Bong lo (uncloseted 'out' homosexual)	1.1	3.7	18.5	2.7	3.3	2.1	12.4	7.7
Bong kin (passes as straight)	74.2	93.1	22.2	78.5	63.2	74.2	37.1	59.9
Straight (does not identify as homosexual)	24.2	3.2	59.3	18.3	33.5	23.7	48.7	32.0
Other	0.5	0	0	0.5	0.0	0.0	1.8	0.4

II. HIV AND STI PREVALENCE AMONG TARGET POPULATIONS

Injecting drug users

HIV prevalence among IDU was high in many provinces surveyed in Round II, including Dien Bien (56%), Quang Ninh (56%), Hai Phong (48%), and HCMC (46%). It was also relatively high in Hanoi (21%), Lao Cai (22%), Dong Nai and Nghe An (both 24%). Da Nang had the lowest prevalence among IDU, at only 1%. Syphilis prevalence was low in all provinces surveyed (less than 2%).

Figure 1: HIV and syphilis prevalence among IDU – IBBS 2009



A number of provinces had lower HIV prevalence among IDU in Round II versus Round I. These included Hai Phong (48% vs. 66%), Can Tho (32% vs. 44%), and Hanoi (21% vs. 29%) in 2009 v.s. 2006, respectively. However, HIV prevalence among IDU in HCMC in 2009 was higher than in 2006 (46% vs. 34% respectively). It is important to note a few developments in HCMC during the period between the two surveys when considering this change:

- Between 2006 and 2008, approximately 20,000 drug users returned to their communities from 06 centers in HCMC (see *Figure 3*).
- In Round I, 23% of IDU surveyed had been at a drug rehabilitation center (06 center). The proportion climbed to 36% in Round II.
- Over 50% of IDU surveyed in 2009 who had been in a 06 center were HIV-positive (see *Figure 4*).
- There were fewer new IDU[3] in 2009 (12.5%) than in 2006 (25.7%) (see *Table 4*). The percentage of new IDU who were HIV-positive in 2009 (18%) was significantly lower than in 2006 (29%).

[3] New injecting drug users are those who have been injecting for less than one year.

These statistics suggest the possibility that the higher prevalence in 2009 may be due, in part, to a significant number of HIV-infected individuals returning from 06 centers between 2006 and 2009.

Figure 2: Comparison of HIV prevalence among IDU - IBBS 2006 and 2009

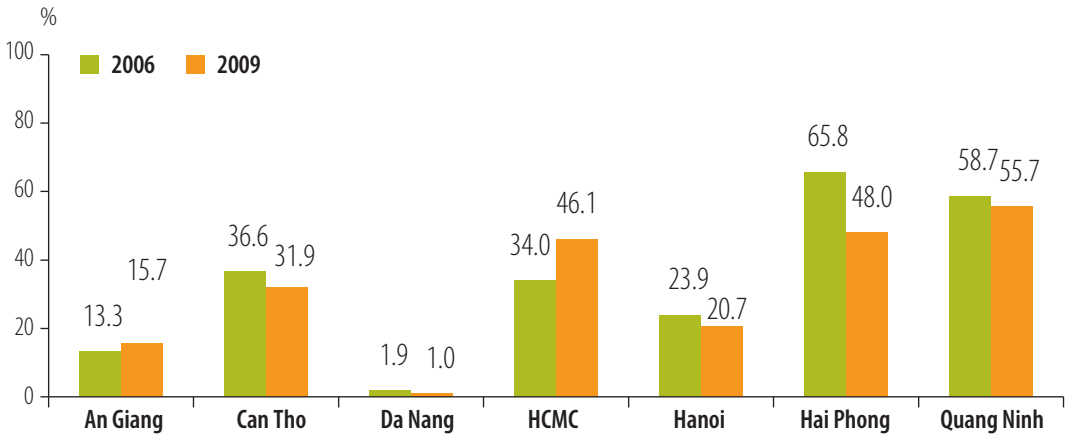


Figure 3: Cumulative number of individuals in HCMC returning to the community from drug rehabilitation centers (06 centers) and proportion HIV-positive between 2006 and 2009

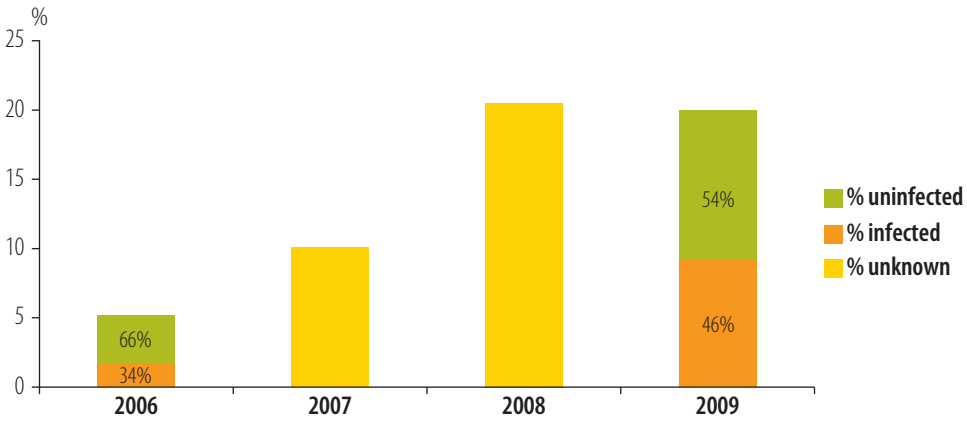
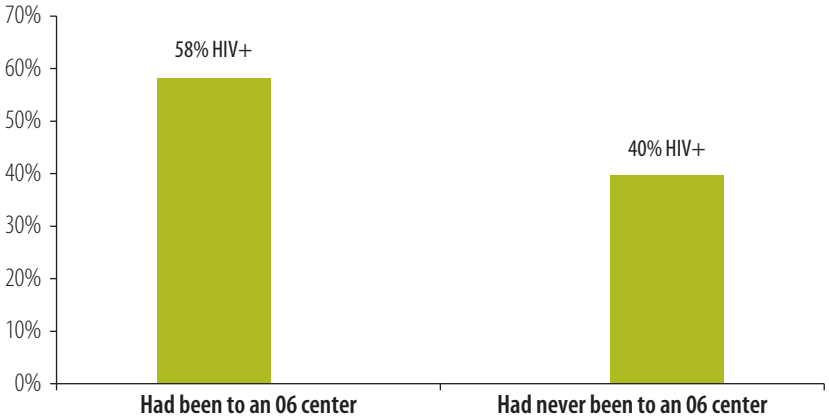


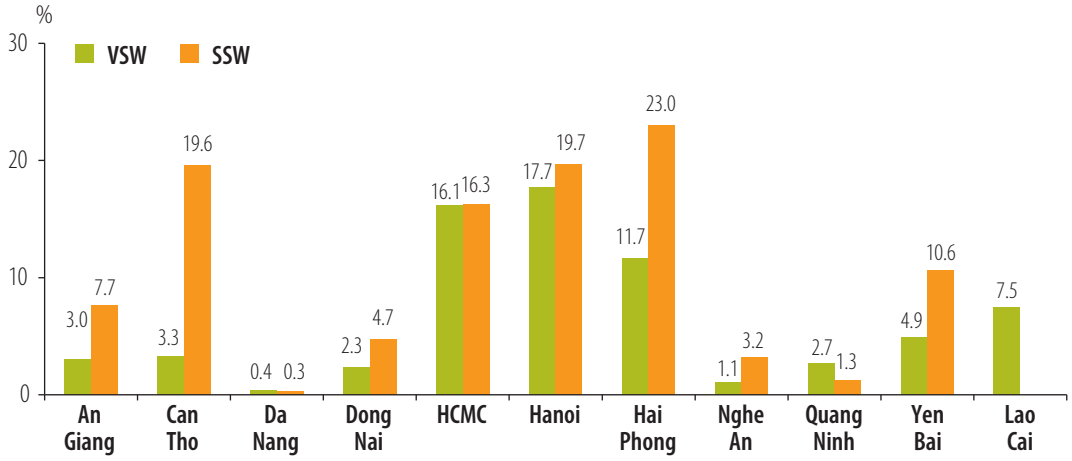
Figure 4: HIV prevalence among IDU –by status of ever attending a drug rehabilitation center (06 center) in HCMC, 2009



Female sex workers

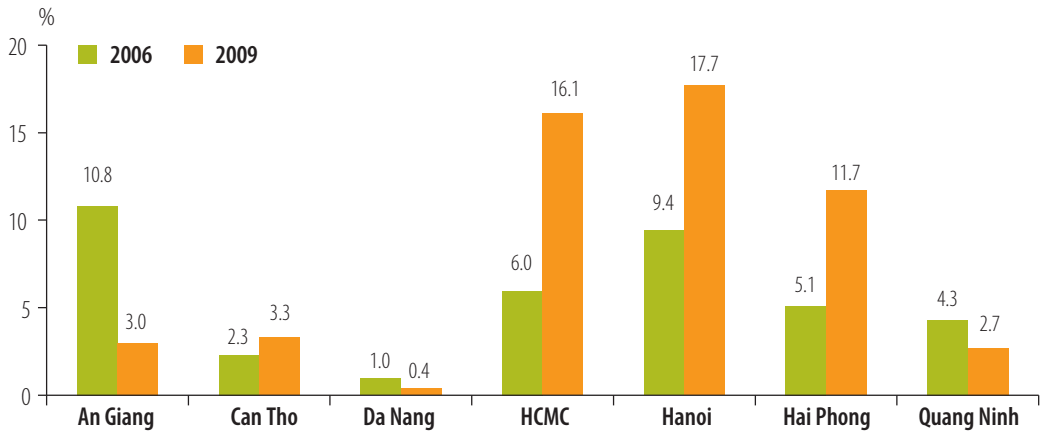
HIV prevalence among FSW was highest in Hanoi, Hai Phong, HCMC and Can Tho (>15%). Provinces with prevalence rates in the middle range were Lao Cai, Yen Bai and An Giang. HIV prevalence was lowest in Quang Ninh, Nghe An and Da Nang (<3%). SSW in Hai Phong had the highest prevalence at 23%. In general, SSW had higher HIV prevalence than VSW.

Figure 5: HIV prevalence among VSWs and SSWs - IBBS 2009



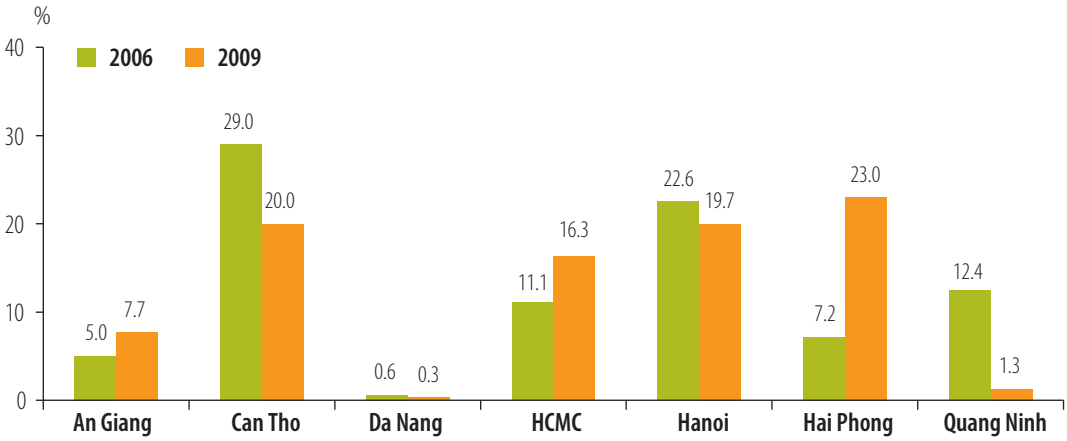
Compared to the 2006 IBBS, HIV prevalence among VSW was higher in 2009 in Hanoi, Hai Phong and HCMC. HIV prevalence was lower for the remaining provinces surveyed, with the greatest difference in An Giang (11% in 2006 and 3% in 2009) (Figure 6).

Figure 6: HIV prevalence among venue-based sex workers – IBBS 2006 and 2009



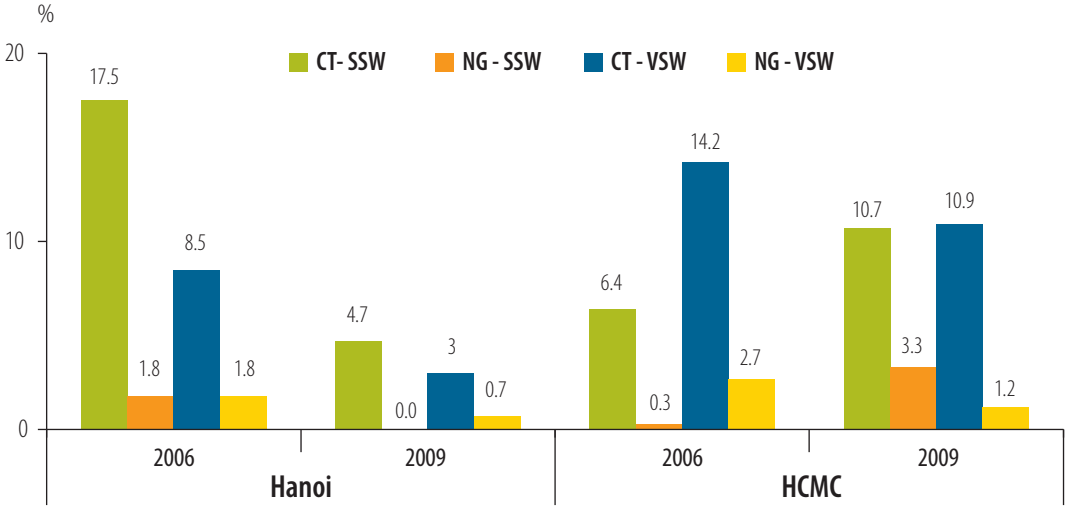
Among SSW, HIV prevalence appears to have stabilized or dropped in Hanoi, Quang Ninh, Da Nang and Can Tho. However, data for Hai Phong are more concerning, showing a change from 7% in 2006 to 23% in 2009. Data for SSW in HCMC and An Giang also suggest increasing prevalence (Figure 7).

Figure 7: HIV prevalence (%) among street-based sex workers – IBBS 2006 and 2009



IBBS results show that SSW and VSW STI prevalences differ in some provinces. While STI prevalence appears to have decreased between 2006 and 2009 for both SSW and VSW in Hanoi, Chlamydia prevalence appears to have increased for SSW in HCMC (10% in 2009 compared to 6% in 2006). Gonorrhea prevalence was low and relatively rare in both cities. Syphilis prevalence remains low among FSW, at less than 2% in most provinces surveyed (except Can Tho, An Giang).

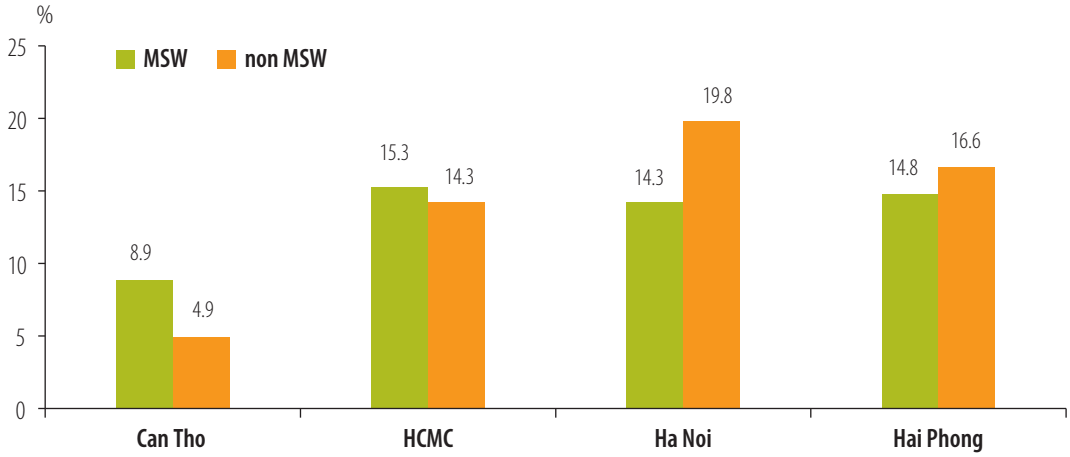
Figure 8: Chlamydia (CT) and Gonnorhea (NG) prevalence among VSWs and SSWs in Hanoi and HCMC - IBBS 2006 and 2009



Men who have sex with men

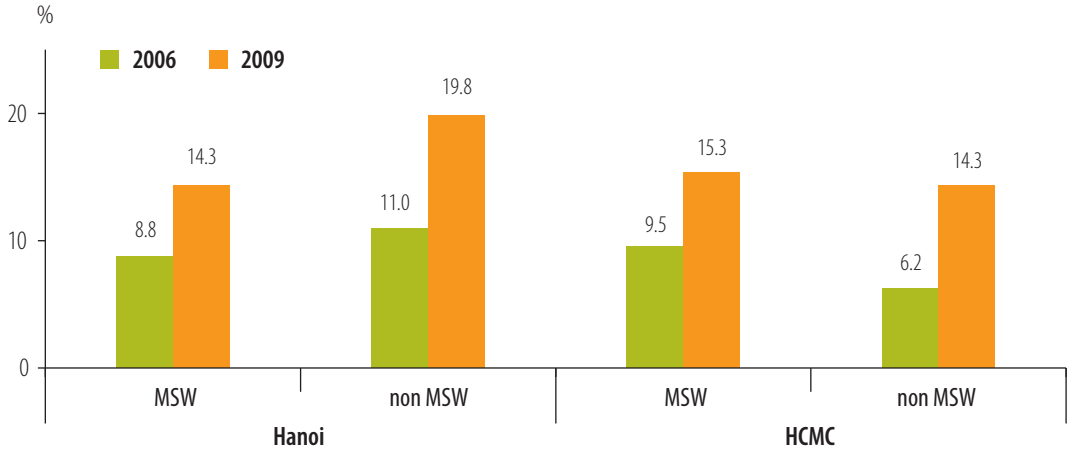
HIV prevalence among MSM in Round II was over 10% in all provinces surveyed, with the exception of Can Tho, and as high as 20% (MSM who had not sold sex - Hanoi).

Figure 9: HIV prevalence among MSM had sold sex (MSW) and MSM had not sold sex (non MSW) – IBBS 2009



In Hanoi and HCMC, HIV prevalence among both groups of MSM in 2009 was significantly higher than in 2006. For MSM who had sold sex (MSW) in Hanoi, prevalence was 14%, versus 9% in 2006 in Hanoi. For those who had not sold sex (non MSW), the prevalence was 20% in 2009, versus 11% in 2006. Data for HCMC were similar.

Figure 10: HIV prevalence among MSM had sold sex (MSW) and MSM had not sold sex (non MSW) – IBBS 2006 and 2009



Sexually-transmitted infection (STI) prevalence (other than HIV) among MSM was high. One in five MSM in HCMC was infected with at least one of the following STIs: syphilis, genital gonorrhea, rectal gonorrhea, genital Chlamydia, or rectal Chlamydia.

Unlike in Hanoi, a slightly higher proportion of MSM in HCMC are infected in 2009 than 2006. STI infections among Hanoi MSM have declined in large proportions, but prevalence is still high, over 10%.

Figure 11: STI prevalence among MSM had sold sex (MSW) and MSM had not sold sex (non MSW) – IBBS 2009

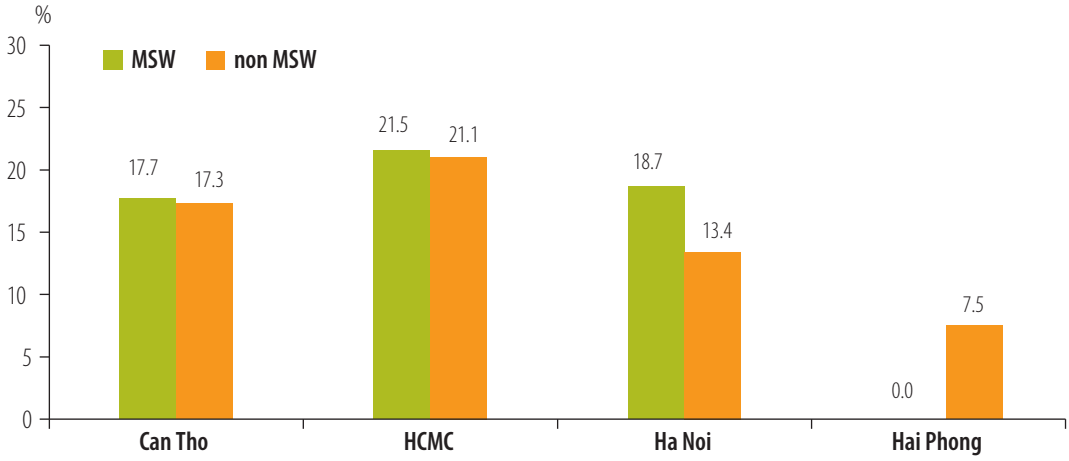
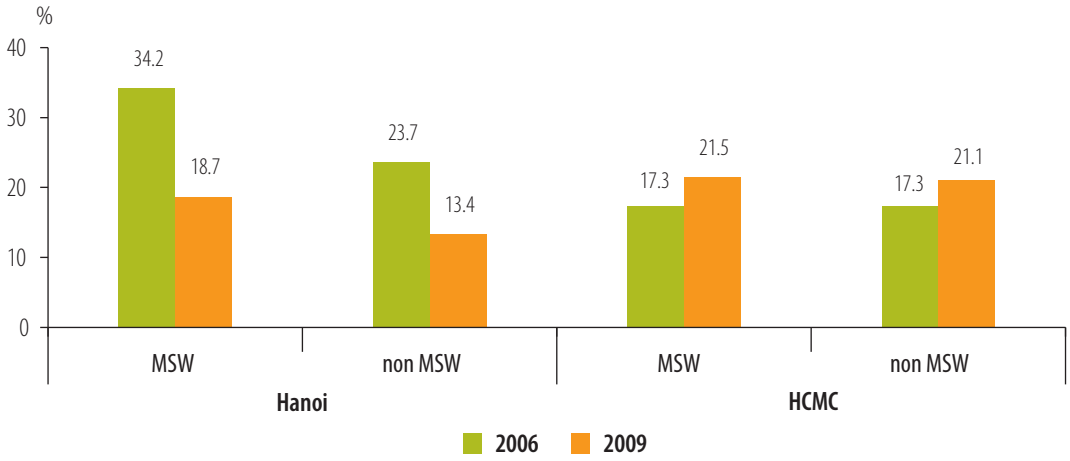


Figure 12: STI prevalence among MSM had sold sex (MSW) and MSM had not sold sex (non MSW) in Hanoi and HCMC – IBBS 2006 and 2009



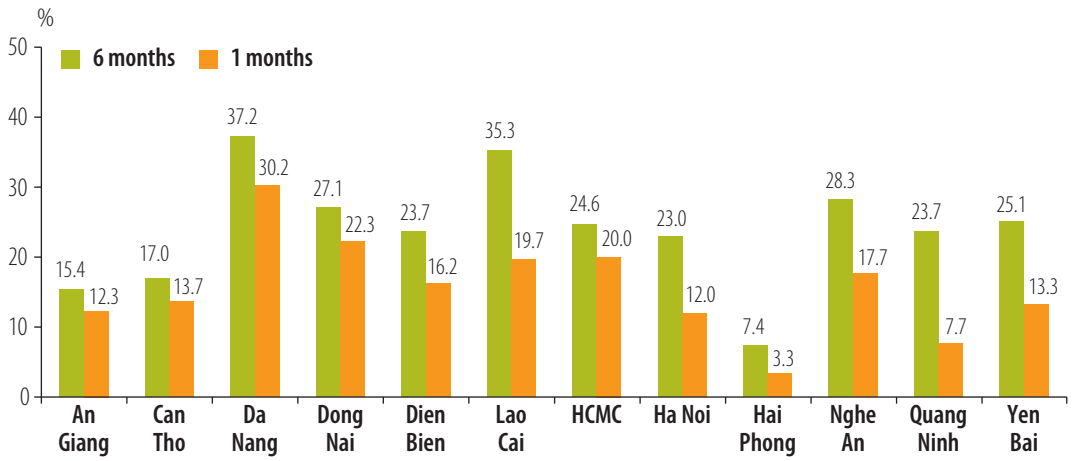
II. HIV/STI BEHAVIORAL INDICATORS AMONG TARGET POPULATIONS

1. Injecting drug users

The following are key findings of risk behaviors among IDU, including injecting and sexual risk behaviors. More data on IDU are available in Appendix 5.

Figure 13 illustrates the percentage of needle and syringe sharing among IDU in 2009 in the last six months and last one month. Needle and syringe sharing in the last six months was relatively high (15% to 37%) in all provinces surveyed but Hai Phong (7%). Reported sharing in the last six months was highest in Da Nang and Lao Cai

Figure 13: Proportion of IDU reporting needle and syringe sharing – IBBS 2009



In comparing data from Rounds I and II, needle sharing in the last six months among IDU in 2009 was lower in Hai Phong, HCMC, Can Tho, and An Giang. Conversely, needle sharing was higher in Hanoi , Da Nang and Quang Ninh.

Figure 14: Proportion of IDU reporting needle and syringe sharing in the last six months – IBBS 2006 and 2009

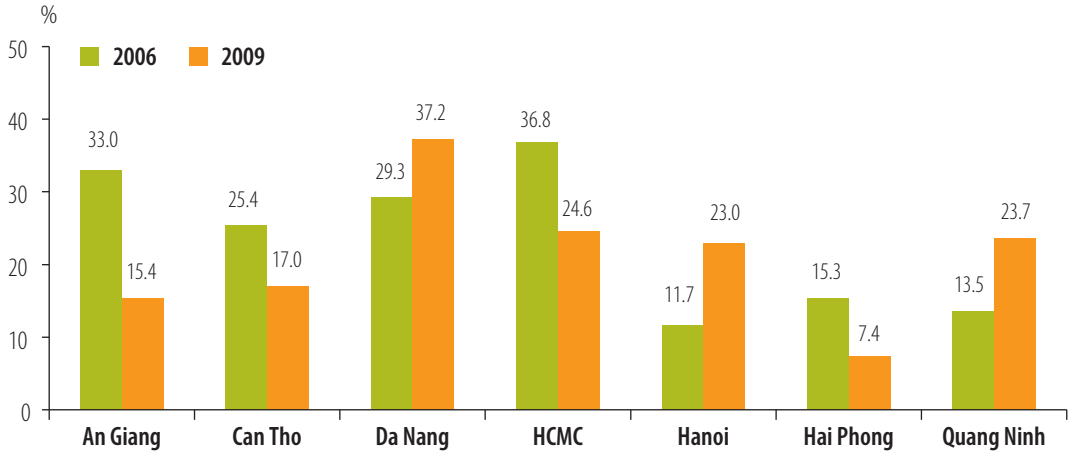
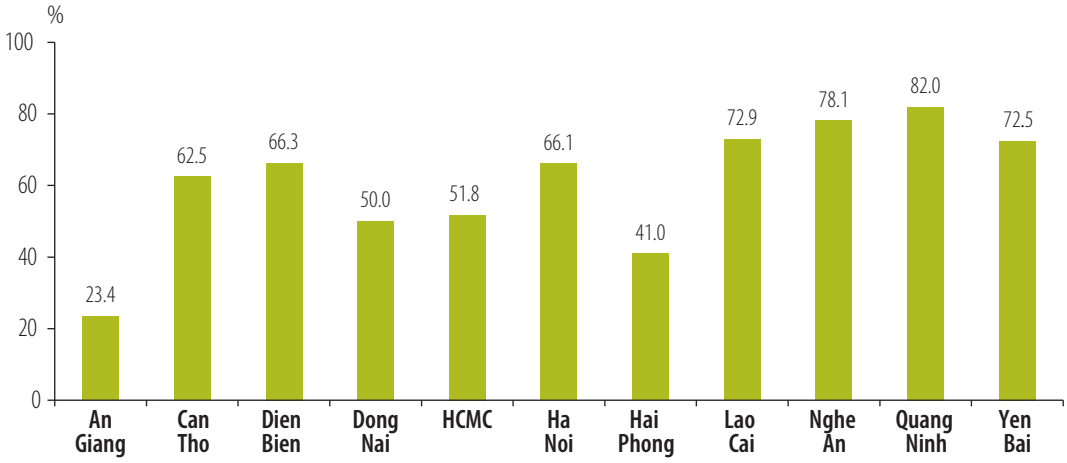


Figure 15 shows a high percentage of HIV-positive IDU who reported ever having shared needles in 2009. Reported sharing was highest in Quang Ninh where 82% of HIV-positive IDU reported ever having shared a needle.

Figure 15: Proportion of HIV-positive IDU who ever shared needles – IBBS 2009



In all provinces surveyed, with the exception of Hai Phong, at least 40% of IDU reported sexual activity with a regular partner in the last 12 months. In addition to having sex with regular partners, a portion of IDU in every province reported having sex at least once with a sex worker in the last 12 months (from 10% in Dien Bien, Quang Ninh, Dong Nai to 45% in Da Nang).

Figure 16: Proportion of IDU who had sex by type of partner in the last 12 months – IBBS 2009

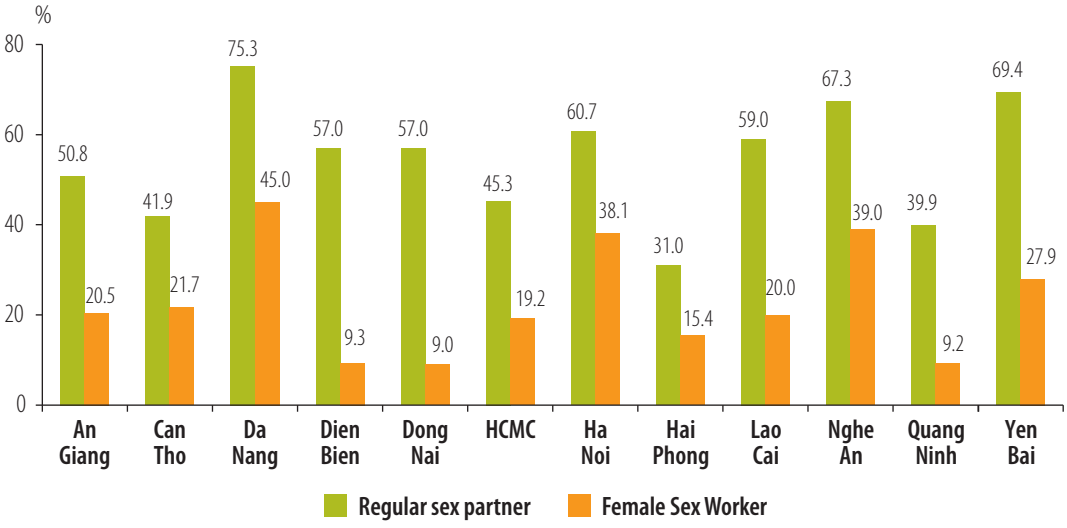
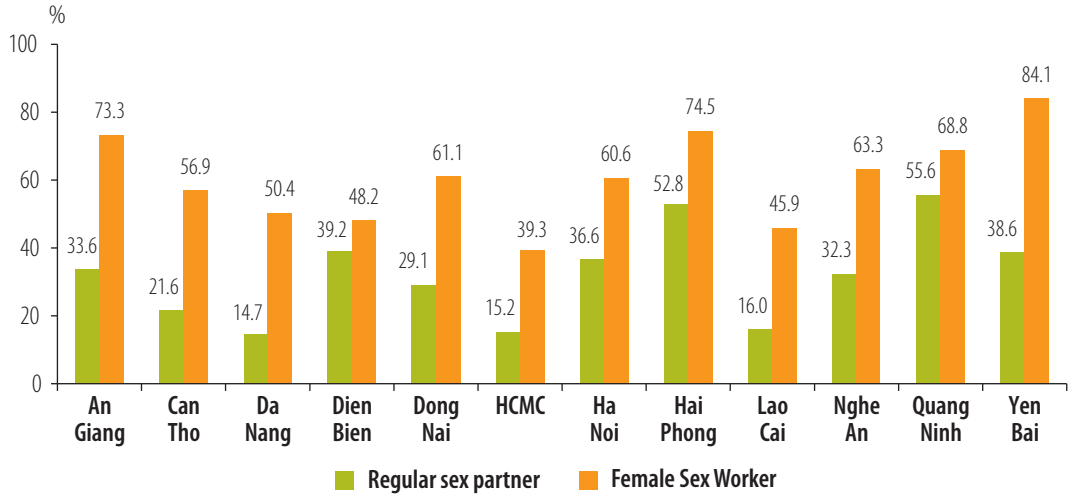
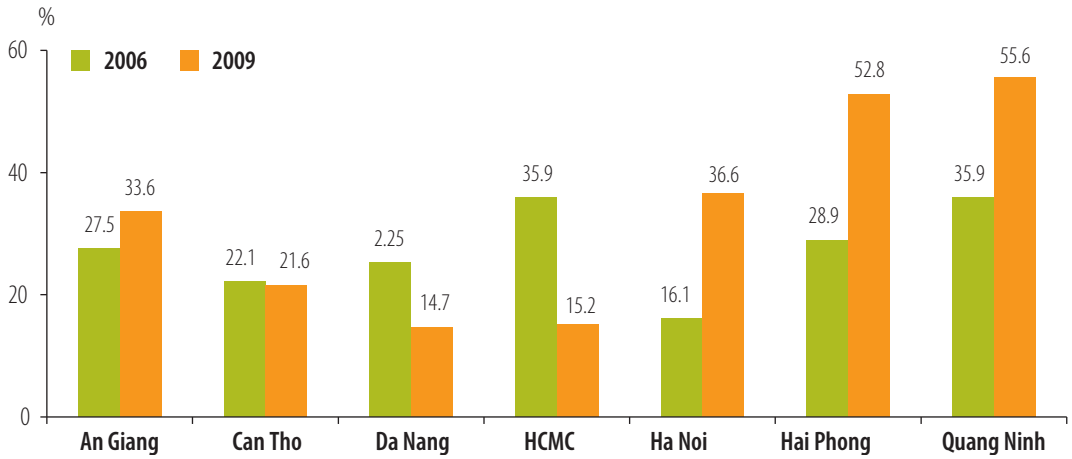


Figure 17: Proportion of IDU who reported consistent condom use by type of partner in the past 12 months – IBBS 2009



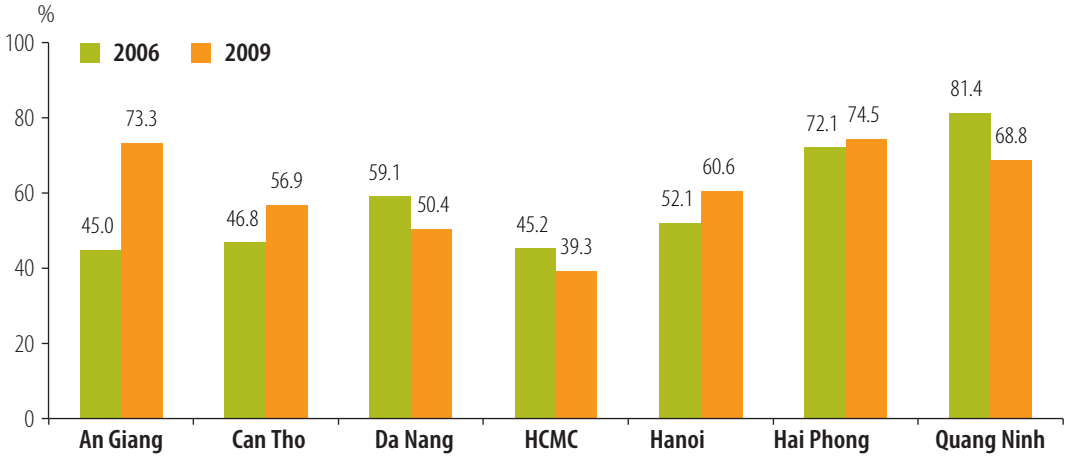
Consistent condom use in the past 12 month among IDU with regular partners (wives and girlfriends) varied, from 15% in Da Nang to 56% in Quang Ninh. While consistent condom use with sex workers was higher than with regular partners, from 39% in HCMC to 84% in Yen Bai, it was still low in provinces surveyed. Compared to the 2006 results, a greater proportion of IDU reported consistent condom use with their regular sex partners in most provinces, specifically Hanoi, Hai Phong, Quang Ninh, and An Giang. The reverse is true for Da Nang and HCMC, where the proportions dropped from 25% and 36%, respectively, to 15%.

Figure 18a: Proportion of IDU who reported consistent condom use in the last 12 months with regular partners– IBBS 2006 and 2009



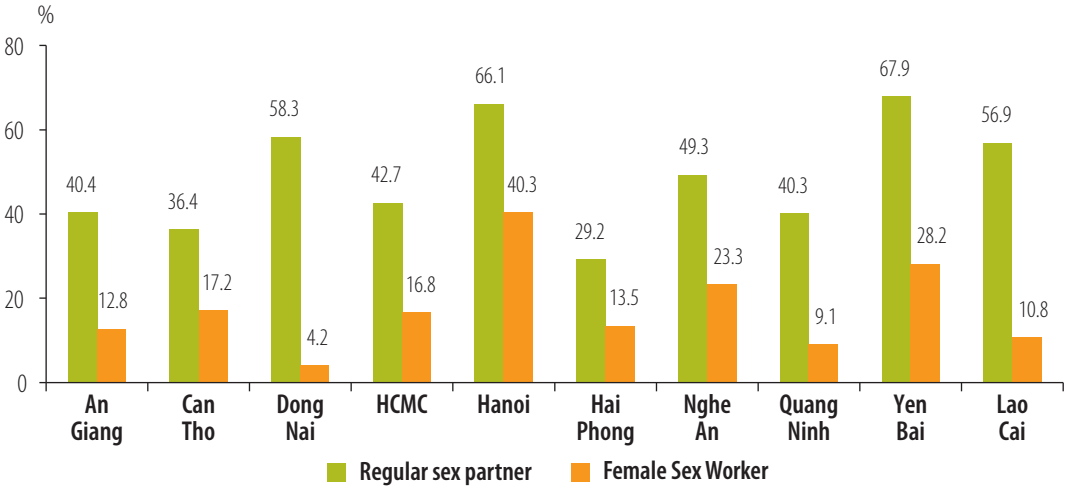
Sexual risk practices with sex workers among IDU appear to have changed little, with the exception of An Giang, where consistent condom use changed from 45% to 73%, and Quang Ninh, which decreased from 81% to 69% (Figure 18b).

Figure 18b: Proportion of IDU who reported consistent condom use in the last 12 months with FSW – IBBS 2006 and 2009



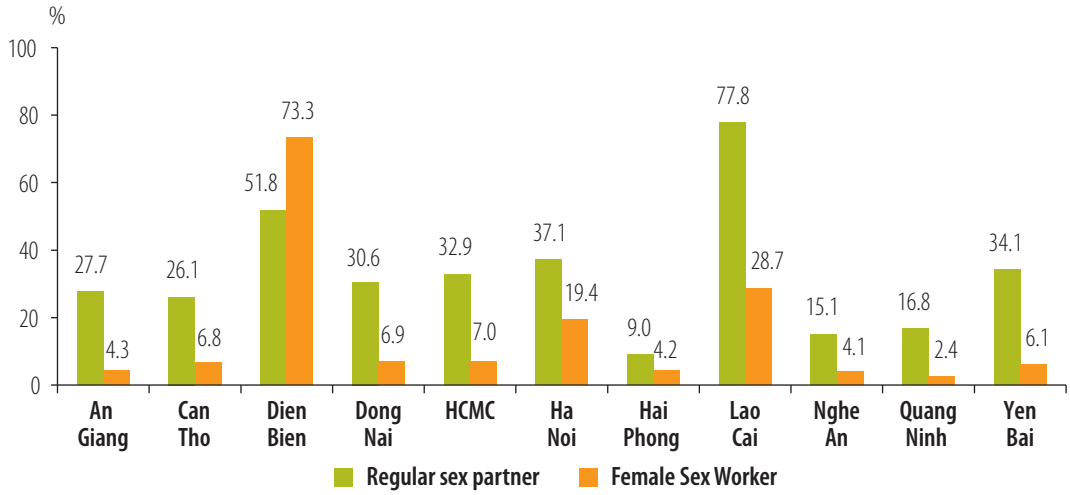
Round II data show that a significant proportion of HIV-positive IDU are sexually active. Thirty to 68% of HIV-positive IDU reported that they had sex with their regular partners in the past year. Yen Bai was of particular concern (Figure 19). While 57% of HIV-positive IDU in Lao Cai reported having sex with regular partners, the province had one of the lowest reported consistent condom use rates among IDU with regular partners, at 16% (Figure 17). Almost half of the HIV-positive IDU in Hanoi reported sexual activity with sex workers.

Figure 19: Proportion of HIV-positive IDU reporting having had sex in the last 12 months by partner type – IBBS 2009



Consistent condom use within the past year among HIV-positive IDU varies considerably by province. Roughly one-third of HIV-positive IDU surveyed in 2009 had regular sex partners and reported that they did not consistently use condoms during sex. Over 50% of HIV-positive IDU in Lao Cai and Dien Bien reported inconsistent condom use with their regular partners, Lao Cai at an alarming 78%. HIV-positive IDU reported more consistent condom use with FSW, but data from provinces including Dien Bien, Lao Cai and Hanoi show considerable need for targeted prevention messaging for this group (Figure 20).

Figure 20: Proportion of HIV-positive IDU who had unprotected sex by partner type in the last 12 months – IBBS 2009[4]

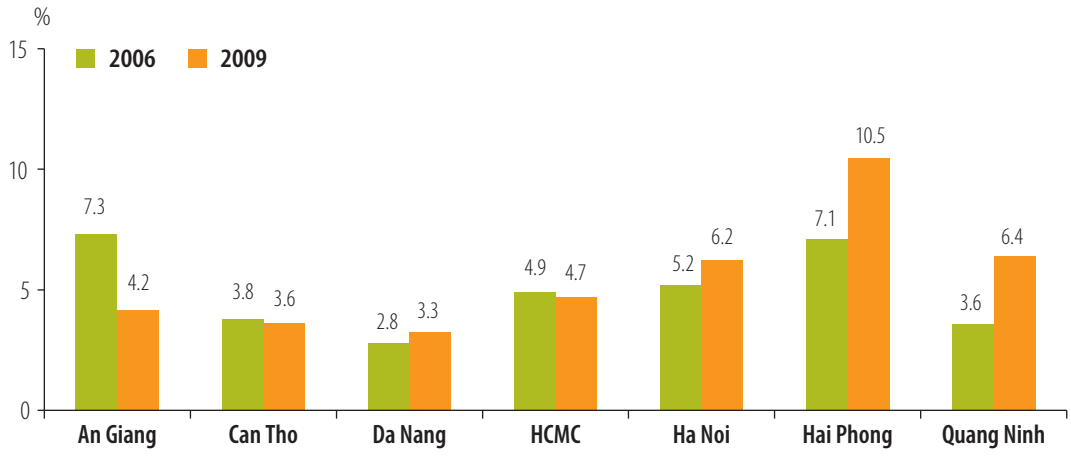


2. Female sex workers

The following are the main behavioral indicators on female sex workers (FSW) including sexual and injecting behaviors. More detailed data are presented in Appendix 6.

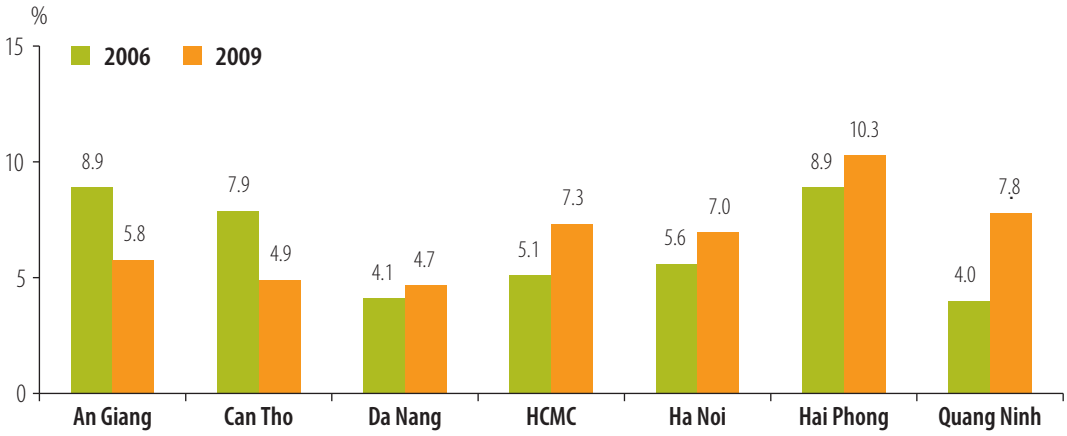
Client frequency varied considerably among FSW in surveyed provinces. FSW in provinces including Hai Phong, Nghe An, and Dong Nai averaged significantly more clients than other provinces, at more than 10 clients per week. Street-based sex workers (SSW) in Nghe An averaged the highest number of clients per week, at 24. FSW in other provinces averaged closer to five clients per week. A comparison of data from 2006 and 2009 shows that client frequency increased slightly in most provinces for both VSW and SSW.

Figure 21a: Average number of clients in the last week per VSW– IBBS 2006 and 2009



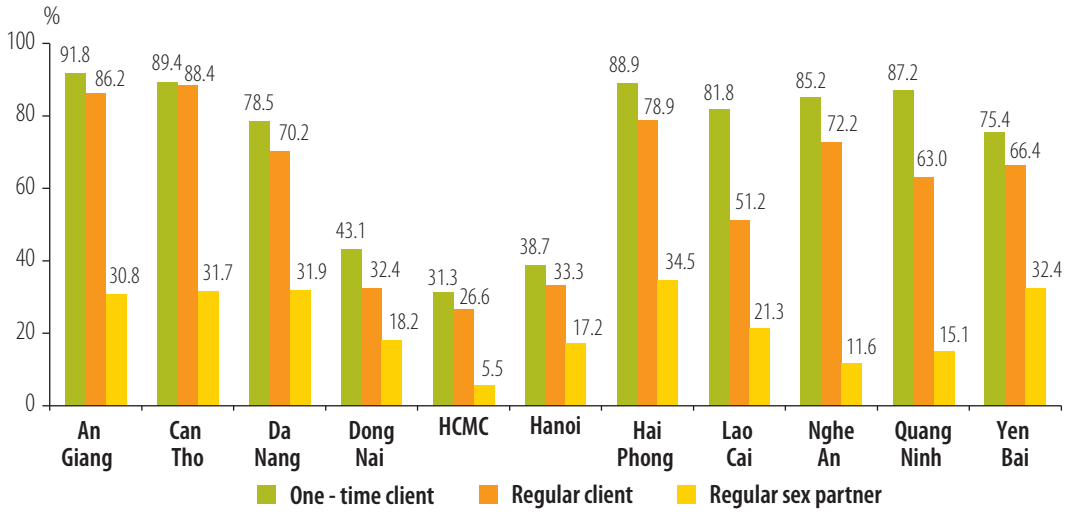
[4] Denominator: Total of the IDUs participated in the study

Figure 21b: Average number of clients in the last week per SSW– IBBS 2006 and 2009



While condom use with regular *clients* at last sex among FSW was reportedly high in most provinces, consistent condom use in the last month varied considerably, and was particularly low in Hanoi, HCMC and Dong Nai. FSW reported using condoms more consistently with one-time clients than with regular clients.

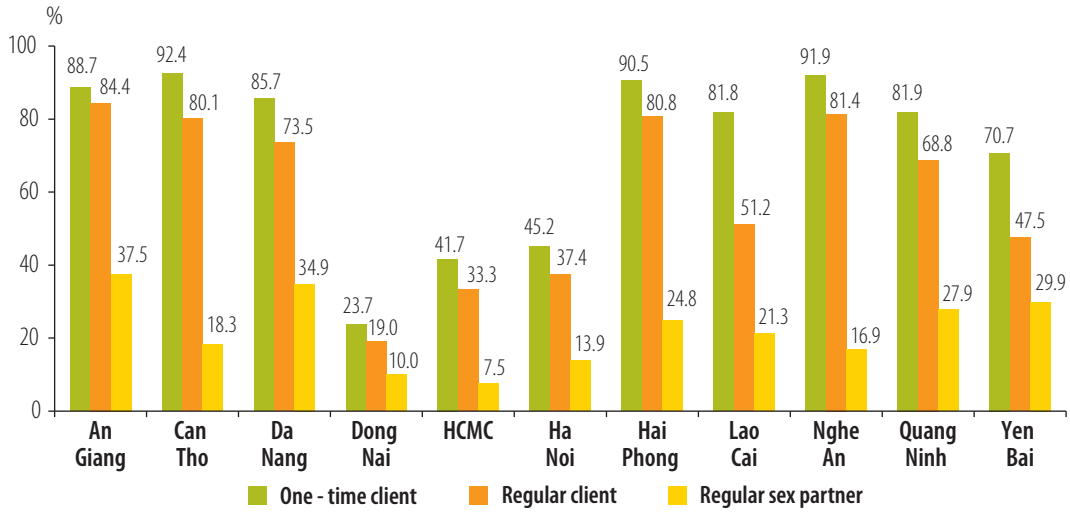
Figure 22a: Consistent condom use in the last month among SSW by sex partner type – IBBS 2009



Consistent condom use with regular partners in the last month was low in all provinces for both VSW and SSW. Provinces with the lowest reported consistent condom use with regular partners among SSW included Hanoi, Quang Ninh, HCMC, Nghe An and Dong Nai (under 20%). Provinces with the lowest reported condom use with regular partners among VSW included and Hanoi, HCMC, Can Tho, Nghe An and Dong Nai (under 20%).

In general, consistent condom use did not vary considerably between SSW and VSW, with the exception of Dong Nai. Consistent condom use in the last month among SSW in Dong Nai was twice as high as that of VSW (39% vs. 21%).

Figure 22b: Consistent condom use in the last month among VSW by sex partner type – IBBS 2009



A comparison of data on consistent condom use from Rounds I and II shows variation among provinces. Provinces with more consistent condom use include An Giang, Hai Phong, and particularly Quang Ninh, where consistent condom use in the last month with one-time clients more than doubled for SSW from 35% to 77%, and nearly tripled with regular clients (24% to 69%).

Conversely, data from Hanoi and HCMC are concerning. For both SSW and VSW, consistent condom use appears to have dropped considerably both for one-time and regular clients. In HCMC, consistent condom use among SSW more than halved from 69% to 31% for one-time clients (Figure 23a), and 64% to 27% for regular clients (Figure 24a). Among VSW it dropped from 81% to 42% for one-time clients (Figure 23b), and 72% to 33% for regular clients (Figure 24b).

Figure 23a: Consistent condom use in the last month with one-time clients among SSW – IBBS 2006 and 2009

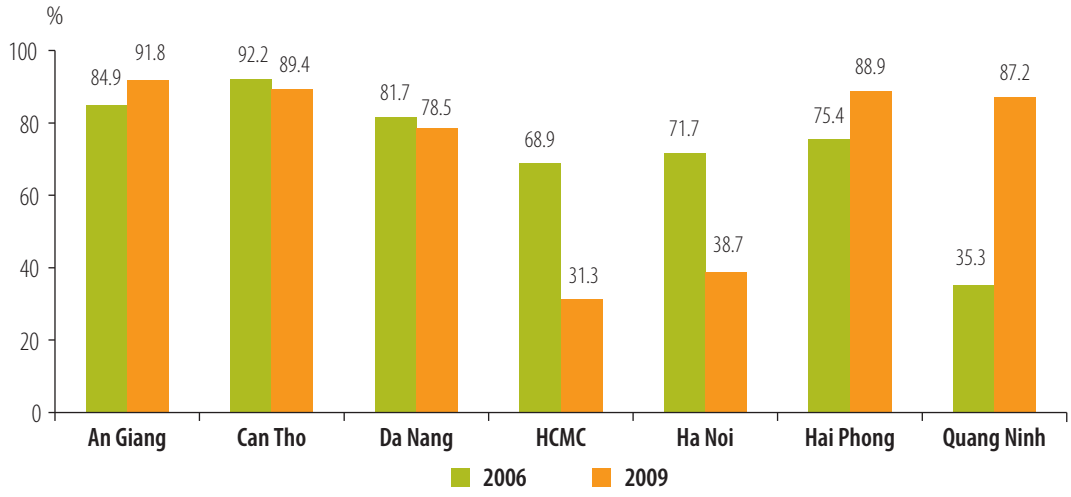


Figure 23b: Consistent condom use in the last month with one-time clients among VSW – IBBS 2006 and 2009

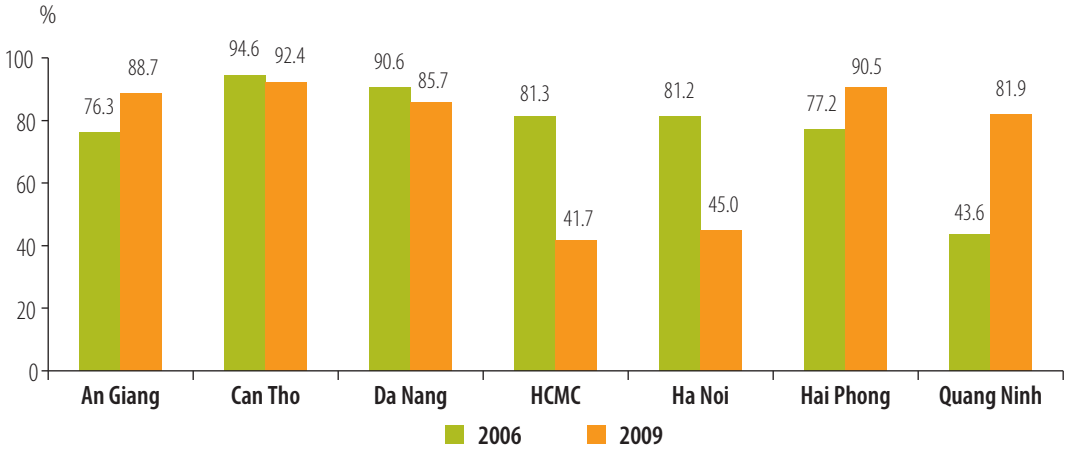


Figure 24a: Consistent condom use in the last month with regular clients among SSW – IBBS 2006 and 2009

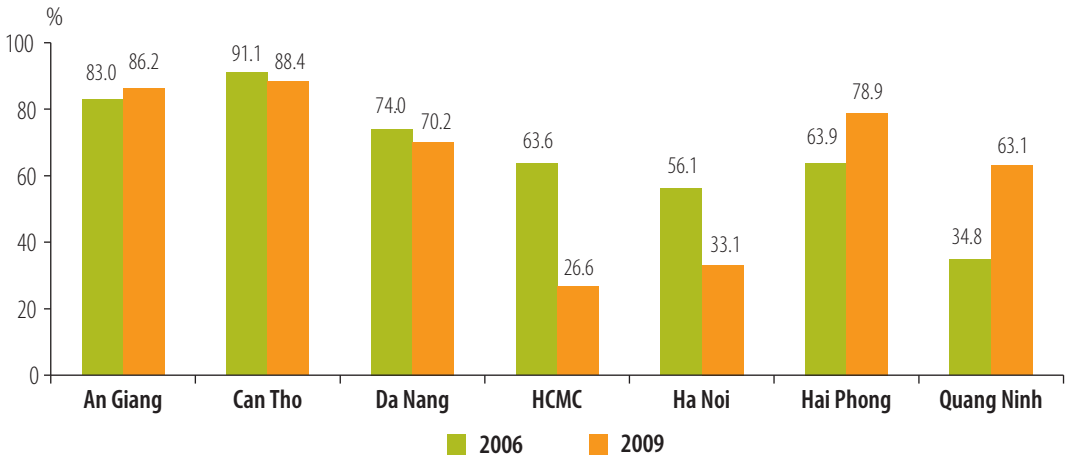
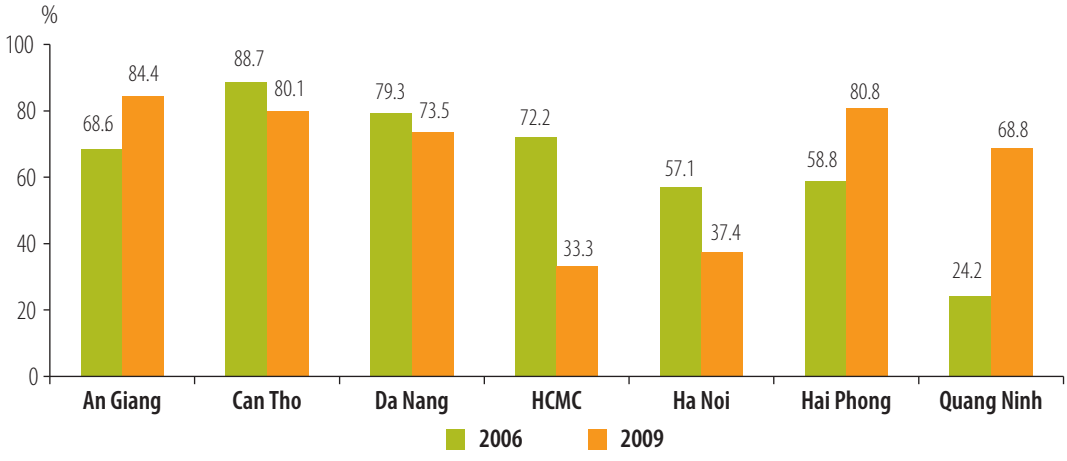


Figure 24b: Consistent condom use in the last month with regular clients among VSW – IBBS 2006 and 2009



Consistent condom use in the last month with regular partners was low for both Rounds I and II. However, some provinces saw notable increases, including Hai Phong, Da Nang, and Can Tho. Provinces with considerable decreases in consistent condom use with regular partners among SSW included Quang Ninh, HCMC and An Giang, the most concerning being HCMC, with a decrease from 24% to under 6%. Hanoi, HCMC and An Giang showed decreases in consistent condom use with regular partners among VSW as well (Figure 25a, 25b).

Figure 25a: Consistent condom use in the last month with regular partners among SSW – IBBS 2006 and 2009

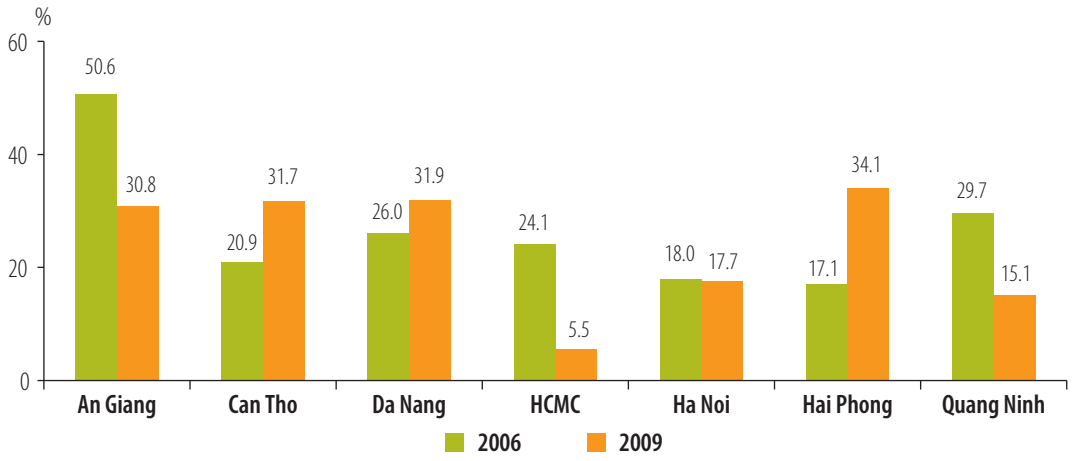
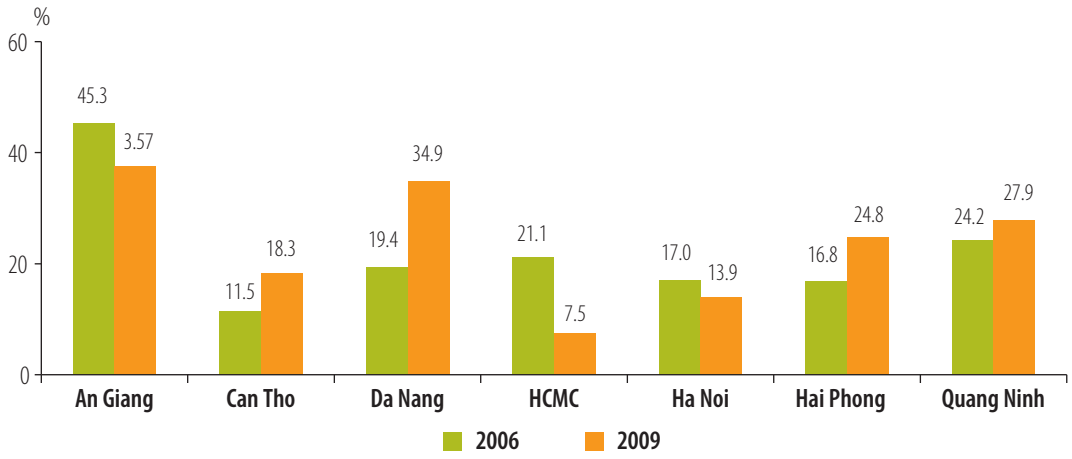


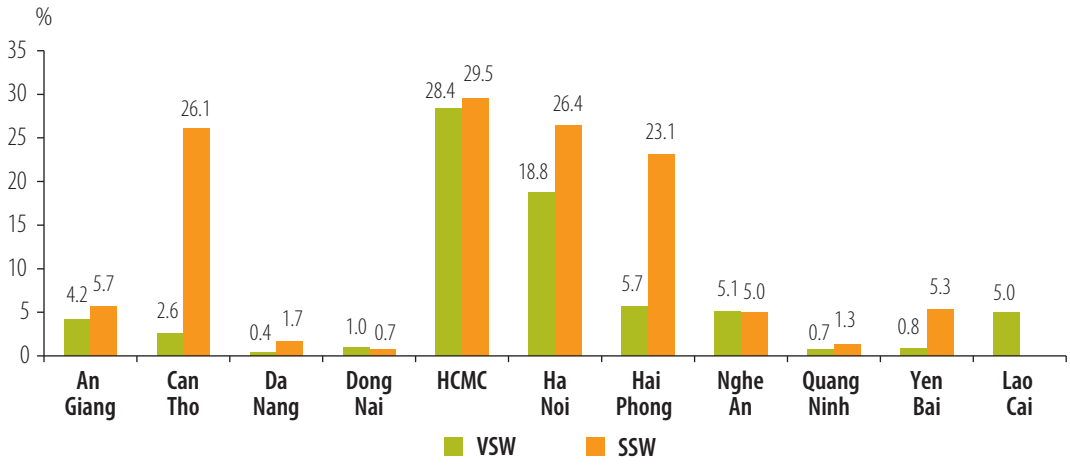
Figure 25b: Consistent condom use in the last month with regular partners among VSW - IBBS 2006 and 2009



Sex workers in Vietnam face drug-related risks in addition to sex-related risks. The IBBS examines general drug use (non-injection) and injection drug use. However, because data are self-reported and drug use among sex workers constitutes a double stigma, drug use may be comparatively underreported in this population group.

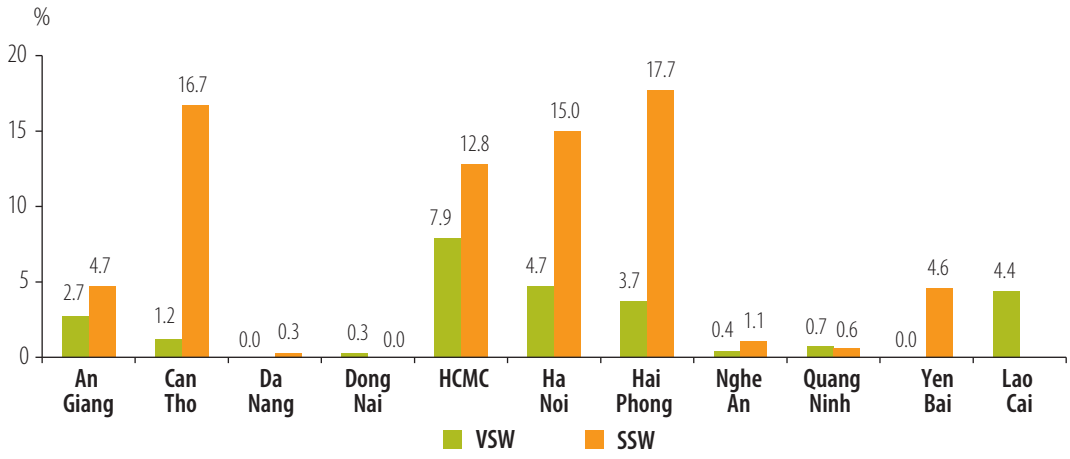
Figure 26 shows the percentage of surveyed FSW who have ever used drugs. Drug use among FSW is generally much higher in urban hubs and ports, like Hanoi, Hai Phong, HCMC and Can Tho, especially among SSW. SSW generally report more drug use than VSW.

Figure 26: Ever used drugs among FSW – IBBS 2009



Drug injection is considerably high in the provinces where reported drug use is also high (Hanoi, Hai Phong, HCMC, Can Tho). In these provinces, the majority of FSW who use drugs also inject. SSW were much more likely to report drug injection than VSW.

Figure 27: Proportion of FSW who ever injected drugs - IBBS 2009



Drug injection among SSW increased substantially in Hai Phong and HCMC between 2006 and 2009, where the proportion in each province more than doubled. Drug injection appears to have stabilized or reduced for the other provinces surveyed in both IBBS rounds.

Figure 28a: Drug injection among SSW – IBBS 2006 and 2009

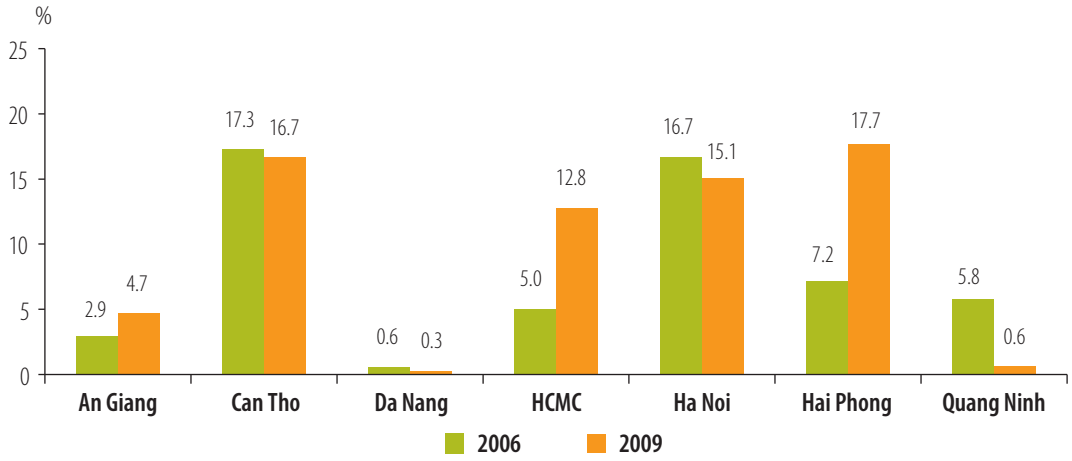
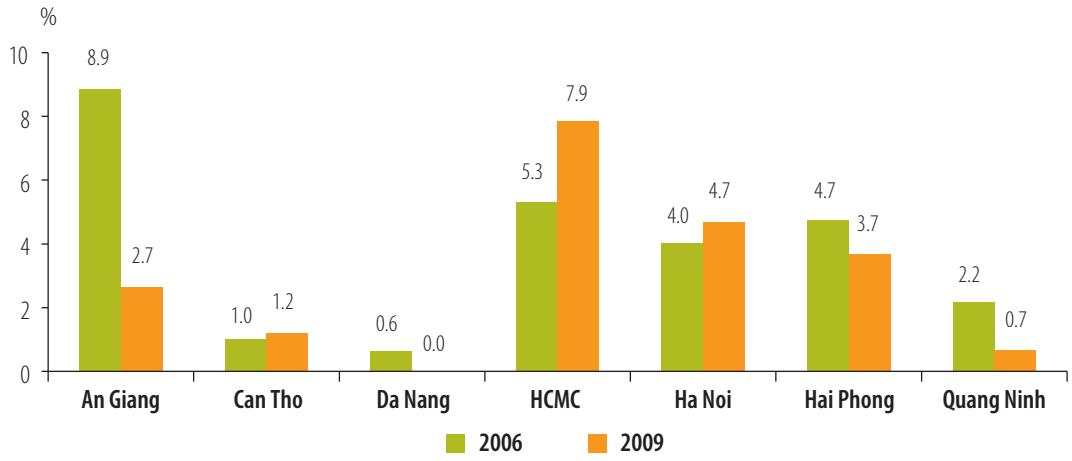
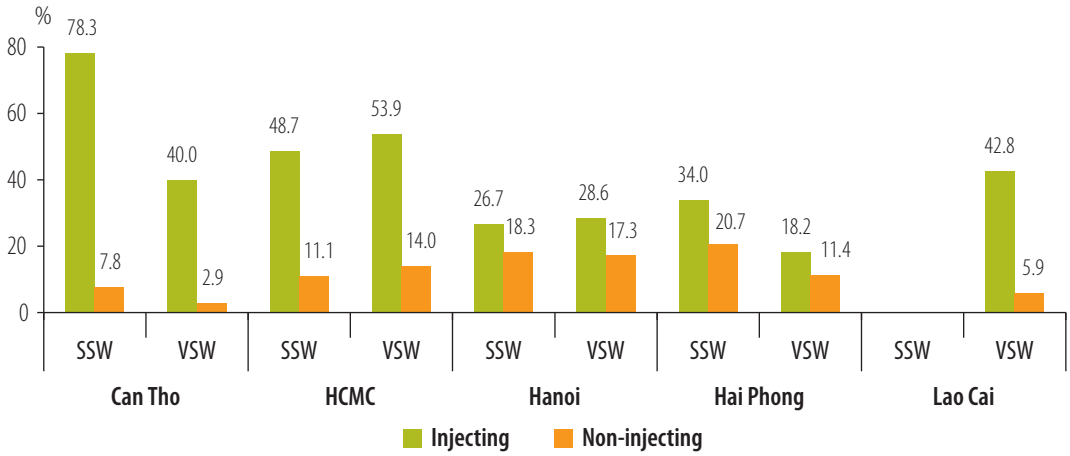


Figure 28b: Drug injection among VSW – IBBS 2006 and 2009



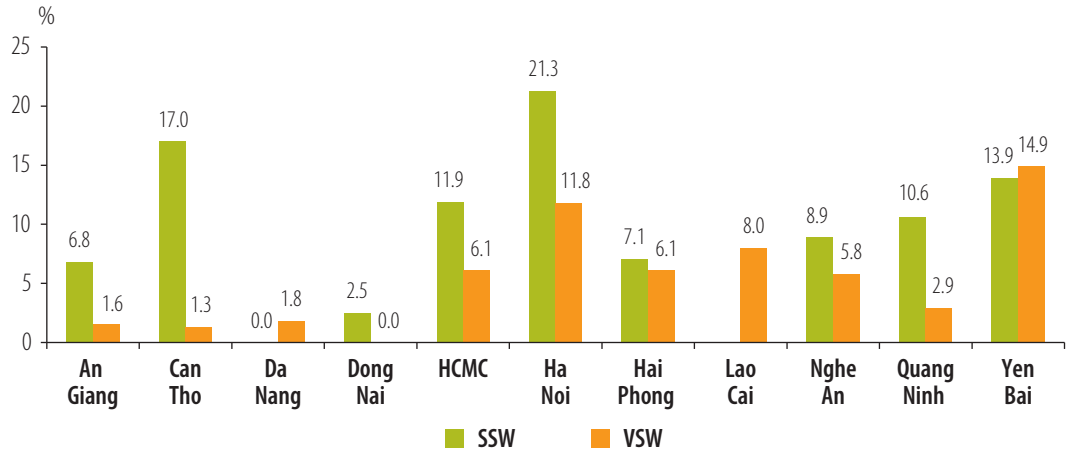
Drug injection remains a critical risk factor for HIV transmission among FSW. HIV prevalence for FSW who inject drugs was higher than those who did not inject drugs in all provinces surveyed. Prevalence is especially high among FSW who inject in Can Tho, HCMC, Lao Cai, Hai Phong, and Hanoi. In Can Tho, the difference was stark; 78% of SSW who inject was HIV-positive versus 8% for those who did not. SSW and VSW who injected in HCMC had comparably high prevalences at 49% and 54%, versus 11% and 14% for those who did not inject. Injecting FSW prevalence figures were equal to or higher than those of male IDU in the same provinces.

Figure 29: HIV infection among FSW who inject drugs and who do not inject drugs – IBBS 2009



A significant proportion of FSW in major urban centers, with the exception of Da Nang, reported that they have drug-injecting non-commercial sex partners. Over 10% of SSW in Hanoi, Quang Ninh, HCMC, Can Tho and Yen Bai reported their regular sex partners inject drugs. SSW were much more likely to report sexual partnerships with IDU than VSW in all provinces, with the exception of Yen Bai and Da Nang.

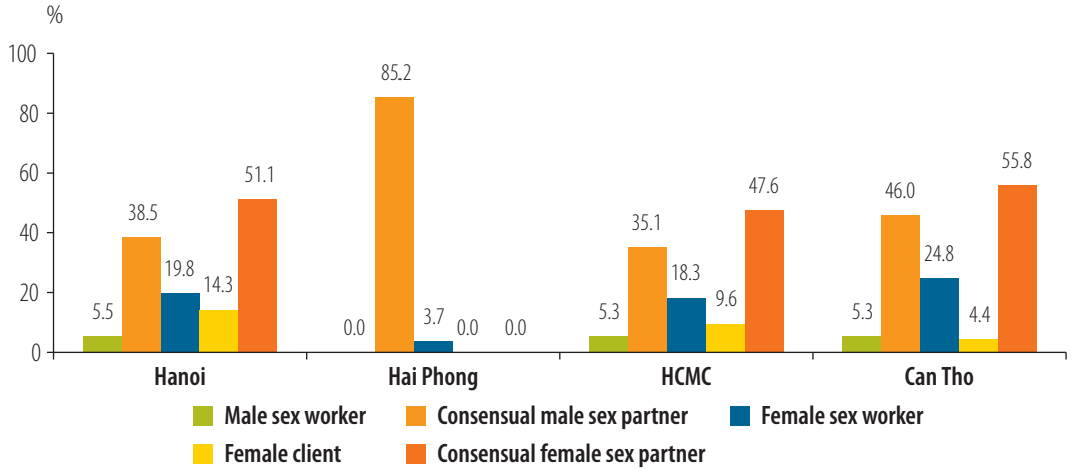
Figure 30: Proportion of FSW who reported that their regular sex partners inject drugs – IBBS 2009



3. Men who have sex with men

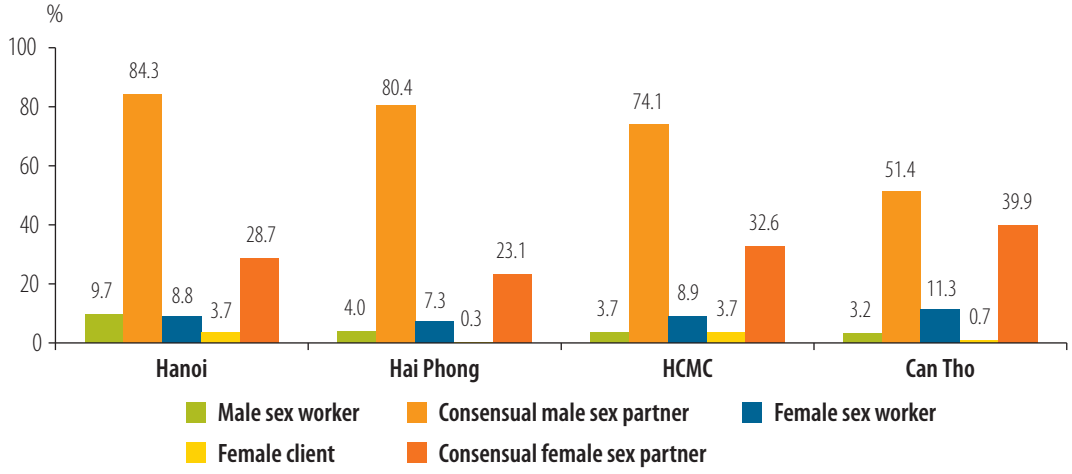
MSM were divided into two strata: those who had sold sex for money, and those who had not. MSM from these two categories had considerably different sexual liaisons, especially with respect to consensual male and female sex partners and female sex workers.

Figure 31a: Proportion of MSM who sold sex reporting they had sex with a male partner in the last month and a female partner in the last 12 months, by partner type IBBS 2009



A large proportion of MSM who sold sex said they have had sex with women as consensual sex partners in the past 12 months in three of the four survey provinces. Not including Hai Phong, where MSM who sold sex overwhelmingly have had sex with male sexual partners, 47-56% reported consensual sexual partnerships with women at least once in the past 12 months, versus 35-46% with men at least once in the past month. MSM who sold sex were also more likely to report sex with FSW (up to 25% in Can Tho) in the past 12 months.

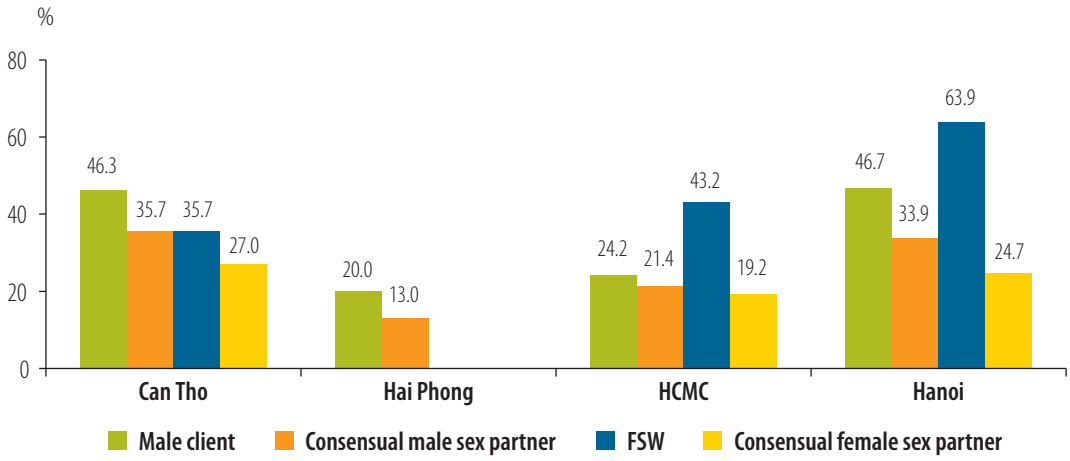
Figure 31b: Proportion of MSM who did not sell sex reporting they had sex with a male partner in the last month and a female partner in the last 12 months, by partner type – IBBS 2009



Conversely, only 7-11% of MSM who did not sell sex reported sex with FSW. While these MSM generally preferred consensual male sexual partners, many also reported sexual relations with consensual female partners (from 23-40%) at least once in the past month.

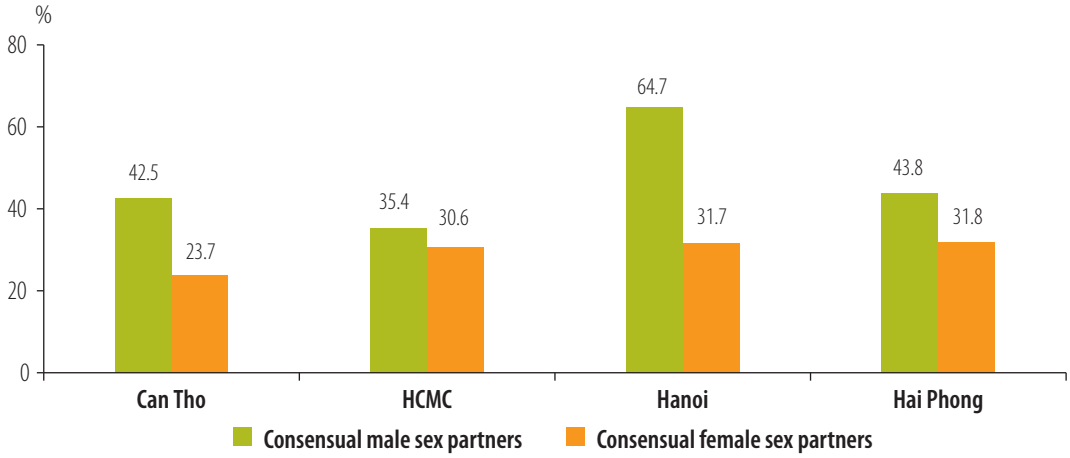
Consistent condom use among MSM who sold sex with their various partners was low - under 50% in all cities except Hanoi, where 64% of MSM reported consistent condom use with FSW. Consistent condom use with consensual female partners (in the last 12 months) was lower than with consensual male partners (in the past one month).

Figure 32: Consistent condom use in the past month with male partners and in the last 12 months with female sex partners among MSM who sold sex – IBBS 2009



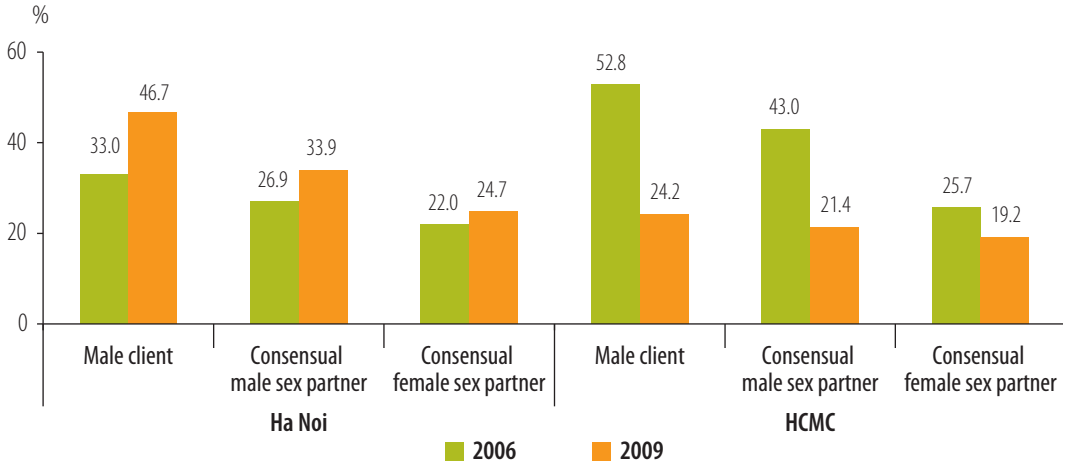
MSM who did not sell sex reported comparably low consistent condom use with both consensual female and male partners. HCMC reported the lowest consistent condom use at 35% in the past month for consensual male partners and Can Tho at 24% for consensual female partners in the past year.

Figure 33: Consistent condom use in the past month with consensual male sex partners and in the last 12 months with consensual female sex partners among MSM who did not sell sex – IBBS 2009



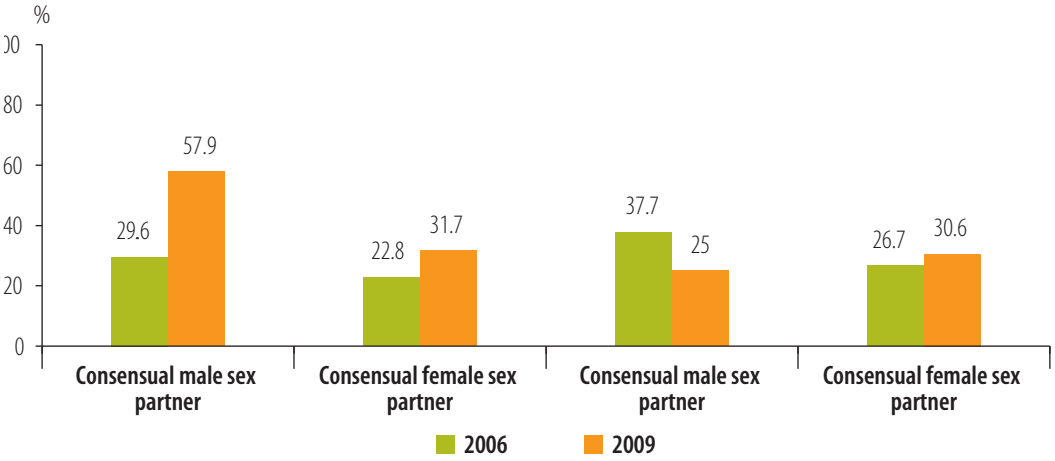
Comparisons of data between Rounds I and II show different results for Hanoi and HCMC. Consistent condom use among MSM who sold sex in Hanoi was higher in 2009 than in 2006 for all types of partners. Conversely, consistent condom use in HCMC dropped precipitously for male clients and consensual male partners, and 26% to 19% for consensual female partners.

Figure 34: Consistent condom use in the past month with male sex partners and in the last 12 months with female sex partners among MSM who sold sex - IBBS 2006 and 2009



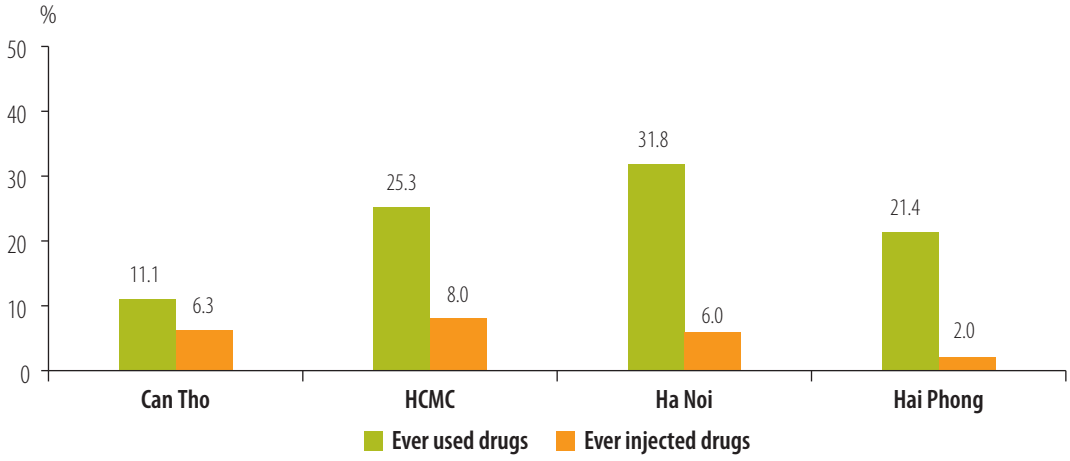
Round I and II comparison data for MSM who did not sell sex in Hanoi and HCMC were similar, though not as severe in HCMC. Consistent condom use among MSM who did not sell sex in Hanoi increased dramatically with consensual male sex partners (more than doubled), and also increased for consensual female partners. HCMC, however, saw reductions in reported consistent condom use with consensual male sex partners from 2006 to 2009.

Figure 35: Consistent condom use in the past month with male partners and in the last 12 months with female sex partners MSM who did not sell sex - IBBS 2006 and 2009



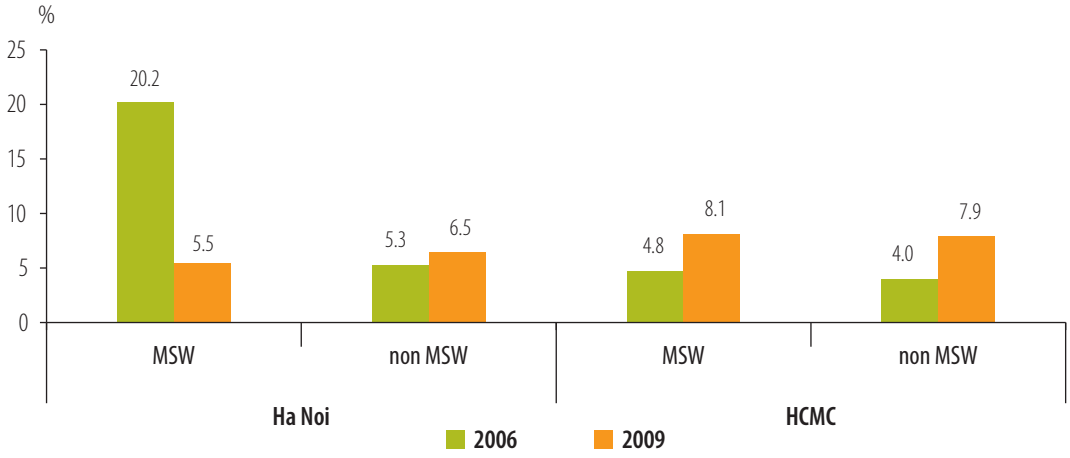
Like FSW and IDU, MSM face drug- and sex-related risks, both of which increase their chances of acquiring HIV. Figure 36 shows the percentage of MSM who reported drug use in 2009. Drug use ranged from one in ten (Can Tho) to one in three (Hanoi). Reported drug injection was relatively low, the highest proportion in HCMC, at 8%.

Figure 36: Proportion of MSM who ever used drugs and ever injected drugs – IBBS 2009



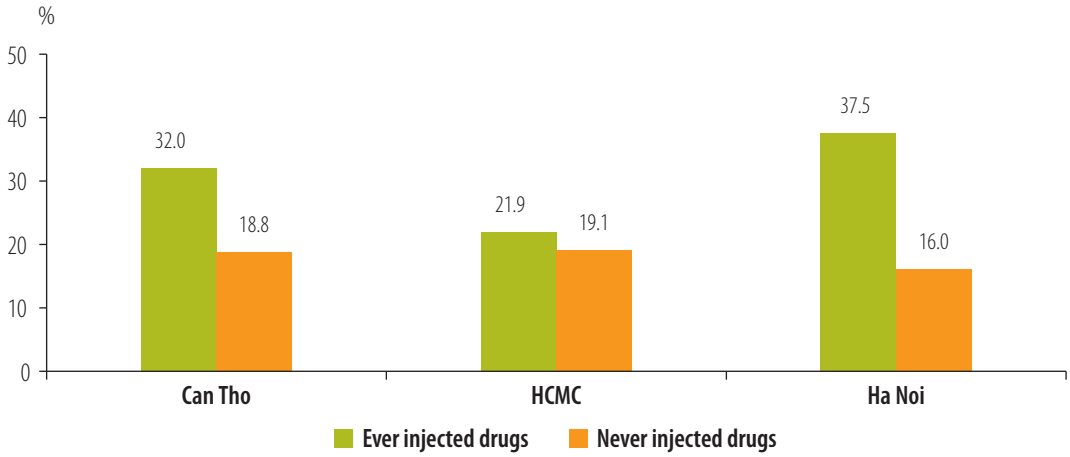
Drug injection practices appear to have changed little between 2006 and 2009, with the exception of MSM who sold sex in Hanoi. Drug injection among this population was considerably lower in 2009 (from 20% to 5%). Other groups saw slight increases.

Figure 37: Proportion ever injected drugs among MSM had sold sex (MSW) and MSM had not sold sex (non MSW) in Hanoi and HCMC - IBBS 2006 and 2009



Data on drug injection and HIV prevalence among MSM mirror those for FSW: drug injection appears to be associated with HIV infection. More than twice as many drug-injecting MSM were HIV-positive in Hanoi compared to those who did not inject. Data for Can Tho were similar, while MSM who injected in HCMC had slightly higher HIV prevalence than those who did not.

Figure 38: HIV prevalence among MSM by drug injected/never injected status – IBBS 2009

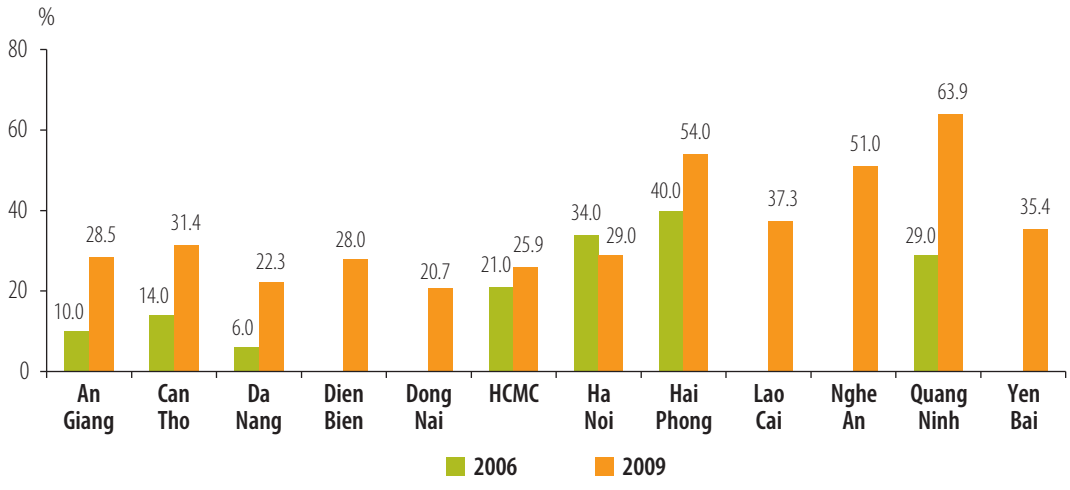


III. EXPOSURE TO INTERVENTIONS

This section provides information on the coverage of interventions that respondents were exposed to in the last six months. It is important to note that intervention coverage is likely to have changed at the study sites since the 2009 IBBS data were collected. More data on interventions can be found in Appendix 5-7.

In all provinces but Hanoi, the proportion of IDU who were tested and were aware of their HIV status was significantly higher in 2009 than in 2006. Quang Ninh and Da Nang saw the largest increases, more than two-fold in Quang Ninh and more than three-fold in Da Nang. Despite these increases, fewer than 30% of IDU accessed counseling and testing services in the majority of provinces.

Figure 39: Proportion of IDU who ever tested for HIV and known the results



Although HIV testing primarily increased among FSW, except in Quang Ninh, rates remained low except in a few provinces. In general, more SSW reported that they tested for and known the results than VSW. The proportion ranged from 3% (Lao Cai) to 86% (Nghe An) for VSW, versus 21% (Yen Bai) to 79% (Hai Phong) for SSW. Testing in the newly surveyed provinces of Lao Cai and Yen Bai was significantly lower than the other provinces.

Figure 40a: Proportion of VSW ever tested for HIV and known the results

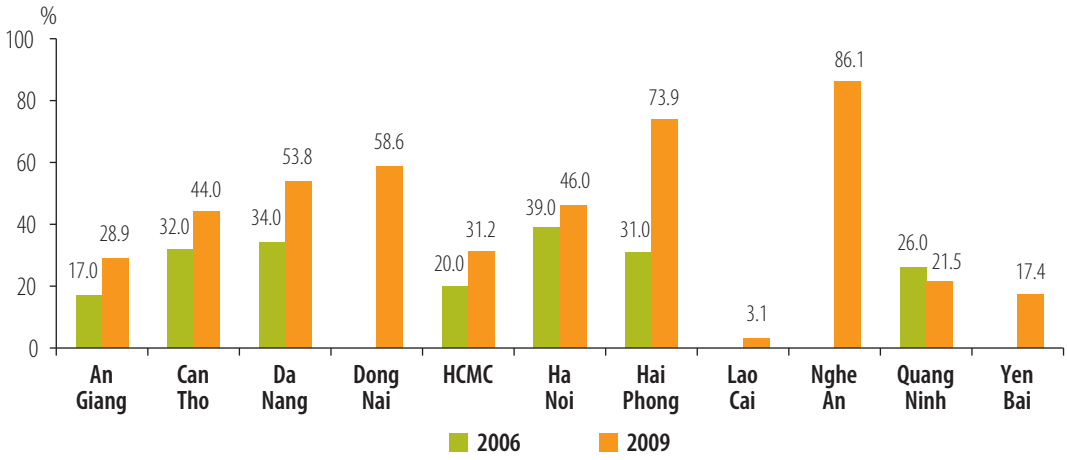
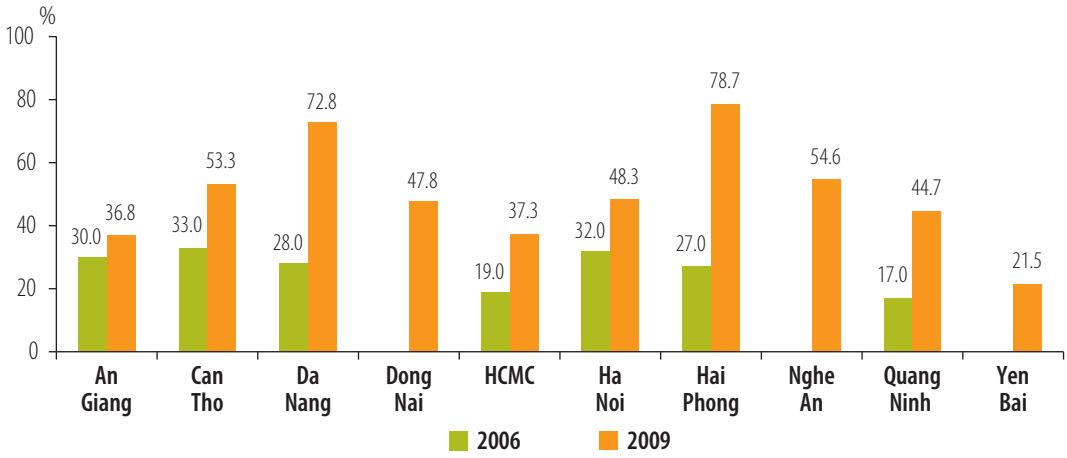
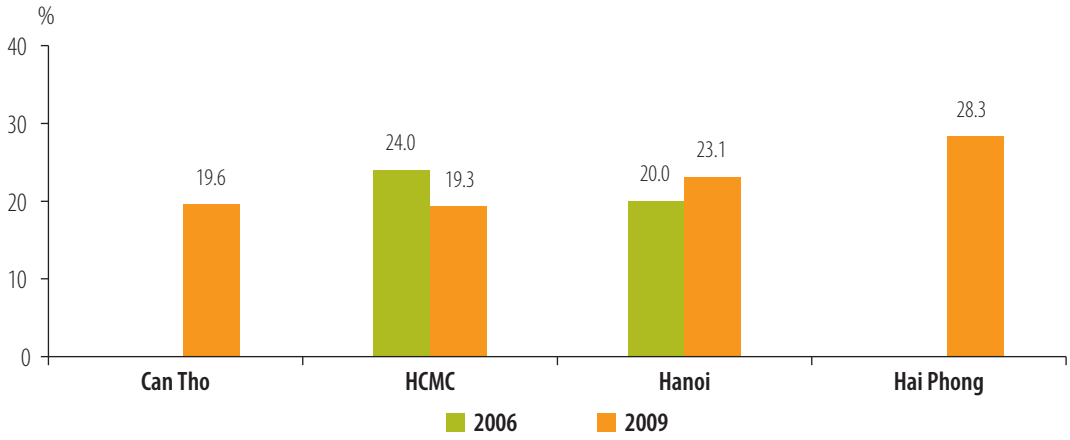


Figure 40b: The proportion of SSW ever tested for HIV and known the results



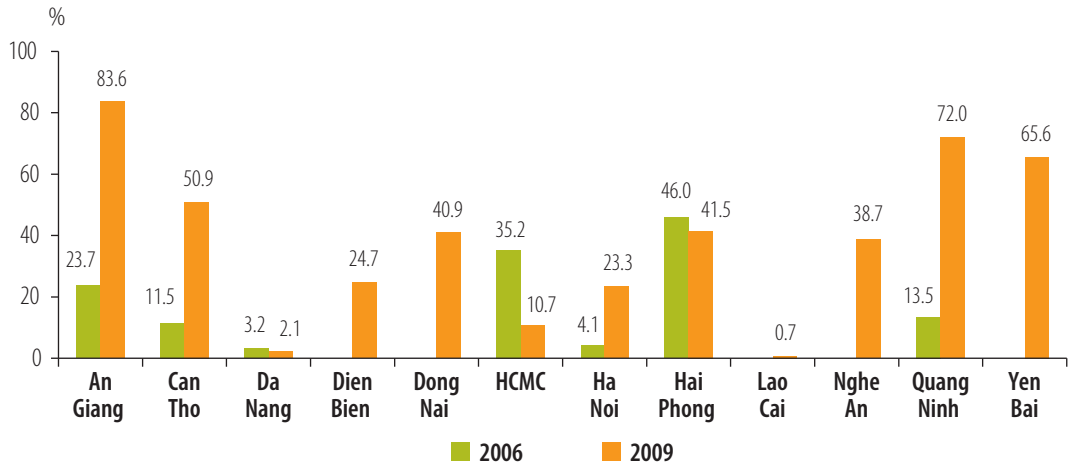
Testing for MSM was also low in all four MSM provinces surveyed. While Hanoi saw only a slight increase in the proportion of MSM tested and returned their results from 2006 to 2009, HCMC saw a substantial decrease (from 24% to 19%). This outcome requires further investigation, given the significant expansion of HTC in HCMC during the period 2006-2009.

Figure 41: Proportion of MSM ever tested for HIV and known the results



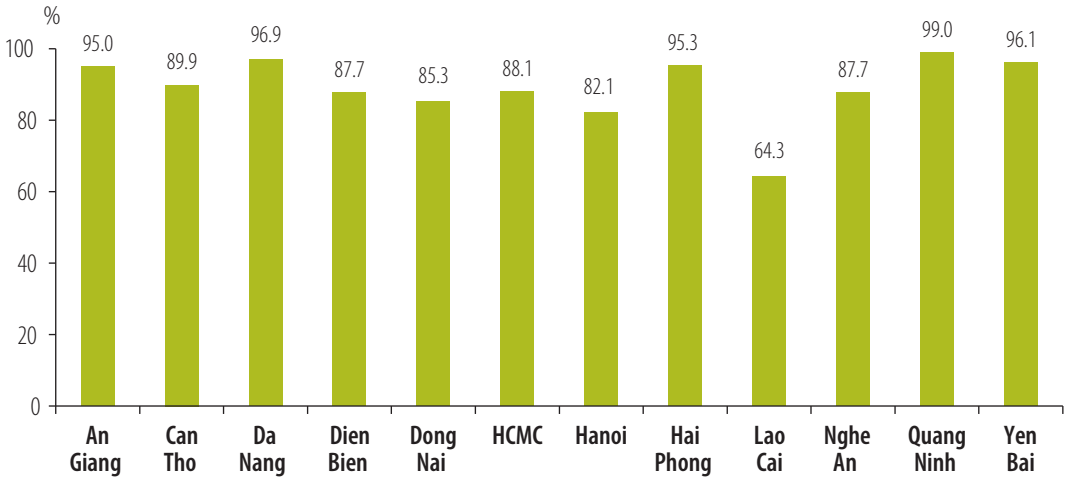
The proportion of IDU who accessed free needles and syringes varied widely by provinces. Four of the seven provinces surveyed in 2006 showed substantial increases in 2009 in the proportion of IDU who reported obtaining free needles and syringes in the last six months. Changes were most significant in Can Tho, Quang Ninh and An Giang, with a three-fold increase in both. Despite these positive changes, obtainment of free needles/syringes in most provinces remained low. 23% of IDU in Hanoi reported obtaining free needles and syringes in 2009, 11% in HCMC, and 2% in Da Nang. HCMC saw a significant reduction in reported exposure to free needles and syringes, down from 35% in 2006.

Figure 42: Proportion of IDU who obtained free needles/syringes within the last 6 months – IBBS 2006 and 2009



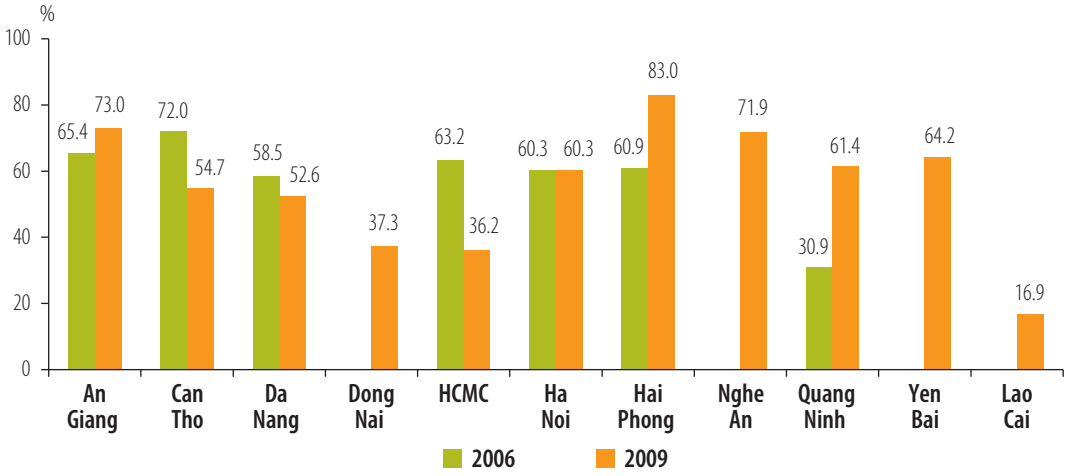
Despite relatively low obtainment of free needles and syringes in critical provinces, the overwhelming majority of IDU reported that they were able to purchase or obtain new needles and syringes when needed. Access ranged from 64% in Lao Cai, to up to 99% in provinces surveyed. In most provinces, 80% of IDU or above reported being able to access free needles and syringes when needed.

Figure 43: Proportion of IDU who were able to purchase or obtain new needles and syringes when needed – IBBS 2009



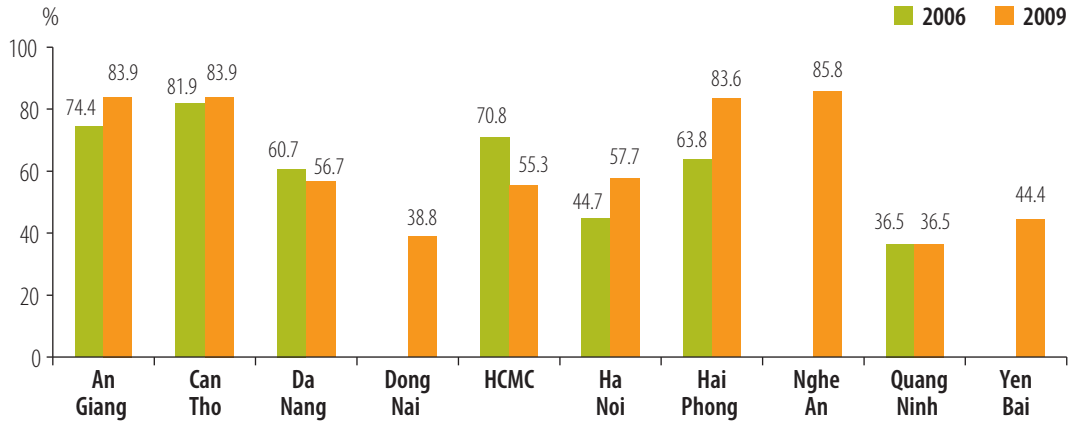
The majority of FSW surveyed in 2009 reported that they had obtained cheap or free condoms in the last six months. However, over 60% of FSW in HCMC, Lao Cai and Dong Nai reported they had not. Some provinces saw overall reductions in reported access to cheap/free condoms between 2006 and 2009 (HCMC, Can Tho and Da Nang). Others saw significant overall increases (Hai Phong and An Giang).

Figure 44a: Proportion of VSW who obtained cheap or free condoms within the last 6 months – IBBS 2006 and 2009



Disaggregation of data between VSW and SSW shows significant differences in access to cheap/free condoms for the two subgroups in a number of provinces. Overall, a higher proportion of SSW reported accessing cheap/free condoms. . Over 80% of SSW in Hai Phong, An Giang, Can Tho and Nghe An reported accessing cheap/free condoms in the last six months.

Figure 44b: Proportion of SSW who obtained cheap or free condoms within the last 6 months – IBBS 2006 and 2009



Over 40% of MSM surveyed Hanoi, HCMC and Can Tho reported obtaining free condoms within the last six months. The proportion of MSM in Hai Phong was comparatively lower, especially among MSM who had sold sex for money (7%). A comparison of data from 2006 and 2009 shows that obtainment of free condoms among MSM has slightly increased in Ha Noi and HCMC.

Figure 45: Proportion of MSM had sold sex (MSW) and MSM had not sold sex (non MSW) who obtained free condoms in the last six months – IBBS 2009

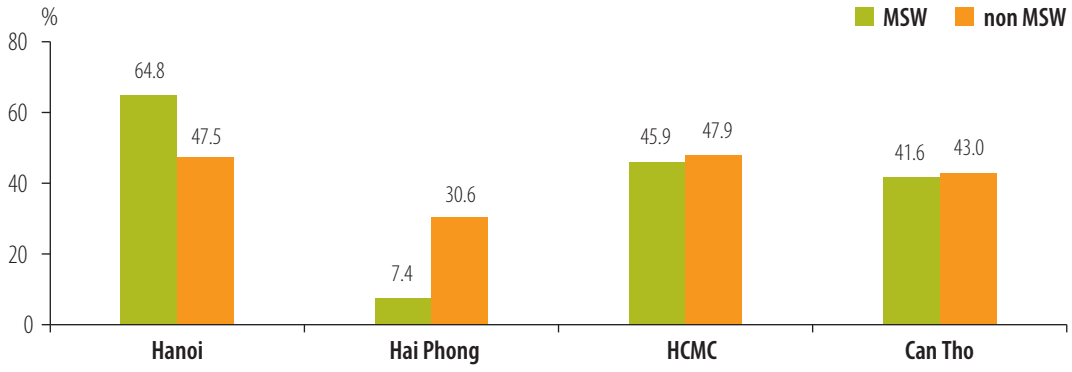
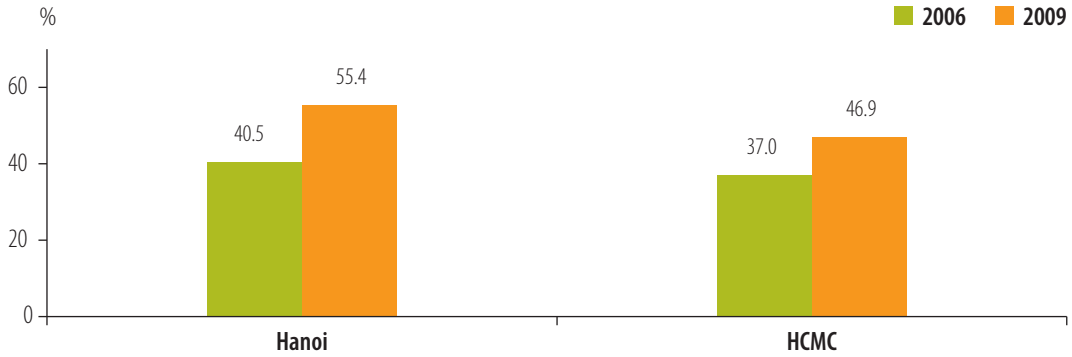


Figure 46: Percentage of MSM who obtained condoms within the last 6 months – IBBS 2006 and 2009



Conclusions and Recommendations

The HIV epidemic in Vietnam is a series of localized epidemics

The 2009 IBBS data suggest that the HIV epidemic in Vietnam can be characterized as a series of localized epidemics in each province, with discrepancies within some provinces. Provinces showed wide variation in HIV and STI prevalence, sexual and drug-related risk behaviors, partnerships, testing, and programmatic reach and exposure. Comparison data from the two IBBS rounds show that provinces vary widely in terms of the potential directions their epidemics are headed across MARP groups. While caution must be taken in using comparison data to denote upward or downward leaning trends (see below), provinces will need to implement specialized approaches that cater to the individual needs of their local epidemics based on local epidemiology, and sufficient human and financial resources to address them.

HIV prevalence remained over 10% among MARP groups in most provinces

Despite evidence of stabilization of HIV prevalence for some MARP groups in some provinces, prevalence remains high (over 10%) for IDU, FSW and MSM in most provinces surveyed. Roughly one in two IDU in Hai Phong, HCMC, Quang Ninh and Dien Bien are HIV positive; roughly one in five FSW in Hanoi, Hai Phong, HCMC and Can Tho are HIV positive; and roughly one in five MSM in Hanoi are HIV positive. It is critical to note that stabilized or decreased HIV prevalence does not necessarily mean reduced incidence of new HIV infections. HIV prevalence includes new and old infections and people on antiretroviral drugs. HIV incidence estimation is needed.

Drug injection and needle sharing must be addressed across MARP groups

IBBS data suggest that drug injection and HIV status are strongly correlated. FSW who injected drugs were between 1.5 to 10 times more likely to have HIV than those who did not. Approximately 78% of injecting FSW in Yen Bai were HIV positive, compared to 8% of non-injecting FSW. MSM who injected had roughly twice the HIV prevalence as those who did not in Hanoi and Can Tho. While the proportion of IDU among FSW appears to be on the increase, this is not being seen in the MSM population, although this may be a result of reporting bias since there was an increase in the number of MSM who reported that their sex partners injected drugs. Many FSW report drug-injecting regular sex partners (over 20% for SSW in Hanoi). Needle and syringe sharing among IDU was relatively high in most provinces surveyed, with over 20% of IDU reporting sharing in the last six months in all but three provinces (Hai Phong, Can Tho and An Giang). IDU are also sexually active, and reported condom use with regular partners and sex workers was low. At least one in four IDU had unprotected sex with their regular partner in the last six months in eight of the 12 provinces surveyed.

These data call for strengthened comprehensive drug prevention and treatment interventions, including harm reduction for reduced needle sharing, and community-

based addictions counseling and methadone treatment for all qualifying individuals. Interventions must expand targeting beyond traditional drug user networks to include MSM and FSW who inject or are at risk of injecting drugs.

Consistent condom use must be increased and maintained among MARP groups

Despite increases in reported consistent condom use among all three MARP groups in some provinces, the majority of IBBS comparison provinces showed stabilized or reduced condom use across all groups. Data for SSW in Hanoi and HCMC are particularly concerning. Consistent condom use with regular clients fell from 56% in 2006 to 33% in 2009, and 64% to 27% respectively. Data for VSW in the same provinces showed comparable decreases. FSW condom use with regular partners was significantly lower than with clients in all provinces. In addition, many FSW reported they had drug-injecting partners. Over 10% of SSW reported drug injecting partners in four provinces, and over 5% in nine provinces surveyed.

Commercial sex remains a risk factor for both IDU and MSM. Over 10% of IDU in the majority of IBBS 2009 provinces reported they had sex with sex workers, up to 48% in Hanoi. While most HIV-positive IDU reported relatively low unprotected sex with FSW in the last 12 months, certain provinces are concerning. Twenty percent of HIV-positive IDU in Hanoi, 29% in Lao Cai, and 73% in Dien Bien reported they had unprotected sex with a sex worker in the last 12 months. Roughly half of MSM who sold sex reported consistent condom use in the last 12 months with clients. MSM who sold sex were also more likely to have consensual female partners with whom consistent condom use was reportedly lower than with other partners in the majority of provinces.

Consistent condom use interventions need to extend further from FSW and MSM who sell sex to their clients and partners, especially for those with injecting partners. Condom social marketing needs to be broadened to reach more FSW working in karaokes, entertainment venues and brothels. Provinces with particularly low condom use among IDU, both with FSW and regular sex partners, need to expand innovative interventions rapidly to mitigate potentially explosive localized epidemics.

Sexually transmitted infection prevalence is highest among MSM

STI prevalence generally decreased for FSW in Hanoi and HCMC, with the exception of SSW in HCMC, for whom both Chlamydia and gonnorhea increased. Gonorrhea prevalence among FSW was low in both Hanoi and HCMC, and syphilis remained low, at less than 2% in all 10 provinces surveyed. STI infection among MSM remains high in three of the four provinces surveyed, despite a small decrease from 2006 to 2009 in Hanoi. One in five MSM in HCMC was infected with at least one STI, and nearly one in five in Can Tho.

Treatment strategies, for MSM in particular, will need to be more aggressive, employing outreach with effective referral for presumptive treatment.

Access to and utilization of HIV testing remain suboptimal

Despite increases in testing for some MARP groups in a number of provinces, the proportion of MARPS who ever tested and knew their results was low. The most uniform

increase in the proportion of individuals who knew their status was among IDU. In all provinces but Hanoi, the proportion of IDU who tested and were aware of their HIV status was significantly higher in 2009 than in 2006. Despite these increases, fewer than 30% of IDU accessed counseling and testing services in the majority of provinces. Similarly, HIV testing increased among FSW overall, but remained low in most provinces. Testing for MSM was low in all four MSM provinces surveyed. While Hanoi saw only a slight increase in the proportion of MSM tested and returned their results from 2006 to 2009, HCMC saw a substantial decrease (from 24% to 19%).

In addition to current efforts to increase availability of and access to HIV testing and counseling (HTC), efforts must be made to scale-up ARV treatment and non-stigmatizing services to assure individuals who practice high-risk behaviors that they can live healthy lives despite their infection. HTC promotion and outreach need to focus on individuals whose behaviors are most risky, including those with multiple sex partners, and those who engage in commercial sex and drug injection.

Condom and needle/syringe programs must meet local needs

MARP access to and utilization of free needles, syringes and condoms varied widely by province. Fewer than half of the IDU in 10 of the 12 provinces surveyed had obtained free needles/syringes in the last six months, and fewer than one-third in six of the provinces. Despite these figures, many IDU report that they are able to access needles and syringes when needed. FSW data show promise in some provinces, while others highlight the need for drastic increases in outreach and commodity distribution and social marketing. Forty-two to 48% of MSM surveyed in Hanoi, HCMC and Can Tho reported obtaining free condoms within the last six months. Still, only 7% of MSM who had sold sex in Hai Phong had obtained free condoms in the last six months.

Outreach programs need to address the broad discrepancies between SSW and VSW access to condoms. Some provinces call for more aggresive condom distribution and social marketing to sex workers who work in karaoke bars and other entertainment venues. Outreach must also be scaled up aggressively for MSM in provinces where condom access is particularly low. More analysis is needed to identify the factors that have led to comparatively high access and utilization in some provinces among certain MARPS (such as needle/syringe distribution in An Giang, HTC among SSW in Da Nang, and access to cheap/free condoms among VSW in Hai Phong).

Newly surveyed provinces call for critical scale up of Continuum of Prevention to Care (CoPC) interventions

A few of the newly surveyed provinces in 2009 produced particularly cautionary results. These provinces included Dien Bien, Lao Cai, Nghe An and Yen Bai. Select data from these provinces are included below.

A critical analysis should make of the services that have been implemented in these provinces. Based on the findings in this report, and triangulation with program and any other related data, these provinces may require rapid responses that cater to their local needs. An example of this is the development and/or refinement of ethnic minority targeted programs

	Dien Bien	Lao Cai	Nghe An	Yen Bai
Proportion of HIV-positive IDU	56%			37%
Proportion of HIV-positive IDU who ever shared needles	66%	73%	78	72
Proportion of IDU who shared needles in the last 6 months		35%	28%	
Proportion of IDU who consistently used condoms with their regular partners in the last 12 months		16%		
Proportion of HIV-positive IDU who practiced unprotected sex with their regular partners in the last 12 months	52%	78%		
Proportion of HIV-positive IDU who practiced unprotected sex with a FSW in the last 12 months	73%	29%		
Proportion of drug-injecting FSW who are HIV positive		43%		
Proportion of VSW who ever tested for HIV and received their results		3%		17%
Proportion of SSW who received free/cheap condoms in the last 6 months				44%

in the mountainous provinces of Dien Bien and Lao Cai, where linguistic and cultural distinctions in programming are critical for reaching individuals and providing services.

Two data points do not define a trend

It is important to note that the data points provided as comparison data between the 2006 and 2009 IBBS do not necessarily indicate long-term upward or downward moving trends, and may only be indicative of short-term fluctuations. Readers should be aware of this while interpreting the data and recommendations within this report. When observed trends can be triangulated and supported by program and related data (e.g. the observed increase in HIV testing across all MARP groups mirrors increases in HIV testing program data), they can be interpreted more clearly as representing actual trends. However, where there are two data points that seem unusual based on other data (e.g. observed dramatic decreases in condom use among FSW), these data should be interpreted with caution.

The IBBS cannot provide explanations as to why a given indicator increased or decreased between 2006 and 2009. Supplemental, qualitative research, and triangulation with program data should be applied to provide explanations to influence program planning and implementation.

Sampling approaches need to be revised

Analysis from Round II identified limitations in the use of respondent-driven sampling, especially for the MSM MARP group. More analysis will be needed to determine the appropriate method for sampling among specific MARP groups to overcome the limitations described in the *Study limitations* section in this report.

Study Limitations and Lessons Learned

Reporting bias

Many efforts were made to limit reporting bias. All interviews were conducted in private, surveys were anonymous, and respondents were encouraged to provide accurate responses. However, because of social stigma, respondents may have under-reported certain behaviors, including drug use and unprotected sex. For example, FSW reported very high condom use at last sex, while the true figures are likely to be lower. FSW may also have under-reported drug use because of the dual stigma associated with being a sex worker and a drug user. As a result, some indicators of risk behaviors are likely to be conservative estimates and some preventive behaviors may be high.

Study design

The IBBS used community-based sampling to obtain subjects. For provinces where a high proportion of injecting drug users were in 06 centers, the samples may not have been representative of the drug-injecting population.

Incomplete sampling frames

Cluster samples were chosen randomly based on sampling frames developed through the mapping process. This process was used to identify places where potential subjects could be reached and sampled. Fieldwork for the mapping exercise was performed over two weeks by three to five staff in each group. Due to the limited mapping period, some hidden populations may not be represented in sampling frames. These include high-class FSW and IDU who did not come to the selected venues. In addition, field staff were not able to access some of the venues identified in the mapping, hence the populations at these venues were not included in the sampling frames. The above issues might have affected the representativeness of the study samples.

Underestimation of refusal rates

Potential subjects were invited to participate in the study by visiting study centers. Invitation cards were distributed at selected locations. Refusal rates were calculated by dividing the number of cards that were not brought back to the study center by the number of cards distributed. However, these rates could have been under-estimated since there were a number of subjects who refused to receive cards. Those cards may have then been given to other potential subjects. Subjects who received cards were more likely to participate in the study. Venue-based sex workers tended to have the highest refusal rates, up to 30% or 40% in several provinces.

Study centers were set up in drop-in centers and MARP clubs

Study centers were established in drop-in centers and MARP clubs for interviewing respondents. Because drop-in centers and clubs are designed to provide a supportive

environment for target populations, potential study subjects who had visited these sites previously may have felt more comfortable going to them to participate in the study than those who had never been before. Consequently, some indicators, such as coverage of ongoing interventions, may be overestimated, while others, such as risk behaviors, may be underestimated.

The use of clubs and drop-in centers to collect data may also have affected the participation rate. In HCMC, for example, clubs for FSW and MSM were used to collect one-thirdof the sample size of these subjects. The remaining data were collected from study sites in communities.

As a result, there may have been greater variation in the sample compared to that which would have resulted from simple random sampling because of two effects: variation among clusters, and variation among individuals within a cluster. In calculating sample sizes, this was taken into consideration. Specific STATA commands helped to do the following:

1) Adjust the sampling probability
2) Adjust the variance correlated to the sampling method

Respondent-driven sampling method may not be appropriate

RDS is still being validated worldwide as a means for collecting data among hard to reach populations. There are several key assumptions and operational issues under evaluation. These include the influence of non-response bias, selection of seeds, the assumption of random selection within a network of target populations, and others. The validity of the reported network size is also questionable. Until these issues are clarified, unknown biases may affect estimates generated from samples using RDS.

In Vietnam, the study team identified the following limitations:

- Seeds were selected from the hidden populations, which may have limited recruitment of certain subgroups, such as young IDU and MSM in schools.
- Several assumptions used in RDS were not appropriate for this study. For example, some seeds may not have recruited within their network. After recruiters participated in the study and received referral cards, they did not generally recruit other participants within their network. Many went to "hot spots" and gave referral cards to anyone they met, including those who were unknown to them.
- Recruitment among different networks took place at different rates. Normally, recruitment among easy-to-reach populations is faster than among hidden populations. Therefore, the last sample might not be representative for the whole population (because of the higher likelihood of recruiting easy-to-reach individuals). The study team tried to minimize this by revising and adjusting the number of referral

cards: the number of cards delivered to seeds with a network of peers that were easy to reach was fewer than those given to seeds with peers that are harder to reach. However, this did not fully eliminate the limitation. Forty percent of MSM, for example, reported they had sold sex, though a representative sample was likely to have been much lower.

Originally, the team used the Respondent-Driven Sampling Analysis Tool (RDSAT, Cornell University, 2003) to analyze the RDS samples. This software was designed to adjust data for three types of potential biases that are likely in this sampling process: network bias, homophile bias and network size bias (Heckathorn 1998). However, in practice, the study team found that RDSAT had some limitations that should be considered carefully. For example, there was a limitation in analysis when the number of people within the network was below 100. In addition, data could not be analyzed when sample sizes were small under 40. As a result, the technical team decided not to use RDSAT to analyze data collected by RDS.

Appendix 1: Calculation of sample sizes

Indicators/Target populations	Primary survey indicators	Periodical surveillance indicators	$Z_{1-\alpha}$	$Z_{1-\beta}$	Response rate	Study design coefficient	Calculated size of samples	Required size of samples
Female sex workers								
HIV/STI prevalence	0.29	0.41	1.65	0.84	0.85	1.2	268	300
Inconsistent condom use	0.37	0.49	1.65	0.84	0.85	1.2	289	
Tested for HIV and given results	0.39	0.51	1.65	0.84	0.85	1.2	292	
Injecting drug users								
HIV prevalence	0.59	0.47	1.65	0.84	0.85	1.2	294	300
Needle and syringe sharing	0.37	0.25	1.65	0.84	0.85	1.2	252	
Tested for HIV and given results	0.40	0.52	1.65	0.84	0.85	1.2	293	
Men who have sex with men								
HIV prevalence	0.09	0.20	1.65	0.84	0.75	1.5	241	300
Unsafe sex with commercial sex partners	0.40	0.20	1.65	0.84	0.75	1.5	396	
Tested for HIV and given results	0.24	0.35	1.65	0.84	0.75	1.5	397	

Appendix 2: Data weighting in the analysis

Data in the IBBS 2009 survey were weighted to correct for errors that may occur as a result of the sampling design. With time-location sampling, certain venues attract subjects with common characteristics. Therefore, members of different populations have unequal selection probability, resulting in potential sampling error.

FSW example:

Table A2.1 illustrates how weights were obtained using the VSW sample collected in 2009. The median size estimates were totaled (column B). Each cluster's size estimate was multiplied with the total number of clusters (n=33) and divided by the total population size estimate (n=2097) to obtain the probability of each cluster of women to be selected in the first stage of sampling (column C). In the second stage, each sex worker had a certain probability (column E) of being selected at the venue based on how many women were at the venue during recruitment. Since the number of women found at recruitment was not recorded, the size estimate was used to produce the probability of being selected during the second stage, which is obtained by dividing the number recruited by the size estimate. The probability of selection for each individual (column F) is a product of the probabilities of being selected in the first and second stages (= column C x column E). Finally, the weight is inversely proportional to this product (= 1 / column F). This weight was applied to each interview completed.

Table A2.1: Calculation of weights

A	B	C	D	E	F	G
Cluster code	Sample size of cluster estimate	Selection probability - Phase 1	Number of selected subjects	Selection probability - Phase 2	Probability of selection of individual	Weight
1	14	0.220314735	10	0.714285714	0.157367668	6.354545455
6	10	0.157367668	10	1	0.157367668	6.354545455
10	12	0.188841202	10	0.833333333	0.157367668	6.354545455
11	21	0.330472103	2	0.095238095	0.031473534	31.77272727
13	37	0.582260372	10	0.27027027	0.157367668	6.354545455
17	18	0.283261803	10	0.555555556	0.157367668	6.354545455
22	15	0.236051502	10	0.666666667	0.157367668	6.354545455
27	11	0.173104435	9	0.818181818	0.141630901	7.060606061
...	...	...	...	...	...	...
Total						
33*	2097	1	304			

** Total number of clusters*

Appendix 3: Process of HIV diagnostic tests

Requirements:

1. HIV testing must be conducted at licensed laboratories which are able to confirm HIV positive result
2. Results are given within 2 weeks.
3. Compliance of testing protocol

Test procedure: According to the Ministry of Health Algorithm III

1. Screening: Use Determine HIV ½ (Abbott)
   a. Negative test results: answering "Negative"
   b. Positive test results: do the additional tests
2. Additional tests:
   a. Genscreen HIV 1 / 2 V.2 (Bio Rad)
   b. Murex HIV Ag / Ab (Abbott)

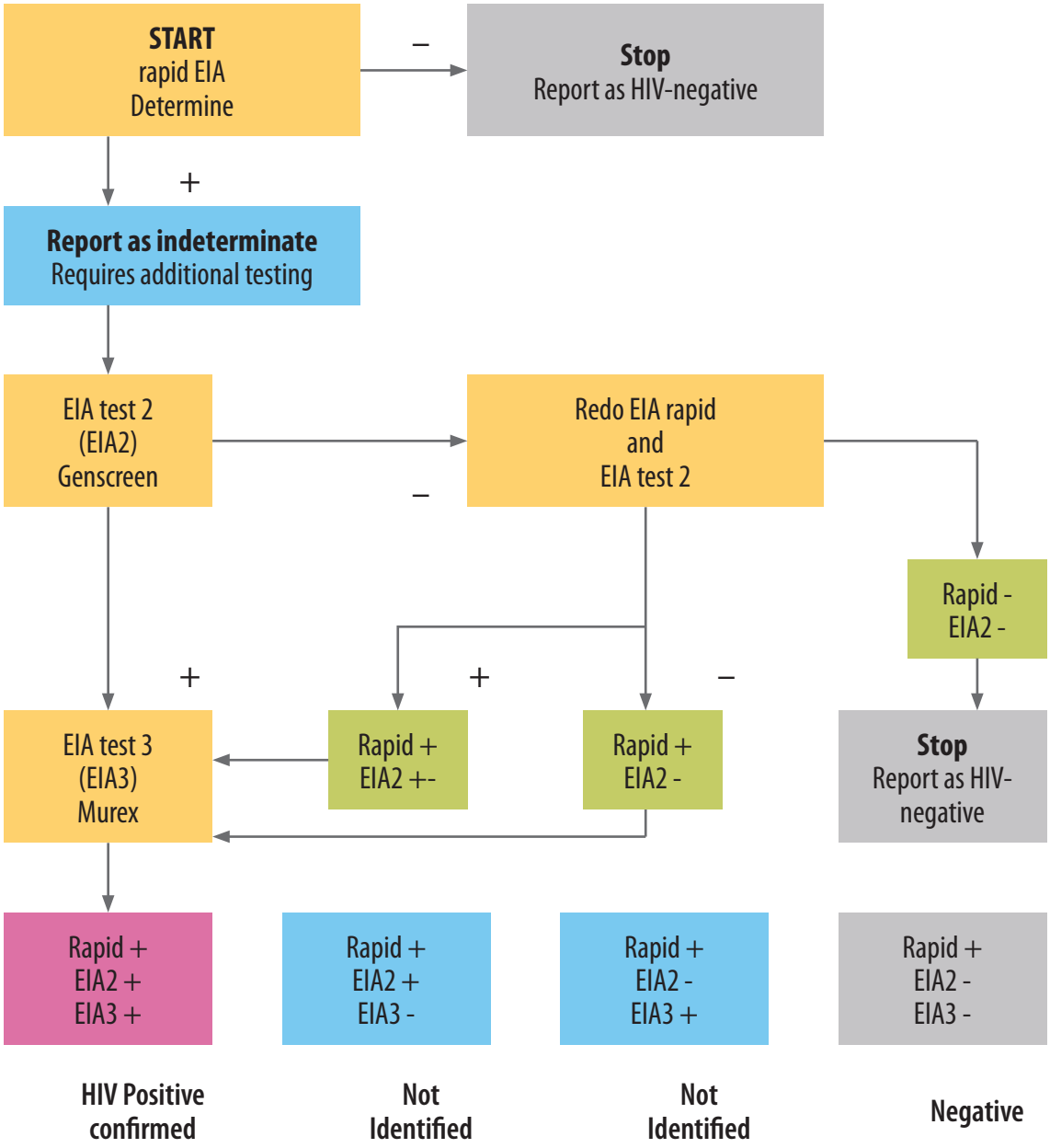
Confirm results:

1. All three techniques give positive results: the conclusion is HIV positive
2. If two ELISA techniques give negative results, the conclusion is HIV negative.

Quality control for HIV testing

The National Institute of Hygiene and Epidemiology will take randomly10% HIV-negative samples and 5% HIV-positive samples to re-test.

HIV Antibody Testing Algorithm



In this study:

- Tests A1: Determine HIV 1 / 2
- Test 2: Genscreen HIV 1 / 2
- Test 3: murex HIV Ag / Ab

Appendix 4: Process of diagnostic tests Syphilis

Requirements:

1. The test must be conducted in the laboratory at provincial level
2. Results are given within 2 weeks.
3. Compliance of testing protocol

Testing procedure:

1. Screening: RPR Technique (Rapid Plasma Reagin)

   a. RPR Qualitative:
   If negative test results: conclude "Negative"
   If positive test results: conduct RPR quantitative test.

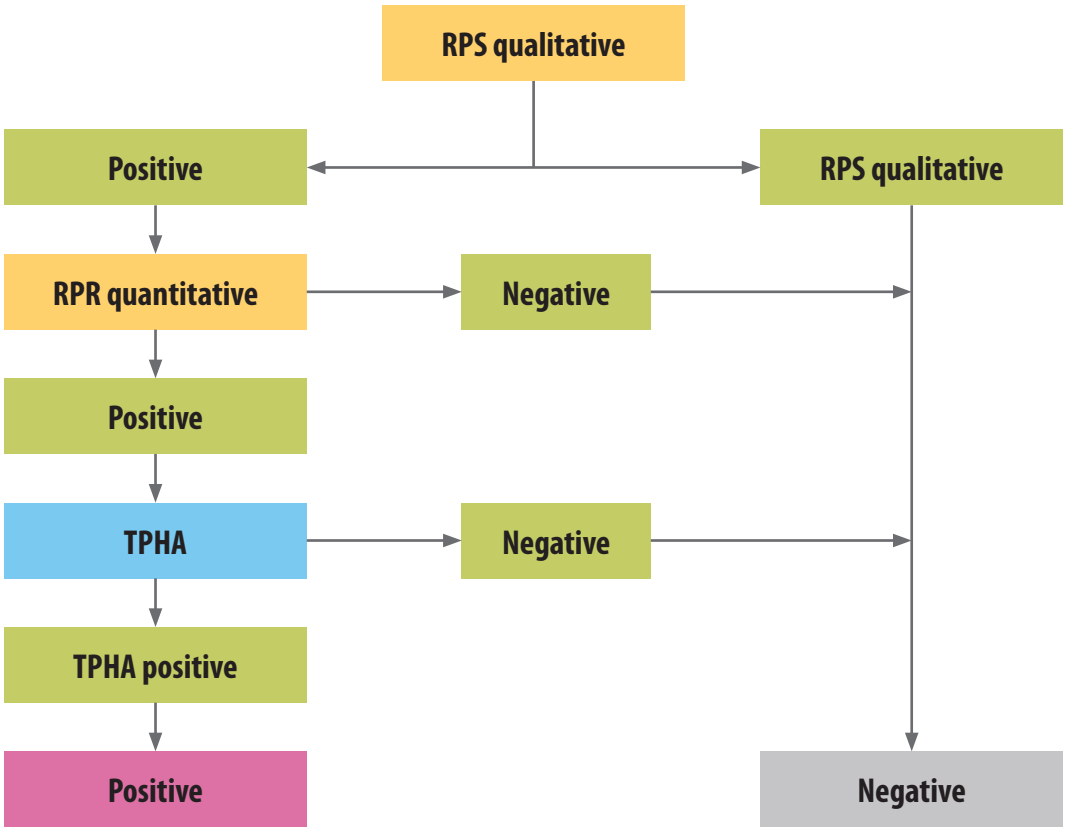
   b. Quantitative RPR:
   f negative test results: conclude "Negative"
   If a positive test results: conduct TPHA test

2. Additional tests: TPHA (Treponema pallidum Hemagglutination)

   a. Negative TPHA results: conclude "Negative"

   b. Positive TPHA results: conclude "Positive"

Algorithm of the diagnostic tests for Syphilis



Appendix 5: Descriptive Analysis of IDUs behavioral and biological data

Appendix 5.1: Socio-demographic characteristic of IDUs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
Age (n)	299	272	291	299	310	300	299	299	299	356	300	299
Mean	25.6	32.1	24.9	28.1	29.2	31.5	35.8	30.1	31.5	34.6	35.5	32.7
Median	24	30	22	26	28	31	36	30	31	34	36	33
Age group (n)	300	273	291	299	309	300	300	300	299	359	300	299
< 20	25.9	5.9	34.4	18.1	6.5	5.3	0.3	2.7	0.3	1.1	0.7	4.7
20 – 25	31.0	16.1	36.8	23.4	26.2	16.3	5.0	26.0	13.0	5.3	10.0	16.7
25 – 30	24.9	28.9	12.7	27.4	30.1	24.3	15.0	21.3	29.8	21.2	15.0	17.7
30 or more	18.2	49.1	16.2	31.1	37.2	54.0	79.7	50.0	56.9	72.4	74.3	60.9
Education level (n)	299	276	291	299	295	299	297	300	298	356	300	300
Illiteracy	14.1	12.0	0	3.7	5.8	1.7	0	0.3	0.3	2.8	5.7	12.0
Primary school (1-5)	41.1	27.9	5.8	12.7	33.6	4.4	10.8	4.3	0.7	10.1	14.3	26.3
Secondary school (6-9)	36.5	39.9	51.6	42.8	47.1	43.1	47.1	28.7	25.5	40.2	40.7	39.7
High school (10-12)	8.4	18.8	34.7	36.1	12.2	45.5	40.4	53.7	70.5	41.9	31.0	18.3
College/University	0	1.5	7.9	4.7	1.4	5.4	1.7	13.0	3.0	5.1	8.3	3.7
Occupation (n)	300	277	291	299	310	300	300	300	300	359	300	300
Farmers	0	1.4	0	1.0	0	0	0.3	10.3	0	22.7	21.3	65.3
Government employees	0	0.7	1.0	2.3	0.6	1.7	1.0	1.3	5.0	0.3	0.7	0.3
Entertainment staff	2.0	2.9	13.4	3.0	3.2	3.0	3.7	5.7	1.7	0.3	0.7	0
Salesman	1.3	1.4	3.4	0.7	0.3	0.1	2.0	1.0	1.7	0.6	1.3	1.0
Business Owner	5.7	5.4	0.7	1.0	7.1	3.7	6.7	4.0	1.0	4.5	2.7	2.3

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
Student	0	0	5.5	4.4	0	0.3	0	3.3	0	0.3	1.0	1.0
Self- employed	38.6	65.7	29.9	21.1	52.3	55.3	59.3	53.0	52.0	64.1	51.0	74.0
Illegal activities	1.7	5.1	1.0	1.0	1.3	2.7	0.3	4.7	0.7	0.6	13.0	0.7
Unemployed	19.5	14.8	34.4	25.8	24.8	15.0	14.4	10.4	38.7	6.2	6.0	4.3
Other	36.4	14.4	13.7	41.3	20.3	17.3	14.4	20.7	0.7	16.3	0.7	3.3
Monthly Income(n) (million)	295	258	290	273	310	283	295	300	289	356	298	300
Mean	1.7	2.5	1.1	1.6	2.0	3.9	2.0	1.9	2.7	1.6	2.3	2.1
Median	1.5	2.1	1.0	1.5	1.5	2.0	1.8	1.5	2.5	1.5	2.0	2.0
Monthly Income group (n)	295	258	290	273	310	283	295	300	289	356	300	300
< 500.000	6.8	0	37.6	17.2	1.3	1.1	3.7	11.3	0.4	8.7	3.7	2.0
500.000- 1.000.000	15.3	4.3	9.3	9.9	18.4	8.1	9.5	11.3	1.0	16.9	6.0	7.7
1.000.000- 1.500.000	17.6	11.2	11.0	18.3	13.9	14.1	17.0	14.0	3.5	23.6	16.7	15.3
1.500.000- 2.000.000	29.8	20.2	17.6	21.6	22.9	19.8	21.0	23.7	10.0	15.2	19.7	20.3
2.000.000 or more	30.5	64.3	24.5	33.0	43.6	56.9	48.8	39.7	85.1	35.7	54.0	54.7

Appendix 5.2: History of drug the among IDUs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
Age at the first drug use (n)	296	263	289	289	309	288	299	299	297	356	299	296
Mean	20	23	20	21	22	22	24	24	23	25	24	23
Median	19	21	18	20	20	21	24	22	22	24	24	22

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
Age group of the first drug use (n)	294	264	289	288	306	288	299	298	297	356	299	296
< 20	60.2	42.8	66.8	54.5	51.3	44.4	26.4	29.2	33.3	21.6	28.1	36.8
20 – 25	25.5	26.1	21.1	24.7	25.8	28.1	33.4	39.6	34.7	33.2	27.4	32.8
25 or more	14.3	31.1	12.1	20.8	22.9	27.4	40.1	31.2	32.0	45.2	44.5	30.4
Duration of drug use (n)	296	261	289	290	309	288	298	298	298	353	299	295
Mean	5.6	8.7	4.7	6.6	7.6	9.6	11.3	6.1	8.7	9.3	11.1	9.6
Median	4	8	3	5	7	9	10	5	9	9	10	8
Duration of drug use (n)	296	261	289	290	309	288	298	298	298	353	299	295
< 1 year	14.5	3.5	11.4	17.2	3.6	4.5	1.3	9.1	1.0	3.4	0.7	2.7
1 year or more	85.5	96.6	88.6	82.8	96.4	95.5	98.7	90.9	99.0	96.6	99.3	97.3
Duration of drug injection (n)	296	263	289	290	304	287	297	298	297	347	297	297
Mean	4.7	7.1	3.5	5.7	5.4	6.0	7.4	4.4	7.2	6.7	5.7	4.2
Median	3	5	2	4	4	5	6	3	7	6	5	3
Duration of drug injection (n)	296	263	289	290	304	287	297	298	297	347	297	296
< 1 year	19.6	8.4	26.6	22.8	12.5	14.3	5.7	16.1	3.7	5.5	8.4	11.8
1 year or more	80.4	91.6	73.4	77.2	87.5	85.7	94.3	83.9	96.3	94.5	91.6	88.2
Frequency of drug injection in the past month (n)	300	291	310	277	300	359	300	300	300	299	300	300
4 times or more per day	0.7	1.4	1.7	0	8.1	4.7	10.0	3.0	0.3	1.4	2.3	2.7
2 – 3 times per day	57.2	59.9	27.5	21.7	81.6	53.0	86.0	31.0	51.0	22.8	39.7	12.0
Once per day	25.8	30.3	43.6	26.0	9.4	31.0	3.7	33.7	42.0	32.0	34.3	76.7
Less than once per day	16.4	8.3	27.2	48.0	1.0	10.7	0.3	32.3	6.7	42.9	23.7	8.7
Don't remember	0	0	0	4.3	0	0.7	0	0	0	0.8	0	0

Appendix 5.3: Injecting behaviors among IDUs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
Ever shared needles/ syringes (n)	299	277	291	300	310	300	300	300	300	359	300	300
Percent	28.1	43.7	43.6	36.7	44.8	45.0	31.3	56.3	70.3	58.2	60.3	57.3
Sharing needles/syringes in the past 6 months (n)	299	277	290	299	310	300	299	300	300	359	300	300
Percent	15.4	17.0	37.2	27.1	24.6	23.0	7.4	28.3	23.7	25.1	35.3	23.7
Sharing needles/syringes in the past months (n)	299	277	290	299	310	300	299	300	300	359	300	300
Percent	12.3	13.7	30.2	22.3	20.0	12.0	3.3	17.7	7.7	13.3	19.7	16.2
Distribute sharing own needles/syringes in the past month (n)	299	276	290	300	310	299	299	300	300	358	300	300
Percent	10.7	10.9	27.9	2.0	13.2	10.4	3.3	16.0	7.3	12.6	19.7	9.0
Receptive sharing needles/syringes in the past month (n)	299	277	290	300	310	299	299	300	300	359	300	300
Percent	12.4	11.2	26.2	20.3	18.7	10.7	2.3	12.7	7.0	13.1	15.0	7.3
Sharing needle/syringe in the last injection (n)	299	277	290	300	309	299	300	300	299	359	300	300
Percent	4.3	3.6	12.1	6.7	6.8	3.0	2.0	5.3	0.7	2.8	2.0	1.3
Sharing drugs/injecting equipments in the past six months (n)	299	277	291	300	310	300	300	300	300	359		
Percent	45.8	65.0	64.3	47.0	44.2	33.3	20.3	63.0	73.7	53.5	N/A	N/A

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
Sharing drug/injecting equipments in the last injecting (n)	299	277	290	300	309	299	300	300	300	359	300	300
Percent	30.1	74.0	56.6	31.3	85.8	13.7	3.0	35.7	30.7	26.2	6.3	6.7
Using new (sterilized) syringes in the last injection (n)	299	277	290	300	309	299	300	300	300	359	300	300
Percent	93.6	92.4	88.6	90.7	85.1	96.3	95.7	96.7	98.0	97.5	95.0	84.7

Appendix 5.4: Sexual history and number of sexual partners among IDUs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
IDUs who ever married (n)	299	277	291	300	309	300	298	300	300	359	300	300
Percent	33.1	48.0	17.9	30.0	30.1	41.7	60.2	40.7	31.7	64.4	65.3	68.3
IDUs who ever had sex (n)	299	277	291	300	309	300	298	300	300	359	300	300
Percent	82.6	95.0	92.1	77.3	93.5	90.3	97.0	95.3	81.0	97.2	97.0	93.0
Age at first sex (n)	245	218	268	218	277	258	286	285	212	340	289	270
Mean	19.0	20.1	18.3	19.8	18.6	19.1	20.4	20.8	20.1	21.3	21.3	19.6
Median	18.0	19.0	18.0	18.0	18.0	18.0	20.0	20.0	20.0	21.0	20.0	19.0
Age at first sex (n)	247	262	268	232	288	271	290	286	242	349	291	279
< 20	66.8	45.8	79.5	53.5	68.4	57.2	45.2	35.3	36.4	24.9	35.1	50.9
20 – 25	27.1	27.9	17.5	29.7	26.0	31.7	39.7	49.3	45.5	58.5	44.0	36.2
25 – 30	5.3	7.3	2.6	6.9	1.4	6.3	11.7	12.2	5.0	12.6	14.8	8.2
30 or more	0	2.3	0.4	3.9	0.4	0	2.1	2.8	0.8	1.4	5.5	1.4
Don't remember	0.8	16.8	0	6.0	3.8	4.8	1.4	0.4	12.4	2.6	0.7	3.2

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
Sharing drug/injecting equipments in the last injecting (n)	299	277	290	300	309	299	300	300	300	359	300	300
Percent	30.1	74.0	56.6	31.3	85.8	13.7	3.0	35.7	30.7	26.2	6.3	6.7
Using new (sterilized) syringes in the last injection (n)	299	277	290	300	309	299	300	300	300	359	300	300
Percent	93.6	92.4	88.6	90.7	85.1	96.3	95.7	96.7	98.0	97.5	95.0	84.7

Appendix 5.4: Sexual history and number of sexual partners among IDUs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
IDUs who ever married (n)	299	277	291	300	309	300	298	300	300	359	300	300
Percent	33.1	48.0	17.9	30.0	30.1	41.7	60.2	40.7	31.7	64.4	65.3	68.3
IDUs who ever had sex (n)	299	277	291	300	309	300	298	300	300	359	300	300
Percent	82.6	95.0	92.1	77.3	93.5	90.3	97.0	95.3	81.0	97.2	97.0	93.0
Age at first sex (n)	245	218	268	218	277	258	286	285	212	340	289	270
Mean	19.0	20.1	18.3	19.8	18.6	19.1	20.4	20.8	20.1	21.3	21.3	19.6
Median	18.0	19.0	18.0	18.0	18.0	18.0	20.0	20.0	20.0	21.0	20.0	19.0
Age at first sex (n)	247	262	268	232	288	271	290	286	242	349	291	279
< 20	66.8	45.8	79.5	53.5	68.4	57.2	45.2	35.3	36.4	24.9	35.1	50.9
20 – 25	27.1	27.9	17.5	29.7	26.0	31.7	39.7	49.3	45.5	58.5	44.0	36.2
25 – 30	5.3	7.3	2.6	6.9	1.4	6.3	11.7	12.2	5.0	12.6	14.8	8.2
30 or more	0	2.3	0.4	3.9	0.4	0	2.1	2.8	0.8	1.4	5.5	1.4
Don't remember	0.8	16.8	0	6.0	3.8	4.8	1.4	0.4	12.4	2.6	0.7	3.2

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
IDUs who reported sex in the past 12 months (n)	299	277	291	300	309	299	300	300	299	359	300	300
Percent	63.2	61.7	88.3	59.3	60.2	69.6	45.3	81.3	46.2	79.4	68.7	63.3
Number of partners in the past 12 months (n)	299	271	289	285	309	262	296	296	285	356	299	300
Mean	2.2	1.4	3.9	1.3	1.6	3.1	0.8	4.4	0.6	1.7	1.5	1.3
Median	1.0	1.0	3.0	1.0	1.0	2.0	0	1.0	0	1.0	1.0	1.0
Number of partners in the past 12 months (n)	299	277	291	300	309	299	300	299	299	359	300	300
0	36.8	36.1	11.0	35.7	39.8	18.1	53.3	17.7	49.2	19.8	31.0	36.7
1	29.4	37.2	14.4	36.7	34.6	20.4	33.7	35.1	42.5	42.3	46.7	47.0
2	11.4	8.7	16.8	11.3	9.7	11.0	5.3	9.7	1.7	17.6	6.7	3.0
3	8.7	5.1	22.0	3.3	5.8	12.4	2.0	9.0	0	11.4	6.3	4.7
>=4	13.7	10.8	35.1	8.0	10.0	25.8	4.3	27.4	2.0	8.1	9.0	8.7
Don't remember	0	2.2	0.7	5.0	0	12.4	1.3	1.0	4.7	0.8	0.3	0
IDUs who reported having sex with regular partners in the past 12 months (n)	299	277	291	300	309	298	300	300	286	359	300	300
Percent	50.8	41.9	75.3	57.0	45.3	60.7	31.0	67.3	39.9	69.4	59.0	57.0
Number of regular partners in the past 12 months (n)	299	277	291	299	309	268	300	300	282	359	300	300
Mean	0.8	0.5	1.2	0.7	0.6	1.0	0.3	0.9	0.4	0.8	0.7	0.7
Median	1.0	0	1.0	1.0	0	1.0	0	1.0	0	1.0	1.0	1.0

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
Number of regular partners in the past 12 months (n)	299	277	291	300	309	298	300	300	286	359	300	300
0	49.2	58.1	24.7	42.7	54.7	29.2	69.0	32.7	58.7	30.6	41.0	43.0
1	40.5	38.3	52.2	47.7	35.0	42.0	29.3	53.3	38.5	61.3	54.7	51.3
2	7.7	1.8	14.1	6.7	6.8	13.4	0.7	9.0	1.1	6.1	3.0	2.3
3	1.7	1.1	5.8	0.7	1.9	2.7	0.7	4.3	0.4	1.7	0.3	2.7
>= 4	1.0	0.7	3.1	2.0	1.6	2.7	0.3	0.7	1.4	0.3	1.0	0.7
Don't remember	0	0	0	0.3	0	10.1	0	0	0	0	0	0
IDUs who reported having sex with sex workers in the past 12 months (n)	298	276	291	297	308	299	293	300	261	358	300	300
Percent	20.5	21.7	45.0	9.1	19.2	38.1	15.4	39.0	9.2	27.9	20.0	9.3
Number of sex workers in the past 12 months (n)	298	271	288	287	308	270	291	297	251	357	299	300
Mean	1.0	0.8	2.0	0.3	0.7	1.3	0.4	3.2	0.2	0.7	0.8	0.4
Median	0	0	0	0	0	0	0	0	0	0	0	0
Number of sex workers in the past 12 months (n)	298	276	291	297	308	299	293	300	261	358	300	300
0	79.5	76.5	54.0	87.5	80.8	52.2	84.0	60.0	87.0	71.8	79.7	90.7
1	3.7	5.1	9.6	4.4	7.5	9.7	6.1	4.3	6.9	10.6	3.7	2.7
2	5.4	5.8	10.3	1.7	2.3	14.1	3.8	9.7	0.4	8.7	5.0	2.0
3	4.0	2.2	9.3	1.4	3.6	5.7	1.4	6.0	0	3.4	4.7	2.3
>= 4	7.4	8.7	15.8	1.7	5.8	8.7	4.1	19.0	1.9	5.3	6.7	2.3
Don't remember	0	1.8	1.0	3.4	0	9.7	0.7	1.0	3.8	0.3	0.3	0

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
IDUs who reported having sex with casual partners in the past 12 months (n)	298	276	291	296	308	298	294	300	248	357	300	300
Percent	10.1	9.1	25.4	8.8	13.0	17.5	2.0	11.7	1.6	8.1	2.3	10.7
Number of casual partners in the past 12 months (n)	298	275	290	288	308	284	293	300	246	357	300	300
Mean	0.2	0.2	0.7	0.2	0.2	0.4	0.0	0.3	0.0	0.1	0.0	0.3
Median	0	0	0	0	0	0	0	0	0	0	0	0
Number of casual partners in the past 12 months (n)	298	276	291	296	308	298	294	300	248	357	300	300
0	89.9	90.6	74.2	88.5	87.0	77.9	97.6	88.3	97.6	91.9	97.7	89.3
1	4.0	4.0	6.2	4.4	7.1	7.7	1.7	4.7	1.6	5.6	1.0	4.3
2	2.7	3.6	9.3	1.0	3.6	5.7	0.3	4.0	0	1.1	1.0	3.0
3	2.0	1.1	4.1	1.4	1.0	1.3	0	0.7	0	1.1	0.3	0.7
>= 4	1.3	0.4	5.8	2.0	1.3	2.7	0	2.3	0	0.3	0	2.7
Don't remember	0	0.4	0.3	2.7	0	4.7	0.3	0	0.8	0	0	0

Appendix 5.5: Condom use

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
Condom use in the last sex with regular partners in the past 12 months (n)	152	116	219	172	139	204	93	202	117	248	175	171
Percent	38.8	34.5	53.9	43.0	24.5	61.3	66.7	48.5	82.9	54.4	28.0	55.9

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
Consistent condom use with regular partners in the past 12 months (n)	152	116	218	172	138	205	91	201	117	249	175	171
Percent	33.6	21.6	14.7	29.1	15.2	36.6	52.8	32.3	55.6	38.6	16.0	39.2
Condom use in the last sex with sex workers in the past 12 months	60	65	133	36	56	142	47	120	32	101	61	27
Percent	81.7	72.3	81.9	72.2	50.0	82.4	91.5	81.7	87.5	84.2	68.9	63.0
Consistent condom use with sex workers in the past 12 months (n)	60	65	133	36	56	142	47	120	32	101	61	27
Percent	73.3	56.9	50.4	61.1	39.3	60.6	74.5	63.3	68.8	84.1	45.9	48.2
Condom use in the last sex with casual partners in the last 12 months (n)	30	25	73	34	36	65	7	34	6	27	7	32
Percent	56.7	44.0	65.8	52.9	19.4	78.5	100.0	47.1	5.0	66.7	28.6	56.3
Consistent condom use with casual partner in the last 12 months (n)	30	25	73	34	36	65	7	34	6	27	7	32
Percent	53.3	36.0	28.8	52.9	16.7	47.7	71.4	35.3	33.3	55.6	0	50.0

Appendix 5.6: STI

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
IDUs who can mention correctly STI symptoms (n)	299	277	291	300	309	300	297	300	297	353	298	300
Abdominal pain	1.7	13.0	14.8	8.7	4.6	15.7	14.9	13.3	34.0	14.7	7.7	5.7
Unusual genital discharge	19.7	33.6	33.7	32.3	45.0	72.7	60.6	49.0	59.6	68.0	57.4	25.7
Pain with urination	12.4	24.6	50.9	28.0	10.7	79.0	61.6	56.3	74.1	55.5	46.6	21.0
Genital ulcers/sore	10.7	19.5	35.7	25.3	33.1	27.3	62.6	33.7	58.3	60.6	25.5	16.7
Genital itching	11.4	20.2	45.4	14.3	10.0	17.0	47.1	46.7	33.7	47.7	22.5	20.7
IDUs who reported unusual genital discharge in the past 12 months (n)	299	277	291	300	309	297	299	300	297	357	299	300
Percent	2.3	1.8	5.5	3.7	1.0	2.7	0	7.0	0.3	1.1	0.3	3.0
IDUs reported genital pain/ulcers in the past 12 months (n)	299	277	291	299	309	296	299	300	297	356	299	300
Percent	3.7	5.4	8.3	2.3	0.7	2.0	0.3	8.0	0.3	0.6	1.0	2.3

Appendix 5.7: HIV knowledge

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
IDUs correctly identifying ways of preventing HIV infection and rejecting misconception of HIV transmission (n)	300	277	291	300	310	300	300	300	300	360		300
Percent	38.3	48.4	44.0	34.0	54.8	41.0	48.3	57.3	27.3	72.2	N/A	43.7
IDUs who perceived their risk of HIV transmission (n)	300	277	291	300	310	300	300	300	300	360		300
Percent	46.3	52.4	71.8	63.7	71.0	76.3	78.3	77.3	90.0	86.9	N/A	57.0
IDUs correctly identifying ways of preventing HIV infection and rejecting misconception of HIV transmission (n)												
1. IDUs who reported sharing needle in the last 6 months (n)	115	134	128	102	170	123	145	172	82	260		71
Percent	46.1	69.4	65.6	42.2	38.2	39.0	20.7	74.4	79.3	51.5	N/A	40.9
2. IDUs who reported inconsistency of condom use with commercial sex workers (n)	17	26	64	8	31	36	23	62	11	82		21
Percent	23.5	34.6	62.5	37.5	51.6	44.4	30.4	32.3	27.3	24.4	N/A	57.1

Appendix 5.8: Expose to HIV/AIDS intervention

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
IDUs who had HIV tested and known the results (n)	298	277	291	299	309	300	300	300	299	359	300	300
Percent	28.5	31.4	22.3	20.7	25.9	29.0	54.0	51.0	63.9	35.4	37.3	28.0
IDUs who had HIV tested, known results and received both pre and post-test counseling (n)	298	277	291	299	309	300	300	300	299	359	300	300
Percent	20.7	7.9	11.3	5.7	12.3	16.0	31.3	24.7	43.0	10.6	2.0	6.3
Mean number of time in 06 Centers (n)	299	273	291	299	310	300	300	300	300	359	299	300
0	69.9	53.8	69.1	80.3	64.4	53.0	62.7	84.3	67.3	61.3	52.5	93.0
1	22.4	23.5	22.3	10.0	27.8	29.0	28.0	13.7	28.0	26.2	34.8	6.3
2	4.4	10.1	6.2	5.0	3.9	12.0	7.7	1.3	3.7	7.8	11.0	0.3
3	1.7	5.8	2.4	2.3	3.9	3.7	1.0	0.3	0.7	2.8	1.3	0.3
>= 4	1.7	5.4	0	1.3	0	2.3	0.7	0.3	0.3	1.9	0.3	0
Don't remember	0	1.4	0	1.0	0	0	0	0	0	0	0	0
IDUs who received free syringes in the last 6 months (n)	299	277	291	298	308	300	299	300	300	358	300	300
Percent	83.6	50.9	2.1	40.9	10.7	23.3	41.5	38.7	72.0	65.6	0.7	24.7
IDU who were able to purchase or obtain new needles and syringes when needed (n)	298	277	290	300	310	296	298	300	299	359	300	300
Percent	95.0	89.9	96.9	85.3	88.1	82.1	95.3	87.7	99.0	96.1	64.3	87.7

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
IDUs who obtained cheap/ free condoms in the last 6 months among sexually active IDUs (n)	189	171	256	185	184	208	138	244	141	285	206	190
Percent	43.4	20.5	7.0	23.1	9.2	22.6	36.9	38.5	63.8	39.7	3.4	26.3
IDUs received drug education in the past 6 months (n)	299	277	291	297	309	300	300	300	299	359	300	300
Percent	59.2	43.3	16.8	37.0	14.2	25.0	62.3	54.3	78.3	67.7	37.7	44.3
IDUs received safe sex education in the past 6 months (n)	299	277	291	299	309	300	299	300	300	358	300	300
Percent	39.5	24.9	17.2	28.4	13.3	21.0	50.5	49.7	67.7	58.4	29.3	29.3
IDUs received IEC material in the past 6 months (n)	299	277	291	298	308	300	299	300	299	357	300	300
Percent	44.2	44.4	37.5	56.7	15.9	33.3	82.6	63.7	81.6	71.7	16.3	38.3

Appendix 5.9: HIV/STI prevalence

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
HIV prevalence among IDU (n)	299	276	291	300	310	300	300	300	300	359	299	300
Percent	15.7	31.9	1.0	24.0	46.1	20.7	48.0	24.3	55.7	36.5	21.7	56.0

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai	Dien Bien
HIV-positive IDU who ever shared needles (n)	47	88	3	72	143	62	144	73	159	131	65	168
Percent	23.4	62.5	66.7	50.0	51.8	66.1	41.0	78.1	82.0	72.5	72.9	66.3
HIV-positive IDU who had sex with regular partners (n)	47	88	3	72	143	62	144	73	159	131	65	168
Percent	40.4	36.4	66.7	58.3	42.7	66.1	29.2	49.3	40.3	67.9	56.9	49.4
HIV-positive IDU who had sex with sex workers (n)	47	88	3	72	143	62	144	73	159	131	65	168
Percent	12.8	17.2	0	4.2	16.8	40.3	13.5	23.3	9.1	28.2	10.8	9.5
Syphillis (n)	299	276	291	300	310	300	300	300	300	359	N/A	300
Percent	0.3	1.5	0.3	0	0.6	0	1.7	1.3	1.0	0.8	N/A	0.7

Appendix 6: Descriptive Analysis of VSWs behavioral and biological data

Appendix 6.1: Socio-demographic characteristic of VSWs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
Age (Year) (n)	262	351	249	299	304	299	299	274	297	123	160
Mean	26.4	27.2	30.1	24.4	25.5	30.1	29.4	23.7	27.7	29.5	26.0
Median	24.9	25.7	29.2	23.4	24.8	29.8	28.9	23.1	27.5	29.5	25.1
Age Group (n)	262	351	249	299	304	299	299	274	297	123	160
< 20	19.1	16.2	8.4	15.3	14.6	3.3	2.3	19.7	3.7	4.9	16.3
20 – 25	31.7	28.9	25.7	48.2	35.6	15.7	20.7	46.7	24.2	18.6	32.5
25 – 30	22.9	20.2	18.5	26.8	23.2	32.1	40.1	26.7	47.5	28.5	30.6
30 or more	26.3	34.7	47.4	9.7	26.6	48.8	36.8	6.9	24.6	48.0	20.6
Education level (n)	263	354	251	300	304	300	300	274	298	123	160
Illiteracy	16.0	7.7	2.8	1.0	4.6	0.3	2.0	1.1	0.3	4.9	2.5
Primary school (1-5)	40.3	36.4	22.4	19.7	30.2	8.7	10.3	16.1	11.1	19.7	16.9
Secondary school (6-9)	36.5	42.1	55.2	57.9	45.6v	54.7	57.7	55.1	46.3	41.0	52.5
High school (10-12)	7.2	13.5	18.8	21.1	16.7	34.3	29.7	25.6	41.6	32.8	27.5
College/University	0	0.3	0.8	0.3	3.0	2.0	0.3	2.2	0.7	1.6	0.6
Who ever married (n)	263	354	251	300	304	300	300	274	298	123	160
Percent	65.0	66.1	53.4	33.1	52.2	67.3	65.0	24.9	46.0	77.9	58.1
Duration of selling sex (sex work) (n) (year)	263	351	249	285	300	300	299	274	266	120	160
Mean	3.1	3.0	4.3	3.3	4.2	5.3	4.0	2.1	3.7	4.6	2.4
Median	2.2	1.7	3.4	2.6	2.6	4.3	3.4	1.6	3.3	4.1	1.3

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
Duration of selling sex (sex work) in current cities/provinces (n) (year)	263	352	251	299	301	300	300	274	298	122	160
Mean	2.6	2.5	3.3	2.1	3.6	4.9	3.6	1.9	2.6	4.0	2.0
Median	2.0	1.0	2.5	1.8	3.0	4.0	3.0	1.3	2.3	3.5	1.0
Ever sold sex in other provinces (n)	263	353	251	297	304	299	300	274	297	122	160
Percent	17.1	12.7	8.4	43.8	2.4	8.7	9.3	13.5	17.9	13.1	11.3
Ever sold sex in other countries (n)	262	353	251	298	304	300	300	274	298	122	160
Percent	2.3	0.3	0.1	0.3	0.6	1.3	0.7	0.4	0	0	2.5
Monthly income (million VND)	262	352	248	294	301	300	300	273	269	121	160
Mean	5.0	5.6	4.5	7.1	5.4	7.4	5.5	9.3	6.8	4.6	6.5
Direct income from selling sex (million VND)	262	352	248	294	301	300	300	273	269	121	160
Mean	2.8	4.0	2.8	5.7	3.5	6.1	5.1	8.1	5.7	2.0	96.3
Most popular client waiting point	263	353	251	299	305	300	300	274	298	121	160
Restaurant, bar or karaoke venue	99.2	97.9	98.4	99.7	94.6	97.3	99.7	100.0	98.0	95.9	96.3
Street	0.8	2.1	1.6	0.3	5.4	2.7	0.3	0	2.0	4.1	3.8

Appendix 6.2: Sexual history and number of sexual clients among VSWs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
Mean and median number of clients in the last week (n)	262	351	248	278	305	300	300	274	243	118	
Mean	4.2	3.6	3.3	8.6	4.7	6.2	10.5	9.9	6.4	3.5	N/A
Median	3.0	3.0	2.0	9.0	4.0	6.0	10.0	9.0	5.0	3.0	N/A

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
Mean and median number of one-time clients in the past month (n)	263	346	251	252	304	300	300	274	166	122	130
Mean	7.0	8.0	7.9	10.2	8.1	14.0	17.5	36.1	9.0	5.7	37.8
Median	4.0	6.0	8.0	10.0	4.0	10.0	12.0	36.0	5.0	4.0	29.5
Mean and median number of one-time clients in the past week (n)	263	300	251	283	304	300	300	274	245	120	
Mean	2.1	2.5	2.0	4.6	2.5	3.8	6.9	8.2	3.8	2.1	N/A
Median	1.0	2.0	2.0	5.0	2.0	3.0	5.5	8.0	2.0	2.0	N/A
Mean and median number of one-time clients in the last day of selling sex (n)	263	301	251	286	304	300	300	274	253	121	
Mean	1.1	1.1	1.1	1.8	1.1	1.6	2.1	1.8	1.5	1.5	N/A
Median	1.0	1.0	1.0	2.0	1.0	2.0	2.0	2.0	1.0	1.0	N/A
Mean and median number of regular clients in the past month (n)	263	349	251	269	304	300	300	274	257	122	156
Mean	5.5	4.3	3.5	6.5	4.6	6.4	6.4	4,0	4.8	2.3	6.7
Median	3.0	3.0	2.0	7.0	3.0	5.0	5.0	2.0	4.0	2.0	5.0
Mean and median number of regular clients in the past week (n)	263	292	251	295	279	300	300	274	267	123	
Mean	2.0	1.7	1.2	3.7	2.2	2.4	3.6	1.7	2.7	1.4	N/A
Median	1.0	1.0	1.0	3.0	2.0	2.0	3.0	1.0	2.0	1.0	N/A
Mean and median number of regular clients in the last day (n)	263	354	251	295	304	300	300	274	263	123	
Mean	1.0	0.9	0.7	1.7	1.3	1.4	1.5	0.6	1.3	1.2	N/A
Median	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	N/A
Number of regular sex partners in the past month (n)	263	352	251	293	303	299	300	274	262	121	159
Mean	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.6	0.9	0.7	0.5

Appendix 6.3: Condom use

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
Condom use with one-time client during last sex (n)	194	294	216	288	216	280	284	272	166	99	158
Percent	97.9	98.5	100.0	89.1	79.3	82.9	97.9	98.5	88.3	95.4	97.5
Consistency of condom use with one-time client in the past month (n)	194	299	216	228	216	280	284	272	166	99	159
Percent	88.7	92.4	85.7	23.7	41.7	45.2	90.5	91.9	81.9	70.7	81.8
Condom use with regular client during last sex (n)	218	292	166	284	279	278	271	172	288	101	120
Percent	94.0	88.6	97.0	78.5	68.6	73.7	95.6	93.6	85.8	72.3	87.5
Consistency of condom use with regular client in the past month (n)	218	291	166	284	279	278	271	172	288	101	121
Percent	84.4	80.1	73.5	19.0	33.3	37.4	80.8	81.4	68.8	47.5	51.2
Condom use with regular sex partner during last sex (n)	128	190	109	120	145	143	114	154	172	67	75
Percent	41.4	25.5	66.1	28.9	21.5	38.5	46.5	44.5	53.5	46.3	33.3
Consistency of condom use with regular sex partner in the past month (n)	128	190	109	120	145	144	114	154	172	67	75
Percent	37.5	18.3	34.9	10.0	7.5	13.9	24.8	16.9	27.9	29.9	21.3

Appendix 6.4: Drug use and injecting behavior among VSWs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
VSWs who ever used drug (n)	263	352	251	299	304	298	300	274	298	122	160
Percent	4.2	2.6	0.4	1.0	28.4	18.8	5.7	5.1	0.7	0.8	5.0
Duration of drug use (n)	10	9	1	2	81	56	17	14	2	1	8
Mean	3.0	3.0	3.3	7.9	4.7	6.5	3.0	0.9	3.8	7.8	7.1
Median	2.3	4.0	3.3	7.9	2.5	5.4	2.4	0.4	3.8	7.8	6.5
VSWs who ever injected drug (n)	263	354	251	300	304	300	300	274	298	123	160
Percent	2.7	1.2	0	0.3	7.9	4.7	3.7	0.4	0.7	0	4.4
Duration of drug injecting (n)	6	5	N/A	1	26	12	11	1	1	N/A	7
Mean	3.9	2.6	N/A	15.4	5.0	6.2	2.0	0.2	3.3	N/A	4.8
Median	3.5	2.0	N/A	15.4	2.9	5.0	1.4	0.2	3.3	N/A	4.5
Frequency of drug injection in the past month (n)	7	3	N/A	1	26	14	11	1	2	N/A	7
One time/day or less	57.1	65.6	N/A	0	69.5	64.3	36.4	0	50.0	N/A	85.7
More than one time per day	42.9	34.4	N/A	100.0	30.5	35.7	63.6	100.0	50.0	N/A	14.3
Injecting VSWs who reported using already used-syringes/needles by another in the last month (n)	5	N/A	N/A	1	26	14	11	1	2	N/A	7
Percent	0	N/A	N/A	100.0	8.0	14.3	0	0	0	N/A	42.9
Injecting VSWs who reported giving their used-syringes/needles to another in the last month (n)	5	N/A	N/A	1	26	14	10	1	2	N/A	7
Percent	0	N/A	N/A	100.0	16.0	7.1	10.0	0	0	N/A	42.9

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
Injecting VSWs who shared needles, drugs or other equipments in the last injection (n)	6	N/A	N/A	1	26	14	10	0	2	N/A	7
Percent	33.3	N/A	N/A	100.0	19.3	0	10.0	N/A	0	N/A	57.1
VSWs who reported that their one-time client injected drugs (n)	194	294	216	288	216	280	284	272	166	99	160
Percent	1.5	2.5	0.9	0.4	2.2	10.0	6.0	2.2	3.7	1.9	8.1
VSWs who reported that their regular client injected drugs (n)	218	292	166	284	279	278	271	172	288	101	122
Percent	1.4	1.7	0.6	0.7	4.0	9.4	8.1	3.5	1.0	4.0	6.6
VSWs who reported that their regular partners injected drugs (n)	128	189	109	120	145	144	114	154	172	67	75
Percent	1.6	1.3	1.8	0	6.1	11.8	6.1	5.8	2.9	14.9	8.0

Appendix 6.5: STI

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
VSWs who mentioned correctly STI symptoms (n)	263	352	251	300	304	300	300	274	298	122	160
Abdominal pain	12.6	17.9	53.4	23.7	3.6	63.7	61.7	26.6	47.3	50.0	26.9
Unusual genital discharge	53.6	52.3	62.6	65.7	9.6	79.3	60.3	65.0	82.9	63.9	41.3
Pain with urination	10.6	25.8	43.6	45.5	5.7	28.3	39.7	42.3	58.7	58.2	28.9
Genital pain	13.4	23.8	37.9	19.4	7.1	45.3	59.3	56.2	77.9	50.0	39.4
Genital ulcers/sore	12.9	27.6	31.1	8.4	27.7	35.0	46.3	42.3	70.1	44.3	20.6
Genital itching	34.2	47.2	62.6	21.1	20.5	77.7	79.0	81.4	84.2	59.8	71.3

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
VSWs reported unusual genital discharge in the last 12 months (n)	263	352	251	300	304	300	300	274	298	122	160
Percent	35.4	49.0	12.4	58.0	42.7	57.3	22.7	27.7	32.2	9.0	30.0
VSWs reported unusual genital pain/ ulcers in the last 12 months (n)	263	352	251	300	303	300	300	274	298	122	160
Percent	7.6	17.5	4.0	35.3	11.5	22.7	7.7	22.6	21.8	1.6	16.3

Appendix 6.6: HIV knowledge

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
VSWs who correctly identified ways of preventing HIV infection and rejecting misconception of HIV transmission (n)	263	354	251	300	304	300	300	274	298	123	
Percent	40.3	32.1	42.6	42.0	62.5	75.7	32.0	51.8	60.4	57.7	N/A
VSWs who perceived their risk of HIV transmission (n)	263	354	251	300	304	300	300	274	298	123	160
Percent	32.3	67.3	57.4	63.3	61.5	85.0	83.0	39.4	78.5	75.6	72.5
VSWs who ever had HIV tested	263	352	251	297	305	300	299	274	298	121	160
Percent	36.5	46.3	53.8	58.6	33.8	46.0	74.9	86.5	21.8	17.4	18.8
VSWs who had HIV tested and known results	263	352	251	297	305	300	299	273	298	121	160
Percent	28.9	44.0	53.8	58.6	31.2	46.0	73.9	86.1	21.5	17.4	3.1

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
VSWs who ever had voluntarily HIV tested (n)	263	352	251	300	304	300	300	274	298	123	160
Percent	33.8	34.2	48.6	49.0	32.7	44.3	72.0	74.1	19.5	12.2	16.9
VSWs who ever had voluntarily HIV tested, known their results and received post-test counseling (n)	263	352	251	300	304	300	300	274	298	123	160
Percent	24.3	21.2	40.6	41.7	11.5	24.3	46.0	53.6	12.1	3.3	5.6

Appendix 6.7: Expose to HIV/AIDS intervention

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
VSWs who have ever been in 05 Centers (n)	263	354	251	300	304	300	300	274	298	123	160
Percent	3.0	1.3	0.8	0.3	3.0	11.3	2.3	0.4	1.0	0.8	0
VSWs who obtained cheap/free condoms in the last 6 months (n)	263	352	251	300	304	300	300	274	298	120	160
Percent	73.0	54.7	52.6	37.3	36.2	60.3	83.0	71.9	61.4	64.2	16.9
VSWs who received safe sex education in the last 6 months (n)	263	351	250	300	304	300	300	274	298	121	160
Percent	72.2	75.7	68.4	68.0	60.9	73.0	82.7	86.5	71.5	74.4	22.5
Drug use VSWs who received drug education in the last 6 months (n)	11	9	1	3	85	56	17	14	2	1	8
Percent	27.3	66.7	0	0	32.4	55.4	76.5	35.7	100.0	0	12.5

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
VSWs who received IEC materials in the last 6 months (n)	263	350	251	300	304	300	300	274	297	121	160
Percent	58.9	59.4	53.8	62.0	63.5	76.7	73.0	81.8	66.8	62.0	11.3
Injecting VSWs who received syringes in the last 6 months (n)	7	5	0	1	26	14	11	1	2	0	7
Percent	57.1	39.6	N/A	0	7.7	42.9	54.6	100.0	0	N/A	14.3

Appendix 6.8: HIV/STI prevalence

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai	Lao Cai
HIV prevalence among VSW (n)	263	354	251	300	304	300	300	274	298	123	160
Percent	3.0	3.3	0.4	2.3	16.1	17.7	11.7	1.1	2.7	4.9	7.5
HIV prevalence among drug injecting VSW (n)	7	5	0	1	26	14	11	1	2	0	7
Percent	42.9	40.0	0	100.0	53.9	28.6	18.2	100.0	100.0	0	42.8
HIV prevalence among non - drug injecting VSW (n)	256	349	251	297	278	284	289	273	296	122	153
Percent	2.0	2.9	0.4	2.0	14.0	17.3	11.4	1.1	2.0	4.1	
Syphilis (n)	263	354	251	300	304	300	300	274	298	123	160
Percent	4.2	1.4	0.4	0.3	1.3	2.0	0.7	0.4	0	0.8	1.3
Gonorrhea (n)	N/A	N/A	N/A	N/A	304	300	N/A	N/A	N/A	N/A	N/A
Percent	N/A	N/A	N/A	N/A	1.2	0.7	N/A	N/A	N/A	N/A	N/A
Chlamydia (n)	N/A	N/A	N/A	N/A	304	300	N/A	N/A	N/A	N/A	N/A
Percent	N/A	N/A	N/A	N/A	10.9	3.0	N/A	N/A	N/A	N/A	N/A

Appendix 7: Descriptive Analysis of SSWs behavioral and biological data

Appendix 7.1: Socio-demographic characteristic of SSWs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
Age (Year) (n)	298	138	296	300	298	298	300	280	151	148
Mean	33.0	34.9	36.0	25.1	33.6	30.7	31.4	25.0	25.8	27.7
Median	32.3	15.1	37.1	23.7	31.3	30.2	30.4	21.9	23.4	27.1
Age Group (n)	298	138	296	300	298	298	300	280	151	148
< 20	6.7	5.1	2.4	20.3	10.2	5.0	0.7	35.0	15.2	10.2
20 – 25	18.8	12.3	12.2	37.3	14.3	16.1	6.3	30.0	41.7	24.3
25 – 30	16.4	20.3	12.2	26.1	20.9	27.9	38.7	12.9	21.9	32.4
30 or more	58.1	62.3	73.2	16.3	54.6	51.0	54.3	22.1	21.2	33.1
Education level (n)	300	138	300	300	300	300	300	281	159	151
Illiteracy	27.0	21.0	6.0	3.0	13.1	1.3	1.7	4.3	1.9	2.0
Primary school (1-5)	51.0	47.8	31.3	24.0	39.5	13.7	22.3	18.9	15.7	9.9
Secondary school (6-9)	18.7	29.0	49.0	53.0	35.6	52.3	55.3	48.8	47.8	50.3
High school (10-12)	3.3	2.2	13.3	18.3	11.8	30.7	19.7	25.3	34.0	36.4
College/University	0	0	0.3	1.7	0	2.0	1.0	2.9	0.6	1.3
Who ever married (n)	300	138	300	300	299	300	300	282	158	151
Percent	84.0	84.8	75.0	43.3	67.8	68.7	83.0	37.2	32.9	64.9
Duration of selling sex (sex work) (n) (year)	292	138	298	279	300	300	300	282	61	146
Mean	5.5	7.4	6.7	3.3	5.6	5.9	5.1	2.2	2.6	3.6
Median	3.3	5.3	4.4	2.4	3.5	5.0	4.4	1.0	2.3	2.6

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
Duration of selling sex (sex work) in current cities/provinces (n) (year)	300	138	300	300	300	300	300	282	158	151
Mean	4.6	5.2	5.8	2.2	4.3	5.5	4.6	1.9	1.6	3.2
Median	3.0	4.0	3.8	2.0	3.0	4.3	4.0	0.8	0.9	2.2
Ever sold sex in other provinces (n)	300	138	299	298	300	300	300	282	153	150
Percent	12.3	21.7	10.3	38.9	4.7	9.0	10.7	11.7	23.5	14.7
Ever sold sex in other countries (n)	300	138	300	299	300	300	300	282	158	151
Percent	1.3	2.9	0	2.3	1.0	0.7	0.7	1.1	0	1.3
Monthly income (million VND)	300	138	300	300	300	300	300	282	158	151
Mean	3.0	3.2	3.3	6.0	3.9	5.9	4.1	4.5	4.6	4.2
Direct income from selling sex (million VND)	300	138	300	300	300	300	300	282	158	151
Mean	2.4	2.8	2.9	7.2	3.3	5.6	3.8	4.1	3.8	3.4
Most popular client waiting point	299	138	300	297	300	300	300	282	153	151
Restaurant, bar or karaoke venue	32.7	15.3	36.3	94.0	7.4	16.0	23.7	92.5	94.1	85.4
Street	67.3	84.7	63.7	6.0	92.6	84.0	76.3	7.5	5.9	14.6

Appendix 7.2: Sexual history and number of sexual clients among SSWs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
Mean and median number of clients in the last week (n)	298	138	300	261	298	297	300	269	63	137
Mean	5.8	4.9	4.7	6.3	7.3	7.0	10.3	24.5	7.8	6.8
Median	5.0	5.0	4.0	5.0	6.0	6.0	10.0	22.0	6.0	6.0

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
Mean and median number of one-time clients in the past month (n)	300	138	300	224	298	300	300	262	45	135
Mean	12.5	9.8	12.6	10.0	14.9	19.3	19.7	71.6	5.6	9.1
Median	7.0	8.0	10.0	8.0	10.0	14.5	15.0	67.5	2.0	8.0
Mean and median number of one-time clients in the past week (n)	299	138	300	264	300	299	300	269	80	144
Mean	3.5	3.1	3.0	3.7	4.7	4.7	7.4	21.2	5.1	4.4
Median	3.0	2.0	2.0	3.0	4.0	4.0	6.0	20.0	4.0	4.0
Mean and median number of one-time clients in the last day of selling sex (n)	299	138	300	272	200	300	300	282	112	149
Mean	1.4	1.6	1.2	1.7	1.6	1.8	2.2	3.3	1.6	2.4
Median	1.0	1.0	1.0	2.0	1.0	2.0	2.0	3.0	1.0	2.0
Mean and median number of regular clients in the past month (n)	300	138	300	280	300	300	300	277	55	150
Mean	5.2	5.0	5.3	4.7	6.7	6.1	5.2	7.8	3.1	3.2
Median	4.0	4.0	4.0	5.0	5.0	5.0	5.0	4.0	3.0	3.0
Mean and median number of regular clients in the past week (n)	300	138	300	290	300	300	300	280	92	148
Mean	2.2	1.8	1.7	2.5	2.6	2.2	2.8	3.3	2.6	2.3
Median	2.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
Mean and median number of regular clients in the last day (n)	300	138	300	296	300	300	300	282	102	147
Mean	1.2	1.0	0.8	1.2	1.2	1.2	1.2	0.9	1.1	1.2
Median	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Number of regular sex partners in the past month (n)	300	138	299	297	299	300	300	282	139	147
Mean	0.4	0.5	0.4	0.5	0.4	0.5	0.3	0.5	0.9	0.7

Appendix 7.3: Condom use

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
Condom use with one-time client during last sex (n)	245	123	274	204	270	279	288	257	39	126
Percent	98.0	95.1	98.9	90.7	80.5	73.8	99.3	95.3	97.4	88.9
Consistency of condom use with one-time client in the past month (n)	245	123	274	204	272	279	288	257	39	126
Percent	91.8	89.4	78.5	43.1	31.3	38.7	88.9	85.2	87.2	75.4
Condom use with regular client during last sex (n)	248	112	229	225	249	264	227	205	45	136
Percent	94.8	93.8	96.5	81.8	64.1	65.9	96.9	86.8	93.3	81.6
Consistency of condom use with regular client in the past month (n)	247	112	228	225	247	264	227	205	46	137
Percent	86.2	88.4	70.2	32.4	26.6	33.3	78.9	72.7	63.0	66.4

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
Condom use with regular sex partner during last sex (n)	117	60	116	112	108	122	84	112	86	73
Percent	33.3	35.0	75.0	31.1	16.8	30.3	57.1	31.3	55.8	43.8
Consistency of condom use with regular sex partner in the past month (n)	117	60	116	121	108	112	84	113	86	74
Percent	30.8	31.7	31.9	18.2	5.5	17.2	34.5	11.6	15.1	32.4

Appendix 7.4: Drug use and injecting behavior among SSWs

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
SSWs who ever used drug (n)	300	138	296	300	300	299	299	281	158	151
Percent	5.7	26.1	1.7	0.7	29.5	26.4	23.1	5.0	1.3	5.3
Duration of drug use (n)	17	36	5	2	86	79	68	14	1	8
Mean	6.6	6.5	2.3	2.3	5.2	7.2	3.9	2.6	0.5	4.2
Median	5.3	4.3	1.3	2.3	4.5	6.8	3.4	1.7	0.5	3.5
SSWs who ever injected drug (n)	300	138	300	300	300	300	300	282	159	151
Percent	4.7	16.7	0.3	0	12.8	15.0	17.7	1.1	0.6	4.6
Duration of drug injecting (n)	14	23	1	N/A	37	45	53	3	1	7
Mean	7.4	4.6	0.7	N/A	4.1	5.5	3.0	2.3	0.3	2.2
Median	6.1	3.3	0.7	N/A	4.0	4.6	2.4	1.7	0.3	1.4
Frequency of drug injection in the past month (n)	14	23	1	N/A	37	45	53	3	1	7
One time/day or less	71.4	69.6	100.0	N/A	76.0	37.8	13.2	66.7	100.0	57.1
More than one time per day	28.6	30.4	0	N/A	24.0	62.2	86.8	33.3	0	42.9

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
Injecting SSWs who reported using already used-syringes/needles by another in the last month (n)	11	23	1	0	37	45	53	2	1	7
Percent	27.3	30.4	100.0	0	0	15.6	7.6	50.0	100.0	14.3
Injecting SSWs who reported giving their used-syringes/needles to another in the last month (n)	11	23	1	0	37	45	52	2	1	7
Percent	0	26.1	100.0	0	0	4.4	5.8	50.0	100.0	14.3
Injecting SSWs who shared needles, drugs or other equipments in the last injection (n)	12	23	1	0	37	44	53	3	1	7
Percent	41.7	17.4	0	0	14.8	4.6	3.8	66.7	100.0	28.6
SSWs who reported that their one-time client injected drugs (n)	254	123	273	203	270	279	288	254	39	126
Percent	3.3	4.1	0.7	1.5	4.2	15.1	7.3	3.9	0	2.4
SSWs who reported that their regular client injected drugs (n)	248	112	229	225	248	264	227	205	46	137
Percent	3.6	10.7	0.9	3.6	6.4	15.5	11.0	3.9	2.2	8.8
SSWs who reported that their regular partners injected drugs (n)	117	59	116	120	108	112	84	112	85	72
Percent	6.8	17.0	0	2.5	11.9	21.3	7.1	8.9	10.6	13.9

Appendix 7.5: STI

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
SSWs who mentioned correctly STI symptoms (n)	300	136	299	300	300	300	300	281	156	148
Abdominal pain	10.3	22.1	48.2	27.7	1.7	64.0	57.0	17.4	31.4	48.0
Unusual genital discharge	47.7	51.5	61.7	57.3	20.7	75.3	58.9	57.7	77.6	46.0
Pain with urination	7.0	33.1	44.6	35.3	5.0	19.0	36.3	44.5	32.5	56.3
Genital pain	14.7	26.1	40.5	15.0	8.3	41.3	58.7	46.8	35.0	50.3
Genital ulcers/sore	12.0	27.5	29.4	10.4	26.4	20.3	53.0	24.1	49.4	41.6
Genital itching	30.7	58.0	60.9	22.0	19.7	68.3	85.3	47.2	81.0	69.3
SSWs reported unusual genital discharge in the last 12 months (n)	300	138	300	300	300	300	300	281	159	151
Percent	34.7	44.2	19.3	49.7	44.2	53.0	30.7	40.9	48.4	20.5
SSWs reported unusual genital pain/ulcers in the last 12 months (n)	300	138	300	298	300	300	300	281	159	151
Percent	12.0	23.9	9.0	23.8	14.3	22.0	18.7	32.7	14.5	9.3

Appendix 7.6: HIV knowledge

Indicators		An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
SSWs who correctly identified ways of preventing HIV infection and rejecting misconception of HIV transmission (n)		300	138	300	300	300	300	300	282	159	151
	Percent	36.0	24.6	45.3	36.3	37.9	73.3	35.7	41.8	66.0	69.5
SSWs who obtained cheap/free condoms in the last 6 months (n)		298	137	298	299	300	300	298	281	159	151
	Percent	83.9	83.9	56.7	38.8	55.3	57.7	83.6	85.8	36.5	44.4
SSWs who received safe sex education in the last 6 months (n)		299	138	300	299	300	300	300	282	156	151
	Percent	72.9	81.2	79.7	58.9	70.9	72.0	83.7	79.4	94.2	49.0
Drug use SSWs who received drug education in the last 6 months (n)		17	36	5	2	87	79	69	14	1	8
	Percent	70.6	77.8	20.0	50.0	44.1	25.2	75.4	35.7	0	37.5
SSWs who received IEC materials in the last 6 months (n)		300	138	300	297	299	299	300	282	157	151
	Percent	55.7	63.8	60.0	53.2	64.2	71.2	76.7	68.8	65.0	60.3
Injecting SSWs who received syringes in the last 6 months (n)		14	23	1	0	37	45	53	3	1	7
	Percent	71.4	82.6	0	N/A	24.0	55.6	83.0	33.3	0	42.9

Appendix 7.7: Expose to HIV/AIDS intervention

Indicators	An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
SSWs who have ever been in 05 Centers (n)	300	138	300	300	300	300	300	282	155	151
Percent	7.3	18.1	4.0	1.3	11.3	16.7	4.7	4.3	0.6	0
SSWs who obtained cheap/free condoms in the last 6 months (n)	298	137	298	299	300	300	298	281	159	151
Percent	83.9	83.9	56.7	38.8	55.3	57.7	83.6	85.8	36.5	44.4
SSWs who received safe sex education in the last 6 months (n)	299	138	300	299	300	300	300	282	156	151
Percent	72.9	81.2	79.7	58.9	70.9	72.0	83.7	79.4	94.2	49.0
Drug use SSWs who received drug education in the last 6 months (n)	17	36	5	2	87	79	69	14	1	8
Percent	70.6	77.8	20.0	50.0	44.1	25.2	75.4	35.7	0	37.5
SSWs who received IEC materials in the last 6 months (n)	300	138	300	297	299	299	300	282	157	151
Percent	55.7	63.8	60.0	53.2	64.2	71.2	76.7	68.8	65.0	60.3
Injecting SSWs who received syringes in the last 6 months (n)	14	23	1	0	37	45	53	3	1	7
Percent	71.4	82.6	0	N/A	24.0	55.6	83.0	33.3	0	42.9

Appendix 7.8: HIV/STI prevalence

Indicators		An Giang	Can Tho	Da Nang	Dong Nai	HCMC	Ha Noi	Hai Phong	Nghe An	Quang Ninh	Yen Bai
HIV prevalence among SSW (n)		300	138	300	300	299	300	300	282	159	151
	Percent	7.7	19.6	0.3	4.7	16.3	19.7	23.0	3.2	1.3	10.6
HIV prevalence among drug injecting SSW (n)		14	23	1	0	37	45	53	3	1	7
	Percent	57.1	78.3	0	0	48.7	26.7	34.0	33.3	100.0	14.3
HIV prevalence among non - drug injecting SSW (n)		286	115	295	300	261	252	247	278	156	144
	Percent	5.2	7.8	0.3	4.7	11.1	18.3	20.7	2.9	0.6	10.4
Syphilis (n)		300	138	300	300	299	300	300	282	159	151
	Percent	7.3	5.8	1.3	0	4.4	0.3	0.7	1.4	0	0
Gonorrhea (n)		N/A	N/A	N/A	N/A	299	300	N/A	N/A	N/A	N/A
	Percent	N/A	N/A	N/A	N/A	3.3	0	N/A	N/A	N/A	N/A
Chlamydia (n)		N/A	N/A	N/A	N/A	299	300	N/A	N/A	N/A	N/A
	Percent	N/A	N/A	N/A	N/A	10.7	4.7	N/A	N/A	N/A	N/A

Appendix 8: Descriptive Analysis of MSM behavioral and biological data

Appendix 8.1: Socio-demographic characteristic of MSM

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
Age (n)	397	113	284	399	209	190	399	182	217	400	27	373
Mean	24.2	22.7	24.8	26.8	25.8	27.9	26.4	25.1	27.5	30.5	31.4	30.5
Median	21.5	20.1	21.9	24.7	23.7	26.0	24.7	23.0	26.0	29.6	31.1	29.5
Age Group (n)	397	113	284	399	209	190	399	182	217	400	27	373
< 20	37.5	46.9	33.8	21.8	25.4	17.9	22.1	29.7	15.7	5.8	7.4	5.6
20 – 25	30.5	29.2	31.0	29.8	33.0	26.3	29.6	28.6	30.4	23.3	11.1	24.2
25 – 30	12.3	8.8	13.7	22.1	21.1	23.2	22.8	20.9	24.4	25.0	22.2	25.2
30 or more	19.7	15.1	21.5	26.3	20.5	32.6	25.6	20.8	29.5	46.0	59.3	45.0
Education Level (n)	398	113	284	399	209	190	399	182	217	400	27	373
Illiteracy	3.0	3.5	2.8	4.3	4.3	4.2	0.5	1.1	0	0.5	3.7	0.3
Primary school (1-5)	10.1	12.4	9.2	19.6	23.9	14.7	3.0	5.5	0.9	5.5	25.9	4.0
Secondary school (6-9)	30.2	39.8	26.4	39.9	44.5	34.7	28.6	36.3	22.1	28.3	33.3	27.9
High school (10-12)	26.1	23.0	27.5	26.1	23.4	29.0	54.9	53.9	55.8	41.8	33.3	42.4
College/University	30.7	21.2	34.2	10.3	3.8	17.4	13.0	3.3	21.2	24.0	3.7	25.5
Occupation (n)	396	113	282	399	209	190	399	182	217	393	27	366
Farmers	0.3	0	0.4	0.5	1.0	100.0	6.5	11.0	2.8	1.0	100.0	1.1
Government employees	1.5	0	2.1	1.5	1.9	10.5	2.0	4.9	5.1	9.9	1.0	10.7
Entertainment staff	9.8	9.7	9.9	7.5	7.2	7.9	32.1	40.1	25.3	19.1	18.5	19.1
Salesman	3.8	4.4	3.5	3.3	3.3	3.2	16.5	23.6	10.3	16.8	100.0	18.0
Business Owner	8.8	7.1	9.6	10.3	8.6	12.1	14.5	3.3	24.0	10.4	100.0	11.2

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
Student	27.0	21.2	29.1	5.3	0.5	10.5	5.8	4.4	6.9	20.9	7.4	21.9
Self- employed	16.7	16.8	16.7	10.3	12.0	8.4	34.6	39.0	30.9	25.4	51.9	23.5
Illegal activities	12.1	33.6	3.5	7.8	12.4	2.6	36.1	67.1	9.2	100.0	100.0	100.0
Unemployed	0	0	0	21.8	20.1	2.4	7.8	11.5	4.6	3.6	3.7	3.6
Other	0	0	0	41.6	44.5	38.4	10.0	3.8	15.2	11.2	18.5	10.7
Monthly income (VND) (milion)	395	112	283	393	206	187	398	181	217	399	27	372
Mean	2	2	2	2	2	2	3	3	3	2	2	3
Monthly income group (VND)	395	112	283	393	206	187	398	181	217	399	27	372
< 500.000	2.8	1.8	3.2	4.3	4.9	3.7	2.5	0.6	4.1	1.8	0	1.9
500.000 – less than 1.000.000	15.4	11.6	17.0	16.5	17.0	16.0	0.5	0.6	0.5	4.0	11.1	3.5
1.000.000 – less than 2.00.000	55.2	56.3	54.8	44.0	42.7	45.5	31.9	30.4	33.2	53.6	77.8	51.9
2.000.000 or more	26.6	30.3	25.0	35.1	35.4	34.8	65.1	68.4	62.2	40.6	11.1	42.7

Appendix 8.2: Sexual characteristic and number of female partner among MSM

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
Ever married with a female (n)	394	111	282	399	209	190	399	182	217	396	27	369
Percent	9.6	9.0	9.9	11.0	12.9	8.9	16.5	15.4	17.5	27.0	22.2	27.4

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
Sexual orientation (n)	398	113	284	399	209	190	399	182	217	400	27	373
Prefers men as partners only	41.7	32.7	45.4	48.9	42.6	55.8	26.1	12.6	37.3	47.5	59.3	46.6
Prefer men to women as partners	12.6	10.6	13.4	15.5	16.8	14.2	46.1	43.4	48.4	35.5	33.3	35.7
Prefers women as much as men	13.1	11.5	13.7	18.8	24.4	12.6	12.0	17.6	7.4	14.8	7.4	15.3
Prefers women to men as partners	9.1	9.7	8.8	13.5	13.4	13.7	10.5	15.4	6.5	2.3	0	2.4
Prefers women as partners only	23.6	35.4	18.7	3.3	2.9	3.7	5.3	11.0	0.5	0	0	0
Self-identification (n)	398	113	284	399	209	190	398	182	216	399	27	372
Bong lo	9.1	12.4	7.7	2.8	3.3	2.1	2.5	1.1	3.7	3.8	18.5	2.7
Bong kin	53.3	37.1	59.9	68.4	63.2	74.2	84.4	74.2	93.1	74.7	22.2	78.5
Straight man	36.9	48.7	32.0	28.8	33.5	23.7	12.8	24.2	3.2	21.1	59.3	18.3
Other	0.8	1.8	0.4	0	0	0	0.3	0.5	0	0.5	0	0.5
Age at the first sex (n)	394	112	282	391	206	185	397	182	215	359	25	334
Mean	17.8	17.3	18.0	19.2	18.7	19.7	18.5	17.8	19.1	18.8	18.0	18.9
Age group at the first sex (n)	394	112	282	391	206	185	397	182	215	359	25	334
<20	79.7	84.8	77.7	68.0	72.8	62.7	68.8	79.7	59.5	67.7	84.0	66.5
20 – less than 25	19.3	15.2	20.9	21.2	18.9	23.8	29.2	19.2	37.7	31.2	16.0	32.3
25 or more	1.0	0	1.4	10.7	8.3	13.5	2.0	1.1	2.8	1.1	0	1.2

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
Having male sexual partners in the past month (n)	397	113	284	399	209	190	399	182	217	400	27	373
Percent	65.7	100.0	52.1	88.2	100.0	75.3	92.5	100.0	86.2	81.8	100.0	80.4
Number of male partners in the past month (n)	398	113	284	398	209	189	390	178	211	389	24	365
Mean	2.2	4.8	1.2	3.3	4.9	1.4	3.7	6.0	1.6	1.5	1.5	1.4
Median	1.0	4.0	1.0	2.0	3.0	1.0	2.0	5.0	1.0	1.0	5.0	1.0
Number of male partners in the past month (n)	398	113	284	398	209	189	390	178	211	389	24	365
0	34.4	0	48.1	11.8	0	24.9	7.7	0	14.2	18.8	0	20.0
1	22.9	12.4	27.0	34.7	25.8	44.4	29.5	7.9	47.6	45.8	0	48.8
2	14.6	22.1	11.6	18.8	21.1	16.4	14.4	11.2	17.0	17.0	50.0	14.8
3	7.8	14.2	5.3	9.1	13.4	4.2	11.5	11.8	11.3	10.0	16.7	9.6
>=4	20.4	51.3	8.1	25.6	39.7	10.1	36.9	69.1	9.9	8.5	33.3	6.9
MSM who sold sex to male partners in the past month (n)	396	112	284	399	209	190	398	182	216	400	27	373
Percent	28.3	100.0	0	52.4	100.0	0	45.7	100.0	0	6.8	100.0	0
Number of male partners MSM had anal sex when they sold sex in the past month (n)	397	112	284	399	209	190	398	181	216	398	25	373
Mean	0.5	2.0	0	1.2	2.4	0	1.6	3.6	0	0	1.4	0
Median	0	1.0	0	0	1.0	0	0	3.0	0	0	1.0	0

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
Number of male partners MSM had anal sex when they sold sex in the past month (n)	397	112	284	399	209	190	398	181	216	398	25	373
0	79.1	26.8	100.0	63.2	29.7	100.0	58.5	9.4	100.0	94.0	4.0	100.0
1	7.1	25.0	0	15.0	28.7	0	7.8	17.1	0	3.5	56.0	0
2	5.3	18.8	0	9.3	17.7	0	10.1	22.1	0	2.0	32.0	0
3	3.3	10.7	0	3.5	6.7	0	7.0	15.5	0	0.3	4.0	0
>=4	5.3	18.8	0	9.0	17.2	0	16.6	35.9	0	0.3	4.0	0
MSM who had sex with male sex workers in the past month (n)	396	112	284	399	209	190	399	182	217	400	27	373
Percent	3.8	5.3	3.2	4.5	5.3	3.7	7.8	5.5	9.7	3.8	0	4.0
Number of male sex workers who MSM had anal sex with in the past month (n)	397	112	284	399	209	190	397	182	214	399	27	372
0	96.2	94.6	96.8	95.5	94.7	96.3	92.7	94.5	91.1	96.2	100.0	96.0
1	1.8	3.6	1.1	1.0	1.4	0.5	2.0	1.7	2.3	1.0	0	1.1
>= 2	2.0	1.8	2.1	3.5	3.8	3.2	5.3	3.9	6.5	2.8	0	3.0
MSM who had consensual sex with male partner in the past month (n)	397	113	284	397	208	189	399	182	217	400	27	373
Percent	49.9	46.0	51.4	53.7	35.1	74.1	63.4	38.5	84.3	80.8	85.2	80.4

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
Number of consensual male partners who MSM had anal sex with in the past month (n)	398	113	284	397	208	189	397	182	214	393	27	366
0	50.3	54.0	48.9	46.4	64.9	25.9	36.8	61.5	15.9	19.6	14.8	20.0
1	25.4	19.5	27.5	32.2	20.2	45.5	36.5	15.4	54.2	50.9	48.2	51.1
2	12.8	15.9	11.6	11.8	7.2	16.9	12.1	8.2	15.4	16.5	29.6	15.6
3	5.0	1.8	6.3	4.5	4.3	4.8	7.6	8.2	7.0	8.4	7.4	8.5
>=4	6.5	8.8	5.6	5.0	3.4	6.9	7.1	6.6	7.5	4.6	0	4.9
MSM who had oral sex with male partner in the past month (n)	398	113	284	399	209	190	389	177	212	389	24	365
Percent	96.0	93.8	96.8	87.7	86.6	88.9	98.7	98.3	99.1	82.8	87.5	82.5
MSM who had anal sex with foreigners including overseas Vietnamese (n)	398	113	284	399	209	190	399	182	217	397	27	370
Percent	4.5	6.2	3.9	14.3	19.1	8.9	10.0	15.9	5.1	1.3	3.7	1.1
MSM who had sex with female partners in the past 12 months (n)	398	113	284	399	209	190	397	182	215	393	27	367
Percent	46.3	59.3	41.2	45.4	53.1	36.8	48.6	65.9	34.4	28.5	3.8	30.8

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
MSM who had sex with female sex workers in the past 12 months (n)	398	113	284	399	209	190	397	182	215	393	27	367
Percent	15.4	24.8	11.3	13.8	18.3	8.9	13.8	19.8	8.8	7.0	3.7	7.3
MSM who sold sex to female partners in the last 12 months (n)	397	113	283	398	208	190	399	182	216	399	27	372
Percent	2.0	4.4	0.7	6.8	9.6	3.7	8.5	14.3	3.7	0.0	0	0.3
MSM who had consensual sex with female partners in the last 12 months (n)	397	113	284	398	208	190	399	182	217	395	27	372
Percent	44.6	55.8	39.9	40.5	47.6	32.6	39.1	51.1	28.7	21.5	0	23.1

Appendix 8.3: Condom use

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
MSM who reported using condom in the last time they sold sex to male client (n)	82	81	1	148	148	N/A	165	164	1	21	21	N/A
Percent	69.5	70.4	0	54.7	84.7	N/A	70.3	70.1	100.0	42.9	42.9	N/A

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
MSM who reported using condom in the last sex with male sex worker (n)	8	5	3	13	9	4	29	10	19	13	N/A	13
Percent	25.0	40.0	0	38.5	44.4	25.0	82.8	80.0	84.2	84.6	N/A	84.6
MSM who reported using condom during last sex with consensual male partner (n)	135	41	94	152	56	96	181	62	119	310	22	288
Percent	60.0	53.7	62.8	52.3	51.8	57.3	72.4	56.5	80.7	52.9	40.9	53.8
MSM who reported using condom consistently when they sold sex to male client in the last month (n)	83	82	1	149	149	N/A	166	165	1	25	25	N/A
Percent	45.8	46.3	0	24.2	24.2	N/A	47.0	46.7	100.0	20.0	20.0	N/A
MSM who reported using condom consistently with male sex workers in the last month (n)	9	6	3	13	9	4	29	10	19	13	N/A	13
Percent	33.3	0	0	15.4	22.2	25.0	58.6	60.0	57.9	23.1	N/A	23.1
MSM who reported using condom consistently with consensual male partners in the last 1 month (n)	136	42	94	152	56	96	181	62	119	315	23	292
Percent	39.7	35.7	42.5	30.3	21.4	35.4	54.1	33.9	64.7	41.6	13.0	43.8

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
MSM who reported using condom during last sex with female sex workers in the last 12 months (n)	61	28	33	54	37	17	55	36	19	28	1	27
Percent	45.9	42.9	48.5	61.1	59.5	64.7	80.0	80.6	78.9	67.9	100.0	70.4
MSM who reported using condom in the last sex they sold sex to female client in the last 12 months (n)	8	5	3	26	19	7	34	26	8	1	N/A	1
Percent	37.5	20.0	66.7	50.0	52.6	42.9	58.8	61.5	50.0	100.0	N/A	100.0
MSM who reported using condom during last sex with consensual female partner in the last 12 months (n)	117	63	114	161	99	62	156	93	63	85	N/A	85
Percent	41.2	44.4	39.5	41.6	38.4	46.8	47.4	39.8	58.7	43.5	N/A	43.5
MSM who reported using condom consistently with female sex workers in the last 12 months (n)	61	28	33	54	37	17	55	36	19	28	1	27
Percent	37.7	35.7	39.4	38.9	43.2	29.4	67.3	63.9	73.7	64.3	100.0	66.7
MSM who reported using condom consistently when they sold sex to female client in the last 12 months (n)	8	5	3	26	19	7	34	26	8	1	N/A	1
Percent	12.5	40.0	33.3	23.1	21.1	28.6	47.1	46.2	50.0	100.0	N/A	100.0

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
MSM who reported using condom consistently with consensual female partners (n)	117	63	114	161	99	62	156	93	63	85	N/A	85
Percent	24.9	27.0	23.7	23.6	19.2	30.6	27.6	24.7	31.7	31.8	N/A	31.8

Appendix 8.4: Drug use and injecting behavior among MSM

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
MSM ever had sex when they drunk (n)	398	113	283	399	208	190	399	182	217	400	27	373
Percent	58.5	62.8	56.9	32.8	35.6	30.0	23.6	27.5	20.3	8.5	3.7	8.9
MSM who reported using condom during last sex when they were drunk (n)	233	71	161	131	74	57	94	50	44	34	1	33
Percent	30.0	36.6	27.3	32.1	31.1	33.3	27.7	18	38.6	41.2	0	42.4
MSM who ever used drugs (n)	397	113	284	399	209	190	399	182	217	397	27	372
Percent	11.1	9.7	11.6	25.3	27.3	23.2	31.8	28.0	35.0	21.4	29.6	20.7

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
MSM who ever injected drugs (n)	397	113	284	399	209	190	399	182	217	400	27	373
Percent	6.3	5.3	6.7	8.0	8.1	7.9	6.0	5.5	6.5	2.0	11.1	1.3
MSM who ever used needles and syringes which was already used by others (n)	25	6	19	32	17	15	24	10	14	8	3	5
Percent	48.0	33.3	52.6	34.4	35.3	33.3	20.8	0	35.7	0	0	60.0
MSM who reported that their sexual partners inject drugs (n)	397	113	284	399	209	190	399	182	217	399	27	372
Percent	7.6	7.1	7.7	30.8	34.4	26.8	11.8	13.2	10.6	3.5	7.4	3.2

Appendix 8.5: STI

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
MSM who mentioned correctly STI symptoms (n)	397	113	283	399	209	190	399	182	217	400	27	373
Abdominal pain	8.3	11.5	6.7	1.3	1.0	1.6	2.8	2.8	2.8	9.8	3.7	10.2
Unusual genital discharge	25.5	19.6	27.6	57.1	53.1	61.6	62.9	61.0	64.5	64.3	40.7	65.9
Pain with urination	30.2	33.6	28.6	47.1	45.9	48.4	59.2	58.8	59.4	70.8	40.7	72.9
Genital ulcer/sore	42.8	38.1	44.5	52.9	48.3	57.9	56.1	53.3	58.5	66.5	55.6	67.3
Unusual anal discharge	32.2	36.3	30.4	10.0	8.6	11.6	2.8	1.7	3.7	21.8	7.4	22.8
MSM who reported sore, ulcers or unusual discharge in the genital area (n)	396	112	283	399	209	190	399	182	217	400	27	373
Percent	5.8	7.1	5.3	8.3	11.7	4.2	7.0	12.6	2.3	5.0	29.6	3.2
MSM who reported sores, ulcers or unusual discharge in the anal area (n)	396	112	283	399	209	190	399	182	217	400	27	373
Percent	5.1	5.4	4.9	6.3	10.5	1.6	2.8	3.9	1.84	4.0	11.1	3.5

Appendix 8.6: HIV knowledge

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
MSM who correctly identify ways of preventing HIV infection and rejecting misconception about HIV transmission (n)	398	113	284	399	209	190	399	182	217	400	27	373
Percent	51.0	45.1	53.2	40.9	29.2	53.7	79.0	74.7	82.5	41.0	7.4	43.4
MSM perceived their risk of HIV infection (n)	398	113	283	399	209	190	399	182	217	400	27	373
Percent	30.9	37.2	28.3	43.9	48.8	38.4	40.9	51.7	31.9	25.8	22.2	26.0
MSM who ever had HIV test (n)	398	113	283	399	209	190	399	182	217	400	27	373
Percent	28.1	16.8	32.9	25.6	23.4	27.9	33.8	39.6	29.0	35.8	33.3	35.9
MSM who ever had HIV test and known the result (n)	398	113	283	399	209	190	399	182	217	400	27	373
Percent	19.6	14.2	21.9	19.3	17.2	21.6	23.1	27.5	19.4	28.3	21.7	30.4
MSM who ever had HIV test voluntarily (n)	398	113	283	399	209	190	399	182	217	400	27	373
Percent	25.4	15.0	29.7	19.8	16.7	23.2	32.8	39.6	27.2	34.8	29.6	35.1
MSM who had HIV test, result informed and received counseling (n)	398	113	283	399	209	190	399	182	217	400	27	373
Percent	19.1	13.5	21.7	18.5	16.5	20.8	21.8	29.1	19.1	28.8	21.3	30.3

Appendix 8.7: Expose to HIV/AIDS intervention

Indicators	Can Tho			HCMC			Hanoi			Hai Phong		
	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
MSM who received condoms in the last 6 months (n)	397	113	284	399	209	190	399	182	217	400	27	372
Percent	42.6	41.6	43.0	46.9	45.9	47.9	55.4	64.8	47.5	29.0	7.4	30.6
MSM who received lubricant in the last 6 months (n)	397	113	284	399	209	190	399	182	217	400	27	373
Percent	31.7	40.7	28.2	25.8	20.6	31.6	45.4	51.6	40.1	27.0	7.4	28.4
MSM who received information on safe sex in the last 6 months (n)	397	113	284	399	209	190	397	182	215	400	27	373
Percent	48.1	49.6	47.5	54.6	54.1	55.3	51.1	56.0	50.7	43.5	22.2	45.0
MSM who received information about MSM and safe injection in the last 6 months (n)	397	113	284	399	209	190	399	182	217	400	27	373
Percent	33.5	21.2	38.4	50.1	55.5	44.2	48.9	42.3	54.4	28.8	14.8	29.8

Appendix 8.8: HIV/STI prevalence

Indicators		Can Tho			HCMC			Hanoi			Hai Phong		
		MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW	MSM	MSW	non MSW
HIV (n)		398	113	284	398	209	189	399	182	217	400	27	373
	Percent	6.0	8.9	4.9	14.8	15.3	14.3	17.3	14.3	19.8	16.5	14.8	16.6
STI (n)		398	113	284	398	209	189	399	182	217	400	27	373
	Percent	17.3	17.7	17.3	21.4	21.5	21.1	15.8	18.7	13.4	7.0	0	7.5
Syphilis (n)		398	113	284	398	209	189	399	182	217	400	27	373
	Percent	0.8	0.9	0.7	2.8	1.9	3.7	0.3	0	0.5	0.5	0	0.5
Genital gonorrhea (n)		398	113	284	399	209	190	399	182	217	400	27	373
	Percent	0.5	0.9	0.4	2.8	2.9	2.6	2.3	3.3	1.4	0	0	0
Rectal gonorrhea (n)		398	113	284	399	209	190	399	182	217	400	27	373
	Percent	7.5	8.0	7.4	7.3	7.2	7.4	8.8	8.8	8.8	2.8	0	2.9
Genital chlamydia (n)		398	113	284	399	209	190	399	182	217	400	27	373
	Percent	0.8	0.9	0.7	7.0	8.1	5.8	2.3	3.8	0.9	1.5	0	1.6
Rectal chlamydia (n)		398	113	284	399	209	190	399	182	217	400	27	373
	Percent	10.1	9.7	10.2	5.8	7.2	4.2	4.8	7.1	2.8	3.0	0	3.2