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FOREWORD

The existing of HIV/AIDS epidemic is a serious threat to all infrastructure development in Cambodia. Reference to the results of the HIV Sentinel Surveillance in 1999, conducted by The National Center for HIV/AIDS, Dermatology and STD (NCHADS), allowed us to estimate the total number of people living with HIV in Cambodia to be 170,000.

There are a lot of factors contributing to the rapid spread of HIV/AIDS in Cambodia. Among the primary factors are: poverty in general, increase of sex service, increase of mobility for job opportunity, lack of knowledge about HIV/AIDS, misunderstandings about HIV/AIDS, the low socio-economic status of much of the population, and especially women etc. The single most important factor, however, is the high-risk behavior of particular sections of the population.

NCHADS has, since 1997, established a surveillance system to monitor these behaviors and changes and trends in selected high-risk group, through a series of annually systematic surveys. This system called Behavioral Surveillance Survey (BSS).

The objective of these surveys is to respond to the needs of individuals, national and Non-Governmental institutions working on HIV/AIDS and to produce a better, comprehensive understanding of the scale and scope of risks, and how these change, in sexual behaviors, over time. The results can also be used as an advocacy tool, for policy support, for programme evaluation, and for design or redesign of interventions to make them appropriate and effective as at national and provincial levels.

We would like to take this opportunity to appeal to those who use these findings and results to interpret them accurately in the spirit in which they were collected.

Finally, NCHADS and myself would like to express our gratitude for the participation and support, financially, technically and morally from different individuals and institutions active in Cambodia, whose contribution made the Survey a success. We would particularly like to thank the interviewees who frankly and honestly answered difficult and sensitive questions about their behavior.

Phnom Penh, 02. 8. 2001



Dr. MEAN-CHHI VU

1. INTRODUCTION

A well established HIV/AIDS epidemic has been clearly documented in the past few years in Cambodia. HIV prevalence in Cambodia is monitored annually by The Cambodian National Center for HIV, AIDS, Dermatology and STDs (NCHADS)'s HIV Sentinel Surveillance program (HSS) that has revealed that Cambodia is experiencing one of Asia's most severe epidemics of HIV/AIDS [1]. HIV prevalence from 1995-1998 among brothel-based direct female sex workers (DFSWs) measured around 40% but in 1999 it declined to 33% possibly as a result of the scaling up of a multi-sectoral HIV/AIDS prevention program. However, an HIV prevalence of 2.6% was found in pregnant women in 1999, suggesting that the epidemic has expanded from core groups into the general population. This classifies Cambodia's epidemic as "generalized"[2].

The Cambodian BSS provides an indirect measure of the impact of HIV/AIDS prevention programs on risk behavior in different sub-populations. For example, it details "bridging" behavior between high and low risk sexual networks and its' potential to bring HIV into low risk populations [3]. Additionally, the BSS provides information on the conditions of sex work that influence whether DFSWs are able to change their behavior. Most research on commercial sex in South East Asia has focused on individual risk factors for STD/HIV or anthropological descriptions of sex work [4,5,6] showing that brothel settings are particularly high risk. Brothel-based DFSWs experienced a ten-fold risk of becoming infected with HIV compared with non-brothel-based sex work in a prospective study in Thailand [7] and were also at elevated risk for contracting HIV in Vietnam [8]. Research from Thailand has described DFSWs' working conditions [9] and the influence of migration [10], however, associations between such factors and DFSWs' risk behavior have not been assessed. Noting changes in the risk behavior and risk conditions for sub-populations at elevated risk of HIV/AIDS such as DFSWs assists program managers in targeting strategies for STD/HIV prevention. BSS has been initiated in other countries and serves to guide ongoing implementation of interventions [11]. Such surveys are also used to supplement HIV surveillance systems because they can highlight risk behaviors in advance of an epidemic as behavior change in a population often precedes changes in HIV prevalence. Behavioral surveillance has been identified as an essential component of second generation HIV surveillance systems [12]. HIV prevalence from 1995-1998 among brothel-based direct female sex workers (DFSWs) measured around 40% but in 1999 it declined to 33% possibly as a result of the scaling up of a multi-sectoral HIV/AIDS prevention program. However, an HIV prevalence of 2.6% was found in pregnant women in 1999, suggesting that the epidemic has expanded from core groups into the general population [12]. These numbers have propelled Cambodia into the position of having one of the highest rates of HIV/STD in Asia. To control this epidemic, NCHADS has developed programs to educate people about STDs/HIV and to prevent the spread of the diseases through promotion of condom use and treatment of STDs. Many non-governmental organizations have also implemented STD/HIV prevention and treatment programs in Cambodia. Such intervention efforts require reliable systems for tracking risk behaviors associated with STD/HIV transmission to determine if and to what extent such behaviors change.

Throughout the world, changes in disease patterns are followed through regular tracking of cases of infectious diseases known as *surveillance*. For public health purposes, most countries systematically collect data on the health behaviors related to chronic diseases such as smoking, physical activity, eating patterns, alcohol consumption, violence and risky sexual behavior. The rise of the global HIV epidemic has led to increasing attention on the need for standardized systems for surveillance of the behaviors associated with acquiring and transmitting HIV. To contribute to that need, USAID-funded AIDSCAP launched a series of studies in developing countries to provide a foundation for the establishing regular surveillance of sexual behavior in those countries called the Behavioral Surveillance Survey (BSS) that is being continued through technical support by IMPACT Project. These surveys are designed to be administered on a regular basis (either annually or bi-annually) to provide data on changes of risk behavior over time. This report presents findings from the third round of the Cambodian BSS completed in June 1999 as well as some important differences in the levels of reported behavior from the BSS I (1997) and the BSS II (1998). The 1999 BSS in Cambodia was funded by Cambodian Disease Control and Health Development Project/MOH and technical support from IMPACT/USAID.

//. WHAT IS A BEHAVIORAL SURVEILLANCE SURVEY (BSS) ?

BSS is a series of repeated cross-sectional surveys conducted at regular intervals on a national or regional scale in target groups. The goal is to monitor and track high-risk sexual behaviors in selected target groups on a regular and systematic basis. The questions focus on the main behaviors that put people at risk for HIV infection.

A. STUDY DESIGN

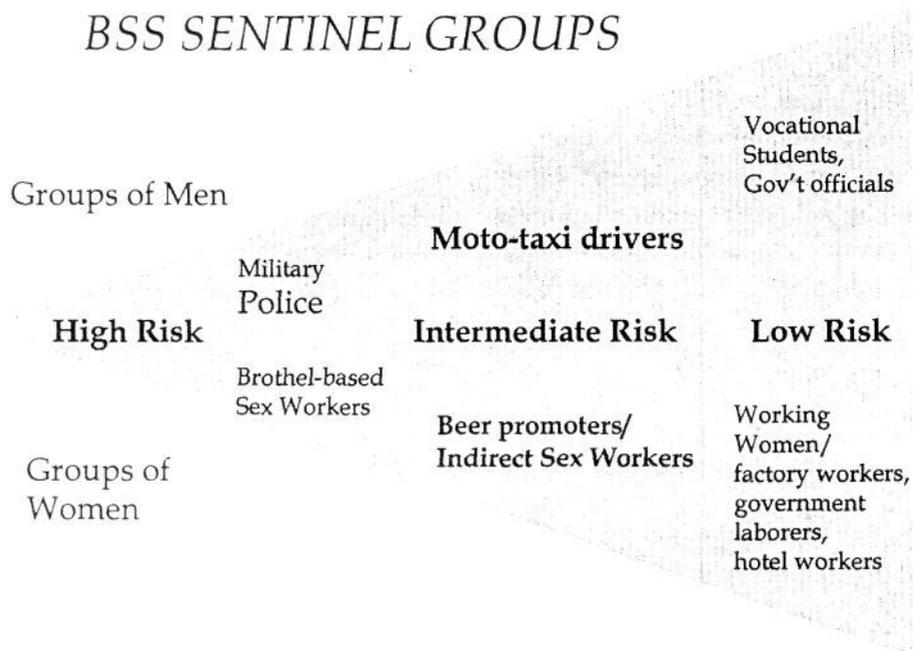
The following section will describe the following major components of Cambodia's BSS study design summarized below:

- Five sites (Cambodia's major urban areas)
- Cluster samples
- Face to face interviews, gender matched
- Repeated measures since 1997
- Annual survey
- Three rounds from 1997-1999

B. STUDY SITES

The BSS is conducted in Cambodia's five major urban centers in five different provinces. The following are the BSS sites: Phnom Penh, Battambang, Siem Reap, Sihanouk ville, and Kampong Cham.

C. SENTINEL GROUPS



A disproportionately large number of STDs result directly or indirectly from a small subgroup of the people experiencing infection in a population known as the "STD core group" [13]. This is defined as a group of highly vulnerable individuals characterized by high rates of partner change (often with each other), longer duration of STD infection often related to poor access to acceptable health care, and highly efficient transmission of infection per exposure; that all contribute to high rates of STDs [14]. Early research on syphilis and gonorrhea epidemics identified core groups. It is assumed that the prevention of STDs in these groups will lower a community's STD rate more than prevention among other groups or the general population.

In Cambodia, the core groups are brothel based direct female sex workers (DFSWs) and urban men belonging to the police and military. Men engaged in these professions are considered the core group for two reasons. First, they have high prevalence of HIV, in fact the 1998 HIV Sentinel Surveillance found 6.2% of police and in 1997 surveillance found 7.1% of military to be HIV positive. Second, they are known to frequently purchase sex and do so at a much higher rate than that reported in any other group of men by other studies in Cambodia. For example, the Cambodia Prevalence and Behavior Study found 50.1% of military/police had commercial sex in the previous month and 81.3% in the past year) [15].

Female sex workers represent the core group of women in many countries. Women engaged in low-fee commercial sex tend to have more partners and greater sexual activity than the rest of the female population by necessity - their livelihood depends on their level of sexual activity. Cambodian DFSWs are no exception. Moreover, the commercial sex industry in Cambodia is organized around "brothels", commercial sex establishments that employ women to sell sex. Descriptive research has been conducted with FSWs in Cambodia and verified the risky nature of their sexual activity and described the structure of brothels [16]. Moreover,

epidemiological data on FSWs revealed that up to about 39% of FSWs having either gonorrhea or chlamydia and 42.6% of FSWs were HIV positive in Cambodia [15] in 1996 when BSS was being planned.

The BSS sample of FSWs was restricted to brothel-based Cambodian FSWs. The BSS team recognizes that there are other types of FSWs in Cambodia, for example Vietnamese FSWs and non-brothel based FSWs. Even though there are many Vietnamese FSWs in Cambodia and these women may play a role in the spread of STD/HIV, they represent a minority of all FSWs in the country and the difficulty of translating questionnaires and locating bilingual interviewers made it not feasible to include them in BSS. Only FSWs working in brothels were interviewed to insure a consistent approach to sampling. It is hoped that specialized surveys in groups of Vietnamese FSW and non-brothel based FSWs will be conducted to supplement information in the BSS.

b. Intermediate Risk Groups:

The transmission of STD/HIV beyond core groups into the general population has been shown to be based on patterns of mixing by individuals who have sexual intercourse with different types of individuals [17]. As STD/HIV spreads in a country, it moves from the core groups into the general population through people who act as a bridge because they have sexual partners both in the core groups and in the general population. Individuals with both core and non-core partners may therefore play a critical "bridging" role for HIV/STD transmission in countries such as Thailand by linking a low prevalence population of spouses (wives) and other non-core women to a high prevalence population of women who work in commercial sex. The sexual transmission of STD/HIV beyond high risk or "core" groups depends upon individuals who have sexual intercourse with members of core groups and with members of the general population [18]. Studies in Thailand have looked at such bridging among men; one found 16.8% of low income men and 25.1% of truck drivers to be sexual "bridges" between FSWs and low risk spouses and girlfriends during the previous six months [19] and the other found that 22% of men reporting commercial sex in the past year [20] to be bridgers. Married men who had sex with prostitutes represented the most common "bridge" in these studies. Women not regarded as FSW but who have multiple partners theoretically could also serve as bridges, but few studies have identified such women in developing Asian countries.

The bridge population was defined for the Cambodian BSS as men and women likely to have both commercial and non-commercial partners. These would include those who exchange sex for money but are not engaged in commercial sex as a full-time profession, also known as Indirect Sex Workers (IDFSWs). Women who work for beer companies promoting beer in restaurants and bars, as beer promoters ("beer girls") are believed to have many sexual partners, including some that are commercial. We suggest they are equivalent to cocktail waitress in other countries. Some beer promoters, though not all, work as indirect sex workers. Others, however, many have "boyfriends" or "sweethearts" in relationships that may be non-monogamous. Moreover, some beer promoters may have more than one "sweetheart" at one time and still other beer promoters may have serially monogamous relationships.

The male bridge group was identified to be men working as moto-taxi and cyclo-taxi drivers (motodriver). Their access to cash and mobility is believed to provide them greater access to commercial sex than other low income men. Taxi drivers congregate at depots and motto drivers (motorcycle taxi drivers) are easily spotted by their common brand of motorcycle and baseball cap.

c. General/Low Risk Groups:

Another important measure of the speed and breadth of HIV spread used in determining the stage of the epidemic is the prevalence level in a low risk group of sexually active individuals, typically married women of reproductive age. In Cambodia, research on the general population has shown relatively low rates of commercial sex use among men in occupations other than police or military [21]. Additionally, the STD/HIV Prevalence and Resistance Study revealed negligible rates of risky sexual behavior among women attending reproductive health services. The sexual behavior of these married women is not expected to change, consequently, they will not be the targets of sexual behavior change programs given their low risk profile. Prevalence of GC/CT in such women was found to be 5.0% [15] and HIV 3.2% in clinic settings although 2.5% of married "housewives" have been found to be HIV positive in rural and urban settings in the 1998 HIV sentinel surveillance. Nevertheless, the prevalence of HIV among such women is still higher than found in most other countries in low risk populations in Asia.

For the low risk group of women in Cambodia's BSS, a sample of women likely to experience changes in sexual behavior and norms regarding sexual activity over time was selected for inclusion. These are young women between 18-30 years working in a low-pay profession such as factory work. These "working women" were sampled from a variety of occupations such as daytime market vendors, factory workers, sanitation crew, hotel and restaurant workers. For males, in 1997 vocational students were chosen because they were presumed to be less prone to sexual risk taking given their higher education and social status. In 1998, the group of low risk men was expanded to include "working men" sampled from the same types of employment as the working women. By including such men, a better comparison can be now made between the men and women in sexual behavior.

Low risk men and women are undergoing rapid social changes in Southeast Asia and may be increasingly likely to interact with higher risk partners, therefore, those rates may climb still higher if their sexual behaviors become more risky. Further rationale for the inclusion of lower risk men and women comes from Thailand where "female peers" of low income men (defined as non-spousal non-FSW women) were found to be exposed to HIV in greater numbers than wives of low income men [19]. This study suggested there may be a substitution effect as policies aimed at reducing commercial sex activity take hold and norms weaken against pre- and extra-marital sex with non-FSWs causing an increase in sexual contact between young men and young women. Given Cambodia's geographic and cultural proximity to Thailand, it is important to track the same social trends. Therefore, we selected sentinel groups at lower occupational risk than the other groups because they may reflect changes in sexual behaviors and norms of the general population.

The BSS groups all represent different levels of risk for STD/HIV in Cambodia. Consideration of vulnerability to HIV and ease of access also influenced the selection of groups. In addition, changes in trends of risk behavior of these groups should be sensitive to effective

national program interventions. These groups of individuals are common in the more urbanized parts of Cambodia and changes in trends of risk behavior of these groups should be sensitive to effective national program interventions.

In 1999, low risk groups sentinel were dropped from the BSS because of the lack of generalizability of these groups to the actual general population. In 2000, BSS IV consisted of a household survey of men representing the urban and rural general population. The results of this survey are reported on elsewhere. A Demographic Health Survey (DHS) was also conducted in Cambodia to collect household data on women and the results are available from the Cambodian Ministry of Health and reported elsewhere. Household surveys in the future will continue to be used by NCHADS to track the behavior of the general population of Cambodia instead of using a sentinel group for the low risk population.

D. SAMPLE DESIGN

The BSS samples each group through use of a cluster design. As a first step, clusters were identified for each group. The clusters for FSWs were brothels; for police police departments, for military battalions; for beer promotion women beer companies; and for motodriver they were heavy traffic street corners such as surrounding central markets. All clusters and the number of individuals in each cluster were listed for each year of BSS. Clusters were then randomly selected from the list and all members of the selected cluster interviewed until the target sample size was reached for that group. For each of the five groups, the proper channels and local authorities were used to gain access to the survey populations and create lists of clusters and are updated before every BSS.

Interviews were conducted face to face by gender matched interviewers described below. Supervisors were present at all times that interviews were conducted to insure that interviews were conducted in privacy and in an appropriately sensitive manner. All questionnaires were checked in the field by supervisors to improve data quality before the data was entered. Data entry was done in the NCHADS office in Phnom Penh in EXCEL. Analysis was done in STATA.¹

E. SAMPLE SIZE

The number of respondents for each group was determined based on the estimated level of key risk behaviors (such as percent using condoms in commercial sex) and the degree of confidence required to detect a significant change in behavior over time [22].

¹ Additional information on the interview process is provided in a following section.

Table 1. Sample Sizes: BSS I, II, III

	BSS I	BSS II	BSS III
FSWs	245	804	792
Police/Military	407	745	1483
Beer Promotion	581	406	379
Motodriviers	570	756	746
Working Women	1370	1011	--
Vocational Students/ Working men*	1183	553	--
Total	4,356	4,275	3,400

In the first round of BSS data was not collected from FSWs in Battambang, Sihanoukville, or Kampong Cham. In BSS II and III, however, all groups were studied in all five sites. Below is a table of the BSS samples by city for 1999. The final numbers of risk group members interviewed by site are in Table 2 below.

Table 2. Sentinel groups By City: BSS 1999

	Phnom Penh	Battambang	Sihanoukville	Kompong Cham	Siem Reap	Total
FSWs	160	158	181	146	147	792
Beer Promotion	85	86	66	69	73	379
Police	135	132	133	131	144	675
Military	150	164	164	159	171	808
Police/Military	285	296	297	290	315	1483
Motodriviers	155	149	146	146	150	746

In 1999, there were brothel bans in Phnom Penh occurring at the time of data collection. Therefore, few FSWs were interviewed in Tuol Kork Dike or Dang Kor although they had been interviewed there in previous years. Instead most were interviewed in Choum Chhao, Tralork Bek, and Chak Angre. Only Cambodian FSWs have been interviewed BSS I-III because the questionnaires have not been translated to other languages such as Vietnamese. The numbers of FSWs interviewed in each city represent different percentages of the FSW population in each city (15% in Phnom Penh, 81% in Battambang, 46% in Kampong Cham, 48% in Sihanoukville, 100% in Siem Reap)². Finally, because the samples of FSWs in each city are random samples, they are representative of the FSWs in each city even

Lower risk groups of men (vocational students and working men) and women (working women) were not included in BSS III because little change could be expected in their risk behavior from year to year. The overall level of sexual risk behavior is low in these groups, therefore a reduction to an even lower level represents small changes that require large sample sizes to detect. Moreover, such changes in behavior happen more slowly over time as they reflect a shift in social/sexual mores and not just the change of a specific risk behavior. Therefore, if such reductions in risk behavior are to be tracked, these low risk groups should be surveyed less frequently than the high risk groups and do not require to be measured on an annual basis.

F. QUESTIONNAIRES

The questionnaires cover demographic information (age, marital status, education, number of living children), social context, perceptions of peer behavior, treatment seeking for STIs, and partner notification. Most of the BSS questions focus on risk behaviors such as number of different sex partners by type and condom use. Certain parts of the questionnaire were the same for all groups while other segments were specific to the subgroup. Questions and wording were adapted from existing, pre-tested data collection tools used in 1996 STD/HIV Prevalence and Behavior Study.

Pretests: Extensive pretesting was conducted before BSS I and BSS II with motodriver, FSWs and beer promoters by supervisors and again by the actual interviewers during the interviewer training. Questionnaires were revised repeatedly. The final versions of the questionnaires used in BSS III represent a fourth generation of the original forms, insuring clarity in question style and recording format.

For BSS III, all questionnaires were again reviewed. A few questions were removed based on the review. A special attempt was made to keep the questions exactly the same for the important variables of interest such as condom use in commercial sex. However, some questions were improved or added to reflect NCHADS emerging topics of concern.

² Numbers of direct sex workers are from Provincial AIDS Office's outreach workers report to NCHADS, July 1999. This reports a total of 10,887 total FSWs in Cambodia, 4,442 Cambodia direct FSWs and 1,793 Vietnamese direct FSWs.

G. DATA COLLECTION TEAM

Supervision:

Four supervisors from the NCHADS national office in Phnom Penh made up a supervisory team led by a team leader. Before BSS I all supervisors underwent a training on behavioral research, kinds of studies done, and for what purpose. The supervisory team for all three BSS was led by Dr. Heng Sopheab. In 1999, two supervisors for each city were chosen from those who had served as interviewers from BSS I or II. All supervisors came to Phnom Penh for a four day supervisor training course that reviewed survey management protocols from the interviewer training manual and the supervisor training manual and provided them training in cluster selection and changes in the questionnaire from BSS II. Two teams of central level supervisors were created, each included an experienced supervisor and a new supervisor. One central level team went to each city for the entire period of data collection to support the provincial supervisory team.

Interviewers:

Some of the interviewers from BSS II and I were retained for BSS III but new interviewers were recruited in each site. In fact, 60% of the interviewers were the same for all three surveys. Each interviewer in each site for the first day training and was supplied with an Interviewer Manual and the questionnaire in advance of the training to review. See Appendix A for the list of BSS III Supervisors and Interviewers.

A combination of good supervision and interviewing resulted in low refusal rates in the surveys, less than 1% of those approached each year.

///. RESULTS: TRENDS IN RISK BEHAVIOR BSS I-III

The demographic characteristics of the sentinel groups did not change significantly across the three years of the survey (1997-99) as shown in Table 3 and Table 4 with the exception of a slight decline in men who report being currently married. DFSWs report declines in the number of clients per day, less regular clients, less "sweethearts", and shorter durations of years in sex work (Table 3). Other conditions of direct sex work such as the cost per sex act (median 5000 Riels - about \$US 2.00), time in each brothel, and brothel size (median 5-6 women per brothel) did not change. For IDFSWs (beer promoters), significantly more report practicing commercial sex in the past year, while those reporting "sweethearts" did not change. While the percentage of DFSWs reporting being tested for HIV dipped in the middle of the period studied, the percent of DFSWs who report being tested for HIV outside of the surveillance program remains at less than one quarter of all DFSWs. An increasing percentage of IDFSWs reported obtaining HIV tests each year (Table 3).

Table 3: Background Characteristics: DFSW & IDFSW BSS I-III

	DFSW			IDFSW		
	1997	1998	1999	1997	1998	1999
Mean Age (median)	21.9 (21)	21.5 (20)	21.6 (20)	22.5 (22)	22.7 (23)	23.1 (23)
% No Schooling (mean years schooling)	42.9 (2.3)	40.9 (2.5)	48.6* (2.1)	9.1	12.6	10.3
Age first sex (mean)	17.5	17.6	17.6	18.5	18.2	18.4
% Married	--	--	--	22.2	24.1	22.8
% Have regular clients now	65.6	51.8	52.6**			
% Have sweetheart past year	50.6	43.5	36.6**	50.1	47.8	54.1
Mean clients last day (median)	3.5 (3)	3.0 (2)	2.5** (2)			
Months brothel mean/median	6.1 (3)	4.7 (2)	6.1* (3)			
Mean years sex work (median)	1.4 (<1)	1.0 (<1)	1.2* (<1)			
Sex work past year	--	--	--	21.1	31.1	38.3**
% HIV test**	29.5	13.8	25.9**	20.1	23.0	37.5**

* Difference between year $p < .05$

** $p < .005$

There have been changes in the choice of partners among male sentinel groups (see table 4); significantly fewer men in each group report having had sex with a FSW in the past month and fewer military and police but more motorcycle taxi-drivers reported having recent "sweethearts". Slightly more men in all groups reported having obtained an HIV test. Finally, since 1998 respondents were asked if they know someone sick with HIV/AIDS and these numbers increased considerably over one year, from 14.8% to 36.1% among military and police, from 18.5% to 45.8% among motorcycle taxi-drivers, from 7% to 20.6% among DFSWs, and from 8.9% to 29.8% among IDFSWs (Table 4).

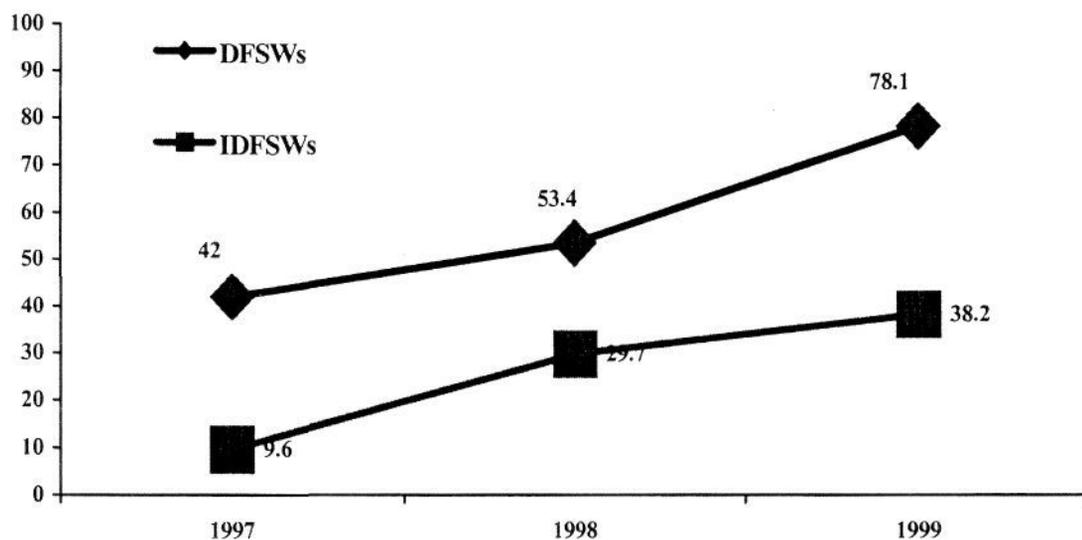
Table 4: Male Sentinel Groups BSS I-III: Background Characteristics

BSS Year	Military			Police			Motorcycle taxi-drivers		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
Age (mean)	31.1	30.4	31.6	31.6	31.2	33.1	31.3	29.4	31.9
Years schooling (mean)	6.6	7.4	6.4	8.9	8.8	8.9	6.8	6.9	7.1
% Currently married	69.2	50.6	63.7***	64.8	68.9	73.4*	85.4	78.7	79.0**
% Sweetheart past year	20.3	21.6	13.8**	19.0	16.7	12.0*	10.8	24.0	14.6***
% HIV test	12.1	11.9	16.9*	21.7	21.2	28.6*	10.3	14.6	15.3*
% Sex FSW past month	64.7	40.8	32.6***	51.8	32.8	33.3***	42.1	33.9	31.1***

A. BROTHEL-BASED FSWs:

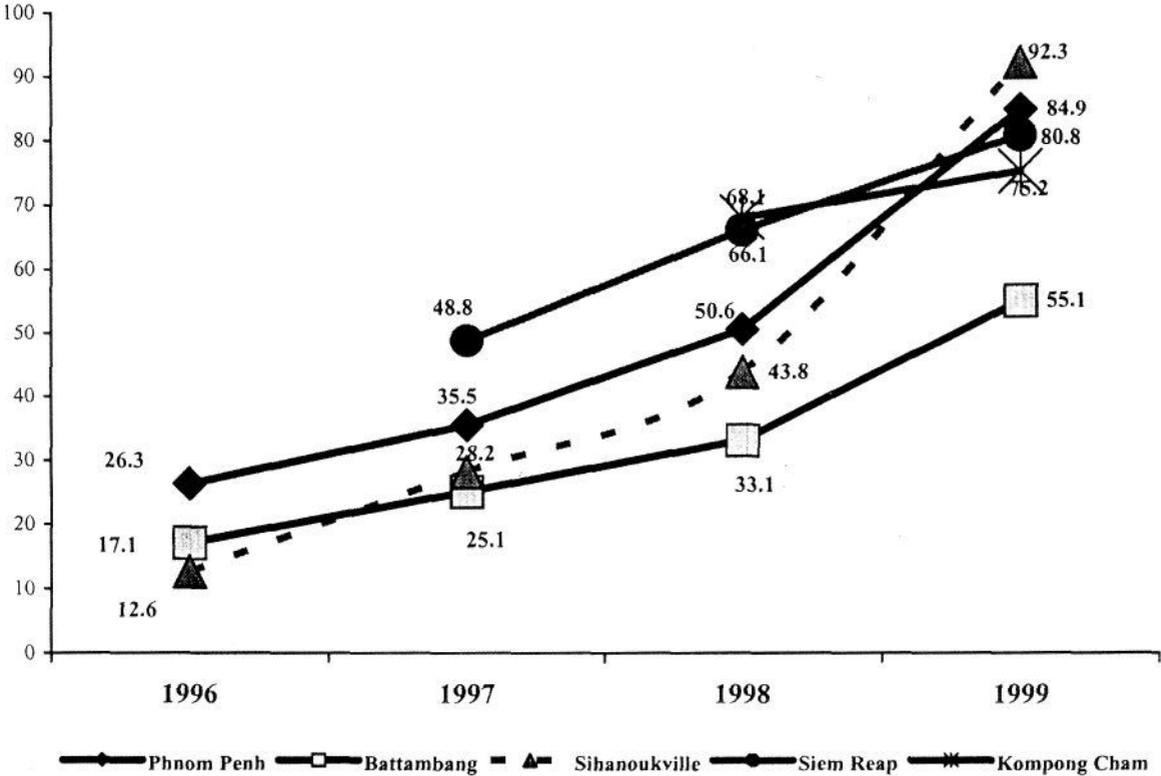
One of the most important behaviors tracked in the BSS is the brothel-based sex workers' condom use with clients. Figure 2 below illustrates that the percent of FSWs reporting always using condoms with their clients has steadily increased, and has reached a high level increasing 46% between 1997 and 1999. While still 100% of FSWs do not report using condom, the trend each year, rates of condom use are greatly increasing. Finally, the increase in the year 1998-99 was greater than the increase in any of the previous years.

Figure 2: DFSWs & IDFSW Always Condom Use with Clients: Cambodia 1996-99



This next figure demonstrates that while condom use has increased among FSWs in all the sites studied in BSS, the rate of increase has varied by city and large differences remain between the cities. In 1999 in Sihanouk Ville, the highest percentage of FSWs reported consistent condom use followed by Phnom Penh and Kompong Cham. However, highest rate of condom use over time has been in Siem Reap. Battambang is the city with the lowest percentage of FSWs reporting consistent condom, and although condom use has increased every year, there is a difference of almost 40 percentage points fewer FSWs reporting using condoms consistently in Battambang than in Sihanoukville in 1999. It should be noted that the percentages of FSWs reporting condom use increased significantly in every city studied in the BSS, a remarkable change in a relatively short period of time.

Figure 3: Consistent Condom Use in General Among FSWs by City: 1996-1999



B. BEER PROMOTERS:

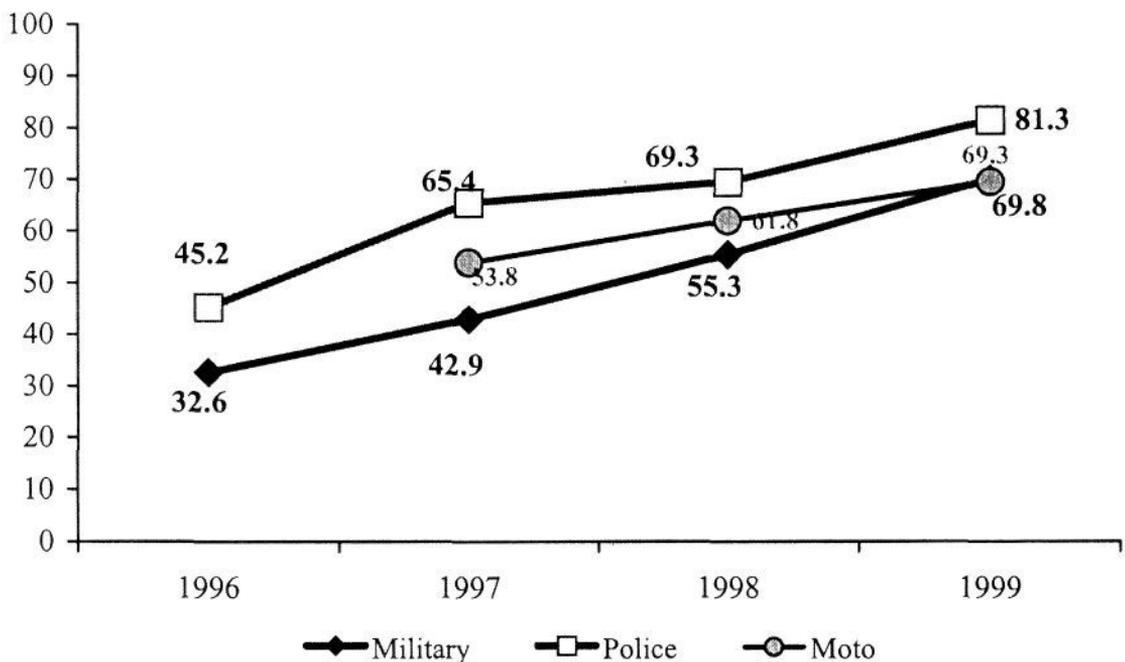
Often referred to as indirect sex workers, the beer promoters certainly have slower rate of partner change and less partners than direct sex workers but nevertheless have many more partners than other Khmer women. Yet beer promoters may not perceive themselves as sex workers, and may not perceive the sex they have with customers or friends as high risk. Therefore, their reported rates of condom use are significantly lower than the rates reported by direct sex workers. In 1997 less than 10% reported using condoms consistently with men who paid them for sex and Figure 18 below shows by 1999 this has increased almost 20 percentage points to almost 40% of beer promoters reporting consistent use which represents a remarkable 300% increase (see figure 2)

C. MILITARY AND POLICE & MOTODRIVERS:

The highest risk men studied in BSS are in the military and police. Given the high risk behaviors reported among such groups, behavior change programs have been launched among both the military and police in the past few years to increase their use of condoms with FSWs and to educate them about risks of HIV/STD. The other group of men in BSS that serve as a sentinel group, motodriver, have not received the same attention and no interventions that specifically target this group have been undertaken. Therefore, the figures below allow for comparisons between groups that have received direct interventions and those that have not, as well as comparisons between cities over time.

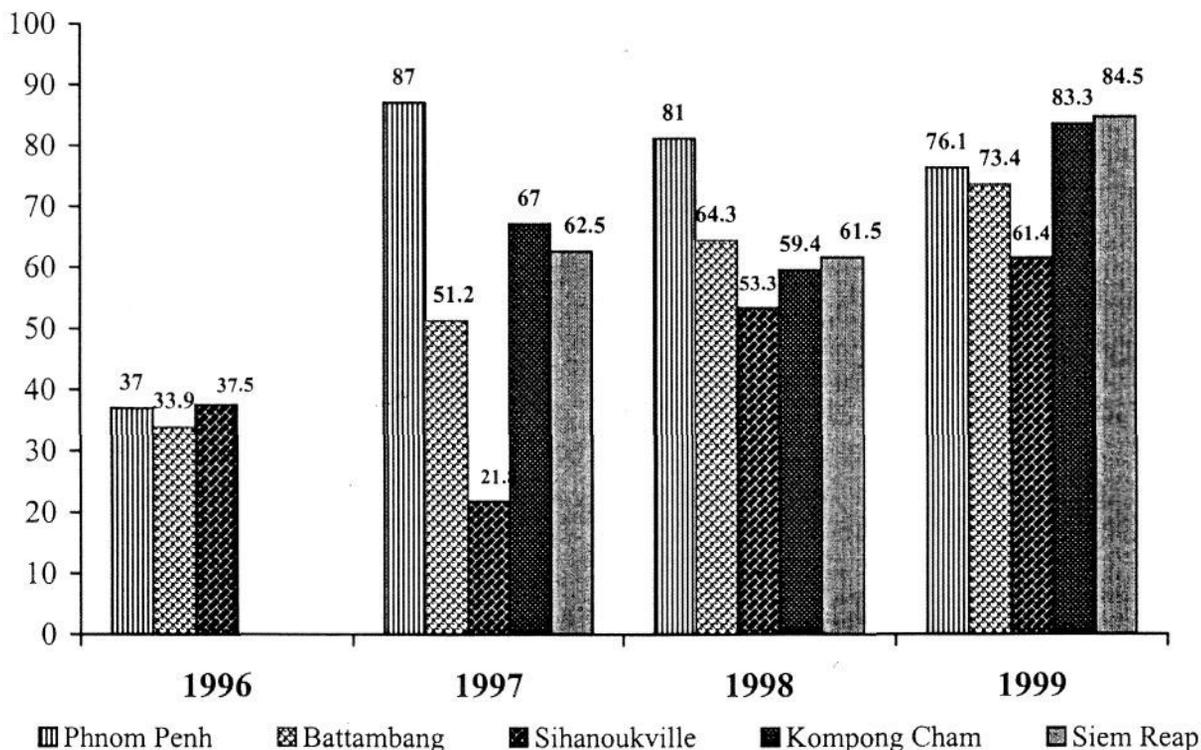
Figure 4 below reveals that the percentages of motodriver reporting consistent condom use in general the past three months has followed the same pattern as military and police. Consistent condom use with FSWs among men having sex with a FSW in the past three months increased significantly in all groups: 62% in the military from 42.9%, 55.3%, to 69.6%; policemen 24% from 65.4%, 69.3%, to 81.3%; and motodriver 29.6% from 53.8%, 61.8%, to 69.8%. The level of condom use is not very different among the groups of men studied, even though some are targets of direct behavior change interventions. Nevertheless, the rate of increase in condom use in these groups has been greater in the intervention-groups (police and especially in the military) than in the group with no direct behavior change program (motodriver). The steady increase in condom use among motodriver does suggest that behavior change is occurring across social groups and is filtering throughout Cambodian cities, beyond the groups directly participating in behavior change programs. While the percent of men in BSS groups reporting consistent condom use has greatly increased in the past three years, considerable numbers of men in these groups that frequently purchase sex continue to not use condoms consistently with high risk partners.

**Figure 4: Always Condom Use with FSWs
In General Military, Police & Motodriver: Cambodia 1996-99**



As among FSWs, differences persist between cities for police and military as well but reveal different patterns (Figure 5). For military and police, there has been consistently the lowest percent of these men reporting condom use in Sihanoukville and the highest percentages in Phnom Penh with Battambang in the middle the last three years. By 1999, the highest percent of men in these groups reporting condom use is in Kompong Cham and Siem Reap (as noted earlier in Figure 5). Clearly, Sihanoukville and Battambang are lagging behind the other cities in increasing condom use during commercial sex among men.

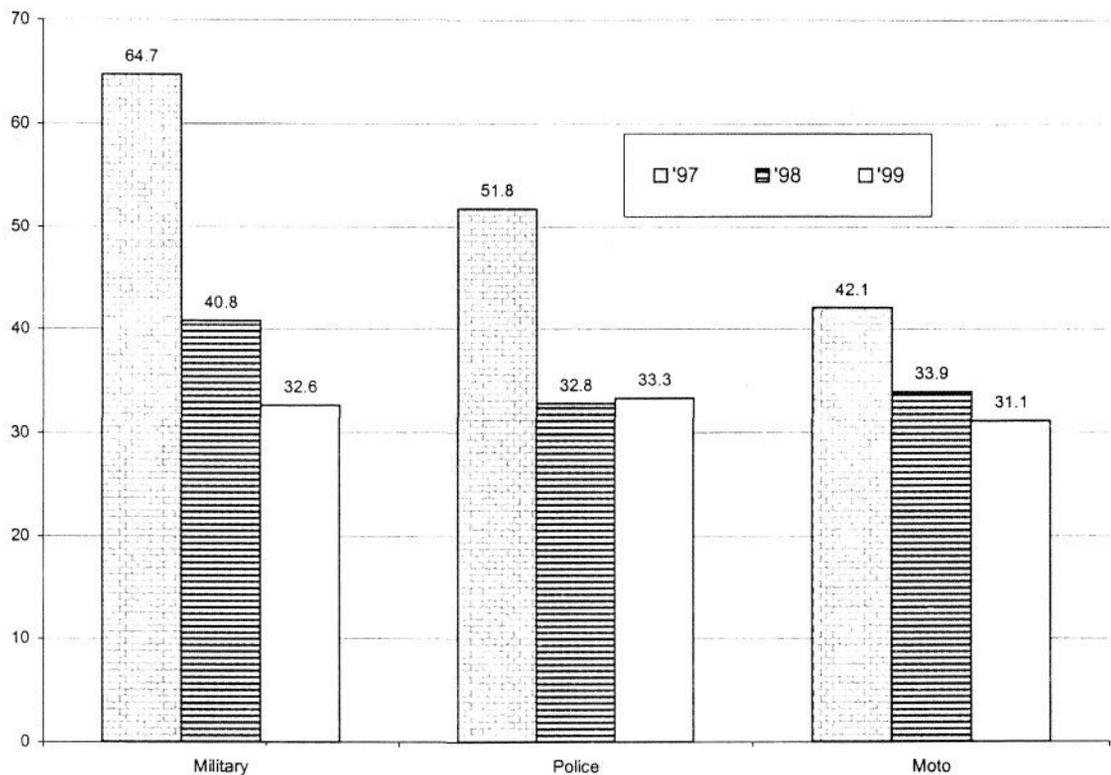
**Figure 5: Military/Police's Always Condom Use
In Past Three Months with FSWs By City: Cambodia 1996-99**



* In 1999 Always condom use specified "in last 3 months"

Another approach to behavior change in STD/HIV control is to reduce the number of partners or at least reduce the frequency of sex with high risk partners. Examining trends in the percentages of men reporting recent purchase of sex in the BSS data illustrates one such behavior that may change over time in response to the HIV epidemic in Cambodia. However, Figure 6 below reveals that Cambodia many men in the BSS sentinel groups continue to purchase sex. While slightly more military reported sex with a FSW in the past month in 1997, by 1999 a similar percentage of men in all groups studied have had recent sex with a FSW. However, the data do suggest that there has been a decrease in the percentage of military reporting sex with a FSW. It does not appear that there has been a significant change among motodriver or police in the percents reporting purchase of sex. In all groups studied, at least one third of the men in the BSS reported having had sex with a FSW in the past month.

Figure 6: Men's Past Month Commercial Sex Use: BSS I, II & III



There is a statistically significant difference in the mean number of women per month that military and police combined have sex with between BSS 1& 2, BSS 1 & 3, but not from BSS 2 & BSS 3 (no change '98 - '99 but from '97-'99 also see table 7). Military and police were combined for this analysis because there was no significant difference between their mean number of partners in the past month in BSS 2 or 3 although military had more mean partners than police in BSS 1 ('97) - oneway scheffe.

There is a significant difference between age group and sex with FSW in past month; across all years similar percentages of men less than 25 years have sex with FSW, as men 25-35 years (38.5% vs. 40.1%) but fewer older men report doing so (31.5%). However, when military and police are looked seperately, there is a different pattern by age, although there is no significant difference in the percent of men in these two groups who sought sex with FSW. For all years, the percent of those having sex with FSW in past month decreased with age for police (48.2%, 36.1%, 33.3%) but was highest among men in the middle age group for military (39.9%, 46.4%, 30.1%).

TABLE 5: Numbers of Sexual Partners By Male Group and BSS Year

1999

	Military	Police	Moto	Beer
Number of partners Ever Mean (median)				3.2 (1)
% >1 partner				49.3%
Past Year mean (median)	7.7 (3)	7.9 (3)	8.3 (3)	
% >1 partner	63.8%	62.1%	61%	%
Past 3 months (median)	2.5 (1)	2.4 (1)	2.6 (1)	
% >1 partner	39%	40.7%	38.6%	
Past Month (median)	1.4 (1)	1.3 (1)	1.6 (1)	0.92 (1)
% 1 or less	72.3%	72.7%	72.3%	86.7%
% >1 partner	27.7%	27.3%	27.7%	13.3%

1998

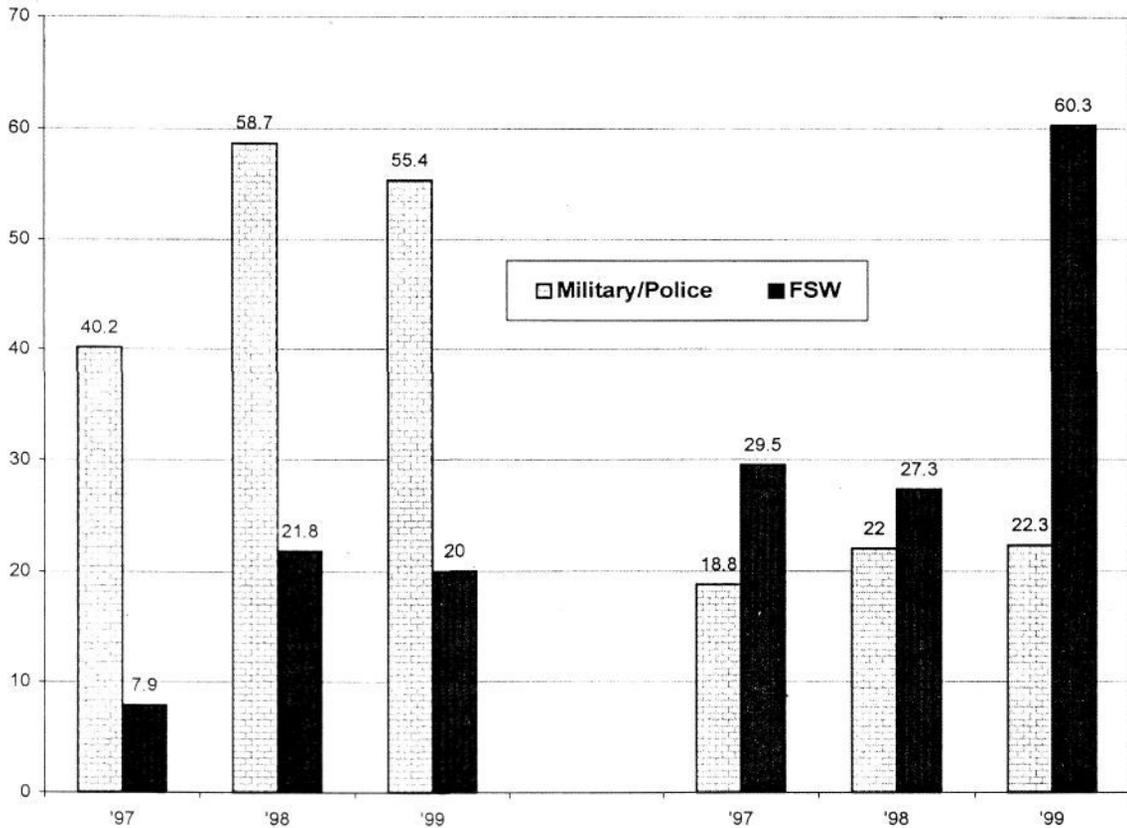
	Military	Police	Moto	Beer
Number of partners Ever	42.9 (20)	31.4 (12)	26.7 (8)	3.1(1)
% >1 partner	91.2%	86.0%	49.3%	39.9%
Past Year mean (median)*				
Past 3 months (median)	3.1 (1)	2.3 (1)	2.9 (1)	
% >1 partner	37.5%	49.1%	44.7%	
Past Month (median)	1.4 (1)	1.3(1)	1.6 (1)	1.0 (1)
% >1 partner	31.4%	25.2%	31.7%	13.5%

*Not asked directly in 1998

D. STD TREATMENT:

The most notable trend in Figure 7 below is that many more FSWs are now obtaining medical treatment for STD symptoms than in 1998. For men, there do not seem to be big changes in health seeking behavior for STD symptoms.

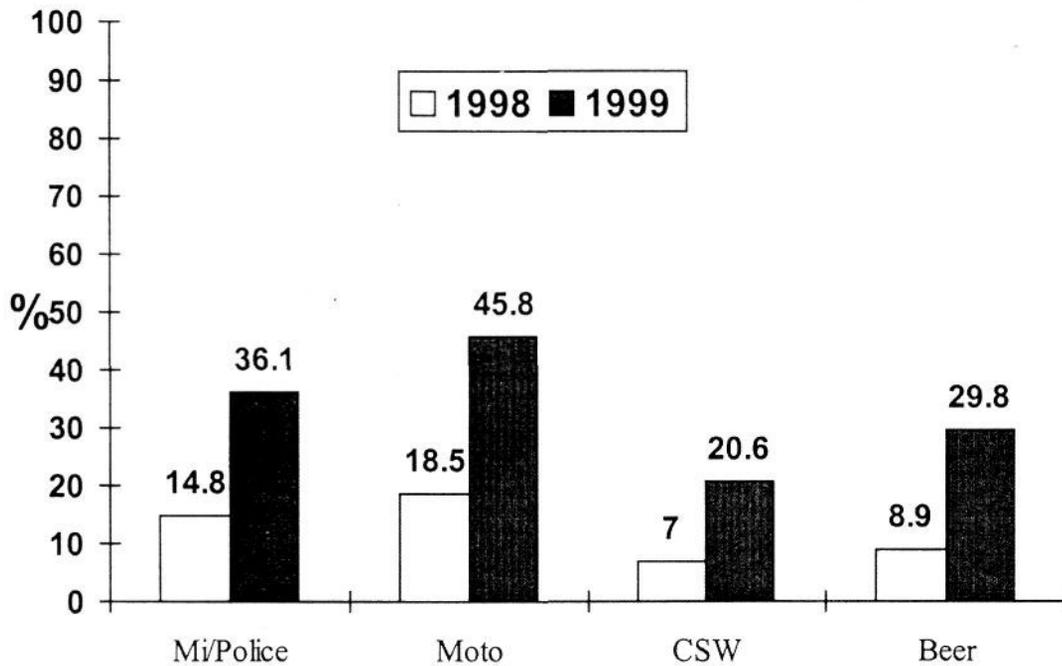
**Figure 7: Percent Treated for Last STD Symptom First
By Place of Treatment and Group: BSS I - III ('97-'99)**



E. EXPOSURE TO PEOPLE LIVING WITH AIDS:

In BSS II & III, respondents in all groups were asked if they know someone "sick with AIDS". There was a significant increase in those knowing someone living with AIDS in 1999 from 1998 in all groups, and remained highest among the motodriver. The high mobility of motodriver may partially explain why they know more people with AIDS than those in the other BSS groups. FSWs may under-report that they know someone sick with AIDS because there is more danger for them of personal exposure and more stigma about AIDS within their group. Finally, FSWs are the least educated of all BSS groups and this may also be a reason why less report knowing someone living with AIDS than those in the other BSS groups. Nevertheless, these figures suggest knowing someone with AIDS is becoming more and more common in Cambodia, a sign that the HIV epidemic is maturing and more individuals have become sick with AIDS throughout the population. Unfortunately, it might take a personal experience of knowing people living with AIDS to make the risk of HIV a reality to Cambodians to reduce their risk behavior. It is unfortunate that it may take personal tragedies to effect real sexual behavior change in Cambodia and ultimately lead to the control of the HIV epidemic.

Figure 8: Percentage Know Someone Sick With AIDS 1998-99



IV. IVARIATE ANALYSIS

The table shows the association between FSW's individual characteristics, brothel conditions, and condom use with clients. Among DFSWs, those who reported always using condoms with clients were more likely to be uneducated, live in larger brothels, not have regular clients, not have a sweetheart, and have fewer clients on the last day they sold sex than those who did not always use condoms. For IDFSWs, those who always used condoms with clients had less years of schooling and were more likely to have had an HIV test than IDFSWs who did not always use condoms with clients (Table 6).

**Table 6: Background Characteristics and Always use condoms:
DFSW & IDFSW BSS I - III**

	DFSW		IDFSW	
	Not Always Condom	Always condom*	Not Always Condom	Always condom*
Age (mean)	21.72	21.54	22.4	22.6
% No Schooling or years school for IDFSWs	43.79	48.53*	10.0	15.3
Currently Married	--	--	4.9	4.1*
Age First Sex	17.5	17.6	9.57	4.5
Age First Commercial Sex	20.5	20.5	18.4	18.2
% with ≥ 1 child	28.03	25.17	--	--
Number FSWs in Brothel	6.54	7.21**	36.2	33.3
Number of months in brothel	5.5	5.5		
% Regular clients now	57.1	52.1*		
Sweetheart Past Year	49.4	36.8***	87.6	82.0
Cost sex (Riels)	6653.28	6425.64		
# Clients last working day	3.1	2.7***		
Mean # times sex past month			5.4	4.8
All or most beer girls sell sex			64.7	67.6
HIV test**	35.80	39.37	25.1	41.4***

* Differences between women that always used condoms and did not always use condoms with clients were tested using the chi-square test for categorical variables and the t-test for continuous variables.

**Those who participated in the government sentinel surveillance program (anonymous) are coded as not tested

Among the male sentinel groups, military who reported always using condoms with FSWs were older, had more years of education, fewer had friends who frequented FSWs, fewer had more than one partner in the past month, and fewer reported visiting a FSW in the past month than military who reported not always using condoms with FSWs. Police who reported always condom use were younger, had more schooling, fewer had more than one partner in the past month, fewer traveled away from home, and fewer reported visiting a FSW in the past month than police who did not always use condoms with FSWs. Motorcycle taxi-drivers who reported always using condoms had more years of education, fewer were married, more had friends who frequented FSWs, more had more one partner in the past month, and more reported sex with a FSW in past month and past 3 months than motorcycle taxi-drivers who reported not always using condoms with FSWs.

**Table 7: Male Sentinel Groups BSS I-III:
Background Characteristics and Always use condoms with FSWS**

	Military		Police		Motorcycle taxi-drivers	
	Not Always Condom	Always condom	Not Always Condom	Always condom	Not Always Condom	Always condom
Age (mean)	30.3	31.1*	32.5	31.0**	30.7	30.4
Years School (mean)	6.5	7.5***	8.6	9.1**	6.8	7.2*
Currently Married	58.6	60.3	76.5	70.8	82.6	76.9*
Girlfriend Past Year	22.5	18.3	18.0	17.7	50.7	59.8*
Travel away from home	82.5	83.0	81.7	72.5*	58.9	63.5
Friends frequent FSWs	66.1	58.7*	57.5	62.5	63.0	71.2***
% >1 partner past month	58.3	48.7*	53.9	41.1***	39.7	48.5***
% CSW past month	68.5	58.9**	64.8	52.7**	50.5	58.0**
% CSW past 3 months	80.4	79.0	73.0	70.3	49.5	71.0***
HIV test*	13.6	16.9	20.6	26.6	63.9	62.6

*Those who have participated in the government sentinel surveillance program (tested anonymously) are coded as not tested

V. DISCUSSION

Monitoring of sexual behavior through repeated surveys in sentinel groups with tools such as the BSS can identify changes not only in the highest risk behaviors, but also broader social changes in a population. Cambodia started its BSS early in its HIV epidemic when evidence of high HIV prevalence among core groups spurred NCHADS and non-governmental organizations to implement prevention programs. Such intervention efforts appear to have achieved a significant increase in consistent condom use during commercial sex among all sentinel groups: percent increases of 86% for DFSW, 300% for IDFSWs, 63% for the military, 23% for policemen and 29% among motorcycle taxi-drivers. This is to be compared to the first three years of Thailand's BSS (1993-96) where a significant increase in condom use during commercial sex was found only in one of the three male sentinel groups, the increase among DFSWs were significant although small (87% to 97%) and 56% to 89% for IDFSWs [23]. The rate of behavior change reported in the Cambodian BSS may be more pronounced than in the Thai BSS because it was initiated at an earlier point in their HIV epidemic.

While condom use during commercial sex rose among all sentinel groups, it increased most among DFSWs and IDFSWs; those who were most aggressively targeted by prevention efforts. The percent increase in condom use during commercial sex among motorcycle taxi-drivers was much less than in the military and police who had specific behavior change programs, suggesting that groups targeted by behavior change programs experience more rapid rates of change. The finding that not using condoms with DFSWs was associated with having friends that frequent sex workers for military men but not for other male sentinel groups suggests peer influence plays a greater role for the men in the military than other men. Additionally, because education influences condom use for all male groups but the police, who have higher education attainment than the other groups, suggests a need for behavior change messages targeted at men with low education.

BSS information on the contextual conditions surrounding risk behaviors in different sub-populations has enabled NCHADS and NGOs to develop prevention programs that take account of specific challenges to individuals in changing their behavior, and allows for the development of broader policy level approaches. For example, locating cities of particular risk has enabled NCHADS to focus resources on Sihanoukville, the port city where men are less likely to use condoms than are men in other cities, and to initiate a 100% condom program based on the Thai model there first. Having the BSS in place will provide data for assessments of the impact of that intervention on risk behaviors on sentinel groups.

BSS also provides insight into behaviors less directly associated with HIV. For example, findings suggest the Cambodian sex industry may be in transition. Men report accessing DFSWs less frequently and DFSWs report fewer clients. While such changes may reduce transmission risks by decreasing the total number of commercial sex acts, such changes may translate into increasing competition among DFSWs for clients and pressures to maintain clients. Fewer DFSWs reported regular clients and sweethearts each BSS year and DFSWs with regular clients and sweethearts were less likely to always use condoms, perhaps because such partners are increasingly valuable. Non-commercial, casual sex may also be on the rise and DFSWs may be moving out of brothels that are increasingly carrying a stigma of high HIV risk into new venues such as karaoke bars or massage parlors. The finding that each BSS year more IDFSWs reported selling sex may also be a sign of an increasing market for IDFSWs.

The finding that IDFSWs who report voluntarily being tested for HIV are more likely to use condoms during commercial sex than those who have not been tested suggests a strong potential for HIV voluntary counseling and testing (VCT) programs. Although findings from other studies suggest women who test for HIV individually are less likely to reduce unprotected sex with a primary or non-regular partner than women who test as part of a couple [24], women who are at particular risk may be more likely than women in the general population to change their behavior. The potential for VCT as a behavior change strategy among IDFSWs and DFSWs in Cambodia should be explored.

Cambodia's BSS provides evidence that HIV/AIDS prevention efforts are successfully and rapidly transforming the risk profile of a population, and potentially stalling the spread of HIV in the country. Cambodia serves as a model of how the recommendations for second

generation HIV surveillance by WHO and UNAIDS [12] have been productively put into place and continue to develop as their national epidemic evolves.

VI. CONCLUSIONS AND RECOMMENDATIONS

- Condom use during commercial sex has increased across all groups studied in BSS. Among Cambodian brothel based Female Sex Workers (FSW)s condom use has increased consistently from BSS **I-III**. Between 1997 and 1999 consistent condom use with clients increased 86% for brothel-based FSW from 42%, 53% %, to 78% and for beer promoters (indirect female sex workers) in the past year with clients 300% (Indirect IDFSWs) from 9.6%, to 29.7%, to 38.2%.
- From 1997 to 1999 there was a relative increase in consistent condom use between DFSWs and clients. Consistent condom use increased by 86% for DFSW from 42% in 1997, to 53% in 1998, and 78% in 1999 ($p<.0001$). For IDFSWs consistent condom use with clients in the past year increased 300% from 9.6% in 1997, to 29.7% in 1998, an 38.2% in 1999 ($p<.0001$). Consistent condom use with FSWs among men having sex with a FSW in the past three months increased significantly ($p<.05$) in all male groups . There was a 63% rise in the military from 42.9% in 1997 to, 55.3% in 1998, and 69.8% in 1999; a 23% increase among policemen from 65.4% in 1997, 69.3% in 1998, and 81.3% in 1999; and for motorcycle taxi-drivers a 29.6% rise from 53.8% in 1997 to 61.6% in 1998, and 69.7% in 1999.
- The level of condom use is not very different among the groups of men studied, even though some are targets of direct behavior change interventions. Nevertheless, the rate of increase in condom use in these groups has been greater in the intervention groups (police and especially in the military) than in the group with no direct behavior change program (motodrivers).
- Men continue to use commercial sex in BSS III at the same rate as in the two previous rounds of BSS. This suggests men in these groups still continue to have risky sexual partners even though they use condoms more frequently with them.
- High percentages of FSWs report sex during menstruation in all cities. The outreach program should focus on reducing this high risk practice to increase the reproductive health of FSWs.
- By city, reported condom use with clients among FSWs in Sihanoukville, the city in which the 100% condom program in brothels was implemented in 1998, is higher than in other provinces. But a lower percentage of military and police report consistent condom use with FSWs in Sihanoukville (61%) than in the other cities with the highest condom use reported in Siem Reap and Kompong Cham. Sihanoukville's 100% condom program which has been implemented since 1998 might result in over-reporting of condom use by FSWs' because they are afraid of brothel closure if found not using condoms. To prove actual condom use, a comparison of STD prevalence between Sihanoukville and other cities is needed.

- Among beer promoters, there has been the greatest percent increase among in condom use since 1997 with both clients and sweethearts of all BSS groups, however, they still report the lowest levels of condom use of BSS groups. Beer promoters practice of commercial sex is highly associated with whether they live with a family member, have a sweetheart, or are married and varies greatly between cities. Beer promoters who are unmarried and not living with a family member are most likely to have a sweetheart and sell sex in all cities.
- More people in each group interviewed have seen others get sick or die of HIV/AIDS more often in 1999 than in previous years, with the highest percentage of knowing someone sick with AIDS reported by motodriver. This may affect the behavior of the people studied toward safer sexual practice and increase their use of condoms. Unfortunately, it might take a personal experience of knowing people living with AIDS to make the risk of HIV a reality to Cambodians to reduce their risk behavior. It is unfortunate that it may take personal tragedies to effect real sexual behavior change in Cambodia and ultimately lead to the control of the HIV epidemic.
- More FSWs access medical care for symptoms of STDs in 1999 than in previous years, mostly through public clinics, and less FSWs are treated in the brothel or receive no treatment. This may be a reflection of the STD clinics providing care to FSWs in all the cities studied by BSS, nevertheless, big differences by city in FSWs access to care persist with those in Siem Reap and Sihanoukville receiving the most care and those in Kompong Cham the least. Men in the BSS groups access medical treatment at the same rate in 1999 as in previous years suggesting that there is a need for more STD treatment services for men.
- HIV testing has increased in all groups and individuals in the BSS groups obtained testing from a variety of sources including anonymous testing centers, private testing centers, public hospitals and HSS. More research is needed to determine how individuals choose HIV testing sites.
- Condom use needs to be intensely promoted among all groups especially with partners who are considered sweethearts, as condom use remains low with such partners in all groups.
- Finally, choice of where to have sex and the type of partner with which to have sex may reflect a man's socio-economic status. Most of the men in the BSS groups studied are working class men and few are from middle or upper-middle class backgrounds. The latter men may purchase sex outside of brothels more than lower socio-economic status men. Differences in reporting rates for condom use with FSWs may reflect a variation in socio-economic status of men in BSS between cities. The military or police selected in one city may be from a different strata than those in another city, therefore such men may have sex more often with non-brothel based sex workers and use condoms with such FSWs less than with those based in brothels. Further research on clients of brothels and upper socio-economic status men is required to clarify this.

APPENDIX A:

LIST OF SUPERVISORS AND INTERVIEWERS BSS III, 1999

	Code No.	Name	Sex	Role	Place of work	
National level	46	Heng sopheab	M	Team leader	NCHADS	
	47	Mun Phalkun	M	Supervisor	NCHADS	
	48	Ek Sameth	F	Supervisor	NCHADS	
	49	Sous Premprey	M	Supervisor	NCHADS	
	50	Kaoeun Chetra	M	Supervisor	NCHADS	
Sihanouk ville	1	Cheng Sovann	F	Interviewer	PHD	
	2	Ty Vibolla	F	Interviewer	PHD	
	3	Ros Sophearany	F	Interviewer	PHD	
	4	Siphan Sovannara	M	Interviewer	PHD	
	5	Sourn Soeun	M	Interviewer	PHD	
	6	Touch chy	M	Interviewer	PHD	
	7	Than Khung	M	Interviewer	PHD	
		Kim Sitha	M	Coordinator	PHD	
		San Borith	M	Coordinator	PHD	
		36	Chhem Samloth	F	Supervisor	PHD
		37	Cheam Mong	M	Supervisor	PHD
	Battambang	8	Sou Norath	M	Interviewer	PHD
		9	Kung Dara	M	Interviewer	PHD
10		Doung Chantha	M	Interviewer	PHD	
11		Chhoeun Sovanna	M	Interviewer	PHD	
12		Ean Kim Eap	F	Interviewer	PHD	
13		Che Chak Riya	F	Interviewer	PHD	
14		Kim Sokhy	F	Interviewer	PHD	
38		Tun Sophal	M	Supervisor	PHD	
39		Ham Rithy	M	Supervisor	PHD	
		Nhein Vanla	M	Coordinator	PHD	
		Sut Sameth	M	Coordinator	PHD	
Seam Reap		15	Bou Sarinn	M	Interviewer	PHD
		16	Pinn Prakoth	M	Interviewer	PHD
	17	Nov Lay	M	Interviewer	PHD	
	18	Chung Sokhemarak	M	Interviewer	PHD	
	19	Leang Chanmonirak	F	Interviewer	PHD	
	20	Chan Than	F	Interviewer	PHD	
	21	Chheth Maryan	F	Interviewer	PHD	
	40	Pen Sary	M	Supervisor	PHD	
	41	Ear Sam Art	F	Supervisor	PHD	
		Chea Sambath	M	Coordinator	PHD	
		Tra Tem	F	Coordinator	PHD	
Kampong	22	Tan Nuch	M	Interviewer	PHD	

Cham					
	23	Yang Serey	M	Interviewer	PHD
	24	Poch virun	M	Interviewer	PHD
	25	Ear Rithy	M	Interviewer	PHD
	26	Penh Sokunthy	F	Interviewer	PHD
	27	Seng Sophary	F	Interviewer	PHD
	28	Mouk Maryan	F	Interviewer	PHD
	42	Chhun Sopheap	F	Supervisor	PHD
	43	Sim Khon	M	Supervisor	PHD
		Chhun Lipich	M	Coordinator	PHD
		Siv Meng Se	M	Coordinator	PHD
Phnom Penh	29	Chhun Chandarine	F	Interviewer	PHD
	30	Beng Horn	F	Interviewer	PHD
	31	Chan Sithan	F	Interviewer	PHD
	32	Krech Silean	M	Interviewer	PHD
	33	Vok Chandina	M	Interviewer	PHD
	34	Ngeth Sovan	M	Interviewer	PHD
	35	San Bunthan	M	Interviewer	PHD
	44	Chan Ann	M	Supervisor	PHD
	45	Sok Phalla	F	Supervisor	PHD
		Sor My	M	Coordinator	PHD
		Dam Phal	M	Coordinator	PHD

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