BEHAVIORAL SURVEILLANCE SURVEYS

GUIDELINES FOR REPEATED BEHAVIORAL SURVEYS IN POPULATIONS AT RISK OF HIV

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BEHAVIORAL SURVEILLANCE SURVEYS BSS

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INTRODUCTION

Successful HIV prevention depends on changing risk behaviors. This includes increasing condom use and reducing the numbers of sex partners among sexually active people, reducing needle-sharing behavior among injecting drug users, and delaying the onset of first intercourse among young people – to name only a few.

As HIV continues to spread in many countries, prevention efforts are increasing to promote the changes in behavior mentioned above. Every country needs information to guide the design of appropriate prevention programs and to monitor whether these efforts are successful.

Behavioral surveillance surveys (BSS) have been shown over several years to make an important and useful contribution to informing the national response to HIV. These surveys use reliable methods to track HIV risk behaviors over time as part of an integrated surveillance system which monitors various aspects of the epidemic. They are especially useful in providing information on behaviors among sub-populations who may be difficult to reach through traditional household surveys, but who may be at especially high risk for contracting or passing on HIV, such as sex workers and their clients, men who have sex with men and injecting drug users.

As interest and experience in BSS has grown, a demand has surfaced for all the available tools to be gathered into a single document. These guidelines meet that demand. They are designed to provide a "one-stop" reference to help public health officials set up and manage systems that provide reliable trends in HIV risk behaviors. Information is also provided to help those who will be implementing the surveys themselves.

The guidelines cover the following areas :

1. The importance of behavioral surveillance

Chapter 1 discusses why behavioral information is such an important building block of effective HIV prevention efforts. It describes the critical contribution of behavioral data to an integrated HIV surveillance system, and discusses various data collection options. The particular strengths of BSS, as well as its limitations, are discussed in detail. This chapter will be especially useful to public health officials who are running national (or regional) surveillance, monitoring and evaluation systems.

2. The survey process, step by step

Chapter 2 describes the steps that must be taken in setting up and conducting repeat behavioral surveys in groups at risk for HIV infection. It gives an overview of the entire process, many aspects of which are discussed in detail in other chapters. This section guides surveillance system managers, but also provides information for BSS implementers.

3. Choosing populations for behavioral surveillance

Chapter 3 describes how to go about choosing the appropriate sub-populations for behavioral surveillance. This process will be guided by the epidemic situation in a country, and the needs of prevention programs. Feasibility and other issues are also considered. This chapter will be of interest to those who are responsible for the output of surveillance systems and the use of the data they generate.

4. Sampling

Appropriate sampling is absolutely critical to ensuring that BSS generates information that provide a reliable picture of trends over time. Most countries have a great deal of expertise in solid sampling methods for household surveys (such as Demographic and Health Surveys). However these methods are inappropriate for sub-populations of interest to HIV prevention programmers, such as sex workers or injecting drug users. Chapter 4 therefore gives detailed information about sampling methods appropriate in different situations, and their implications for interpreting results. It will be most useful to those who are actually implementing the surveys, as well as those engaged in the technical analysis of the data.

5. Analysis issues related to multi-stage cluster sampling

This chapter deals with how to weight data at the analysis stage to compensate for limitations of the sampling design. It provides information for technical staff who will be designing the sampling frame and conducting the analysis.

6. Selecting and adapting questionnaires

These guidelines include a number of standardized questionnaires intended for use with different sub-populations. This chapter discusses when to use which questionnaire, and how to adapt it for local use. Other issues surrounding the interview and data collection process are discussed.

7. Data analysis

The reliability of the information generated by BSS will depend largely on appropriate sampling and high quality data collection. But the way the data are analyzed can also have a major impact on its reliability and its credibility. Chapter 7 describes how data can be analyzed and presented for maximum credibility, and gives examples from BSS in various countries. It includes information about the basic tests of statistical significance needed to demonstrate that changes over time are not just random fluctuations. This section will be most useful to the technical staff who are conducting the data analysis.

8. Data use

Information is only as valuable as the use to which it is put. Chapter 8 recaps briefly some of the major uses of information generated by BSS. It also suggests ways of presenting information to different audiences in ways that will encourage them to act to strengthen the response to HIV. This section provides information that should help public health officials maximize the benefit of the information they have taken the trouble to generate.

9. Indicators

A key question in behavioral data collection is : what to measure ? There are many things to consider when choosing indicators. Obviously, they have to measure behaviors which are relevant to the spread of HIV, and which national program efforts are trying to change. They should be able to register change over time in a way that is easy to interpret. While they must meet local needs, they should to the extent possible conform to internationally agreed standards, so that progress can be compared not only over time, but between populations. Chapter 9 defines key indicators for each population sub-group, developed in conjunction with the United Nations Joint Program on HIV/AIDS (UNAIDS), the World Health Organization (WHO) and others. It describes how they can be constructed from the questionnaires included in these guidelines, and discusses the strengths and limitations of each. This section will help policy-makers pick indicators most appropriate to their needs, and guide data analysts in the formulation of those indicators.

10. Annexes

The annexes include other useful items such as standardized questionnaires, fieldwork forms and examples of interviewer guidelines. The annexes also contain detailed descriptions of the sampling process used in many different settings to date.

Keeping up to date

The methods in these guidelines have been widely used, and with great success. While every effort is made to maintain consistency over time, these methods do not stand still. As they become even more widely used, new lessons will be learned and improvements will inevitably be made. The latest versions of the materials in these guidelines can always be downloaded from the internet at: **http://www.fhi.org.**

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CHAPTER 1

WHY BEHAVIORAL SURVEILLANCE?

- *Uses of behavioral surveillance*
- *Different approaches to collecting behavioral data*
- *Issues and limitations in behavioral data collection*

1

Why Behavioral Surveillance?

HIV is a fatal disease spread mostly by unprotected sex and by drug injection. This much has been known for two decades. In that time, hundreds of millions of dollars have been spent around the world to limit the spread of the virus. The vast majority of prevention programs focus on trying to encourage people to adopt safer behavior. And yet remarkably, relatively few countries or regions have made substantial efforts to track those behaviors reliably over time.

Most surveillance efforts to date have concentrated on tracking AIDS cases or the spread of the HIV virus itself. Concentrating on infection alone, however, is rather like shutting the stable door after the horse has bolted. When HIV prevalence is rising, it gives a good indication that prevention programs are failing, but no indication of why. Stable or falling HIV prevalence could mean fewer new infections, or it could mean more deaths. And because a person can live with HIV for many years before it is detected, HIV prevalence figures reflect a mix of old and new infections, and are not that useful for documenting recent changes in new infection rates.

On top of that, HIV surveillance by itself is of limited use in places where HIV infection is still relatively uncommon. Continued low prevalence in a population may mean that members of the population do not engage in behavior that would expose them to HIV, perhaps because HIV prevention programs have been successful. Or it may simply mean that the virus has not yet reached a critical mass in that population. If risk behaviors do exist but are not recorded, the opportunity to plan programs to reduce risk before the virus explodes through a population with risk behavior will be lost.

Recognizing that HIV surveillance does not, by itself, meet the information needs of HIV prevention program planners, UNAIDS, WHO, FHI and others have developed a new framework for HIV surveillance. This framework, known as **Second Generation HIV Surveillance**, stresses the need to design a surveillance system that is appropriate to the epidemic state of the country, concentrating surveillance resources on the groups in which HIV infection is most likely to be concentrated. It particularly emphasizes the importance of using behavioral data to inform and explain trends recorded in HIV infection in a population, and advocates for the more extensive use of behavioral data in planning and evaluating an appropriate response to HIV. A comprehensive discussion of the new approach to HIV surveillance can be found in : *WHO/UNAIDS : Guidelines for second generation HIV surveillance. Geneva, 2000.* This document is available on the internet at **http://www.who.ch.**

Uses of behavioral surveillance

Second Generation Surveillance identifies several important roles for information that reliably tracks changes in the behaviors that spread HIV.

Behavior as an early warning system

Not everyone in the population is at the same risk for HIV. Risk behaviors are sometimes concentrated in sub-populations which vary from place to place. These sub-populations can often be defined locally in terms of occupation, migration status, sexual orientation, age group or other factors. Behavioral data can indicate which populations are at risk locally, and can suggest the pathways the virus might follow if nothing is done to brake its spread. It can indicate levels of risk in the general population too, and can identify sexual links or "bridges" between groups in the population with especially high risk of infection, and groups with lower risk.

These sorts of information can act as a call to arms for people - politicians, religious and community leaders and people who may themselves be at risk - signaling that the threat of HIV is very real even in areas where it is not yet visible. Such data are a powerful tool in pressing for action.

Behavioral information to inform program design

A country monitoring the HIV epidemic is doing so because it wants to slow the spread of the virus through effective prevention programs. Effective prevention is prevention that enables people to adopt safer behaviors and protect themselves from the risk behavior of their partners. But unless something is known about existing risk behavior, it is not possible to support relevant safe alternatives.

Behavioral data can indicate who is most at risk of contracting or passing on HIV infection, and why. It can help communities and program planners come up with initiatives carefully focused on breaking the links in the chain of transmission in a particular country, region or group. Without information on HIV-related risk behavior, public health officials and others are unlikely to be able to prioritize their interventions so that they have the greatest impact in curbing the spread of HIV.

Behavioral data can pinpoint specific behaviors which need to be changed, and can also highlight those that are not changing over time in response to program efforts. This information should lead to a rethinking of prevention approaches, and the design of new, more effective interventions.

Tracking behavior helps evaluate programs

A good behavioral data collection system will give a picture of changes in sexual and drug-taking behavior over time, both in the general population and in groups of people whose behavior puts them at high risk of infection. The system will record a reduction in risky sex just as it will record persistent risk behavior or shifts in the pattern of risk.

These changes should give an indication of the success of a package of activities aimed at promoting safe behavior and reducing the spread of HIV, both in the general population and in groups with high risk behavior.

Showing that behavior can and does change following national efforts to reduce risky sex and drug taking is essential to building support for ongoing prevention activities. BSS data have been used by UNAIDS and other international bodies to highlight HIV prevention successes in countries as varied as Cambodia, India and Senegal.

Changes in behavior help explain changes in HIV prevalence

Changing behavior and a consequent reduction in new infections are just one possible reason for changes in HIV prevalence. It is, of course, the most encouraging to those involved in trying to reduce the spread of the virus. But without collecting data that show trends in behavior over time, it is not possible to ascertain whether behavior change contributes to changes in prevalence.

When prevalence stabilizes - and even when it stabilizes at very high levels - there is often a tendency towards becoming complacent ; the problem has peaked, it won't get any worse. This can be a dangerous fallacy. Behavioral data showing no change in risk activities, or continued risk in certain age groups or sections of the population, should ring alarm bells even where prevalence is stabilizing. If there is no reduction in the risky behaviors that lead to HIV infection, changes in prevalence may well be due to other factors such as rising mortality, migration of those infected, sampling bias or other measurement errors. None of these constitute successful prevention efforts.

Although comparisons across regions, cultures and countries must be made with extreme caution, behavioral data can also help explain differences in levels of infection between one region and another. This is particularly the case when indicators of risk behavior are standardized across all studies and surveys, with the same wording and reference periods. The use of the same (or broadly similar) sampling and data collection methods also greatly increase the comparability of risk behavior across time and in different locations.

Different approaches to collecting behavioral data

There are many approaches to collecting information about the behaviors that spread or prevent HIV. Some of the most commonly-used are described here. These methods are by no means mutually exclusive. Each has different strengths, and they are largely complementary. Any comprehensive HIV surveillance and monitoring and evaluation system will encompass several, if not all, of these methods, although the mix will differ according to the epidemic state in a country.

Large household surveys

One very common approach has been to use large household surveys to find out what people know about HIV and what their attitudes to the epidemic are. Questions on sexual behavior are also common. Often, questions about HIV and related practices are included in a broader household survey such as a Demographic and Health Survey. Sometimes, nationally representative household surveys have focused exclusively on HIV and related behaviors.

Household surveys can give a good picture of risk behavior in the general population. These surveys are time consuming and expensive, particularly when they include a random sample of households that is representative of a whole country or large region. A great deal of care is generally invested in solid sampling methods, and statistical analysis is usually very thorough. This means that the results of these surveys are generally reliable, and data can be compared over time with some confidence. Because they are so expensive, it is rarely possible to conduct this sort of survey more than once every four or five years.

Household surveys are especially useful for behaviors that are quite common. In the context of HIV, they are of special interest in countries with generalized epidemics that are sustained by significant levels of sexual mixing between men and women in the general population. They are less useful, however, for looking at behaviors that tend to be concentrated in specific sub-populations. Random household sampling is unlikely to turn up a large enough number of sex workers, drug injectors, or men who have sex with other men to yield statistically significant information about the HIV-related behaviors in these sub-populations. Mobile populations such as transport workers or those who gather in institutions or barracks such as the military may also be missed or underrepresented in household surveys. And yet these groups may be of particular interest to public health officials or others who want to design and evaluate HIV prevention activities for those most vulnerable to infection.

Ad-hoc surveys and qualitative studies related to interventions

Much of the information that has been gathered about HIV-related behavior comes from studies linked to prevention initiatives. These include ethnographic and qualitative studies, as well as “pre and post” surveys of behavior.

Qualitative data are critically important to good HIV prevention planning. Well-designed quantitative surveys can give a very good idea of what behaviors exist, of how common they are, and of whether they are changing over time. However they cannot determine why these behaviors exist, or why they are or are not changing. In depth studies using different anthropological methods are needed to answer the “why” question. And effective interventions can only be planned if prevention workers understand what structural, cultural or other factors stand in the way of adopting safer behaviors. Qualitative research is not, however suitable for measuring trends over time.

Project evaluation studies usually do aim to measure change over time. They often conduct surveys in the population intended to benefit from an intervention before it begins, and then again once the prevention program is underway or when it is over. These surveys can yield useful data. But they tend to be a corollary to an intervention, rather than the “main event”. The time and effort put into these surveys (and especially into ensuring representative sampling) determines how useful they are to a wider audience. Even when they are carefully conducted, however, these surveys tend to be small-scale, linked to a particular intervention, and rarely repeated regularly over a long period. For these reasons, their utility for the purpose of monitoring the effectiveness of the national response and planning national or regional level programs is limited.

Behavioral surveillance surveys

Based on classical HIV and STI serologic surveillance methods, BSS consists of repeated cross-sectional surveys of groups whose behavior may help explain the spread of HIV and determine prevention needs in a given country.

The defining characteristic of BSS is consistency over time. It uses a consistent sampling methodology, consistent data collection methods and consistent indicators in order to track trends in behavior over time. In order to ensure that trends over time can be interpreted with confidence, BSS focuses a lot of attention on sampling strategies. This approach is designed to yield a maximum of reliable, usable information for the investment made.

BSS aims to concentrate attention on behaviors and sub-populations that contribute most to the potential spread of HIV. Because it uses sampling methods other than household-based sampling, BSS is peculiarly well-suited to investigating behaviors that are rare or unevenly distributed throughout a population, but that may disproportionately affect the spread of HIV. These behaviors include drug injection, sex between men, and commercial sex. This makes BSS an especially useful tool in monitoring HIV epidemics in which HIV and related risk remains concentrated in relatively well-defined sub-populations.

Just as HIV sero-surveillance systems record HIV prevalence among clients with sexually transmitted infections to reflect those at high risk for infection and among pregnant women to reflect those at lower risk, so BSS can select groups to represent different levels of likely risk behavior. A country might choose one occupational group — such as migrant mine workers or the military — thought to be highly likely to be clients of sex workers, and another, such as farm workers - thought to represent those with more average levels of risk. Table 1 on page 27 illustrates some of the groups that countries have chosen to include in BSS to date.

The principal rationale for focusing on populations with higher-than average risk behavior is that they contribute disproportionately to the spread of HIV. Early prevention efforts are often focused on these groups. BSS in these sub-populations can help ascertain whether the level of risk behavior is changing following HIV prevention efforts. By investigating sexual links with others outside the sub-population with high risk behavior, BSS can help to gauge the likelihood that the virus will spread widely into a broader population. But a focus on populations with higher-than average risk has other advantages, too. It generally enables statistically significant results to be achieved with relatively small samples. This keeps costs down, and means that it is possible to repeat surveys with greater frequency than larger, more costly household based surveys.

Frequency of data collection

HIV sero-surveillance systems typically collect and publish data on an annual basis. For behavioral data collection, frequency is dictated by several factors. While cost and complexity are often cited, one other factor is at least as important : prevention programming. In the absence of any prevention programming, HIV sero-surveillance systems are likely to record a change in HIV prevalence over time, and it is more than likely to be a rise. The same is NOT true of behavior. If no HIV prevention programs are in place, it is unlikely that sexual or drug-taking behaviors will change over time. If they do change in response to general societal trends such as urbanization, these changes tend to be slow and incremental.

Where there are no HIV prevention efforts, an initial round of surveys may be justified in order to provide information that will feed in to the design of future programs. But unless such programs are implemented, changes in behavior can be expected to be minimal, and regular surveillance can hardly be justified. If, on the other hand, a strong national prevention effort is put in place, then it is definitely worth conducting regular behavioral surveys to monitor changes in behavior. How regular depends partly on the strength of the prevention effort, partly on the population being monitored, and partly on the capacity and willingness of a country to use the data generated to improve prevention efforts.

Behavior in the general population tends to change more slowly than in a tightly-knit community of people who interact frequently. Many of the sub-populations at high risk for HIV infection fall into the latter category. In addition, effective behavior change interventions potentially have a greater effect on these sub-populations than on the general population. The higher the level of risk at the outset, the further it has to fall. In general, it is recommended that behavioral data be collected every four or five years in the general population, and every year in sub-populations among whom HIV prevention initiatives are most concentrated. Training a core of people in the standard methods used in BSS will allow for this regular data collection to be conducted in a way that ensures data that reliably describe changes in HIV-related behaviors over time.

If successful prevention initiatives contribute to new norms of safe behavior, annual data collection may no longer be needed. While less frequent data collection will save cash, it also bears a cost. Annual data collection feeds into programming, providing information for the constant re-evaluation of prevention needs. Undertaking the exercise regularly maintains skills and capacity within local institutions. And regular publication of this information has the added advantage of keeping HIV prevention needs in the public eye, and on the agenda of policy-makers.

The cost of BSS

The cost of collecting behavioral data varies greatly from country to country and depends on the number of respondents, the geographic coverage, the sampling design, and the frequency and methods of data collection.

Nationally-representative household surveys are typically the most expensive, costing around US$250,000 in a developing country of 30 million people. Where other information are being collected simultaneously, these costs can be shared with other users such as maternal and child health programs.

BSS are less expensive (partly because sample sizes are much smaller and geographical coverage more limited). They tend, however, to be more frequent. Initial rounds of BSS, which may include formative research to determine the most appropriate population groups, and extensive training and mapping work, are likely to be more expensive than subsequent rounds. As BSS becomes a routine part of monitoring and evaluation of the national response to HIV, costs drop because more experience is gained about how to efficiently sample and interview sub-population groups.

Behavioral data collection is generally a fairly resource-intensive business, and it is especially heavy on human resources. But if the results of the data collection are combined with other elements of a surveillance system to improve programs that successfully prevent HIV or minimize its impact, these costs are more than justified. Set against the costs of behavioral data collection are the economic benefits of targeting prevention activities most effectively. This would not be possible without a systematic and reliable way of tracking trends in risk behavior over time, such as that provided by BSS.

Issues and limitations in behavioral data collection

Validity of self-reported data about sex and drug-taking

One reason there has not been more behavioral data collected in the past is that many people are deeply skeptical about the validity of self-reported data on sexual behavior or illegal activities such as drug injection. Growing experience in collecting data on sexual behavior indicates that people do not generally lie. They are, however, more likely to tell the truth in some situations than in others. The more stigmatized the behavior, the more likely people are to lie about it. The extent to which people answer questions about sex openly and truthfully also depends on the setting of the question. Are privacy and confidentiality assured ? Is the interviewer sympathetic, and of the same sex and age bracket as the respondent ? Are questions non-judgmental ?

It is not possible to validate data on sexual practices by direct observation. It is, however, possible to triangulate them with data from other sources to see if the picture presented is consistent and credible. An increasing number of studies comparing self-reported sexual behavior with biological markers of sexual activity such as pregnancy, STIs and HIV infection show that at an individual level there is quite a good match between the reported risk behavior and biological indicators of risk.

Still, some misreporting of risk behavior undoubtedly occurs, and true levels of risk may well be underreported, especially by women among whom extramarital sex is more heavily stigmatized than it is among men. Those tracking the HIV epidemic may, however, be less concerned with the exact level of risk behavior in a population than they are with trends in those behaviors over time. Even where there is misreporting, repeat behavioral surveys will show changes in trends over time, provided that the magnitude or direction of misreporting do not change significantly.

Linking behavioral and serological data for better explanatory power

In developing the framework for second generation HIV surveillance, much discussion went in to the issue of whether serological and behavioral information could routinely be collected from the same individuals. This is a common practice in specialized research studies. However it is logistically and ethically complex. Generally, HIV surveillance is conducted using blood left over from other clinical procedures. It is stripped of all identifying markers, so that a test result can not be traced back to an individual. This method allows blood to be tested without the consent of the person it came from, so eliminating refusal bias. Linking behavioral data to HIV status changes that equation. It may yield extra information about the relationship between risk behavior and infection, but since consent must be sought, it also increases the likelihood that participants will refuse to give blood. Those who refuse may have different risk profiles from those who accept — people who refuse are generally thought to have higher risk profiles - and the results of surveillance will be distorted. In addition, there is an ethical obligation to offer counseling and voluntary HIV testing to all those in the sample. Because of this, it is *not* generally recommended that HIV surveillance and behavioral surveillance be conducted using the same individuals.

Another consideration is that the populations traditionallly used in sentinel surveillance for HIV - pregnant women at antenatal clinics and clients at STI clinics - have by definition had unprotected sex in the recent past. If their risk profile changes - they abstain or switch to consistent condom use for example - they will drop out of the population attending the clinics. Trends in risk behavior among those still attending the clinics will be virtually impossible to interpret.

In sum, collecting behavioral data and HIV status from the same individuals is not recommended in regular surveillance systems. However it *is* recommended that where serosurveillance occurs in sub-populations such as men who have sex with men, sex workers or drug injectors, attempts be made to draw respondents for behavioral surveillance from the same source population. Where sero-surveys are population-based, this may mean using the same sampling frame. Where they are service based, it may mean taking the catchment area of the service into consideration in the sampling framework for the behavioral surveillance. At a minimum, basic sociodemographic variables should be collected from both groups in order to determine similarities and differences between the two to the extent possible.

Attributing behavior change to a prevention intervention

While behavioral data can help document changes in behavior, it is important to realize that they can *not* draw a direct causal link between a particular intervention and a particular level of behavior change. Most people are exposed to many sources of information and make decisions based on many, criteria. Information or activities provided as part of a prevention program will contribute to what people decide and how they behave, but there may be many other factors in the equation. Behavioral surveillance data alone are rarely able to isolate and attribute change to a single element.

Behavioral data such as that generated by BSS can, however, be used together with other types of data to infer a plausible effect of prevention efforts. For example, process indictors might show that 50 prime-time spots encouraging young men to use condom in commercial sex had been aired on TV in a six month period between two rounds of BSS. Output indicators might show that condom sales had doubled in that period. BSS among military recruits might register a 50 percent rise in condom use at last commercial sex, and BSS among sex workers might register a 10 percent rise in condom use with last client. In addition, health facility statistics might record a significant drop in STI cases treated in the last month, compared with the same period a year earlier. It would not be possible from this to attribute the safer behavior directly to the TV campaign. But the consistency of the indicators would surely allow policy - makers to infer that their prevention efforts (which of course include the availability of condoms and of STI treatment services to support the messages of the media campaign) were reducing the risk of HIV infection in young men and their future sex partners.

Other research complements BSS

BSS is not meant to answer every risk behavior question about every target group. In fact, BSS should be limited to only a few target groups with a questionnaire including only key introductory and behavioral questions. In-depth information about target groups, the evaluation of specific interventions, and relationships between several behavioral variables are better obtained through quantitative and qualitative behavioral research specifically designed to answer these questions. They are necessary adjuncts to behavioral surveillance which together form a comprehensive package of monitoring and evaluation.

CHAPTER

2

SETTING UP BSS:
STEPS IN THE PROCESS

- *Building partnerships*
- *Decisions on methodologies*
- *Implementation planning*
- *Analysis issues*
- *Dissemination*

2

Setting up BSS: steps in the process

This chapter describes the process of setting up and conducting BSS. These steps include a preparatory phase of building up relationships with people who will be involved in collecting and using the data and defining their needs. Appropriate groups for surveillance must be chosen, the feasibility of quality data collection in these groups assessed, and sampling frames developed. Implementation of data collection follows, with the dataset analyzed and finally, the results disseminated and used to improve prevention programming.

This chapter gives a preliminary overview of these processes. Individual steps are covered in far greater detail in subsequent chapters. It is important to recognize that the process of setting up behavioral surveys is not as linear as this series of steps might suggest. Rather, it is an iterative process. Information gathered or conclusions reached in one step, such as site selection and mapping, may lead to the review of decisions made at other steps, such as the definition of measurement objectives. The whole process seeks to establish a delicate balance between what is most useful and what is most feasible.

Step1 : Building partnerships

In planning for behavioral data collection, it is important that a number of groups and individuals agree on the goals of the data collection as well as the practicalities. The following section outlines the groups who are most likely to be key to this process ; after that comes a discussion of the issues around which consensus is most important.

The process of building partnerships and agreement is fundamental to ensuring that BSS produces results that are both usable and used. The ideas and resources contributed by different partners greatly strengthen the value of the data collected. But it is worth noting here that this process can be time-consuming and occasionally frustrating, especially during the very first round of BSS. Those managing the process would do well to plan realistically for the time and resources consumed by this preparatory phase.

Public health officials and other government agencies

BSS is a core part of a second generation surveillance system for HIV. It is therefore most likely to occur under the leadership of the national AIDS program or a national epidemiological monitoring center. Besides managing the systems that generate HIV surveillance data (both behavioral and serological) public health officials are likely to be the prime users of the data. The whole point of surveillance systems is, after all, to provide information to improve the prevention and care programs led by these same officials.

It should be noted that this leadership role does not mean that public health officials necessarily have to implement the surveys themselves. Staff in national AIDS programs are often overworked as it is, and experience with social and behavioral research may be limited among program staff. The surveys and the data analysis may be undertaken by a variety of institutions, ranging from local universities to market research firms to non-governmental development organizations. But if the results of the data collection are to meet their needs, program officials will want to maintain a leading role in overseeing the choice of respondent groups, indicators, etc., as well as in disseminating the data and lobbying for its effective use.

Public health officials in the national AIDS program and elsewhere are also well placed to seek support from other quarters of government. Often, formal approval for research on human subjects must be sought from national authorities, often in a ministry of science and technology. Various other ministries may also be able to help facilitate access to groups to be included in surveillance. Education officials can help provide a sampling frame and work to secure head teacher support for surveys among students, for example, while the defense ministry might facilitate access to groups of soldiers.

Agencies that might obstruct progress if they misunderstand the purpose and goals of behavioral surveillance should also be consulted early on. The support of the interior ministry or the police authorities can be crucial to the smooth implementation of BSS among groups such as drug injectors whose behavior is illegal. Once these authorities are fully informed of the purpose of BSS by their colleagues in the health ministry, they are often in a position to offer constructive suggestions which will improve the eventual outcome of the data collection exercise.

Organizations providing services to communities at risk for HIV

In many countries, the majority of services for members of sub-populations at especially high risk of exposure to HIV are provided by non-governmental organizations (NGOs). These NGOs have an important contribution to make in planning BSS activities for two main reasons.

First, they are likely to want to use the data generated to support their own project evaluation efforts and to improve their prevention services. They are therefore likely to have useful ideas about appropriate survey questions and indicators. Secondly, they are likely to have good access to communities that are otherwise difficult to reach. The trust that they have established with these communities provides a platform from which successful behavioral surveys can be launched. NGOs providing services to communities at risk for HIV may therefore become a primary partner (or the lead actor) in carrying out the surveys themselves.

Communities at risk for HIV, and those that interact with them

The full and active participation of all quarters of government and of non-governmental service providers will be of no value unless the communities at risk for HIV are themselves willing to participate in behavioral surveillance. And people are only likely to be willing to participate if they believe that the exercise will benefit them and their communities. The translation of data into better service provision is the weakest link in what should be a circular chain of programming, surveillance, evaluation and improved programming. Often, people are right to be wary of vague promises that a survey will be followed by improved programming. This is one of the reasons that it is so critically important to plan realistically how data will be used before the survey process begins.

The provision of information and service is an important part of HIV prevention programming, but it is up to members of the communities themselves to use those services to reduce their exposure to HIV, and that of their partners. They know better than anyone what the current profile of risk behavior is. The more BSS answers questions raised within the community itself, the more community members are likely to act on the information it generates. It is therefore important to consult with members of the communities who will be answering questionnaires about what should be included in the survey.

Like the NGOs that serve them, community members know the ins and outs of the world they inhabit. Key individuals can provide essential information, helping to delineate the community and to facilitate access to its members. Community members can also shed light on the power structures that operate within a community. For BSS to succeed, those planning the data collection have to deal not only with individuals at high risk for HIV, but also with the men, women and organizations that hold the keys to their community. These people - be they brothel owners and pimps, drug dealers and shooting gallery owners, taxi company bosses, union leaders or head teachers - may stand to gain or to lose from a better understanding of risk behavior in the communities they influence, and from more effective prevention efforts in these communities. Certainly, they can stand in the way of a successful data collection exercise. One of the jobs of those planning BSS is to consult key power brokers about their concerns, and to clarify the benefits that better HIV prevention efforts can bring to them and to the communities they influence.

Funders of HIV prevention activities

Those who fund HIV prevention activities have a special interest in knowing whether their contribution is making any difference. While this includes local tax-payers, in practice the demand for evaluation very often comes from international investors in prevention. As part of a national surveillance system for HIV, BSS is not designed to evaluate particular interventions or the contribution of particular donors. It is designed to monitor whether the sum total of the national response to HIV is having any effect on the behaviors that threaten to spread the virus throughout sub-populations or the general population.

However, public health officials managing a surveillance system may be sensitive to the needs of major donors by taking their concerns into account in designing BSS. This may imply including particular geographical areas or population sub-groups in the surveillance system. It should be stressed, however, that BSS is designed to be a routine exercise which meets the long-term information needs of a national AIDS program. The concerns of individual organizations funding particular short-term prevention projects should remain secondary to long-term national needs.

Mechanisms to sustain partnerships

It may be a good idea to formalize the consultation process so that partners can continue to contribute ideas and exchange experience throughout the planning and implementation of BSS, and can coordinate their responses to its results. One mechanism that appears to work well is a technical working group on surveillance that includes members of all the groups mentioned above. This group should meet very regularly during the design phase of BSS or wider second generation surveillance systems, and continue to meet at less frequent intervals during the implementation and analysis phase to review progress and plan for the effective use of the emerging data.

Step 2 : Building agreement on the BSS process

Together, the groups listed above need to come to agreement on several issues. These include :

- Which sub-populations will be included in the surveys ?
- What information will be collected from these groups ?
- Who will do the data collection and analysis ?
- What mechanisms will ensure that information gathered will be used to benefit the communities involved ?

These decisions are interdependent. For example, the choice of respondent groups may well determine which institution can most effectively conduct the data collection. How the information will ultimately be used will influence what information is collected.

Step 3: Choosing sub-populations for behavioral surveillance

Experience has shown that the first of these issues is often the most difficult to resolve. Ideally, sub-populations should be chosen on the basis of their contribution or potential contribution to the spread of HIV in the local situation, and because prevention efforts are underway or planned to reduce risk behavior in those particular groups. Some sub-populations may be chosen to represent particular types of risk behavior, with behavioral or occupational groups all included as separate respondent groups. In practice, the choice of sub-populations is influenced by many factors other than epidemiological concerns. Political considerations, resources and feasibility of access all have a part to play. Indeed the process of choosing sub-populations for BSS ideally should include a rapid assessment stage that confirms that members of the group exist in sufficient numbers and that they do engage in high risk behaviors. It should also investigate the feasibility of data collection among potential respondents.

In this process of selecting sub-populations and confirming their relevance and feasibility as potential respondent groups for BSS, care should be taken to use existing data which can indicate what sub-populations are most at risk in a society, and which behaviors put them at risk. Press reports and interviews with people likely to have information on sexual and drug-taking behavior can also inform preliminary decisions about relevant risk groups and behaviors. This is discussed in greater detail in the section on rapid assessment on page 26.

Step 4: Defining measurement objectives

One of the driving factors behind the choice of sub-populations for BSS will be the country's strategic prevention priorities. After sub-populations have been discussed and agreed upon, surveillance planners should clearly articulate why they have chosen these groups. In other words, what exactly they want to know, how they plan to measure it, and how that information will help improve national prevention efforts.

Failure to articulate objectives clearly at this stage may lead to wasted resources and lost opportunities in the data collection phase. Information may be collected in ways that are not easy to interpret or not comparable with other data sources, and questions which need answering may go unanswered.

What will the information be used for ?

Information is collected to be used. It follows that it must be presented in a form that will be useful to those who have the power to act on it. Defining the likely users and uses of information is an important first step in defining the overall measurement objectives. Specifying the ultimate data uses will lead to rational answers to the next question period.

What is to be measured ?

Indicators must be chosen before the survey process begins, so that questionnaires can be checked to see that they do indeed yield information that can be used to construct the indicators selected. Standardized indicators have been defined for several sub-populations likely to be included in BSS. It is recommended that standardized indicators be used wherever possible. The use of standard definitions and time reference periods greatly increases the comparability of data across time and in different populations, and increases the cohesion of a national surveillance and monitoring and evaluation system for HIV.

Detailed definitions and explanations of standard indicators can be found in Chapter 9 of these guidelines. There may, however, be good reasons to include other indicators that are more situation-specific. This may be linked to behavioral patterns in a particular culture, or may be derived from some aspect of the national response. Use of a particular brand of socially-marketed condom may be an example. Survey designers must always bear in mind, however, that BSS is not able to evaluate the independent effects of individual prevention projects.

Step 5 : operationalizing definitions of populations of interest

Once overall respondent groups have been settled on, the sampling universe must be defined. The universe is the population to which results may be extrapolated. An example of a respondent group might be sex workers, and the sampling universe could be those selling sex in the capital city of the country.

After defining the sampling universe, the sampling domains must be identified. A sampling domain is a specific population segment or subset for which separate survey estimates are desired. For example, sex workers may be broken down into brothel-based and freelance sex workers. Further, brothel-based sex workers may be broken down into urban and rural brothel-based sex workers. In order to ensure that statistically significant changes can be monitored over time in particular sub-groups (or domains), sample sizes are calculated per domain. This means that it is very important to think clearly beforehand about what information the program really needs to improve its prevention efforts. It is no good calculating a sample size for all sex workers, and then deciding afterwards that it would be interesting to know whether changes have occurred just in sex workers aged under 25. Unless this is taken into account at the design stage, it is very likely that the sample size will be too small to calculate significant changes in a subset of the group, such as younger women only.

Operational definitions of survey domains

After deciding which groups and sub-groups are of interest, survey designers must specify exactly how they define a member of those groups. The importance of clear operational definitions of survey domains cannot be over-emphasized ; it is often quite difficult to achieve. In a culture with no overtly “gay” identity, for example, how should men who have sex with men be defined ? Where large numbers of women supplement their income with the occasional sale of sex, what constitutes a sex worker ? Unless domains can be defined in terms that are operationally useful for sampling and fieldwork purposes, survey estimates regarding such group’s behaviors can be expected to be subject to considerable error, and the group may have to be dropped from BSS.

Geographic definitions of survey domains

Once operational definitions have been agreed upon survey designers need to determine to what geographic area they wish to be able to extrapolate results. For example, surveys conducted exclusively among school children in urban areas cannot be extrapolated to school children in rural areas. Ideally, behavioral data for specific sub-populations should be monitored on a national basis, with sufficient sample sizes to allow for separate estimates for different regions. Although comparisons across regions, cultures and countries must be made with extreme caution, this type of behavioral data can help explain differences in levels of HIV infection between one region and another, and help to identify local prevention needs. Regardless of whether coverage is national, regional, or only for a subset of regions, it is important to recognize that the generalizability of survey findings is limited to those areas included in the universe for the survey effort.

Many factors (including cost, feasibility and political expediency) will influence the geographic coverage of BSS. One important consideration for managers of national HIV surveillance efforts should be the distribution of HIV sero-surveillance efforts. The principles of second generation surveillance dictate that behavioral and serological data be used in conjunction to explain trends in the epidemic. It is not possible to do this with confidence unless the data are drawn from the same source populations. Behavioral data collected from married women in the capital city will do nothing to explain sentinel surveillance data recorded among women at antenatal clinics in rural areas. It is therefore advisable to try to conduct BSS in the same geographic area as HIV sero-surveillance for a given sub-population. Indeed where sero-surveillance efforts use population-based sampling approaches for a given hard-to-reach population, the same sampling frame and sampling design can be used for both HIV surveillance and behavioral surveillance. For reasons given in the discussion of choice of respondent groups, however, it is not advisable to collect behavioral information and biological specimens from the same individuals.

Each geographic catchment area is, properly speaking, considered a separate sampling universe. However, if data collection is spread out across the country and the data are weighted appropriately, it is sometimes possible to derive national estimates of behavioral indicators.

Step 6 : Site Selection and Mapping

After rapid assessment has shown that a sub-population can feasibly be accessed in large enough numbers to produce meaningful data, the universe and domains have been identified and criteria for the inclusion of potential respondents have been set, a more thorough process of mapping and selection of sampling points can begin.

Behavioral data collection which focuses on populations with higher levels of risk behavior must identify points where populations are accessible in a comprehensive way if representative data are to be collected. This generally involves a mapping of sites where the behaviors take place, such as brothels, shooting galleries, gay bars, and cruising areas, together with an estimate of the number of individuals associated with each site. More information on this process is provided in Chapter 4.

Step 7: Constructing a sampling frame

The process of constructing sampling frames can be simple or complicated, depending on the nature of the sub-population and the details of the sampling approach. In some instances the lists for the different stages of sampling may be readily available. For example, a survey of in-school youth might use lists of schools separated by gender and with measures of size for the number of students in each school and in each class, which can be obtained through the ministry of education. On the other hand, consider the case of a survey with commercial sex workers. A list of establishments where the sex workers solicit clients may be required, along with an estimate of the number of sex workers who are likely to frequent the establishments on different nights of the week. Such a sampling frame would require a significant amount of up-front fieldwork, which must be anticipated in the budget and timeline. This type of fieldwork might also require specialized personnel, often drawn from the respondent group itself. Adequate time and resources for sampling frame development are a frequent omission of survey protocols. Detailed information on mapping and sampling frame development is contained in Chapter 3 of these guidelines.

Step 8: Develop the sampling design

The sampling design for a given survey effort defines the universe and domains for the survey, the sample size requirements, the number and size of clusters and other major steps of the sampling strategy. In addition, the procedures to be used to estimate population parameters from the sample data and to calculate estimates of sampling errors should also be specified as part of the sample design. The sampling plan describes how the sampling design will be implemented ; and provides step-by-step instructions to be followed in choosing survey respondents.

Developing the sampling design is a technical exercise, requiring estimates of existing levels of risk behavior, decisions about the magnitude of changes worth measuring, and the accuracy with which they should be measured. All of these aspects are described in detail in Chapter 4.

Step 9: Develop the survey protocol

A survey protocol lays out the research methodology to be used for the survey. It includes a description of the goals and objectives of the research, as well as details about the methodology including a description of the chosen target populations and sites, and a sampling plan for each sub-population. Questionnaires to be used by field staff in conducting interviews with survey respondents, plus auxiliary materials such as interviewer guides used both for training purposes and as an on-site reference for field staff would also be part of the protocol. In some surveys, supervisory guides are also prepared in order to standardize supervision of the fieldwork.

Step 10: Pretest and adapt survey instruments

Standardized questionnaires have been developed for different sub-populations among which BSS may be conducted. Copies of these questionnaires are included in Appendix 1, and will also be available on the internet at http://www.fhi.org. These questionnaires are the result of long experience and have been widely tested in many different settings. The use of standardized questionnaires maximizes comparability of data across time, population groups and geographic regions. However, it is still essential to pretest and adapt survey instruments for every local setting. Often this will involve translating the instruments into local languages and searching for the correct local terminology to ensure that the original meaning of the question is not lost. It may also be necessary to conduct qualitative research; it is certainly desirable to involve local members of the respondent groups who can help with the interpretation of the questions. To help in this process, an interviewer guide laying out the original intent of the questions for each respondent group should be used. An example of one such guide is included in Appendix 2. More information on adapting questionnaires, securing informed consent from participants and ensuring the quality of fieldwork is provided in Chapter 6.

Step 11: Train interviewers and pilot survey procedures

Training of interviewers is an important part of the survey process. The attitude of interviewers can greatly influence the outcome of a survey, especially one that asks about illegal or stigmatized behavior. To increase the likelihood of honest responses, interviewers must be thoroughly trained in open and non-judgmental questioning techniques, and in accurate recording of responses. The amount of training required will vary depending on who is carrying out the survey. Where peers of those in the respondent group are selected as interviewers, they may be less likely than professional researchers to appear judgmental. Without adequate training they may, on the other hand, also be more prone to recording or coding responses in a way that reflects their own opinions or behavior.

Once interviewers have been trained, the entire survey process should be piloted before actual data collection begins. At this stage, any unforeseen wrinkles can be dealt with. Aspects of the survey process that should be piloted include selection of survey respondents, feasibility of completing interviews with selected respondents, timing (ability of the interviewers to carry out the required number of interviews in a day), role of the supervisors (how the supervisors will maintain quality control), and storage and transport of completed questionnaires.

Step 12 : Data collection and supervision

Actual data collection should begin only after all of the above steps have been completed. Supervisors should remain vigilant throughout the survey, especially when interviewer fatigue begins to take its toll. Supervisors should spot-check questionnaires for completeness and accuracy. They can also begin the work of coding open-ended responses. If there is a principle investigator, he/she should coordinate this process, and ideally all the coding should be done by one person. Certainly no more than three different people should be involved in this process. If the work is to be done by more than one supervisor, they should agree ahead of time on exactly how the coding is to be done. In some instances it may be possible to begin the work of data entry in the field, while data collection is still ongoing. If not, the questionnaires should be transported to a central location where data entry can begin.

Steps in the survey process : a summary

Step 1 :	Building partnerships
Step 2 :	Building agreement on the BSS process
Step 3 :	Choosing sub-populations for behavioral surveillance
Step 4 :	Defining measurement objectives
Step 5 :	Operationalizing definitions of populations of interest
Step 6 :	Site selection and mapping
Step 7 :	Constructing a sampling frame
Step 8 :	Develop the sample design
Step 9 :	Develop the survey protocol
Step 10 :	Pretest and adapt survey instruments
Step 11 :	Train interviewers and pilot survey procedures
Step 12 :	Data collection and supervision
Step 13 :	Data management
Step 14 :	Data analysis
Step 15 :	Using the data to improve HIV prevention efforts

Step 13 : Data management

Once the survey data have been gathered, they need to be entered into a computer data file and checked for errors and inconsistencies. Time-consuming, but absolutely necessary. The failure to exercise care at this stage of the survey can cause difficulties at the analysis stage. Several types of data checks are advised prior to beginning analysis. First, data entry should be checked by verifying the accuracy of a sample of completed survey questionnaires. If resources permit, the data should be entered twice and the two entered data sets compared to detect data entry errors. Some research groups are now beginning to use a scanner to enter data. This practice is designed to help increase accuracy.

Once data entry errors have been reconciled, the data should be checked for values that are “out of range” (i.e., values that are implausible or impossible) and/or are inconsistent with other information gathered in the survey interview (e.g., males reporting having become pregnant, information on condom use having been gathered for respondents reporting not having been sexually active, etc.). The data should also be checked for “missing” items — that is, items that should have been completed during the course of the survey interview but were not, either because of respondent inability/refusal or interviewer error. Decisions will need to be made as to whether to insert values for missing data items (a process known as “imputation”) or to simply disregard missing data items during analysis.

Step 14: Data analysis

The penultimate step in the survey process is the analysis of the data collected. In addition to the calculation of behavioral indicators based upon the survey data collected, the analysis stage entails the application of sampling weights to the data (if necessary), the calculation of standard errors of the survey estimates, and the conduct of tests for the statistical significance of observed trends over time and/or differences among various response groups or sub-groups. These issues are discussed in detail in Chapter 7.

Step 15: Using the data to improve HIV prevention efforts

This final step is the one that justifies the whole of the BSS effort. Primary responsibility for decisions about how data are used will rest with public health officials in the national AIDS program. They will decide how best to present data to different audiences to press for change. These audiences may include partners in HIV prevention both within the government and outside it, members of the respondent groups themselves and those who provide services to them, key decision-makers both nationally and internationally who can contribute resources to a more effective response to HIV. Behavioral data will usually be combined with other sources of HIV-related data such as that generated by a sentinel surveillance system, and packaged differently for different audiences.

CHAPTER

3

CHOOSING POPULATION GROUPS

- *Choosing respondent groups by state of the epidemic*
- *Defining potential respondents: eligibility criteria*

3

Choosing population groups

Population-based household surveys are especially good at assessing trends in relatively common behaviors, and in investigating the extent of sexual networking between people with different levels of risk behavior. For example, what proportion of men in the general population regularly have sex with sex workers? To investigate the particular behaviors of clients of sex workers or of sex workers themselves, however, a more focused survey is needed. BSS is particularly useful for conducting these kinds of focused surveys.

Ultimately, the choice of respondent groups should be determined by two things:

- the state of the HIV epidemic in a country
- the prevention efforts that are either underway or planned

Choosing respondent groups according to the state of the HIV epidemic

In countries or regions **where HIV has spread into the general population,** the behaviors of greatest interest are those of the majority. Household surveys of risk behavior in the general population are therefore recommended. Where HIV has already reached very high levels among men and women in the general population, establishing safe behaviors among young people may be the only way of creating a fire-break around the spread of HIV. For this reason, surveys of behavior among young people are of special interest in countries with high HIV prevalence. Even in countries where the HIV epidemic is sustained by sexual networking of men and women in the general population, certain sub-populations, notably sex workers and their regular clients, may contribute disproportionately to the spread of the virus. Focused surveys in these groups may therefore be justified.

In countries or regions **where HIV is concentrated in defined sub-populations** with higher than average risk behavior, the bulk of behavioral surveillance should consist of BSS in these groups. They typically include some or all of the following: men who have sex with men, injecting drug users, and male and female sex workers.

In a concentrated epidemic, the virus may remain confined to circles of people with higher-risk behavior because there are few links between those populations and the general population. Or links and generalized risk behavior may exist, but HIV may not have infected enough individuals to result in explosive growth. In that case, it may be just a matter of time before the epidemic becomes generalized. Determining which of these situations is the case and designing and measuring the success of the appropriate interventions are the key purposes of behavioral data collection in a concentrated epidemic.

The extent to which HIV spreads from these sub-populations into a wider population depends on the sexual links between members of these groups and members of the general population. Some groups, notably men who are frequent clients of sex workers (and who are frequently associated with mobile occupations such as transport or defense work), can act as conduits between those with high risk and a wider population. These groups may therefore also be included in BSS, and the links with different partner types should be a special focus of attention.

It is recommended that countries with concentrated epidemics carry out occasional general population surveys to investigate links between high and low risk groups. However general population surveys are difficult to carry out, and may not be justified for this purpose alone. Some countries with concentrated epidemics may therefore choose to include groups representing people of average risk in their BSS systems. These groups serve principally for comparative purposes, and can provide an early warning if risk behavior suddenly increases. However it should be noted where risk behavior is already rare, very large sample sizes would be needed to show a significant decrease in risk over time.

Countries or regions where **HIV is very uncommon** are in a particularly interesting situation. Many countries is this situation have not felt the need to invest resources in collecting behavioral data, assuming that if the virus is largely absent, risk behavior must also be limited. However, it is exactly at this point of the epidemic that behavioral data can act most effectively as a warning system. Where behavioral data and other indicators such as STI or hepatitis B prevalence show that people are having unprotected sex with multiple partners or are sharing injecting equipment, it may simply be a matter of time before HIV follows. Almost inevitably in these situations, if HIV surfaces it will do so first in those groups whose behavior carries a high risk of exposure to the virus. Behavioral surveillance should therefore be restricted to those groups.

Just as there are groups that are important to survey in different epidemic states, it is important to point out that certain groups are **inappropriate** for behavioral surveillance. For example, it makes little sense to include pregnant women or STI clients in behavioral surveillance, for reasons given in the section on linking behavioral and serological data on page 8.

In certain countries where little behavioral information is available, or target populations are not clearly defined, BSS might include an initial pilot phase with more in-depth formative research e.g. attempting to better characterize sex worker clients. Alternatively, the pilot phase may be built into the first round of data collection, with multiple populations included, some of which may be dropped in later rounds, or included in alternative waves.

Since social circumstances change over time, countries need constantly to re-evaluate the existence and importance of different sub-populations. In Eastern Europe, for example, rapidly changing social circumstances had by the mid-1990s led to an epidemic of injecting drug use unimaginable just a few years earlier. Similarly, in parts of China, economic growth is giving rise to increased internal migration, a rapid resurgence of the sex industry and an increase in STIs.

Other factors affecting the choice of respondent groups

It is rare that respondent groups are chosen purely on epidemiological grounds, and rightly so. Other factors, led by prevention efforts, must come into play. As mentioned in the introductory chapter, there is no point setting up a behavioral surveillance system unless a change in behavior is expected. And while social circumstances may indeed affect behavior, the primary engine for behavior change should be HIV prevention efforts. Unless such efforts are in place or planned, behavioral surveillance is a waste of time and money.

In some circumstances, public health officials may wish to use a first round of behavioral data as a springboard from which to launch a campaign to lobby for prevention activities in marginalised groups such as injecting drug users. But if the prevailing social or political climate dictates that such initiatives are bound to fail, it may be best to drop the group from BSS until circumstances change. One of the greatest dangers surrounding HIV surveillance systems including BSS is that the data generated will be used to victimize or discriminate against populations from whom data are collected. The consultative group planning BSS should take this possibility into very careful consideration when choosing respondent groups.

Another danger is that the data will not be used at all. This is most commonly the case when influential sectors of society are in "hear no evil, see no evil, speak no evil" mode : in other words, in denial about the existence of certain behaviors in their societies. Examples come from several African countries that have refused to allow any data collection or indeed prevention programming for school children, arguing that this group is not sexually active. Some have persisted in this attitude even when 10 percent of blood donations from this "low risk" group have to be rejected because they are infected with HIV. In the case where inaction is so harmful, it is worth persisting in trying to build alliances that will make the collection and eventually the use of data from these groups possible.

Political imperatives may affect the choice of respondent groups in other ways, too. There may be pressure from politicians to include (or to exclude) certain geographic areas or ethnic groups in data collection. Large donors may also hope to influence the selection of groups to include populations for whom they have funded interventions.

Rapid assessment of the feasibility of including a sub-population group for BSS

Other practical considerations are also important. A particular group may contribute to the spread of HIV in a country, but it may simply not be feasible to define and sample from the group in a way that would yield any meaningful information. Criteria necessary to guide selection of groups include the following:

- It must be possible to define criteria for being considered a member of the respondent group
- It must be possible to construct a sampling frame of locations where the population can be found
- Interviewers must be able to access respondents
- Respondents must consent to be interviewed and be willing to answer personal questions about their sexual/risk behavior
- There must be adequate numbers of respondents present to meet sampling quotas.

Rapid assessment techniques should establish whether these criteria can be met. Rapid assessment will include a review of any existing data or literature about the sub-population in question, including a press review. Interviews with group members or those who provide services to them can also help broadly to confirm assumptions about basic levels of risk behaviors in the sub-population. The ability of interviewers to approach potential respondents safely, and the willingness of potential respondents to discuss their sexual and drug-taking behavior should also be explored.

Table 1 : Examples of respondent groups selected for BSS, various countries

Cambodia	Kenya	Indonesia	Senegal	Thailand
Female				
Sex workers Beer vendors Working women	High paid sex workers Low paid sex workers Youth	Brothel-based sex workers Non brothel-based sex workers	Registered sex workers University students Secondary school students Domestic house keepers Women in income-Generating groups Office workers	Direct sex workers Indirect sex workers Factory workers Vocational students
Male				
Military/police Motorcycle drivers Vocational students	Bus drivers Youth	Truck drivers Sailors/seaport workers	University students Secondary school students Truck drivers Apprentices in the informal sector Workers	Army conscripts Factory workers Vocational students

If early field tests suggest these criteria cannot be met, then a re-think of respondent groups will be necessary. For example, single female vocational students in one large city exhibited very low levels of sexual activity. Sample sizes of several thousand would have been required to detect significant changes in sexual practices and would therefore have made the BSS unmanageable and unaffordable.

Defining potential respondents: eligibility criteria

Defining the respondent group is not always easy. While many respondent groups will be defined by characteristics that relate directly to their risk behavior, it is important that the definition does not cause people to drop out of the group if they adopt safer behaviors in response to prevention campaigns. It may not, for example, be desirable to set “anal sex in the last 12 months” as an inclusion criterion for a survey of men who have sex with men. If men respond to HIV prevention campaigns by switching to less dangerous sexual practices in their relations with other men, they will be excluded from future surveys and the prevention success will go unrecorded. Together, the working group on surveillance and other partners will have to decide on a mix of respondent groups which is feasible and best matches epidemiological information needs, while meeting the concerns of all interested parties to the extent possible.

Table 1 shows some of the choices made by countries so far.

CHAPTER 4

SAMPLING APPROACHES

- *The importance of sampling*
- *Devising the sampling plan*
- *Probability and non-probability sampling methods*
- *Multi-stage cluster sampling*
- *Sample size requirements and parameters for calculations*

4

Sampling approaches

This section of the BSS guidelines covers the topics of survey measurement and sampling issues specific to behavioral surveillance of HIV-related high-risk behaviors. It is designed for use with behavioral surveys in general, and for defining sampling strategies for hard-to-reach, hidden and mobile populations in particular.

The importance of sampling

Sampling is of crucial importance in measuring trends over time. Sampling strategies should be systematic and replicable over time. If they are not, then any changes observed over time may simply be the result of different sampling strategies between sample rounds.

A great deal of work has been done over the years in developing sampling methods that provide representative samples for the general population. Large international survey programs such as the Demographic and Health Survey series have perfected the art of household sampling. Sampling from established institutions such as schools is also a well-developed practice. These sampling methods are extensively described in many publications. While examples of these methods are given in Appendix 3, they are not covered in detail in this chapter.

The majority of sub-populations of particular interest to BSS are precisely those that are not easily accessible through conventional household or institutional sampling techniques. The primary challenge to conducting meaningful BSS is to devise sampling plans that are both feasible and capable of producing unbiased estimates (or, more realistically, estimates with minimal levels of bias) for population sub-groups that are not easily "captured" in household surveys. As a practical matter, this will require (1) the use of conventional, probability sampling approaches in non-conventional ways, (2) the use of different sampling strategies for different sub-populations, and (3) the occasional use of non-probability sampling methods in situations where probability methods are not feasible.

Devising the sampling plan

Once the step of selecting the sub-populations has been completed, a sampling plan must be devised before the actual mapping and development of the sampling frame can take place. During the process of mapping, the original sampling plan is usually revised several times, as the survey managers begin to understand the patterns of the population, and the effects of these patterns on operationalizing the design. This is particularly true for hard-to-reach populations, such as sex workers, injecting drug users, men who have sex with men, and mobile populations, among whom BSS is frequently conducted.

The first step in devising a sampling plan is to select a sampling approach. In this chapter, two sampling approaches are proposed for hard-to-reach populations: multi-stage sampling and a modified form of snowball sampling known as "targeted" sampling. Next, sample size requirements are considered. The final section discusses a number of key design issues and parameters for the sampling strategies proposed.

Probability and non-probability sampling methods: issues and challenges

Sampling procedures may be thought of as falling into two broad classes: formal or probability methods, and informal or non-probability methods. In a ***probability sample,*** every person in the defined universe may be selected into the sample, with a known (non-zero) probability. Probability sampling tends in practice to be characterized by the use of lists or sampling frames to select the sample, and by clearly defined sample selection procedures. With a probability sample, it is possible to use the data themselves to estimate the ***sampling error,*** or the effect of random fluctuations in sample selection on the accuracy of the observed results. Estimates of population characteristics derived from surveys based upon probability sampling methods may be expected to approximate the "true" population value (i.e. proportion or mean) within a specified margin of error with a known probability.

Under the heading of ***non-probability sampling methods*** are a variety of approaches that are not based upon the statistical principles which govern probability samples. There are various reasons for using non-probability methods. Some methods (e.g. ***snowball or network sampling***) are designed for use when probability sampling is not feasible. In snowball sampling, key informants in a sub-population identify other members of their community. These people are contacted, and they in turn identify further contacts. The process goes on until an adequate sample is achieved. Other methods (e.g. purposive sampling) are designed to provide the maximum amount of information possible for key groups of study subjects in order to develop and/or test social theories. Yet others (convenience sampling) are designed to obtain a sample of subjects at the least possible cost. In general, non-probability sampling methods are not intended to produce "representative" data for larger populations, although they are sometimes (incorrectly) used to try to do so.

Probability sampling has two major advantages. Firstly, it is less prone to bias than non-probability methods and secondly, it permits the application of statistical theory to estimate sampling error from the survey data themselves. Consistent use of probability sampling methods in the context of BSS has the critical advantage of producing data which are comparable from one survey to the next, and which can therefore be used to measure statistically significant changes in risk behavior over time. Therefore probability sampling methods are the preferred choice for BSS whenever feasible. The major disadvantage of probability sampling is that a list or sampling frame is needed, and this can take time and resources to produce. While there are ways to make the task of developing sampling frames less costly and time consuming, the use of probability sampling methods will nevertheless involve greater time and expense than sampling approaches that do not require a list or sampling frame.

While they are generally cheaper and easier to use, non-probability sampling methods have several important drawbacks. The first is the risk of ***sampling bias*** resulting from the subjectivity that often enters into the sample selection process. Where a list of sampling units is not available from which to select a sample following fixed rules, there is the danger that certain types of subjects will be disproportionately included in and others disproportionately excluded from the sample. Secondly, there is the issue of replicability, which is of key importance for surveys intended to monitor behavioral trends over time. Where sample selection criteria are not defined in operationally precise terms so that they can be replicated in subsequent survey rounds, there is a danger that observed changes will be due to changes in sampling rather than real changes in behavior. Finally, non-probability methods provide no statistical basis for assessing the precision or reliability of survey estimates. In fact, conventional statistical tests cannot reliably be used with non-probability samples, although in practice this limitation is often overlooked.

In the end, the issue boils down to one of credibility. A survey based upon non-probability sampling methods may produce the same results as a probability survey, but the results will be harder to defend against skeptics who suspect that the findings may reflect poor sampling rather than actual behavior. Probability methods produce data that can be interpreted with much greater confidence. This should in turn translate into a firmer basis for decision-making in designing HIV prevention programs and in allocating resources.

Early in the HIV epidemic, much research was conducted on an ad hoc basis — a response to the need for ANY information, as quickly as possible. More recently, however, the demand has grown for the systematic collection of high-quality data that can be interpreted and acted upon with greater confidence. This demand has spurred the development of methods to extend probability sampling as much as possible to surveys of population sub-groups that are difficult to enumerate. It is acknowledged, however, that the use of probability sampling methods will not be feasible for some populations; notably, those whose members do not congregate in fixed locations and for whom it is thus not feasible to develop a list or sampling frame. When a sampling frame cannot be constructed, the use of non-probability sampling methods is the only alternative. Guidance on how to make data collected under these circumstances as objective and replicable as possible is provided later in this chapter.

Multi-stage cluster sampling methods

In probability sampling, the key element in the sample selection process is ***randomization***. This means that units and/or respondents are randomly selected from all those included in the sampling frame. This reduces potential bias. Randomization can occur at various levels; the scheme chosen will depend on the level of error surveillance managers are prepared to accept in their results, as well as what is most feasible. There is almost always a trade-off between these two elements.
In general, easier types of sampling such as the ***multi-stage cluster sampling*** described below carry wider margins of error than ***simple random sampling*** from the entire population. This means that a larger sample size will be needed to achieve the same levels of precision.

Where a complete list of all individuals in the group to be sampled is available, it is possible to select individuals randomly from that list. However this is rarely the case. More commonly, a list of larger units where the individuals gather is more likely to be available, or easy to construct. These units are known as ***primary sampling units (PSUs)*** or ***clusters***. Examples might include schools, brothels, or gay bars. If a list of all PSUs can be compiled, a set number of PSUs can be selected at random. Then lists of individuals need only be compiled for the PSUs selected, and individuals can be chosen, preferably at random, from within the selected PSUs. As discussed below, some variants of multi-stage cluster sampling do not even require that a list of elements within sample clusters be created.

Table 2 : Examples of PSU definitions for selected BSS respondent groups

Respondent group	Possible PSU definitions
Sex workers	Brothels, massage parlors, bars, restaurants, city blocks, streets, public parks
Men-who-have-sex-with-men	Bars, nightclubs, parks
Young people	Households, schools, workplaces, locations where “street children” gather
Mobile populations	Truck stops, depots

Defining primary sampling units

It is not always clear exactly what constitutes a primary sampling unit. In the context of BSS, most multi - stage sampling schemes will consist of simple two - stage sampling. In this case, a PSU is any grouping of potential respondents that can be unambiguously defined as a unit. The examples of brothels and gay bars have already been given. But other units are also possible, such as a city block where street-based sex workers seek clients, or a park where men who have sex with men commonly meet one another. For the purposes of BSS, PSUs can be defined as ***any identifiable site or location where respondent group members congregate.***

Table 2 provides some examples of possible operational definitions of PSUs for selected respondent groups in BSS surveys investigating HIV-related risk behavior.

Developing a sampling frame

Sampling frames are an integral part of probability sampling. The applicability of probability sampling methods to surveys of HIV-related behavior depends upon whether it is possible to construct meaningful sampling frames for the respondent groups of interest.

In some cases, HIV-related behaviors may be investigated through household surveys, where conventional area sampling techniques can be used. Large national surveys of HIV-related behavior among young people might choose to use this technique, for example. Often, however, household surveys will not be possible.

In looking at behaviors of hard-to-reach populations, sampling frame development will require preliminary qualitative research and some level of mapping, to determine whether and where members of particular sub-populations tend to gather. The objective of such efforts is to identify sites/locations where sufficient numbers of respondent group members may be found on a regular basis for use as PSUs. Key informants and members of the respective respondent groups themselves will need to be consulted in a systematic fashion in order to construct a sampling frame of sites that is as complete as possible. The process of gathering this information is known as ethnographic or social mapping. This simply means that those creating the maps use basic ethnographic techniques in their construction; for example, key informant interviewing, and spending time "walking the community" in the company of key informants. These techniques are explained in more detail in publications specifically designed to describe this methodology (see Suggested Reading).

It is important that sampling frames cover the entire geographic universe defined for a given survey effort and include the large majority of sites or locations where respondent group members congregate in significant numbers. If not, the resulting survey estimates are prone to bias to the extent that the characteristics and behaviors of target members excluded from the possibility of selection for the survey differ from those who were surveyed.

In some cases, creating the sampling frame might only involve creating lists of sites. In other instances, it may be necessary to map out locations of sites. Mapping may entail actual sketching of the specific geographic area. The resulting map would not need to have precise dimensions and distances, but rather be a rough drawing including such things as main streets, main features of the landscape or other identifiable features, and most importantly, main places where respondent group members are likely to "hang out". It is important to allow sufficient time, human resources and budget for sampling frame development, a process which may take up to two months.

One example of successful mapping comes from a rural area of Maharashtra, in India. Investigators conducting an exercise to map female sex workers by working with community level government workers, such as village level workers and health workers to identify initial contacts and links with sex workers. Using those links, they were able to gather information to identify the villages and towns where commercial sex activities took place. They also spoke to other types of key informants, such as young people, to validate the information they got from the sex workers. As their "snowball" technique of identifying new locations rolled forward, they were eventually led to border towns, and also discovered the importance of weekly markets as a focal point where female sex workers in rural areas gather.

Members of the community as partners in mapping

Care must be taken in mapping members of sub-populations engaged in illegal or stigmatized activities. Commercial sex workers, injecting drug users and men who have sex with men all fall into this category. Mapping of these groups requires extensive rapport and trust-building which can best be achieved by working with members of the sub-population as part of the mapping team. Confidentiality of the information, with very limited circulation of the maps is also crucial. Since the mapping stage is often a first point of contact between survey teams and members of the respondent populations, surveillance officers should always come prepared to explain what they are doing, why, and how the results of their work will be used to benefit the community in question.

NGOs and service providers as partners in mapping

Non-governmental organizations (NGOs) who provide services to the sub-population of interest are often crucial partners in successful mapping exercise. In some instances, NGOs who have been working for many years with a target population may have already created maps of their "catchment" area. One danger of working with NGOs as contact persons is that the association of a research team with an NGO can bias data. This is especially true if the NGOs tends to lead surveillance officers to the people or sites that are the beneficiaries of their intervention programs. If the services provided include effective HIV prevention services, then these respondents may be expected to have lower levels of HIV-related risk than other potential respondents in the sub-population, who have not been in contact with the prevention program. In addition, beneficiaries of NGO programs may perceive that the investigators are in cooperation with the NGO, and therefore be more likely to give the "expected" responses in a behavioral survey, instead of telling the truth.

Police as partners in mapping

In some cases, police officers have helped in mapping exercises. This is most common in surveys of sex workers. While the support of the police for survey activities can be important in ensuring success, it is preferable that this support remains passive. For example, it is a great help to have police officers commit not to harass individuals contacted by the survey teams. It may be less helpful to have them actively involved in mapping, however, since association of the survey team with law enforcement authorities may greatly increase the refusal of respondent group members to participate in the survey.

Maps derived from program planning exercises

Mapping can also be an important part of planning interventions. For example, ethnographic mapping in the early stages of a program in Nepal illustrated that long distance drivers did not tend to congregate in truck stops along major roads. The mapping process included interviews with transport workers where each respondent was asked to draw the preferred locations for commercial sex, on a road map of Nepal. The maps identified small rest stops along the major east-west and north-south transport routes leading from India into Nepal. Transport workers preferred remote, highway-based tea shops, restaurants, and lodges as rest and entertainment sites, over similar establishments in large urban locations. In Nepal, truck drivers and their assistants said they would rather rest and relax at small roadside locations where there is plenty of space to park and maintain their trucks, and where they are not bothered by police and others. Given men's preferences for remote, out-of-the-way locations and sex workers' identification with transient lifestyles, it was determined that the Nepal program's geographical focus should expand beyond Nepal's major urban centers to include smaller commercial centers, transport bazaars, and small rest stops adjacent to Nepal's major highways. This mapping exercise ultimately allowed the project to reach the target population more effectively. The same type of procedure may be used to create an appropriate sampling frame.

In some cases, it may not be financially or logistically feasible to create a sampling frame for the entire population universe for a given sub-population. In this case, the only option that still meets the criteria for probability sampling is to restrict the universe to one part of the larger population, and to create a sampling frame for that part alone.
For example, in a large country it might not be feasible to develop a sampling frame for all major cities, and thus a decision might be made to limit a behavioral survey effort to only the largest cities. In this event, it should be made absolutely clear that the results cannot be extrapolated to smaller cities or rural areas.

Regardless of the process that is used to help learn about where members of a sub-population are located, the mapping of groups in a particular geographic area is likely to be an ongoing process in which maps are continually refined as new information becomes available. In addition, triangulation of data from several sources is necessary to obtain comprehensive and accurate information.

Basic two-stage sample design

Most sub-population surveys will use a two-stage sample design. Primary sampling units (PSUs) or clusters are chosen at the first stage of sample selection, and individual respondents are chosen from within each of the selected PSUs at the second stage. This sampling scheme, adapted to meet the needs of the different sub-populations and local conditions, will likely satisfy the needs of most BSS efforts. The basic two-stage cluster sample design and some of the major design options are described in this chapter. Examples of how these designs can practically be adapted and applied to different respondent groups appear in Appendix 2.

Conventional clusters vs. time-location clusters

Before determining how PSUs (clusters) will be selected, a key decision must be made about whether to use conventional clusters or ***time-location clusters***. This decision is based on the nature of the population to be sampled. When members of the population are associated with sites in a "fixed" manner, then conventional clusters can be used. Examples of "fixed" populations would include brothel based sex workers who live at the brothel, police attached to a certain unit or division, or secondary school students at particular schools. However, frequently the populations included in surveillance are not associated with a site, but rather come and go freely from the site. Examples of these "floating" populations might include street-based sex workers, men who have sex with men in parks (or pick-up points), truck drivers at halt-points, or injecting drug users at shooting galleries. For these "floating" populations, the number you might find at a particular site will vary from day to day, and even by time of day or by the time of the month. This is not very important if the individuals at a PSU share the same patterns of behavior regardless of when they go to that site. But if people with different levels of risk visit a site at different times, then the time selected for sampling may affect the results of survey and make it less representative of the population as a whole. An example might be men who have sex with men and gather at cruising sites. Men who are found at these sites mid-afternoon may be disproportionately more likely to be unemployed than men who come to the sites in the evenings, and may therefore be more likely to sell sex for income. So for this population, sampling mid-afternoon would probably give higher estimates of risk behavior than sampling in the evening.
It may well give a doubly distorted picture, in fact, because more men may visit a cruising site in the evening (after work and a few drinks) than mid-afternoon. In this case, risk levels measured in the afternoon would be representative of a smaller proportion of the overall population than risk levels measured in the evening.

Time location sampling provides a way around these difficulties. The same site may be included in the sampling frame more than once, at different times of the day or different days of the week, in order to give a more accurate picture of the different levels of risk associated with the site. In other words, the PSU is defined not as the site alone but as the site plus the time of the day/week/month at which sampling takes place. The same physical site can therefore become several PSUs. This system has the added advantage that it is not necessary to count the total number of individuals associated with a single location. Only the number of individuals in the sampling time interval need be discussed.

Selecting primary sampling units (clusters) for "fixed" populations

When conventional PSUs are used for "fixed" populations, the procedure recommended for choosing first stage sampling of PSUs (clusters) will depend upon whether information on the size of PSUs (i.e. the number of sub-population members associated with each site or PSU) is available prior to sample selection. Below, two scenarios are considered - the first where the number of sub-population members associated with each PSU is known or can be estimated at reasonable cost, and the second where such information cannot be obtained at an acceptable cost.

when measures of PSU size are available

Statistically, the most efficient two-stage sample design is one in which PSUs are selected with probability-proportional-to-size at the first stage of sample selection and a fixed number of sub-population members is chosen from each PSU at the second-stage.

The term ***probability-proportional-to-size (PPS)*** simply means that the chance of a PSU being selected depends upon its size. The larger the PSU, the higher the likelihood that it will get selected into the sample. This compensates for the fact that an individual in a large PSUs will be less likely to be selected from that PSU into the final sample than an individual in a small PSU (because there will be more individuals competing to be selected.) Using PPS, a brothel that employed 100 women would be twice as likely to be selected as a primary sampling unit as a brothel that employed 50 women. But as long as the number of women selected from each brothel was the same at the second stage of sampling every individual woman in both brothels would have the same probability of being selected into the final respondent sample.

To use PPS selection procedures, the number of individuals associated with each PSU must be known in advance. This number, known as a ***measure of size,*** does not need to be an exact count. A rough approximation for each site is good enough.

As the number of PSUs listed in a sampling frame is often large, the recommended procedure for choosing sample clusters is through ***systematic sampling,*** where one PSU or sample cluster is chosen at random and every ith cluster thereafter is automatically chosen for the sample, based on a calculated sampling interval.

If sample PSUs are selected with a probability weighted according to their size, as described below, and an equal number of individuals is chosen per PSU at the second stage of sample selection, the end result is a ***self-weighted sample.*** This means that every person in the universe described by the sampling frame has the same overall probability of being selected into the final sample. In addition to being relatively efficient in terms of sampling precision, this design eliminates the need to weight the data during analysis.

The steps involved in selecting a sample of clusters using systematic sampling with probability-proportional-to-size are described in Figure 1, and an example of the selection procedure is provided in Table 3. Form 1 in Appendix 4 can be used in the field to assist with the selection of clusters by probability proportional to size.

Figure 1 : Steps in the selection of a systematic-random sample of primary sampling units with probability proportional to size (PPS)

1. Prepare a list of primary sampling units with a corresponding measure of size for each;
2. Starting at the top of the list, calculate the cumulative measure of size and enter these figures in a column next to the measure of size for each unit;
3. Calculate the sampling interval (SI) by dividing the total cumulative measure of size for the domain or stratum (M) by the number of units to be selected (a)- that is SI = M/a;
4. Select a random number (RS) between 1 and (SI). Compare this number with the cumulated measure of size column. The unit within whose cumulated measure of size the number (RS) falls is the first sample unit;
5. Subsequent units are chosen by adding the sampling interval (SI) to the number identified in step (4); that is RS + SI, RS + 2SI, RS + 3SI, etc;
   This procedure is followed until the list has been exhausted.

Note: in selecting sample PSUs, it is important that the decimal points in the sampling interval be retained. The rule to be followed is when the decimal part of the sample selection number is less than .5, the lower numbered cluster is chosen, and when the decimal part of the sample selection number is .5 or greater, the higher numbered cluster is chosen.

Table 3 : selection of a systematic-random sample of clusters, PPS - an example

PSU No.	Measure of Size - Target Group Members	Cumulative Size	Sample Selection No.	PSU Selected
001	120	120	73	x
002	105	225		
003	132	357		
004	96	453		
005	110	563	503.47	x
006	102	665		
007	165	839		
008	98	937	933.94	x
009	115	1,052		
-	-	-		
-	-	-		
-	-	-		
170 (last)	196	17,219		
Total	17,219			

Planned no. of PSUs = 40
Random start between 1 and 430.47 = 73
Sampling interval = 17,219/40 = 430.47
PSUs selected = 001, 005, 008, ...

...when measures of size are not available for each PSU

If the number of individuals associated with each "fixed" primary sampling unit is not known (in other words where no measure of size is available), it is obviously not possible to select PSU with probability proportional to their size. In this case, each PSU should have an ***equal probability*** of being selected. The procedures for choosing a sample of clusters with equal probability are described in Figure 2, and an example is provided in Table 4. Form 2 in Appendix 4 can be used in the field to assist with the selection of clusters by equal probability.

If a fixed number of respondent group members were to be chosen from each PSU selected, this would lead to individuals having differing overall probabilities of selection, and the final sample would be ***non-self-weighting***. To continue the previous example, the women in the brothel with 100 employees would be less likely to be selected than the women in the brothel with 50 employees. Both brothels have the same probability of selection into the sample, but because there are twice as many women in the large brothel, each woman is half as likely to end up in the final sample. Since women in small brothels might have different risk behavior than women in big brothels, this unequal probability of selection might bias the results of the survey. To correct for this potential bias, data can be weighted at the analysis stage, as described in Chapter 5. Alternatively, a fixed *proportion* (rather than a fixed *number)* of individuals associated with each site could be included in the survey — for example every third group member. This would result in a self-weighting sample. However it should be noted that an estimated measure of size will still be necessary at the time of data collection if this method is to be used.
A drawback is that if the size of the population associated with the PSU is not known before-hand, using this second approach to self-weighting will result in an unpredictable final sample size.

Figure 2 : Steps in the selection of a systematic-random sample of primary sampling units with equal probability

1. Prepare a numbered list of primary sampling units, preferably ordered geographically (e.g., by areas of a city);
2. Calculate the sampling interval (SI) by dividing the total number of PSUs in the domain (i.e. sub-population) (M) by the number of PSUs to be selected (a) — that is, SI = M/a;
3. Select a random number (RS) between 1 and (SI). The PSU on the numbered list corresponding to this number will be the first sample unit;
4. Subsequent units are chosen by adding the sampling interval (SI) to the number identified in step (3); that is RS + SI, RS + 2SI, RS + 3SI, etc;
5. This procedure is followed until the list has been exhausted.

Table 4 : Selection of a systematic - random sample of primary sampling units with equal probability - an example

No.	Selection	
Primary sampling unit		
001		Planned no. of clusters = 40
002	X	Sampling interval = 170/40 = 4.25
003		Random start between 1 and 4.25 = 2
004		Clusters selected = 002, 006, 011, ...
005		
006	X	
007		
008		
009		
010		
011	X	
-		
-		
-		
170 (Last)		

Note: in selecting sample clusters, it is important that the decimal points in the sampling interval be retained. The rule to be followed is when the decimal part of the sample selection number is less than.5, the lower numbered cluster is chosen, and when the decimal part of the sample selection number is.5 or greater, the higher numbered cluster is chosen. In the above example, the sample selection number for the third sample cluster was 10.5, and thus cluster 011 was chosen for the sample.

Selecting respondents within sample PSUs for "fixed" populations

In conventional two-stage sampling, where the number of respondents is basically fixed at each site, respondents are chosen from a list of individuals associated with each of the primary sampling units selected, using either simple random or systematic sampling. A discussion of the number of respondents to include in each PSU can be found in the section titled Number of PSUs and sample sizes from each, later in this chapter. Examples of this type of sampling are contained in Appendix 3.

Selecting primary sampling units (time-location clusters) for "floating" populations

When the population is a "floating" one, with individuals not being associated with the sites in any fixed manner (such as with truckers at truck stops, or men who have sex with men at pick-up points), then time-location clusters should be used. As explained above, there are two dimensions to a PSU, place and time. This means that the first step in creating a sampling frame - listing all possible PSUs, can be somewhat complicated.

If there is no reason to believe that the behavior of individuals at a given site varies according to the time they visit the site (and it is only the volume of individuals that is likely to change) then it does not matter when sampling at that site takes place. For example, injecting drug users who visit a shooting gallery in the afternoon may be unlikely to have different injecting behaviors than injecting drug users who visit a shooting gallery in the morning or the evening. In this case, the site can be included only once as a PSU, and the time can be randomly selected from a calendar listing.

If, on the other hand, work in the rapid assessment phase shows that behaviors of interest vary according to when a person visits a site, then more work must be done to characterize these differences. The day (or week, or month) must be divided into discrete time intervals according to variations in respondent behavioral type. The PSU in this case becomes the site during each of the different risk periods specified, and each of these "PSUs" is entered separately into the listing of PSUs for the sampling frame. For example, if some sex workers are known to sell sex during periods of high demand following payday but not during the rest of the month, a single block of a red light district, say Block A, might be entered three times as follows: "Block A, week before payday" "Block A, week after payday" and "Block A, rest of the month. Other examples are provided in Appendix 3.

It should be noted that in time-location sampling where the number of sites is small, one site may be entered in the sampling frame on more than one occasion simply to reach sample size requirements. Where there is no variation expected in behavior with time, several calendar time periods can be randomly selected for the same site to create multiple PSUs for inclusion in the sampling frame. Where the same individuals visit the same locations on a fairly regular basis, this may result in rather high duplication of respondents. Measures to eliminate duplicate respondents are discussed in the section titled duplicate observations later in this chapter. Duplication may also occur between sites, since members of "floating" populations may visit several different sites associated with risk behavior for HIV and selected as PSUs.

Once this list of PSUs has been created, with both single and multiple entries as appropriate, PSUs should be selected with equal probability, using the same process outlined in Figure 2 and Table 4.

Selecting respondents within sample PSUs for "floating" populations

There are two options available for selecting respondents at the second stage when time-location sampling is used. These are discussed below. The single most important aspect of sampling at this stage is to ensure that sampling takes place over a **fixed time interval,** which is the same for every PSU selected. This interval may vary according to the average volume of members of a sub-population visiting sites in a country. Typically it will be one hour. The essential thing is that, once selected, the *same* time interval for sampling be applied to every selected PSU.

The take-all approach

The first option is to use a “take-all” approach, whereby *every population member who appears at the site during a fixed time interval* is included in the sample, irrespective of how many that turns out to be. This approach has the advantage of resulting in a self-weighted sample. However it is often not feasible to implement, especially where the number of population members who come into contact with the site is expected to be large. This approach also has the disadvantage of resulting in an overall sample size that may be different from that expected.

A rule of thumb is that the “take-all” method should not be attempted unless the average number of individuals per time-location cluster is expected to be small (i.e. 15 or fewer). A rapid mapping exercise will be needed in advance of the survey to determine the typical or average number of individuals frequenting sites at various time intervals.

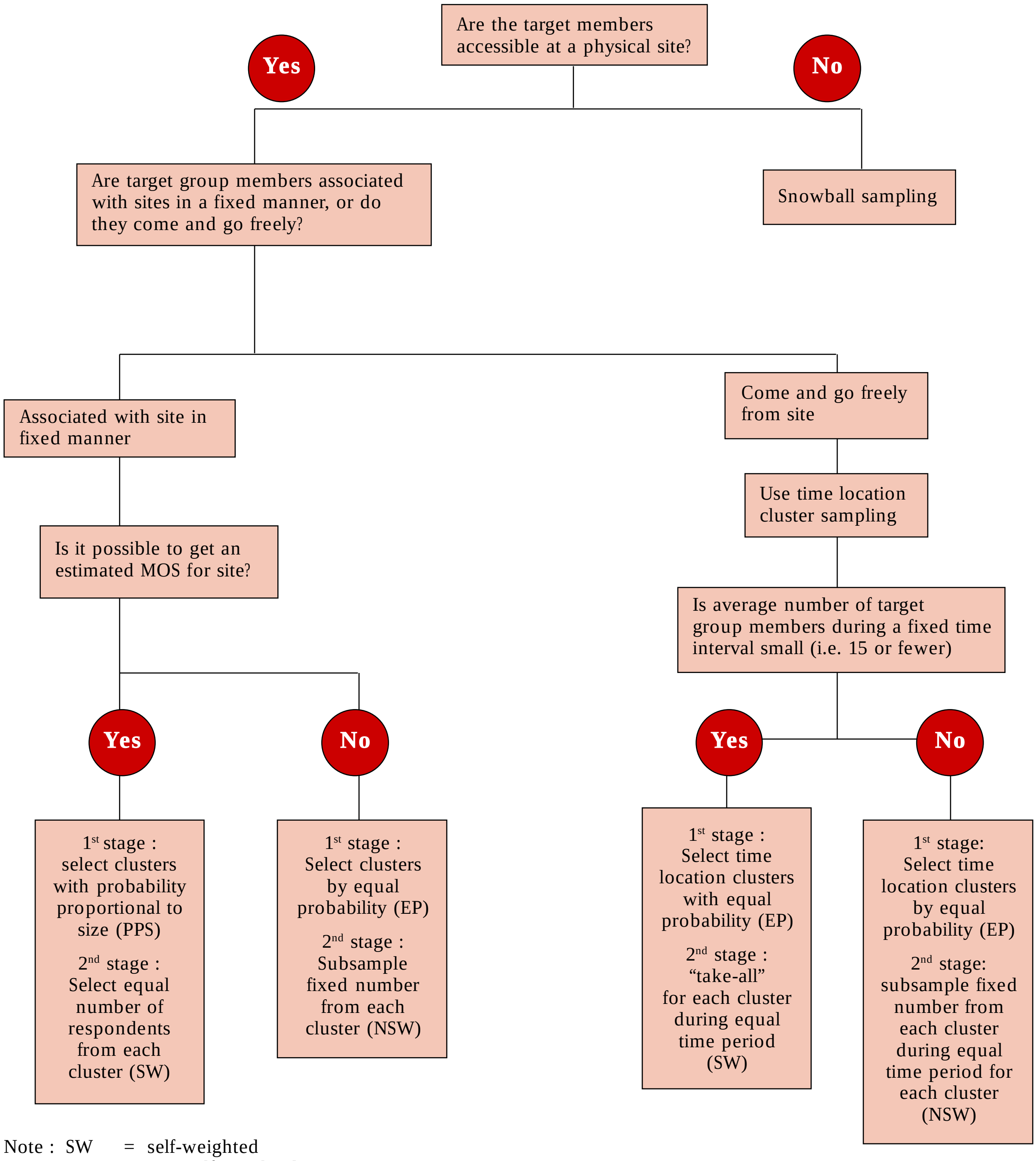
Fixed number of respondents per cluster

The more commonly used approach for selecting respondents at the second stage will be to select a fixed number from each selected PSU (time-location cluster). A discussion of the number of respondents to include in each PSU can be found in the section titled Number of PSUs and sample sizes from each, later in this chapter. Although this will not result in a self-weighted sample, it is likely to be more feasible to implement and it will result in a predictable final sample size. When this approach is used, it will be necessary to estimate the number of population members who appear at the site during the fixed time interval, so that it will be possible to calculate the probability that the population members sampled are representative of the wider population. This will require that someone be stationed at the site throughout the time interval to count population members who appear at the site, even if the fixed sample size of respondents is achieved before the end of the specified time interval.

When fixed sample sizes are used with time-location clusters, it will not be possible to list all of the individuals who will appear at the site ahead of time. Therefore, an approach which is as systematic as possible will have to be devised for randomly selecting respondents at the site. How to do this will depend on the number of people present at the site at the beginning of the time interval. For example, if the fixed number of respondents to be sampled from each time-location cluster is 7, then two scenarios are possible. If the interviewing team arrives at the site and finds fewer that 7 respondents, they can select all those who are present at the time of arrival, and then select the remainder consecutively, in the order in which the respondents appear at the site. If, on the other hand, the team arrives at the site to find a number greater than the required 7, they must then find a way to randomly select 7 respondents. This could be done by rapidly listing the respondents (by some visible characteristic such as “man in red shirt” or “woman with big gold earrings” rather than by name) and then selecting every ith respondent, using as the sampling interval the total number of respondents present, divided by the required sample size of 7. Examples of how this has sometimes been done are included in Appendix 3.

Figure 3 summarizes the discussion above, and provides a “decision tree” to guide selection of first- and second-stage sampling approaches for cluster surveys.

Figure 3 : Decision tree for first- and second-stage cluster sampling approaches



Note : SW = self-weighted
NSW = non self-weighted
MOS = measure of size

Targeted (snowball) sampling

The rationale for preferring probability over non-probability sampling methods for BSS was outlined earlier in this section. Non-probability sampling methods are a last resort. They are used in situations where probability methods are not feasible because it is not possible to construct an adequate sampling frame of sites or locations where members of a sub-population of interest congregate. Groups for which non-probability sampling methods may have to be used include injecting drug users, some types of sex workers, and possibly men-who-have-sex-with-men.

The basic form of non-probability sampling recommended for BSS is a modified form of snowball sampling referred to as ***targeted sampling***. The basic idea in snowball sampling is to compensate for the lack of a sampling frame by learning the identities of members of a given "network" of persons who engage in a given risk behavior through key informants and respondent group members themselves. Snowball sampling is an iterative process. Typically, the data collection process begins by interviewing key informants and sub-population members known to the researchers in order to learn the identities of other group members and to gather information on where other members might be found. These persons are then contacted, data are collected, and these sub-population members are asked to provide information on how and where additional sub-population members might be found. "Leads" from each wave of referrals are followed-up until a sample of pre-determined size has been reached.

An important limitation of snowball sampling is that "lead" sub-population members are more likely to provide information on other group members who are in their own social, economic, and/or sexual network. To the extent that risk-taking and/or protective behaviors differ across networks, this poses a potential bias problem for sub-population surveys. Research in the United States (San Francisco), for example, revealed the existence of different social networks in terms of racial, ethnic and drug-type among drug-users, even in relatively small geographic areas. In order for the snowball sampling approach to yield meaningful monitoring data, it is therefore necessary to ensure individuals from different networks are included in the sample.

The targeted sampling approach extends the ideas of snowball sampling to include an initial ethnographic assessment aimed at identifying the various networks or sub-groups that might exist in a given setting. The sub-groups so identified are then treated as sampling strata, and quota samples are chosen within each stratum using snowball sampling techniques. More information about targeted sampling can be found in a paper by John Watters and Patrick Biernacki: "Targeted sampling: options for the study of hidden populations", published in the journal Social Problems (Vol.36, No.4, 1989).

Implications of alternative sampling strategies for analysis

The choice of sampling method has important implications for data analysis. More can be done during analysis to compensate for potential biases in survey data when probability sampling methods have been used than when non-probability methods have been used. For example, the fact that some respondent group members may have had a greater chance of being included in a survey than others can be taken into account in probability samples by introducing sampling weights. These procedures are described in Chapter 5. Such adjustments are not possible with non-probability sampling schemes. The use of conventional statistical procedures to determine the statistical significance of observed changes in indicators is also on more solid theoretical grounds when probability sampling methods are used.

Probability sampling methods often imply a greater investment in developing sampling frames, and complex fieldwork. The trade off between complexity of fieldwork and precision of results should be taken into account when choosing a sampling approach. In general, more reliable survey results are more likely to lead to more appropriate decisions about investment in effective HIV prevention efforts, so where probability designs are possible, they are usually worth the effort.

Sample size requirements

One of the key design parameters for any survey is, of course, the sample size needed to satisfy the survey's measurement objectives. In this section, procedures are presented for calculating sample size requirements for repeated rounds of BSS. Several points should be borne in mind when reviewing the material below. First, the procedures presented are intended for surveys whose primary objective is to measure changes in selected behavioral indicators over time. The sample sizes required to measure changes in indicators over time are larger than those required to measure a variable or indicator at a single point in time, and this must be taken into account in order to ensure sufficient statistical power.

Secondly, sample size requirements are addressed here with respect to indicators measured as proportions. This is the type of indictor most commonly used in behavioral surveillance for HIV. Examples might include the proportion of respondents who used a condom the last time they had sex with a sex worker, or the proportion of respondents who shared injecting equipment the last time they injected drugs.

Finally, the discussion of sample size requirements below does not distinguish between surveys to be undertaken using probability sampling methods and those using non-probability methods. It bears repeating that conventional tests of statistical significance and other statistical methods should not, strictly speaking, be used in the analysis of non-probability surveys. However, given that the use of non-probability sampling methods may be unavoidable in some settings, as a practical matter the best that can be done in such situations is to take steps to minimize bias in the survey data. This implies assuming that the data have distributional characteristics similar to data gathered using probability sampling methods. It may be possible to ascertain how likely this is to be true by examining basic socio-demographic variables collected from respondents to non-probability samples for any marked deviations from expected distributions.

The formula for calculating sample sizes

The sample size required per survey round for the measurement of change on a given indicator is a function of five factors:

- the initial or starting level of the indicator;
- the magnitude of change you want to be able to detect reliably;
- how sure you want to be that a change of that magnitude would not have occurred by chance (that is, the **level of significance**);
- how sure you want to be that you will observe a change of that magnitude if it did in fact occur (that is, the **power**);
- the percent of the population of interest that - is eligible to be considered for the indicator[1]

An expression for the required sample size for a given sub-population **for each survey round** (n) is given by:

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

Where:

D = design effect (see page 53);

P_1 = the estimated proportion at the time of the first survey;

P_2 = the target proportion at some future date, so that (P2 - P1) is the magnitude of change you want to be able to detect;

$\bar{P}$ = $(P_1 + P_2)/2$;

$Z_{1-\alpha}$ = the z-score corresponding to desired level of significance

$Z_{1-\beta}$ = the z-score corresponding to the desired level of power

Standard values of $Z_{1-\alpha}$ and $Z_{1-\beta}$ are provided in Table 5, and the use of the above formula is illustrated in Figure 4.

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[1]*While it may appear that this fifth factor is similar to the first, it is not so. Take one common indicator: the proportion of respondents with non-regular partners in the last year who used a condom with their last non-regular partner. The starting level of the indicator may be quite high. But the proportion of all respondents who had non-regular partners in the last year might be quite low. Both of these factors must be taken into account in calculating the sample size necessary to measure a significant change in the indicator.*

Table 5 : Values of $Z_{1-\alpha}$ and $Z_{1-\beta}$

α	$Z_{1-\alpha}$	$Z_{1-\alpha}/2$	β	$Z_{1-\beta}$
To measure change in one direction	One-sided Test	Two-sided Test to measure change in two directions		
0.10	1.282	1.645	0.30	0.53
0.05	1.645	1.960	0.20	0.83
0.025	1.960	2.240	0.10	1.282
0.01	2.326	2.576	0.05	1.645
		0.025	1.960	
		0.01	2.326	

Figure 4 : sample size calculations

Example 1

Suppose you wanted to detect an increase of 10 percentage points in the proportion of commercial sex workers who always used a condom with clients, and be 90 percent confident that if an increase of this magnitude did occur, you would catch it (i.e., you want 90 percent power). Furthermore, you want to be 95 percent sure that if you do observe an increase of 10 percentage points or more, you are not seeing something that is the result of chance fluctuations in the data (i.e., you want your results to be significant at the 95 percent level). At the time of the first survey, it is thought that about 30 percent of sex workers always use condoms with clients. Thus, you wish to be able to detect when the proportion of sex workers who always use condoms exceeds 40 percent. Set P_1 = .30 and P_2 = .40, and use the one-tailed z-score value for $Z_{1-\alpha}$ = 95% (1.645) and the z-score value for $Z_{1-\beta}$ = 90% (1.282). Inserting these values into the formula, we obtain:

$$n = 2\left[1.645\sqrt{2(.35)(.65)}+1.282\sqrt{(.3)(.7)+(.4)(.6)}\right]^2/(.4-.3)^2$$

$$= 2\left[(1.1096+.8600)^2/.01\right] = 776 \textit{ FSW's in each survey round.}$$

Example 2

Suppose you wanted to detect an decrease of 15 percentage points in the proportion of male vocational students who had unprotected sex in the past 12 months. Levels of significance of 95 percent and power of 80 percent are desired. On the basis of earlier survey data, it is thought that the appropriate "baseline" value on the indicator would be 55 percent. Thus, we set P_1 = .55 and P_2 = .40, and use z-score values of $Z_{1-\alpha}$=1.645 (95% significance level for a one-sided test) and $Z_{1-\beta}$=0.84 (corresponding to 80% power) and obtain:

$$n = 2\left[1.645\sqrt{2(.475)(.525)}+0.84\sqrt{(.4)(.6)+(.55)(.45)}\right]^2/(.40-.55)^2$$

$$= 2\left[(1.1617+.5865)^2/.0225\right] = 271 \textit{ vocational students in each survey round.}$$

**Note: Sample Sizes assume a design effect of 2.*

Table 6 provides a "lookup" table based upon the above formula to permit final sample sizes to be determined without having to perform calculations. The table provides sample sizes needed to measure changes in behavioral indicators of magnitude 10 and 15 percentage points for different initial values of a given indicator, as well as for different combinations of significance and power.

Note that some indicators include two behavioral dimensions. For example the proportion of all students who had sex with a sex worker in the last year (dimension one) who used a condom the last time they had sex with a sex worker (dimension two). In these cases a further step is needed in calculating the sample size. In this case, the first step in calculating the sample size required would be to determine how many students would be needed to measure a change in the proportion who used a condom during an encounter with a sex worker during the previous year. For this step, proceed exactly as in the examples given in Figure 4. Say the number comes to 200. Does that mean the final sample size will be 200? No, because not all of the students sampled will have had sex with a sex worker in the last year, and this indicator takes only the ones that have had sex with a sex worker into account in the denominator. So it is necessary to estimate how many students would be needed in the overall sample, in order to capture 200 who have had sex with a sex worker in the last year.

Computationally, the procedure is simple - one merely divides the required sample size calculated as described above by the estimated proportion of the sub-population with the required "qualifying" behavior. For example, if 40 percent of male vocational students in a given setting are thought to have had sex with a sex worker in the last year, it would be necessary to interview n=500 (=200/.4) students in order to find n=200 subjects who had had sex with a sex worker in the last year, to allow for the indicator of condom use to be calculated. Examples of this type of calculation are given in Figure 5.

The difficult part of this procedure is, of course, knowing what proportion of the total population engages in the behavior of interest. Here, other surveys or anecdotal information might be consulted for guidance. If resources permit, a small pilot survey might be conducted to better inform sample size calculations for the main survey effort. As there may be considerable uncertainty concerning these parameters, the general guidance is to err toward under-estimating the proportion engaging in a given behavior, as this will ensure a sufficient sample size for the main survey effort. For example, if it were thought that between 20% and 30% of students typically engage in sex with sex workers on an annual basis in a given setting, the 20% figure should be used in determining sample size requirements for BSS.

Table 6 : Sample size requirements for selected combinations of P1, P2, Z1-α and Z1-β

		Combinations of $Z_{1-\alpha}$ / $Z_{1-\beta}$ (1-sided significance level / per cent power)			
P1	**P2**	**95/90**	**95/80**	**90/90**	**90/80**
.10	.20	432	312	330	227
.10	.25	216	156	165	114
.20	.30	636	460	485	336
.20	.35	299	216	229	158
.30	.40	773	558	594	408
.30	.45	352	255	270	186
.40	.50	841	607	646	444
.40	.55	375	271	288	198
.50	.60	841	607	646	444
.50	.65	367	266	282	194
.60	.70	773	558	594	408
.60	.75	329	238	253	174
.70	.80	636	460	485	336
.70	.85	261	189	200	138
.80	.90	432	312	331	228
.80	.95	163	118	125	86

Note: sample sizes shown assume a design effect of 2.0.

In determining sample size requirements for any sub-population survey, the standard procedure would be to compute the requirements for each of the key indicators you want to measure, and use the largest of all the sample sizes produced by these calculations. This will ensure that the requirements of all indicators will be satisfied. In general, the rarer the behavior, the larger the sample size required to measure any change.

Choosing Parameters for the Sample Size Calculations

What magnitude of change (P_2 - P_1) should be measured?

It is important to start by deciding what level of change in behavior between survey rounds should be measured. The smaller the level of change to be measured, the larger the sample size required to measure it with accuracy.

Figure 5 : sample size calculations to measure indicators with two dimensions

Example 1

Consider the indicator "proportion having used a condom during the last sexual encounter with a non-regular partner, of those who have had sex with a non-spousal, non-cohabiting partner in the last 12 months. Using the formula presented above, it might have been calculated that a sample size of n=320 respondents was needed to register a change of a specified size in condom use in irregular sex at the desired levels of power and significance. Data from a recent survey suggest that about 20 percent of men and 5 percent of women engaged in such encounters in an earlier 12-month period. The number of males and females that would have to be contacted in order to obtain n=320 respondents would thus be estimated as:

Males: n = 320 /.20 = 1,600

Females: n = 320 /.05 = 6,400

Example 2

For the indicator "proportion using a condom during their last sexual encounter with a sex worker" among truck drivers, it is thought that most truck drivers in a given setting (75 percent) have sex with sex workers during any given 12-month period. Thus, if the required sample size (again calculated as described above) were to be n=275, the number of truck drivers that would have to be contacted would be n = 275 /.75 = 367 per survey round.

In deciding what level of change to measure, surveillance managers should ask themselves the question: what level of change is worth measuring? In other words, what level of change might be deemed to reflect success in achieving the aims of prevention efforts? And what level of change might have an impact on the risk of the spread of HIV? The doubling of condom use during sex with sex workers might make headlines, but if usage has doubled from only five percent to 10 percent, it will have virtually no impact on stemming the potential spread of HIV. Given the very large sample sizes required to measure small changes with any degree of confidence, it may well not be deemed worthwhile to register this change.

Some National AIDS Programs have stated targets for various indicators. For example, a country might, in its strategic plan, set the goal of increasing condom use in extra-marital sex by 25 percentage points over five years. In cases where large changes in indicators are expected, there is a temptation to set the magnitude of change parameter (P_2 - P_1) in the sample size calculations at quite a high level, thereby decreasing the sample size needed. It should be recognized, however, that this will jeopardize the ability to detect smaller changes that may in fact be programmatically significant in their own right. By the same token, the cost of measuring smaller changes annually may be prohibitive, because of the large sample sizes required. In this case, the pros and cons of using larger sample sizes which are designed to measure statistically significant changes each year vs. smaller sample sizes which may only register statistically significant change over the long term should be debated and well understood ahead of time. If only changes of larger magnitude are deemed worth measuring, it may be worth considering cutting the frequency of BSS.

There are other trade-offs, too, in setting the magnitude of change parameter at a high or low levels. Parameters of significance and power included in the sample size calculation will determine that the sample size is large enough to detect the selected level of change with the confidence desired. But the smaller the sample size, the higher the probability that an indicator estimated from that sample does not represent the true value of the indicator for the whole universe from which the sample is drawn. To compensate for this uncertainty, it is common practice to calculate ***confidence intervals*** around an estimate. The confidence level represents a range for the likely value of the estimate of an indicator from a survey. A 95% confidence interval means you can be 95 percent sure that the total population value for an indicator lies within the specified range around the value measured in the sample population. For a given level of power and significance, smaller sample sizes will yield wider confidence intervals around an estimate. The wider the confidence interval, the less precise the estimate of the true population value will be. More information on confidence intervals is given in Chapter 7.

Where specific program targets are not available, it is recommended that sample size calculations use a "generic" target of 10-15 percentage points of detectable change. This magnitude of change generally produces sample sizes that are within the resource levels available for data collection for most programs, while producing results in a range narrow enough to be meaningful.

Determining starting or baseline levels of indicators (P_1)

Another challenge concerns the choice of a starting value for an indicator being monitored; that is, P_1. Ideally, this choice would be based on information available from other surveys that have been conducted in the study setting. Where such information is unavailable, an informed guess will have to be made. In choosing a value for P_1, the recommended course of action is to err toward assigning P_1 a value of .50. The reason for this is that the variances of indicators measured as proportions are maximized as they approach .50. Thus, erring toward .50 provides a measure of insurance that the sample size chosen will be sufficient to satisfy the measurement objectives of the survey even if the estimate of P_1 used is wrong. The safest course would, of course, be to choose P_1=.5 for all indicators. However, this would result in samples that are much larger than is needed in the event that the actual value of P1 is very different from .50. Thus, the recommended approach is to make the best guess based upon available information, and err toward .50 in selecting values of P_1.

Design effects

The formula given for calculating sample sizes includes a term D, for the design effect. This is used in multi-stage sample designs, to correct for the difference between the chosen design and a simple random sampling design (in which every member of the universe is enumerated and the sample is chosen at random from all members of the universe). D may be simply interpreted as the factor by which the sample size for a cluster sample would have to be increased in order to produce survey estimates with the same precision as a simple random sample.

The magnitude of D depends upon two factors:

the degree of similarity or homogeneity of elements within primary sampling units

the number of sample elements to be taken from each PSU

The initial factor, the homogeneity of elements within PSUs, is a population characteristic over which the survey manager has no control. In general, individuals within one PSU tend to be more similar to one another than they may be to individuals in another PSU. For example, 10 respondents taken from a single brothel with a 100 percent condom use rule will probably report more similar levels of consistent condom use that 10 respondents taken from 10 different brothels, some of which enforce condom use and some of which don't. The prudent course is therefore to assume that some degree of homogeneity within PSUs exists. The second parameter, the number of individuals chosen per PSU, is largely within the control of the survey manager, and is an important consideration in the sample design for any survey. This is discussed further in the section titled Number of PSUs and sample sizes from each, later in this chapter.

To calculate the design effect accurately for the two-stage sampling designs commonly used in BSS, it is necessary to be able to estimate the variation of behavior between individuals *within a single PSU,* as well as the average variation in behavior *between all selected PSUs.* This information is used to calculate **the intra-class correlation coefficient** (ρ), as follows.

$$\rho = \frac{(\text{standard deviation (SD) for variation between PSUs})^2}{(\text{SD for variation between PSUs})^2 + (\text{SD for variation within PSUs})^2}$$

The design effect D is then calculated as:

$$D = 1 + (\text{number sampled per PSU} - 1)\ \rho$$

Information on the variations in behavior within and between PSUs is rarely readily available, at least during a first survey round, so the use of a "default" value is recommended. Assuming that cluster sample sizes can be kept moderately small in a given survey (e.g., not more than 20-25 individuals per PSU), the use of a standard value of D = 2.0 should adequately compensate for the loss of accuracy resulting from two-stage sampling designs. In fact, the real design effect may be smaller than this. Since a smaller design effect will lead to smaller sample sizes, it is worth calculating the design effect accurately for subsequent survey rounds, using data collected during the first survey round and the formula given above.

Should one- or two-tailed z-score values be used?

In the examples in Figure 4, we are interested in detecting changes in one direction, an increase in the proportion of sex workers who always use a condom, and thus used a value of $Z_{1-\alpha}$ for a one-tailed test with a 95% confidence (1.645). This will result in a smaller sample size than if the corresponding value for a two-tailed test had been used. If we were interested in being able simultaneously to detect a change of the same magnitude in either direction, i.e. either an increase or a decrease, we would use a two-tailed test with a 90% confidence level, with a value of 1.96 instead of 1.645. In the latter case, the resulting required sample size for each survey round would be somewhat larger.

As a general rule, the prudent course of action is to use two-tailed values of $Z_{1-\alpha}/2$. However, BSS is often undertaken in the context of prevention efforts which are deliberately aiming to produce a change in a given direction. In this case, it is reasonable to use one-tailed tests.

The power of a study

In the context of BSS, ***power*** *is* shorthand for the probability that a study will detect a change in behavior of a specified magnitude, if such a change did in fact occur. There is no point carrying out a survey that does not have the power to detect the changes you aim to measure. To illustrate, suppose we wanted to be able to measure a change of 10 percentage points in the proportion of sex workers who always use a condom with their clients. We compare two pairs of hypothetical surveys taken 2 years apart: one with a sample size of n=500 in each survey round and the other with a sample size of n=200 per survey round. While both surveys might indicate the expected increase of 10 percentage points, the increase may well not be statistically significant for the survey with 200 respondents per round. Thus, we would be forced to conclude that there was no significant change in this behavior over the study period , when in fact there was a real increase that was not detectable with a sample size of n=200 per survey round. To ensure sufficient power, a minimum value of $Z_{1-\beta}$ of .80 should be used. This means you can be 80 percent sure that if a change has occurred between survey rounds, your study will pick it up. Where resources permit, .90 is better yet.

The level of significance

In describing the results of a study, and particularly the measurement of changes over time, the phrase ***"statistically significant"*** is frequently used. If a measured increase in condom use over time is deemed to be statistically significant, it means that surveillance officials are confident that the observed change could not have occurred by chance, because of random differences in the characteristics of respondents selected for the survey. Survey designers must choose a level at which they wish to be confident that observed differences are not due to chance. Traditionally, this level is set at 95 percent. In other words, a statistically significant result is one where investigators are 95 percent sure that the observed change in behavior would not have happened by chance. Measures of significance are sometimes expressed as ***p-values***. A p-value is the inverse of the level of significance. It indicates the probability that the observed *could* have happened by chance. A p-value of 0.05 means there is a five percent chance that the observed change could have occurred by chance. In other words, it corresponds to a 95 percent level of significance.

Number of PSUs (clusters) and sample sizes from each

Once sample size requirements have been determined, the final step in developing the sample size parameters for two-stage surveys is determining how many PSUs should be chosen, and how many individuals per PSU. There are three primary considerations in reaching decisions on these issues. The first is the magnitude of the two-stage sampling design effect (D). This is particularly important with behaviors that are likely to be influenced by association with a PSU itself. Frequency of condom use among sex workers is more likely to be associated with the PSU where the PSU is a brothel (because brothel-owners often have policies on condom use) than it is where the PSU is a city block (because freelance sex workers and their clients are not subject to the rules of a brothel). In situations where there is likely to be considerable homogeneity among individuals in a PSU, a smaller sample size per PSU is particularly desirable.

The second consideration is the actual size of the PSUs. Obviously, the sample size per PSU is limited by the number of individuals associated with the PSU. So before deciding on sample sizes per PSU, it is worth obtaining measures of size for a handful of PSUs thought to be roughly representative of the range available. This information should guide decision-making.

Thirdly, there is the issue of cost (in time, money and effort). For the same overall sample size, a design that includes fewer respondents from a larger number of PSUs will likely (although not necessarily) be more costly than a design that interviews large numbers of respondents from a smaller number of sites.

As so often in sampling, there is clearly a tradeoff between what is feasible and what will produce the most reliable results, and surveillance managers must weigh the costs and benefits of various approaches. From a sampling precision point of view, more PSUs with a smaller number of respondents selected from each is the best option. For a fixed target sample size (e.g., 400 sex workers), a design that selects 10 individuals from each of 40 PSUs will give more reliable results than one which selects 40 individuals from each of 10 PSUs. As a general rule, selecting no more than 20-25 study subjects per PSU should be relatively safe. As that number increases, the reliability of the study results will decrease. Sampling more than 40 individuals from each PSU should be avoided.

Although the use of 30 PSUs has become a standard of sorts in behavioral surveys, there is in fact no statistical justification for 30 as a minimum or ideal number. There is, however, a need to ensure that samples of sub-population members are sufficiently well “spread” across enough PSUs that survey estimates are not unduly influenced by behaviors practiced in only a handful of PSUs. As a working guideline, a minimum of 20 PSUs per respondent group is recommended, and more is desirable when feasible.

Other measurement issues for BSS

The primary objective of undertaking BSS is to provide a basis for tracking or monitoring changes in selected risk-taking or protective behaviors among population sub-groups that are strategically important to the AIDS epidemic. These measurement objectives have a number of important implications for the design of surveys.

Should PSUs be retained or replaced in each survey round?

One of the key design issues in multi-round surveys whose primary objective is to measure change is whether to retain the same PSUs or to choose a new sample of PSUs in each survey round.

There are two advantages in retaining the same sample of PSUs. The first is that it reduces the sampling frame development work that needs to be done at the beginning of each survey round. The second is that it increases the confidence with which it can be concluded that observed changes over time are not due to random changes in sample selection. This is because the background characteristics and behaviors of individuals associated with particular sites are likely to be correlated over time. So for example men at a particular gay bar may report high numbers of partners in the last 12 months, because that bar is known as a pick-up joint. If men at the same bar next year report lower numbers of partners in the last 12 months, it is likely to mean that there has been an overall tendency towards less risk behavior, even at the high-risk end of the spectrum. However if the following year men are sampled from a different bar and lower partner numbers are observed, the difference may well be related to differences in the clientele. The second bar may be favored more by couples who have fewer non-regular partners, while levels of risk behavior among men at the "pick-up" bar may be as high as ever.

The effect of this correlation on statistical precision, is to reduce the standard error of survey estimates of change by a factor equal to (1 - PR). P is defined as the proportion of sample overlap between the two survey rounds and R is the correlation (or more precisely, the covariance) between indicators for the same site across survey rounds.

However there are also important disadvantages to retaining the same sample of PSUs across survey rounds. The "gatekeepers" who control access to PSUs (brothel owners, for example) sometimes object to repeated survey rounds in their establishments.
The response of individuals who are selected for more than one survey round may be influenced by having participated in a previous round, and this is much ore likely to be the case where PSUs are retained over time than when new samples are drawn. And in the fluid worlds of commercial sex, drug injection, migrant labor etc, high proportions of PSUs may simply not be there at a subsequent round. In some settings the sites at which sub-populations congregate might change so rapidly over time that there is no choice

but to construct a new sampling frame and select a new sample of sites in each survey round. In addition, retaining the same sites over an extended period of time does not allow for new sites or "pockets" of risk behavior to be reflected in the behavioral monitoring data. Accordingly, there will be a need to periodically update sampling frames and allow new PSUs to have a chance to enter the sample even if the strategy of maintaining the same sample of sites is adopted.

A compromise strategy that is often used in repeated surveys is to retain a fixed proportion of sites between any two successive survey rounds and replace the remaining sample of sites with a new sample. For example, if a 50% retention rule were adopted, 50% of the sites covered in the first survey round would also be covered in the second round, 50% of the sites covered in the second survey round would also be covered in the third round, and so on. The site rotation schedule could be set up such that no site is visited more than twice if it is felt that more than two visits to each site were to be problematic in a given setting. Under this strategy, retaining a fixed proportion of sites between any two survey rounds serves to dampen sampling variability in the measurement of change, while at the same time avoiding some of the negative consequences of following the same set of sites continuously over time.

In the particular context of BSS, the disadvantages of retaining the same sites over time in sub-population surveys seem to outweigh the advantages. Therefore, the general recommendation for BSS is to choose a new sample of PSUs in each survey round. While this will entail field costs in updating the sampling frame, the costs of updating are likely to be substantially lower than those incurred in developing the sampling frame for the initial round of surveys.

Duplicate observations

Irrespective of which sampling method is used, one problem that will need to be addressed in carrying out BSS is how to handle duplicate observations of the same individual. Duplicate observations are likely to arise because some respondent group members may be associated with more than one of the sites or locations from which respondents are to be recruited for the survey. For example, sex workers may work at more than one location or truck drivers may use more than one truck stop during the period when a survey is being carried out, and they may therefore be sampled more than once.

One way to deal with this problem would be to adjust the sampling weights to be applied to the survey data at the analysis stage in order to account for the fact that individuals might be included in the survey sample more than once. This requires rather complex record keeping and data analysis techniques, and is not recommended for BSS.

A “low-tech” solution to the problem would be to try to screen out duplicate observations during the course of data collection by inquiring whether potential survey respondents had already been interviewed during the period of survey fieldwork, and not conducting duplicate interviews with respondents answering yes. In populations where there is not likely to be any overlap, these screening questions can be dropped from the questionnaire.

Field forms to assist with cluster sampling

Once the sampling design has been finalized, one must plan ahead for the type of information that will need to be recorded during data analysis, so that proper analysis procedures can be used. Special analysis techniques are required when multi-stage cluster sampling is used. These techniques are discussed at length in Chapter 5. Appendix 4 contains a set of instructions and a set of four forms to assist the survey manager with the process of recording the required information.

Documentation

Given the difficult sampling problems posed by surveys of HIV/AIDS -related behaviors in sub-populations likely to be at high risk, it is important that steps be taken to make the resulting data as unbiased and sampling plans as replicable as possible. Of crucial importance is the thorough documentation of sampling plans and selection criteria. This will enhance the replicability of data collection efforts over time. This is especially important where probability sampling methods are not used, as the credibility of estimated trends in behaviors over time depends very heavily upon whether a convincing case can be made that identical sampling and survey methods were used across repeated survey rounds. Being able to demonstrate that constant sampling procedures were used adds considerably to the credibility of such estimates.

CHAPTER 5

WEIGHTING IN MULTI-STAGE SAMPLING

- *Weighting the data*
- *Potential bias from not weighting*
- *Calculating standard errors*

5

Weighting in multi-stage sampling

This chapter contains key information about analysis for cluster sampling that will be critical during the planning stage of the survey. It explains what information must be recorded during data collection so that appropriate analysis techniques can be applied to adjust for any bias that may have occurred as a result of the sampling design. Included in this chapter are 1) a discussion of how multi-stage cluster designs must be considered in the analysis, 2) instructions on how to calculate sampling probabilities for weighted analysis and 3) and introduction to cluster analysis.

When and why must the cluster design be considered for analysis?

Some and perhaps most of the sampling plans used in the BSS will produce non-self-weighted samples; that is, samples in which sub-population members have unequal probabilities of selection, resulting in potentially biased samples. The magnitude of the bias will depend upon two factors: (1) the magnitude of differences among respondent group members in terms of probabilities of selection and (2) the magnitude of differences in behaviors across sample sites. The standard method for correcting for unequal probabilities of selection is to apply sampling weights to the survey data during analysis, as described below.

Table 7 : Summary of analysis procedures needed for different sampling approaches

Prototype Sampling Design	Weighted analysis required?	Cluster analysis required?
1. PPS with equal number of respondents selected from each cluster (includes segmentation method)	No	Yes, if design effect is ≠ 1
2. PPS with unequal number of respondents selected from each cluster	Yes, if sampling weights differ by a factor of 3 or more	Yes, if design effect is ≠ 1
3. EP with a fixed number of respondents selected from each cluster	Yes, if sampling weights differ by a factor of 3 or more	Yes, if design effect is ≠ 1
4. EP with "take-all" respondents during equal time periods for each cluster	No	Yes, if design effect is ≠ 1

PPS = Probability proportional to size
EP = Equal Probability

Another issue that comes up when cluster designs are used for sampling is how to deal with design effects in the analysis. When there is a design effect, it affects the standard error of the estimates, so normally a cluster analysis must performed. This issue is discussed further later in this Chapter. Table 7 summarizes the different sampling approaches outlined in this guide, and categorizes them in terms of the need for weighted analysis and cluster analysis.

Weighting the data

To perform a weighted analysis, one must begin by calculating sampling probabilities for each sample cluster (each element in a given cluster will have the same probability for selection). Figure 6 provides the formulae for making these calculations. It includes some designs that were not included in Chapter 4, but which are described in appendix 3. Once you have calculated the sampling probability, the sampling weight can easily be obtained, since it is just the inverse of the sampling probability (i.e. one divided by the sampling probability). As will be discussed later in the chapter, it is best to also calculate standardized weights to be used during analysis, in order to avoid incorrect statistical results. Standard software packages (such as SPSS or STATA) can then be used to perform weighted analysis. It will be noted that as sampling probabilities cannot be calculated when snowball sampling is used, formulae are not provided for data obtained using this sampling approach.

Figure 6 : Procedures for calculating sampling probabilities for sample elements (P_i) chosen using the various prototype sub-population survey sample designs

1. Selection of clusters PPS, with an equal number taken from each cluster at the second stage.

$P_i = (m * M_i/M) * (n_i/N_i)$

Where:

P_i = probability that a target group member in cluster i was chosen for the survey;

m = number of sample clusters chosen;

M_i = expected measure of size for cluster i;

M = total measure of size for the survey universe ($M = \Sigma Mi$);

n_i = number of sub-population members chosen in cluster i; and

N_i = total number of sub-population members in the cluster i.

Note: Since it is expected that M_i and N_i will be equal, they will cancel one another out. Since n_i is the same for each cluster, all clusters will have an equal sampling probability of n_i /M. Therefore this design results in a self-weighed sample, and it will thus not be necessary to apply sampling weights during analysis.

2. Selection of clusters with equal probability, "take-all" strategy used at second stage

$P_i = (m/M)$

Where:

P_i = probability that a sub-population member in cluster i was chosen for the survey;

m = number of sample clusters chosen;

M = total number of sample clusters in the sampling frame;

Note: Since all sub-population members present on the randomly chosen day are chosen for the sample, the second-stage sampling probability is equal to 1.0 and is thus not shown above. Note also that this design results in a self-weighting sample, and it will thus not be necessary to apply sampling weights during analysis.

3. Selection of clusters PPS, sub-sampling used at second stage

$P_i = (m * M_i/M) * n_i /N_i$

Where:

P_i = probability that a sub-population member in cluster i was chosen for the survey;

m = number of sample clusters chosen;

M_i = expected measure of size for cluster i;

M = total measure of size for the survey universe ($M = \Sigma Mi$);

n_i = number of sub-population members chosen in cluster i; and

N_i = total number of sub-population members in the cluster i.

Note: This design results in a non-self-weighting sample, and it will thus be necessary to apply sampling weights during analysis.

4. Selection of clusters with equal prob ability, sub-sampling used at second stage

$P_i = (m/M) * n_i /N_i$

Where:

P_i = probability that a sub-population member in cluster i was chosen for the survey;

m = number of sample clusters chosen;

M = total number of clusters in the sampling frame;

n_i = number of sub-population members chosen in cluster i; and

N_i = total number of sub-population members in the cluster i.

Note: This design results in a non-self-weighting sample, and it will thus be necessary to apply sampling weights during analysis.

Figure 6 : Procedures for calculating sampling probabilities for sample elements (P_i) chosen using the various prototype sub-population survey sample designs (continued)

5. Selection of schools PPS, classes with equal probability, and all students in sample classes chosen for sample

$P_{ij} = (m * M_i/M) * (b/B_i)$

Where:

P_{ij} = probability that a sub-population member in class j of school i was chosen for the survey;

m = number of sample schools chosen;

M_i = measure of size for school i;

M = total measure of size for schools in the survey universe (M = ΣMi);

b = number of classes chosen for the sample; and

B_i = total number of classes in sample school i.

Note: This design results in a non-self-weighting sample, and it will thus be necessary to apply sampling weights during analysis.

6. Selection of schools PPS and students sub-sampled at randomly chosen interview sites

$P_{ij} = (m * M_i/M) * n_i /N_i$

Where:

P_{ij} = probability that a sub-population member in class j of school i was chosen for the survey;

m = number of sample schools chosen;

M_i = measure of size for school i;

M = total measure of size for schools in the survey universe (M = ΣMi);

n_i = number of sub-population members chosen in cluster i; and

N_i = total number of sub-population members in the cluster i.

Note: This design results in a non-self-weighting sample, and it will thus be necessary to apply sampling weights during analysis.

7. Household surveys of youth, clusters chosen with PPS, constant number of youth chosen per cluster at second stage using segmentation method:

$P_i = (m * M_i/M) * 1/S_i = m * C/M$

Where:

M = number of sample clusters chosen;

M_i = measure of size for the ith cluster;

M = total measure of size for the survey universe (M = ΣMi);

S_i = number of segments created in the ith cluster; and

C = standard (i.e., constant) segment size.

Note: Since this design results in a self-weighting sample, the application of sampling weights during analysis is not required.

8. Household surveys of youth, clusters chosen with PPS, constant number of youth chosen per cluster at second stage using a random walk method:

$P_I = (m * M_i/M) * k/N_i$

Where:

M = number of sample clusters chosen;

M_i = measure of size for the ith cluster;

M = total measure of size for the survey universe (M = ΣMi);

k = constant number of households chosen per cluster; and

N_i = total number of households in the ith cluster.

Note: This design results in a non-self-weighting sample, and it will thus be necessary to apply sampling weights during analysis.

Calculating weights from sampling probabilities

Once sampling probabilities have been calculated, these are converted to sampling weights as follows:

Where:

$W_i = 1/P_i$

W_i = sampling weight for elements in the ith cluster; and

P_i = probability of selection for elements in the ith cluster.

Note, however, that when sampling weights are applied to survey data using standard computer software packages (e.g., EPI-INFO, SPSS), the number of sample observations will be inflated and will thus imply a larger sample size than was actually realized in a survey. As a result, statistical tests for changes in indicators over time will be based upon incorrect sample sizes, and misleading conclusions as to the effects of programs might result. For example, changes that were not statistically significant based upon the actual sample size will appear to be significant based upon the weighted number of cases.

Calculating standardized weights

To compensate for this, standardized weights are often used. ***Standardized weights*** assign a weight to each sample observation that reflects its relative probability of selection in comparison with other sample observations, but does not change the overall survey sample size. Standardized weights (w_i') for sample elements in the i^{th} cluster are calculated as follows:

$w_i' = w_i n_i \ / \ \Sigma w_i n_i$

It will be noted that since each element in a given cluster has the same probability of selection, each will also receive the same standardized weight. Figure 7 illustrates the computation of standardized weights using hypothetical survey data.

In order to make use of standardized sampling weights during data analysis, it is necessary to include an appropriate “weight” variable in the survey data file to be analyzed. The standardized weights can either be calculated by hand or using a spreadsheet and entered as a variable during data entry, or alternatively the first- and second-stage selection probabilities could be entered and the weights calculated using appropriate commands for the statistical package used.

What kind of bias can result by failing to weight the data?

If characteristics of the sub-population being measured differ from one cluster to the next, and those differences are correlated to the size of the cluster, then this can have the effect of changing the point estimates (values for indicators).

For example, imagine a situation where an intervention was conducted to promote 100% condom use in brothels. Although there were 30 brothels, for the sake of efficiency the intervention focused on only the 10 largest brothels, because those brothels were thought to house around 75% of all sex workers. As a result, after several months of the intervention, 80% of the women in the larger brothels were consistently using condoms. However, in the smaller brothels, only 30% of the women were doing so.

Figure 7 : Calculation of selection probabilities, sampling weights, and standardized sampling weights — hypothetical data

In this example, calculations of standardized weights are shown for the first five of a sample of clusters chosen in a hypothetical survey. Let n_i = the number of sample elements chosen in cluster i, P_i = overall probability of selection for sample elements in cluster i, w_i = sampling weight for sample elements in cluster i, and w_i' = standardized sampling weight for sample elements in cluster i.

Cluster No.	n_i	P_i	w_i	$w_i n_i$	w_i'
1	20	.033	30.30	606.06	.0502
2	11	.022	45.45	499.95	.0414
3	6	.030	33.33	199.98	.0166
4	13	.043	23.26	302.28	.0250
5	12	.023	43.48	521.76	.0432
.					
.					
.					
Total	300			12,073.02	

Now suppose that you do your survey, and you randomly select 10 of the 30 brothels to be included in your sample. Measures of size are not available at the planning stage. So you select the brothels with equal probability. The small brothels therefore have the same chance of being selected as the larger brothels. In all likelihood (based on probabilities), you would select around 3-4 of the large brothels, and 6-7 of the small brothels. If you sub-sampled a fixed quota of 20 women from each brothel (for a total sample of 200), you would end up with approximately 130 women from the smaller brothels, and only 70 women from the larger brothels. Since the women from the smaller brothels would be much less likely to use condoms than the women from the larger brothel, you would underestimate consistent condom use for the total sample.

This is essentially a weighting problem, because the women selected from the large brothels should account for 75% of the sample. By correctly keeping track of sampling probabilities for each cluster, weighting factors can easily be handled during analysis. But this can only happen if the proper information is recorded during the data collection process. Sample forms specifying what type of data to record during data collection are provided in Appendix 4.

Calculating standard errors with multi-stage cluster designs

In order to test the statistical significance of observed changes or trends, it is necessary to have estimates of the magnitude of sampling error associated with the survey estimates, commonly referred to as ***standard errors.*** The estimation of sampling depends upon the sample design used in collecting the data. As sample designs become more complex (e.g., when stratification, cluster sampling, and multiple stages of sample selection are used), the procedures for estimating standard errors become quite complicated. The estimation of standard errors for such designs is beyond the scope of this Guide, and consultation with a statistician is recommended.

Unfortunately, standard statistical software packages such as SPSS and EPI-INFO do not provide an adequate solution to this problem. While both packages will estimate the standard errors of observed changes on indicators and perform appropriate statistical tests, the standard errors produced by these software packages assume that simple random sampling was used in gathering the survey data. Since it is highly probable that cluster sampling will be employed in BSS, the estimated standard errors produced by these packages will be incorrect. Because the standard errors generated by standard software packages will usually be under-estimated (because they assume simple random sampling), there is the danger that observed changes in indicators will be believed to be statistically significant when in fact they are not.

To avoid this problem, and perform careful data analysis, software that can perform cluster analysis should be used. STATA and SUDAAN are two such packages. These programs do not assume that simple random sampling was used. They make use of the cluster information to calculate design effects, and adjust standard errors before conducting statistical tests, thereby avoiding the problem of incorrect conclusions.

If using appropriate software is not an option, one other possibility is to compensate for the expected under-estimation of standard errors by tightening the criteria used for judging statistical significance. For example, instead of using $p<.05$ as the cutoff point for judging an observed change or difference in an indicator to be significant, $p<.04$ or even $p<.03$ might be used. In this way, the danger of incorrectly judging an observed change to be significant is reduced without adding to the complexity of the statistical analyses of the survey data or having to use software on which local staff have no prior training or experience. In any event, the actual p value observed should be given (rather than any arbitrary cut off such as $p< .05$) to allow data users to judge for themselves the likely significance levels in this context.

CHAPTER

6

ADAPTING AND USING QUESTIONNAIRES

- *Time frames of key behaviors*
- *Informed consent*
- *Questionnaire administration and interview settings*
- *Assuring quality control*

6

Adapting and using questionnaires

Standardized questionnaires should be used for behavioral surveillance in order to maximize the comparability of data between survey rounds and across sub-populations and geographic regions. In fact, small changes in the wording and the order of questions can greatly affect responses to questions so that observed changes in behaviors over time may, in fact, be due to these changes as opposed to any real changes in those behaviors. So preparation of a well-developed questionnaire which can be maintained over multiple waves with minimal changes is critical.

International experience in surveying several key sub-population groups has generated a wealth of knowledge on what types of questions work and don't work in asking people about their sexual and drug-using behaviors. Similarly, researchers have developed standardized indicators for tracking behaviors over time which are based on these questions. These indicators are presented in Chapter 9 and are comparable to the indicators developed by UNAIDS and MEASURE/ Evaluation for the monitoring and evaluation of National AIDS Programs.

Questionnaires for five sub-population groups which have been tested in numerous international settings and which produce key indicators for those groups are included in Appendix 1. They include instruments for the following groups:

- Adults
- Unmarried youth
- Female sex workers
- Injecting drug users
- Men who have sex with men

The following provides additional information regarding the use of these questionnaires with the relevant sub-population groups.

Adults

This questionnaire has been designed to be used with both male and female adults who are 15-years of age or older and who do not fit into one of the prescribed higher-risk groups of sex workers, injecting drug users, and men who have sex with men. Other instruments are more appropriate for those groups. This instrument is typically used with adult occupational groups such as male and female factory workers, truck drivers, seafarers, and market venders who may be included in behavioral surveillance because of epidemiological and/or qualitative evidence of their role in the epidemic. Among other items, the questionnaire asks respondents to report on their numbers of regular (cohabiting or spousal) sexual partners in the past year, commercial (paid) sexual partners, and other non-regular partners. They are also asked to report on their last time and consistent condom use for each of these partner categories.

Unmarried youth

The questionnaire for unmarried youth is designed to be used with young people who are at the start of their sexual lives. In many countries, this questionnaire is used among girls and boys aged 15-19, and in some its use is extended to unmarried men and women in their early 20s.

The questionnaire tracks trends in the initiation of sexual intercourse and condom use at first sex, as well as in partner turnover in this population among whom sexual partnerships may be inherently unstable., It also treats sexual partnerships differently than the adult questionnaire. In the adult questionnaire, respondents are asked to report on their regular vs. commercial vs. non-regular sexual partnerships. However, since all sexual partnerships with youth are considered to be non-regular, questions not asked about regular partnerships.

If during the course of the rapid assessment phase it is discovered that a high proportion of young people in a given setting are married, then the adult questionnaire should be used. Surveillance managers should consider identifying another sampling frame for unmarried youth to measure and track sexual behavior in this group.

Female sex workers

The questionnaire for female sex workers is to be used for women who sell sex. This may be women who engage in commercial sex in brothel-based locations or women who sell sex indirectly in locations such as restaurants, truck stops, or other places identified in the rapid assessment process. It should be noted that it may be more difficult for interviewers to identify this latter group of women and obtain their participation in the survey since many of them will not want to be seen as associated with commercial sex. Various approaches may need to be tested to facilitate participation, including adapting the initial rapport-building segment of the questionnaire.

Some attempts have in the past been made to use a broad definition for commercial sex, such as the exchange of goods and services for sex. Experience has shown that these definitions yield information that is hard to interpret. This questionnaire is designed only for use with women who sell sex for cash.

Injecting drug users

The questionnaire designed for injecting drug users contains questions on frequency of drug injection, syringe and equipment sharing behavior, cleaning of equipment, and sexual behavior. It is to be used solely with individuals who are regular injecting drug users. Often, this will be defined as anyone who has injected drugs at least once in the last month.

Men who have sex with men

The questionnaire for this group is to be used with men who have regular sexual contact - manual, oral, or anal - with other men. Since this group can be extremely diverse in various country settings, the questionnaire will likely need to be adapted to the local contexts and cultures of male-to-male sex.

In many of the locations where men who have sex with men can be sampled, male sex workers may also be present. However, because this group engages in commercial sex, they are fundamentally different than the general community of men who have sex with men. Thus, we do not recommend that they be combined in the same sample, nor that the same questionnaire be used. For male sex workers, a different questionnaire (not included here) should be constructed which takes into consideration the contexts of commercial sex.

Overlapping sub-population groups

It frequently occurs that some members of the above described sub-population groups engage in additional risk behaviors other than the ones which define them as a group. For example, some female sex workers also inject drugs, some youth also engage in commercial sex, and some adult males who might be sampled in a survey focusing on sex with women also engage in male-male sex.

If the rapid assessment phase points out that substantial numbers of a sub-population group engage in these "cross-over" risks, then the questionnaire should be adapted to reflect this.

Adapting standardized questionnaires

The use of the attached standardized questionnaires has many advantages. First, questionnaire development is a difficult process, and these instruments contain formulations of questions, time references, and skip patterns which have been tested and are known to produce high-quality data. Second, since these instruments have been used in numerous settings throughout the world, their continued use will allow behavioral surveillance results to be compared internationally to determine differences in the dynamics of behavior change and the characteristics of different population groups.

However, it is still essential to pretest and adapt survey instruments for every local setting. This involves translating the instruments into local languages and using the appropriate local terminology to ensure that the original meaning of the question is not lost. It will also be necessary to conduct qualitative research and to involve local members of the sub-populations who can help with the interpretation of the questions.

It is also useful to develop a guide for interviewers and supervisors, which goes through the questionnaire one question at a time, explaining in full the rationale behind a question and its intended meaning. This can be used in training and in the field, to clarify any ambiguities or misunderstandings that may arise. An example of one such set of guidelines is provided in Appendix 2. This is relevant only to the questionnaire that was used in Zambia; other countries will have to develop their own guidelines to accompany locally adapted questionnaires.

Among the many items that can help ensure quality, the following check list can be used to improve the instrument:

- Qualitative research before the survey to learn about the characteristics of the sub-populations and how best to approach them;
- Comprehensive adaptation and pre-testing of the questionnaires that are suited to the local context;
- Verification that the language in the questionnaires is clear to the people being interviewed, and that the questions are answerable;
- Taking the time to do translation and back-translation, to make sure that complex concepts are interpretable in a commonly understood manner;
- Use of self-administered questionnaires when surveying literate populations

Time frames of key behaviors

One of the most potentially confusing aspect of questionnaire design can be the time frames of behaviors asked of respondents. For example, when asking a male respondent about whether he has had sex with a sex worker, should the time frame for this behavior be the past month, the past six months, or the past year?

People tend to remember recent behaviors more accurately and this argues for shorter time frames. However, if the behaviors are not extremely common and frequent, then too short a time frame will yield few respondents, making it difficult to track trends in the behavior over time with any degree of statistical confidence. The time frames of the indicators contained in this document and the questions in the questionnaires are the product of trying to marry these two diverging factors so that the time frame is convenient to the respondent and analyzable to the researcher.

Note that changing the time frame of behaviors in the questionnaires will yield radically different results. This may be appropriate because of the local context, but it will also mean that analysis comparisons with other surveys using different time frames will be difficult, if not impossible.

Informed consent

Confidentiality and informed consent are important for all research subjects, but when the subject of the research is an illegal or stigmatized activity such as sex work, injecting drug use, or illegal migration into another country to work, the importance of protection of privacy is magnified.

Behavioral surveys cannot take place without the informed consent of the respondent. Special efforts must be made to ensure that the potential respondents understand their rights and the risks involved, and that every effort is made to ensure that the community will benefit from the research. As discussed earlier, involving the community in planning and the dissemination of the research is one way to do this. In addition, the interviewers must be trained to inform people of the purposes of the survey and request participant consent in a factual and neutral manner. The purpose of the survey should be explained to the respondent, including the risks and benefits, as well as the measures to ensure confidentiality. The respondent should give verbal consent to the interview, and the interviewer should sign his/her name indicating that verbal informed consent has been given. Some respondents may refuse to participate and in this situation interviewers should respect the respondent's rights, and thank them for their time. To ensure confidentiality, no identifiers should be recorded on the respondent questionnaire.

Questionnaire administration and interview settings

In situations where some members of the sub-population of interest may be illiterate, BSS data should be collected by a trained interviewer who explains questions to the respondent and records answers. Where all respondents are literate and educated such as with student populations, respondents may record answers to questions themselves on an anonymous written questionnaire, submitting it to a data collection manager in a sealed envelope so that it cannot be distinguished from that of other respondents. Since the respondent is not confronted with a face-to-face interviewer who they fear may disapprove of the behaviors they report, they may be more honest with their answers to sensitive questions. This may increase the validity of self-reported behaviors.

With trained interviewers, it is nevertheless important to conduct survey interviews in settings where questions and answers cannot be overheard by others and to engage in a rapport-building conversation prior to asking survey questions. This will reduce the likelihood that respondents will give "socially desirable" answers rather than telling the truth. If a third person enters the room or is within hearing distance, the interviewer should explain that it is important to interview the respondent alone.

Assuring quality control before and during fieldwork

If care is taken to exercise quality control during fieldwork, two main sources of error that interfere with the ability to collect valid data will be avoided. One source comes from people collecting the data, and the other from the people from whom the data is being collected.

It is commonly said that people do not tell the truth about their sexual behaviors, and that they exaggerate, withhold information, or refuse to admit to behaviors that are culturally unacceptable. Experience has shown that there are techniques that can be used to increase the likelihood of honest sharing of information. When interviewers are well trained to discuss sensitive behaviors with respondents and make them feel at ease, research suggests that respondents will provide truthful information.

The interview and supervisor guidelines found in Appendix 2 provide one example of a necessary tool for ensuring quality of fieldwork.

Other quality control issues relate to interactions with the groups being surveyed. Often these surveys are conducted with communities who are vulnerable and therefore reticent to open up to strangers. Working through community organizations who have relationships with the target populations is an essential component of this work. In some cases, such as with men who have sex with men or injecting drug users, it will be necessary to use members of the respondent community (or those working with them) to do the interviewing because it cannot be expected that rapport can be built with sub-populations in a very short period of time. If interviewers do not come from the community, then they must be carefully chosen individuals who do not threaten the respondents in any way. A concern for the privacy and confidentiality of the community must be maintained at all times. Winning the trust of the community is part of the whole package of obtaining valid results.

In summary, reliable and valid behavioral data can best be guaranteed by ensuring that:

- Questionnaires are sufficiently pre-tested;
- Interviewers are well-trained;
- Questionnaire administration includes rapport-building and is consistently applied;
- A confidential atmosphere is provided

CHAPTER 7

ANALYSIS AND INTERPRETATION OF RESULTS

- *Recommended methods of statistical analysis*
- *Bivariate analysis*
- *Multivariate analysis*
- *Analysis of trends in behavior over time*
- *Sources of bias*

7 Analysis and Interpretation of Results

Once data have been collected, they must be analyzed to calculate chosen indicators, to assess changes in indicators over time, and to explore relationships between variables. The probability sampling methods explained in Chapter 4 produce representative and replicable samples, and they also permit us to use statistical methods for analysis so that the statistical significance and accuracy of the data can be assessed.

This chapter presents recommended methods of statistical analysis of data from repeated surveys of HIV-related risk behaviors. It describes which statistical tests are most appropriate in different settings, and gives formulas and worked examples for the most common tests. Interpretation of statistical analyses is discussed, and common sources of bias in the data are outlined.

There are numerous existing statistical analysis computer packages such as EPI-INFO, SPSS, SAS, and STATA which can be used to analyze behavioral data. These packages ease the analysis process by conducting statistical tests using standardized formulas. However, they should be used by researchers who fully understand these tests and their assumptions and limitations. The discussion below provides some basic information regarding these statistical tests. For explanatory purposes, some hand calculations of these statistical tests are provided in Appendix 5.

Recommended Methods of Statistical Analysis

Statistical analyses of behavioral surveillance data can be divided into two categories:

- analysis within one wave of data
- trend analysis over multiple waves

Within each of these categories, variables can be looked at in several ways. (A *variable* is simply an aspect of a person or their behavior that can be measured or recorded, for example, their age or their use of condoms.) The following types of analyses are possible:

Univariate analysis - This involves the analysis of the distribution of one variable only. Most of the indicators defined for behavioral surveillance purposes are calculated through univariate analysis. They would include the proportion of young men who have had sex with more than one partner, during a given time period, for example, or the proportion of injecting drug users that shared equipment last time they injected drugs. Confidence intervals are calculated for these proportions to indicate the precision of these estimates. When multiple waves are analyzed, statistical techniques are used to calculate whether changes in the proportions could have occurred by chance, or whether observed changes are likely to reflect real changes.

Bivariate analysis - This analysis is performed to determine whether one variable influences the distribution of another. In these analyses, variables are usually divided into two categories, the independent or *explanatory* variable and the dependent or *outcome* variable. Bivariate analysis typically looks for associations between an explanatory and an outcome variable. For example, there might be an association between a respondent's age (the explanatory variable) and their use of condoms (the outcome variable). Statistical tests in bivariate analysis determine whether any observed difference reflects a true difference, or may be due to chance.

Multivariate analysis - This analysis is performed to look at the influence of at least two variables on another variable since relationships between variables are often complex and interwoven. Multivariate techniques can pin-point the individual effects of several explanatory variables on an outcome variable which may be related to each other.

If multi-stage cluster sampling is used, ***weighting*** and ***cluster effects*** will need to be considered. These are discussed in Chapter 5.

Analysis of one data wave

Univariate Analysis

Univariate analysis is the most basic - yet often the most important - because it shows the distribution of each variable, some of which are key prevention indicators. In BSS, univariate analysis consists primarily of constructing indicators out of categorical variables. A categorical variable is a non-numerical variable that is often defined in categories (such as ethnic group) or in answer to a yes/no question (such as consistent condom use). Many behavioral surveillance indicators consist of the percentage of respondents falling into a certain category, such as the category of people who used condoms the last time they had sex with a non-regular partner.

Because BSS asks questions of just a sample of the universe of possible respondents, the indicator calculated from the replies of respondents may not reflect the true proportion of members of the sub-population falling into the category in question (in other words, those who have the behavior in question). It is therefore useful to calculate confidence intervals around the indicator. A confidence interval is the range in which you can be "confident" (within a specified degree) that the proportion of people reporting the behavior is accurate. In fact, it is important to remember that the "true" values of proportions are never known. Rather, on the basis of statistical theory, we construct confidence intervals which give us a range within which we assume the true value lies.

Typically, the level of confidence used in calculating this range is set at 95 percent. For example, if a survey shows that 15 percent of truck drivers have had sex with a sex worker in the past year, and the 95 percent confidence interval has been calculated to be between 12 and 18 percent, then it means that we are 95% confident that the true value lies in between these values. This helps us to understand the accuracy and precision of the estimates we obtain.

As the sample size becomes larger, the confidence intervals become narrower, and we can be more confident about the precision of our estimates.

Indicators based on simple proportions are calculated simply by dividing those that report the behavior by the total number of respondents who were questioned about the behavior. Where the indicator is expressed as a percentage (which is often the case), the result should be multiplied by 100. So if 700 high school girls were asked whether they had ever had sex, and 460 replied that they had, the calculation for indicator: the percentage of girls in high school ever having had sex would be:

Indicator 1 = 460/700 x 100 = 65.7%

In some cases, the denominator may not be all respondents, but may be all respondents reporting another behavior. For example, an indicator may be calculated for the percent of sexually active high school girls who have ever used a condom. In this case, the question would only be asked of the 460 girls who had ever had sex. If 194 of them replied that they had used a condom, the indicator would be

194/460 x 100 = 42.2%

The confidence interval is based on the ***standard error*** of a percentage. The standard error (SE) is calculated as follows:

$$SE = \frac{\sqrt{(p\ (100-p))}}{\sqrt{n}}$$

where n is the sample size in the denominator of the indicator and p is the percentage in which the outcome variable is observed (i.e., the indicator itself)

The 95% confidence interval is calculated as follows:

95% CI = p ± 1.96 (SE)

In comparing the same indicator in two different populations, it is possible to be confident that there is a real difference only if there is little or no overlap in the confidence intervals around the two indicators. Indicators based on categorical variables and the confidence intervals surrounding them are often represented graphically using a bar chart with lines denoting the confidence interval.

An example from Tamil Nadu, India

These data come from the first round of behavioral surveillance in Tamil Nadu, India. The data, presented table format, are for a key indicator: the percentage of men who used a condom the last time they had sex with a sex worker, among all men who had sex with a sex worker in the past year.

In tabulating the data, it is helpful to give the actual numbers in the numerator and the denominator, as well as the percentage and the 95 percent confidence interval. It is especially important to give numerators and denominators when the denominator is *not* the total sample size (as is the case in this indicator, where only men who have had sex with a sex worker are included in the denominator.

Table 8 : Percent of male target group reporting condom use during most recent act of sexual intercourse with a commercial sex partner (Tamil Nadu)

Respondent group	%	N	95% confidence interval
Male STD patients	15	68/435	11.6, 18.4
Truck Drivers and Helpers	55	144/262	49.0, 61.0
Male Factory Workers	28	27/97	19.0, 37.0
Male Students	80	14/18	61.5, 98.5

Source: The AIDS Prevention and Control Project (APAC), Voluntary Health Services, Chennai, Tamil Nadu, India, 1996.

The following is one example of how to calculate the 95 percent confidence interval from the above data.

Male STD patients: n = 435, p = 15.

$$95\%\ CI = 15 \pm 1.96 * \frac{\sqrt{(15*85)}}{\sqrt{435}}$$

$$= 15 \pm 3.36$$

$$95\%\ CI = 11.6 - 18.4$$

From these data, it appears that condom use during the most recent commercial sex act is relatively low among male STI patients in Tamil Nadu, and since the sample size is large, this can be asserted with some degree of confidence. It is also entirely plausible: recent unprotected sex with a sex worker may well be the source of the STI which led to the respondent's inclusion in the survey sample. At the other end of the spectrum lie male students, 80 percent of whom used a condom the last time they had sex with a sex worker, according to the survey findings. However because only 18 students reported sex with a sex worker in the last year, the denominator for this indicator is very small and the confidence interval is very wide. The range of the proportion of students using condoms the last time they had sex with a sex worker, according to these calculations, lies anywhere between 62 and 99 percent. In other words, anywhere from under two thirds of students to almost all students used condoms the last time they had sex with a sex worker.

However, this very large range makes it difficult for program planners to respond with appropriate prevention programs for this group and to gauge how successful previous efforts have been. If the true value lies closer to 99 percent, then condom use is very high and the battle has already been partially won. In this case, prevention strategies (and corresponding funding) could be best geared for the maintenance of desired behaviors. But since there is a large confidence interval, the true value may just as likely lie near 62 percent, which indicates that a significant proportion of the population is still putting themselves at risk for HIV infection. This illustrates the difficulty of interpreting data that have wide confidence intervals.

Bivariate analysis

Bivariate analysis is used to investigate the relationship between two different variables (in the case of BSS usually categorical variables) that may be associated. Variables are associated if the value of one tells you something about the value of another. For example, level of education is generally associated with income levels. If you know that a person has a university education, you could guess that they earn more money than a person who did not finish primary school. Obviously there will be exceptions. The role of statistical tests in bivariate analysis is to determine the extent to which the association is a real one at a population level, and the extent to which it may have occurred just by chance.

The most common test used in this context is known as the ***Chi-square*** test, usually written using the annotation: χ^2

Table 9 : Reported number of non-regular sex partners in the last 12 months among truck drivers, by age of driver. Ivory Coast, 1998

Age	Number of sexual partners, past 12 months					Total
	0	1	2	3+	Mean	
<20	38.7% n=12	12.9% n=4	19.4% n=6	29.0% n=9	2.1	100% n=31
20-24	50.9% n=87	21.1% n=36	12.3% n=21	15.8% n=27	1.2	100% n=171
25-29	56.4% n=75	21.8% n=29	8.3% n=11	13.5% n=18	1.3	100% n=133
30+	78% n=177	11.5% n=26	4.8% n=11	5.7% n=13	0.6	100% n=227

Source = Report of 1998 BSS survey among truck drivers in Ivory Coast, ENSEA, FHI/IMPACT, SFPS (Note: data have been modified slightly for the purpose of the example)

The chi-square test works on the principle of the **null hypothesis.** It assumes there is no difference in the outcome variable according to the explanatory variable with which it is associated, and tests that assumption. If the distribution of the outcome variable by explanatory variable is identical, (i.e. if there is no difference between the groups) then $\chi^2 = 0$. The larger the real difference in distribution according to explanatory variable, the larger χ^2. The chi-square statistic can be looked up in a table of chi-square values (given in Appendix 5) to determine whether the difference between explanatory variables reaches statistical significance.

To calculate a distribution comparing two variables, it is necessary to determine which is the explanatory and which is the outcome variable, and to set up a table. In the context of BSS, the explanatory variable will almost always be a population characteristic, while the outcome variable will often be an indicator of sexual or drug-taking risk behavior.

As mentioned above, researchers typically use statistical analysis packages to conduct statistical tests, including chi-square tests.

An example from Côte d'Ivoire

Table 9 shows data from the first round of behavioral surveillance, conducted in the Côte d'Ivoire in 1998. In addition to providing data on the indicator related to the numbers of non-regular partners for the whole sample of sexually active men, the table also shows the same data broken down by age in order to show the relationship between these variables.[1]

To provide a worked example of the χ^2 distribution, let us consider just the first variable, age, which is depicted in Table 9.

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[1] In this survey non-regular is defined as a sex partner who the respondent has just met, but where no money was exchanged. This is different from the current standardized definition, where non-regular partners are non-spousal, non-cohabiting partners.

A glance at this table suggests that older men were far more likely than younger men to have no non-regular partners in the last 12 months, while younger men were more likely than older men to have two or more non-regular partners in that time frame. However, we also note that there are far more older men than younger men in the total sample, and indeed only a handful of the total sample (31 out of 562) are in the youngest age category of teenagers. The way to determine whether there is a statistically significant relationship between age (the explanatory variable) and non-regular sexual partnerships (the outcome variable) is to calculate a χ^2 value. The χ^2 value for this particular example is 40.8, with a p-value of less than 0.001. We can therefore conclude that age is significantly related to number of sexual partners in this population.

Tests for trend within bivariate analysis

If one variable in bivariate analysis is a variable that can be divided into ordered categories (such as the age categories in the example above), and the other variable has two possible values, it is possible to use a χ^2 test for trend.

For example, if the category of numbers of non-regular partners in the above example were collapsed from four to just two (e.g. zero vs. one or more), it would be possible to determine if having more partners were significantly associated with falling age. The formula for this type of trend analysis is found in all basic statistical textbooks. In BSS, the most common test for trend is a test for trends over time. The formula can be found in any standard statistics textbook.

Bivariate analysis with binary variables: a quick formula

When each of the variables in a bivariate analysis is a binary variable with just two values (for example male or female, or condom use yes/no), then a quick formula can be used in calculating the Chi-square distribution. The variables are set up into a table as below, this version of the table is known as a "**two by two** table". The table will look like this:

			Row totals
	A	B	E
	C	D	F
Column totals	G	H	N

The quick calculation formula for this type of table is:

$$\chi^2 = \frac{(AD - BC)^2 * N}{EFGH}$$

Once the chi-square statistic has been calculated, the p-value can be found in a chi-square table of any standard statistics textbook and also contained in Appendix 5.

With two by two tables, the total number of respondents (i.e. N) should be greater than 40. The method is also valid if the number of respondents lies between 20 and 40 and no single expected value is less than 5.

False conclusions: the danger of confounders in bivariate analysis

It is particularly important to be aware of confounding in bivariate analysis. Confounding can happen when one of the variables that is being treated as an explanatory variable in the analysis is associated with the outcome variable, but is independently associated with another explanatory variable which may be the true cause of the observed association.

A simple example may help to explain this. Let's say there were cross-sectional surveys looking at tuberculosis in Jakarta, with the prevalence of TB as the outcome variable of the study, and various socio-demographic factors as the explanatory variables. If ownership of a Mercedes Benz were included among the explanatory variables, investigators would almost certainly find an inverse association between Mercedes ownership and TB. Owners of Mercedes would be less likely to have TB than people who did not own Mercedes, and the associations would probably be highly statistically significant.

Does that mean than owning a Mercedes Benz protects against TB? No. This is a classic case of confounding. TB is significantly associated with socio-economic status (SES) and the poor housing conditions, poor diets and other lifestyle factors that accompany low SES. People who are poor are more likely than people who are rich to have TB. They are also far less likely than people who are rich to own a Mercedes Benz. The relationship between being rich and owning a Mercedes Benz is **independent** of the relationship between being rich and having TB. So if you were looking for a relationship between Mercedes Benz ownership and TB, you would probably find one. But this relationship would have been **confounded** by the association of both the explanatory variable (Mercedes ownership) and the outcome variable (TB) with socio-economic status.

This means that once bivariate analysis has been performed, it is wise to put the variables that have been shown to be associated with the outcome of interest through other types of tests, which control for potential confounders. There are two ways to do this.

If a confounder or potential confounders are known in advance, then a type of χ^2 test known as the **Mantel-Haenszel** test can be used. This splits the confounding variable into its various categories, and compares each category with an outcome variable, using two by two tables, to ***control*** for confounders. In the above example, to investigate the relationship between Mercedes ownership and TB, you would want to control for the potential confounding effect of SES by looking at the association between Mercedes ownership and TB for each wealth group. If there were three SES groups in the study, (e.g. earnings over 10,000 a year, earnings between 5,000 - 9,999 a year, and earnings < 5000 a year), then a two by two table would be constructed for each SES group and the Mantel-Haenszel chi-square statistic could then be calculated to see whether SES is a confounding factor.

Performing this test in the example given above would almost certainly give a result that was *not* statistically significant. In other words, it would lead investigators to conclude that once the level of SES (the potential confounder in this example) has been controlled for, there is no significant association between Mercedes Benz ownership and the likelihood of being infected with TB.

Another, more complex type of analysis controls for several confounders at once. This type of analysis is known as **multivariate analysis.**

Multivariate analysis

Multivariate analysis is used to examine the relationship between a number of different explanatory variables to an outcome variable. It looks for interactions between different explanatory variables.

Logistic regression

The most common form of multivariate analysis when dealing with categorical variables such as those most commonly measured in BSS is logistic regression. Logistic regression is particularly appropriate when investigating data sets that include several potential confounding variables.

Logistic regression uses more sophisticated statistical techniques to determine whether the explanatory variable in question has an independent effect on the outcome variable after controlling for potential confounding effects of other variables. The statistical methods used are too complex to describe in detail here. Logistic regression is virtually always performed by computer, and several standardized software packages are available to assist in this process.

The output of a logistic regression can be expressed in terms of an **odds ratio.** In the context of BSS, this means the likelihood that someone of a certain category behaves in a certain way, compared with someone who is not in that category. When confounding factors that may influence the outcome are controlled for, the result is known as an **adjusted odds ratio.** For example, the odds ratio might describe the likelihood that a sex worker who earns 100 francs per client used a condom with her last client, compared with a sex worker who earns 10 francs per client. The calculation may control for age, ethnic origin and educational level of the sex worker, among other factors.

In general, odds ratios are expressed in relation to one level of the variable of interest, which is set at a value of 1.0. This category is known as the **reference group**. In the example above, imagine that sex workers who earn 10 francs are the reference group, the odds ratio for sex workers who earn 50 francs is 1.6, and the odds ratio for sex workers who earn 100 francs is 2.0. This means that sex workers who earn 50 francs are *60 percent (or 1.6 times) more likely* to have used a condom at last sex than sex workers who earn 10 francs. Similarly, sex workers who earn 100 francs are twice as likely as the reference group to have used a condom at last sex.

Significance tests for logistic regression

Like all types of analysis, logistic regression analyses include tests for statistical significance. Statistical software packages that perform logistic regression can usually produce 95 percent confidence intervals for each odds ratio, as well as a p-value. This confidence interval gives an indication of the range in which you can be 95 percent confident of the precision of the odds ratio. *If the confidence interval spans from less than one to more than one, there is no significant difference between the category investigated and the reference category*. This is because the odds ratio of 1.0 is included in the confidence interval, signifying no greater odds of association. In this case, the p-value, which indicates the probability that the difference between the two categories occurred by chance, will be greater than 0.05.

Analysis of trends in behavior over time

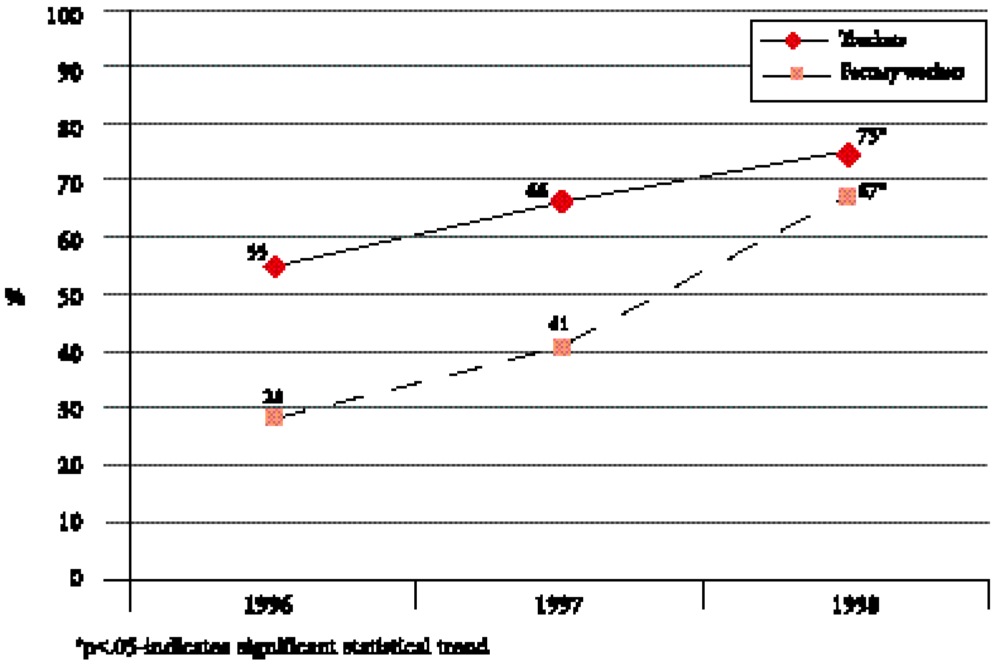
Just as we want to be confident that differences in behavior observed between populations or population sub-groups at one point in time are real and not the result of sampling error or confounding, so we want to be sure that trends in behavior observed over time are real. For these reasons, statistical significance tests are also performed for trends over time.

For analyzing trends in behavioral surveillance, the most common test used is the **Chi-square test for trend.** The purpose of using this test is to compare trends between survey rounds in an indicator that is measured in terms of a binary variable. For example, has condom use risen among truck drivers over the last three survey rounds in a way that is statistically significant and not just due to chance? Statistical packages calculate the chi-square test for trend.

An example from India

Figure 8 shows trends in reported condom use by two male sub-population groups surveyed as part of behavioral surveillance in Tamil Nadu: truckers and factory workers. The graph suggests that condom use during last sex with a sex worker has increased in both groups. However, this can only be established by performing statistical tests for trend.

Figure 8 : Percent of males reporting condom use during last sex with a female sex worker in Tamil Nadu



Source: The AIDS Prevention and Control Project (APAC), Voluntary Health Services, Chennai, Tamil Nadu, India, 1998.

Using the chi-square test for trend, it turns out that both trend lines are statistically significant. The chi-square test statistic for the trucker's condom use trend is 67.84, with a p-value of <.001. For the factory workers, the chi-square value is 521.55, also with a p-value of <.001. Since the p-value is less than the very strict value of .001, we are more than 99% confident that the observed trend is true and not due to survey error.

More sophisticated analyses should be used for samples which have used multi-stage cluster designs. This is because the design effect of the cluster-based sampling must be taken see chapters 4 and 5 into consideration when analyzing trends. A statistician who is familiar with utilizing statistical analysis packages should be consulted for these purposes.

In some cases, it may be advisable to conduct logistic regression on an observed trend to control for confounding variables. For example, if the demographic distribution of the sub-population group has significantly changed over a several year period, we will want to control for these characteristics in order to be sure that they have not affected the observed trend over time. In these cases, an adjusted odds ratio is given for the trend over time. This can be interpreted as the average odds of change from one wave to the next over the observed time period.

Sources of bias

Besides potential confounders described above, which can be corrected for in analysis as described, there are many potential sources of bias in BSS as in any type of surveillance. In the context of BSS, bias describes systematic differences between the results obtained by a survey, and the "true" situation in the population. Investigators need to be aware of potential sources of bias: in many cases they can be minimized with careful forward planning. Crucially, surveillance officials need to be aware of biases that might change over time. Sources of bias that are constant over time distort the specific values of indicators, but trends measured over time will still be consistent with real changes. If a bias changes over time, however, it may distort trends in unpredictable ways.

Major sources of potential bias include following:

Selection bias

Selection bias is probably the most important source of bias for BSS. It arises when the HIV-related behaviors of the individuals who actually participate in a survey differ from the behaviors of individuals who don't participate. The reason that BSS pays so much attention to mapping and sampling techniques is precisely to try to eliminate as much selection bias as possible. But the fact remains that most of the sub-populations of interest to BSS are hard to enumerate and access, and compromises may have to be made which allow selection bias to creep in to the survey. An example discussed earlier is when NGOs are partners are lead agents in the sampling process. While they may ensure good access to a community, they may also tend to include in the sampling frame a disproportionately large number of sites or individuals who are in contact with their services. When their services include HIV prevention services, it is to be expected that these individuals may have safer behavior than other members of the sub-population who do not have access to these services.

Changes in sampling methodology over time are almost certain to result in selection bias, making trends over time much more difficult to interpret than when a consistent methodology is used.

Even if sampling methodology remains the same, changes in the political or social climate may have important influences on who is included in a survey. A crackdown on illegal immigrants may completely change the profile of the sex worker population between one survey and the next, for example. Differences in risk behavior over time may not reflect behavior change in this case, but may simply mean the population measured is no longer the same. It should be noted that rapid population turnover is typical of many of the sub-populations of interest to HIV prevention programmes. As long as the population sampled relates in the same way to the wider population to which results will be extrapolated, this will not increase sampling error. It will, however, affect the interpretation of trends over time.

One important potential source of selection bias is **refusal bias.** BSS asks people about personal and often illegal behaviors. It is absolutely essential, therefore, that the purpose of the study be carefully explained to selected respondents, and that their full consent to participate be obtained before questioning begins. Refusal bias arises when those who refuse to participate have different behaviors than those who agree. In the case of BSS, refusal bias may well underestimate true levels of risk behavior, because people may avoid participating because they do not want to admit to behaviors that they recognize are risky. Survey reports should always state what proportion of the selected sample refused participation, and should give socio-demographic profiles of refusers where available.

One way of attempting to gauge the importance of selection bias is to collect some basic socio-demographic variables from selected participants, including those who refuse to participate in the study. These variables can be compared with the same variables in respondents in earlier survey rounds (as well as in those who refuse to take part) to see if any systematic differences are discernable. Variables that will help judge the likely magnitude of selection bias will depend on the local situation but may include nationality, province of origin, length of time associated with the site, etc.

Measurement bias

Another source of potential error in surveys is error in the measurement of the variables. This can arise when survey forms are not clear, for example when the meaning of a question in the local language is open to different interpretations.

Interviewer bias can also affect the correct measurement of behavior. Some interviewers are more judgmental than others, and people may be more or less willing to report stigmatized behaviors to an interviewer depending on their attitude. Indeed people's unwillingness to tell the truth about their sexual or drug-taking behavior may be the most important source of measurement bias. It is not clear to what extent this is likely to change over time.

Where an interviewer has to turn a verbal answer into one that fits in to a coded category, they may also influence results, by consistently preferring one category over another when answers are ambiguous.

Many of the difficulties associated with measurement bias can be minimized through comprehensive training of interviewers and survey staff, and active supervision.

CHAPTER

8

USING THE DATA COLLECTED TO IMPROVE HIV PREVENTION EFFORTS

- *Packaging the data for different users*
- *A strategy for presenting data*
- *Data presentation for clarity and impact*

8

Using the data collected to improve HIV prevention efforts

There is no point collecting behavioral data unless they are used, and used for the benefit of the people from whom they were collected. Deciding how the data are to be used should be one of the early steps in the planning process for BSS, as described in Chapter 2.

Waiting until after the data are collected to decide how they will best be used may lead to lost opportunities: pieces of information that might prove particularly persuasive to key decision-makers in a local context may simply not get collected unless data use is planned before data collection begins. Having said that, it must also be recognized that information that arises out of the data collection and analysis process and that was not anticipated may influence the final use of data in unpredictable ways.

The various reasons for tracking behavior were discussed at the start of this document This chapter describes the particular uses to which the data can be put, once collected and analyzed. It also describes how data can be packaged differently for different audiences, and makes suggestions for data presentation.

Encouraging policy-makers to promote HIV prevention

Public health officials need no convincing of the importance of dedicating time and resources to prevent the further spread of HIV. The same cannot always be said for policy-makers in other sectors, who are confronted with pressing priorities of their own.

In the early phases of the epidemic, well-designed, credible behavioral data can warn of the possibility of rapid HIV spread and can encourage policy-makers to act to prevent that spread. But only if they are presented in language politicians respond to, language that may vary according to the target audience. The more simply that message can be directed at a key policy-maker's particular interests, the more likely it is to provoke a response.

Demonstrating that behaviors do change following prevention activities, both in groups with high risk behaviors and in the general population, is one of the most effective ways of increasing support for prevention activities. Behavioral data showing changes over time should be presented simply and rapidly to policy-makers who have the power to influence spending and program direction.

Making the public aware of the threat posed by HIV

Many generalized epidemics have reached their current stage because people in the general population did not know or did not want to believe that they were at risk of HIV infection. Behavioral surveys in the general population as well as in selected population groups can illustrate the extent of continuing risk behavior. Presented to the general public through the media or in other ways, the findings of such surveys will increase awareness of the risk of unprotected sex with any partner.

It is also important for the general public and members of specific sub-populations to be aware of trends in behavior over time. Knowing that others are adopting safer behaviors can help reinforce behavior change, especially among young people subject to peer pressure, and among members of sub-populations that share particular risk behaviors for HIV.

Seeking support from non-government sources

Behavioral data indicate success in prevention and highlight continuing needs. Presented appropriately to private firms, development organizations and international funders, these data can be used to increase resources for activities that are not being adequately covered in government spending plans.

Improving prevention programs

As a picture of risk behavior builds up and changes over time, it will indicate which behaviors have changed following interventions and which remain entrenched. This information can and should be used to improve prevention programs. Packages of interventions which appear to be associated with behavior change in some groups may be continued and expanded. Behaviors that remain unchanged despite efforts to promote safer alternatives will need a new approach, perhaps one that pays more attention to the social or economic context which determines why people behave in that way.

Packaging data for different users

There are many names for the Art of Persuasion: advocacy, lobbying and marketing to name just a few. While the words differ, the art remains essentially the same: choose the information that people most care about, and present it to them in a way that provokes action.

The results of BSS should always be presented in a full technical report, as discussed below. But this is far from being enough. The Minister of Education is not going to read a 50 page report about HIV-related behavior that includes information on sampling methodology and statistical tests. In fact, the Minister of Education may very well not think that HIV-related behavior bears any relation to his/her work at all. The task for HIV prevention workers is to pick out of the BSS results the two or three pieces of information most likely to be relevant to the minister, and to package them together with information from other sources into a two-page brief that makes a compelling case for greater HIV-prevention activities in schools and among teachers. The information chosen from BSS might include the proportion of high school students reporting more than one partner in the last 12 months, and the proportion of men and women in the general population using condoms at last risky sex, by level of education. These might be packaged together with information about school enrollment rates from the ministry's own records, showing at what age children begin to drop out of school, information about school attendance according to orphanhood status obtained from Demographic and Health studies, and information about absenteeism and death among teachers in service, obtained from the teachers' union. Together, these data can be used to make a compelling case for policies which promote HIV prevention activities in schools at appropriate ages, which help to keep children in vulnerable situations in schools, and which promote effective forward planning for the impact of HIV on the educational system. National AIDS program officials or others responsible for ensuring data use should not be afraid to draw conclusions from the data presented, or to suggest specific action to improve HIV prevention and care policies.

Data can be packaged to meet the interests of virtually any sector. The ministry of labor may want to know how widespread risk behavior is in the urban adult population in order to anticipate training needs as well as to increase support for HIV prevention in the workforce. The finance ministry might be startled by the implications of financing health care if 10 percent of those reporting risk behavior were to become infected with HIV. The private sector and non-government organizations can also be interested in the results of BSS and be persuaded to act on them if they understand the relevance to their own work. Again, the careful selection of relevant data and its presentation in the right language are fundamental to success. Private firms may respond to the language of the bottom line, while development organizations may be persuaded to contribute more to preventing HIV when information is couched in the language of rights and responsibilities.

Choosing relevant data requires some attention to detail. In some cases, it may be helpful to present information for only some age groups, or for only one gender, to stress the relevance of the findings to the audience at hand.

There are many ways to get to an audience. One is to arrange meetings and to present information directly to a targeted group. This is often most effectively done by arranging invitations to speak at regularly scheduled meetings of the group. A presentation to the national chamber of commerce monthly lunch is likely to reach far more senior business people than a specially arranged seminar on HIV and the workplace. Another way of reaching a target audience is to use “back door” approaches such as the media. A feature article about HIV-related discrimination in the national legal review may, for example, be an effective way of reaching lawyers who collectively have the capacity to press for more effective enforcement of anti-discrimination laws.

One type of audience deserves special attention: that is any group that has shown that it has the power to obstruct effective HIV prevention efforts. Information prepared for these groups should take special care to take into account the concerns that are at the root of their opposition to prevention efforts. For example, if parents are opposed to sex education in schools, it is not helpful simply to bombard them with data showing that their children are, indeed, sexually active from an early age. These data have to be presented sensitively, together with information (perhaps from neighboring countries if none is available locally) about the association between reproductive health education in schools and later age at first sex.

Finally, information about HIV and the behaviors that spread it should be fed back to the communities from which the information was collected, to enable community members to make informed choices about HIV prevention measures both at a personal and at a community level.

A strategy for presenting data

Data use must be planned for at the start of any surveillance exercise in order to ensure that all the data likely to be relevant to key decision-makers are collected. But a strategy for packaging and presenting data to the relevant audiences should also be planned for from the start.

Ideally, a country will have developed a data dissemination plan as part of its overall framework for the monitoring and evaluation of the national response to HIV. This plan should specify the contribution of all the different actors in surveillance, monitoring and evaluation. The role of different groups in packaging and disseminating information, including information generated by BSS, should be specified in this plan. It should also include mechanisms for data sharing between groups involved in HIV prevention and care work.

The roles and responsibilities of different groups will vary by country. The institution actually undertaking BSS data collection and analysis will at a minimum be required to produce a full technical report of the BSS results. Data analysts may also be called upon to do additional analysis not included in the general report in order to meet the needs of particular data users.

The packaging of data for different users and the active lobbying of these users may be the responsibility of surveillance managers, or may fall elsewhere within the national structure (it may, for example, lie with a multisectoral AIDS committee). Whoever is responsible must certainly have access to more than just the BSS data.

A key consideration is speed. Data from BSS or other sources should be presented as soon as possible after it has been collected. This may entail publishing preliminary results for key indicators in a summary report within a month or two of data collection, while data analysis is continuing. A full report can be published once data analysis is complete.

Essential "products" of BSS and HIV surveillance systems

A country may decide to divide up responsibilities for data use in different ways. However most data use strategies should include a number of basic "products" derived from the information collected. Most of these will be produced at least annually. They include:

1. A full technical report of the sentinel surveillance systems for HIV and STDs.
2. A full technical report of the behavioral surveillance system.
3. A non-technical review of the national HIV epidemic, combining data from the technical reports as well as other sources such as academic studies.
4. A one or two page press release focusing on the main findings of the BSS and HIV sentinel surveillance systems, to accompany the release of the non-technical report.

5. A series of "issues briefs" which package data from the surveillance systems together with data from other sources for the use of different sectors, as described above.
6. A schedule of meetings with members of the community from which data were gathered, carefully explaining the implications of the findings for the community and the individuals within it.

Data presentation for clarity and impact

Choosing the right information for the audience and presenting it persuasively are the two keys to turning data into action. Simple issues surrounding the physical presentation of data can help increase its use. Some suggestions for data presentation follow:

A picture is worth a thousand words

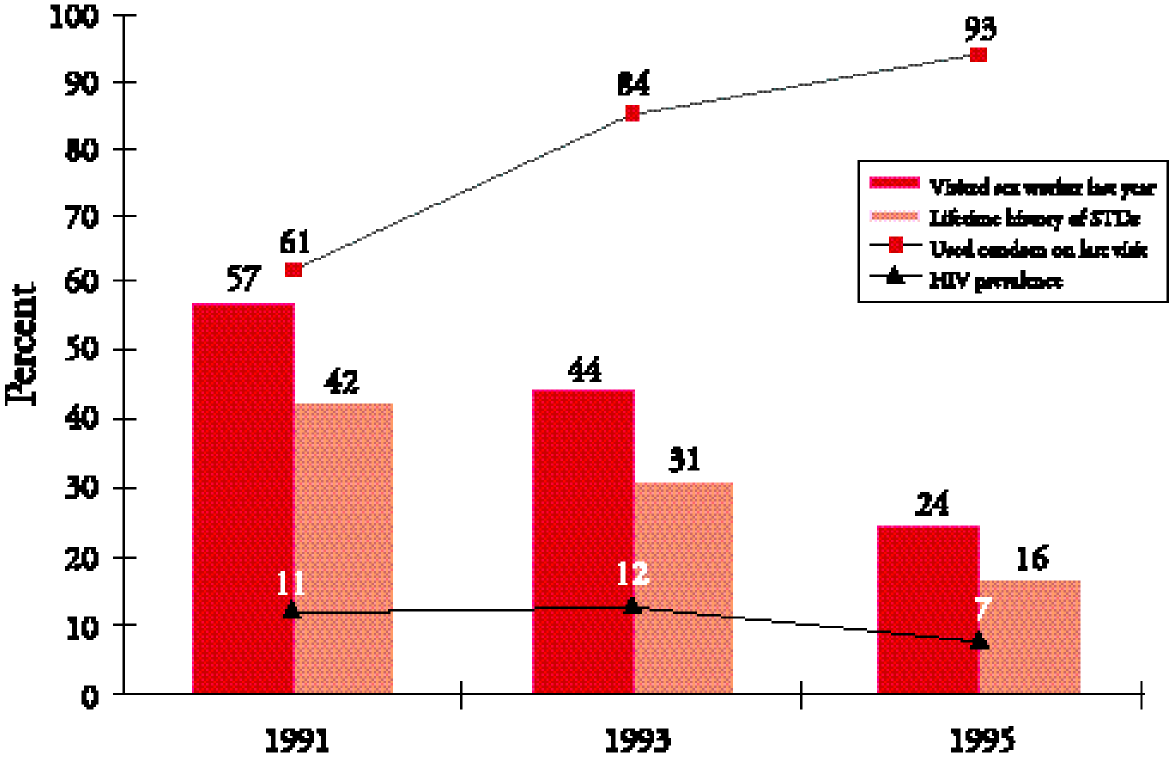
Graphic presentation of information from BSS and other sources of surveillance information is much more persuasive to the majority of people than tables or text. Bear in mind that many people may want to reproduce graphics to use in their own presentations, or in combination with other data, so they should be virtually self contained. A good graphic contains:

- A title that clearly specifies what is being measured, including the population in the denominator, the location and the time (e.g. year) of data collection. Parameters of the indicator should also be specified in the graphic, although if this overloads the graph titles, they can sometimes be included in the axes titles or the legend
- A source
- Value labels for each data point. This allows people to read off values and either recreate the graph or refer to them in a text or speech. Where there are many data points on a graph and data labels are likely to cause confusion, the base data for the graph can accompany it in a small table.
- Significance levels and/or confidence intervals. In more technical reports, the p-value itself may be reported on the data series for the graph. For more general presentation, relevant data series can simply be labeled "statistically significant".

More sources are better than fewer

There are elements of uncertainty associated with most aspects of HIV-related surveillance, monitoring and evaluation, even after all the relevant statistical analyses have been performed. People are more likely to be persuaded that observed changes are real if different types of data all point in the same direction. A graph showing a significant rise in self-reported condom use will be more believable if it is presented in conjunction with other data showing a rise in condom sales than if it appears alone. These different data types may not necessarily come from the same source. Some may be generated by BSS or HIV sentinel surveillance while others may come from routine health system reporting or retail surveys. Figure 9 shows data from a study among young men in Thailand. In this study, fewer men reported recent commercial sex partners in each year of the study, and among those that did, condom use with sex workers rose dramatically. These changes in self-reported behavior are strongly supported by physical evidence of lower risk behavior, in the form of lower STI and HIV prevalence.

Figure 9 : HIV and STD prevalence, visits to sex workers in the last 12 months, and condom use at last visit to sex worker, among 21 year-old military conscripts. Northern Thailand, 1991-1995



Source : Nelson K, Celentano D, Eiumtrakol S, et al.: Changes in sexual behavior and a decline in HIV infection among young men in Thailand. N Engl J Med 1996, 335:297-303

Data tables: the more information the better

When presenting data in tables, many of the same standards hold true. Clear descriptions of the parameters of the indicators (e.g. time reference periods etc) are necessary, and special care should be taken to ensure that it is clear who is included in the denominator. In technical reports, the more information given in a data table the better. This is because end users of the data may wish to reanalyze it in ways that meet their particular needs. This is generally only possible if full information is given about the numbers of respondents in each sample and sub-sample. It is usually helpful to give the numerator and the denominator for each indicator, as well as the percentages, so that users have maximum flexibility in interpreting and reanalyzing data.

The more user-friendly the presentation of the data, the more likely it is to be used.

CHAPTER 9

INDICATORS

9 Indicators

This guide identifies a set of indicators and methods for measuring them to be used at the national level. These indicators define aspects of behavior that are key to the spread of HIV, behaviors that HIV prevention programs generally try to change. They provide a way to track changes in those behaviors over time. They also provide a convenient way to compare levels of risk behavior between different population groups, so that decisions can be made about the efficient allocation of prevention resources.

Over the last few years, a great deal of work has been put in to developing standardized indicators for HIV-related risk behavior. Standardization is important to ensure comparability over time and between population groups. FHI, publishers of these guidelines, have been actively involved together with a number of national and international partners in a global initiative to improve the monitoring and evaluation of national AIDS programs. An important part of this initiative has been to develop a minimum set of key indicators which national AIDS programs can use to monitor progress in achieving HIV prevention and care goals. These indicators are published in National AIDS Programmes: A Guide to Monitoring and Evaluation, which are available on the internet at **http://www.unaids.org.**

The indicators in this chapter include all of the newly-agreed indicators in this minimum set which are relevant to prevention programs and can be measured using BSS methodology. The chapter also specifies a wider set of indicators which may be of particular interest to countries wanting more detailed information about HIV-related risk behaviors.

How are these indicators selected?

Essentially, for prevention efforts to make a difference to the course of the HIV epidemic, three things have to happen :

1. The intervention has to be delivered as planned
2. It has to reach the people for whom it was intended
3. Those people have to adopt behaviors that reduce the risk of HIV transmission

Indicators can be defined for each of these levels, but BSS concentrates on measuring the third level : the behaviors which directly influence the HIV epidemic. These are the behaviors that determine :

- The likelihood that an uninfected person will come into contact with an infected person. This is determined by number and type of sexual partners, or by patterns of needle exchange.
- The likelihood that transmission of HIV will occur if that contact comes about. With regard to sexual behavior, this is determined principally by levels of condom use, but also by other factors such as the presence of another STI (influenced in turn by treatment-seeking behavior). In drug injecting it is determined by equipment sharing practices.

So indicators need to be selected that measure these aspects of risk behavior. But they have to share other qualities too. Indicators should above all be relevant to program effort. It bears repeating : there is no point trying to measure changes in behavior if you are not doing (or planning to do) anything to bring about the change. Indicators need to be capable of measuring trends over time (so yes/no type measures such as "the existence of a law requiring the regular screening and treatment of sex workers for STIs" would not be considered a useful indicator). Indicators need to be easy to interpret. This has proven a stumbling point for indicators of attitudes, in particular, since many attitudinal questions invite an element of "it depends" in the response, so that it is hard to be sure what exactly is being measured. The precise wording of questions determines to a large extent how easy behavioral indicators are to interpret. Recommendations for ensuring the clarity of a questionnaire are made in Chapter 5. Finally, indicators need to be feasible to collect.

While most of the suggested indicators focus on sexual and drug-taking behaviors themselves, BSS surveys may want also to investigate factors likely to promote high-risk sexual behavior (such as alcohol and drug use) or to reduce it (such as knowing someone with AIDS, having been exposed to a prevention program, or knowing one's own HIV status). Accordingly a small number of indicators are defined in these areas. The questionnaires also provide information on all sorts of other aspects of risk behavior and exposure to risk, which may be very helpful in program planning, and in helping to interpret changes over time in key indicators. This includes socio-demographic information that can be used to compare samples over time, for example the country of origin of sex workers, or the educational level of men who have sex with men and are sampled in cruising areas. These are not included as indicators in their own right, since they are not generally things that prevention programs are directly trying to influence. They do not therefore meet the first criterion of indicator selection, which is that an indicator should be relevant to program effort.

The standard questionnaires are accompanied by additional modules that allow for the calculation of a number of other indicators that have traditionally been collected in Knowledge, Attitudes, Behaviors and Practices (KABP) surveys. These include measures of risk perception and health-seeking behavior. These have not been included in the list of indicators cited here, because experience has shown that trends over time in these indicators are difficult to interpret. It is strongly recommended that more qualitative data collection techniques that better explain the reasons behind such attitudes or behaviors be used in monitoring these types of responses to HIV.

Countries conducting BSS may want to add a few indicators to the list presented here, to look at aspects of risk behavior and prevention which are particularly relevant to their programs. In selecting and defining such indicators, care should be taken to ensure that they meet the above criteria.

The importance of being precise

All the indicators chosen here are very carefully defined. It is absolutely vital (in defining an indicator as well as in analyzing and presenting the data) that the ***numerator,*** the ***denominator*** and the ***time reference period*** be precisely defined. The exact definition for any terms open to interpretation (such as "commercial sex" or "non-regular partner") should also be given.

The denominator, particularly, is a frequent source of confusion. Some indicators are calculated using all respondents in the denominator, while others restrict the denominator to only those respondents who report a certain behavior, for example only those who have had sex in the past year, or only those who have had sex with a non-regular partner in the last year. The denominator for similar indicators sometimes differs according to the sub-population surveyed. For example, for reasons that are given below, indicators of multiple partnerships for young people include all respondents in the denominator, one word whereas the equivalent indicator for adults includes in the denominator only those who have had sex in the past year.

The standardized indicators have been developed following long years of trial (and a fair bit of error) in dozens of countries and situations around the world. It is strongly recommended that standard definitions be used, and changes to the standard definitions should not be made lightly. However, if there is a compelling reason to change any parameter of a standardized indicator, it is absolutely vital that changes are clearly stated and carefully defined, so that the indicator can be measured the same way in future rounds of behavioral surveillance.

Limitations of indicators

Indicators are just that. They give an indication of the magnitude or direction of changes over time. They can not, however, tell managers much about why the changes have or have not occurred, and so are not always useful for diagnostic purposes. For these purposes, other types of data are needed in conjunction with the indicators specified here. In particular, measures are needed of the first two aspects of programming mentioned above (was the intervention delivered ? Did it reach its intended audience). Qualitative data is also needed to answer the "why?" question. Alone, the indicators discussed here are not able to attribute measured changes to a particular intervention.

KEY INDICATORS

What follows is a full description of each of the indicators, arranged according to the appropriate respondent group. The first grouping (indicators for adult men and women) are intended for use with men and women who are identified as belonging to occupational groups or sub-populations other than sex workers, drug users or men who have sex with men (although there may of course be some overlap between groups). Each indicator, along with its denominator and its numerator, is defined. The relevant questionnaires and question numbers which yield the information are listed. The purpose and interpretation of the indicator is given, along with its strengths and limitations. Indicators that are also included in the MEASURE Evaluation/UNAIDS Guide to the Monitoring and Evaluation of National AIDS Programs are also labeled with the number given to them in that guide.

In this section of the document, the following acronyms are used:

MSM : men who have sex with men
IDU : injecting drug user
FSW : female sex worker

Indicators for adult men and women

Adult Indicator 1
Knowledge of HIV prevention methods

Definition

Numerator :	Number of male/female respondents able to identify consistent condom use and mutually monogamy between HIV negative partners as methods of reducing the risk of contracting HIV, in response to prompted questions.
Denominator :	Total number of male/female respondents surveyed.

Measurement tools

Adult questionnaire   Q903, Q905

What it measures

Early assumptions that knowledge about AIDS and how to prevent it would lead to behavior change have proven optimistic. However, there is no doubt that knowledge is an important prerequisite for behavior change. Most AIDS programs targeting the general population promote mutual monogamy and condom use as the primary ways of avoiding HIV infection among the sexually active men and women who make up the majority of all adults in virtually every population. This indicator measures the extent to which those messages have reached the general population or the specific sub-population surveyed.

How to measure it

The indicator is derived from correct answers given for both (Q903+Q905) primary sexual prevention methods for sexually active adults, following prompted questions in a survey. Someone only identifying one of the two ways is not counted in the numerator of the indicator. All respondents surveyed are included in the denominator, regardless of whether they have ever heard of AIDS or not. The indicator components should also be reported separately to show changes in specific knowledge areas.

The precise wording of the prompted questions must be given careful thought in each linguistic and cultural context. It should be noted that the correct prevention methods prompted for should be interspersed in the questionnaire with misconceptions used to calculate the next knowledge indicator.

Strengths and limitations

In many countries, the score on this indicator will be high and it will be hard to measure incremental changes. This indicator is therefore particularly useful in countries where knowledge is not high. Disaggregation of the indicator by individual questions, residence, gender or age group may provide useful pointers to gaps in information flows.

The indicator uses promoted data. One of the challenges in measuring knowledge is deciding how much to jog people's memory through prompted questions. It is probably true that spontaneous answers are a better reflection of the respondent's actual application of knowledge than prompted responses. For example, if a person regularly uses condoms to protect themselves from HIV, then condom use is likely to be the first answer they give when asked how HIV can be prevented. The trouble with unprompted or spontaneous responses (e.g. "What ways can one protect from HIV?") is that they tend to be extremely variable between populations and across time, and this variability does not always reflect true differences in knowledge. Rather, it is likely to be because of variation in the interviewer's ability to solicit spontaneous responses, and their preference for certain response codes. Prompted questions are therefore preferred for the purposes of constructing standardized knowledge indicators that are comparable across time.

Previous knowledge indicators have included abstinence as a "correct" method of prevention used in this indicator. Abstinence is an extremely important prevention option for young people. However research in many settings shows that it is rarely used as a primary HIV prevention method among adults who are already sexually active. In addition, people who know that HIV is sexually transmitted are highly likely to know that not having sex can reduce the risk of transmission. Negative responses on this item are more likely to result from sexually active adults believing that abstinence is not feasible than from their believing that abstinence does not provide effective protection. Experience in the field shows that some people consider the prompted question on faithfulness clumsy ("sticking to one uninfected partner who also has no other partners"). It is not, however, possible to drop the term "uninfected" from the question. In countries where HIV prevalence is high, many respondents know very well that faithful partners may not have been faithful in the past, and may already be HIV-infected. Where the sero-status of the partner has not been specified in the question, negative responses to this item have actually risen over time with rising knowledge in some countries.

This indicator has sometimes been constructed using only people who have heard of AIDS in the denominator. However since someone who has not heard of AIDS can not know how to prevent it, they represent a clear program failure and should be included in the denominator.

Adult Indicator 2
No incorrect beliefs about AIDS transmission

Definition

Numerator :	Number of male/female respondents who in response to prompted questions correctly reject the two most common local misconceptions about AIDS transmission or prevention, and who know that a healthy-looking person can transmit AIDS.
Denominator :	Total number of male/female respondents surveyed.

Measurement tools

Adult questionnaire	Q904, Q907, Q909 (questions depend on context)

What it measures

Many of the people who know that condoms protect against AIDS also believe that AIDS can be contracted from a mosquito bite or other uncontrollable event. Why bother to reduce the pleasure of sex, they reason, if they might in any case be infected by something as random as a mosquito bite ? At high levels of HIV-related awareness, a reduction in misconceptions that act as a disincentive to behavior change may actually be a better reflection of the success of an IEC campaign than an incremental shift in already high levels of "correct" knowledge. This indicator measures progress made in reducing misconceptions.

How to measure it

In a series of prompted questions, respondents are given correct and incorrect statements about AIDS transmission and prevention. Responses to the correct statements about prevention are used to calculate Adult Indicator 1. Responses to a question about infection status in healthy-looking people and two incorrect statements about transmission or prevention are used to calculate this indicator.

The incorrect statements will vary to reflect the misconceptions most common in the local context. Very often these will include the belief that AIDS can be spread through an insect bite or through kissing. Sometimes they will include beliefs about prevention or cure, such as AIDS being preventable by eating certain types of food or herbs, or by performing certain rituals after sex. One question will always center on knowledge of the "healthy carrier" concept, that is, knowledge that a person may contract HIV by having unprotected sex with an apparently healthy person. The exact wording may vary locally. For example, in some areas "fat" may be synonymous with "healthy" in this context and may better reflect people's misunderstanding of who constitutes a "safe" partner.

The local misconceptions should be identified shortly before a survey takes place. They may vary over time within the same country.

To be counted the numerator for this indicator, a respondent must correctly reject both misconceptions, and must know that a healthy-looking person can transmit AIDS. The denominator is all respondents, including those who have not heard of AIDS. For program purposes, the indicator should be disaggregated by misconception, and the percentage believing that a healthy-looking person cannot transmit HIV should also be reported separately.

Strengths and limitations

This indicator gives a good picture of the level of false beliefs that may impede people's determination to act on correct knowledge. When the data are disaggregated, they provide invaluable information for program managers planning future IEC campaigns, telling them which misconceptions must be attacked, and in which sub-populations.

A word of caution is in order, however. There is always a danger that the inclusion of misconceptions in a questionnaire actually increases their credibility. Preparatory research should be sure to establish commonly-held misconceptions (rather than run the risk of promoting new ones), and the questionnaire should make very clear that some of the statements in the sequence are true while others are false.

Adult Indicator 3
Number of non-regular partners in the last year

Definition

Option 1 : Median number of sexual partners in the last 12 months who are not spousal or cohabiting, and who are not commercial partners

Option 2 :

Numerator : Number of male/female respondents who have had sex with more than x non-regular (i.e. non-spousal, non-cohabiting and non-commercial)

Denominator : Total number of male/female respondents

Measurement tools

Adult questionnaire Q304

What it measures

The spread of HIV depends upon unprotected sex with people who also have other partners. Most monogamous relationships are cohabiting, although the reverse is not necessarily true. Partners who do not live together — who have sex only occasionally — are those who are most likely to have other partners over the course of a year. These partnerships therefore carry a higher risk of HIV transmission than partnerships that do not link in to a wider sexual network. AIDS prevention programs try to discourage high numbers of partnerships, and to encourage mutual monogamy.
This indicator aims to give a picture of the proportion of the population that engages in relatively high risk partnerships and that is therefore more likely to be exposed to sexual networks within which HIV can circulate.

How to measure it

Respondents are asked whether they have had sex in the past 12 months, and if so, whether they have had sex with a spouse or regular partner, with a non-regular partner, or with a commercial partner. They are further asked how many partners they have had of each type in the previous year. This indictor is calculated using information about the second category only. For this indicator the “threshold” number of non-regular partners should be defined locally. Since the purpose of an indicator is to measure changes in risk behavior over time, it is suggested that this threshold be derived from the first round of surveillance. The most appropriate threshold may depend on the distribution of risk behavior in a population, as well as on background levels of HIV prevalence.
Where background HIV prevalence is high and any non-regular sex carries a high risk of transmission, the threshold may be set at the median value recorded during the first round. In epidemics where the risk of HIV is concentrated in groups with higher than average risk behavior, the threshold may be set higher, say at the 75th percentile. This will track reductions in risk among those at the higher risk end of the spectrum.

Where sexual behavior is normally distributed around the mean, it may be sufficient to track changes in the median numbers of non-regular partners.

Strengths and limitations

Some measures of "non-regular" sex (such as M&E Sexual Behavior Indicator 1) measure *any sex* with non-regular partners. If people stop having sex with all of their extramarital partners, the change will be captured by changes in these indicators. However, if people decrease from seven extra-marital partners to one, the indicator will not reflect a change, even though potentially this may have a significant impact on the epidemic spread of HIV and may be counted as a program success. Adult Indicator 3 sets less stringent (and perhaps more realistic) thresholds for changes in risk behavior. It is especially useful in sub-populations with a high turnover of non-regular partners. Such populations are frequently chosen as respondent groups for BSS.

This indicator should always be interpreted together with Adult Indicator 6. to give a more complete picture of levels of extra-marital sex in a population. Together, these indicators give an idea of the success or failure of the "stick to one, faithful partner" message espoused by many HIV prevention programs.

Adult Indicator 4
Condom use at last sex with a non-regular, non-commercial partner

Definition

Numerator :	Number of male/female respondents who used a condom the last time they had sex with a non-regular (i.e. non-spousal, non-cohabiting and non-commercial) partner
Denominator :	Number of male/female respondents who have had sex with at least one non-regular partner in the past 12 months

Measurement tools

Adult questionnaire Q603

What it measures

If everyone used condoms every time they had sex with a non-marital or non-cohabiting partner, a heterosexually transmitted HIV epidemic would be almost impossible to sustain. While AIDS programs may try to reduce casual partnerships, they must also, if they are to succeed in curbing the epidemic, promote condom use in the casual partnerships that remain. This indicator tracks changes in condom use in these partnerships.

How to measure it

Respondents are asked whether they used a condom the last time they had sex with each of the three partner types listed (spouse or regular partner, non-regular partner, or commercial partner). Those who report condom use at last sex with a partner in the second category enter the numerator for this indicator. The denominator is all men/women reporting sex with a non-regular partner (excluding commercial partners) in the last 12 months.

Strengths and limitations

A rise in this indicator is an extremely powerful indication that condom promotion campaigns are having the desired effect among their principle target market.

Asking about the most recent sex act with a non-regular partner minimizes recall bias and gives a good cross-sectional picture of levels of condom use. One of the principal goals of HIV prevention efforts is to increase consistent condom use with all non-regular partners. This indicator cannot provide measures of consistency, which are covered in Adult Indicator 5. Inevitably, though, if consistent use rises, this indicator will also rise. Many years of use have proven this indicator to be very robust.

Adult Indicator 5
Consistent condom use with non-regular, non-commercial partners

Definition

Numerator : Number of male/female respondents who used a condom every time they had sex with any non-regular (i.e. non-spousal, non-cohabiting and non-commercial) partner over the past 12 months

Denominator : Number of male/female respondents who have had sex with at least one non-spousal, non-cohabiting and non-commercial partner in the past 12 months.

Measurement tools

Adult questionnaire Q606

What it measures

This provides the measure of consistent condom use in non-regular sex that is not provided by Adult Indicator 4.

How to measure it

Respondents who report non-regular sex partners are asked about condom use with the most recent partner of this type, and are further asked about consistency of condom use with all non-regular partners in the past year. Those who report *always* having used a condom with *every* non-regular partner in the last 12 months form the numerator for this indicator. The denominator is all men/women reporting sex with a non-regular partner (excluding commercial partners) in the last 12 months.

Strengths and limitations

Depending on the respondent's level of sexual activity, this indicator may refer to many different acts of sex with many different partners. It is therefore likely to be subject to recall bias. And because the question is asked in general terms, respondents may be more than likely to give an answer they believe is socially desirable than they would be if the question asked about a specific act of sex, such as the most recent sex act.

By only including people who say they always use condoms with every non-regular partner, this indicator sets the standard for consistent condom use very high. This may result in the indicator being measured at low levels for some years.

It has been suggested that respondents who report that they use condoms "most of the time" be included in the numerator. However this is likely to overstate true levels of consistent use. The "desirability" bias mentioned above probably means that many respondents who truly use condoms "most of the time" are already included in the numerator (by overlooking the rare occasions when they do not use condoms and reporting that they use them all of the time).

It is especially important to maintain a high threshold for this indicator where background HIV prevalence is high, since the protective value of occasional condom use diminishes as the likelihood of encountering an infected partner rises.

Adult Indicator 6 (men only)
Commercial sex in the last year

Definition

Numerator : Number of male respondents who have had sex with a female sex worker in the past 12 months

Denominator : Total number of male respondents

Measurement tools

Adult questionnaire Q304

What it measures

In heterosexual epidemics, the initial focal point of infection is very often among sex workers and their clients. Those clients then spread infection to their wives and girlfriends in the general population, as well as to other sex workers. In such situations, AIDS programs often focus on trying to reduce the proportion of men having sex with sex workers, as well as increasing condom use in these encounters. This indicator measures progress towards the first of these goals.

How to measure it

This indicator is intended ONLY for countries with well-defined populations of sex workers. It will most often be asked in BSS among groups of men who fit the profile of clients of sex workers (the military, truck drivers etc). Men are asked directly if they have had sex with a commercial partner in the previous 12 months.

While there may be several different types of definable sex workers in a given country, each with different perceived levels of risk, all these groups should be combined into an indicator of commercial sex use for monitoring and evaluation purposes.

Strengths and limitations

This indicator is useful in concentrated heterosexual epidemics in countries where commercial sex (and especially brothel-based sex) is common, and where a sex worker has a clearly defined role. This means it is most likely to be used in parts of the world where commercial sex has played a dominant role in the epidemiology of HIV, e.g. many countries in Asia.

Attempts to collect and analyze data using a wider definition of commercial sex (questions such as "Have you given or received money or gifts in exchange for sex?") have not yielded useful information. In epidemic terms sex workers are of interest because they have a high turnover of partners and therefore have a high probability of being exposed to infection and passing on infection. In many cultures, this is true of only a fraction of the people who have "received money or gifts in exchange for sex". If there is no locally specific term for prostitution, the chances are that this indicator is not relevant to the program. It should not be used in these situations.

The indicator is also of limited use in very high prevalence epidemics, since differences in risk associated with sex with a sex worker compared with any other casual partner may not be very substantial.

Some men may respond to the HIV epidemic by reducing, but not eliminating, their purchase of sex. This indicator is not sensitive to these changes. It should be interpreted in conjunction with Adult Indicator 7.

Adult Indicator 7 (men only) Number of commercial partners in the last year

Definition

Option 1 : Median number of commercial sex partners in the last 12 months

Option 2 :

Numerator : Number of male respondents who have had sex with more than x commercial partners in the past 12 months

Denominator : Total number of male respondents

Measurement tools

Adult questionnaire Q304

What it measures

High partner turnover is a prime determinant of the early sexual spread of HIV. Sex workers and their regular clients often contribute disproportionately to the early spread of the virus, and clients also provide a "bridge" though which HIV can pass into the general population. Adult Indicator 5 measures the proportion of men in the respondent groups of interest that have any contact with commercial sex workers, but it is not sensitive to reductions in frequency of commercial sex, or overall numbers of commercial partners. This indicator attempts to give an idea of reductions (rather than elimination) of risk behavior. It is intended principally for use among men whose occupations or social situation create the conditions for the frequent purchase of sex.

How to measure it

Respondents are asked whether they have had sex in the past 12 months, and if so, whether they have had sex with a spouse or regular partner, with a non-regular partner, or with a commercial partner. They are further asked how many partners they have had of each type in the previous year. This indictor is calculated using information about the third category only. For this indicator the "threshold" number of commercial partners should be defined locally. Since the purpose of an indicator is to measure changes in risk behavior over time, it is suggested that this threshold be derived from the first round of surveillance There may be wide variance in the number of commercial sex partners, so a measure of the mean number of partners may be hard to interpret. Reductions in the median number of partners would be encouraging.

Because HIV prevalence in sex workers has reached high levels in many countries, and any unprotected sex with sex workers carries a high degree of risk, it is suggested that any threshold be set fairly low. One suggestion would be to set the threshold at the median number of commercial partners measured in the first round of surveillance.

Strengths and limitations

This indicator shares the strengths and limitations of Adult Indicator 3.

Adult Indicator 8
Condom use at last sex with a commercial partner

Definition

Numerator: Number of male respondents who used a condom the last time they had sex with a commercial partner

Denominator: Number of male respondents who have had sex with at least one commercial partner in the past 12 months

Measurement tools

Adult questionnaire Q503

What it measures

This indicator gives an indication of the success or failure of campaigns to increase condom use among clients of sex workers. It measures condom use by men with partners they consider to be commercial partners.

How to measure it

As with Adult Indicator 6, this indicator is only relevant to settings where commercial sex or prostitution is well defined. Men who report sex with a commercial partner in the previous 12 months are asked whether they used a condom the last time they had sex with a sex worker.

The indicator is the number of men who report that they used a condom at last sex with a sex worker, divided by all those say they have had sex with a sex worker in the last 12 months.

Strengths and limitations

This indicator is invaluable in tracking the success of major programs to promote condom use in commercial sex.

Most AIDS programs aim to increase consistent use of condoms with sex workers. Surveys of clients of sex workers will almost certainly want to ask whether they use a condom always, sometimes or never during sex with sex workers over the last 12 months. However the pressure to say "always" is strong. Asking about a particular, and recent, act of sex may give a more robust measure of levels of condom use in commercial sex. This measure should therefore be used as the core indicator. However it is strongly recommended that programs focusing prevention resources on increasing condom use in commercial sex also construct an indicator of consistent use of condoms in commercial sex, as described in Adult Indicator 9. Where both questions are asked, the "last time you had sex with a sex worker" the question should precede the "always, sometimes, never" question.

Where there are several distinct populations of sex workers with different levels of perceived risk — for example, brothel-based sex workers may be thought of as having riskier behavior than girls in night-clubs — data may be collected separately for separate categories of sex worker. This can provide important information for programming. For example, men may report very high levels of consistent condom use in brothels, but much lower levels with women working out of night clubs. This may be a warning signal for a shift of the high prevalence from one group to another. In constructing the indicator, however, only the last commercial sex partner of any sort should be considered.

Adult Indicator 9
Consistent condom use with commercial partners

Definition

Numerator : Number of male respondents who used a condom every time they had sex with any commercial partner over the past year

Denominator : Number of male respondents who have had sex with at least one commercial partner in the past 12 months.

Measurement tools

Adult questionnaire Q506

What it measures

This provides the measure of consistent condom use during commercial sex.

How to measure it

Respondents who report commercial sex partners are asked about condom use with the most recent partner of this type, and are further asked about consistency of condom use with all commercial partners in the past year. Those who report *always* having used a condom with *every* commercial partner in the last 12 months form the numerator for this indicator. The denominator is all men reporting sex with a commercial partners in the last 12 months.

Strengths and limitations

This indicator shares the limitations of Adult Indicator 5. Because the risk of HIV transmission in unprotected sex with a sex worker is generally higher than in unprotected sex with other types of partners, any inconsistency in condom use can carry a high likelihood of spreading the virus. Many countries have invested considerable resources in trying to ensure that condoms are always used in commercial sex encounters, so measures of consistency in this field are extremely important programmatically. It is therefore critical that this indicator include in the numerator only those men who report always using condoms with all commercial sex partners.

Adult Indicator 10
Unprotected sex with A higher-risk partner

Definition

Numerator : Number of male/female respondents who reported not always using a condom with every non-regular partner and every commercial partner

Denominator : Total number of male/female respondents.

Measurement tools

Adult questionnaire	Q707

What it measures

This gives an overall summary level of sexual behavior that carries an elevated risk of HIV. It provides a sort of summary of prevention failure. Only respondents who have abstained, been entirely faithful to their spouse or live-in partner, or have use a condom in every act of non-spousal sex will escape the numerator in this measure.

How to measure it

This indicator uses a combination of information on sex and consistent condom use with different partner types. The denominator is the entire sample of respondents, including those who have never had sex, or had no partners in the past year.

Strengths and limitations

This provides a useful, single summary indicator of sexual risk in a sub-population of interest. Like all summary or composite indicators, it records trends over time that may be slightly difficult to interpret. This is because "improvements" (such as lower proportions of people having commercial sex) in one part of the indicator may mask "deterioration" (such as a shift to more non-commercial partners with whom condom use is lower) in another aspect of the indicator. Nonetheless, real drops in overall levels of sexual risk behavior in a population will almost certainly be reflected in a downward trend in this indicator.

Adult Indicator 11
Population seeking voluntary HIV tests

Definition

Numerator : Number of respondents who have ever voluntarily requested an HIV test, received the test and received their results.

Denominator : Total number of respondents.

Measurement tools

Adult questionnaire Q914, Q915, Q916

What it measures

The coverage of quality VCT services will go a long way towards determining whether those services achieve their three-fold aims of providing an entry point for care and support, promoting safe behavior and breaking the vicious circle of silence and stigma.

This indicator aims to give an idea of the reach of voluntary HIV testing services in groups who represent different levels of risk in the general population.

How to measure it

Respondents are asked whether they have ever requested an HIV test, whether they were tested and if so whether they have received the results. Those having ever requested a test and received the results form the numerator, while the denominator is all respondents in the survey.

The questionnaire prefaces the questions by saying " I do not want to know the results of the test....". In addition to having information on the reach of VCT services in the populations of interest over time, it will be useful also to know the percentage of the population surveyed who have been tested and received the results *in the last 12 months,* a more time-sensitive measure. To this end, a further question is included about the approximate date of the most recent test.

Strengths and limitations

The survey question specifies that the test must have been requested by the respondent. In many situations, people may assume that their blood has been tested for HIV at some time, and this is especially true in sub-populations in which unlined anonymous HIV surveillance takes place. These involuntary tests, whether real or perceived, are excluded in the calculation of this indicator. So are tests made for diagnostic purposes without the consent of the client, even if the client was then told of the results. Such tests do not reflect either the coverage of or the demand for testing services ; nor do they take into account that the measure emphasizes the 'voluntary' element desired for HIV tests. For that reason, survey questions must specify that the person requested a test.

This indicator gives some idea of the increasing coverage of services that meet people's demand for testing. It is not, however, limited to voluntary testing and counseling services staffed by trained counselors. It may therefore include tests requested from private doctors who do not necessarily provide any counseling.

The "ever tested" measure is less sensitive to recent trends in test-seeking behavior than a time-bound measure such as "tested in the last 12 months". If voluntary counseling and testing services are widely available and actively promoted within a sub-population, this cumulative measure may eventually reach quite high levels. At this stage, the indicator may be time-limited to respondents who have requested an HIV test and received the results in the last 12 months. Note that in high-prevalence populations with good coverage of testing services, trends in the time-bound indicator can be expected to be affected by the fact that people who have tested HIV positive will not return for further testing in future years.

Adult Indicator 12
Exposure to interventions

Definition

Denominator : Number of respondents reporting having been exposed to specific HIV prevention interventions

Numerator : Total number of respondents surveyed.

Measurement tools

Adult questionnaire	Section 10

What it measures

The purpose of this indicator is to document the reach of specific HIV prevention efforts in the population of interest. Increasing the coverage of intervention efforts to levels that can actually impact on the risk of HIV transmission can be a tremendous challenge for public health workers. A rise in this indicator over time measured progress towards achieving coverage of specific interventions in the sub-populations that are the intended beneficiaries of the programs.

How to measure it

The indicator can be constructed for many different elements of programming for adult groups. These may range from recall of IEC messages to use of STI care services. Questions will obviously have to be situation-specific, and must be developed to meet the surveillance and program information needs of each country or region.

At the data analysis stage, exposure to interventions may be associated with lower risk behavior. It is not possible to conclude from repeat cross sectional surveys such as BSS that the exposure is the cause of the behavior change, since there may have been other factors affecting risk behavior. Taken together with program process and output indicators, however, exposure data can help to clarify whether exposure to a program may plausibly have contributed to any observed changes in behavior.

Indicators for youth

Note: *These indicators should be calculated separately for males and females*

Youth Indicator 1
Knowledge of HIV prevention methods

Definition

Numerator :	Number of male/female respondents able to identify consistent condom use, mutually monogamy between HIV negative partners and abstinence from sex as methods of reducing the risk of contracting HIV, in response to prompted questions.
Denominator :	Total number of male/female respondents surveyed.

Measurement tools

Youth questionnaire	Q703, Q705, Q706

What it measures

This is the same as Adult Indicator 1, except that it includes abstinence as an acceptable method of preventing HIV. HIV prevention and life skills programs aimed at young people generally try to equip people with the skills to delay sex until they feel it is appropriate, as well as to encourage safe sex when young people do choose to become sexually active. For some young people, abstinence may well be the prevention method of choice, and it should be included in the list of prompted prevention options.

How to measure it

The indicator is derived from correct answers given for three primary sexual prevention methods for young people.
A respondent identifying fewer than two of the correct methods listed is not counted in the numerator of the indicator. All respondents surveyed are included in the denominator, regardless of whether they have ever heard of AIDS or not. The indicator components should also be reported separately to show changes in specific knowledge areas.

Youth Indicator 2
No incorrect beliefs about AIDS transmission

Definition

Numerator : Number of male/female respondents who in response to prompted questions correctly reject the two most common local misconceptions about AIDS transmission or prevention, and who know that a healthy-looking person can transmit AIDS.

Denominator : Total number of male/female respondents surveyed.

Measurement tools

Youth questionnaire	Q704, Q707 (questions depend on context)

This measure is identical to Adult Indicator 2.

Youth Indicator 3
Median age at first sex

Definition

The age by which one half of young men or young women aged 15-24 have had first penetrative sex (median age), of all young people surveyed.

Measurement tools

Youth questionnaire	Q202

What it measures

A major program goal in many areas is delaying the age at which young people first have sex. Clearly, young people are protected from infection by abstinence. But there is evidence to suggest that a later age at first sex also reduces susceptibility to infection per act of sex, at least for women. This indicator measures the age by which half of the adolescent population is sexually active.
An upward shift in the indicator suggests that programs promoting abstinence among young people are working.

How to measure it

This measure is constructed from data on current virginity status among young people, NOT from retrospective questions about age at first sex. Young respondents are asked whether or not they have ever had penetrative sex.
A curve is plotted with the current age of the respondent on the y axis, and whether the person has ever had sex on the x-asis. The age at which the curve exceeds 50 percent is taken to be the median age at first sex.
On average, people reporting they are a

certain age will be six months older than that age. (For example those who say they are 15 will range from those who turned 15 on the day of the survey to those who will turn 16 the following day. Assuming an even age distribution, they will be on average 15.5). Half a year should therefore be added to the exact ages used in the calculation of the median age at first sex.

Strengths and limitations

Because this indicator is constructed from a question about current virginity status, it is sensitive to recent changes in the age at first sex. The indicator itself does not, however, give any idea of the full distribution of ages at sexual initiation. In some circumstances, such as when a significant proportion of girls are exposed to sex at very young ages, it may be the tails rather than the middle of the age curve which interest those designing prevention programs.

To allow for the construction of a robust indicator using this "current status" methodology, reasonable sample sizes are needed at each single year of age (preferably at least 100 respondents of each sex in single years, especially the single years at which the median age is expected).

Most questionnaires also include questions such as "How old were you when you first had sex?". These data are NOT used in the construction of this indicator. This is because they exclude people who have not yet had sex, and therefore tend to bias the median age downwards. Retrospective data can be used from age cohorts at which virtually everyone is already sexually active. However an indicator constructed in this way is not sensitive to recent changes in the age at first sex, and it is these recent trends that are of interest in monitoring the success of HIV prevention programs.

The indicator is most useful where the median is rather young — between 15 and 19 years. Where the median age at first sex is over 19 for both men and women, promoting abstinence among adolescents may be replaced by other priority interventions within the program and this indicator will diminish in importance and may not even be measured.

Youth Indicator 4
Youth sexually active

Definition

Numerator : Number of respondents reporting having had sex in the last 12 months.

Denominator : Total number of respondents surveyed.

Measurement instrument

Youth questionnaire Q205

What it measures

This indicator is a measure of sexual activity among young people. Because the youth questionnaire is designed for young people who are not married, it amounts to an indicator of premarital sex. A high score on this indicator reflects a failure of prevention messages stressing abstinence until marriage.

How to measure it

In a survey among unmarried people aged 15-24, respondents are asked about sexual activity. Those that report any sex partners in the last 12 months enter the numerator. The denominator is all respondents.

Like all indicators of sexual behavior, this should be reported separately for men and women. It may also be constructed separately for those aged 15-19 and 20-24, as appropriate. In some settings, the proportion of 20-24 years olds who are single will be very low, at least among women, and it may not be appropriate to construct the indicator for this age group in these cases.

Strengths and limitations

This indicator has a critical role in advocacy. Resistance to improved sexual education and service provision for young people frequently comes from parents or other authorities who believe that abstinence until marriage is the only acceptable message for youth. An indicator that tracks premarital sex tracks the success or failure of this message and may point to gaps in the current approach.

Youth Indicator 5
Youth with multiple partners

Definition

Numerator : Number of respondents reporting having had sex with more than one partner in the last 12 months.

Denominator : Total number of respondents surveyed.

Measurement tools

Youth questionnaire	Q206

What it measures

Prevention messages for youth tend to begin with abstinence and often focus also on mutual monogamy. But because sexual relationships among young people are frequently unstable, relationships that were intended to be mutually monogamous may break up and be replaced by other relationships in which similar intentions prevail. Particularly in high HIV prevalence epidemics, serial monogamy is not greatly protective against HIV infection. This indicator measures the proportion of youth that have been exposed to more than one partner in the last year. That is, the proportion for whom the "one, mutually faithful partner" message has failed.

How to measure it.

In a survey among people aged 15-24, respondents are asked about their sexual partnerships in the last year. Those that report more than one partner in the last 12 months enter the numerator. The denominator is all respondents.

The indicator should be reported separately for men and women. It may also be constructed separately for those aged 15-19 and 20-24, as appropriate.

Strengths and limitations

This indicator does not distinguish commercial and non-commercial partners. It tracks all multiple partnerships, regardless of their relative levels of risk. Again, it is especially useful for advocacy purposes. If this indicator is high, the message for parents and other adults is : not only are your children sexually active, they are also having sex with multiple partners. The HIV prevention needs of this group cannot be ignored.

Youth Indicator 6
Number of sexual partners among youth

Definition

Option 1 : Median number of sexual partners in the last 12 months, among unmarried male and female respondents

Option 2 :

Numerator : Number of male/female respondents who have had sex with more than x partners in the past 12 months

Denominator : Total number of male/female respondents

Measurement tools

Youth questionnaire Q206

What it measures

This is essentially the same as Adult Indicator 3. However it makes no distinction between partner types. It gives a good idea of the overall turnover of partners among young men and women. As with Adult Indicator 3., a threshold of risk must be chosen, and it is recommended that this choice be informed by the median number of partners recorded in the first survey round.

Youth Indicator 7
Condom use at last sex with a non-commercial partner

Definition

Numerator: Number of male/female respondents who used a condom the last time they had sex with a non-commercial partner

Denominator: Number of male/female respondents who have had sex with a least one non-commercial partner in the past 12 months

Measurement tools

Youth questionnaire Q403

What it measures

In many high HIV prevalence epidemics, it is clear that a high (and rising) proportion of HIV infections take place before marriage, but reluctance to provide services to decrease risk among people who choose to be sexually active before marriage is sometimes intense. Some national programs are beginning to actively promote the provision of services to young and unmarried people. This indicator tracks their success in reducing the risk of HIV infection in premarital sex by increasing condom use. A separate indicator tracks condom use among commercial partners.

How to measure it

In a survey among unmarried people aged 15-24, respondents are asked about their sexual partnerships by partner type (commercial and non-commercial), and condom use at last sex with each partner type is recorded. Those that report using a condom the last time they had sex with a non-commercial partner enter the numerator. The denominator is all single respondents who have had sex at least once in the last 12 months with a non-commercial partner.

The indicator should be reported separately for men and women. It may also be constructed separately for those aged 15-19 and 20-24, as appropriate. In some settings, the proportion of 20-24 years old who are single will be very low, at least among women, and it may not be appropriate to construct the indicator for this age group in these cases.

Strengths and limitations

This indicator tracks levels of risk in premarital sex. It does not cover condom use with commercial partners. In HIV epidemics where the virus remains concentrated in those with high partner turnover and the difference in levels of transmission risk between commercial and other types of partners is very large, this may not be appropriate. In this case, Young People Indicators 11 and 12 are preferable.

The indicator also gives no measure of consistency of condom use. This is covered in Youth Indicator 8.

Youth Indicator 8
Consistent condom use with non-commercial partners

Definition

Numerator : Number of male/female respondents who used a condom every time they had sex with any non-commercial partner in the past 12 months

Denominator : Number of male/female respondents who have had sex with at least one non-commercial partner in the past 12 months.

Measurement tools

Youth questionnaire	Q406

What it measures

This provides a measure of consistent condom use. It is similar to Youth Indicator 12.

How to measure it

Unmarried respondents aged 15-24 are asked about sex with different partner types, and those who report either commercial or non-commercial partners (or both) are further asked about the frequency of their condom use with each partner type. Those who report always using condoms with all the non-commercial partners they report having sex with in the last 12 months form the numerator. The denominator is all respondents who report any non-commercial sexual partner over the last 12 months.

Strengths and limitations

The measure shares the strengths and weaknesses of other measures of consistent condom use (such as Adult Indicator 8 and Adult Indicator 9) In addition, it does not distinguish between partner types. It should therefore be presented together with Youth Indicator 12.

Youth Indicator 9
Youth using condoms at first sex

Definition

Numerator :	Number of male/female respondents who used a condom the first time they ever had sex
Denominator :	Total number of male/female respondents who have ever had sexual intercourse.

Measurement tools

Youth questionnaire	Q202A

What it measures

It is generally believed that it is easier to maintain safe behaviors established from the onset of sexual activity than to change risky behaviors once they have become habitual.

In addition, data from a number of sero-surveys suggest that in high HIV prevalence areas, very high proportions of young women become infected with HIV during their first few acts of sex. The physical trauma caused by the rupture of the hymen may contribute to a high likelihood of infection during first sex.

Life skills programs for young people have therefore concentrated on promoting safe behavior right from the beginning of young people's sex lives. This indicator measures progress towards establishing safe behavior from the outset of people's sexually active lives. The indicator should of course be disaggregated by gender. Disaggregation by age and concentration on 15-19 year-olds will increase the sensitivity of the indicator to recent changes in condom use at first sex.

Strengths and limitations

One limitation of this measure is that where it is high, it may create a false sense of complacency. HIV and STIs are far from being the only concern for young people. Many adolescents are more concerned about the immediate threat of pregnancy than they are about HIV and STIs. Integrated life skills and reproductive health programs for young people stress avoiding unwanted pregnancies as much as they stress avoiding STIs, including HIV. High levels of condom use at first sex may in fact reflect growing use of condoms as a use of contraceptives. When sexual activity becomes more regular, young women may adopt longer-term forms of contraception, and abandon condom use. Because of this, it is important to present this indicator in conjunction with other indicators of condom use among young people.

Youth Indicator 10
Commercial sex among young men

Definition

Numerator : Number of unmarried male respondents who report at least one commercial partner in the last 12 months.

Denominator : Total number of unmarried male respondents.

Measurement tools

Youth questionnaire Q206

What it measures

This measure is identical to Adult Indicator 6., except that the denominator is restricted to unmarried men aged 15-24.

Youth Indicator 11
Condom use at last commercial sex among young men)

Definition

Numerator : Number of unmarried male respondents who report condom use during their last act of commercial sex

Denominator : Number of unmarried male respondents reporting at least one commercial partner in the last 12 months.

Measurement tools

Youth questionnaire Q303

What it measures

This measure is identical to Adult Indicator 8, except that the denominator is restricted to unmarried men aged 15-24.

Youth Indicator 12
Consistent condom use during commercial sex among young men

Definition

Numerator : Number of unmarried male respondents who report always using a condom with every commercial sex partner in the last 12 months.

Denominator : Number of unmarried male respondents reporting at least one commercial partner in the last 12 months.

Measurement tools

Youth questionnaire Q306

What it measures

This measure is identical to Adult Indicator 9, except that the denominator is restricted to unmarried men aged 15-24.

Youth Indicator 13
Youth seeking voluntary HIV tests

Definition

Numerator : Number of respondents who have ever voluntarily requested an HIV test, received the test and received their results.

Denominator : Total number of respondents.

Measurement tools

Youth questionnaire Q714, Q715, Q716

What it measures

This measure is identical to Adult Indicator 11, except that the denominator is restricted to young men and women aged 15-24. Like Adult Indicator 11, it may also be measured using the time reference period of 12 months.

Youth Indicator 14
Exposure to interventions

Definition

Denominator : Number of respondents reporting having be exposed to specific HIV prevention interventions

Numerator : Total number of respondents surveyed.

Measurement tools

Youth questionnaire	Section 8

What it measures

This measure is identical to Adult Indicator 12, except that the denominator is restricted to young men and women aged 15-24. The interventions specified in this indicator will obviously be those that are aimed specifically at reducing the risk of HIV transmission to and from young people.

Indicators for female sex workers

Female Sex Worker Indicator 1
Knowledge of HIV prevention methods

Definition

Numerator : Number of respondents identifying consistent condom use as a method of reducing the risk of contracting HIV, in response to a prompted question.

Denominator : Total number of respondents surveyed.

Measurement tools

Female sex worker questionnaire Q803

What it measures

This measures the proportion of sex workers who know that consistent condom use is an effective means of reducing the risk of contracting HIV. It differs from knowledge measures for the preceding groups because it is limited to the only primary prevention method relevant to sex workers.

How to measure it

The indicator is derived from the response given to a prompted question about means of reducing the risk of HIV transmission. Women who answer affirmatively to the question are included in the numerator. The denominator is all respondents, regardless of whether they have ever heard of AIDS or not.

It is expected that this indicator will be at very high levels in most sex-worker populations. However disaggregation by type of sex worker may point to information gaps useful for program planning. For example, unregistered sex workers or immigrants may have lower than average levels of knowledge.

Strengths and limitations

As with all indicators of knowledge, it should be borne in mind that knowledge alone is no indication of the capacity to exercise prevention skills.

Female Sex Worker Indicator 2
No incorrect beliefs about AIDS transmission

Definition

Numerator: Number of respondents who in response to prompted questions correctly reject the two most common local misconceptions about AIDS transmission or prevention, and who know that a healthy-looking person can transmit AIDS.

Denominator: Total number of respondents surveyed.

Measurement tools

Female sex worker questionnaire	Q804, Q807 (questions depend on context)

What it measures

This measure is identical in principle to Adult Indicator 2. However it is worth mentioning that there may be prevention or cure myths specific to the world of sex workers. These should be explored in the survey planning stage, and be used to replace more generally held misconceptions where appropriate.

Female Sex Worker Indicator 3
Condom use at last sex with client

Definition

Numerator: Number of sex workers who report using a condom with their most recent client

Denominator: Total number of sex workers surveyed.

Measurement tools

Female sex worker questionnaire	Q403

What it measures

This indicator measures the success of campaigns to promote condom use in commercial sex from reports given by sex workers. Collected in conjunction with self-reported data from clients of sex workers (Adult Indicator 8, Adult Indicator 9, and the equivalent Young People's indicators), this indicator will validate levels of condom use in commercial sex. For program purposes the indicator should be disaggregated by type of sex worker (brothel-based, freelance, licensed, illegal etc.) where appropriate.

How to measure it

Sex workers are asked whether they used a condom with their most recent client. The indicator is the number of sex workers who say they used a condom with their most recent client, divided by the total number of sex workers interviewed.

Strengths and limitations

The goal of most AIDS programs working with sex workers is an increase in the number of sex workers who always use a condom and thus are protected from HIV infection. The pressure to say "always" may be strong, and asking about a recent act of sex may give a more robust measure of levels of condom use with clients. Consistent condom use with clients is covered in Female Sex Worker Indicator 4. The difference between these two indicators can be useful for program purposes. What proportion of those who say they used a condom at last sex also say they are not regular condom users, for example? Do any sex workers who claim to "always" use condoms with their clients also say that they did not use one with their last client? Since a sex worker typically sees more clients than vice versa, it is unlikely that there will be an exact match between condom use reports from sex workers and from their clients. In addition, the time reference periods for the two indicators are very different. However if both data sets show trends in the same direction, confidence in this self-reported data is likely to be strengthened.

Female Sex Worker Indicator 4
Consistent condom use with clients in the last month

Definition

Numerator : Number of sex workers who report always using a condom with every client in the last month.

Denominator : Total number of sex workers surveyed.

Measurement tools

Female sex worker questionnaire Q406

What it measures

Sex workers typically have a very high turnover of partners, so even occasional lapses in condom use can lead to high levels of HIV transmission from clients to sex workers and vice versa. Consistent condom use is probably a more critical goal in this sub-population than in any other. The indicator is the proportion of all sex workers surveyed who report using a condom with every single client in the last month. For program purposes it should be disaggregated by type of sex worker (brothel, based, freelance, licensed, illegal etc.) where appropriate.

Strengths and limitations

This measure shares the strengths and weaknesses of other measures of consistent condom use. Note that the time reference period is restricted to one month, rather than the one year used for clients. This is because sex workers typically have several clients in a week, and often even in a day. Their ability to recall condom use in every act of sex over a longer period with any degree of accuracy is therefore likely to be limited. In countries with exceptionally high average turnover of clients, it may be appropriate to restrict this reference period to a week. Whichever of the two is chosen, it is crucial that it be clearly stated in all use and discussion of the indicator, and that it be used consistently over time.

Female Sex Worker Indicator 5
Sex workers injecting drugs in the last twelve months

Definition

Numerator :	Number of sex workers who report having injected drugs at least once in the last twelve months.
Denominator :	Total number of sex workers surveyed.

Measurement tools

Female sex worker questionnaire Q113

What it measures

In some countries, women engage in commercial sex partly to support drug use. Since injecting drug use is one of the most effective means of transmitting HIV this is of some concern. Sex workers who become infected with HIV through injecting drug use have a high probability of passing the infection on to substantial numbers of sexual partners.

How to measure it

Sex workers are asked directly whether they have injected drugs at any point in the last twelve months. Those who report drug injection in this period form the numerator. The denominator is all sex workers.

Strengths and limitations

There are very few prevention interventions that try directly to reduce injecting drug use among sex workers. If this indicator shows substantial "overlap" between drug injection and commercial sex, such programs may be warranted. Such findings may also suggest the need to add more extensive questions on risky drug injecting habits to future rounds of BSS with sex workers.

This indicator has advocacy value, too. It illustrates the extent to which sex workers may be putting themselves and their clients at risk of HIV infection. It may increase the incentive for clients to use condoms in commercial sex, and may be used to increase pressure for effective prevention programs that take into account the many factors driving sex worker behavior.

Female Sex Worker Indicator 6
Sex workers seeking voluntary HIV tests

Definition

Numerator : Number of respondents who have ever voluntarily requested an HIV test, received the test and received their results.

Denominator : Total number of respondents.

Measurement tools

Female sex worker questionnaire	Q814, Q815, Q816

What it measures

This measure is identical to Adult Indicator 11, except that the denominator is restricted to sex workers. Like Adult Indicator 11, it may also be measured using the time reference period of 12 months.

Female Sex Worker Indicator 7
Exposure to interventions

Definition

Numerator : Number of respondents reporting having been exposed to specific HIV prevention interventions

Denominator : Total number of respondents surveyed.

Measurement tools

Female sex worker questionnaire	Section 9

What it measures

This measure is identical to Adult Indicator 12, except that the denominator is restricted to sex workers. The interventions specified in this indicator will obviously be those that are aimed specifically at reducing the risk of HIV transmission to and from sex workers.

Indicators for men who have sex with men

Men Who Have Sex With Men Indicator 1 Knowledge of HIV prevention

Definition

Numerator : Number of respondents who correctly identify avoiding anal sex and using condoms during anal sex as means of reducing the risk of HIV infection, in response to prompted questions.

Denominator : Total number of respondents surveyed.

Measurement tools

Men who have sex with men questionnaire	Q903A, Q903B

What it measures

In HIV epidemics where there is a concentration of HIV infection or risk behaviors among men who have sex with other men, IEC campaigns are often designed to meet the specific needs of this population. Most of these campaigns promote non-penetrative sex and condom use during anal sex as ways of avoiding HIV infection. This indicator measures the extent to which those messages have reached members of a sub-population of men who have sex with men.

How to measure it

In a behavioral survey of men who have sex with other men, respondents are asked about their knowledge of AIDS, and whether it can be prevented. They are then prompted for various correct and incorrect means of prevention, including non-penetrative sex and condom use during anal sex. The indicator is derived from correct answers given for these two methods of preventing HIV transmission during sex between men. Someone giving correct answers to only one of the two is not counted in the numerator of the indicator. All respondents are included in the denominator, regardless of whether they have ever heard of AIDS or not.

Strengths and limitations

Clearly, there are many other ways of preventing HIV transmission in male-male sex besides those specified in the indicator. These include abstinence, condom use during oral sex, and mutually faithful partnerships among men who have tested HIV-negative and had no other partners since the test. The extent to which these different messages are stressed depends very much on the context in which male-male sex takes place. The “mutual faithfulness” message is, for example, much more likely to be emphasized in countries with well-established gay communities in which long term partnerships are common. It will be of far less importance in countries where a majority of men who have sex with men are also married, or where male-male sex is dominated by commercial exchanges. In order to make the indicator more comparable across different situations, the areas of knowledge cited are those that are a focus of prevention programs for men who have sex with men in almost all contexts. To be of additional use to program managers, data for this indicator may be disaggregated by prevention method, showing up strengths and weaknesses in existing IEC campaigns.

Men Who Have Sex With Men Indicator 2
No incorrect beliefs about AIDS transmission

Definition

Numerator : Number of respondents who in response to prompted questions correctly reject the two most common local misconceptions about AIDS transmission or prevention, and who know that a healthy-looking person can transmit AIDS.

Denominator : Total number of respondents surveyed.

Measurement tools

Men who have sex with men questionnaire	Q904, Q907 (questions depend on context)

What it measures

This measure is identical in principle to Adult Indicator 2. However, it is worth mentioning that there may be prevention or cure myths specific to the world of men who have sex with men. These should be explored in the survey planning stage, and be used to replace more generally held misconceptions where appropriate.

Men Who Have Sex With Men
Indicator 3
Anal sex with multiple partners in the last six months

Definition

Numerator :	Number of respondents who report anal sex with more than one other man in the last six months
Denominator :	Total number of respondents surveyed.

Measurement tools

Men who have sex with men questionnaire	Q306

What it measures

Unprotected anal sex is by far the highest risk behavior for transmission of HIV among men who have sex with men. Most interventions in this group aim both to decrease the overall number of partners and to increase condom use in all partnerships. This indicator attempts to measure changes in anal sex with multiple partners (and therefore exposure to sexual networks that may carry the risk of HIV transmission).

How to measure it

In a behavioral survey in a sample of men who have sex with men, respondents are asked about sexual partnerships in the preceding six months. For male partners, they are asked how many they had anal sex with. If the response is more than 1, the respondent enters the numerator for this indicator. The denominator is all respondents.

Strengths and limitations

Note that the time reference period for this denominator differs from those used for other groups. The standard time reference period for indicators of sexual behavior is 12 months. The six month period is used because in most cases where BSS is used in sub-populations of men who have sex with men, the sampling strategy tends to focus on cruising areas and other areas where men congregate specifically to seek other male partners. This means that those included in the sample are likely to be at the higher end of the spectrum of risk behavior, and to have a high turnover of partners. Indeed these are precisely the individuals of greatest interest to HIV prevention programs.

Groups with a high average turnover of partners are likely to have difficulty recalling the total number of partners over one year, the reference period commonly used in indicators of sexual behavior. The time reference period is reduced to six months to provide for more accurate recall. In situations where rapid assessment shows that a high proportion of men sampled have very high levels of sexual behavior, a time reference period of one month may even be considered for all indicators of sexual behavior among men who have sex with men.

One of the difficulties associated with the sampling methods used for men who have sex with men is that men who respond to the HIV epidemic by “cruising” for partners less often may drop out of the denominator, because they are no longer hanging out at the sites where sampling takes place. The behavior changes that are recorded by this indicator and others in this set are therefore likely to underestimate the true levels of risk reduction in a population.

Men Who Have Sex With Men Indicator 4 Number of anal sex partners in the last six months

Definition

Option 1 : Median number of male anal sex partners in the past 6 months, among men who have sex with men

Option 2 :

Numerator : Number of respondents who have had anal sex with more than x men in the past 6 months

Denominator : Total number of respondents

Measurement tools

Men who have sex with men questionnaire	Q306

What it measures

This is the MSM equivalent of Adult Indicator 3. Only male partners with whom the respondent has had anal sex in the last 6 months are included in the indicator. As with Adult Indicator 3, a threshold of risk must be chosen, and it is recommended that this choice be informed by the median number of partners recorded in the first survey round.

Men who have sex with men Indicator 5 Condom use at last anal sex with a non-commercial partner

Definition

Numerator : Number of respondents who report condom use at last anal sex with a non-commercial male partner

Denominator : Number of respondents who report anal sex with at least one non-commercial partner in the last 6 months

Measurement tools

Men who have sex with men questionnaire	Q503

What it measures

The single most common intervention among men who have sex with men is the promotion of condom use during anal sex. This indicator measures progress towards increasing the proportion of acts of anal sex that are protected against HIV transmission. It focuses on the last act of anal sex for reasons similar to those given in Adult Indicator 4. The indicator measures condom use by the insertive partner during the last anal act, but because details of the sex act may not be known, the respondent is asked whether he or his partner used a condom. A separate set of indicators (8 and 9) measure condom use specifically with commercial partners.

How to measure it

Respondents are asked about sexual partnerships with men in the preceding 6 months, about anal sex within those partnerships, and about condom use at last anal sex.

The numerator is the number of men reporting that a condom was used the last time they had anal sex with a non-commercial partner. The denominator is all men who reported having anal sex at least once in the previous 6 months with a non-commercial partner.

Strengths and limitations

The most serious limitation of this measure is that it does not distinguish between regular and non-regular partners and that information about sero-status is not known. Many couples who know their sero-status and are sero-concordant may choose not to use condoms within their regular partnership. Provided they use condoms in any sex with other partners, this represents no increased risk of transmission within the partnership. Where non-use of condoms within stable partnerships is common, the indicator will suggest higher levels of risk than actually exist.

However, defining "regular" partnerships in the context of men who have sex with men is fraught with difficulty, particularly in communities where male-male sex is clandestine. The fact that most BSS sampling methods among men who have sex with men result in sampled at the high-risk end of the behavioral spectrum means that even though some men will have regular partners, a high proportion of most recent sex acts are likely to have been between people who are not stable, monogamous partners and are therefore exposed to the risk of contracting or passing on HIV. Condom use at last anal sex with non-commercial partners probably gives a good indication of overall levels and trends of protected and unprotected sex in these higher-risk populations of men who have sex with men. For more specific condom use information on commercial vs. non-commercial partners, Indicator 8 should be used.

Men who have sex with men
Indicator 6
Consistent condom use in anal sex with non-commercial male partners

Definition

Numerator: Number of respondents who used a condom every time they had anal sex with non-commercial partners over the past 6 months.

Denominator: Number of respondents who have had anal sex with a non-commercial partner at least once in the past 6 months.

Measurement tools

Men who have sex with men questionnaire	Q505

What it measures

This provides a measure of consistent condom use in anal sex between men. It is similar to Youth Indicator 8.

How to measure it

Men who have sex with men are asked about both their commercial and non-commercial male sexual partners over the last 6 months. Those who report anal sex with any non-commercial male partner are further asked about the frequency of their condom use with those partners. Those who report always using condoms with all non-commercial partners they report having sex with in the last 6 months form the numerator. The denominator is all respondents who report any anal sex with a non-commercial partner over the last 6 months.

Strengths and limitations

The measure shares the strengths and weaknesses of other measures of consistent condom use (such as Adult Indicator 5 and Adult Indicator 9) In addition, it does not distinguish between partner types. Anal sex without a condom with a commercial partner is likely to carry a substantially higher risk of HIV transmission than sex without a condom with a regular non-commercial partner. For this reason, this indicator should always be presented together with Men Who Have Sex With Men Indicator 8.

Men Who Have Sex With Men Indicator 7
Men paying for sex with commercial partners

Definition

Numerator : Number of respondents who have paid for anal sex with another man at least once over the past 6 months.

Denominator : Total number of respondents

Measurement tools

Men who have sex with men questionnaire Q307

What it measures

In homosexual as in heterosexual relations, unprotected sex with a commercial partner carries a higher risk of HIV transmission than with a non-commercial partner. This is because male sex workers tend to have a high turnover of partners, so unless they consistently use condoms they are repeatedly exposed to the risk of infection. The indicator gives an estimate of the proportion of men in the sub-population of interest who are exposed to particularly high risk partners.

It is similar to Adult Indicator 6, but refers only to male commercial partners.

This indicator is intended to measure the proportion of men sampled who are *buying* anal sex with other men (whether insertive or receptive). Where there is an identifiable population of men selling sex, a separate questionnaire and sample can be developed for this sub-population.

Strengths and limitations

This indicator gives an idea of the overall proportion of men exposed to any commercial partner. Like Adult Indicator 6, it is not sensitive to changes that involve the reduction rather than the elimination of commercial partners.

This indicator includes only men who have paid cash for sex with other men. It is recognized that many other exchanges take place in return for sex. However the spectrum is wide, and exchange of non-cash items for sex may not imply that those who accept a gift or non-cash payment have a particularly high turnover of partners. Men who accept cash for sex tend to represent those with highest partner turnover and highest risk for HIV.

Men Who Have Sex With Men Indicator 8
Condom use at last anal sex with a commercial partner

Definition

Numerator : Number of respondents who report condom use at last anal sex with a male commercial partner whom they are paying cash for sex.

Denominator : Number of respondents who report anal sex with at least one male commercial partner in the last 6 months

Measurement tools

Men who have sex with men questionnaire	Q403

What it measures

This measure is the same as Men Who Have Sex With Men Indicator 5 except that it is restricted to condom use at last sex with commercial partners, and includes in the denominator anyone who has paid for anal sex at any time in the last 6 months.

Men Who Have Sex With Men Indicator 9
Consistent condom use in anal sex with commercial male partners

Definition

Numerator : Number of respondents who used a condom every time they paid for sex with any man over the past 6 months.

Denominator : Number of respondents who have paid for anal sex with a man at least once in the past 6 months.

Measurement tools

Men who have sex with men questionnaire	Q405

What it measures

This measure is the same as Men Who Have Sex With Men Indicator 6, except that it is restricted to consistent condom in anal sex with all commercial partners, and includes in the denominator anyone who has paid for anal sex at any time in the last 6 months.

Men Who Have Sex With Men
Indicator 10
Men who have risky sex with men and women

Definition

Numerator : Number of respondents who have had unprotected sex with a woman at least once in the last 6 months, and who have had unprotected anal sex with at least one other man in the last 6 months

Denominator : All respondents.

Measurement tools

Men who have sex with men questionnaire Q405, Q505, Q604, Q605

What it measures

Anal sex between men carries a relatively high risk of HIV transmission, especially if partner turnover is high. But many men who engage in this relatively risky sexual behavior also have sex with women. Unless all their sexual acts are protected by condom use, they may therefore be putting their female partners at elevated risk of contracting HIV. This behavior may be especially likely in societies where there is no clearly defined “gay” community, whose members self-identify as homosexual.

How to measure it

In a survey of men who have sex with men, respondents are asked about their male sexual partners over the last 6 months, and about consistent condom use with those partners. They are then asked about female partners in the last 6 months, and about condom use with those female partners. The numerator is men who report any anal sex with at least one man in the last 6 months and do not report always using condoms with every male partner, and who report sex with at least one woman in the last 6 months and do not report always using condoms with every female partner. The denominator is all respondents.

Strengths and limitations

This indicator is rather complicated to construct, since it requires several different pieces of data : sex with men in the last six months, consistent condom use with men in the last six months, sex with women in the last six months, and consistent condom use with women in the last six months.

It is not, however, difficult to understand. It gives a fairly accurate measure of the proportion of men who have sex with men who put female sex partners at risk because of their male-male sexual practices.

This indicator does not qualify as a key indicator because few if any prevention programs work to reduce the proportion of men who have sex with both men and women. However it is of immense value as part of an “early warning system”, one of the prime functions of BSS. The indicator can help to provide warning of the possibility of spread from a sub-population in which HIV may already by concentrated to a wider population of women and their other male partners.

Men Who Have Sex With Men Indicator 11
Men who have sex with men seeking voluntary HIV tests

Definition

Numerator : Number of respondents who have ever voluntarily requested an HIV test, received the test and received their results.

Denominator : Total number of respondents.

Measurement tools

Men who have sex with men questionnaire	Q914, Q915, Q916

What it measures

This measure is identical to Adult Indicator 11, except that the denominator is restricted to men who have sex with men. Like Adult Indicator 11, it may also be measured using the time reference period of 12 months.

Men Who Have Sex With Men Indicator 12
Exposure to interventions

Definition

Denominator : Number of respondents reporting having been exposed to specific HIV prevention interventions

Numerator : Total number of respondents surveyed.

Measurement tools

Men who have sex with men questionnaire	Section 10

What it measures

This measure is identical to Adult Indicator 12, except that the denominator is restricted to men who have sex with men. The interventions specified in this indicator will obviously be those that are aimed specifically at reducing the risk of HIV transmission to and from men who have sex with men.

Indicators for injecting drug users

Injecting Drug User Indicator 1
Knowledge of HIV prevention

Definition

Numerator :	Number of respondents who correctly identify switching to non-injecting drugs and avoiding sharing injecting equipment as methods of preventing HIV transmission, in response to prompted questions.
Denominator :	Total number of respondents surveyed.

Measurement tools

Injecting drug user questionnaire	Q1108, Q1109

What it measures

In HIV epidemics where there is a concentration of HIV infection or risk behaviors among injecting drug users, some programs actively promote HIV prevention in this population. Most efforts to reduce transmission between drug injectors try to encourage safer drug-taking, including using non-injecting drugs and not sharing injecting equipment. This indicator measures the extent to which drug injectors are aware of these methods of preventing HIV transmission.

How to measure it

In a behavioral survey in a community of drug injectors, respondents are asked about their knowledge of AIDS, and whether it can be prevented. They are then prompted for various correct and incorrect means of prevention, including switching to non-injection drugs and avoiding sharing injecting equipment. The indicator is derived from correct answers given for both prevention methods. Someone giving correct answers on only one way is not counted in the numerator of the indicator. All respondents are included in the denominator, regardless of whether they have ever heard of AIDS or not. Results for each component of the indicator should also be reported.

Strengths and limitations

This indicator will be most useful where efforts are being made to reach injecting drug users with prevention messages that help them reduce exposure to HIV infection, both for themselves and for other members of the drug-taking community. Where such programs exist but concentrate only on a single message backed up by appropriate services, it may be possible to restrict the indicator to knowledge about that means of prevention. Obviously it will be difficult to use these data if programs are not openly informing the drug using public about using clean needles and safer methods to use drugs.

In the past some HIV prevention programs among injecting drug users promoted carefully cleaning injecting equipment with bleach between users as an HIV prevention method. Recent research calls into question the effectiveness of this method, and few programs for drug users now actively promote it. It is therefore not included as a prevention method in this indicator.

Many programs aimed at drug injectors also promote condom use in order to limit the spread of HIV from infected drug users to their sexual partners. This is covered in indicators of sexual risk, and is not included in the indicator of knowledge specific to prevention in drug-injecting situations. But, it may be useful to include an indicator similar to Adult Indicator 1 for the an IDU sub-population as well.

Injecting Drug User Indicator 2
No incorrect beliefs about AIDS transmission

Definition

Numerator :	Number of respondents who in response to prompted questions correctly reject the two most common local misconceptions about AIDS transmission or prevention, and who know that a healthy-looking person can transmit AIDS.
Denominator :	Total number of respondents surveyed.

Measurement tools

Injecting drug user questionnaire	Q1104, Q1107 (questions depend on context)

What it measures

This measure is identical in principle to Adult Indicator 2. However it is worth mentioning that there may be prevention or cure myths specific to the world of injecting drug users. These should be explored in the survey planning stage, and be used to replace more generally held misconceptions where appropriate.

Injecting Drug User Indicator 3
Injecting equipment sharing at last injection

Definition

Numerator :	Number of respondents who report sharing injecting equipment the last time they injected drugs.
Denominator :	Total number of respondents surveyed.

Measurement tools

Injecting drug user questionnaire Q301

What it measures

Sharing of injecting equipment is both the biggest risk factor for HIV transmission among drug injectors, and the most common focus of interventions. While equipment sharing is now relatively uncommon in industrialized countries with long histories of preventative interventions among drug injectors, the same is not true of many of the countries in which drug injecting populations are exploding.

This indicator measures progress in program efforts to reduce the most risky practice, the sharing of injecting equipment among people who continue to inject drugs. It is especially valuable for tracking trends over time for programs that support needle-exchange initiatives, or that work to improve easy access to safe injecting equipment.

How to measure it

In a behavioral survey among injecting drug users, respondents are asked about their injecting habits. Those that report sharing needles or syringes (other injecting equipment such as cookers, spoons and vials, etc. are not included) the last time they injected drugs form the numerator. The denominator is all respondents.

Some respondents may not automatically think of injecting in shooting galleries or receiving an injection from a dealer or professional injector as sharing. Rather, they think of sharing as something that happens with a group of known friends. However, since shooting gallery and similar injecting circumstances do not use new equipment for every user, they do qualify as sharing situations. The questionnaire therefore prompts for these situations. If anyone responds that they have injected in any of these situations in the past month, they automatically enter the numerator for this indicator.

Strengths and limitations

The indicator does not specify a time frame within which the last injecting episode must have taken place. BSS among injecting drug users by definition includes only those who are active injectors. In most cases, the inclusion criteria for potential respondents to the survey will be drug injection in the last month.

It is assumed that these surveys take place among people identified as members of a community of drug injectors. It is possible that in response to HIV-related interventions, some injectors stop taking drugs entirely or switch to non-injected drugs. Since the indicator is designed to track changes in risky injecting practices over time among people who continue to inject drugs, people who cease to inject will not be included in the denominator for the indicator.

Some education programs have focused on sterilizing needles between users. Users may continue to inject drugs and even share needles, but may sterilize in between uses. It is, however, difficult to know the success of individual efforts to sterilize equipment. Experience in some settings has demonstrated that inadequate cleaning of equipment is common, and many programs have ceased to promote equipment cleaning as a prevention method, preferring to concentrate efforts on putting an end to the sharing of injecting equipment. This indicator includes in its numerator of those with risky behavior, injecting drug users who sterilize, but still share their equipment.

Because those included in the survey have by definition injected recently, the indicator is very sensitive to recent time trends in injecting practice. Countries with inconsistent policies supporting safe drug injection may see large variations in this indicator. Police crackdowns on users, distributors or support services such as needle exchange centers may lead to dramatic changes in injecting practices over a very short period of time.

The indicator does not attempt to look at consistency in avoiding needle sharing. It asks only about a single recent act of injection. This method minimizes recall bias and has proved very robust in other areas such as condom use at last sex. Consistency is covered in the IDU indicator 4.

Injecting Drug User Indicator 4
Injecting drug users never sharing equipment in the last month

Definition

Numerator : Number of respondents who report never sharing injecting equipment during any episode of injection in the last month.

Denominator : Total number of respondents surveyed.

Measurement tools

Injecting drug user questionnaire Q307

What it measures

Sharing of injecting equipment between HIV-infected and uninfected drug injectors is an extremely efficient pathway for the spread of HIV. Because the risk of contracting infection per single act of risky injection is so high, programs must aim not just for a reduction in the sharing of equipment between drug users, but for a complete halt to this behavior.

Injecting Drug User Indicator 3 uses a robust methodology that will give a good picture of rising safe injecting behavior, but will not capture entirely the rises in consistently safe behavior for which prevention programs among drug injectors strive.

This indicator measures trends in consistent safe behavior among drug users who continue to inject drugs.

How to measure it

In a behavioral survey among injecting drug users, respondents are asked about their injecting habits. Those that report sharing needles or syringes at any time in the last month are excluded from the numerator, which includes only people who report not having shared equipment during any episode of drug injecting over the last month.
The denominator is all respondents.

As with the previous indicator, the questionnaire should prompt for sharing situations such as injecting in shooting galleries or through professional injectors.

Strengths and limitations

This indicator shares the strengths and limitations of Injecting Drug User Indicator 3. In addition, it is likely to suffer more from recall bias. Depending on the local drug scene, drug users may be injecting several times each day. Recalling the circumstances of every act of injection over the past 30 days may be problematic.

Trends measured by this indicator should confirm changes registered in the indicator that looks only at behavior at last injection. The difference between the two indicators may be used to pinpoint areas of program weakness.

Injecting Drug User Indicator 5
Injecting drug users sharing in high equipment sharing situations

Definition

Numerator :	Number of respondents who report sharing in any high equipment sharing situation at least once in the last month.
Denominator :	Total number of respondents surveyed.

Measurement tools

Injecting drug user questionnaire Q303

What it measures

This indicator tracks trends in the very highest level of injecting risk behavior - injecting in situations such as shooting galleries, though professional injectors and dealers, or in prison. These are situations where equipment is commonly shared with a very high number of other people. Since cleaning between users is often inadequate, this means that HIV can spread very rapidly through large networks of drug injectors.

How to measure it

Injecting drug users are asked directly whether they have injected in a variety of different situations in the last month. Those who report injecting in a situation of particularly high risk at least once are included in the numerator for this indicator. The denominator includes everyone.

Strengths and limitations

This indicator will be very strongly influenced by the sampling frame for a survey. Sampling frames which include shooting galleries, dealer's territories and prisons will by definition register a high percentage for this indicator. And if the sampling frame remains roughly comparable over time, this percentage is likely to remain unchanged, even if a decreasing proportion of the overall drug using population attends these sites.

If a sampling frame can be constructed which better reflects the totality of the drug injecting population (rather than a preponderance of those gathering at sites of highest risk), then a fall in this indicator over time should more accurately reflect a shift away from injection of highest risk.

Injecting Drug User Indicator 6 Injecting drug users with access to sterile needles

Definition

Numerator : Number of respondents who report having access to sterile needles though pharmacies or needle exchange programs

Denominator : Total number of respondents surveyed.

Measurement tools

Injecting drug user questionnaire Q311A

What it measures

This indicator measures the ease of access to needles among drug injectors. In countries where sterile syringes/needles are not easily available over the counter, this indicator will act principally as a measure of the coverage of needle exchange programs.

How to measure it.

Injecting drug users are asked whether they know where they can get a sterile needle any time they want one. They are then asked more specific questions about sources of clean needles.

Those that report that they can easily get sterile needles any time they want form the numerator for this indicator. The denominator is all respondents in the survey.

Strengths and limitations

Changes in this indicator over time may be very abrupt. If a country changes its policy to allow for the sale of needles in pharmacies without prescription (where previously such sales were forbidden or required a prescription) this indicator may move from virtually nil to virtually 100 percent between two survey rounds. Where this is the case, the indicator may be dropped from future survey rounds.

Where access to sterile needles through pharmacies remains restricted, this indicator will function primarily as a measure of the coverage of needle exchange programs. In this case it may be affected by the inclusion of needle exchange programs as a sample site for BSS in drug injectors. The higher the proportion of respondents sampled from such sites, the higher this indicator will be. This may not, however, truly reflect high coverage by the needle exchange program, but simply that the program provided a convenient access point to a large number of drug injectors.

There are many things that affect access to sterile needles besides simple availability. Price, opening hours of institutions providing needles and fear of disapproval or harassment may limit access to needles even where they are technically available. These dimensions of access are not covered in the indicator. They are better explored using qualitative survey methods than in a quantitative behavioral survey.

Injecting Drug User Indicator 7
Injecting drug users selling sex

Definition

Numerator :	Number of respondents who report selling sex for money or drugs at least once in the last month.
Denominator :	Total number of respondents surveyed.

Measurement tools

Injecting drug user questionnaire Q702

What it measures

This provides a similar measure to the measure of injecting drug use in female sex workers, but from a different perspective. In most countries, drug injection carries a higher risk of HIV transmission than any other behavior, and HIV prevalence among injecting drug users is often higher than in any other sub-population. If injecting drug users sell sex to non-injectors to pay for their drugs, then they may put those sexual partners at very high risk of infection. The sale of sex by drug injectors to large numbers of partners has a greater potential to spread HIV from injecting to non-injecting populations than any other behavior. The proportion of drug injectors regularly selling sex is therefore of central interest to HIV prevention workers.

If the sale of sex is only occasional, then it will have little overall impact on the spread of HIV from injecting to non-injecting populations. Drug users who regularly sell sex and who therefore have the potential to spread HIV to a larger number of partners are of greater interest than those with only occasional commercial partners. The relatively short time-frame of one month for the sale of sex will capture a higher proportion of injectors who sell sex regularly than a longer time frame.

How to measure it

Respondents are asked about different categories of sexual partners over the past 12 months. Those who report a commercial partner are questioned about whether they bought or sold sex, or both in the past one month. Those who report selling sex within the last month form the numerator of the indicator. The denominator is all respondents.

This indicator can be used for either male or female samples of injecting drug users, but should be reported separately for each.

Strengths and limitations

This gives a good idea of the “overlap” between drug injectors and sex workers, and therefore of the potential for HIV to spread from injecting to non-injecting populations. It does not, however, distinguish between relationships in which condoms are used and those in which condoms are not used. If condoms are used by drug injectors selling sex, then the risk of an infected injector passing HIV on to a sex client is reduced. This dimension is covered by Drug Injecting User Indicator 8.

High levels of this indicator act as a warning of the potential spread of HIV from drug injecting to non-injecting populations, and argue for strong efforts to increase safe sexual behavior as well as safe drug injecting behavior in sub-populations of drug injectors.

Injecting Drug User Indicator 8
Drug injectors using condoms the last time they bought or sold sex

Definition

Numerator : Number of respondents who report using a condom the last time they bought or sold sex.

Denominator : Number of respondents who report buying or selling sex in exchange for drugs or money at least once in the last month.

Measurement tools

Injecting drug user questionnaire Q704

What it measures

Drug injectors frequently have sexual partners who do not inject drugs. Because of the high HIV prevalence typically found among injecting drug users, these partners are at especially high risk of infection through sex unless a condom is used. They provide a conduit by which the virus may enter the larger population of people who are sexually active but who do not inject drugs. This is especially true for drug injectors who sell sex, since they may have a large number of partners.

The risk of passing HIV from a drug injector to a client is highest when no condom is used. This indicator tracks changes over time in condom use by injecting drug users, by partner type.

How to measure it

In a survey of injecting drug users, respondents are asked about commercial partners in the last 12 months. They are further asked whether commercial partners were paid or paying, and the timing of the most recent paying client. The indicator is the number reporting that they used a condom the last time they bought or sold sex, divided by all those who sold sex in the past one month.

Strengths and limitations

For reasons given in the section on sexual behavior, a cross-sectional measure of condom use at last sex gives a rather reliable picture of overall levels in condom use.

The indicator is restricted to commercial partners for programmatic reasons. While epidemiologically the risk of a drug injector passing on HIV infection in sex is not dependent on partner type, the implications for the further spread of HIV are substantial. Low condom use with commercial partners among drug injectors who support their drug purchases by selling sex is epidemiologically more worrying than low condom use with regular partners, simply because partner turnover in commercial sex is higher. Special interventions may be needed to promote condom use in sex between injecting drug users and their commercial partners.

Injecting Drug User Indicator 9
Drug injectors using condoms at last sex with a non-regular partner

Definition

Numerator : Number of respondents who report using a condom the last time they had sex with a non-regular partner (i.e. non-spousal non cohabiting and non-commercial).

Denominator : Number of respondents who report sex with any non-regular partner (i.e. non-spousal not cohabiting and non-commercial) in the last 12 months.

Measurement tools

Injecting drug user questionnaire Q803

What it measures

Drug injectors frequently have sexual partners who do not inject drugs. Because of the high HIV prevalence typically found among injecting drug users, these partners are at especially high risk of infection through sex unless a condom is used. They provide a conduit by which the virus may enter the larger population of people who are sexually active but who do not inject drugs.

While interventions with drug users center on safer injecting practices, many also actively promote condom use during sex, aiming to minimize the spread of HIV from drug users to the general population. This indicator tracks changes over time in condom use by injecting drug users with non-regular partners.

How to measure it

In a survey of injecting drug users, respondents are asked about sex with non-regular partners in the last 12 months, and about condom use at last sex with the most recent of these partners. The indicator is the number reporting that they used a condom the last time they had sex with a non-regular partner, divided by all those who have had sex with a non-regular partner in the last 12 months.

Strengths and limitations

For reasons given in the section on sexual behavior, a cross-sectional measure of condom use at last sex gives a rather reliable picture of overall levels in condom use. The major limitation of this measure among drug injectors is that it does not distinguish between partners who are themselves injectors and those who are not. Men and women who inject drugs are far more likely to be at risk for HIV because of their injecting behavior than because of their sexual behavior. Unprotected sex with another injector is likely to represent only a small incremental risk of infection for them. In addition, couples who know that they are both HIV-infected are unlikely to use condoms with one another. In this case, unprotected sex does not represent any risk. It is when a drug injector has unprotected sex with someone who does not inject drugs that the risk of sexual transmission is greatest.

Distinguishing between injecting and non-injecting partners may not, however, be practical. People may not know their non-regular partner's injecting status. And inaccuracies in recall are more likely if people are asked to report condom use with the most recent non-regular partner who was not an injector.

Injecting Drug User Indicator 10
Drug injectors using condoms at last sex with a regular partner

Definition

Numerator : Number of respondents who report using a condom at last sex with a spousal or cohabiting partner.

Denominator : Number of respondents who report at least one regular partner in the last 12 months.

Measurement tools

Injecting drug user questionnaire Q603

What it measures

This is similar to Injecting Drug User Indicator 9, except that it focuses only on spousal or cohabiting partners. Condom use with these partners may be lower than with other types of partners. If these partners do not inject drugs themselves, they may be put at risk by their sex partner's drug injecting behavior.

How to measure it

In a survey of injecting drug users, respondents are asked about sex with spousal or cohabiting partner in the last 12 months, and whether they used a condom the last time they had sex with a regular partner. The indicator is the number reporting that they used a condom the last time they had sex with a regular partner, divided by all those who have had sex with a regular partner in the last 12 months.

Strengths and limitations

This indicator suffers from the same limitations as Injecting Drug User Indicator 9. In addition, since the living situation of drug injectors is often very unstable, It may be difficult clearly to define "co-habiting".

This indicator is, however, especially worth measuring in populations where the bulk of drug injectors are males, since unprotected sex between injecting drug users and their wives may provide a major conduit of HIV infection into the female population that would not otherwise be at risk.

Injecting Drug User
Indicator 11
Drug injectors seeking voluntary HIV tests

Definition

Numerator :	Number of respondents who have ever voluntarily requested an HIV test, received the test and received their results.
Denominator :	Total number of respondents.

Measurement tools

Injecting drug user questionnaire	Q1114, Q1115, Q1116

What it measures

This measure is identical to Adult Indicator 11, except that the denominator is restricted to injecting drug users. Like Adult Indicator 12, it may also be measured using the time reference period of 12 months.

Injecting Drug User
Indicator 12
Exposure to interventions

Definition

Denominator :	Number of respondents reporting having been exposed to specific HIV prevention interventions
Numerator :	Total number of respondents surveyed.

Measurement tools

Injecting drug user questionnaire	Section 12

What it measures

This measure is identical to Adult Indicator 11, except that the denominator is restricted to injecting drug users. The interventions specified in this indicator will be those that are aimed specifically at reducing the risk of HIV transmission to and from injecting drug users.

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1 APPENDIX

QUESTIONNAIRES

QUESTIONNAIRE

For Adult Target Groups Aged 15 - 49

FAMILY HEALTH INTERNATIONAL (FHI)
HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEYS (BSS)

FOR USE WITH ADULT TARGET GROUP AGED 15-49

TITLE OF SURVEY - COUNTRY - YEAR CONDUCTED

001 QUESTIONNAIRE IDENTIFICATION NUMBER |___|___|___|

002 CITY_______________________ (provide locally appropriate categories)

003 REGION____________________ (provide locally appropriate categories)

004 SITE_______________________ (provide locally appropriate categories)

Introduction : "My name is... I'm working for... We're interviewing people here in [name of city, region or site] in order to find out about... [describe purpose of study]. Have you been interviewed in the past few weeks [or other appropriate time period] for this study? **IF THE RESPONDENT HAS BEEN INTERVIEWED BEFORE DURING THIS ROUND OF BSS, DO NOT INTERVIEW THIS PERSON AGAIN.** Tell them you cannot interview them a second time, thank them, and end the interview. If they have not been interviewed before, continue:

Confidentiality and consent : "I'm going to ask you some very personal questions that some people find difficult to answer. Your answers are completely confidential. Your name will not be written on this form, and will never be used in connection with any of the information you tell me. You do not have to answer any questions that you do not want to answer, and you may end this interview at any time you want to. However, your honest answers to these questions will help us better understand what people think, say and do about certain kinds of behaviors. We would greatly appreciate your help in responding to this survey. The survey will take about XX minutes to ask the questions. Would you be willing to participate?"

____

(Signature of interviewer certifying that informed consent has been given verbally by respondent)

Interviewer visit

	Visit 1	Visit 2	Visit 3
Date			
Interviewer			
Result			

Result codes : Completed 1; Respondent not available 2; Refused 3; Partially completed 4; Other 5.

005 INTERVIEWER : Code [____|____] Name__________________________

006 DATE INTERVIEW : __\ ____ \ _____

CHECKED BY SUPERVISOR : Signature ____________________ Date ___________

The ADULT questionnaire includes the following sections:

Section 0 - Questionnaire identification data (6 codes)	
Section 1 - Background characteristics	13 questions
Section 2 - Marriage	4 questions
Section 3 - Sexual history: numbers and types of partners	5 questions
Section 4 - Sexual history: regular partners	6 questions
Section 5 - Sexual history: commercial partners	6 questions
Section 6 - Sexual history: non-regular, non commercial partners	6 questions
Section 7 - Male condoms	7 questions
Section 8 - STDs	5 questions
Section 9 - Knowledge, opinions, and attitudes towards HIV/AIDS	18 questions
Section 10 - Exposure to prevention	(variable)
TOTAL NUMBER OF QUESTIONS :	**70 questions**

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR ADULTS

Section 1: Background characteristics

No.	Questions and filters	Coding categories	Skip to
Q101	RECORD SEX OF THE RESPONDENT	MALE 1 FEMALE 2	
Q102	In what month and year were you born?	MONTH [__|__] DON'T KNOW MONTH 88 NO RESPONSE 99 YEAR [__|__] DON'T KNOW YEAR 88 NO RESPONSE 99	
Q103	How old were you at your last birthday? **(COMPARE AND CORRECT Q102 IF NEEDED)**	AGE IN COMPLETED YEARS [__|__] DON'T KNOW 88 NO RESPONSE 99 **ESTIMATE BEST ANSWER**	
Q104	Have you ever attended school?	YES 1 NO 2 NO RESPONSE 9	→ **Q107**
Q105	What is the highest level of school you completed: primary, secondary or higher? **CIRCLE ONE**	(List locally appropriate categories) PRIMARY 1 SECONDARY 2 HIGHER 3 NO RESPONSE 9	
Q106	How many total years of education have you completed up to now?	# YEARS COMPLETED [__|__] NO RESPONSE 99	
Q107	How long have you lived here in (NAME OF COMMUNITY/TOWN NEIGHBORHOOD/VILLAGE) ?	NUMBER OF YEARS [__|__] RECORD 00 IF LESS THAN 1 YEAR DON'T KNOW 88 NO RESPONSE 99	

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR ADULTS

Section 1: Background characteristics (continued)

No.	Questions and filters	Coding categories		Skip to
Q108	In the last 12 months have you been away from your home for more than one month altogether?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q109	What religion are you? **CIRCLE ONE**	(LIST LOCALLY APPROPRIATE CATEGORIES) NO RELIGION DON'T KNOW NO RESPONSE	 0 8 9	
Q110	To which ethnic group do you belong? CIRCLE ONE	(List locally appropriate categories) MIXED ETHNICITY NO RESPONSE	 0 9	
Q111	During the last 4 weeks how often have you had drinks containing alcohol? Would you say ......**READ OUT** **CIRCLE ONE**	Every day At least once a week Less than once a week or never DON'T KNOW NO RESPONSE	1 2 3 8 9	
Q112	Some people have tried a range of different types of drugs. Which of the following, if any, have you tried? **READ LIST**	(List locally appropriate categories) YES NO DK NR 1 2 8 9 1 2 8 9 1 2 8 9 1 2 8 9		
*Q113	Some people have tried injecting drugs using a syringe. Have you injected drugs in the last 12 months? **DRUGS INJECTED FOR MEDICAL PURPOSES OR TREATMENT OF AN ILLNESS DO NOT COUNT**	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

**NOTE:* *Q113 is appropriate for settings where illicit injection drug use is common or suspected.*

No.	Questions and filters	Coding categories		Skip to
Q201	Have you ever been married?	YES	1	
		NO	2	→ **Q203**
		NO RESPONSE	9	
Q202	How old were you when you first married?	Age in years	[__|__]	
		DON'T KNOW	88	
		NO RESPONSE	99	
Q203	Are you *currently* married or living with a man/woman with whom you have a sexual relationship?	currently married, living with spouse	1	
		currently married, living with other sexual partner	2	
		currently married, not living with spouse or any other sexual partner	3	
		not married, living with sexual partner	4	→ **Q301**
		not married, not living with sexual partner	5	→ **Q301**
		NO RESPONSE	9	
*Q204	IF MARRIED: MEN: Do you have more than one wife? WOMEN: Does your husband have other wives?	YES	1	
		NO	2	
		NO RESPONSE	9	

**NOTE: Q204 is appropriate for settings where polygamy is practiced.*

No.	Questions and filters	Coding categories		Skip to
Q301	Have you ever had sexual intercourse? [For the purposes of this survey, "sexual intercourse," is defined as vaginal or anal sex.]	YES NO NO RESPONSE	1 2 9	 → **Q703**
Q302	At what age did you first have sexual intercourse?	AGE IN YEARS DON'T KNOW NO RESPONSE	[__|__] 88 99	
Q303	Have you had sexual intercourse in the last 12 months?	YES NO NO RESPONSE	1 2 9	 → **Q702**
Q304	*For WOMEN:* Think about the male sexual partners you've had in the last 12 months. *For MEN:* Think about the female sexual partners you've had in the last 12 months. How many were:			
	- Your spouse(s) or live-in sexual partners ***("regular" partners)***	**REGULAR** DON'T KNOW NO RESPONSE	[__|__] 88 99	
	- ***"Commercial"*** (partners with whom you had sex in exchange for money)	**COMMERCIAL** DON'T KNOW NO RESPONSE	[__|__] 88 99	
	- Sexual partners that you are not married to and have never lived with and did not pay ***("non-regular" partners)*** - DO NOT INCLUDE CURRENT SPOUSE(S) OR LIVE-IN SEXUAL PARTNERS)	**NON-REGULAR** DON'T KNOW NO RESPONSE	[__|__] 88 99	

No.	Questions and filters	Coding categories		Skip to
Q305	**(Ask of men):**			
	- We've just talked about your female sexual partners. Have you ever had any male sexual partners?	YES NO NO RESPONSE	1 2 9	 → **Q401**
	- Have you had sexual intercourse with any of your male partners in the past 12 months? (sexual intercourse defined as penetrative anal sex)	YES NO NO RESPONSE	1 2 9	 → **Q401**
	- How many male partners have you had anal intercourse with in the last 12 months?	**Male partners** DON'T KNOW NO RESPONSE	[__|__] 88 99	

No.	Questions and filters	Coding categories	Skip to
Q401	**FILTER: CHECK Q304** HAD SEX WITH REGULAR PARTNER DURING PAST 12 MONTHS...[___] ↓	DID NOT HAVE SEX WITH REGULAR PARTNER DURING PAST 12 MONTHS [__]→	→**Q501**
Q402	Think about your most recent regular sexual partner. How many times did you have sexual intercourse with this person over the last 30 days? **[REGULAR PARTNER INCLUDES SPOUSE OR LIVE-IN SEXUAL PARTNER]**	Number of times |__|__| DON'T KNOW 88 NO RESPONSE 99	
Q403	The last time you had sex with this regular partner, did you and your partner use a condom?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	 →**Q405** →**Q406**
Q404	Who suggested condom use that time? **CIRCLE ONE**	Myself 1 My partner 2 Joint decision 3 DON'T KNOW 8 NO RESPONSE 9	→**Q406** →**Q406** →**Q406** →**Q406**

No.	Questions and filters	Coding categories			Skip to
			Y	N	
Q405	Why didn't you and your partner use a condom that time?	Not available	1	2	
		Too expensive	1	2	
		Partner objected	1	2	
		Don't like them	1	2	
	ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING	Used other contraceptive	1	2	
		Didn't think it was necessary	1	2	
		Didn't think of it	1	2	
		Other_____________________	1	2	
	CIRCLE ALL ANSWERS MENTIONED	DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q406	With what *frequency* did you and all of your regular partner(s) use a condom during the past 12 months?	EVERY TIME		1	
		ALMOST EVERY TIME		2	
		SOMETIMES		3	
		NEVER		4	
		DON'T KNOW		8	
		NO RESPONSE		9	

No.	Questions and filters	Coding categories	Skip to
Q501	**FILTER: CHECK Q304** HAD SEXUAL INTERCOURSE WITH A COMMERCIAL PARTNER IN LAST 12 MONTHS...[___] ↓	HAS NOT *HAD* SEXUAL INTERCOURSE WITH A COMMERCIAL PARTNER IN LAST 12 MONTHS.... [__]→	→ **Q601**
Q502	Think about your most recent commercial sexual partner. How many times did you have sexual intercourse with this person over the last 30 days?	Number of times |__|__| DON'T KNOW 88 NO RESPONSE 99	
Q503	The last time you had sex with this commercial partner, did you and your partner use a condom?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	 → **Q505** → **Q506**
Q504	Who suggested condom use that time? **CIRCLE ONE**	Myself 1 My partner 2 Joint decision 3 DON'T KNOW 8 NO RESPONSE 9	→ **Q506** → **Q506** → **Q506** → **Q506**

No.	Questions and filters	Coding categories			Skip to
			Y	N	
Q505	Why didn't you and your partner use a condom that time? **ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING** **CIRCLE ALL ANSWERS MENTIONED**	Not available	1	2	
		Too expensive	1	2	
		Partner objected	1	2	
		Don't like them	1	2	
		Used other contraceptive	1	2	
		Didn't think it was necessary	1	2	
		Didn't think of it	1	2	
		Other_______________________	1	2	
		DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q506	With what *frequency* did you and all of your commercial partner(s) use a condom during the past 12 months?	EVERY TIME		1	
		ALMOST EVERY TIME		2	
		SOMETIMES		3	
		NEVER		4	
		DON'T KNOW		8	
		NO RESPONSE		9	

No.	Questions and filters	Coding categories	Skip to
Q601	**FILTER: CHECK Q304** HAD NON-REGULAR NON-COMMERCIAL SEX PARTNER DURING IN LAST 12 MONTHS...[___] ↓	DID NOT HAVE NON-REGULAR NON-COMMERCIAL SEX PARTNER DURING LAST 12 MONTS [__]→	→ **Q701**
Q602	Think about your most recent non-regular, non-commercial sexual partner. How many times did you have sexual intercourse with this person over the last 30 days?	Number of times |__|__| DON'T KNOW 88 NO RESPONSE 99	
Q603	The last time you had sex with this non-regular, non-commercial partner, did you and your partner use a condom?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	 → **Q605** → **Q606**
Q604	Who suggested condom use that time? **CIRCLE ONE**	Myself 1 My partner 2 Joint decision 3 DON'T KNOW 8 NO RESPONSE 9	→ **Q606** → **Q606** → **Q606** → **Q606**

No.	Questions and filters	Coding categories	Y	N	Skip to
Q605	Why didn't you and your partner use a condom that time? **ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING** **CIRCLE ALL ANSWERS MENTIONED**	Not available	1	2	
		Too expensive	1	2	
		Partner objected	1	2	
		Don't like them	1	2	
		Used other contraceptive	1	2	
		Didn't think it was necessary	1	2	
		Didn't think of it	1	2	
		Other______________________	1	2	
		DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q606	With what *frequency* did you and all of your non-regular, non-commercial partner(s) use a condom during the past 12 months?	EVERY TIME		1	
		ALMOST EVERY TIME		2	
		SOMETIMES		3	
		NEVER		4	
		DON'T KNOW		8	
		NO RESPONSE		9	

No.	Questions and filters	Coding categories	Skip to
Q701	**FILTER: SEE Q403, Q406, Q503, Q506, Q603, Q606** **CONDOMS NOT USED**......[___] ↓	**CONDOMS USED** [__]→	→ **Q704**
Q702	Have you and a sexual partner *ever* used a male condom? **(Show picture or sample of one.)** (The respondent may not have used a condom with partners in sections 4-6, but may have used a condom at some other time in the past.)	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	→ **Q704**
Q703	Have you ever *heard* of a male condom? **(Show picture or sample of one.)** (I mean a rubber object that a man puts on his penis before sex.)	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	 → **Q707** → **Q707**
Q704	Do you know of any place or person from which you can obtain male condoms?	YES 1 NO 2 NO RESPONSE 9	 → **Q707**
Q705	Which places or persons do you know where you can obtain male condoms? **PROBE AND RECORD *ALL* ANSWERS** Any others?	Y N Shop 1 2 Pharmacy 1 2 Market 1 2 Clinic 1 2 Hospital 1 2 Family planning center 1 2 Bar/guest house/hotel 1 2 Peer educator 1 2 Friend 1 2 Other__________________ 1 2 NO RESPONSE 1 2	

No.	Questions and filters	Coding categories		Skip to
Q706	How long would it take you to obtain a male condom close to your house or to where you work?	(Adjust categories as locally appropriate) Under 1 hour 1 hour to 1 day More than 1 day DON'T KNOW NO RESPONSE	 1 2 3 8 9	
Q707	*FOR SEXUALLY ACTIVE RESPONDENTS ONLY:* During the past 12 months, did you ever have sexual intercourse *without* using a condom with any commercial sexual partner or any other sexual partner who you have never lived with and are not married to?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

No.	Questions and filters	Coding categories	Skip to
Q801	Have you ever heard of diseases that can be transmitted through sexual intercourse?	YES 1 NO 2 NO RESPONSE 9	→ **Q804** (if NO)
Q802	Can you describe any symptoms of STDs in women? ..... Any others? **DO *NOT* READ OUT THE SYMPTOMS** **CIRCLE 1 FOR ALL MENTIONED.** **CIRCLE 2 FOR ALL *NOT* MENTIONED.** **MORE THAN ONE ANSWER IS POSSIBLE.**	Yes / No ABDOMINAL PAIN 1 2 GENITAL DISCHARGE 1 2 FOUL SMELLING DISCHARGE 1 2 BURNING PAIN ON URINATION 1 2 GENITAL ULCERS/SORES 1 2 SWELLINGS IN GROIN AREA 1 2 ITCHING 1 2 OTHER ________________ 1 2 NO RESPONSE 1 2	
Q803	Can you describe any symptoms of STDs in men? ..... Any others? **DO *NOT* READ OUT THE SYMPTOMS** **CIRCLE 1 FOR ALL MENTIONED.** **CIRCLE 2 FOR *ALL* NOT MENTIONED.** **MORE THAN ONE ANSWER IS POSSIBLE.**	Yes / No GENITAL DISCHARGE 1 2 BURNING PAIN ON URINATION 1 2 GENITAL ULCERS/SORES 1 2 SWELLINGS IN GROIN AREA 1 2 OTHER ________________ 1 2 NO RESPONSE 1 2	
Q804	Have you had a genital **discharge** during the past 12 months?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
Q805	Have you had a genital **ulcer**/sore during the past 12 months?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	

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Section 9: Knowledge, opinions, and attitudes

No.	Questions and filters	Coding categories		Skip to
Q901	Have you ever heard of HIV or the disease called AIDS ?	YES NO NO RESPONSE	1 2 9	 → **Q1001**
Q902a	Do you know anyone who is infected with HIV or who has died of AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	 → **Q903** → **Q903**
Q902b	Do you have a close relative or close friend who is infected with HIV or has died of AIDS?	YES, A CLOSE RELATIVE YES, A CLOSE FRIEND NO NO RESPONSE	1 2 3 9	
Q903	Can people protect the virus that causes AIDS themselves from HIV by using a condom correctly every time they have sex?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q904	Can a person get HIV from mosquito bites?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q905	Can people protect themselves from HIV by having one uninfected faithful sex partner?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q906	Can people protect themselves from HIV by abstaining from sexual intercourse?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q907	Can a person get HIV by sharing a meal with someone who is infected?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q908	Can a person get HIV by getting injections with a needle that was already used by someone else?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q909	Do you think that a healthy-looking person can be infected with HIV, the virus that causes AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

No.	Questions and filters	Coding categories			Skip to
Q910	Can a pregnant woman infected with HIV or AIDS transmit the virus to her unborn child?	YES		1	
		NO		2	→ **Q912**
		DON'T KNOW		8	→ **Q912**
		NO RESPONSE		9	
			Yes	No	
Q911	What can a pregnant woman do to reduce the risk of transmission of HIV to her unborn child? **DO NOT READ LIST** **CIRCLE ALL THAT ARE MENTIONED.**	TAKE MEDICATION (Antiretrovirals)	1	2	
		OTHER ______________	1	2	
		DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q912	Can a woman with HIV or AIDS transmit the virus to her newborn child through breastfeeding?	YES		1	
		NO		2	
		DON'T KNOW		8	
		NO RESPONSE		9	
Q913	Is it possible in your community for someone to get a confidential test to find out if they are infected with HIV? By confidential, I mean that no one will know the result if you don't want them to know it.	YES		1	
		NO		2	
		DON'T KNOW		8	
		NO RESPONSE		9	
Q914	I don't want to know the result, but have you ever had an HIV test?	YES		1	
		NO		2	→**Q1001**
		NO RESPONSE		9	
Q915	Did you voluntarily undergo the HIV test, or were you required to have the test?	Voluntary		1	
		Required		2	
		NO RESPONSE		9	
Q916	Please do not tell me the result, but did you find out the result of your test?	YES		1	
		NO		2	
		NO RESPONSE		9	
Q917	When did you have your most recent HIV test?	WITHIN THE PAST YEAR		1	
		BETWEEN 1-2 YEARS		2	
		BETWEEN 2-4 YEARS		3	
		MORE THAN 4 YEARS AGO		4	
		DON'T KNOW		8	
		NO RESPONSE		9	

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR ADULTS

Section 10: Exposure to interventions (optional)

[A section on exposure to interventions can be added here if the target group has already received some kind of HIV/AIDS/STD prevention interventions. Specific questions designed to assess exposure would need to be developed locally.]

That is the end of our questionnaire. Thank you very much for taking time to answer these questions. We appreciate your help.

POSSIBLE ADDITIONAL QUESTIONS

Communications

No.	Questions and filters	Coding categories		Skip to
	During the last 4 weeks how often have you listened to the radio? Would you say ... **READ OUT** **CIRCLE ONE**	Every day At least once a week Less than once a week Did not listen to radio in last 4 weeks DON'T KNOW NO RESPONSE	1 2 3 4 8 9	
	During the last 4 weeks how often have you watched television? Would you say ... **READ OUT** **CIRCLE ONE**	Every day At least once a week Less than once a week Did not watch television in last 4 weeks DON'T KNOW NO RESPONSE	1 2 3 4 8 9	

Female Condom

No.	Questions and filters	Coding categories	Skip to
	Have you ever heard of a female condom? **(Show picture or sample of one.)** (I mean a rubber object that a woman puts into her vagina before sex.)	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
	Have you ever used a female condom? **(Show picture or sample of one.)**	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
	Do you know any place or person where you can obtain female condoms?	YES 1 NO 2 NO RESPONSE 9	
	Which (other) places or persons do you know where you can obtain female condoms? **PROBE AND RECORD *ALL* ANSWERS**	Yes No Shop 1 2 Pharmacy 1 2 Market 1 2 Clinic 1 2 Hospital 1 2 Family planning center 1 2 Bar/guest house/hotel 1 2 Peer educator 1 2 Friend 1 2 Other__________ 1 2 NO RESPONSE 1 2	

STD Treatment seeking behaviors

No.	Questions and filters	Coding categories				Skip to
	FILTER: CHECK Q* AND Q***** HAD GENITAL DISCHARGE AND/OR GENITAL ULCER......[___] IN LAST 12 MONTHS ↓	NO DISCHARGE OR ULCER [__]→ IN LAST 12 MONTHS				→
	Did you do any of the following the last time you had a genital ulcer/sore or genital discharge: **READ OUT. MORE THAN ONE ANSWER IS POSSIBLE.**	Yes	No	DK	NR	
	a. Seek advice/medicine from a government clinic or hospital?	1	2	8	9	
	b. Seek advice/medicine from a workplace clinic or hospital?	1	2	8	9	
	c. Seek advice/medicine from a church or charity-run clinic or hospital?	1	2	8	9	
	d. Seek advice/medicine from a private clinic or hospital?	1	2	8	9	
	e. Seek advice/medicine from a private pharmacy?	1	2	8	9	
	f. Seek advice/medicine from a traditional healer?	1	2	8	9	
	g. Took medicine you had at home?	1	2	8	9	
	h. Tell your sexual partner about the discharge/ STD?	1	2	8	9	
	i. Stop having sex when you had the symptoms?	1	2	8	9	
	j. Use a condom when having sex during the time you had the symptoms?	1	2	8	9	

STD Treatment seeking behaviors (continued)

No.	Questions and filters	Coding categories			Skip to
	Which of these things did you do FIRST? **ONLY ONE ANSWER IS POSSIBLE.** ADD OTHER LOCALLY APPROPRIATE CATEGORIES IF NECESSARY.)	a. Seek advice/medicine from a government clinic or hospital?		1	
		b. Seek advice/medicine from a workplace clinic or hospital?		2	
		c. Seek advice/medicine from a church or charity-run clinic or hospital?		3	
		d. Seek advice/medicine from a private clinic or hospital?		4	
		e. Seek advice/medicine from a private pharmacy?		5	
		f. Seek advice/medicine from a traditional healer?		6	
		g. Took medicine you had at home?		7	
		h. Other________________________		8	
		DON'T REMEMBER		88	
		NO RESPONSE		99	
	If you took medicine for the last episode of symptoms, from where did you obtain the medicine? **CIRCLE ALL THAT APPLY.**		Yes	No	
		Health worker in clinic/hospital	1	2	
		Pharmacy	1	2	
		Traditional healer	1	2	
		Friend or relative	1	2	
		"Took medicine I had at home"	1	2	
		Did not take any medicine	1	2	
		DON'T REMEMBER	1	2	
		NO RESPONSE	1	2	

STD Treatment seeking behaviors (continued)

No.	Questions and filters	Coding categories	Skip to
	How much did you pay for the medicine you took?	[___][___] ADAPT TO LOCALLY APPROPRIATE CATEGORIES	
	FILTER: SEE Q*:** Sought advice from a health worker in clinic or hospital [___] Yes ↓	No [__] →	→**Q**
	How long after first experiencing symptoms did you seek advice from a health worker in a clinic or hospital?	1 week or less 1 Less than 1 month but more than 1 week 2 One month or more 3 DON'T KNOW 8 NO RESPONSE 9	
	Did you receive a prescription for medicine?	Yes 1 No 2 DON'T REMEMBER 8 NO RESPONSE 9	
	Did you obtain the medicine prescribed?	Yes, I obtained all of it 1 I obtained some but not all 2 I did not obtain the medicine 3 DON'T REMEMBER 8 NO RESPONSE 9	
	Did you take all of the medicine prescribed?	Yes 1 No 2 DON'T KNOW 8 NO RESPONSE 9	
	If not, why did you not take all of the medicine prescribed? **CIRCLE ALL THAT APPLY.**	(List locally appropriate Yes No categories) 1 2 DON'T REMEMBER 1 2 NO RESPONSE 1 2	

Stigma and Discrimination

No.	Questions and filters	Coding categories	Skip to
	Would you be willing to share a meal with a person you knew had HIV or AIDS?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
	If a male relative of yours became ill With HIV, the virus that causes AIDS, would you be willing to care for him in your household?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
	If a student has HIV but is not sick, should he or she be allowed to continue attending school?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
	If a female relative of yours became ill With HIV, the virus that causes AIDS, would you be willing to care for her your household?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
	If a teacher has HIV but is not sick, should he or she be allowed to continue teaching in school?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
	If you knew a shopkeeper or food seller had HIV, would you buy food from them?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
	If a member of your family became ill with HIV, the virus that causes AIDS, would you want it to remain secret?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	

Voluntary vs. Involuntary Sexual Relations

	FOR WOMAN : During the past 12 months, did any of your sexual partner(s) force you to have sex with them even though you did not want to have sex?	YES 1 NO 2 NO RESPONSE 9	

QUESTIONNAIRE

For Unmarried Male And Female Youth Target Groups

FAMILY HEALTH INTERNATIONAL (FHI)
HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEYS (BSS)

FOR USE WITH UNMARRIED MALE AND FEMALE YOUTH TARGET GROUPS

TITLE OF SURVEY - COUNTRY - YEAR CONDUCTED

001 QUESTIONNAIRE IDENTIFICATION NUMBER |___|___|___|

002 CITY______________________ (provide locally appropriate categories)

003 REGION___________________ (provide locally appropriate categories)

004 SITE______________________ (provide locally appropriate categories)

Introduction : "My name is... I'm working for... We're interviewing people here in [name of city, region or site] in order to find out about... [describe purpose of study]. Have you been interviewed in the past few weeks [or other appropriate time period] for this study? **IF THE RESPONDENT HAS BEEN INTERVIEWED BEFORE DURING THIS ROUND OF BSS, DO NOT INTERVIEW THIS PERSON AGAIN.** Tell them you cannot interview them a second time, thank them, and end the interview. If they have not been interviewed before, continue:

Confidentiality and consent : "I'm going to ask you some very personal questions that some people find difficult to answer. Your answers are completely confidential. Your name will not be written on this form, and will never be used in connection with any of the information you tell me. You do not have to answer any questions that you do not want to answer, and you may end this interview at any time you want to. However, your honest answers to these questions will help us better understand what people think, say and do about certain kinds of behaviors. We would greatly appreciate your help in responding to this survey. The survey will take about XX minutes to ask the questions. Would you be willing to participate?"

____

(Signature of interviewer certifying that informed consent has been given verbally by respondent)

Interviewer visit

	Visit 1	Visit 2	Visit 3
Date			
Interviewer			
Result			

Result codes : Completed 1; Respondent not available 2; Refused 3; Partially completed 4; Other 5.

005 INTERVIEWER : Code [____|____] Name__________________________

006 DATE INTERVIEW : __\ ____ \ _____

CHECKED BY SUPERVISOR : Signature ____________________ Date ___________

The YOUTH questionnaire includes the following sections:

Section 0 - Questionnaire identification data (6 codes)	
Section 1 - Background characteristics	18 questions
Section 2 - Sexual history: Number and types of partners	8 questions
Section 3 - Sexual partners: Commercial partners	6 questions
Section 4 - Sexual partners: non-commercial partners	6 questions
Section 5 - Male condoms	7 questions
Section 6 - STDs	5 questions
Section 7 - Knowledge, opinions, and attitudes towards HIV/AIDS	18 questions
Section 8 - Exposure to interventions for HIV prevention	(variable)
TOTAL NUMBER OF QUESTIONS :	**68 questions**

THIS SURVEY ONLY INTERVIEWS YOUTH AGED ** - ** WHO HAVE NEVER BEEN MARRIED OR LIVED WITH A SEXUAL PARTNER FOR 12 MONTHS OR LONGER. IF THE RESPONDENT IS YOUNGER THAN ** OR OLDER THAN **, OR HAS EVER BEEN MARRIED, OR LIVED WITH A SEXUAL PARTNER, DO NOT INTERVIEW THIS PERSON.

No.	Questions and filters	Coding categories		Skip to
Q101	RECORD SEX OF THE RESPONDENT	MALE	1	
		FEMALE	2	
Q102	In what month and year were you born?	MONTH	[__|__]	
		DON'T KNOW MONTH	88	
		NO RESPONSE	99	
		YEAR	[__|__]	
		DON'T KNOW YEAR	88	
		NO RESPONSE	99	
Q103	How old were you at your last birthday? **(Compare and correct Q102 if needed)**	AGE IN COMPLETED YEARS	[__|__]	
		MUST BE BETWEEN AND YRS OLD		
		DON'T KNOW	88	
		NO RESPONSE	99	
		ESTIMATE BEST ANSWER		
Q104	Have you ever attended school?	YES	1	
		NO	2	→ **Q109**
		NO RESPONSE	9	
Q105	What is the highest level of school you completed: primary, secondary or higher? **CIRCLE ONE**	(List locally appropriate categories)		
		PRIMARY	1	
		SECONDARY	2	
		HIGHER	3	
		NO RESPONSE	9	
Q106	How many total years of education have you completed up to now?	# YEARS COMPLETED	[__|__]	
		NO RESPONSE	99	
Q107	Who pays your school fees?	MOTHER	1	
		FATHER	2	
		RELATIVES	3	
		SEX PARTNER	4	
		GOVT/SCHOLARSHIP	5	
		"I PAY THEM MYSELF"	6	
		OTHER________________	7	
		DON'T KNOW	8	
		NO RESPONSE	9	

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR YOUTH

Section 1: Background characteristics (continued)

No.	Questions and filters	Coding categories	Skip to
Q108	How often, if at all, have you missed school because you did not have enough money for school fees, lunch money or bus fare? Would you say... READ RESPONSES	VERY OFTEN 1 OFTEN 2 SOMETIMES 3 NEVER 4 DON'T KNOW 8 NO RESPONSE 9	
Q109	Do you work to earn money for yourself?	YES 1 NO 2 NO RESPONSE 9	→ **Q112**
Q110	What do you do to earn money? MULTIPLE ANSWERS ARE POSSIBLE.	(List locally appropriate categories in yes/no format) NO RESPONSE 1 2	
Q111	What do you do with this money? Do you keep most for yourself, give it to your family or what?	KEEP FOR SELF 1 FAMILY 2 OTHER_________________ 3 DON'T KNOW 8 NO RESPONSE 9	
Q112	How long have you lived here in (NAME OF COMMUNITY/ TOWN NEIGHBORHOOD/ VILLAGE)?	NUMBER OF YEARS [__|__] RECORD 00 IF LESS THAN 1 YEAR DON'T KNOW 88 NO RESPONSE 99	
Q113	What religion are you? CIRCLE ONE	(List locally appropriate categories) NO RELIGION 0 DON'T KNOW 8 NO RESPONSE 9	
Q114	To which ethnic group do you belong? CIRCLE ONE	(List locally appropriate categories) MIXED ETHNICITY 0 NO RESPONSE 9	

No.	Questions and filters	Coding categories					Skip to
Q115	Do you presently live: Alone? With family (relatives)? With employer? With peers/friends/ coworkers/students? Not living anywhere (on the street)? CIRCLE ONE	Alone With family (relatives) With employer With peers/friends/ coworkers/students Not living anywhere Other________________ NO RESPONSE	1 2 3 4 5 6 9				
Q116	During the last 4 weeks how often have you had drinks containing alcohol? Would you say ......READ OUT CIRCLE ONE	Every day At least once a week Less than once a week or never DON'T KNOW NO RESPONSE	1 2 3 8 9				
Q117	Some people have tried a range of different types of drugs. Which of the following, if any, have you tried? READ LIST		YES	NO	DK	NR	
		(List locally appropriate categories)	1	2	8	9	
			1	2	8	9	
			1	2	8	9	
			1	2	8	9	
*Q118	Some people have tried injecting drugs using a syringe. Have you injected drugs in the last 12 months? **DRUGS INJECTED FOR MEDICAL PURPOSES OR TREATMENT OF AN ILLNESS DO NOT COUNT**	YES NO DON'T KNOW NO RESPONSE	1 2 8 9				

**NOTE:* *Q118 is appropriate for settings where illicit injection drug use is common or suspected.*

Now I am going to ask you some personal questions about sex. Remember we are asking these questions to learn more about how young people like yourself feel, in order to help you make your life safer. We know that some young people have had sexual intercourse and some have sexual intercourse with more than one person. Please answer the following questions honestly. Remember, your name is not written on this questionnaire.

No.	Questions and filters	Coding categories		Skip to
Q201	Have you ever had sexual intercourse? For the purposes of this survey, "sexual intercourse," is defined as vaginal or anal penetrative sexual intercourse.]	YES NO NO RESPONSE	1 2 9	 → **Q503**
Q202	At what age did you first have sexual intercourse?	AGE IN YEARS DON'T KNOW NO RESPONSE	[__|__] 88 99	
Q202A	Was a condom used during this first time you had sexual intercourse?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q203	What was the age of the person with whom you first had sexual intercourse?	AGE IN YEARS DON'T KNOW NO RESPONSE	[__|__] 88 99	
Q204	How much older or younger was the person with whom you had your first sexual experience? READ OUT ANSWERS:	MORE THAN 10 YRS OLDER 5-10 YRS OLDER LESS THAN 5 YRS OLDER YOUNGER DON'T KNOW NO RESPONSE	1 2 3 4 8 9	
Q205	Have you had sexual intercourse in the last 12 months?	YES NO NO RESPONSE	1 2 9	 → **Q503**
Q206	***For FEMALES:*** Think about the male sexual partners you've had in the last 12 months. ***For MALES:*** Think about the female sexual partners you've had in the last 12 months.			

No.	Questions and filters	Coding categories	Skip to
	How many were: - *"Commercial"* (partners with whom you had sex in exchange for money) - *"Non-commercial"* Any partner other than a commercial partner.	**COMMERCIAL** [__|__] DON'T KNOW 88 NO RESPONSE 99 **NON-COMMERCIAL** [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q207	**(Ask of men):** - We've just talked about your female sexual partners. Have you ever had any male sexual partners? - Have you had sexual intercourse with any of your male partners in the past 12 months? (sexual intercourse defined as penetrative anal sex) - How many male partners have you had anal intercourse with in the last 12 months?	YES 1 NO 2 NO RESPONSE 9 YES 1 NO 2 NO RESPONSE 9 **Male partners** [__|__] DON'T KNOW 88 NO RESPONSE 99	 →**Q301** →**Q301**

No.	Questions and filters	Coding categories			Skip to
Q301	**FILTER: CHECK Q206**				
	HAD SEXUAL INTERCOURSE WITH A COMMERCIAL PARTNER IN LAST 12 months...[___] ↓	HAS NOT HAD SEXUAL INTERCOURSE WITH A COMMERCIALPARTNER IN LAST 12 months....	[__]→		→Q401
Q302	Think about your most recent commercial sexual partner. How many times did you have sexual intercourse with this person over the last 30 days?	Number of times	|__|__|		
		DON'T KNOW	88		
		NO RESPONSE	99		
Q303	The last time you had sex with this commercial partner, did you and your partner use a condom?	YES	1		
		NO	2		→ Q305
		DON'T KNOW	8		→ Q306
		NO RESPONSE	9		
Q304	Who suggested condom use that time?	Myself	1		→ Q306
		My partner	2		→ Q306
		Joint decision	3		→ Q306
	CIRCLE ONE	DON'T KNOW	8		→ Q306
		NO RESPONSE	9		
Q305	Why didn't you and your partner use a condom that time?		Y	N	
		Not available	1	2	
		Too expensive	1	2	
	ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING	Partner objected	1	2	
		Don't like them	1	2	
		Used other contraceptive	1	2	
		Didn't think it was necessary	1	2	
		Didn't think of it	1	2	
	CIRCLE ALL ANSWERS MENTIONED	Other________________________	1	2	
		DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q306	With what *frequency* did you and all of your commercial partner(s) use a condom over the last 12 months?	EVERY TIME	1		
		ALMOST EVERY TIME	2		
		SOMETIMES	3		
		NEVER	4		
		DON'T KNOW	8		
		NO RESPONSE	9		

No.	Questions and filters	Coding categories	Skip to
Q401	**FILTER : CHECK Q206** HAD NON-COMMERCIAL SEX PARTNER DURING LAST 12 months......[___] ↓	DID NOT HAVE NON-COMMERCIAL SEX PARTNER DURING LAST 12 months [___]→	→ **Q501**
Q402	Think about your most recent non-commercial sexual partner. How many times did you have sexual intercourse with this person over the last 30 days?	Number of times |__|__| DON'T KNOW 88 NO RESPONSE 99	
Q403	The last time you had sex with this non-commercial partner, did you and your partner use a condom?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	 → **Q405** → **Q406**
Q404	Who suggested condom use that time? **CIRCLE ONE**	Myself 1 My partner 2 Joint decision 3 DON'T KNOW 8 NO RESPONSE 9	→ **Q406** → **Q406** → **Q406** → **Q406**
Q405	Why didn't you and your partner use a condom that time? **ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING** **CIRCLE ALL ANSWERS MENTIONED**	Y N Not available 1 2 Too expensive 1 2 Partner objected 1 2 Don't like them 1 2 Used other contraceptive 1 2 Didn't think it was necessary 1 2 Didn't think of it 1 2 Other_______________ 1 2 DON'T KNOW 1 2 NO RESPONSE 1 2	
Q406	With what *frequency* did you and all of your non-commercial partner(s) use a condom over the last 12 months?	EVERY TIME 1 ALMOST EVERY TIME 2 SOMETIMES 3 NEVER 4 DON'T KNOW 8 NO RESPONSE 9	

No.	Questions and filters	Coding categories			Skip to
Q501	**FILTER: SEE Q303, Q306, Q403, Q406** **CONDOMS NOT USED......[___]** ↓	**CONDOMS USED**	[__]→		→ **Q504**
Q502	Have you and a sexual partner <u>ever</u> used a male condom? (Show picture or sample of one.) (The respondent may not have used a condom with partners in sections 3-4, but may have used a condom at some other time in the past.)	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	→ **Q504**
Q503	Have you ever *heard of* a male condom? **(Show picture or sample of one.)** (I mean a rubber object that a man puts on his penis before sex.)	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	 → **Q507** → **Q507**
Q504	Do you know of any place or person from which you can obtain male condoms?	YES NO NO RESPONSE		1 2 9	 → **Q507**
Q505	Which places or persons do you know where you can obtain male condoms? **PROBE AND RECORD *ALL* ANSWERS** Any others?	 Shop Pharmacy Market Clinic Hospital Family planning center Bar/guest house/hotel Peer educator Friend OTHER___________________ NO RESPONSE	Y 1 1 1 1 1 1 1 1 1 1 1	N 2 2 2 2 2 2 2 2 2 2 2	

No.	Questions and filters	Coding categories		Skip to
Q506	How long would it take you to obtain a male condom close to your house or to where you work?	(Adjust categories as locally appropriate) Under 1 hour More than 1 hour to 1 day 1 day DON'T KNOW NO RESPONSE	 1 2 3 8 9	
Q507	*FOR SEXUALLY ACTIVE RESPONDENTS ONLY:* During the past 12 months, did you ever have sexual intercourse *without* using a condom with any commercial sexual partner or any other sexual partner who you have never lived with and are not married to?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

No.	Questions and filters	Coding categories	Skip to
Q601	Have you ever heard of diseases that can be transmitted through sexual intercourse?	YES 1 NO 2 NO RESPONSE 9	 → **Q604**
Q602	Can you describe any symptoms of STDs in women? ..... Any others? **DO *NOT* READ OUT THE SYMPTOMS** **CIRCLE 1 FOR ALL MENTIONED.** **CIRCLE 2 FOR ALL NOT MENTIONED.** **MORE THAN ONE ANSWER IS POSSIBLE.**	Yes No ABDOMINAL PAIN 1 2 GENITAL DISCHARGE 1 2 FOUL SMELLING DISCHARGE 1 2 BURNING PAIN ON URINATION 1 2 GENITAL ULCERS/SORES 1 2 SWELLINGS IN GROIN AREA 1 2 ITCHING 1 2 OTHER ________________ 1 2 NO RESPONSE 1 2	
Q603	Can you describe any symptoms of STDs in men? ..... Any others? **DO *NOT* READ OUT THE SYMPTOMS** **CIRCLE 1 FOR ALL MENTIONED.** **CIRCLE 2 FOR ALL NOT MENTIONED.** **MORE THAN ONE ANSWER IS POSSIBLE.**	Yes No GENITAL DISCHARGE 1 2 BURNING PAIN ON URINATION 1 2 GENITAL ULCERS/SORES 1 2 SWELLINGS IN GROIN AREA 1 2 OTHER ________________ 1 2 NO RESPONSE 1 2	
Q604	Have you had a genital discharge during the past 12 months?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
Q605	Have you had a genital ulcer/sore during the past 12 months?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR YOUTH

Section 7: Knowledge, opinions, and attitudes

No.	Questions and filters	Coding categories		Skip to
Q701	Have you ever heard of HIV or the disease called AIDS?	YES NO NO RESPONSE	1 2 9	 →**Q801**
Q702a	Do you know anyone who is infected with HIV or who has died of AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	 →**Q703** →**Q703**
Q702b	Do you have a close relative or close friend who is infected with HIV or has died of AIDS?	YES, A CLOSE RELATIVE YES, A CLOSE FRIEND NO NO RESPONSE	1 2 3 9	
Q703	Can people protect themselves from HIV, the virus that causes AIDS by using a condom correctly every time they have sex?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q704	Can a person get the HIV virus from mosquito bites?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q705	Can people protect themselves from HIV by having one uninfected faithful sex partner?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q706	Can people protect themselves from HIV by abstaining from sexual intercourse?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q707	Can a person get HIV by sharing a meal with someone who is infected?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q708	Can a person get HIV by getting injections with a needle that was already used by someone else?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q709	Do you think that a healthy-looking person can be infected with HIV, the virus that causes AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

No.	Questions and filters	Coding categories			Skip to
Q710	Can a pregnant woman infected with HIV or AIDS transmit the virus to her unborn child?	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	 → **Q712** → **Q712**
			Yes	No	
Q711	What can a pregnant woman do to reduce the risk of transmission of HIV to her unborn child? **DO NOT READ LIST** **CIRCLE ALL THAT ARE MENTIONED.**	TAKE MEDICATION (Antiretrovirals) OTHER ____________ DON'T KNOW NO RESPONSE	1 1 1 1	2 2 2 2	
Q712	Can a woman with HIV or AIDS transmit the virus to her newborn child through breastfeeding?	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	
Q713	Is it possible in your community for someone to get a confidential test to find out if they are infected with HIV? By confidential, I mean that no one will know the result if you don't want them to know it.	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	
Q714	I don't want to know the result, but have you ever had an HIV test?	YES NO NO RESPONSE		1 2 9	 → **Q801**
Q715	Did you voluntarily undergo the HIV test, or were you required to have the test?	Voluntary Required NO RESPONSE		1 2 9	
Q716	Please do not tell me the result, but did you find out the result of your test?	YES NO NO RESPONSE		1 2 9	
Q717	When did you have your most recent HIV test?	WITHIN THE PAST YEAR BETWEEN 1-2 YEARS BETWEEN 2-4 YEARS MORE THAN 4 YEARS AGO DON'T KNOW NO RESPONSE		1 2 3 4 8 9	

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR YOUTH

Section 8: Exposure to interventions (optional)

[A section on exposure to interventions can be added here if the target group has already received some kind of HIV/AIDS/STD prevention interventions. Specific questions designed to assess exposure would need to be developed locally.]

That is the end of our questionnaire. Thank you very much for taking time to answer these questions. We appreciate your help.

POSSIBLE ADDITIONAL QUESTIONS

Communications

No.	Questions and filters	Coding categories		Skip to
	During the last 4 weeks how often have you listened to the radio? Would you say ... **READ OUT** **CIRCLE ONE**	Every day At least once a week Less than once a week Did not listen to radio in last 4 weeks DON'T KNOW NO RESPONSE	1 2 3 4 8 9	
	During the last 4 weeks how often have you watched television? Would you say ... **READ OUT** **CIRCLE ONE**	Every day At least once a week Less than once a week Did not watch television in last 4 weeks DON'T KNOW NO RESPONSE	1 2 3 4 8 9	

Female Condom

No.	Questions and filters	Coding categories			Skip to
	Have you ever heard of a female condom? **(Show picture or sample of one.)** (I mean a rubber object that a woman puts into her vagina before sex.)	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	
	Have you ever used a female condom? **(Show picture or sample of one.)**	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	
	Do you know any place or person where you can obtain female condoms?	YES NO NO RESPONSE		1 2 9	
	Which (other) places or persons do you know where you can obtain female condoms? **PROBE AND RECORD *ALL* ANSWERS**	 Shop Pharmacy Market Clinic Hospital Family planning center Bar/guest house/hotel Peer educator Friend OTHER___________ NO RESPONSE	Yes 1 1 1 1 1 1 1 1 1 1 1	No 2 2 2 2 2 2 2 2 2 2 2	

STD Treatment seeking behaviors

No.	Questions and filters	Coding categories				Skip to
	FILTER: CHECK Q* AND Q***** HAD GENITAL DISCHARGE AND/OR GENITAL ULCER......[___] IN LAST 12 MONTHS ↓	NO DISCHARGE OR ULCER IN LAST 12 MONTHS [__]→				→
	Did you do any of the following the last time you had a genital ulcer/sore or genital discharge: **READ OUT. MORE THAN ONE ANSWER IS POSSIBLE.**	Yes	No	DK	NR	
	a. Seek advice/medicine from a government clinic or hospital?	1	2	8	9	
	b. Seek advice/medicine from a workplace clinic or hospital?	1	2	8	9	
	c. Seek advice/medicine from a church or charity-run clinic or hospital?	1	2	8	9	
	d. Seek advice/medicine from a private clinic or hospital?	1	2	8	9	
	e. Seek advice/medicine from a private pharmacy?	1	2	8	9	
	f. Seek advice/medicine from a traditional healer?	1	2	8	9	
	g. Took medicine you had at home?	1	2	8	9	
	h. Tell your sexual partner about the discharge/ STD?	1	2	8	9	
	i. Stop having sex when you had the symptoms?	1	2	8	9	
	j. Use a condom when having sex during the time you had the symptoms?	1	2	8	9	

No.	Questions and filters	Coding categories			Skip to
	Which of these things did you do FIRST? **ONLY ONE ANSWER IS POSSIBLE.** (ADD OTHER LOCALLY APPROPRIATE CATEGORIES IF NECESSARY.)	a. Seek advice/medicine from a government clinic or hospital?		1	
		b. Seek advice/medicine from a workplace clinic or hospital?		2	
		c. Seek advice/medicine from a church or charity-run clinic or hospital?		3	
		d. Seek advice/medicine from a private clinic or hospital?		4	
		e. Seek advice/medicine from a private pharmacy?		5	
		f. Seek advice/medicine from a traditional healer?		6	
		g. Took medicine you had at home?		7	
		h. Other________________________		8	
		DON'T REMEMBER		88	
		NO RESPONSE		99	
	If you took medicine for the last episode of symptoms, from where did you obtain the medicine? **CIRCLE ALL THAT APPLY.**		Yes	No	
		Health worker in clinic/hospital	1	2	
		Pharmacy	1	2	
		Traditional healer	1	2	
		Friend or relative	1	2	
		"Took medicine I had at home"	1	2	
		Did not take any medicine	1	2	
		DON'T REMEMBER	1	2	
		NO RESPONSE	1	2	

No.	Questions and filters	Coding categories		Skip to
	How much did you pay for the medicine you took?	[___][___] ADAPT TO LOCALLY APPROPRIATE CATEGORIES		
	FILTER: SEE Q*:** Sought advice from a health worker in clinic or hospital: [___] Yes ↓	No [__] →		→**Q**
	How long after first experiencing symptoms did you seek advice from a health worker in a clinic or hospital?	1 week or less	1	
		Less than 1 month but more than 1 week	2	
		One month or more	3	
		DON'T KNOW	8	
		NO RESPONSE	9	
	Did you receive a prescription for medicine?	Yes	1	
		No	2	
		DON'T REMEMBER	8	
		NO RESPONSE	9	
	Did you obtain the medicine prescribed?	Yes, I obtained all of it	1	
		I obtained some but not all	2	
		I did not obtain the medicine	3	
		DON'T REMEMBER	8	
		NO RESPONSE	9	
	Did you take all of the medicine prescribed?	Yes	1	
		No	2	
		DON'T KNOW	8	
		NO RESPONSE	9	
	If not, why did you not take all of the medicine prescribed? **CIRCLE ALL THAT APPLY.**	(List locally appropriate categories)	Yes No 1 2	
		DON'T REMEMBER	1 2	
		NO RESPONSE	1 2	

Stigma and Discrimination

No.	Questions and filters	Coding categories		Skip to
	Would you be willing to share a meal with a person you knew had HIV or AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a male relative of yours became ill with HIV, the virus that causes AIDS, would you be willing to care for him in your household?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a student has HIV but is not sick, should he or she be allowed to continue attending school?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a female relative of yours became ill with HIV, the virus that causes AIDS, would you be willing to care for her in your household?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a teacher has HIV but is not sick, should he or she be allowed to continue teaching in school?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If you knew a shopkeeper or food seller had HIV, would you buy food from them?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a member of your family became ill with HIV, the virus that causes AIDS, would you want it to remain secret?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

Voluntary vs. Involuntary Sexual Relations

	FOR WOMAN ***:*** During the past 12 months, did any of your sexual partner(s) force you to have sex with them even though you did not want to have sex?	YES NO NO RESPONSE	1 2 9	

QUESTIONNAIRE

For Female Sex Workers (FSWs)

FAMILY HEALTH INTERNATIONAL (FHI)
HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEYS (BSS)

FOR USE WITH FEMALE SEX WORKER (FSWs)

TITLE OF SURVEY - COUNTRY - YEAR CONDUCTED

001 QUESTIONNAIRE IDENTIFICATION NUMBER |___|___|___|

002 CITY_______________________ (provide locally appropriate categories)

003 REGION____________________ (provide locally appropriate categories)

004 SITE_______________________ (provide locally appropriate categories)

Introduction : "My name is... I'm working for... We're interviewing people here in [name of city, region or site] in order to find out about... [describe purpose of study]. Have you been interviewed in the past few weeks [or other appropriate time period] for this study? **IF THE RESPONDENT HAS BEEN INTERVIEWED BEFORE DURING THIS ROUND OF BSS, DO NOT INTERVIEW THIS PERSON AGAIN.** Tell them you cannot interview them a second time, thank them, and end the interview. If they have not been interviewed before, continue:

Confidentiality and consent : "I'm going to ask you some very personal questions that some people find difficult to answer. Your answers are completely confidential. Your name will not be written on this form, and will never be used in connection with any of the information you tell me. You do not have to answer any questions that you do not want to answer, and you may end this interview at any time you want to. However, your honest answers to these questions will help us better understand what people think, say and do about certain kinds of behaviors. We would greatly appreciate your help in responding to this survey. The survey will take about XX minutes to ask the questions. Would you be willing to participate?"

____

(Signature of interviewer certifying that informed consent has been given verbally by respondent)

Interviewer visit

	Visit 1	Visit 2	Visit 3
Date			
Interviewer			
Result			

Result codes : Completed 1; Respondent not available 2; Refused 3; Partially completed 4; Other 5.

005 INTERVIEWER : Code [____|____] Name___________________________

006 DATE INTERVIEW : __\ ____ \ _____

CHECKED BY SUPERVISOR : Signature _____________________ Date ___________

The FEMALE SEX WORKER questionnaire includes the following sections:

Section 0 - Questionnaire identification data (6 codes)	
Section 2 - Background characteristics	13 questions
Section 3 - Marriage, family, work	9 questions
Section 4 - Sexual history: Number and types of partners	3 questions
Section 5 - Sexual history: paying clients	6 questions
Section 6 - Sexual history: non-paying partners	6 questions
Section 7 - Male condoms	7 questions
Section 8 - STDs	5 questions
Section 9 - Knowledge, opinions, and attitudes towards HIV/AIDS	18 questions
Section 10 - Exposure to interventions	(variable)
TOTAL NUMBER OF QUESTIONS :	**67 questions**

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR FSWs

Section 1: Background characteristics

No.	Questions and filters	Coding categories	Skip to
Q101	In what month and year were you born?	MONTH [__|__] DON'T KNOW MONTH 88 NO RESPONSE 99 YEAR [__|__] DON'T KNOW YEAR 88 NO RESPONSE 99	
Q102	How old were you at your last birthday? **(Compare/AND CORRECT Q101 if needed)**	AGE IN COMPLETED YEARS [__|__] DON'T KNOW 88 NO RESPONSE 99 **ESTIMATE BEST ANSWER**	
Q103	Have you ever attended school?	YES 1 NO 2 NO RESPONSE 9	→ **Q106**
Q104	What is the highest level of school you completed: primary, secondary or higher? **CIRCLE ONE**	(List locally appropriate categories) PRIMARY 1 SECONDARY 2 HIGHER 3 NO RESPONSE 9	
Q105	How many total years of education have you completed up to now?	# YEARS COMPLETED [__|__] NO RESPONSE 99	
Q106	How long have you lived here in (NAME OF COMMUNITY/TOWN NEIGHBORHOOD/VILLAGE) ?	NUMBER OF YEARS [__|__] RECORD 00 IF LESS THAN 1 YEAR DON'T KNOW 88 NO RESPONSE 99	
Q107	Where else did you do sex work before coming to this community?	LOCALLY APPROPRIATE RESPONSES Never worked in the other place before NO RESPONSE 99	
Q108	Where were you born?	LOCALLY APPROPRIATE RESPONSES DON'T KNOW 88 NO RESPONSE 99	

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR FSWs

Section 1: Background characteristics (continued)

No.	Questions and filters	Coding categories	Skip to
Q109	What religion are you? **CIRCLE ONE**	(List locally appropriate categories) NO RELIGION 0 NO RESPONSE 9	
Q110	To which ethnic group do you belong? **CIRCLE ONE**	(List locally appropriate categories) MIXED ETHNICITY 0 NO RESPONSE 9	
Q111	During the last 4 weeks how often have you had drinks containing alcohol? Would you say ......**READ OUT** **CIRCLE ONE**	Every day 1 At least once a week 2 Less than once a week or never 3 DON'T KNOW 8 NO RESPONSE 9	
Q112	Some people have tried a range of different types of drugs. Which of the following, if any, have you tried? **READ LIST** **CIRLCLE ALL THAT APPLY.**	YES NO DK NR (List locally 1 2 8 9 appropriate 1 2 8 9 categories) 1 2 8 9 1 2 8 9	
*Q113	Some people have tried injecting drugs using a syringe. Have you injected drugs in the last 12 months? **DRUGS INJECTED FOR MEDICAL PURPOSES OR TREATMENT OF AN ILLNESS DO NOT COUNT**	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	

**NOTE:* *Q113 is appropriate for settings where illicit injection drug use is common or suspected.*

No.	Questions and filters	Coding categories	Skip to
Q201	Have you *ever* been married?	YES 1 NO 2 NO RESPONSE 9	 → **Q203** → **Q203**
Q202	How old were you when you first married?	Age in years [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q203	Are you *currently* married or living or living with a sexual partner?	currently married, living with spouse 1 currently married, living with other sexual partner 2 currently married, not living with spouse or any other sexual partner 3 not married, living with sexual partner 4 not married, not living with sexual partner 5 NO RESPONSE 9	→ **Q204** → **Q204** → **Q204** → **Q205** → **Q205** → **Q205**
*Q204	Does your spouse/partner have other wives?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
Q205	At what age did you first receive money for sex?	AGE IN YEARS [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q206	Do you earn money doing work other than sex work?	YES 1 NO 2 NO RESPONSE 9	 →**Q208**
Q207	What is this other work? **MULTIPLE ANSWERS POSSIBLE**	YES NO DK NR (List locally 1 2 8 9 appropriate 1 2 8 9 categories) 1 2 8 9 1 2 8 9	
Q208	Are you supporting anyone (children, parents or others) now?	YES 1 NO 2 NO RESPONSE 9	 →**Q301**
Q209	How many people are you supporting now?	NUMBER OF PEOPLE [__|__] DON'T KNOW 88 NO RESPONSE 99	

**NOTE:* *Q204 is appropriate for setting where polygamy is practiced.*

Section 3: Sexual history: numbers and types of partners

No.	Questions and filters	Coding categories	Skip to
Q301	Now I'd like to ask you some questions about your sexual partners... At what age did you first have sex ?	AGE IN YEARS [__|__] DON'T REMEMBER 88 NO RESPONSE 99	
Q302	Among all of your partners in the last seven days (one week), how many were: - PAYING CLIENTS: How many were partners who you had sex with in exchange for money? - NON-PAYING PARTNERS: Partners you have sex with who do not give you money in exchange for sex **(INCLUDE SPOUSE AND LIVE-IN SEXUAL PARTNERS)**	PAYING CLIENTS [__|__] DON'T KNOW 88 NO RESPONSE 99 NON-PAYING PARTNERS [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q 303	With how many *different* sexual partners in total have you had sex during the last seven days (one week)? **INCLUDE SPOUSE(S) AND LIVE-IN SEXUAL PARTNERS** **NOTE: CHECK TOTAL NUMBERS OF PARTNER IN Q302 AND Q303 TO MAKE SURE THE NUMBERS MATCH.**	NUMBER IN LAST 7 DAYS [__|__] DON'T KNOW 88 NO RESPONSE 99	

No.	Questions and filters	Coding categories			Skip to
Q401	On the last *day* you worked, how many clients did you have?	Number of clients |__|__|			
		DON'T KNOW	88		
		NO RESPONSE	99		
Q402	The last time you had sex with a client, how much money did you receive?	List amount of money in local currency			
		DON'T KNOW	88		
		NO RESPONSE	99		
Q403	The last time you had sex with this client, did you and your client use a condom?	YES	1		
		NO	2		→ **Q405**
		DON'T KNOW	8		→ **Q406**
		NO RESPONSE	9		
Q404	Who suggested condom use that time?	Myself	1		→ **Q406**
		My partner	2		→ **Q406**
		Joint decision	3		→ **Q406**
	CIRCLE ONE	DON'T KNOW	8		→ **Q406**
		NO RESPONSE	9		
Q405	Why didn't you and your client use a condom that time?		Y	N	
		Not available	1	2	
		Too expensive	1	2	
		Partner objected	1	2	
		Don't like them	1	2	
	ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING	Used other contraceptive	1	2	
		Didn't think it was necessary	1	2	
		Didn't think of it	1	2	
		Other________________	1	2	
	CIRCLE ALL ANSWERS MENTIONED	DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q406	With what *frequency* did you and all of your clients use condoms over the last 30 days?	EVERY TIME	1		
		ALMOST EVERY TIME	2		
		SOMETIMES	3		
		NEVER	4		
		DON'T KNOW	8		
		NO RESPONSE	9		

No.	Questions and filters	Coding categories	Skip to
Q501	**FILTER: CHECK Q302** HAD NON-PAYING [___] PARTNER ↓	HAS NO NON-PAYING PARTNER [__]→	→ **Q601**
Q502	Think about your most recent non-paying sexual partner. How many times did you have sexual intercourse with this person over the last 30 days?	Number of times |__|__| DON'T KNOW 88 NO RESPONSE 99	
Q503	The last time you had sex with this NON-PAYING partner, did you and your partner use a condom?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	 → **Q505** → **Q505**
Q504	Who suggested condom use that time? **CIRCLE ONE**	Myself 1 My partner 2 Joint decision 3 DON'T KNOW 8 NO RESPONSE 9	→ **Q506** → **Q506** → **Q506** → **Q506**
Q505	Why didn't you and your partner use a condom that time? **ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING.** **CIRCLE ALL ANSWERS MENTIONED.**	Y N Not available 1 2 Too expensive 1 2 Partner objected 1 2 Don't like them 1 2 Used other contraceptive 1 2 Didn't think it was necessary 1 2 Didn't think of it 1 2 Other________________ 1 2 DON'T KNOW 1 2 NO RESPONSE 1 2	
Q506	With what *frequency* did you and all of your non-paying partner(s) use a condom over the last 12 months?	EVERY TIME 1 ALMOST EVERY TIME 2 SOMETIMES 3 NEVER 4 DON'T KNOW 8 NO RESPONSE 9	

No.	Questions and filters	Coding categories			Skip to
Q601	**FILTER: SEE Q403, Q406, Q503, Q506** **CONDOMS NOT USED**......[___] ↓	**CONDOMS USED**	[__]→		→ **Q604**
Q602	Have you and *any* sexual partner *ever* used a male condom? **(Show picture or sample of one.)** (The respondent may not have used a condom with partners in sections 4-5, but may have used a condom at some other time in the past.)	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	→ **Q604**
Q603	Have you ever *heard of* a male condom? **(Show picture or sample of one.)** (I mean a rubber object that a man puts on his penis before sex.)	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	 → **Q701** → **Q701**
Q604	Do you know of any place or person from which you can obtain male condoms?	YES NO NO RESPONSE		1 2 9	 → **Q607**
Q605	Which places or persons do you know where you can obtain male condoms? **PROBE AND RECORD *ALL* ANSWERS** Any others?		Y	N	
		Shop	1	2	
		Pharmacy	1	2	
		Market	1	2	
		Clinic	1	2	
		Hospital	1	2	
		Family planning center	1	2	
		Bar/guest house/hotel	1	2	
		Peer educator	1	2	
		Friend	1	2	
		OTHER____________________	1	2	
		NO RESPONSE	1	2	

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR FSWs

Section 6: Male condoms (continued)

No.	Questions and filters	Coding categories		Skip to
Q606	How long does it take you to obtain a condom close to your house or to where you work?	(Adjust categories as locally appropriate)		
		Under 1 hour	1	
		1 hour to 1 day	2	
		More than 1 day	3	
		DON'T KNOW	8	
		NO RESPONSE	9	
Q607	How many condoms do you have on-hand right now in your room (if brothel-based) or on your person (if street-based).	Number of condoms on-hand	|__|__|	
		NO RESPONSE	99	

No.	Questions and filters	Coding categories			Skip to
Q701	Have you ever heard of diseases that can be transmitted through sexual intercourse?	YES		1	
		NO		2	→**Q704**
		NO RESPONSE		9	
			Yes	No	
Q702	Can you describe any symptoms of STDs in women? ..... Any others?	ABDOMINAL PAIN	1	2	
		GENITAL DISCHARGE	1	2	
	DO *NOT* READ OUT THE SYMPTOMS	FOUL SMELLING DISCHARGE	1	2	
		BURNING PAIN ON URINATION	1	2	
	CIRCLE 1 FOR ALL MENTIONED.	GENITAL ULCERS/SORES	1	2	
		SWELLINGS IN GROIN AREA	1	2	
	CIRCLE 2 FOR ALL *NOT* MENTIONED.	ITCHING	1	2	
		OTHER ________________	1	2	
	MORE THAN ONE ANSWER IS POSSIBLE.	NO RESPONSE	1	2	
			Yes	No	
Q703	Can you describe any symptoms of STDs in men? ..... Any others?	GENITAL DISCHARGE	1	2	
		BURNING PAIN ON URINATION	1	2	
	DO *NOT* READ OUT THE SYMPTOMS	GENITAL ULCERS/SORES	1	2	
		SWELLINGS IN GROIN AREA	1	2	
	CIRCLE 1 FOR ALL MENTIONED.	OTHER ________________	1	2	
	CIRCLE 2 FOR *ALL* NOT MENTIONED.	NO RESPONSE	1	2	
	MORE THAN ONE ANSWER IS POSSIBLE.				
Q704	Have you had a genital discharge during the past 12 months?	YES		1	
		NO		2	
		DON'T KNOW		8	
		NO RESPONSE		9	
Q705	Have you had a genital ulcer/sore during the past 12 months?	YES		1	
		NO		2	
		DON'T KNOW		8	
		NO RESPONSE		9	

No.	Questions and filters	Coding categories		Skip to
Q801	Have you ever heard of HIV or the disease called AIDS?	YES NO NO RESPONSE	1 2 9	 → **Q901**
Q802a	Do you know anyone who is infected with HIV or who has died of AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	 → **Q803** → **Q803**
Q802b	Do you have a close relative or close friend who is infected with HIV or has died of AIDS?	YES, A CLOSE RELATIVE YES, A CLOSE FRIEND NO NO RESPONSE	1 2 3 9	
Q803	Can people protect themselves from HIV the virus that causes AIDS by using a condom correctly every time they have sex?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q804	Can a person get HIV from mosquito bites?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q805	Can people protect themselves from HIV by having one uninfected faithful sex partner?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q806	Can people protect themselves from the HIV virus by abstaining from sexual intercourse?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q807	Can a person get HIV by sharing a meal with someone who is infected?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q808	Can a person get HIV by getting injections with a needle that was already used by someone else?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q809	Do you think that a healthy-looking person can be infected with HIV, the virus that causes AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

No.	Questions and filters	Coding categories			Skip to
Q810	Can a pregnant woman infected with HIV or AIDS transmit the virus to her unborn child?	YES		1	
		NO		2	→ **Q812**
		DON'T KNOW		8	→ **Q812**
		NO RESPONSE		9	
			Yes	No	
Q811	What can a pregnant woman do to reduce the risk of transmission of HIV to her unborn child? **DO NOT READ LIST** **CIRCLE ALL THAT ARE MENTIONED.**	TAKE MEDICATION (Antiretrovirals)	1	2	
		OTHER ________________	1	2	
		DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q812	Can a woman with HIV or AIDS transmit the virus to her newborn child through breastfeeding?	YES		1	
		NO		2	
		DON'T KNOW		8	
		NO RESPONSE		9	
Q813	Is it possible in your community for someone to get a confidential test to find out if they are infected with HIV? By confidential, I mean that no one will know the result if you don't want them to know it.	YES		1	
		NO		2	
		DON'T KNOW		8	
		NO RESPONSE		9	
Q814	I don't want to know the result, but have you ever had an HIV test?	YES		1	
		NO		2	→ **Q901**
		NO RESPONSE		9	
Q815	Did you voluntarily undergo the HIV test, or were you required to have the test?	Voluntary		1	
		Required		2	
		NO RESPONSE		9	
Q816	Please do not tell me the result, but did you find out the result of your test?	YES		1	
		NO		2	
		NO RESPONSE		9	
Q817	When did you have your most recent HIV test?	WITHIN THE PAST YEAR		1	
		BETWEEN 1-2 YEARS		2	
		BETWEEN 2-4 YEARS		3	
		MORE THAN 4 YEARS AGO		4	
		DON'T KNOW		8	
		NO RESPONSE		9	

Section 9: Exposure to interventions (optional)

[A section on exposure to interventions can be added here if the target group has already received some kind of HIV/AIDS/STD prevention interventions. Specific questions designed to assess exposure would need to be developed locally.]

That is the end of our questionnaire. Thank you very much for taking time to answer these questions. We appreciate your help.

POSSIBLE ADDITIONAL QUESTIONS

Communications

No.	Questions and filters	Coding categories		Skip to
	During the last 4 weeks how often have you listened to the radio? Would you say ... **READ OUT** **CIRCLE ONE**	Every day At least once a week Less than once a week Did not listen to radio in last 4 weeks DON'T KNOW NO RESPONSE	1 2 3 4 8 9	
	During the last 4 weeks how often have you watched television? Would you say ... **READ OUT** **CIRCLE ONE**	Every day At least once a week Less than once a week Did not watch television in last 4 weeks DON'T KNOW NO RESPONSE	1 2 3 4 8 9	

Female Condom

No.	Questions and filters	Coding categories	Skip to
	Have you ever heard of a female condom? **(Show picture or sample of one.)** (I mean a rubber object that a woman puts into her vagina before sex.)	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
	Have you ever used a female condom? **(Show picture or sample of one.)**	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
	Do you know any place or person where you can obtain female condoms?	YES 1 NO 2 NO RESPONSE 9	
	Which (other) places or persons do you know where you can obtain female condoms? **PROBE AND RECORD *ALL* ANSWERS**	Yes No Shop 1 2 Pharmacy 1 2 Market 1 2 Clinic 1 2 Hospital 1 2 Family planning center 1 2 Bar/guest house/hotel 1 2 Peer educator 1 2 Friend 1 2 OTHER________________ 1 2 NO RESPONSE 1 2	

STD Treatment seeking behaviors

No.	Questions and filters	Coding categories				Skip to
	FILTER: CHECK Q* AND Q***** HAD GENITAL DISCHARGE AND/OR GENITAL ULCER......[___] IN LAST 12 MONTHS ↓	NO DISCHARGE OR ULCER IN LAST 12 MONTHS [__]→				→
	Did you do any of the following the last time you had a genital ulcer/sore or genital discharge: **READ OUT. MORE THAN ONE ANSWER IS POSSIBLE.**	Yes	No	DK	NR	
	a. Seek advice/medicine from a government clinic or hospital?	1	2	8	9	
	b. Seek advice/medicine from a workplace clinic or hospital?	1	2	8	9	
	c. Seek advice/medicine from a church or charity-run clinic or hospital?	1	2	8	9	
	d. Seek advice/medicine from a private clinic or hospital?	1	2	8	9	
	e. Seek advice/medicine from a private pharmacy?	1	2	8	9	
	f. Seek advice/medicine from a traditional healer?	1	2	8	9	
	g. Took medicine you had at home?	1	2	8	9	
	h. Tell your sexual partner about the discharge/ STD?	1	2	8	9	
	i. Stop having sex when you had the symptoms?	1	2	8	9	
	j. Use a condom when having sex during the time you had the symptoms?	1	2	8	9	

STD Treatment seeking behaviors (continued)

No.	Questions and filters	Coding categories		Skip to
	Which of these things did you do FIRST? **ONLY ONE ANSWER IS POSSIBLE.** ADD OTHER LOCALLY APPROPRIATE CATEGORIES IF NECESSARY.)	a. Seek advice/medicine from a government clinic or hospital?	1	
		b. Seek advice/medicine from a workplace clinic or hospital?	2	
		c. Seek advice/medicine from a church or charity-run clinic or hospital?	3	
		d. Seek advice/medicine from a private clinic or hospital?	4	
		e. Seek advice/medicine from a private pharmacy?	5	
		f. Seek advice/medicine from a traditional healer?	6	
		g. Took medicine you had at home?	7	
		h. Other______________________	8	
		DON'T REMEMBER	88	
		NO RESPONSE	99	

No.	Questions and filters	Coding categories	Yes	No	Skip to
	If you took medicine for the last episode of symptoms, from where did you obtain the medicine? **CIRCLE ALL THAT APPLY.**	Health worker in clinic/hospital	1	2	
		Pharmacy	1	2	
		Traditional healer	1	2	
		Friend or relative	1	2	
		"Took medicine I had at home"	1	2	
		Did not take any medicine	1	2	
		DON'T REMEMBER	1	2	
		NO RESPONSE	1	2	

STD Treatment seeking behaviors (continued)

No.	Questions and filters	Coding categories		Skip to
	How much did you pay for the medicine you took?	[___][___] ADAPT TO LOCALLY APPROPRIATE CATEGORIES		
	FILTER: SEE Q*:** Sought advice from a health worker in clinic or hospital [___] Yes ↓	No [__] →		→**Q**
	How long after first experiencing symptoms did you seek advice from from a health worker in a clinic or hospital?	1 week or less Less than 1 month but more than 1 week One month or more DON'T KNOW NO RESPONSE	1 2 3 8 9	
	Did you receive a prescription for medicine?	Yes No DON'T REMEMBER NO RESPONSE	1 2 8 9	
	Did you obtain the medicine prescribed?	Yes, I obtained all of it I obtained some but not all I did not obtain the medicine DON'T REMEMBER NO RESPONSE	1 2 3 8 9	
	Did you take all of the medicine prescribed?	Yes No DON'T KNOW NO RESPONSE	1 2 8 9	
	If not, why did you not take all of the medicine prescribed? **CIRCLE ALL THAT APPLY.**	(List locally appropriate categories) DON'T REMEMBER NO RESPONSE	Yes No 1 2 1 2 1 2	

Stigma and Discrimination

No.	Questions and filters	Coding categories		Skip to
	Would you be willing to share a meal with a person you knew had HIV or AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a male relative of yours became ill With HIV, the virus that causes AIDS, would you be willing to care for him in your household?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a student has HIV but is not sick, should he or she be allowed to continue attending school?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a female relative of yours became ill With HIV, the virus that causes AIDS, would you be willing to care for her in your household?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a teacher has HIV but is not sick, should he or she be allowed to continue teaching in school?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If you knew a shopkeeper or food seller had HIV, would you buy food from them?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a member of your family became ill with HIV, the virus that causes AIDS, would you want it to remain secret?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

Voluntary vs. Involuntary Sexual Relations

	During the past 12 months, did any of your sexual partners(s) force you to have sex with them even though you did not want to have sex?	YES NO NO RESPONSE	1 2 9	

Questionnaire

For Men Who Have Sex With Men (MSM)

FAMILY HEALTH INTERNATIONAL (FHI)
HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEYS (BSS)

FOR USE WITH MEN WHO HAVE SEX WITH MEN (MSM)

TITLE OF SURVEY - COUNTRY - YEAR CONDUCTED

Operational definition of respondent: Men who have had manual, oral, or anal sex with another man in the past six months

001 QUESTIONNAIRE IDENTIFICATION NUMBER |___|___|___|

002 CITY________________________ (provide locally appropriate categories)

003 REGION_____________________ (provide locally appropriate categories)

004 SITE________________________ (provide locally appropriate categories)

Introduction : "My name is... I'm working for... We're interviewing people here in [name of city, region or site] in order to find out about...[describe purpose of study]. Have you been interviewed in the past few weeks [or other appropriate time period] for this study? **IF THE RESPONDENT HAS BEEN INTERVIEWED BEFORE DURING THIS ROUND OF BSS, DO NOT INTERVIEW THIS PERSON AGAIN.** Tell them you cannot interview them a second time, thank them, and end the interview. If they have not been interviewed before, continue:

Confidentiality and consent : "I'm going to ask you some very personal questions that some people find difficult to answer. Your answers are completely confidential. Your name will not be written on this form, and will never be used in connection with any of the information you tell me. You do not have to answer any questions that you do not want to answer, and you may end this interview at any time you want to. However, your honest answers to these questions will help us better understand what people think, say and do about certain kinds of behaviors. We would greatly appreciate your help in responding to this survey. The survey will take about XX minutes to ask the questions. Would you be willing to participate?"

____

(Signature of interviewer certifying that informed consent has been given verbally by respondent)

Interviewer visit

	Visit 1	Visit 2	Visit 3
Date			
Interviewer			
Result			

Result codes : Completed 1; Respondent not available 2; Refused 3; Partially completed 4; Other 5.

005 INTERVIEWER : Code [____|____] Name___________________________

006 DATE INTERVIEW : __\ ____ \ _____

CHECKED BY SUPERVISOR : Signature ____________________ Date ___________

The MSM questionnaire includes the following sections :

Section 0 - Questionnaire identification data (6 codes)	
Section 1 - Background characteristics	12 questions
Section 2 - Marriage and partnerships	3 questions
Section 3 - Sexual history: numbers and types of partners	8 questions
Section 4 - Sexual history: commercial partners	6 questions
Section 5 - Sexual history: other non-regular partners	6 questions
Section 6 - Sexual history: sex with females	4 questions
Section 7 - Male condoms and lubricants	11 questions
Section 8 - STDs	7 questions
Section 9 - Knowledge, opinions, and attitudes towards HIV/AIDS	20 questions
Section 10 - Exposure to interventions	(variable)
TOTAL NUMBER OF QUESTIONS :	**77 questions**

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR MSM

Section 1: Background characteristics

No.	Questions and filters	Coding categories		Skip to
REMEMBER THAT ONLY MALES ARE TO BE INTERVIEWED WITH THIS INSTRUMENT.				
Q101	In what month and year were you born?	MONTH DON'T KNOW MONTH NO RESPONSE YEAR DON'T KNOW YEAR NO RESPONSE	[__|__] 88 99 [__|__] 88 99	
Q102	How old were you at your last birthday? **(Compare and correct Q101 if needed)**	AGE IN COMPLETED YEARS DON'T KNOW NO RESPONSE **ESTIMATE BEST ANSWER**	[__|__] 88 99	
Q103	Have you ever attended school?	YES NO NO RESPONSE	1 2 9	→ **Q106**
Q104	What is the highest level of school you completed: primary, secondary or higher? **CIRCLE ONE**	(List locally appropriate categories) PRIMARY SECONDARY HIGHER NO RESPONSE	 1 2 3 9	
Q105	How many total years of education have you completed up to now?	# YEARS COMPLETED NO RESPONSE	[__|__] 99	
Q106	How long have you lived here in (NAME OF COMMUNITY/ TOWN NEIGHBORHOOD/VILLAGE)?	NUMBER OF YEARS RECORD 00 IF LESS THAN 1 YEAR DON'T KNOW NO RESPONSE	[__|__] 88 99	

Section 1: Background characteristics (continued)

No.	Questions and filters	Coding categories	Skip to
Q107	In the last 12 months have you been away from this community for one continuous month or more?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
Q108	What religion are you? **CIRCLE ONE**	(List locally appropriate categories) NO RELIGION 0 NO RESPONSE 9	
Q109	To which ethnic group do you belong? **CIRCLE ONE**	(List locally appropriate categories) MIXED ETHNICITY 0 NO RESPONSE 9	
Q110	During the last 4 weeks how often have you had drinks containing alcohol? Would you say ...... **READ OUT** **CIRCLE ONE**	Every day 1 At least once a week 2 Less than once a week or never 3 DON'T KNOW 8 NO RESPONSE 9	
Q111	Some people have tried a range of different types of drugs. Which of the following, if any, have you tried? **READ LIST**	YES NO DK NR (List locally 1 2 8 9 appropriate 1 2 8 9 categories) 1 2 8 9 1 2 8 9	
*Q112	Some people have tried injecting drugs using a syringe. Have you injected drugs in the last 12 months? **DRUGS INJECTED FOR MEDICAL PURPOSES OR TREATMENT OF AN ILLNESS DO NOT COUNT**	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	

**NOTE :* *Q112 is appropriate for settings where illicit injection drug use is common or suspected*

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR MSM

Section 2: Marriage and partnerships

No.	Questions and filters	Coding categories		Skip to
Q201	Have you *ever* been married to a woman?	YES NO NO RESPONSE	1 2 9	
Q202	Are you *currently* married or living with a female sexual partner?	Currently married, living with female spouse	1	
		currently married, living with other female sexual partner	2	
		currently married, not living with spouse or any other female sexual partner	3	
		not married, living with female sexual partner	4	
		not married, not living with female sexual partner	5	
		NO RESPONSE	9	
Q203	In the past six months, have you had any sexual contact with another man, that is, have you done any of the following: oral sex, anal sex, or have you touched the penis of another man, or had another man touch your penis for sexual arousal? ***(This question will need to be adapted for each local setting)***	YES NO NO RESPONSE	1 2 9	 → **Q1001**

Section 3: Sexual history: numbers and types of partners

No.	Questions and filters	Coding categories		Skip to
Q301	I would now like to ask you several questions about different kinds of sex with men. In the past six months, have you had oral sex with a man, that is, where another man has put his penis in your mouth or you have put your penis in his mouth?	YES NO NO RESPONSE	1 2 9	 → **Q306**
Q302	Think about how many different partners you have had oral sex with in the past six months. **READ OUT :** Please take time to think about your answer to this question so that we can get the most accurate information possible. Remember this information is strictly confidential.	NUMBER IN THE PAST SIX MONTHS DON'T KNOW NO RESPONSE	[__|__] 88 99	
Q303	The last time you had oral sex, did you or your partner use a condom?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q304	With what frequency did you or your partners use a condom with oral sex during the past 6 months?	EVERY TIME ALMOST EVERY TIME SOMETIMES NEVER DON'T KNOW NO RESPONSE	1 2 3 4 8 9	
Q305	In the past six months, did you ejaculate in another man's mouth or did a man ejaculate in your mouth?	YES NO DON'T REMEMBER NO RESPONSE	1 2 8 9	

No.	Questions and filters	Coding categories	Skip to
Q306	Now please think about how many different men you have had anal sex with, that is, both the number where you have been the insertive partner and the number where you have been the receptive partner in the past six months. (THIS WILL NEED TO BE ADAPTED FOR LOCAL SETTINGS.) **READ OUT :** **Please take time to think about your answer to this question so that we can get the most accurate information possible. Remember this information is strictly confidential.** How many men have you had anal sex with in the past six months where you were the insertive partner? And how many where you were the receptive partner?	NUMBER WHERE INSERTIVE [__|__] DON'T KNOW 88 NO RESPONSE 99 NUMBER WHERE RECEPTIVE [__|__] DON'T KNOW 88 NO RESPONSE 99 **IF NONE**	→ **Q601**
Q307	Of all these partners, how many were: - "*Commercial*" (partners with whom you had sex in exchange for money?) - Other Partners **NOTE :** CHECK TOTAL NUMBERS OF PARTNERS IN Q306 TO MAKE SURE THE NUMBERS MATCH.	**COMMERCIAL** [__|__] DON'T KNOW 88 NO RESPONSE 99 **OTHER** [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q308	During the past year, did any of your sexual partner(s) force you to have sex with them even though you did not want to have sex?	YES 1 NO 2 NO RESPONSE 9	

No.	Questions and filters	Coding categories			Skip to
Q401	**FILTER : CHECK Q307** HAS ANAL SEX WITH COMMERCIAL PARTNER DURING PAST 6 MONTHS .... [__] ↓	DID NOT HAVE ANAL SEX WITH COMMERCIAL PARTNER DURING PAST 6 MONTHS		[__]→	→ **Q501**
Q402	Think about your most recent sex partner whom you exchanged money for sex. How many times did you have anal sex with your *last* commercial partner during the past 30 days?	Number of times		|__|__|	
		DON'T KNOW		88	
		NO RESPONSE		99	
Q403	The last time you had anal sex with this commercial partner, was a condom used?	YES		1	→ **Q405**
		NO		2	
		DON'T REMEMBER		8	→ **Q405**
		NO RESPONSE		9	
Q404	Why didn't you use a condom that time? **ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING** **CIRCLE ALL ANSWERS MENTIONED**		Y	N	
		Not available	1	2	
		Too expensive	1	2	
		Partner objected	1	2	
		Don't like them	1	2	
		Didn't think it was necessary	1	2	
		Didn't think of it	1	2	
		Other__________	1	2	
		DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q405	With what frequency did you use a condom with all of your commercial partner(s) during the past 6 months?	EVERY TIME		1	
		ALMOST EVERY TIME		2	
		SOMETIMES		3	
		NEVER		4	
		DON'T KNOW		8	
		NO RESPONSE		9	
Q406	Have you ever discussed HIV, AIDS or STDs with any of your commercial partners?	YES, ALL		1	
		YES, SOME		2	
		NO, NONE		3	
		DON'T KNOW		8	
		NO RESPONSE		9	

No.	Questions and filters	Coding categories	Skip to
Q501	**FILTER : CHECK Q307** HAD ANAL SEX WITH OTHER PARTNERS DURING PAST 6 MONTHS .... [___] ↓	DID NOT HAVE ANAL SEX WITH OTHER PARTNERS DURING PAST 6 MONTHS [__]→	→ **Q601**
Q502	How many times did you have anal sex with your *last* non-paying partner during the past 30 days?	Number of times |__|__| DON'T KNOW 88 NO RESPONSE 99	
Q503	The last time you had anal sex with this non-paying partner, was a condom used?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	→ **Q505** → **Q505** → **Q505**
Q504	Why didn't you use a condom that time? **ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING** **CIRCLE ALL ANSWERS MENTIONED**	Y N Not available 1 2 Too expensive 1 2 Partner objected 1 2 Don't like them 1 2 Didn't think it was necessary 1 2 Didn't think of it 1 2 Other________________ 1 2 DON'T KNOW 1 2 NO RESPONSE 1 2	
Q505	With what *frequency* did you use a condom with all of your non-paying partner(s) during the past 6 months?	EVERY TIME 1 ALMOST EVERY TIME 2 SOMETIMES 3 NEVER 4 DON'T KNOW 8 NO RESPONSE 9	
Q506	Have you ever discussed HIV, AIDS or STDs with any of your non-paying partners?	YES, ALL 1 YES, SOME 2 NO, NONE 3 DON'T KNOW 8 NO RESPONSE 9	

Section 6: Sexual history: sex with females

No.	Questions and filters	Coding categories	Skip to
Q 601	Now I have some questions related to your sexual experiences with females. Have you ever had sexual intercourse with a woman?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	 → **Q701** → **Q701** → **Q701**
Q602	How many women have you had sexual intercourse with during the past 6 months?	NUMBER OF FEMALE PARNERS IN THE PAST 6 MONTHS [__|__] DON'T KNOW 88 NO RESPONSE 99 IF NONE	 → **Q701**
Q603	Think about the last time you had sex with a female partner during the past 6 months, was a condom used?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
Q604	With what frequency did you use a condom with all of your *female* partners in the past 6 months?	EVERY TIME 1 ALMOST EVERY TIME 2 SOMETIMES 3 NEVER 4 DON'T KNOW 8 NO RESPONSE 9	

No.	Questions and filters	Coding categories	Skip to
Q701	**FILTER: SEE Q403, Q405, Q503, Q505, Q603, Q604** **CONDOMS NOT USED**......[___] ↓	**CONDOMS USED** [__]→	→ **Q704**
Q702	Have you *ever used* a male condom during sex? **(Show picture or sample of one.)** (The respondent may not have used a condom with partners in sections 4-6, but may have used a condom at some other time in the past.)	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	→ **Q704**
Q703	Have you ever *heard of* a male condom **(Show picture or sample of one.)** (I mean a rubber object that a man puts on his penis before sex.)	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	 → **Q706** → **Q706**
Q704	Do you know of any place or person from which you can obtain male condoms?	YES 1 NO 2 NO RESPONSE 9	 → **Q706**
Q705	Which places or persons do you know where you can obtain male condoms? **PROBE AND RECORD *ALL* ANSWERS** Any others?	Yes No Shop 1 2 Pharmacy 1 2 Market 1 2 Clinic 1 2 Hospital 1 2 Family planning center 1 2 Bar/guest house/hotel 1 2 Peer educator 1 2 Friend 1 2 OTHER__________________ 1 2 DON'T KNOW 1 2 NO RESPONSE 1 2	
Q706	Now I would like to ask you some questions about the use of lubricants during sexual intercourse with men. Do you use lubricants during anal intercourse with men?	NO ANAL SEX WITH MEN 1 YES 2 NO 3 DON'T KNOW 8 NO RESPONSE 9	→ **Q801** → **Q709**

No.	Questions and filters	Coding categories			Skip to
			Yes	No	
Q707	Which lubricants do you commonly use?	AQUALUBE	1	2	
		VASELINE	1	2	
		KY JELLY	1	2	
	PROBE AND RECORD *ALL* ANSWERS	HAND LOTION	1	2	
		VAGINAL GEL	1	2	
	EDIT TO LIST LOCALLY APPROPRIATE CATEGORIES	BABY OIL	1	2	
		BUTTER	1	2	
		COOKING OIL	1	2	
		OTHER________________	1	2	
		DON'T KNOW	1	2	
		NO RESPONSE	1	2	
			Yes	No	***IF NO***
Q708	Why do you not use lubricants?	PARTNER OBJECTS	1	2	→ **Q710**
		AFRAID TO USE IT	1	2	→ **Q710**
		CAN'T GET IT	1	2	→ **Q710**
	PROBE AND RECORD ALL ANSWERS	DON'T LIKE LUBRICANTS	1	2	→ **Q710**
		OTHER________________	1	2	→ **Q710**
		DON'T KNOW	1	2	→ **Q710**
		NO RESPONSE	1	2	→ **Q710**
Q709	How often have you use lubricants during the past six monts? Have you used lubricants...**READ OUT**	EVERY TIME		1	
		ALMOST EVERY TIME		2	
		SOMETIMES		3	
		NEVER		4	
		DON'T KNOW		8	
		NO RESPONSE		9	
Q710	Do you know any place or person where you can obtain lubricants?	YES		1	
		NO		2	→ **Q801**
		NO RESPONSE		9	
			Yes	No	
Q711	Which places or persons do you know where you can obtain lubricants?	Shop	1	2	
		Pharmacy	1	2	
		Market	1	2	
	PROBE AND RECORD *ALL* ANSWERS	Clinic	1	2	
		Hospital	1	2	
		Family planning center	1	2	
		Bar/guest house/hotel	1	2	
		Peer educator	1	2	
		Friend	1	2	
		OTHER________________	1	2	
		DON'T KNOW	1	2	
		NO RESPONSE	1	2	

No.	Questions and filters	Coding categories	Skip to
Q801	Have you ever heard of diseases that can be transmitted through sexual intercourse?	YES 1 NO 2 NO RESPONSE 9	 → **Q804**
Q802	Can you describe any symptoms of STDs in women? ..... Any others? **CIRCLE 1 FOR ALL MENTIONED.** **CIRCLE 2 FOR ALL *NOT* MENTIONED.** **MORE THAN ONE ANSWER IS POSSIBLE.** **DO *NOT* READ OUT THE SYMPTOMS**	Yes No ABDOMINAL PAIN 1 2 GENITAL DISCHARGE 1 2 FOUL SMELLING DISCHARGE 1 2 BURNING PAIN ON URINATION 1 2 GENITAL ULCERS/SORES 1 2 SWELLINGS IN GROIN AREA 1 2 ITCHING 1 2 OTHER ____________________ 1 2 NO RESPONSE 1 2	
Q803	Can you describe any symptoms of STDs in men? ..... Any others? **CIRCLE 1 FOR ALL MENTIONED.** **CIRCLE 2 FOR ALL NOT MENTIONED.** **MORE THAN ONE ANSWER IS POSSIBLE.** **DO *NOT* READ OUT THE SYMPTOMS**	Yes No GENITAL DISCHARGE 1 2 BURNING PAIN ON URINATION 1 2 GENITAL ULCERS/SORES 1 2 SWELLINGS IN GROIN AREA 1 2 CAN'T RETRACT FORESKIN 1 2 ULCERS/SORES ON THE ANUS 1 2 OTHER ____________________ 1 2 NO RESPONSE 1 2	
Q804	Have you had a genital **discharge** during the past 12 months?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	

No.	Questions and filters	Coding categories		Skip to
Q805	Have you had a genital ulcer during the past 12 months?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q806	Have you had an anal ulcer or sore during the past 12 months?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q807	Have you had an anal discharge during the past 12 months?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

No.	Questions and filters	Coding categories		Skip to
Q901	Have you ever heard of HIV or the disease called AIDS?	YES NO NO RESPONSE	1 2 9	 → **Q1001**
Q902a	Do you know anyone who is infected with HIV or who has died of AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	 → **Q903** → **Q903**
Q902b	Do you have a close relative or close friend who is infected with HIV or has died of AIDS?	YES, A CLOSE RELATIVE YES, A CLOSE FRIEND NO NO RESPONSE	1 2 3 9	
Q903a	Can people protect themselves from HIV the virus that causes AIDS by using a condom correctly every time they have sex?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q903b	Can people protect themselves from HIV by avoiding anal sex?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q903c	Can people protect themselves from HIV by using a condom correctly every time they have anal sex?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q904	Can a person get HIV from mosquito bites?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q905	Can people protect themselves from HIV by having one uninfected faithful sex partner?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

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Section 9: Knowledge, opinions, and attitudes towards HIV/AIDS (continued)

No.	Questions and filters	Coding categories		Skip to
Q906	Can people protect themselves from HIV by abstaining from sexual intercourse?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q907	Can a person get HIV by sharing a meal with someone who is infected?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q908	Can a person get HIV by getting injections with a needle that was already used by someone else?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q909	Do you think that a healthy-looking person can be infected with HIV, the virus that causes AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

No.	Questions and filters	Coding categories			Skip to
Q910	Can a pregnant woman infected with HIV or AIDS transmit the virus to her unborn child?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9		 → **Q912** → **Q912**
Q911	What can a pregnant woman do to reduce the risk of transmission of HIV to her unborn child? **DO NOT READ LIST** **CIRCLE ALL THAT ARE MENTIONED.**		Yes	No	
		TAKE MEDICATION (Antiretrovirals)	1	2	
		OTHER ____________	1	2	
		DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q912	Can a woman with HIV or AIDS transmit the virus to her newborn child through breastfeeding?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9		
Q913	Is it possible in your community for someone to get a confidential test to find out if they are infected with HIV? By confidential, I mean that no one will know the result if you don't want them to know it.	YES NO DON'T KNOW NO RESPONSE	1 2 8 9		
Q914	I don't want to know the result, but have you ever had an HIV test?	YES NO NO RESPONSE	1 2 9		 → **Q1001**
Q915	Did you voluntarily undergo the HIV test, or were you required to have the test?	Voluntary Required NO RESPONSE	1 2 9		
Q916	Please do not tell me the result, but did you find out the result of your test?	YES NO NO RESPONSE	1 2 9		
Q917	When did you have your most recent HIV test?	WITHIN THE PAST YEAR BETWEEN 1-2 YEARS BETWEEN 2-4 YEARS MORE THAN 4 YEARS AGO DON'T KNOW NO RESPONSE	1 2 3 4 8 9		

Section 10: Exposure to interventions (optional)

[A section on exposure to interventions can be added here if the target group has already received some kind of HIV/AIDS/STD prevention interventions. Specific questions designed to assess exposure would need to be developed locally.]

That is the end of our questionnaire. Thank you very much for taking time to answer these questions. We appreciate your help.

POSSIBLE ADDITIONAL QUESTIONS

Communications

No.	Questions and filters	Coding categories		Skip to
	During the last 4 weeks how often have you listened to the radio? Would you say ... **READ OUT** **CIRCLE ONE**	Every day At least once a week Less than once a week Did not listen to radio in last 4 weeks DON'T KNOW NO RESPONSE	1 2 3 4 8 9	
	During the last 4 weeks how often have you watched television? Would you say ... **READ OUT** **CIRCLE ONE**	Every day At least once a week Less than once a week Did not watch television in last 4 weeks DON'T KNOW NO RESPONSE	1 2 3 4 8 9	

STD Treatment seeking behaviours

No.	Questions and filters	Coding categories				Skip to
	FILTER: CHECK Q* AND Q***** HAD GENITAL DISCHARGE AND/OR GENITAL ULCER......[___] IN LAST 12 MONTHS ↓	NO DISCHARGE OR ULCER [__]→ IN LAST 12 MONTHS				→
	Did you do any of the following the last time you had a genital ulcer/sore or genital discharge: **READ OUT. MORE THAN ONE ANSWER IS POSSIBLE.**	Yes	No	DK	NR	
	a. Seek advice/medicine from a government clinic or hospital?	1	2	8	9	
	b. Seek advice/medicine from a workplace clinic or hospital?	1	2	8	9	
	c. Seek advice/medicine from a church or charity-run clinic or hospital?	1	2	8	9	
	d. Seek advice/medicine from a private clinic or hospital?	1	2	8	9	
	e. Seek advice/medicine from a private pharmacy?	1	2	8	9	
	f. Seek advice/medicine from a traditional healer?	1	2	8	9	
	g. Took medicine you had at home?	1	2	8	9	
	h. Tell your sexual partner about the discharge/ STD?	1	2	8	9	
	i. Stop having sex when you had the symptoms?	1	2	8	9	
	j. Use a condom when having sex during the time you	1	2	8	9	

No.	Questions and filters	Coding categories		Skip to
	Which of these things did you do FIRST? **ONLY ONE ANSWER IS POSSIBLE.** ADD OTHER LOCALLY APPROPRIATE CATEGORIES IF NECESSARY.)	a. Seek advice/medicine from a government clinic or hospital?	1	
		b. Seek advice/medicine from a workplace clinic or hospital?	2	
		c. Seek advice/medicine from a church or charity-run clinic or hospital?	3	
		d. Seek advice/medicine from a private clinic or hospital?	4	
		e. Seek advice/medicine from a private pharmacy?	5	
		f. Seek advice/medicine from a traditional healer?	6	
		g. Took medicine you had at home?	7	
		h. Other________________________	8	
		DON'T REMEMBER	88	
		NO RESPONSE	99	
	If you took medicine for the last episode of symptoms, from where did you obtain the medicine? **CIRCLE ALL THAT APPLY.**		Yes No	
		Health worker in clinic/hospital	1 2	
		Pharmacy	1 2	
		Traditional healer	1 2	
		Friend or relative	1 2	
		"Took medicine I had at home"	1 2	
		Did not take any medicine	1 2	
		DON'T REMEMBER	1 2	
		NO RESPONSE	1 2	

No.	Questions and filters	Coding categories		Skip to
	How much did you pay for the medicine you took?	[___][___] ADAPT TO LOCALLY APPROPRIATE CATEGORIES		
	FILTER: SEE Q*:** Sought advice from a health worker in clinic or hospital: [___] Yes ↓	No [__]→		→ **Q**
	How long after first experiencing symptoms did you seek advice from a health worker in a clinic or hospital?	1 week or less Less than 1 month but more than 1 week One month or more DON'T KNOW NO RESPONSE	1 2 3 8 9	
	Did you receive a prescription for medicine?	Yes No DON'T REMEMBER NO RESPONSE	1 2 8 9	
	Did you obtain the medicine prescribed?	Yes, I obtained all of it I obtained some but not all I did not obtain the medicine DON'T REMEMBER NO RESPONSE	1 2 3 8 9	
	Did you take all of the medicine prescribed?	Yes No DON'T KNOW NO RESPONSE	1 2 8 9	
	If not, why did you not take all of the medicine prescribed? **CIRCLE ALL THAT APPLY.**	(List locally appropriate Yes categories) 1 DON'T REMEMBER 1 NO RESPONSE 1	No 2 2 2	

Stigma and Discrimination

No.	Questions and filters	Coding categories		Skip to
	Would you be willing to share a meal with a person you knew had HIV or AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a male relative of yours became ill with HIV, the virus that causes AIDS, would you be willing to care for him in your household?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a student has HIV but is not sick, should he or she be allowed to continue attending school?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a female relative of yours became ill With HIV, the virus that causes AIDS, would you be willing to care for her in your household?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a teacher has HIV but is not sick, should he or she be allowed to continue teaching in school?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If you knew a shopkeeper or food seller had HIV, would you buy food from them?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
	If a member of your family became ill with HIV, the virus that causes AIDS, would you want it to remain secret?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

QUESTIONNAIRE

For Injecting Drug Users (IDUs)

FAMILY HEALTH INTERNATIONAL (FHI)
HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEYS (BSS)

FOR USE WITH INJECTING DRUG USERS (IDUs)

TITLE OF SURVEY - COUNTRY - YEAR CONDUCTED

001 QUESTIONNAIRE IDENTIFICATION NUMBER |___|___|___|

002 CITY______________________ (provide locally appropriate categories)

003 REGION___________________ (provide locally appropriate categories)

004 SITE_______________________ (provide locally appropriate categories)

Introduction : "My name is... I'm working for... We're interviewing people here in [name of city, region or site] in order to find out about... [describe purpose of study]. Have you been interviewed in the past few weeks [or other appropriate time period] for this study? **IF THE RESPONDENT HAS BEEN INTERVIEWED BEFORE DURING THIS ROUND OF BSS, DO NOT INTERVIEW THIS PERSON AGAIN.** Tell them you cannot interview them a second time, thank them, and end the interview. If they have not been interviewed before, then verify that the respondent is an injecting drug user:

This questionnaire is ONLY to be administered to people who are known to be injecting drug users (IDUs). If you do not know in advance, you must ask "have you injected drugs within the past month?" You may need to probe that these drugs are non-medical, illegal, or addictive drugs in an appropriate local context. If yes, continue with the questionnaire ; if no, end the interview.

Confidentiality and consent : "I'm going to ask you some very personal questions that some people find difficult to answer. Your answers are completely confidential. Your name will not be written on this form, and will never be used in connection with any of the information you tell me. You do not have to answer any questions that you do not want to answer, and you may end this interview at any time you want to. However, your honest answers to these questions will help us better understand what people think, say and do about certain kinds of behaviors. We would greatly appreciate your help in responding to this survey. The survey will take about XX minutes to ask the questions. Would you be willing to participate?

____

(Signature of interviewer certifying that informed consent has been given verbally by respondent)

Interviewer visit

	Visit 1	Visit 2	Visit 3
Date			
Interviewer			
Result			

Result codes : Completed 1; Respondent not available 2; Refused 3; Partially completed 4; Other 5.

005 INTERVIEWER : Code [____|____] Name__________________________

006 DATE INTERVIEW : __\ ____ \ _____

CHECKED BY SUPERVISOR : Signature ____________________ Date ___________

This questionnaire includes the following sections:

Section 0 - Questionnaire identification data	
Section 1 - Background characteristics	11 questions
Section 2 - Drug use	5 questions
Section 3 - Needle and sharing behaviors	20 questions
Section 4 - Marriage and live-in partnerships	4 questions
Section 5 - Sexual history: numbers and types of partners	5 questions
Section 6 - Sexual history: regular partners	6 questions
Section 7 - Sexual history: Commercial partners	7 questions
Section 8 - Sexual history: non-regular partners	6 questions
Section 9 - Male condoms	6 questions
Section 10 - STDs	5 questions
Section 11 - Knowledge, opinions, and attitudes towards HIV/AIDS	18 questions
Section 12 - Exposure to prevention	(variable)
TOTAL NUMBER OF QUESTIONS :	**93 questions**

FHI 2000 HIV/AIDS/STD BEHAVIORAL SURVEILLANCE SURVEY (BSS) FOR IDUs

Section 1: Background characteristics

No.	Questions and filters	Coding categories		Skip to
Q101	RECORD SEX OF THE RESPONDENT	MALE	1	
		FEMALE	2	
Q102	In what month and year were you born?	MONTH	[__|__]	
		DON'T KNOW MONTH	88	
		NO RESPONSE	99	
		YEAR	[__|__]	
		DON'T KNOW YEAR	88	
		NO RESPONSE	99	
Q103	How old were you at your last birthday? **(COMPARE AND CORRECT Q102 IF NEEDED)**	AGE IN COMPLETED YEARS	[__|__]	
		DON'T KNOW	88	
		NO RESPONSE	99	
		ESTIMATE BEST ANSWER		
Q104	Have you ever attended school?	YES	1	
		NO	2	→ **Q107**
		NO RESPONSE	9	
Q105	What is the highest level of school you completed: primary, secondary or higher? **CIRCLE ONE**	(List locally appropriate categories)		
		PRIMARY	1	
		SECONDARY	2	
		HIGHER	3	
		NO RESPONSE	9	
Q106	How many total years of education have you completed up to now?	# YEARS COMPLETED	[__|__]	
		NO RESPONSE	99	
Q107	How long have you lived here in (NAME OF COMMUNITY/TOWN NEIGHBORHOOD/VILLAGE)?	NUMBER OF YEARS	[__|__]	
		RECORD 00 IF LESS THAN 1 YEAR		
		DON'T KNOW	88	
		NO RESPONSE	99	

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Section 1: Background characteristics (continued)

No.	Questions and filters	Coding categories		Skip to
Q108	In the last 12 months have you been away from your home for more than one month altogether?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q109	What religion are you? **CIRCLE ONE**	(List locally appropriate categories) NO RELIGION NO RESPONSE	 0 9	
Q110	To which ethnic group do you belong? **CIRCLE ONE**	(List locally appropriate categories) MIXED ETHNICITY NO RESPONSE	 0 9	
Q111	During the past one month how often have you had drinks containing alcohol? Would you say ......**READ OUT** **CIRCLE ONE**	Every day At least once a week Less than once a week or never DON'T KNOW NO RESPONSE	1 2 3 8 9	

No.	Questions and filters	Coding categories	Skip to
Q201	How long have you been using illegal/non-medical/addictive drugs? (Use local definition for what is meant by "non-medical" or addictive or illegal drugs)	NUMBER OF YEARS [__|__] NUMBER OF MONTHS [__|__] RECORD 00 IF LESS THAN 1 MONTH DON'T KNOW 88 NO RESPONSE 99	
Q202	How long have you been *injecting* drugs ?	NUMBER OF YEARS [__|__] NUMBER OF MONTHS [__|__] RECORD 00 IF LESS THAN 1 MONTH DON'T KNOW 88 NO RESPONSE 99	
Q203	How old were you when you first injected illegal/non-medical drugs? (Includes self-injection or injection by another).	AGE IN COMPLETED YEARS [__|__] DON'T KNOW 88 NO RESPONSE 99 **ESTIMATE BEST ANSWER**	

No.	Questions and filters	Coding categories		Skip to
Q204	Which of the following types of drugs have you used in the past one month and which were injected? **READ LIST.** **MULTIPLE ANSWERS POSSIBLE.**	Used in last month YES NO DK NR	Injected in last month YES NO DK NR	
	Heroin (not in combination with cocaine)	1 2 8 9	1 2 8 9	
	Cocaine (not in combination with heroin)	1 2 8 9	1 2 8 9	
	Heroin and cocaine together	1 2 8 9	1 2 8 9	
	Crack	1 2 8 9	1 2 8 9	
	Buprenorphine (Tidigesic)	1 2 8 9	1 2 8 9	
	Dextropropoxyphene	1 2 8 9	1 2 8 9	
	Amphetamines (such as...)	1 2 8 9	1 2 8 9	
	Tranquilizers (such as...)	1 2 8 9	1 2 8 9	
	Barbiturates (such as...)	1 2 8 9	1 2 8 9	
	Anything else? (such as...)	1 2 8 9	1 2 8 9	
	(List other locally appropriate categories)			
Q205	During the past one month how often would you say you injected drugs?	ONLY ONCE 1 2-3 TIMES 2 ABOUT ONCE A WEEK 3 2-3 TIMES A WEEK 4 4-6 TIMES A WEEK 5 ABOUT ONCE A DAY 6 2-3 TIMES A DAY 7 4 OR MORE TIMES/DAY 8 DON'T KNOW 88 NO RESPONSE 99		

IN THE NEXT SECTION, I WOULD LIKE TO ASK YOU A FEW QUESTIONS ABOUT INJECTING YOUR SELF OR BEING INJECTED BY SOMEONE ELSE. I AM INTERESTED IN THE TIMES YOU HAVE INJECTED WITH NEEDLES OR SYRINGES THAT HAD PREVIOUSLY BEEN USED. LATER, I WILL ASK YOU ABOUT THE TIMES YOU LET OTHER PEOPLE USE NEEDLES AND SYRINGES AFTER YOU HAD USED THEM.

No.	Questions and filters	Coding categories	Skip to
Q301	Think about the *last time* you injected drugs. Did you use a needle or syringe that had previously been used by someone else?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	
Q302	Think about the times you injected drugs *during the past one month*. How often was it with a needle or syringe that had previously been used by someone else?	ALWAYS 1 MOST TIMES 2 ABOUT HALF THE TIME 3 OCCASIONALLY 4 NEVER 5 DON'T KNOW 8 NO RESPONSE 9	
Q303	In the past one month, did you ever share needles and syringes with any of the following: **READ OUT LIST.** **MULTIPLE ANSWERS POSSIBLE.**	YES NO DK NR	
	Your usual sexual partner	1 2 3 4	
	A sexual partner who you did not know	1 2 3 4	
	A friend	1 2 3 4	
	A dealer	1 2 3 4	
	A professional injector	1 2 3 4	
	Someone in a shooting gallery	1 2 3 4	
	A fellow prisoner	1 2 3 4	
	Other____________________	1 2 3 4	

No.	Questions and filters	Coding categories	Skip to
Q304	With how many different injecting partners did you share needles or syringes in the past one month?	NUMBER OF PEOPLE [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q305	In the past one month, when you injected with needles or syringes that had previously been used, how often did you clean them first?	EVERY TIME 1 ALMOST EVERY TIME 2 SOMETIMES 3 NEVER 4 DON'T KNOW 8 NO RESPONSE 9	
Q306	IF CLEANED How did you usually clean them? **DO NOT READ OUT LIST**	Cold water 1 Hot water 2 Boiling 3 Bleach 4 Alcohol 5 Other______________________ 6 DON'T KNOW 8 NO RESPONSE 9 (Add other locally appropriate categories)	
Q307	When you injected in the past one month, how often was it with a needle that no one else had ever used other than yourself?	EVERY TIME 1 ALMOST EVERY TIME 2 SOMETIMES 3 NEVER 4 DON'T KNOW 8 NO RESPONSE 9	

NOW I WOULD LIKE TO ASK YOU A FEW MORE QUESTIONS ABOUT THE TIMES YOU HAVE GIVEN, LENT OR SOLD YOUR NEEDLES OR SYRINGES TO SOMEONE ELSE.

No.	Questions and filters	Coding categories	Skip to
Q308	In the past one month, how often did you give, lend, sell or rent a needle or syringe to someone else, after you had already used it?	EVERY TIME 1 ALMOST EVERY TIME 2 SOMETIMES 3 NEVER 4 DON'T KNOW 8 NO RESPONSE 9	
Q309	In the past one month, to how many different people did you give, lend, rent or sell used needles or syringes?	NUMBER OF PEOPLE [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q310	In the past one month, when you gave, lent, rented or sold a used needle and/or a syringe, was it ever to a: **READ OUT LIST.** **MULTIPLE ANSWERS POSSIBLE.**	YES NO DK NR	
	Your usual sexual partner	1 2 3 4	
	A sexual partner who you did not know	1 2 3 4	
	A friend	1 2 3 4	
	A dealer	1 2 3 4	
	Someone you did not know	1 2 3 4	
	A fellow prisoner	1 2 3 4	
	Other________________________	1 2 3 4	
Q311A	Can you obtain new, unused needles and syringes when you need them?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	→**Q311c**

No.	Questions and filters	Coding categories			Skip to
Q311B	Do you know of any person or place from which you can obtain new, unused needles and syringes?	YES	1		
		NO	2		→ **Q312**
		DON'T KNOW	8		
		NO RESPONSE	9		
Q311C	Where can you obtain new, unused needles and syringes ?				
	DO NOT READ OUT LIST. MULTIPLE ANSWERS POSSIBLE. PROBE ONLY WITH "ANYWHERE ELSE?"		YES	NO	
	Pharmacist/chemist		1	2	
	Drugstore/other shop		1	2	
	Health worker		1	2	
	Hospital		1	2	
	Drug worker/drug agency		1	2	
	Family/relatives		1	2	
	Sexual partner		1	2	
	Friends		1	2	
	Other drug users		1	2	
	Drug dealer		1	2	
	Needle exchange program		1	2	
	Theft from legitimate source		1	2	
	Buy on streets		1	2	
	Other__________________		1	2	
Q312	In the past one month, did you ever inject with a pre-filled syringe (by that I mean a syringe that was filled without your witnessing it) ?	YES	1		
		NO	2		
		DON'T KNOW	8		
		NO RESPONSE	9		
Q313	In the past one month, how often did you inject drugs using a syringe after someone else had squirted drugs into it from his/her used syringe (frontloading/ backloading/splitting) ?	EVERY TIME	1		
		ALMOST EVERY TIME	2		
		SOMETIMES	3		
		NEVER	4		
		DON'T KNOW	8		
		NO RESPONSE	9		

No.	Questions and filters	Coding categories			Skip to
Q314	In the past one month, when you injected drugs, how often did you share a cooker/vial/container, cotton/filter, or rinse water?	EVERY TIME	1		
		ALMOST EVERY TIME	2		
		SOMETIMES	3		
		NEVER	4		
		DON'T KNOW	8		
		NO RESPONSE	9		
Q315	In the past one month, how often did you draw up your drug solution from a common container shared by others?	EVERY TIME	1		
		ALMOST EVERY TIME	2		
		SOMETIMES	3		
		NEVER	4		
		DON'T KNOW	8		
		NO RESPONSE	9		
Q316	Are you currently under treatment (or receiving help) or have you ever received treatment (or help) because of your drug use?	Currently under treatment	1		
		Was in treatment but not now	2		→ **Q318**
		Have never received treatment	3		→ **Q401**
		NO RESPONSE	9		
Q317	How many months ago did you last receive treatment or help for your drug use?	NUMBER OF MONTHS	[__|__]		
		RECORD 00 IF LESS THAN 1 MONTH			
		DON'T KNOW	88		
		NO RESPONSE	99		
Q318	What kind of treatment or help have you received? **Do not read out the responses** **PROBE by asking "Are there any other kinds of treatment that you've received?"** **MULTIPLE ANSWERS POSSIBLE**		YES	NO	
		Outpatient countseling	1	2	
		Self-help groups	1	2	
		Detoxification w/methadone	1	2	
		Maintenance w/methadone	1	2	
		Detoxification w/other drugs	1	2	
		Detoxification with no drug	1	2	
		Residential rehabilitation	1	2	
		Helped to quit *cold turkey*	1	2	
		Forced to quit *cold turkey*	1	2	
		Other ___________________	1	2	
		NO RESPONSE	1	2	

Section 4: Marriage and live-in partnerships

No.	Questions and filters	Coding categories		Skip to
Q401	Have you ever been married?	YES	1	
		NO	2	→ **Q403**
		NO RESPONSE	9	→ **Q403**
Q402	How old were you when you first married?	Age in years	[__|__]	
		DON'T KNOW	88	
		NO RESPONSE	99	
Q403	Are you *currently* married or living with a man/woman with whom you have a sexual relationship?	currently married, living with spouse	1	
		currently married, living with other sexual partner	2	
		currently married, not living with spouse or any other sexual partner	3	
		not married, living with sexual partner	4	→ **Q501**
		not married, not living with sexual partner	5	→ **Q501**
		NO RESPONSE	9	
*Q404	Does your spouse/partner have have other wives?	YES	1	
		NO	2	
		DON'T KNOW	8	
		NO RESPONSE	9	

**NOTE : Q404 is appropriate for settings where polygammy is practiced.*

No.	Questions and filters	Coding categories	Skip to
Q501	Have you *ever* had sexual intercourse? [For the purposes of this survey, "sexual intercourse," is defined as vaginal or anal sex.]	YES 1 NO 2 NO RESPONSE 9	 → **Q903**
Q502	At what age did you first have sexual intercourse?	AGE IN YEARS [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q503	Have you had sexual intercourse in the last 12 months?	YES 1 NO 2 NO RESPONSE 9	 → **Q902**
Q504	*For WOMEN:* Think about the *male* sexual partners you've had in the last 12 months. *For MEN:* Think about the *female* sexual partners you've had in the last 12 months. In total, how many different sexual partners have you had in the last 12 months? Among these partners that you have had in the last 12 months, how many were: - Your spouse(s) or live-in sexual partners ***("regular" partners)*** - ***"Commercial"*** (partners with whom you bought or sold sex in exchange for money or drugs) - Sexual partners you that you are not married to and have never lived with and did not have sex in exchange for money ***("non-regular" partners)*** - DO NOT INCLUDE CURRENT SPOUSE(S) OR LIVE-IN SEXUAL PARTNERS)	**TOTAL** [__|__] DON'T KNOW 88 NO RESPONSE 99 **REGULAR** [__|__] DON'T KNOW 88 NO RESPONSE 99 **COMMERCIAL** [__|__] DON'T KNOW 88 NO RESPONSE 99 **NON-REGULAR** [__|__] DON'T KNOW 88 NO RESPONSE 99	

No.	Questions and filters	Coding categories		Skip to
Q505	**(Ask of men):**			
	- We've just talked about your female sexual partners. Have you ever had any male sexual partners?	YES	1	
		NO	2	→**Q601**
		NO RESPONSE	9	
	- Have you had sexual intercourse with any of your male partners in the last 12 months? (sexual intercourse defined as penetrative anal sex)	YES	1	
		NO	2	→**Q601**
		NO RESPONSE	9	
	- With how many different male partners have you had anal intercourse in the last 12 months?	**Male partners**	[__|__]	
		DON'T KNOW	88	
		NO RESPONSE	99	

No.	Questions and filters	Coding categories		Skip to
Q601	**FILTER: CHECK Q504** HAD SEX WITH REGULAR PARTNER DURING LAST 12 MONTHS...[___] ↓	DID NOT HAVE SEX WITH REGULAR PARTNER DURING LAST 12 MONTS	[__]→	→ **Q701**
Q602	Think about your most recent regular sexual partner. How many times did you have sexual intercourse with this person over the last 30 days? **[REGULAR PARTNER INCLUDES SPOUSE OR LIVE-IN SEXUAL PARTNER]**	Number of times DON'T KNOW NO RESPONSE	|__|__| 88 99	
Q603	The last time you had sex with a regular partner, did you and your partner use a condom?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	 → **Q605** → **Q606**
Q604	Who suggested condom use that time? **CIRCLE ONE**	Myself My partner Joint decision DON'T KNOW NO RESPONSE	1 2 3 8 9	→ **Q606** → **Q606** → **Q606** → **Q606**

No.	Questions and filters	Coding categories			Skip to
			Y	N	
Q605	Why didn't you and your partner use a condom that time?	Not available	1	2	
		Too expensive	1	2	
		Partner objected	1	2	
		Don't like them	1	2	
	ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING	Used other contraceptive	1	2	
		Didn't think it was necessary	1	2	
		Didn't think of it	1	2	
		Other_____________________	1	2	
	CIRCLE ALL ANSWERS MENTIONED	DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q606	With what frequency did you and all of your *regular* partner(s) use a condom during the last 12 months?	EVERY TIME		1	
		ALMOST EVERY TIME		2	
		SOMETIMES		3	
		NEVER		4	
		DON'T KNOW		8	
		NO RESPONSE		9	

No.	Questions and filters	Coding categories	Skip to
Q701	**FILTER: CHECK Q504** HAD SEXUAL INTERCOURSE WITH A COMMERCIAL PARTNER IN LAST 12 MONTHS...[___] ↓	HAVE NOT HAD SEXUAL INTERCOURSE WITH A COMMERCIAL PARTNER IN LAST 12 MONTS .... [__]→	→ **Q801**
Q702	Think about the commercial partners you have had in the *past one month*. In total, how many were: - Partners to whom you **sold** sex in exchange for money or drugs - Partners from whom you **bought** sex in exchange for money or drugs	**SOLD** [__|__] DON'T KNOW 88 NO RESPONSE 99 **BOUGHT** [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q703	Think about your most recent commercial sexual partner. How many times did you have sexual intercourse with this person in the past one month?	Number of times |__|__| DON'T KNOW 88 NO RESPONSE 99	
Q704	The last time you had sex with a commercial partner, did you and your partner use a condom?	YES 1 NO 2 DON'T KNOW 8 NO RESPONSE 9	 → **Q706** → **Q707**
Q705	Who suggested condom use that time? **CIRCLE ONE**	Myself 1 My partner 2 Joint decision 3 DON'T KNOW 8 NO RESPONSE 9	→ **Q707** → **Q707** → **Q707** → **Q707**

No.	Questions and filters	Coding categories			Skip to
			Y	N	
Q706	Why didn't you and your partner use a condom that time?	Not available	1	2	
		Too expensive	1	2	
		Partner objected	1	2	
		Don't like them	1	2	
	ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING	Used other contraceptive	1	2	
		Didn't think it was necessary	1	2	
		Didn't think of it	1	2	
		Other______________________	1	2	
	CIRCLE ALL ANSWERS MENTIONED	DON'T KNOW	1	2	
		NO RESPONSE	1	2	
Q707	With what frequency did you and all of your *commercial* partner(s) use a condom during the last 12 months?	EVERY TIME		1	
		ALMOST EVERY TIME		2	
		SOMETIMES		3	
		NEVER		4	
		DON'T KNOW		8	
		NO RESPONSE		9	

No.	Questions and filters	Coding categories			Skip to
Q801	**FILTER: CHECK Q504** HAD NON-REGULAR NON-COMMERCIAL SEX PARTNER DURING LAST 12 MONTHS...[___] ↓	DID NOT HAVE NON-REGULAR NON-COMMERCIAL SEX PARTNER DURING LAST 12 MONTS	[__]→		→ **Q901**
Q802	Think about your most recent non-regular sexual partner. How many times did you have sexual intercourse with this person over the last 30 days?	Number of times DON'T KNOW NO RESPONSE	|__|__| 88 99		
Q803	The last time you had sex with a non-regular partner, did you and your partner use a condom?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9		 → **Q805** → **Q806**
Q804	Who suggested condom use that time? **CIRCLE ONE**	Myself My partner Joint decision DON'T KNOW NO RESPONSE	1 2 3 8 9		→ **Q806** → **Q806** → **Q806** → **Q806**
Q805	Why didn't you and your partner use a condom that time? **ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING** **CIRCLE ALL ANSWERS MENTIONED**	 Not available Too expensive Partner objected Don't like them Used other contraceptive Didn't think it was necessary Didn't think of it Other________________ DON'T KNOW NO RESPONSE	Y 1 1 1 1 1 1 1 1 1 1	N 2 2 2 2 2 2 2 2 2 2	
Q806	With what frequency did you and all of your *non-regular* partner(s) use a condom during the last 12 months?	EVERY TIME ALMOST EVERY TIME SOMETIMES NEVER DON'T KNOW NO RESPONSE	1 2 3 4 8 9		

No.	Questions and filters	Coding categories			Skip to
Q901	**FILTER: SEE Q603, 606, 704, 707, 803, 806** **CONDOMS NOT USED**......[___] ↓	**CONDOMS USED**	[__]→		→ **Q904**
Q902	Have you and a sexual partner *ever* used a male condom? **(Show picture or sample of one.)** (The respondent may not have used a condom with partners in sections 6-8, but may have used a condom at some other time in the past.)	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	→ **Q904**
Q903	Have you ever *heard* of a male condom? **(Show picture or sample of one.)** (I mean a rubber object that a man puts on his penis before sex.)	YES NO DON'T KNOW NO RESPONSE		1 2 8 9	 →**Q1001**
Q904	Do you know of any place or person from which you can obtain male condoms?	YES NO NO RESPONSE		1 2 9	 → **Q907**
Q905	Which places or persons do you know where you can obtain male condoms? **PROBE AND RECORD *ALL* ANSWERS** Any others?	 Shop Pharmacy Market Clinic Hospital Family planning center Bar/guest house/hotel Peer educator/outreach Friend OTHER____________________ NO RESPONSE	Y 1 1 1 1 1 1 1 1 1 1 1	N 2 2 2 2 2 2 2 2 2 2 2	
Q906	How long would it take (from your house or the place where you work) to obtain a male condom?	(Adjust categories as locally appropriate) Under 1 hour 1 hour to 1 day More than 1 day DON'T KNOW NO RESPONSE		 1 2 3 8 9	

No.	Questions and filters	Coding categories			Skip to
Q1001	Have you ever heard of diseases that can be transmitted through sexual intercourse?	YES		1	
		NO		2	→**Q1004**
		NO RESPONSE		9	
			Yes	No	
Q1002	Can you describe any symptoms of STDs in women? ..... Any others? **DO *NOT* READ OUT THE SYMPTOMS** **CIRCLE 1 FOR ALL MENTIONED.** **CIRCLE 2 FOR ALL *NOT* MENTIONED.** **MORE THAN ONE ANSWER IS POSSIBLE.**	ABDOMINAL PAIN	1	2	
		GENITAL DISCHARGE	1	2	
		FOUL SMELLING DISCHARGE	1	2	
		BURNING PAIN ON URINATION	1	2	
		GENITAL ULCERS/SORES	1	2	
		SWELLINGS IN GROIN AREA	1	2	
		ITCHING	1	2	
		OTHER ____________	1	2	
		NO RESPONSE	1	2	
			Yes	No	
Q1003	Can you describe any symptoms of STDs in men? ..... Any others? **DO *NOT* READ OUT THE SYMPTOMS** **CIRCLE 1 FOR ALL MENTIONED.** **CIRCLE 2 FOR *ALL* NOT MENTIONED.** **MORE THAN ONE ANSWER IS POSSIBLE.**	GENITAL DISCHARGE	1	2	
		BURNING PAIN ON URINATION	1	2	
		GENITAL ULCERS/SORES	1	2	
		SWELLINGS IN GROIN AREA	1	2	
		OTHER ____________	1	2	
		NO RESPONSE	1	2	
Q1004	Have you had a genital **discharge** during the past 12 months?	YES		1	
		NO		2	
		DON'T KNOW		8	
		NO RESPONSE		9	
Q1005	Have you had a genital **ulcer**/sore during the past 12 months?	YES		1	
		NO		2	
		DON'T KNOW		8	
		NO RESPONSE		9	

No.	Questions and filters	Coding categories		Skip to
Q1101	Have you ever heard of HIV or the disease called AIDS?	YES NO NO RESPONSE	1 2 9	 →**Q1201**
Q1102a	Do you know anyone who is infected with HIV or who has died of AIDS?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	 →**Q1103** →**Q1103**
Q1102b	Do you have a close relative or close friend who is infected with HIV or has died of AIDS?	YES, A CLOSE RELATIVE YES, A CLOSE FRIEND NO NO RESPONSE	1 2 3 9	
Q1103	Can people protect themselves from HIV, the virus that causes AIDS, by using a condom correctly every time they have sex?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q1104	Can a person get HIV, from mosquito bites?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q1105	Can people protect themselves from HIV, by having one uninfected faithful sex partner?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q1106	Can people protect themselves from HIV, by abstaining from sexual intercourse?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q1107	Can a person get HIV, by sharing a meal with someone who is infected?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q1108	Can a person get HIV, by getting injections with a needle that was already used by someone else?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q1109	Can people who inject drugs protect themselves from HIV, by switching to non-injecting drugs?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	

No.	Questions and filters	Coding categories		Skip to
Q1110	Can a pregnant woman infected with HIV transmit the virus to her unborn child?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	 →**Q1112** →**Q1112**
Q1111	What can a pregnant woman do to reduce the risk of transmission of HIV to her unborn child? **DO NOT READ LIST** **CIRCLE ALL THAT ARE MENTIONED.**	TAKE MEDICATION (Antiretrovirals) Yes OTHER ________ 1 DON'T KNOW 1 NO RESPONSE 1	 No 2 2 2	
Q1112	Can a woman with HIV transmit the virus to her newborn child through breastfeeding?	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q1113	Is it possible in your community for someone to get a confidential test to find out if they are infected with HIV? (By confidential, I mean that no one will know the result if you don't want them to know it.)	YES NO DON'T KNOW NO RESPONSE	1 2 8 9	
Q1114	I don't want to know the result, but have *you* ever had an HIV test?	YES NO NO RESPONSE	1 2 9	 →**Q1201**
Q1115	Did you voluntarily undergo the HIV test, or were you required to have the test?	Voluntary Required NO RESPONSE	1 2 9	
Q1116	Please do not tell me the result, but did you find out the result of your test?	YES NO NO RESPONSE	1 2 9	
Q1117	When did you have your most recent HIV test?	WITHIN THE PAST YEAR BETWEEN 1-2 YEARS BETWEEN 2-4 YEARS MORE THAN 4 YEARS AGO DON'T KNOW NO RESPONSE	1 2 3 4 8 9	

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Section 12: Exposure to interventions (optional)

[A section on exposure to interventions can be added here if the target group has already received some kind of HIV/AIDS/STD prevention interventions. Specific questions designed to assess exposure would need to be developed locally.]

That is the end of our questionnaire. Thank you very much for taking time to answer these questions. We appreciate your help.

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APPENDIX

INTERVIEWER GUIDELINES

EXAMPLE OF SUPERVISORS' AND INTERVIEWERS' GUIDELINES FOR BSS

This document contains the Supervisors' and Interviewers' guidelines for the Zambia HIV/AIDS/STD Behavioral Surveillance Surveys (BSS) 2000. Please note that although most of the questions correspond to the BSS core questionnaire, a few will not. This set of guidelines was included to illustrate how a similar set of guidelines can be developed for any BSS.

The target group questionnaires in this document do not represent the final instruments for the BSS and should never be used as is without further modification. The questionnaires will be pre-tested during the training for adaptation to local context and then be finalized and translated to local languages before data collection begins.

The Supervisors' Guidelines are divided in two main sections. Part A provides general team leading procedures and Part B provides guidelines for field control and editing checks. The Interviewers' Guidelines are divided into four sections. Part A - covers general interviewing guidelines, Part B provides a description of the questionnaire format and instructions for recording answers to the various types of questions contained in the questionnaire, Part C reviews the questionnaires in detail with focus on the administration of the questions and Part D outlines the consistency checks.

SUPERVISORS' GUIDELINE

Part A: General Team Leading Procedures

Introduction and Objectives

As a Supervisor you are very important in ensuring the highest quality of data collection on people's knowledge, attitudes, beliefs and practices regarding HIV/AIDS and other STDs is obtained.

The **key objectives** of the behavioural surveillance survey are to :

- Help establish a monitoring system that will track behavioral trend data for high risk and vulnerable target groups, which influence the epidemic in Zambia.
- Provide information on behavioral trends of key target groups in some of the same catchment areas where voluntary counseling and testing is being offered.
- Provide information to help guide program planning
- Provide evidence of the relative success of the combination of HIV prevention efforts taking place in selected sites.
- Obtain data in a standardized format, which will enable comparison with other behavioral surveillance studies carried out in other countries.

Supervisors' Duties :

As a Supervisor your duties are to :

1. Maintain close contact with your team members in order to closely monitor and support work being done at each stage of data collection including sampling specifications (sampling points, selection of respondents), and interviewing specifications. This is done to ensure quality and consistency throughout the data collection process.
2. Act as a resource person for your team members thereby providing them with answers and clarification to questions that may or may not have been covered in their guidelines.
3. Introduce your team members to the various gatekeepers in order to facilitate the fieldwork/interviewing process.
4. Organize and schedule activities of your team members in order to ensure that the planned activities of the team are met within the required time frame.
5. Liaise with Tropical Diseases Research Center on all matters related to fieldwork to ensuring mutual agreement and consistency of work.
6. Monitor the work-in-progress, prepare and submit (by fax or e-mail) weekly reports to the Project Manager.
7. To thoroughly review each completed questionnaire in order to ensure that all questionnaires filled in by team members are comprehensively and correctly completed.
8. Act as a motivator to your team members.
9. Be available to assist in the training of team members.

Part B: Field Control and Editing Checks

The quality of the fieldwork/data collection is one of the most important aspects of this research exercise. It is therefore essential that as a Supervisor you ensure that all the fieldwork controls are adhered to and that all fieldwork is thoroughly checked and edited.

Field Control

Fieldwork must be done in line with the following specifications:

Female Sex Workers

The sample sizes for this target group are as follows:

Livingstone	-	400
Chipata	-	400
Chirundu	-	400

It is likely that two points of contact will have to be made to complete an interview with this target group. The first point of contact will be on the business night at the place of congregation, for example bars, clubs, street corners, homes (brothels) ; and the second point of contact will be at the place of interview. Attempts are to be made to conduct interviews with CSWs on the business night, however as they will be busy seeking clients the success levels at this stage may be very low. Interviewers are therefore to arrange a time and point at which the interview could be done the following day.

A “take-all” approach is to be utilized whereby all FSWs present at the “time-location” will be interviewed. Interviewers are to spend the same amount of time at each time location cluster. The precise times and hours to spend at each time location will be established via the mapping exercise and will be submitted to each Supervisor prior to the start of fieldwork.

Long Distance Truck Drivers

The sample sizes for this target group are as follows:

Livingstone	-	300
Chirundu	-	300
Chipata	-	300

These individuals will be contacted at their respective points of trade. These will be identified through the mapping exercise and a “time-location” schedule similar to the one designed for the FSWs will be developed. Interviews will be done at the same times on each occasion and for the same period of time.

These individuals will be contacted and interviewed at various points according to where they congregate such as truck stops, bars, et cetera. A mapping exercise to identify these different points will be carried out and a “time-location” sampling frame similar to that which will be developed for the FSWs, will be established for the purpose.

A schedule of time-locations, number of interviews to be completed and the times at which interviews with each target group are to be completed will be submitted to you prior to the start of fieldwork. This will serve as your primary control tool for the execution of fieldwork. This will be finalized after a thorough mapping exercise of the various locations at which the target groups congregate has been completed.

Editing Checks

Supervisors are required to check and have interviewers edit the questionnaire once the interview has been completed. Instructions for editing the questionnaire appear below :

Questionnaire editing will be done by the interviewer or supervisor. Some interviews may have to be done in the absence of the supervisor (in particular for the FSWs).
In these instances, the supervisor must arrange to meet the interviewer within 12 -24 hours after the interview has been completed in order for him/her to carry out another level of checking and editing. Interviewers will be required to edit their questionnaires before considering an interview complete.

Where the supervisor is present editing will be done on the spot by the supervisor in order to avoid re-contacting respondents which is quite likely to be difficult and impractical given the time frame for fieldwork completion. Note that field editing is especially important at the beginning of fieldwork when interviewers are less familiar with the questionnaire. Each edited questionnaire should be reviewed with the interviewer who completed it and signed by the supervisor.

All questionnaires should be reviewed from beginning to end for the following:

- Verify that an interview result code has been recorded in the interviewer visit box on the cover page of the questionnaire.
- Verify that the interviewer has signed the witnessed verbal consent.
- Verify that all skip and filter instructions have been respected.
- Verify that the responses are legible.
- Verify that only one response code is circled for each question unless instructions allow for more than one response. For questions which allow for more than one response, verify that codes "2" (No) have been circled for all responses not coded "1".
- Verify that any corrections made by the interviewer are done legibly and according to the instructions in Part B of the Interviewers' Guidelines.

In reviewing the questionnaires, supervisors are to ensure that all consistency checks as outlined in Part D of the Interviewers' Guidelines were utilized and adhered to.

INTERVIEWERS GUIDELINES

Part A: General interviewing procedures

Introduction and Objectives

As an interviewer, you are part of a very important research endeavor to collect information on people's knowledge, attitudes, beliefs, and practices regarding HIV/AIDS and other STDs. The main objectives of this research are to learn:

- How much do people in this area understand about transmission and prevention of HIV, the virus that causes AIDS, and other STDs ?
- What influences people's information about AIDS and HIV ?
- What are common sexual practices related to the risk of AIDS or HIV transmission in this population?
- What behavioral changes, if any, have people adopted in order to avoid contracting HIV?

Interviewer duties :

Your main duties as an interviewer include:

- To be prepared, and have all the necessary supplies: questionnaires, guidelines, a pen or pencil, and samples of male and female condoms [if necessary], required administrative forms (such as logs of assigned or completed interviews) which vary from one setting to another.
- To read each question aloud **exactly** as it is written in the questionnaire.
- To listen carefully and without judgment to your respondent's answers and comments.
- To accurately record the respondent's answers on the questionnaire according to instructions in this manual.

- To probe for additional information when necessary.
- To ask your supervisor for assistance whenever you have a question which is not covered in this manual.
- Not to give advice to respondents but to refer them to local resources or your supervisor.

Beginning the interview :

A respondent's first impression of you will strongly affect his/her willingness to cooperate with the survey. Therefore, it is very important that you approach each interview in a friendly and professional manner. Guidelines for good interviewing include the following:

Always remain neutral : Your job as an interviewer is to obtain the facts. An interviewer should be friendly, but firm, neutral, but interested. Your tone of voice, facial expressions and even body postures all combine to establishthe rapport you create with your respondent. Do not express surprise, pleasure or disapproval at any response or comment made by the respondent.

Answer the respondent's questions :

Some respondents may question you about the purpose of the survey before agreeing to participate. Answer the respondent's questions as directly as possible referring to the introduction paragraph on the front of each survey.

However, if a respondent has questions about AIDS or other interview-related topics at any time during the interview, politely explain that you prefer to complete the interview first and discuss his/her questions after the interview. Once completed, direct the respondent to the nearest HIV/AIDS information resource (could be an NGO, a health facility, or any locally appropriate source) for more information. It is important to remember that your job is not to educate respondents, but only to collect information from them.

Handling reluctant respondents :

Occasionally, a potential respondent will refuse to participate in the survey. Do not take the initial unwillingness of a respondent to be interviewed as a final refusal. Try to put yourself in their position and think of factors that might have brought about this reaction. The respondent may not be in the right mood at that particular time or they may have misunderstood the purpose of your visit. Try to find out why the respondent is unwilling to participate, and respond accordingly. Some arguments you can use to persuade a respondent to participate are:

- The respondent cannot be replaced by anyone else.
- The information they provide will help to develop programs, which assist people like themselves.
- If confidentiality is an issue, assure the respondent that his or her name will not go on the questionnaire. Questionnaires will only be identified by a number. Everyone working on the survey has pledged to maintain confidentiality. **Never ask the respondent's name.**
- However, in some circumstances a respondent may continue to refuse. In this situation, respect the respondent's right to refuse, and thank the respondent for his/her time. Do not take these refusals personally.

Always interview the respondent in a private setting

A respondent is much more likely to respond honestly if the interview is conducted in a private setting. All interviews should be conducted alone with the respondent. Once an interview has begun, if a third person enters the room/point or is within hearing distance, explain to the respondent that it is important that you interview him/her alone. This is especially important since this questionnaire contains many personal questions.

Read every question exactly as written and in sequence

The wording of each question has been carefully chosen and for that reason it is essential that you read each question to the respondent exactly as it is written. It is very important for this survey that each question is asked to each respondent in exactly the same manner. Certain sections of the questionnaire also have an introductory paragraph that must be read to the respondent in its entirety.

Listen to the respondent

Listening carefully to what your respondents say is as important as asking the questions on the questionnaire. Some questions in the questionnaire require you to listen to what the respondent says and record it by simply drawing a circle around the number next to a printed response category. Sometimes, you must write down exactly the answer given by the respondent if the answer does not fit in any of the listed categories. In either case, be a good listener. Do not rush into circling the code category before you have really listened to your respondent. This may be taken as a sign of disrespect or not paying attention. More importantly, people who rush into coding a response are often in danger of attributing their own biases, preferences and favorite response categories to their respondents.

Probing

Occasionally, a respondent may answer a question incompletely, or seem to have misunderstood the question. The first thing to do is simply to repeat the question as written a second time. If this does not help, you will have to probe to obtain the response. Probing is a way of asking for further information **without influencing the response**. For example, “Could you explain that a little more?” or “Could you be more specific about that?” *You must never interpret a respondent’s answer and then ask the respondent if your interpretation is correct.*

Part B: How to use the Long Distance Driver Questionnaire

***Note :** This questionnaire is based on the BSS questionnaire for adult men and women age 15-49.*

The interviewer's task is to use the survey questionnaire to collect information that is as accurate as possible. The instructions and examples below will acquaint you with the procedures for correctly using this questionnaire. **It is important to remember that in this part of the guidelines items from the questionnaire are presented as examples of types of questions found in the questionnaire. Part C of the guidelines provides clarification of the content of the individual questions.**

This questionnaire is divided into four columns.The first column contains the question number with each section numbered separately within each section. The second column contains the questions, the third column contains the response categories, and the fourth column contains skip instructions, if necessary. Sometimes in the question column, you will see additional instructions to help you to correctly pose the questions.

Certain questions must be worded differently according to a response already given by the respondent or according to the sex of the respondent. Variable formulations of the question are always presented in parentheses. In the example below, the wording of the question depends on the sex of the respondent:

Q 403	The last time you had sex with a regular partner, did you [or your partner] use a condom?	YES	1	
		NO	2	→ **Q405**
		DON'T REMEMBER	3	→ **Q406**
		NO RESPONSE	4	→ **Q406**

The question column may also contain interviewer instructions or filters. All interviewer instructions throughout the questionnaire are not read to the respondent. For example:

Q103	How old were you at your last birthday?	AGE IN COMPLETED YEARS	[__|__]	
		DON'T KNOW	88	
	(COMPARE AND CORRECT Q102 IF NEEDED)	NO RESPONSE	99	
		ESTIMATE BEST ANSWER		

Filters are also instructions for the interviewer. Filters instruct the interviewer to check the response to a previous question, and then provide the interviewer with the appropriate instructions to continue with the interview. For example:

Q401	**FILTER : CHECK Q305** HAS SEX WITH REGULAR PARTNER DURING PAST 12 MONTHS .... [___] ↓	DID NOT HAVE SEX WITH REGULAR PARTNER DURING PAST 12 MONTHS [__] →	→ **Q501**

As stated earlier, responses are recorded in the third column of the questionnaire and are not to be read aloud unless you are instructed to do so by the phrase **READ OUT**.

Column four contains the instructions for skipping over questions that might be inappropriate under certain circumstances. Skip instructions appear as arrows followed by question numbers. In the example below, if a respondent has never been to school, the interviewer skips over two additional questions related to school attendance:

Q104	Have you ever attended school ?	YES	1	
		NO	2	→ **Q107**
		NO RESPONSE	3	

Interviewers must pay particular attention to the skip instructions in order to collect the appropriate information and to avoid asking irrelevant or inappropriate questions.

Recording responses :

Below are instructions for recording responses to the various types of questions in this questionnaire. In general, every question must contain a mark EXCEPT if it has been skipped according to the skip instructions. If the respondent does not know the answer or does not remember, mark the appropriate category. If the respondent refuses to answer the question, mark NO RESPONSE.

Pre-coded Questions. Pre-coded questions are questions for which the possible responses/answers are written in the questionnaire. To record a response/answer, the interviewer simply circles the appropriate code. Unless explicit instructions are given in the question column, the interviewer records ***only one*** response for each question.

Q110	During the last 12 months have you been away from this community for one continuous month or more?	YES	1	
		NO	2	
		DON'T KNOW	3	
		NO RESPONSE	4	

An example of a question for which more than one response is allowed is included below. Notice that once the respondent has finished answering the question, it is your responsibility to circle code "2" for NO corresponding to every response **not mentioned** by the respondent.

			Y	N
Q405	Why didn't you [or your partner] use a condom that time?	Not available	1	2
		Too expensive	1	2
		Partner objected	1	2
	ADD OTHER LOCALLY APPROPRIATE CATEGORIES AFTER PRE-TESTING	Don't like them	1	2
		Used other contraceptive	1	2
		Didn't think it was necessary	1	2
		Didn't think of it	1	2
	CIRCLE ALL ANSWERS MENTIONED	Other______________________	1	2
		DON'T KNOW	1	2
		NO RESPONSE	1	2

Also notice in the question above, the instructions to "add other locally appropriate categories after pre-testing." Many questions in these questionnaires contain similar instructions which are part of the questionnaire adaptation process during the pre-testing phase of the training. As the questionnaires are edited with locally appropriate responses, such instructions will be deleted to save space. Also, categories which seem inappropriate locally will be deleted from column three.

There are several questions in the questionnaire for which more than one response is allowed, AND for which you are required to probe to see if the respondent is able to provide additional answers. See the example below:

			Yes	No
Q705	Which places or persons do you know where you can obtain male condoms?	Shop	1	2
		Pharmacy	1	2
		Market	1	2
		Clinic	1	2
	PROBE AND RECORD *ALL* ANSWERS	Hospital	1	2
		Family planning center	1	2
		Bar/guest house/hotel	1	2
	Any others?	Peer educator	1	2
		Friend	1	2
		OTHER____________________	1	2
		NO RESPONSE	1	2

Pre-coded questions may also include an "OTHER" response for answers not already coded, as shown in the above example. In this case, the interviewer circles the code YES (1) for OTHER and then writes down the respondent's exact words on the line provided. Questionnaires that are being pre-tested will generally have many questions with the "OTHER" response code. However, a finalized questionnaire should contain fewer "OTHER" responses.

Numeric answers : Some pre-coded questions require that you record the respondent's numeric answer in the boxes provided. When recording numbers in the answer boxes, be careful that your response is recorded in the appropriate box. For example:

Q102	In what month and year were you born?	MONTH [__|__] DON'T KNOW MONTH 88 NO RESPONSE 99 YEAR [__|__] DON'T KNOW YEAR 88 NO RESPONSE 99	

Any time a respondent's answer requires fewer digits than provided for in the response column, the interviewer must record zeros (0) in the left-hand box and the respondent's answer in the right hand box. For example:

Q304	With how many different partners (including spouse) in total have you had sex during: [Q304a] the last 3 months [Q304b] the last 12 months **READ OUT:** **Please take time to think about your answer to this question so that we can get the most accurate information possible. Remember this information is strictly confidential.**	NUMBER IN LAST 3 MONTH [_0|__2] DON'T KNOW 88 NO RESPONSE 99 NUMBER IN LAST 12 MONTH [_0|__5] DON'T KNOW 88 NO RESPONSE 99	

Correcting Errors : If the interviewer makes an error in recording a respondent's answer, or if the respondent corrects something he/she has previously said, the interviewer is to *draw one line through the incorrect code and circle the correct code.* To correct an open-ended answer, draw one line through the incorrect answer and write the correct answer next to it. **NEVER ERASE** anything on the questionnaire.

Part C: Section-by-section review of adult questionnaire

Below are detailed instructions for each question in the Long Distance Driver questionnaire. Sections and questions are identified by number and the reader should refer to the corresponding pages of the instrument. Following this section on the Long Distance Driver questionnaire, explanations occur for additional or differently-worded questions included in the FSW questionnaires.

Questionnaire identification/cover page

The cover page of the questionnaire will differ greatly from one setting to another depending on how the sample is drawn, what other information is required, the number of call-backs allowed, and the possible interview results. Instructions for this page of the questionnaire will be designed by TDRC. The format provided in this document is simply a suggestion based on formats that have worked well in other places. Instructions and accompanying forms for respondent selection, contact procedures and interview logs to monitor the number of completed questionnaires during fieldwork.

In general, much of the information on the cover page will be completed before the interviewer contacts the respondent. QUESTIONNAIRE IDENTIFICATION NUMBERS (001) will be written in prior to distributing the instruments, or may be pre-printed on all the instruments. Questions 002, 003, and 004 enable the research team to record the geographic location in terms of city, region, and site. Other categories may be more appropriate and will be substituted during instrument revision.

The exact wording of an INTRODUCTION that the interviewer is to say initially to the respondent will be printed on the cover page of the instrument to remind the interviewer of the purpose of the study. Interviewers should memorize and practice the introduction during training. The section on CONFIDENTIALITY AND CONSENT is extremely important. Here, the interviewer reassures the respondent that their conversation and information exchanged is private and will not have their name attached. *Never ask the respondent for their name.* The respondent gives verbal consent to the interviewer, the interviewer signs his/her name indicating that verbal response has been given, and then arranges for a private setting to conduct the interview. The table recording information about INTERVIEWER VISITS may have to be adjusted depending on the sampling plan used and the method of identifying respondents. The SIGNATURE OF SUPERVISOR (Supervisor) indicates that the interviewer's supervisor has looked over the questionnaire, determined there is no missing data and no ambiguous marks, and that the questionnaire is ready for coding.

Section 1: Background characteristics

The questionnaire begins by asking background questions that help to establish rapport between the interviewer and the respondent.

Q101. Do not ask this question. Circle the appropriate code indicating the respondent's sex. This question will not appear in a questionnaire designed for a target group such as female sex workers since the entire sample is the same gender.

Q102 and Q103 are included to obtain the best estimate of the respondent's age. If the respondent does not know his/her age or his/her birthday, probe using one or more of the following techniques:

- ask the respondent if he/she has any written records which might include a year of birth,
- ask the respondent if anyone else around would know his/her age,
- if the respondent has a child/children, ask if he/she knows his/her approximate age at the birth of the child. Then, ask for the child's age. Calculate the respondent's age by adding the child's age to the respondent's age at birth of the child.

If none of the above techniques succeed, ask the respondent to estimate his/her age.

Q104, Q105, Q106 are all included to assess level of education/literacy. The most desirable information is the number of completed years of education, however, many people cannot say immediately how many years of school they have finished. Most people who have been to school can say which level or year they finished, but this information has little meaning outside the country and the categorical data cannot be averaged. When reporting characteristics of the sample, the analyst wants to be able to provide the average years of education completed by the entire sample. Thus, the report might say, "The males in this sample averaged 8.2 years of schooling while the females averaged 4.9 years." You will first ask if the respondent has ever attended school (Q104). If yes, you next ask for the highest level of school completed (Q105). Finally, you ask for the total number of years of education completed up to now. You may have to calculate the number of years with the respondent's help. If the respondent never attended school, you skip to Q107.

Q107, Q108. The purpose of these two questions is to find out something about migration patterns in terms of length of time in the area and travel out of the area. Insert into question 107 the name of the village, town, city, or neighborhood in which the interview is taking place. If the respondent has lived in the locale of the interview for less than one year (12 months), write in 00 in the space provided. In 108, the one-month period refers to a *continuous* period of one or more months. This means that a respondent who has spent one week away in, for example, January, two weeks away in March and one more week away in August has NOT been away for a *continuous* period of one month during the previous 12 months. Note also that the reference period is "the last or previous 12 months" and not the last calendar year. In some settings, survey staff may be interested in more detailed information on migration. For instance, identifying cities to which respondents travel, differentiation between the capital city and other cities, identifying international migration, etc. These kinds of additional questions might be added if the survey team thinks they would be appropriate for the particular target group in question.

Q109. If the respondent says he/she does not have a religion, circle 0; if the respondent does not answer, circle 9 for NO RESPONSE.

Q110. In most places, asking about ethnicity is important for clear descriptions of target groups. Most people identify strongly with only one ethnic group, even if their parents come from two different groups. There should be only one answer for this question because we are asking to which group the respondent identifies most strongly. If the respondent is of mixed ethnicity and states that they do not identify strongly with either ethnic group, then circle the code for MIXED ETHNICITY.

Q111, Q112, Q113. Alcohol and drug use correlate with increased risk of infection with HIV and other STDs. Assessing levels of alcohol and drug use among target groups can help to direct educational strategies. Q111 asks about frequency of alcohol use; only one answer is possible. Q112 asks where alcohol is most frequently consumed within the past 4 weeks and must be adapted using local categories. In Q113, categories or types of drugs most often available must be included for the local area. Each type of drug is read out to the respondent, and they are asked if they have ever tried each one. For each possibility, the interviewer must circle the number for YES, NO, DON'T KNOW (DK) or NO RESPONSE (NR).

Section 2: Marriage and live-in partnerships

The four questions in this section do not look like the typical marital status questions usually asked in these kinds of surveys. They attempt to establish whether or not a person has ever been married and age at first marriage, if the person currently lives with or is married to someone, and whether or not the partners are *currently* living together. Living with a person in a sexual relationship or marrying someone changes an individual's status in society and potentially, their level of risk of infection with HIV. These questions begin to assess sexual risk behavior by exploring marital or live-in partnerships. A marital relationship is a legal, religious, or socially recognized union. Sexual relationships between married or live-in partners are generally considered to be less risky than other kinds of sexual relationships, provided that the relationship is mutually exclusive and neither partner is already infected. Ultimately, the questions determine whether the respondent is married, living apart/separated, single without specifically asking "what is your marital status?" *Reasons* for a particular marital status (widowed/divorced) are not asked. A person who is widowed or divorced *has* been married but is not *currently* married.

Q201. This question asks about ever having been married in order to get at age at first marriage. "Marriage" involves a religious or official ceremony. Circle YES, NO, or NO RESPONSE. Pay attention to the correct skip patterns, so that if the person has never been married, then you skip the question about age at first marriage.

Q202. Age at first marriage is considered to be a critical risk indicator. You might have to probe to get age at *first* marriage. Over the longer term, we want to see age at first marriage increasing. Probe to get the respondent to estimate as best they can if they don't remember exactly. But if they cannot estimate, write 88 for DON'T KNOW into the boxes.

Q203. Asks about *currently* married or living with someone. If a person is married but separated (e.g., waiting for a divorce), then he/she should not be considered as "currently married." Again, be careful how you code the response and make sure it is the correct code. If the respondent is currently married, they may either be living with their spouse (1), living with some other sexual partner such as a girlfriend or boyfriend (2), or not living with either the spouse or another sexual partner (3). If the respondent is not currently married, they may or may not be living with a sexual partner. Pay attention to skip patterns, because Q204 is only to be asked of married people.

Q204. The wording of this question depends on the sex of the respondent. If the respondent is male, the interviewer asks if he has more than one wife. If the respondent is female, the interviewer asks, does your husband have other wives? Regardless of the gender of the respondent, the answer always refers to wives. This is simply a yes/no question and does not ask about number of wives. This question may be excluded in countries where polygamy 15 not practiced.

Sections 3, 4, 5, 6 : Sexual history by partner type

The questions in these sections are very personal and for that reason it is essential that you, the interviewer, read the questions in a confident, non-judgmental, and professional manner. Anytime that a respondent appears to be on the verge of refusing to answer a question, you should remind him/her that all answers will be kept confidential.

Section 3 summarizes data on number and types of partners, while Sections 4, 5 and 6 ask specific questions about regular, non-regular, and commercial partners. Many respondents may not have all these types of partners, therefore several of these sections may be skipped. Those who have not been sexually active within the past 12 months will not answer any of the questions in these sections.

Section 3 : Numbers and types of partners

For those respondents who have sexual experience, this section identifies the total number of sexual partners during the previous 12 months, and breaks down that total by type.

Q301. This question acts as a filter to determine what proportion of the entire sample has ever had sexual intercourse. If the respondent answers YES to the question, you continue to 302. If he/she answers NO or does not answer the question, you then turn to section 7 on condoms (Q703), skipping sections 4, 5, and 6. By "sexual intercourse," we mean sexual activity that includes penetration of the penis in the vagina or anus. Be tactful, but ask the question exactly as it is worded. This question is not asking if the respondent has ever had anal sex, but rather it is asking if the respondent has had sexual intercourse as defined, which is penile penetration of either of the two locations. The term "sexual intercourse" is defined in this way for this survey because vaginal and anal sex are the main sexual risk behaviors for HIV infection. "Heavy petting" or "deep kissing" don't "count" as "sexual intercourse" in this survey.

Q302. Record the age at which the respondent first had sexual intercourse, according to the above definition. Probe to get the best estimate. If he/she cannot remember, probe using age ranges (between 8 and 10 years? older than 10 but younger than 13? and so on). Here the respondent is being asked to think back to what may be a distant time period. Make sure the respondent understands that you are asking about age at the first ever experience of sexual intercourse.

Q303. Many variables use the sexually active subsample as a denominator. This subsample is restricted, however, to those reporting sexual activity within the past 12 months (but not the past calendar year). If the respondent has had sexual intercourse in the past, but not within the previous 12 months, then you skip sections 4, 5, and 6, go to section 7 (Q702), and do not ask about any sexual partners.

Q304. The purpose of this question is to determine what types and how many of each type of sexual partner the respondent has had. "Commercial" partners are considered to be those with whom money was exchanged. Commercial partners are a type of non-regular partners. In many surveys, "non-regular" partners are considered to be those with whom the respondent has had a sexual relationship lasting less than 12 months or whom are non-spousal and non-live-in. Although these usually include both commercial and non-commercial partners, in this survey, we are trying to distinguish between "commercial" and other "non-regular" partners because risk levels may differ. In many places, men are reducing their reliance on commercial sex but may be increasing their involvement with non-commercial, non-regular partners. We want to be able to track these trends in partner types. The second category, "spouse or live-in partner" is often referred to as "regular" partners. Remember that spouses and live-in partners always are included in the "regular" category regardless of length of time of marriage or living-in.

Section 4 : Regular partners

Q401. This question is a filter and requires the interviewer to look back at 304. If the respondent is married, or is living with someone with whom they have a sexual relationship, the questions in section 4 should be asked. If not, skip to section 5.

Q402. Record the number of times the respondent states they have had sex with their *last* regular partner during the *past 30 days*. Here the question refers to the last occasion of sexual intercourse with a spouse, or live-in sexual partner. This question provides data for the AVERT model which calculates number of infections averted in response to interventions. You may have to probe to obtain accurate information.

Q403. Again, this question applies to the *last* sexual intercourse with *any* regular partner (either a spouse or live-in partner). This question is worded differently depending on the sex of the respondent. For male respondents, you ask : "The last time you had sex with a regular partner, did you use a condom?" For female respondents, you ask : "The last time you had sex with a regular partner, did your partner use a condom?" This difference recognizes that females don't technically "use" condoms. Record the answer in the boxes provided. Pay attention to skip patterns. If the respondent did not use a condom, skip to 405 and ask why. If the respondent answers DON'T KNOW or does not answer, skip to 406. Q403 is one of three key condom use indicators measured in this questionnaire : *ever-use* of condoms, condom use at *last sex* by partner type, and *frequency* of condom use by partner type.

Q404. The purpose of this question is to determine who initiated use of condoms at the last use. This question will be skipped if 403 is anything other than "yes". There is only one possible answer.

Q405. If a condom was not used, as reported in 403, then you will ask the respondent why he didn't use a condom, or why her partner didn't use a condom. In this question, multiple answers are possible. During pretesting, determine if other categories might be appropriate and add them. Do not read out the answers. Simply mark 1 (YES) for each answer mentioned by the respondent. All other answers then automatically become "no" answers and should be marked as such. Make the circles carefully so that the answers are clear to the people who will be coding the interviews. Each category should be marked either "yes" or "no."

Q406. The purpose of this question is to assess *frequency* of condom use with the *last regular partner* on a four-point scale of "every time", "most times", "occasionally", and "never". The wording of the question is slightly different by gender, and both wordings appear in the questionnaires. If the respondent's answer does not fit easily into one of the four categories, you may say, "would you say you used a condom with your last regular partner every time, most times, occasionally, or never?" Circle the response mentioned.

Section 5 : Non-regular partners

Q501: This is a filter question requiring the interviewer to look back at 304 to determine if the respondent reports non-regular partners during the previous 12 months. If not, this section is skipped. Recall that the term "non-regular" is used to refer to any non-spousal or non-live-in partner, but excluding commercial partner's who the respondent has had sex in exchange for cash. "Non-regular" would include casual partners and "girlfriends"/"boyfriends" and any other sexual partner(s) with whom money has not been exchanged. In this questionnaire, we are distinguishing between "commercial" and "non-commercial" relationships. In-kind gifts are not included as commercial exchanges.

Q502-Q505 : These questions are similar to **Q402-Q405** (see above).

Q506 : This question is similar to **Q406** (see previous section).

Section 6 : Commercial sexual partners

Q601: Again, this is a filter question requiring the interviewer to look back at Q304. Both males and females are asked if they have had sex with anyone in exchange for money. The utility of the definition of "commercial sexual partner" has to be determined locally based on the research team's experience, qualitative research conducted with the target group in question, and the specific characteristics of the target group. Although some might question asking females about commercial partners, it is possible that a particular target group (say, for example, market women) may contain members who are exchanging sex for money, but who do not consider themselves "female sex workers" and who would not be interviewed using the FSW questionnaire. Details about commercial sexual transactions can thus be captured with this section without using the FSW instrument.

Q602-Q605 : These questions are similar to **Q402-Q405** and **Q502-505** (see above). In 602, we are trying to get an idea of how many times the same commercial partner may be visited, which is why the question reads, "How many times did you have sex with your most recent commercial partner in the last 30 days?"

Q606 : This question is similar to **Q406** and **Q506** (see above).

In sections 5 (non-regular) and 6 (commercial), we did *not* ask if the respondent had discussed HIV, AIDS, or STDs with any of these kinds of partners. Part of the reason for this choice had to do with the length of these questionnaires and prioritizing inclusion of questions. In addition, we felt that communication about HIV and STD risk was least likely among *regular* partners and therefore this might be the most appropriate section in which to include this question. Over time, increases in this indicator between regular partners (a larger proportion of the samples will report regular partners) will suggest evolving social norms about communicating risk and prevention.

Section 7 : Male and female condoms

This section asks separate questions about male and female condoms in an effort to begin tracking awareness and use of the female condom. The research team will need to decide if this distinction makes sense for their local situation. If the female condom is simply not available at all in country, then you might want to simply ask if respondents have heard of the device, rather than including questions about use. On the other hand, if the female condom is available in country and is accessible to the target group in question, additional questions may need to be added.

The research team may determine that it would be important to show the respondent samples of an unrolled condom and one condom still in its packaging, and ask, "What are these?" In that case, this section would need to be modified.

Q701 : In the three previous sections, respondents were asked if a condom had been used during the last sexual encounter with the three different types of partners. The interviewer must refer back to those questions (403, 503, 603). If the respondent mentioned using a condom with any of the three types of partners, then the interviewer marks the filter question 701 as "condoms used", skips 702 and 703, and asks if the respondent knows where to obtain male condoms (704).

Q702 : If the respondent did *not* say they had used a condom at the last sexual encounter with any of the three types of partners in 403, 503, or 603, then you ask about *ever-use* of condoms in 702, since the respondent may have used condoms prior to the last sexual intercourse with any of the three types of partners.

Q703 : If no condom use has been mentioned up to this point, then 703 determines if the respondent has ever *heard of* a male condom. If the respondent has not heard of a male condom, then the interviewer skips to 706 and asks if they have heard of a female condom.

Q704 : This question determines if the person knows where to obtain male condoms. Mark YES or NO, or NO RESPONSE if he/she does not answer. If the answer is NO, then you will skip to 706. Be careful with this question. If you know that condoms can be purchased in the pharmacy on the next street, but the respondent does not know this, the correct answer would be "NO."

Q705 : This question identifies sources of condom availability. Since this question may have multiple answers, circle the code 1 (YES) for all responses mentioned. If the respondent offers an answer which is not included in the list, circle code "1" next to "OTHER" and write down the respondent's words on the line provided. When the respondent finishes answering the question, probe by asking "Is there anywhere else that you could go right now to obtain a condom?" Once the respondent has completed answering the question, circle codes "2" (NO) for all responses not mentioned. Probe for all available condom outlets, using the given response categories if necessary.

Q706 : This question determines the amount of time it would take to obtain a condom close to home or work. The categories may need to be adjusted for local conditions, or it may be that the question is not necessary at all for some geographic areas or target groups. If the categories are changed, verify that they are mutually exclusive (i.e., that an answer can't fit in more than one category).

Q707 : This question asks about any unprotected sexual intercourse with non-regular or commercial partners during the previous 12 months. Although the data could theoretically be derived from other questions in the instrument, this question asks directly about unprotected sex and thus serves as an internal check on information obtained elsewhere in the instrument. It also provides data for indicator 13, which is the percentage of target group reporting unprotected sex with any non-regular or commercial sex partners during the previous 12 months.

Section 8 : STDs

Questions in this section are posed to men and women. The 5 questions contained in the section attempt to assess certain aspects of STD symptom awareness by gender and self-reported STD incidence. Self-reported incidence of STDs raises a number of problems concerning definition and measurement. Many respondents may not know the correct medical terms for different STDs, and therefore all questions are phrased in terms of symptoms, instead of asking "What STDs do you know?" or "Have you ever had an STD?" For females, many infections may be asymptomatic for long periods and difficult to diagnose. For males, symptoms are usually more easily recognizable, and gonorrhea (penile discharge) can be distinguished from syphilis (sores, ulcerations). The main objective of STD program interventions is to improve the point of first encounter for treatment, to increase the probability that a person experiencing symptoms will seek out and receive prompt effective treatment, as well as to provide prevention advice. Answers to these questions complement STD case management studies by providing a perspective from the person experiencing the symptoms. Read the questions slowly and carefully. Be careful not to imply any judgment of the respondent and his/her behavior or morals.

Q801 : Respondents are first asked if they have heard of diseases that can be transmitted through sexual intercourse. If not, you skip to questions about symptoms beginning with 804. If they answer YES, DON'T KNOW, or they don't answer, you then ask both males and females the following two questions about symptoms.

Q802, Q803 : These two questions are knowledge questions, asking about symptoms of STDs in women and in men. You should *not* read out the categories, but should probe by asking "Do you know any others?" because more than one answer is possible. For each symptom mentioned, you circle 1 (YES). If the respondent describes a symptom not listed, write the symptom on the line next to the OTHER category and circle 1. When the respondent can no longer think of other symptoms, then you must circle 2 (NO) for each category not mentioned by the respondent. Note that the categories are not completely identical for the two genders.

Q804, Q805 : These two questions ask about discharge (804) and ulcers/sores (805) during the past 12 months. If the answers to both these questions are NO, then you skip the rest of this section (after filling in the filter question in 806) and go on to section 9. Both of these questions are simple YES/NO questions, but note that they are limited to the previous 12 months (not the last calendar year).

Section 9 : Knowledge, opinions, and attitudes towards HIV/AIDS

In many questionnaires of this type, knowledge, attitude, and opinion questions are placed first in the instrument because they are considered to be less threatening than behavioral questions, and because they provide an opportunity to develop rapport between interviewer and respondent. However, some researchers feel that by exploring these kinds of knowledge issues first in the interview, the respondent is reminded of all the correct answers for behavioral questions. He/she may be less likely to provide honest responses to behavioral questions, instead telling you what he/she now knows or suspects to be the "correct" answer. For these reasons, the "knowledge" section appears here near the end of the interview.

Q901 : This question simply asks if the respondent had ever heard of the disease called AIDS. If the answer is NO, then skip the remainder of these questions and go to section 10, the last section.

Q902a and b : Past research has shown that knowing someone well who is infected or who has died of AIDS correlates with safer sexual behavior. This question goes into somewhat more detail than a simple yes/no question. We want to know not only if the respondent knows someone with HIV or AIDS but also if that person is a close friend or relative. Listen carefully to what the respondent says and mark the appropriate category. Note the skip patterns.

Q903 - Q908 : These question identifies the level of awareness of the different ways in which one can protect themselves from the HIV virus as well as the different ways in which individuals can get the virus.

Q909 : This question about knowledge of asymptomatic infection is very important and for many target groups, will turn out to be a key indicator of knowledge change over time. Being aware that a person might be infected even though they look healthy can result in very different behavior. This is a simple YES/NO question.

Q910 - Q912 : Knowledge of maternal/ infant (vertical) transmission of HIV may be another key knowledge indicator for many target groups. Q910 asks if the respondent believes a pregnant woman can pass on HIV to her unborn child. Q911 then asks what specifically a mother can do to reduce the risk of passing on HIV to her unborn child, in order to find out if people are aware of medication that can be given during pregnancy or at delivery. Other responses that might be mentioned may be written in the line next to OTHER. More than one answer is possible. Do not read out the possible answers. Circle 2 for NO for each possible answer not mentioned. Q912 find out whether respondents are aware that a mother can pass on the virus to her newborn child through breastfeeding.

Q913-Q916 : These four questions concern HIV testing. The first asks if respondents believe it is possible in the community to get a confidential HIV test, defining confidential. Then they are asked if they have ever been tested (Q914). Please be sure to let the respondent know that you are not interested in knowing the results, this might encourage their willingness to respond to the question. Q915 seeks to find out the incidence of persons who have voluntarily done the test and Q916 if they found out the result. Respondents are not asked the specific result of the test.

Section 10 : Exposure to interventions

Many target groups may have already been exposed to HIV prevention programming. The BSS research team may want to assess in section 10 the degree of exposure of members of the target group to past interventions. These questions should be very specific questions about interventions in the geographic area, such as questions about having talked to a peer educator, being aware of a certain campaign slogan, knowing a specific brand of socially marketed condoms, or using a certain health facility where STD services have been upgraded. This section can be eliminated if the target group and/or geographic area have not been exposed to previous interventions, or more general questions can be added about sources of knowledge about HIV, AIDS and STDs. This section provides an important opportunity to assess penetration of various past interventions.

At the end of the interview, thank the respondent for their time and reassure them again that their name will not be associated with any information from the survey results.

FSW questionnaire -- additional questions

The FSW questionnaire should be administered to women who identify as "prostitutes" although they may use a different word to describe how they earn their living. Women who "regularly" exchange sex for money or gifts are easily identifiable in some cultural settings, especially if they live in or work out of brothels, hotels, bars, smaller eating establishments or on the streets. However, in some settings, women who engage in what researchers might call prostitution, work in a clandestine fashion, and may not readily identify themselves as prostitutes. The wording in the questionnaire may have to be adapted, or some questions eliminated, in order to avoid damaging rapport with members of some target groups.

Section 1 : Background characteristics

This section is very similar to section 1 of the adult questionnaire. You do not need to record the sex of the respondent, since all interviews are with female sex workers. FSWs are also not asked how often they've listened to the radio and watched television. This FSW questionnaire contains the most questions of any of the set of questionnaires, so some questions were eliminated in order to reduce the total length of time necessary to conduct the interview.

Q107 : Because FSWs frequently move around for their work, they are asked about frequent travel to other places, a behavior that may put them at greater risk.

Section 2 : Marriage, family, work

Q201-Q205 : The first five questions in this section are nearly identical to the first five in section 2 of the adult questionnaire, attempting to elicit information on past or present, permanent or stable sexual relationships. These questions ask about ever having been married (201), age at first marriage (202), currently married or living with a sexual partner (203), and current spouse or partner having other wives (204). Questions worded and analyzed in this way give a more detailed picture of relationship status than does the traditional multi-category method of asking about "marital status".

Q205 : The purpose of this question is to find out when the respondent first began exchanging sex for money, suggesting the age at which these women first become vulnerable to risk of infection. This question might not work well at all with women who do not self-identify as "prostitutes" unless appropriate language can be developed for the specific cultural situation.

Q206, Q207 : These questions ask about income in addition to that supplied by prostitution (206) and specifically about sources of additional income (207). Having other sources of income, or developing other sources, may help to reduce a woman's risk of infection, in the sense that a woman may feel better able to resist pressure to engage in riskier behavior (i.e., not using condoms) if she can financially afford to lose a customer. Again, the categories for sources of additional income have to be developed locally, based on the usual set of possibilities. These categories may already be known for a given target group, or may need to be elicited through individual or group interviewing. Note that multiple answers are possible for 207. This question is asked without reading out the categories to the respondent. For each answer mentioned by the respondent, you circle 1 for YES. Then you probe by asking, "Are there any other sources of additional income besides what you just mentioned?" and/or "Is there anything else you haven't mentioned?" After the respondent finishes mentioning categories, you must then circle 2 for NO for each category not mentioned by the respondent, including the DON'T KNOW and NO RESPONSE categories.

Q208, Q209 : The purpose of these two questions is to determine if the respondent is responsible for supporting other people besides herself and if so, how many people. Sometimes the need to provide support to other people pushes a woman into more risky behavior.

Section 3 : Number and types of partners

FSWs are not asked if they have ever had sex, under the assumption that all sex workers have been or are sexually active within the past 12 months.

Q301 : The purpose of this question is to learn how early the respondent began having sex, providing guidance about the appropriate age to begin interventions with young girls who might ultimately drift into prostitution.

Q302 : This question asks about how many different partners the respondent has had in the past 30 days. This question is different in terms of time span to Q304 in the adult questionnaire, which asks how many partners a person has had during the past 3 months, and during the past 12 months. The assumption here is that sex workers have more partners than the average non-sex worker, and would have trouble remembering how many partners there had been during longer time periods.

Q303 : Similarly to Q305 in the adult questionnaire, this question seeks to establish types of sexual partners. The types listed here were based on a decade of experience interviewing sex workers worldwide. However, in a particular cultural setting, different categories might be more appropriate. Certainly different wording might exist to describe the different types of partners a sex workers might have. Often there are two general categories, paying and non-paying. Within those two categories, however, or overlapping those designations, would be "regular" and "non-regular" or "casual." For each category listed, paying one-time client, paying regular client, and non-paying partner (which includes spouse or live-in partner), you list the total number of *partners* within the past 7 days. Then you must check to see that the total of those 3 categories matches exactly the total number of partners listed in Q302. If the numbers don't match, then you must continue to question the respondent to verify the number of each type of partner, and then say, "So then, if we add up the total number of partners you've just told me about, then that makes X partners all together. Is that the total number of partners I should list for you during the past 7 days?"

Sections 4, 5, 6 : Sexual history by partner type

These sections correspond to sections 4, 5 and 6 in the adult questionnaire, asking a set of questions about each type of sexual partner.

Q401 : This question attempt to specify in a more detailed fashion, the number of partners a sex worker has on the last day they worked. These questions are very helpful in describing a typical sex worker among the target group. In the analysis, you would say that the average sex worker in this target group saw XX clients in a day. This establishes a range of risk for the particular target group, and over time, also helps to clarify changes in sex work, possibly as a result of the influence of risk of HIV.
In some settings, research over time has shown that the number of clients of sex workers is decreasing and thus that sex work is becoming less lucrative than it used to be.

Q402 : The purpose of this question is to determine the amount of money a respondent receives for sex with a casual (one-time) client, yielding an average for the target group. List the amount the respondent tells you in the space provided on the questionnaire, and list it in the local currency. In the report, the analyst will list the average amount for the target group and translate that into a universal currency such as dollars or some other currency appropriate for the majority of readers.

Q403, Q404, Q405 : This is one of the key behavioral questions – last - time condom use with the most recent paying one - time client. If the respondent's most recent partner did use a condom (402), then you ask who suggested condom use at that time (403). If the respondent's partner did not use a condom, then you skip 405, and ask why a condom was not used (405). Other appropriate local categories may need to be added, or categories currently listed may need to be deleted.
Usual reasons for lack of condom use may already be known for the specific target group in question, or may need to be developed through individual or group interviewing.
In 405, multiple answers are possible. You first ask the question without mentioning the possible categories. As the respondent tells you the reasons, you circle 1 for YES for each reason she mentions. Then you ask, "Are there any other reasons you and your partner did not use a condom that time, that you haven't already mentioned?" Circle 1 for YES for additional reasons mentioned. Then ask, "Are there any other additional reasons?" Once the respondent has finished telling you all the reasons, then you mark 2 for NO for each category not mentioned, including DON'T KNOW and NO RESPONSE.

Q406 : This question is about frequency of condom use with the last one-time paying client, and is similar to other frequency of condom use questions in the adult questionnaire. Possible answers include every time, most times, occasionally, and never. DON'T KNOW and NO RESPONSE are also possible.

Section 5 : Non-paying partners

Questions in this section are identical to those in the previous section and apply to non-paying regular clients, with whom protective behaviors may be different.

This section asks questions about non-paying partners, also called regular partners, including spouses and live-in sexual partners. The section begins with a filter question to determine if the respondent had previously mentioned, in Q302, that during the past 7 days, she had had sex with a non-paying partner.

Q502 : The questions for non-paying partners begin with a question about how many times during the past 30 days did the respondent have sex with a non-paying. Remember that she may have stated in Q302 that she did not have sex with a non-paying partner during the past 7 days but that during the past 30 days, she may have had sex with non-paying partners, so the answer to Q502 could possibly be different than Q302.

Q503-Q506 : The rest of the questions in this section are identical to the other questions in previous sections on last time condom use, who suggested condom use, why no condom use, frequency of condom use, and discussion of HIV with partners.

Section 6 : Male and female condoms

This section on male and female condoms, like similar sections in the other questionnaires, begins with a filter question, requiring you to remember or look back to Q403 and 503 to see if the respondent mentioned condom use. The rest of the section, up to Q606, is identical to the adult questionnaire.

Q607 : This question asks the respondent to show you how many condoms she has on hand (available) in her room at the time of the interview (right now). You are to count the condoms and record the number in the box. This code will allow the analyst to determine what percent of women actually had condoms on hand, and on average, how many condoms they had.

Section 7 : STDs

This section on STDs is the same as the adult questionnaire.

Section 8 : Knowledge, opinions, and attitudes

This section is identical to the adult questionnaire.

Section 9 : Exposure to interventions.

Locally-relevant questions about past interventions with FSWs in the targeted geographic region should be developed in-country and added here.

Consistency Checks

The following consistency checks help to verify that the response recorded for one question does not contradict recorded responses elsewhere in the questionnaire. These apply to the adult questionnaire only. Similar consistency checks apply to other target group questionnaires, although the question numbering may be slightly different.

1. Verify that there is agreement between Q102 and Q103 so that the birth month and year matches the stated age on last birthday.
2. Verify that if the respondent answers yes to Q104, that Q105 and Q106 have also been answered (education questions).
3. Verify that Q107 is less than or equal to Q103. Number of years residing in current location must be less than or equal to current age.
4. Verify that Q302 is less than Q103. Age at first sex must be less than current age.
5. Verify that section 4 (regular partners) has been filled out, if in Q304, the respondent says he/she has had at least one sexual partner for 12 months of more (includes spouse and live-in partners).
6. Verify that section 5 (non-regular partners) has been filled out, if in Q304, the respondent says he/she has had at least one sexual partner for less than 12 months (not including spouse or live-in partners).
7. Verify that section 6 (commercial sex) has been filled out, if in Q304, the respondent says he/she has had at least sexual partner with whom money or gifts were exchanged.
8. Verify that section 7 (male and female condoms) is filled out if the answer for either Q403, Q503, or Q603 is YES.
9. Verify that if the answer to Q801 is YES (respondent has heard of STDs), then Q802 through Q805 have been answered.
10. Verify that if the answer to either Q804 or Q805 is YES, then Q806, Q807, Q808 and Q809 have been answered.
11. Verify that all skip patterns in section 9 have been properly done so that all people who have heard of AIDS have answered all the questions about knowledge, opinions and attitudes.
12. Verify that if the respondent has been exposed to any prevention interventions (section 10), that they have answered the appropriate questions about the interventions {if applicable}.

3 APPENDIX

WORKING EXAMPLES OF SAMPLING APPROACHES

ADDITIONAL INFORMATION AND EXAMPLES OF RECOMMENDED SAMPLING DESIGNS

This appendix provides examples of sampling schemes that are proposed for some of the key populations based upon the prototype designs described in Chapter 4. The recommended sampling schemes for the various sub-populations are summarized in Figure 1.

Figure 1 : Summary of recommended sampling approaches, by sub-population

Sub-population	Recommended sampling approach	
Sex workers		
Fixed	*Preferred:*	Conventional 2-stage cluster sampling
Floating	*Preferred:*	Time-location cluster sampling
	Alternative:	Targeted snowball sampling
Injecting drug users	*Preferred:*	Time-location cluster sampling
	Alternative:	Targeted snowball sampling
Men who have sex with men	*Preferred:*	Time-location cluster sampling
	Alternative:	Targeted snowball sampling
Mobile populations	*Preferred:*	Time-location cluster sampling
Youth	*Preferred:*	Cluster survey of households
	Alternative:	Cluster survey of schools, worksites, youth organizations, and/or other relevant sites

Sex workers (SW)

One of the initial issues that will have to be addressed in undertaking BSS is the different types of sex workers found in many settings. Many distinctions have been used in different settings, including brothel-based and floating, registered and clandestine; high-paid and low-paid, and “direct” and “indirect” (i.e., sex workers working in brothels or massage parlors as opposed to those working as bartenders or waitresses in bars or restaurants who also engage in commercial sex). These are just a few of the distinctions that exist. Every country has it’s own distinct patterns for sex work, and these must be understood before a BSS can be undertaken.

For the purposes of the BSS, the key issue is whether the different types of sex workers differ with regard to risk-taking and protective behaviors. If behaviors are thought or are known to differ, then the advisable course of action would be to treat the types of sex workers as separate domains (i.e., to undertake separate surveys of each). If not, then they can be treated as a single domain for sampling and estimation purposes. Note that in the initial round of BSS it may not be known whether the different types of sex workers differ in terms of key behaviors. Accordingly, it would be prudent to treat the different groups as separate domains in at least the first round in order to obtain some empirical evidence on this issue. A more informed decision may then be made as to whether it is necessary to treat different types of sex workers as separate domains in subsequent survey rounds.

Irrespective of the distinctions made among sex workers in different settings, a crucial distinction for the purposes of sampling is between sex workers who are associated with their workplace in a fixed manner, (e.g., brothels, massage parlors) and those who have no fixed workplace. This distinction is important because the application of cluster sampling methods is relatively straightforward in the case of sex workers working in fixed worksites, while depending upon their mode of operation, sex workers who are not associated with a particular workplace, but who work at different sites (sometimes known as freelance or "floating" sex workers), may pose more difficult sampling problems. Accordingly, the two categories are considered separately below.

Sex workers at fixed worksites

In most settings, at least some sex workers will work from fixed establishments; for example, brothels, massage parlors, karaoke lounges, etc. For such workers, a fairly straightforward application of two-stage cluster sampling is the recommended approach.

Sampling frame development

As will be the case with most sub-population surveys, the most difficult aspect of the sampling operation is likely to be the development of a sampling frame. Here, key informants and sub-population members themselves will need to be consulted as a starting point in the development of a sampling frame.

As part of the sampling frame development for establishment-based sex workers, it is useful to list all the establishments (sites) where they can be located, and to gather information on the number of sex workers associated with the site. This information is useful for 1) selecting sample PSU's or clusters with probability-proportional-to-size (PPS) should this option be chosen, 2) determining the appropriate number of sex workers to be sampled from each cluster, and 3) determining how many sample sites must be chosen in order to satisfy the survey's sample size requirements.

The list of commercial sex establishments is used to construct a sampling frame, consisting of the name of the establishment (or some other identifying information about the establishment), the measure of size (number of sex workers working at each establishment) and the cumulative measure of size. Once this sampling frame has been created, then the procedures in Figure 1 and Table 2 in Chapter 4 for the basic two-stage cluster design can be followed.

Two dimensions that should be accounted for in constructing the sampling frame are geographic location within the area covered by a survey and type of establishment. What is typically done to ensure an adequate "spread" of sample PSU's with respect to such characteristics is to arrange or order the sampling frame on the basis of location prior to sample selection. For example, commercial sex establishments in a city might be ordered by first listing establishments (or more precisely, the PSU's associated with them) located in the northwest quadrant of the city, followed by establishments in the southwest quadrant, the southeast quadrant, and finally the northeast quadrant. Within each quadrant, establishments /PSU's would be ordered by each of the different types of establishments that are considered as part of the sampling frame for that target group ; for example, brothels first, followed by massage parlors, karaoke lounges, etc. When dealing with sex workers with no fixed worksite (as described in the section on "Selecting Primary Sampling Units (time-location clusters) for Floating Populations" in Chapter 4), the type of site might include street corners, parks, or other pickup points (restaurants, bars, hotels, etc.)

Step-by-step sampling procedures

Once the sampling frame has been developed, a sample of PSU's can be chosen either with probability proportional to size (PPS) or with equal probability, as was described in Chapter 4. PPS selection should be used when establishments vary significantly in terms of numbers of sex workers associated with them (e.g., when there are larger establishments with 3-5 times as many sex workers as smaller establishments) and when it is possible to obtain measures of size prior to sample selection. Where the numbers of sex workers associated with establishments are roughly comparable (i.e., vary in size by a factor of less than three), sampling with equal probability will suffice.

The number of PSUs or clusters to be chosen will depend upon the number of sex workers expected to be found at establishments. For example, if the target sample size for a survey were n=300 sex workers and it is thought that on average 10 sex workers may be found per site, then 30 clusters might be chosen. As noted earlier, however, it is important that the sample be spread out across as many clusters as is feasible for a given survey effort. For example, if it were anticipated that an average of 30 sex workers could be found per site, although 10 clusters would give you the 300 women needed for the sample, having only 10 clusters would be insufficient in terms of spread. In this event, the preferred course of action would be to choose 20 sites of 15 women each.

The second stage sampling procedure will involve taking a fixed number from each site. The following describes how this was done based on a design developed for use with brothel-based sex workers in an Asian setting. Some details and numbers have been modified for the sake of clarity.

It was decided to use a self-weighted two-stage cluster design, selecting PSUs by PPS at the first stage, and sampling an equal numbers of respondents from each brothel at the second stage. This was possible because women lived at the brothels, so they were associated with the sites in a fixed manner, and because measures of size were available for each brothel. The total sample size was 300. The number of women at each brothel ranged from 10 to 30, so it was decided to select 20 clusters of 15 sex workers each, to reach the desired sample size.

Sampling approach :	PPS sampling with equal cluster sizes
Sampling frame :	List of brothels with MOS (# of women living at the brothel or connected to the brothel)
Sample size :	300
Cluster size :	15
Number of clusters required :	20

First stage sampling procedure

Following the procedures outlined in Figure 1 and Table 2 in chapter 4 on sampling, clusters were selected by PPS.

This process is illustrated in Figure 2.

Second stage sampling procedure

Once the clusters had been selected, the supervisor and interviewers visited the brothels and the supervisor randomly selected 15 women to be interviewed from each one. There are various ways of doing the random selection. In this situation it was important not to select volunteers, and not to let the brothel owner select which women should be interviewed. In order not to make the women feel that they were being singled out, the supervisor made the process into a game. (Note that this might not be appropriate in every setting). Each woman was given a piece of paper with a number. Pieces of paper with matching numbers were put into a hat. One of the women from the brothel was then asked to pick fifteen numbers from the hat, and the women holding the papers with the matching numbers were selected to be interviewed. For each one who refused, another number was drawn from the hat to randomly replace the women who had refused. Refusal rates were carefully recorded by keeping track of the total number of women who were invited to be interviewed, and the total number who refused. For record-keeping, it is good practice to have well-designed forms to help field workers keep track of information. Sample forms are provided in Appendix 4 of this guide.

Figure 2 : Selection of Systematic Random Sample of Clusters (Brothels) PPS

Name of Brothel Owner	Measure of Size (MOS)	Cumulative MOS	Cluster Interval	Cluster Selection Number	Selected Cluster
1	10	10	1-10	9.98	cluster 1
2	18	28	11-28		
3	15	43	29-43	33.73	cluster 2
4	16	59	44-59	57.48	cluster 3
5	12	71	60-71		
6	17	88	72-88	81.23	cluster 4
7	14	102	89-102		
8	17	119	103-119	104.98	cluster 5
9	10	129	120-129	128.73	cluster 6
10	13	142	130-142		
11	16	158	143-158	152.48	cluster 7
12	13	171	159-171		
13	11	182	172-182	176.23	cluster 8
14	14	196	183-196		
15	11	207	197-207	199.98	cluster 9
16	10	217	208-217		
17	16	233	218-233	223.73	cluster 10
18	15	248	234-248	247.48	cluster 11
19	15	263	249-263		
20	13	276	264-276	271.23	cluster 12
21	16	292	277-292		
22	14	306	293-306	294.98	cluster 13
23	17	323	307-323	318.73	cluster 14
24	20	343	324-343	342.48	cluster 15
25	17	360	344-360		
26	15	375	361-375	366.23	cluster 16
27	13	388	376-388		
28	10	398	389-398	389.97	cluster 17
29	15	413	399-413		
30	16	429	414-429	413.73	cluster 18
31	17	446	430-446	437.48	cluster 19
32	16	462	447-462	461.23	cluster 20
33	13	475	463-475		
Total	**475**	**475**			

M = Cumulative MOS : 475 *a = Planned number of clusters : 20*

SI = Sampling interval : M/a = 23.75 *RI = Random start between = 9.98*

Cluster Selection Number : 9.98, 33.73, 57.48, 81.23, etc.

Notes:

1. It may not always be possible to randomly select respondents in this fashion, but one should always try to find a way to get a headcount of target group members present at the site, and then systematically select the number that are needed. It is never advisable to take volunteers instead of selecting respondents randomly.

2. If fewer than the required number of respondents (in this case 15) are present at the time of the survey team's visit, then it will be necessary to return to the site at a later time to complete the cluster. If this cannot be done, then it will be necessary to record the number of respondents interviewed so that the second stage probability can be calculated at a later time. (See chapter 5 for instructions on how to calculate sampling probabilities and conduct weighted analysis). (Note : although returning to a site is sometimes necessary for this design, where conventional clusters are being used, it is not appropriate to return to a site when time-location clusters are being used).

3. If, at the time of the team's visit, it is discovered that the measure of size for the site that was estimated in the sampling frame is inaccurate, then it will be necessary to obtain an estimate of the number of target group members who really are associated with the site, so that sampling probabilities can be calculated.

Variation when measure of size for the cluster is not available ahead of time

A variation on this design is one in which a measure of size is not available ahead of time, so it is not possible to select clusters by PPS. In this case, clusters will need to be selected with equal probability (see Figure 2 and Table 3 from chapter 4), and it will be necessary to obtain an estimate of the number of people at the site on the day the data is collected, so that a first stage probability can be calculated. There are two options for selecting respondents at the second stage. One option is to select the same number of respondents at each site. This makes the field work less complicated, but the resulting sample will not be self-weighted. So it will be necessary to calculate sampling probabilities, and perhaps conduct a weighted analysis. In order to avoid this, it is possible to decide on a sampling fraction ahead of time to be applied at each site. For example, it could be decided that at each site, 25% of respondents found there would be interviewed. For example, if 80 people were found at a site, then 20 people (80/4=20) would be interviewed. And if 25 people were found at the site, then 6 people (25/4= 6.25) would be interviewed. This procedure is slightly more complicated and one issue is that you lose control over the total sample size. It is difficult to define what the sampling fraction should be, so that the final sample will not overshoot or undershoot the desired total sample size. However, the advantage of this approach, is that if it is done at every site, then the final sample is self-weighted. Whichever option is chosen, it is still necessary to obtain an estimate of the number of respondents at the site, so that sampling probabilities can be calculated.

Floating Sex workers

For sex workers who do not work from fixed establishments, two alternative sampling schemes are proposed. The preferred approach would be to access sex workers at locations that they frequent, and use a two-stage time-location sampling approach, as in Chapter 4. This approach is illustrated below. The second approach, recommended for use only if the preferred approach is not feasible in a given setting, entails the use of target snowball sampling, described in Chapter 4.

Time-location cluster sampling

As already mentioned, in some places it is typical for sex workers to work on a "freelance" basis, where they are not attached to any fixed location, but rather come and go freely from different sites. In this situation, there is no way to list people at a site, or get a fixed measure of size for the site. One way to get around this situation, and still get a probability sample, is to use the time-location cluster method introduced in Chapter 4. In that chapter, the principles used for developing the sampling frame are described in detail. A mapping exercise is needed before a list of time-location clusters can be developed. The two options for selecting respondents from PSUs, "take-all" or fixed number per site are also described in Chapter 4. The following example illustrates the process for conducting time-location sampling for freelance sex workers.

Sampling frame development

In this example, let us suppose that a mapping exercise has been conducted, using key informants including sex workers, NGOs working with sex workers, taxi drivers who tend to lead men to locations where sex is sold and some clients of sex workers. Through the mapping, the team deduces a set of information about floating sex workers that they will use to develop the sampling frame. From the information they have gathered and the situations they have observed, they will assume that floating sex workers can be found in certain bars and hotels, as well as on particular streets. In addition, they conclude that :

- Friday and Saturday nights are the busiest nights of the week for floating sex workers, but some floating sex workers can also be found during the day.
- There are more floating sex workers at night than during the day, but those found during the day on weekdays include slightly older women, some of whom are married, but who sell sex during the day while their husbands are at work.
- If a site is visited twice, on average 20-30% of the floating sex workers found will be the same as those who were there on other days of the week.
- Floating sex workers do not stay in one place, but tend to circulate among different sites looking for clients.
- If a site is visited for two hours, on average, the number of floating sex workers found will be between 7 and 13, however, some sites are very large, with as many as 30-40 women, especially on Friday and Saturday nights after paydays.

The information from the mapping exercise suggests the following.

- The sampling frame should include both daytime and night-time time-location clusters, as well as clusters on both week-ends and weekdays. This is needed in order to ensure a good distribution of sex workers with different characteristics.
- A "take-all" approach would not be prudent, since the possibility exists of selecting some very large time-location clusters.
- The time interval should be two hours per site, and the cluster size should be fixed at 10 women per site, since that is the average number of floating sex workers to be found in two hours.
- Some sites will inevitably not yield the desired ten respondents, due to the fact that some women will refuse, some will be duplicates, and some clusters will have fewer than ten women to begin with. Therefore a few extra clusters should be chosen to make up the shortfall. Note: the fact that some sites will not yield ten women is of no consequence, since this is not a self-weighted design.

Step by step sampling procedure

Sampling approach: Time-location clusters with fixed cluster size

Sampling frame: List of bars, hotels and street corners frequented by floating sex workers

Time interval: Each selected cluster will be included for two hours. This means that every sex worker who comes in contact with the site during the two-hour time selected for the survey, is included in the measure of size for the cluster. The measure of size is needed to calculate the sampling probability.

Calendar timeframe: Each site should be included in the sampling frame three times per week (one weekday night, one weekday afternoon and one weekend night) over a three-week time-frame which spans a payday.

Sample size: 300

Cluster size: 10

Number of time-location clusters to be selected: 34... this includes 300/10=30 clusters plus 4 extra clusters to make up the shortfall from clusters that end up with fewer than ten respondents. So the total number of clusters should be 34.

First stage sampling procedures

Figure 3 provides an example of a sampling frame which includes 25 sites each listed three times, once on weekday night, once on a weekday afternoon and once on weekend night. In reality, it is possible that not all sites will be included at all three times in the sampling frame. Sites should be included only at times when they are known to be active, based on what is learned in the mapping exercise. Sites are numbered from one to 25, with each number corresponding to a site that has been mapped.

Figure 3 : Illustrative example of a sampling frame for time-location consisting of bars, hotels and street corners frequented by floating sex workers

1. Site 1 Weekday	x	28. Site 10 Weekday	x	55. Site 19 Weekday	
2. Site 1 Weeknight		29. Site 10 Weeknight		56. Site 19 Weeknight	
3. Site 1 Weekend		30. Site 10 Weekend	x	57. Site 19 Weekend	x
4. Site 2 Weekday	x	31. Site 11 Weekday		58. Site 20 Weekday	
5. Site 2 Weeknight		32. Site 11 Weeknight	x	59. Site 20 Weeknight	x
6. Site 2 Weekend	x	33. Site 11 Weekend		60. Site 20 Weekend	
7. Site 3 Weekday		34. Site 12 Weekday		61. Site 21 Weekday	x
8. Site 3 Weeknight	x	35. Site 12 Weeknight	x	62. Site 21 Weeknight	
9. Site 3 Weekend		36. Site 12 Weekend		63. Site 21 Weekend	x
10. Site 4 Weekday	x	37. Site 13 Weekday	x	64. Site 22 Weekday	
11. Site 4 Weeknight		38. Site 13 Weeknight		65. Site 22 Weeknight	x
12. Site 4 Weekend	x	39. Site 13 Weekend	x	66. Site 22 Weekend	
13. Site 5 Weekday		40. Site 14 Weekday		67. Site 23 Weekday	
14. Site 5 Weeknight		41. Site 14 Weeknight	x	68. Site 23 Weeknight	x
15. Site 5 Weekend	x	42. Site 14 Weekend		69. Site 23 Weekend	
16. Site 6 Weekday		43. Site 15 Weekday	x	70. Site 24 Weekday	x
17. Site 6 Weeknight	x	44. Site 15 Weeknight		71. Site 24 Weeknight	
18. Site 6 Weekend		45. Site 15 Weekend		72. Site 24 Weekend	x
19. Site 7 Weekday	x	46. Site 16 Weekday	x	73. Site 25 Weekday	
20. Site 7 Weeknight		47. Site 16 Weeknight		74. Site 25 Weeknight	x
21. Site 7 Weekend	x	48. Site 16 Weekend	x	75. Site 25 Weekend	
22. Site 8 Weekday		49. Site 17 Weekday			
23. Site 8 Weeknight	x	50. Site 17 Weeknight	x		
24. Site 8 Weekend		51. Site 17 Weekend			
25. Site 9 Weekday		52. Site 18 Weekday	x		
26. Site 9 Weeknight	x	53. Site 18 Weeknight			
27. Site 9 Weekend		54. Site 18 Weekend	x		

x indicates selected cluster

M = Number of PSUs (time-location clusters) in the sampling frame : 75
a = Planned number of clusters : 34
SI = Sampling interval : M/a = 2.21
RI = Random start between = 1.39
Cluster Selection Number : 1.39, 3.60, 5.81.8.02, etc.

In Figure 3, clusters were chosen by following the procedure outlined in Chapter 4, Figure 2, rounding the cluster selection number down if the decimal was below 0.5, and rounding up if the decimal was above 0.5. In this way, 34 time-location clusters were systematically chosen with *equal probability*.

How to organize the field work

There are many different ways that the fieldwork can be organized. Here is one suggested option.

Since there are a total of 34 clusters to be completed in 3 weeks, the survey manager could plan to have the interviewers complete approximately 12 clusters during the first week, 12 clusters during the second week, and the remaining 10 clusters during the third week. If there were three teams each doing four clusters per week, it should be feasible to complete the work in a three-week time-frame.

The first 12 clusters would be completed during the first week. From Figure 3, the first 12 cluster that were selected are the following:

Site 1 on a weekday

Site 2 on a weekday

Site 2 on a weekend night

Site 3 on a weeknight

Site 4 on a weekday

Site 4 on a weekend night

Site 5 on a weekend night

Site 6 on a weeknight

Site 7 on a weekday

Site 7 on a weekend night

Site 8 on a weeknight

Site 9 on a weeknight

If a weekday or weeknight is chosen, then the specific day of the week on which the team should visit the site can be randomly chosen from among the five weekdays (Mon-Fri) during the first week of the survey. If a weekend is chosen, then either Friday or Saturday night can be randomly chosen. The two-hour time-frame should be agreed upon in advance, and be based upon information about what time the women are most likely to be at the site, and also be available for a 30-45 minute interview. The goal would be to complete 10 interviews from each time-location cluster, being careful to keep track of the total number of women who come into contact with the site during the two-hour time-frame. The team would also need to record the number of refusals and the number of duplicates, from among those women who were selected to participate. Even if the 10 interviews were completed before the two hour time-frame was complete, it would still be necessary for someone to remain at the site for the full two-hour time period, so as to count the total number of women who came in contact with the site during the specified time period. This information would then be used as the measure of size for the cluster for calculation of sampling probabilities.

A similar procedure would be used during the second and third week of the survey, to complete the 34 time-location clusters.

Procedure for second stage sampling

For fixed number from each cluster.

The procedure for second stage sampling is described in detail in Chapter 4. It involves selecting respondents from among members of the sup-population at the site in a systematic way. In this example, 10 women need to be randomly selected from each time-location cluster.

It is important that the team keep track of the information in Table 1 (below) for each cluster. A prototype cluster information form is provided in Appendix 4 to help the survey manager organize the fieldwork. It is important to track this information separately for each cluster, and for each cluster to have a unique identifying number which is recorded on the sheet. If this information is not tracked, it will not be possible to calculate the sampling probabilities.

Table 1 : Information to record at each cluster

- cluster number and location
- number of respondents invited to participate in the survey
- number of completed interviews
- number of refusals
- number of duplicates (if the person was previously interviewed as part of this round of the BSS in this sub-population on another day or at another site)
- the total measure of size for the cluster (number of respondents who come in contact with the site during the specified time interval)

Variation when "take-all" strategy is used

The second option that was described for second stage sampling was the "take-all" strategy, which has the advantage of resulting in a self-weighted sample. The procedure used for first stage sampling is exactly the same as the one described above for floating sex workers. The only difference is that during the second stage of sampling, instead of sub-sampling a fixed number from among all women who appear at the site during a fixed interval, *all* women who appear at the site during the specified time frame must be invited to participate. *For this reason, it is not recommended that this strategy be used unless the expected number of respondents is small for all clusters.* Note that use of this strategy will result in a final sample size that is unpredictable. Therefore, this method should not be used unless there are very good estimates available from the mapping exercise about the average number of respondents who can be expected at a site during a given time interval. It is also very important to pilot test the process, so that all the assumptions can be verified.

The importance of pilot testing

When using the "take-all" design, it is a very good idea to pilot test the assumptions used in calculating the inflated samples sizes (i.e. refusal and duplication factor), and also the number of clusters needed to get the desired number of respondents (i.e. average "sample take" per cluster. If this is not done, then it is very easy to "over" or "undershoot" the desired sample size.

Fieldwork assignments when the "take-all" strategy is used to select sample target group members

A key aspect of the proposed sampling strategy is that sample PSU's or clusters be visited for the same amount of time and that all target group members who appear at the site during the period chosen for data collection be included in the sample. For sites where relatively small numbers of sex workers are expected, it may be feasible for a single interviewer to "capture" all sex workers appearing at the site. However, where the expected number of respondents is larger, it would be advisable to deploy a sufficient number of interviewers to ensure that all sex workers appearing at the site are interviewed. The failure to do so may result in the sample size target for the group not being met, as well as possibly causing bias.

Although the "take-all" strategy results in a self-weighted sample, it is a good idea to record all the same information outlined in Table 1. That way, if mid-way through the survey it is found that continuation of the strategy is not possible because the interviewers are unable to interview *all* respondents at the site, it will still be possible to correct a non self-weighted sample at the time of analysis.

How to handle duplicates with time-location sampling

If a respondent who is interviewed as part of one time-location cluster is encountered again in another time-location cluster, that person should not be interviewed a second time, but rather recorded as a duplicate. However, it is possible that a respondent may refuse to be interviewed in one time-location cluster, but then accept to be interviewed in another. In that case, that respondent should not be counted as a duplicate, but rather as a *refusal* in the first cluster, and a *completed interview* in the second cluster

Targeted snowball sampling approach

In some settings, floating sex workers may not congregate in public places, and thus the cluster sampling approach described above will not be feasible. For example, in some places, encounters with sex workers are sometimes arranged through "brokers", or arrangements are made via telephone. If a significant portion of the commercial sex trade operates in this fashion in a given setting, then probability sampling methods will not be feasible and the targeted snowball sampling approach described in Chapter 4 will become the next best option.

As described earlier, the key aspect of targeted snowball sampling is to determine which networks exist in a given setting. In the case of sex workers, this may entail determining who the major brokers or controllers of sex workers are, gaining entrance into the network, and using snowball sampling techniques to identify target group members in each network.

Sometimes it is helpful to work with NGOs or community groups who may already be involved in doing interventions with sex workers, to help gain entry. If these groups are already trusted by the sex workers, working through them can help improve participation and cooperation with the survey. If that option is not available, the sex workers themselves may be the best "emissaries" in terms of helping make contact with the population and ensuring their participation.

A word of caution: Regardless of how mapping of sex workers takes place, whether it be for establishment-based or floating sex workers, and whether or not snowball sampling is used, utmost care must be taken to respect the privacy and confidentiality of those involved in the survey. In most situations, trust can only be built by working through NGOs or members of the community themselves, and building rapport requires time and patience.

Injecting drug users (IDU)

Of the groups to be covered by target group surveys, undertaking surveys among (IDU) may well be the most difficult. Among the problems likely to be encountered are difficulties in locating sufficient numbers of IDU and in obtaining cooperation in providing the information requested. *There is an absolute need to safeguard the identity, location and confidentiality of anyone cooperating in the effort to obtain data from potential respondents. The protection of the identity of the respondents must be ensured as well.* Potential danger to the respondents, as well as to the interviewers should be taken into account before attempting to carry out these surveys.

With regard to sampling, it is unlikely that IDUs will tend to congregate in certain locations in sufficient numbers for a cluster sampling approach to be effective. However, in some settings it may be possible to identify areas of cities where higher than average concentrations of IDU may be found. For example, in HIV/AIDS-related research in San Francisco, USA, it has proven feasible to identify neighborhoods/districts with significant numbers of IDU from key informant interviews and consultations with police and medical authorities. However, even if a sufficient number of such areas can be identified, it will still be necessary to identify the different social networks operating. Accordingly, the targeted snowball sampling approach can be a feasible alternative in most settings.

Figure 4 provides an example of the use of the targeted snowball sampling approach for collecting survey data on IDU.

Figure 4 : Example of targeted snowball sampling for the collection of survey data on IDU

Researchers in San Francisco, California, USA sought to gather data on injecting and sexual risk-taking behaviors among IDU for use as baseline measures in evaluating behavior change interventions. The up-front research activities began with an attempt to identify parts of the city (districts and neighborhoods) that contained high concentrations of IDU and drug-related activity. To do this, direct observation of neighborhoods were made for signs of drug activity, key informants (drug treatment program staff, police, and residential hotel desk clerks) were interviewed, and police arrest records and emergency room admission data were reviewed. Neighborhoods were then ranked in terms of potential density of IDU, and maps were developed showing their locations.

In each potential high-activity district, ethnographic mapping exercises were carried out to identify the predominant “networks” of IDU. This research indicated that although some sub-groups lived in close proximity to each other, their social interaction was minimal or non-existent. It was thus necessary to gain entry into several different networks differentiated along racial, ethnic, and gender lines. Each sub-group was treated as a stratum for sampling purposes, and a separate quota sample was chosen from each. Paid key informants in each district/sub-group were used to gain access into the various networks/strata. Snowball sampling was then used to obtain data for pre-determined sample sizes for each sub-group/stratum.

Source: Watters and Biernacki, 1989

Men who have sex with men (MSM)

Like IDU, men who have sex with men (MSM) are difficult to enumerate in sample surveys. However, in many settings MSM tend to congregate in certain types of establishments or locations (e.g., certain bars, nightclubs, parks, neighborhoods, etc.) in sufficient numbers that such locations may be used as PSU’s for cluster sampling. In many settings, this may be the only feasible means of gathering behavioral data on MSM. It should be recognized, however, that since not all MSM frequent such locations, this approach is prone to bias to the extent that the behaviors of MSM who frequent such locations differs from those who don’t. This potential bias should be borne in mind when considering survey data on MSM.

The proposed cluster sampling approach for MSM is quite similar to that used for floating sex workers. The initial step is the development of a sampling frame of locations where MSM congregate. This will require consultation with key informants and target group members. In compiling the list of sites, attention should be paid to ensuring that the frame covers all geographic parts of the survey universe and that all relevant “networks” are included (e.g., MSM of different ethnic or socio-economic groups).

Once a list of locations has been developed, time-location sampling units can be created for use as PSU’s. The list of PSU’s should be ordered geographically and by type of site prior to sample selection.

Figure 5 provides an example of cluster sampling for behavioral surveys of MSM.

Figure 5 : Example of cluster sampling for men who have sex with men

In 1992/93, an HIV seroprevalence and risk behavior survey was undertaken among homosexual and bisexual men in the San Francisco Bay area. A variant of cluster sampling was used in conducting the survey. Clusters or PSU's for the survey consisted of locations or sites frequented by young homosexual or bisexual men or by men who had sex with men but did not identify themselves as homosexual or bisexual. The sites considered included street corners or sidewalks, dance clubs, bars, and parks known to be frequented by such men. On the basis of key community informant interviews and focus groups with groups of MSM, a total of 49 sites were identified. Based upon direct observation and interviews with MSM found at each site, the final list of sites to be included in the survey was reduced to 26 "high volume" sites, defined as sites that yielded two or more eligible persons per hour during "peak" hours.

Interviewing was conducted during afternoons, evenings, and late at night. Intercept methods were used in obtaining interviews with eligible respondents. Men appearing to be 22 years of age or younger were approached at each site as they walked on the sidewalk, entered a venue, or waited in line. Interviews (and for this particular survey) blood drawing were conducted in a specially equipped van parked near the sampling venue.

The target sample size was n=500 men. The sample was allocated to the 26 sites proportionally to the expected number of eligible respondents per hour based upon information gathered during the preliminary research phase. Data were collected during 96 visits to sample sites.

Source: Lemp et al., 1994.

Note: Although this example is for an HIV seroprevalence survey, as opposed to a behavioral survey, it is often the case that sampling strategies for these different types of surveys can and should be the same. Since blood samples are not to be taken in BSS surveys, having a van is not necessary. Also note that the same proportional allocation would have resulted had the field teams merely visited each site for the same amount of time (e.g., 2-3 visits per site for two hours at a time)

Youth

The recommended sampling designs for youth were not discussed in chapter Chapter 4, partially because they follow more conventional sampling methods. From a survey measurement perspective, youth differ from the other groups that might be covered in target group surveys in that it is feasible to use repeated household surveys to monitor changes in behavioral indicators. In fact, a case may be made that household surveys are the preferred way to go about monitoring behavioral trends for youth since such surveys can theoretically cover a very high proportion of youth. Only youth residing at school, or who have no fixed place of residence (e.g., homeless or street children) would be excluded from the universe of a household survey. Note, however, that if in a given setting a sizeable proportion of youth fall into one of these categories and/or if there are interventions planned or in place to address such sub-groups, it might be necessary to also survey them in addition to undertaking household surveys.

In some settings it may not be acceptable to conduct surveys of youth covering sensitive and potentially embarrassing topics at their place of residence. In this event, it will be necessary to identify groups or segments of the general population of "youth" for whom it is feasible to locate and interview outside of their homes. What criteria should be used in defining which sub-groups or segments of youth to pursue in non-household surveys? One possibility is to include targeted sub-groups of youth for which there are interventions planned or in place. Another approach is to include several categories of youth that are thought to cover (collectively) the spectrum of youth in a given setting. For example, one might consider for inclusion as "proxy' groups youth in schools, youth working in the informal sector of the economy (e.g., street hawkers), or youth working in low-skill occupations in the formal sector (e.g., domestic workers, apprentices). Finally, "special" categories of youth such as homeless or street children might be considered.

It is to be emphasized, however, that caution should be exercised in generalizing the results of surveys for "proxy" sub-groups of youth. This is because, even collectively, there is no way to know how well the behaviors observed across the various "proxy" groups correspond to behaviors in the general population of youth.

In this section, sampling schemes for four data collection approaches for youth are described : (1) household surveys, (2) school surveys, (3) workplace surveys, and (4) surveys of youth with no fixed residence.

Household surveys of youth

When household surveys are to be used to enumerate youth, a conventional two-stage cluster sample design is the recommended sampling approach. Note : this approach is the same as that proposed for general population surveys by UNAIDS or in the AIDS Module of the Demographic and Health Surveys, [which are reproductive health surveys conducted on household samples of women, and sometimes men]. The basic approach is to take a sample of geographic areas (used as PSU's) at the first stage of sample selection. The second stage would be to sample a predetermined number of households from each sample cluster or PSU. Finally the third stage would be to interview all male or female respondents (sampling is done separately by gender) ages 15-19 (or in whatever age range is used to define "youth") found in sample households. The recommended age categories for sampling youth are "<15", "15-19" and "20-24", because these are international standards for reproductive health surveys. However, these categories should be adjusted to those that are most suited to the local situation. For example, in settings where most female youth do not become sexually active before the age of 18, there may be little point in surveying 15-19 year old females on a regular basis, because very little information about risk for HIV would be obtained.

Sampling frame development for household surveys with youth

The sampling frame development process will typically begin with consultation with the national statistics office. The preferred sampling frame for household surveys is a list of census enumeration areas (CEA's) developed by the national statistics office in connection with the most recent population census. These have a number of advantages for use as PSU's in household surveys, notably that (1) they have already been mapped, (2) they have population sizes associated with them that can be used as measures of size during sample selection, and (3) they are roughly the same size in terms of population, making control of the survey fieldwork somewhat easier.

Sample selection procedures

Sample PSU's or clusters should be chosen from a geographically ordered list using systematic sampling with probability-proportional-to-size (i.e. proportional to the total population or number of households located in each CEA) as described Chapter 4. The numbers of sample PSU's/clusters and youth per sample PSU will be determined by the sample size for the population and the expected "take" per household. For example, if the sample size for a given male youth population survey were set at n=500, and the latest census data indicated that a male aged 15-19 would be found on average in one in every four households, a total of 2,000 households would have to be contacted in order to find the required number of eligible respondents. If 30 clusters were to be used, this would result in a per-cluster sample size of 67 households (which would be expected to yield a sample of approximately 18 male youth per cluster).

How should youth within sample PSU's or clusters be chosen? The preferred procedure is to first create a list or sampling frame of all households containing one or more youth located within each sample PSU, and then choose a sample of units using either simple random or systematic sampling. However, because creating complete lists of households tends to be costly and time consuming, "short-cut" procedures are often used. This section describes two alternative methods that may be used to select samples of youth within sample clusters.

Segmentation method

The basic approach of the so-called "segmentation" method is to divide sample clusters into smaller "segments" of approximately equal size, choose one segment at random from each cluster, and *interview all youth found in all households in the chosen segment.* The advantages of this approach are two-fold : (1) it avoids the household listing operation and (2) it results in a self-weighting probability sample. The specific steps in using the segmentation method are summarized in Figure 6 and Figure 7 provides an illustrative example of a sample cluster that has been segmented following the prescribed procedures. In an actual application, one of these segments would be chosen randomly, all households located in the segment contacted, and youth found in those households interviewed.

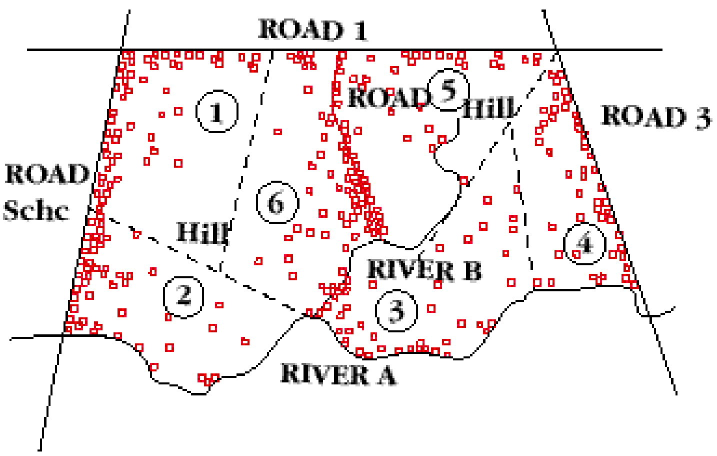
Because all households in the chosen segment are to be interviewed, the target segment size under the segmentation method should be the same as the target number of sample households to be chosen per cluster. For example, if it had been determined as in the example above that 30 clusters will be chosen for a given survey and 67 households would be chosen per cluster, the target segment size method might be 74 households (67 plus a 10% allowance for non-response).

Figure 6 : Steps in using the segmentation method to choose sample households

1. **Calculate the number of segments to be created.** Divide the number of households recorded in the last census by the target segment size. The result will be the number of segments to be created in the field. For example, if the last census indicated that there were 250 households in the cluster and the target segment size was 40 households, 6 segments would need to be created for that cluster. (Note : in performing this calculation, decimal numbers of segments should be rounded to the nearest whole number.)
2. **Update the cluster map.** Using a map of the cluster, verify/update the external boundaries of the cluster and enter any internal features that may be useful for dividing the cluster into easily recognizable segments.
3. **Count and indicate the location of households located in the cluster on the map.** This is intended to be a quick operation undertaken so that the cluster can be divided into segments with approximately equal numbers of households.
4. **Based upon the cluster map, divide the cluster into equal-sized segments.** The number of segments to be used is the number determined in Step 1 above.
5. **Choose one segment at random.**
6. **Interview all households located within the boundaries of the randomly-chosen segment.**

An illustrative application of the "segmentation" method is provided in Figure 7.

Figure 7 : Example of a hypothetical cluster that has been divided into six segments



Source: United Nations Children's Fund. 1995. Monitoring Progress Toward the Goals of the World Summit for Children: A Practical Handbook for Multiple-Indicator Surveys. New York: UNICEF.

Figure 8 : Example of household survey of youth using cluster sampling

The modified cluster sampling method sometimes referred to as the "segmentation" method was recently applied in a survey of youth residing within the catchment areas of health facilities participating in a program to improve the "youth friendliness" of health services in Lusaka, Zambia. First, the Census Enumeration Areas, EA's, falling within the geographic catchment areas of each facility were defined, and a sampling frame of such EA's was developed for each facility. A sample of five (5) EA's was then chosen from each list with PPS. The total population enumerated in the last population census was used as the measure of size.

Based upon data from the most recent census, it was estimated that each household would contain on average just over one person aged 15-24 years, the age range defined as the universe for the survey. Thus, in order to obtain interviews from 25 adolescents and young adults per EA, the standard segment size was set at 30 (25 households to obtain interviews with 25 eligible respondents, plus a cushion for non-response). (Note: A rapid field test should be conducted to verify the number of households that should be in a standard segment . Failure to do so could end up in serious over- or under-estimation of the number of households needed per segment to reach the desired sample size).

Each sample EA was divided into segments of approximate size 30 households, and then one of the segments was randomly chosen to be the sample segment. All households were contacted during the course of the survey fieldwork, and all eligible respondents were interviewed. Two repeat visits were made to each household in the event that eligible respondents were not at home during the first visits.

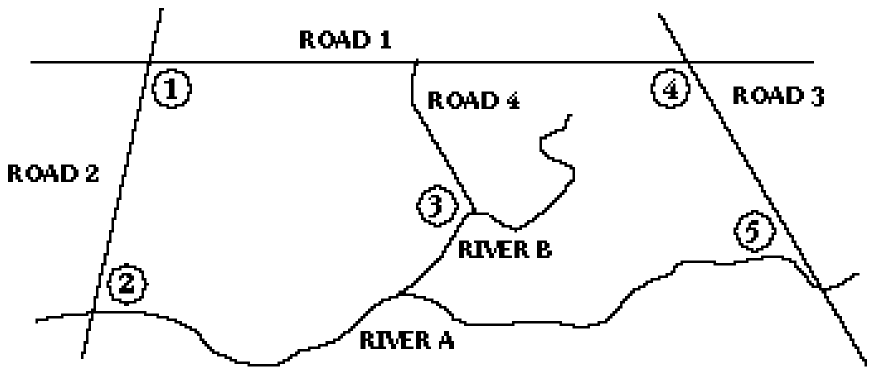
Note: in this example, the segmentation method was applied only to areas surrounding certain health facilities. The method could be applied in the same fashion to larger populations, including national populations if necessary.

Modified random walk method

The other "short-cut" alternative is known as the random walk method. It will be familiar to many readers in that it is the method used in Expanded Programme on Immunization (EPI) Cluster Surveys. The method entails (1) randomly choosing a starting point and direction of travel within a sample cluster, (2) conducting an interview in the nearest household, and (3) continuously choosing the next nearest household and conducting interviews until the target number of interviews has been obtained.

The variant of the random walk method proposed for sub-population surveys differs from the manner in which the method is often applied in several respects. First, in order to ensure that the households and youth chosen for surveys are truly chosen randomly, maps are used to indicate several possible starting points at easily identifiable locations in the cluster. One of these points is then randomly chosen as the starting point for the survey. Maps are used to avoid the common practice of always starting in the center of the cluster, as this procedure can result in bias. Figure 9. illustrates how one might construct a map of random starting points.

Figure 9 : Map of hypothetical sample cluster showing possible starting points



Source : United Nations Children's Fund. 1995. *Monitoring Progress Toward the Goals of the World Summit for Children : A Practical Handbook for Multiple-Indicator Surveys.* New York : UNICEF.

Secondly, when eligible respondents are identified that for some reason cannot be easily interviewed (e.g., when they are not at home), the standard random walk procedure is to skip such respondents and instead interview more readily accessible respondents in other households until the target sample size or sample quota for the cluster has been met. As this can cause bias (see below for further discussion), a different approach is proposed in the modified version of the random walk method. The modified procedure entails following the standard random walk procedure for identifying the required number of eligible respondents, but instead of skipping over respondents who are not readily accessible for interviewing, making at least three attempts to interview each eligible respondent identified.

Finally, although the random-walk method does not call for an actual measure of size to be obtained for sample clusters, it is proposed for sub-population surveys that an estimate of the number of households located in each cluster be obtained. The reason for this is that without a measure of size for each sample cluster, it is impossible to calculate sampling probabilities, and thus the sample would not be a probability sample. Note, however, that obtaining an approximate measure of size for each cluster does not have to be a costly and time-consuming activity. In most instances, a count or rough estimate of the number of households in a cluster can be obtained from a knowledgeable local informant. If this is not possible, a quick tour of the cluster can usually provide a reasonably accurate count. This type of "quick count" procedure is often used in cluster sampling.

Of the two methods, the preferred procedure is the “segmentation” method, as this method comes the closest to approximating a conventional two-stage cluster sample, and is thus less prone to bias. However, sketch mapping is required to use the method, and thus it may not be feasible in all settings. In such instances, the modified random walk method provides a suitable alternative, low-cost method, provided that a measure of size is obtained for sample clusters.

Non-response in household surveys

One of the problems faced in all household surveys is that of what to do when respondents chosen for a survey are not available to be interviewed. In some surveys, fieldworkers are instructed to substitute other respondents (e.g., in the neighboring household) for respondents who have been chosen for a survey but cannot be readily located. For sub-population surveys, this practice should be discouraged because of the potential bias that may be introduced by only interviewing readily accessible respondents. For example, youth who engage in high-risk behaviors may be more likely to live in one-person households and/or to be at home less regularly, thus making it more difficult to locate them for a survey interview. However, if such persons are systematically excluded from sub-population surveys because they are difficult to locate, sub-population survey data will be biased toward under-estimating the extent of risky behaviors.

The recommended course of action is to require at least three return visits (“call-backs”) to each sample household in order to obtain an interview from each eligible respondent in the original sample of households. In scheduling return visits, information should be sought from other household residents and neighbors in order to determine the best times to find difficult-to-locate individuals at home. If after three attempts it is still not possible to obtain an interview, the case should be dropped and not replaced by a substitute respondent. To compensate for the possible loss of sample size, it is recommended that the target sample size for household surveys be increased by 10% or so.

School surveys of youth

When undertaking household surveys of youth is not feasible (or desirable), an alternative strategy for tracking behaviors of youth is to undertake non-household surveys of different segments or sub-groups of youth. In settings where a sizable proportion of youth remain in school at the secondary level, conducting surveys in schools represents a fairly cost-effective way of reaching youth 15-19 years of age for data collection purposes. Two cluster sampling schemes for undertaking school surveys are described below - the first for use where the survey can be conducted in school classrooms using self-administered questionnaires, and the second where data collection has to take place outside of classroom settings.

In-class sampling of school youth

The logistically simplest approach to carrying out school surveys of youth is to have student's complete self-administered questionnaires during class sessions. This approach is not only logistically simpler than trying to interview students outside of class, but because of the low cost of self-administered questionnaires, data can be obtained for larger samples of students than will generally be feasible when personal interviews are used to collect the data. Provided that confidentiality can be ensured, it is also possible that more candid responses to sensitive questions might be obtained through the use of self-administered questionnaires.

When "in-class" data collection is possible, a two-stage cluster sample design similar to that used in household surveys of youth will likely satisfy most sub-population survey needs. Under this design, sample students would be chosen by first selecting a sample of schools, then selecting a sample of classes from sample schools at the second stage of selection, and gathering data from all students in sample classes. Since measures of size (i.e., number of school enrollees) are likely to be available prior to sample selection in most settings, sample schools should be chosen using systematic sampling with probability-proportional-to-size (PPS). The steps involved were outlined in Chapter 4.

The number of schools and classes/sections to be chosen should be determined as follows. First, divide the target sample size for the survey by the average class/section size in the schools in the survey universe. For example, suppose the intended sample size for a sub-population survey was n=800 male students, and that classes/sections in secondary schools in the setting in question averaged 25 male. A minimum of 32 classes/sections would thus be needed (32=800/25). As protection against non-response, it is recommended that the number of sample classes/sections to be chosen be increased by 10 percent or so (e.g., to 35 classes/sections).

Next, the number of schools to be included in the survey needs to be determined. As was discussed in Chapter 4, it is preferable to take larger rather than smaller numbers of "clusters" in cluster surveys. Thus, the number of schools to be included in a given survey effort should be as large as resources will permit. Ideally, 30 or more schools would be included in a school survey. Where this is not feasible, a smaller number of sample schools may be used, but it is recommended that the number of sample schools chosen not fall below 10-15. In the above example, the sample size for schools might be set at n=20, and two (2) classes/sections chosen per school, yielding a total of n=40 classes/sections. Because the relative cost of collecting data "in-class" using self-administered questionnaires is low, rounding up the number of classes/sections to be chosen will increase survey costs only slightly. Note that to insure that the proposed sampling scheme results in a self-weighting sample, it is necessary for the same number of classes/sections to be chosen from each sample school, which is another reason for rounding up to n=40 classes/sections in the example above. See Chapter 5 for guidance on the computation and use of sampling weights.

The recommended procedure for selecting a sample of classes within sample schools is to first create a list of the classes or sections in each sample school ordered by grade, and then select a sample of classes using systematic sampling with equal probability (since variations in class sizes within a given school are likely to be minor, there is little to be gained by PPS selection). Only grades/levels in which most students meet the age criteria for the population survey (e.g., ages 15-19) should be included in the sampling frames. Figure 9 provides an example of a systematic-random selection of a sample of classes or sections for a hypothetical school.

Figure 10 : Illustrative example of a systematic-random selection of classes/ sections for a hypothetical secondary school

Grade/Level 3	**Selection**	No. of classes to be sampled = 2
Section 1		Sampling interval = 12/2 = 6
Section 2		Random start = 3
Section 3	X	Classes chosen = 3, 9
Section 4		
Section 5		
Grade/Level 4		
Section 1		
Section 2		
Section 3		
Section 4	X	
Grade/Level 5		
Section 1		
Section 2		
Section 3		

Total classes/sections = 12

Note: grades/levels 1 and 2 not included in sampling frame as, in this hypothetical example, students in these grades/levels are assumed to be mostly below age 15.

Alternative to "in-class" sampling for school youth

If "in-class" data collection in schools is not possible, it will be necessary to obtain data from students in non-classroom settings. Although it may be possible to schedule appointments with individuals or groups of students to be interviewed either before or after school, the most feasible approach is likely to be to conduct "intercept" interviews with individual students at strategically chosen locations (e.g., outside of classrooms or in cafeterias, lunch rooms, or other common areas where students congregate). Either self-administered questionnaires or personal interviews may be used to gather the survey data, depending upon whether there is a convenient place available for students to sit down and complete a self-administered questionnaire. Irrespective of the data collection strategy used, it is important that steps be taken to ensure that the sample is sufficiently well spread out across students of different grades/levels.

Selecting students when entering or leaving the classroom

If students are to be interviewed as they enter and/or leave class, the classes/sections from which sample students are to be drawn should be chosen using a systematic-random selection procedure similar to that used in selecting classes/sections for in-class data collection (see Figure 10).

The number of classes/sections to be chosen will depend upon the target sample size for the survey and the number of students it is expected can be interviewed before and after each class. For example, if the target sample size for a survey were n=300 students and it was anticipated that n=6 students could be interviewed by the team, before/after each class per day, n=50 classes/sections might be chosen. Alternatively, n=25 sample classes/sections could be chosen if more interviewers could be deployed simultaneously and each could complete more interviews before/after each class.

Selecting students from common areas

If student survey respondents are to be recruited from common areas, a time-location strategy, similar to the one described for floating populations (sex workers, MSM and IDU) in Chapter 4 might be employed. In the case of school surveys of youth, the time-location PSU's would be defined as the common-areas where students congregate at different time intervals. For example, if a school cafeteria or lunch room that is open three hours per day is to be used as the location from which to choose survey respondents, each day-hour of operation might be used as a PSU. In this case, there would be 15 PSU's per week per school (3 one-hour segments per day * 5 days per week). PSU's should be chosen using systematic sampling. The number of PSU's to be chosen will depend upon the target sample size for the survey and the number of students it is expected can be interviewed during each time segment. For example, if the target sample size for a survey were n=300 students and it is anticipated that n=10 students could be interviewed during each time segment, n=30 segments might be chosen.

Irrespective of the sampling strategy used, the guidance provided earlier concerning numbers of schools and PSU's also applies to data collection outside of classes. Choosing not less than 10-15 schools and 30 or more "clusters" across sample schools is strongly recommended. Also note that in order for a self-weighted sample to result, the same number of clusters (i.e., either classes/sections or time-location PSU's) of equal size should be chosen in each sample school.

Out of school youth - surveys of youth in the workplace

In order to obtain behavioral survey data on out-of-school youth, it will be necessary to first determine where such youth may be found. One possibility is to interview youth at business establishments that typically employ significant numbers of youth. Examples of "workplace" sampling frames for youth in the informal sector would be businesses employing apprentices, helpers of truck/bus/van drivers, motorcycle taxi drivers and female domestic workers.

As the types of businesses/occupations with significant numbers of youth are likely to vary from setting to setting, a generic sampling approach is proposed here. The recommended approach is a cluster sample design, with business establishments employing youth being chosen at the first stage of sample selection. As with most sub-population surveys, the sampling frame development process will begin with consultations with key informants and members of the population themselves, the purpose of which is to determine businesses that employ youth and the number of youth that are typically found at such businesses.

Once the sampling frame has been developed, a sample of workplaces can be chosen, as was described in Chapter 4, either with probability proportional to size (PPS) or with equal probability. PPS selection should be used when establishments vary significantly in terms of numbers of youth employees, for example, if some establishments have 3-4 times as many youth workers as smaller establishments. Where the numbers of youth employees associated with establishments are roughly comparable (i.e., vary in size by a factor of less than three), sampling with equal probability will suffice.

If the number of workers who may be present at sample establishments is likely to vary from day to day, it is recommended that time-location cluster sampling be used, as described in Chapter 4.

Surveys of youth with no fixed residence (street kids)

For youth that do not have a fixed place of residence, the sampling approaches described above for other categories of youth will be inappropriate. However, a modified cluster sampling approach in which neighborhoods, city blocks, public parks, and other locations where youth with no fixed residence are known to congregate are used as PSU's. This application of cluster sampling methods is similar to that for floating populations, described in Chapter 4.

The sampling frame development process will consist of "up-front" research to determine the locations within the geographic universe for the survey where such youth can be found, the days and times that are the "peak" and "off-peak" times, and (if possible) the number of youth that might be expected to be found at the various locations at different times. This last piece of information is needed to help determine the cluster size, that is the number of people it will be possible to sample from each PSU (time-location cluster). Once the information has been gathered, it is then possible to construct a sampling frame consisting of time-location segments, which are used as PSU's.

Parental consent for youth

It is worth mentioning that although oral informed consent from respondents is routine practice for BSS surveys, in some settings, when working with young people, under the age of 18 years or so, it is necessary also to obtain parental consent. The necessity for this is highly variable, depending on locally accepted research practices, and the guidelines of those who are funding the research. If parental consent is required, it is important to take steps to minimize the bias that this might potentially cause. At a minimum, even if parents would like to review the contents of the questionnaire before it is administered, it is best if the interview itself be conducted outside the earshot of parents. It is also a good idea to track the refusal rate of parents, in order to assess how much non-response bias might be influencing the results. Obviously in the case of street kids, it will not be possible to obtain parental consent.

Mobile populations

Mobile populations are of concern for HIV/AIDS programs because of their potential for engaging in risky behavior. Transportation workers, for example, often spend extended period of time away from home, and the frequency of engaging in casual sexual relationships buying sex from sex workers is probably higher than in the general population in most settings. Migrant laborers also work away from home, in factories, plantations and mining towns, to name a few. Merchants who import and export also travel frequently, both domestically and internationally.

The general recommended sampling approach for mobile populations is similar to that of other floating populations. The only major difference lies in the nature of the "sites" to be used as PSU's for cluster sampling. Appropriate sites or PSU's for long distance transportation workers could be truck stops, depots or customs checkpoints, hotels where mobile populations congregate in significant numbers.

The initial step is the development of a sampling frame of sites where such persons congregate. This will require consultation with key informants and members of the population. In compiling the list of sites, attention should be paid to ensuring that the sampling frame covers all geographic parts of the survey universe. Once a list of establishments has been developed, time location sampling units should be created for use as PSU's. For example, if 20 truck stops were to be identified and if truck stops were to be open seven days per week, a total of 140 PSU's would be created. Note, however, that if preliminary research were to indicate that different types of transportation workers frequented truck stops during the daylight hours than at night, PSU's might be further divided into day-night segments, yielding a total of 280 PSU's. As for the other sub-populations, the list of PSU's should be ordered geographically and (if relevant) by type of site prior to sample selection.

One thing to keep in mind with truck drivers, is that they are moving all the time. So depending on the distances traveled, sampling from several different locations might tend to result in a lot of duplication. Therefore, if there is a single location (such as a bridge or weighing station), that all drivers must pass through to get where they are going, it is sometimes a better idea for the interviewing team to remain stationary. The strategy would be to set up multiple time-location units at the same spot, but on different days of the week, and times of the day, over a period of several weeks. By repeatedly sampling from a few sites, it might be possible to more efficiently "capture" the population as they pass through.

Guidance on selected sampling problems

Despite careful up-front research and planning, surprises often occur during the course of survey fieldwork. Guidance on what should be done when several sampling-related surprises arise is provided below.

When insufficient numbers of the survey population members are found at sample sites

In many of the sampling schemes described above, the number of sites to be chosen will be based upon an "expected" number of sub-population members to be found per site during a specified time interval. What should be done if it is found during the course of fieldwork that the actual number of sub-population members found is substantially lower than expected ?

The preferred course of action is to have anticipated such a possibility when determining survey sample size requirements, and to have adjusted the target sample size upward as a precaution against "surprises" in the field. Such allowances for non-response are typically made in sample size calculations for household surveys. Given that the number of sub-populations members expected to be found per site will often be no more than an informed guess, a strong case may be made for following the same practice in all sub-population surveys. The recommended procedure is to increase the number of sites to be included in the sample by 10% or so. So, for example, if it were determined that 30 PSU's would be covered in a given survey, the recommended course of action would be to increase this to 33, 35, or even 40 if resources permit.

Although returning to sample sites for an additional period of data collection is an option, this option is less desirable than increasing the number of sample PSU's chosen for two reasons. First, if the reason that insufficient numbers of sub-population members were found is that the estimates of the expected daily volume of sub-population members were faulty (i.e., too low), returning to the same sites will be a relatively inefficient way of increasing the sample size. Secondly, sampling additional PSU's will serve to increase the precision of survey estimates more so than sampling additional cases per PSU. Returning to sample PSU's different numbers of times also complicates the calculation of sampling probabilities. If this option is chosen, the number of return visits made to each site needs to be carefully documented.

What should be done if, even after an allowance for surprises has been made, the "accomplished" sample falls short of the target sample size? The preferred course of action would be to choose a supplementary sample of PSU's and include these in the survey. The same procedures used in choosing the original sample of PSU's should be followed in choosing a supplementary sample, except that PSU's chosen in the original sample should be deleted from the sampling frame prior to choosing the supplementary sample. If this option is chosen, the sample selection process needs to be carefully documented so that sampling probabilities may be calculated. A second, less desirable option would be to return to the original sample of PSU's for additional intervals of data collection.

What should be done in cases where all PSU's are already included in the sample, and it is thus impossible to choose more PSU's? In this situation the only alternative is to visit sample sites/PSU's for longer intervals than had been originally planned.

What should be done if even after repeated visits to all PSU's, it is not possible to reach the target sample size? The answer to this question depends upon the underlying reason why it was not possible to reach the target sample size. One possible cause is that the sampling frame was incomplete. In such a case, one option would be to update the sampling frame and choose a supplementary sample of PSUs of sufficient size to enable the target sample size to be reached. Alternatively, a lower-than-planned sample size could be accepted for the current survey round, and more resources could be put into sampling frame development in subsequent survey rounds in which larger sample sizes would be used. It will be noted that larger sample size in subsequent survey rounds can offset the effects of sample size deficit in earlier rounds.

One approach to dealing with this problem which was tried in Nepal was to inquire from successfully interviewed establishment-based sex workers about any friends who worked at the same establishment but had not been present during the times that data was being collected for the sub-population survey. These "leads" were then followed up and included in the sample as having been sampled from the "referring" establishment. Such an approach should be used cautiously and as a last resort, as it departs from a probability sampling approach. Furthermore, it is necessary to verify that such "leads" truly belong to the sub-population being monitored. In the Nepal case, for example, it was found that a number of the "leads" were in fact not sex workers, but friends of the sex workers who were "nominated" in order to collect the incentive offered for identifying other sex workers. In the final analysis, it is probably better to accept a lower than expected sample size than stretch the sampling methodology to the point where the survey data cannot be justified as having been produced using scientifically defensible sampling methods.

A final note on the problem of insufficient sample size is that in some instances, it may be the case that there simply are not enough members of the sub-population. In such cases, the key issue is not the sampling method used, but rather whether there is sufficient justification for doing surveys for the sub-population in question.

4
APPENDIX
Field work forms

FIELDWORK FORMS

The following set of forms are designed to help organize the fieldwork for behavioral surveillance surveys. They are especially useful for cluster designs and will help with the following tasks :

- selecting sample clusters for each target group in a systematic fashion
- assignment of supervisors and interviewers to selected survey sites
- tracking essential cluster information (to be used for weighting and cluster analysis)
- tracking refusal rates for each target group, by cluster

Forms are presented with instructions on how to use them.

Form 1 Cluster Selection Sheet for PPS sampling should be used to help select which clusters are to be included in the sample. It should be used when clusters are being selected with probability proportional to size

Form 2 Cluster Selection Sheet for EP sampling is similar to Form 1, however it should be used when cluster are selected with equal probability

Form 3 Assignment Information Sheet can be used by the supervisor to assign an interviewer (or team of interviewers) to work in the selected clusters

Form 4 Cluster information sheet should be used to keep track of essential cluster information that will be needed to calculate sampling probabilities and weight the data

Instructions for using form 1 - Cluster Selection Sheet (Probability Proportional to Size)

Steps in the selection of a systematic-random sample of clusters with probability proportional to size (PPS)

1. Prepare a list of clusters with a corresponding measure of size for each;

2. Starting at the top of the list, calculate the cumulative measure of size and enter these figures in a column next to the measure of size for each unit;

3. Calculate the sampling interval (SI) by dividing the total cumulative measure of size (M) by the number of clusters to be selected (a) that is, SI = M/a;

4. Select a random number (RS) between 1 and (SI). Compare this number with the cumulated measure of size column. The unit within whose cumulated measure of size the number (RS) falls is the first sample unit;

5. Subsequent units are chosen by adding the sampling interval (SI) to the number identified in step (4); that is RS + SI, RS + 2SI, RS + 3SI, etc;

6. This procedure is followed until the list has been exhausted.

Note : In selecting sample clusters, it is important that the decimal points in the sampling interval be retained. The rule to be followed is that when the decimal part of the sample selection number is less than 0.5, the lower numbered cluster is chosen, and when the decimal part of the sample selection number is 0.5 or greater, the higher numbered cluster is chosen.

Form I
Cluster Selection Sheet (Probability Proportional to Size)

Sub-Population _______________ *Geographic Location* _________________

Cluster Number	Cluster Name	Measure of Size (target group members)	Cumulative Size	Sample Selection Number	Mark the Cluster Selected
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Total cunmulative measure of size (MOS) :
Planned number of clusters :
Sampling interval (Total MOS/Planned number of clusters) :
Random Start (Random number between 1 and Sampling Interval) :
Clusters Selected :

Instructions for using form 2 - Cluster Selection Sheet (Equal Probability)

1. Prepare a numbered list of sites or clusters, preferably ordered geographically (e.g., by areas of a city);

2. Calculate the sampling interval (SI) by dividing the total number of clusters in the domain (i.e., target group) (M) by the number of clusters to be selected (a) -- that is, SI = M/a;

3. Select a random number (RS) between 1 and (SI). The cluster on the numbered list corresponding to this number will be the first sample cluster;

4. Subsequent units are chosen by adding the sampling interval (SI) to the number identified in step (3); that is RS + SI, RS + 2SI, RS + 3SI, etc;

5. This procedure is followed until the list has been exhausted.

Note : In selecting sample clusters, it is important that the decimal points in the sampling interval be retained. The rule to be followed is that when the decimal part of the sample selection number is less than 0.5, the lower numbered cluster is chosen, and when the decimal part of the sample selection number is 0.5 or greater, the higher numbered cluster is chosen.

Form 2
Cluster Selection Sheet (Equal Probability)

Sub-Population _______________ *Geographic Location* _________________

Cluster Number	Cluster Name	Sample Selection Number	Mark the Cluster Selected
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Total number of clusters :
Planned number of sampled clusters :
Sampling interval (Total number of clusters/Planned number of clusters) :
Random Start (Random number between 1 and Sampling Interval) :
Clusters Selected :

Instructions for using form 3 - the Assignment Information Sheet

Once clusters have been selected, the project manager may organize the fieldwork by assigning supervisors to a group of clusters (perhaps in a given geographic area, or on different days of the week).

Supervisors in turn can assign interviewers or teams of interviewers to individual clusters.

The assignment information sheet helps keep track of who is responsible for which part of the survey.

Form 3
Assignment Information Sheet

Sub-Population ________________ *Geographic Location* __________________

Name of location or cluster	Name of Supervisor	Name of Field Worker (s)

Instructions for using form 4 - the Cluster Information Sheet

It is very important that the interviewing team (with the help of the supervisor if necessary), completes all the information specified on the cluster information sheet. This will allow for calculating sampling probabilities and performing a weighted analysis (should that be necessary).

1. The estimated measure of size is whatever was obtained during the mapping and development of the sampling frame.

2. The *actual* measure of size on the day of the survey is needed to help determine how accurate the PPS sampling was. If very different measures of size are found than what was expected, this *actual* measure of size will be essential for calculating the sampling probability, and ultimately the sampling weight. The measure of size does not need to be exact, but should approximate as closely as possible the number of target group members at the site.

3. The number of people approached to be interviewed refers to people who are randomly selected at the site. This number is used as the denominator for the refusal rate for the cluster.

4. The number of people who refuse to be interviewed refers to people who are invited to participate in the survey (after being randomly selected), but who decline to be interviewed. It is used as the numerator for the refusal rate for the cluster.

5. The number of duplicates refers to people who have already been interviewed as part of this survey. This may happen if you are using a “take-all” approach and the site was visited previously. It may also happen if this is a mobile population and you happen to select a person who was previously interviewed at another site.

6. The number of interviews completed refers to the number of people who were randomly selected to be interviewed, and for whom a questionnaire was completed.

Form 4
Cluster Information Sheet

Sub-Population ____

Geographic Location ____

Cluster Number ____

Cluster Name ____

Date and Time When Cluster is Visited ___________________________

1. **Estimated Measure of Size for Cluster (if it was available before the survey) :**

2. **Actual Measure of Size for Cluster (number of people at the site on the day of the survey) :**

3. **Number of People approached to be interviewed :**

4. **Number of People who refused to be interviewed after being approached :**

5. **Number of Duplicates (people interviewed previously on another day or at another site) :**

6. **Number of Interviews Completed :**

Note : It is highly recommended that a separate cluster information be kept for *each* cluster.

5 APPENDIX

Statistical tests

TABLE OF CHI-SQUARE STATISTICS AND EXAMPLE

CHI-SQUARE TABLE

	Probability, p											
df	0.99	0.98	0.95	0.90	0.80	0.50	0.20	0.10	0.05	0.02	0.01	0.001
1	0.000	0.001	0.004	0.016	0.064	0.455	1.64	2.71	3.84	5.41	6.64	10.83
2	0.020	0.040	0.103	0.211	0.446	1.386	3.22	4.61	5.99	7.82	9.21	13.82
3	0.115	0.185	0.352	0.584	1.005	2.366	4.64	6.25	7.82	9.84	11.35	16.27
4	0.297	0.429	0.711	1.064	1.649	3.357	5.99	7.78	9.49	11.67	13.28	18.47
5	0.554	0.752	1.145	1.610	2.343	4.351	7.29	9.24	11.07	13.39	15.09	20.52
6	0.872	1.124	1.635	2.204	3.070	5.35	8.56	10.65	12.59	15.03	16.81	22.46
7	1.239	1.564	2.167	2.833	3.822	6.35	9.80	12.02	14.07	16.62	18.48	24.32
8	1.646	2.032	2.733	3.490	4.594	7.34	11.03	13.36	15.51	18.17	20.09	26.13
9	2.088	2.532	3.325	4.168	5.380	8.34	12.24	14.68	16.92	19.68	21.67	27.88
10	2.558	3.059	3.940	4.865	6.179	9.34	13.44	15.99	18.31	21.16	23.21	29.59
11	3.05	3.61	4.58	5.58	6.99	10.34	14.63	17.28	19.68	22.62	24.73	31.26
12	3.57	4.18	5.23	6.30	7.81	11.34	15.81	18.55	21.03	24.05	26.22	32.91
13	4.11	4.77	5.89	7.04	8.63	12.34	16.99	19.81	22.36	25.47	27.69	34.53
14	4.66	5.37	6.57	7.79	9.47	13.34	18.15	21.06	23.69	26.87	29.14	36.12
15	5.23	5.99	7.26	8.55	10.31	14.34	19.31	22.31	25.00	28.26	30.58	37.70
16	5.81	6.61	7.96	9.31	11.15	15.34	20.47	23.54	26.30	29.63	32.00	39.25
17	6.41	7.26	8.67	10.09	12.00	16.34	21.62	24.77	27.59	31.00	33.41	40.79
18	7.02	7.91	9.39	10.87	12.86	17.34	22.76	25.99	28.87	32.55	34.81	42.31
19	7.63	8.57	10.12	11.65	13.72	18.34	23.90	27.20	30.14	33.69	36.19	43.82
20	8.26	9.24	10.85	12.44	14.58	19.34	25.04	28.41	31.41	35.02	37.57	45.32
21	8.90	9.92	11.59	13.24	15.45	20.34	26.17	29.62	32.67	36.34	38.93	46.80
22	9.54	10.06	12.34	14.04	16.31	21.34	27.30	30.81	33.92	37.66	40.29	48.27
23	10.20	11.29	13.09	14.85	17.19	22.34	28.43	32.01	35.17	38.97	41.64	49.73
24	10.86	11.99	13.85	15.66	18.06	23.34	29.55	33.20	36.42	40.27	42.98	51.18
25	11.52	12.70	14.61	16.47	18.94	24.34	30.68	34.38	37.65	41.57	44.31	52.62
26	12.20	13.41	15.38	17.29	19.82	25.34	31.80	35.56	38.89	42.86	45.64	54.05
27	12.88	14.13	16.15	18.11	20.70	26.34	32.91	36.74	40.11	44.14	46.96	55.48
28	13.57	14.85	16.93	18.94	21.59	27.34	34.03	37.92	41.34	45.42	48.28	56.89
29	14.26	15.57	17.71	19.77	22.48	28.34	35.14	39.09	42.56	46.69	49.59	58.30
30	14.95	16.31	18.49	20.60	23.36	29.34	36.25	40.26	43.77	47.96	50.89	59.70

EXAMPLE : CALCULATING THE CHI-SQUARE STATISTIC BY HAND

The following illustrates a step-by-step process of calculating the chi-square statistic : Set up the explanatory variable in columns, and the outcome variable in rows. Then calculate the row and the column totals. Next, calculate the **expected** number of observations for each cell **if there were no difference in distribution according to the explanatory variable** (i.e., if the null hypothesis were true). Do this as follows :

$$\text{The } \textbf{expected} \text{ number} = \frac{\text{row total} * \text{column total}}{\text{overall total N}}$$

Chi-square is calculated by comparing the numbers **actually observed** with those expected if there were no difference in distribution according to the explanatory variable. For every cell of the table, calculate the difference between the expected and observed values (and square it to get rid of any negatives) and then divide it by the expected value. Now add together the result of that calculation for every cell of the table. The result is the chi-square value. In other words

$$\chi^2 = \text{SUM } \frac{(\text{observed - expected})^2}{\text{expected}}$$

Once the χ^2 value has been calculated, it can be compared with the Chi-square Table to determine whether there is indeed a statistically significant association between the explanatory and the outcome variables. Notice that the table uses the term **degrees of freedom**. The statistical significance of χ^2 depends on how many categories there are in both the explanatory and the outcome variables. The degrees of freedom (DF) can be calculated easily by looking at the table laying out the variables, as follows :

DF = (number of rows - 1) * (number of columns - 1)

The steps below refer to the example provided in Chapter 7 of the analysis of the number of non-regular sex partners by age group.

Step 1 : Set up the explanatory variable in columns, and the outcome variable in rows. Then calculate the row and the column totals.

Table of observed numbers

	0	**1**	**2**	**3+**	**Totals**
< 20 years	12	4	6	9	31
20 - 24	87	36	21	27	171
25 - 29	75	29	11	18	133
30+	177	26	11	13	227
Totals	351	95	49	67	562

Step 2 : Calculate the **expected** number of observations for each cell **if there were no difference in distribution according to the explanatory variable** (i.e., if the null hypothesis were true). Do this as follows:

$$\text{The } \textbf{expected} \text{ number} = \frac{\text{row total * column total}}{\text{overall total N}}$$

For cell one (<20 years, with 0 non-regular partners), expected = 31*351/562 = 19

Cell two (<20 years, with 1 non-regular partner), expected = 31*95/562 = 5

Continue for each cell, which gives the following:

Table of expected numbers

	0	1	2	3+	Totals
< 20 years	19	5	3	4	31
20 - 24	107	29	15	20	171
25 - 29	83	22	12	16	133
30+	142	38	20	27	227
Totals	351	95	49	67	562

Step 3 : For every cell of the table, calculate the difference between the expected and observed values (and square it to get rid of any negatives) and then divide it by the expected value, as follows:

$$\frac{(\text{observed - expected})^2}{\text{expected}}$$

For cell 1: $(12 - 19)^2 /19 = 49/19 = 2.58$

For cell 2: $(4-5)^2 /5 = 0.2$

Continue for every cell to yield the following:

Table of differences

	0	1	2	3+	Totals
< 20 years	2.58	0.2	3	6.25	12.03
20 - 24	3.74	1.69	2.4	2.45	10.28
25 - 29	0.77	2.23	0.08	0.25	3.33
30+	8.63	3.79	4.05	7.26	23.73
Totals	15.72	7.91	9.53	16.21	49.37

Step 4 : Add together the result of that calculation for every cell of the table. The result is the Chi-square value. The total of all the cells (excluding, of course, the row and column totals) is the sum of all the column OR row totals, found in the bottom right hand corner of the table. So in this case :

$\chi^2 = 49.37$.

Step 5 : In order to determine whether this χ^2 value is statistically significant, it is necessary to calculate the degrees of freedom.

DF = (number of rows - 1) * (number of columns - 1)

DF = (4-1) * (4-1) = 9.

Step 5 : Go to the Table Chi-Square and look up the significance level for a χ^2 value of 49.37, with nine degrees of freedom. For nine degrees of freedom, the largest value given is 27.88, for a significance level (or **p-value**) of 0.001. Since the value we have calculated is larger than this, it means that it is significant at even greater levels of significance than that given. A p-value of 0.001 corresponds to a level of certainty of 99.9 percent. In other words, by using this test, we have shown that **we are more than 99.9 percent sure that the association between age and non-regular sex partners could not have occurred by chance.** This means that program planners in Côte d'Ivoire can with confidence assume that younger truck drivers are more likely to have multiple non-regular sex partners than older truck drivers, and they can target their prevention activities accordingly.

There are some limitations on the validity of this test. Chi-square distribution tests cannot reliably be used where more than a fifth of the values in the table of expected values are expected to be smaller than five, or when any expected value is less than one.

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