Using Programmatic Mapping to Improve Program Access and Coverage for Key Populations

Guidelines for Countries

CONTENTS

Foreword 5

Part I Background 6

1.1 What is The Purpose of These Guidelines? 6

1.2 Who Are Key Populations? 7

1.3 WHY FOCUS ON KEY POPULATIONS? 8

1.3.1 HIV Disproportionately affects key populations 8

1.3.2 Key populations have low access to services 8

1.4 What Services and Interventions are Included in a Combination Prevention Approach For Key Populations? 9

1.5 What is The Purpose of Programmatic Mapping? 12

1.6 Where has Programmatic Mapping Been Used? 12

1.7 Why Implement Programmatic mapping? 14

1.7.1 Because local epidemics need a tailored response 14

1.7.2 Because a tailored response must meaningfully engage key populations 14

1.7.3 Because programmatic mapping will identify geographic areas of greatest need 15

1.7.4 Because programmatic mapping provides baseline coverage indicators 15

1.7.5 Results from Programmatic Mapping Can Be Used to Estimate the Size of Each Key Population 15

1.8 When is Mapping Not Appropriate? 19

Part II Human Rights, HIV and AIDS, and Key Populations 20

2.1 The Global Fund's Commitment to Human Rights 20

2.2 Effects of Criminalization 20

2.3 Physical and Sexual Violence among Key Populations in the Context of Repressive Laws and Policies 21

2.4 Guiding Principles for Working with Key Populations 22

2.5 Response to Hostile Environments and Countries 25

Part III Writing a Proposal to Implement Programmatic Mapping to Increase Access to Services For Key Populations 26

3.1 Proposal Overview 26

3.2 3.2 Proposal Outline 26

1. Context and Rationale 27
2. Preparation 27
3. Key Protocol Decisions: Who , Where and What 27
4. Ethical Considerations 27
5. Data Collection 27
6. Data Analysis and Use 27

7. Risk 27
8. Technical Assistance Needs and Costing the Proposal 27
3.3 How to use these guidelines 27
Proposal Guidelines 28
1. Context 28
1.3 Country Response: Key Population Strategy in the Country and Programs 30
1.4 Social Context: Legal Status of Key Populations, Stigma, Harassment, Violence & Barriers 32
2. Preparation For Programmatic Mapping and Size Estimation 33
2.1 Community Engagement 33
2.2 Readiness Assessment 33
2.3 Other Formative Work 36
3. Key Protocol Decisions: Who, Where & What 39
Summary of Section on Proposal Decisions 39
3.1 Populations Covered 39
3.2 Geographic Areas Covered 40
....43
3.3 Services Covered 44
4. **Ethical Review**. 45
5. Data Collection for Programmatic Mapping 47
5.1 Overview of site identification 47
5.2 Overview of site visiting and mapping 51
5.3 Validity Study for Adjusting Size Estimates 54
....57
5.4 Team Structure, Informed Consent, Safety 58
6. Data Analysis and Data Use 60
Overview of Data Analysis and Use 60
6.1 Data Use: Analysis of Service Gaps 60
6.2 Size Estimation 61
6.3 Maps: Data confidentiality and use 64
7. RISK 65
8. Technical Assistance Needs and Costing the Proposal 67
8.1 Overview of the Budget 67
8.2 Example of a budget 67
Appendices 77

Appendix 1. Questions for Researchers to Ask for Key Population/HIV Research 77
Appendix 2. Using geographic mapping of key vulnerable populations to control the spread of HIV epidemics 81
Literature 84

List of Figures

FOREWORD

The Guidelines were completed with resources available through PEPFAR to provide technical assistance to the Global Fund. The PEPFAR HIV Global Fund Technical Assistance Working Group decided to strategically focus on assistance that can benefit countries undergoing the first stages of the Global Fund New Funding Model, as well as other existing and emerging needs identified through coordination with the Global Fund Secretariat and U.S. Government country teams. One such activity includes support to countries to strengthen collection of strategic information regarding key populations. The activity will be implemented in collaboration with the Global Fund Secretariat, UNAIDS, WHO, UNFPA, and UNDP. Collaboration includes discussions with appropriate groups within Global Fund including the Global Fund Human Rights Reference Group and the Global Fund Key Population Expert Group.

The Global Fund identified countries to receive assistance through a process reflecting the level of the Global Fund investment in the country and the disease burden (HIV, TB, Malaria). Criteria for selecting countries to receive technical assistance included:

Extent to which there are data gaps regarding key populations

Whether or not the country already has plans to fill data gaps

Whether the country is on the list of High Impact or TERG focus countries

Interest in participation by the Global Fund Country Teams and partners in-country.

There is a Steering Committee to facilitate communication among agencies, coordinate activities so that duplication is avoided, and serve as an expert group to advise on the development of country proposals. Members include:

Co-Chairs: Sharon Weir (UNC) and Jamie Blanchard (University of Manitoba)

Ryuichi Komatsu, Jinkou (Button) Zhao (Global Fund)

Keith Sabin, Peter Ghys (UNAIDS)

Joanne Csete, Open Society Foundation

Eliot Albers, International Network of People who Use Drugs (INPUD)

Jesus Garcia Calleja , Daniel Low-Beer (WHO)

Abu Abdul-Quader, Erin Balch, Paul Booey , Linda Wright-Deaguero, Vanessa Brown, Nate Heard (USG)

Faran Emmanuel, Shajy Isac, Baba Mari (University of Manitoba Team)

Jenny Butler (UNFPA)

Ludo Bok and Vivek Divan (UNDP)

Freddie Ssengooba, Uganda

These guidelines are developed to guide countries to develop country-specific proposals for conducting programmatic mapping, size estimation and improve coverage for key populations.

Provision of technical assistance in programmatic mapping has been primarily through workshops coordinated by the Global Fund, UNAIDS and WHO. Regional workshops have been conducted in Pretoria, South Africa, Hanoi, Vietnam and San Salvador, El Salvador. A fourth workshop will be in Eastern Europe and Central Asia region in early 2015.

PART I BACKGROUND

1.1 WHAT IS THE PURPOSE OF THESE GUIDELINES?

This document provides guidance on programmatic mapping to improve program access and coverage for key populations. Specific objectives are:

To facilitate a determination about whether there is a rationale for programmatic mapping and size estimation of key populations in the country

To facilitate development of a country proposal to implement programmatic mapping

To provide information to guide implementation of programmatic mapping

To facilitate engagement with relevant stakeholders including regional or national Global Fund groups to ensure that the health and human rights of key populations are respected.[1].

The guidelines reflect the "Global Fund Strategy, Investing for Impact 2012-2016" , which includes a high level strategic objective on human rights and a focus on ensuring that human rights are integrated in the grant cycle, increased investment in addressing human rights barriers to access and ensuring that Global Fund investments do not infrin human rights. [2]

[1] A brief proposal is developed during the workshop. The full protocol is prepared prior to implementation. The full protocol includes all of the supportive documents such as questionnaires, survey procedures, and training manuals.
[2] The Global Fund Human Rights Information Note can be found on the Global Fund website

(http://www.theglobalfund.org/en/fundingmodel/support/infonotes/ accessed on October 8 2014). Also see Part II of this document on Human Rights.

ENGAGEMENT

"Effectively engaging key populations is crucial for the development and implementation of this type of research, especially in repressive environments. Community organizations of key populations may be best suited to take on research, service provision and advocacy. Engagement should include a situational assessment of the environment affecting key populations in a particular location, including discussions with community groups and other stakeholders to assess whether the timing is right for a study targeting key populations given ongoing and expected sociopolitical dynamics.

It is also vital to determine the level of organization of key populations in the planned location. If there is a lack of established infrastructure, then the research study implementers should commit to building local capacity as a component of the research program. Engagement rules also include assessing the level of interest of key populations in research programs that specifically target them. History suggests that most community groups will likely be motivated to take part in research projects by the importance of gathering data to support their advocacy strategies. Finally, engagement should be preceded by an assessment of the research organization's willingness to respect, protect, and fulfill the rights of key populations."

From: Respect, Protect, Fulfil: Best practices guidance in conducting HIV research with gay, bisexual, and other men who have sex with men (MSM) in rights-constrained environments, UNDP

1.2 WHO ARE KEY POPULATIONS?

This workbook recognizes the definitions recognized by UN agencies for four key populations:

- A person who injects drugs: Men or women who have injected any time within the past 12 months. Those who have self-injected medicines for medical purposes only are excluded.

- Sex worker (from the UNAIDS Guidance Note on HIV and Sex Work): "female, male and transgender adults and young people who receive money or goods in exchange for sexual services, either regularly or occasionally". This definition includes those who occasionally exchange sex for gifts. It does not include people younger than 18.

- Men who have sex with men: MSM is an abbreviation used for 'men who have sex with men' or 'males who have sex with males'. The term 'men who have sex with men' describes males who have sex with males, regardless of whether or not they have sex with women or have a personal or social gay or bisexual identity. This concept is useful because it also includes men who self-identify as heterosexual but have sex with other men. However, abbreviations should be avoided whenever possible. Writing out the term is preferred.

- Transgender persons: ' individuals whose gender identity and/or expression of their gender differs from social norms related to their gender of birth. The term transgender persons describes a wide range of identities, roles and experiences which can vary considerably from one culture to another. '

During the preparation phase of programmatic mapping, formative assessment should be done to characterize key populations in a country, particularly the identification of important sub-groups (e.g., street-based sex workers) and determine the definition that should be used for mapping.

The global definitions may be operationalized according to the local context.

It may be useful to define particular sub-groups of a key population using terms that are not locally stigmatizing, e.g., women who work in bars and clubs.

Community members should be involved in tailoring context-specific definitions. Attention should be paid also to existing definitions used in the national AIDS strategic documents, national M&E plans and in the bio-behavioral surveys

1.3 WHY FOCUS ON KEY POPULATIONS?

1.3.1 HIV Disproportionately affects key populations

HIV and AIDS disproportionately affect sex workers, men who have sex with men, people who inject drugs and transgender people . (See figures to the right[2].) Data from low and middle income countries consisten**tly find these populations more likely to be infected with HIV than the general population[1-4].**

1.3.2 Key populations have low access to services

Although the prevalence of infection is high among key populations, access to services is often low[4 5]. Key populations are among the most marginalized persons in society and may be barred from HIV information and services by healthcare providers who discriminate against them or refuse to provide treatment. Criminalization reinforces stigma and discrimination, and acts to legitimize violence, extortion and discrimination against criminalized persons by police as well as private actors. Abusive policing practices – such as using condoms as evidence of illegal sex, or needle marks as proof of drug use – foster risky practices and may increase the risk of HIV infection. Poor access to justice and service in the context of harsh legal and policy environments increases their vulnerability to HIV and decreases their ability to cope with consequences of HIV (World Bank, 2011).

Because of their increased risk of HIV acquisition and onward transmission as well as their lack of access to services, efforts to increase access and program coverage for key populations are ethically justified as well as cost effective .

Impact

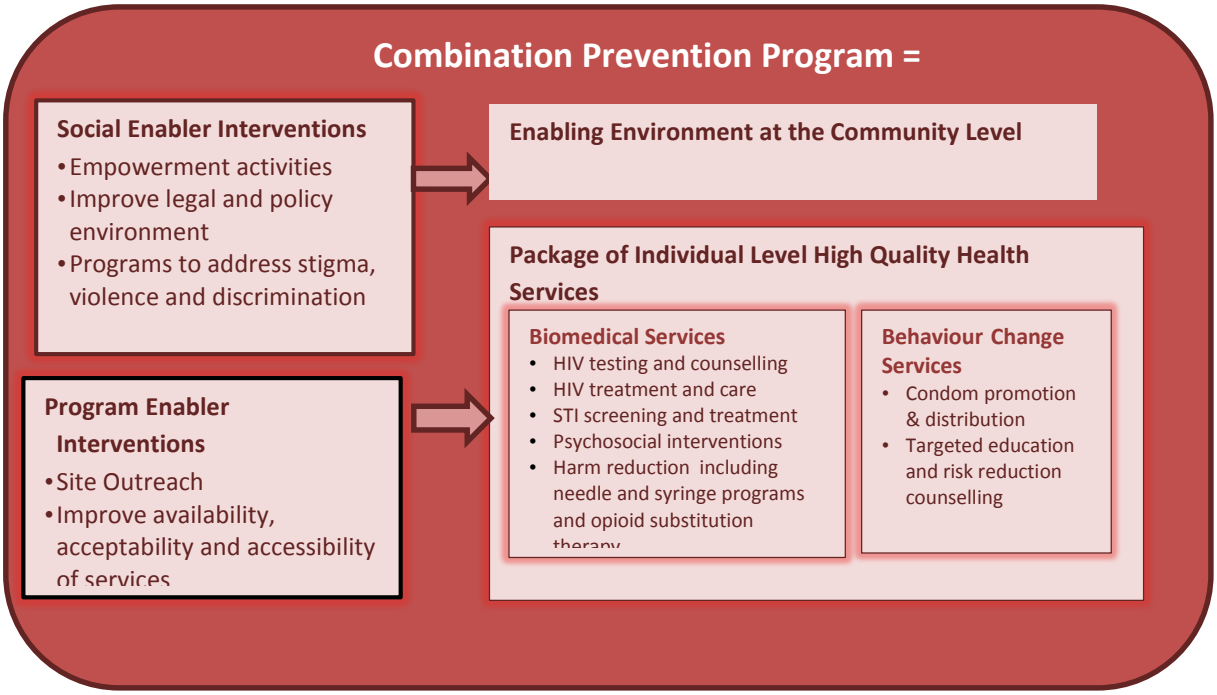
Some peoples still question the importance of focused prevention for key populations in a generalized epidemic. A recent analysis using simulated models of the HIV epidemic in Kisumu Kenya (Steen, AIDS 2014) estimated the benefits that would have occurred “downstream” had sex workers used condoms 100% and removed transmission from sex work in a generalized epidemic. The model estimated a 66% lower HIV incidence (range 54–75%) and 56% lower prevalence (range 44–63%) after 20 years. More feasible interventions reduced HIV prevalence from 20% to 50%. High rates of condom use had the greatest effect and interventions reaching sex workers with most clients were more effective than approaches reaching all sex workers. Declines were independent of antiretroviral therapy rollout. The authors concluded that ‘upstream’ transmission in sex work remains important in advanced African HIV epidemics even in the context of antiretroviral therapy. As in concentrated Asian epidemics, feasible condom and STI interventions that reach the most active sex workers can markedly reduce transmission.

1.4 What Services and Interventions are Included in a Combination Prevention Approach For Key Populations?

A combination prevention strategy includes interventions to improve the social environment (*social enablers*) and improve the quality of programs (*program enablers*) as well as basic health services including clinic-based and outreach-based services (See Figure below).

The term "critical enablers" includes social and program enablers and addresses factors often referred to as contributing factors or underlying determinants. This protocol supports a Combination Prevention approach in several ways.

The protocol identifies sites where key populations meet new sexual partners. Site-based interventions may include structural or environmental interventions at the site to improve access to services. The comprehensive package is also described in the Consolidated Guidelines on HIV Prevention, Diagnosis, Treatment and Care for Key Populations (see below).



Combination Prevention Program (modified from Operational Guidelines for Monitoring and Evaluation of HIV Programs for Sex Workers, Men who Have Sex with Men and Transgender People)[1]

The package is divided into essential strategies for an enabling environment and essential health sector interventions

Essential strategies for an enabling environment	Essential health sector interventions
It is important to consider the context in which men who have sex with men, sex workers and transgender people live and work and where services for them are delivered. Structural factors such as societal norms, policies, laws and economic factors influence HIV risk and may impede, or assist, the delivery and impact of interventions. Ensuring these factors contribute positively to an enabling environment to reduce HIV risk and enhance treatment efforts is essential. Doing so requires multi-sectorial input and cooperation, and while not the sole responsibility of the health sector, if these structural factors are not addressed, the impact of health sector interventions will be constrained. The following interrelated strategies are therefore included as essential components of the response to HIV among these key populations: • Supportive legislation, policy and financial commitment commitment, including decriminalization of behaviors of key populations • Addressing stigma and discrimination • Community empowerment • Addressing violence against people from key populations	The following interventions are able to produce the most benefit when they are available in combination, and when the necessary enabling environment factors outlined above, are in place. The implementation of these interventions should not be delayed, even in the absence of these enabling environment factors. It is important to recognise, however, that their impact will be greatly increased if the enabling factors are present. 1. Comprehensive condom and lubricant programming 2. Harm reduction interventions for substance use 3. Behavioral interventions 4. HIV testing and counselling 5. HIV treatment and care 6. Prevention and management of co-infections and other co-morbidities, including viral hepatitis, TB and mental health conditions 7. Sexual and reproductive health interventions
The comprehensive package for persons who inject drugs includes the following:	
• Needle and syringe programs • Opioid substitution therapy and other drug dependence treatment • HIV testing and counseling • Antiretroviral therapy • Prevention and treatment of sexually transmitted infections	• Condom distribution programs for people who inject drugs and their sexual partners • Targeted information, education and communication for people who inject drugs and their sexual partners • Vaccination, diagnosis, treatment of viral hepatitis • Prevention, diagnosis and treatment of tuberculosis

Further guidance on combination prevention programs for key populations

- WHO (2014). Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations.
- WHO, UNFPA, UNAIDS, NSWP (2012). Prevention and treatment of HIV and other sexually transmitted infections for sex workers in low- and middle-income countries. Geneva: WHO.
- WHO, UNAIDS, GIZ, MSMGF (2011). Prevention and treatment of HIV and other sexually transmitted infections among men who have sex with men and transgender people. Geneva: WHO.
- UNDP/UNAIDS (2012). Understanding and acting on critical enablers and development synergies for strategic investments.
- WHO, UNODC, UNAIDS (2012). Technical guide for countries to set targets for universal access to HIV prevention, treatment and care for injecting drug users – 2012 revision.
- WHO (2014). Policy brief: Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations.

1.5 What is The Purpose of Programmatic Mapping?

Programmatic mapping documents where key populations can be reached, whether services are available and accessible to key populations in these locations, and where there are gaps in services. Programmatic mapping reflects a renewed focus on the need for an informed local response to local epidemics. According to UNAIDS:

"Addressing the specific issues within local epidemics is crucial to a greatly improved HIV response. Focusing on the areas where the HIV epidemic is highly concentrated, identifying the places where services are lacking or not reaching the people in need of prevention services, testing, treatment and support are the first steps towards achieving more efficient and effective programs."

1.6 Where has Programmatic Mapping Been Used?

Programmatic mapping has been used in epidemiology in both communicable and non-communicable diseases. Over the past ten years, the method has been improved and implemented on a large scale.

The University of Manitoba includes programmatic mapping as part of a country epidemic appraisal. The appraisal includes systematic mapping of high risk sites for key populations, urban venue profiling to describe other risk environments where casual sexual partnerships are formed, and rural appraisals for quickly assessing sexual networks in rural areas. The map below shows where the University of Manitoba under the leadership of Dr. James Blanchard and Dr. Faran Emmanuel have conducted epidemic appraisals.

Figure 1. University of Manitoba Country Appraisal Locations

Figure 2. Locations Where PLACE has been implemented

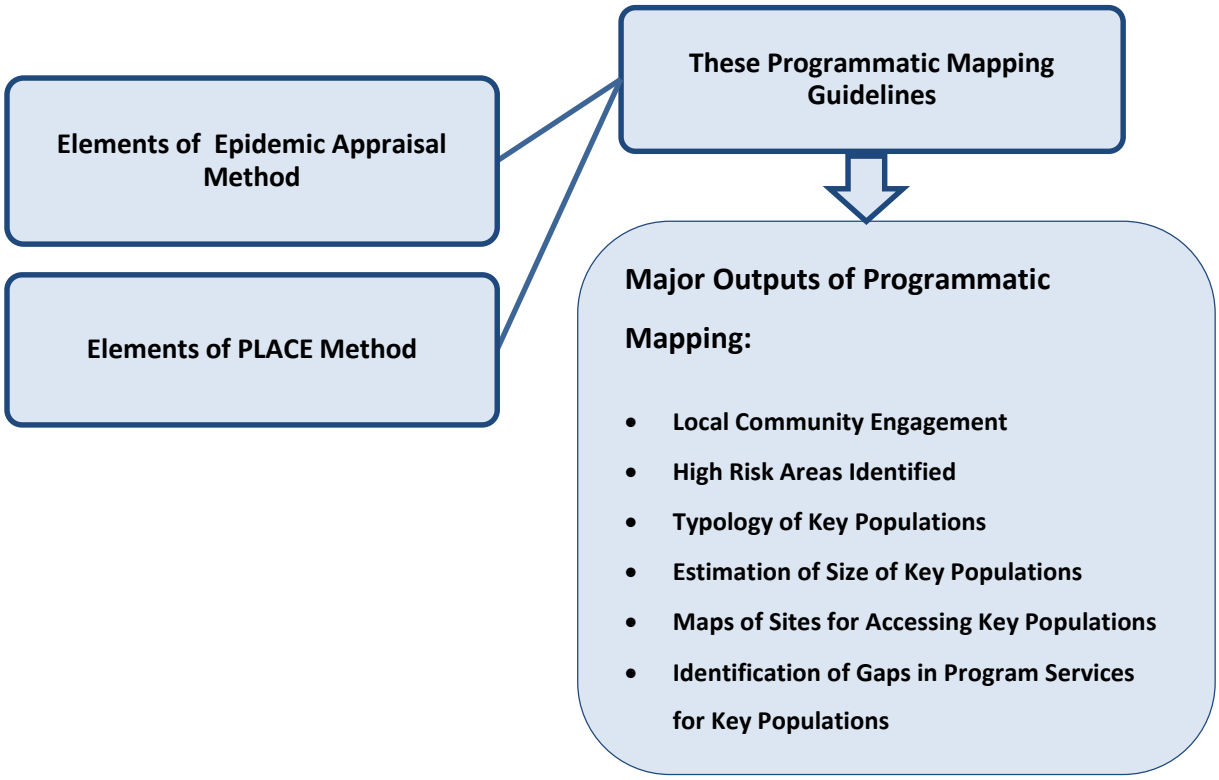
The Priorities for Local AIDS Control Efforts (PLACE) method, developed at the University of North Carolina through the MEASURE Evaluation Project, shares many features of the University of Manitoba approach. The PLACE method:

1. identifies areas in a country that may be at increased risk of HIV transmission;
2. identifies and maps public sites in these areas where people meet new sexual partners and public sites where people who inject drugs can be reached;
3. estimates the number of key populations at sites;
4. assesses on-site prevention services; and
5. interviews and tests a representative sample of people at sites to obtain bio-behavioral indicators for risk groups

Elements from the PLACE Method and from the University of Manitoba Epidemic Appraisal Method are combined in the approach presented here.

Programmatic mapping as described in this workbook is the systematic identification of areas in the country where HIV transmission may be greatest, the development of a pragmatic typology of key populations in these areas, the identification of the locations where key populations congregate and could be reached with services, the size of each key population, and an assessment of whether services are locally available. More information on the objectives and methods of programmatic mapping are included later in these guidelines. A summary of the main outputs is shown in the figure

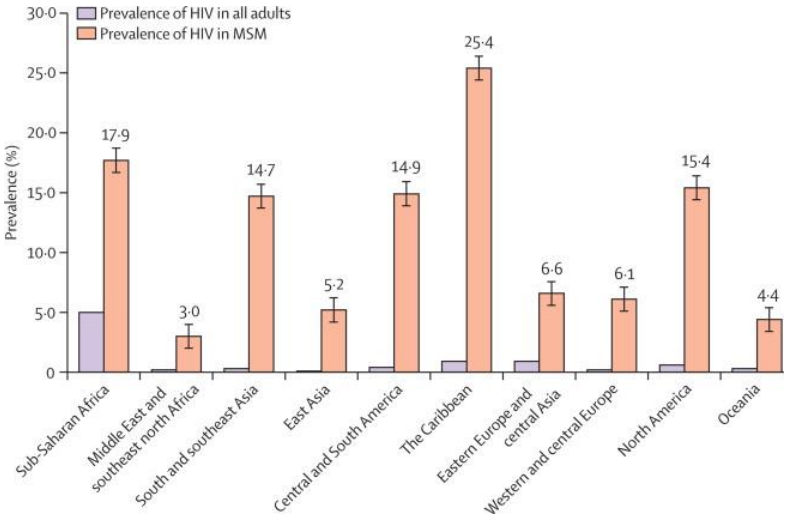
.



1.7 WHY IMPLEMENT PROGRAMMATIC MAPPING?

1.7.1 Because local epidemics need a tailored response

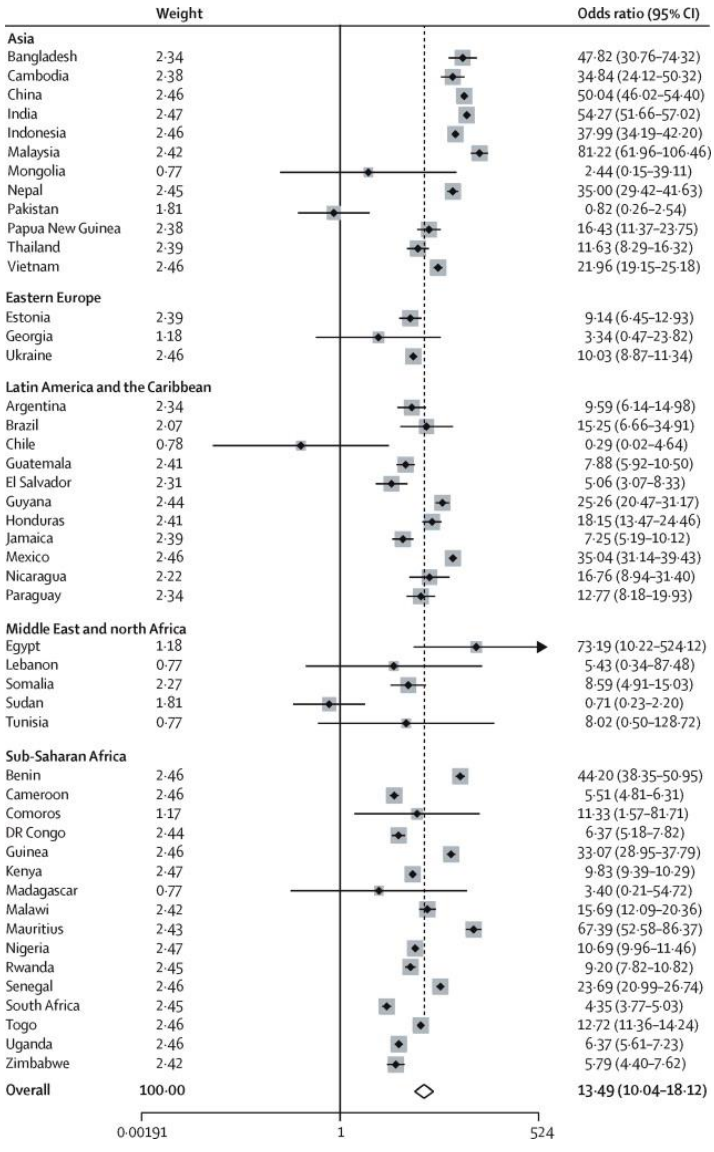
The specific features of the HIV epidemic and gaps in the local response vary within a country. Programmatic mapping is a tool to identify and address gaps at the local level.



Programmatic mapping is a useful tool for planning services to key populations. Using appropriate safeguards to protect key populations, the tool can identify where to reach key populations and assess their access to services. Programmatic mapping can thus provide information for program planning about the number of key populations who could be reached in local service delivery areas and where they can be reached.

1.7.2 Because a tailored response must meaningfully engage key populations

Ensuring empowerment and leadership of key populations in the design, implementation, monitoring and evaluation of programs that affect their lives and health are ethical, human rights, and public health imperatives. The ethical tenet to ensure meaningful involvement is reflected in the human right to participation without discrimination in the conduct of public affairs. Community members are experts on their own lives and experiences, and often are best able to identify and implement effective public health programs.



Global guidance from the Implementing Comprehensive HIV/STI Programs with Sex Workers states:

'Community participation and leadership in the design, implementation, monitoring and evaluation of programs are also essential. Participation and leadership help to build trust

in those whom programs are intended to serve, make programs more comprehensive and more responsive to sex workers' needs, and create more enabling environments for HIV prevention and sex work.'

During programmatic mapping, key populations and service delivery providers work together to identify opportunities for extending coverage. Identifying and visiting sites can be very informative for service delivery providers who are not familiar with the risk environment. Mapping sites may open channels of communication between site managers, key population communities, and health programs that could lead to outreach testing at sites, condom distribution to sites, targeted education at sites, and site-based peer education.

1.7.3 Because programmatic mapping will identify geographic areas of greatest need

A critical part of the rationale for programmatic mapping is that programs need to be implemented where they are needed. The HIV epidemic in a country usually differs across sub-national areas. Although it may not be feasible to implement programmatic mapping in all areas of a country, implementation in highest risk areas among people most likely to acquire and transmit infection is recommended. Often high risk areas include urban areas, transportation routes, slums, and areas with a high male to female ratio, such as military installations, mining areas or construction projects. The context of the epidemic differs across countries and the location and characteristics of high risk areas will vary.

Within these high risk areas, programmatic mapping of sites where key populations congregate will reveal sub-groups of the population that have been missed. Outreach to key populations at these sites can increase the use of services. Often key populations would prefer to be provided with services at locations they already visit. They may be reluctant to visit clinics or service delivery providers they do not know. Outreach to sites where key populations congregate is consistent with a strategy of combination prevention. An important coverage target for service delivery providers is to increase the proportion of the key population who receive services. Outreach services that can be provided in the community in non-clinic settings include HIV testing, STI testing, targeted education, peer education, condom promotion and distribution, referrals for ART and TB and malaria screening. Even in countries with generalized epidemics, targeted intervention with key populations will have an important effect on the HIV epidemic in the country[6-8].

1.7.4 Because programmatic mapping provides baseline coverage indicators

Effective monitoring and evaluation improves access, quality, reach, acceptability and effectiveness of programs. Effective monitoring and evaluation identifies gaps in services and barriers so that problems can be resolved and the quality and effectiveness of programs improved . Good practices include rapid assessments and well conceptualized identification of the problems and strategies for improvement. The full array of population-centered monitoring and evaluation strategies are not included in this workbook. Programmatic mapping is often part of program planning, monitoring and evaluation rather than an external research activity .

1.7.5 Results from Programmatic Mapping Can Be Used to Estimate the Size of Each Key Population

Systematic mapping also offers an opportunity for estimating the number of a key population who visit these sites. Initial estimates obtained from counting the number of each key population at sites are usually adjusted based on information obtained on frequency of site attendance, frequency of visiting more than one site, length of time spent in the locality, and duration of membership in the key population.

Size estimation based on programmatic mapping does not estimate the total number of the key population in an area. It estimates the number that could be reached by service delivery providers working with key populations in the area.

The chart on the next page describes commonly used methods for size estimation of key populations. Multiple approaches should be applied to estimating the size. Consensus process with all relevant stakeholders should happen for nationally and/or locally agreed estimates for programming and M&E. Programmatic mapping is primarily to identify gaps in services and to improve program planning. Programmatic mapping is usually implemented as a census method (if key populations at all locations are counted) or a multiplier method (if key populations at a sample of locations are counted and the total number estimated based on the proportion of locations sampled). Size estimates based on programmatic mapping have the following advantages:

Strengths for size estimation

- Size estimates based on information from specific locations can be readily translated into outreach targets by local service delivery providers because the providers have been a part of the mapping in collaboration with and led by members of the key population
- Site-based estimates can empower key populations as they are at the center of the process.
- Often people who go to sites are among the most at risk of the key populations because the sites are places where people go to meet new sexual partners or socialize with people who inject drugs.

Limitations

- If the process of identifying sites is not comprehensive, important sites and segments of the population can be missed.
- Site-based estimates reflect the number of people who visit sites and not the entire population.
- Size estimates based on site mapping are usually lower than estimates based on other methods.

Summary of Advantages of Programmatic Mapping:

- Mapping identifies sites unknown to service delivery providers and key population communities
- Mapping identifies where condom, lube and safe injecting equipment should be accessible
- Mapping is a form of “ground-truthing” that gives incontrovertible evidence of risk environments that need services with evidence that cannot be denied or ignored by funders
- Mapping is a locally implemented exercise that can be collaborative and build working relationships between key populations and health delivery providers
- Mapping can be used to uncover human rights abuses such as police harassment, discrimination, rape, child trafficking, coercion by third parties, and forced migration and improve relationships with the judicial and police systems
- Mapping provides concrete information that can be used to assess program coverage and improve the reach of services. The figure on the next page shows how programmatic mapping can be useful at each step in monitoring and evaluation
- Mapping can provide size estimates of key populations to inform funding requests approaches reaching all sex workers

Summary of Methods for Estimating the Size of Key Populations

Methods	Strengths	Limitations	Recommendations	Author (reference)
Census: Count all members of the population; Enumeration: Develop a sampling frame and count all members of the population at the selected locations	Real count, not an estimate or sample; Can produce credible lower limit; Can be used to inform other methods	At-risk populations are often hidden, will miss some or many members of the population; Stigma may cause members to not identify themselves; Time-consuming and expensive	Prior to implementation conduct detailed mapping	Altaf *et al.* [4]; Comiskey *et al.* [5]
Capture–recapture: Size estimate is based on two independent captures (samples): Capture 1: 'tag' and count number tagged; Capture 2: 'tag' and count who is 'retagged' and who is 'first time tagged'	Relatively easy to do with access to population; Does not require much data	Relies on 4 conditions that are hard to meet: The two captures must be independent and not correlated; Each population member should have equal chance of selection; Each member must be correctly identified as 'capture' or 'recapture'; No major in/out migration	Use this method when census/ enumeration is not feasible, or no or poor quality service data	Kimani *et al.* [6]
Multiplier method: Apply a multiplier (e.g., number receiving particular service/ having membership or number receiving a unique object distributed prior to a survey) to survey estimate (proportion of survey sample sharing same characteristic)	Uses data sources already available; Flexible in terms of sampling methods; first source need not be random, but second source should be representative of population	The data sources must be independent; The data sources must define population in the same way; Time periods, age range, geographic areas must be aligned; Data collected from existing sources may be inaccurate	Use when you already do or plan for a behavioral survey; The multiplier can be based on either accurate service provider data or results of distributing unique objects by outreach workers before the survey	Paz-Bailey *et al.* [7]; Johnston *et al.* [8]; Khalid *et al.* [9]
General population-based survey: Ask respondents if they engage in the behavior of interest (e.g., male–male sex, money for sex, inject drugs)	Surveys are common and familiar; Easy to implement if a survey is underway; Straightforward to analyze; Sampling is easy to defend scientifically ('gold standard')	Low precision when the behaviors are rare; Respondents may be reluctant to admit to stigmatized behaviors; Only reaches people residing in households (mobility); Privacy, confidentiality, risk to patients	Consider using with already planned general population-based surveys	Purcell *et al.* [10]
Network scale-up is based on the assumption that people's social networks reflect the general population sampled in a survey	Can generate estimates from general population rather than hard-to-reach populations; Doesn't require survey respondent to disclose stigmatizing behaviors about him/herself	Average personal network size is difficult to estimate; Some subgroups may not associate with members of the general population; transmission error: Respondent may be unaware someone in his/her network engages in the behaviour of interest; Reporting bias (i.e., social desirability) may arise	Consider adding to already planned general population-based surveys	Ezoe *et al.* [11▪]; Salganik *et al.* [12]
Single-survey methods based on a single general population-based survey or RDS survey	One well designed survey; Do not need to reach the population multiple times	Participants need to be randomly selected or representative of population; Requires collecting network information	When conducting behavioral survey using respondent-driven sampling or other random survey	Chen *et al.* [13▪]; Laska *et al.* [14]; Laska *et al.* [15]; Tate *et al.* [16]; Dombrowski *et al.* [17▪]; Handcock *et al.* [18▪] and RDS Analyst software (http://www.hpmrg.org/)

[a]Adapted from UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance Guidelines on Estimating the Size of Populations Most at Risk to HIV (2010).

	The public health questions model focuses on the following questions and strategies to answer the questions.
programmatic mapping contribution	
	1 Know your epidemic:
	• What is the prevalence of infection among key populations?
✓	• How many individuals are in each key population?
✓	• Where can they be reached?
	2 Measure determinants of transmission
	• What behaviors increase risk of transmission?
✓	• What structural determinants increase transmission?
	3 Know your response and set targets:
✓	• What services exist for each sub-group?
	• What are the program targets for each sub-group?
✓	• Where are services lacking?
	4 Input monitoring:
	• What resources are needed?
	5. Quality monitoring:
	• What is the quality of the services we are providing?
✓	• Are services available? accessible?
	6 Monitoring outputs and program coverage:
✓	• How many people did we reach?
	• Where are the gaps in services?
	7 Outcome monitoring and evaluation:
	• Are there changes in HIV transmission risk? Are these changes due to programs?
	8. Impact monitoring and evaluation:
	• Is the HIV program reducing the number of new HIV cases?

Further guidance on conducting size estimates can be found here.

- UNAIDS, WHO (2009). Estimation of the size of high risk groups and HIV prevalence in high risk groups in concentrated epidemics. Geneva, UNAIDS. http://www.epidem.org/Publications/Amsterdam%20Report_July%202009.pdf
- WHO, UNAIDS (2013). Guidelines for Second Generation HIV Surveillance: an update: know your epidemic. Geneva, WHO. http://www.who.int/hiv/pub/guidelines/surveillance_update/en/index.html
- UNAIDS, WHO (2010). Guidelines on Estimating the Size of Populations Most at Risk to HIV. http://www.who.int/hiv/pub/surveillance/estimating_populations_HIV_risk/en/index.html

1.8 When is Mapping Not Appropriate?

Challenges with mapping should be taken seriously and addressed fully. Mapping can pose risks to key populations, is time consuming, requires extensive training, and can be expensive. Consequently, programmatic mapping should not be undertaken without an assessment of its risks and benefits.

The first rule of public health is to do no harm. If key population leaders and service delivery providers believe that harm could result from mapping, then mapping should not be undertaken. If the decision is made to implement mapping, confidentiality agreements and data protections should be in place to ensure that the maps are not used inappropriately. This does NOT imply that confidentiality and data protection kicks in only after mapping is completed.

Confidentiality and data protection are required throughout the entire activity. Robust standards of informed consent, confidentiality & data protection must be part of the very exercise of mapping itself, not subsequent to it having taken place for purposes of implementing the maps – as much as mapping requires training interviewers, it requires such training most importantly on these ethical obligations before obtaining data. This should be explicit in implementation of the activity.

In some settings, it may not be possible due to stigma or fear of reprisal or other reasons to conduct key-population specific mapping. In these settings, it may be possible to map public sites where a larger category of at-risk individuals can be reached.

Programmatic mapping has been implemented for many years in several different forms, however, mapping should **NOT** be implemented if any of the following conditions exist:

- Strategies to protect the confidentiality and safety of participants cannot be implemented
- Maps of locations where key populations can be reached cannot be safeguarded
- There is no plan to use the information to improve services at the sites that are identified
- Failure to reach consensus among key population groups about the value of programmatic mapping.

See Part II of these Guidelines for a more complete discussion of human rights issues.

Further information and guidance:

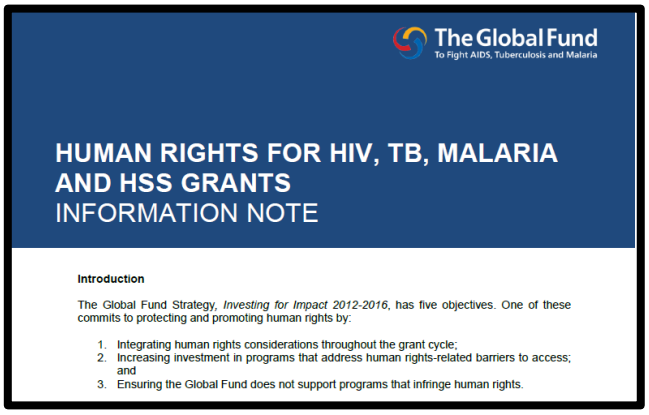
- MEASURE Monitoring and Evaluation Systems. http://www.cpc.unc.edu/measure/tools/monitoring-evaluation-systems/geographic-information-systems
- An Overview of Spatial Data Protocols for HIV/AIDS Activities: Why and How to Include the "Where" in Your Data. http://www.cpc.unc.edu/measure/publications/MS-11-41A
- PLACE Mapping and Size Estimation Module, MEASURE Evaluation. https://www.cpc.unc.edu/measure/publications/WP-11-126/at_download/document
- National Research Council (2007). Putting People on the Map: Protecting Confidentiality with Linked Social-Spatial Data. Panel on Confidentiality Issues Arising from the Integration of Remotely Sensed and Self-Identifying Data, M.P. Gutman and P.C. Stern, Eds. Washington, D.C.: The National Academies Press.http://www.nap.edu/catalog.php?record_id=11865
- VanWey, et al (2005). Confidentiality and spatially explicit data: Concerns and challenges. PNAS October 25, 2005 vol. 102 no. 43 15337-15342. http://www.pnas.org/content/102/43/15337.fll
- Guidelines on Protecting the Confidentiality and Security of HIV Information: Proceedings from a Workshop 15-17 May 2006, Geneva, Switzerland INTERIM GUIDELINES 15 May2007. http://data.unaids.org/pub/manual/2007/confidentiality_security_interim_guidelines_15may2007_en.pdf

PART II HUMAN RIGHTS, HIV AND AIDS, AND KEY POPULATIONS

2.1 THE GLOBAL FUND'S COMMITMENT TO HUMAN RIGHTS

Establishing the size of key populations is important for advocacy, planning and implementation of HIV prevention, care, and treatment programs, and for monitoring and evaluation of these programs.

The Human Rights Information Note from The Global Fund describes the Global Fund's commitment to Human Rights in all activities including programmatic mapping.


The Global Fund
To Fight AIDS, Tuberculosis and Malaria

HUMAN RIGHTS FOR HIV, TB, MALARIA AND HSS GRANTS
INFORMATION NOTE

Introduction

The Global Fund Strategy, *Investing for Impact 2012-2016*, has five objectives. One of these commits to protecting and promoting human rights by:

1. Integrating human rights considerations throughout the grant cycle;
2. Increasing investment in programs that address human rights-related barriers to access; and
3. Ensuring the Global Fund does not support programs that infringe human rights.

2.2 EFFECTS OF CRIMINALIZATION

People who inject drugs, sex workers, men who have sex with men, and transgender individuals – the "key populations" -- are often socially marginalized, even before the law intervenes. The criminalization of drug use, sex work, same sex conduct, and nonconforming gender identities effectively criminalizes their status, regardless of whether they have been proven guilty of (or even committed) a crime. Criminalization reinforces stigma and discrimination against these populations, and acts to legitimize violence, extortion and discrimination against them by police as well as private actors. Criminalization also deprives them of police protection and access to justice, fosters risky practices, and undermines access to HIV, health, and legal services.

Laws criminalizing sex work, same sex conduct, nonconforming gender identities, illicit drug use or possession, and associated policing practices targeting these populations create a "risk environment" that increases the risk of HIV and other adverse health outcomes in both direct and indirect ways.

Most countries in the world criminalize sex work, either through prohibitions on selling sexual services, buying sexual services, or through laws prohibiting activities related to the selling of sex (e.g., solicitation, living on the earnings of sex work, brothel-keeping, procuring or communicating for the procurement of sexual services, facilitating the act of prostitution by providing information or assistance). Criminal laws proscribing sex work and associated policing practices increase the risk of violence and HIV for sex workers. The fear of arrest or police abuse displaces street-based sex workers to remote work environments where they are less likely to be found, further isolating them from systems of security and support. When prostitution is criminalized, sex workers feel they must work quickly and make quick decisions about accepting customers and negotiating condom use. Criminalization affects the pace of work and the care with which it is conducted. The stigmatized social position of persons deemed 'sexually impure' is relied on by abusive police and buyers to ensure the wrongs remain out of sight.

2.3 Physical and Sexual Violence among Key Populations in the Context of Repressive Laws and Policies

Sex workers in many countries also face brutal physical and sexual violence, and unlawful arrest and detention. The police practice of using condoms as evidence of prostitution and related offenses forces sex workers to rush or skip negotiations about condom use with their clients. Police also confiscate and destroy sex workers' condoms, and harass and arrest peer outreach workers. In some countries, sex workers do not carry condoms (or carry fewer than they need) to avoid arrest or police abuse.

In countries where same sex behavior or gender transition is against the law, male and transgender sex workers may be at even greater risk of abuse. Laws criminalizing sex work can also exacerbate police targeting of transgender persons, who are sometimes profiled as sex workers regardless of their actual behavior.

The fear of arrest or police abuse drives people who use drugs away from lifesaving HIV services, and fosters risky practices. In some countries, many injection drug users do not carry sterile syringes or other injection equipment, even when it is legal to do so, because possession of drug injection equipment can mark an individual as a drug user, and expose him or her to punishment or other grounds. Police presence at or near government sanctioned harm reduction programs (such as legal needle exchange sites) and drug treatment centers likewise drives people who use drugs away from these services out of fear of arrest or other punishment.

Homosexual conduct is a criminal offense in more than 80 countries, with penalties ranging from fines to incarceration to execution. Many countries also criminalize non-conforming gender expression or identity. Repressive laws targeting men who have sex with men, and transgender persons, and the absence of legal protections from discrimination, put them at high risk of brutal – and sometimes fatal- violence by police and private actors. Laws criminalizing same-sex acts also facilitate abusive police interference with HIV prevention efforts, sometimes shutting them down altogether. Police confiscate condoms and lubricants as evidence of homosexuality or sex crimes, and informational materials as "obscenity." Public safety", "vagrancy" or "solicitation" laws give police leeway to harass and control men who have sex with men and the places where they may gather, which may include HIV service centers. Most prosecutions for homosexual conduct are not for actual, observed sexual behavior, which is hard to detect, but for proxy behaviors or expressions believed to be "markers" of same-sex sex or "homosexuals."

Criminalized persons make easy targets for police extortion or those seeking to meet arrest quotas. They also make easy targets for extortion by civilians, as blackmailers believe that their victims will report the crime to the police. Criminalization makes it impossible for sex workers, men who have sex with men, transgender persons, and people who used drugs to reasonably expect assistance from police when they face violence or other abuse from clients, and even less so when the violence is from police.

2.4 Guiding Principles for Working with Key Populations

Activities must be consistent with the general principles of autonomy, beneficence, non-malevolence, and justice and the fundamental human rights of key populations must be respected, protected and fulfilled.

Working with key populations presents unique challenges given the criminalization of key populations, stigma, discrimination, and danger that are often experienced, plus the lack of community structures offering protection and safe social space. Ethical conduct and regard for the welfare of those involved in programmatic and M&E activities and those affected by their results are of utmost importance. M&E must provide useful information while ensuring that data collection and use does not result arrests and prosecutions, harassment and violence or worsen discrimination and stigma. Sex workers, men who have sex with men and transgender people are already socially vulnerable and often marginalized for their behaviors. Data collection efforts that bring attention to these populations may place them at additional risk.

Collecting data to estimate the size of key populations can be useful for more effective HIV programming. But it poses real risks of harm to them: information about conduct that is illegal or stigmatized may provoke a punitive response by law enforcement or other state agents, subject key populations to increased violence and discrimination by government and community members, and undermine the public health goals of the project. Consequently, there needs to be careful assessment prior to implementing activities with key populations, including programmatic mapping, whether the risks outweigh the benefits.

Guiding principles for working with key populations and specific guidelines include:

1. "**Nothing about us without us**" – key population members have the right to participate in decisions about their health and lives, and should be meaningfully engaged in all parts of the process, including the decision of when and whether to go forward with the research, as well as with project design, implementation, and evaluation. Their leadership, expertise and experience are critical to ensure that the project is relevant to their needs and priorities, and to evaluating its health, legal, and social risks.

2. The ethical principles of "**beneficence" – "do no harm**" – should guide this work.

   M&E must provide useful information while ensuring that data collection and use does not facilitate or exacerbate arrests and prosecutions, harassment and violence, worsen discrimination and stigma or otherwise cause harm to key populations.

3. All activities must be ensure that the **fundamental human rights of key populations must be respected,** protected and fulfilled.

4. There should be an evaluation of the human rights risks of activities and measures taken to address that risk.

5. There should be an assessment of the law and policy risk environment (criminal laws, policies and policing practices that affect the relevant population). Is conduct penalized by law? Are police compensated based on arrest quotas? Are their geographic areas, seasons, special events that are prone to police crackdowns? Is there a registration system that obliges or encourages health workers to report people suspected of criminal behavior to police? To what extent do criminalized persons know their rights under national law in the face of police stop and search, detention, etc.? Are their legal services available to advise and to protect them in case of abuse?

6. There should be **ethical review of data collection activities**. Protocols to collect data should be reviewed by a research ethics committee that is independent of the donor and in the country in which the protocol is implemented.

7. Safeguards must be put in place to ensure the **confidentiality of the data** collected. Interviewers must be trained to observe strict confidentiality. This is especially important if they are local community members. Data use agreements must specify who has access to the data. Maps of sites cannot be published.

8. Monitoring and accountability: There should be a system in place to monitor the research and for interviewees to report harmful incidents [harassment or violence] that occur in the context of the research. These incidents should trigger an immediate response, including legal or other relevant assistance to the interviewee, an investigation into the incident, and a consideration of whether the research should continue.

9. There must be a plan to **use the information** for the benefit of the key population (e.g., to improve the services to the relevant key population).

10. **Informed consent** must be obtained from all participants asked for information. Interviewers must disclose the purpose of the project, what will be done with the information collected and where it will be stored, an assurance that information at the individual level will not be shared, and the possible risks and benefits to the participant and the community; ensure that the decision to participate in the project is voluntary, that the interviewee understands the risks of participation (including the risk of breach of confidentiality), that s/he can refuse to participate or to answer questions, and has an opportunity to ask questions at the time of the interview and contact information for the person responsible for the research if s/he has questions later. Consent may be verbal under certain conditions, including the fact that providing written consent could bring harm to the person.

11. Informed consent procedures must be reviewed and approved by an **independent research ethics committee [IRB or ERC].**

12. People younger than age 18, prisoners, and people with mental disabilities have significant additional needs regarding protection. If the final protocol developed by the country includes any of these groups, appropriate additional safeguards must be taken. Consultation with institutional review boards

MEANINGFUL INVOLVEMENT

Key populations should be involved to ensure that the activity will actually work to their benefit. It means providing input on the proposal, the questionnaires and other instruments, including how they implement this. They also provide an important role accessing and engaging the key population community.

It is also important to avoid potentially negative reactions from the broader community, such as hostility from healthcare workers, government officials, religious leaders, police, or the media.
Leaders from different key populations need to help those implementing understand the context where the activity will take place and develop strategies to deal with any structural barriers. The implementers need to be creative, finding the appropriate balance between promoting, protecting, and fulfilling rights.

Adapted from: Respect, Protect, Fulfil: Best practices guidance in conducting HIV research with gay, bisexual, and other men who have sex with men (MSM) in rights-constrained environments, UNDP/AmFAR

and other groups that protect the human rights of persons should be consulted.

13. Data security and confidentiality: Implementers must ensure and maintain the confidentiality of data collected by conducting interviews in private spaces and anonymizing all personal or other identifying information and storing it in a secure place (locked file cabinet; encrypted files, if on computers) that is not accessible to others on the study team**.** Confidentiality must be maintained if a participant reports illegal behavior. Implementers should guard against the possibility that maps and other confidential information be obtained by law enforcement or other groups that could use them to locate members of key populations to harass, prosecute, or otherwise abuse them. Access to data and ownership of the data must be clarified in writing prior to data collection and appropriate safeguards put into place to protect all persons. All persons engaging in data collection, data analysis, data management or data storage should receive ethical training that includes discussion of specific strategies to protect the rights of participants and ensure that the data are not used for harm.

14. For activities funded by PEPFAR or other US-based donors, persons responsible for implementing research activities should complete the online CITI training in research ethics.

15. All people should be respected and treated as autonomous individuals who can and should freely make decisions regarding their participation in M&E activities such as surveys, interviews and group discussions. M&E activities should maximize the benefits and minimize any potential harm from these activities. Individuals involved in planning or implementing M&E activities have ethical and legal obligations to protect the privacy of their participants. They must clearly explain to participants how they will protect and use private information.

16. All persons engaging in data collection, data analysis, data management or data storage should receive ethical training that includes discussion of specific strategies to protect the rights of participants and ensure that the data are not used for harm. Some common procedures that ensure that these principles are achieved when conducting monitoring and outcome/impact evaluations and research include processes for obtaining informed consent before participation, safeguards to ensure confidentiality of information and review by an authorized institutional review board to assess protection of human subjects. Informed consent and human subject protections are measures to ensure that the rights, welfare, and wellbeing of human subjects involved in research are documented and protected. In some cases, M&E activities may require a formal protection of human subjects review when data collection activities are classified as human subject research by qualified institutions.

17. Specific issues that should be addressed in the submission of any protocol to an Institutional Review Board for a review regarding protection of human subjects include the following:

- People younger than age 18, prisoners, mentally handicapped and criminalized key populations have significant additional needs regarding protection. If the final protocol developed by the country includes any of these groups, the appropriate additional safeguards must be taken. Consultation with institutional review boards and other groups that protect the human rights of persons should be consulted.
- The amount of any compensation to participate must not be coercive
- Informed consent must be obtained from all participants. The informed consent form consists of two parts: the information sheet and the consent certificate. The informed consent process has certain items that must be covered including the purpose of activity, the possible risks and benefits to the participant and to the community, what exactly (interview) will happen to the participant, what will happen to the answers to the data, where the data will be stored, the an assurance that information at the individual level will not be shared, the name of the institutions that have approved the activity in the country, the name and phone number of the person responsible for the activity to call if

you have questions, how long participation will take, that participation is voluntary, what voluntary participation means, communication about the participant's right to stop at any time, the name and the organization of the interviewer, and the opportunity to ask questions. Examples of informed consent form at WHO http://www.who.int/rpc/research_ethics/informed_consent/en/

- Consent may be verbal under certain conditions, including the fact that providing written consent could bring harm to the person
- Language must be clear to the participant and the file must document translation
- Possible risks and benefits including the risk of breach of confidentiality must be fully explained
- Storage of data must ensure that nobody has access to data who is not on study team/ trained re confidentiality
- Confidentiality must be maintained if participant reports illegal behavior
- Interview setting must be conducive for private interview
- No interviews with people who are unable to give informed consent such as those under the influence of alcohol or drugs or mental incapacity
- Content of training for interviewers and data collectors must review principles behind the ethics of responsible human subject research and specific discussion of situations that might arise
- Documentation of how data will be stored and presented including how maps and data will be masked to preclude identification of individuals or specific places
- Proper procedures must be used to ensure the confidentiality and protection of private information in all programs, regardless of whether research is being conducted. These usually include conducting interviews in private spaces and storing private or individually identifiable information in a secure environment.
- Access to data and ownership of the data must be clarified in writing prior to data collection and appropriate safeguards put into place to protect all persons.

2.5 Response to Hostile Environments and Countries

Organizations implementing programmatic mapping will need to address the issue of preparing and responding to hostile reactions. This means developing emergency plans in settings where governments or other stakeholders (religious leaders, media, opposition political partners, community leaders, etc.) are known to be hostile to key populations. The protocol developed by the country must include a plan for responding to hostile situations.

PART III WRITING A PROPOSAL TO IMPLEMENT PROGRAMMATIC MAPPING TO INCREASE ACCESS TO SERVICES FOR KEY POPULATIONS

3.1 PROPOSAL OVERVIEW

These guidelines were initially developed for country teams to use during workshops organized by the Global Fund and UNAIDS. During the workshop, participants draft and present an initial proposal, and provide a copy of the proposal to the meeting facilitators. The proposal is later used in country dialogues and discussions with key populations. The proposals describe how programmatic mapping will be used to document gaps in services to key populations, provide information on where services are needed, and provide an estimate of the number of people needing the services. Eventually, the proposal may be included in a funding proposal to Global Fund or other donors.

The outline for the proposal is on the next page. During the workshop, participants focus on Context, Preparation, Methods, Ethics, Risk and Costing the Proposal. A fully developed protocol will include the schedule for data collection, data analysis plans, and a plan for outreach to the places identified during the programmatic mapping.

Criteria for assessing proposals to the Global Fund are found in Appendix 1.

SEQUENCE OF EVENTS

Here is the expected sequence of events leading up to and after a country team attends a workshop:

1. UNAIDS and Global Fund work with stakeholders to identify and issue invitations to workshop.
2. Invitees are requested to submit available size estimates and information on epidemiology of key populations to Global Fund and UNAIDS prior to workshop.
3. Three person country team attends workshop (program person, surveillance person, key populations representative).
4. Facilitators present the rationale, methods and issues that must be addressed in developing a country proposal.
5. Facilitators and workshop participants discuss key population engagement, human rights and data security issues.
6. Country team develops draft proposal for programmatic mapping during workshop and presents the proposal to the workshop attendees and facilitators.
7. Facilitators provide feedback during workshop and maintain email contact after the workshop.
8. After the workshop, participants discuss the workshop in their country with stakeholders including the Country Coordinating Mechanism (CCM) and determine whether to request funding from the Global Fund or other donors.
9. The funding proposal can be reviewed by facilitators if requested.
10. If funding is secured, additional support for planning and implementing the proposal may be available from facilitators or other consultants. Funding for external consultants should be secured within the proposal or otherwise from donors or government sources.

3.2

3.2 Proposal Outline

1. **Context and Rationale**
    - 1.1. Epidemiologic Evidence and Available Size Estimates
    - 1.2. Justification for Size Estimation Process
    - 1.3. Country Response for Key Populations
    - 1.4. Social Context
2. **Preparation**
    - 2.1. Community Engagement
    - 2.2. Readiness assessment
    - 2.3. Other Formative Work
3. **Key Protocol Decisions: Who , Where and What**
    - 3.1. Who: Populations covered.
    - 3.2. Where: Areas covered
    - 3.3. What: Services covered
4. **Ethical Considerations**
    - 4.1. Protocol review
    - 4.2. Informed Consent
    - 4.3. Data confidentiality
5. **Data Collection**
    - 5.1. Site identification
    - 5.2. Site visiting and mapping
    - 5.3. Validity Study for Adjustment of Estimates
    - 5.4. Team Structure, Informed Consent, Safety
6. **Data Analysis and Use**
    - 6.1. Analysis of Service Gaps
    - 6.2. Size Estimation
    - 6.3. Maps
7. **Risk**
8. **Technical Assistance Needs and Costing the Proposal**

3.3 How to use these guidelines

The following pages include instructions and sample text to help write a full proposal. The proposal outline is very ambitious for a country team to complete during a four day workshop.

For each part of the proposal, the guidelines include the following:

- **Summary:** Overview of the section.
- **Objectives:** Objectives for each sub-section.
- **Instructions:** Specific instructions are noted with an arrow. →
- **Explanations:** Text describing the objectives or instructions.
- **Examples:** Tables or text provided as an example for an instruction or worksheet.
- **Sample Text for Proposal:** Draft text is provided in shaded areas. If it is not useful, just delete it. Adapt the text to meet the needs of your group. **< options >** Text inside brackets gives options.
- **Next steps:** Add a section called next steps if necessary to the proposal.
- **Worksheets:** Documentation of decisions and data. Try to complete each worksheet. Highlighted with a red star.
- **Data Collection Forms:** Generic data collection forms are included in the appendix
- **Powerpoint template for proposal:** There is a Powerpoint template to use for presenting your proposal to the group. and can be modified.

PROPOSAL GUIDELINES

1. CONTEXT

1.1 **Epidemiologic Evidence** Of Extent of HIV Infection among Key Populations, Available Estimates of Key Population Size, and Geographic Distribution

1.2 **Justification for Size Estimation Process**

1.3 **Country Response**: National AIDS Control Program Key Population Strategy and Description of Programs actually in operation, including extent of engagement (if any) with key populations

1.4 **Social Context:** Legal Status, Stigma and Discrimination, Harassment, Violence and Important Laws and Policies that Affect Key Populations

Summary:

This section presents available evidence supporting a strengthened programmatic response for key populations including:

- HIV prevalence among key populations by area of the country
- Description of known sub-groups of each key population, and
- the size and HIV prevalence of sub-groups by geographic area.

The description of the epidemiologic evidence and size estimates should include a description of the methods used for the current estimates and a justification of the current and proposed size estimation approach. Next the country response to the HIV epidemic among key populations should be summarized including a summary of the strategy and a description of the largest programs. In addition, the social context of the HIV epidemic among key populations should be described including the legal and human rights environment and known barriers to programs. Finally, this information will be distilled into the key messages about whether programmatic mapping is needed, why it may be needed, and what outcomes are expected from programmatic mapping that will improve programs.

1.1 Epidemiologic Evidence Of Extent of HIV Infection among Key Populations, Available Estimates of Key Population Size, and Geographic Distribution

Objectives:

- To describe burden of infection among key populations nationally and by region or area and available estimates of the size of key populations by region and method used for size estimation.
- To describe prevalence of infection for each population and compare the prevalence with the prevalence among the general population.
- Based on the synthesis of epidemiologic information, to identify gaps in definitions of key populations, prevalence estimates and population size for each region in the country
- To prioritize gaps that need to be addressed.

Complete Worksheet 1. Availability of HIV Prevalence and Size Estimates by Region of the Country and Sub-Groups.

The worksheet may be copied into an excel spreadsheet. Use an excel spreadsheet for each key population.

Key populations are not a homogeneous group and prevalence estimates can vary significantly among sub-groups. Capture information about each sub-group separately if information is available (for example, street sex workers, brothel based sex workers, women who work in bars). Sub-groups may have different levels of risk and may require different approaches for service delivery.

If sub-groups are not well-defined, formative assessment may be needed to develop location-based sub-groups. See Section 2.4 Formative Assessment: Typology of Sub-Groups and Sites.

Based on the information in Worksheet 1, summarize the gaps in size estimates in **Worksheet 2** and indicate which gaps are the most important to address.

Complete Worksheet 2. Gaps in Definitions, HIV Prevalence and Size Estimates and Prioritization of Gaps.

Based on the information in Worksheet 1, summarize the gaps in size estimates in the Worksheet 2 and indicate which gaps are the most important to address.

Sample Text for Epidemiologic Rationale

<Country With data>: In <country > a disproportionate burden of disease is borne by sub populations <list of key populations>.

<Country Without data>: In our country, we have insufficient data to gauge the relative importance of key populations. In neighboring/regional countries, these key populations have disproportionately high HIV transmission rates.

< All countries can adapt text below >

We have insufficient data about the location, typology, behaviors, and HIV prevalence among key populations. These gaps are a critical weakness in our strategic information used to inform our programs. Discrimination and other abuse increases HIV risk for these communities, and limits their access to HIV services. Empowering them and ensuring their rights is critical to addressing HIV in their communities and in the larger population. Epidemiological modelling suggests that the needs of key populations must be met to achieve the goal of zero new infections. National programs that focus testing and treatment programs only on populations at lower risk may slow incidence but will not be able to halt it.

Communities of men who have sex with men, sex workers, transgender people and people who inject drugs bear a disproportionate burden of the HIV epidemic in most countries. However, owing to the stigmatizing nature of their behaviors and/or small populations relative to the rest of the population, these communities are often ignored in national plans or underreported. To reach zero new infections, it will be critical for the national program to engage and service these key communities.

1.2 Justification for Size Estimation Process and Methodology Choice

Objectives:

- To describe why size estimates from programmatic mapping would be useful
- To describe other size estimates that have been obtained and how an estimate from programmatic mapping would complement available size estimates

Worksheet 1 will identify gaps in size estimates List the reasons why additional estimates from mapping would be useful and complement the size estimates that are already available.

1.3 Country Response: Key Population Strategy in the Country and Programs

Objective:

- To describe the National AIDS Control Program strategy for serving key population including current program and service targets.

Complete Worksheet 3 Components of the Country Strategy and Country Targets

Describe current coverage of HIV prevention and treatment programs for key populations and extent to which community members are actively engaged in program:

- What services are currently available?
- Where?
- To what extent are key populations currently engaged?
- Who are the main providers of services to each population?

Sample Text: Rationale for Programmatic Mapping.

Programmatic mapping will serve key populations well. We expect the programmatic mapping activity to be a critical step in the implementation of a community-led and centered program. We expect that enhanced community engagement in the programmatic mapping activity will lead to improved prevention, care and treatment programming. Leadership from key populations in the design and delivery of programs should also lead to reduced stigma and discrimination among providers, increased efficiency from better targeting of programs, and consequently increased access to programs.

The programmatic mapping activity will provide the following maps and indicators of coverage for key populations (in each sub-national area) with these indicators:

- % of sites with condoms, lube, peer education, outreach testing, <other>
- % of sites where key populations report no available service nearby
- Maps of locations where programs currently provide services
- Estimates of persons reached by those services
- Locations where services should be extended
- Estimated number of each key population not reached with services
- Size estimates that may be used for both setting targets, denominators in coverage estimates and EPP/Spectrum modelling

Describe the social and program enabler interventions, if any that are being implemented (e.g. access-to-justice programs, community empowerment, etc).

Describe any gaps between the national strategic plan and current programming and how programmatic mapping can help identify where programs are needed.

Sample Text: National Strategy on Key Populations

The National HIV Strategic Plan addresses <does/ does not> address men who have sex with men, sex workers, people who inject drugs, transgender people, calling for the following programs with the following targets:

Key populations <were / were not> included in the development of the national strategy.

Sample Text: Current Programs and Gaps

We have limited programs for key populations. The largest programs we have include:

We have/don't have data on coverage for prevention and treatment programs for the following key populations:

However, we do not have formal data to support that these locations are well-situated or designed to meet the needs of the community.

Programmatic mapping can improve both the efficiency and effectiveness of our programs by engaging the affected population and understanding the barriers to successful HIV prevention and health promotion.Mapping the population and our programs targeted to the populations will permit us to assess the efficiency of our programs' reach. This activity will create an evidence base with which to direct prevention and treatment activities in a rational manner, ideally improving both efficiency and effectiveness.

Sample Text: Community Engagement

We < have/have not> actively engaged community members to understand and access key populations in the most efficient and effective manner. We have the following activities that currently include community engagement:

Steps will be taken to assure the safety, privacy, confidentiality, as well as to respect the dignity and respect of the community members as they participate in this activity. Their input is not only valued, it is viewed as an essential component of the project. The community will be consulted regarding the use and safeguarding of the data produced by the activity. All possible measures will be taken to keep the data confidential and secure, only to be used to improve public health programming. Any concerns from the community will be heeded and addressed.

Integrated community involvement in programmatic mapping will improve trust within the population which should lead to improved uptake of services. The interactions of community members with public health providers can also reduce stigma and discrimination in public health settings. While surveys can engage the community, this activity focuses on fully integrating community members, helping to increase access to needed services.

1.4 Social Context: Legal Status of Key Populations, Stigma, Harassment, Violence & Barriers

Objectives:

- To describe known general and specific barriers to obtaining services, including criminal law, policies, and policing practices stigma, legal and other barriers in the country as well as a description of enabling factors.

Complete Worksheet 4. Protective and Punitive Laws and Policies

Describe the law regarding sex work, sex between men, injecting drug use and sexual diversity.

- Is there a registration system for drug users, sex workers, men who have sex with men, and/or transgender persons maintained by health care providers and/or police?
- How does it work (e.g. are health care providers required to report people suspected of illegal behavior to police)?
- Are sex workers subject to mandatory testing (e.g., for HIV, HCV, STIs)?
- Are sex workers, drug users, men who have sex with men, transgender persons subject to arbitrary detention?
- Do they have access to legal services?
- Are their laws penalizing possession of drug paraphernalia?

If the group at the workshop does not have sufficient information at the workshop, include a brief description of plans to obtain the information in a Programmatic Mapping Readiness Assessment (See next section).

Describe your approach to working with key populations in light of these issues and the safeguards that must be in place and indicators to measure protections.

Sample Text: Country Context: Legal issues, stigma, harassment, violence.

The known effects of criminalization on key populations and service delivery include (provide the list):

Current strategies to create enabling legal environments and reduce harassment include (provide the list):

Overall, we do not have enough information on the effects of criminalization on key populations or the services required to mitigate harm. Therefore we support Legal Environment Assessment. See section on '*Assessment of Legal Environment'*.

In our country, the following laws and policies exist (provide the list):

Use table to indicate protective and punitive laws and policies.

2. Preparation For Programmatic Mapping and Size Estimation

2.1 Community Engagement
2.2 Readiness Assessment
2.3 Other Formative Work

Summary:

In this section, you will describe your strategy to engage key populations and stakeholders, describe the readiness of key populations, service delivery providers and the mapping team to implement the mapping and size estimation protocol and describe the formative research that is required to adequately develop the protocol.

2.1 Community Engagement

Objective:

- To describe your strategy to develop the proposal further with key population and stakeholders during and after the workshop including with service delivery providers.

Complete Worksheet 5. Stakeholder Engagement Plan for Programmatic Mapping

Members of key populations must be meaningfully involved. Describe activities to engage stakeholders and key populations. Describe whether there are key population groups or structures or networks and how they will be asked for input and engagement.

- How will key populations be meaningfully involved?
- How will the national program ensure that the activity is collaborative, ethical, acceptable, respected by key populations and that principles of community engagement and empowerment are central**?**

2.2 Readiness Assessment

Objective:

- To assess the appropriateness of programmatic mapping at the current time

Working with key populations presents unique challenges because of criminalization and on-going stigma and discrimination. While identifying HIV epidemics is vital for more effective HIV programming, it can be put key populations at risk– for example, if the information that is collected is used to harass or prosecute people. The unintended consequences of program planning and implementation can include heightened stigma and increases in human rights violations and violence. Careful consideration of the potential negative consequences and ways to address these is of the utmost importance in the design and implementation of any activity involving key populations. Data must be collected in a way that respects the confidentiality of individuals.

Because of the risks to key populations as well as the need to understand the organization of each population, key populations will be engaged in a Readiness Assessment to determine whether to implement programmatic mapping and if it is implemented to ensure engagement of key populations, appropriate terminology and appropriate typologies for key population sub-groups and sites where they congregate.

Further information and guidance can be found in: *Creating Enabling Environments: Conducting National Reviews and Multi-Sector Consultations on Legal and Policy Barriers to HIV Services, UNDP 2013.*

A protocol for a Readiness Assessment is included in Appendix 2.

The results from the Readiness Assessment will determine if programmatic mapping should proceed or not. The output of the readiness assessment is an informed strategy for using mapping and size estimation for program planning and meaningful engagement with key populations. Input will be sought from KP community groups and networks during the development of data collection guides that will be used to conduct the readiness assessment.

There are three components of the Readiness Assessment: the assessment of the readiness of key populations, the assessment of the readiness of service delivery providers, and an assessment of the readiness of the mapping and survey team.

2.2.1 Assessment of the Readiness of Key Populations

The objectives of the assessment with key populations are:

- To assess whether each key population is supportive of programmatic mapping and whether the communities endorse implementation of community mapping or not.
- To describe the advantages and disadvantages of programmatic mapping from the perspective of each key population. Are there some areas or regions where groups are ready and some that are not? Would it be more acceptable to minimize the focus on key populations and broaden the mapping?
- To assess the legal environment and work with key populations to assess whether the risks of programmatic mapping outweigh the benefits.
- To reach consensus with key population groups on whether programmatic mapping should proceed or not and if so, where it would be acceptable.

The mapping readiness assessment will obtain information from key populations on the following topics :

- Experiences with police and officials
- Fears about risk of mapping and participating in the survey
- Fears about lack of confidentiality if maps are printed
- Benefits of mapping
- Advice regarding how interviewers should access sites
- Current barriers to services
- Opinion on the quality of services
- Stigma and discrimination in health services
- Other issues regarding human rights and access to services
- Perceived need for peer educators
- Interest in drop in centers and mobile clinics for outreach testing
- Languages needed for interviews
- Acceptability and issues regarding the use of a unique identifier system
- Types of locations where key populations congregate
- Mobility of FSW and MSM
- How frequently they attend a venue and how many venues per night
- When are the peak hours at a site and how much does the number of people at a site change over the course of an evening
- Acceptability and concerns regarding venue-based HIV, CD4, and viral load testing; and whether the benefits of mapping outweigh the perceived risks or not.

2.2.2 Readiness of Service Delivery Providers

The objectives of the assessment with service delivery providers are:

- To assess the readiness of program providers to use the information to improve service delivery.
- To specify how the results will be used.

Programmatic mapping will provide information about where to provide services and where the greatest gaps in services are located. The information must be used to improve services. Consequently, before mapping is conducted, an assessment should be undertaken to determine the capacity to provide services when the findings are available.

The size estimates from programmatic mapping are preliminary based on the best estimates possible from an informed person at each site. The estimates should be confirmed/ updated by peer educators or other outreach workers when they visit the sites and enroll people into programs.

2.2.3 Readiness of Survey Team

After the survey teams have been identified and trained, the readiness of the team to conduct programmatic mapping should be assessed. In addition to obtaining ethical review of the protocols, there are specific actions that can be taken prior to the survey to maintain the safety of the team.

The objectives of the assessment with the survey team are:

- To assess whether the interviewers understand their responsibilities regarding confidentiality of the information they obtain
- To assess whether appropriate safeguards are in place for the interview team including the social mobilizers and that people understand what to do if problems occur, such as difficulties with the police.
- To identify what steps should be taken in advance to improve the environment for the survey, such as meetings with local leaders, police, and provision of phone numbers and protocols for emergency situations.

The output of the assessment will include a list of steps that will be taken to ensure the safety and preparedness of the survey team.

Sample Text

Readiness Assessment

Working with key populations whose behavior has been criminalized poses many challenges. Unforeseen consequences of well-intended efforts can be harmful. We will engage key population communities from the outset and maintain good communication to prevent problems. IF the community determines that programmatic mapping is not useful or would bring harm to the community, programmatic mapping will not be implemented. The following questions will address community readiness and risk assessment:

- How common are violence, discrimination and human rights violations against key populations?
- Have there been recent assessments of stigma or violence against key populations?
- How will the decisions be made about whether or not the risks to the key-populations outweigh the benefits of key-population specific programmatic mapping?
- Would mapping of a wider variety of risk venues carry less risk?
- What is the process for ethical review of the protocol Is there an established IRB that is appropriate? What assessment will be done to assess whether it is feasible to implement the protocol given issues regarding stigma, violence and discrimination against key populations?

Assessment of Barriers to Accessing Programs and Services

We will conduct an assessment to identify barriers to accessing services and inform planning. The assessment could address the following questions. < Add or modify questions based on what is relevant in your context.>

- What national laws, policies and practices restrict the rights of key populations and create barriers to accessing HIV services?
- What characterizes the relationship between key populations and the police?
- How do newspapers portray key populations?
- Are there national or local groups of key populations that advocate for key populations? Who are these groups and where are they located? Is HIV prevention one of their objectives?
- To what extent would program outreach to sites where key populations can be reached improve program access? Would outreach at non-traditional sites be acceptable to key populations?

Readiness Assessment for Service Delivery Providers

Prior to programmatic mapping, the capacity of current organizations to increase their delivery of services will be assessed. The assessment will include development of partnerships between community organizations, service delivery organizations, and the organizations that will lead the programmatic mapping activity. The goal is to be prepared to roll out and extend services to new areas identified by programmatic mapping.

2.3 Other Formative Work

Objective:

- To develop a typology of sub-groups of each key population
- To operationalize the definition of each sub group for programmatic mapping

Complete Worksheet 6. Typology of Key Populations and Sites

Programmatic mapping identifies where outreach programs can reach key populations. Most members of key populations can be reached at public places including the internet. Some can only be reached at private locations.

In each key population, there are important sub-groups that can be defined based on location. Developing a typology of key populations is critical for estimation of population size, outreach, and program monitoring. Population size will be estimated for each category.

A collaborative meeting among key population groups, service delivery providers, and the programmatic mapping team to develop a location-based typology of key populations is an excellent opportunity to work together and create ownership of the protocol and the findings. Ensure that key population communities lead the development of these categories.

Too many or too few categories can pose problems. The importance of an accurate well-informed typology for sites where key populations congregate cannot be over-estimated. The typology will be used in data collection forms and in planning outreach activities. If an important category of site is omitted, some people will be left out of service delivery.

Formative work should include an investigation of the characteristics of sub-groups of the key population that could not be reached at public sites (including the internet, which is public).

MSM often socialize at parties which can be quite large. Parties can be in private or public locations. Formative assessment should include an investigation about whether outreach to MSM at parties is a reasonable HIV prevention strategy or not. Should outreach testing be available at parties? Should condoms and lube be available? If the community wants prevention activities at parties, then a decision should be made regarding whether party sites should be included in programmatic mapping or not. Generally mapping is reserved for mapping public locations, however, mapping parties is possible if the community is supportive.

An example of a location-based typology is below. It is hierarchical. A person should be put into the first category that fits. Other categories can be developed during analysis, such as sex workers of a certain age (18-25).

Example of a Typologies of Key Populations by Type of Location:

Female Sex Workers	Men Who Have Sex with Men	People Who Inject Drugs	Transgender People
1 Bar-based 2 Street-based 3 Massage-parlor based 4 Internet based 5 Only Private	1 Sex worker 2 Public Venue Attender 3 Party Attender 4 Internet Attender 5 Only Private	1 Male Public Venue Attender 2 Female Public Venue Attender 3 Male: Only Private 4 Female: Only Private	1 Female Sex Worker at Public Venues 2 Female Public Venue Attender 3 Female: Only Private 4 Male: Only Private

Operationalizing who will be counted as a member of each key population should be aligned with the categories in the typology. The definition can be narrow or wide. An example of a narrow definition of a female bar-based sex worker is:

- Bar-based sex worker: A female age 18 or older who solicits clients for sex in exchange for money/cash at a bar, who has exchanged sex for money/cash in the past four weeks, and who self-identifies as a female sex worker when asked.

A narrow definition has the advantage that everyone who meets the definition is clearly a member of the key population and self-identifies as a member. A problem with a narrow definition of a sex worker is that the application of a narrow definition can be more stigmatizing and may not include people who are engaged in sex work who do not self-identify as sex work. In addition, this particular narrow definition is impossible for interviewers to use to count sex workers as a site without an extremely knowledgeable person to provide the information or surveys of the people at the venue.

One option is to use a broader category of a risk group that includes the key population. An example of a broader category is:

- Women at sites with sex work: Women age 18 and older who work or regularly visit sites where women exchange sex for cash

A problem with a broad definition is that is will include people who do not engage in sex work. A major advantage of a broad definition is that working in a bar is not a stigmatizing behavior. In some settings, almost all women who work in a bar engage in sex work and a worker-based definition will include people who engage in sex work but would not report the behavior. It also has the advantage that outreach programs can be designed as workplace or occupational health interventions.

The decisions about how to operationalize definitions should be made with the engagement of key populations, service delivery providers, and the program monitoring and evaluation team. If the size estimates are used as targets for program planning, the operational definitions for size estimates should match as closely as possible the definitions used for program monitoring.

3. KEY PROTOCOL DECISIONS: WHO, WHERE & WHAT

3.1. Who: Populations Covered
3.2. Where: Geographic Areas Covered
3.3. What: Services Covered

Summary of Section on Proposal Decisions

In this section you will summarize the key protocol decisions for programmatic mapping. These include which key populations are included, which geographic areas in the country are covered, and which services are assessed.

3.1 Populations Covered

Objective:

- To determine which key populations and sub-groups will be included.

The decisions regarding which key populations to include and the sub-groups will be finalized with relevant stakeholders after the workshop and based on the formative assessment.

Complete Worksheet 7.

Indicate in the worksheet the key populations the workshop country team has chosen to recommend at this initial stage. If possible, list the sub-groups and a rationale for including each group. In general, the recommendation is to include all key populations.

Sample Text: Populations Included in Mapping

The initial proposal is to implement programmatic mapping for the following key populations:

This decision is based on our current understanding of the needs by key populations, the lack of information about program coverage, the benefits to the key populations, the feasibility of implementation, the readiness of the areas where it will be implemented, and the enthusiastic support of key populations.

Based on the principles used to develop these proposals, a population cannot be ultimately included without key population support and leadership.

3.2 Geographic Areas Covered

Objective :

- To specify the areas where programmatic mapping will be implemented as well as the areas for which population size will be estimated.

In this section, you will determine where (which geographic areas) programmatic mapping should be implemented. Refer to Worksheet 2 where gaps in size estimates were identified by key population and geographic area.

There are 4 steps for selecting areas.

3.2.1 Select Option A, B, C

First, determine which option you will use for selecting areas. There are three main options for selecting areas (Option A, B or C). See table to the right. A key factor in selection the option is whether you need size estimates at the national level or not.

Complete Worksheet 8. Selection of Strategy for Selecting Geographic Areas.

3.2.2 Second, describe the geographic framework in your country.

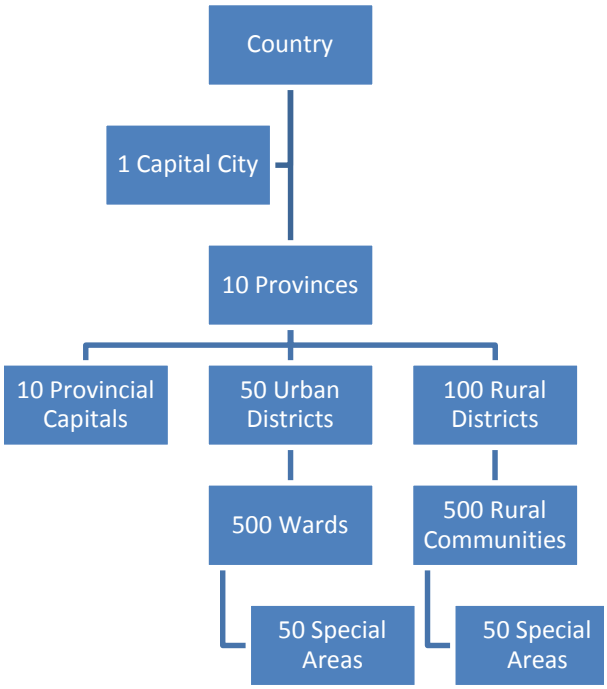
Use the figure on the next page as a guide. Every country is unique in its organization of administrative boundaries, there are often important "special areas" such as transportation hubs, border crossings, or other areas where there is a larger number of key populations. It is usually a good idea to identify these special areas in your geographic hierarchy. Indicate how many areas there are in each level.

Table 3.2 Options for Selecting Areas

Options	
A. Implement Programmatic Mapping in **every sub-national area**	Advantages • Provides national maps and size estimates that require minimal adjustment. • May uncover previously unknown or hidden areas that need services. Disadvantages • Most expensive option
B. Implement Programmatic Mapping in high priority areas	Advantage • Provides size estimates that require minimal adjustment for most important areas. Disadvantage • Does not provide national estimates unless one assumes that the most important areas include all members of the population
C. Implement Programmatic Mapping in selected area using a sampling method that allows size estimates for areas that were not sampled.	Advantage • Provides national size estimates • Provides maps for sampled areas. Areas can be stratified based on high, medium, low priority with high priority areas oversampled or included outright • May uncover previously unknown or hidden areas that need services • Most efficient approach in terms of focused mapping high priority areas and national size estimates Disadvantage • Size estimates require some assumptions and adjustment

Complete Worksheet 9 Geographic Framework.

The figure below shows one hierarchy. In this county, the capital city is a separate area. The rest of the country is divided into 10 provinces. Each province is comprised of a provincial capital and urban and rural districts. Urban districts are divided into wards. Rural districts are divided into communities.



3.3.3 Prioritize areas

Third, categorize each sub-national area and any special areas into high, medium or low priority. Indicate the criteria used to identify which areas are highest, medium or lowest priority.

Complete Worksheet 10 Criteria for Prioritizing Areas for Programmatic Mapping

. Here are some possible criteria for highest priority areas:

- Areas recommended by key population stakeholders and community members
- Areas with the greatest number of the key population
- Areas with highest prevalence among key population
- Areas where services could be provided
- Areas where demand for services and community mobilization is greatest
- Areas with the largest urban population

Engagement with key populations is essential. They will have recommendations on which areas should be mapped.

3.3.4 Finalize sampling decisions

Determine the number of sub-national and special areas that will be included in programmatic mapping. If you are using Option C, describe how many high priority, medium priority and low priority areas will be selected.

You may select the sample now or wait until funding is secured.

Summarize your decisions in Worksheet 11.

Sample Text: Selection of Geographic Areas

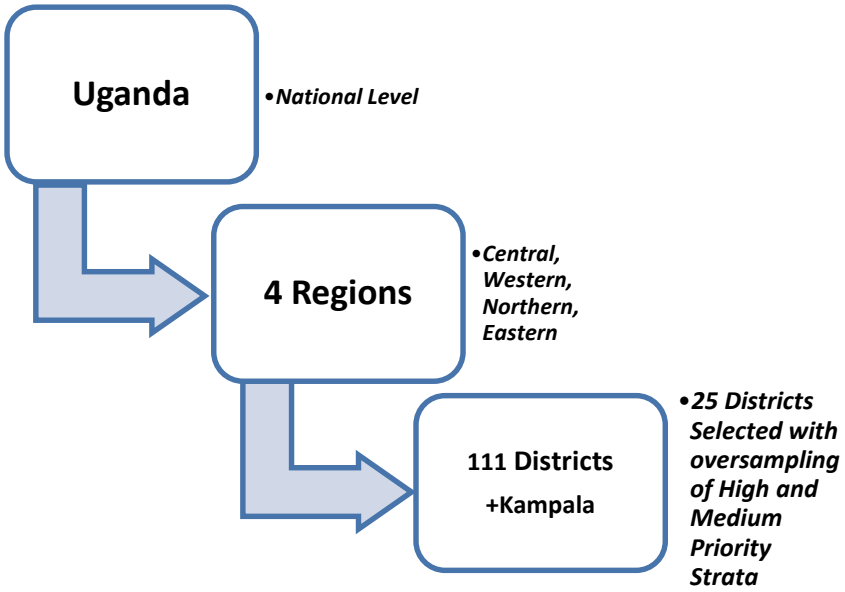
The country is organized into <Regions, provinces, districts>.

We propose to implement programmatic mapping for the following key populations <list> in the following areas of the country <list>.

The table below describes the key decisions in our selection of geographic areas and the rationale for each decision. This table is Worksheet 11.

	Question	Answer
1	Which key populations will be included?	List:
2	Which option will be used to select the areas where mapping will occur? A or B or C?	A All Areas B Only high priority areas C Sample of high, medium and low priority areas with oversampling of high priority areas
3	How will high, medium and low priority areas be defined? What are the criteria for high, medium and low priority areas?	Criteria for each:
5	Will mapping be implemented in the largest urban areas?	Yes or No IF no, why not:
6	Are any of the high priority areas "special areas" based on contextual or other risk factors?	IF YES: Type of special areas
7	Are rural areas included?	IF YES: Number of Rural areas included
8	Summary of the number of areas where mapping will be implemented	Number of High Priority Areas: Number of Medium Priority Areas: Number of Low Priority Areas:

Example from Uganda



The Uganda team selected Option C. They wanted to have a sample that allowed extrapolation to the entire country. They decided to sample at the district level. They developed a scoring criteria and scored each district. See the box for the criteria.

After each district was scored, a computer program (in STATA) was used to select 25 districts with oversampling of districts with the highest scores, but ensuring that all four regions were sampled and that a few of the lowest scoring districts were sampled.

Within each selected district, stakeholders identified high risk sub-areas. District teams conducted mapping in each sub-area.

Uganda Example of Scoring Criteria for Districts Uganda developed a scoring system for districts to receive a PLACE assessment. The scoring system was based on discussions with the National AIDS Committee and including the following 10 items, reflecting surveillance data, population size and contextual factors: Points were given based on the following:

- 1 point if district is on a major transport route with a long distance truck stop over (accommodation/bed and parking)
- 1 point if it is a Border district with major border crossing
- 1 point if district has a municipality or above (reflects larger population / urban center)
- 1 point if district has 2 or more fishing villages (fishing villages higher HIV prevalence)
- 1 point if district has mobile employment clusters evidenced by having at least one fishing village, mine, military camp, road construction, or major plantation
- 1 point if district has site with PMTCT data showing prevalence among 15-24 >=10%
- 1 point if there is low coverage for medical services generally based on discussions with MOH and there are few implementing partners for HIV
- 1 point if district has top 10% of HIV burden in region
- 1 point if 10% of mothers w HIV in the region live in district (from PMTCT data)
- 1 point if there is evidence of substantial increase in HIV prevalence based on discussions with MOH

Each district was scored and the districts were organized into 3 strata: districts with the highest score, with a moderate score, and districts with the lowest score. Within each high, medium and low stratum, a random sample of districts were selected, with oversampling from High and Medium Strata.

3.3 Services Covered

Objective:

- To describe the services that will be assessed during mapping.

This approach **does not** map all of the services that should be provided to key populations. Full mapping of health services is covered in other protocols.

The approach **does** map where key populations can be reached and asks key populations at these locations if they have accessed services and where they accessed services. The objective is to determine if services are available to key populations and identify geographic areas where services are not available.

Review the list of services for key populations that is recommended in your national strategy or that key populations want to receive. For each service, a member of a key population will be asked about their use of the service in the past 12 months.

The most common services assessed are

- Condoms
- Condom compatible lubricants
- Safe injecting equipment
- Sexually transmitted disease screening
- Sexually transmitted disease treatment
- HIV testing
- HIV treatment
- Legal services
- Risk reduction counseling

A more complete list of services is described in Part I of this document.

4. ETHICAL REVIEW.

4.1. Protocol review
4.2. Informed Consent
4.3. Data confidentiality

Summary

This workbook is not a full protocol. Finalizing the protocol, forms, field monitoring and quality assurance processes, development of training materials and ethical review of the protocol will occur after the workshop.

4.1 Protocol Review

The final protocol must meet ethical standards and assure that the questions and training materials are understandable and translated appropriately. The national HIV/AIDS committee will know the appropriate options for where to submit the protocol for ethical review.

The full protocol including all data collection forms and informed consent document should be submitted for ethical review.

See Annex 1 for draft forms and examples of informed consent documents.

4.2 Informed Consent

Informed consent is the process of explaining to a potential participant what they will be asked to do and what are the possible risks and benefits of participation. Possible participants must be assured that their participation is voluntary, that they can stop at any time, and that

Sample Text for Ethical Review of Protocol

In addition to meeting the in-country requirements of the implementing organization, the protocol will be reviewed by <an authorized Institutional Review Board in the country>. Additional review by other groups may be warranted if funders, stakeholders, community members or experts in human rights recommend additional review.

Final protocols must cover issues of translation of questionnaires, recruitment of social mobilizers and respondents, whether people will be compensated for participation, the schedule and organization of data collectors, data collection, storage, data entry, data use, data sharing, interviewer safety, supervision, and confidentiality.

Mapping locations where key populations can be reached carries a serious risk that maps and other data collected can be used to identify marginalized, criminalized persons, and subject them to violence, arrest, or other abuse.

The protocol must preclude the wrongful use of the maps by using strategies to safeguard access to digital data and to avoid producing maps that could be used to harm persons. All planned maps will be vetted with members of the community. Standard data use and confidentiality protocols should be included in the final protocol. These serve to ensure that personal identifiers, if collected, are stored securely and that there are clear protocols for who has access to any data.

the information they provide is confidential. The protocol does not require the person to provide personal identifying information or signature. An information sheet should be provided to the participant describing what is being requested, what the possible benefits and risks of participation are, the purpose of the interview, and what actions will be taken to maintain the confidentiality of the information provided. Also, the name and phone number of a senior responsible person should be provided in case the person has questions or concerns after the interview.

4.3 Data confidentiality

Spatial data and information from people at high risk venues are sensitive. Consequently procedures must be put in place to safeguard the information. Maps that are produced should not include information that could cause harm to key populations. Data sets should be stored securely and access to the data limited to those who are authorized to use the data. We do not recommend printing maps showing the locations of sex workers, men who have sex with men or transgender persons. We recommend maps that show where services are available and where services are needed without indicating which type of key population if any can be reached at the site.

5. Data Collection for Programmatic Mapping

5.1 Site identification
5.2 Site visiting and mapping
5.3 Validity Study for Adjustment of Estimates
5.4 Team Structure, Informed Consent, Safety

Summary

This section describes data collection. There are three phases of data collection (see figure below):

- Site Identification: Interviews with people to identify sites where people meet new sexual partners and where key populations congregate and can be reached.
- Site Visiting and Mapping: Collection of mapping coordinates at each site named and collection of information about the site from a member of a key population including use of services.
- Validity study: Collection of data from patrons and workers at sites to adjust size and coverage estimates.

Decisions made in earlier sections about the areas where mapping is conducted and the types of key populations included in the study and what services will be assess guide data collection.

This section assumes that formative assessment will be conducted before data collection and that key populations have agreed to programmatic mapping and are meaningfully involved. If not, then programmatic mapping should not be implemented.

The organization that is implementing mapping should have experience working with key populations and service providers. The organization could be the government, an NGO, or other group, and should have the support of key populations.

Prior to data collection, Interviewers are trained in interviewing techniques, confidentiality, human rights, ethics, storage of interview documents, how to request informed consent, and how to record responses. No identifying information is obtained from community informants. Verbal informed consent is obtained.

5.1 Overview of site identification

Objectives:

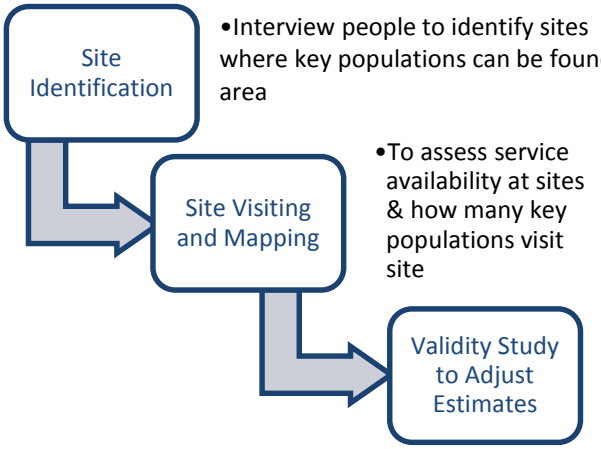
- To identify and engage stakeholders in community-led program improvement
- To systematically identify all public sites in the selected geographic areas where members of the key population can be reached with outreach programs. A public site is a physical venue, event, or website where members of the key population congregate and can be reached.

Steps in Site Identification

5.1.1 Finalize forms

There are four forms to collect data from community informants:

- Form A1 .Instructions to Interviewer
- Form A2 Fact Sheet for Respondent
- Form A3 Characteristics of Community Informant
- Form A4 Characteristics of Site and Event As Reported by Community Informant.



Community informants who agree to be interviewed are provided a fact sheet (Form A2) and asked to name sites where people meet new sexual partners and sites where people who inject drugs can be reached.

They are called community informants because they are knowledgeable about their local community. Community Informants can include members of the key population, taxi drivers, street vendors, bar workers, and anyone knowledgeable about where to reach key populations. In order to finalize form A3, a list of the types of community informants that will be targeted for interview should be developed.

Follow-up probes ask if the community informant can name sites for each key population. Each informant can name up to 10 sites. The informant is asked about each site that he or she names. Sites can include internet sites.

Key population communities will provide the appropriate language to use in asking the question. Interviews are conducted until no new sites are named. It is important that the list of sites is comprehensive and that it is systematically built.

Experience has shown that at least 50 unique sites are named within each zone.

For each site named by the informant, recording the following information on Form A4 is recommended:

- Date of interview
- Geographic codes of location of interview
- Interviewer Number
- Community Informant Sequential Number
- Name of site
- Type of site (according to local site typology)
- Location: physical street address, village/town
- Nearby landmark / how to get to site
- Busiest day of week
- Busiest time of day
- Type of key population at site (for each type in local typology): Y/N for each
- Best estimate of the number of people socializing at the site at a busy time

An important tasks is to finalize the types of sites that will be used to describe the sites on Form A4.

The 3 categories of sites are:

- Physical sites such as bars, clubs, restaurants, churches, streets, parks, beaches
- Events such as festivals, raves, parties, weddings, funerals
- Internet sites such as internet dating sites

Within each category, develop the list of types of sites that should be included. Try not to include more than 10-20 types of sites in total. Be sure to include the types of sites that were used to develop the categories of key populations.

Developing the typology of sites and of community informants can be done in formative work. See Section 2.3 of this guideline “Other Formative Work.”

Output: Final forms.

5.1.2 Divide each selected area into zones to facilitate the logistics of mapping.

Often the selected areas are large districts or cities. In order to plan the logistics of data collection, each area must be divided into zones. The data collection team supervisors divide each selected area into zones. If possible, zones should reflect catchment areas for clinics or political or administrative areas. A good target is for each zone to be comprised of about 50,000 inhabitants. Cities of more than a million

inhabitants will have many zones. To determine the number of zones, divide the population in the area by 50,000. Number each zone.

Output: A Map of zones in each selected area.

5.1.3 Identify the target number of community informants of each type that will be interviewed in each zone.

The overall number of community informant interviews recommended for site identification is approximately 75 per zone (area with a population of 50,000 inhabitants). For smaller areas, use the following guide:

- Areas with fewer than 20,000 total population: 30 Informants
- 21,000-49,000 population : 30-50 interviews

Targets for each type of community informant should be determined based on local information about the types of persons most knowledgeable.

Output: List of type of community informants and zone targets for each type.

Table of the Estimated Number of Interviewers Needed for Community Informant Interviews By Size of Area

Size of General Population in Selected Area	Number of Zones	Target Number of Community Informants To Interview (50 per zone)	Number of Interviewer/ Social Mobilizer Pair Days Needed Assuming: • 2 day Training, collation, other activities • A Pair is one interviewer and one social mobilizer • 2 Person pair does about 14 interviews per day	Recommendation	Expected Number of Unique Sites in Area
50,000	1	50	2 + 4= 6 days	1 team of 6 pairs working 1 day	50
250,000	5	250	2+ 18=20 days	2 teams of 5 pairs working 2 days	250
500,000	10	500	2+ 36=38 days	2 teams of 5 pairs working 4 days	500
1,000,000	20	1000	2+ 71=73 days	3 teams of 6 pairs working 4 days	1000

5.1.4 Prior to data collection, conduct interviewer training

Best practices should be followed including strategies to protect the safety of interviewers and respondents. (See section on interviewer safety later in guidelines).

Points to Cover in Training:

- Who is a community informant
- How to ask questions
- How to approach community informants and request informed consent
- Having a non-judgmental attitude
- Working together as a team
- How to ensure data quality
- Review each questionnaire item by item
- Role play interviews
- Interviewer safety
- Contingency planning

5.1.4 Field work logistics

Each survey team will have a Supervisor. For community informant interviews, the interviewer will be accompanied by a social mobilizer. A "social mobilizer" is a person from the key informant community who is knowledgeable about sites and can help identify community informants and later, during site visiting, identify the most appropriate respondent at the site. Interviewers conduct the interview and record responses.

There should be an assistant supervisor for every 4-6 interviewer/social mobilizer pairs.Field work for community informant interviews can be completed in a few days with an adequate number of interviewers and social mobilizers. Each interviewer is paired with a social mobilizer for community informant interviews. See Table below. It is reasonable to expect that the pair can conduct 14 interviews in a day. Each interview will take 15-20 minutes. The estimated number of days below includes two extra days for training, collation of results, and other activities. The table suggests the number of survey teams and the number of interviewer-social mobilizer pairs in each team. A team should completely cover a zone.

The expected number of sites is also shown in the table. This number is based on experience which shows that the number of sites reported is often roughly the same as the number of persons interviewed. Of course the actual number can be much higher or lower.

5.1.5 Collation of site identification forms into a list of unique sites, events and websites

After data collection, site identification forms are collated. A site may be named many times and have many Form A4s. A team may decide to enter each form separately into an excel spreadsheet or alternatively , entire one record per site. For example, if there are 20 reports for a site called Joe's Bar, the team could enter all 20 records into a spreadsheet (one row per record, so 20 rows in total for Joes Bar.) Alternatively, they could consolidate the information onto one form for Joe's bar taking the information that they consider most accurate from the 20 forms. In this case, the information entered into a spreadsheet[3] includes the number of informants who named Joe's bar. The spreadsheet serves as the list of sites and could serve as a sampling frame for bio-behavioral surveys.

Output: A list of sites in a spreadsheet database that includes limited information about the number of key populations that could be reached at each site and the number of informants reporting the place.

5.2 Overview of site visiting and mapping

Objective:

- To visit all or a sample of sites and obtain information about the site and key populations at the site
- To map sites and characterize them in a way that will be used to improve service delivery
- To identify gaps in program outreach and coverage
- To obtain information necessary to estimate size of key populations

Site visiting and mapping is also called site verification. The location and characteristics of the site as reported by the community informant are verified during a site visit.

At each site, one person will be interviewed. This person is called a Site Informant. There are three forms to collect data from Site Informants:

- Form B1 Instructions to Interviewer and Social Mobliizer
- Form B2 Fact Sheet for Site Informant
- Form B3 Site Verification Form

There are 5 steps in site verification. These are described below.

5.2.1 Determine whether all sites can be visited and mapped and if not, develop a strategy for selecting which sites to visit and map.

All of the sites named by community informants are listed in the excel spreadsheet of the list of unique sites, events and websites (See 5.1.7). We recommend visiting ALL of the sites on the list. However, sometimes funds are not available to visit all of the sites that are named or there is not enough time to visit all of the sites. A map will be incomplete if not all of the sites are visited.

If not all sites can be mapped, some type of prioritization may be required for selecting which sites to visit and map in a selected area. Using a probability method to select sites has the advantage that the results from the sample can be generalized to the entire list of sites if proper sampling weights are applied.

There are 3 options for sampling sites to map from the list of all sites named in a selected area:

Options for Selecting Sites to Map within Selected Areas:

- A Map All Sites named by Community Informants (1st choice)
- B Map Only high priority sites (3rd Choice)
- C Map All High Priority Sites and a sample of medium and low priority sites.(2nd Choice)

Below are some possible criteria for highest priority sites. Note that all of the information was collected from community informants during Site Identification.

- Sites where sex work is reported
- Sites where people who inject drugs can be reached
- Sites with men who have sex with men
- Sites with transgender people
- All sites of a certain type (for example street sites)
- Sites most frequently reported by community informants.

There are several reasons why mapping should not be restricted to high priority sites such as sites with sex workers or MSM. Restricting mapping to sites with reported key populations may add to the stigma of mapping and may miss important sites where key populations could be reached but are not as visible.

A map of sites that only includes sites with key populations could lead to problems for the sites and for the key populations at the sites.

Mapping a sample of medium and lower priority sites can validate whether the categorization of a site as a high, medium or low priority site was accurate or not and reduce the stigma associated with mapping. It can also validate whether key populations visit sites not initially identified as having key populations. In addition, there is not a great additional cost for mapping additional sites in an area.

Recommendation: If not all sites can be visited: Visit all sites that are reported to have few, some or many members of a key population. In addition, visit a random 10% of remaining sites. The 10% can be randomly selected in each zone.

Output: List of sites, events and websites that will be mapped and visited in each zone.

5.2.2 Finalize the site verification form (Form B3).

During the workshop you should determine whether the information listed below is adequate or if other information is needed.

Recommended Information For Interviewer to Obtain Via Observation:

- Name of site
- Type of site (Note that the typology of sites was developed during Preparation)
- Physical address
- Whether condoms, lube visible or not
- Outcome of site visit (Select 1): Site Found and Interviews Conducted, Site Not Found, Duplicate Site, Site Closed, Site Found but Informant Refused to Participate, Other Reason (Specify)

Recommended Information For Interviewer to Obtain from Site Informant:

- Type of informant interviewed at site
- Type of key populations at site
- Number of each type of key population at site at a busy time
- Number of female workers at the site at a busy time
- Number of male and female patrons at the site at a busy time
- Busiest times at the site during week
- Prevention activities at site: (condom distribution, outreach testing, peer education) Current, Not Now But in Past 12 months, Never

If informant is a member of a key population also ask:

- How often do you come here?
- Do you work here?
- What services did you receive in the past month (yes or no): Condoms, treatment for STI, HIV testing, lube, HIV treatment
- Opinion how accessible each health services are for respondent: Condoms, treatment for STI, HIV testing, lube, HIV treatment (very accessible / moderately accessible, not accessible / not needed)

Note that this proposal does not include mapping locations where key populations obtain services. We will ask people at sites if they have accessed services and where they have accessed services. Gaps in services can be determined from this information. It is very useful to fully map the services that are in the areas that are included in mapping, but comprehensive mapping of services is not part of this proposal. Service delivery mapping is covered in other protocols.

The information that requires careful review is the information about which services should be assessed for availability. Review the nationally agreed upon package of services for key populations and reach consensus on which services will be included in the programmatic mapping assessment. Prior to implementation of the protocol, meet with stakeholders, in each Selected Geographic Area, to determine whether each service is provided in the area or not. During interviews with key populations at site visits, key population members will be asked

about which services they have used in the past months, where they received the service, and their opinion of the accessibility of the service. If the respondent is age 24 or younger, the person will be asked it the site was youth friendly.

5.2.3 Finalize the FACT SHEET and any other informed consent documents (Form B2).

The FACT SHEET should review:

- the information that will be asked,
- the risks and benefits of participating
- what will be done with the data
- how the data will be safeguarded
- who to ask if respondent has questions
- assurance that participation is voluntary and can be stopped at any time

See also Section 7: Risk

Output: Final FACT sheet and consent forms.

5.2.4 Prior to data collection, conduct training.

Points to cover in training:

- Every selected site should be visited. The outcome of the visit must be recorded even if the site was not found or a duplicate site.
- The most important decision is who to interview at a site as a Site Respondent. Social mobilizers should identify the most knowledgeable person at the site who can give accurate information about who visits the site and how many people visit the site. The person should know the characteristics of the site in terms of outreach at the site, and must be trusted by key populations at the site.
- Interviewers must be accompanied by "social mobilizers."
- The most appropriate Site Respondent is the person who is
- We recommend that the Site Respondent be a member of a key population.
- Only those who consent are interviewed.
- Some information obtained for each site is obtained by the interviewer.
- The interviews at a site should be brief. The survey is limited to only the most important questions.
- Site Respondents who are members of a key population will be asked additional questions.
- There is no incentive payment or reimbursement for participation.
- An interviewer and social mobilizer travel in pairs to each site. The interviewer records the responses.

Instructions to the interviewer and social mobilizer should include the following:

- Be sure to carry all necessary materials to the site including questionnaires, identity cards, letters of introduction, information on what to do if problems arise, list of phone numbers to call for resolving problems, and contingency planning.
- How to identify the most appropriate site informant, introduce oneself, describe the project, and request informed consent.
- Provision of fact sheet and request for verbal informed consent.
- How to approach another person if first respondent refuses.
- How to answer each question and why the question is important.

Output: Final Form B1: Instructions for Interviewers and Social Mobilizers. See Example in Appendix 2.

5.2.4 Finalize the FACT SHEET and any other informed consent documents (Form B2).

The FACT SHEET should review:

- the information that will be asked,
- the risks and benefits of participating
- what will be done with the data

- how the data will be safeguarded
- who to ask if respondent has questions
- assurance that participation is voluntary and can be stopped at any time

See also Section 7: Risk

Output: Final FACT sheet and consent forms.

5.3 Validity Study for Adjusting Size Estimates

Objective:

- **To collect additional information from a more representative sample of people at sites in order to refine size estimates**

The size estimates based on the reported number of key populations at a site may be biased if the estimates provided by the person interviewed at the site are incorrect. There are several reasons why the Site Informant's estimate may be in error:

- Many people have trouble estimating any number
- Some people will remember the people who come every day but underestimate the number who visit occasionally
- Key population members may may hide their behaviors
- The Site Informant may not work at the busiest times or may not work when key populations are present

Usually the estimates based on the reports from a knowledgeable site informant are sufficient for initial program planning. As peer education programs and outreach get underway, the initial estimates can be refined as key population members are enrolled into programs.

We recommend refining the estimates by conducting a validation study as part of data collection. In the validation study a sample of sites is selected and visited during a busy time. A representative sample of people at the site is interviewed about their site visiting behavior and access to services. In addition, the number of people at the site at a busy time is counted and compared with the number reported during the site visit.

This workbook does not contain complete information for the validity study. Please contact the workshop facilitators or Sharon Weir directly for additional information.

5.3.1 Finalize forms for the Validity Study

There are 3 forms for the validity study:

- Form C1 Instructions to Interviewers
- Form C2 Informed Consent
- Form C3 Questionnaire for Patrons and Workers

The information obtained during the validity study from Form C3 will provide the following:

- The percentage of female workers and patrons who report sex work
- The percentage of male patrons who report sex work
- The percentage of male patrons who report having sex with a man in the past 12 months
- The percentage of men and women who report injecting drugs
- Access to services among each key population
- How many sites are visited by the respondent on a busy day/night
- Number of years in sex work

This information will be used to adjust the initial size estimates regarding:

- overestimation due to people visiting more than one site per night
- underestimation due to assuming that some sites did not include sex workers or MSM or PWID when these persons were at the site
- underestimation due to less than one year turnover among a percentage of sex workers
- overestimation due to mobility across cities.

5.3.2 Select the sites where the validity study will be implemented.

The target number of sites where the validity study should be conducted as well as how many people should be interviewed per site will depend on several factors including cost, the importance of getting accurate estimates in a country, and the availability of strong interviewing teams. A more complete description of the methods for the validity study can be obtained from the PLACE manual.

A general recommendation is to interview:

- 800 female patrons
- 800 male patrons
- 400 female workers

The interviews with the patrons and workers will provide a more valid estimate of the proportion of patrons and workers who exchange sex for money.

The validity study should be implemented in 2-3 selected areas and include interviews with patrons and workers in 75-100 sites. The sites should be a random sample of the site selected for mapping and site verification. The number of persons interviewed at each site should be proportional to the number of patrons and workers at the site.

5.3.3 Conduct training

Experienced interviewer should be used. In this phase, people will be interviewed while they are socializing or working at sites. Interviews with workers should ideally occur at a time when they are not busy, usually earlier in the day or evening.

Interviews with male and female patrons should occur when the site is busy.

Additional information on the validity study can be obtained from the workshop facilitators or from Sharon Weir directly. Please email Sharon Weir at sharon_weir@unc.edu

5.3.4 Selection of individuals to interview at selected sites

The number of people to interview at a site will depend on the number of people at the site at a busy time. At large sites, more people will be interviewed. We have provided target numbers of patrons and workers to interview in large, medium and small sites in the budget example.

A random sample of male and female patrons and female workers should be interviewed at the selected sites. Several strategies have been used to select patrons and workers randomly:

- Estimate how many people will enter the site over a period of time and use a skip pattern (every 2nd or 3rd person for example) to identify respondents
- Draw a large X across the site and interview persons along each diagonal.
- Number chairs or tables in the room and randomly select numbers associated with the chairs or tables. Interview the people sitting in the chairs or tables that were selected.

5.4.5 Face to face or computer assisted interviewing formats

The questionnaires are very easy to administer and readily adapt to either a paper-based interviewing system or a tablet or phone based system .

Sample Text for Data Collection:

Site identification

In each area selected for inclusion in the study, we propose to interview community informants using an approved protocol and obtain a list of sites where people meet new sexual partners and where people who inject drugs can be reached. We expect to interview approximately 50 informants per 50,000 population. We will continue the interviews until no new sites are named. For each site named we will obtain limited information from the respondent regarding its name, location, its type, and what key populations could be reached at the site. We will limit each respondent to naming no more than 10 sites. Sites can include internet sites, physical locations including streets and event such as festivals.

Site Visiting and Mapping

We propose to visit and map all sites named as places where key populations can be reached and a random 10% sample of the remaining sites. During the site visit, a site informant who is a member of a key population at the site is asked about the characteristics of the site and how many key population members come to the site. Ideally, the respondent is a member of a key population and visits the site regularly either as a worker or a patron. The objective is to validate the information collected from the general community informants who identified the site.

Interviewers will verify the location of the site, describe the type of site, and get more specific information on the size of the key population that is there.

Sites not found are dropped from the initial site list, while new sites identified or informed by site-based key informants are added to the list. Information about the number of key populations at each site is used to estimate the size of the key population.

Each interviewer who visits the site is accompanied by a "social mobilizer" who is a member of the key population for whom the site was listed. If the site is named as a site for sex workers, then the social mobilizer should be a sex worker. Private locations such as households are not visited and not recorded even if they are named. For sites that are visited that were not associated with a key population, it is useful to include a social mobilizer who is a sex worker.

Interviewers must request and obtain informed consent from all participants.

At each selected site, we will interview one or more members of a key population who regularly visit the site. The respondent must consent to the interview using an informed consent process that has been approved. Information about the site will be recorded using a standard form based on observations from the interviewer and respondent answers. Information will include the type of site, its location, and availability of services onsite. In addition we will obtain information from the respondent about his or her access to services.

5.4 Team Structure, Informed Consent, Safety

Objective:

- To organize field work so that the work is implemented according to protocol and to ensure the safety of the interviewing teams and all participants

5.4.1 Team Structure

There is usually a national steering committee, a national programmatic team and a local programmatic mapping team in each selected area.

The national team is comprised of:

- In Country Manager
- Mapping Specialist
- Budget and Administrative person
- Data Manager

The local team is comprised of:

- Local Field Supervisor
- Assistant Supervisor
- Interviewers
- Social Mobilizers (members of key population communities who know the dynamics of the population and where to reach the key populations)
- Data Entry personnel

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5.4.2 Ensuring Safety

Steps must be taken to ensure the safety of the researchers. See the box on the next page. Decisions arising from a safety incident in the field will be made by working group and the coordinator within 24 hours. It will be mandatory for the field teams to have the following items with them when in the field:

- Contact information of the coordinator
- Incident report forms
- Flashlights
- Discretionary money (cab, coffee, etc…)

To our knowledge, in all of the places where mapping has been implemented, no community or its individual members has been harmed. We are, however, aware of appreciable benefits to communities that now have improved access to quality services as signified by higher uptake of those services

.

This following guidance on the Safety of Field Teams was adapted from University Of Manitoba Canada Field Work Protocol:

1. A “safety agreement” will be signed by each member of the field team.
2. A session on security measures will be included in the training program, where global experiences and lessons learned will be shared and discussed.
3. Field team members will be provided security IDs prepared by < >. Each team member will be required to carry the IDs any time they are in the field.
4. Contact will be made with local community police office by the coordinator to inform them about the research and garner support whenever required.Cell phones used for fieldwork will be programmed for quick dial to local police line. Alternative contacts will be provided in areas where police are generally unresponsive.
5. Field team members will never be allowed to work alone, and will always move in pairs. Local community members will accompany field staff.
6. Field teams will be trained on how to look for security hazards in the field. e.g, a geographic scan (walking) of the area to be mapped will be done, to identify areas as potentially dangerous. These could be locations that are isolated, poorly lit; lacking public facilities (ie public phones, convenience stores, etc…), thought of as being dangerous by the community. Upon completion of geographic scan, team members will identify areas that are deemed as potentially unsafe for field work and will take special precautions when approaching these places or individuals in these areas.
7. In the course of field work, if the staff has any safety concerns at a given location or from the respondent, s/he will be justified to leaving the interview/place immediately. If this step is taken, the coordinator must be contacted, who will decide on the next steps.
8. Constant contact will be maintained between field team and coordinator while the team is in the field. This requires phone contact or text message every 30 minutes to provide exact location, and an ongoing assessment of safety.
9. Safety will form a regular item for de-briefing every day. The team will convene every day to discuss any untoward situations or security threats faced by any of the team member in the field or to which they have exposed the subjects and discuss measures to control such situations.
10. All safety issues/concerns will be documented using an incident reporting form. All incident reports will be retained by the coordinator for the duration of mapping.

6. Data Analysis and Data Use

6.1 Data Use: Analysis of Service Gaps
6.2 Size Estimation
6.3 Maps: Data Confidentiality and Use

Overview of Data Analysis and Use

This section includes sample text that can be used in the proposal. The section should be adapted based on the decisions made regarding the areas selected and key populations and services selected.

6.1 Data Use: Analysis of Service Gaps

Objectives:

- To identify gaps in coverage of services so that these gaps can be addressed.
- Specifically, to determine:

1. The percentage of sites with each on-site service available at the time of the visit, for example, the percentage of sites with condoms available, peer education available, outreach testing available, lube distribution.
2. The percentage of sites with a package of services available
3. The percentage of key populations who report that each service is accessible
4. The percentage of zones that contain the full package of services
5. The location of hidden sub-groups not yet receiving services
6. Overlap between sub-groups such as the sex workers who inject drugs
7. Unmet demand for services
8. Structural issues that should be addressed so that services can be provided

The approach is to identify where key populations can be reached. Key populations at sites are asked where they receive services. Also the availability of services at the site is assessed

Validation with Key Population Leadership

Validation of research findings with the leadership of key populations is an important component of these kind of studies. The validation process is made much simpler if key population voices have been heard at all stages of the research, including members of the community presenting results to their peers. These representatives should also be prepared to respond to and defend research results and, because increased visibility can bring increased risks, potentially organize key population communities to respond to any backlash from the media, government, or communities in general.

From: Respect, Protect, Fulfil: Best practices guidance in conducting HIV research with gay, bisexual, and other men who have sex with men (MSM) in rights-constrained environments, UNDP

Each country will determine the package of services and interventions that should be available in each area. Data from the mapping activity will be used to assess availability of services for each service that is included in the survey of key populations. During the preparation phase, the list of services should be determined.

6.2 Size Estimation

Steps in Size Estimation

1. Review data to confirm completeness of site lists and adequacy of estimates of the number of key population members at each site. Check the quality of the data by comparing the number of sites named and the number of times each was named with the number of reports naming a site from community informants. Check that there are sites named in every zone included in the mapping activity. Confirm that targets for type and number of community informants were reached. Confirm that the interviewers visited sites with social mobilizers. Review the list of sites that were not located and re-visit a random sample to confirm that the sites do not exist.
2. At each site, informants were asked to estimate the number of each key population at the site at a busy time. Sum up the number of key populations in each stratum of sites if there was any sampling across strata. See Table below. Make a table showing the number of high, medium and low priority sites and the sum of each key population for each stratum (high medium low). Indicate the sampling probability for each stratum (for example 100% of high, 50% of medium and 10% of low priority sites.)
3. Use the sampling probabilities to estimate the total number of key population in each sampling stratum in the area. See Table below.
4. Adjust the initial Area Estimate based on information about frequency of visiting sites and frequency of visiting more than one site in a day.

Example of Size Estimation Calculation for MSM in an Area

Example	Probability of Selection	Number of MSM Counted at Sites: Sum from all Sites in Area	Adjusting for Sampling Probability in Area
High Priority Sites	100%	600	600
Medium Priority Sites	50%	100	200
Low Priority Sites	10%	20	200
Total in Area			1000

The basic formula below for adjusting the initial area estimates was provided by the University of Manitoba. The example shows how it was used to adjust the number of female sex workers is:

- $E_i = s_i(1-p_i)+ (s_i*p_i/m_i)$
- E_i = the adjusted estimated number of the key population in an Area
- S_i = Initial estimate for area (summed up over all zones in area taking into account sampling probability)
- P_i = Proportion of population in area who visit two or more sites in an evening
- M_i = Mean number of places visited

The formula adjusts for information from the Site Informant about the number of sites visited on a busy day.

For example, if the initial estimate is 10,000 but 10% visit other sites, and the mean number of places the 10% visit is 2 then the estimate is

10,000 (1-.1) + (10,000 * .10/2)
= 9000+ 10,000 * 0.05
= 9000 + 500
=9500

The formula is reasonable because it counts all of who are only at one place and for the ones who go to more places, the percentage of that group is reduced because the people might have counted at more than one place.

The results are an Adjusted Area Estimates that do not take into account the findings from a validity study.

5. Adjust estimates further based on information from the validity study.

The validity study will increase the size of the key populations by identifying additional sites where key populations can be found. The validity study asks people at the sites about their behavior and almost always uncovers additional sites not identified by community informants as sites where key populations can be reached. The size estimate often increases by 10-20%.

The validity study can also be used to assess mobility and the number of sites visited by key populations on a busy night.

6. Use the area estimates to develop national estimates.

National estimates are developed by extrapolation of data. One approach is to estimate the percentage of the male and female population who is a member of a key population in the areas where the mapping and size estimation activity was done. Apply the percentage estimated in one area to the areas that are similar.

For example, if the adjusted estimate of female sex workers in an area is 9500 and this represents 2% of the female population age 18-49 in the area, then use the estimate of 2% of the female population age 18-49 to estimate the number of female sex workers in similar areas. See Table Below. If 30 or more areas were selected using a probability sampling strategy, then the sampling probabilities can be used to estimate the weights that should be applied to the area specific estimates to get a national estimate.

There are other strategies for extrapolation. These are not covered in this workbook. Contact the facilitators for additional information on extrapolation.

7. Meet with stakeholders to review the estimates and ensure that the size estimates are reasonable and acceptable to the stakeholders.
8. The size estimates can be used as the denominator in coverage estimates. If the randomly selected members of the key population were asked questions about access to testing and other prevention initiatives, additional analysis of their responses would be useful

Extrapolation Example						
	Mapping and Size Estimation Conducted?	IF YES: What is adjusted size estimate taking into account site sampling probability, mobility, and frequency of site visiting? And What % is that of the female or male adult population?		IF NO: What area is most appropriate comparison area that has an estimate?	What is estimated number in areas without mapping based on % from similar area that was mapped?	Estimated number per area and in Country
		Initial Adjusted Estimate	% of Female (or Male) Population			
Area 1	Yes	9500	2%			9500
Area 2	Yes	12,000	1.8%			12000
Area 3	Yes	5000	1.5%			5000
Area 3	No			Area 1	2%: 5,000	5000
Area 4	No			Area 3	1.5%: 3000	3000
Area 5	No			Area 2	1.8%: 6000	6000
Area 6	No			Area 1	2%: 4,500	4500
Area 7	No			Area 2	1.8%: 4,000	4000
Entire Country						49,000

6.3 Maps: Data confidentiality and use

Data are used for program planning including target setting, coverage monitoring, budgeting. For example, information on the size of key populations can inform targets for programs, coverage maps can show areas where services are not provided, the distribution of the type of sub-groups can indicate changes that should be made in program delivery. In Nigeria, programmatic mapping showed that in one area, home-based sex work was dominant whereas in other areas bar-based sex work was more common. Outreach strategies were adapted to reach the different types of sex worker environments.

The programmatic mapping activity will provide the following maps and indicators of coverage for key populations (in each sub-national area) with these indicators:

- % of sites with condoms, lube, peer education, outreach testing, <other>
- % of sites where key populations report no available service nearby
- Maps of locations where programs currently provide services
- Maps of locations where services should be provided
- Estimates of persons reached by those services
- Locations where services should be extended
- Estimated number of each key population not reached with services
- Size estimates that may be used for both setting targets, denominators in coverage estimates and EPP/Spectrum modelling

Maps showing the locations where key populations congregate will be shared only with groups identified in the data use agreements developed during the preparation phase. Maps will be used to improve services available for key populations.

There should not be a long lag between mapping of sites where key populations can be reached and delivery of services to those sites. Among the outputs of the activity that should spark immediate action are the following:

1. List of sites with key populations (name, location, address, map) in each area and whether services are available at the site or nearby
2. List of other sites where people meet new sexual partners (if PLACE approach is taken)
3. List of services used by key populations and location of these services
4. Data for size estimation

Data use agreements and data storage policies should be defined during the process of protocol development. Topics to cover in data use agreements include:

- Where are the data stored
- How is confidentiality assured
- Who has access to the data
- What happens to questionnaires after data are entered
- Who has access to the names of sites that are mapped
- Who has access to the type of key populations at each site
- Does the process of informed consent provide sufficient information on data storage and use
- What is the process for updating the information
- What safeguards are put in place so that the data cannot harm anyone?

7. RISK

Summary

This section provides an overview of the principles that should be adopted to ensure that no harm comes to the key populations. Other elements of reducing harm are included in sections describing safety of interviewing teams and participants, and ensuring adequate ethical review of the protocol and appropriate strategies for obtaining informed consent.

Following principles must be followed to ensure that "no harm" is caused to the key populations:

- Community leadership and involvement: It is not appropriate to implement this protocol adequately without the explicit and active involvement of the local population representatives, beginning with the initial discussions, through formative, qualitative work and any mapping and survey elements used. In effect, the community is given the power to make decisions on how this project is implemented. Service providing organizations and community representatives MUST agree that there is a need for this study, and that the social environment is conducive for implementation with their active involvement. If community members, or other stakeholders at any stage felt that confidentiality could not be maintained or that the risks outweighed the benefits, the specific elements causing issues would not be implemented. The key population community has the power to evaluate the costs and benefits to them, and make decisions on how and whether this project is implemented. If they do not support it, it should not be done.
- Informed consent and voluntary participation: Recruitment of participants will be conducted only after describing the study procedures and obtaining informed consent. During the process of obtaining informed consent, participants will be clearly informed that participation is voluntary and that non-participation would have no negative consequences in terms of access to programs or services. Informed verbal consent will be obtained prior to entry into the survey, both with initial community informants and during site visits. This will be done through a standard consent form at the beginning of each questionnaire that will be read out to the participant by the interviewer. The interviewer subsequently signs the appropriate place on the questionnaire to indicate that consent was obtained before proceeding with data collection.
- Safety of the key population: Optimum effort will be taken to maintain the safety of respondents before, during and after data collection. It is acknowledged that completing an interview comprising potentially sensitive questions in a public place could cause discomfort or even put respondents at risk. The team will be trained to ensure that interviews are undertaken in a private place (an 'incidental' budget is incorporated to facilitate interviews at coffee shops, bars, etc.), and that the initial approach to a potential respondent does not compromise the safety of the respondent (nor their own). The only other anticipated risk to participants is distress arising from the questions themselves. Although personal behavioral questions are not the focus of questions, it is possible that questions about their connection to the spot (and/or others present at the spot) or the spot in general could conceivably provoke unintended distress. This will be addressed by the field team's training and their access to resources and referral destinations (see also 'Debriefing,' below). An emergency plan should be in place. (See text box on previous page.)

- Confidentiality of responses: The final report will not contain information that can lead to identification of spots and places where priority populations congregate. A non-identifying coding system will be used to track study data while assuring non-disclosure of participants' identities. All survey-related materials (e.g., completed questionnaires, maps, etc.) will be kept in a secure and locked cabinet at the survey field office, which will be accessible only to the study coordinator and staff. Electronic data will be password protected, and only authorized officials of the activity will have access to the data files. The final report will not contain information which can lead to identification of spots and places where priority populations congregate. The tables and maps presented in the report will be population estimates and will not include details about individual spots nor persons. Details on sites and priority populations will be provided separately, the confidentiality of which will be assured by the activity leadership.

Hostile Situations

Emergency plans may be appropriate in settings where governments or other stakeholders (religious leaders, media, opposition political partners, community leaders, etc.) are known to be hostile to key populations. Such plans are best developed in advance of engagement with stakeholders. Researchers and community organizations should look to human rights organizations to develop such plans.

However, should social harms emerge, it is vital that decisions on appropriate next steps be made with guidance from key population community leadership. Researchers should never forget that the local key population community will have to address any lasting consequences long after studies are shutdown or stalled before implementation.

While some researchers doubtless prefer to take apolitical stances, the engagement of stigmatized populations does imply the need to engage in advocacy on behalf of that community. These may be quiet "under the radar" efforts with key allies and opponents, but addressing potential social harms generated by research protocols is an accepted responsibility for investigators in all contexts.

Clearly, there is a delicate balance. The research agenda should not supersede the community's interest, and developing strong partnerships with individuals and community organizations of key populations may reduce the likelihood of researchers "getting out in front" of the community on rights issues.

From: Respect, Protect, Fulfil: Best practices guidance in conducting HIV research with gay, bisexual, and other men who have sex with men (MSM) in rights-constrained environments, UNDP

8. TECHNICAL ASSISTANCE NEEDS AND COSTING THE PROPOSAL

8.1 Overview of The Budget
8.2 Example of a Budget and Time Frame

8.1 Overview of the Budget

The cost of programmatic mapping varies by country. The main costs are interviewer cost and travel costs. The table below shows a rough estimate of the cost by size of the area that is mapped. This budget does not include the cost of technical assistance.

	Approximate Cost
City of 2 million	$113,000
City of 1 million	$61,000
City of 500,000	$34,500
City of 250,000	$21,500
City of 100,000 or less	$13,500 or less
District with urban and rural areas / population of district 100,000 or less	$15,000

Each budget is divided into sections:

- Preparation phase
- Field Work Budget with separate sections for the national level costs, costs per each area selected and cost for each zone selected.

A separate budget is provided for technical assistance costs.

8.2 Example of a budget

Below is an illustrative budget. It includes the preparation costs, the field costs at the national level level, a budget for each selected geographic area, a budget for each zone of population 50,000. The figures are illustrative and should be adapted to your country and the size of the areas that will be mapped.

An excel spreadsheet will be provided at the workshop. This budget assumes that 10 areas will be mapped over a 6 month period. It assumes that the country manager for the project is paid $500/week and that interviewers are paid $150/week. The areas in the example are large with up to 1000 sites mapped per area. The example also assumes that feedback workshops are conducted in each area in order to improve program planning. A description of each item in the budget follows the budget.

This example assumes 10 selected geographic areas, with a total of 49 zones: one city of 1,000,000; one city of 250,000; one district of 200,000; five cities with 150,000 and two areas with 100,000.

For each selected geographic area, time for the local field supervisor and assistant supervisor to hire their teams and plan for field work is included (2 weeks). This example assumes 10 selected geographic areas, with a total of 49 zones: one city of 1,000,000; one city of 250,000; one district of 200,000; five cities with 150,000 and two areas with 100,000.

For each selected geographic area, time for the local field supervisor and assistant supervisor to hire their teams and plan for field work is included (2 weeks).

This example does not include staff and supplies for hiv testing. If hiv testing is included in a validity study, add the relevant line items.

This budget includes a validity study with interviews of 800 male patrons, 800 female patrons and 400 female workers at a sample of sites.

1. PREPARATION PHASE BUDGET					***TOTAL***
Legal environment assessment					
Mapping readiness assessment					
Formative research on typology of sites and sub-groups					
Community engagement					
Ethical review					
Community advisory board					
Formative work to develop protocol and instruments					
Work to develop emergency plan and legal assistance					
SUB-TOTAL					**$5,000**
Note: please consider the amounts illustrative. You should put in the correct amounts. You can add people and workshops, whatever you think is needed.					
2 .FIELD WORK BUDGET	NUMBER	UNIT COST OR WEEKLY RATE	NUMBER OF WEEKS	PERCENTAGE OF STAFF TIME	TOTAL
A. National level					
In country manager	**1**	**$500**	**22**	**100%**	**$11,000**
Mapping specialist	**1**	**$300**	**13**	**50%**	**$1,950**
Budget and admin person	**1**	**$300**	**22**	**100%**	**$6,600**
Gps units	**20**	**$100**	**1**	**1**	**$2,000**
Data manager	**2**	**$300**	**16**	**100%**	**$9,600**
Training workshop (4 days)	**1**		**1**	**100%**	
·Participants: national stakeholders	**10**	**$100**	**1**	**1**	**$1,000**
·Participants: national team	**5**	**$100**	**1**	**1**	**$500**
·Participants: 2 people from each area (10 areas)	**20**	**$500**	**1**	**1**	**$10,000**
Ethics and clearances	**1**	**$200**	**1**	**1**	**$200**
Transportation and travel costs to districts during field work	**1**	**$400**	**20**	**1**	**$8,000**
National feedback workshop and action plans					
SUB-TOTAL					**$50,850**

B. Selected geographic area level (may be comprised of several zones) 1 of these per geographic area					
Local field supervisor	**1**	**$300**	**2**	**100%**	**$600**
Assistant supervisor	**2**	**$200**	**2**	**100%**	**$800**
Trainings -- 2 days each	**3**	**$800**	**1**	**1**	**$2,400**
Interviewer training	**10**	**$150**	**1**	**100%**	**$1,500**
Social mobilizer training	**10**	**$150**	**1**	**100%**	**$1,500**
Supplies	**1**	**$400**	**1**	**1**	**$400**
Local stakeholder meeting to describe study prior to field work	**1**	**$500**	**1**	**1**	**$500**
Feedback workshop and action plans	**1**	**$500**	**1**	**1**	**$500**
Local total for one selected geographic area					**$8,200**
SUB-TOTAL FOR ALL SELECTED GEOGRAPHIC AREAS	**10**				**$82,000**
C. Zone level (zone=population 50,000)					
Local field supervisor	**1**	**$300**	**0.5**	**100%**	**$150**
Assistant supervisor	**2**	**$200**	**0.5**	**100%**	**$200**
Interviewers	**10**	**$150**	**0.5**	**100%**	**$750**
Social mobilizers	**10**	**$150**	**0.5**	**100%**	**$750**
Photocopies of questionnaires and fact sheets	**800**	**$0.25**	**1**	**1**	**$200**
Transportation	**1**	**$1,000**	**0.5**	**1**	**$500**
Data entry technicians	**2**	**$150**	**0.5**	**50%**	**$75**
Local total for one zone					**$2,625**
SUB-TOTAL FOR ALL ZONES IN ALL SELECTED GEOGRAPHIC AREAS	**48**				**$126,000**
GRAND TOTAL					**$263,850**

Technical Assistance Budget for Country $56,000

	Number of Non-Travel Weeks @ $3000/ week including institutional overheads	Travel Weeks	Travel & Accommodation /Per Diems
Design Mission including protocol development / IRB	2	1	5000
Training of Trainers		1	5000
Field support	2	2	5000
Analysis support	1		
Report Writing Support	2		
Dissemination		1	5000
Total	7	5	
	$21,000	**$15,000**	**$20,000**

Item by Item Description of the Budget

National Level Preparation

- **Legal Environment Assessment** – Review of laws, policies and practices affecting key populations. See section 1.4 in the Guidelines for a description of this activity.
- **Mapping Readiness Assessment** – Prior to beginning mapping, it is important to conduct an assessment to determine if mapping key populations is appropriate given the current political, social and service delivery climate and to determine if survey team is ready to undertake the work. This may involve meeting with key population groups, service delivery providers, and a survey team. See section 2.2 in the Guidelines for a description of this activity.
- **Formative research on typology of sites and sub-groups** – Each country or geographic region will have a list of site types specific to that area. Additionally, each may have different sub-groups of key populations, such as street-based female sex workers and venue-based female sex workers as sub-groups of female sex workers. It may be necessary to talk with key populations and other stakeholders to determine the complete list of site types and key population sub-groups likely to be encountered during programmatic mapping. See section 5.1.1 in the Guidelines for a description of this activity.
- **Community Engagement** – Meeting with the relevant communities to inform them of the study and to receive their input. This should include key population groups but also may include community leaders, the police, and Ministry of Health representatives, and may involve people from different sectors, including government, NGO, donors, civil society, and others. Refer to 2.1 in the Guidelines for a description of this activity.
- **Ethical Review** - Because programmatic mapping involves interviewing human subjects, it is necessary to seek ethical review of the study protocol. This may involve paying a fee for the review to be carried out by an in-country review board.
- **Steering Committee** – Forming a Steering Committee provides an important mechanism for review of the protocol and monitoring of the activity. Meetings should be held periodically to solicit input and provide updates. This may involve three meetings total: one early in the process, one to review the protocol, and one to provide an update or review preliminary results.

- **Formative work to develop protocol and instruments** – Although drafts of a protocol and questionnaires are provided with the Programmatic Mapping Guidelines, each country implementing team will need to make and document protocol decisions and adapt questionnaires to the country and populations of interest. Work should also be done on a plan for emergencies and to access legal assistance if needed.

National Level Field Costs

- **In Country Manager** – This person is responsible for the implementation of programmatic mapping and should be able to dedicate all or most of their time to this activity. Note: country teams may choose to have add a position for assistant manager who can work with the manager to train teams in each selected geographic area and to make visits during field work. The Country Manager is responsible for all data analysis and report writing.
- **Mapping Specialist** – This person is responsible for maintaining the GPS units, finding base maps, and creating maps of sites. Prior to implementation, he/she must help decide what software will be used for mapping, obtaining or advising regarding GPS units, acquiring base maps of administrative boundaries of the country, and train interviewers in using GPS units. After data are available, he/she will create maps as requested by the In Country Manager.
- **Budget and Admin person** – Duties of this person include everything related to movement of funds (receiving and paying out), accounting, and contracts. This person also may be asked to arrange for a training venue, hire vehicles, acquire supplies for field work.
- **GPS Units** – Geographic Positioning System Units are required to measure the geographic coordinates of sites (latitude and longitude) when using paper questionnaires. It may be possible to share GPS units across the local field work teams, especially if field work is staggered. In the example budget, the number of GPS units can be used by two selected geographic areas at a time (10 x 2 = 20). If tablets or mobile phones are used in place of paper questionnaires for interviews, GPS units are not needed since these devices can be used to measure geographic coordinates. In this case, replace this line item with Tablets, for example, and include a line item for SIM cards, air time, server space to receive incoming data, and insurance.
- **Data Manager** – This person is responsible for managing the data entry process, including the use of Excel to create the site list and the entry of data from site informant and key population questionnaires. He/She will create a plan to ensure data quality during data collection, create data entry templates, oversee data entry, clean the data, produce tables of results, and create a code book for use during data analysis.
- **National Training Workshop (4 days) –** One workshop that brings together national stakeholders, national study team members and two local study team members from each selected geographic area to learn about the study objectives and protocol. If longer in duration, this “workshop” could also serve as a training for supervisors in each selected geographic region while piloting the protocol in the first area.
- **Ethics and clearances –** Some ethics boards require a fee to be submitted with a protocol. This amount will vary by country and board.
- **Transportation and travel costs to districts during field work** – National level study staff will need to travel to each selected geographic area where mapping is done in order to provide training, technical assistance, quality checks, and data entry oversight.

Field Costs for Each Selected Geographic Area

- **Local Field Supervisor** – In each selected geographic area a field supervisor is in charge of hiring interviewers and social mobilizers, data entry technicians; ensuring the protocol steps are carried out, communicating with national level team. Under this budget heading, time is budgeted for all duties unrelated to time in the field. This includes administrative duties.
- **Assistant Supervisor** –In each selected geographic area, there is an assistant supervisor for each team of 4 to 6 interviewer/mobilizer pairs. The assistant supervisor helps carry out the duties of the local field supervisor, including accompanying teams into the field. Under this budget heading, time is budgeted for all duties unrelated to time in the field or interviewer training. This includes administrative duties.
- **Trainings** – Training for community informant interviews and site visits and mapping should each take about two days. This time may be extended if interviewers have little experience.
- **Interviewers** – These personnel are responsible for carrying out interviews with community informants and site informants. Each will be accompanied by a social mobilizers that is a member of a key population at all times. They must have flexible hours so that work can be carried out on weekends and possibly in the evening. Under this budget heading, time is budgeted for the three two-day training sessions.
- **Social Mobilizers** – These members of key populations will accompany interviewers into the field and help identify informants likely to be knowledgeable about the sites, what occurs at sites and numbers of people at sites. Some informants may be members of key populations. Under this budget heading, time is budgeted for the three two-day training sessions.
- **Supplies** – This line item will cover items such pens, clipboards, and mobile phone minutes for study personnel. If HIV testing will be done as part of the validation study, those costs must be added here as well as in personnel.
- **Local Stakeholder Meeting to Study Prior to Field Work** – Each community should be made aware of the planned field work at a public meeting.
- **Feedback Workshop and Action Plans –** A workshop will be held in each selected geographic study area to disseminate results and develop action plans to encourage use of results.
- **Local Total for One Selected Geographic Area** – Sum of all above costs.

Sub-total for ALL Areas – Enter the number of selected geographic areas for mapping. The budget for one area will be multiplied by the number of areas to arrive at the cost of all local field work.

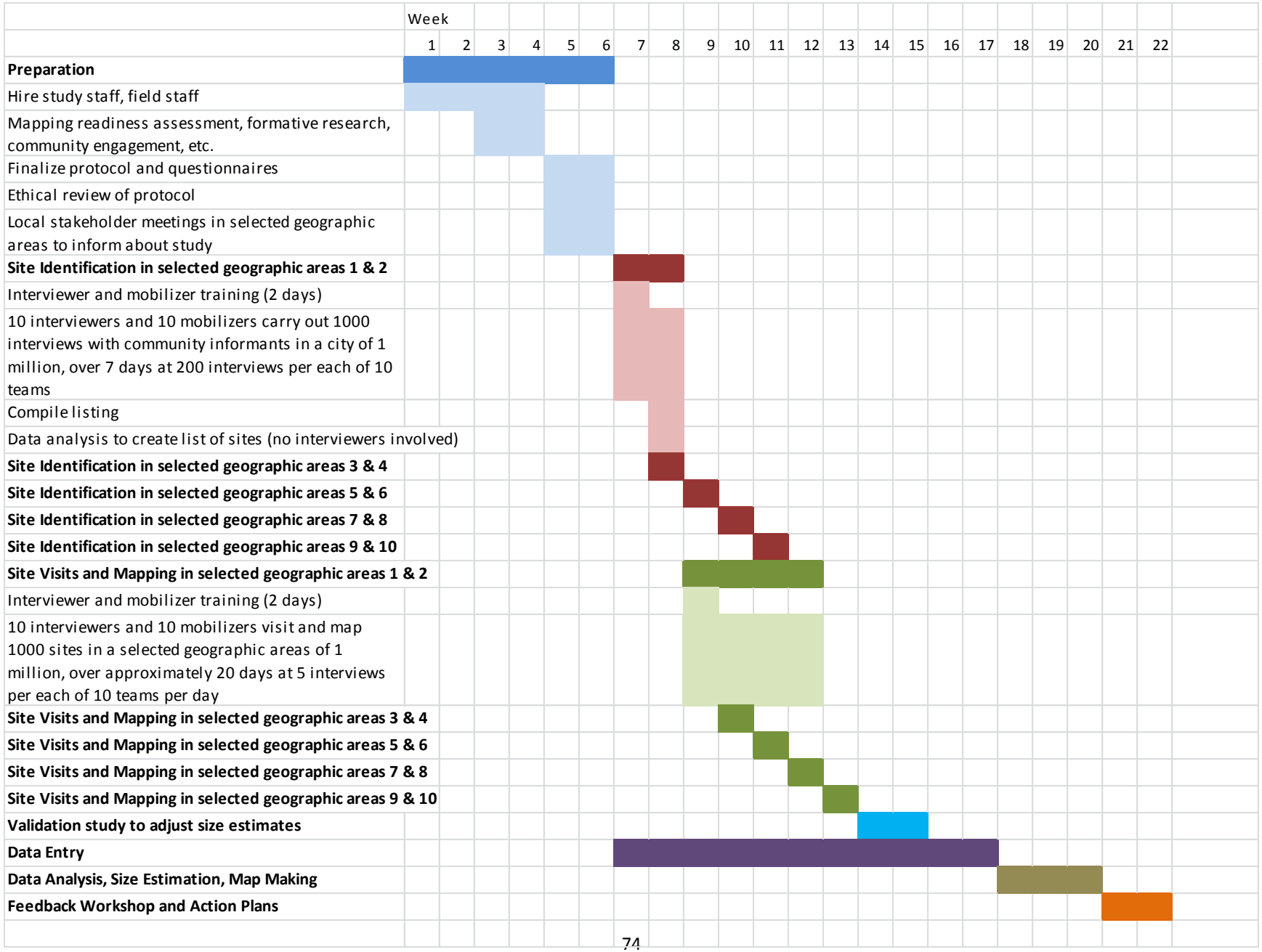
Field Costs in Each Zone in each Selected Area

- **Local Field Supervisor** – Duties described above. Under this budget heading, time is budgeted for accompanying interviewers during field work in one zone.
- **Assistant Supervisor -** Duties described above. Under this budget heading, time is budgeted for accompanying interviewers during field work in one zone.
- **Interviewers -** Duties described above. Under this budget heading, time is budgeted for conducting interviews during field work in one zone.
- **Social Mobilizers -** Duties described above. Under this budget heading, time is budgeted for conducting interviews during field work in one zone.
- **Photocopies of Questionnaire and Fact Sheets –** The estimate is 800 copies per zone: 50 community informant interviews of 4 pages each; 50 site informant interviews of 5 pages each; 2 sites visited for

the validation study, with about 28 people interviewed at each site (56 in total) at 5 pages each. In addition to these 730 photocopies, allow for extra and round to 800.

- **Transportation** – A vehicle or two will be needed to transport interviewers and mobilizers during field work.
- **Data Entry Technicians** – Data entry personnel will be responsible for entering information collected form community informants to create a site list, consolidating the site list, and entering data collected during site visits into a database.
- **Local Total for One Zone** – Sum of all above costs.

Sub-total for ALL zones in selected in ALL selected geographic areas - Enter the number of zones selected in all selected geographic areas for mapping. The budget for one zone will be multiplied by the number of areas to arrive at the cost of all local field work.


Week
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Preparation
Hire study staff, field staff
Mapping readiness assessment, formative research, community engagement, etc.
Finalize protocol and questionnaires
Ethical review of protocol
Local stakeholder meetings in selected geographic areas to inform about study
Site Identification in selected geographic areas 1 & 2
Interviewer and mobilizer training (2 days)
10 interviewers and 10 mobilizers carry out 1000 interviews with community informants in a city of 1 million, over 7 days at 200 interviews per each of 10 teams
Compile listing
Data analysis to create list of sites (no interviewers involved)
Site Identification in selected geographic areas 3 & 4
Site Identification in selected geographic areas 5 & 6
Site Identification in selected geographic areas 7 & 8
Site Identification in selected geographic areas 9 & 10
Site Visits and Mapping in selected geographic areas 1 & 2
Interviewer and mobilizer training (2 days)
10 interviewers and 10 mobilizers visit and map 1000 sites in a selected geographic areas of 1 million, over approximately 20 days at 5 interviews per each of 10 teams per day
Site Visits and Mapping in selected geographic areas 3 & 4
Site Visits and Mapping in selected geographic areas 5 & 6
Site Visits and Mapping in selected geographic areas 7 & 8
Site Visits and Mapping in selected geographic areas 9 & 10
Validation study to adjust size estimates
Data Entry
Data Analysis, Size Estimation, Map Making
Feedback Workshop and Action Plans

Field Staff and Time Needed per Zone (population 50,000) and in One Selected Geographic Area of population

Example for selected geographic area of population 1,000,000

	Target # interviews per zone	# interviews per day per interviewer	# interviewers	# days	# days rounded	# zones in selected geographic area	CI Interviews: # days in selected geographic area (14 per interviewer per day)	CI Interviews: # days rounded
Community Informant	50	14	10	0.36	1	20	7.14	7
Venue visits	50	5	10	1	1	20	20	20
	Target # sites per zone	# sites per day per team of 5 interviewers	# teams of 5 interviewers			# zones in selected geographic area	# days in selected geographic area	# days rounded
Validation Study	2	2	2	0.5	1	20	10	10
TOTAL estimate for each zone					**3**			
TOTAL estimate for all zones in selected geographic area								**37**

Note: when estimating number of days of field work per zone, we recommend rounding up the number of days. We recommend estimating by zone for the budget. However, when estimating the timeline, use the number of days in all zones for a for a selected geographic area, assuming they are close together. Proximity of zones indicates efficiency in field work community for example, in that 10 interviewer/mobilizer pairs could conduct informant interviews in two zones in one day.

It is assumed here that each interviewer/mobilizer pair can conduct 14 community informant interview per day and 5 site visits per day. These numbers will depend on the setting, but for budgeting and timeline purposes, use these estimates.

Example: Calcuating Staff and Field Time per Selected Geographic Area

				Community Informant Interivews			**Site Visits and Mapping**		**Validation Study: Return to sample of sites for interviews**					
Selected Geographic Area	Population	# of Zones	# interviewers	CI Interviews: # Community Informant interviews (50 each zone of 50,000 pop)	CI Interviews:# days in selected geographic area (14 per interviewer per day)	**CI Interviews: # days rounded**	Site Visits: # sites expected (50 per zone)	**Site Visits: # days (5 per interviewer per day)**	Validation Study: Target # of Sites (2 per zone)	Validation Study: # of teams of 5 interviewers	Validation Study: # of sites per day per team of 5 interviewers	Validation Study: # of days of field work	**Validation Study: # of days rounded**	Total days field work per selected geographic area
1	1,000,000	20	10	1000	7.14	**7**	1000	**20**	40	2	2	10.00	**10**	37
2	250,000	5	10	250	1.79	**2**	250	**5**	10	2	2	2.50	**3**	10
3	200,000	4	10	200	1.43	**1**	200	**4**	8	2	2	2.00	**2**	7
4	150,000	3	10	150	1.07	**1**	150	**3**	6	2	2	1.50	**2**	6
5	150,000	3	10	150	1.07	**1**	150	**3**	6	2	2	1.50	**2**	6
6	150,000	3	10	150	1.07	**1**	150	**3**	6	2	2	1.50	**2**	6
7	150,000	3	10	150	1.07	**1**	150	**3**	6	2	2	1.50	**2**	6
8	150,000	3	10	150	1.07	**1**	150	**3**	6	2	2	1.50	**2**	6
9	100,000	2	10	100	0.71	**1**	100	**2**	4	2	2	1.00	**1**	4
10	100,000	2	10	100	0.71	**1**	100	**2**	4	2	2	1.00	**1**	4
Total		48	100	2400		**17**	2400	**48**	96	20	20	24	**27**	

Notes and Assumptions

This example assumes 10 selected geographic areas, with a total of 49 zones: one city of 1,000,000; one city of 250,000; one district of 200,000; five cities with 150,000 and two areas with 100,000.

Assumes 14 community informant interviewers per day per interviewer/mobilizer pair; 5 site visits per interviewer/mobilizer pair; 2 sites per day/night per team of 5 interviewers for validation study

Since # of interviews at each site during validation study will depend on the site, this is only an estimate. See below for recommended sample size at each site for validation study.

Number of sites covered per day/night per team of 5 interviewers for validation study will depend on site size. For example, a large site may require all 10 interviewers to be completed in one day/night

Remember that field work in some geographic areas will be simultaneous, therefore adding the number of days for each phase of data collection does not necessarily determine the duration of

APPENDICES

Appendix 1. Questions for Researchers to Ask for Key Population/HIV Research[4]

RESPECT	Status	Notes
Have you included members from the key populations community in:		
• Engagement rules		
• Situational assessment		
Have you assessed the relevance of the research and potential reactions from greater community structures?		
Have you assessed the interest amongst the key populations community, as well as current infrastructure (or lack thereof)?		
Have you assessed the willingness of your research institution to Respect, Protect, and Fulfill rights of participants?		
Have you developed an MOU with community-based organizations—clearly involving them in all aspects of the research?		
Have you clearly defined roles and responsibilities of all stakeholders?		
Have you conducted a comprehensive identification process with stakeholders including:		
• Community stakeholders, NGOs, CBOs, community groups, informal networks, etc.		
• Government ministries, leaders, etc.		
• Local health care facilities and services		
Have you engaged government, while first discussing effective models of engagement with community representatives?		
Have you secured funds for community involvement (e.g., providing financial Incentives, etc.)?		
Will you start by conducting formative assessment activities to learn more about the target populations and their priorities? (This would also include learning about what prior research has been conducted in this population and what are the local perceptions of this research [both from key population groups and from other stakeholders].)		

[4] Adapted from Respect, Protect, Fulfill: Best practices guidance in conducting HIV research with gay, bisexual, and other men who have sex with men (MSM) in rights-constrained environments

Have you included research on human rights protections/violations within the research context?		
Will you provide research literacy training to key stakeholders?		
• Local NGOs, CBOs, informal networks of MSM/LGBT		
• Healthcare service providers		
• Government		
• Influential community leaders		

PROTECT	Status	Notes
Have you developed policies for dealing with hostile/intrusive media, media that may blame key populations for 'spreading HIV' in a country?		
Have you developed certificates of confidentiality to help participants feel safe, knowing that their information will not be shared with others?		
Have you developed personal identifiers that protect people's identities, or considered conducting research anonymously?		
Have you ensured safe storage of any data that would link participants' sexual orientation information or behavioral practices?		
FULFILL		
Have you (or others) conducted formative assessment activities to learn about:		
• Key population's needs and specific priorities		
• Prior research in this community		
• Local perceptions of past research (both from key population groups and from other stakeholders)		
Have you (or others) conducted formative assessment to learn more about and address structural drivers of HIV and STI risk when researching key populations in low- and middle-income countries?		
• Criminalization		
• Stigma and discrimination		
• Violence/sexual violence		
• Poverty		
Have you planned for community capacity-building of key populations and informed participation?		
• Secure funding to build capacity of community members from key populations		
• Allow local groups to use resources such as meeting spaces		
• Ensure representation of key populations on staff		
• Train community members of key populations to be involved as study staff to build capacity for the future		

• In disseminating results, do you have plans to work with key population community leaders on data protection and a utilization plan		

Questions for Community Organizations to Ask for Researchers

RESPECT	Status	Notes
What is motivating the research team to conduct this research in your community?		
Who is funding the research?		
On what level and how will community stakeholders be involved in the research process?		
How can we be sure that the research will respect our priorities and needs and include our input?		
What role can we have in designing, conducting, analyzing, and reporting results of the research?		
Who will "own" the data?		
How can we be sure that once the data are collected, the researchers won't just go away and publish our data in another country?		
Who will be involved in decisions on how data and results are disseminated?		
Will we have authorship on publications derived from the research?		
How will the data be used to improve the situation for the target population?		
How will we be compensated for our involvement (financially or in-kind) in the research?		
PROTECT		
How will the research team protect our confidentiality and safety before, during, and after the research?		
What is the timeline for the research and what are the stages?		
What sort of support will the research team provide us so we can better understand the research and participate in a more equitable way?		
What plans are there to guarantee protection of personal data from police, media, and the community?		
Is there budget to assist in emergency situations?		
For example, if a study participant is arrested based on sexual orientation and needs to be bailed out of jail, or if participants' lives are being threatened and they need to find safe housing.		

After data are analyzed, how will results be shared with the broader community without jeopardizing the safety of the target population, or further stigmatizing us?		
FULFILL		
What sort of services will be provided to research participants?		
In what concrete ways will this research benefit the population?		
Once the study is completed, what assurances can you offer that prevention, treatment, and care services will continue?		

Appendix 2. Using geographic mapping of key vulnerable populations to control the spread of HIV epidemics

Editorial

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Using geographical mapping of key vulnerable populations to control the spread of HIV epidemics

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"Despite a few limitations, the geographic mapping approach presents a rapid and efficient mechanism to identify and highlight all key locations (venues, spots, places) in a systematic and scientific manner."

Even in countries experiencing widely established HIV epidemics among the general population, available epidemiological evidence suggests that certain key populations form the major driver of the epidemic [1]. These populations mainly comprise of female sex workers, men having sex with men and people who inject drugs (PWID) [2]. Their engagement in behaviors that are considered illegal leads to their dissociation from social programs and services, meaning that they remain hidden and extremely hard to reach, which adds to the complexities of planning a prevention response. Over recent years, a large emphasis has been placed on developing an understanding of the key drivers of HIV transmission locally and allocating resources where they are needed the most [3]. The UNAIDS Practical Guidelines for Intensifying HIV Prevention recommend that HIV program planners use strategic information to define the key populations and risk settings, and then match prevention measures according to their epidemic scenario for strategic allocation of resources and placement of the prevention interventions [4]. The approach poses policymakers and program planners with a great challenge of quantifying the size of these populations, understanding their subtypes and identifying locations where they can be found. A lack of reliable knowledge about these populations including their size estimates remains a major information gap identified in various countries globally [5].

Geographical mapping approach: the basic concept

Several methods including census and enumeration methods, capture–recapture techniques, nomination and multiplier methods, network scale-up methods, among others, are available for estimating the size of populations at risk of HIV [6–8]. While most of these methods generate reliable size estimates, various key elements of programmatic information needed to set up comprehensive targeted interventions are usually missing. Geographical mapping presents a systematic, sequential approach, which provides key information about the 'size, distribution and dynamics for a given key vulnerable population'. The rationale for this approach is based on programmatic experience in diverse settings in Asia and Africa, which has shown that risk populations congregate and/or meet clients in definable geographic settings. Accordingly, the approach also focuses on identifying these locations, characterizing specific 'spots' and collecting further information about the various types of risk populations, their operational typologies and characteristics of the sexual or drug-using networks there. The approach also identifies various key stakeholders and

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gate-keepers involved in these discreet operations. Broader methodological steps of geographical mapping include various levels of activity, including development of maps of the target area and segmentation of the target area into smaller geographical units called zones. Data regarding locations where risk populations congregate are collected from secondary key informants (people who are in contact with persons directly engaged in high-risk activities) at level 1. Level 2 serves as the validation phase, where these locations are visited and validated through interviewing primary key informants (people engaged in high-risk activities themselves). The final stage consists of data triangulation and developing a city-wide estimate through combining zonal estimates and removing overlaps [9].

"Mapping data provides service delivery programs with denominators, which are crucial to be able to set goals and establish benchmarks for key outcomes indicators."

There are a number of ways information generated by mapping can be utilized. The following section presents how mapping data have been utilized by various countries for advocacy and program development, as well as for monitoring and research.

Using mapping data for size estimation & advocacy

Reliable size estimates of key vulnerable populations is one of the key pieces of information provided by geographical mapping. Various countries in Africa and Asia [10–13,101] have used this approach to generate absolute numbers of key populations in major cities and towns, as well as semi-urban localities and villages. Unlike various size estimation methods, which provide an absolute number of the key vulnerable population, geographical mapping produces estimates at the level of a spot, statistically adjusts for duplication between spots and within zones, and rolls them up to a city-wide estimate. Thus, one of the key strengths of this approach lies not only in its development of estimates, but also in providing a consequential distribution of key population members at different spots. In countries such as Pakistan, Kenya and Sri Lanka, further analyses of mapping data were conducted to calculate 'key population density' per 1000 adult population, which was used to develop national estimates of key populations. The numbers generated from mapping data serve to convince policymakers about the existence and magnitude of public health issues. For example, the existence of a sizeable commercial sex industry in Pakistan was long denied by the government authorities. However, with the available mapping results, it was easier to sensitize policymakers and state actors to prove the presence of such vulnerable populations and advocate for public health action.

Using mapping data for developing strategic direction & macroplans

Due to the economic challenges experienced by HIV prevention programs over recent years, national AIDS authorities are compelled to prioritize key populations for HIV prevention, and strategically allocate its funding resources to produce the greatest impact on the epidemic. In Pakistan, mapping data were supplemented with surveillance data to develop macroplans for a targeted response and set priorities for resource allocation [14]. As part of the macroplan, a high portion of the available resources were shifted to provide services to PWID among key populations; the current hub of HIV infection in the country [15]. Further to this, the macroplan prioritized cities and towns where higher numbers of PWID were mapped to rapidly establish appropriate programs and basic services. In addition to identifying key locations and quantifying risk populations, mapping results were used to identify existing programs and quickly institute services where they were unavailable. Within cities, mapping data helped identify geographic divisions or zones where risk of HIV transmission was the highest, and guided the development of an overarching prevention plan to set up services.

Microplanning & program implementation

Other than providing reliable estimates, the approach provides contextual milieu and draws information on group operational characteristics based on which subtypologies can be categorized. Grounded in the basic approach of estimation, a list of all locations of HIV risk activity is developed, assigning a range of estimates for risk population members at each spot by subtypology. Information regarding the geography of a spot along with the number of key populations attached to each spot serves as a valuable tool for planning services and intervention. Sex worker programs in India and Sri Lanka [16,17] have benefited tremendously from the data gathered from geographical mapping and have used this information to plan and deliver services in finest details. Effective characterization of sex work locations, particularly the size and distribution of the population, facilitated program planners identify specific locations within a larger region where services should be located. Mapping data-facilitated outreach efforts access the maximum numbers of sex workers while being responsive to differences in client volume, typology of sex workers, age of sex workers, time of operation and frequency of operation. It also enabled prioritization of outreach based on volume of sex work for individuals or at specific locations (sex work and soliciting sites) or time of day, season or special events, such as festivals and market days. Identification of typologies of female sex work provided information that was used to design the most appropriate targeted interventions.

Program monitoring & research

Mapping data provides service delivery programs with denominators, which are crucial to be able to set goals and establish benchmarks for key outcomes indicators. Key indicators related to program coverage and utilization of programs and services by target populations serve as markers for program success. Coverage gaps at spot level can be evaluated through mapping of these spots on a continuous basis. Other than monitoring the success of a program, mapping data have been of significant value for planning research and further studies. For example, mapping data were extensively used by the surveillance rounds in Pakistan [18] to draw representative samples of the target populations. The lists of various

spots generated by mapping served as a sampling frame, which was used to recruit a representative sample of the key populations using multistage cluster sampling techniques. Where typologies existed among a vulnerable population, for example female sex workers, sampling weights were calculated to allocate the sample proportionate to the size of each typology. Furthermore, spots were randomly selected from the available spot lists to recruit available key population members through a random process.

Conclusion

A few limitations of the geographic mapping approach also need to be acknowledged. First, there is a possibility of missing some spots and either over- or under-estimating some key population groups depending on the extent of their invisibility. Thus, men having sex with men or sex workers operating through network operators or cell phones are likely to be under-represented in geographically based mapping. A variant of geographic mapping called 'network mapping' has been successfully used for mapping these specific subtypes. Moreover, since the methodology relies on numeric estimates rather than a count of population members at a spot, the possibility exists that some key informants may still over- or under-estimate the numbers depending on their numeric orientation and competence.

Despite a few limitations, the geographic mapping approach presents a rapid and efficient mechanism to identify and highlight all key locations (venues, spots, places) in a systematic and scientific manner. Above all, the methodology presents a flexible approach, which can be tailored to the need of the given circumstances with minimum modifications. It has proven to be remarkably successful in guiding HIV programming, advocacy and resource allocation, and monitoring programs, as well as guiding research.

Key messages

The 'geographical mapping' presents a systematic, sequential approach that provides key information about the 'size, distribution and dynamics for a given key vulnerable population'. The methodology presents a fairly flexible approach, which can be tailored to the need of the given circumstances with minimum modifications; the approach has been successfully implemented in diverse settings in Asia (India, Pakistan, Sri Lanka, the Maldives, Bhutan and Afghanistan) and Africa (Nigeria, Kenya and South Sudan), as well as in the Ukraine.

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