Drug Consumption Patterns, Sexual Behavior and HIV Risk among Low-Income Drug Users in Guatemala City

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ACKNOWLEDGEMENTS

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LIST OF ACRONYMS

FMA	Fundación Marco Antonio (Foundation Marco Antonio)
HIV	Human immunodeficiency virus
IRB	Institutional review board
MSM	Men who have sex with men
NIDU	Non-injection drug use
NGO	Non-governmental organization
PASMO	Pan American Social Marketing Organization
PWID	People who inject drugs
RDS	Respondent driven sampling
SD	Standard deviation
SECCATID	*Secretaría Ejecutiva de la Comisión Contra las Adicciones y el Tráfico Ilícito de Drogas* (National Commission on Addictions and Illicit Drug Trafficking)
STI	Sexually transmitted infection
SW	Sex worker
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

Background

HIV prevalence in Guatemala is estimated at less than 1% and is thought to be concentrated in a few key populations of at heightened risk. At present, these key populations include female sex workers (SW), with an estimated HIV prevalence of 4.3%, and men who have sex with men (MSM), with a prevalence of 12.1% (UNAIDS, 2008; Soto et al., 2007). However, in recent years the question has emerged as to whether drug users constitute a third key population in this setting.

In light of the emerging recognition that not only injection, but also non-injection, drug use can heighten the risk of HIV transmission, this study was conducted to measure and analyze patterns of substance use, sexual behavior, and HIV prevalence among a population of drug users in Guatemala City. In addition, this study yielded an estimate of the number of illicit drug users in this city.

Methods

This study used respondent-driven sampling (RDS) to recruit drug users based on the following eligibility criteria: being at least 18 years of age, having consumed at least one of five illicit drugs (cocaine, crack, heroin, LSD, or ecstasy) in the past 30 days, and living in Guatemala City. This study was conducted from July through September 2011 at the Fundación Marco Antonio (FMA), a clinic with experience in HIV/STI testing and HIV prevention in Guatemala City, Zone 4. Consenting respondents, including nine "seeds" who initiated recruitment of their drug user peers, participated in a 30- to 45-minute survey, received pre-test counseling, underwent an HIV test, and were provided the option of obtaining their HIV test results and post-test counseling within 4 to 24 hours. The respondents received 50 *quetzales* (Q50 or $6.50 USD) as a reimbursement for transport and/or food and were provided up to three coupons to use in the recruitment of their peers.

An additional activity used the "multiplier method" to estimate the size of the population of drug users in Guatemala City (UNAIDS, 2010). This involved the distribution of 637 key chains through networks of drug users approximately two weeks prior to the start of the cross-sectional survey, and a question on the survey to identify the proportion of study respondents who had received a key chain.

Results

The multiplier method estimated the number of drug users in Guatemala City was 20,742 with confidence intervals between 2,313 and 39,172.

Through RDS for the cross-sectional survey, the study recruited a total of 299 respondents. One seed yielded 12 recruitment waves, well beyond the number needed to reach equilibrium for key variables. Of the respondents, 79% were male, 21% female, and the median age was 35 years. Among sexually active respondents, 56% reported to be heterosexual, 24% bi-sexual, and 17% gay/homosexual. Three percent reported being transgender women. The majority were *ladino* (Spanish-speaking residents, generally mestizo; 80%) and unmarried (63%). Almost half had a household income of less than $190/month, and educational attainment was low.

The three most commonly used drugs in the past 30 days were cocaine/inhaled (72%), marijuana (68%), and crack (56%). Less than 5% reported using any other drug in the past 30 days: LSD (4%), ecstasy (4%), and heroin/injected (3%). The large majority considered it easy to obtain cocaine (86%) and crack (85%), in contrast to heroin (34%), ecstasy (33%) or LSD (34%).

Respondents used drugs alone (28%), with other people (43%) or both (30%). The vast majority indicated that at least one of their three closest friends used drugs. Surprisingly, among those with a steady sexual partner, only 38% of partners used drugs, and only 22% indicated that their partner was part of his/her drug-using group.

Regarding sexual behavior, 88% of respondents reported having sex in the previous three months and were considered "sexually active" in this survey. Of the total sample, 45% reported having paid or charged for sex in the past 12 months, and 30% had had sex in exchange for drugs. The percent of sexually active respondents reporting the following types of partners in the past 12 months were: steady partner (71%), casual partner (77%), sex worker partner (70%), and injection drug user partner (20%).

HIV prevalence among the 299 respondents was 6.0% (confidence interval: 2.9-10.1). The sample size did not allow us to identify statistically significant correlates of HIV status, but data are presented for generating hypotheses for future research. The heightened risk of HIV among this sample of drug users may in part be related to the overlap of this population with other groups at heightened risk for HIV acquisition, such as MSM, SW or people who inject drugs (PWID). Sixty-four percent of sexually active men and 55% of sexually active women in the study were members of one of these key populations, most commonly gay/bisexual/transgender identification and/or sex work for males and sex work for females. Only, 5% of men and 6% of women in the overall sample were PWID.

Among sexually active drug users, 59% had used condoms at last sex, although only 37% reported consistent condom use in the past month. Among sexually active gay/bisexual men and transgender women, virtually all had tried a water-based lubricant, and 84% had used one at last sex.

The majority of respondents (72%) knew of an HIV testing site other than the site of the study, and 43% reported having been tested for HIV in the past 12 months. A high percent claimed to have seen/heard messages on drug prevention (80%) or HIV prevention (87%) in the media.

Conclusion

In sum, this drug user population in Guatemala City is at heightened risk of HIV, although some of the risk results from overlap with vulnerability experienced as members of groups at heightened risk, such as gay/bisexual men, transgender women, and sex workers. Future HIV programming should expand to include HIV prevention in drug programs and drug prevention/treatment in HIV prevention activities.

INTRODUCTION

Background

Guatemala, with a total population of approximately 14 million people, is estimated to have an HIV prevalence of less than 1% (UNAIDS, 2008). In 2008, approximately 59,000 Guatemalans were living with HIV (UNAIDS, 2008). As in most of Latin America, the HIV epidemic in Guatemala is concentrated in a few key populations thought to be at heightened risk for HIV. At present, these are sex workers (SW, with an estimated HIV prevalence among female sex workers at 4.3%) and men who have sex with men (MSM, estimated HIV prevalence at 12.1%; Soto et al., 2007). In recent years however, the question has emerged as to whether drug users (injection and non-injection) constitute a third key population in this setting.

Drug use is a concern for HIV transmission for three reasons. First, among drug users who inject, HIV transmission is particularly high due to the practice of sharing unclean needles and other injecting equipment. Second, under the influence of either injection or non-injection drugs, users are more likely to engage in risk behaviors, including sexual risk behaviors. Third, to the extent that drug users have sexual partnerships with non-drug using populations, drug use represents a potential "bridge" for the spread of the HIV epidemic from this potential key population into the general population (Neaigus et al., 2001).

During the past two decades, the role of drug use in the transmission of HIV has centered on injection drug use. However, it is becoming increasingly evident that many non-injection drug users may be at heightened risk for HIV infection via sexual risk behaviors, most notably through the practice of exchanging sex for drugs. Several studies from the U.S. suggest a strong link between sexual risk behaviors and non-injection drug use, especially heroin and cocaine use. Sanchez and colleagues (2002) conducted a study among male and female heroin sniffers with no history of injection drug use. The frequency of crack use was associated with giving money and drugs for sex among men. Among women, frequency of crack use was associated with number of partners and receiving money and drugs for sex. Similarly, Wang and colleagues (2000) found that non-injecting cocaine users are at heightened risk of infection due to having a high number of sex partners, reduced condom use, and use of drugs during sex. According to Hoffman and colleagues (2000), women from 22 locales in the U.S. who used crack with the greatest frequency and intensity were also those most heavily involved in sexual risk behaviors. In comparison, their counterparts who used crack at a lower intensity and/or lower-frequency reported strikingly lower rates of HIV sexual risk behaviors and actual seroprevalence.

Additionally, having a drug-centered social network (i.e., a network that includes a high proportion of individuals who provide, receive, or use drugs) increases the risk of engaging in sexual risk behaviors (Howard &Latkin, 2006; Pilowsky et al., 2007). Moliter and colleagues (1998) showed that methamphetamine use was related to sexual transmission of HIV, and that the mode of administration (injection versus non-injection) appeared to be extraneous to effects of sexual risk behaviors. Des Jarlais and colleagues (2007) showed in two cross-sectional studies conducted in New York City that HIV prevalence was nearly identical among current injectors (injected in the last 6 months) and heroin and

cocaine users who had never injected. The authors concluded that the very large HIV epidemic among drug users in New York City appeared to be entering a new phase, in which sexual transmission is of increasing importance. These studies form part of a growing literature that links non-injection drug use to increased risk for HIV transmission.

Despite the explosive and harmful growth of drug trafficking in Guatemala (Espach et al., 2011), there is relatively little in the published literature on the prevalence and patterns of drug use in Guatemala. As reported by the Interamerican Commission of the Control of Drug Abuse to the Organization of American States (CICAD & SSM, 2010), standard statistics on drug use among the general Guatemalan population are not available (e.g., prevalence of drug use, mean age at initiation into drugs, or the extent of drug abuse/dependency). Further, Mathers and colleagues(2008) reported injection drug use prevalence for 61 countries, but listed Guatemala among the countries for which no estimate was available. A review article of drug use in Latin America states that (apart from the PACARDO project cited below), very little epidemiological research infrastructure exists in Central America (Aguilar-Gaxiola et al., 2006), although this situation is changing with the behavioral and biological surveillance surveys being conducted among populations at heightened risk for HIV.

Evidence from the published literature on the extent of drug use and types of drug use In Guatemala includes the following limited information. One international group reported the prevalence of injection drug use among adults 15-64 years old to be 0.11%, although the basis for this estimate was not given (Aceija et al., 2004). A multi-country study conducted in 1999-2000 among a representative sample of in-school youth reported that in Guatemala, 4% of youth (mean age of respondents=16 years) had used an illicit drug. Specifically, 3% had reported ever using marijuana, 1% reported crack/coca paste, 0.4% ecstasy, and 0.7% heroin (Dormitzer et al., 2004).

According to local drug authorities working with SECCATID (*La Secretaría Ejecutiva de la Comisión Contra las Adicciones y el Tráfico Ilícito de Drogas*, or the Executive Secretariat of the Commission against Drug Addiction and Trafficking), most drug use in Guatemala involves non-injection drugs. McIlwaine and Moser(2004) reported the use of marijuana, cocaine, ecstasy, crack, mushrooms, and glue, based on an ethnographic study in four neighborhoods of Guatemala City. In an article by Diaz and colleagues (2009) interviews with family members of drug users cited marijuana and cocaine use as growing problems that primarily affect adolescents and young adults (15-30 years). Though most of the aforementioned studies concur that the majority of drug use is non-injecting, one study among drug users in rehabilitation centers in Guatemala and El Salvador listed heroin as the fourth most widely used drug, indicating that it is in circulation (Shehane et al., 2008).

To date, public health officials in the government of Guatemala, local non-governmental organizations (NGOs), and donor agencies have paid relatively little attention to drug use as a risk factor for HIV for several reasons. First, until recent years, drug use has been relatively limited in Guatemala and in most of Central America. Second, the limited evidence available on drug use in Guatemala suggests that it mainly involves non-injection drugs (e.g., marijuana, cocaine, and crack) rather than injection drugs (e.g., heroin, injected cocaine) (SECCATID, 2009). Third, the population of drug users is generally more

hidden than SWs, who often have established places of work and attend health clinics on a regular basis, or MSM, who increasingly frequent gay bars or clubs in the capital city.

Despite the dramatic rise in drug trafficking in Central America and the association between commercial drug routes and the sex trade, no Central American country has conducted a study examining the relationship between drug use, sexual risk behavior, and HIV transmission to our knowledge. Further, almost all funding for HIV prevention in Guatemala focuses on the established key populations, (MSM and SW) and drug users are not currently recognized as a group at heightened risk or priority population for HIV prevention activities (Shehane et al., 2008). Thus, it is important to document the extent to which drug users are at heightened risk for HIV transmission and whether they should be considered as a priority group for future HIV prevention programs and funding.

Study Scope and Objectives

In 2009, officials from USAID/Washington and USAID/Guatemala voiced the importance of exploring drug users as a potential key population and a possible bridge for HIV transmission into the general population. This interest resulted in two complementary studies on drug use and HIV risk; a qualitative study among young, middle-class drug users and a quantitative study that included bio-markers among lower-income drug users—both in Guatemala City. Given that drug use is reportedly higher in Guatemala City relative to other parts of the country, the studies were conducted in this urban area (McIlwaine & Moser, 2004). The qualitative study has been reported elsewhere (Fortin & Bertrand, 2011). The current report presents the results of the quantitative study, which consisted of two overarching objectives:

A. **To estimate the size of the population of drugs users in Guatemala City**, using the "multiplier method" (UNAIDS, 2010). Estimating the number of people engaging in HIV risk behaviors, such as illicit drug use, clarifies the magnitude of the HIV epidemic within the population. It also provides policymakers, donors, and program implementers with crucial data to determine the level of the response needed to target key populations and to allocate resources better for program planning and management.

B. **To examine drug use, sexual behavior, and HIV risk among drug users** through a cross-sectional survey.

The specific objectives of the cross-sectional survey clustered around six topics:

1. Drug use:
    a. To determine the types and frequency of drugs used;
    b. To explore initiation of drug use;
    c. To establish a socio-demographic profile of drug users, including the extent of overlap with other vulnerable groups (e.g., SW, gay/bisexual men, and transgender women);
    d. To determine the dynamics of drug use, including networks that facilitate drug use, acquisition of drugs/dealing patterns, types of partners in using drugs, ease of acquisition of drugs, settings where drugs are consumed, and related questions;

e. To assess perceived drug dependency, treatment and rehabilitation among drug users in the study.

2. Sexual behavior:
    a. To examine sexual behaviors that would put drug users at increased risk of HIV infection, including:
        i. Prevalence of four HIV-related risk behaviors: multiple partners, unprotected sex, exchange of sex for drugs or money, and sex with a partner who uses injection drugs;
        ii. Types of drugs associated with heightened risk behavior;
        iii. Experience with sexually transmitted infection (STI) symptoms or diagnosis
        iv. Overlap with other key populations at heightened risk for HIV.
3. HIV prevalence and drug use:
    a. To measure HIV prevalence;
    b. To describe the socio-demographic profile of HIV-infected drug users.
4. Condoms and lubricants:
    a. To assess consistency of condom use;
    b. To measure perceptions of the availability of condoms; and
    c. To assess knowledge and use of lubricants among gay/bisexual men and transgender women.
5. Knowledge of HIV prevention and HIV testing sites:
    a. To measure the extent of knowledge of forms of prevention and HIV testing sites;
    b. To measure knowledge and previous use of HIV testing services;
    c. To measure perceived risk of acquiring HIV.
6. Exposure to HIV prevention activities:
    a. To measure exposure of drug users to HIV educational materials;
    b. To assess recall of different PASMO (Pan American Social Marketing Organization) prevention programming and activities of other organizations.

METHODS

Eligibility

Study eligibility was consistent for both the population size estimation and cross-section survey data collection activities. Potential respondents were limited to users of cocaine, crack, heroin, ecstasy, and/or LSD—five of the mostly widely consumed drugs in Guatemala according to SECCATID and the limited number of studies conducted in Guatemala to date (Dormitzer et al., 2004). Based on guidance from SECCATID and other organizations working with drug users in Guatemala, individuals who exclusively used other drugs, such as marijuana, alcohol and cigarettes, but not the five listed in the eligibility criteria, were excluded from participation in the study. The eligibility requirement was limited to more potent drugs to avoid obtaining a sample composed primarily of exclusive marijuana users.

Respondents in this study had to meet the following eligibility criteria:

- At least 18 years of age;
- Resident of Guatemala City[1];
- Willing and able to give informed consent;
- Consumed at least one illicit drug (cocaine, crack, heroin, LSD, or ecstasy) in the past 30 days.

Additionally, in order to be eligible for the cross-sectional survey, potential respondents were required to present a valid coupon that had been given to them by someone who had previously participated in the study. This process part of the respondent-driven sampling (RDS) methodology and is described in further detail in later sections.

Estimation of the size of the drug user population in Guatemala City

Methodology

The study team implemented the size estimation activity between June and July 2011 using the same eligibility criteria as for the larger study. The population size estimate used the "unique object technique," a variation of the multiplier method, to estimate the size of Guatemala City's drug using population (UNAIDS, 2010). This method relies on two sources of data for making a population size estimate: (1) data on the distribution and tracking of a unique object to members of the population, and (2) a survey among a representative sample of this population to determine the number of respondents that had received the object. In this study, the unique object was a key chain with a distinctive red fish symbol, and the survey was embedded in the subsequent cross-sectional survey (described below) that recruited through respondent driven sampling. The proportion of respondents that, during the cross-sectional survey, indicated that they had previous received the unique object served as a basis for estimating the size of the population of drug users in Guatemala City.

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[1] Guatemala City includes the municipalities of Guatemala, Mixco, Santa Catarina Pinula, San Jose Pinula, Fraijanes, and Villa Nueva.

Unique object distribution procedures

In consultation with SECCATID and its own health educators, PASMO recruited and trained a group of 15 "enumerators"—individuals that were themselves drug users who would distribute the key chains. The enumerators were diverse in multiple aspects, such as socio-economic level, educational background, types of drugs used, and membership or non-membership of other key populations.

Training consisted of the purpose and importance of the size estimation, the role of the enumerator, the key chain tracking logs (see Appendix B), and the script for determining eligibility and verifying whether an individual had previously received a key chain. The enumerators engaged in several practical exercises to simulate distribution during the training session. The investigators emphasized to the enumerators that each eligible "receiver" should:

1) Have only one key chain
2) Keep the key chain
3) Notice the key chain's distinctive red fish symbol
4) Remember who gave him/her the key chain and when and where s/he received it.

The enumerators participated with the study director in a mapping exercise to determine the sites for distribution of the key chains. They listed 87 public locations where drug users congregated, including bars, discos, public parks, markets, and red-light districts (see Appendix C). Given widespread crime in Guatemala City, PASMO was particularly concerned for the safety of the enumerators, and allowed teams of two to four enumerators to select the distribution sites that they felt comfortable entering. On the advice of the National Police, the enumerators received instructions to use their PASMO name badges and shirts to help identify them as outreach workers. Additionally, the PASMO shirt, backpack, and identification badge were also intended to make the distribution experience more memorable and recallable for the receiver.

Each enumerator received 40 to 50 key chains and condoms to distribute during this phase of the estimation exercise. The enumerators initiated conversations at distribution sites by asking basic questions about HIV prevention and distributing condoms, which helped them to engage potential key chain "receivers" and broach the topic of drug use. They then checked for eligibility, verified that the individual had not received a key chain previously, and recorded the interaction in a log.

Follow-up survey

The second source of data for the size estimation activity was the RDS-based quantitative survey of drug users, described in the sections below. The survey included the following series of questions to determine if the respondent had received a key chain:

- Did you receive a key chain?
- Can you show me the key chain?
- (if not) Can you describe the key chain?
- (if not) Show a sample key chain and ask: Did you receive a key chain like this?
- Who gave you the key chain?

If the respondents produced or correctly described a key chain and indicated they received it from an enumerator during two weeks prior to data collection, they were included in the proportion of respondents who had received a key chain.

Data Analysis
The population size estimate was based on two data points: (1) the number of key chains distributed and (2) the number of survey respondents who reported having received a key chain from study personnel. The mathematical formula for calculating the total size of the population is shown below.

$$N = \frac{1}{p} 1$$

$$N = \frac{1}{p}(M)$$

where N is the estimate of the total population size, M is the number of drug users who received key chains from the enumerators and p is the estimated proportion of drug users who reported having received a key chain.

The following formula was used to estimate the variance of the estimated population size and the 95% confidence intervals:

$$Var(N) = \frac{Var(M)}{[E(P)]^2} + \frac{[E(M)]^2}{[E(P)]^4} Var(P) \quad N = n1n2(n1-m)(n2-m)$$

$$Var(N) = \frac{Var(M)}{[E(P)]^2} + \frac{[E(M)]^2}{[E(P)]^4} Var(P)$$

where Var(N) is the variance of the estimated total population size, M is the number of drug users who received key chains from the enumerators, P is the proportion of the RDS sample that received a key chain.

Cross-sectional survey

Sampling
A cross-sectional study survey employed the use of RDS, a widely recognized method for conducting survey research among populations that are "hidden," hard-to-reach, and/or stigmatized and for which sampling frames generally do not exist (Heckathorn, 1997; Salganik & Heckathorn, 2004; Johnston, 2007; Johnston et al., 2008). As of 2008, over 125 studies had used this methodology. In Central America, researchers have used RDS to study the behavior of sex workers (in El Salvador, Honduras, and Nicaragua) and MSM (in El Salvador, Honduras, and Nicaragua). Frost and colleagues (2006) used RDS in a study of HIV and other STIs among persons who inject drugs in two cities on the Mexico/U.S. border. To our knowledge, this is the first study in Central America to apply RDS to the study of drug users.

RDS, like other chain-referral techniques, initiates with a convenience sampling of subjects, known as "seeds" on the premise that members of subpopulations themselves can most efficiently identify and encourage participation by other members (Magnani et al., 2005). The non-randomly selected seeds recruit the first wave of respondents, who in turn recruit the second wave of respondents, and so forth. Key assumptions of RDS include: (1) respondents know one another as members of the target

population, (2) the population's network forms a single underlying component, (3) sampling occurs with replacement, (4) respondents can accurately report their personal network size, and (5) respondents recruit randomly from their personal networks.

When implemented and analyzed properly, RDS data is representative of the population from which the sample is collected. Heckathorn (1997) has demonstrated using Markov modeling that bias from the non-random selection of seeds is progressively mitigated as the sample expands through many waves, ultimately reaching a point of equilibrium. A limited number of coupons are distributed with RDS to control the number of recruits that an individual can invite, mitigating biases associated with the larger versus smaller personal network sizes of the respondents. Also, the "multiplicity estimator" weights the data to account for the respondents' different personal network sizes and recruitment patterns, addressing potential biases associated with chain-referral sampling (Salganik & Heckathorn, 2004). When determining proportions and confidence intervals for given variables, groups or categories with a larger average social network size are assigned less weight and groups with the smaller average network size are assigned more weight.

Based on a calculation used in surveillance studies (FHI, 2003), the desired sample size was established to be 367 adults that had used illicit drugs in the past 30 days. The sample size is powered to detect a hypothetical change over time assuming that this study would be repeated in order to measure trends. Assuming a design effect of 2.0, a power of 80%, and 15% change over time starting with a baseline of 50%,[2] a sample size of 333 was calculated. Assuming a non-response rate of 10%, the target sample size became 367. This sample size was considered adequate to detect a difference of 15% in a key outcome variable, such as use of a condom at last sexual encounter. Of note, the median sample size for the 123 studies using RDS conducted as of 2008 was 275, and 85% of these studies achieved at least 90% of the desired sample (Johnston et al., 2008).

Seed selection
The RDS procedure began recruitment by identifying nine "seeds," or individuals that met the eligibility criteria for this study (used illicit drugs in the past 30 days, 18 years or older, live in Guatemala City). Outreach workers from drug use prevention and treatment organizations as well as other social development agencies (e.g., PASMO) selected the nine seeds from among participants in their programs. Seeds were selected to represent diverse socio-demographic characteristics (e.g., age, gender, income, ethnicity, geographic area within Guatemala City) in order for the sample to reach sociometric depth as quickly as possible. Income levels were classified based on a socio-economic classification for Central America, developed by Cid Gallup (2010). Low income was defined as earning less than Q3000 ($375 USD) per month. Middle income was defined as Q5001-12000 per month ($ 375-$1500 USD) and high income was defined as Q12001+ per month ($ 1500+ USD). As the pace of recruitment slowed, additional seeds were added to initiate new recruitment chains required to meet the target sample size.

Specifically, four seeds were low-income men who used crack and cocaine (as shown in the table below). Two seeds were low-income men who used cocaine exclusively. One female seed was a middle-

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[2] No baseline value for the key outcome variable was available, and 50% is the most conservative approach in such cases.

income user of ecstasy and LSD. The other female seed was a low-income user of cocaine, LSD and ecstasy. The final seed—a male from a higher economic level—reported use of ecstasy and LSD. The nine seeds ranged from 20 to 59 years old.

Characteristics of seeds identified to recruit drug users in Guatemala City

Seed	Sex	Age	Income	Max. number of recruits	Max. number of waves	% of Sample	Drugs used in the last 12 months				
							Cocaine	Crack	Heroine injected	LSD	Ecstasy
1	Male	28	Low	5	2	1.7	X	X			
2	Male	29	Low	23	7	7.7	X	X	X		
3	Male	21	Low	158	12	52.8	X				
4	Male	33	Low	76	8	25.4	X	X			
5	Male	20	Low	19	7	6.4	X	X			
6	Male	59	Low	4	2	1.3	X				
7	Female	27	Middle	3	2	1.0				X	X
8	Female	21	Low	6	5	2.0	X			X	X
9	Male	29	High	5	3	1.7				X	X

Study site and data collection procedures
Each seed was invited to report to the clinic Fundación Marco Antonio (FMA), which works in HIV prevention, testing and care and is located near a major bus terminal in Zone 4 of Guatemala City. The facility had a private room for interviewing respondents, provided onsite pre- and post-counseling for HIV, performed the HIV test, analyzed the results onsite, gave the test results to interested respondents within 4 to 24 hours, and provided referrals to care for those respondents who tested positive. In short, the location provided the full range of services required for this study.

Data collection ran from July through September, 2011. The seeds and their recruits could enroll at the FMA between 8 am and 5 pm, Monday through Friday. FMA clinic staff directed them toward the area where the interview would take place. The study supervisor welcomed each potential respondent, explained the study process, and completed the process of obtaining oral informed consent. Thereafter, the respondent and interviewer entered a small room which afforded privacy during the 30- to 45-minute survey. Upon completing the survey, the respondent then proceeded to another part of the facility, where he/she was consented for HIV testing using the standard procedure and form authorized by the Ministry of Health in Guatemala. The respondent participated in pre-counseling session provided

by FMA staff and underwent the test. Upon completion, the respondent was presented with supermarket gift card for 50 *quetzales*, or approximately $6.50 U.S. and asked to recruit up to three other persons meeting the study's eligibility criteria using pre-coded coupons. The interviewer explained that the respondent would receive another gift card as a reimbursement for expenses related to successfully recruiting respondents. The steps in this process appear in Figure 1.

Figure 1: Sequence of events for potential RDS drug user study respondents upon their arrival at the Fundación Marco Antonio in Guatemala City
(adapted from Johnston, 2007)
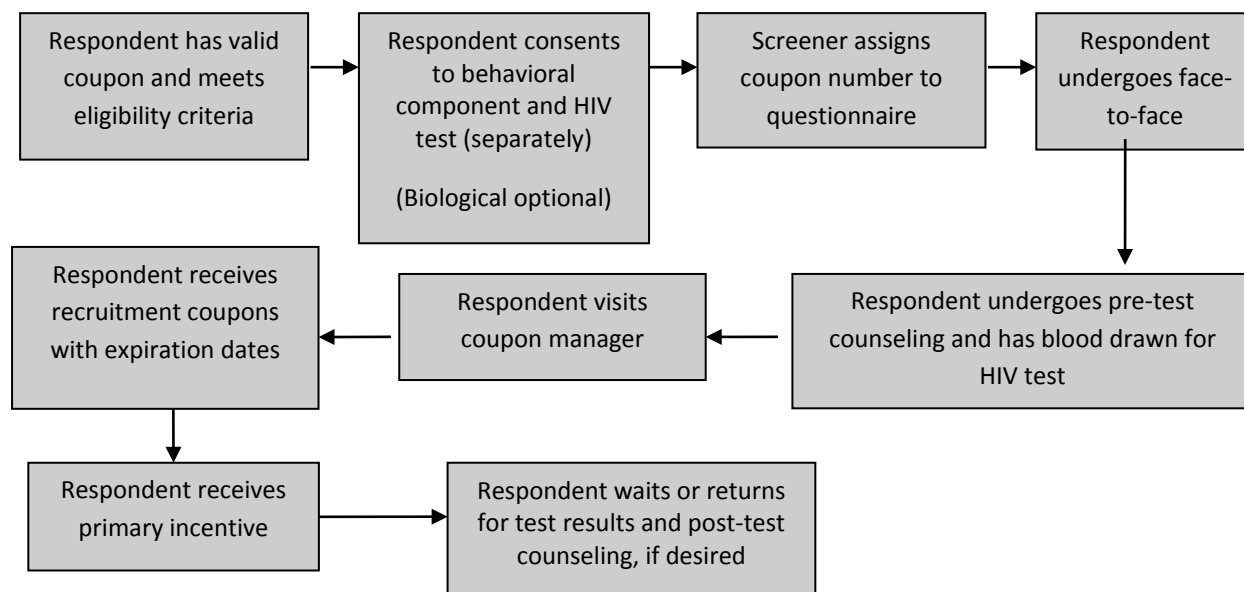
Each set of recruits was considered a "wave." The persons recruited by the seeds that successfully participated in the study comprised "wave 1" (Johnston, 2007). When these respondents in turn recruited their peers who enrolled in the study, their recruits comprised "wave 2." More waves per chain increased the chance of reaching RDS equilibrium, or the point at which the sample is no longer influenced by the non-randomly selected seeds.

The research team strictly monitored the use of the coupons through a computer system that tracked the number of recruits as well as unredeemed and valid coupons in the community at any given time. The coupon tracking system also monitored non-productive seeds and the number of waves recruited into each seed's chain, allowing the team to monitor the source of respondents. Coupons had an expiration date of 10 days from the time of each recruiter's enrollment to ensure efficient recruitment and that no valid coupons were in the community after the final date of data collection on September 30, 2011.

Data requirements for RDS analysis

For RDS analysis to be performed satisfactorily, it is essential to have the three following fields of data for each respondent (Heckathorn, 2009):

- The respondent's coupon number, or the number of the coupon that the respondent used upon enrolling in the study;
- The coupon numbers of three coupons given to the respondent for recruitment of his/her peers
- The respondent's personal network size: number of people the respondent knows within the target population (i.e., illicit drug users over 18 that live in Guatemala City).

Given the importance and complexity of the question on personal network size, the interviewer segmented the topic into the following four questions.

- How many men or women do you know and they know you who have used cocaine, crack, ecstasy, LSD or heroin in the past 30 days?
- How many of these people live in Guatemala City?
- How many of these people are 18 years or older?
- How many of these people have you seen in the past two weeks?

Data analysis

Respondent Driven Sampling Analysis Tool 6.01 (RDSAT) was used to calculate the proportion estimates and 95% confidence intervals (95% CI) for variables of interest, including HIV prevalence, drug use patterns, and sexual behavior. RDSAT was specifically developed to analyze data collected through RDS and adjusts for biases associated with chain referral sampling (Heckthorn, 2009). The software's multiplicity estimator was used to weight the data for respondents' network sizes and to control for differential recruitment patterns (Johnston et al., 2010). Proportion estimates and 95% confidence intervals for variables with over one-third of the sample missing (primarily because of skip patterns) were calculated using the "estimate prevalence" function.[3]

RDSAT's estimate prevalence function was also used for bivariate analysis of categorical variables to determine the socio-demographic profile of HIV positive respondents (Table 21) and HIV prevalence among select HIV risk groups, such as people who inject drugs and sex workers (Table 22) (Johnston et al., 2010). RDSAT is not able to calculate Pearson χ^2 or other tests of association. To determine statistically significant associations between categorical variables, such as HIV status and condoms use at last sex, the RDSAT-adjusted 95% confidence intervals were compared. Ninety-five percent confidence intervals that did not overlap were considered to be statistically significant. Medians and means were calculated in STATA 12.0 using the unadjusted data (Johnston et al., 2008).

$$95\%CI = N \pm 1.96\sqrt{Var(N)}$$

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[3] Currently there is a debate about the point of equilibrium and the respondents who should be considered for analysis. According to Johnston (2007), some researchers argue that only those respondents in the waves beyond the point of equilibrium should be analyzed. Recent analyses conducted by Giles et al. (2010) and Wejnert and Heckathorn (2008), however, found that the advantages of analyzing only data of respondents beyond equilibrium was not worth the loss due to reductions in sample size resulting from eliminating earlier waves. The analysis in this study does not eliminate earlier waves.

Human subjects approval

This study received human subjects approval from both Tulane University and the Comité de Etica (Ethics Committee) of the Ministry of Health, Guatemala.

RESULTS

Estimation of the size of the drug user population

The enumerators distributed 643 key chains among drug users in 59 locations throughout Guatemala City. After adjusting for the use of RDS, 10 out of 299 survey respondents reported receiving a key chain from study personnel. The adjusted proportion of respondents receiving the unique object was 3.1% (95% CI 0.8-6.1), resulting in an estimated 20,742 drug users in Guatemala City (95% CI: 2,313 to 39,172).

Cross-sectional survey

This section begins by recapping the performance of the seeds and development of recruitment chains. The following seven headings represent categories of data from the cross-sectional survey: sociodemographic profile of the study population, drug use, sexual behavior, condoms and lubricants, HIV prevalence and drug use, knowledge of HIV prevention and HIV testing sites, and exposure to prevention activities. The survey also included eight sets of questions on attitudes, motivations, and other psycho-social factors related to condom use, described in Appendix D.

Seed performance and chain development

The final sample size of 299 fell short of the original target of 367. Possible explanations for this smaller sample include a slow enrollment during the early days of the study, the fixed study time period, and the inability to attract more middle-class users to this location with the amount of reimbursement provided.

Once data collection began, the low-income seeds were the first to arrive to the study site and to start recruiting others. When recruitment began slowing down from the initial low-income seeds, new seeds—all low income—were added. This resulted in a steady flow of low-income recruits into the study, as recruits started to refer other friends to participate. Almost 79% of the sample resulted from two low-income seeds.

In total, the researchers contacted 18 persons to serve as seeds, but only 13 actually reported to FMA for the interview and agreed to recruit others. The study director approached seven individuals whom he subjectively considered to be middle- and high-income drug users and only one enrolled in the study.[4] Of the 13 seeds that enrolled, only 9 were able to recruit peers, including one middle-income seed. These 9 seeds and their respective recruitment chains were considered for analysis. The 4 unproductive seeds were dropped. One seed produced a chain of 12 waves, as illustrated in Figure 2. RDS Analytic Tool 6.01 was used to estimate equilibrium on all reported variables, which was reached well in advance of the maximum 12 recruitment waves attained in the sample.

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[4] The study director could not confirm income level until the seeds enrolled in the study and reported monthly income. Five of the 18 individual approached to be seeds—who were deemed to be middle income— did not enroll in the study. It is not believed that income-level influenced their decision to not participate.

Figure 2: Recruitment chains
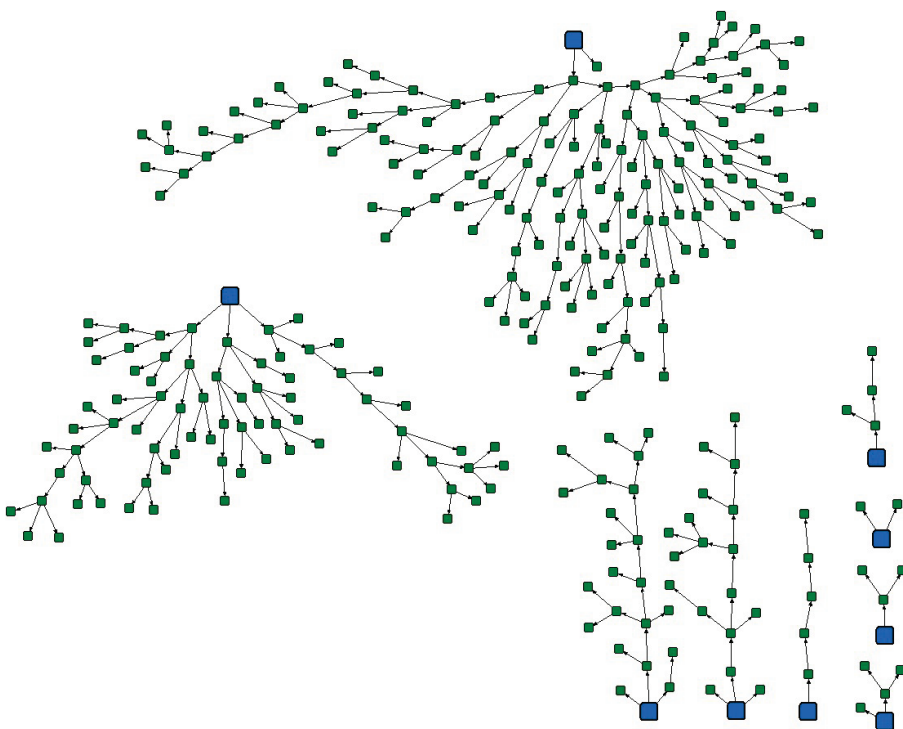
Socio-demographic profile of the study population

The data collection process yielded 299 eligible respondents, of whom 79% were male, 21% female. They ranged in age from 18 to 63, with a median age of 30 years (see Table 2).[5] Approximately half (49%) had completed primary school only and over one-third had attended or completed secondary school (39%). Five percent had no education, and 7% had a university education, indicating that the large majority of respondents had less than a high school education.

Just over a quarter (29%) of respondents were currently married or living in a union, 63% were single and 9% were separated/widowed/divorced. Nearly half (49%) of respondents had at least one child, the median being two children among those respondents who were parents.

The large majority of respondents reported their ethnicity as *ladino*[6] (80%), compared to indigenous/Mayan (17%) or other (2%). Only 9% reported a Mayan language spoken in the household, including Quiché, Mam, and Kakchikel.

In terms of a current primary source of income, the large majority cited their own work (79%), with much lower percentages mentioning parents/family (7%), spouse/partner (3%), or no income (10%). Among those who reported their own work, the median number of persons depending on this income was two persons. Regarding monthly household income, close to half (48%) reported Q1500 ($190 USD)

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[5] All tables are included in Appendix A.

[6] The term *ladino* is particular to Guatemala and refers to Spanish-speaking persons of mixed origin (mestizo, European, or assimilated indigenous). The definition of *ladino* is not defined by racial features but rather by language, dress, and culture.

or less, with 36% that reported Q1501-3000 ($191-$380 USD). Less than 16% had a household income of more than Q3001 ($381 USD).

Well over half of respondents considered themselves somewhat religious (61%) or very religious (10%), in contrast to at least one quarter that reported not being religious (29%). In terms of a related concept—spirituality—respondents were slightly more likely to report being spiritual, with only 20% claiming not to be spiritual.

The study also asked about sexual orientation. Only respondents who had had sex in the past three months (88% of the total) answered this question. Among this group, 56% reported to be heterosexual, 24% bi-sexual, 17% homosexual, and 3% transgender.

Drug use

Initiation of drug use
Respondents in this study reported to have initiated drug use with different drugs, the most commonly mentioned being marijuana (46%), followed by cocaine (35%). Far fewer respondents mentioned crack (11%), glue (3%) or other (5%; see Figure 3). The median age at first use of drugs was 15 years, see Table 3. The large majority initiated drug use with a friend (84%), with far fewer citing a spouse/partner (8%), family member (4%), or sex worker (1%).

Figure 3: Drugs first used by respondents
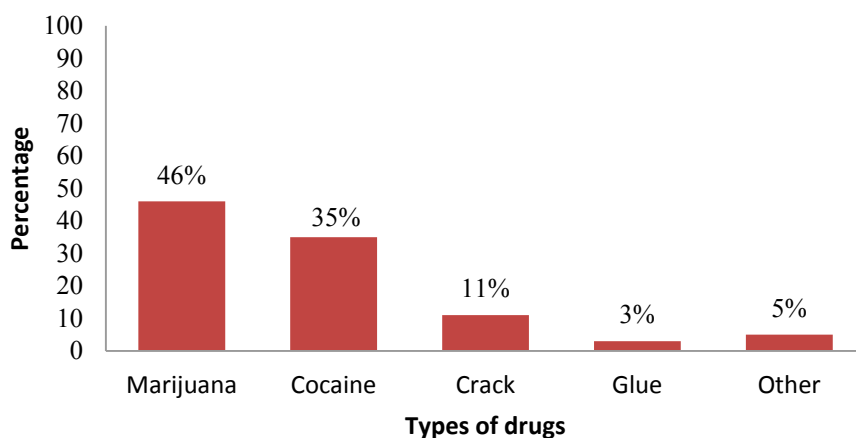
Types and frequency of drugs used
Respondents were asked to mention all the drugs that they had ever used (spontaneous recall; see Table 3). The vast majority cited both cocaine (94%) and marijuana (91%), followed by crack (77%). In sharp contrast, less than one in five mentioned other drugs: glue (18%), heroin (18%), ecstasy (14%), mushrooms (11%), LSD (8%), or *floripundia* (4%). Two percent or less of respondents had ever used poppers, methamphetamine (meth), DMT, opium, amphetamines, mescaline, or *salvia*.

Subsequently, the interviewer asked the respondent about the use of six specific illicit drugs, differentiating between "inhaled" and "injected" for cocaine and heroin. The results from this series of questions appear in Table 4. The number in each cell is the median, mean, or weighted percentage (as indicated by the column heading). As noted previously, "weighted" refers to the adjustments made by RDSAT to account for average network size and differential recruitment patterns. In parenthesis under each number are (1) the numerator and denominator (n/N) used to derive the number and (2) the 95% confidence interval (CI) around it.

When asked regarding each specific drug, the percent of "ever use" was similar to the responses given to the previous question, where respondents had to volunteer the names of the drugs used. As shown in Table 4, the three most commonly mentioned drugs were cocaine /inhaled (94%), marijuana (91%) and crack (77%). Less than 15% had used any of the other drugs that the interviewer specifically asked about: ecstasy (14%), heroin/injected (11%), heroin/inhaled (8%), LSD (8%), and cocaine/injected (5%).

Data on the use of each drug in the past 12 months, in the past 30 days, and in the past 24 hours provide additional insight into the drug use patterns of this population. Of these three time periods, "last 30 days" is highlighted in the analysis as most instructive, reflecting recent drug use behavior while not being too short of a window to capture routine drug use. The three most frequently consumed drugs in the past 12 months were cocaine/inhaled (83%), marijuana (73%) and crack (64%). In the last 30 days the same pattern occurs, with cocaine/inhaled being most prevalent (72%), followed by marijuana (68%) and crack (56%). The number of respondents reporting use in the past 30 days did not reach 5% for any other drug.

For the three most frequently cited drugs, the number of times used in the past 30 days was far higher for marijuana (median=30 times) than for crack (median=8 times) or cocaine/inhaled (median=4 times). Among the less frequently mentioned drugs, the mean number of times used in the last 30 days ranged from 1-3.

In terms of length of use (i.e., total number of years used), marijuana topped the list (median= 12 years), followed by cocaine/inhaled (10 years) and crack (8 years). Median length of use for the less frequently mentioned drugs ranged from 2-4 years.

The final variable in Table 4 is consumption of alcohol at the last use of each of these drugs. Over seven out of ten users of ecstasy, cocaine/inhaled or cocaine/injected reported drinking alcohol in conjunction with their last use of the drug (74%; 73%; 72% respectively). Approximately half of those who used crack (54%) or heroin/inhaled (49%) consumed alcohol when they last used these drugs. By contract, alcohol was less frequently consumed at last use of LSD (43%), marijuana (38%) and heroin/injected (28%). Although the combination of drugs and alcohol differed substantially by type of drug, it is noteworthy that one-quarter to three-quarters of respondents consumed alcohol at the time of last drug use, across all drugs.

The study also explored the use of multiple drugs and of drugs used within the same time frame (e.g., last 30 days, past 24 hours; see Table 5). In terms of the instances of cocaine, crack, ecstasy, LSD and

heroin used in the last 30 days, the majority (68%) had used only one drug in that period, whereas 29% had used two drugs. Only three percent reported use of three or more drugs in the last 30 days.

Table 6 shows the most frequent combinations, based on drug use in the past 30 days for the three most frequently used drugs; cocaine/inhaled, marijuana, and crack.[7] Among respondents, 26% had used both cocaine and marijuana, another 26% used cocaine, crack and marijuana, 14% used crack and marijuana, and 3% used cocaine and crack. By contrast, a smaller percent reported use of one drug only in the past 30 days: cocaine (16%), crack (13%) and marijuana (2%).

Results also sought to determine the relationship between inhaled and injected use of cocaine and heroin. Table 7 shows all possible permutations of using cocaine (in either form) or heroin (in either form) during the last 30 days. Among the 224 respondents that used either of these drugs, 95% used cocaine/inhaled exclusively. An additional 1% used cocaine in both forms. None of the drug users reported using heroin exclusively (injected, inhaled, or both). Just over 2% used cocaine/inhaled and heroin/injected, and the remaining 2% used cocaine/inhaled with some form of heroin.

Access to and source of drugs in Guatemala City
The interviewers asked respondents about the ease of obtaining five illicit drugs in Guatemala City. Due to a skip pattern in the questionnaire, these questions were asked only of the 266 drug users (88% of respondents) who had been sexually active in the past 3 months. The large majority answered that it was easy to obtain cocaine (86%) and crack (85%). By contrast, a third or less reported that it was easy to obtain heroin (34%), ecstasy (33%) or LSD (25%); see Figure 4.

Figure 4: Access to drugs

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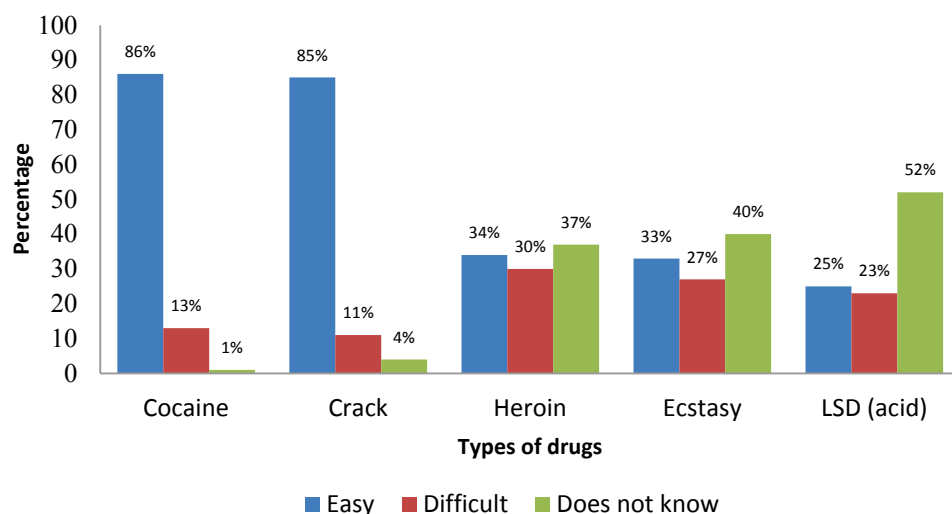
[7] Note that this table excludes possible use of ecstasy, LSD, or heroin, which were less frequently used in this population.

On average, respondents spent Q1159 ($145 USD) per month on drugs. This number represents a considerable sum, when compared to the income of this group: 48% reported a monthly household income of under $190 and another 36% reported between $191-390/month.

The four primary sources or locations for obtaining drugs were from a private house (37%), hotels/motels (30%), a friend or acquaintance (27%), or a dealer (25%). Discos/bars (9%) and home delivery (7%) fell considerably behind the other sources. Over one-third mentioned some other site.

Dynamics of drug use: venues and social networks

The most common locations cited for consuming drugs included own house (36%), someone else's house (32%), parties/discos/bars/concerts (30%), and parks (23%) (Table 9). Over one-third mentioned another site.

The survey included several questions related to the persons with whom the respondent used drugs. One-quarter (28%) reported using drugs alone, whereas the remainder used drugs in a group (43%) or both alone/in a group (30%). Among the 187 respondents who replied "in a group," over half indicated that the group remains the same from one week to the next, whereas one in five (20%) said that it changes, and a quarter (28%) indicated that some groups stay the same and some change.

Respondents were asked about their three closest friends: did they use drugs? Over half (58%) replied that all three used drugs, whereas one third (33%) indicated that 1-2 of them used drugs. Only 8% replied that none of their three closest friends used drugs. Among the 136 respondents with a steady sexual partner, only 38% reported that this partner uses drugs. Moreover, only 22% replied that this person was part of his/her group that used drugs.

Drug dependency, treatment and rehabilitation

Respondents were asked to answer how difficult they felt it would be to stop using drugs on a 4-point Likert scale. Though 21% claimed it would not be difficult, the majority expressed some level of difficulty: somewhat (42%), very (26%) or extremely difficult (11%), see Table 10.

A follow-up question was intended to gauge the respondent's perceived necessity for using drugs. This question was based on a 10-point scale, ranging from "not necessary" (1) to "most necessary" (10). The average score for sexually active respondents was 6 (SD: 2.91).

Of the full sample of 299 respondents, 16% were attending some type of drug rehabilitation program at the time of the survey (Table 11). Over one-third (35%) had ever been in rehab. Among those who had ever received treatment, the median number of times in treatment was 2 (range 1- 20) and the mean was 4 (SD: 4.90).

Sexual behavior

Types of sexual behavior and sexual partners

As shown in Table 12, 88% of the respondents in this study reported having had sex in the past 3 months (89% among men, 82% among women). These respondents were considered "sexually active" for the analysis.

Among sexually active respondents, the median number of sexual partners the last 12 months was 9 (range 1-135). Approximately 44% had 10 or more sexual partners in the last 12 months, 42% had 2-9, and 14% had just 1 sexual partner. In the last 30 days, respondents reported an average (median) of 3 sexual partners (range 0-63). Almost a third reported four or more partners in the last 30 days. Nearly 8% had no sexual partners in the last 30 days and 59% had one to three.

Of the total sample, 42% had charged or received payment for sex in the past 12 months. Although not shown, the percentages were 43% among men and 40% among women. Just under one-third (30%) of respondents reported having sex in exchange for drugs in the last 12 months. Among those having sex in the last 30 days, over 60% of respondents reported using drugs at last sex with any type of partner.

Table 13 provides an overview of the types and numbers of sexual partners that respondents in this study had had in the past year and in the 30 days prior to the survey. It also shows reported prevalence of condom use, alcohol consumption, and drug use during sex. The rest of the findings reported in this section are limited to sexually active respondents (i.e., those who reported having had sex in the past 3 months).

Almost three-quarters of the sexually active respondents in the study reported having at least one steady partner in the past 12 months, and the median number of steady partners was one. The percent reporting a steady partner dropped to 59% in the past 30 days, and again the median was one steady partner in that period. On average, respondents had sex twice a week (8 times a month) with the steady partner. Thirty-three percent reported condom use with a steady partner in the past month. Nearly 20% reported consistent condom use with a stable partner in the last 30 days (see Figure 5). Four in 10 respondents used drugs during sex with a steady partner, the median being 2 times per month, from which one can crudely estimate that respondents used drugs during sex in about one-quarter of instances with a steady partner. In terms of using drugs during last sex with steady partner, one-quarter of respondents reported using cocaine, one-quarter marijuana, 11% crack, and 16% other or didn't know the drug.

As show in Table 13, 77% of the sexually active respondents reported having one or more casual partners in the past 12 months (70% among men and 80% among women). On average, both male and female respondents reported four casual partners in the past year. The proportion of respondents reporting at least one causal partner over the past 30 days was 57%, with a median of two casual partners. Sexually active respondents reported an average of five total penetrative sexual acts with casual partners in the past 30 days. A higher percentage reported having used a condom with a casual partner than with a steady partner (63% vs. 33%). Of the respondents with causal partners, 59% reported consistent condom use. They were also more likely to use drugs with a casual partner (72%) than with a steady partner 42%). Among those using drugs during sex with casual partners, cocaine was the drug of choice, followed by marijuana.

Almost three-quarters (70%) of sexually active respondents reported being involved in the exchange of sex for drugs, money or other goods with a commercial partner in the past 12 months. On average, this group had had seven commercial partners in the past year, although the wording of the question does

not allow us to know if the respondent bought or sold sex. Approximately half (48%) reported sex with a commercial partner in the past 30 days, with an average of 3 partners and 7 sex acts with commercial partners during this period. With commercial partners in the last 30 days, respondents were more likely to used condoms consistently (75%) and at least once (81%). The percentage having used drugs during sex was similar for commercial sex partners (69%) and casual partners (72%), with the drug of choice among this group being cocaine (24%), marijuana (24%) and crack (17%).

Figure 5: Condom use by partner type
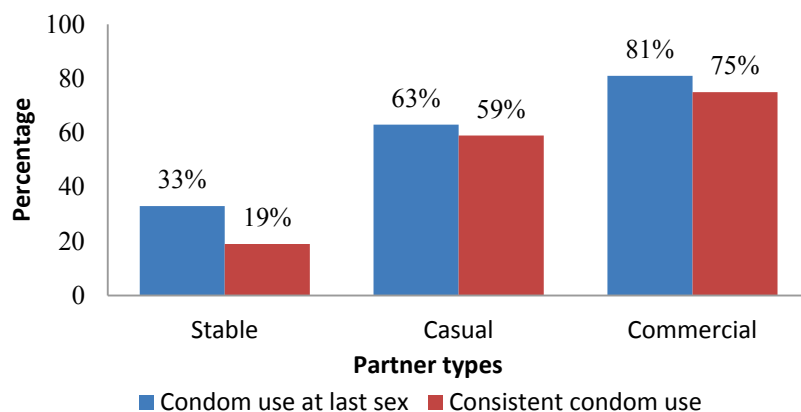
Whereas the types of sexual partners reported in the past 12 months were similarly distributed among respondents reporting steady, casual, and commercial partners (all near 75%), the percent was dramatically lower for sex with an injecting drug user (20%). Given the relatively few drug users in this study that had ever tried injected heroin (11%) or injected cocaine (5%), it is not surprising that only one in five respondents reported sex with an injecting drug user in the past 12 months, and only 5% in the past 30 days. Although the denominator is very small and the numbers should be interpreted with caution, two-thirds of respondents having sex with a person who injects drugs in the past 30 days reported condom use. Well over three quarters reported use of drugs during these sexual acts with injecting drug users, the most common being cocaine, crack and marijuana.

Respondents were also asked to report drug use in groups and their "usual sexual partners" (see Table 14). Surprisingly, the highest percentage (62%) responded that their usual sexual partners were non-drug users that were not members of the group of people with whom they use drugs. A slightly lower percentage (58%) claimed that their usual sex partners were drug users but not part of their own drug-using group. Just one-quarter (27%) mentioned that their usual sex partners were members of their drug using group. A further 22% indicated that their usual sex partners were non-drug using members of their group.

Respondents who reported having sex in the past week (approximately two-thirds of the sample) reported an average of one partner in the last week who used drugs on the day of sex.

Experience with STI symptoms or diagnosis

As shown in Table 15, almost one-third (31%) of the sexually active respondents had or suspected they had had a sexually transmitted infection in the past month. The median number of STIs was one.

In terms of specific symptoms among sexually active respondents, 15% reported that they had had an ulcer, sore, pimple or excessive itching on genitals sometime in the last 12 months; the median frequency was one time (Table 16). When asked about abnormal discharge, excessive fluid or pus in the last 12 months, 9% replied affirmatively, again with a median of one time (Table 16).

Among those that had or suspected having an STI or reported having a symptom in the past 12 months, the majority (56%) sought treatment at a health center, clinic, or hospital (Table 18). An additional 3% looked for medicines at pharmacies, whereas 10% did nothing/waited until the symptoms disappeared.

Overlap with other key populations

To determine whether there is overlap with other behaviors that put individuals at heightened risk for HIV transmission, the analysis explored the extent to which sexually active drug users also fell in one or more of the following key populations:

- Self-reported gay/bisexual men or transgendered women[8];
- Sex work: men or women reported charging or receiving payment for sex in the past 12 months;
- Person who injects drugs (PWID): has injected heroin or cocaine in the past 12 months.

Table 19 and Figure 6 demonstrate that among the 218 sexually active male respondents, almost two-thirds (64%) also add one or more of the above-cited risk factors. Among the 48 sexually active female respondents, 55% had at least one other risk factor. Conversely, for 36% of male and 45% of female respondents, drug use was their only HIV risk factor in this assessment.

Figure 6: Overlap of sexually active drug users with other key populations

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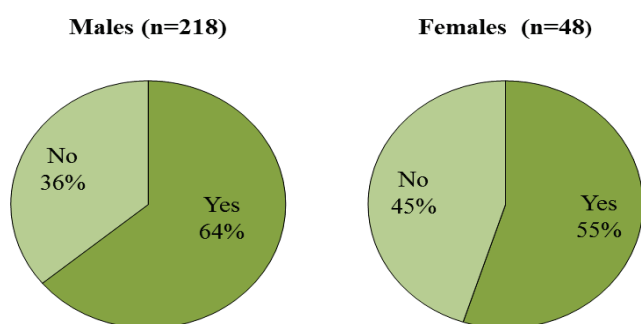
[8] Male respondents were <u>not</u> asked whether they had unprotected anal sex with another man or transgendered woman in the 12 months.

Based on the data in Table 19, Figure 7 illustrates the overlap for the 64% of male respondents with other key populations, which consists of (in order of importance):

- Gay/bisexual men or transgender women <u>and </u>sex work: 32%
- Gay/bisexual men or transgender women <u>only</u> 15%
- Sex work <u>only</u>: 11%
- PWID <u>and</u> sex work: 2%
- PWID <u>only</u>: 2%
- Has all 3 risk factors (Gay/bisexual men or transgender women, PWID, <u>and</u> sex work): 1%
- Gay/bisexual men or transgender women <u>and </u>PWID: 0%

Figure 7: Overlap for elevated risk of HIV among sexually active males (n=259)
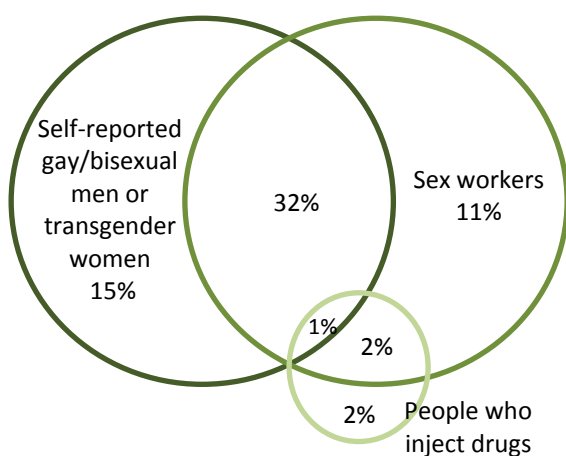
Figure 8 on the following page illustrates the overlap for the 55% of female respondents with other risk factors for HIV, which consists of (in order of importance):

- Sex work (48%)
- Sex work <u>and </u>PWID: 5%
- PWID <u>only</u>: 1%

Figure 8: Overlap of elevated risk for HIV among sexually active females (n=30)
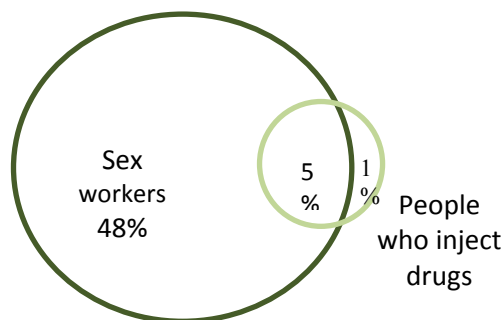
HIV prevalence and drug use

HIV prevalence

Of 299 respondents who were successfully interviewed and tested for HIV, 21 or 6% (95% confidence interval: 2.9-10.1) were HIV-positive.

Socio-demographic profile of HIV-positive drug users

Table 20 shows the socio-demographic characteristics of the 21 persons who tested positive for HIV. However, with such a small denominator, these percentages should be interpreted with caution.

Almost all (94%) were male, and the overall median age was 35 years. The majority had some primary or secondary education. Most (80%) were single, 14% were married/in union and 6% were separated/ widowed/divorced. Three-quarters (78%) were *ladino.*

For the majority (63%), their income came from their own work, averaging less than Q3000 per month for all HIV positive respondents. Only 4% reported being "very religious," although 24% considered themselves "very spiritual."

Correlates of being HIV-positive

Tables 21 and 22 attempt to relate sociodemographic characteristics with HIV-positive status. However, because of the relatively small sample size (n=299) and the relatively low percent of respondents who were HIV positive (6%), there was not sufficient power to demonstrate any statistically significant differences. From this data, potential sociodemographic factors relating to HIV positive status may include male gender, older age, and single marital status. Behavioral risk factors may include engaging in sex work, being a self-reported gay/bisexual men or transgender women, having had (or suspected having had) an STI.

Condoms and lubricants

Reported use of condoms

As shown in Table 23, 59% of sexually active drug users reported condom use at last sex (65% among men, and 32% among women). However, only 37% of the sexually active respondents reported consistent condom use during the past month. One in five had a condom with him/her at the time of the interview.

Perceived condom availability

The survey included a series of five questions related to ease of access to condoms. In all cases, the large majority of respondents agreed or strongly agreed to the following statements (see Table 24):

- *It's easy to find condoms near the place that you usually have sex* (82%).
- *You can always find a condom when you need one* (80%).
- *Finding a place that sells condoms is easy* (92%).
- *It's easy to always have a condom at hand* (82%).
- *You can find a condom in less than 10 minutes from where you often have sex* (68%).

Knowledge and use of lubricants among self-reported gay/bisexual men or transgender women

Nearly 93% of sexually active gay/ bisexual men or transgender women respondents claimed to know about water-based lubricants, and almost all of them (97%) reported having tried them (see Table 25). However, over half (57%) reported "always" using condoms and lubricants during sex in the past 30 days. The remainder reported "almost always," "occasionally," or "never" using lubricants in the past 30 days (16%, 17%, and 10%, respectively). About eight in ten (84%) reported use of a water-based lubricant at last sex.

Knowledge of HIV prevention and HIV testing sites

When asked to spontaneously list ways of preventing HIV, most respondents mentioned condoms (98%), and one-fifth or less mentioned abstinence (21%), being faithful (13%) or reducing the number of sexual partners (11%; see Table 26). When the interviewer read the list of possible ways to prevent HIV, a similar percentage recognized condoms (98%). Approximately three-quarters recognized that being faithful (76%), abstinence (77%) and reducing number of partners (73%) were also ways to prevent HIV. Further, 82% correctly affirmed the idea that a person can have HIV and still look healthy.

Almost three-quarters (72%) of the drug users in this study knew of a site for HIV testing other than the FMA where they were interviewed and tested (see Table 27). Just over half (58%) claimed to know a location other than FMA for pre-test counseling, and just under half (43%) had been tested for HIV in the past 12 months. Of those tested, 95% reported to have received the results of their HIV test. Relatively few (10%) reported that they had experienced discrimination when tested for HIV. The majority of those who received their test results (86%) reported receiving post-test counseling.

With regard to HIV risk (Table 28), the large majority of respondents agreed or strongly agreed that AIDS is a fatal disease (88%), AIDS is an incurable disease (96%), and one can get gravely ill with AIDS (98%). Just over half strongly agreed (17%) or agreed (38%) that they were at risk, whereas 33% disagreed and

13% strongly disagreed. Figures were similar for the statement "you are at risk of contracting HIV because you have sex without condoms." For the statement "you are not the type of person who can contract HIV/AIDS," 66% disagreed or strongly disagreed.

Exposure to prevention activities

Exposure to prevention programming on drug use and on HIV risk

A high percentage of respondents reported having been exposed to TV, newspaper, and/or radio messages related to drug use prevention (80%) or HIV/AIDS (87%) in the past 12 months (see Table 29). However, the percentage reporting that they had attended a talk about drug use was much lower (41%).

The survey measured self-report of exposure to a series of specific programs on several different channels that presumably carried HIV prevention messages (see Table 30). For each program, the percentage of respondents who reported any level of exposure ranged from 35% to 74%.

The survey also asked about four different programs that PASMO had produced in the recent past: (*Gente, Hombres de Verdad*, *Juanes*, and *Got it? Get it* and their dissemination channels (TV/cable/radio/print/outdoors). The most frequently cited programs/channels (i.e., those that had at least 20% of respondents reporting exposure to it 10 or more times) were *Juanes*/TV/cable (27%), *Juanes*/radio (27%), *Gente*/radio (21%), *Got It? Get It* (TV/cable, 20%). By contrast, programming that the respondents reported to have never seen included *Gente* on TV/cable (65%), *Hombres de Verdad* on TV/cable (55%) and *Got It? Get It* in print/outdoors (52%) and radio (50%).

Exposure to HIV prevention education or information from specific sources

The interviewer asked respondents if they had received any type of HIV/AIDS education or information in the last 12 months. Over half (62%) reported that they had not (see Table 31). The programs/organizations most frequently cited by respondents were Fundación Marco Antonio (25%), Colectivo Amigos Contra el SIDA (18%), PASMO/Condoms VIVE (17%), Asociación Gente Positiva (10%), Asociación Gente Nueva (10%) and Proyecto Vida (6%).

Respondents were also asked if they had participated in any of a list of seven PASMO activities in the past 12 months (Table 32). Over a quarter of the respondents had participated in *Espacio P* (28%) or had talked with a PASMO educator (29%). About one in five had participated in *El Reto* (19%)*, 1-2-3 Saludable* (17%), and *Decisiones* (18%). They were least likely to have participated in *Viviendo la Vida* (13%) and *XY* (11%). At least five in ten had not participated in any of the PASMO activities.

DISCUSSION

Globally, between 149 and 272 million people, or between 3.3% and 6.1% of the population aged 15-64, have used illicit substances at least once in the past year. About half that number is estimated to represent current drug users, that is, those having used illicit drugs at least once during the past month (UNOCD, 2011).

Until recently, little attention has been paid to drug use and its relationship to HIV in Guatemala, given the small size of the country and anecdotal evidence that most drug use consisted of non-injection drugs. Yet with the increasing evidence of heightened HIV risk among non-injection drug users and with the escalating drug traffic passing through Guatemala, the question of HIV risk among drug users in Guatemala takes on new importance.

This study provides the first available data from Guatemala on several key indicators: the estimated size of the drug user population in Guatemala City, the prevalence of HIV among low-income drug users in Guatemala City, and overlapping risk factors for HIV. In addition, it provides a wealth of data on drug use (types of drugs, age at initiation, source of supply) and sexual behaviors (number and types of partners, exchange of sex for drug, use of drugs at last sex, among others).

The discussion section begins with an overview of the limitations of the study and then highlights key findings and their implications for programs, policy and future research.

Limitations of the study

The major limitation of the data collection was the inability to attract respondents across the full income spectrum. Anecdotal evidence suggests that occasional or regular drug use may be common among many wealthier Guatemalans. The qualitative study conducted previous to this survey provides insights into the drug use of young, middle class residents of Guatemala City (Fortin & Bertrand, 2011). Yet the quantitative study attracted almost entirely low-income respondents. Census estimates show that nearly 90% of Guatemala City falls into the study's low income category, which is consistent with our estimates (Research Technology, 2002).

There appears to be three primary reasons for the inability to attract higher-income drug users into the study: the level of reimbursement, the study location, and the level of connectedness of the income groups. The study reimbursements may have been too low to attract middle/upper income individuals. Although the research team would have liked to increase the reimbursement, the local IRB had stipulated Q50 ($6.50 USD) as the maximum allowed. In addition to the selection bias, a stipend increase could have also been potentially coercive if the low-income respondents' decision to participate was unduly affected by reimbursement. The study location may have been undesirable in terms of safety and convenience for higher-income drug users, limiting their participation. Finally, low-income and high-income drug users may represent two separate networks. This lack of interaction may violate a key assumption of RDS, limiting the sample to primarily low-income users.

Additionally, the desired sample size of 367 was not met in this study. This was the sample size deemed to necessary to meet RDS equilibrium—or the point at which the sample characteristics are assumed to no longer significantly change regardless of the number of additional respondents. In this study, one chain achieved 12 waves or recruitment, far surpassing the minimum number required for any variable; thus, this sample can be considered representative of the low-income drug user population of Guatemala City. Yet the size of the sample limited the ability to obtain significant results in terms of correlates of HIV prevalence (though this was not originally a primary objective of this study).

Another limitation relates to possible social desirability bias, that is, the respondents might not have revealed the full extent of undesirable behaviors or practices. This bias is somewhat mitigated by the fact that these individuals agreed to participate in a study for which the primary selection criterion was use of an illicit drug in the past 30 days. Thus, it is thought that the respondents had to have assumed a reasonable level of trust with the interviewers when agreeing to participate.

As with many surveys, there is a possible courtesy bias, or the chance that respondents gave the interviewer the answer he/she perceived that the interviewer would want to hear. For example, questions related to recall of specific programs that PASMO has carried out might have influenced some respondents to answer affirmatively. However, the varied range of responses over different types of programs via different channels and the percent answering "zero times" for seeing or hearing different programs supports the notion that courtesy bias did not have a major influence in responses. Nonetheless, it is probably wise to interpret the results to this set of recall questions on different programming in relative terms rather than as absolute numbers.

The study asked respondents about sexual orientation but it did not ask directly about anal sex in the past 12 months or the last 30 days. It is not sexual orientation but rather having anal sex that puts men who have sex with men at greater risk for HIV transmission. Also, it did not ask about sharing of drug injection equipment among the few IDU drug users. Future research on this topic should include these questions to increase the relevancy of results.

Although RDS has become the method of choice for studying some hidden populations, recent assessments of this methodology have called into question whether several of its key assumptions are accurate, limiting the validity of the estimates attained (McCreesh et al., 2012; Burt et al., 2010). For example, the inability of the current study to attract middle- to upper-class drug users resulted in a sample that may well reflect the patterns of drug use and sexual behavior among lower-class drug users, but does not capture the experience of the full range of drug users in this population. RDS holds several key assumptions related to how individuals interact and recruit each other and on the characteristics of social networks. It is possible that RDS assumptions were not met during recruitment for this study, which may over- or underestimate some of the results of this study (Silva-Sebastian et al., 2012; McCreesh et al., 2012).

Finally, it is important to underscore that this study was cross-sectional. Data is presented on correlates of seropositivity for the purposes of generating hypotheses for future research. However, such correlations should not be interpreted as causal or statistically significant. Also, the findings from this

sample in Guatemala City are not generalizable to other populations. Given that this was the first study of its type to be conducted in Guatemala on the topic of drug use and sexual behavior as risk factors for HIV transmission, the data provide a wealth of information on this under-researched topic in spite of these limitations.

Comparison of these findings with other research on these topics

Estimating the size of drug use populations

Consistent with the current critical global theme for AIDS prevention "Know your Epidemic," it is essential that countries with concentrated HIV epidemics have up-to-date population estimates of most-at-risk populations (Paz-Bailey et al., 2011). This study produced an estimate of the size of the population of drug users (specifically of cocaine, crack, ecstasy, LSD, and heroin) in Guatemala City of 20,742 users (95% CI: 2,313 to 39,172). This number represents 2% of the total population of Guatemala City[9] over 18 years of age.

Importantly, most methods of size estimation may contain biases that lead to under- or overestimation of the population. No other sources of size estimation in this population are available to validate this study's estimate. As recommended by Paz-Bailey and colleagues (2011), including specific questions in national household surveys could help triangulate results and improve the size estimations of the drug using population.

To our knowledge, the only other estimate on number of drug users in Guatemala in the published literature to date is from Aceija and colleagues (2004), who estimated the number of injection drug users for the country to be 7,000 (with the low/high estimates at 6,000-9,000). However, it was unclear from the article the basis of this calculation. Moreover, it is unclear if the estimate included non-injection drug use.

Prevalence of HIV among non-injecting drug users

The current study found that 6.0% of drug users (almost exclusively non-injection drug users) in Guatemala City were HIV positive (95% confidence interval: 2.9-10.1). Given the paucity of studies on HIV prevalence among drug users in Latin America or on non-injection drug users elsewhere, it is somewhat difficult to put this figure in context. Frost and colleagues (2006) found an HIV prevalence of 4.1% among people who injected drugs in the Mexican border town of Ciudad Juarez. HIV prevalence was reported as slightly lower (2.8%) among non-injection drug user at a drug detoxification center in Northern Thailand (Razak et al., 2003). One study among NIDUs in North America showed similar levels; Strathdee and Sherman (2003) reported an HIV prevalence of 3.6% among NIDUs in Baltimore, Maryland (statistically similar to the HIV prevalence among people who injected drugs in the same study: 4.4%).

Overlap of populations at elevated risk for HIV

In this study, almost two-thirds of the male drug users and just over half the female drug users reported additional risk factors for HIV. For men, the most notable risk factors were sexual orientation/gender

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[9] For the purposes of this study, eligible respondents had to live in the municipalities of Guatemala, Mixco, Villa Nueva, Fraijanes, Santa catarina Pinula or San José Pinula

identity and sex work combined (32%), sexual orientation/gender identity only (15%), and sex work only (11%). Among women, these risk factors were sex work (48%), sex work and injecting drug users (5%) and injecting drug users only (1%).

Evidence from other countries suggest that some drug users turn to sex work out of financial necessity to support their addiction, while some sex workers seek emotional escape from their life circumstances through drugs. In either situation, influence of drugs can exacerbate the already high-risk situation of sex work, as drugs can impair judgment and ability to practice safer sex (Amin & Burrows, 2005).

These dual risk factors are evident from the surveillance studies conducted in the region among other groups at risk for HIV. For example, in a study of at-risk groups conducted in 2009-2010 in Managua, Nicaragua (Morales-Miranda et al., 2011), a quarter of the MSM and of transgendered respondents reported drug use in the past 12 months, with the most widely used drugs being *piedra*, crack or cocaine.

The sample size of 299 did not allow for definitive multivariate analysis of the socio-demographic correlates of being HIV positive. However, the majority of the HIV positive cases (15 of 15 for men who had sex in the past 3 months, 2 of 4 for women who had sex in the past 3 months) had at least one other risk factors: either sexual orientation or sex work. Of note, none of the HIV positive respondents reported injection drug use.

Sex of drug users, types of drug use and patterns of initiation
In the current study, 79% of the drug users were male. This percent is consistent with data reported for other Latin American countries, where 70-80% of users are male (Aguilar-Gaxiola et al., 2006). The data of the present study also is consistent with the 2005 World Drug Report, indicating that majority of users are between 18-25, with cocaine and heroin being used primarily by those on the high end of the age bracket (UNODCCP, 2005).

The prominence of cocaine in the current study is consistent with the 2011 World Drug Report, which states that cocaine use in Central and South America is higher than the global average. The estimated annual prevalence among the adult population ranges between 0.5% and 0.6% in Central America (UNODC, 2011).

The use of non-injection drugs, in contrast to injection drugs, is borne out by other studies in the region, in particular the biological and behavioral surveillance surveys of other populations at high risk in Central America (e.g., in Nicaragua; Morales-Miranda et al., 2011).

Among respondents, the average age of initiation to drug use was 15 years, most frequently with marijuana. This is slightly younger than the age reported by Vega and colleagues (2002) for selected locations worldwide. These data support the widely held belief that marijuana is the entry point for illicit drugs, but in the case of Guatemala City, cocaine was a close second.

Topics for further research
The findings from this study raise myriad questions for future research, including

- Does the increased risk for HIV among non-injection drug users relate to their drug use or to other risk factors (i.e. sexual orientation, or sex work)?
- Do other populations in Guatemala have elevated risk for HIV, such as different socioeconomic classes or populations outside Guatemala City?
- Is there sexual mixing across the economic classes of Guatemala that represents a potential bridge for the transmission of HIV?
- Will the escalation of the drug trade in Guatemala increase the prevalence of drug use and associated risks among Guatemalans?

Programmatic implications

Given the overlap in risk factors encountered in this study, local experts and participants in the study's dissemination conference advocated for "cross-over programming," whereby (1) HIV programming should redirect part of their efforts to reach the subgroup of drug users within their target population and (2) drug prevention/treatment programs should explicitly integrate HIV education and prevention services into their ongoing activities. Especially considering limited resources, integrated programming would be more cost-effective than developing new programmatic initiatives intended only for drug users.

The following findings from this study are useful to those designing HIV prevention programs:

- In designing outreach strategies, programs should remember that the vast majority of drug use in Guatemala City, at least among low-income respondents, appears to be non-injection cocaine, marijuana, and crack. Targeted HIV prevention efforts should broaden their scope beyond injection to non-injecting drug users.
- Drug users are at higher risk than the general population for HIV. Part of this risk may result from other types of behavior related to HIV transmission: unprotected anal intercourse (not measured in this study) or sex work. In turn, addressing the influence of drug use on HIV-related risk among sex workers, gay/bisexual men and transgender women in this setting is critical in future HIV prevention programming.
- The influence of injection drug use on HIV prevalence in Guatemala City is low. Although the sample is too small to yield statistically significant results, the data provide no indication that testing HIV-positive is related to using injection drugs or having a sexual partner who is an injection drug user. Although this threat could emerge if injection drug use increases in the future, it does not appear to explain current HIV transmission in this population.
- The majority of drug users in this population regularly engage in at least one type of higher risk sex with casual partners or commercial partners; very few have had sex partners who inject drugs. Consumption of drugs—highly prevalent during these sexual encounters—likely heightens this risk.
- Although a quarter of respondents reported using drugs alone, the majority consume drugs in groups, at least part of the time. The effects of social networks are evident from the findings; almost all respondents reported that at least one of their closest friends consumes drugs; and almost 40% indicated that their steady sexual partner used drugs. Programmatic implications of

these findings include the importance of capitalizing on these social networks in any type of prevention work, such as getting drug users to encourage others in their network to get tested.

- Drug users know of condoms as a prevention method and had reported using them regularly but not consistently. Thus, condom promotion should include strategies to encourage consistent condom use, in addition to the promotion of lubricants among gay/bisexual men and transgender women.

- This study provided suggestive evidence of the role of STIs in HIV transmission. In fact, having a diagnosis or symptom of an STI was of borderline significance as a correlate of HIV status. Although most STI treatment providers are undoubtedly aware of the link between STIs and HIV transmission, clinic visits for STI treatment could also serve to discuss drug use with clients and to provide referral to available drug prevention/treatment services.

- The findings also point to the need for greater HIV prevention among this population (e.g., to increase awareness of testing sites). In addition, these findings signal the need for reaching drug users with information on treatment services, given that over 80% recognized it would be difficult for them to stop taking drugs.

Conclusion

In sum, this drug user population in Guatemala City is at heightened risk of HIV, although some of the risk results from overlap with vulnerability experienced as members of other groups at heightened risk, such as gay/bisexual men, transgender women and sex workers. Future HIV programming should expand to include HIV prevention in drug programs and drug prevention/treatment in HIV prevention activities.

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APPENDICES

Appendix A: Tables

Table 1. Receipt of key chain (used to estimate size of drug user population)

	n/N	Weighted %	95% CI
Reported receiving key chain	40/299	13.8	7.9-20.7
Among those reporting having received a key chain	*(n=40)*		
Showed key chain to interviewer	3/40	6.9	0.0-17.6
Among those not in possession of a key chain	*(n= 37)*		
Correctly described the key chain	4/37	13.4	0.0-30.9
Among those who did not receive, show or correctly describe a key chain	*(n=292)*		
Recognized key chain when shown	3/292	0.4	0-1.0
Among those in who showed, correctly described or recognized the key chain	*(n=10)*		
Source of key chain			
A person with A PASMO name tag and a red fish	8/10	85.0	40.9-100.0
A friend or family member	2/10	15.0	0-59.2
They gave it to me in the clinic	0	--	--
Other	0	--	--
Among all respondents	(n=299)		
Interviewer's determination that respondent received a key chain	10/299	3.1	0.8-6.1

Table 2. Select socio-demographic characteristics of the study population

Drug Users (N=299)	n	Weighted %	95% CI
Sex			
Male	242/299	78.5	71.7-86.3
Female	57/299	21.5	13.7-28.3
Age Groups			
18-24	88/299	31.1	23.7-38.0
25-34	92/299	32.1	25.5-40.6
35-44	87/299	26.0	19.4-32.5
45-65	32/299	10.8	5.8-16.4
Median (range) Age	30 (18-63)		
Education			
No education	17/299	5.4	2.6-8.6
Primary (incomplete/complete)	130/299	49.0	40.5-57.3
Secondary/Bachillerato (incomplete/complete)	125/299	38.9	31.7-47.0
University (incomplete/complete)	27/299	6.7	2.3-12.7
Marital status			
Single	193/299	62.5	53.9-71.4
Married/common law	79/299	29.0	20.6-37.6
Separated/divorced/widowed	27/299	8.5	4.7-12.8
At least 1 child			
Yes	155/299	48.9	40.1-57.8
No	144/299	51.1	42.2-59.9
Median (range) number of children (among those with children)	2 (1-9)		
Self-report of ethnicity			
Ladino	235/299	80.1	73.2-86.1
Indigenous (Mayan)	52/299	17.4	11.7-24.1
Garífuna	7/299	1.4	0.2-3.0
Other (specify)	5/299	1.1	0.1-2.7
Mayan language spoken in household			
Yes	23/299	8.6	85.8-95.5
No	276/299	91.4	4.5-14.3
Monthly household income			
Q0-1500	143/299	47.8	39.2-57.1
Q1501-3000	111/299	36.4	28.8-44.7
Q3001-5000	31/299	12.1	6.2-19.0
Q5001+	14/299	3.6	0.8-7.1
Median (range) number of people who depend on respondent's monthly income	2 (1-11)		

Table 2 (continued). Select socio-demographic characteristics of the study population

	n	Weighted %	95% CI
Source of Income			
Does not have an income	21/299	9.5	3.9-15.0
Own work	240/299	79.3	72.7-86.2
From parents/family	24/299	7.2	3.8-11.3
From sex partner (husband or wife/ boyfriend or girlfriend/lover)	9/299	3.4	1.1-6.5
From other	5/299	0.7	0.1-1.5
Level of religiosity			
Not religious	95/299	28.6	21.5-36.2
Somewhat religious	180/299	61.4	53.3-69.2
Very religious	24/299	10.0	5.4-15.3
Level of spirituality			
Not at all spiritual	60/299	19.6	13.8-26.1
Somewhat spiritual	183/299	59.4	51.4-67.3
Very spiritual	56/299	21.0	14.0-28.3
Among those who had sex in the last 3 months[1]	*(n=266)*		
Self-identified sexual orientation or gender identity			
Heterosexual	154/266	56.1	45.3-65.3
Bisexual	72/266	23.7	17.1-31.8
Homosexual/gay/lesbian	33/266	17.1	9.6-26.1
Transgender woman	7/266	3.2	0.7-6.2

[1]Due to an inadvertent skip pattern, the question of sexual orientation and gender identity was only asked of respondents that had had sex in the past three months.

Table 3. Drug use patterns

Drug Users (N=299)	n	Weighted%	95% CI
Drug first used by respondent			
Cocaine	78/299	35.2	37.3-54.1
Crack	28/299	11.2	26.8-43.2
Marijuana	154/299	45.5	6.5-16.9
Glue	21/299	3.2	1.3-6.0
Other	18/299	4.8	0.2-8.2
Age at first use of (any) drug			
Median (range)	15 (6-52)		
Person(s) with whom first drug use began			
Friend	247/299	83.9	77.8-89.7
Sexual partner (husband or wife/ boyfriend or girlfriend/lover)	16/299	7.5	3.0-12.7
Family members	20/299	4.4	2.0-7.2
Sex worker	3/299	1.4	0.0-2.9
Other	13/299	2.8	0.8-6.6
Drug ever used (spontaneously mentioned)			
Cocaine	278/299	94.2	90.9-97.1
Crack	249/299	77.2	68.8-85.6
LSD (acid)	44/299	8.2	4.7-12.5
Ecstasy	64/299	13.9	8.9-19.0
Heroin	63/299	17.8	12.4-24.3
Marijuana	280/299	90.9	81.0-95.9
Methamphetamine (crystal)	18/299	2.1	0.9-3.7
Glue	77/299	18.3	12.9-24.4
Mushrooms	57/299	11.2	7.2-15.8
Poppers	13/299	2.2	0.6-4.3
DMT	10/299	1.1	0.3-2.4
Mescaline	2/299	0.2	0.0-0.8
Amphetamines	8/299	0.6	0.2-1.2
Opium	7/299	1.1	0.3-2.1
Salvia	1/299	0.2	0.0-0.7
Floripundia	25/299	3.7	2.0-5.9
Other	58/299	13.4	8.7-19.3

Table 4. Types and frequency of drugs used among low-income drug users in Guatemala City[1]

Type of drug	% ever used	% used in last 12 months	% used in last 30 days	# times used in last 30 days (median)	Used in last 24 hours	# times used in last 24 hours (median)	# years of use (median)	Alcohol consumed at last use of drug
Cocaine (inhaled)	94.2 (278/299) (90.9-97.0)	82.6 (252/299) (75.0-88.3)	71.5 (224/299) (63.9-79.0)	4 (1-30)	16.3 (59/299) (11.2-22.1)	1 (1-11)	10 (0-40)	72.8 (219/278) (63.4-81.8)
Cocaine (injected)	5.4 (25/299) (2.8-8.4)	1.5 (8/299) (0.4-3.0)	0.9 (4/299) (0.1-2.1)	1.5 (1-3)	0.4 (1/299) (0.0-1.4)	1 (n/a)	3.5 (0-28)	71.5 (13/23) (43.9-92.7)
Marijuana	90.9 (280/299) (80.0-96.0)	72.7 (237/299) (63.0-80.8)	67.8 (219/299) (58.4-76.4)	30 (1-30)	34.6 (139/299) (27.8-42.1)	3 (1-10)	12 (0-40)	37.8 (103/280) (30.3-45.4)
Crack	77.3 (249/299) (68.7-85.7)	64.2 (222/299) (55.8-72.2)	56.4 (184/299) (47.1-64.9)	8 (1-30)	16.2 (65/299) (11.1-21.4)	2 (1-10)	8 (0-33)	54.3 (140/249) (44.0-64.1)
Ecstasy	13.9 (64/299) (0.9-19.1)	7.0 (30/299) (3.7-11.1)	4.1 (16/299) (1.8-6.7)	1 (1-10)	0.4 (1/299) (0.0-1.3)	1 (n/a)	1.5 (0-32)	74.1 (46/64) (58.9-87.9)
Heroin (injected)	11.0 (45/299) (7.1-15.4)	6.2 (27/299) (3.0-9.9)	2.5 (11/299) (0.9-4.5)	3 (1-10)	0.5 (2/299) (0.0-1.5)	1.5 (1-2)	2 (0-32)	27.6 (19/45) (13.8-47.7)
Heroin (inhaled)	7.7 (23/299) (0.5-13.2)	2.5 (8/299) (0.7-4.8)	0.9 (4/299) (0.0-2.1)	2 (1-8)	0.4 (1/299) (0.0-1.4)	1 (n/a)	2 (0-24)	48.6 (13/23) (21.4-86.9)
LSD	8.2 (44/299) (4.6-12.2)	4.5 (25/299) (1.9-8.0)	4.1 (16/299) (1.8-6.7)	1 (1-7)	0.5 (2/299) (0.0-1.4)	2 (1-3)	3.5 (0-35)	42.6 (21/44) (21.0-64.4)

[1]The numbers in the first parentheses in each cell are the numerator and denominator used to obtain the percentage; the numbers in the second parentheses in each cell are the 95% confidence intervals for the estimate.

Table 5. Multiple drug use: number of different types of drugs used by respondents in the last 30 days[1]

	n/N	Weighted %	95% CI
Number of different types of drugs used:			
1	163/299	67.6	60.6-74.1
2	119/299	29.0	22.7-35.7
3	17/299	3.4	1.5-5.7

[1]This table includes use of the following drugs: cocaine/inhaled, cocaine/injected, crack, heroin/inhaled, heroin/injected, ecstasy, or LSD.

Table 6. Drug use patterns among users of cocaine, crack and/or marijuana in the last 30 days (n=298)

	n/N	Weighted %	95% CI
Used cocaine exclusively	37/299	16.3	9.7-23.9
Used crack exclusively	26/299	12.7	6.2-18.5
Used marijuana exclusively	10/299	2.4	0.6-4.8
Used cocaine and crack	16/299	2.8	1.2-4.9
Used cocaine and marijuana	67/299	25.9	18.2-33.9
Used crack and marijuana	38/299	14.1	9.1-20.6
Used cocaine, crack, and marijuana	104/299	26.1	19.9-32.8

Table 7. Drug use patterns among users of cocaine (inhaled or injected) or of heroin (inhaled or injected) in the last 30 days

	n/N	Weighted %	95% CI
Used cocaine (inhaled)exclusively	208/224	94.8	89.2-97.0
Used cocaine (injected)exclusively	0	--	--
Used heroin (inhaled) exclusively	0	--	--
Used heroin (injected) exclusively	0	--	--
Used cocaine (inhaled) & cocaine (injected)	3/224	0.8	0-2.2
Used cocaine (inhaled) & heroin (inhaled)	2/224	0.3	0-1.8
Used cocaine (inhaled) & heroin (injected)	9/224	2.6	0.4-6.8
Used cocaine (injected) & heroin (inhaled)	0	--	--
Used cocaine (injected) & heroin (injected)	0	--	--
Used heroin (inhaled) & heroin (injected)	0	--	--
Used cocaine (inhaled), cocaine (injected) & heroin (inhaled)	0	--	--
Used cocaine (inhaled), cocaine (injected) & heroin (injected)	0	--	--
Used cocaine (inhaled), heroin (inhaled) & heroin (injected)	1/224	1.4	0-2.3
Used cocaine (injected), heroin (inhaled) & heroin (injected)	0	--	--
Used cocaine (inhaled), cocaine (injected), heroin (inhaled) & heroin (injected)	1/224	1.1	0-3.5

Table 8: Access to and Sources of Drugs

	n/N	Weighted %	95% CI
Consider it easy to obtain			
Cocaine			
Easy	239/266	85.7	78.2-91.3
Difficult	25/266	13.6	8.0-21.1
Does not know	2/266	0.7	0.0-1.9
Crack (rock)			
Easy	232/266	85.1	77.0-90.0
Difficult	23/266	10.9	6.3-18.8
Does not know	11/266	4.0	1.4-7.3
LSD (acid)			
Easy	69/266	25.0	16.4-32.6
Difficult	67/266	23.1	16.8-30.6
Does not know	130/266	51.9	42.6-61.9
Ecstasy			
Easy	91/266	33.4	24.5-40.8
Difficult	76/266	26.6	20.9-34.6
Does not know	99/266	40.0	31.0-49.5
Heroin			
Easy	102/266	33.5	25.6-40.8
Difficult	79/266	29.9	22.5-37.6
Does not know	85/266	36.5	28.5-46.1
Monthly expenditure on drugs in Quetzales (mean)	Q1159.31 (s.d. 1873.82)		
Sources for obtaining drugs			
A friend or acquaintance	64/266	26.5	17.9-35.3
In hotels/motels	89/266	30.3	24.0-38.7
Private house	105/266	37.1	28.6-45.7
With street vendor (chiclero)	10/266	1.9	0.6-3.8
Home delivery	17/266	7.0	2.3-13.3
At the university	5/266	0.6	0.0-1.6
In the disco or bar	36/266	9.3	5.1-14.0
Dealer	89/266	24.5	17.1-32.1
Other	104/266	37.0	27.6-44.9

Table 9. Dynamics of drug consumption: venues and social networks

	n/N	Weighted %	95% CI
Location where drugs consumed regularly			
Own house	88/266	35.6	25.9-42.8
Someone else's house	82/266	32.0	24.6-40.3
University	2/266	0.5	0-1.7
Work	9/266	2.2	0.5-4.6
Parties, discos, bars, concerts	86/266	29.9	22.1-38.3
Car	8/266	1.8	0.5-3.7
Park	79/266	22.8	16.2-30.8
Public toilets	23/266	9.0	4.8-14.5
Other	112/266	38.7	29.9-47.5
Uses Drugs			
Alone	79/266	27.9	18.9-35.9
In a group	100/266	42.5	33.2-52.9
Both	87/266	29.6	22.4-37.8
Among those who use drugs in groups	*(n= 187)*		
Changes in composition of drug-using groups from one week to the next			
Stays the same	87/187	52.6	41.5-61.5
Changes	43/187	19.5	12.7-27.6
Both	57/187	27.9	19.2-38.5
Among all users	(n=266)		
Number of three closest friends who use drugs			
0	26/266	8.3	4.9-12.3
1	32/266	16.9	9.3-22.5
2	40/266	16.5	10.7-24.3
3	168/266	58.3	50.9-66.9
Median (range) number of people known by respondent who have used cocaine, crack, heroin, ecstasy, or LSD in the last 30 days, live in Guatemala City, are 18 years or older and have seen the respondent in the last 2 weeks	10 (1-500)		
Among those who have a steady sexual partner	*(n=136)*		
Steady partner uses drugs	59/136	37.9	26.0-50.8
Steady partner is member of drug using group	34/136	21.6	11.2-33.9

Table 10. Potential dependence on drugs

	n/N	Weighted %	95% CI
Perceived difficulty to stop using drugs			
Not difficult	52/266	20.8	12.7-29.2
Somewhat difficult	100/266	42.1	32.9-50.5
Very Difficult	74/266	26.4	19.4-34.6
Extremely Difficult	40/266	10.7	6.3-16.4
Perceived necessity for using drugs (mean)[+]	6.08 (s.d. 2.91)		

[+] Respondents were asked to rate their need for drugs on a scale from 1-10 with 1 and not necessary and 10 as very necessary.

Table 11. Experience with drug treatment or rehabilitation

	n/N	Weighted %	95% CI
Currently attending a drug rehabilitation center or house	36/299	15.6	9.5-21.6
Ever been in treatment or rehabilitation for drug use	112/299	35.2	27.6-42.6
Among those ever receiving treatment	*(n=112)*		
Median (range) number of times in treatment	2 (1-20)		
Number of times in treatment (mean)	4.16 (s.d. 4.90)		

Table 12. Sexual Behavior

	n/N	Weighted %	95% CI
Had sex in the last 3 months	266/299	87.6	77.0-92.6
Charged or received payment for sex in the last 12 months	144/299	41.8	33.6-50.6
Exchanged sex for drugs in the last 12 months	102/299	30.4	23.1-38.4
Among those having sex in the last 2 months		(n=266)	
Number of sex partners in the last 12 months			
1		14.0	6.8-22.1
2-9		42.3	34.0-51.6
10+		43.7	34.3-53.1
Median number of sex partners in the last 12 months (range)	9 (1-135)		
Number of sex partners in the last 30 days			
0		7.5	3.3-11.7
1		30.4	22.0-41.6
2-3		29.2	21.5-37.1
4+		32.8	24.4-40.8
Median number of sex partners in the last 30 days (ragne)	3 (0-63)		
Among those having sex in the last 30 days		(n=249)	
Used drugs at last sex in the last 30 days		61.8	52.5-70.4
Among men		*(n=218)*	
Circumcised (among men)			
Yes	67/218	31.7	23.7-44.1
No	131/218	55.5	42.4-64.0
Do not know	20/218	12.8	5.4-22.2

Table 13. Types of sexual partners and drug use during sex in last 30 days among low-income drug users in Guatemala City[1]

Type of partner	% with at least one of this partner in the last 12 months	Median # of this partner in last 12 months	% with at least one of this partner in last 30 days	In past 30 days (among those having sex with this type of partner)						Among those that had this partner in the last 12 months, which drug(s) used at last sex with this partner type?			
				Median # of this partner	Median # of penetra-tive sex acts	% used condom at last sex with this partner	Median # of times condom used with this partner	Used drugs with at least 1 of this partner	Median # times used drugs before sex with this partner	Cocaine	Mari-juana	Crack	Other, not sure
Steady partner	71.1 (187/266) (58.9-81.4)	1 (1-10)	58.6 (153/266) (49.8-68.1)	1 (1-5)	8 (0-150)	33.1 (48/153) (24.1-42.4)	0 (0-150)	41.7 (87/153) (28.9-60.2)	2 (0-20)	23.0 (41/187) (14.7-32.1)	23.9 (58/187) (15.5-33.2)	10.7 (34/187) (6.0-16.9)	16.4 (27/187) (9.5-23.9)
Casual partner	76.8 (207/266) (68.4-84.2)	4 (1-100)	56.5 (162/266) (46.-64.6)	2 (0-15)	5 (0-60)	63.2 (95/162) (53.2-72.3)	2 (0-50)	71.5 (119/161) (56.1-84.1)	6 (0-20)	27.7 (57/207) (18.3-35.9)	27.1 (69/207) (19.0-35.8)	14.2 (45/207) (6.1-24.0)	25.3 (38/207) (14.1-34.5)
Com-mercial partner	69.7 (189/266) (61.3-78.7)	7 (1-100)	48.0 (140/266) (38.4-57.0)	3 (1-60)	6.5 (1-80)	80.8 (110/140) (72.1-88.3)	4 (0-80)	69.0 (104/140) (49.4-83.8)	3 (0-20)	24.2 (52/189) (17.3-32.7)	24.0 (58/189) (17.2-31.3)	16.7 (51/189) (9.3-24.8)	24.9 (33/189) (16.5-33.4)
Injection drug user	20.1 (56/266) (13.4-26.8)	2 (1-50)	5.2 (20/266) (2.6-8.3)	2 (1-12)	4.5 (1-60)	65.7 (12/20) (35.4-91.9)	2 (0-60)	85.2 (18/20) (65.5-100)	3 (0-20)	31.0 (21/56) (15.7-47.2)	12.6 (14/56) (5.5-22.7)	17.2 (15/56) (8.0-28.5)	47.4 (20/56) (27.8-65.8[)]

[1]Due to the skip patterns used in the questionnaire, this table is limited to respondents at had sex in the past 3 months, representing 87% of all respondents in the study.

[2]In the case of injection drug users, the 50% reporting "other" or "not sure" broke down as follows: 2.6, ecstasy; 2.6, amphetamines; 2.2, heroin; 0.7, LSD; 0.2, glue; and 41.7, not sure of drug taken.

Table 14. Sex and drug use partners

	n/N	Weighted %	95% CI
Among those using drugs in a group, usual sex partners[10]			
Drug-using group member	67/187	27.0	18.8-42.3
Non drug-using non-group member	111/187	62.1	52.1-71.0
Drug-using non-group member	124/187	57.5	44.8-68.3
Non drug-using group member	38/187	22.0	14.4-30.2
All of the above	18/187	7.8	3.8-12.7
Among those who had a sex in the last 7 days	(n=201)		
Median (range) number of sex partners in the last week who used drugs on the day of sex	1 (0-10)		

Table 15. Experience with STI diagnosis or symptoms

	n/N	Weighted %	95% CI
Had or suspected STI in last 12 months	79/266	30.6	20.45-38.1
Among those who had or suspected having an STI in the last 12 months	*(n=79)*		
Median (range) number of times had STI in last 12 months	1 (1-30)		

Table 16. Experience with STI related symptoms

	n/N	Weighted %	95% CI
Had abnormal discharge, excessive fluid or pus in the last 12 months	31/266	8.5	4.1-12.4
Among those who had abnormal discharge, excessive fluid or pus in the last 12 months	*(n=31)*		
Median (range) number of times had abnormal discharge, excessive fluid or pus in last 12 months	1 (1-12)		
Among those who had sex in the last 3 months	*(n=266)*		
Had ulcer, sore, pimple or excessive itching on genitals in the last 12 months	36/266	15.0	8.2-24.1
Among those who had ulcer, sore, pimple or excessive itching on genitals in the last 12 months	*(n=36)*		
Median (range) number of times had ulcer, sore, pimple or excessive itching on genitals in last 12 months	1 (1-30)		

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[10] Multiple response allowed

Table 17. Had a suspected STI or experienced an STI symptom in the last 12 months

	n/N	Weighted %	95% CI
Had a suspected STI or experienced an STI symptom in the last 12 months	92/266	35.5	26.8-45.8

Table 18. Health seeking behavior of those experiencing an STI or select symptoms

	n/N	Weighted %	95% CI
Went to health centers/hospital/clinic	47/92	55.8	30.0-64.8
Looked for medicines at pharmacies	8/92	2.8	0-29.7
Did nothing, waited until the symptoms disappeared	15/92	10.3	1.0-11.3
Other	22/92	31.1	12.6-63.6

Table 19. Overlap of groups at heightened risk for HIV by sex

	n	Weighted%	95% CI
Among all sexually active men	(n=218)		
Men who self-identified as gay/bisexual/Transgender only	33/218	14.7	9.2-27.4
Men who engaged in sex work in the last 12 months only	31/218	11.4	5.9-16.6
Men who used injected cocaine or heroin in the last 12 months only	8/218	2.1	2.8-9.4
Men who self-identified as gay/bisexual/transgender & have engaged in sex work in the last 12 months	63/218	31.6	24.2-44.7
Men who self-identified as gay/bisexual/transgender & have used injected cocaine or heroin in the last 12 months	0/218	--	--
Men who engaged in sex work in the last 12 months and used injected cocaine or heroin in the last 12 months	8/218	2.4	0.4-6.4
Men who self-identify as gay /bisexual/transgender, have engaged in sex work in the last 12 months & have used injected cocaine or heroin in the last 12 months	6/218	1.4	0.2-3.6
Men who did NOT self-identify as gay /bisexual/transgender, have engaged in sex work in the last 12 months or have used injected cocaine or heroin in the last 12 months	69/218	36.4	23.7-48.3
Among all sexually active women	(n=48)		
Women who engaged in sex work in the last 12 months only	27/48	48.4	25.6-71.7
Women who used injected cocaine or heroin in the last 12 months only	1/48	1.2	0.0-6.3
Women who engaged in sex work & have used injected cocaine or heroin in the last 12 months	2/48	5.4	0.0-21.2
Women who did NOT engage in sex work or have used injected cocaine or heroin in the last 12 months	18/48	45.0	20.5-68.8

Table 20. Socio-demographic profile of HIV+ respondents among low income drug users in Guatemala City

	n/N	Weighted %	95% CI
Percent of sample testing HIV positive			
Yes	21/299	6.0	2.7-9.8
No	278/299	94.0	90.2-97.3
Sex			
Male	17/21	94.3	82.7-99.9
Female	4/21	5.7	1.0-17.3
Age			
18-24	3/21	18.3	0.0-46.0
25-34	5/21	21.6	0.0-50.8
35-44	10/21	44.6	20.3-75.4
45-65	3/21	15.7	0.0-36.9
Median age (range)	35 (18-46)		
Education			
No education	0/21	--	--
Primary (incomplete/complete)	10/21	32.1	10.2-60.1
Secondary (incomplete/complete)	11/21	67.9	39.9-89.8
University (incomplete/complete)	0/21	--	--
Marital status			
Single	16/21	80.2	55.2-98.5
Married/common law	4/21	13.8	1.3-33.7
Separated/divorced/widowed	1/21	6.0	0.0-19.1
Has at least 1 child			
Yes	9/21	25.7	6.6-53.9
No	12/21	74.3	46.2-93.4
Median (range) number of children among those with children	2 (1-4)		
Self-report of ethnicity			
Ladino	16/21		
Indigenous (Mayan)	4/21		
Garífuna	1/21		
Other (specify)	0/21		
Mayan language spoken in household			
Yes	1/21		
No	20/21		
Monthly household income			
Q0-1500	12/21		
Q1501-3000	9/21		
Q3001+	0/21		

Table 20. (continued) Socio-demographic profile of HIV+ respondents among low income drug users in Guatemala City

	n/N	Weighted %	95% CI
Source of Income			
Does not have an income	2/21	24.6	0.0-52.4
Own work	17/21	62.9	38.4-97.3
From parents/family	1/21	2.7	0.0-9.0
From sex partner (husband or wife/ boyfriend or girlfriend/lover)	1/21	2.8	0.0-9.6
From other	0/21	--	--
Level of religiosity			
Not religious	7/21	29.1	6.8-51.6
Somewhat religious	13/21	67.1	42.9-90.0
Very religious	1/21	3.8	0.0-15.1
Level of spirituality			
Not at all spiritual	3/21	17.2	0.0-39.0
Somewhat spiritual	15/21	58.7	32.0-88.5
Very spiritual	3/21	24.1	0.0-54.5

Table 21. Percent HIV positive by socio-demographic group

	n/N	Weighted %	95% CI
Sex			
Male	17/242	7.2	3.2-12.0
Female	4/59	1.6	0.3-4.3
Age			
18-24	3/88	3.5	0.0-11.2
25-34	5/92	3.9	0.0-9.6
35-44	10/87	10.1	3.7-18.8
45-65	3/32	8.5	0.0-21.7
Education			
No education	0/17	--	
Primary (incomplete/complete)	10/130	4.4	1.1-8.4
Secondary (incomplete/complete)	11/125	11.7	4.2-20.6
University (incomplete/complete)	0/27	--	
Marital status			
Single	16/193	7.9	3.2-13.7
Married/common law	4/79	2.9	0.2-6.9
Separated/divorced/widowed	1/27	4.2	0.0-14.5
Has at least 1 child			
Yes	9/155	3.2	0.8-6.8
No	12/144	9.0	3.2-16.7
Self-report of ethnicity			
Ladino	16/235	5.8	2.2-10.2
Indigenous (Mayan)	4/52	5.6	0.8-13.2
Garífuna	1/7	22.2	0.0-74.1
Other (specify)	0/5	--	--
Mayan language spoken in household			
Yes	1/23	2.0	0.0-7.5
No	20/276	6.3	2.8-10.4
Monthly household income			
Q0-1500	12/143	6.3	1.8-13.4
Q1501-3000	9/111	7.5	2.5-14.0
Q3001+	0/45	--	--
Source of Income			
Does not have an income	2/21	16.8	0.0-47.3
Own work	17/240	5.3	2.3-8.4
From parents/family	1/24	8.1	0.0-21.2
From sex partner (husband or wife/boyfriend or girlfriend/lover)	1/9	5.7	0.0-19.7
From other	0/5	--	--

Table 21. (continued) Percent HIV positive by socio-demographic group

	n/N	Weighted %	95% CI
Level of religiosity			
Not religious	7/95	5.9	1.0-10.6
Somewhat religious	13/180	6.5	2.2-12.0
Very religious	1/24	2.2	0.0-8.3
Level of spirituality			
Not at all spiritual	3/60	5.3	0.0-12.7
Somewhat spiritual	15/183	5.8	2.3-9.9
Very spiritual	3/56	6.1	0.0-18.7

Table 22. HIV prevalence among groups at-risk for HIV

	n	Weighted %	95% CI
Used injected heroin or cocaine in the last 12 months[+]			
Yes	4/27	5.8	0.6-14.3
No	17/272	5.9	2.5-10.2
Had and IDU sex partner in the last 12 months[++]			
Yes	5/56	7.7	7.5-16.9
No	14/210	6.8	2.6-12.5
Charged or received payment for sex in the last 12 months[+]			
Yes	14/144	9.4	3.2-15.8
No	7/155	2.7	0.6-6.4
Exchanged sex for drugs in the last 12 months[+]			
Yes	9/102	8.3	2.1-16.4
No	12/197	4.9	1.7-8.7
Self-identified as gay/bisexual men or transgender women[+++]			
Yes	12/102	11.3	3.6-20.6
No	3/116	2.7	0.0-7.1
Used a condom at last sex[++]			
Yes	12/137	8.8	3.4-15.7
No	7/129	4.5	0.4-13.0
Diagnosed with or reported symptoms of an STI in the last 12 months[++]			
Yes	11/92	14.1	6.1-28.4
No	8/174	3.2	1.0-6.0

[+]Among all respondents (N=299); [++] Among sexually active respondents (N=266); [+++]Among sexually active males (N=218)

Table 23. Condom use among drug users who had sex in the last 3 months

	n/N	Weighted %	95% CI
Condom used at last sex			
Yes	137/266	59.3	50.3-68.0
No	129/266	40.7	32.0-50.1
Condoms used at every sex in the last 30 days			
Yes	88/266	36.5	30.1-46.1
No	178/266	63.5	53.9-69.9
Possesses condom at time of interview			
Yes	52/266	19.5	13.1-25.8
No	214/266	80.5	74.2-86.9

Table 24. Perceived availability of condoms

	n/N	Weighted %	95% CI
It's easy to find condoms near the place that you usually have sex			
Strongly agree	87/266	32.2	24.7-40.2
Agree	129/266	49.6	41.1-58.3
Disagree	43/266	17.3	10.6-24.5
Strongly disagree	7/266	0.9	0.3-2.0
You can always find a condom when you need one			
Strongly agree	77/266	28.2	20.9-36.1
Agree	127/266	51.5	43.0-59.5
Disagree	53/266	17.4	11.4-24.7
Strongly disagree	9/266	2.9	0.4-6.3
Finding a place that sells condoms is easy			
Strongly agree	111/266	43.2	33.7-49.6
Agree	135/266	49.0	40.9-58.4
Disagree	17/266	6.8	2.8-14.1
Strongly disagree	3/266	1.1	0.0-2.9
It's easy to always have a condom at hand			
Strongly agree	91/266	36.5	28.7-44.5
Agree	128/266	45.5	37.1-54.7
Disagree	39/266	15.5	8.1-23.2
Strongly disagree	8/266	2.5	0.4-5.6
You can find a condom in less than 10 minutes from where you often have sex			
Strongly agree	92/266	33.8	26.3-41.6
Agree	102/266	33.7	27.4-42.9
Disagree	63/266	28.4	19.6-35.0
Strongly disagree	9/266	4.2	0.4-9.8

Table 25. Knowledge of water-based lubricants among sexually active gay/bisexual men and transgender women drug users

	n/N	Weighted %	95% CI
Knows of water-based lubricants			
Yes	93/102	92.8	85.9-98.0
No	9/102	7.2	2.0-14.1
Among sexually active gay/bisexual men and transgender women who know about lubricants	(n=93)		
Ever used water-based lubricants			
Yes	87/93	99.6	95.0-100.0
No	6/93	0.4	0.0-5.0
Among sexually active gay/bisexual men and transgender women who have ever-used lubricants	(n=87)		
Frequency of water-based lubricant and condom use in last 30 days			
Always	42/87	56.6	37.4-75.2
Almost always	11/87	16.4	8.3-28.3
Occasionally	27/87	17.2	5.1-31.1
Never	7/87	9.8	2.2-18.2
Used water-based lubricant at last sex			
Yes	64/87	83.7	73.3-92.8
No	23/87	16.3	7.2-26.7

Table 26. HIV knowledge

	n/N	Weighted %	95% CI
Has heard of HIV			
Yes	264/266	99.9	99.8-100.0
No	2/266	0.1	0.0-0.2
Among those who have heard of HIV	(n=264)		
Forms of HIV prevention mentioned spontaneously			
Reducing number of sex partners	28/264	10.7	5.2-17.6
Using condoms	256/264	97.8	96.6-99.7
Abstinence	58/264	21.1	13.0-28.8
Being faithful	35/264	12.9	7.4-19.6
Forms of HIV prevention mentioned when prompted by interviewer			
Reducing number of sex partners	192/264	73.0	65.8-81.5
Using condoms	258/264	98.3	96.4-99.7
Abstinence	207/264	76.5	68.3-84.3
Being faithful	194/264	76.3	68.9-83.9
A person with HIV can look healthy	214/264	81.5	73.5-87.8

Table 27. HIV testing knowledge and behaviors (F21-F26)

	n/N	Weighted %	95% CI
Knows a site for HIV testing (other than el Fundación Marco Antonio)			
Yes	182/266	71.6	64.5-79.1
No	84/266	28.4	20.9-35.5
Knows a location (other than el Fundación Marco Antonio) for pre-test counseling			
Yes	126/266	58.4	50.7-66.6
No	140/266	41.6	33.4-49.3
Had HIV test in the last 12 months			
Yes	116/266	43.4	33.7-52.6
No	150/266	56.6	47.4-66.3
Among those who had an HIV test in the last 12 months	*(n=116)*		
Received result of HIV test			
Yes	108/116	95.3	90.7-99.0
No	8/116	4.7	1.0-9.3
Experienced discrimination when tested for HIV			
Yes	12/116	10.2	3.5-18.5
No	114/116	89.8	81.5-96.5
Among those had an HIV test in the last 12 months and received their results	*(n=108)*		
Received post-test counseling			
Yes	92/108	86.2	79.0-94.0
No	16/108	13.8	6.1-21.1

Table 28. Perceived risk for HIV

	n/N	Weighted %	95% CI
AIDS is a fatal disease			
Strongly agree	147/266	49.9	41.7-58.9
Agree	101/266	38.7	29.4-46.9
Disagree	14/266	7.2	2.5-14.1
Strongly disagree	4/266	4.3	0.2-8.7
AIDS is an incurable disease			
Strongly agree	149/266	56.1	47.5-63.6
Agree	107/266	40.2	32.4-49.2
Disagree	8/266	3.1	0.5-6.7
Strongly disagree	2/266	0.6	0.0-1.6
One can get gravely ill with AIDS			
Strongly agree	152/266	57.5	49.2-67.0
Agree	107/266	40.8	31.4-49.4
Disagree	7/266	1.8	0.3-3.6
Strongly disagree	0/266	0.0	0.0
You are at risk of acquiring HIV/AIDS			
Strongly agree	55/266	16.6	12.8-26.0
Agree	118/266	37.6	28.1-45.0
Disagree	74/266	33.3	23.2-40.9
Strongly disagree	19/266	12.5	5.4-21.6
You are at risk of contracting HIV because you have sex without using condoms			
Strongly agree	56/266	18.5	13.8-27.7
Agree	121/266	44.0	33.7-51.2
Disagree	65/266	29.2	20.9-37.5
Strongly disagree	24/266	8.3	4.7-12.6
You are not the type of person who can contract HIV/AIDS			
Strongly agree	17/266	8.4	4.0-14.4
Agree	64/266	26.0	17.3-32.0
Disagree	126/266	42.5	31.9-49.6
Strongly disagree	59/266	23.1	17.5-35.5

Table 29. Exposure to messages about drug prevention or HIV prevention in the last 12 months

	n/N	Weighted %	95% CI
Messages on television/newspaper/radio about drug prevention/treatment			
Yes	241/299	79.9	72.3-86.9
No	58/299	20.1	13.1-27.7
Educational talks about drug use			
Yes	130/299	40.8	33.3-48.3
No	169/299	59.2	51.7-66.7
Messages on television/newspaper/radio about HIV/AIDS prevention			
Yes	262/299	87.3	82.3-92.0
No	37/299	12.7	8.0-17.8

Table 30. Exposure to specific HIV/AIDS prevention campaigns by medium

	n/N	Weighted %	95% CI
Gente			
TV/Cable			
0 times	189/299	64.8	56.9-72.5
1-10 times	74/299	23.3	17.0-29.9
11-20 times	16/299	5.6	1.7-10.5
21+ times	20/299	6.3	2.9-10.8
Radio			
0 times	116/299	34.6	27.6-42.5
1-10 times	116/299	44.9	37.8-53.4
11-20 times	29/299	8.3	4.6-12.5
21+ times	38/299	12.2	7.2-17.9
Hombres de Verdad			
TV/Cable			
0 times	161/299	55.3	46.9-62.0
1-10 times	90/299	32.4	26.5-40.1
11-20 times	23/299	5.1	2.5-7.9
21+ times	25/299	7.2	3.0-13.0
Print/Outdoor			
0 times	133/299	46.4	37.8-54.5
1-10 times	97/299	36.5	28.4-44.7
11-20 times	31/299	8.0	4.2-12.6
21+ times	38/299	9.1	5.4-13.2
Radio			
0 times	143/299	44.8	37.3-52.7
1-10 times	115/299	43.6	35.7-51.8
11-20 times	20/299	7.5	3.5-11.8
21+ times	21/299	4.1	2.0-6.5

Table 30 (continued). Exposure to specific HIV/AIDS prevention campaigns by medium

	n/N	Weighted %	95% CI
Juanes			
TV/Cable			
0 times	114/299	33.7	26.4-41.3
1-10 times	97/299	39.5	31.4-47.7
11-20 times	41/299	15.7	9.6-22.6
21+ times	47/299	11.1	7.0-15.9
Print/Outdoor			
0 times	164/299	50.6	42.3-59.0
1-10 times	86/299	32.9	25.0-40.5
11-20 times	26/299	8.5	4.7-13.9
21+ times	23/299	8.0	3.5-12.9
Radio			
0 times	63/299	26.2	18.5-34.0
1-10 times	127/299	47.0	38.7-55.4
11-20 times	34/299	10.9	6.6-15.5
21+ times	75/299	15.9	11.5-21.2
Got it Get it			
TV/Cable			
0 times	111/299	38.6	31.3-47.2
1-10 times	123/299	41.6	33.7-49.5
11-20 times	27/299	8.5	4.6-12.6
21+ times	38/299	11.3	6.1-16.8
Print/Outdoor			
0 times	138/299	52.2	43.5-59.6
1-10 times	90/299	29.5	22.9-37.8
11-20 times	27/299	9.5	5.0-14.9
21+ times	44/299	8.9	5.1-13.2
Radio			
0 times	161/299	50.4	42.5-58.6
1-10 times	94/299	36.6	28.6-44.8
11-20 times	17/299	7.0	2.8-11.6
21+ times	27/299	6.1	3.3-9.2

Table 31. Received any type of HIV/AIDS education or information in the last 12 months by organization

	n/N	Weighted %	95% CI
Fundación Marco Antonio	70/299	25.1	16.8-33.9
PASMO/Condoms VIVE	39/299	16.6	10.8-22.8
Condones VIVE	26/299	6.9	3.4-10.8
Asociación Gente Positiva	32/299	10.0	6.0-14.6
Asociación Gente Nueva	22/299	9.5	4.5-15.4
Asociación Nuevos Horizontes	8/299	1.9	0.3-4.2
Asociación Educación para la Vida	11/299	2.8	0.8-5.1
Colectivo Amigos Contra el SIDA	46/299	18.2	12.1-24.9
Proyecto Vida	18/299	6.4	2.9-10.5
None	179/299	61.6	52.6-69.4

Table 32. Participation in PASMO activities in the last 12 months

	n/N	Weighted %	95% CI
Participated in any PASMO activity in the last 12 months	130/299	45.7	37.1-62.9
El Reto			
0 times	251/299	81.2	73.7-87.7
1-10 times	31/299	12.0	6.6-18.1
11-20 times	6/299	1.4	0.1-4.4
21+ times	11/299	5.4	1.7-10.0
1, 2, 3 Saludable			
0 times	256/299	82.6	75.2-89.2
1-10 times	33/299	16.0	9.7-23.6
11-20 times	2/299	0.4	0.0-1.2
21+ times	8/299	1.0	0.0-1.8
Conversado con un educador de PASMO			
0 times	224/299	70.8	63.4-78.2
1-10 times	60/299	24.9	17.5-32.6
11-20 times	9/299	3.8	1.1-7.1
21+ times	6/299	0.5	0.1-1.1
Espacio P			
0 times	212/299	71.8	64.1-79.3
1-10 times	59/299	19.2	13.7-26.9
11-20 times	17/299	4.3	1.7-7.3
21+ times	11/299	4.7	0.9-7.8
Viviendo la Vida			
0 times	266/299	87.1	82.5-92.9
1-10 times	30/299	11.8	6.3-16.6
11-20 times	2/299	0.2	0.0-0.5
21+ times	1/299	0.9	0.0-2.3
Decisiones			
0 times	260/299	82.1	74.8-88.6
1-10 times	29/299	12.6	6.9-19.2
11-20 times	1/299	0.1	0.0-0.2
21+ times	9/299	5.2	1.6-9.7
XY			
0 times	278/299	89.3	83.0-94.7
1-10 times	16/299	9.6	4.2-15.9
11-20 times	0/299	0.0	
21+ times	5/299	1.1	0.1-2.4

Appendix B: Unique object tracking log

Hoja de Distribución de Llaveros

Iniciales del Enumerador_____   Fecha entregada: _____   Revisado por: _____

1. Local y contexto de distribución: Describe el lugar y contexto donde distribuye los llaveros.								
2. Fecha (dd/mm/aa)	__/__/__	__/__/__	__/__/__	__/__/__	__/__/__	__/__/__	__/__/__	__/__/__
Información Demográfica								
3. Número de personas que tengan 18 años o más y que sean UD (y son elegibles para un llavero)								
Distribución de Llaveros:								
4. Número total de llaveros entregados (estas personas reciben llaveros por primera vez)								
5. Número de personas que ya han recibido un llavero del estudio en ocasión previa.								

DIRECTRIZ PARA LA DISTRIBUCIÓN DEL LLAVERO
- Es importante entregar solamente un llavero a cada persona que sea elegible.
- Es importante asegurar que las personas que reciban los llaveros son UD. Si hay una duda, es mejor no darle uno.
- Es importante que el receptor del llavero se lo guarde y que no se lo dé a otra persona.
- Es importante que el receptor recuerde quién le dio el llavero y cuándo y dónde lo recibió. Use la gorra roja para que el receptor se acuerda de usted.

Propósito de la Hoja de Distribución: Usamos esta hoja para contar cuántos llaveros distribuimos. Un conteo exacto es MUY importante para poder estimar el tamaño de UD en la Ciudad de Guatemala.

Como llenar esta hoja:

1. **Lugar y Contexto de Distribución:** Describe el local y contexto diferente donde distribuye los llaveros. Incluye detalles sobre el local (nombre de un parque, zona de la ciudad, una esquina específica, un bar, etc.) y la hora del día (mañana, medio día, tarde, etc).

    ¡Ojo! - Cada columna de la tabla corresponde a cada local diferente en donde distribuye los llaveros. Por ejemplo, si el 16 de junio usted distribuye llaveros en el parque central a la 1pm de la tarde, llene la primera columna. Si a las 6 de la tarde ese mismo día, usted distribuye llaveros en un bar, llene una columna nueva para este local nuevo.

2. **Fecha:** Escriba la fecha cuando distribuye los llaveros.

3. **Número de UD**: Cuente el número total de personas que sean UD y llenen los criterios de elegibilidad. Es importante verificar que alguien sea un UD. Pregunte:
    a. *¿Ha consumido cocaína, crack, heroína o éxtasis en los últimos 30 días?*
    b. *¿Tiene 18 años o más?*
    c. *¿Es residente de la ciudad de Guatemala?*

4. **Número de personas que acepten un llavero en esta visita (por primera vez):** Explique al receptor que ustedes están distribuyendo estos llaveros para una encuesta. No le hará más preguntas, solo tiene que aceptar el llavero.

    Si la persona acepta el llavero, dígale:
    a. Guarde el llavero (no se lo dé a nadie más)
    b. Recuerde quién le dio el llavero y cuándo lo recibió porque es posible que en las siguientes semanas alguien le pregunte durante esta encuesta si usted ya ha recibido un llavero del estudio.

5. **Número de personas que ya han recibido un llavero del estudio en una ocasión previa:** Pregunte: *Ha recibido un llavero como ésto en la última semana?* Si "Si", <u>NO</u> le dé otro llavero.

6. **Total:** Esta repuesta es igual a número 4.

Appendix C: Locations identified as venues for drug distribution or use

Gran Hotel	Black and White	Cruz Roja
100 Puertas	Rush	La Palangana
Las Gardenias	Cerrito del Carmen	Los Asados
Bad Attitude	Parque Central	Santa Cecilia
Bares de la Mariano	Centro Comercial Los Cápitol	El Guarda
Esperanto	Parque Concordía	Los Campos de Roosevelt
Porcino Pollo	Guarda	El CUM
Rattle n´Hum	La Bodeguita	Col Mariscal
Go Deep	Parque Colon	Los campos del Roosevelt
Genetics	La Placita	Parque Miraflores
G Lounge	La 18	Caravanchel
Kahlua	El Amate	Las 12 Calle/Avenida
El Granada	La Catedral	La Reformita
Jack´s Place	Parque San Sebastian	Aguilar Batres
Los bares de la USAC	Parque Morazan	Los chupaderos USAC
USAC	Avenida de Cementerio	Col. Bethania
Woodies	Basurero Zona 3	Kaminal
Bierstub	4to Grado Norte	
The Pub	Le Club	
Reducto y demás	Centro Comercial de la zona 4	
UVG	La linea zona 4	
URL	La terminal	
Excéntrico	La Palmita	
La Maga	La Limonada	
NOA	Alrededor de Estadio	
El Círculo	La Ruedita	
Trova Jazz	La Parroquia	
El Templo	La Pedrera	
La Cuadra de The Box	Bar Cowboy	
Café Rú	Colonia Landivar	
Lux	Monserrat	
Chicken Bus	Gran Via	
La Playa	Quinta Samayo	
Los Shucos	Col. Tikal	
Sector Trans	Verbena	

Appendix D: Data on attitudes, motivations, self-efficacy and other psycho-social variables related to condoms and condom brands

The questionnaire contained eight sets of variables that PASMO routinely uses in its marketing research to better understand their target population, in order to develop strategies and direct relevant messaging to specific groups.

We have not opted to report these data in this report for three reasons:

o   This type of analysis is relevant for the development of communication programming; yet it is premature to conclude that low-income drug users will become a target in future HIV prevention activities in Guatemala City;

o   This type of information is particularly useful when converted to scales that can be used for more in-depth analysis. If the decision is made to move forward with HIV prevention programming for this population, the researchers will delve further into these results.

o   The amount of data produced from this study and presented in this report is already extensive; we opted not to add additional tables that might create "information overload" for readers, especially given the two points above.

Data are available from this survey on the following topics (4-5 questions each, except for locus of control with 7 questions):

- Attitudes toward condoms

- Condom brand preferences

- Attitudes toward VIVE condoms

- Social support for condom use

- Self-efficacy for condom use

- Ability and willingness to purchase condoms

- Self-esteem

- Locus of control

The researchers will plan to explore these findings in more depth, assuming the decision is made to develop HIV prevention programming for this population.