

**The Integrated  
Biological and Behavioral Survey  
among Long Distance Truck Drivers,  
Mozambique 2012**

Final Report



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## Final Report

### Partners

Ministry of Health (MISAU)

National Institute of Health (INS) of the Ministry of Health

Manica Provincial Health Directorate (DPS de Manica)

US Centers for Disease Control and Prevention (CDC)

University of California San Francisco (UCSF)

Pathfinder International

Center for the Investigation of Infectious Diseases (CIDI)  
of the Catholic University of Mozambique

International Training and Education Center for Health (I-TECH)





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### **Disclaimer**

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# 1. Preface

It is with great satisfaction that we present the final report of the Integrated Biological and Behavioral Survey among Long Distance Truck Drivers (IBBS-LDTD 2012). This is the first survey of its kind conducted in Mozambique. The survey estimated the prevalence of HIV and associated risk behaviors among LDTD and assessed the use of and access to health and social welfare programs among LDTD.

While the National Survey on Prevalence, Behavioral Risks and Information on HIV and AIDS in Mozambique (INSIDA) provides important information on the HIV epidemic among the general population, there is a need for additional information about key populations at higher risk for HIV. This need is clearly expressed in the National Strategic Plan for HIV and AIDS in Mozambique (Plano Estratégico Nacional de Resposta ao HIV e SIDA de Moçambique - PEN III 2010-2014), which urges the completion of representative surveys to provide evidence and define specific actions targeting these groups. The World Health Organization has defined key populations at higher risk for HIV as those who have behaviors that can put them at greater risk of HIV infection including multiple unprotected sexual partnerships, unprotected anal sex with multiple partners, and injecting drugs with non-sterile equipment. PEN III calls for surveys to provide HIV prevalence data and associated risk behaviors among female sex workers, Mozambican mine workers who work in South African mines, men who have sex with men and long distance truck drivers. This survey is part of four others among key populations at higher risk for HIV implemented in 2011-2012 in Mozambique.

The data from the IBBS-LDTD confirms that long distance truck drivers are a key population at risk for HIV in Mozambique. HIV prevalence was significantly higher among participants who attended primary school or literacy classes, compared to those who attended secondary school; it was also higher among those who had a permanent residence in Mozambique compared to those who resided abroad; and was significantly higher among those who had an HIV test before participating in the survey compared to those who had not previously tested. We have the opportunity to improve access to HIV care and treatment and to support positive prevention interventions among LDTD, as well as enhance social and behavioral prevention interventions that may reduce LDTD exposure to HIV infection. This IBBS provided a safe environment for LDTD-friendly HIV counseling and testing and is an example of the types of

services that can be achieved nationally for key populations at higher risk for HIV.

Based on this scientific evidence, it is our hope that the Ministry of Health, the Ministry of Labor and the National HIV and AIDS Council, together with other institutions involved in HIV programming, will strive to implement strategic and comprehensive HIV prevention and care programs that will address the unique characteristics and vulnerabilities identified among LDTD in Mozambique. This IBBS serves as a baseline for future IBBS rounds of the same design as part of a national biological and behavioral surveillance system that tracks changes in the HIV epidemic and the national response to the epidemic.

In order to effectively respond to HIV, it is necessary to 'know your epidemic' by gathering important epidemiological data. With this in mind, the National Institute for Health of Mozambique (Instituto Nacional de Saúde – INS) welcomes this important epidemiologic contribution and will continue to facilitate a collaborative environment where such important findings can be actionable at the highest level of the national response to HIV and AIDS with the goal of an AIDS-free generation.

We thank those who agreed to participate in this survey. The success of the survey was possible due to the commitment and professionalism of the team of survey investigators, project coordinators, community outreach workers, HIV counselors, interviewers, and laboratory technicians. Our thanks are extended to various institutions, including the US Centers for Disease Control and Prevention (CDC), the University of California San Francisco, Pathfinder International, the International Training and Education Center for Health (I-TECH), The Catholic University of Mozambique's Center for Research in Infectious Diseases (CIDI), Manica Provincial Directorate of Health, the Government of Inchope Administrative Post in Manica Province and members of the IBBS Technical Working Group.



Illesh V. Jani, MD, Ph.D  
Director, National Institute of Health  
Maputo, March 2014



## 2. Executive Summary

The Integrated Biological and Behavioral Survey (IBBS) among Long Distance Truck Drivers (LDTD) is the first of its kind conducted in Mozambique. The objectives of the survey were (i) to estimate the prevalence of human immunodeficiency virus (HIV) and associated risk behaviors among LDTD, (ii) to assess access to and use of health and social welfare programs among LDTD, (iii) to estimate the population size and geographic distribution of LDTD in Mozambique, (iv) and to enhance local capacity to conduct IBBS and LDTD population size estimates in Mozambique. Survey participants were recruited through Time Location Sampling (TLS), a method widely used for hard-to-reach, stigmatized or key populations at higher risk for HIV. Eligibility criteria for participation in the survey included: being male, 18 years of age or older; a truck driver who has made at least one interprovincial or international trip in the last 12 months; having stayed away from their principal place of residence at least one night in the last 12 months; having not participated in an IBBS-LDTD this year; being able to communicate in Portuguese or English; and being capable of providing written informed consent.

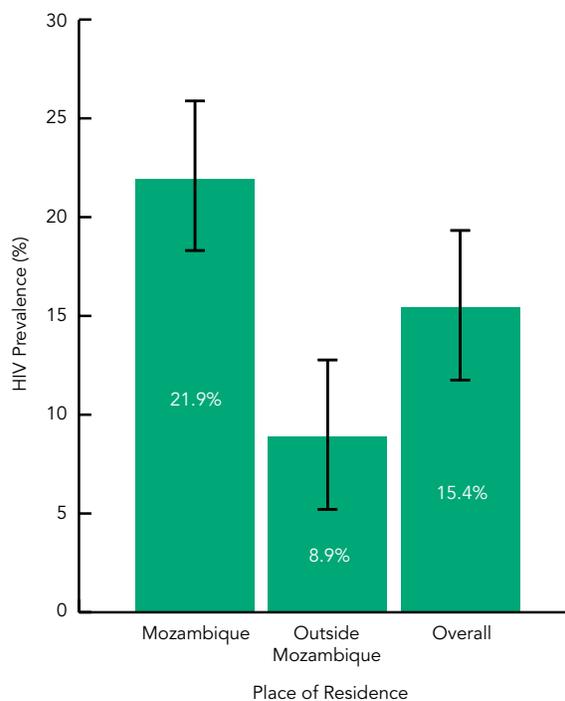
The survey took place in Inchope, Manica Province, Mozambique, between February 23 and August 26, 2012. A total of 327 truck drivers participated. Two-thirds of the survey sample was obtained during sampling events strictly following the TLS method, and the last third was slightly modified due to difficulty reaching sample size. Although two-thirds of the sample followed a venue and time-based methodological approach, the overall sample is classified as a convenience sample. Participants provided informed consent, responded to a behavioral questionnaire, provided a blood sample for surveillance testing (at the central laboratory of the National Institute of Health) and received rapid HIV testing with immediate access to their results. All participants who tested positive on the rapid test were referred to the Inchope Health Clinic.

### HIV prevalence

HIV prevalence among survey participants was 15.4% (95% confidence interval [CI]: 11.4-19.4%), and significantly higher for participants with permanent residence in Mozambique (21.9%, [95% CI: 15.5-28.3%]), compared to non-residents in the country (8.9%, [95% CI: 4.4-13.3%]), as illustrated in Figure 2.1.

Among participants infected with HIV (n=53), 83.7% were not aware of their HIV status. Among those that had been tested for HIV in the 12 months preceding the survey (n=144), 8.5% tested positive on the HIV test performed at the central laboratory during the survey. Thirty-four percent of participants had never been tested for HIV prior to the survey.

**Figure 2.1: HIV prevalence among participants by place of residence, IBBS-LDTD, 2012**



### Demographic description

Most participants (45.3%) were 31-40 years old, followed by 18-30 year olds (29.8%). Those who were 41 years or older accounted for 24.8% of the sample. The average age of participants was 35.9 years. The primary language spoken at home was Portuguese (28.0%), followed by Shona (26.1%) and English (13.0%) respectively. The majority of participants were married (88.5%) and less than one in ten participants (7.8%) reported being single, that is, never having been married or never having lived conjugally with a woman. Half of participants were Mozambican (50.3%) and the other half were from neighboring countries.

### Behavior and access to prevention and healthcare services

Two in 10 participants (20.6%) reported having four or more sexual partners in the 12 months preceding the survey and 27.1% had at least one paid sex partner within that period. Less than one percent of the participants reported ever having had sex with another man.

In the 12 months preceding the survey, 76.5% of participants did not use a condom the last time they had sex with a woman. Only 13.0% of the participants used a condom the last time they had sex with each of their most recent partners (the questionnaire included questions relating to the last three sexual partners). Furthermore, 88.3% of participants did not use a condom the last time they had sex with each spouse or steady partner and 34.8% did not use a condom the last time they had sex with each occasional partner or paid sex partner in the 12 months preceding the survey. Within the same reference period, 9.9% of the participants reported having had symptoms or having been told that they had a sexually transmitted infection (STI).

Among survey participants, 86.0% reported they had not participated in any lecture on HIV and/or AIDS in Mozambique in the 12 months preceding the survey and 73.9% reported they had not received condoms, lubricants or HIV and AIDS education pamphlets in Mozambique in that same period. Additionally, 17.1% claimed to have seen the logo from Family Health International (FHI)'s ROADS to a Healthy Future (ROADS II) prevention project, "PARAGEM SEGURA" (SAFE STOP), in the 12 months preceding the survey. Also during the same period, 26.7% of participants reported having received medical care in Mozambique and 3.1% experienced difficulties in obtaining healthcare services in Mozambique.

### Recommendations

1. The survey found low coverage of HIV and STI prevention programs and high prevalence of risk behaviors. As a result, we recommend the development of a comprehensive package, which includes short-term and long-term strategies, that will expand HIV and STI prevention activities among LDTD and ensure that a greater number of LDTD have access to these interventions.
  - a. In the short-term, existing HIV prevention activities should consider the particular characteristics and needs of LDTD and immediately factor these into program planning activities.
  - b. In the long-term, HIV prevention must be integrated and implemented in the workplace. Advocating with transportation companies, Ministry of Transportation and Communication, the Ministry of Labor, the Ministry of Health and the National HIV and AIDS Council will be critical for prioritizing health education and promotion activities to foster a healthy workforce. Employers and companies that hire or interact with LDTD should develop comprehensive workplace HIV prevention programs targeted at LDTD, their families and other actors that work with the transport industry (e.g., truck driver assistants, customs officers, gas station staff, port staff, etc.).
2. It is necessary to have reliable information about the number of LDTD who reside and circulate in the country in order to estimate the impact of the HIV epidemic among LDTD has on public health and allocate commensurate resources. The survey could not provide the population size estimate of LDTD who drive in Mozambican roads, nor their distribution in the country due to limitations in the sources of this data in Mozambique.
3. There are additional aspects of LDTD behavioral risks for HIV that warrant study or continued observation, including qualitative studies, to acquire a deeper knowledge of key areas such as the barriers to HIV testing and consistent condom use by this population. Additionally, future IBBS rounds, including counts of the size of the LDTD population, should be conducted in locations highly frequented by LDTD to monitor the progress of interventions designed to respond to their HIV prevention and care needs.

### 3. Acronyms

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>ARV</b>	Antiretroviral
<b>CAPI</b>	Computer Assisted Personal Interview
<b>AUDIT-C</b>	Alcohol Use Disorders Identification Test-Consumption
<b>CAPI</b>	Computer Assisted Personal Interview
<b>CDC</b>	Centers for Disease Control and Prevention of the United States of America
<b>CI</b>	Confidence Interval
<b>CNBS</b>	<i>Comité Nacional de Bioética para a Saúde</i> /National Bioethics Committee for Health
<b>DBS</b>	Dried Blood Spots
<b>DPTC</b>	<i>Direcção Provincial dos Transportes e Comunicações</i> /Provincial Directorate of Transport and Communication
<b>EIA</b>	Enzyme Linked Immunosorbent Assay
<b>FHI</b>	Family Health International
<b>HIV</b>	Human Immunodeficiency Virus
<b>IBBS</b>	Integrated Biological and Behavioral Survey
<b>INE</b>	<i>Instituto Nacional de Estatística</i> /National Statistics Institute
<b>INS</b>	<i>Instituto Nacional de Saúde</i> /National Institute of Health
<b>INSIDA</b>	<i>Inquérito Nacional de Prevalência, Riscos Comportamentais e Informação sobre o HIV e SIDA em Moçambique</i> /National Survey on Prevalence, Behavioral Risks and Information about HIV and AIDS in Mozambique
<b>IOM</b>	International Office of Migration
<b>LDTD</b>	Long Distance Truck Driver
<b>MISAU</b>	<i>Ministério da Saúde</i> /Ministry of Health
<b>MTC</b>	<i>Ministério dos Transportes e Comunicações</i> /Ministry of Transport and Communication
<b>NGO</b>	Non-Governmental Organization
<b>NICD</b>	National Institute of Communicable Diseases in South Africa
<b>PEPFAR</b>	U.S. President's Emergency Plan for AIDS Relief
<b>QDS™</b>	Questionnaire Development System
<b>PDTC</b>	Provincial Directorates of Transport and Communications
<b>STI</b>	Sexually Transmitted Infection
<b>TLS</b>	Time-Location Sampling
<b>UCSF</b>	University of California San Francisco
<b>UNAIDS</b>	Joint United Nations Programme on HIV/AIDS
<b>UNGASS</b>	United Nations General Assembly Special Session on HIV/AIDS
<b>USA</b>	United States of America
<b>UTC</b>	Unique Testing Code/Individual Participant Code



## 4. Introduction

### 4.1. The HIV epidemic in the region

The HIV epidemic in sub-Saharan Africa continues to contribute disproportionately to the global burden of HIV-related morbidity and mortality. While new infections in the region have reduced by 25% in the last 10 years (2.4 million in 2001 to 1.8 million in 2011), the region accounted for 72% of new infections worldwide and 69% of all people living with HIV (UNAIDS, 2012). The number of AIDS-related deaths in sub-Saharan Africa decreased by 32% from 2005 to 2011 (1.8 million to 1.2 million), still nearly 71% of all people dying from AIDS-related complications in 2011 were in the region (UNAIDS, 2012).

The epidemics in sub-Saharan Africa vary considerably, and southern Africa is still the most severely affected. It is estimated that 11.3 million people were living with HIV in southern Africa in 2009; 31% more than the 8.6 million people living with HIV a decade earlier. Globally, 34% of the people living with HIV in 2009 resided in 10 countries in Southern Africa, and 31% of the new HIV infections in that same year occurred in those 10 countries.

Mozambique has a generalized HIV epidemic predominantly based on heterosexual transmission. Although it appears to be stabilizing (UNAIDS, 2011), Mozambique has the eighth highest HIV prevalence in the world (UNAIDS, 2010). The most recent national data show an HIV prevalence of 11.5% in adults aged 15-49 years in 2009 and substantial regional variation, with higher prevalence in the Central and Southern regions of the country and a lower prevalence in the North (INS, INE and ICF Macro, 2010). The prevalence is higher in urban areas (15.9%) compared to rural areas (9.2%). Regionally, HIV prevalence is highest in the South (17.8%), followed by the Central region (12.5%) and then the North (5.6%). It is highest in the provinces of Gaza (25.1%), Maputo (19.8%), Maputo City (16.8%), and lowest in Sofala (15.5%), Niassa (3.7%) and Nampula (4.6%). (INS, NSA and ICF Macro, 2010). Prevalence increases with age and wealth, and is highest for women aged 25-29 years (16.8%) and men aged 35-39 years (14.2%) compared to other age groups. (INS, INE and ICF Macro, 2010)

### 4.2. Epidemiological importance of key populations at higher risk for HIV infection: the case of LDTD

There are certain population groups at higher risk for HIV infection as a result of social, economic, cultural or behavioral factors. Among them are sex workers, refugees, migrant populations, military personnel, prisoners, people who inject drugs, men who have sex with men, and women – especially in communities where gender inequality is more prominent (Conselho de Ministros de Moçambique, 2010). Mobile populations, such as long distance truck drivers (LDTD), may have a higher risk of infection due to their mobile lifestyle. They may engage in risk behaviors including having multiple sexual partners and visiting sex workers who frequently work along the transport corridors (Lafort et al., 2010). In countries with a generalized HIV epidemic, the majority of the transmission occurs via unprotected heterosexual sex among the general population; however, key populations, as a result of their possible risk behaviors, frequently have a higher infection rate than the general population (Scorgie et al., 2012).

HIV and risk behavior surveillance among LDTD makes it possible to track an important sub-epidemic to gain valuable insight on the HIV prevalence and the behavioral, social and environmental factors that impact HIV transmission in this population. Determining HIV prevalence and transmission factors will improve our limited understanding of the needs of LDTD in terms of healthcare use and risk behaviors in Mozambique.

### 4.3. Description of LDTD in Southern Africa

LDTD are key players in the HIV epidemic, not only because they transport people and goods, but also because the mobility associated with their professional occupation may contribute to higher exposure to HIV infection and other STIs (Deane, Parkhurst, and Johnston, 2010). LDTD are at especially high risk of HIV and STIs because they are men of sexually active age who spend long periods of time away from their primary residence, and they frequently engage in sex with occasional partners and sex workers International Office of Migration - (IOM, 2011; IOM, 2006) and they circulate in areas with high HIV prevalence (IOM, 2006; UNAIDS, 2011). LDTD may also serve as vehicles of HIV transmission to their regular partners in their primary areas of residence (IOM, 2006).

## 4. Introduction

Studies documenting the prevalence of HIV and risk behaviors among truck drivers in southern Africa are scarce. A study of truck drivers frequenting female sex workers in Kwazulu-Natal, South Africa found a prevalence of HIV of 56% (Ramjee and Gouws, 2002).

### 4.4. Description of LDTD in Mozambique

Few studies on truck drivers have been conducted in Mozambique. While the majority of drivers are foreign, more Mozambicans than foreigners have participated in previous studies (Austral Consultoria e Projectos, 2005; Lafort, Geelhoed, Cumba et al., 2010; DPS Tete & ICRH, 2008; IOM, 2011). In previous studies, most of the truck drivers were at least 30 years old and had completed primary school (Austral Consultoria e Projectos, 2005; DPS Tete & ICRH, 2008; IOM, 2011).

Data sources used to produce estimates of the size of the LDTD population circulating in Mozambique include government institutions (Ministry of Transport and Communications– MTC – and Provincial Directorates of Transport and Communications - PDTC), transport associations, and research. These data had several limitations that made them difficult to use to estimate the population size throughout the country. First, MTC decentralized the licensing process for cargo transportation to the PDTC, and therefore the Ministry did not have updated data about the population size in the country. Second, not all PDTC had complete or updated data. Third, transport associations had data for some of the provinces but not for others.

Despite these limitations, some recent studies have shown a considerable number of truck drivers circulating in the country. For example, a survey by the IOM (2011) counted 3,005 trucks in the Central region of the country, with 1,889 in the Beira corridor and 1,116 in the Tete corridor, while another survey conducted between 2007 and 2009 enumerated 19,210 trucks at a night clinic in Moatize, Tete (Lafort, Geelhoed, Cumba et al., 2010).

Long distance truck drivers in Mozambique are highly mobile, with a third of truck drivers in the Beira and Tete corridors having spent less than 40 days at home in the last 12 months (IOM, 2011) and in the Maputo-South Africa corridor more than half of drivers were away from their

primary residence for one to three weeks per month (Austral Consultoria e Projectos, 2005). During this time away from home, truckers sometimes had unprotected sex with occasional partners (Austral Consultoria e Projectos, 2005; IOM, 2011), including sex workers (Austral Consultoria e Projectos, 2005; DPS Tete & ICRH, 2008; Lafort, Geelhoed, Cumba et al., 2010) exposing themselves to HIV and other STIs (IOM, 2011). A study conducted in Moatize, Tete found that 73.8% of truck drivers had engaged in sex with a sex worker. In the three months preceding the survey, 33.6% and 59.6% of truck drivers had relations with sex workers two or more times, respectively, and 40.4% had not used a condom at last sex with a sex worker (DPS Tete & ICRH, 2008). Reasons given for having had unprotected sex in different surveys included trust in sexual partners, fluidity of the distinction between a regular partner and an occasional partner/sex worker, higher payment for sex without a condom with sex workers, the perception that condoms reduce pleasure and intimacy, drunkenness during sex, lack of condoms at the moment of intercourse, and the partner's refusal to use a condom (DPS Tete & ICRH, 2008; IOM, 2011).

Alcohol use during last sex varied between 10.6% and 32.8% in a study conducted in the Beira and Tete corridors (IOM, 2011) and was 11.1% during last sex with sex workers in Moatize, Tete (DPS Tete & ICRH, 2008). In the Moatize survey, HIV prevalence was 36.8%, herpes simplex virus 2 (HSV2) prevalence was 71.4%, active syphilis prevalence was 5.4% and 68.0% reported having syphilis at some point in their life (DPS Tete & ICRH, 2008).

The IOM survey found that drug use was not common among truck drivers (IOM, 2011). The same survey mapped 17 public health facilities and one night clinic in 14 hot-spots in the Beira and Tete corridors, the majority of which offer assistance for various health issues, including consultations and treatment for STIs and HIV (IOM, 2011). Some NGOs offered Information, Education and Communication services or materials and distributed condoms and one such project targeted truck drivers (IOM, 2011). Truck drivers tend to seek public health facilities (85.1%) for health issues and to obtain condoms (about 60%) (IOM, 2011). One survey indicated that the establishment of healthcare facilities oriented toward providing assistance to key populations at risk for HIV, such as truck drivers, would be acceptable and beneficial to this

population, but the national health system does not have the conditions required to guarantee their sustainability (Lafort, Geelhoed, Cumba et al., 2010).

In 2012 we conducted an integrated biological and behavioral survey (IBBS) among LDTD in order to collect additional data about HIV prevalence and the related behavioral, social, and environmental factors that affect HIV transmission in this population. Determining HIV prevalence and the drivers of transmission will improve our limited understanding of the health needs and behaviors among LDTD in Mozambique. This information is necessary in order to design targeted, effective HIV/AIDS policies and interventions and to allocate appropriate resources for LDTD in Mozambique.

#### **4.5. Survey objectives**

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1. To estimate the prevalence of HIV, associated risk behaviors and prevention indicators among LDTDs in Mozambique
2. To estimate the population size and distribution of LDTDs in Mozambique
3. To identify and assess determinants of access and utilization of health and social programs in Mozambique among LDTDs
4. To enhance the national capacity to conduct IBBS for MARPs in Mozambique as a key component of a strengthened second generation national surveillance system





## 5. Methodology

The field team included a field supervisor, an enumerator, two interviewers, two counselors and one community outreach worker. An additional interviewer joined the team in the third month of recruitment. At the beginning of each month of implementation of the survey, the field team prepared a monthly work calendar, selecting randomly between 16 and 22 days. For each selected day, venues that would be open were identified; for logistic purposes, those with the fewest time periods that had not yet been chosen for that month were selected first. For each venue, a four-hour long primary recruitment period was randomly selected. For some days and locations, more than one event could be available. After selecting a sufficient number of primary events to fill the monthly work calendar, up to two alternate events were selected. An alternate event would be used in case the primary event was not available at the day and time selected for recruitment (i.e. if it was closed, or there were an event going on that would prevent recruitment at that site). Alternate events fell on the same day as the primary event and began at the same time or later. At the end of each month, the field team updated the universe of venues, adding, deleting or changing venues, in order to prepare the next months sampling calendar. All changes and updates, including the reasons were documented in the universe of venues spreadsheet.

During each sampling event, the enumerator counted all truckers who were at least 18 years old passing through the venue (Figure 5.1.B). (Please refer to section 5.3 for more information about the eligibility criteria.) Interviewers intercepted potential participants sequentially to determine eligibility, and if they were eligible, created a Unique Testing Code (UTC) to prevent duplicate participation; obtained informed consent and conducted the interview. After concluding the interview, participants would be referred to one of the counselors for counseling, HIV testing and collection of a biological sample.

For purposes of monitoring the field work at each sampling event, the team recorded the number of truck drivers

**Figure 5.1.B: Enumerator during a recruitment period, IBBS-LDTD, Mozambique 2012**



enumerated, eligible, reasons for refusal, those who consented to participate in the survey and those who accepted counseling and HIV testing.

In the course of the survey, it was noted that the participation rate was below what was expected, resulting in a low rate of recruitment. In order to improve the rates of recruitment, and starting with sampling event no. 83, investigators decided to modify the recruitment procedures: during each sampling event interviewers approached truck drivers who were present at the venue selected for that specific day as well as truck drivers in other nearby venues at the Inchope crossroads.

### **5.2. Survey site and implementation training**

#### **Survey site**

Inchope, located in the district of Gondola, Manica Province, was selected as the survey site because it is located at the crossroad of two large transportation corridors in the country: the EN1 connecting the South and North of the country and the EN6, which crosses the country between the port of Beira and Manica Province. Formative assessment concluded that the number and diversity of truck drivers that go through this post was conducive to implementation of the survey in Inchope. The map below illustrates the location of the Inchope crossroads (figure 5.2.A).

**Figure 5.2.A: Location of the Inchope crossroad, IBBS-LDTD, Mozambique 2012**



### Implementation training

Before survey implementation, the data collection team received a two-week training in the city of Beira, on basic TLS principles, field work procedures, biosafety and ethics in research involving human subjects.

### 5.3. Eligibility criteria

Criteria for participation in the survey were:

- Male;
- $\geq 18$  years old;
- Truck driver who has made at least one interprovincial or international trip in the last 12 months;
- Spent at least one night outside of their primary residence in the last 12 months;
- No previous participation in the survey in the same year;
- Portuguese or English-speaking;
- Ability to provide written informed consent (for example, not under the influence of alcohol or drugs).

The survey excluded all potential participants who:

- Had previously participated in this survey round;
- Were unable to provide written informed consent (including people under the influence of alcohol or drugs).

Nationality was not an exclusion criterion, since LDTD from other countries drive on Mozambican roads.

### 5.4. Sample size

The sample size estimate is based on the surveillance purpose of tracking important changes in the epidemic over time, that between rounds of IBBS. The key indicator selected was

**Figure 5.2.B: A typical day in the Inchope crossroad, IBBS-LDTD, Mozambique 2012**



condom use at last sex. Because this information is not available for LDTD in Mozambique, condom use among men in the general population with more than 2 partners was used as a proxy. Condom use among men who had more than two partners in the last 12 months was 21% in Mozambique according to the National Survey on HIV Prevalence, Behavioral Risks and Information about HIV and AIDS in Mozambique (INS, INE and ICF Macro, 2010). The sample size was calculated using R 2.11.1 (R Foundation for Statistical Computing, Austria) using the “bsamsize” function from the “Hmisc” library (Harrell, 2009). The estimate is based on the Fleiss, Tytun, and Ury method for estimating the power (or the sample size needed to achieve a given power) of a two-sided test for the difference in two proportions (Fleiss, Tytun, & Ury, 1980).

Two hundred and eighty-two (282) LDTD were required to provide 80% power to detect a significant ( $p < 0.05$ ) 15% change in condom use between the proposed IBBS and future rounds of IBBS-LDTD using a chi-square test with a design effect of 2.0. We rounded up to 400 in order to be able to have greater precision around the prevalence estimate and in order to ensure we meet our primary objective of estimating a prevalence of HIV with an acceptable confidence interval. We used the R function “n.for.survey” from the library “epicalc” (Chongsuvivatwong, 2007), to determine that a sample size of 398 is sufficient to ensure a confidence interval of  $\pm 0.07$  around a prevalence estimate of HIV of 37%, with a design effect of 2.0. An HIV prevalence estimate of 37% was based on a 2007 study conducted in Tete in a sample of 500 truck drivers (DPS Tete & ICRH, 2008).

### 5.5. Behavioral data collection

Behavioral data were collected using a standardized questionnaire, which took into account the experiences of other countries, adapted to the Mozambican context. The questionnaire included questions aligned with indicators used in the national and international response to the HIV epidemic. The questions included socio-demographic characteristics, behaviors potentially associated with HIV infection and other STIs, access and healthcare service seeking, among others.

The questionnaire was prepared both in Portuguese and English and its accuracy was assessed by survey investigators, given their fluency in both languages. The tool was tested and reviewed by the investigators and members of the survey team before survey implementation, including during the implementation training. Interviews were conducted in English or Portuguese according to the participant's preference.

Training on the questionnaire also included a discussion about the meaning of each question and consensus about the best way to pose each question in each language used in the survey. The questionnaire was entered electronically into the Questionnaire Development System (QDS™) version 2.6.1 and administered by the interviewers using a netbook.

### 5.6. Laboratory procedures

Rapid on-site HIV testing and centralized HIV testing at the national laboratory were conducted using algorithms used by the Ministry of Health and following standard operational procedures for each type of testing. For both tests, blood was collected using a fingerprick.

#### HIV Testing

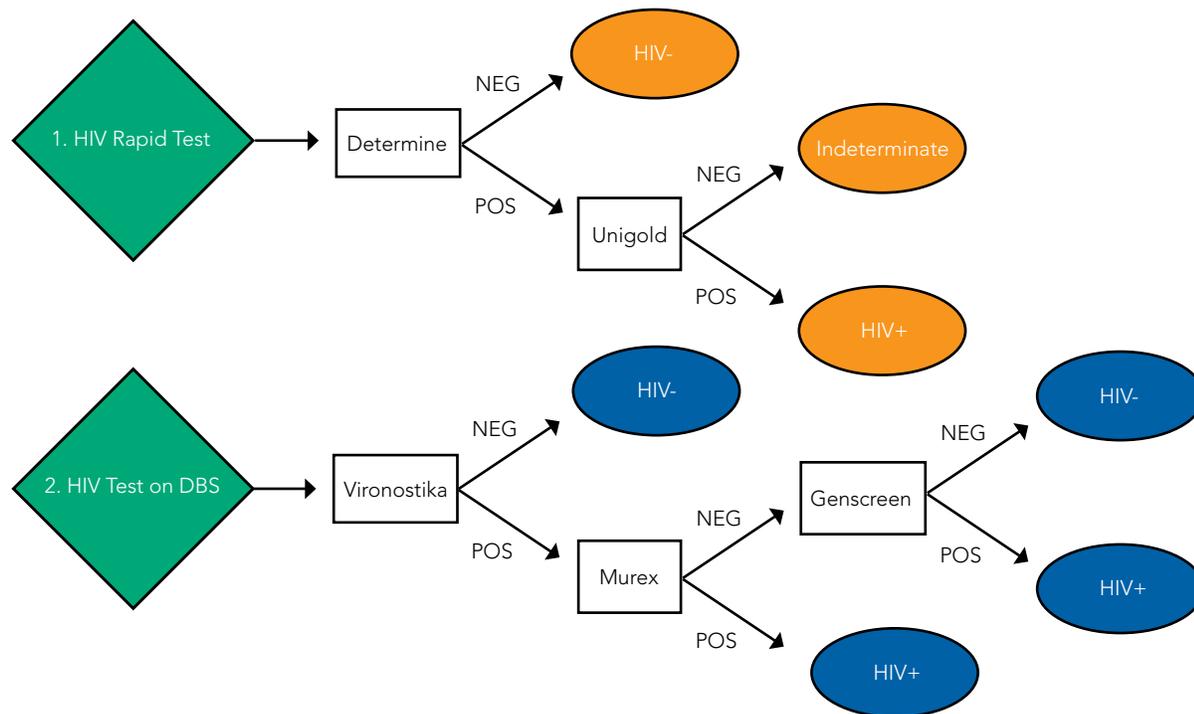
The HIV rapid test was conducted on site, following informed consent and administration of the survey questionnaire. After concluding pre-test counseling administered by certified counselors, rapid HIV testing was performed using the national diagnostic algorithm: two rapid tests administered sequentially. HIV screening was conducted using Determine® HIV - 1/2 (Abbott Laboratories, UK). Non-reactive results were considered negative and reactive results were confirmed using the Uni-Gold™ HIV (Trinity Biotech, Ireland) rapid test. Participants with reactive results on both tests were classified as HIV-positive and participants with a negative

result on the Uni-Gold™ test were considered indeterminate. Consistent with the national rapid test algorithm, discordant results were classified as indeterminate and referred for a repeat test in one month at the reference health facility for the survey: the Inchope Health Center. If the repeat test is also indeterminate, a second specimen is obtained and sent to the national reference lab for testing based on ELISA and Western Blot. All participants received post-test counseling with specific messages adapted to each test result. Participants testing HIV-positive or indeterminate were referred to the Inchope Health Center.

Dried blood spot (DBS) samples were prepared on filter paper for each participant, following explicit consent to conduct centralized HIV testing. The results of these tests were used solely for epidemiological surveillance purposes. DBS samples were stored in the survey site office in waterproof containers with desiccants and humidity indicators and sent weekly to the INS (Instituto Nacional de Saúde) National Laboratory, where they were stored in freezers at -20°C. HIV testing at the national laboratory was conducted after the destruction of the UTC. Samples were analyzed using a testing algorithm of three sequential tests of Enzyme Linked Immunosorbent Assay (EIA), which detect HIV antibodies. For more information about the algorithm refer to the INSIDA 2009 report (INS, INE, ICF Macro, 2010). Screening was conducted using Vironostika HIV Uniform II plus O (Biomérieux SA, France). Reactive samples and 5% of negative samples were tested using Murex HIV 1.2.O (Dia Sorin S.p.A, UK). Discordant results were retested using Genscreen HIV 1/2 Version 2 (Bio-Rad, France), the final result of which was considered definitive.

Each ELISA plate included internal controls from the kit which were used to calculate cutoffs as well as DBS controls. Laboratory staff testing specimens underwent a training and certification process prior to testing. As an additional internal control, 5% of specimens which tested negative on the screening ELISA were randomly selected to be retested on the confirmatory ELISA. Additionally, 2% of negative samples and 5% of positive samples were randomly selected and sent to the National Institute for Communicable Diseases in South Africa, a regional reference laboratory for external quality assurance (EQA). The EQA found a concordance of 100%. Figure 5.6 summarizes the algorithm used for rapid HIV and laboratory testing in the survey.

Figure 5.6: HIV Testing Flowchart, IBBS-LDTD, 2012



## 5.7. Data management and analysis

### Data Entry

During interviews, data were entered directly by the interviewer into a netbook using QDS™. The results of rapid HIV testing conducted on site were entered weekly by the supervisor, using EpiData version 3.1 (EpiData Association, Odense Denmark). The supervisor transferred all QDS and EpiData files from the netbooks to a data warehouse stored on a password-protected computer located at the survey site, and encrypted the data before sending it by email to the Data Manager.

### Data Analysis

Two-thirds of the survey sample were obtained during sampling events strictly following the TLS method, and the last third was modified due to difficulty reaching sample size. Although two-thirds of the sample followed a venue and time-based methodological approach, the overall sample is classified as a convenience sample

Descriptive analyses were conducted on the data, including the preparation of univariate tables. Bivariate analysis was conducted using the HIV results obtained through EIA. The software package R (Version, 2.15) was used to conduct data analysis. The association between HIV infection and other

variables was analyzed with Pearson's chi-square test and Fisher's exact test, for which p-values are presented.

## 5.8. Ethical considerations

### Data Entry

The questionnaire included questions about HIV, which is a sensitive issue. For this reason, we used ethically recommended procedures in order to protect survey participants. The survey was approved by the National Bioethics Committee for Health (CNBS) in Mozambique, and the Committee on Human Research (CHR) at the University of California, San Francisco (UCSF). The CDC Division of Global HIV/AIDS Associate Director for Science determined this was a research activity involving human subjects but CDC involvement did not constitute engagement in human subject research. All staff involved in data collection participated in a training focused on ethics in research involving human subjects and signed a confidentiality agreement before initiating their duties in the survey.

Participation in the survey required written informed consent from participants. In order to protect the identity of participants they were not requested to provide any personal identification documents.

## 5. Methodology

Participants' anonymity and confidentiality of the data were safeguarded during data collection, transmission and processing through the UTC and unique laboratory codes. Files containing the UTC were deleted before the central laboratory was authorized to initiate testing on the blood samples.

All participants received an incentive: a kit containing hygiene and prevention materials, including a razor-blade, nail-clippers, hair comb, toothpaste, toothbrush, condoms and pamphlets with information on HIV/AIDS. Although the survey's protocol envisioned providing a small meal, this was replaced by packaged food.

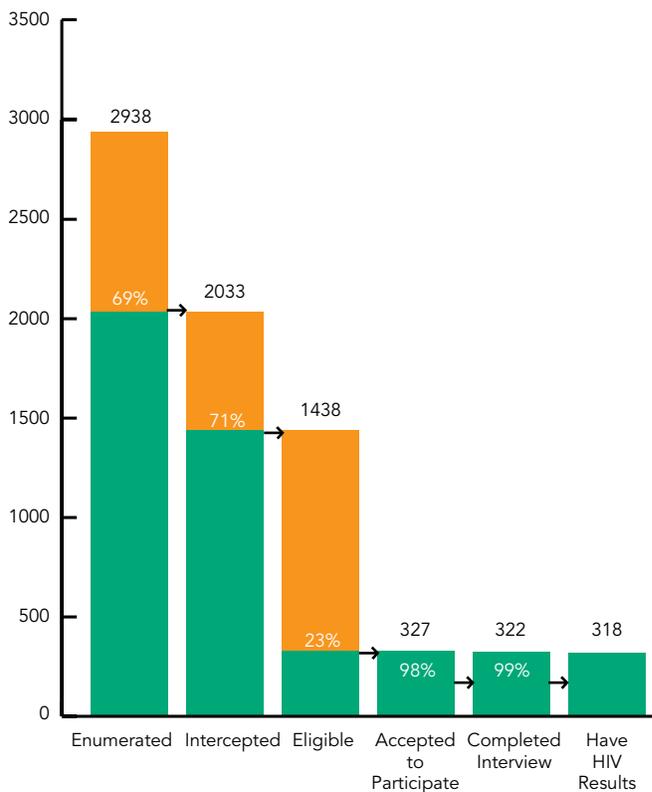
## 6. Results

### 6.1. Recruitment

From February 23 to August 26, 2012, 139 recruitment periods were randomly selected, during which a total of 2938 men were enumerated, 2033 were approached and 1438 (71% of men approached) were eligible to participate in the survey. Among those eligible, 327 (23%) agreed to participate in the survey, 322 (98% of those that agreed to participate) completed the behavioral interview and 99% of those who completed the interview provided consent and specimens which were tested for HIV for surveillance purposes. This information is illustrated in Figure 6.1. The number of truck drivers who agreed to participate in the survey (327) is higher when compared to those who completed the interview (322), because four participants did not complete the interview and one was lost.

Survey participants were recruited at sites with different characteristics, but all sites shared the common feature of being a location frequented by LDTD. These locations included government facilities like customs offices; parking lots; restaurant-type stalls where meals were served or which provided meals to go, bar-type facilities where alcoholic drinks were sold and which might or might not sell meals. There were also grocery stores, stores or stalls that sold packaged items, personal hygiene items and other convenience goods and bar-type stalls, that could also be restaurants that provided rooms for rent

Figure 6.1: Participant recruitment in the IBBS-LDTD, 2012



overnight or for a few hours. Finally, participants were also recruited in pensions, rooms and motel-type accommodations that provide rooms for rent overnight or for a few hours.

#### Reasons for refusal to participate in the IBBS

- Of the 1438 eligible men intercepted, 1111 did not agree to participate in the IBBS. We were able to collect information on the age and main reason for refusal from 1093 of these men.
- The average age of eligible men who did not agree to participate in the survey (38.1) is significantly higher than the average age of those who provided consent to participate in the IBBS (35.9), as illustrated in the table below.

	N	Mean	95% CI	T Test
Consented	327	35.9	(35.0-36.9)	<0.001
Did not consent	1093	38.1	(37.6-38.6)	-

- The main reasons given for refusal to participate in the IBBS was the request to reschedule the interview to another time and then failing to return for it (53.3%), followed by those who claimed to be too tired (28.8%) and those who were in a hurry or had just stopped in Inchope to purchase food or stamp documents (17.8%).

## 6.2. Socio-demographic characteristics of the LDTD population

### Key findings

Among survey participants:

- Average age was 35.9 years old
- 88.5% were married or cohabitating at the time of the survey
- 78.7% had attended secondary school
- The majority spent one or more nights away from their primary residences in the 7 days that preceded the survey.

Socio-demographic information on the participants, namely age, language most frequently spoken at home, religion and nationality is illustrated in table 6.2.A. The mean age of participants was 35.9 years old, and the largest proportion (45.3%) was in the 31-40 year old age group (see also figure 6.2.A); 32.9% spoke African languages used in Mozambique and 88.5% were cohabitating or were married to a woman. Additionally, 87.9% practiced some religion; half (50.3%) were Mozambican and the other half included nationals from other African countries, namely Zimbabwe (33.9%) and Malawi (12.1%), and South-Africans and Tanzanians accounted for 3.7% of the sample.

**Figure 6.2.A: Age group of participants in the IBBS-LDTD, Mozambique 2012**

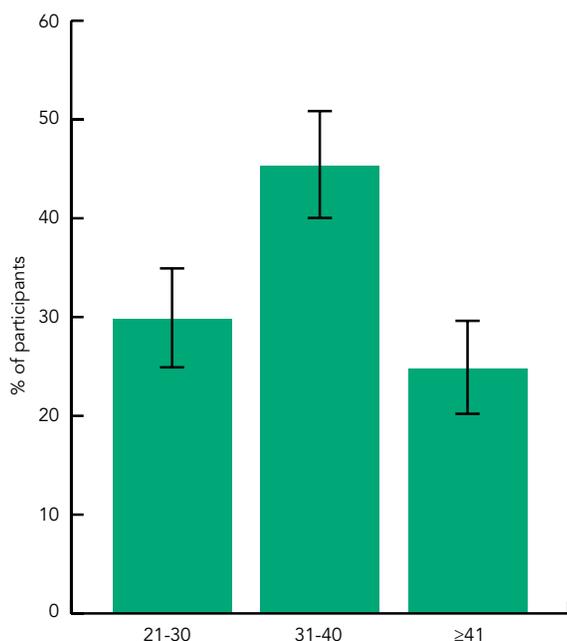


Table 6.2.B provides information on education level, mobility and trips. More than three-quarters (78.7%) of participants reported having attended secondary school; and half (50.3%) had their primary residence in Mozambique: 53.1% in the central region of the country and 45.3% in the southern region. Of those with primary residence outside the country, 68.8% resided in Zimbabwe and 31.2% in South Africa, Malawi, Swaziland, Tanzania or Zambia. Among participants with a permanent residence in Mozambique only two were not Mozambicans, and among those with a permanent residence abroad only two were Mozambicans.

**Figure 6.2.B: Map showing location of Inchope crossroads and major highways in central Mozambique**



Four out of every 10 participants (43.2%) spent more than one month away from their primary residence in the 12 months preceding the survey, and 77.3% spent one or more nights away from their primary residence in the 7 days preceding the survey. About 6 out of every 10 participants (56.8%) took on average more than three long distance trips per month in the 12 months preceding the survey. The majority of participants (67.7%) used National Road No. 6 (EN6) for their last long distance trip, 37.6% used the EN1 and 30.7% used the EN7. The EN3, 4 and 8 were used by 16.1% of participants. During their last long distance trip, 18.4% were accompanied by a colleague, 5.3% were accompanied by a friend or girlfriend. Additionally, 23.3% engaged in sexual relations during their last long distance trip.

Table 6.2.A: Demographic characteristics of participants, Mozambique, 2012

	N	%	(95% CI)
<b>Age group</b>			
18-30	96	29.8	(24.8-34.8)
31-40	146	45.3	(39.9-50.8)
≥41	80	24.8	(20.1-29.6)
Average (minimum, maximum):	36 (21, 68)		
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Primary language spoken at home*</b>			
Portuguese	90	28.0	(23.0-32.9)
English	42	13.0	(9.4-16.7)
Shona	84	26.1	(21.3-30.9)
Other	106	32.9	(27.8-38.1)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Religion</b>			
Practices a religion	283	87.9	(84.3-91.5)
Does not practice any religion	39	12.1	(8.5-15.7)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Marital status</b>			
Never married	25	7.8	(4.8-10.7)
Married or cohabitating	285	88.5	(85.0-92.0)
Widowed, divorced or separated	12	3.7	(1.7-5.8)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Nationality**</b>			
Mozambican	162	50.3	(44.8-55.8)
Zimbabwean	109	33.9	(28.7-39.0)
Malawian	39	12.1	(8.5-15.7)
Other	12	3.7	(1.7-5.8)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>

\*Other language (Ronga/Changana, Xitswa, Bitonga, Chope, Sena, Nyungué, Ndaú, Chewa, Echuabo, Elómue, Swahili, Macua)

\*\* Other Nationality (South African, Tanzanian)

Figure 6.2.B is a map showing the Inchope crossroads, where the EN1 connects the north and south of the country and intersects the EN6, which crosses the country between the port of Beira and Manica Province heading to Zimbabwe. EN1 becomes the EN7 for 65km, as far as the junction town of Malei, where the EN7 veers westward to

Milange. EN3 links Impaputo to Goba, border post to Swaziland. EN4 links Maputo and South Africa. EN8 links the cities of Nacala-Porto, on the northern coast of Mozambique and the deepest natural port on the east coast of Africa, to Chiponde, near Cuamba, a city in the district of Niassa Province.

## 6. Results

Table 6.2.B: Education level and mobility of participants, Mozambique, 2012

	N	%	(95% CI)
<b>Education level</b>			
Primary school or less	68	21.3	(16.8-25.8)
Secondary school or higher	251	78.7	(74.2-83.2)
Missing	3	-	-
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Place of residence</b>			
Mozambique	162	50.3	(44.8-55.8)
Outside Mozambique	160	49.7	(44.2-55.2)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Place of residence in Mozambique</b>			
Northern Region	3	1.9	(0.0-3.9)
Southern Region	73	45.1	(37.4-52.7)
Central Region	86	53.1	(45.4-60.8)
<b>TOTAL</b>	<b>162</b>	<b>100</b>	<b>-</b>
<b>Place of residence outside of Mozambique</b>			
Zimbabwe	110	68.8	(61.6-75.9)
Other*	50	31.2	(24.1-38.4)
<b>TOTAL</b>	<b>160</b>	<b>100</b>	<b>-</b>
<b>Spent more than a month away from primary residence</b>			
Yes	139	43.2	(37.8-48.6)
No	183	56.8	(51.4-62.2)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Spent one or two nights away from primary residence in the last 7 days</b>			
Yes	249	77.3	(72.8-81.9)
No	73	22.7	(18.1-27.2)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Average number of trips per month in the last 12 months</b>			
1 - 3 trips	139	43.2	(37.8-48.6)
>3 trips	183	56.8	(51.4-62.2)
Average (minimum, maximum):	4.5 (1, 50)		
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>National roads (or routes) used during last trip**</b>			
National Road Number 1	121	37.6	(32.3-42.9)
National Road Number 6	218	67.7	(62.6-72.8)
National Road Number 7	99	30.7	(25.7-35.8)
Other	52	16.1	(12.1-20.2)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>

\*Other (South Africa, Malawi, Zambia, Tanzania, Swaziland)

\*\*Other (N3, N4, N8)

Continued on page 29

Table 6.2.B: Education level and mobility of participants, Mozambique, 2012 (Continued)

	N	%	(95% CI)
<b>Had company during the last trip</b>			
Was accompanied by a girlfriend/friend	17	5.3	(2.8-7.7)
Was accompanied by a colleague	59	18.4	(14.1-22.6)
Other company	16	5.0	(2.6-7.4)
No company	229	71.3	(66.4-76.3)
Missing	1	-	-
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Had sex during the last trip</b>			
Yes	75	23.3	(18.7-27.9)
No	247	76.7	(72.1-81.3)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>

### 6.3. Sexual history and risk behaviors

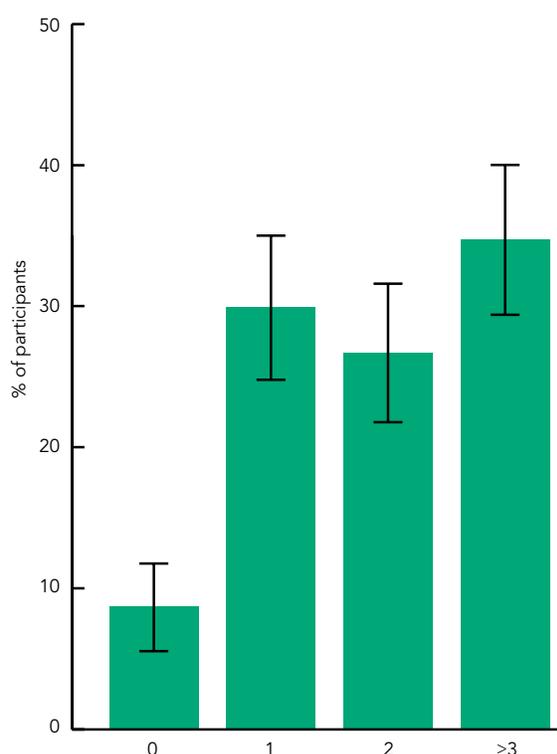
#### Key findings

Among participants who had sexual partners in the 12 months preceding the survey:

- 20.6% had four or more sexual partners
- 9.2% had three or more main partners (wives or girlfriends)
- 12.8% had three or more occasional sex partners
- 27.1% had a paid sexual partner.

Table 6.3 presents results on the sexual history of survey participants. One-third (34.0%) reported being younger than 18 years old and 31.3% reported being 18-19 years old at the time of sexual debut with a woman; and 86.3% of participants had a wife or were cohabitating. Participants had (on average) two sexual partners in the 12 months preceding the survey. Among those who had sexual partners in this period, 24.4% had two main partners (girlfriends or wives), 9.2% had at least three main partners, while 12.8% had at least three occasional partners and 27.1% paid for sex. Two participants reported having had sex with another man.

Figure 6.3: Number of sexual partners of the participants in the 12 months preceding the survey, IBBS-LDTD, Mozambique 2012



## 6. Results

Table 6.3: Sexual history of participants, Mozambique, 2012

	N	%	(95% CI)
<b>Age at first sex with a woman</b>			
<18	99	34.0	(28.6-39.5)
18-19	91	31.3	(25.9-36.6)
20-24	79	27.1	(22.0-32.3)
≥25	22	7.6	(4.5-10.6)
Mean	18		
Missing	31	-	-
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Total number of sex partners in the last 12 months</b>			
0	27	8.7	(5.6-11.8)
1	93	29.9	(24.8-35.0)
2	83	26.7	(21.8-31.6)
3	44	14.1	(10.3-18.0)
≥4	64	20.6	(16.1-25.1)
Mean	2		
Missing	11	-	-
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Number of wives or cohabitating sexual partners*</b>			
1	246	86.3	(82.3-90.3)
≥2	39	13.7	(9.7-17.7)
<b>TOTAL</b>	<b>285</b>	<b>100</b>	<b>-</b>
<b>Total number of main partners (spouses or girlfriends) in the last 12 months**</b>			
0	17	6.0	(3.2-8.8)
1	171	60.4	(54.7-66.1)
2	69	24.4	(19.4-29.4)
≥3	26	9.2	(5.8-12.6)
Missing	12	-	-
<b>TOTAL</b>	<b>295</b>	<b>100</b>	<b>-</b>
<b>Total number of occasional sex partners in the last 12 months**</b>			
0	190	67.6	(62.1-73.1)
1	44	15.7	(11.4-19.9)
2	11	3.9	(1.6-6.2)
≥3	36	12.8	(8.9-16.7)
Missing	14	-	-
<b>TOTAL</b>	<b>295</b>	<b>100</b>	<b>-</b>

\*Only includes participants who were married or cohabitating the time of the survey

\*\*Only includes participants who had a sex partner in the 12 months preceding the survey

Continued on page 31

Table 6.3: Sexual history of participants, Mozambique, 2012 (Continued)

	N	%	(95% CI)
<b>Total number of paid sexual partners in the last 12 months **</b>			
0	207	72.9	(67.7-78.1)
≥1	77	27.1	(21.9-32.3)
Missing	11	-	-
<b>TOTAL</b>	<b>295</b>	<b>100</b>	<b>-</b>
<b>Ever had anal sex with a man</b>			
Yes	2	0.6	(0.0-1.5)
No	320	99.4	(98.5-100)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>

#### 6.4. Condom use and access to prevention services

##### Key findings

Among participants in the 12 months preceding the survey:

- Among those who had sexual partners, 87.0% did not use a condom at last sex with at least one of their last partners (up to three).
- Among those who had a steady partner, such as a spouse, 88.3% used a condom at last sex with at least one of their steady partners.
- Among those that had a paid or occasional partner, 34.2% did not use a condom at last sex with at least one of their occasional or paid partners.
- 86.0% had not participated in HIV and AIDS talks.
- 73.9% did not receive condoms, lubricants or pamphlets about HIV and AIDS.

Findings related to condom use in the 12 months preceding the survey among participants are shown in table 6.4.A. When asked where participants usually obtain condoms, nearly one fourth (23.3%) of participants reported never having used a condom. Nearly half of participants obtained condoms from a pharmacy, store, or convenience store at a gas station (47.5%) and nearly

one fifth in markets (19.6%). In the 12 months preceding the survey, 76.5% of the participants did not use condoms at last sex and 87.0% did not use a condom at least once during last sex with up to their last three partners. In that same period, 88.3% of participants who had steady sexual partners did not use condoms at last sex with at least one of their steady partners (up to three partners), and 34.2% of participants who had occasional or paid partners in this period did not use condoms at last sex with at least one of their paid or occasional partners (up to last three).

Table 6.4.B contains results on access to prevention programs among survey participants. In the 12 months preceding the survey, 86.0% of participants had not attended education sessions on HIV/AIDS that took place in Mozambique, and 73.9% had not received condoms, lubricants or pamphlets with information about HIV/AIDS. In the same period, 17.1% of participants had seen the logo from Family Health International (FHI) ROADS to a Healthy Future (ROADS II) prevention project, “PARAGEM SEGURA” (SAFE STOP). ROADS II works to reduce HIV transmission among people who live and work along major highways that connect Mozambique to neighboring countries by mobilizing these communities to adopt safer sexual behaviors such as correct and consistent condom use and increase utilization of health services.

## 6. Results

Table 6.4.A: Condom use among participants , Mozambique, 2012

	N	%	(95% CI)
<b>Where do participants usually obtain condoms*</b>			
Never used a condom	75	23.3	(18.7-27.9)
Hospital/Clinic	45	14.0	(10.2-17.8)
Pharmacy/Store/Service Station	153	47.5	(42.1-53.0)
Coffee shop/Hotel	12	3.7	(1.7-5.8)
Market	63	19.6	(15.2-23.9)
At work	33	10.2	(6.9-13.6)
Other	29	9.0	(5.9-12.1)
<b>Used a condom at last sex in the last 12 months**</b>			
Yes	66	23.5	(18.5-28.4)
No	215	76.5	(71.6-81.5)
No reply	14	-	-
<b>TOTAL</b>	<b>295</b>	<b>100</b>	<b>-</b>
<b>Used a condom at last sex with all partners (up to last three) in the last 12 months**</b>			
Yes	37	13.0	(9.1-16.9)
No	247	87.0	(83.1-90.9)
No reply	11	-	-
<b>TOTAL</b>	<b>295</b>	<b>100</b>	<b>-</b>
<b>Used a condom at last sex with each steady partner (up to last three) in the last 12 months***</b>			
Yes	31	11.7	(7.8-15.6)
No	234	88.3	(84.4-92.2)
<b>TOTAL</b>	<b>265</b>	<b>100</b>	<b>-</b>
<b>Used a condom at last sex with each occasional or paid sex partner (up to last three) in the last 12 months****</b>			
Yes	73	65.8	(56.9-74.6)
No	38	34.2	(25.4-43.1)
<b>TOTAL</b>	<b>111</b>	<b>100</b>	<b>-</b>

\* Check all that apply question

\*\* Excludes those who did not have a sexual partner in the last 12 months

\*\*\* Includes only those who had a steady partner in the last 12 months

\*\*\*\* Includes only those who had an occasional or paid sex partner in the last 12 months

Table 6.4.B: Access to prevention programs among participants, Mozambique, 2012

	N	%	(95% CI)
<b>Participated in educational sessions on HIV and AIDS in Mozambique in the last 12 months</b>			
Yes	45	14.0	(10.2-17.8)
No	277	86.0	(82.2-89.8)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Received condoms, lubricants, leaflets in Mozambique in the last 12 months</b>			
Yes	84	26.1	(21.3-30.9)
No	238	73.9	(69.1-78.7)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Had ever seen the logo "PARAGEM SEGURA" (SAFE STOP)</b>			
Yes	55	17.1	(13.0-21.2)
No	267	82.9	(78.8-87)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>

### 6.5. Self-reported STI symptoms and diagnosis, use of health services, and alcohol and drug use

Table 6.5.A presents findings of reported STI symptoms and related medical care and circumcision rates among participants. In the 12 months preceding the survey, 9.9% of participants reported having had symptoms or having been told they had an STI. Among these participants, 92.9% sought treatment or medical advice for their STI symptoms or diagnosis. Among participants, 44.4% were circumcised.

Table 6.5.B presents results on healthcare use among participants in the 12 months preceding the survey, as well as alcohol and drug use. In the 12 months preceding the survey, 26.7% of participants received medical care in Mozambique and 3.1% had difficulty obtaining assistance from a physician, nurse or other healthcare professional when seeking medical care in the country. Nearly half of participants (47.7%) reported having consumed alcoholic drinks, and nearly all reported never having used drugs

Table 6.5.A: Self-reported STIs and circumcision among participants, Mozambique, 2012

	N	%	(95% CI)
<b>Had an abnormal discharge, sore or ulcer in the penis or someone told them they might have an STI</b>			
Yes	32	9.9	(6.7-13.2)
No	290	90.1	(86.8-93.3)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Sought medical advice or treatment the last time he had symptoms or was diagnosed with an STI*</b>			
Yes	13	92.9	(79.4-100)
No	1	7.1	(0.0-20.6)
No reply	18	-	-
<b>TOTAL</b>	<b>32</b>	<b>100</b>	<b>-</b>
<b>Circumcision status</b>			
Circumcised	143	44.4	(39.0-49.8)
Non-circumcised	179	55.6	(50.2-61.0)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>

\*Includes only those who reported STI symptoms or diagnosis

## 6. Results

(98.1%). Participants were asked questions pertaining to potential alcohol abuse or addiction. One-third of participants (33.3%) potentially had problems with alcohol dependence or abuse according to the AUDIT-C indicator.

Among participants who had sexual intercourse in the 12 months preceding the survey, 9.2% reported drug or alcohol use before or during sex.

### AUDIT-C Indicator

The AUDIT-C indicator is composed of three questions with possible scores of 0-4 for each answer. The sum of the scores for the three questions results in possible AUDIT-C scores of 0–12 points. The recommended screening threshold and the one used in the IBBS-LDTD was  $\geq 4$  points for men (Frank et al, 2008). The three questions we asked in the survey are as follows:

1. How often do you have a drink containing alcohol?
  - Never (0 points), Monthly or less (1 point), Two to four times a month (2 points), Two to three times a week (3 points), Four or more times a week (4 points)
2. How many drinks containing alcohol do you have on a typical day when you are drinking?
  - 1 or 2 (0 points), 3 or 4 (1 point), 5 or 6 (2 points), 7 to 9 (3 points), 10 or more (4 points)
3. How often do you have six or more drinks on one occasion?
  - Never (0 points), Less than monthly (1 point), Monthly (2 points), Weekly (3 points), Daily or almost daily (4 points).

Table 6.5.B: Use of healthcare services and use of alcohol and drugs among participants, Mozambique, 2012

	N	%	(95% CI)
<b>Received medical care in Mozambique in the last 12 months</b>			
Yes	86	26.7	(21.9-31.5)
No	236	73.3	(68.5-78.1)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Had difficulty obtaining assistance from a doctor, nurse or other healthcare professional when seeking healthcare services in Mozambique in the last 12 months</b>			
Yes	10	3.1	(1.2-5.0)
No	312	96.9	(95.0-98.8)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Drank alcohol in the past 12 months</b>			
No	168	52.3	(46.9-57.8)
Yes	153	47.7	(42.2-53.1)
Missing	1	-	-
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Use of alcohol indicating probable abuse and/or alcohol dependence (AUDIT-C)**</b>			
Yes	107	33.3	(28.2-38.5)
No	214	66.7	(61.5-71.8)
Missing	1	-	-
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Used drugs or drank alcohol before or during last sex*</b>			
Yes	26	9.2	(5.8-12.5)
No	258	90.8	(87.5-94.2)
Missing	11	-	-
<b>TOTAL</b>	<b>295</b>	<b>100</b>	<b>-</b>
<b>Used drugs in the last 12 months</b>			
Yes	6	1.9	(0.4-3.3)
No	316	98.1	(96.7-99.6)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>

\*Includes only participants who reported sexual partners in the last 12 months

\*\* This indicator includes three questions: 1. "How often have you had alcoholic drinks in the last 12 months?", "How many glasses do you drink on a typical day when you drink?" and "How many times do you drink 6 or more glasses in a single occasion?".

### 6.6. Prior HIV testing and risk perception

#### Key findings

- 65.8% of participants had ever been tested for HIV before the survey;
- Among these, 71.2% tested in the last 12 months;
- Among participants who had never been diagnosed as HIV-positive, 36.9% believed they were HIV-negative at the time of the survey, and 48.5% believed they were at low risk of contracting HIV.

Table 6.6.A presents data on HIV testing prior to the survey. Two-thirds (65.8%) of participants said they had been tested for HIV at some point in their lives. Among these, 71.2% tested in the last 12 months or less. Additionally, 95.6% tested negative and 3.9% tested positive in their most recent HIV test. Approximately four out of every 10 participants had either tested in the last 12 months and knew their result or had previously tested HIV-positive.

Table 6.6.A: Prior HIV testing among participants, Mozambique, 2012

	N	%	(95% CI)
<b>Had ever been tested for HIV</b>			
Yes	212	65.8	(60.7-71.0)
No	110	34.2	(29.0-39.3)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Was tested for HIV in the last 12 months*</b>			
Yes	151	71.2	(65.1-77.3)
No	61	28.8	(22.7-34.9)
<b>TOTAL</b>	<b>212</b>	<b>100</b>	<b>-</b>
<b>Results of the most recent HIV test*</b>			
Positive	8	3.9	(1.3-6.6)
Negative	196	95.6	(92.8-98.4)
Indeterminate	1	0.5	(0.0-1.4)
No reply	7	-	-
<b>TOTAL</b>	<b>212</b>	<b>100</b>	<b>-</b>
<b>Was tested for HIV and received results in the last 12 months</b>			
Tested and received results or already aware of HIV+ status	156	48.4	(43.0-53.9)
Was not tested in the past 12 months	166	51.6	(46.1-57.0)
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>

\* Only applies to people who had ever been tested for HIV

Perceptions of risk are presented in table 6.6.B. Among participants who had never tested positive for HIV, 48.5% believed they were at low risk, 18.8% believed they were at moderate risk and 18.1% believed they were at high-risk of contracting HIV.

Among those who were not aware of their HIV status or had a negative result in their last test, 36.9% believed they

were HIV-negative. Among participants who were aware of their HIV-positive status, 75.0% had consulted a doctor, nurse or other healthcare professional to obtain HIV-related healthcare and 87.5% said they were taking antiretroviral drugs (not shown in table).

**Table 6.6.B: Perception of risk of HIV infection among participants, Mozambique, 2012**

	N	%	(95% CI)
<b>Perception of risk of HIV infection*</b>			
No risk	43	14.7	(10.6-18.7)
Low risk	142	48.5	(42.7-54.2)
Moderate risk	55	18.8	(14.3-23.2)
High risk	53	18.1	(13.7-22.5)
No reply	21	-	-
<b>TOTAL</b>	<b>314</b>	<b>100</b>	<b>-</b>
<b>Perception of the status of HIV infection *</b>			
Positive	1	0.3	(0.0-0.9)
Negative	116	36.9	(31.6-42.3)
Is not aware/refuses to know	197	62.7	(57.4-68.1)
<b>TOTAL</b>	<b>314</b>	<b>100</b>	<b>-</b>

\* Applies only to those who had never had an HIV-positive test result



## 7. HIV Prevalence and Associated Factors

HIV test results used for prevalence estimates in this report are from the EIA testing conducted at the central laboratory using DBS samples. Anonymous DBS samples were tested for HIV with EIA upon termination of the survey. The results of these tests were used solely for surveillance purposes and were not returned to individual participants.

All participants were given the opportunity to be tested for HIV and receive immediate results using a rapid HIV test on site. Participants were not required to be tested for HIV or to receive their test results.

### Results of the rapid HIV test vs. centralized HIV test using EIA

The majority of participants agreed to be tested for HIV using EIA. Therefore, we can compare the rapid tests conducted on site with the EIA tests performed in the central laboratory. This comparison can be useful in future surveys. The survey included 322 participants, of whom 301 did both tests. There were three discrepant results: negative in the rapid test and positive in the EIA test. Considering the EIA test as a reference, this indicates a negative predictive value of 98.9% and a positive predictive value of 100% in this sample.

HIV test		EIA	
		HIV+	HIV-
Rapid	HIV+	38	3
	HIV-	3	260

PPV=100%  
NPV=98.9%

Disease prevalence is the proportion of cases of any given disease (like HIV) existing in a certain population and location (like the population of LDTD in Inchope) at a given time (for example, the year 2012). Disease prevalence allows us to understand how common a certain disease is within a population. HIV prevalence among survey participants was 15.4%, that is, between one and two out of every 10 participants were infected with HIV in 2012 (see table 7.A).

Table 7.A: Survey HIV test results, Mozambique, 2012

	N	%	(95% CI)
<b>Centralized HIV test (EIA)</b>			
Positive	49	15.4	(11.4-19.4)
Negative	269	84.6	(80.6-88.6)
Did not Consent	4	-	-
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>
<b>Rapid HIV Test</b>			
Positive	38	12.5	(8.8-16.3)
Negative	265	87.5	(83.7-91.2)
Did not Consent	19	-	-
<b>TOTAL</b>	<b>322</b>	<b>100</b>	<b>-</b>

## 7. HIV Test Results and Associated Factors

Among participants with HIV, 83.7% were not aware of their status. Among those who had been tested for HIV in the 12 months preceding the survey and had negative results, 8.5% tested positive for HIV during the survey (table 7.B).

**Table 7.B: Undiagnosed HIV infection among HIV-positive participants and HIV test results among participants who self-reported to have tested negative for HIV in the past 12 months, Mozambique, 2012**

	N	%	(95% CI)
<b>Undiagnosed HIV infection*</b>			
Never tested positive for HIV	41	83.7	(73.3-94.0)
Previously tested positive for HIV	8	16.3	(6.0-26.7)
No reply	4	-	-
<b>TOTAL</b>	<b>53</b>	<b>100</b>	<b>-</b>
<b>HIV test results among participants who self-reported to have tested negative for HIV in the 12 months preceding the survey**</b>			
ELISA positive	12	8.5	(3.9-13.0)
ELISA negative	130	91.5	(87.0-96.1)
Did not Consent	2	-	-
<b>TOTAL</b>	<b>144</b>	<b>100</b>	<b>-</b>

\* Applies only to those who tested HIV-positive in the survey

\*\* Applies only to people tested negative for HIV in the 12 months preceding the survey

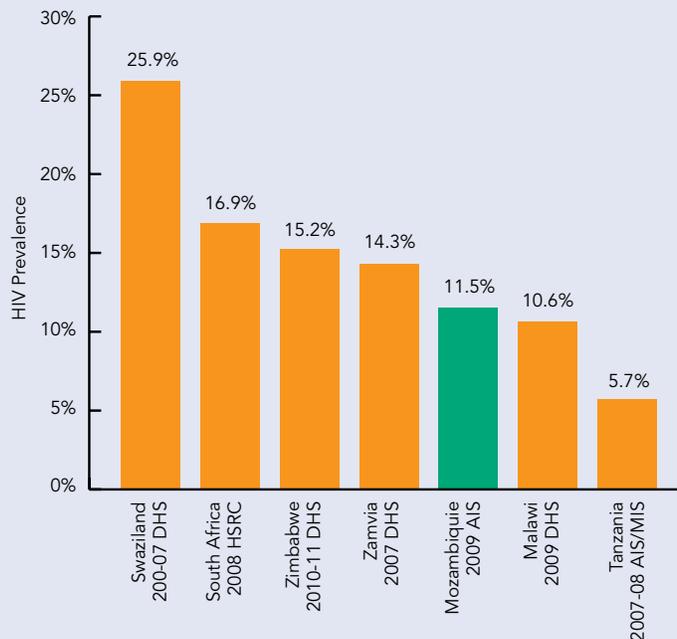
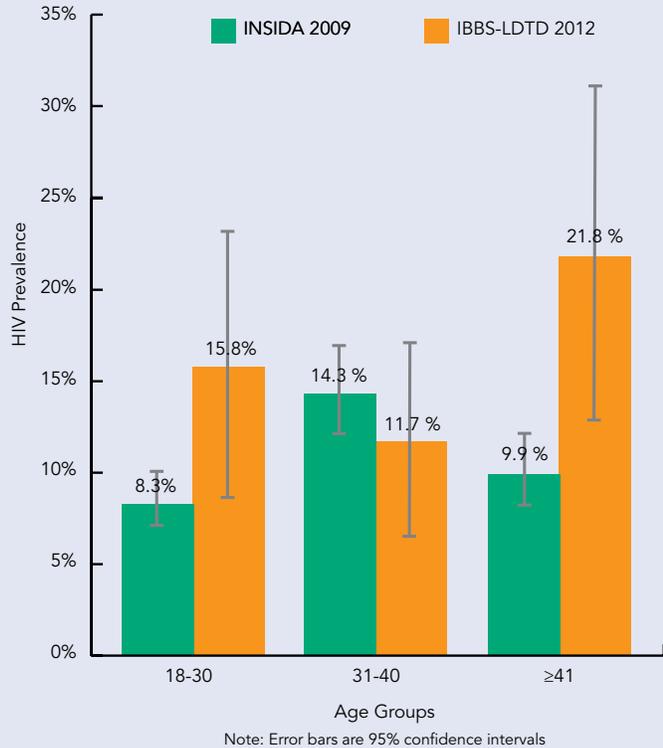
## 7.1. HIV prevalence by demographic data

### HIV prevalence in the general male population by age and province

The National HIV and AIDS Indicator Survey in Mozambique (INSIDA 2009) estimated HIV prevalence among the general male population aged 15-49 years at 9.2%. Prevalence varied by age: 8.3% among those between 18-30 years old, 14.3% among those between 31-40 years old, and 9.9% among those between 41-64 years old (INS, INE & ICF Macro, 2010).

The estimated prevalence among truck drivers who participated in this survey was 15.4% (95% CI: 11.4-19.4%). Direct comparisons with the prevalence among men in INSIDA should be made with care since truck drivers included in the survey tended to be from the Center and Southern regions of the country, where HIV prevalence in the general population is higher. The IBBS survey was also restricted to men aged 18 years and older. Thus the higher estimated prevalence in this survey could be due to factors other than risk behaviors associated with being a long distance truck driver.

HIV prevalence was higher among truck drivers who resided in Mozambique (21.9%) compared with those who resided outside the country (8.9%). However, HIV prevalence among the general population in bordering countries, with the exception of Tanzania and Malawi, is generally higher than in Mozambique.



## 7. HIV Test Results and Associated Factors

Table 7.1.A presents HIV prevalence by socio-demographic characteristics: age group, primary language spoken at home, religion, marital status and circumcision status. There were no statistically significant associations found in these results. Although not significant, HIV prevalence by age group was 15.8% for 18-30 year olds, 11.7% for 31-40 year olds and 21.8% for those 41 years of age or older (figure 7.1).

Data on HIV prevalence by education level and mobility are presented in table 7.1.B. Prevalence was significantly higher in participants with primary school education or lower, compared to those with secondary school education or higher (27.9% and 11.7%, respectively). Among participants with residence in Mozambique, HIV prevalence was significantly higher, 21.9%, than among those who resided abroad (8.9%). There were no statistically significant differences in HIV prevalence for the remaining variables.

Figure 7.1: HIV prevalence by age group, IBBS-LDTD, Mozambique 2012

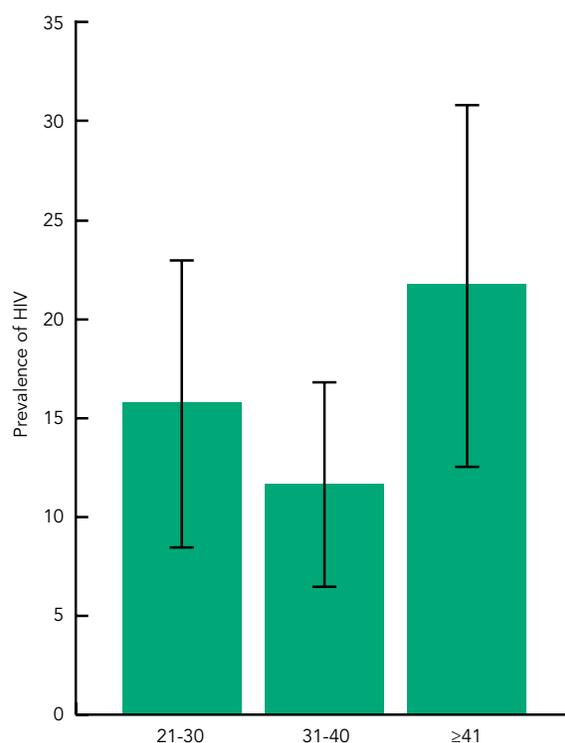


Table 7.1.A: HIV Prevalence among participants by demographic characteristics, Mozambique 2012

	n/N	%	(95% CI)	p-value
<b>Age group</b>				
18-30	15/95	15.8	(8.5-23.1)	0.138
31-40	17/145	11.7	(6.5-17.0)	-
≥41	17/78	21.8	(12.6-31.0)	-
≥51	20/94	21.3	(13.0-29.6)	-
<b>Primary language</b>				
Portuguese	16/89	18.0	(10.0-26.0)	0.295
English	4/41	9.8	(0.7-18.8)	-
Shona	9/83	10.8	(4.2-17.5)	-
Other	20/105	19.0	(11.5-26.6)	-
<b>Religion</b>				
Practices a religion	40/279	14.3	(10.2-18.4)	0.238
Does not practice any religion	9/39	23.1	(9.9-36.3)	-
<b>Marital status</b>				
Never married	2/25	8.0	(0.0-18.6)	0.553
Cohabiting or Married	43/281	15.3	(11.1-19.5)	-
<b>Circumcision status</b>				
Circumcised	25/142	17.6	(11.3-23.9)	0.413
Not circumcised	24/176	13.6	(8.6-15.8)	-

Table 7.1.B: HIV prevalence among participants by level of education and mobility, Mozambique 2012

	n/N	%	(95% CI)	p-value
<b>Level of education</b>				
Primary or lower	19/68	27.9	(17.3-38.6)	0.002
Secondary or higher	29/247	11.7	(7.7-15.8)	-
<b>Country of residence</b>				
Mozambique	35/160	21.9	(15.5-28.3)	0.002
Abroad	14/158	8.9	(4.4-13.3)	-
<b>Region of residence in Mozambique (applies only to those residing in Mozambique)*</b>				
Southern Region	14/73	19.2	(10.1-28.2)	0.639
Central Region	20/85	23.5	(14.5-32.5)	-
<b>Country of residence outside of Mozambique (applies only to those residing outside the country)*</b>				
Zimbabwe	10/108	9.3	(3.8-14.7)	1
Malawi/Other	4/50	8.0	(0.5-15.5)	-
<b>Spent more than one month away from primary residence in the past 12 months</b>				
Yes	24/138	17.4	(11.1-23.7)	0.483
No	25/180	13.9	(8.8-18.9)	-
<b>Number of trips per month</b>				
1-3	16/138	11.6	(6.3-16.9)	0.135
≥4	33/180	18.3	(12.7-24.0)	-
<b>Had company during part or all of last trip</b>				
Yes	16/91	17.6	(9.8-25.4)	0.612
No	33/227	14.5	(10.0-19.1)	-
<b>Had sex during last trip</b>				
Yes	11/73	15.1	(6.9-23.3)	1
No	38/245	15.5	(11.0-20.0)	-

\* Excludes categories with fewer than 20 participants

## 7.2. HIV prevalence by sexual behavior and condom use

HIV prevalence by sexual history is presented in table 7.2.A. There were no statistically significant differences in HIV prevalence among participants based on their sexual history: age of sexual debut, total number of partners, and having paid for sex in the last 12 months.

Table 7.2.A: HIV Prevalence among participants by sexual history, Mozambique 2012

	n/N	%	(95% CI)	p-value
<b>Age of sexual debut</b>				
<18	14/96	14.6	(7.5-21.6)	0.863
≥18	31/192	16.1	(10.9-21.2)	-
<b>Total number of partners in the last 12 months</b>				
0-1	20/117	17.1	(10.3-23.9)	0.517
≥2	26/190	13.7	(8.8-18.6)	-
<b>Paid for sex in the last 12 months</b>				
Yes	10/77	13.0	(5.5-20.5)	0.693
No	34/216	15.7	(10.9-20.6)	-

## 7. HIV Test Results and Associated Factors

The association between HIV and condom use during sexual intercourse in the 12 months preceding the survey is presented in table 7.2.B. There were no statistically significant differences in HIV prevalence by condom use at last sex, or consistent use of condoms at last sex with each partner, regardless of the type of relationship (wife or steady partner, occasional or paid sex partner).

**Table 7.2.B: HIV Prevalence among participants by condom use, Mozambique 2012**

	n/N	%	(95% CI)	p-value
<b>Used a condom at last sex</b>				
Yes	8/65	12.3	(4.3-20.3)	0.825
No	28/194	14.4	(9.5-19.4)	-
<b>Used condoms at last sex with all partners (up to last 3) in the last 12 months</b>				
Yes	5/34	14.7	(2.8-26.6)	1
No	34/233	14.6	(10.1-19.1)	-
<b>Used condoms at last sex with each wife or steady partner (up to last 3) in the last 12 months</b>				
Yes	4/28	14.3	(1.3-27.2)	1
No	29/212	13.7	(9.1-18.3)	-
<b>Used condoms at last sex with each occasional or transactional sex partner (up to last 3) in the last 12 months</b>				
Yes	6/65	9.2	(2.2-16.3)	0.247
No	7/36	19.4	(6.5-32.4)	-

### 7.3. HIV prevalence by healthcare utilization and use of alcohol and drug

Table 7.3 presents HIV prevalence by healthcare utilization and use of alcohol and drugs. HIV prevalence was significantly higher for participants who received medical care in Mozambique (23.5%) compared to those who didn't (12.4%). There were no statistically significant differences in HIV prevalence by alcohol use.

**Table 7.3: HIV Prevalence among participants by healthcare utilization and use of alcohol and drugs, Mozambique 2012**

	n/N	%	(95% CI)	p-value
<b>Received medical care in Mozambique in the last 12 months</b>				
Yes	20/85	23.5	(14.5-32.5)	0.025
No	29/233	12.4	(8.2-16.7)	-
<b>Drank alcohol in the last 12 months</b>				
Yes	21/164	12.8	(7.7-17.9)	0.231
No	28/153	18.3	(12.2-24.4)	-
<b>Alcohol use indicative of possible abuse and/or alcohol dependence (AUDIT-C)</b>				
Yes	17/107	15.9	(9.0-22.8)	1
No	32/210	15.2	(10.4-20.1)	-
<b>Used drugs at last sex or drank alcohol before or during sex</b>				
Yes	4/27	14.8	(1.4-28.2)	1
No	39/262	14.9	(10.6-19.2)	-

#### 7.4. HIV prevalence by previous HIV testing, HIV risk perception, self-reported symptoms or diagnosis of an STI

Participants who had never tested for HIV had a significantly higher HIV prevalence (23.1%) compared to those who had ever tested (11.4%). There were no statistically significant associations in HIV prevalence by date of the most recent HIV test, HIV risk perception, perception of HIV infection status, or self-reported STI symptoms or diagnosis in the 12 months preceding the survey (table 7.4).

**Table 7.4: HIV Prevalence among participants by previous HIV testing and risk perception, Mozambique 2012**

	n/N	%	(95% CI)	p-value
<b>Has ever tested for HIV</b>				
Yes	24/210	11.4	(7.1-15.7)	0.01
No	25/108	23.1	(15.2-31.1)	-
<b>Tested for HIV in the past 12 months (applies only to those previously tested)</b>				
Yes	15/149	10.1	(5.2-14.9)	0.465
No	9/61	14.8	(5.9-23.7)	-
<b>Perception of risk for HIV infection</b>				
No risk/Low risk	20/181	11.0	(6.5-15.6)	0.109
Moderate risk/High risk	20/108	18.5	(11.2-25.8)	-
<b>Perception of current HIV status</b>				
Negative	17/110	15.5	(8.7-22.2)	0.668
Doesn't know/refused	23/178	12.9	(8.0-17.8)	-
<b>Self-reported STI diagnosis or symptoms in the last 12 months</b>				
Yes	5/32	15.6	(3.0-28.2)	1
No	44/286	15.4	(11.2-19.6)	-



## 8. Conclusion

This was the first attempt at a TLS-based survey conducted among LDTD in Mozambique. Ultimately, due to slow recruitment, this became a convenience sample. However, survey strengths include the recruitment of a diverse sample of LDTD working in Mozambique, including 160 foreign participants, representing 49.7% of the participants. Additionally, the survey provided services to people who wanted to know their HIV serostatus, and the majority of participants (94.0%) benefitted from counseling and HIV testing during the survey. The information collected in the survey will help inform public health interventions focused on LDTD, such as the FHI ROADS Project, connecting vulnerable and excluded communities to crucial healthcare services along corridor transports in West and Central Africa.<sup>1</sup>

### 8.1. Main Findings

HIV prevalence among LDTD who participated in the survey was 15.4%. HIV prevalence was higher among participants with primary education level or literacy (29.7%) compared with participants who had some level of secondary schooling (11.7%). HIV prevalence was higher among participants with permanent residence in Mozambique (21.9%) compared with those with permanent residence outside of the country (8.9%). HIV prevalence was higher among participants who had never been tested for HIV (23.1%) compared to those who previously tested (11.4%).

Nearly a quarter of participants reported having paid for sex in the last 12 months prior to the survey. Nearly one-third reported having sex during their last long distance trip and 61.4% had two or more sexual partners in the 12 months preceding the survey. A third of respondents had multiple main sexual partners and condom use with those partners was low (11.7%) compared to condom use with occasional or transactional sex partners (65.8%).

One-third of participants reported alcohol use indicative of possible abuse and/or alcohol dependence.

Among survey participants, 65.8% had been tested for HIV before the survey, and among them 71.2% had tested in the last 12 months. Only 3.9% tested positive in their most recent

test. Of those that had never tested positive, 63.2% believed themselves to be at low or no risk of acquiring HIV. Among those who tested positive for HIV in the survey, 83.7% were not aware they were infected.

Participants' access to HIV prevention programs, services and resources is still limited. In the 12 months preceding the survey 86.0% of the participants did not attend an educational session about HIV/AIDS while in Mozambique and 73.9% did not receive condoms, lubricants or pamphlets with information about HIV/AIDS. In that same period, only 17.1% of the participants saw the logo "PARAGEM SEGURA" (SAFE STOP), which is part of the ROADS project implemented by FHI in Mozambique.

### 8.2. Limitations

This survey has the following limitations:

- Recruitment rate was low – only 23% of eligible LDTD participated. While formative assessment concluded that Inchope is a place where LDTD from different regions of the country and other countries converge, the survey team found in practice that many LDTD only stopped briefly in Inchope and this may have contributed to the survey's low recruitment rate. Although the TLS methodology was slightly modified survey investigators think this change did not harm the quality of the sample.
- The survey was unable to estimate the population size of LDTD who work in Mozambican roads and their distribution across the country, due to limitations in reliable sources of information in Mozambique.

Despite these limitations, survey investigators believe these results provide useful information in moving forward with program decisions for LDTD passing through Inchope, Mozambique. By following a modified TLS approach, the sample may be closer to the true sample of truckers passing through Inchope than other traditional convenience samples: survey participants were not recruited from healthcare facilities, they were not chosen

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<sup>1</sup> FHI 360. Regional Outreach Addressing AIDS through Development Strategies (ROADS). Website accessed from [http://www.fhi360.org/en/CountryProfiles/EastAfrica/res\\_ROADS\\_II.htm](http://www.fhi360.org/en/CountryProfiles/EastAfrica/res_ROADS_II.htm). The ROADS Project began in August 2005 with ROADS I, and has been extended until September 2013 through the follow-on project ROADS II. Funded by PEPFAR Through USAID, the project supports comprehensive prevention, healthcare, and impact mitigation. FHI is the principal implementing partner of this Leader with Associates Award.

## 8. Conclusion

by community outreach workers, nor did they self-select to participate. This report provides information that can be used to inform programs, such as LDTD socio-demographic characteristics, level of risk behaviors and access to healthcare services.

### 8.3. Recommendations

1. The survey found coverage of HIV and STI prevention programs and resources (e.g., condoms and educational materials) was low among participants. For example, only about one in 10 participants had attended HIV and AIDS educational sessions in Mozambique while one-quarter had received condoms in the 12 months prior to the survey. In the same period, only about two in 10 participants had seen the logo “PARAGEM SEGURA”, an HIV prevention intervention specifically for LDTD. The fact that many participants engaged in risk behaviors points to the need for broader coverage of HIV prevention interventions. Specifically for interventions around condom use, being that less than one fourth of participants reported using condoms at last sex, and less than 7 in 10 reported consistent use of condoms with occasional and transactional sex partners. Because of these results, we recommend short- and long-term strategies to develop a comprehensive package of interventions to expand HIV and STI prevention activities among LDTD and implementation of strategies to ensure that more LDTD have access to the interventions.
  - a. In the short-term, existing HIV prevention activities should consider the particular characteristics and needs of this mobile population and factor them into program planning activities.
    - i. HIV prevention programs targeting LDTD should prioritize Mozambican drivers, who according to this survey, had a higher HIV prevalence. The current ROADS program being implemented by FHI360 should be scaled-up to reach a greater number of LDTD and other evidence-based HIV prevention interventions should be explored to address major behavioral risks among LDTD: unprotected sex with multiple concurrent partners, unprotected sex with their own spouses or steady partners, low uptake of HIV counseling and testing services, and awareness of symptoms of STIs, and their correct treatment. The interventions should be implemented in a manner that is culturally and gender appropriate, addressing masculinity norms and the role of LDTD in HIV prevention.
  - ii. Programs should employ activists and outreach workers who are able to access work and recreational locations that are frequented by LDTD to conduct tailored educational campaigns addressing the risks of HIV for LDTD and their partners. Similarly, bar and restaurant owners who are well-known and respected by LDTD can be enlisted to support HIV prevention activities. This approach has been used successfully to reach other populations such as female sex workers and should be more aggressively explored in Mozambique. Further, restaurants, bars and other locations (e.g., hotels, guest houses) most common to LDTD should be established condom distribution sites to improve access.
  - iii. Information, Education, and Communication (IEC) materials developed for LDTD should address HIV risks noted through this survey including: abusive use of alcohol and consistent condom use during sexual intercourse, especially with occasional, transactional or paid sexual partners. IEC materials should also emphasize consistent condom use during all sexual intercourse for LDTD who have multiple sexual partners, even with girlfriends or spouses. IEC materials should be available at regular LDTD stops along roads, parking lots, ports and railways, as well as transportation companies.
  - iv. Communication strategies to increase HIV literacy (both in terms of prevention and treatment) among LDTD should consider the high mobility of the population and the various languages (Portuguese, Changana/Ronga and Sena) that are spoken in the population. Since half of the participants were not Mozambican nationals, it would be

- beneficial to consider the possibility of using IEC materials in English and Shona produced in neighboring countries.
- b. With long-term sustainability a priority, HIV prevention should be integrated and, when appropriate, implemented in the workplace. Advocating with transportation companies, Ministry of Transportation and Communication, the Ministry of Labor, the Ministry of Health and the National HIV and AIDS Council will be critical for prioritizing health education and promotion activities to foster a healthy workforce. Employers and companies developing activities in the industry that interact with LDTD should develop comprehensive workplace HIV prevention programs targeting LDTD, their families and others that work in this industry (e.g., the “helpers”, customs officers, gas/petrol station staff, port staff, etc.). Specific long-term approaches should include:
    - i. Expansion of the coverage of counseling and testing services, with particular focus on early HIV diagnosis. HIV counseling and testing programs and interventions should encourage LDTD to get tested for HIV on a regular basis, promote couples counseling and testing and demonstrate the advantages of early detection of HIV infection. HIV counseling and testing should also be delivered in a comprehensive manner, integrating services with screening for STIs, alcohol abuse and other diseases, and adapted to the LDTD lifestyle (e.g., mobile integrated HIV counseling and testing in the main roads used by LDTD and in ports such as the Beira port and in hours that are compatible with work schedules).
    - ii. Services should include referrals to clinical services, including HIV care and initiation of ART.
      - Referrals to HIV clinical services should be developed to adapt to the high mobility of LDTD. This could be achieved by providing a list of all healthcare facilities that provide ARV in the country, mainly along the main transport corridors and focus on the importance of enlisting in a treatment program as soon as possible. It is also critical to facilitate the continuation of access to treatment across national borders in order to ensure adherence to treatment and maximum efficacy.
      - The prevention messages should contribute to increased awareness of the importance of early detection of HIV and all options available to LDTD infected with HIV, including a focus on positive prevention and disclosure of HIV status to partners and the importance partners being tested.
      - Because of the high mobility of LDTD, health services and partners providing counseling and testing services should coordinate with employers to provide these services to the LDTD in their workplace, wherever feasible.
  2. There are additional aspects of LDTD behavioral risks for HIV that warrant study or continued observation, including qualitative studies, to acquire a deeper knowledge of key areas such as the barriers to HIV testing and consistent condom use by this population. Additionally, future IBBS rounds, including counts of the size of the LDTD population, should be conducted in locations highly frequented by LDTD to monitor the progress of interventions designed to respond to their HIV prevention and care needs.



## 9. References

- Austral Consultoria e Projectos Lda. (2005). Technical assistance to SATCC-TU, prevention and control of HIV: Final programme report as of December 12, 2005. Maputo: GTZ.
- Chongsuvivatwong, V. (2007). Hmisc: epicalc: Epidemiological calculator. R package version 2.12.0.0. <http://cran.r-project.org/web/packages/epicalc/index.html>.
- Conselho dos Ministros de Moçambique. (2010). Plano Estratégico Nacional de Resposta ao HIV e SIDA 2010 – 2014. Mozambique.
- Deane, K. D., Parkhurst, J. O., & Johnston, D. (2010). Linking migration, mobility and HIV. *Tropical medicine & International Health: TM & IH*, 15(12), 1458–1463. doi:10.1111/j.1365-3156.2010.02647.x
- Direção Provincial de Saúde de Tete (DPS Tete) & International Centre for Reproductive Health (ICRH). (2008). Prevalências de ITS/HIV e comportamento de saúde sexual em grupos de alto risco na província de Tete. Relatório final. March 2008.
- Ferreira, L. O., de Oliveira, E. S., Raymond, H. F., Chen, S. Y., & McFarland, W. (2008). Use of time-location sampling for systematic behavioral surveillance of truck drivers in Brazil. *AIDS and Behavior*, 12(4 Suppl), S32–8. doi:10.1007/s10461-008-9386-0;
- Fleiss, J. L., Tytun, A., & Ury, H. K. (1980). A Simple Approximation for Calculating Sample Sizes for Comparing Independent Proportions. *Biometrics*, 36(2), 343. doi:10.2307/2529990 Harrel,
- Instituto Nacional de Saúde (INS), Instituto Nacional de Estatística (INE) & ICF Macro. (2010). Inquérito Nacional de Prevalência, Riscos Comportamentais e Informação sobre o HIV e SIDA em Moçambique 2009. Calverton, Maryland, USA: INS, INE e ICF Macro
- International Organization for Migration (IOM). (2011). HIV “hot-spot” mapping of two transport corridors in Mozambique. Maputo: IOM.
- IOM. (2006). Long-distance truck driver’s perceptions and behaviors towards STD/HIV/TB and existing health services in selected truck stops in the Great Lakes region: a situation assessment. Final report.
- Karon, J. M., & Wejnert, C. (2012). Statistical Methods for the Analysis of Time–Location Sampling Data. *Journal of Urban Health*, 89(3), 565–586. doi:10.1007/s11524-012-9676-8
- Lafort, Y., Geelhoed, D., Cumba, L., Lázaro, C. das D. M., Delva, W., Luchters, S., & Temmerman, M. (2010). Reproductive health services for populations at high risk of HIV: Performance of a night clinic in Tete province, Mozambique. *BMC Health Services Research*, 10(1), 1–9. doi:10.1186/1472-6963-10-144
- Pandey, A., Benara, S. K., Roy, N., Sahu, D., Thomas, M., Joshi, D. K., and the IBBA Study Team. (2008). Risk behaviour, sexually transmitted infections and HIV among long-distance truck drivers: a cross-sectional survey along national highways in India. *AIDS* (London, England), 22 Suppl 5, S81–90. doi:10.1097/01.aids.0000343766.00573.15
- Ramjee, G., & Gouws, E. (2002). Prevalence of HIV among truck drivers visiting sex workers in KwaZulu-Natal, South Africa. *Sexually Transmitted Diseases*, 29(1), 44–49.
- Scorgie, F., Chersich, M. F., Ntaganira, I., Gerbase, A., Lule, F., & Lo, Y.-R. (2011). Socio-Demographic Characteristics and Behavioral Risk Factors of Female Sex Workers in Sub-Saharan Africa: A Systematic Review. *AIDS and Behavior*, 16(4), 920–933. doi:10.1007/s10461-011-9985-z
- United National (UN). (2001). Resolution adopted by the General Assembly: Declaration of Commitment on HIV-AIDS, “Global Crisis – Global Action”. 8th plenary meeting, 27 June 2001.
- UNAIDS. (2012). *Global Report: UNAIDS report on the global AIDS epidemic 2012*. Geneva, Switzerland.
- UNAIDS. (2011). *World AIDS Report 2011*. Geneva, Switzerland.



## 10. Appendices

### Appendix 10.1: Survey Team

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#### Principal Investigators

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Paula Simone

#### Counselors

Eugénio do Rosário  
Nelson Tanque  
Zejú Dias

#### Community Outreach Workers

Eduardo Luísa  
Paula Simone



<p>What language do you speak most commonly at home in Mozambique?</p>	<p>01. Portuguese 02. English 03. Ronga/Changana 04. Maconde 05. Chope 06. Xitswa 07. Bitonga 08. Sena 09. Ndau 10. Nyungué 11. Shona 12. Macua 13. Echuabo 14. Elómue 15. Swahili 96. Other (specify) _____ 97. Refused</p>
<p>What is your religion? DO NOT READ OUT ANSWERS.</p>	<p>01. Catholic 02. Protestant/Evangelic 03. São/Zione 04. Muslim 05. Animist 06. None 96. Other(Specify) _____ 97. Refused</p>
<p>What is your nationality</p>	<p>01. Mozambican 02. South African 03. Zimbabwean 04. Malawian 05. Tanzanian 06. Nigerian 96. Other (specify): _____ 97. Refused</p>
<p>Your primary residence is in Mozambique or in another country?</p>	<p>01. Mozambique 02. Outside of Mozambique</p>
<p>In what province is your primary residence? (READ DEFINITION OF PRIMARY RESIDENCE: a primary residence is defined as the unit that you have occupied for the largest part of the calendar year)</p>	<p>01. Niassa 02. Cabo Delgado 03. Nampula 04. Zambézia 05. Tete 06. Manica 07. Sofala 08. Inhambane 09. Gaza 10. Maputo Province 11. Maputo City 98. Don't know 97. Refused</p>
<p>In what province is your primary residence? (READ DEFINITION OF PRIMARY RESIDENCE: a primary residence is defined as the unit that you have occupied for the largest part of the calendar year)</p>	<p>1. South Africa 2. Swaziland 3. Zimbabwe 4. Malawi 5. Zambia 97. Refused 98. Don't know</p>
<p>How long have you lived in this place?</p>	<p>[__ __] (number of years) 00. If less than 1 year 97. Refused 98. Doesn't know or doesn't remember</p>
<p>In the last 12 months have you been away from your permanent residence for more than one month?</p>	<p>1. Yes 2. No 99. No Response</p>

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In the last week (7 days) have you spent one or more nights away from your permanent residence?	1. Yes 2. No 99. No Response
During the past week how many nights have you spent away from your permanent residence?	[__ __] (number of nights) 97. Refused 99. No Response
In the last 12 months, on average how many long distance trips did you make in one month?	[__ __] (number of days) 97. Refused 99. No Response
<b>LAST TRIP</b>	
Now I am going to ask you a few questions about the last long distance trip you took. In other words, the last long distance trip that you made to another province or country driving a truck.	
From what village or city did you depart from on your last trip?	Open-Ended:
What was the city or village of your destination for this trip?	Open-Ended:
On what national roads or routes did you travel for this last trip? CHECK ALL THAT APPLY	1. EN1 2. EN2 3. EN3 4. EN4 5. EN5 6. EN6 7. EN7 8. EN8 96. Other (specify): _____
During this last trip, in what places did you stay the night or nights? CHECK ALL THAT APPLY	01. Pension/Hotel/Hostel 02. Truck 03. Girlfriend house 04. Family or friends house 05. Company house 06. Other (specify): _____ 7. Refused 8. Don't know or don't remember
During this last trip did anyone accompany you for part or all of your trip?	1. Yes 2. No 99. No answer
How many people accompanied you during this last trip?	[__ __ __] (Number of people)
If so, who accompanied you?	01. A friend: driver or assistant 02. A girlfriend 03. A sexworker 04. A woman who wanted a ride 05. Other person who wanted a ride 06. A young boy who wanted a ride 98. Don't know 97. Refused
During this last trip did you have sexual relations with anyone?	1. Yes 2. No 99. No Response
How many people did you have sexual relations with in this last trip?	[__ __] (number of people) 97. Refused 99. No Response
<b>MARITAL HISTORY</b>	
Now I am going to ask you some questions about your marital status. These may or may not apply to you.	
Are you currently married or living together with a woman as if married?	1. Yes, Currently Married 2. Yes, Living With A Woman 3. No 7. Refused

Have you ever been married or lived together with a woman as if married?	1. Yes, Formerly Married 2. Yes, Lived With A Woman 3. No 7. Refused 9. Valid skip
What is your current marital status: widowed, divorced, or separated?	1. Widowed 2. Divorced 3. Separated 7. Refused 9. Valid skip
How many wives/other partners do you have as married?	[ ] [ ] 7. Refused 8. Don't know 9. Valid skip
<b>SEXUAL HISTORY</b>	
Now I am going to ask you some questions about sexual history. These questions can be sensitive. Please remember that you do not have to provide answers to questions you do not feel comfortable answering.	
Have you ever had sex with a woman? In the case, sex means vaginal or anal sex.	1. Yes 2. No 7. Refused
The last time you had sex (vaginal or anal) with this person was a condom used?	1. Yes 2. No 7. Refused 8. Don't know 9. Valid skip
The last time you had sex with this person, did you use drugs or alcohol before or during sex?	1. Yes 2. No 7. Refused 8. Don't know
The last time you had sex with this person, did you give him or her money for sex?	1. Yes 2. No 7. Refused 8. Don't know
Now I am going to ask you questions about the person you had sex with most recently before this last person.	
How old is is this person? (Best estimate if you don't know)	[ ] [ ] (age)
At what age did you first have sex with a woman?	[ ] [ ] (age) 97. Refused 98. Don't know 99. Valid skip
In total, with how many different women have you had sexual intercourse in the past 12 months? If you don't remember, give your best estimate.	[ ] [ ] [ ] (number of partners) 997. Refused 998. Don't know
How many of the (response Q45) women were a principal partner (like girlfriends or wives)?	[ ] [ ] [ ] (number of partners) 997. Refused 998. Don't know
How many of the (response Q45) women were occasional partners?	[ ] [ ] [ ] (number of partners) 997. Refused 998. Don't know
How many of the (response Q45) women were paid sexual partners?	[ ] [ ] [ ] (number of partners) 997. Refused 998. Don't know
Have you ever had anal sex with a man? (anal sex is when a man puts his penis in the anus of another man)	1. Yes 2. No 7. Refused
In total, with how many different men have you had sexual intercourse in the past 12 months? Sex being defined as anal sex. If you don't remember, give your best estimate.	[ ] [ ] [ ] (number of partners) 997. Refused 998. Don't know

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### PARTNER MATRIX

Now I'm going to ask you a few questions about your experiences with the last 3 people with whom you most recently had sex with. Please think of the last 3 people you have had sex with mostly recently. We will start with questions about the most recent partner.

How old is this person? (Best estimate if you don't know)	[__ __] (age)
Is this partner biologically male or female?	<ol style="list-style-type: none"> <li>1. Biological female</li> <li>2. Biological male</li> <li>7. Refused</li> <li>8. Don't know</li> <li>9. Valid skip</li> </ol>
What is or was your relationship to this person? RECORD ALL MENTIONED	<ol style="list-style-type: none"> <li>1. Permanent</li> <li>2. Steady</li> <li>3. Casual</li> <li>4. Exchange (Sex for money or goods)</li> <li>5. Hit and Run (one night stand)</li> <li>7. Refused</li> <li>8. Don't know or don't remember</li> </ol>
In what province or country did you last have sex with this person?	<ol style="list-style-type: none"> <li>01. Niassa</li> <li>02. Cabo Delgado</li> <li>03. Nampula</li> <li>04. Zambézia</li> <li>05. Tete</li> <li>06. Manica</li> <li>07. Sofala</li> <li>08. Inhambane</li> <li>09. Gaza</li> <li>10. Maputo Province</li> <li>11. Maputo City</li> <li>12. South Africa</li> <li>13. Swaziland</li> <li>14. Zimbabwe</li> <li>15. Malawi</li> <li>16. Zambia</li> <li>17. Tanzania</li> <li>96. Other</li> <li>98. Don't know</li> <li>97. Refused</li> </ol>
When did you first have sex with this person? PUT THE RESPONSE IN FORMAT OF EITHER DAYS, WEEKS, MONTHS OR YEARS. SELECT ONLY ONE FORMAT.	<p>_____ ago</p> <ol style="list-style-type: none"> <li>1. Days</li> <li>2. Weeks</li> <li>3. Months</li> <li>4. Years</li> </ol>
When did you last have sex with this person? PUT THE RESPONSE IN FORMAT OF EITHER DAYS, WEEKS, MONTHS OR YEARS. SELECT ONLY ONE FORMAT.	<p>_____ ago</p> <ol style="list-style-type: none"> <li>1. Days</li> <li>2. Weeks</li> <li>3. Months</li> </ol>
Do you plan on having sex with this person again in the future?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>7. Refused</li> <li>8. Don't know</li> </ol>
The last time you had sex (vaginal or anal) with this person was a condom used?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>7. Refused</li> <li>8. Don't know</li> <li>9. Valid skip</li> </ol>
The last time you had sex with this person, did you use drugs or alcohol before or during sex?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>7. Refused</li> <li>8. Don't know</li> </ol>

The last time you had sex with this person, did you give him or her money for sex?	1. Yes 2. No 7. Refused 8. Don't know
Now I am going to ask you questions about the person you had sex with most recently before this last person.	
How old is this person? (Best estimate if you don't know)	[__ __] (age)
Is this partner biologically male or female?	1. Biological female 2. Biological Male 7. Refused 8. Don't know 9. Valid skip
What is or was your relationship to this person?  RECORD ALL MENTIONED	1. Permanent 2. Steady 3. Casual 4. Exchange (Sex for money or goods) 5. Hit and Run (one night stand) 7. Refused 8. Don't know or don't remember
In what province or country did you last have sex with this person?	01. Niassa 02. Cabo Delgado 03. Nampula 04. Zambézia 05. Tete 06. Manica 07. Sofala 08. Inhambane 09. Gaza 10. Maputo Province 11. Maputo City 12. South Africa 13. Swaziland 14. Zimbabwe 15. Malawi 16. Zambia 17. Tanzania 96. Other 98. Don't know 97. Refused
When did you first have sex with this person?  PUT THE RESPONSE IN FORMAT OF EITHER DAYS, WEEKS, MONTHS OR YEARS. SELECT ONLY ONE FORMAT.	In _____ 1. Days 2. Weeks 3. Months 4. Years
When did you last have sex with this person?  PUT THE RESPONSE IN FORMAT OF EITHER DAYS, WEEKS, MONTHS OR YEARS. SELECT ONLY ONE FORMAT.	In _____ 1. Days 2. Weeks 3. Months
Do you plan on having sex with this person again in the future?	1. Yes 2. No 7. Refused 8. Don't know
The last time you had sex (vaginal or anal) with this person was a condom used?	1. Yes 2. No 7. Refused 8. Don't know 9. Valid skip
The last time you had sex with this person, did you use drugs or alcohol before or during sex?	1. Yes 2. No 7. Refused 8. Don't know

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The last time you had sex with this person, did you give him or her money for sex?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>7. Refused</li> <li>8. Don't know</li> </ol>
Now I am going to ask you questions about the person you had sex with most recently before this last person.	
How old is this person? (Best estimate if you don't know)	[__] [__] (age)
Is this partner biologically male or female?	<ol style="list-style-type: none"> <li>1. Biological female</li> <li>2. Biological Male</li> <li>7. Refused</li> <li>8. Don't know</li> <li>9. Valid skip</li> </ol>
What is or was your relationship to this person? RECORD ALL MENTIONED	<ol style="list-style-type: none"> <li>1. Permanent</li> <li>2. Steady</li> <li>3. Casual</li> <li>4. Exchange (Sex for money or goods)</li> <li>5. Hit and Run (one night stand)</li> <li>7. Refused</li> <li>8. Don't know or don't remember</li> </ol>
In what province or country did you last have sex with this person?	<ol style="list-style-type: none"> <li>01. Niassa</li> <li>02. Cabo Delgado</li> <li>03. Nampula</li> <li>04. Zambézia</li> <li>05. Tete</li> <li>06. Manica</li> <li>07. Sofala</li> <li>08. Inhambane</li> <li>09. Gaza</li> <li>10. Maputo Province</li> <li>11. Maputo City</li> <li>12. South Africa</li> <li>13. Swaziland</li> <li>14. Zimbabwe</li> <li>15. Malawi</li> <li>16. Zambia</li> <li>17. Tanzania</li> <li>96. Other</li> <li>98. Don't know</li> <li>97. Refused</li> </ol>
When did you first have sex with this person? PUT THE RESPONSE IN FORMAT OF EITHER DAYS, WEEKS, MONTHS OR YEARS. SELECT ONLY ONE FORMAT.	_____ ago <ol style="list-style-type: none"> <li>1. Days</li> <li>2. Weeks</li> <li>3. Months</li> <li>4. Years</li> </ol>
When did you last have sex with this person? PUT THE RESPONSE IN FORMAT OF EITHER DAYS, WEEKS, MONTHS OR YEARS. SELECT ONLY ONE FORMAT.	_____ ago <ol style="list-style-type: none"> <li>1. Days</li> <li>2. Weeks</li> <li>3. Months</li> </ol>
Do you plan on having sex with this person again in the future?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>7. Refused</li> <li>8. Don't know</li> </ol>
The last time you had sex (vaginal or anal) with this person was a condom used?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>7. Refused</li> <li>8. Don't know</li> <li>9. Valid skip</li> </ol>
The last time you had sex with this person, did you use drugs or alcohol before or during sex?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>7. Refused</li> <li>8. Don't know</li> </ol>

The last time you had sex with this person, did you give him or her money for sex?	1. Yes 2. No 7. Refused 8. Don't know
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### CONDOMS AND LUBRIFICATION

Now I am going to ask you about condom and lubricant use.

Where do you usually obtain condoms? RECORD ALL MENTIONED	01. Hospital 02. Private Clinic 03. Pharmacy 04. Shop/Supermarket 05. Café/Bar/Disco 06. Gas Station 07. Hotel 08. Market/Stand 09. At Work/At the company 10. Street Vendor 11. Friends 12. AIDS Organizations 13. School 14. Peer education 96. Other (specify): _____ 97. Refused 98. Don't know 99. Valid skip
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### PROGRAM COVERAGE

Now I am going to ask you some questions about your experience with social programs

During the last 12 months, have you attended any meetings ("palestras") to discuss HIV and/or AIDS in Mozambique?	1. Yes 2. No 7. Refused 8. Don't know
In the last 12 months did you receive any of these items for free in Mozambique? (Condoms, lube, pamphlets or anything else?)	01. Condoms 02. Lubricants 03. Pamphlets about HIV or AIDS 04. None 96. Other (specify): _____ 97. Refused 98. Don't know
Have you ever seen this logo? (Show 'Paragem Segura' logo)	1. Yes 2. No 7. Refused 8. Don't know
Have you ever participated on meeting (palestra) facilitated by someone wearing a hat, shirt or ID badge with the "Paragem Segura" logo?	1. Yes 2. No 7. Refused 8. Don't know
During the last 12 months, you receive any item for free (condom, lube, pamphlets or other things) from someone wearing a hat, shirt or ID badge with the "Paragem Segura" logo?	1. Yes 2. No 7. Refused 8. Don't know
During the last 12 months, have you talked one-on-one with a peer educator about HIV and/or AIDS in Mozambique?	1. Yes 2. No 7. Refused 8. Don't know
If yes, was the peer educator wearing a hat, shirt or ID badge with the "Paragem Segura" logo?	1. Yes 2. No 7. Refused 8. Don't know

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STI	
Now I am going to ask you some questions about sexually transmitted diseases. These are diseases you can get from having sex with someone.	
Sometimes men experience an abnormal discharge from their penis. During the last 12 months, have you had an abnormal discharge from your penis?	1. Yes 2. No 7. Refused 8. Don't know
Sometimes men have a sore or ulcer near their penis. During the last 12 months, have you had a sore or ulcer near your penis?	1. Yes 2. No 7. Refused 8. Don't know
In the last 12 months, did someone inform you that you had or could have an STI?	1. Yes 2. No 7. Refused 8. Don't know
The last time you had this problem did you seek medical advice or treatment?	1. Yes 2. No 7. Refused 8. Don't know 9. Valid skip
The last time you had this problem where did you go? Any other place? DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED.	01. Public Hospital/Health Center 02. Private Clinic 03. First Aid Post 04. Pharmacy 05. Traditional doctor/religious person 06. Friends, coworkers, other miners 07. Company clinic 96. Other (specify): _____ 97. Refused 98. Don't know 99. Valid skip
HEALTH UTILIZATION	
Now I am going to ask you some questions about your experience with the health care system.	
Have you been circumcised? SHOW THE CIRCUMCISION VISUAL AID.	1. Yes 2. No 7. Refused 8. Don't know
Did you receive health care in Mozambique in the last 12 months?	1. Yes 2. No 97. Refused
Where did you last receive healthcare in Mozambique?	01. Public Hospital/Health Center 02. Private Clinics 03. Pharmacy 04. Traditional doctor/religious person 05. Friends, coworkers, other miners 96. Other (specify): _____ 97. Refused 98. Don't know
During the last 12 months, have you had difficulty getting medical care from a doctor, nurse or other health professional when you sought it in Mozambique?	1. Yes 2. No 7. Refused 8. Don't know 9. Valid skip
What difficulty did you have? DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED.	01. Too expensive 02. Too far away 03. Could not take time from work 04. Long waiting times 96. Other (specify): _____ 97. Refused 98. Don't know 99. Valid skip

During the last 12 months, did you try to get any medications that you were unable to get in Mozambique?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>7. Refused</li> <li>8. Don't know</li> </ol>
Why were you unable to get the medications?	<ol style="list-style-type: none"> <li>01. Too expensive</li> <li>02. Too far away</li> <li>03. Could not take time from work</li> <li>04. Long waiting times</li> <li>05. Were not for sale</li> <li>96. Other (specify): _____</li> <li>97. Refused</li> <li>98. Don't know</li> <li>99. Valid skip</li> </ol>
DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED.	
<b>DRUGS AND ALCOHOL</b>	
Now I am going to ask you some questions about drug and alcohol use. Remember that everything you say here is confidential and nobody will know it was you that gave the answers.	
How often have you had alcohol in the last 12 months?	<ol style="list-style-type: none"> <li>1. Did not drink</li> <li>2. Once a months or less</li> <li>3. 2-4 times a month</li> <li>4. 2-3 times per week</li> <li>5. 4 + times per week</li> <li>7. Refused</li> <li>8. Don't know</li> </ol>
How many drinks containing alcohol do you have on a typical day when you are drinking?	<p>[__ __] (number of drinks)</p> <ol style="list-style-type: none"> <li>97. Refused</li> <li>98. Don't know</li> <li>99. Valid skip</li> </ol>
How often do you have five or more drinks on one occasion?	<ol style="list-style-type: none"> <li>00. Never</li> <li>01. Monthly or less</li> <li>02. Two to four times a month</li> <li>03. Two to three times per week</li> <li>04. Four or more times a week</li> <li>97. Refused</li> <li>98. Don't know</li> <li>99. Valid skip</li> </ol>
DON'T READ OUT ANSWERS	
During the last 6 months have you consumed any drugs without having a medical reason?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>7. Refused</li> <li>8. Don't know or don't remember</li> </ol>
Which drugs did you use?	<ol style="list-style-type: none"> <li>01. Cannabis (Suruma, Haxixe, Marijuana or Passa)?</li> <li>02. Mandrax</li> <li>03. Heroin, "Brown sugar"</li> <li>04. Cocaine "Crack"</li> <li>05. Ecstasy, LSD</li> <li>06. Prescription medications (amphetamines, benzodiazepines, morphine, codeine)</li> <li>96. Other (specify): _____</li> <li>97. Refused</li> <li>99. Valid skip</li> </ol>
RECORD ALL MENTIONED.	
Have you ever injected drugs?	<ol style="list-style-type: none"> <li>1. No, Never</li> <li>2. Yes, But Not During Last 6 Months</li> <li>3. Yes, During Last 6 Months</li> <li>7. Refused</li> <li>8. Don't know</li> <li>9. Valid skip</li> </ol>
IF YES: Did you inject within the last 6 months?	

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<p>Have you ever shared needles or syringes? IF YES: Did you share within the last 6 months?</p>	<ol style="list-style-type: none"> <li>1. No, Never</li> <li>2. Yes, But Not During Last 6 Months</li> <li>3. Yes, During Last 6 Months</li> <li>7. Refused</li> <li>8. Don't know</li> <li>9. Valid skip</li> </ol>
<b>HIV TESTING HISTORY</b>	
<p>Now I am going to ask you some questions about HIV testing. Remember that you do not have to answer any questions you do not feel comfortable answering.</p>	
<p>Have you been tested for HIV?</p>	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>7. Refused</li> <li>8. Don't know</li> </ol>
<p>Why have you NOT had an HIV test?  DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED.</p>	<ol style="list-style-type: none"> <li>01. Don't Know Where To Go</li> <li>02. I Am Not Infected with HIV</li> <li>03. Not At Risk Of Getting Aids</li> <li>04. I Trust My Partner</li> <li>05. Fear To Discover That I Am Positive</li> <li>06. I Am Not Ready To Get The Test</li> <li>07. Lack Of Confidentiality</li> <li>08. Don't Want To Be Stigmatized</li> <li>09. Fear To Lose Job</li> <li>96. Other (specify):_____</li> <li>97. Refused</li> <li>98. Don't know</li> <li>99. Valid skip</li> </ol>
<p>When was the last time you were tested for HIV?</p>	<ol style="list-style-type: none"> <li>01. Less Than 6 Months ago</li> <li>03. 6 - 12 Months ago</li> <li>04. 12 - 23 Months ago</li> <li>05. Two 2 Years ago</li> <li>06. Three 3 Years ago</li> <li>07. Four 4 Years ago</li> <li>08. Five 5 Years Or More ago</li> <li>97. Refused</li> <li>98. Don't know</li> <li>99. Valid skip</li> </ol>
<p>Where did you do your last HIV test?  DO NOT READ OUT ANSWERS. RECORD ONLY ONE ANSWER.</p>	<ol style="list-style-type: none"> <li>01. GATV/ATS/VCT</li> <li>02. Hospital/Health Center</li> <li>03. Blood Donation</li> <li>04. Private Clinic/Lab</li> <li>05. SAAJ</li> <li>06. Satellite GATV/ATS/VCT</li> <li>07. PMTCT</li> <li>08. Community ATS/VCT</li> <li>09. Transport company</li> <li>96. Other (specify):_____</li> <li>97. Refused</li> <li>98. Don't know</li> <li>99. Valid skip</li> </ol>
<p>For what reason did you get this last test? Any other reason?  DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED.</p>	<ol style="list-style-type: none"> <li>01. Wanted To Know My HIV Status</li> <li>02. My Partner Asked Me To Get</li> <li>03. Wanted To Start Sexual Relations With A New Partner</li> <li>04. Wanted To Get Married</li> <li>05. Need For Insurance Coverage</li> <li>06. Employer Requested The Test</li> <li>07. I Felt Sick</li> <li>08. Advised By A Health Worker (Nurse/doctor/peer educator)</li> <li>96. Other</li> <li>97. Refused</li> <li>98. Don't know</li> <li>99. Valid skip</li> </ol>

Were you very satisfied, satisfied, a little satisfied, or not satisfied with the quality of services provided at the place where you got the last test?	<ol style="list-style-type: none"> <li>1. Very satisfied</li> <li>2. Satisfied</li> <li>3. Indifferent</li> <li>4. Unsatisfied</li> <li>5. Very unsatisfied</li> <li>7. Refused</li> <li>8. Don't know</li> <li>9. Valid skip</li> </ol>
What was the result of your most recent HIV test?	<ol style="list-style-type: none"> <li>1. Positive</li> <li>2. Negative</li> <li>3. Indeterminate</li> <li>4. Didn't get my results</li> <li>7. Refused</li> <li>8. Don't know</li> <li>9. Valid skip</li> </ol>
How long ago was your first positive test result?	<ol style="list-style-type: none"> <li>01. Less Than 6 Months ago</li> <li>02. Between 6 - 12 months ago</li> <li>03. Between 12 - 23 months ago</li> <li>04. Two 2 Years ago</li> <li>05. Three 3 Years ago</li> <li>06. Four 4 Years ago</li> <li>0. Five 5 Years ago Or More</li> <li>97. Refused</li> <li>98. Don't know</li> <li>99. Valid skip</li> </ol>
Do you think your chances of getting HIV are small, moderate, great, or no risk at all?	<ol style="list-style-type: none"> <li>1. No Risk</li> <li>2. Small Risk</li> <li>3. Moderate Risk</li> <li>4. Great Risk</li> <li>7. Refused</li> <li>9. Valid skip</li> </ol>
<p>Why do you think that you have no risk/small risk?</p> <p>Any other reason?</p> <p>DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED.</p>	<ol style="list-style-type: none"> <li>01. I trust my partner</li> <li>02. I am faithful to my partner</li> <li>03. Use Condoms</li> <li>04. No Sharing Needles or Puncturing Instruments</li> <li>05. Know That My Partner and I Aren't Infected</li> <li>06. My Ancestors Protect Me</li> <li>08. It is a Rural Disease</li> <li>10. It is a Woman's Disease</li> <li>11. No HIV In My Community</li> <li>12. It Is A Black Disease</li> <li>13. It Is A White Disease</li> <li>96. Other (specify): _____</li> <li>97. Refused</li> <li>98. Don't know</li> </ol>
<p>Why do you think that you have a moderate/great risk?</p> <p>Any other reason?</p> <p>DO NOT READ OUT ANSWERS. RECORD ALL MENTIONED.</p>	<ol style="list-style-type: none"> <li>01. Blood Transfusion</li> <li>02. Don't Use Condoms</li> <li>03. Don't Trust Partner</li> <li>04. Had Injuries/Cuts</li> <li>05. Multiple Partners</li> <li>06. Prostitution, sex for money</li> <li>96. Other: _____</li> <li>97. Refused</li> <li>98. Don't know</li> <li>99. Valid skip</li> </ol>
What do you think is your HIV status today?	<ol style="list-style-type: none"> <li>1. HIV positive</li> <li>2. HIV negative</li> <li>7. Refused</li> <li>8. Don't know or don't remember</li> </ol>

**HIV CARE AND TREATMENT**

INTERVIEWER: Because you have said you know your HIV status to be positive, I am now going to ask you some questions about HIV treatment.

Have you seen a nurse, doctor or other health care provider for a medical evaluation or care related to your HIV infection?

- 1. Yes
- 2. No
- 7. Refused
- 8. Don't know
- 9. Valid skip

Have you ever taken or are currently taking ARVs? If yes, are you currently taking them? Antiretrovirals are medications that reduce the multiplication of the HIV virus in an HIV infected person and make it possible for them to live longer with HIV.

- 1. Yes, currently taking
- 2. Yes, no longer taking
- 3. No
- 7. Refused
- 8. Don't know
- 9. Valid skip

Have you taken ARVs during the past 12 months?

- 1. Yes
- 2. No
- 7. Refused
- 8. Don't know
- 9. Valid skip

Why did you stop taking ARVs?

READ OUT ANSWERS. RECORD ALL MENTIONED.

- 01. They made me sick
- 02. They did not work
- 03. I could not afford them
- 04. Distance to get them is far
- 05. I was feeling better and did not need them
- 06. A doctor/nurse told me to stop taking them
- 07. The pharmacy ran out of the medicine
- 96. Other (specify): \_\_\_\_\_
- 97. Refused
- 98. Don't know
- 99. Valid skip

If taking ARV, where do you go for ARV's?

RECORD ALL MENTIONED.

- 01. Public Hospital/Health Center
- 02. Private Clinics
- 03. Pharmacy
- 04. Traditional doctor/religious person
- 05. Company clinic
- 06. Market
- 07. Friend/family member
- 96. Other (specify): \_\_\_\_\_
- 97. Refused
- 98. Don't know
- 99. Valid skip

If no longer taking, where did you go for ARV's?

RECORD ALL MENTIONED.

- 01. Public Hospital/Health Center
- 02. Private Clinics
- 03. Pharmacy
- 04. Traditional doctor/religious person
- 05. Company clinic
- 06. Market
- 07. Friend/family member
- 96. Other (specify): \_\_\_\_\_
- 97. Refused
- 98. Don't know
- 99. Valid skip

If never took ARV, where could you go for ARV's?

RECORD ALL MENTIONED.

- 01. Public Hospital/Health Center
- 02. Private Clinics
- 03. Pharmacy
- 04. Traditional doctor/religious person
- 05. Company clinic
- 06. Market
- 07. Friend/family member
- 96. Other (specify): \_\_\_\_\_
- 97. Refused
- 98. Don't know
- 99. Valid skip

Were you very satisfied, satisfied, indifferent, unsatisfied, or very unsatisfied with the quality of services provided at the place where you go or went to for treatment?	<ol style="list-style-type: none"> <li>1. Very satisfied</li> <li>2. Satisfied</li> <li>3. Indifferent</li> <li>4. Unsatisfied</li> <li>5. Very unsatisfied</li> <li>7. Refused</li> <li>8. Don't know</li> <li>9. Valid skip</li> </ol>
<b>POPULATION SIZE</b>	
Now I am going to ask you some estimates about the number of truck drivers that work in Mozambique. Please, come up with your best estimate. If you don't know or don't remember please say any number you think of or an approximate interval.	
How many truck drivers do you think pass through Inchope in one month?	[ _   _   _   _   _   _   _ ] (0000000=none)
How many truck drivers that are "pirates" do you think pass through Inchope in one month?	[ _   _   _   _   _   _   _ ] (0000000=none)
Before we close, would you like to modify your consent to have a DBS made?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>9. Valid skip</li> </ol>
Would you like to modify your consent to receive your rapid HIV test results?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>9. Valid skip</li> </ol>
INTERVIEWER: Do you have confidence that the participant's responses are true?	<ol style="list-style-type: none"> <li>1. Confident</li> <li>2. Some questions</li> <li>3. I'm not confident</li> </ol>
INTERVIEWER: Please explain why you don't have confidence or have doubts about the participant's answers?	open ended