size estimation of

TRANSGENDER POPULATION IN CAMBODIA 2012

Using the Capture-Recapture Method in Seven Urban Cities

MARCH 2013
SIZE ESTIMATION OF TRANSGENDER POPULATION IN CAMBODIA, 2012

USING THE CAPTURE-RECAPTURE METHOD IN SEVEN URBAN CITIES
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This study was conducted by FHI 360 Cambodia, funded by the United States Agency for International Development (USAID) under the PRASIT project. The study was conducted between August and September 2012 in Phnom Penh, Battambang, Serei Saophoan (Sisophon), Poipet, Siem Reap, Kompong Cham, and Sihanoukville, Cambodia.

The study design and field research was led by Dr. Kai-Lih Liu (FHI 360) Cambodia and Dr. Neth Sansothy, (NCHADS).

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The following members of FHI 360’s SI Unit and research consultants conducted monitoring at the survey sites: Im Chanry, Toeng Rothy, Chhim Srean, Phlong Pisith, Rang Chandary, Chien Samphoas, and Deup Channarith. Data management and GIS mapping was conducted by Rang Chandary. Initial data analysis was performed by Prum Virak. Subsequent analysis was done by Chhim Srean and Nicky Jurgens, with additional input provided by Amy Weissman and Dr. Laurent Ferradini.

The report was written by Dr. Song Ngak, Steve Penfold, Dr. Kai-Lih Liu, Chhim Srean and Anine Kongelf.

The study team would like to extend their sincere appreciation to all the transgender participants who took part in this study. Without them this size estimation study would not have been possible.

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## acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immune Deficiency Syndrome</td>
</tr>
<tr>
<td>CSSD</td>
<td>Cooperation for Social Services and Development</td>
</tr>
<tr>
<td>FHI 360</td>
<td>The new organization formed when Family Health International (FHI) acquired the Academy for Educational Development (AED) in 2011</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>KDOF</td>
<td>Khmer Development of Freedom Organization</td>
</tr>
<tr>
<td>MARP</td>
<td>Most At Risk Population</td>
</tr>
<tr>
<td>MHC</td>
<td>Men’s Health Cambodia</td>
</tr>
<tr>
<td>MHSS</td>
<td>Men’s Health Social Services</td>
</tr>
<tr>
<td>MSM</td>
<td>Men who have sex with men</td>
</tr>
<tr>
<td>NCHADS</td>
<td>National Center for HIV/AIDS, Dermatology and STD</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>SBC</td>
<td>Strategic Behavior-change Communication</td>
</tr>
<tr>
<td>SI</td>
<td>Strategic Information</td>
</tr>
<tr>
<td>TG</td>
<td>Transgender</td>
</tr>
<tr>
<td>UCSF</td>
<td>University of California - San Francisco</td>
</tr>
<tr>
<td>UNAIDS</td>
<td>Joint United Nations Program on HIV/AIDS</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
</tbody>
</table>
1. Executive summary

Over the last decade, Cambodia’s HIV response has successfully reversed the HIV epidemic in the general population. To date interventions primarily target entertainment and sex workers, injecting drug users, and men who have sex with men (MSM), wherein the latter has become a ‘catch-all’ category for a diverse population that also includes transgender women (TG).[1] This is the first study to estimate the size of transgender populations, in seven of the largest cities in Cambodia.

This study adopts a slightly broader definition of transgender than that provided by UNAIDS, by not limiting inclusion to those with a “female appearance”. Therefore for the purposes of this study, the definition of a transgender woman is: “a person who was born as a man and self-identifies and/or expresses themselves as a different gender identity.”

The study adopted the Lincoln-Petersen model of capture and recapture, resulting in 1,906 and 1,990 were contacted in Round 1 and Round 2 respectively. Among them, 1,412 were recaptured (those who were interviewed in the Round 1 and re-interviewed in Round 2).

Key findings from the size estimation show there:

- There are an estimated 2,686 transgender people in the seven cities (Phnom Penh, Battambang, Poipet, Serei Saophoan (Sisophon), Siem Reap, Kampong Cham, and Sihanoukville) surveyed within this study. This figure is based on the Lincoln-Peterson formula with the 95% CI [2,648 -2,724].

- A similar calculation was performed for each city. The highest transgender population proportion (51%) was found in Phnom Penh, followed by Battambang (16%) and Serei Saophoan and Siem Reap (11%). The lowest transgender population proportion was found in Sihanoukville (5%).

- When asked how they would describe themselves, two thirds would identify themselves as a third gender, i.e. as neither “female” nor “male”. Only 30% identify as female and only four percent perceive themselves to be male. This is important in demonstrating these are not “long hair” MSM, and that they should be seen as a distinct population group.

- Approximately 37% of transgender participating in this study have used oral or injectable female hormones; 2% have had breast implants, and only around 1% have had sex re-assignment surgery.
Selling or buying sex is a common practice among transgender. Almost two-thirds (66%) of transgender have sold or bought sex at least once in the past 6 months.

Despite most outreach being non-specific to the transgender community, around 93% have received HIV prevention education from an outreach worker in the past six months.

This study demonstrates the need for the transgender community to receive targeted information to mitigate both individual and public health risks. The existing HIV/AIDS interventions therefore need to consider integrating information on hormone therapy, including its availability, dosage and side effects for this population.
2. Background

Over the last decade, Cambodia’s HIV response has successfully reversed the HIV epidemic in the general population, and efforts are now focused on high-risk groups among whom infection is most widespread.[2] To date interventions primarily target entertainment and sex workers, injecting drug users, and men who have sex with men (MSM), wherein the latter has become a ‘catch-all’ category for a diverse population that also includes transgender women (TG).[3]

Recently however the national response has been revised through a set of Standard Operating Procedures (such as the Boosted Continuum from Prevention to Care and Treatment)[4], to more effectively target and deliver services to most-at-risk populations (MARPs). For the first time this explicitly includes a distinction between MSM and transgender.

Globally, TGs are disproportionately affected by HIV and sexually transmitted infections (STIs) and at high risk of infection. Yet, little is understood about the scale, needs and challenges faced by these populations, partly because epidemiological data rarely distinguish TG from MSM [5],[6],[7]. This results in an information gap for governments and non-governmental organizations that attempt to respond to the epidemic among high-risk groups. It is evident that TGs need to be recognized as a key population separated from MSM. [8]

This study attempts to estimate the size of the TG population in seven Cambodian cities in order to inform and improve policy and programs targeting TGs, and guide the allocation of resources.

Sexual orientation and gender identity are subjective and difficult to categorize in any society, and even more so in cultures where stigma, discrimination and social exclusion shape language and self-identity.[9],[10] The Cambodian context reveals fluid and diverse gender roles, where self-identified gender and sexual identity are not necessarily corresponding with sexual practices.[11] Whilst cultural norms and language can account for some of this, this dynamic can also be partly attributed to the stigma and discrimination faced by Cambodian TGs and MSM. The structural barriers of stigma and discrimination might in fact hinder programs and interventions targeting MSM and TG populations, if they do not recognize the distinction between MSM and TG, and tailor programs accordingly. [12]
TGs and MSM share biological risk factors that drive HIV transmission [13], and they are subject to widespread stigma and discrimination.[14],[15] This might place them in the same category for HIV response purposes. However, most TGs do not identify themselves as MSM, nor do they interact with MSM, and most MSM do not want to be associated with TGs. [16],[17] There is nevertheless a level of interaction between MSM and TG through their sexual networks, increasing both groups HIV vulnerability. Transactional sex is common amongst both MSM and TGs; MSM may well be clients or partners of TGs, and both groups have reported also having sex with women.[18],[19] These complex sexual networks, hidden identities and marginalization from the wider society demonstrate a need for more informed responses to address HIV risk-taking behavior.

In order to tackle these challenges, the information gap that exists in Cambodia needs to be addressed. This size estimation survey begins to quantify that distinction for the first time in Cambodia.
3. Methods

Recognizing that transgender populations (see section 3.1 for a definition of terms) are at high risk of HIV, this study estimated the size of the male-to-female transgender population in seven cities of Cambodia (Phnom Penh, Battambang, Poipet, Serei Saophoan, Siem Reap, Kampong Cham, and Sihanoukville) to inform HIV prevention care and treatment programs.[20] To estimate transgender (TG) population size, this study applied a capture-recapture methodology. Capture-recapture has been widely used in demographical and epidemiological studies, and previously applied in Cambodia to estimate the size of the MSM population.[21]

Little has been documented about the transgender community in Cambodia, and in particular their risk of acquiring HIV. An international meta-analysis, (Herbst et al. 2007) [22] showed that male-to-female transgender are at far higher risk of acquiring HIV and STIs than female-to-male transgender. As this research is linked to HIV risk, the focus is upon the risks associated with being male-to-female transgender.

3.1 POPULATION DEFINITION

According to the UNAIDS definition,

“A transgender person has a gender identity that is different from his or her sex at birth. Transgender people may be male to female (female appearance) or female to male (male appearance). It is preferable to describe them as ‘he’ or ‘she’ according to their gender identity, i.e. the gender that they are presenting, not their sex at birth”. [23]

The USAID definition is less emphatic about the need for a difference in appearance,

“Transgender: Literally meaning, “differently gendered,” transgender is an umbrella term referring to people whose physical body does not align with their gender identity.” [24]

Observations from the field in Cambodia suggest that factors such as the stigmatization; individual self-confidence and/or a lack of awareness associated with the ability to self-identify as transgender identity while transitioning, may cause some to initially self-identify as male. For that reason, this study adopts a slightly broader definition of transgender than that provided by UNAIDS, by not limiting inclusion to those with a “female appearance”:
For the purposes of this study, the definition of transgender individual is: “a person who was born as a male and self-identifies and/or expresses themselves as a different gender identity.”

The transgender population contains a diverse group of people who express and identify themselves in different ways. Table 1 below presents the five groups of people who are considered as transgender (cell number 1-5), and the cut off point for people who are not considered to be transgender (cell number 6) in this study. Table 1 can be interpreted as follows:

1) Self-identified as female with feminine appearance
2) Self-identified as third gender with feminine appearance
3) Self-identified as female without feminine appearance
4) Self-identified as third gender without feminine appearance
5) Self-identified as men with feminine appearance occasionally

<table>
<thead>
<tr>
<th>SELF-IDENTIFIED GENDER</th>
<th>Female</th>
<th>Third gender</th>
<th>Male</th>
<th>Feminine appearance?*</th>
</tr>
</thead>
</table>

* refers to those who sometimes or always dressed as a female or displayed feminine characteristics

3.2 ELIGIBILITY CRITERIA

To identify transgender at risk of HIV, this study aimed to measure the size of the transgender population who reported having had sex in the past 12 months.

The transgender included in this size estimation study were those who met the following eligibility criteria:

- Biological male at birth
- At least 18 years of age at time of screening (no upper age limit)
- Being male-to-female transgender, i.e. self-identified as a female or third gender and/or with a feminine appearance
- Reporting having had sex with at least 1 male partner in the past 12 months
- Khmer-speaking
- Able and willing to provide oral informed consent
3.3 DATA COLLECTION METHODS

Study sites were selected based on the existence of HIV/AIDS intervention programs with transgender populations in the most populous and more economically developed cities in Cambodia. For two weeks prior to the field data collection, NGOs and transgender who work with MSM and transgender in those selected cities, were invited to participate in a mapping exercise. Areas where transgender are known to spend time were identified based on existing intervention sites and community networks. All places known to be transgender gathering points, including NGO offices, parks, river banks, bars, discotheques, private houses, sport centers, schools, and temples were listed and the times at which most transgender appeared at these locations were recorded.

At each site the survey comprised two rounds of enumeration. Each round of enumeration was conducted for five consecutive days, including a Friday, a Saturday and a Sunday. Weekend days were suggested from experienced NGO field staff and selected transgender, as the majority of transgender were reported to be seen on those days. The two rounds of surveys were separated by an interval of 14 days. While parks, river banks, street corners, cafes and discotheques were visited multiple times during each round of the survey, private houses, schools, temples, and sport facilities were visited only once per site.

<table>
<thead>
<tr>
<th>Type of hotspots</th>
<th>Phnom Penh</th>
<th>Kg. Cham</th>
<th>Battambang</th>
<th>Siem Reap</th>
<th>Serey Sophoan</th>
<th>Poi Pet</th>
<th>S. Ville</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park/ River bank</td>
<td>34</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Beauty Shop/ Salon</td>
<td>11</td>
<td>4</td>
<td>9</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Street</td>
<td>19</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bar/ Cafe/ Disco/Club</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Private House</td>
<td>46</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>14</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>All types of locations</td>
<td>117</td>
<td>12</td>
<td>18</td>
<td>11</td>
<td>19</td>
<td>11</td>
<td>14</td>
</tr>
</tbody>
</table>

At each survey site, team members contacted the transgender presenting at the site, assessed the contacts’ eligibility through informal discussions, and explained the objectives of the survey. At each contact, the team members collected personal information through a short questionnaire (Annex 1). Personal information collected included age, appearance, female hormone injection, breast implant, sex change surgery, whether they had sold or purchased sex in the past 6 months, and whether they had been reached by prevention interventions in the past 6 months.

During the first capture round (August 15-19, 2012), interviewees received a small phone bag at first contact, which served to identify those already contacted. Duplicates were identified by asking participants if they had already received the small phone bag and answered the questionnaire.

During the second round of the survey (September 5-9, 2012), participants were given a mirror with USAID-PRASIT logos. Duplicate contacts were identified by asking participants if they had already received the mirror and answered the questionnaire upon receiving it. In addition, those who had previously participated in the first round were identified by asking if they had received the small phone bag and answered the questionnaire.
3.4 SURVEY TEAMS

Team members were recruited among the transgender community to ensure that they were able to recognize those who may be transgender, for example through body language and appearance, or acting in an overtly feminine manner. Other than in Phnom Penh, one NGO was responsible for managing data collection in their intervention sites in each city. In each site, a supervisor from each participating NGO was assigned to ensure adherence to survey methodology. Research officers from FHI 360’s SI Unit accompanied the teams to conduct field monitoring during these two rounds of surveys.

<table>
<thead>
<tr>
<th>City</th>
<th>NGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phnom Penh</td>
<td>MHC, CSSD, MHSS, Khemara, KDFO</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>MHC</td>
</tr>
<tr>
<td>Battambang</td>
<td>MHSS</td>
</tr>
<tr>
<td>Siem Reap</td>
<td>MHC</td>
</tr>
<tr>
<td>Serei Saophoan</td>
<td>MHSS</td>
</tr>
<tr>
<td>Poipet</td>
<td>MHC</td>
</tr>
<tr>
<td>Sihanoukville</td>
<td>KWCD</td>
</tr>
</tbody>
</table>

Prior to the first round of the survey, team members received a one-day training course on the survey procedures and the importance of confidentiality.

3.5 DATA ENTRY AND ANALYSIS

Data was entered in Epi-Data and analysis was performed with the STATA software package (Version 12). The size estimation was calculated by using the Lincoln-Petersen model (two samples). More detail about the capture-recapture model is presented in the discussion section.

In the formula below:

\[
N = \text{Estimated population of transgender} \\
C_1 = \text{Number of unique contacts with transgender in the first round} \\
C_2 = \text{Number of unique contacts with transgender in the second round} \\
M = \text{Number of transgender contacted in both rounds (interviewed in the first round & re-interviewed in the second round)(matches)}
\]
The estimated population of transgender was calculated using the formula:

$$N = \frac{C_1 \times C_2}{M}$$

The 95% confidence intervals (95% CI) of the estimates were calculated using the formula:

$$95\% \text{ CI} = \bar{n} \pm 1.96\sqrt{\text{Var}(\bar{n})}.$$ 

It is important to note that the resulting number of transgender obtained with this methodology is an estimate, and not a real count. [25]

Because individuals who refused to participate might be counted by different teams at different locations, it was difficult to estimate the number of transgender who refused to participate. Therefore the refusal rate is based on a per-contact analysis.
4. Results

4.1 Recruitment Process

Round 1 of the survey was conducted from 15-19 August 2012 and Round 2 was conducted from 5-9 September 2012 in the seven cities. Round 1 resulted in 2,093 eligible participants, of whom 63 (3.0%) refused to participate. Round 2 resulted in 2,162 participants met the criteria, of whom 32 (1.4%) refused to participate.

After controlling for duplicates 1,906 and 1,990 were contacted in Round 1 and Round 2 respectively (Figure 1). Among them, 1,412 were recaptured (those who were interviewed in the Round 1 and re-interviewed in Round 2).

While parks, river banks, street corners, cafes and discotheques were visited multiple times during each round of the survey, private houses, schools, temples, and sport facilities were visited only once per site, as mentioned in section 2.3. Table 3 suggests that the highest proportions of transgender were recruited from private houses in both rounds and lowest proportions were recruited from bars/cafes. These proportions were only slightly different between round 1 and round 2.

<table>
<thead>
<tr>
<th>Recruitment sites</th>
<th>ROUND 1</th>
<th>%</th>
<th>Recruitment sites</th>
<th>ROUND 2</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private houses</td>
<td>714</td>
<td>37.5%</td>
<td>Private houses</td>
<td>654</td>
<td>32.9%</td>
</tr>
<tr>
<td>Parks (River side)</td>
<td>387</td>
<td>20.3%</td>
<td>Parks (River side)</td>
<td>364</td>
<td>18.3%</td>
</tr>
<tr>
<td>Beauty shop/Salon</td>
<td>335</td>
<td>17.6%</td>
<td>Beauty shop/Salon</td>
<td>342</td>
<td>17.2%</td>
</tr>
<tr>
<td>Streets</td>
<td>232</td>
<td>12.2%</td>
<td>Streets</td>
<td>192</td>
<td>9.7%</td>
</tr>
<tr>
<td>Disco Clubs</td>
<td>94</td>
<td>4.9%</td>
<td>Disco Clubs</td>
<td>218</td>
<td>11.0%</td>
</tr>
<tr>
<td>Bar/Café</td>
<td>70</td>
<td>3.7%</td>
<td>Bar/Café</td>
<td>60</td>
<td>3.0%</td>
</tr>
<tr>
<td>Other</td>
<td>74</td>
<td>3.9%</td>
<td>Other</td>
<td>160</td>
<td>8.0%</td>
</tr>
</tbody>
</table>

1 Unique completed interviews refers to individuals who were interviewed only once for a single round.
4.2 TOTAL ESTIMATED SIZE OF TRANSGENDER POPULATION IN SEVEN CITIES

There are an estimated 2,686 transgender in the seven cities surveyed within this study. This figure is based on the Lincoln-Peterson formula with the 95% CI [2,648 - 2,724].

A similar calculation was performed for each city. Table 4 shows that the highest transgender population proportion (51%) was found in Phnom Penh, followed by Battambang (16%) and Serei Saophoan and Siem Reap (11%). The lowest transgender population proportion was found in Sihanoukville (5%).

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Estimate</th>
<th>95% Confidence Interval</th>
<th>As % of total estimated TG population in cities within the study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phnom Penh</td>
<td>1,380</td>
<td>1,350-1,410</td>
<td>51.3%</td>
</tr>
<tr>
<td>Battambang</td>
<td>420</td>
<td>410-430</td>
<td>15.6%</td>
</tr>
<tr>
<td>Siem Reap</td>
<td>280</td>
<td>270-290</td>
<td>10.4%</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>220</td>
<td>210-230</td>
<td>8.2%</td>
</tr>
<tr>
<td>Serei Saophoan (Sisophon)</td>
<td>150</td>
<td>140-160</td>
<td>5.6%</td>
</tr>
<tr>
<td>Poipet</td>
<td>130</td>
<td>120-140</td>
<td>4.8%</td>
</tr>
<tr>
<td>Sihanoukville</td>
<td>110</td>
<td>100-120</td>
<td>4.1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,690</strong></td>
<td><strong>2,600-2,780</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Note: These figures represent the total estimated number of transgender using the capture-recapture method and formula, and not real counts. When the above formula is applied to each city, it provides an estimated numbers of transgender by cities.
### 4.3 PARTICIPANT GENDER IDENTITY

#### 4.3.1 SELF-IDENTIFIED GENDER

Table 5 below displays the estimated number of transgender based on their self-identified gender (overall denominator is 2,686). This is then split into sub categories, based on whether they sometimes/always express themselves through a feminine appearance.

<table>
<thead>
<tr>
<th>TABLE 5: ESTIMATED NUMBER OF TRANSGENDER BY GENDER IDENTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SELF-IDENTIFIED GENDER</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>827</td>
</tr>
<tr>
<td>Feminine appearance?* = Yes (always/sometimes)</td>
</tr>
<tr>
<td>801</td>
</tr>
<tr>
<td>Feminine appearance?* = No</td>
</tr>
<tr>
<td>26</td>
</tr>
</tbody>
</table>

*refers to those who sometimes or always dressed as a female or displayed feminine characteristics*
4.3.2 SEX CHANGE USING HORMONAL THERAPY AND SEX RE-ASSIGNMENT SURGERY

Over a third of transgender participating in this study have taken steps to becoming transsexual. Table 6 shows that approximately 37% of transgender participating in this study have used oral or injectable female hormones; 2% have had breast implants, and around 1% have had sex re-assignment surgery.

When the data is examined by city, the larger proportions of transgender who used injecting/oral female hormone were found in Phnom Penh 15%, followed by Siem Reap 7%, and Battambang 5%. Breast implantation is not a common practice among transgender in Cambodia, (1.2% in Phnom Penh, and less than 0.5% of transgender in each of the other three cities).

**FIGURE 3: SEX CHANGE USING HORMONAL THERAPY OR SEX RE-ASSIGNMENT SURGERY AMONG TRANSGENDER**

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2 UNAIDS defines transsexual as “A transsexual person is in the process of or has undertaken surgery and/or hormonal treatment in order to make his or her body more congruent with his or her preferred gender.” (UNAIDS Terminology Guidelines (January 2011))
TABLE 6: SEX CHANGE METHODS USED BY TRANSGENDER

<table>
<thead>
<tr>
<th>CITIES</th>
<th>FEMALE HORMONE INJECTION/PILL</th>
<th>BREAST IMPLANT</th>
<th>SEX RE-ASSIGNMENT SURGERY*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Point est. % of overall TGs</td>
<td>Point est. %</td>
<td>Point est. %</td>
</tr>
<tr>
<td>Sex change</td>
<td></td>
<td>(95% CI)</td>
<td></td>
</tr>
<tr>
<td>among overall</td>
<td>37%</td>
<td>981 [959-1002]</td>
<td>2%</td>
</tr>
<tr>
<td>transgender</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sex change by cities

<table>
<thead>
<tr>
<th>CITIES</th>
<th>Sex change % of overall TGs</th>
<th>Sex change of overall Tgs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phnom Penh</td>
<td>15%</td>
<td>410 [395-424]</td>
</tr>
<tr>
<td>Battambang</td>
<td>5%</td>
<td>133 [126 - 140]</td>
</tr>
<tr>
<td>Siem Reap</td>
<td>7%</td>
<td>196 [187 – 204]</td>
</tr>
<tr>
<td>Kg. Cham</td>
<td>2%</td>
<td>49 [43 – 55]</td>
</tr>
<tr>
<td>Serei Saophoan</td>
<td>3%</td>
<td>77 [70 – 84]</td>
</tr>
<tr>
<td>Poipet</td>
<td>3%</td>
<td>75 [70 – 80]</td>
</tr>
<tr>
<td>Sihanoukville</td>
<td>2%</td>
<td>44 [42 – 46]</td>
</tr>
</tbody>
</table>

4.4 SELLING AND BUYING SEX

When asked about sexual behavior in the past six months, it was found that selling or buying sex is a common practice among transgender. Figure 4 shows that almost two-thirds (66%) of transgender have sold or bought sex at least once in the past 6 months.

**FIGURE 4: SELLING AND BUYING SEX AMONG OVERALL TRANSGENDER IN THE PAST 6 MONTHS**
When examining these data by city (figure 5), the largest proportion of transgender who sold or bought sex in the past 6 months was found in Phnom Penh (77%) and Serei Saophoan (77%), followed by Siem Reap (73%) respectively.

### TABLE 7. SELLING AND BUYING SEX AMONG OVERALL TRANSGENDER IN THE PAST 6 MONTHS

<table>
<thead>
<tr>
<th>City</th>
<th>NEVER</th>
<th>SOLD ONLY</th>
<th>BOUGHT ONLY</th>
<th>BOUGHT &amp; SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phnom Penh</td>
<td>23%</td>
<td>32%</td>
<td>36%</td>
<td>16%</td>
</tr>
<tr>
<td>Battambang</td>
<td>52%</td>
<td>21%</td>
<td>31%</td>
<td>12%</td>
</tr>
<tr>
<td>Siem Reap</td>
<td>27%</td>
<td>7%</td>
<td>50%</td>
<td>14%</td>
</tr>
<tr>
<td>Kg. Cham</td>
<td>70%</td>
<td>16%</td>
<td>18%</td>
<td>4%</td>
</tr>
<tr>
<td>Serei Saophoan</td>
<td>23%</td>
<td>37%</td>
<td>37%</td>
<td>5%</td>
</tr>
<tr>
<td>Poipet</td>
<td>49%</td>
<td>70%</td>
<td>35%</td>
<td>51</td>
</tr>
<tr>
<td>Sihanoukville</td>
<td>39%</td>
<td>16%</td>
<td>44%</td>
<td>49</td>
</tr>
<tr>
<td><strong>AVERAGE</strong></td>
<td>34%</td>
<td>35%</td>
<td>12%</td>
<td>19%</td>
</tr>
</tbody>
</table>

### 4.5 RECEIVING HIV EDUCATION

Most of the outreach involving HIV education to transgender communities has been through MSM-targeted activity. Despite most outreach being non-specific to the transgender community, around 93% have received HIV prevention education from an outreach worker in the past six months (Table 8).

### TABLE 8: PERCENTAGE OF ESTIMATED THE ESTIMATED TRANSGENDER POPULATION RECEIVING HIV INFORMATION IN THE PAST 6 MONTHS.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>% based on estimated population</th>
<th>Estimated number</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiving HIV education from outreach workers in the past 6 months among transgender</td>
<td>93%</td>
<td>2,502</td>
<td>2,467 – 2,538</td>
</tr>
<tr>
<td>Receiving HIV education from outreach workers in the past 6 months by province</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phnom Penh</td>
<td>96%</td>
<td>1,327</td>
<td>1,300 – 1,354</td>
</tr>
<tr>
<td>Battambang</td>
<td>87%</td>
<td>369</td>
<td>357 – 382</td>
</tr>
<tr>
<td>Siem Reap</td>
<td>98%</td>
<td>280</td>
<td>269 – 292</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>86%</td>
<td>194</td>
<td>183 – 204</td>
</tr>
<tr>
<td>Serei Saophoan</td>
<td>99%</td>
<td>150</td>
<td>141 – 158</td>
</tr>
<tr>
<td>Poipet</td>
<td>78%</td>
<td>103</td>
<td>96 – 109</td>
</tr>
<tr>
<td>Sihanoukville</td>
<td>89%</td>
<td>99</td>
<td>92 – 108</td>
</tr>
</tbody>
</table>
5. Discussion

The estimated size of the total transgender population was 2,686 in the seven cities of Phnom Penh, Battambang, Serei Saophoan, Poipet, Siem Reap, Kampong Cham and Sihanoukville. These estimates provide the first reference data for transgender-specific programming in Cambodia and can be used to inform further research.

This study focused on transgender people who are perceived to be at elevated risk of HIV infection. Therefore, as discussed in the limitations below, this study probably underestimates the total size of the transgender population in those cities. If the population was assessed other health issues that are pertinent to transgender people, such as side effects of long-term hormone use, and high levels of depression, then it is likely the relevant populations would be greater than this size estimation suggests.[26]

5.1 Methodology & Limitations

The Lincoln-Petersen model of capture and recapture provides a reliable estimate of the size of a study population. The methodology depends on an appropriate period of study time; a sufficient time interval between capture and recapture; an equal probability to be selected in two rounds; independent samples in two rounds, and a closed population. Where there is a very high level of overlap in the individuals identified in both the first and second round of capture, then the smaller the difference in confidence interval, and therefore the higher degree of certainty in the population estimate.

There are several limitations to this study.

1) This is a study of the population in seven cities. In no way can, or should, this be extrapolated to represent the “national” figure for size of the transgender population in Cambodia.

2) For the purposes of this survey, one week of the study period for each round was deemed appropriate. However, the subsequent interval of two weeks between the two rounds might not have been sufficient for selected transgender to mingle in the population. This may have caused a higher percentage of transgender to be selected in both rounds.

3) The size estimation surveyed only ‘hot spots’ and known transgender venues, which leaves out any ‘hidden’ transgender population who do not frequent public meeting places. As a result, the numbers presented in this report may be an underestimate of the true transgender population size.
The initial mapping of the transgender venues was based on the experiences and social networks of the participating NGOs. The exposure to HIV/AIDS intervention among the total number of transgender in this study was high (93%), but because a high proportion of respondents were likely program clients, coverage by prevention programs might be overestimated.

At the time the study was designed, a decision was made to limit the inclusion criteria to transgender who have sex with a male in the 12 months prior to the survey. It is known from previous studies, that because “transgender” is not a reflection of sexual orientation, that some are likely to also have had sex with women; by default these will have been captured in this study. The only category of sexually active transgender who were excluded are those who only have sex with a woman.

The study only sought to identify those transgender aged 18 or over. For ethical research reasons, there was no attempt to include younger transgender in the study, although studies exists that suggest younger transgender and MSM may be particularly susceptible to sexual violence and abuse.[27],[28]

The study has not attempted to identify risk-behavior among transgender. This is the subject of a separate integrated biological behavioral sentinel surveillance (IBBSS) which was also conducted by FHI 360 in 2012.

Finally, we were unable to confirm the applied terminology with the population, which may have added to the challenge of reaching hidden transgender. Although the study included transgender self-identified as men with occasional feminine appearance, it is possible that this group is underrepresented in this study, due to their rather more hidden status.

5.2 IMPLICATIONS

5.2.1 POPULATION SIZE & IDENTITY

The findings also demonstrate the there is no single definition or identifier of what it means to be “transgender”. As the Center of Excellence for Transgender Health at UCSF notes:

“Some trans people may not identify as transgender, may live stealth, and/or may be afraid to tell people about their gender history--so even if given the opportunity to indicate this on a data collection form, they still may not choose to do so.”[29]

Rather as the Benjamin transitioning scale demonstrates, the process of transitioning means that inevitably those considered to be “transgender” would at different times, be at different stages on the scale.[30] Therefore if the same study were to be repeated in five years time, it is quite possible that whilst the population might relatively static, that the characteristics and self-descriptors of what it means to be transgender, may have changed even within this community.
That is not to say the population will remain static. As acceptance of being transgender changes within Cambodia, it is likely that some of those who are currently hidden, will feel more comfortable expressing themselves as transgender in future. Therefore, this population estimate should be seen as a conservative estimation of the population.

For years there has been a lack of distinction between “gender” and “sexual orientation”. In Cambodia transgender have often been referred to as “long hair” MSM as distinct from other MSM who were until recently described as “short hair”. This study clearly demonstrates that transgender do not see themselves as “long hair” MSM, and that they should be seen as a distinct population group.

In particular, one of the key findings of the study indicates that when asked how they would describe themselves, two thirds of those interviewed as a third gender, (i.e. neither “female” nor “male”). Only 30% identify as female and only four percent perceive themselves to be male.

5.2.2 THE NEED FOR DISCRETE HIV-RELATED PROGRAMS

This study evidences the existence of sizeable transgender community; if nothing else this is justification for careful consideration for future discrete programming. However the results reveal that two-thirds have engaged in transactional sexual activity within the past six months. This study has not assessed condom use, however the degree of transactional sex is significant and likely to place them at elevated risk of both HIV and STIs.

Outreach among the participants was high, suggesting that they have higher levels of knowledge and access to services via referrals. However given the populations were identified by local NGOs working with these communities, further research is necessary to know if this has skewed the population significantly. This level of access to HIV education should therefore not be generalized beyond the population surveyed.

In general, the results should be used to inform national programs, donor decision making, key stakeholders input and how non-governmental organizations assign the level of priority and the scale of the HIV/AIDS response among transgender in Cambodia.

5.2.3 BROADER HEALTH CARE

Data from this study shows that over a third of transgender interviewed use hormonal therapy to change their physical body to feminine appearance. However prior to this, there have been no specific consideration has been given to their health needs. In a ten-year study of transgender men and women, Wierckx et al. (2012) identified:
“...a substantial number of transsexual women suffered from osteoporosis at the lumbar spine and distal arm. Twelve percent of transsexual women experienced thromboembolic and/or other cardiovascular events during hormone treatment, possibly related to older age, estrogen treatment, and lifestyle factors. In order to decrease cardiovascular morbidity, more attention should be paid to decrease cardiovascular risk factors during hormone therapy management.”[31]

In the short-term, the existing HIV/AIDS interventions therefore need to consider integrating information on hormone therapy, including its availability, dosage and side effects for this population. In the medium to long term, this demonstrates a need for better access to counseling, advice, preventative approaches for both physical and mental health. This could include for example, simple interventions such as advocating the uptake of both calcium and vitamin D supplements [32], although medical advice is necessary to minimize potential side effects.[33]

The study made no attempt to measure levels of sexual violence that transgender individuals have experienced. Studies such as Hilton (2008) identify that sexual violence in Cambodia is not limited to women. Further research is necessary to assess levels of stigma and violence experienced by those who are transgender, and this too needs to factor into broader acceptance and change in health services; social support mechanisms and judicial processes.

5.2.4 FURTHER RESEARCH

Some of the limitations above were simply a factor of how such studies are designed and undertaken. However lessons have been learned during this process, and two specific recommendations should apply to any future research with this population group.

First, this study based definitions on formative work beforehand, and then discussions with other partners such as UNAIDS. However it would be beneficial to check the definitions used with interview participants during the study.

Second, to gain a more reliable estimation it would be desirable to broaden the scope to include transgender, irrespective of whether they have had sex in the previous twelve months, and without limiting the study to transgender of a particular sexual orientation.

The forthcoming first Transgender IBBSS study report will shed further light on HIV specific risks. An earlier secondary analysis of the Bros Khmer study, identified that 24.9% of 3,000 “high risk men” used drugs in the previous twelve months. Of these, 42.4% were classified as “men who have sex with men and women”, although there was no attempt at the time to define gender as distinct from sexual orientation. The analysis found, not surprisingly, that drug-use of any kind correlated with higher risk-taking behavior, and underlined the importance of multiple risk factors even among non-injecting drug-users. The analysis concluded that “Overall, male drug users, especially IDUs, had higher risk sex, such as lower condom use with all partner and lower knowledge of HIV/AIDS education). This warrants more detailed investigation for the transgender community.
5.3 CONCLUSION

Over the last decade, Cambodia’s HIV response has successfully reversed the HIV epidemic in the general population. This study helps to identify a reliable, estimated number for the transgender communities in seven cities in Cambodia. It marks the beginning of further transgender-specific research and programs in the country. If the data is acted upon it could provide help the country towards achieving the goal of zero new infections; zero new deaths, and zero stigma by 2020.
ANNEX 1. QUESTIONNAIRE FIRST ROUND AND SECOND ROUND

QUESTIONNAIRE: ‘CAPTURE’ ROUND

FHI360 and NCHADS are conducting a short study to estimate the population size of transgender people for HIV prevention program and policy. Before you make your decision, we want to be sure that you understand the purpose of this study and your responsibilities. You are being asked to take part in this study to help us gather quick information about transgender people. You must be 18 years or older to participate in this study. If you agree to participate in this study, we will not take your name or any information that could identify you. We will ask you few questions about your sexual behavior.

The local authorities have approved this study and have agreed that it will be completely anonymous, as well as voluntary. We will not record your name anywhere. No one will have a name list of those who agreed to participate, or decided not to participate. If you do not want to be part of this study, please tell us now.

Your participation will last about 10 minutes. You may refuse to answer any of the questions, at any time.

Should we start the interview now?  YES  NO  (Thank You -> END)

1-Provincial code :
2-Date :
3-Interviewer Code:
4- Location Code :
5- Type of location:
   1-Park (River side)  2-Beauty Shop/Salon
   3- Street  4- Bar/Café
   5- Disco/Club  6-Private house
   7- Other

6- Have received Token#1

7- Have completed interview after you received Token#1  (If YES, End the interview)

8- How old are you?  _______________Years

9- Are you a ‘transgender’?  Yes  No  (if NO, end the interview)
10- Have you done the following procedures?
   1. Dressed as a woman
   2. Female Hormone Injection
   3. Breast Implant
   4. Sex Change Surgery

11- Did you receive information on HIV from outreach worker in past 6 months?
   YES   NO

12- Did you receive money from having sex with men in past 6 months?
   No   Once   More than once

13- Did you pay money for having sex with men in the past 6 months?
   No   Once   More than once

14- In the past 6 months whom did you have sex with?
   Boys   Girls   Bo sexes

QUESTIONNAIRE: ‘RECAPTURE’ ROUND

FHI360 and NCHADS are conducting a short study to estimate the population size
of transgender people for HIV prevention program and policy. Before you make
your decision, we want to be sure that you understand the purpose of this study
and your responsibilities. You are being asked to take part in this study to help
us gather quick information about transgender people. You must be 18 years or
older to participate in this study. If you agree to participate in this study, we will
not take your name or any information that could identify you. We will ask you
few questions about your sexual behavior.

The local authorities have approved this study and have agreed that it will be
completely anonymous, as well as voluntary. We will not record your name
anywhere. No one will have a name list of those who agreed to participate, or
decided not to participate. If you do not want to be part of this study, please tell
us now.

Your participation will last about 10 minutes. You may refuse to answer any of the
questions, at any time.

Should we start the interview now?   YES   NO (Thank You -> END)

1-Provincial code :
2-Date :
3-Interviewer Code:
4- Location Code :
5- Type of location:
1-Park (River side)  
2-Beauty Shop/Salon  
3-Street  
4- Bar/Café  
5-Disco/Club  
6-Private house  
7-Other

6- Have you received Token#1

7- Have completed interview after you received Token#1  
   *(If YES, End the interview)*

9- Have you received Token#2

10- Have you completed interview after you received Token#2

11- How old are you?  
   Years

12- Are you a ‘transgender’?  
   Yes  
   No (if NO, end the interview)

13- Have you done the following procedures?  
   1. Dressed as a woman  
   2. Female Hormone Injection  
   3. Breast Implant  
   4. Sex Change Surgery

12- Did you receive information on HIV from outreach worker in past 6 months?  
   YES  
   NO

13- Did you receive money from having sex with men in past 6 months?  
   No  
   Once  
   More than once

14- Did you pay money for having sex with men in the past 6 months?  
   No  
   Once  
   More than once

15- In the past 6 months whom did you have sex with?  
   Boys  
   Girls  
   Bo sexes
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15. Sovannara et al, ibid
16. Earth et al., ibid
17. Catalla, et al., ibid
18. Girault
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27. Catalla, et al., ibid

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