

# National Population Size Estimation, Integrated Biological and Behavioral Survey, and HCV among PWID and PWUD in Cambodia, 2017

**Presented by:**

**Phalkun Mun, MD, MPH**

**Siyan Yi, MD, MHSc, PhD**

**Sovannary Tuot, BA, MA**

**Sunway Hotel, May 21, 2018**



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Research Team

## ■ Research Advisors:

- Dr. Penhsun Ly, Director, National Center for HIV/AIDS, Dermatology and STD (NCHADS)
- Mr. Sok Chamreun Choub, Executive Director, KHANA

## ■ Principal Investigators:

- Dr. Phalkun Mun, Chief of Surveillance Unit, NCHADS
- Dr. Siyan Yi, Director, KHANA Center for Population Health Research (KHANA-CPHR)

## ■ Project Coordinators:

- Dr. Navy Chann, Deputy-Chief of Surveillance Unit, NCHADS
- Mr. Sovannary Tuot , Manager, KHANA-CPHR
- Mr. Srean Chhim, Senior Research Officer, FHI 360 Cambodia
- Mr. Pheak Chhoun, Research Fellow, KHANA-CPHR
- Mr. Kao Boumony, NACD
- Mr. Yen Yoeurt, NACD
- Dr. Chon Vichea, NCHADS
- Dr. Lay Panhavorn, NCHADS
- Ms. Seng Sopheata, NCHADS



# Background (1)

- HIV epidemic in Cambodia is currently concentrated among key populations
- Prevalence among the groups: MSM (2.3%), transgender women (5.9%), FEWs (3.2%) and PWID (24.8%) (Mun et al., 2016; Mun et al., 2016; Mun et al., 2017; Chhea et al., 2014)
- Emerging drug use and abuse problems have widespread for both people who inject drugs (PWID) and people who use drugs (PWUD) (Chhea et al., 2014)
- Health-seeking behavior and health service delivery are still limited access (Chhea et al., 2014)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Background (2)

- Evidences have shown that the number of PWUD and PWID has been considerably increasing in recent years
- PWID who share syringes and needles with multiple partners, have significantly higher prevalence of HIV and HCV
- Cambodia has set a goal to eliminate new HIV infections by 2025 through the Cambodia 3.0
- Updated data are important for HIV program planning, implementation, monitoring, and evaluation

(Chhea & Seguy, 2010; Chhea, et al., 2014)



**FLAGSHIP**  
OKHANA fhi360 psii



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Objectives

1. To estimate the prevalence of HIV and syphilis among PWID and PWUD and HCV among PWID
2. To examine HIV risk behaviors among PWID and PWUD: illicit drug use behaviors, substance abuse, and other health issues including healthcare seeking behaviors and exposure to HIV programs
3. To estimate the national population size of PWID and PWUD by types of drug used



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Methods



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីក្រសួងសេដ្ឋកិច្ច និងហិរញ្ញវត្ថុ

# Working Definitions (1)

- **Drug users:** People who have used any types of illicit drugs, defined by the Cambodian Drug Control Law, in any routes of administration in the past 12 months.
- **PWID:** People who have injected any types of illicit drugs, defined by the Cambodian Drug Control Law, in the past 12 months.
- **PWUD:** People who have used any types of illicit drug, defined by the Cambodian Drug Control Law, in any routes of administration other than injection in the past 12 months.



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Working Definitions (2)

- **Regular drug users:** People who have used any types of illicit drugs, defined by the Cambodian Drug Control Law, in any routes of administration with a frequency of three times or more per week in the past month.
- **Occasional drug users:** People who have used any types of illicit drugs, defined by the Cambodian Drug Control Law, in any route of administration with a frequency of two times or less per week in the past month.



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក



# Methods

- **Part I: IBBS**
  - Prevalence of HIV, HCV (among PWID), and syphilis
  - Related KAP and risk behaviors and exposure to HIV program
  
- **Part II: National population size estimation nested in the IBBS**



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Integrated Biological and Behavioral Survey (IBBS)



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Eligibility Criteria

- Be at least 18 years old
- Have a valid study coupon
- Have not participated in this survey before
- Meet criteria according to the definition of PWID and PWUD
- Be able to communicate in Khmer
- Be able and willing to provide written informed consent



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Sample size and sampling Procedures

- This was a cross sectional design to collect biological and behavioral data from participants
- We used respondent driven sampling (RDS) to recruit PWUD/PWID with 4 initial seeds
- Expected numbers of sample size in the IBBS were 1390 for PWUD and 290 for PWID
- Study sites included the capital city of Phnom Penh and 11 provinces with 21 locations



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Study Sites: Phnom Penh & 11 Provinces

## STUDY SITE MAP



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីកម្មវិធីសហប្រតិបត្តិការ

# Data Collector Team Members

- Two teams were responsible for data collection
- Each team consisted of:
  - 1 field supervisor
  - 4 interviewers
  - 1 lab technician,
  - 1 counselor from the PASP
  - 2 coordinators
- Research team members were trained on study objectives, data collection methods, questionnaires, and study flow



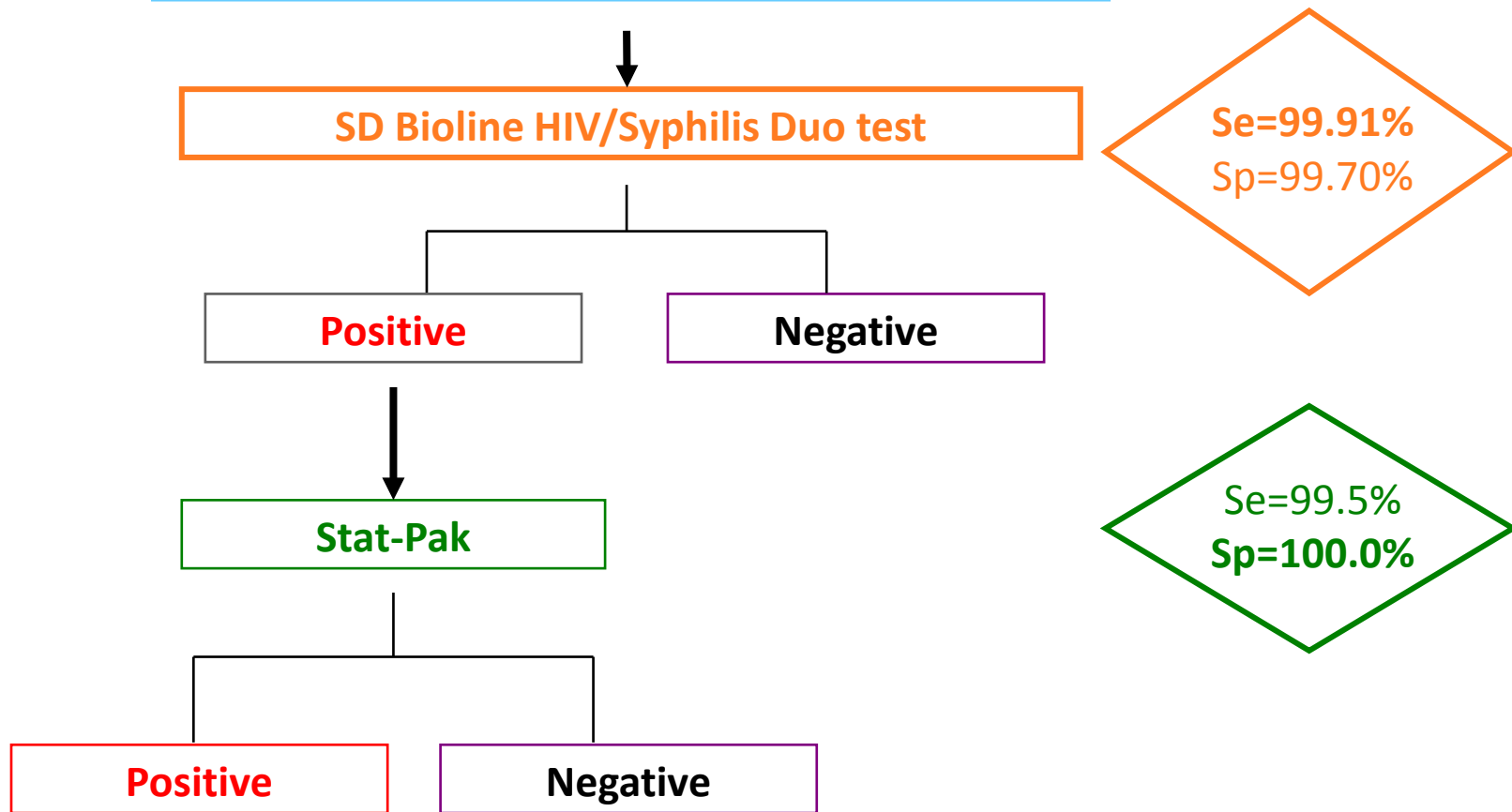
**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HIV Testing Algorithm

After a written informed consent is obtained, the lab staff performed a finger prick and applied for



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HVC Testing and Referral Mechanism

- For PWID, HCV Oraquick (rapid test) was done using finger prick by MSF nurse
- If HCV Oraquick test was positive, participants were informed that they have been or are now infected with HCV. Further test for a viral load was required to confirm infection.
- Proper referral mechanism was ensured for HIV (+) cases at VCT, ART clinic; HCV(+) was in charge by MSF clinic



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក



# Questionnaire (105 questions)

- Socio-demographic:  
age, sex, gender, income, residence, and employment
- Types of illicit drugs used and frequency of use
- Drug injection practices including needle sharing
- Exposure to community-based services: harm reduction and HIV programs, MMT, needle exchange services, ART services for PLHIV, rehabilitation services, etc.
- Sexual risk behaviors with different types of partners
- Risk behaviors: HIV, STIs, Hepatitis C

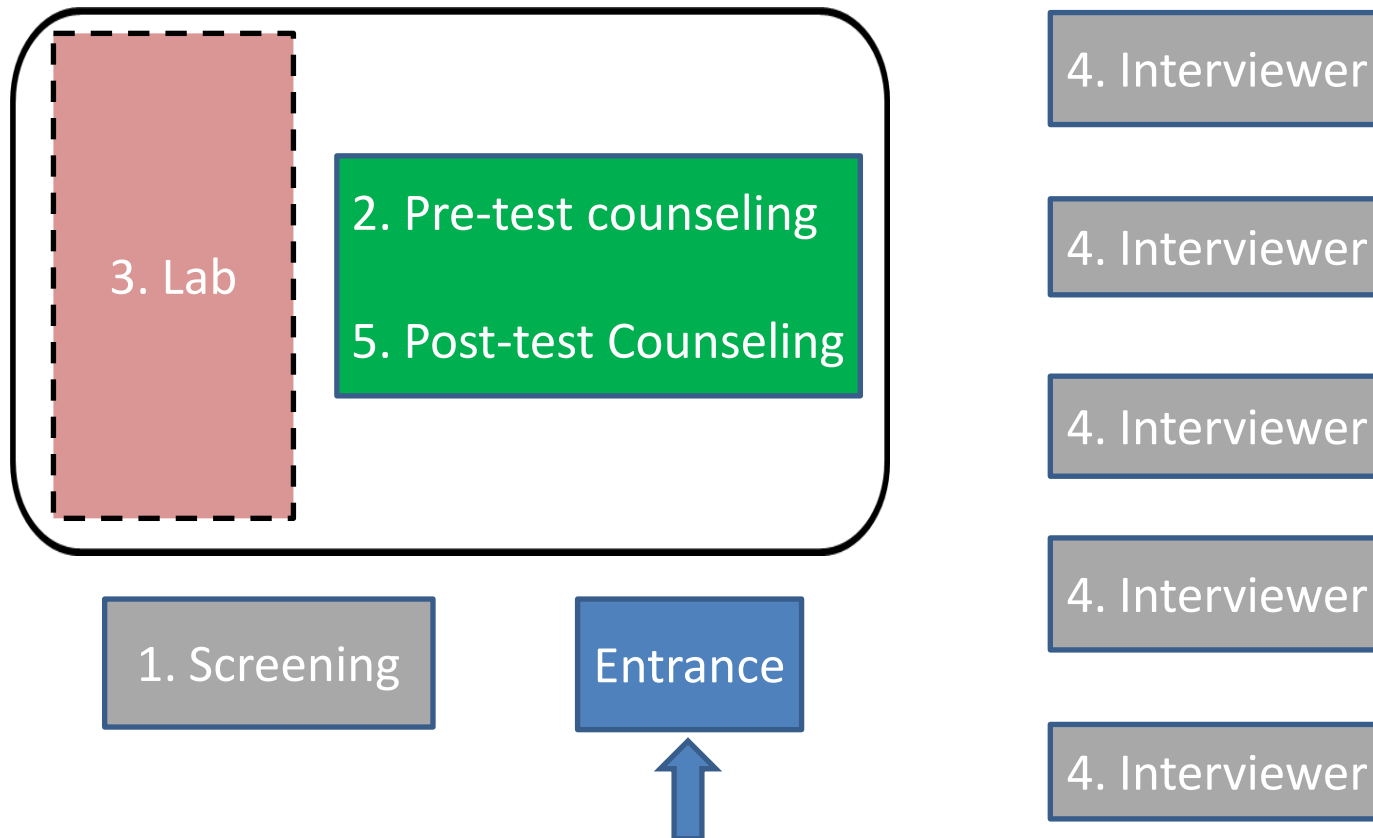


**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Overall Flow Chart of Data Collection



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Data Management and Analyses

- Double data entry performed in Epi-data V3 and validated
- Data analyzed with STATA 13
- Descriptive statistics:  
frequency, proportion, mean, SD, median, IQR
- Prevalence of HIV, syphilis and HCV estimated with the 95% CI
- Bivariate analysis (Chi-square test) used to test the association between HIV with selected variables
- Comparison with HIV prevalence 2012 made by type of drug used



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Ethical Clearance and Informed Consent

- Participation in the study was completely voluntary, and anticipated minimal risk for participants
- Study procedures was explained and a written informed consent was obtained
- Sensitive and confidential information as well as privacy were ensured over the study period
- Finally, the study protocol and tools was submitted and approved by NECHR (NECHR # 0062)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Results



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Samples distribution by province

Province	Total = 1677	PWUD = 1367	PWID = 310
	n (%)	n (%)	n (%)
Phnom Penh	564 (33.6)	346 (25.3)	218 (70.3)
Banteay Mean Chey	270 (16.1)	233 (17.0)	37 (11.9)
Battambang	185 (11.0)	173 (12.7)	12 (3.9)
Siem Reap	127 (7.6)	117 (8.6)	10 (3.2)
Kandal	118 (7.0)	116 (8.5)	2 (0.7)
Kampong Speu	86 (5.1)	82 (6.0)	4 (1.3)
Thboung Khmoum	75 (4.5)	62 (4.5)	13 (4.2)
Prey Veng	72 (4.3)	68 (5.0)	4 (1.3)
Kampong Chhnang	69 (4.1)	65 (4.8)	4 (1.3)
Preah Sihanukville	47 (2.8)	44 (3.2)	3 (1.0)
Kampong Cham	37 (2.2)	34 (2.5)	3 (1.0)
Svay Rieng	27 (1.6)	27 (2.0)	0 (0.0)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីកម្មវិធីសហប្រតិបត្តិការ

# Demographic characteristics (1)

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
<b>Sex</b>			
Male	1053 (62.8)	826 (60.4)	227 (73.2)
Female	624 (37.2)	541 (39.6)	83 (26.8)
<b>Gender self-identified</b>			
Male self-identified as M	949 (56.6)	732 (53.6)	217 (70.0)
Female self-identified as F	621 (37.0)	538 (39.4)	83 (26.8)
Male self-identified as F/ third gender	104 (6.2)	94 (6.9)	10 (3.2)
Female self-identified M	3 (0.2)	3 (0.2)	0 (0.0)
<b>Age (in years)</b>			
Median (IQR)	28 (22-34)	27 (22-32)	32 (26-37)
18-24	578 (34.6)	519 (38.1)	59 (19.1)
25-29	378 (22.6)	321 (23.5)	57 (18.5)
30-39	575 (34.4)	424 (31.1)	151 (48.9)
40 or older	142 (8.5)	100 (7.3)	42 (13.6)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Demographic characteristics (2)

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
<b>Nationality</b>			
Khmer	1578 (94.6)	1334 (97.9)	244 (79.5)
Vietnamese	91 (5.5)	28 (2.1)	63 (20.5)
<b>Marital status</b>			
Never married	769 (46.2)	644 (47.6)	125 (40.3)
Married	624 (37.5)	498 (36.8)	126 (40.7)
Divorced	271 (16.3)	212 (15.7)	59 (19.0)
<b>Education</b>			
No/pre-/primary school	896 (53.7)	722 (53.1)	174 (56.3)
Secondary school	462 (27.7)	387 (28.5)	75 (24.3)
High school or higher	311 (18.6)	251 (18.5)	60 (19.4)



**FLAGSHIP**  
OKHANA fhi 360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក



# Demographic characteristics (3)

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
<b>Normally living place</b>			
With parents or relatives	781 (46.7)	659 (48.4)	122 (39.4)
Own dwelling	382 (22.8)	322 (23.6)	60 (19.4)
With friend (s)	172 (10.3)	157 (11.5)	15 (4.8)
Street	171 (10.2)	87 (6.4)	84 (27.1)
Others	167 (10.0)	138 (10.1)	29 (9.4)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Demographic characteristics (4)

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
<b>Main occupation</b>			
Farmers	597 (35.6)	481 (35.2)	116 (37.4)
Entertainment workers	306 (18.3)	280 (20.5)	26 (8.4)
Seller assistants	212 (12.6)	152 (11.1)	60 (19.4)
Unemployed	197 (11.8)	158 (11.6)	39 (12.6)
Skilled/unskilled workers	104 (6.2)	72 (5.3)	32 (10.3)
Hair dresser/beautician	82 (4.9)	76 (5.6)	6 (1.9)
Office worker	79 (4.7)	63 (4.6)	16 (5.2)
Taxi driver	59 (3.5)	47 (3.4)	12 (3.9)
Student	41 (2.4)	38 (2.8)	3 (1.0)
<b>Monthly income in past 6 month (USD)</b>			
Median (IQR)	100 (60-170)	100 (60-175)	100 (60-150)
≤ 50	396 (23.8)	326 (24.0)	70 (22.7)
51-100	476 (28.6)	376 (27.7)	100 (32.5)
101-200	558 (33.5)	457 (33.7)	101 (32.8)
≥ 200	236 (14.2)	199 (14.7)	37 (12.0)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Drug use characteristics (1)

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
Duration of using drugs (in months)			
Median (IQR)	18 (6-48)	12 (6-36)	48 (14-120)
Route of first drug use			
Smoking	1429 (85.3)	1273 (93.2)	156 (50.3)
Injecting	156 (9.3)		153 (49.4)
Sniffing/snorting	76 (4.5)	76 (5.6)	0 (0.0)
Drinking	15 (0.9)	14 (1.0)	1 (0.3)
Person (s) who used with, first time			
Friend	1309 (78.2)	1064 (78.1)	245 (79.0)
Myself	259 (15.5)	206 (15.1)	53 (17.1)
Sweetheart	34 (2.0)	31 (2.3)	3 (1.0)
Spouse/partner	31 (1.9)	27 (2.0)	4 (1.3)
Relative	27 (1.6)	25 (1.8)	2 (0.7)
I was forced	13 (0.8)	10 (0.7)	3 (1.0)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Drug use characteristics (2)

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
<b>Type of drugs, past 12 months</b>			
ATS only	1407 (83.9)	1310 (95.8)	97 (31.3)
ATS & Heroin	143 (8.5)	6 (0.4)	<b>137 (44.2)</b>
Heroin only	79 (4.7)	5 (0.4)	74 (23.9)
Ectasy	83 (5.0)	69 (5.1)	14 (4.5)
Others	48 (2.9)	46 (3.4)	2 (0.7)
<b>Frequency of drug use, past month</b>			
Median (IQR)	2 (0-8)	2 (0-5)	6 (2-37)
0	686 (41.1)	614 (45.0)	72 (23.6)
1	430 (25.7)	361 (26.4)	69 (22.6)
2+	<b>555 (33.2)</b>	<b>391 (28.6)</b>	<b>164 (53.8)</b>
<b>Expense per time of using (USD)</b>			
Median (IQR)	8 (5-10)	8 (5-10)	10 (5-15)
< 5	233 (14.0)	193 (14.2)	40 (12.9)
5--10	1020 (61.1)	841 (61.8)	179 (57.9)
> 10	416 (24.9)	326 (24.0)	90 (29.1)



**FLAGSHIP**  
OKHANA fhi 360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Drug use characteristics (3)

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
Visited DiC in past 12 months	287 (17.3)	205 (15.1)	82 (26.6)
Ever been arrested because of using drugs, past 12 months	266 (15.9)	168 (12.3)	98 (31.6)
Ever been detained (life time)	188 (11.2)	107 (7.8)	81 (26.1)
Reasons for detaining			
Other crimes	92 (49.5)	53 (50.5)	39 (48.2)
Used drugs	80 (43.0)	43 (41.0)	37 (45.7)
Sold drugs	14 (7.5)	9 (8.6)	5 (6.2)
Ever been sent to rehab center	266 (15.9)	143 (10.5)	123 (39.7)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Injecting drug use characteristics (1)

Characteristics		PWID (310)
		Number (%)
Frequency of drug injection in past month		
	Median (IQR)	4 (2-30)
	0	13 (12.2)
	1- 9	55 (51.4)
	10-30	21 (19.6)
	>30	18 (16.8)
Number of syringes and needles gotten in past month		
	Median (IQR)	3 (0-20)
	0	79 (43.9)
	1- 9	36 (20.0)
	10-30	36 (20.0)
	>30	29 (16.1)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Injecting drug use characteristics (2)

Characteristics	PWID (310) n (%)
Ever shared syringes and needles in past months	20 (11.0)
Sources of syringes and needle in past month	
NGO drop-in center	42 ( <b>27.1</b> )
Pharmacy/drug seller	37 (20.4)
Needle/syringe exchange program	30 (16.6)
Friends	12 (6.6)
Drug seller	3 (1.7)
Public/private health facility	2 (1.1)
Sexual partner	2 (1.1)
Other drug users	1 (0.6)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Sexual behaviors (1)

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
Ever had sexual intercourse	1557 (92.8)	1263 (92.4)	294 (94.8)
Age at first sex (in year)			
Median (IQR)	18 (17-20)	18 (17-20)	18 (16-20)
≤ 15	206 (13.3)	162 (13.0)	44 (15.0)
16-17	352 (22.8)	283 (22.6)	69 (23.6)
18-24	883 (57.2)	729 (58.3)	154 (52.6)
≥ 25	103 (6.7)	77 (6.2)	26 (8.9)
Number of sexual partners in past months			
Median (IQR)	1 (0-2)	1 (1-3)	1 (0-2)
0	395 (25.7)	296 (23.7)	99 (34.0)
1	575 (37.3)	472 (37.8)	103 (35.4)
2+	570 (37.0)	481 (38.5)	89 (30.6)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក



# Sexual behaviors (2)

Characteristics	Total (1677) n (%)	PWUD (1495) n (%)	PWID (310) n (%)
Sex under influence of drugs in past 3 months	456 (39.8)	369 (38.7)	87 (45.1)
Sex with non-paid partners in past 3 months	622 (53.8)	505 (52.4)	117 (60.3)
Condom use with non-paid partners in past 3 months			
Always	<b>129 (20.5)</b>	<b>119 (23.3)</b>	<b>10 (8.6)</b>
Not always	499 (79.5)	392 (76.7)	107 (91.5)
Sex with paid partners in past 3 months	415 (35.8)	371 (38.5)	44 (22.6)
Condom use with paid partners in past 3 months			
Always	<b>162 (39.2)</b>	<b>150 (40.7)</b>	<b>12 (27.3)</b>
Not always	251 (60.8)	219 (59.4)	32 (72.7)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Access to HIV education

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
Ever got HIV education (life time)	1235 (73.7)	983 (72.0)	252 (81.6)
Ever got HIV education in past 3 months	<b>787 (63.8)</b>	<b>618 (63.1)</b>	<b>169 (66.8)</b>
Source of HIV education in past 3 months			
Peer educator/outreach worker	520 (66.2)	423 (68.7)	97 (57.4)
Health facility/VCCT	205 (26.1)	124 (20.1)	81 (47.9)
Media (TV/radio/newspaper)	159 (20.3)	136 (22.1)	23 (13.6)
Poster/billboard/booklet	142 (18.1)	128 (20.8)	14 (8.3)
Training/workshops/HIV campaign	132 (16.8)	115 (18.7)	17 (10.1)
Drop in center	27 (3.4)	19 (3.1)	8 (4.7)



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Self-report of HIV testing

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
Report of HIV testing (life time)	1185 (70.7)	935 (68.4)	250 (80.7)
Report of HIV testing in past 6 months	719 (42.9)	558 (40.8)	161 (51.9)
Duration since last HIV test			
Median (IQR)	6 (3-12)	6 (3-12)	5 (3-10)
Did not test	535 (31.9)	469 (34.3)	66 (21.3)
1-6	543 (32.4)	421 (30.8)	122 (39.4)
6-12	292 (17.4)	227 (16.6)	65 (21.0)
> 12	307 (18.3)	250 (18.3)	57 (18.4)
Reasons for not being tested for HIV			
Didn't think I am at risk for HIV	181 (10.9)	156 (11.6)	25 (8.1)
No information where to get tested	128 (7.7)	108 (8.0)	20 (6.5)
Scared of the test	83 (5.0)	70 (5.2)	13 (4.2)
Scared of positive result	32 (1.9)	30 (2.2)	2 (0.7)
Other	27 (1.6)	25 (1.9)	2 (0.7)
Concerned about stigma/discrimination	16 (1.0)	16 (1.2)	0 (0.0)
Concerned about confidentiality	9 (0.5)	9 (0.7)	0 (0.0)
Concern about being arrested	5 (0.3)	4 (0.3)	1 (0.3)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Self-report of STI symptoms

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
Self report of STI symptoms in past 12 months	556 (33.2)	468 (34.2)	88 (28.4)
Seeking STI care and treatment			
Social health clinic/public facility	128 (23.2)	114 (24.5)	14 (15.9)
Pharmacy	125 (22.6)	104 (22.4)	21 (23.9)
Didn't seek treatment	110 (19.9)	92 (19.8)	18 (20.5)
NGO facility	85 (15.4)	67 (14.4)	18 (20.5)
Private health facility	71 (12.8)	59 (12.7)	12 (13.6)
Traditional healer	21 (3.8)	17 (3.7)	4 (4.6)
Private health provider's home	7 (1.3)	7 (1.5)	0 (0.0)
Other	6 (1.1)	5 (1.1)	1 (1.1)



**FLAGSHIP**  
OKHANA fhi 360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Alcohol use and cigarette smoking

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
<b>Binge drinking (&gt; 5 drinks in one day or night) in past three months</b>			
Never drink (lifetime)	353 (21.1)	233 (17.0)	120 (38.7)
Never had > 5 drinks	271 (16.2)	205 (15.0)	66 (21.3)
< Once a month	121 (7.2)	110 (8.1)	11 (3.6)
Once a month	171 (10.2)	148 (10.8)	23 (7.4)
2- 3 times a week	339 (20.2)	297 (21.7)	42 (13.6)
≥ 4 times a week	415 (24.8)	368 (26.9)	47 (15.2)
<b>Number of cigarettes per day in past 3 months</b>			
Median (IQR)	10 (5-20)	10 (5-20)	10 (6-20)
0	868 (51.8)	778 (56.9)	90 (29.0)
1-20	727 (43.4)	535 (39.1)	192 (61.9)
21-40	59 (3.5)	36 (2.6)	23 (7.4)
> 40	23 (1.4)	18 (1.3)	5 (1.6)



**FLAGSHIP**  
OKHANA fhi 360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HIV program intervention (1)

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
Ever been reached by NGO staff delivering HIV services (life time)	948 (56.8)	736 (54.2)	212 (68.4)
Ever been reached by NGO staff delivering HIV services in past 12 months	735 (43.8)	567 (41.5)	168 (54.2)
Ever been reached by NGO staff delivering HIV services in past 6 months	615 (36.7)	472 (34.5)	143 (46.1)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HIV program intervention (2)

Characteristics	Total (1677) n (%)	PWUD (1367) n (%)	PWID (310) n (%)
<b>Services the group has received in past 6 months among those who had been reached</b>			
Condoms	485 (28.9)	385 (28.2)	100 (32.3)
HIV/STI testing	370 (22.1)	<b>283 (20.7)</b>	<b>87 (28.1)</b>
HIV education/materials	319 (19.0)	251 (18.4)	68 (21.9)
Needles/syringes			70 (22.6)
Drop-in-center	95 (5.7)	64 (4.7)	31 (10.0)
Hepatitis C education & care	38 (2.3)	26 (1.9)	12 (3.9)
Legal support services	28 (1.7)	21 (1.5)	7 (2.3)
Rehab center	6 (0.4)	6 (0.4)	0 (0.0)
<b>Ever been on MMT (n=182)</b>			130 (41.9)
<b>If yes, currently on MMT (n=130)</b>			99 (76.7)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Prevalence of HIV, HCV, and Syphilis



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក



# Prevalence of HIV, HCV, and syphilis

	Total (n= 1677)	PWUD (n= 1367)	PWID (n= 310)	
	% (95% CI)	% (95% CI)	% (95% CI)	P-value
HIV (+)	7.5 (6.3-8.8)	5.7 (4.6-7.1)	15.2 (11.6-19.6)	<0.01
HCV (+)	NA	NA	30.4 (25.3-36.0)	
Syphilis (+)	3.8 (2.9-4.8)	3.4 (2.6-4.5)	5.2 (3.2-8.3)	0.15

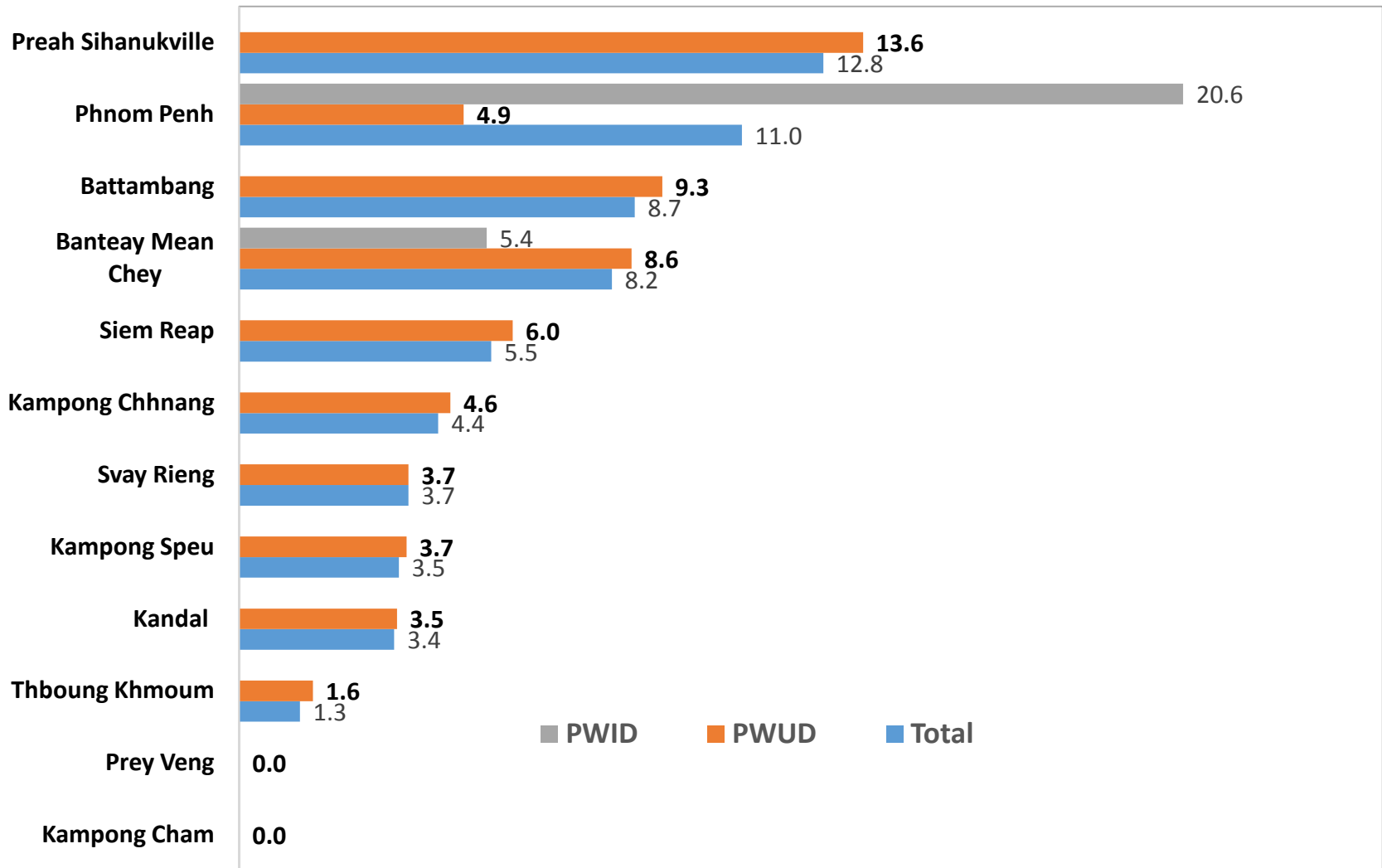


**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HIV prevalence by province



5.0

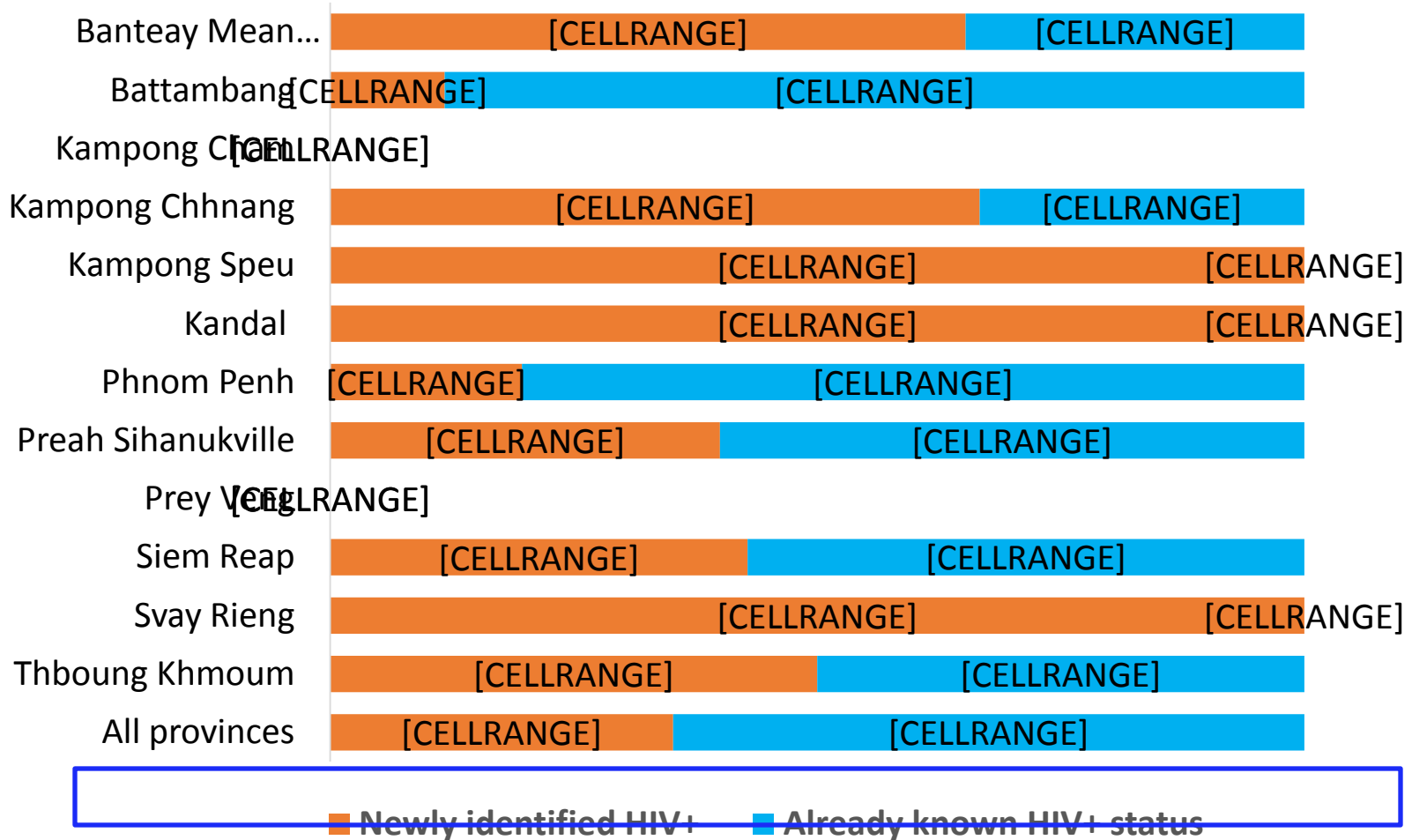
10.0  
% of HIV positive

15.0



25.0

# Newly identified vs. already known HIV+



Source: HIV Record Counselling of the IBBS 2017

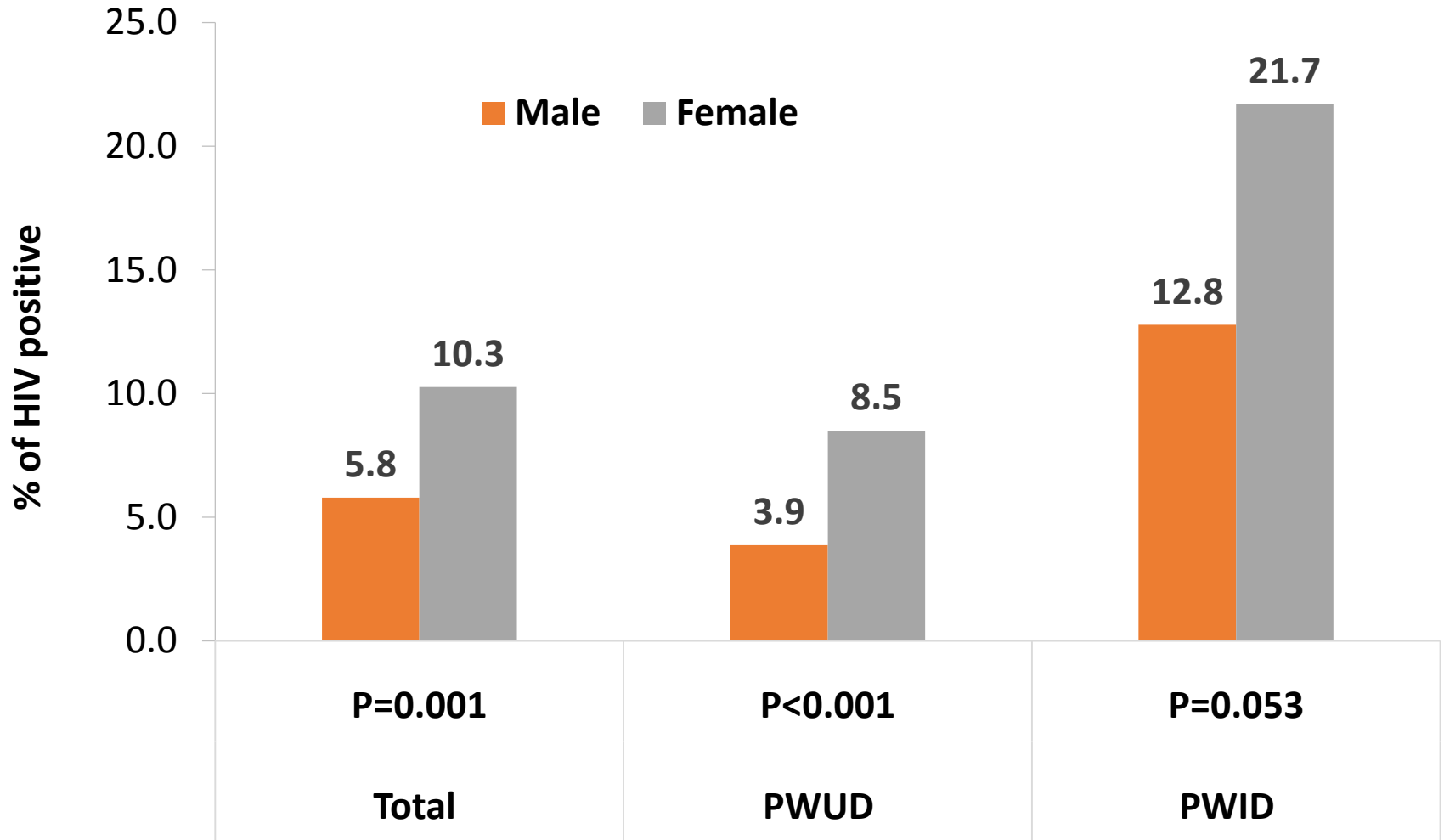


**FLAGSHIP**  
OKHANA fhi360 psi



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HIV prevalence by biological sex

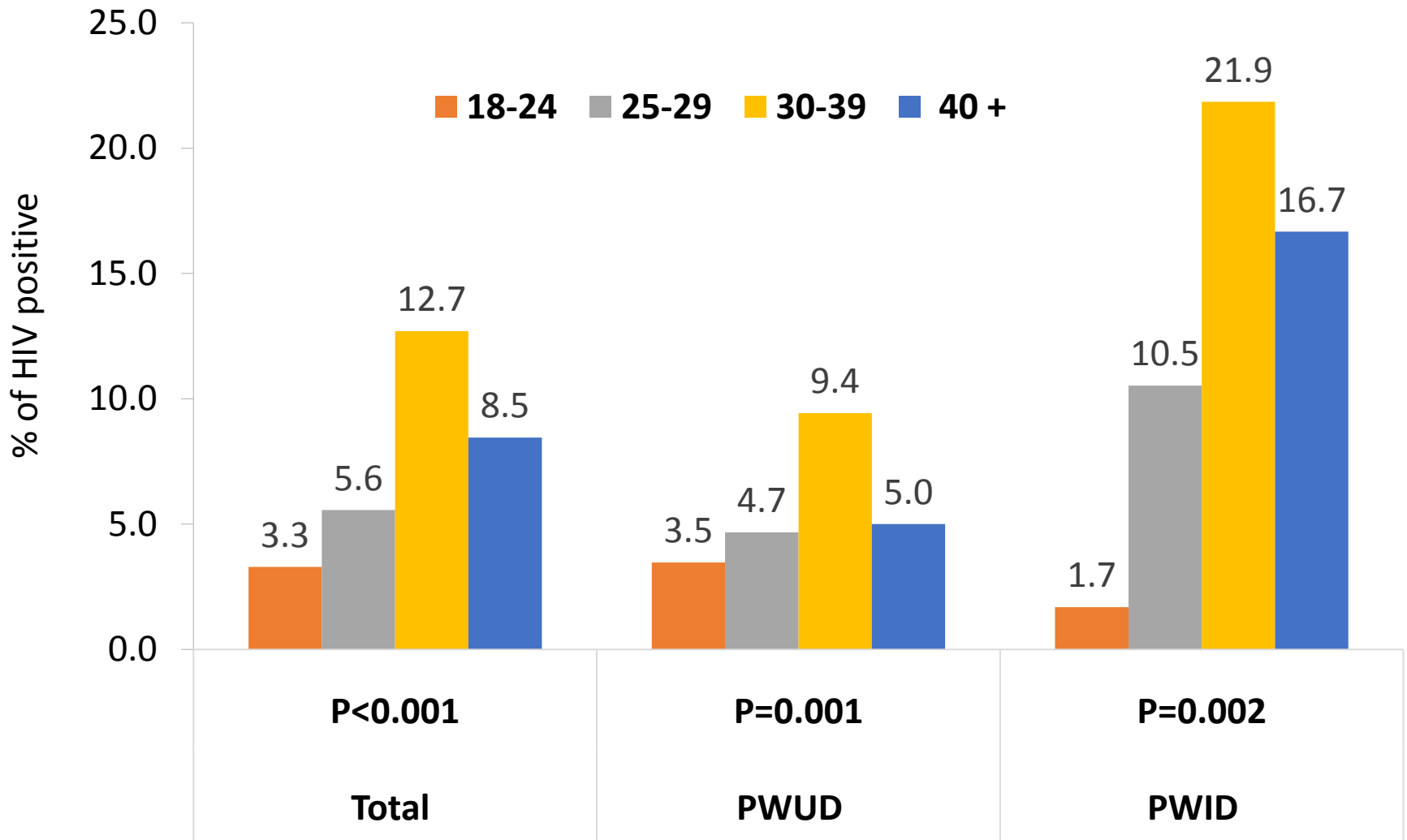


**FLAGSHIP**  
OKHANA fhi360 psi



**USAID**  
ជំនួយពីលក្ខណៈសេដ្ឋកិច្ច

# HIV prevalence by age group (years)

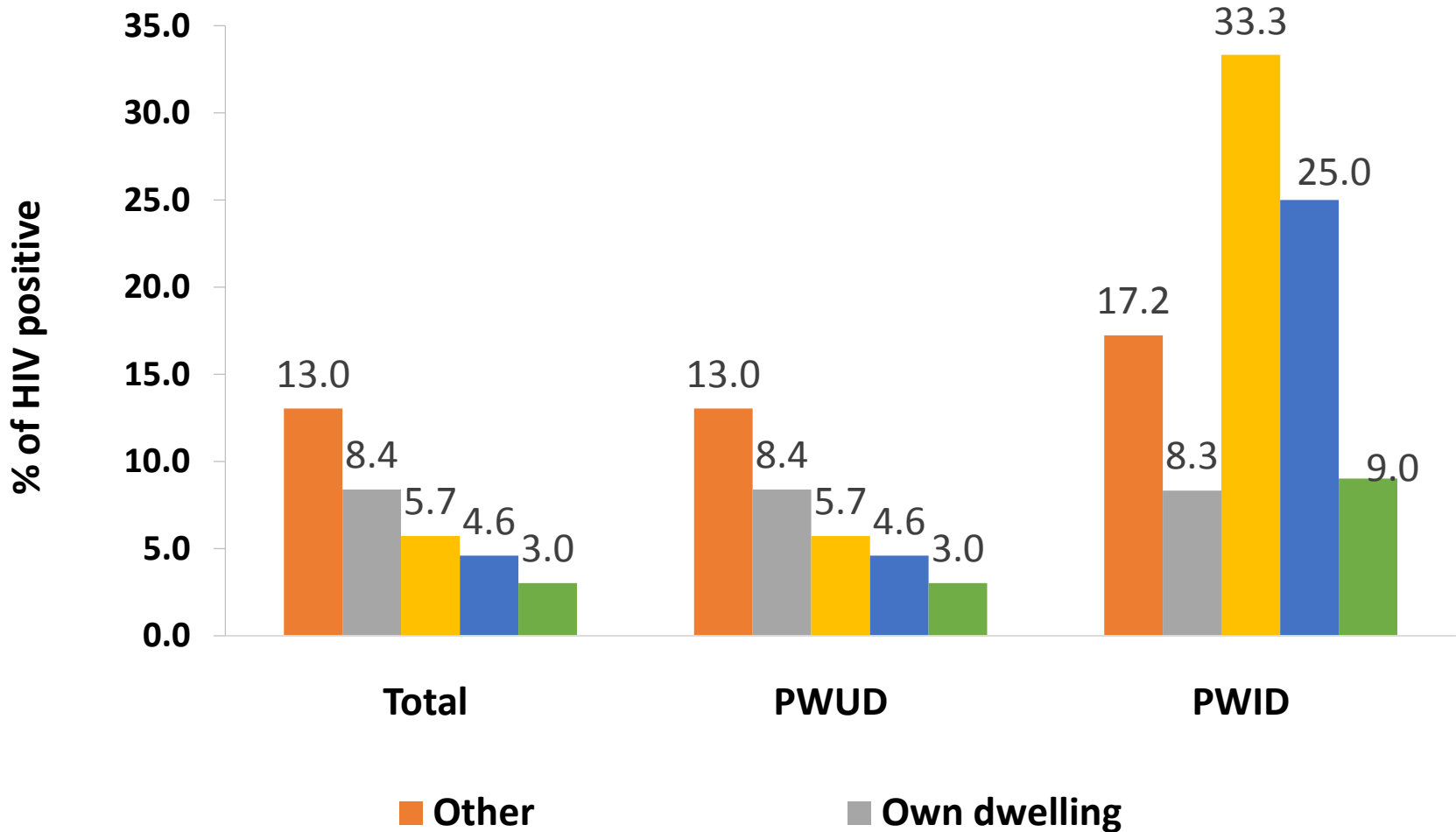


**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HIV prevalence by current living places



*\*Others: most commonly reported living in rental rooms*

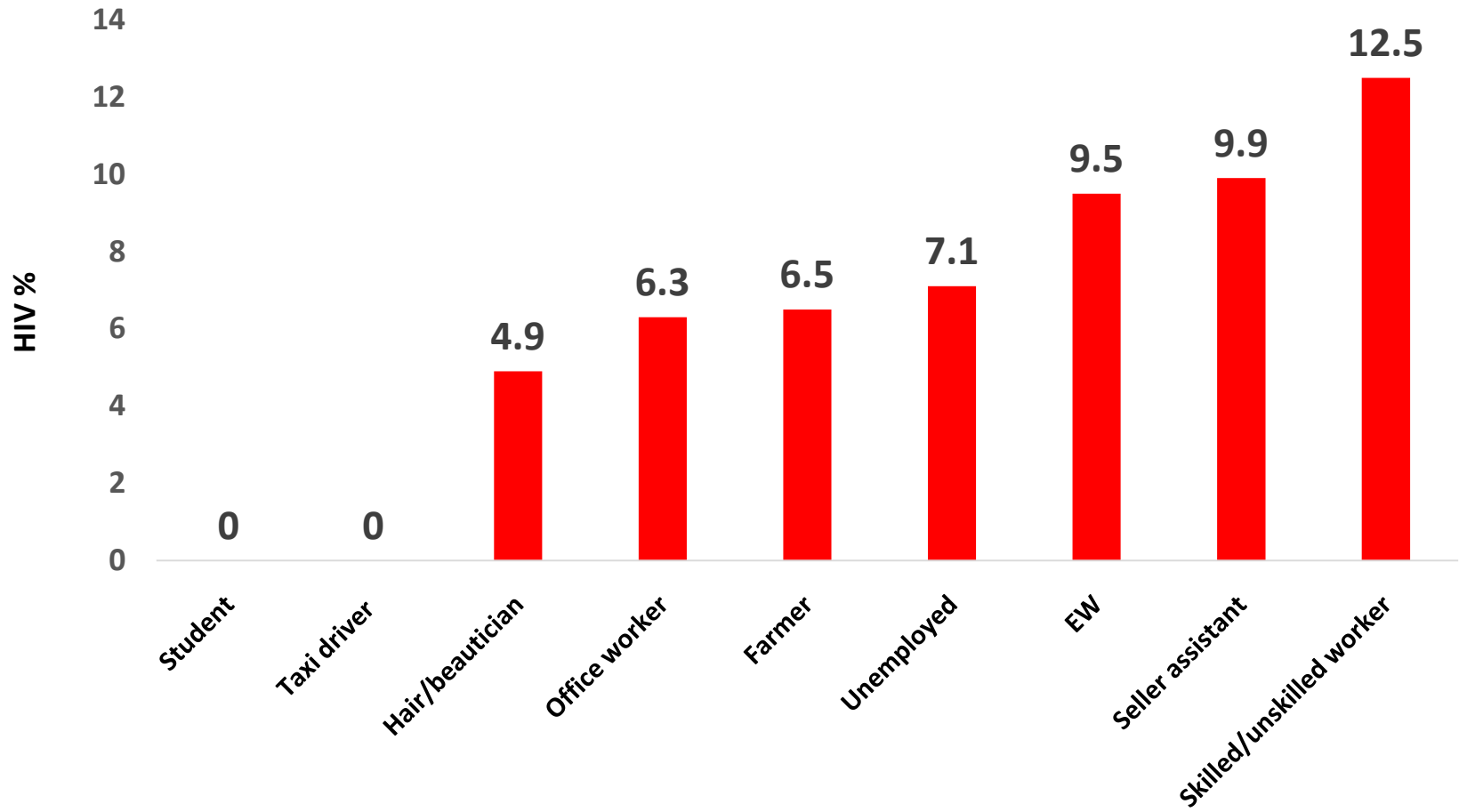


**FLAGSHIP**  
OKHANA fhi360 PSI

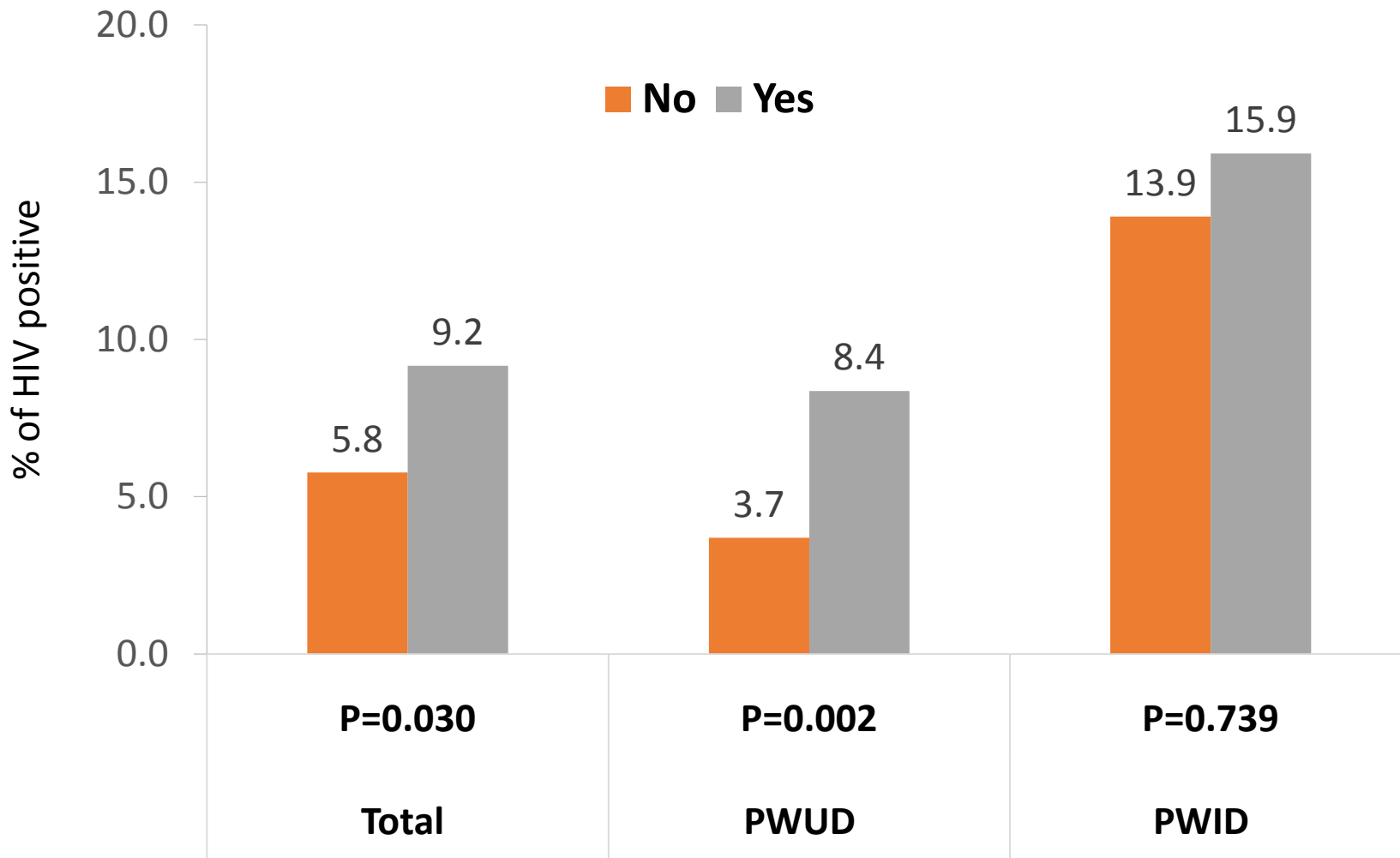


**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HIV prevalence by current primary jobs



# HIV by sex with paid partners in past three months



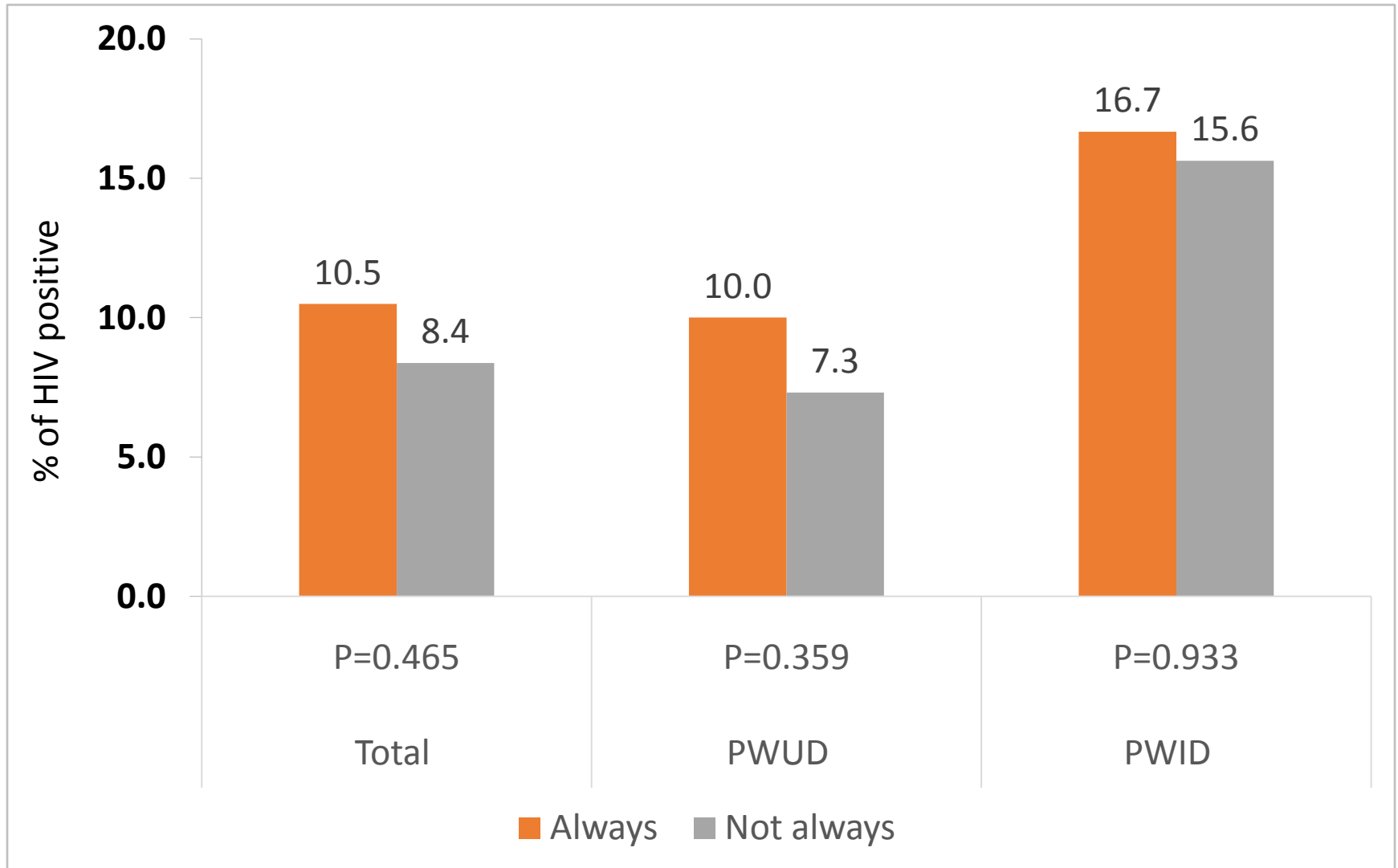
**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីលក្ខណៈសហប្រតិបត្តិការ



# HIV by consistent condom use with paid partners in past 3 months

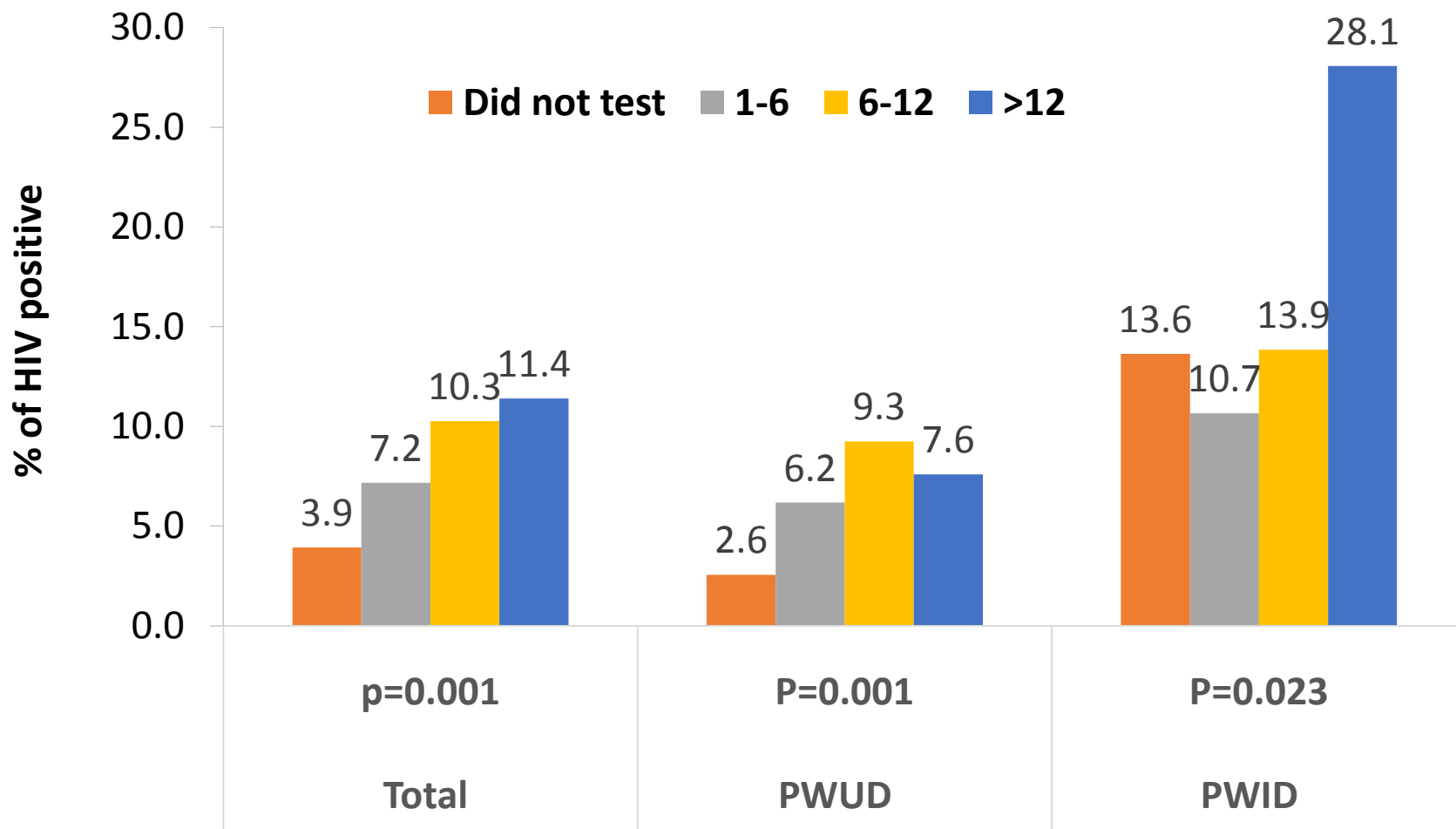


**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីលក្ខណៈសហប្រតិបត្តិការ

# HIV by duration of HIV test since the last time



**FLAGSHIP**  
OKHANA fhi360 psi



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Phnom Penh vs. Provinces

Characteristics	PWID			p-value
	Total (n= 310)	Phnom Penh (n= 218)	Province (n= 92)	
HIV prevalence				
Negative	263 (84.8)	173 (79.4)	90 (97.8)	<0.001
Positive	47 (15.2)	45 (20.6)	2 (2.2)	
HCV prevalence				
Negative	199 (69.6)	119 (57.8)	80 (100.0)	<0.001
Positive	87 (30.4)	87 (42.2)	0 (0.0)	

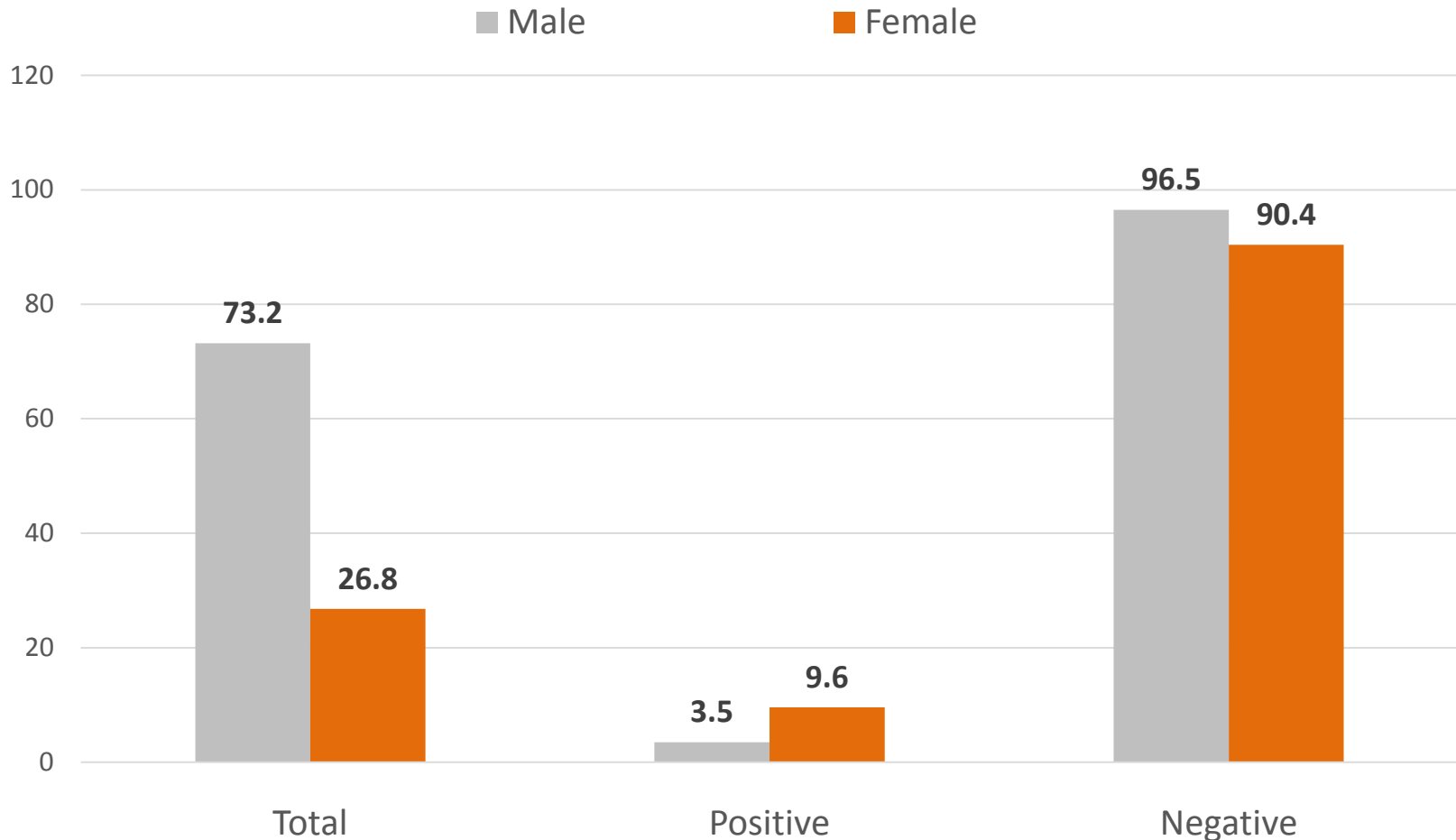


**FLAGSHIP**  
OKHANA fhi360 psi



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HCV by gender (PWID)

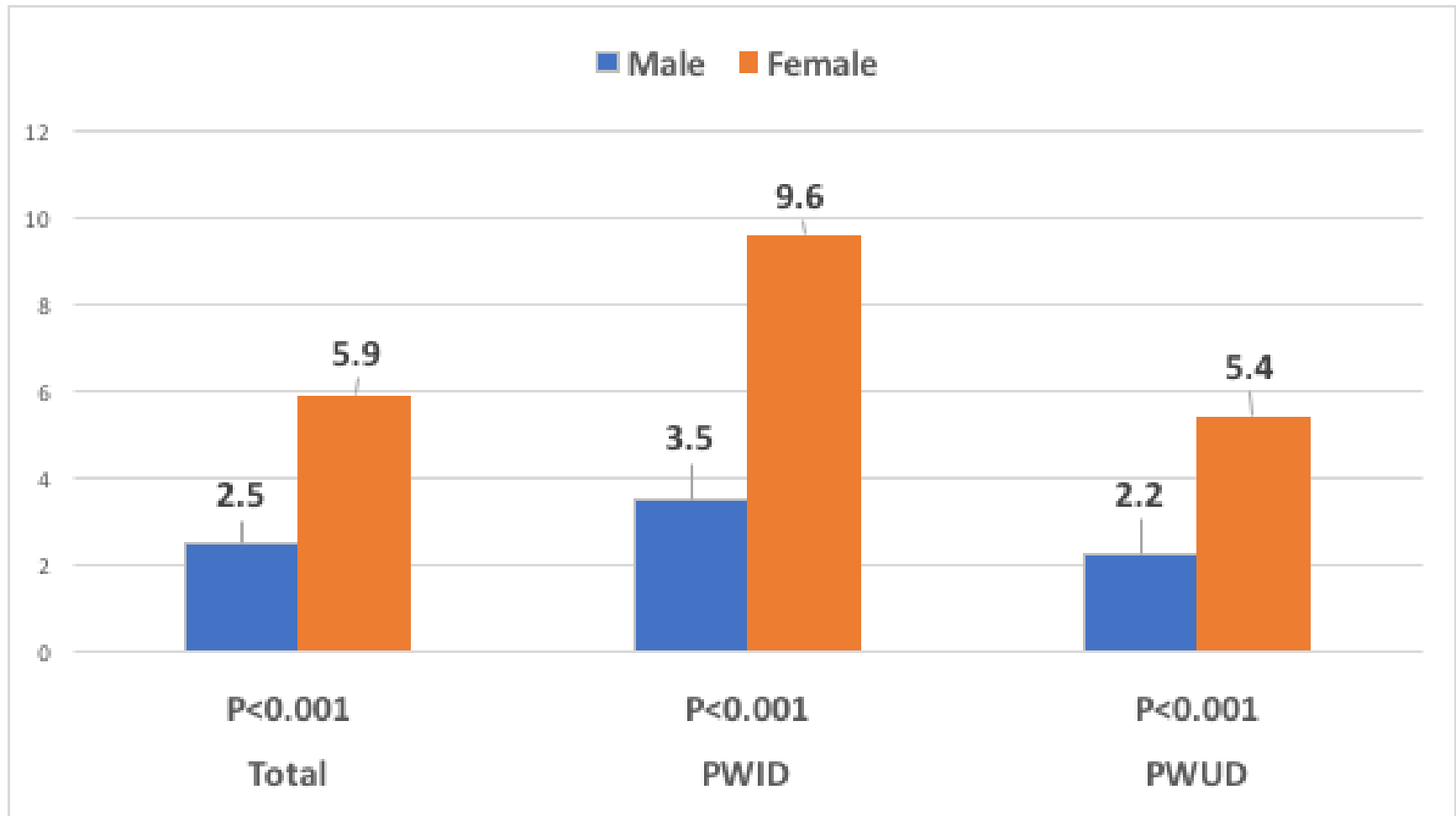


**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Syphilis by gender (PWID/PWUD)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Comparisons of some selected indicators and HIV prevalence between IBBS 2012 & IBBS 2017



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Injecting drug use characteristics 2012 vs. 2017

Characteristics	2012	2017
	PWID (119)	PWID (310)
	<i>n</i> (%)	<i>n</i> (%)
<b>Total sample</b>	1625	1677
% of PWID of the total sample	7.3	18.5
Ever shared syringes and needles in past months	44 (36.7)	20 (11.0)
<b>Sources of syringes and needle in past month</b>		
NGO drop-in center	12 (11.9)	42 (27.1)
Pharmacy/drug seller	44 (43.0)	37 (20.4)
Needle/syringe exchange program	71 (70.3)	30 (16.6)
Friends	13 (12.9)	12 (6.6)
Drug seller	—	3 (1.7)
Public/private health facility	—	2 (1.1)
Sexual partner	—	2 (1.1)

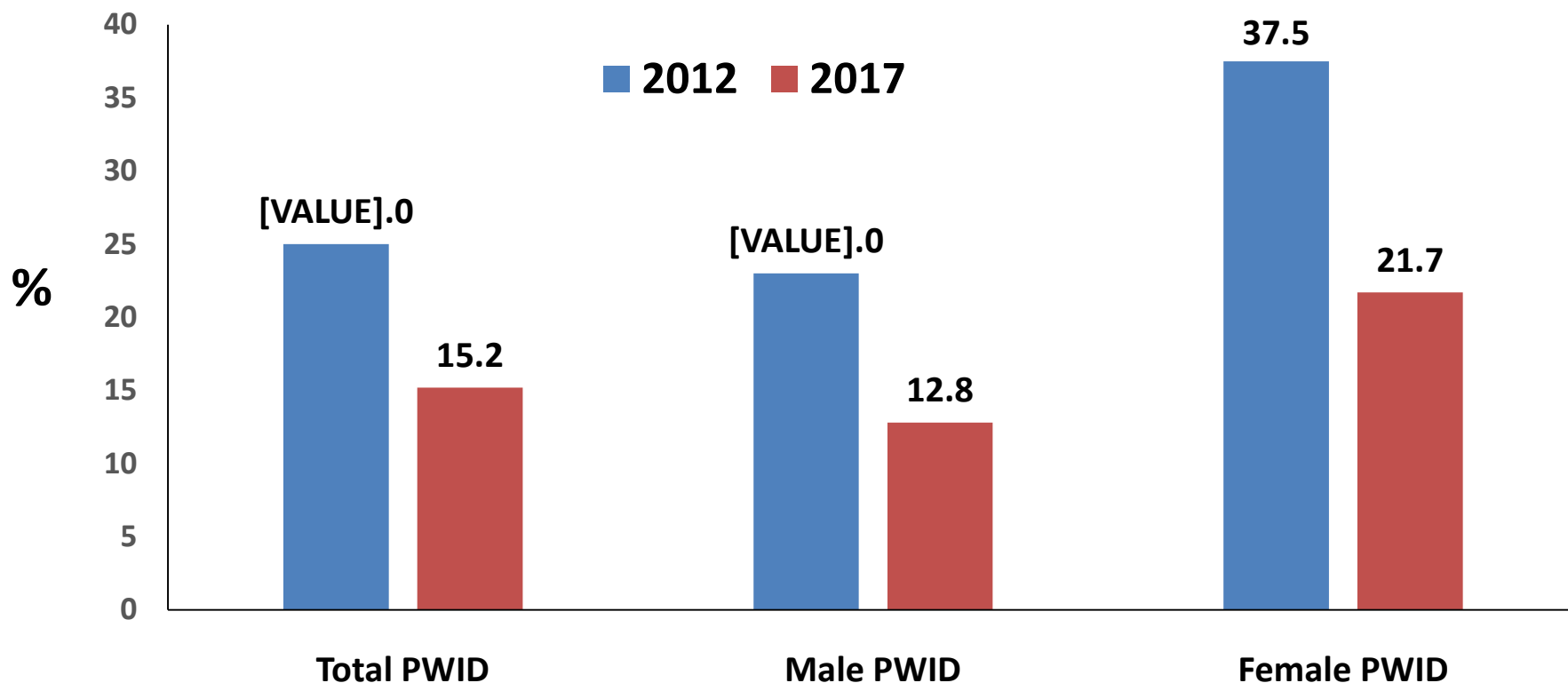


**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HIV prevalence among PWID between 2012 & 2017



	Men PWID	Women PWID	Total PWID
	% (95% CI)	% (95% CI)	% (95% CI)
2012 (N = 116)	23.0 (15.7- 32.4)	37.5 (16.1- 65.0)	25.0 (17.8- 32.4)
2017 (N = 310)	12.8 (9.0- 17.8)	21.7 (14.0- 32.1)	15.2 (11.6-19.6)



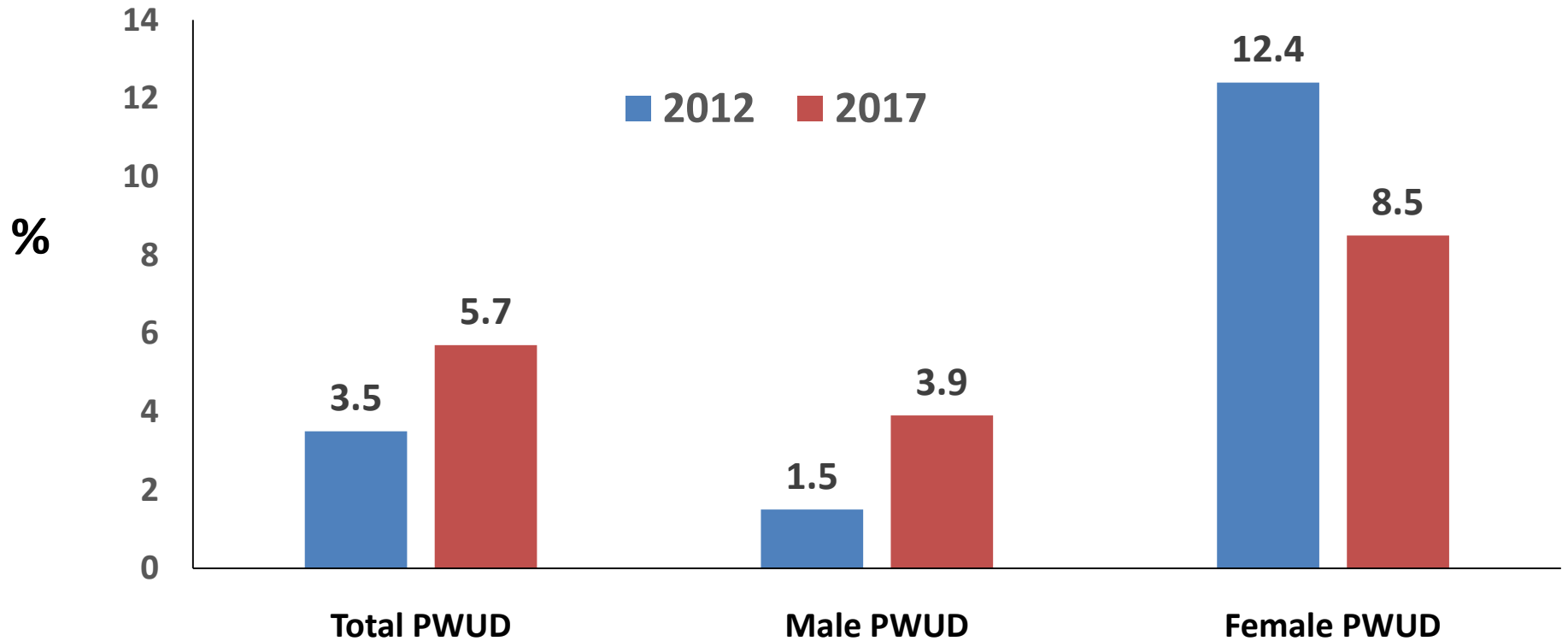
**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក



# HIV prevalence among PWUD between 2012 & 2017



	Men PWUD % (95% CI)	Women PWUD % (95% CI)	Total PWUD % (95% CI)
2012 (N = 1453)	1.5 (0.9- 2.4)	12.4 (8.9- 16.9)	3.5 (2.7- 4.9)
2017 (N = 1495)	3.9 (2.8- 5.4)	8.5 (6.4- 11.2)	5.7 (4.6- 7.1)



**FLAGSHIP**  
OKHANA fhi360 PSI



# Conclusions (1)

- Women represented about 37% of the samples
- PNP sample represented of 34% of the samples
- PWID represented 18.5% (310/1677) of the total samples
- EW group represented about 18% of total DU's job
- PWUD/PWID reported initial non-injecting drug use: 93% for PWUD and 50% for PWID
- Their friends were commonly those who initially persuaded them to use drugs (about 80%)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

## Conclusions (2)

- 96% of PWUD reported using only ATS, while 44% of PWID reported using both ATS and heroin in the past 12 months
- PWID reported low proportion of sharing N&S in the past month
- Low proportion of using DiC in the past 12 months among both PWID (30%) and PWUD (15%)
- 36% reported paid sex in the past 3 months, in which the consistent condom use was low (40%)
- 42% of the PWID ever reported being in the MMT program



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

## Conclusions (3)

- Access to HIV education program: 64%
- Main sources of the HIV education were commonly through outreach (66%), VCCT (26%) and mass media
- HIV testing in the past 6 months: 43%
- Self report of STI symptoms: 33%
- HIV test, MMT, condom use are not satisfactory high given the program investment to HIV and harm reduction



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HIV Prevalence (1)

- HIV prevalence among PWID declined from 25% in 2012 to 15.2% in 2017
- HIV prevalence among PWUD increased from 4.0% in 2012 to 5.7% in 2017, indicating the national concerns of HIV epidemic among the group given its large proportion
- High HIV prevalence was concentrated in main cities (SHV, PNP, BTB, BMC, SRP), in age group 30-39 in both PWUD and PWID groups and among skilled/unskilled workers, seller assistant, and EW



**FLAGSHIP**  
OKHANA fhi 360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# HIV Prevalence (2)

- Across the two rounds of IBBS, HIV prevalence was consistently higher in women than men in both groups
- Geographical targeted intervention program is needed, especially for women and specific occupations
- This study was limited to sampling strategy (RDS) that was not feasible in all locations
- Some indicators such as condom use could not be compared to IBBS among PWUD 2012 due to the different timeframe measurement



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Collaborators & Supporters

- NCHADS
- NACD
- PHDs, ODs
- Local authorities
- PEPFAR/USAID, US-CDC, WHO, UNAIDS
- HIV/AIDS Flagship (KHANA, FHI 360, PSI/PSK)
- MSF Cambodia
- Implementing partners



**FLAGSHIP**  
KHANA fhi360 psi



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Thank you!

## Q & A



**FLAGSHIP**  
OKHANA fhi 360 | PSI





# National Population Size Estimation of PWUD and PWID, 2017



**FLAGSHIP**  
OKHANA fhi 360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Methods for Size Estimation

- Capture-Recapture method
- Plus number from Rehab center from NACD's report 2017
- Extrapolation from the estimate of 12 provinces to the national estimate



**FLAGSHIP**  
OKHANA fhi 360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Results from Capture-Recapture in 12 sites

No.	Province	C1	C2	R	(% tagged	Estimated PWUD	95% CI	
							Lower	Upper
1	Banteay Meanchey	367	354	65	18.4	1,999	1,600	2,397
2	Battambang	246	199	47	23.6	1,042	808	1,276
3	Kampong Cham	41	77	8	10.4	395	162	627
4	Kampong Chhnang	74	70	11	15.7	471	235	707
5	Kampong Speu	118	110	25	22.7	519	519	519
6	Kandal	154	116	42	36.2	425	338	513
7	Phnom Penh	670	435	138	31.7	2,112	1,853	2,371
8	Preah Sihanukville	61	62	12	19.4	315	172	459
9	Prey Veng	79	66	13	19.7	401	222	580
10	Siem Reap	174	172	18	10.5	1,663	974	2,351
11	Svay Rieng	35	35	10	28.6	123	68	177
12	Tboung Khmoum	94	55	12	21.5	448	233	663
<b>Total</b>		<b>2113</b>	<b>1751</b>	<b>401</b>	<b>22.9</b>	<b>9,911</b>	<b>7,185</b>	<b>12,638</b>



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Estimate the numbers of PWUD in the 12 sites (1)

- Total number of PWUD estimated by CR method was only for the 12 provinces included in the IBBS 2017
- We then need to combine with numbers reported in Rehab Centers (NACD source)



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Final estimate of PWUD/PWID in 12 sites (2)

		Estimated	Lower	Upper
C&RC method to the total in 12 sites	A	9,911	7,185	12,638
Reported numbers of PWUD/PWID in Rehab Centers in 2017	B	4,184	4,184	4,184
<b>Final total in 12 provinces</b>	<b>(A+B)</b>	<b>14,095</b>	<b>11,369</b>	<b>16,822</b>



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

## Proportion of PWUD from 12 sites out of the total PWUD in Cambodia (1)

**Estimated numbers of  
PWUD in 12 provinces =  
14,095 (63%)**

**Total PWUD in Cambodia?  
(25 cities/provinces, 37%)**



**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Total PWUD/PWID size estimate in Cambodia in 2017

Final total in 25 provinces of PWUD/PWID		Estimate	Lower	Upper
Total in 12 provinces (outside the rehab centers and prisons) from C&CR	A	9,911	6,952	11,976
Reported numbers of PWUD/PWID in Rehab Centers in 2017	B	4,184	4,184	4,184
Final total in 12 provinces	(A+B)	14,095	11,369	16,822
The rest 13 provinces contributed 37% of the whole country	C	8,278	6,676	9,880
<b>Grant total in 25 provinces</b>	<b>(A+B)+C</b>	<b>22,374</b>	<b>18,045</b>	<b>26,702</b>

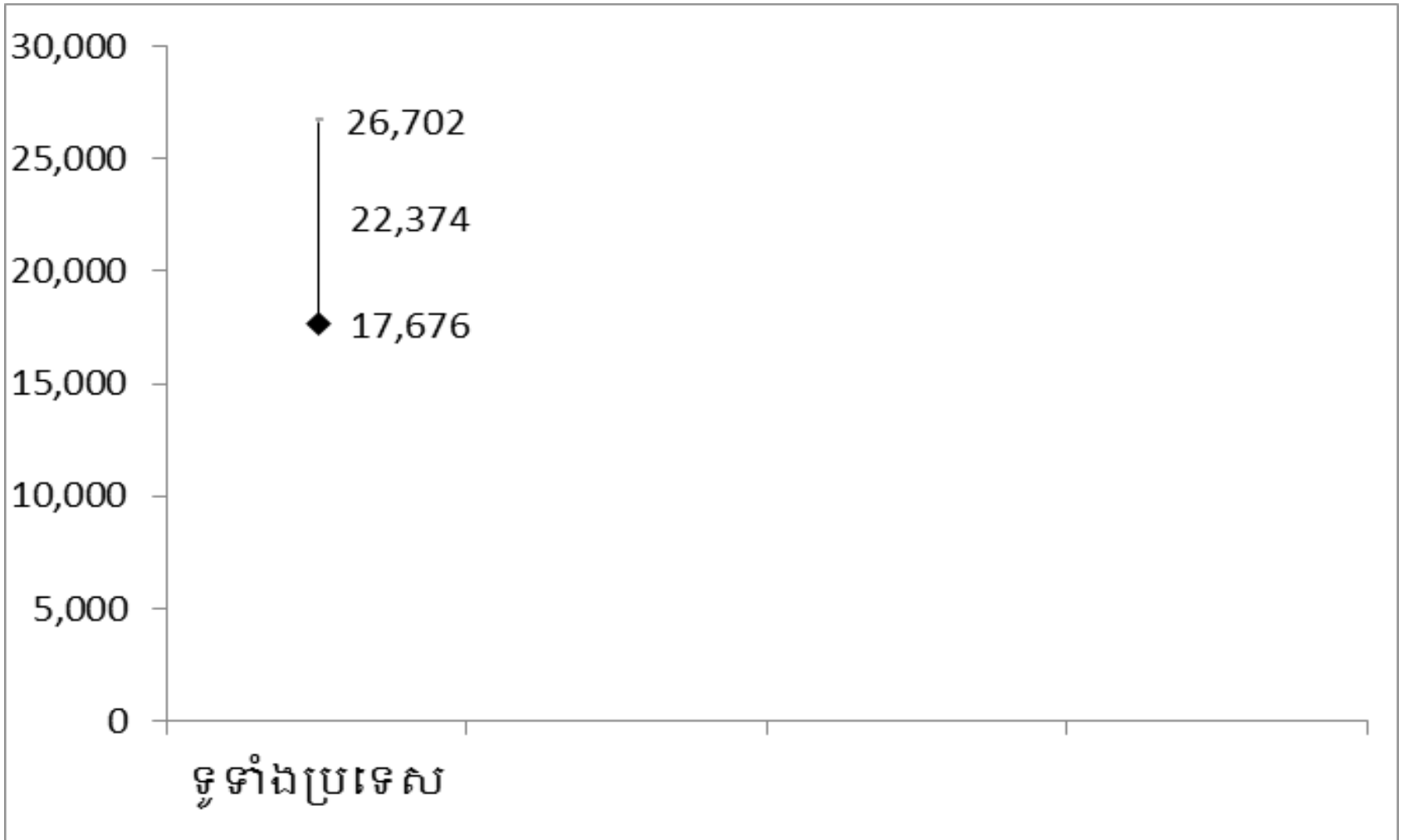


**FLAGSHIP**  
OKHANA fhi360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Summary of size estimation of PWUD



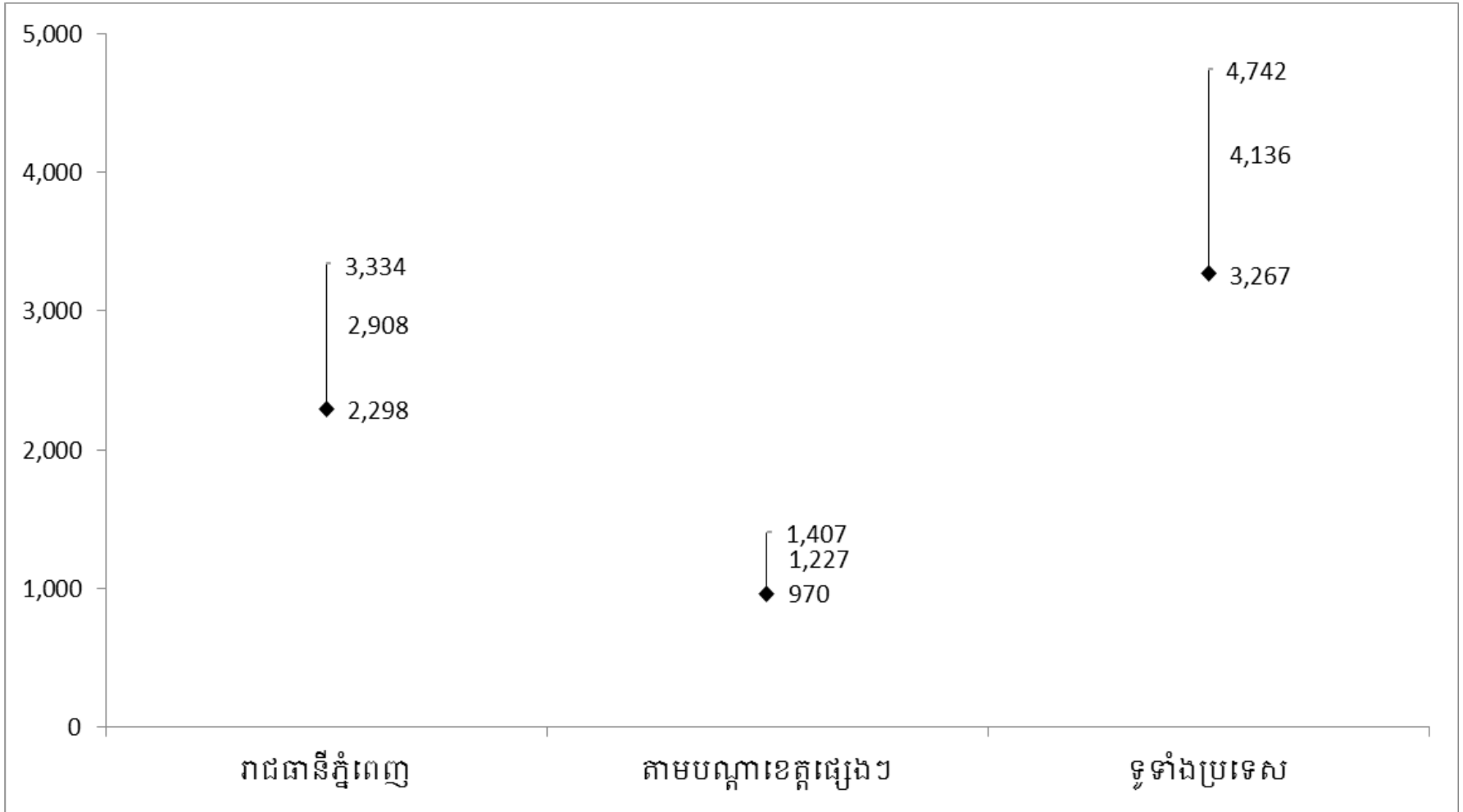
**FLAGSHIP**  
OKHANA fhi 360 PSI



**USAID**  
ជំនួយពីលក្ខណៈសាស្ត្រ



# Summary of PWID

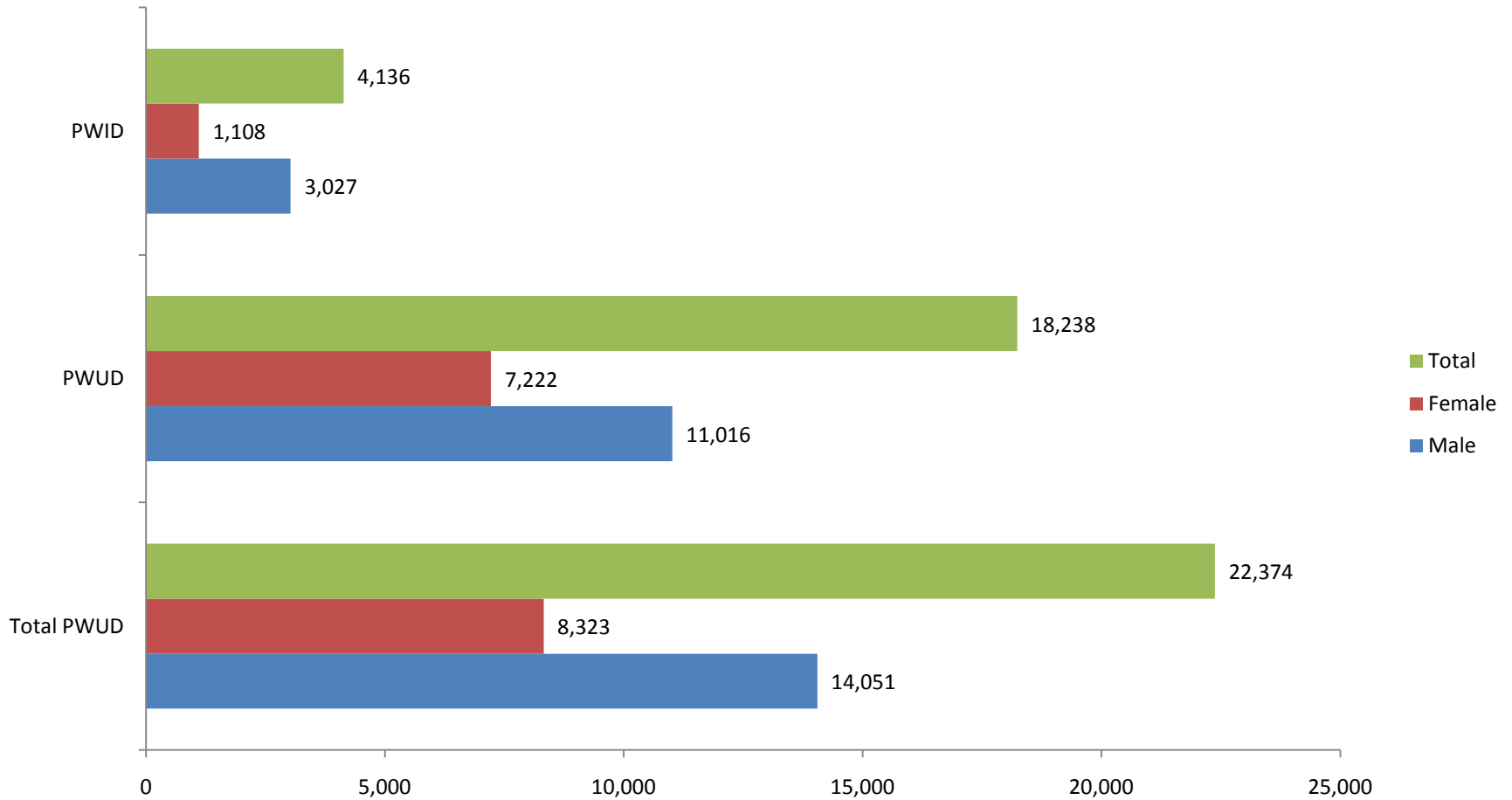


**FLAGSHIP**  
OKHANA fhi 360 PSI



**USAID**  
ជំនួយពីលក់រដ្ឋអាមេរិក

# By Gender

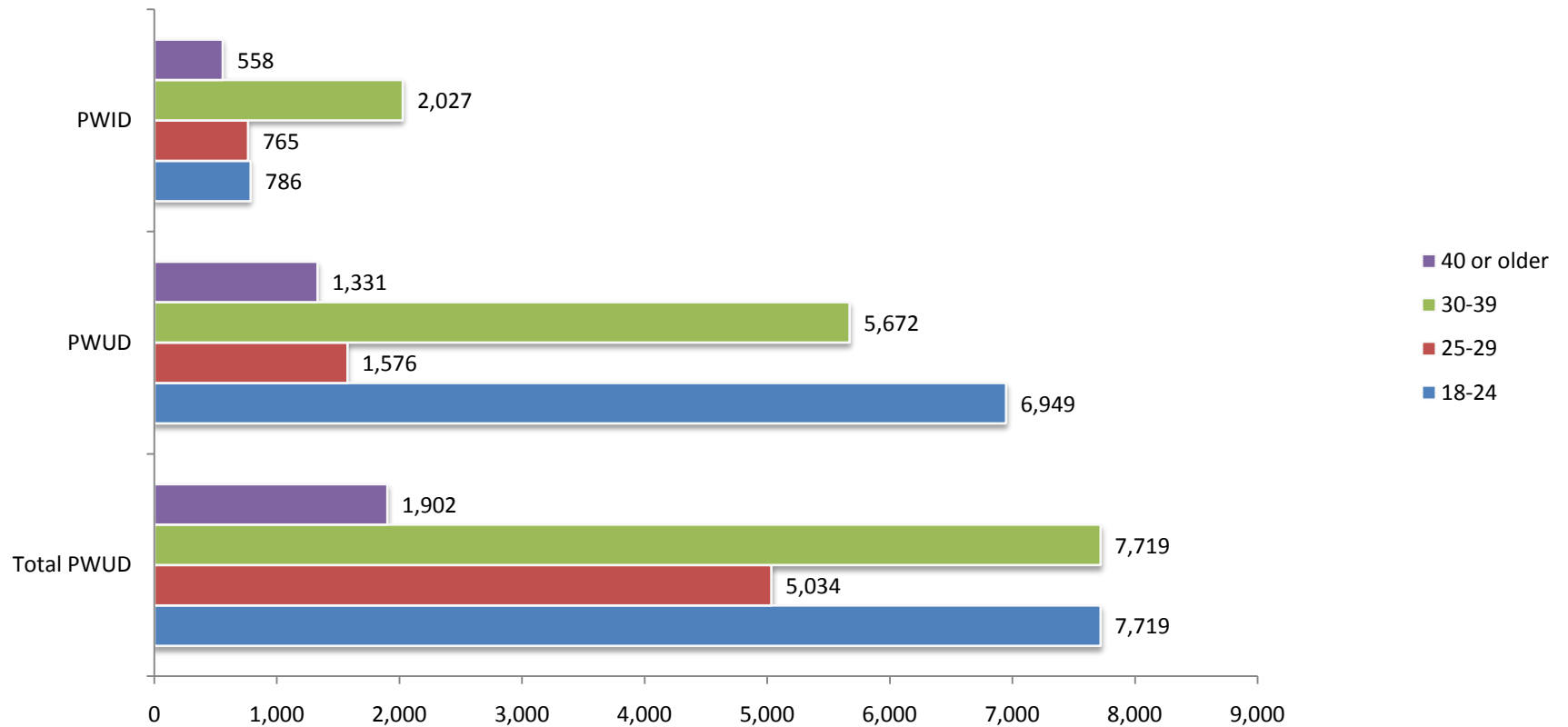


**FLAGSHIP**  
OKHANA fhi 360 PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# By Age Group



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Limitations

**All methods are not perfect.** They have their own limitations:

- Capture-Recapture method was conducted mostly in the urban areas of selected provinces. Consequently, it might be underestimated the true size of the PWUD population in each province
- No clear definition regarding to the PWUD/PWID reported by the Rehab Center (new admission or repeated admission). This may result in overestimate the population size
- Not include the hidden PWUD into the exercise may influence the estimate



**FLAGSHIP**  
OKHANA fhi360 | PSI



**USAID**  
ជំនួយពីសហរដ្ឋអាមេរិក

# Thank you!

## Q & A



**FLAGSHIP**  
OKHANA fhi360 | PSI

