National HIV Behavioral Surveillance Report 2003–2013

Center for Public Health Research Population Health Division San Francisco Department of Public Health





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Executive Summary

National HIV Behavioral Surveillance (NHBS) tracks risk behaviors, HIV prevalence and HIV incidence among populations at high risk for HIV infection in San Francisco. NHBS uses state of the art sampling methods to reach members of these populations for standardized behavioral surveys and HIV testing. NHBS samples men who have sex with men (MSM), people who inject drugs (PWID) and heterosexuals living in high risk areas of the city (HRH) on a three year cycle. NHBS started in 2003.

This report contains data from the first nine years of NHBS in San Francisco and comprises three data collection cycles for each high-risk population.

The NHBS survey instrument collects demographic, social experience, sexual behavior, alcohol and substance use, drug treatment, HIV testing, prevention activity and health data. HIV testing is done using validated HIV testing kits and standardized laboratory methods for confirmation of HIV-positive cases. Results are offered to all participants.



All HIV-positive participants are given referrals to appropriate services. NHBS uses time location sampling (TLS), a venue based approach, to survey MSM and respondent driven sampling (RDS), a social network based approach, to survey PWID and HRH. NHBS is considered research and thus has ethical approval from an institutional review board.

In this first NHBS report we focus on the characteristics of each survey wave, key indicators of HIV risk, sexually transmitted infections, prevention service use and HIV infection.

NHBS is ongoing and as of the writing of this report we have completed an additional MSM cycle (2014) and PWID cycle (2015). We are excited to continue NHBS with the award in 2016 of another 5 year cooperative agreement from the CDC. This will allow us to continue to monitor important HIV risk behaviors well into the next decade.

NHBS REPORT 2015

2. Men Who Have Sex With Men

2.1 Sampling and recruitment

All three waves of NHBS among MSM employed time-location sampling (TLS) to sample MSM frequenting venues. A formative assessment phase identified venues where MSM congregate regardless if the venue was known as gay identified. Venues included bars, dance clubs, parks, cafes, street locations, and social organizations (e.g. gay softball league). At each sampled venue men were systematically approached, screened and if eligible asked to participate in a behavioral survey and HIV testing. Surveys were conducted by a trained interviewer using a hand held computer. Men were eligible if they were 18 years old or older, reported being gay or bisexual, or had sex with another man in the past 12 months and were attending the venue where sampling was taking place.

2.2 **Demographics**

Participants in NHBS MSM represent a wide range of ages with the youngest being 18 and the oldest being over 60. The majority of MSM sampled are between 20 and 45 years old. 100 percent of participants identified as male. In terms of race / ethnicity, just over half of participants reported being white, while Latinos comprised the second largest group (about 19.3%–24.5%) with African American / Blacks comprising 5.7%–7.3% and Asian / Pacific Islanders comprising 6.7%–11.9% of the samples. (Table: 2.1)

The majority of participants were born in the US. Most men identified as homosexual with only about 8.5%–10.9% identifying as bisexual and 1% or less identifying as heterosexual. Most MSM participants had at least some college education or greater (>= 85%).The proportion of men reporting having no health care coverage was stable at just more than 20%.

Most participants were employed with only about 14.6% reporting being unemployed in 2011 and 3.2%–5.3% reporting being disabled in 2008 and 2011, respectively. Current homelessness was reported by very few participants. (Table: 2.2)

	2004	2008	2011
	(N=386)	(N=522)	(N=507)
Age in years			
18 – 19	8 (2.1)	8 (1.5)	2 (0.4)
20 - 24	57 (14.8)	60 (11.5)	68 (13.4)
25 – 29	59 (15.3)	94 (18.0)	75 (14.8)
30 - 34	61 (15.8)	77 (14.8)	77 (15.2)
35 – 39	59 (15.3)	74 (14.2)	57 (11.2)
40 - 44	66 (17.1)	91 (17.4)	64 (12.6)
45 – 49	29 (7.5)	48 (9.2)	56 (11.0)
50 – 59	31 (8.0)	56 (10.7)	73 (14.4)
60+	16 (4.1)	14 (2.7)	35 (6.9)
Male	386 (100.0)	522 (100.0)	507 (100.0)
Race/Ethnicity			
American Indian	2 (0.5)	2 (0.4)	9 (1.8)
Asian	46 (11.9)	35 (6.7)	37 (7.3)
Black	22 (5.7)	38 (7.3)	31 (6.1)
Latino	78 (20.2)	128 (24.5)	98 (19.3)
Mixed	18 (4.7)	20 (3.8)	26 (5.1)
Native Hawaiian	5 (1.3)	13 (2.5)	6 (1.2)
Other	4 (1.0)	9 (1.7)	0 (0.0)
White	210 (54.4)	276 (52.9)	298 (58.8)
Born in the USA	300 (77.7)	432 (82.8)	418 (82.4)
Sexual identity			
Bisexual	33 (8.5)	57 (10.9)	45 (8.9)
Heterosexual	2 (0.5)	5 (1.0)	2 (0.4)
Homosexual	343 (88.9)	459 (87.9)	455 (89.7)
Currently insured			
Private	252 (65.3)	298 (57.1)	271 (53.5)
Public	24 (6.2)	37 (7.1)	114 (22.5)
Other	26 (6.7)	58 (11.1)	0 (0.0)
None	84 (21.8)	123 (23.6)	119 (23.5)

Table 2.1: Demographic characteristics (1), MSM, NHBS, San Francisco 2004-2011.

	2004	2008	2011
	(N=386)	(N=522)	(N=507)
Education			
No high-school diploma	6 (1.6)	8 (1.5)	6 (1.2)
High-school diploma or equivalent	47 (12.2)	70 (13.4)	67 (13.2)
Some college, or technical degree	108 (28.0)	175 (33.5)	144 (28.4)
College, or post-graduate degree	225 (58.3)	269 (51.5)	288 (56.8)
Employment			
Employed	NA	395 (75.7)	338 (66.7)
Unemployed	NA	70 (13.4)	74 (14.6)
Disabled	NA	17 (3.2)	27 (5.3)
Other	NA	39 (7.5)	66 (13.0)
Income			
\$0 - \$19,999	NA	126 (24.1)	128 (25.2)
\$20,000 - \$39,999	NA	127 (24.3)	103 (20.3)
\$40,000 - \$74,999	NA	111 (21.3)	135 (26.6)
\$75,000+	NA	153 (29.3)	132 (26.0)
Currently homeless	2 (0.5)	22 (4.2)	17 (3.4)
Ever homeless	NA	44 (8.4)	32 (6.3)

Table 2.2: Demographic characteristics (2), MSM, NHBS, San Francisco 2004–
2011.

Figure 2.1: Residential distribution of MSM, NHBS, San Francisco, 2011.



As you can see from the map above, most MSM participants reside in the Castro, Mission, Haight, SOMA and Tenderloin neighborhoods.

2.3 HIV-related risk indicators

Self-reported HIV status increased slightly from 18.9% to 21.7% in 2011. In terms of STI, men reported on whether they were told by a clinician if they had Chlamydia, Gonorrhea or Syphilis in the past 12 months. Gonorrhea and syphilis were generally stable and less than 10% across the survey years while Chlamydia increased from 0.5% in 2004 to 6.9% in 2011. (Figure: 2.2)

Methamphetamine use and binge drinking have been implicated in HIV acquisition among MSM. We tracked indicators of these two high risk behaviors and an indicator of unprotected intercourse over a seven year period. Binge drinking and unprotected intercourse were stable at about 67% and 47% over the period while methamphetamine use declined from 22.8% to 12.0% in 2011. (Figure: 2.3)



Figure 2.2: Self-reported STIs and HIV infection, MSM, NHBS, San Francisco, 2004–2011.



Figure 2.3: Unprotected intercourse, methamphetamine use, and binge drinking in the last 12 months, MSM, NHBS, San Francisco, 2004–2011.



- Unprotected intercourse - Methamphetamine - Binge drinking

HIV testing in the last six months among HIV-negative MSM was reported by 42.2% in 2004 growing to 56.7% in 2011. An increasing proportion of HIV-negative MSM reported accessing HIV counseling in the last 12 months. A high proportion of MSM reported both receiving free condoms (over 70%) and, among those reporting receiving free condoms, using those condoms (over 60%). The most common source of free condoms were businesses, special events and schools. Receiving free condoms at HIV organizations increased to almost 39.7% from 9.4% over the survey period. (Table: 2.3)

	2004	2008	2011
HIV-negative participants:	313 (81.1)	427 (81.8)	397 (78.3)
Tested in the last 6 months	132 (42.2)	230 (53.9)	225 (56.7)
Talked to HIV counselor	12 (3.8)	55 (12.9)	63 (15.9)
Free condoms:	286 (74.1)	393 (75.3)	383 (75.5)
Used condoms	200 (69.9)	273 (69.5)	235 (61.4)
Source of condoms			
HIV/AIDS-focused organization	27 (9.4)	181 (46.1)	152 (39.7)
LGBTQ community health center	117 (40.9)	153 (38.9)	149 (38.9)
Needle exchange program	1 (0.3)	4 (1.0)	0 (0.0)
Health center or speciality clinic	1 (0.3)	7 (1.8)	0 (0.0)
Drug treatment center	20 (7.0)	106 (27.0)	106 (27.7)
Other sources	145 (50.7)	313 (79.6)	259 (67.6)
(businesses, special events, schools)			

Table 2.3: Prevention service use in the last 12 months, MSM, NHBS, San Francisco, 2004–2011.

Most MSM in San Francisco had between 1–2 partners over the past 6 months. With between 14.0% and 20.9% reported no partners. Approximately 19% of men reported having 6 or more partners each of the three survey years. Over half of all MSM reported having no episodes on unprotected anal sex (UAI) in the last 6 months in all study years. While only about 10% reported having had 1–2 UAI episodes. Approximately a quarter of men reported having 6 or more UAI episodes. (Table: 2.4)

Over two thirds of all MSM report at least some drugs use, a proportion that has remained stable from 2004 to 2011. The most commonly reported substance was marijuana (about 50%) followed by powdered cocaine (25%). Notably, methamphetamine use appears to have decreased from among 22.8% of men in 2004 to 12.0% in 2011. (Table 2.5)

	2004	2008	2011
	(N=386)	(N=522)	(N=507)
Number of partners			
0	54 (14.0)	77 (14.8)	106 (20.9)
1–2	182 (47.2)	218 (41.8)	196 (38.6)
3–5	72 (18.6)	119 (22.8)	99 (19.5)
6–17	54 (14.0)	66 (12.6)	62 (12.2)
18–35	19 (4.9)	24 (4.6)	22 (4.3)
36+	5 (1.3)	8 (1.5)	10 (2.0)
Number of UAI episodes			
0	209 (54.1)	274 (52.5)	263 (51.9)
1–2	44 (11.4)	52 (10.0)	57 (11.2)
3–5	47 (12.2)	56 (10.7)	44 (8.7)
6–17	36 (9.3)	58 (11.1)	67 (13.2)
18–35	24 (6.2)	26 (5.0)	31 (6.1)
36+	26 (6.7)	56 (10.7)	45 (8.9)

Table 2.4: Number of partners and episodes of unprotected anal intercourse in
the last 6 months, MSM, NHBS, San Francisco, 2004–2011.

Table 2.5: Non-injection drug use in the last 12 months, MSM, NHBS, San Francisco, 2004–2011.

	2004	2008	2011
	(N=386)	(N=522)	(N=507)
Marijuana	184 (47.7)	264 (50.6)	266 (52.5)
Cocaine	82 (21.2)	125 (23.9)	126 (24.8)
Ecstasy	87 (22.5)	92 (17.6)	109 (21.5)
Poppers	72 (18.7)	100 (19.2)	125 (24.6)
Methamphetamine	88 (22.8)	69 (13.2)	61 (12.0)
Ketamine or GHB	47 (12.2)	40 (7.7)	61 (12.0)
Hallucinogens	19 (4.9)	45 (8.6)	72 (14.2)
Painkillers	23 (6.0)	45 (8.6)	47 (9.3)
Downers	31 (8.0)	34 (6.5)	47 (9.3)
Crack	17 (4.4)	21 (4.0)	20 (3.9)

MEN WHO HAVE SEX WITH MEN

HIV prevalence as determined by testing in NHBS was stable at about 22% across the three survey waves. The proportion of HIV-positive MSM who were aware of their HIV infection rose from 78.3% in 2004 to 92.5% in 2011. ARV use among self-reported positive MSM also increased from 56.5% to 81.1%. (Figure 2.4) Incidence, as determined by laboratory based testing suggests a decrease from 2.6% to 1.0% in the study period (data not shown).

Figure 2.4: HIV prevalence, recognized HIV infection, and ART coverage in the last 12 months, MSM, NHBS, San Francisco, 2004–2011.



2.4 Summary

Across the board with a few notable exceptions, the characteristics of MSM in San Francisco have remained stable in the period of 2004–2011. Just over half of MSM in San Francisco are White, while Asian, Black and Latino MSM comprise less than 10%, ~6% and ~20% of MSM, respectively. Most MSM in San Francisco identify as homosexual (90%). Most are employed and have health insurance. In terms of HIV-related risk behaviors, number of partnerships and number of unprotected sex acts are stable while reported STI infections have increased. Use of methamphetamine has decreased.

3. People Who Inject Drugs

3.1 Sampling and recruitment

NHBS samples PWID every three years using RDS. RDS harnesses the power of social networks to recruit participants. Initial participants complete the survey and HIV testing then are invited to recruit a set number of their peers. Subsequent recruits also complete study activities and recruit. This process is repeated until enough participants have been recruited. Interviewers administer a behavioral survey then participants are tested for HIV. People were eligible if they were 18 years of age or older, had injected illicit substances in the past 12 months and presented themselves to study staff with a valid study coupon.

3.2 **Demographics**

The majority of NHBS's PWID participants were over 39 years old. This has been consistent across the 3 waves of data collection presented in this report. In terms of sex, over two thirds were male and one third female. A very small number of participants identified as transgender. (Table: 3.1)

Most people were Black or White (30–40%) while Latinos made up about 10%. While the majority of participants identified as heterosexual, a large proportion identified as bisexual (22%) and homosexual (8%).

In terms of health coverage we note a promising trend. The proportion of PWID reporting no health coverage declined from 62.1% in 2005 to 18.2% in 2012. (Table: 3.1)

	2005	2009	2012
	(N=565)	(N=535)	(N=570)
Age in years			
18 – 19	0 (0.0)	0 (0.0)	1 (0.2)
20 - 24	14(2.5)	10 (1.9)	7 (1.2)
25 – 29	15(2.7)	19 (3.6)	27(4.7)
30 - 34	28 (5.0)	30 (5.6)	40 (7.0)
35 – 39	80 (14.2)	52 (9.7)	32 (5.6)
40 – 44	109 (19.3)	72 (13.5)	70 (12.3)
45 – 49	101 (17.9)	103 (19.2)	104 (18.2)
50 – 59	187 (33.1)	199 (37.2)	224 (39.3)
60+	31 (5.5)	50 (9.3)	65 (11.4)
Sex & Gender identity			
Male	411 (72.7)	358 (66.9)	396 (69.5)
Female	142 (25.1)	171 (32.0)	166 (29.1)
Transgender	12 (2.1)	5 (0.9)	7 (1.2)
Race/Ethnicity			
American Indian	14 (2.5)	16 (3.0)	16 (2.8)
Asian	3 (0.5)	0 (0.0)	2 (0.3)
Black	191 (33.8)	170 (31.8)	229 (40.2)
Latino/a	58 (10.3)	74 (13.8)	61 (10.7)
Mixed	55 (9.7)	44 (8.2)	45 (7.9)
Native Hawaiian	2 (0.4)	4 (0.7)	5 (0.9)
White	231 (40.9)	227 (42.4)	207 (36.3)
Born in the USA	537 (95.0)	517 (96.6)	548 (96.1)
Sexual identity			
Bisexual	124 (21.9)	121 (22.6)	130 (22.8)
Heterosexual	372 (65.8)	362 (67.7)	393 (68.9)
Homosexual	48 (8.5)	46 (8.6)	44 (7.7)
Currently insured			
Private	5 (0.9)	12 (2.2)	16 (2.8)
Public	91 (16.1)	103 (19.2)	445 (78.1)
Other	113 (20.0)	250 (46.7)	3 (0.5)
None	351 (62.1)	167 (31.2)	104 (18.2)
Doctor visit last 12 months	476 (84.2)	449 (83.9)	499 (87.5)

Table 3.1: Demographic characteristics (1), PWID, NHBS, San Francisco 2005–2012.

A majority of PWID had a high-school diploma or less (71.8%, 65.4%, 63.3%) and a majority were unemployed or disabled (86.1%, 79.8%). Most PWID were very low income with 80–90% reporting an annual income of \$19,999 or less.

Notably, while high school level education and unemployment declined, higher college education as well as employment status increased. Some college and post-graduate education increased from 28.1% in 2005 to 36.3% in 2012 and employment status increased from 9.2 in 2009 to 11.6% in 2012. Over half of PWID participants reporting being currently homeless. (Table: 3.2)

Table 3.2: Demographic characteristics (2), PWID, NHBS, San Francisco 2005–2012.

	2005	2000	2012
	2005	2009	2012
	(N=565)	(N=535)	(N=570)
Education			
No high-school diploma	164 (29.0)	131 (24.5)	141 (24.7)
High-school diploma or equivalent	242 (42.8)	219 (40.9)	222 (38.9)
Some college, or technical degree	130 (23.0)	152 (28.4)	170 (29.8)
College, or post-graduate degree	29 (5.1)	33 (6.2)	37 (6.5)
Employment			
Employed	NA	49 (9.2)	66 (11.6)
Unemployed	NA	264 (49.3)	214 (37.5)
Disabled	NA	197 (36.8)	241 (42.3)
Other	NA	25 (4.7)	49 (8.6)
Income			
\$0 - \$19,999	549 (97.2)	470 (87.8)	462 (81.0)
\$20,000 - \$39,999	9 (1.6)	48 (9.0)	71 (12.4)
\$40,000 - \$74,999	1 (0.2)	14 (2.6)	26 (4.6)
\$75,000+	0 (0.0)	3 (0.6)	9 (1.6)
Currently homeless	319 (56.5)	299 (55.9)	345 (60.5)
Ever homeless	411 (72.7)	373 (69.7)	414 (72.6)

The map below depicts the residential neighborhood of PWID in NHBS (2012). Most PWID reported living in the Tenderloin and SOMA and some in the Mission and Bayview-Hunters Point.





3.3 HIV-related risk indicators

Self-reported HIV-positive status declined across the three waves from 12.0% in 2005 to 6.8%, while lab tested HIV are higher and more stable at 13.6% in 2009 and 11.6% in 2012. Self-reported STIs were low overall, however there appears to be a slight increase in Chlamydia (1.4% to 3.0%) and Syphilis (0.9% to 1.9%). (Figure 3.2)

Figure 3.2: Self-reported STIs and HIV infection, PWID, NHBS, San Francisco, 2005–2012.



Needle sharing went down from 23.4% in 2005 to 13% in 2012. Unprotected intercourse increased from 55.2% to 65.3% in 2012. (Figure 3.3)





Table 3.3 shows prevention services access as reported by PWID participants. HIV testing in the past six months among HIV-negative PWID declined from 66.9% in 2005 to 42.7% in 2012. Among HIV-negative participants "talking to an HIV counselor" rose from 15.2% in 2005 to 29.2% in 2012. A high proportion of participants reported receiving free condoms, (60.0%–81.4%) and among those receiving the condoms, 58.0%–69.0% were also using the condoms.

Table 3.3: Prevention service	ise in the last	12 months, PW	/ID, NHBS, San Fr	an-
cisco, 2005–2012.				

	2005	2009	2012
HIV-negative participants:	492 (87.86)	486 (91.18)	531 (93.16)
Tested in the last 6 months	329 (66.9)	211 (43.4)	227 (42.7)
Talked to HIV counselor	75 (15.2)	83 (17.1)	155 (29.2)
Free condoms:	339 (60.0)	367 (68.6)	464 (81.4)
Used condoms	234 (69.0)	213 (58.0)	306 (65.9)
Source of condoms			
HIV/AIDS-focused organization	91 (26.8)	145 (39.5)	104 (22.4)
LGBTQ community health center	12 (3.5)	34 (9.3)	0 (0.0)
Needle exchange program	135 (39.8)	234 (63.8)	85 (18.3)
Health center or specialty clinic	21 (6.2)	43 (11.7)	22 (4.7)
Drug treatment center	92 (27.1)	142 (38.7)	189 (40.7)
Other sources	85 (25.1)	97 (26.4)	114 (24.6)
(Businesses, special events, schools)			

HIV prevalence was about 12% in the last two years of data collection. ARV coverage declined from 56.5% to 37.9% as well as recognized HIV infection, which declined from 64.4% to 56.1% among HIV-positive PWID. Note: HIV testing was not done in the first round of data collection. (Figure 3.4)

The most common drug used among PWID was heroin at 61.4% in 2012 followed by methamphetamine at 27.5%. There were very little changes in drugs of choice used across the three waves of data collection. Please note that in 2005 the question was framed as check all and check only one in later years. (Figure 3.5)

A large proportion of PWID also reported using marijuana (~60%) and downers (>25%) in each of the survey waves. Use of other drugs was relatively low and stable with the exception of a slight increase (8.0% to 12.9%) reported hallucinogens. (Table 3.4)



Figure 3.4: HIV prevalence, recognized HIV infection, and ART coverage in the last 12 months, PWID, NHBS, San Francisco, 2005–2012.

Table 3.4: Non-injection drug use in the last 12 months, PWID, NHBS, SanFrancisco, 2005–2012.

	2005	2009	2012
	(N=565)	(N=535)	(N=570)
Marijuana	386 (68.3)	311 (58.1)	385 (67.5)
Crack	372 (65.8)	338 (63.2)	330 (57.9)
Methamphetamine	240 (42.5)	209 (39.1)	289 (50.7)
Painkillers	184 (32.6)	165 (30.8)	190 (33.3)
Cocaine	179 (31.7)	139 (26.0)	178 (31.2)
Downers	149 (26.4)	164 (30.6)	181 (31.8)
Hallucinogens	45 (8.0)	55 (10.3)	73 (12.8)
Ecstasy	40 (7.1)	36 (6.7)	53 (9.3)
Poppers	29 (5.1)	28 (5.2)	0 (0.0)

Figure 3.5: Primary drug of choice in the last 12 months, PWID, NHBS, San Francisco, 2005–2012.



Almost half of PWID had 1–2 partners in the past six months while less than 20% had 3 to 5 partners in each of the survey waves. About 20% reported having no partners in the past six months. In terms of unprotected intercourse, over a third of PWID reported zero unprotected intercourse acts with partners in the past six months. However, just under half reported having 6 or more unprotected sex acts in the same period. (Table 3.5)

, ,	- /		
	2005	2009	2012
	(N=565)	(N=535)	(N=570)
Number of partners			
0	104 (18.4)	128 (23.9)	96 (16.8)
1–2	251 (44.4)	262 (49.0)	282 (59.5)
3–5	106 (18.8)	86 (16.1)	103 (18.1)
6–17	55 (9.7)	24 (4.5)	48 (8.4)
18–35	22 (4.0)	17 (3.2)	14 (2.5)
36+	15 (2.7)	8 (1.5)	16 (2.8)
Number of UI episodes			
0	253 (44.8)	225 (42.0)	198 (34.7)
1–2	41 (7.2)	43 (8.0)	47 (8.2)
3–5	40 (7.1)	34 (6.4)	49 (8.6)
6–17	62 (11.0)	66 (12.3)	71 (12.5)
18–35	58 (10.3)	56 (10.5)	67 (11.8)
36+	111 (19.6)	111 (20.7)	138 (24.2)

Table 3.5: Number of partners and episodes of unprotected intercourse in the
last 6 months, PWID, NHBS, San Francisco, 2005–2012.

A high proportion (86.5%, 85.4%, 87.2%) of PWID reporting using needle exchange programs to obtain clean needles. An increasing proportion accessed clean needles from pharmacies with 18.4% in 2005 to 34.6% in 2012. (Table: 3.6)

	2005	2009	2012
	(N=565)	(N=535)	(N=570)
Needle source			
Needle exchange program	489 (86.5)	457 (85.4)	497 (87.2)
Friend	353 (62.5)	323 (60.4)	323 (56.7)
Dealer	278 (49.2)	196 (36.6)	184 (32.3)
Pharmacy	104 (18.4)	208 (38.9)	197 (34.6)
Physician or Hospital	43 (7.6)	43 (8.0)	77 (13.5)
Use sterile syringe			
Always	354 (62.6)	327 (61.1)	358 (62.8)
Sometimes	193 (34.2)	194 (36.3)	186 (32.6)
Rarely	11 (1.9)	10 (1.9)	20 (3.5)
Never	3 (0.5)	4 (0.7)	4 (0.7)
Share needle			
Always	1 (0.2)	1 (0.2)	1 (0.2)
Sometimes	38 (6.7)	13 (2.4)	24 (4.2)
Rarely	93 (16.5)	66 (12.3)	49 (8.6)
Never	74 (13.1)	8 (1.5)	8 (1.4)
Divide drugs with same syringe			
Always	8 (1.4)	6 (1.1)	2 (0.4)
Sometimes	40 (7.1)	22 (4.1)	32 (5.6)
Rarely	80 (14.2)	55 (10.3)	51 (9.0)
Never	157 (27.8)	14 (2.6)	24 (4.2)

Table 3.6: Needle source and sharing behavior in the last 12 months, PWID,NHBS, San Francisco, 2005–2012.

3.4 Summary

We successfully recruited robust samples of PWID over three waves of data collection. PWID sampled a high prevalence of homelessness and lower education. We note a few potential biases and uncertainties. Small changes in demographic characteristics could influence the changes in HIV risk related indicators. In terms of HIV status, participants may have under-reported their HIV-positive status thus biasing our measurement of known HIV infection.

HIV prevalence in this group was stable but there was a high proportion of HIVpositive PWID that were unaware of their HIV infection. HIV testing among HIVnegative PWID is low and could be improved. Also ART uptake among PWID could be improved. Both unprotected intercourse and needle sharing are high among PWID.

4. High-Risk Heterosexuals

4.1 Sampling and recruiting

RDS was used to sample participants for HRH, NHBS. Areas in San Francisco with high historic AIDS case burden among HRH and high levels of poverty were used to select seed participants. Seed areas were the same across all three waves. Participants were asked to recruit three to five members of their social network and give them a coupon for study participation. After presenting their coupon to study staff at a centrally located study site, individuals were screened for eligibility, invited to participate if they were eligible and consented if they chose to participate. After completing an interviewer-administered electronic survey, participants were tested for HIV antibodies using standard testing methods.

To be eligible for the studies individuals had to be 18 years old or older, residents of San Francisco and had sex with at least one opposite sex partner in the past 12 months. In addition, in 2006 the upper age limit was 50 years old. In 2010 and 2013 the upper age limit was 60 years old. Moreover, prioritization of areas of the city for participants increasingly focused on areas of poverty and lower educational attainment.

4.2 **Demographics**

Demographically, the HRH samples were a majority Black (78.6%, 63.7% and 63.4%) over the study years. The composition of other race / ethnicity groups were not consistent. Most participants identified as heterosexual (>85%). Male homosexuals were excluded from analysis. (Table 4.1)

A majority of HRH participants had a high school education or less (63.7%–73.3%) while almost a third in each year had some college education. In terms of health insurance, the proportion who reported having no insurance declined from 41.4% in 2003 to 29.4% in 2013. We saw a corresponding increase in the proportion with public insurance rise from 39.6% in 2003 to 65.3% in 2013.

About a third of HRH were unemployed in each year, while there was a declining proportion that reported being employed (40.5% to 22.9%) from 2006 to 2013. Notably, an increasing proportion of HRH participants reported being disabled, rising from 6.3% in 2006 to 26.7% in 2013. This change is likely due to age and income eligibility criteria changing in the same period. (Table 4.2)

Most participants had incomes lower than \$40,000 per year (~90% or more) and almost three fourths had an income of less than \$20,000 in 2006 and 2010 and over half (58%) in 2013. Finally, the proportion of HRH participants who reported being currently homeless increased from 13.9% in 2006 to 57.3% in 2013. (Table 4.2)

	2006	2010	2013
	(N=331)	(N=446)	(N=262)
Age in years			
18 – 19	47 (14.2)	74 (16.6)	5 (1.9)
20 – 24	118 (35.6)	132 (29.6)	13 (5.0)
25 – 29	48 (14.5)	58 (13.0)	16 (6.1)
30 - 34	28 (8.5)	49 (11.0)	22 (8.4)
35 – 39	35 (10.6)	27 (6.1)	25 (9.5)
40 – 44	20 (6.0)	39 (8.7)	25 (9.5)
45 – 49	32 (9.7)	36 (8.1)	48 (18.3)
50 – 59	3 (0.9)	31 (7.0)	101 (38.5)
60+	0 (0.0)	0 (0.0)	7 (2.7)
Sex			
Female	216 (65.3)	259 (58.1)	98 (37.4)
Male	115 (34.7)	187 (41.9)	164 (62.6)
Race/Ethnicity			
American Indian	0 (0.0)	0 (0.0)	7 (2.7)
Asian	5 (1.5)	7 (1.6)	5 (1.9)
Black	260 (78.6)	286 (63.7)	166 (63.4)
Latino/a	43 (13.0)	29 (6.5)	27 (10.3)
Mixed	9 (2.7)	38 (8.5)	22 (8.4)
Native Hawaiian or Pacific Islander	2 (0.6)	80 (17.9)	3 (1.1)
White	10 (3.0)	8 (1.8)	32 (12.2)
Born in the USA	21 (97.0)	432 (96.9)	250 (95.4)
Sexual identity			
Bisexual	32 (9.7)	59 (13.2)	26 (9.9)
Heterosexual	297 (89.7)	384 (86.1)	235 (89.7)
Homosexual	2 (0.6)	3 (0.7)	1 (0.4)
Currently insured			
Private	57 (17.2)	59 (13.2)	12 (4.6)
Public	131 (39.6)	232 (52.0)	171 (65.3)
None	137 (41.4)	147 (33.0)	77 (29.4)

Table 4.1: Demographic characteristics (1), HRH, NHBS, San Francisco 2006–2013.

	2006	2010	2013
	(N=331)	(N=446)	(N=262)
Employment			
Employed	134 (40.5)	149 (33.4)	60 (22.9)
Unemployed	123 (37.2)	178 (39.9)	95 (36.3)
Disabled	21 (6.3)	36 (8.1)	70 (26.7)
Other	53 (16.0)	83 (18.6)	37 (14.1)
Education			
No high-school diploma	75 (22.7)	97 (21.7)	54 (20.6)
High-school diploma or equivalent	150 (45.3)	230 (51.6)	113 (43.1)
Some college, or technical degree	100 (30.2)	116 (26.0)	76 (29.0)
College, or post-graduate degree	6 (1.8)	3 (0.7)	19 (7.3)
Income			
\$0 - \$19,999	240 (72.5)	316 (70.8)	67 (25.6)
\$20,000 - \$39,999	64 (19.3)	80 (17.9)	36 (31.7)
\$40,000 - \$74,999	19 (5.7)	38 (8.5)	10 3.8)
\$75,000+	3 (0.9)	8 (1.8)	1 (0.4)
Currently homeless	46 (13.9)	82 (18.4)	150 (57.3)
Ever homeless	87 (26.3)	165 (37.0)	188 (71.8)

Table 4.2: Demographic characteristics (2), HRH, NHBS, San Francisco 2006–2013.





Most HRH participants in 2013 lived in the Tenderloin and SOMA neighborhoods of the City. These areas match the geographic distribution of historic HIV/AIDS cases in San Francisco. (Figure 4.1)

4.3 HIV-related risk indicators

Among HIV-negative HRH, HIV testing in the last six months was consistent across the waves. A substantial proportion of HRH reported receiving free condoms in the past 12 months (>50%) and a majority of those reported receiving free condoms also reported using them (>70%). Most commonly, HRH report receiving free condoms at health centers and specialty clinics as well as at events, businesses and HIV organizations. (Table 4.3)

In terms of self-reported STIs, we measured a declining trend in Chlamydia and Gonorrhea. Chlamydia dropped from 11.2% in 2003 to 1.9% in 2013. Gonorrhea decreased from 4.5% in 2006 to 1.9% in 2013. Syphilis was lower than 0.5% in each study year. Self-reported HIV prevalence was at 0% across all years. (Figure 4.2)

A large proportion of HRH reported any binge drinking in the past 12 months

	2006	2010	2013
HIV-negative participants:	331 (100.0)	446 (100.0)	262 (100.0)
Tested in the last 6 months	58 (17.5)	67 (15.0)	43 (16.4)
Talked to HIV counselor	22 (6.6)	53 (11.9)	25 (9.5)
Free condoms:	189 (57.1)	247 (55.4)	162 (61.8)
Used condoms	137 (72.5)	166 (67.2)	114 (70.4)
Source of condoms			
HIV/AIDS-focused organization	50 (26.4)	46 (18.6)	52 (32.1)
LGBTQ community health center	0 (0.0)	8 (3.2)	0 (0.0)
Needle exchange program	2 (1.1)	10 (4.0)	0 (0.0)
Health center or specialty clinic	1 (0.5)	8 (3.2)	12 (7.4)
Drug treatment center	65 (34.4)	121 (49.0)	93 (57.4)
Other sources	67 (35.4)	123 (49.8)	78 (48.1)
(Businesses, special events, schools)			

Table 4.3: Prevention service use in the last 12 months, HRH, NHBS, San Francisco, 2006–2013.

Figure 4.2: Self-reported STIs and HIV infection, HRH, NHBS, San Francisco, 2006–2013.



(>60%) and there was a rising trend in this indicator. Any unprotected intercourse was reported by about 86.1% of the participants in 2006 and declined to 79.4%. Methamphetamine use was stable at about 10.0% in 2006 and 2010 and increased in 2013 to 15.3%. (Figure 4.3)

Figure 4.3: Unprotected intercourse, methamphetamine use, and binge drinking in the last 12 months, HRH, NHBS, San Francisco, 2006–2013.



- Unprotected intercourse - Methamphetamine - Binge drinking

In terms of numbers of partners over the past six months, most HRH reported having 1–5 partners (83.4%, 82.7% and 77.5% in the three survey waves). Few HRH had more than 5 partners (13.9%, 11.6% and 14.5% over the three survey waves).

As for unprotected intercourse, 13.9%, 18.4% and 20.6% of HRH reported no unprotected intercourse in 2006, 2010 and 2013, respectively. A large proportion of HRH reported 36 of more episodes of unprotected intercourse over the past six months (42.6%, 34.1% and 30.9%). (Table: 4.4)

	2006	2010	2013
	(N=331)	(N=446)	(N=262)
Number of partners			
0	6 (1.8)	8 (1.8)	21 (8.0)
1–2	192 (58.0)	265 (59.4)	144 (55.0)
3–5	84 (25.4)	104 (23.3)	59 (22.5)
6–17	36 (10.9)	43 (9.6)	27 (10.3)
18–35	6 (1.8)	8 (1.8)	7 (2.7)
36+	4 (1.2)	1 (0.2)	4 (1.5)
Number of episodes of UAI			
0	46 (13.9)	82 (18.4)	54 (20.6)
1–2	37 (11.2)	31 (7.0)	23 (8.8)
3–5	24 (7.2)	35 (7.8)	27 (10.3)
6–17	46 (13.9)	81 (18.2)	46 (17.6)
18–35	37 (11.2)	65 (14.6)	31 (11.8)
36+	141 (42.6)	152 (34.1)	81 (30.9)

Table 4.4: Number of partners and episodes of unprotected intercourse in thelast 6 months, HRH, NHBS, San Francisco, 2006–2013.

Over 65% of HRH report any non-injection drug use in the past 12 months. The most common drug used was marijuana (63.7%, 71.7%, 53.8%). Notably the use of ecstasy declined over the three waves of data (21.1%, 23.1% and 7.2%) while cocaine and crack increased from 13.0% to 20.6% and from 10.9% to 26.3% respectively. (Table 4.5)

	2006	2010	2013
	(N=331)	(N=446)	(N=262)
Marijuana	211 (63.7)	320 (71.7)	141 (53.8)
Ecstasy	70 (21.1)	103 (23.1)	19 (7.2)
Cocaine	43 (13.0)	66 (14.8)	54 (20.6)
Crack	36 (10.9)	45 (10.1)	69 (26.3)
Methamphetamine	33 (10.0)	46 (10.3)	40 (15.3)
Painkillers	49 (14.8)	62 (13.9)	30 (11.4)
Downers	21 (6.3)	24 (5.4)	17 (6.5)
Hallucinogens	15 (4.5)	8 (1.8)	11 (4.2)
Poppers	1 (0.3)	2 (0.4)	0 (0.0)

Table 4.5: Non-injection drug use in the last 12 months, HRH, NHBS, San Francisco 2006–2013.

4.4 Summary

Demographic characteristics of our HRH participants changed over the three waves of data collection most likely due to changing eligibility criteria which focused on increasingly impoverished and lower educated persons. These changes may be reflected in some of the noted changes in risk behavior and HIV testing and prevalence. Nonetheless, some notable promising findings bear pointing out.

HIV infection is very low among HRH even when refining the inclusion criteria to better prioritize the segment of HRH that are most at risk for HIV infection. Secondly, health insurance coverage has increased dramatically, again, even when prioritizing lower income individuals. Lastly, we saw a trend of lowering self-reported Chlamydia and Gonorrhea infection.

A. Appendix

A.1 Data tables for MSM figures

	2004	2008	2011
	(N=386)	(N=522)	(N=507)
HIV			
HIV-positive best estimate	92 (23.8)	115 (22.0)	106 (20.9)
Self reported positive	73 (18.9)	95 (18.2)	110 (21.7)
Lab confirmed positive	92 (23.8)	115 (22.0)	106 (20.9)
Unknown infection	20 (5.2)	21 (4.0)	8 (1.6)
STI's last 12 months			
Any STI	47 (12.2)	73 (14.0)	75 (14.8)
Syphilis	6 (1.6)	15 (2.9)	11 (2.2)
Gonorrhea	25 (6.5)	40 (7.7)	47 (9.3)
Chlamydia	2 (0.5)	34 (6.5)	35 (6.9)

Table A.1: Self-reported STIs and HIV infection, MSM, NHBS, San Francisco,2004–2011. (Figure: 2.2)

Table A.2: Unprotected intercourse, methamphetamine use, and binge drinking in the last 12 months, MSM, NHBS, San Francisco, 2004–2011. (Figure: 2.3)

	2004 (N=386)	2008 (N=522)	2011 (N=507)
HIV Indicators			
Unprotected Intercourse	181 (46.9)	250 (47.9)	244 (48.1)
Methamphetamine use	88 (22.8)	69 (13.2)	61 (12.0)
Regular binge drinking episodes	NA	353 (67.6)	336 (66.3)

Table A.3: HIV prevalence, recognized HIV infection, and ART coverage in thelast 12 months, MSM, NHBS, San Francisco, 2004–2011. (Figure: 2.4)

	2004	2008	2011
Cascade			
Known Infection	72 (78.3)	94 (81.7)	98 (92.5)
On ART	52 (56.5)	75 (65.2)	86 (81.1)
HIV Lab confirmed	92 (23.8)	115 (22.0)	106 (20.9)

A.2 Data tables for PWID figures

Table A.4: Self-reported STIs and HIV infection, PWID, NHBS, San Francisco,2005–2012. (Figure: 3.2)

	2005	2009	2012
	(N=565)	(N=535)	(N=570)
HIV			
HIV-positive best estimate	69 (12.2)	73 (13.6)	67 (11.8)
Self reported positive	68 (12.0)	47 (8.8)	39 (6.8)
Lab confirmed positive	NA	73 (13.6)	66 (11.6)
Unknown infection	NA	26 (4.8)	29 (5.1)
STI's last 12 months			
Any STI	47 (8.3)	73 (13.6)	75 (14.2)
Syphilis	5 (0.9)	2 (0.4)	11 (1.9)
Gonorrhea	14 (2.5)	5 (0.9)	16 (2.8)
Chlamydia	8 (1.4)	11 (2.1)	17 (3.0)

	2005	2009	2012
	(N=565)	(N=535)	(N=570)
HIV Indicators			
Unprotected intercourse	312 (55.2)	310 (57.9)	372 (65.3)
Needle sharing	132 (23.4)	80 (15.0)	74 (13.0)

Table A.5: Unprotected intercourse and needle sharing in the last 12 months,
PWID, NHBS, San Francisco, 2005–2012. (Figure: 3.3)

Table A.6: HIV prevalence, recognized HIV infection, and ART coverage in the last 12 months, PWID, NHBS, San Francisco, 2005–2012. (Figure: 3.4)

	2005	2009	2012
Cascade			
Known Infection	NA	47 (64.4)	37 (56.1)
On ART	39	30 (63.8)	25 (67.6)
HIV Lab confirmed	NA	73 (13.6)	66 (11.6)

Table A.7: Primary drug of choice in the last 12 months, PWID, NHBS, San Francisco, 2005–2012. (Figure: 3.5)

	2005 $(N=565)$	2009 $(N=535)$	2012 (N=570)
	(11 505)	(11 333)	(11 370)
Injection drug use			
Heroin	427 (75.6)	379 (70.8)	350 (61.4)
Methamphetamine	261 (46.2)	103 (19.2)	157 (27.5)
Speedballs or Goofballs	207 (36.6)	36 (6.7)	47 (8.2)
Cocaine	148 (26.2)	9 (1.7)	10 (1.7)
Crack	46 (8.1)	1 (0.2)	2 (0.3)
Painkillers	23 (4.1)	5 (0.9)	4 (0.7)

A.3 Data tables for HRH figures

Table A.8: Self-reported STIs and HIV infection, HRH, NHBS, San Francisco,2006–2013. (Figure: 4.2)

	2006	2010	2013
	(N=331)	(N=446)	(N=262)
HIV			
HIV-positive best estimate	1 (0.3)	1 (0.2)	6 (2.3)
Self reported positive	0 (0.0)	0 (0.0)	0 (0.0)
Lab confirmed positive	1 (0.3)	1 (0.2)	6 (2.3)
Unknown infection	1 (0.3)	1 (0.2)	6 (2.3)
STI's last 12 months			
Any STI	46 (13.9)	48 (10.8)	8 (3.0)
Syphilis	0 (0.0)	1 (0.2)	1 (0.4)
Gonorrhea	15 (4.5)	10 (2.2)	5 (1.9)
Chlamydia	37 (11.2)	45 (10.1)	5 (1.9)

Table A.9: Unprotected intercourse, methamphetamine use, and binge drinking in the last 12 months, HRH, NHBS, San Francisco, 2006–2013. (Figure: 4.3)

	2006	2010	2013
	(N=331)	(N=446)	(N=262)
HIV Indicators			
Unprotected intercourse	285 (86.1)	364 (81.6)	208 (79.4)
Methamphetamine use	33 (10.0)	46 (10.3)	40 (15.3)
Regular binge drinking episodes	178 (53.8)	307 (68.8)	166 (63.4)