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HIV STATUS DIFFERENCES IN VENUES WHERE HIGHLY SEXUALLY ACTIVE GAY AND BISEXUAL MEN MEET SEX PARTNERS: RESULTS FROM A PILOT STUDY

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Abstract

Highly sexually active men who have sex with men (MSM) are a critical population in which to provide HIV prevention and education. To inform the tailoring and placement of such services, this study reports on HIV status differences in nine venues where 50 highly sexually active MSM (defined as those who had nine or more male partners in the past 90 days) met recent male sex partners. HIV-positive men (95%) were significantly more likely than HIV-negative/unknown status men (68%) to have used the Internet to meet partners but were less likely to meet partners in bars/clubs (37% vs. 71%). Although both HIV-positive and HIV-negative/unknown status men reported a sizable portion of their total partners from the Internet (55% and 29%, respectively), HIV-positive MSM also gravitated toward meeting partners through sexual networks (private sex parties and via other sex partners), whereas HIV-negative/unknown status also gravitated toward gay bars/clubs and public cruising. Overall, HIV-positive men were more likely to report unprotected anal sex than to HIV-negative/unknown status men. Among HIV-negative/unknown status men, the highest rates of unprotected sex were with men they met online (20% of online partners) and through other sex partners (25% of these partners). Efforts targeted toward highly sexually active HIV-negative/unknown status men might be best positioned online and in gay bars/clubs, whereas those tailored for highly sexually active HIV-positive men may consider targeting the Internet and peers/sexual networks.

BACKGROUND

Despite recent declines in HIV transmission in the United States overall, men who have sex with men (MSM) still account for 48% of HIV/AIDS cases (Centers for Disease Control and

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Prevention [CDC], 2008a), and the number of HIV/AIDS diagnoses among MSM from 2001 to 2006 has increased 8.6% (CDC, 2008b). These findings highlight the need to better identify those at highest risk for HIV transmission in addition to factors that may increase or diminish risky behavior. In this review, we explore two such factors: highly sexually active MSM and venues where they meet sex partners.

FREQUENT SEXUAL ACTIVITY

MSM who engage in frequent sexual activity (oral and anal sex) with multiple partners are an important population in which to target HIV prevention and education. Given that condoms are not 100% effective (Reece et al., 2008; Richters, Donovan, & Gerofi, 1993; Rosenberg & Waugh, 1997), frequent sexual activity with multiple partners increases the opportunity for one to experience condom failure. In addition, there is evidence to suggest frequent sexual activity is independently associated with unprotected anal intercourse (Prestage et al., 2009). In the EXPLORE study, a nationwide study involving nearly 4,300 MSM, having multiple sexual partners was identified as one of the chief factors leading to new HIV incidence (Koblin et al., 2006). The vast size of highly sexually active MSM's sexual networks, coupled with frequent sexual behavior, may enable the introduction and rapid spread of sexually transmitted infections (STIs) and HIV (including new strains or drug-resistant strains) into the larger MSM community, including those members who are not highly sexually active themselves. Thus, highly sexually active MSM might be a key group in which to direct HIV prevention resources (Prestage et al., 2009).

VENUES FOR MEETING SEX PARTNERS

Venues where MSM gather continue to serve as key locations where health and community service providers engage MSM for HIV testing, education, and prevention (Arumainayagam et al., 2009; Daskalakis et al., 2009; Mullens, Staunton, Debattista, Hamernik, & Gill, 2009; Raymond, Bingham, & McFarland, 2008; Reisner et al., 2009). Meanwhile, the growth of the Internet as a *virtual* space where MSM meet partners has presented new challenges for venue-based HIV prevention and education (Liau, Millett, & Marks, 2006; Moskowitz, Melton, & Owczarzak, 2009). One meta-analysis found 40% of MSM had used the Internet to meet sex partners (Liau et al., 2006), and others have highlighted how the Internet has altered patterns of sex-seeking among MSM (Benotsch, Kalichman, & Cage, 2002; Blackwell, 2008; Carballo-Dieguez, Miner, Dolezal, Rosser, & Jacoby, 2006), spawning inquiry as to whether the Internet facilitates HIV risk (Chiasson et al., 2006; Mustanski, 2007; Ogilvie et al., 2008).

Although the Internet seems to be a common medium through which MSM meet sex partners (Liau et al., 2006), many MSM use other venues exclusively or in tandem (Niccolai, Livingston, Richardson, & Jenkins, 2007). One study reported on the prevalence of six locations where MSM met recent male sex partners: bar or dance club (55%), Internet (53%), bathhouse (40%), via public cruising (30%), gym (28%), and at private sex parties (25%) (Grov, Parsons, & Bimbi, 2007). Researchers have suggested that the venues where MSM meet sex partners possess physical and social characteristics that may influence HIV risk behavior (Grov et al., 2007; Horvath, Bowen, & Williams, 2006; Richters, 2007; Thiede et al., 2008). For example, bars/clubs serve alcohol, which may increase the opportunity for

sex while intoxicated. The anonymous nature of online chatting may facilitate HIV status disclosure. And norms against audible communication in bathhouses may reduce opportunities for negotiating condom use.

Community health and service providers could use venues as powerful tools for reaching MSM at risk for HIV, engaging them in education and serving as portals into service provision (Mullens et al., 2009). Depending on the venue, these can include providing information, counseling, and skills to enhance safer sexual behaviors; brief interventions; and referrals (Mullens et al., 2009). Prior to implementing such efforts, it would be necessary to identify patterns in which HIV-positive men and HIV-negative/unknown status men meet partners. Some researchers have indicated that HIV seroprevalence can vary by venue. For example, Binson et al. (2001) and Parsons and Halkitis (2002) reported that compared with HIV-negative men, HIV-positive men were more likely to have visited both public sex environments and commercial sex environments. In Los Angeles the proportion of MSM with unrecognized HIV infection was greatest in public sex environments, highlighting the need for increased location-based HIV testing and education (Raymond et al., 2008).

PURPOSE OF STUDY

Highly sexually active MSM are a critical population to provide HIV prevention and education. Venues where men meet partners may inhibit or increase HIV risk behaviors (Aral & Manhart, 2009), and can serve as integral locations for providing HIV-related services. Unfortunately, we lack comprehensive data on the role that HIV status may play in venue frequenting, and thus have limited data on where HIV prevention efforts might be best targeted. Addressing this limitation, we report on a pilot study with 50 highly sexually active MSM.

METHOD

PARTICIPANTS AND PROCEDURE

Analyses were performed on baseline data from the Pillow Talk Project, a pilot study whose primary aim was to investigate HIV risk behavior and sexual compulsivity (SC) in a sample of 50 highly sexually active gay and bisexual men. Participants were recruited using targeted sampling (Watters & Biernacki, 1989), whereby the research team first used ethnographic mapping to identify venues and times where gay and bisexual men gathered in New York City. Then recruitment teams were sent to these venues and systematically approached potential participants, asking them to take part in a brief 2-minute anonymous screening survey housed on the handheld devises. The following preliminary eligibility criteria for the project were embedded in the screening survey: biologically male, aged 18 or over, and nine or more male sex partners in the last 90 days. Recruitment staff collected contact information for those who appeared eligible and research staff recontacted potential participants via telephone for additional screening and to describe the study further. In addition, and consistent with our sampling approach, we took advantage of Internet-based recruitment (advertising for the study on several websites and sex blogs catered toward gay and bisexual men), respondent-driven sampling (RDS), snowball sampling, and tear-off

flyers. Of the 50 participants, 29 were recruited via field contact, 14 via RDS or snowball sampling, three from the Internet, and two via tear off flyers. Two participants did not disclose how they heard about the study.

In order to join the study, participants had to meet the following eligibility criteria: have had nine or more male sex partners in the last 90 days, be aged 18 or over, be biologically male, be free from serious cognitive or psychiatric impairments (no participants were excluded based on this criterion), have Internet access, and be gay or bisexually identified. (Note: Internet access was required for a portion of the study that will not be reported on in the present analyses.) Only five men (3.8%) who telephoned/screened to join the study were excluded because they did not have daily Internet access.

Our operationalization of nine or more recent male sex partners to indicate “high sexual activity” was based on prior work with both SC and nonSC gay and bisexual men (Grov et al., 2008; Grov, Parsons, & Bimbi, 2010; Parsons, Bimbi, & Halkitis, 2001; Parsons et al., 2008; Parsons, Kelly, Bimbi, Muench, & Morgenstern, 2007). This rate is approximately triple the average (Pollack, 2009) number of male sex partners found among sexually active New York City MSM in the Urban Men’s Health Study (a probability-based sample of urban MSM) (Stall et al., 2001; Stall et al., 2003) and thus can be considered highly sexually active.

Study visits took place at the Center for HIV/AIDS Educational Studies and Training (CHEST). Participants completed informed consent and took part in a qualitative and quantitative assessment. Assessments took, on average, 2.5 hours to complete, and participants were compensated $40. All procedures were reviewed and approved by the Hunter College Institutional Review Board.

MEASURES

Demographic and Other Sample Characteristics—During their study visit, participants completed quantitative measures on computers equipped with audio computer-assisted self-interview (ACASI) software. Participants reported various demographic characteristics, including their history of STIs and HIV status.

Venues for Meeting Sex Partners—Participants indicated their number of sex partners in the last 3 months. ACASI then prompted participants with a series of follow-up questions, including “Of the ___ men you had sex with in the last 3 months, how many did you meet at [venue]?” and “Of the ___ men you met via [venue], how many of them did you have anal sex with without a condom?” We report data on nine types of sources (i.e., “venues”): bathhouse, private sex parties, gay bars/clubs, Internet, gym, through friends, current or previous sex partners (e.g., through “fuck buddies”), public cruising (at parks, piers, etc.), and sex clubs. Although “friends” and “sex partners” are technically not venues (i.e., physical spaces), for ease in discussing findings we use the term *venue* to describe these sources.

Sexual Compulsivity—Participants also completed the Sexual Compulsivity Scale (SCS) (Kalichman et al., 1994; Kalichman & Rompa, 1995). The SCS ($\alpha = .87$) is a 10-item self-

administered questionnaire that assesses the impact of sexual thoughts on daily functioning and the inability to control sexual thoughts or behaviors. Items on the SCS are scripted in a Likert-type fashion, ranging from 1 (not like me) to 4 (very much like me) with summation scores ranging from 10 to 40. Per study design, the sample was stratified such that 50% of participants exceeded 24 on the SCS (indicative of SC symptomology; Grov et al., 2010; Parsons et al., 2001) and 50% did not. Given that the Pillow Talk Project was designed in part around SC, we have included SC in the present analyses, though many venue-focus findings were nonsignificant.

ANALYSIS PLAN

Using *t* tests and Fishers exact *p*, we assessed for SC status differences and HIV status differences as they related to the nine venues and across four venue-associated domains: (a) number of venues men met recent partners; (b) having met a recent sex partner via [venue] (yes/no); (c) percentage of partners met via [venue], out of his total recent male partners; and (d) percentage of partners met via [venue] with which participants had unprotected anal sex. The first three domains included all participants' data ($n = 50$), and the last domain used data that was nested among those participants who reported partners via each specific venue (n = varies).

RESULTS

SAMPLE CHARACTERISTICS

Table 1 reports sample characteristics. Participants were ethnically diverse (48% were men of color), and mean age was 36.2 (range 22–72). Eight men (16%) were bisexual, and the remainder identified as gay. Thirty-eight percent were HIV-positive, 74% were single, and 58% completed college. Participants reported having median of 21 male sex partners in the previous 90 days (mean = 32, range 9–150, interquartile range [IQR] 13–35), and 70% of men had been diagnosed with one or more STIs. Aggregated among the 50 participants, men reported a total of 1,600 sex partners within the prior 3 months. There were no SC status or HIV status differences in the number of recent male sex partners. All HIV-positive participants had recent unprotected anal sex with at least one casual male sex partner, compared with 58.1% (18 of 31) of HIV-negative/unknown status men who had recent unprotected sex with at least one casual male sex partner, Fisher's exact $p < .001$.

SEXUAL COMPULSIVITY AND VENUES FOR MEETING PARTNERS

Given that our sample was stratified by SC status, we assessed for SC status differences by the four venue-associated domains discussed under "Analysis Plan." There were no significant SC differences in (a) the number of venues men met recent partners; (b) having met a recent sex partner via [venue] (yes/no); (c) the percentage of partners met via [venue]; out of total recent male partners, and (d) the percentage of partners met via [venue] with which participants had unprotected anal sex. The data indicate that SC and non-SC men overlap in the venues where they meet partners and venue-associated risks. These nonsignificant findings are not shown in a table. Having determined that SC did not play a role in venue-associated risk behavior, we next examined the role of HIV status.

NUMBER OF VENUES IN WHICH MEN MET PARTNERS

Men reported partners from a median of three of the nine venues assessed (IQR 2.75–4). One participant reported that he did not meet partners from any of the nine venues we assessed, and five participants reported a maximum of six venues. There were no significant HIV status differences in the number of venues from which met had met a partner, $t(48) = -.66$, $p = .513$.

HIV STATUS DIFFERENCES IN VENUES WHERE MEN MET SEX PARTNERS (YES VS. NO)

The first set of columns in Table 2 reports on HIV status differences in having met a recent (< 90 days) male sex partner via each of the nine venues (yes v. no). A significantly greater percentage of HIV-positive men reported finding partners on the Internet (95% v. 68%) and at private sex parties (58% v. 26%) than HIV-negative/ unknown status men. In contrast, a significantly smaller percentage of HIV-positive men (37% v. 71%) reported finding partners via gay bars/clubs than HIV-negative unknown/status men. There were no significant differences in whether men had met a partner via other venues assessed (yes v. no).

HIV STATUS DIFFERENCES IN THE PERCENT OF PARTNERS MET VIA EACH VENUE

We next report HIV status differences in the average percentage of recent (< 90 days) male partners met at each venue. For each participant the percentage of partners met at each venue was calculated as a function of his total partners, and these percentages were averaged across HIV-positive and HIV-negative/unknown status participants. For example, a man who reported 17 of his 30 partners to be from the Internet would be calculated as having met 56% of his partners online. As such, these percentages reflect differences in venue selection, as depicted in the first series of columns of Table 2, but give an additional description of the percentage of total partners met in each venue by HIV status. These values are reported in the second series of columns in Table 2.

On average, HIV-positive men reported a majority (55%) of their partners were from the Internet, followed by 31% of their partners from private sex parties, and 16% being through previous sex partners. This pattern was different for HIV-negative/unknown status men. Similar to HIV-positive men, HIV-negative/unknown status men reported, on average, that the largest proportion (albeit not a majority) of their partners were from the Internet (29%), followed by gay bars/clubs (22%), public cruising (11%), and the gym (10%). In contrast to HIV-negative/unknown status men, HIV-positive men reported a significantly larger proportion of their partners to be from the Internet (55% v. 29%), via private sex parties (31% v. 7%), and through other sex partners (16% v. 5%), all $p < .05$.

HIV STATUS AND VENUE DIFFERENCES IN THE PROPORTION OF PARTNERS WITH WHOM PARTICIPANTS HAD UNPROTECTED ANAL SEX

Finally we report HIV status differences in the average percentage of recent (< 90 days) male sex partners with whom participants had engaged in unprotected anal sex at each of the nine venues. These values are nested among men who reported at least one partner from the venue in question. For example, a participant who reported engaging in unprotected anal sex with six of the 14 men he met online would be calculated as having unprotected sex with 42% of his online sex partners. Values are reported in the third set of columns in Table 2.

Overall, HIV-positive men reported higher rates of unprotected anal sex compared with HIV-negative/unknown status men regardless of venue. On average, HIV-positive men reported unprotected anal sex with 77% of the partners they met through the Internet, 63% of the partners they met at private sex parties, and 87% of the partners they met through other sex partners. These are the three venues from which HIV-positive participants reported the greatest portion of their recent male sex partners (shown in the second set of columns in Table 2). In contrast, HIV-negative/unknown status men reported unprotected anal sex with, on average, 20% of the partners they met online, 12% of the partners they met via gay bars/clubs, and 16% of the partners they met via public cruising. These are the three venues from which HIV-negative/unknown status participants reported the greatest portion of their recent male sex partners (shown in the second set of columns in Table 2).

DISCUSSION

These data indicate that highly sexually active MSM meet their male sex partners in a variety of venues—76% of participants reported partners from three or more venues.

HIV-positive men gravitated toward meeting partners online and through sexual networks (private sex parties and via other sex partners). In contrast, HIV-negative/ unknown status men met a large portion of their partners online but also gravitated toward gay bars/clubs and public cruising. Highly sexually active MSM are a critical population in which to provide HIV prevention and outreach, and these data indicate where venue-based HIV preventative efforts might be best located. Further, they highlight the need to tailor these efforts to meet the unique needs of HIV-positive and HIV-negative/unknown status men.

Researchers have suggested that HIV-positive men may wish to seek others who are also HIV-positive (Eaton, West, Kenny, & Kalichman, 2009). However, HIV-related stigma (Emlet, 2006; Golub, Tomassilli, & Parsons, 2008) may make it difficult for these men to initiate such conversations in public settings (e.g., via bars or clubs). In contrast, many men-for-men Web sites allow users to post their status in their profile and search for others based on HIV status (Berry, Raymond, Kellogg, & McFarland, 2008). And the impersonal nature of online chatting can facilitate candid discussions on topics that might be more difficult to initiate face to face (Carballo-Dieguez et al., 2006). These factors may explain our finding that HIV-positive men were more likely to meet partners online and less likely to meet them in bars/ clubs. Unfortunately, our data were limited in that we did not capture perceptions of partner's HIV status or HIV status disclosure. Thus, our interpretation should be viewed with caution.

These data suggest that HIV-positive men are meeting partners via their ongoing sexual networks. HIV-positive men reported a sizable proportion of partners from private sex parties and through other sex partners. Reisner et al. (2008) found that some MSM use private sex parties in order to reduce HIV/STI risk. For example, a positive-for-positive sex party represents opportunities for HIV-positive men to have sex with other HIV-positive men. Such events may be common in urban settings (Clatts, Goldsamt, & Yi, 2005). In contrast, others have highlighted that sexual networks may be an important factor in understanding STI acquisition—concurrent connections may facilitate spread within

networks (Aral & Manhart, 2009; O'Byrne, Holmes, & Woodend, 2008). Given that highly sexually active HIV-positive men may be using existing sexual networks, researchers and service providers seeking to work with these men should capitalize on peer-driven network-based outreach efforts.

As would be expected, HIV-positive men were more likely to report unprotected sex. However, it is noteworthy that HIV-negative/unknown status men reported unprotected sex with one out of every five of their Internet partners and one out of every eight partners met in bars/clubs (the two venues where they met the largest portion of their partners). In addition, HIV-negative/unknown status men reported unprotected anal sex with a quarter of the partners met through other sex partners. These high rates of unprotected sex are alarming and point to the importance of continued HIV prevention and education for highly sexually active MSM. Given the fact that participants in this study were, by design, highly sexually active, their behavior may potentiate the introduction and rapid spread of STIs (including new strains or drug-resistant strains) into the larger MSM community, including those members who are not highly sexually active themselves.

Although our sample was stratified by SC status, it was unrelated to the venues where men met partners. These nonsignificant findings indicate that, among highly sexually active men, both SC and nonSC MSM overlap in the places they meet sex partners. Programs designed to reach highly sexually active MSM might also consider including content relevant to the unique psychosocial needs of SC men.

LIMITATIONS AND IMPLICATIONS

This study has limitations. Data were taken from a modest-sized community-based sample of highly sexually active men, which may not represent all gay and bisexual men. Nevertheless, it may characterize those men who are highly sexually active—a population at increased risk of HIV and STI transmission and acquisition. Although modest in sample size, we captured a substantial amount of data on men's sexual activity (e.g., 1,600 recent male sex partners), and were able to identify several significant findings at $p < .05$ (two-tailed). Nevertheless, a larger scale study could capture more minute differences and take advantage of multivariate modeling.

Few researchers have connected MSM's behaviors to the partners met via specific venues. Although this study reported on unprotected sex with partners met in nine different venues, it was limited in the amount of data obtained for each venue. For example, we reported the proportion of partners met via bathhouses with which participants had engaged in unprotected anal sex, but we lacked information on other behaviors such as oral sex. In addition, and as indicated, our venue-based data did not capture perceptions of partner's HIV serostatus or instances of serostatus disclosure. It is highly likely that men's episodes of unprotected sex were with partners they *believed* to be the same HIV status. Although some have called into question the efficacy of serosorting as a strategy to prevent HIV transmission (Golden, Stekler, Hughes, & Wood, 2008; Van der Bij et al., 2007), researchers have found that serosorting behavior among MSM may be on the rise (Truong et al., 2007). Information on serosorting and sero "guessing" would have helped to further contextualize our findings, and this limitation should be noted.

Despite these limitations, these findings have implications for the placement and targeting of HIV prevention and education for highly sexually active MSM. Although the highly sexually active men we studied reported sex partners from a variety of outlets—and there was overlap in the venues where HIV-positive and HIV-negative/unknown status men found partners partners—HIV status played an important role in where men met partners. Thus, it may be necessary to tailor efforts separately for these two groups. The Internet was a common medium for both groups; however, it was even more so among HIV-positive men. In placing efforts in the venues where highly sexually active men meet sex partners, those targeted for HIV-negative/unknown status men may wish to focus on bars/clubs and online, whereas those tailored for HIV-positive men may consider targeting the Internet and peer-driven sexual networks efforts.

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Table 1

Sample characteristics of highly sexually active gay and bisexual men, $N = 50$, New York City, 2008

	***n* %**
HIV positive	19 (38)
Race and Ethnicity	
Asian/Pacific Islander	4 (8)
Black/African American	9 (18)
White/Caucasian	26 (52)
Latino	10 (20)
Multi-Racial/Other	1 (2)
Employment status	
Full-time (40 hours per week)	22 (44)
Part-time (less than 40 hours per week)	10 (20)
Permanent or temporary disabled	5 (10)
Unemployed	13 (26)
Education	
High School or less	12 (24)
Some College or Associates Degree	9 (18)
College Degree or Graduate School	29 (58)
Relationship Status	
Married, partner, or a lover	6 (12)
Boyfriend or a girlfriend	7 (14)
Single	37 (74)
Income	
Less than $20,000	21 (42)
$20,000 to $49,999	15 (30)
$50,000 or more	14 (28)
Lifetime STI exposure	
Any STI	35 (70)
Syphilis	15 (30)
Chlamydia	13 (26)
Gonorrhea	14 (28)
Genital warts	13 (26)
Genital herpes	7 (14)
Urethritis	6 (12)
Hepatitis A	5 (10)
Hepatitis C	2 (4)

Table 2

Venues where highly sexually active gay and bisexual men met recent male sex partners in the past 90 days. *N* = 50, New York City, 2008

	***n* (%) who met at least one partner via [venue]**			**Percent of partners met via [venue], out of total recent male partners [a]**				**Percent of partners met at [venue] who participants had unprotected anal sex with[b]**			
	Not HIV+ *n* = 31	**HIV+ *n* = 19**	**Fishers exact *p***	**Not HIV+ *n* = 31**	**HIV+ *n* = 19**	***t* (df)**	**Sig.**	**Not HIV+ *n* varies**	**HIV+ *n* varies**	***t* (df)**	**Sig.**
Internet	21 (68%)	18 (95%)	*	29%	55%	−2.65 (48)	**	20%	77%	−5.29 (37)	***
Gay bar/club	22 (71%)	7 (37%)	*	22%	14%	1.20 (48)		12%	79%	−6.77 (27)	***
Private sex parties	8 (26%)	11 (58%)	*	7%	31%	−3.52 (48)	***	15%	63%	−2.45 (17)	*
Through cruising	12 (39%)	4 (21%)		11%	9%	.39 (48)		16%	75%	−2.65 (14)	*
Bathhouse	8 (26%)	5 (26%)		9%	11%	−.28 (48)		13%	80%	−3.03 (11)	**
Through other sex partners	8 (26%)	9 (47%)		5%	16%	−2.01 (48)	*	25%	87%	−3.22 (15)	**
Gym	8 (26%)	3 (16%)		10%	7%	.46 (48)		0%	67%	−3.61 (9)	**
Sex clubs	6 (19%)	5 (26%)		7%	10%	−.54 (48)		1%	100%	−107.6 (9)	***
Through friends	11 (35%)	7 (37%)		8%	5%	.64 (48)		11%	100%	−7.78 (16)	***

[a] Column totals exceed 100% as it is possible for a participant to have reported meeting a partner in more than one venue (e.g., meeting a partner in a bar and then going to a bathhouse with him)

[b] These percentages are nested among those who reported at least one sex partner via said venue. Refer the first two columns for sample sizes.

* $p < .05$,

** $p < .01$,

*** $p < .001$ using t-test or Fishers exact p test, two-sided.

Sig = Significance

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