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A comparison of sexual behavior patterns among men who have sex with men and heterosexual men and women

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Abstract

Objective—Men who have sex with men (MSM) have higher rates of HIV and other sexually transmitted infections (STI) than women and heterosexual men. This elevated risk persists across age groups and reflects biological and behavioral factors, yet there have been few direct comparisons of sexual behavior patterns between these populations.

Methods—We compared sexual behavior patterns of MSM and male and female heterosexuals aged 18–39 using 4 population-based random digit dialing surveys. A 1996–1998 survey in 4 U.S. cities and 2 Seattle surveys (2003, 2006) provided estimates for MSM; a 2003–2004 Seattle survey provided data about heterosexual men and women.

Results—Sexual debut occurred earlier among MSM than heterosexuals. MSM reported longer cumulative lifetime periods of new partner acquisition than heterosexuals, and a more gradual decline in new partnership formation with age. Among MSM, 86% of 18–24 year olds and 72% of 35–39 year olds formed a new partnership during the prior year, compared to 56% of heterosexual

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men and 34% of women at ages 18–24, and 21% and 10%, respectively, at ages 35–39. MSM were also more likely to choose partners >5 years older and were 2–3 times as likely as heterosexuals to report recent concurrent partnerships. MSM reported more consistent condom use during anal sex than heterosexuals reported during vaginal sex.

Conclusions—MSM have longer periods of partnership acquisition, a higher prevalence of partnership concurrency, and more age-disassortative mixing than heterosexuals. These factors likely help explain higher HIV/STI rates among MSM, despite higher levels of condom use.

Keywords

men who have sex with men; heterosexuals; sexual behavior; HIV; STI

Introduction

Sexually transmitted infections (STI) disproportionately affect men who have sex with men (MSM). MSM comprise approximately 2% of the U.S. population¹, but accounted for 59% of new HIV infections and 62% of cases of early syphilis in 2009^{2,3}. The Centers for Disease Control and Prevention (CDC) estimates that HIV and early syphilis rates among MSM are >40 times higher than those among heterosexuals⁴. In part, these differences reflect the fact that an individual MSM can engage in both insertive and receptive sexual roles (i.e., versatility), while exclusively heterosexual men and women each engage in only one of these roles. Goodreau *et al.* demonstrated that an MSM population with a very high level of versatility would have a higher HIV prevalence than one with less versatility⁵. Furthermore, the transmission probability of HIV associated with anal sex is higher than that associated with vaginal sex^{6,7}. These factors alone would result in significant disparities in HIV rates between MSM and heterosexuals even if both populations had similar numbers of sex partners, frequency of sex, and condom use levels⁸.

However, the sexual behaviors of MSM and of male and female heterosexuals are substantially different in ways that are not explained by biology alone. Prior research has found that MSM tend to have higher numbers of sex partners than heterosexuals⁹, but the dynamics of partnership formation¹⁰, concurrency¹¹, and age mixing patterns^{12–14} have not been extensively characterized. These factors likely play important roles in the epidemiology of HIV/STI and in explaining observed disparities. While some of these behaviors have been assessed to better understand observed racial disparities in HIV/STI rates^{15–18}, much less has been done to compare the behaviors of MSM and heterosexuals^{9,19}. In this paper we used population-based studies to compare the sexual behaviors of MSM and heterosexual men and women in the U.S., paying particular attention to how patterns of behavior differed across age groups.

Methods

Study populations, study designs, and survey instruments

We used data from 4 random digit dialing (RDD) surveys (Table 1). To calculate sexual behavior estimates for MSM, we used the Urban Men's Health Study (UMHS)^{20–22} and two Seattle surveys (SEA)²³. For similar estimates among heterosexual men and women, we used data from the Seattle Sex Survey 2 (SSS)²⁴.

The SSS and the two SEA RDDs were conducted in the mid-2000s, while the UMHS, which enrolled MSM from 4 U.S. cities, was conducted from 1996–1998. For this analysis, we excluded SSS participants who had never had sex or reported partnerships that were not exclusively heterosexual. For UMHS and SEA, telephone numbers were sampled from zip codes with high proportions of MSM. Men who reported same-sex sexual behavior since

age 14 were eligible. UMHS MSM were also eligible if they self-identified as homosexual, gay, or bisexual. Oral informed consent was obtained from all participants. To increase comparability across all surveys, we restricted analyses to participants aged 18–39 years.

Only SSS and SEA provided response rates, which were <50% and computed by dividing the number of interviews by an estimate of the number of eligible individuals from the RDD sampling frame. This denominator was the sum of the number of interviews, refusals, and an estimate of the number of eligible individuals among those for whom eligibility could not be determined²⁵. The cooperation rates were based on the proportion of eligible individuals who opted to participate and were higher for UMHS and SEA (78–97%) than the SSS (46%). The UMHS and SEA surveys gathered partner-specific data only for partners in the past year. Thus, analyses regarding a participant's most recent partner were restricted to heterosexual participants reporting at least one *opposite-sex* partner in the past year, and to MSM reporting at least one *male* partner in the past year. For partner-specific measures among MSM, UMHS data reflected participants' most recent male partners while the SEA data included only male anal sex partners.

Measures

We chose sexual behavior measures that we hypothesized *a priori* might help explain differences in HIV/STI rates between MSM and heterosexual men and women. Although the exact wording of questions varied across surveys, most measures were similar. The Appendix includes specific survey questions and more detailed descriptions of each measure.

Age at sexual debut and number of partners—We calculated age at sexual debut with any partner among heterosexuals and UMHS MSM. (SEA MSM did not provide these data.) Among MSM only, we also compared age at sexual debut with a male partner and the age at anal sex debut. The SSS and UMHS provided data on lifetime number of partners, while all surveys included a question about number of partners in the past year.

Partnership formation and the cessation of new partner recruitment—We used partner-specific start and end dates (month and year) to estimate the time since the start of each participant's most recently formed partnership. Using these data, we calculated the proportion of participants who had formed any new partnership in the past year. We defined the cessation of new partner recruitment as having last formed a new partnership >5 years ago. To estimate an individual's total time of active partner-seeking to date, we calculated the number of years between a participant's age at sexual debut and age at the start of the most recently formed partnership. Finally, we used the variable regarding number of partners in the past year to indicate if an individual had engaged in any sex in the past year.

Mixing by age—We used age data about each participant's most recent partner to calculate the proportion who had partners with greater than a 5- or 10-year age difference.

Condom use—Across all surveys, we assessed whether or not participants always used condoms with their most recent partner. This was based upon partner-specific questions about how often condoms were used, or by comparing the total number of sex acts with the number of protected sex acts. As a proxy for partner type, we stratified these findings by partnership duration (<3 or >3 months).

Sex partner concurrency—Using available partnership start and end dates (month and year), we determined the proportion of respondents who reported any overlapping

partnerships in the past year. We classified participants with no partners in the past year as having no partner concurrency.

Partner meeting place—Using a question about how respondents met their most recent partner, we created three categories²⁶: through formal social venues (e.g., friends, family, work, private party), through less formal social venues (e.g., bar, Internet, bath house, park), or by other means (i.e., participant chose the “other” option).

Statistical methods

We compared each measure among heterosexual men and women and MSM using descriptive statistics. As appropriate, we used t-tests, chi-square tests, or Wilcoxon rank-sum tests to assess for group differences, and linear and logistic regression to test for age trends. Although UMHS did include sampling weights, the SSS and SEA did not. Because we found no meaningful differences between the weighted and unweighted estimates in our analysis of UMHS data, we elected to apply a uniform analytic approach across datasets and all presented estimates are unweighted. Therefore, in the context of these study designs, p-values are best understood as a metric for comparing the strength of the observed associations within each study. We conducted all analyses using Intercooled Stata 12 (Stata Corporation, College Station, TX). Study procedures were either exempt from IRB review (UMHS and SEA) or approved (SSS) by the Human Subjects Division at the University of Washington.

Results

Sample characteristics

The mean age of participants included in this analysis was similar across surveys, ranging from 30.0–32.1 years. In all surveys, approximately three-quarters of participants were non-Hispanic white and two-thirds had obtained a 4-year college degree. Among MSM, 15.7% of UMHS participants and 10.1% of SEA participants reported being HIV-infected; no heterosexual participants reported HIV infection.

Age at sexual debut and number of partners

The mean age at same-sex sexual debut was 16.5 years among UMHS MSM and 17.0 years among SEA MSM (Table 2). Approximately one-quarter of UMHS MSM first had sex with a woman; when this was considered, the overall age at sexual debut among UMHS MSM was 15.4 years. Heterosexual debut was older at 17.4 years for men and 17.8 years for women. Anal sex debut among MSM was several years later than overall age of sexual debut, at 19.6 years in UMHS and 20.2 years in SEA.

At all ages, heterosexual men and women reported a median of 1 partner in the past year, while MSM reported a median of 4 partners in UMHS and 2–3 male partners in SEA. MSM reported significantly more lifetime partners than heterosexual men and women at all ages ($p < 0.01$ for each age group). The median lifetime number of sex partners among those aged 18–24 was 4 in heterosexuals and 15 in UMHS MSM, and among persons age 35–39, was 10 and 67, respectively. (The SEA did not ask about lifetime number of partners.)

Partnership formation and the cessation of new partner recruitment

Across all age groups, MSM were more likely than heterosexuals to report having a new partner in the past year (Figure 1a). Among UMHS MSM, 86.4% of the youngest MSM (age 18–24) and 71.7% of the oldest MSM (age 35–39) formed a new same-sex partnership in the prior year. These proportions were lower among SEA MSM – due, in part, to the fact that only male anal sex partners were counted – with 78.1% of the youngest MSM and 41.7% of

the oldest MSM reporting a new male anal sex partnership in the past year. Among heterosexuals, the proportions were lower than in any of the MSM surveys, particularly among participants in their 30s. For example, 55.9% of the youngest men and 20.8% of the oldest men formed a new partnership in the prior year, compared with 34.1% of the youngest women and 9.6% of the oldest women.

These trends are clearly seen when viewed over a 5-year period: a much higher proportion of heterosexuals than MSM reported that their last new partnership began >5 years ago (Figure 1b). For example, among participants aged 35–39, 50.0% of heterosexual men and 68.2% of heterosexual women reported that at least 5 years had passed since the start of their most recent partnership. Only 11.2% of UMHS MSM and 14.2% of SEA MSM in the same age range reported this. Consequently, MSM in each age group reported longer periods of new partner acquisition than heterosexuals, defined as the amount of time from sexual debut to the start of the most recently formed partnership. Because the age-specific means for heterosexual men and women, and MSM in both surveys, were so similar (within 1–3 years), we combined the data for these respective groups. Among participants ages 35–39, MSM reported an average of 20.2 years of new partner acquisition compared with 11.9 years among heterosexuals. This difference between heterosexuals and MSM increased linearly with age ($p < 0.01$ for interaction).

At the same time, the proportion of individuals who reported no sexual activity may be higher among older MSM than among their heterosexual counterparts, though these findings were not consistent across surveys. Unlike UMHS MSM and heterosexuals, the proportion of SEA MSM who reported no male partner in the past year increased linearly by age, including nearly a quarter (23.0%) of those age 35–39 ($p < 0.01$ for trend). This proportion was approximately four times higher than that observed among Seattle heterosexual men (4.8%) and women (6.7%) in the same age group (SEA MSM vs. heterosexual men and women, $p < 0.01$).

Mixing by age

To accurately capture partnerships formed at a given age, we restricted these analyses to participants reporting a new partnership in the past year. Among all 18–24 year olds, there were no recent partners who were >5 years younger. Over one-half (52.0%) of SEA MSM aged 18–24 reported a recent male anal sex partner who was >5 years older, while 42.5% of UMHS MSM reported this age difference with a recent male partner (Figure 2a). By contrast, only 7.9% of heterosexual men and 10.0% of heterosexual women in this age group reported a recent partner who was >5 years older (MSM vs. heterosexual men and women, $p < 0.01$). No heterosexuals age 18–24 reported a recent partner with a 10-year age difference, while 16.7% of UMHS MSM and 28.0% of SEA MSM reported this (MSM vs. heterosexual men and women, $p < 0.001$). At older ages, the difference in the proportion of MSM and heterosexuals reporting a 5-year age difference with their most recent partner was less apparent (Table 2), although MSM age 35–39 were more likely than heterosexuals to report a 5-year age difference with their most recent partner ($p = 0.018$).

Condom use

Among recent partnerships lasting ≥ 3 months, approximately 80% of MSM in UMHS reported always using condoms during insertive anal sex. A similar proportion reported this during receptive anal sex. By contrast, only 57.4% of heterosexual men and 44.4% of heterosexual women reported consistent condom use during vaginal sex in partnerships of ≥ 3 months. For partnerships lasting ≥ 3 months, consistent condom use was reported by 48.0% and 46.8% of MSM during insertive and receptive anal sex, respectively, and by less than one-quarter of heterosexual men (23.8%) and women (19.7%). (Due to small cell sizes,

we could not estimate position-specific (insertive and receptive) condom use among SEA MSM.)

Concurrency

As shown in Figure 2b, the prevalence of sex partner concurrency during the year was much lower among heterosexual men and women (9.7% and 7.5%, respectively) than among UMHS MSM (31.3%) and SEA MSM (17.8%) (MSM vs. heterosexual men and women, $p < 0.01$). The prevalence of partner concurrency declined linearly with age among heterosexual men ($p = 0.03$) and women ($p = 0.01$). The prevalence of concurrency increased with age among MSM, though this trend was not statistically significant in either UMHS ($p = 0.11$) or SEA ($p = 0.14$) (Table 2).

Meeting new partners

Over three-quarters of heterosexual men (75.3%) and women (76.5%) met their most recent partner through a formal social venue (e.g., friends, family, work, school) compared with 32.9% of UMHS MSM and 30.3% of SEA-RDD MSM ($p < 0.001$). MSM more often reported meeting partners through less formal social venues (e.g., bars, Internet, street). Among women and UMHS MSM, the proportion who met their most recent partner through formal social venues was lower among older age groups than younger age groups.

Discussion

We used data from several large population-based surveys to estimate the dynamics of sexual partnership formation, concurrency, and age mixing among MSM and heterosexuals. MSM initiated sexual activity at slightly younger ages than heterosexuals, reported larger numbers of recent partners, continued to form new partnerships later into adulthood, and displayed more age-disassortative mixing and sex partner concurrency. Along with biological factors, these sexual behavior patterns likely help explain the high HIV/STI rates among MSM. However, compared with heterosexuals, MSM used condoms more frequently and a larger proportion of MSM may become sexually abstinent in their 30s.

Our findings are most notable for demonstrating how partnership formation patterns differed between MSM and heterosexuals from time of sexual debut through their 30s. Approximately half of sexually active heterosexuals surveyed were effectively out of the risk pool for HIV/STI by age 30, as they reported no new partners during the prior 5 years. By contrast, a much higher proportion of MSM continued to form new partnerships well into their 30s. This is consistent with Australian HIV data that suggested that the formation rate among MSM peaks in the mid-30s²⁷. Our study suggests that the average period of new partnership acquisition among MSM is at least twice as long as among heterosexuals. Indeed, mathematical models estimated that the mean age of HIV acquisition among Australian MSM is in the mid-30s²⁷, and researchers in the UK found that HIV incidence was highest among MSM in this age group²⁸, an age when most heterosexuals are no longer forming new partnerships.

The epidemiologic implications of sustained new partnership formation among MSM are likely magnified by the relatively high frequencies of disassortative age mixing observed among MSM compared to heterosexuals. For example, because HIV prevalence rises with age, younger MSM who have older partners are at increased risk for exposure to HIV infection^{12,29,30}.

Mathematical models suggest that sex partner concurrency amplifies the spread of HIV through sexual networks¹¹. We found that the prevalence of concurrent partnerships in the past year was several-fold higher among MSM than heterosexuals, and that, unlike among

heterosexuals, the prevalence of concurrency did not decline with age. Data from other population-based studies have consistently found a higher prevalence of concurrency among heterosexual men than among women^{31–33}. We also observed some gender asymmetry in the prevalence of concurrency among heterosexuals - slightly higher rates of concurrency for heterosexual men than women - which leads to small fragmented components (e.g., a man with two female partners) and reduces the impact that concurrency has on the connectivity of the network³⁴. Among MSM practicing both insertive and receptive anal sex, however, concurrency may be more likely to be symmetric, which could lead to the rapid growth of larger connected network components and more efficient HIV/STI transmission within the network.

MSM overall reported both higher numbers of partners and more concurrency than heterosexuals. In a descriptive study like this it is not possible to tease apart the relative impact of these two factors. Both likely contribute to greater transmission. It is possible that the high rates of partner acquisition among MSM are sufficient to produce and sustain the observed disparities in HIV/STI prevalence. But it is also possible that concurrency produces a qualitative difference in transmission dynamics even in this context – creating more robust connectivity in the network, compounded by the window of high infectivity during acute infection. This qualitative effect has been shown in two recent modeling studies of heterosexual spread of HIV in Zimbabwe^{35,36}, and a similar modeling study would be needed here to identify the independent and joint impacts of concurrency and rapid partner acquisition.

This study had several limitations. First, we used three different surveys which limited the comparability of measures between groups. To our knowledge, however, no single survey includes large numbers of MSM and heterosexuals from rigorously sampled representative populations as well as the parameters we sought to study. The Seattle-based heterosexual and MSM RDDs were all conducted in the mid-2000s, and our findings using the SEA survey were similar to what Levin *et al.* reported regarding age at first sex and condom use using the small number of MSM participating in the SSS [n=72]⁹. The UMHS, on the other hand, was conducted in 1996–98, which was 5–10 years earlier than the Seattle surveys. Since the mid-1990s, antiretroviral therapy for HIV was introduced, and some evidence suggests that serosorting and HIV testing frequency increased among MSM^{37,38}. Despite these changes, we did not observe large, consistent differences in the sexual behavior patterns we evaluated in MSM between the UMHS and SEA. For example, although there were drastic changes in internet use between the mid-1990s and mid-2000s, the proportion of MSM who met their partners through less formal social venues in general did not change. Another limitation of using UMHS data for this analysis was that it was conducted in different cities than the Seattle MSM surveys. Although not presented here, there were very few differences in behavior patterns between the UMHS cities suggesting that sexual behavior patterns among urban MSM were relatively similar.

A second limitation is that the low survey response rates may have affected the representativeness of our findings if there were differential participation rates associated with sexual behavior. Third, the cross-sectional data in these studies were prone to potential recall bias and the confounding of cohort effects, which can affect the estimation of longitudinal patterns. Finally, we did not directly measure the incidence of HIV or other STI. Because of this, we were unable to specifically evaluate the behaviors of persons with STI, which are clearly key with respect to transmission risk.

Our finding that MSM continued to form new partnerships later into adulthood than heterosexuals, coupled with much higher levels of concurrency and age-disassortative mixing, demonstrates important ways in which the sexual behavior and sexual network

patterns of MSM and heterosexuals differ. While these differences may explain part of the observed disparity in HIV/STI rates by sexual orientation, our data provide relatively little insight into why these patterns of sexual behavior vary. Relatively few MSM partnerships in our analysis were formed in the context of personal social networks. Perhaps the separation of social and sexual networks observed among many MSM – a phenomenon that is at least partially conditioned by factors such as laws, culture, and attitudes toward homosexuality – plays a critical role in fostering the sustained HIV/STI epidemics in this population. Attitudes toward sexual minorities and laws affecting their relationships (e.g., gay marriage) are changing in many parts of the world. Thus, it is plausible that the long-standing cultural forces that promote relatively safe patterns of sexual behavior among heterosexuals have exerted relatively little influence on MSM. Insofar as social norms pertaining to same-sex relationships, marriage, and parenting continue to change, MSM sexual behavior patterns may also change, ultimately reducing risk for HIV/STI among MSM.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1.

(A) Proportion of men who have sex with men (MSM) and heterosexual men and women who formed a new partnership in the past year by age at interview; (B) Proportion of MSM and heterosexual men and women whose last new partnership began more than 5 years ago by age at interview; Seattle Sex Survey (SSS, 2003–2004), Urban Men’s Health Study (UMHS, 1996–1998), and Seattle MSM RDD (SEA, 2003 and 2006).

Figure 2.

(A) Proportion of men who have sex with men (MSM) and heterosexual men and women age 18 to 24 years who reported that their most recent partner was >5 years older or younger; (B) Proportion of MSM and heterosexual men and women who reported any concurrent (overlapping) partnerships in the past year; Seattle Sex Survey (SSS, 2003–2004), Urban Men’s Health Study (UMHS, 1996–1998), and Seattle MSM RDD (SEA, 2003 and 2006).

Table 1

Characteristics of the random digit dialing surveys; Seattle Sex Survey (2003–2004), Urban Men's Health Study (1996–1998), and Seattle Men Who Have Sex With Men (MSM) RDD (2003 and 2006).

	Seattle Sex Survey [SSS] (Heterosexual Men & Women)	Urban Men's Health Study [UMHS] (MSM)	Seattle MSM RDD [SEA] (MSM)
Years	2003–2004	1996–1998	2003 & 2006
Eligibility criteria	<ul style="list-style-type: none"> • Age 18–39 • Seattle residents • Present analysis restricted to those who reported exclusively heterosexual partnerships 	<ul style="list-style-type: none"> • Age 18 or older • New York City, Chicago, San Francisco, or Los Angeles residents • Same-sex behavior since age 14 or self-identified as gay or bisexual 	<ul style="list-style-type: none"> • Age 18 or older • Seattle residents • Same-sex behavior since age 14
Sample size	N=1,194 (Heterosexuals, n=926)	N=2,881 (Age<40, n=1,621)	N=800 (Age<40, n=342)
Response rate	24%	not reported	46% (2003) & 22% (2006)
Cooperation rate	46%	78%	97% (2003) & 87% (2006)
Partner-specific questions	Asked about up to 5 most recent partners (vaginal, oral, or anal sex)	Asked about up to 4 most recent male partners in the past year (any kind of sex)	Asked about up to 3 most recent male anal sex partners in the past year

Age-specific sexual behavior patterns of men who have sex with men (MSM) and heterosexual participants in three random digit dialing surveys; Seattle Sex Survey (SSS, 2003–2004), Urban Men's Health Study (UMHS, 1996–1998), and Seattle MSM RDD (SEA, 2003 and 2006).

Table 2

Characteristic	Population/Survey	Age at interview				
		18–24 n=344 mean (95% CI)	25–29 n=703 mean (95% CI)	30–34 n=940 mean (95% CI)	35–39 n=902 mean (95% CI)	Overall n=2889 mean (95% CI)
Age at sexual debut	Heterosexual men	16.7 (16.2–17.2)	17.2 (16.7–17.7)	17.6 (17.1–18.1)	17.9 (17.3–18.5)	17.4 (17.1–17.7)
	Heterosexual women	17.3 (16.8–17.7)	18.0 (17.5–18.5)	17.9 (17.4–18.3)	18.1 (17.5–18.6)	17.8 (17.6–18.1)
	MSM (UMHS)	15.3 (14.8–15.9)	15.5 (15.1–16.0)	15.4 (15.0–15.7)	15.4 (15.0–15.8)	15.4 (15.2–15.6)
	MSM (SEA)	n/a	n/a	n/a	n/a	n/a
Age at male sexual debut	MSM (UMHS)	16.4 (15.8–17.0)	16.9 (16.3–17.4)	16.5 (16.0–16.9)	16.3 (15.8–16.7)	16.5 (16.2–16.7)
	MSM (SEA)	16.8 (15.0–18.6)	18.8 (17.3–20.3)	16.7 (14.8–18.5)	16.5 (15.0–18.1)	17.0 (16.1–17.9)
	MSM (UMHS)	18.2 (17.7–18.7)	19.7 (19.3–20.1)	19.7 (19.3–20.1)	19.8 (19.4–20.3)	19.6 (19.4–19.8)
	MSM (SEA) *	18.2 (16.1–20.3)	20.2 (18.8–21.6)	19.1 (17.4–20.8)	21.1 (19.5–22.8)	20.2 (19.2–21.1)
Age at anal sex debut	Heterosexual men	1 (0–99)	1 (0–9)	1 (0–10)	1 (0–10)	1 (0–99)
	Heterosexual women	1 (0–5)	1 (0–6)	1 (0–7)	1 (0–4)	1 (0–7)
	MSM (UMHS)	4 (0–200)	4 (0–200)	4 (0–500)	4 (0–400)	4 (0–500)
	MSM (SEA) *	3 (0–40)	2 (0–35)	3 (0–300)	2 (0–50)	2 (0–300)
Number of partners, last year [median, range]	Heterosexual men	4 (1–99)	8 (1–99)	9 (1–99)	12 (1–99)	8 (1–99)
	Heterosexual women	4 (1–25)	6 (1–60)	7 (1–40)	7 (1–99)	6 (1–99)
	MSM (UMHS)	15 (1–3100)	30 (1–2562)	55 (1–7000)	67 (0–9005)	45 (0–9005)
	MSM (SEA)	n/a	n/a	n/a	n/a	n/a
Number of partners, lifetime [median, range]	Heterosexual men	7.9 (0.0–16.9)	18.0 (5.3–30.6)	45.5 (22.9–68.1)	23.8 (3.9–43.7)	20.8 (13.5–28.2)
	Heterosexual women	10.0 (0.0–21.4)	42.3 (22.0–62.7)	45.5 (22.9–68.1)	18.2 (0.0–45.4)	29.2 (19.6–38.8)
	MSM (UMHS)	42.5 (33.5–51.5)	37.9 (32.2–43.7)	35.9 (31.2–40.6)	43.0 (37.8–48.2)	39.2 (36.4–42.0)
	MSM (SEA) †	52.0 (31.0–73.0)	44.1 (26.5–61.7)	53.7 (40.0–67.4)	44.8 (31.6–58.0)	48.5 (41.0–56.1)
Age of most recent partner was >5 years older or younger [†] [%]	Heterosexual men	13.9 (5.7–22.1)	12.7 (6.6–18.8)	7.7 (2.8–12.6)	5.8 (1.2–10.3)	9.7 (6.9–12.6)
	Heterosexual women	13.2 (6.1–20.3)	8.7 (4.1–13.3)	5.0 (1.6–8.4)	4.9 (1.0–8.8)	7.5 (5.2–9.7)
	MSM (UMHS)	23.3 (16.5–30.2)	31.6 (26.8–36.4)	32.3 (28.4–36.2)	32.3 (28.4–36.3)	31.3 (29.1–33.6)
	MSM (SEA)					
Any concurrency in the last year ^{**} [%]	Heterosexual men	13.9 (5.7–22.1)	12.7 (6.6–18.8)	7.7 (2.8–12.6)	5.8 (1.2–10.3)	9.7 (6.9–12.6)
	Heterosexual women	13.2 (6.1–20.3)	8.7 (4.1–13.3)	5.0 (1.6–8.4)	4.9 (1.0–8.8)	7.5 (5.2–9.7)
	MSM (UMHS)	23.3 (16.5–30.2)	31.6 (26.8–36.4)	32.3 (28.4–36.2)	32.3 (28.4–36.3)	31.3 (29.1–33.6)
	MSM (SEA)					

Characteristic	Population/Survey	Age at interview				
		18–24 n=344 mean (95% CI)	25–29 n=703 mean (95% CI)	30–34 n=940 mean (95% CI)	35–39 n=902 mean (95% CI)	Overall n=2889 mean (95% CI)
	MSM (SE/A) [‡]	12.5 (0.4–24.6)	12.3 (4.6–20.1)	20.6 (12.4–28.8)	20.0 (13.3–26.7)	17.8 (13.8–21.9)

* Male partners only.

[^] Restricted to partners formed within the last year.

[‡] Anal sex partners only.

** Includes those who reported no sex partners in the past year.