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Sexual Identity Differences in High-Intensity Binge Drinking: Findings from a US National Sample

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Abstract

Aim—To estimate sexual identity differences in high-intensity binge drinking.

Design and setting—Cross-sectional US adult health survey from 2014 and 2015.

Participants—US adults ages 18 and older ($N = 215,684$; $n = 203,562$ heterosexual, $n = 2,784$ lesbian/gay, $n = 2,892$ bisexual, $n = 686$ “other” and $n = 1,947$ don’t know/unsure).

Measurements—Self-reported past 30-day standard binge and high-intensity binge drinking. Standard binge drinking cutoff values were 4+/5+ drinks for women and men, respectively. High-intensity binge drinking was measured as 2 and 3 times the standard level (8+ and 12+ drinks for women and 10+ and 15+ drinks for men).

Findings—Lesbian and bisexual women were more likely than heterosexual women to report consuming 4+ drinks (adjusted odds ratio [aOR] = 1.57, CI [1.18, 2.09] and $aOR = 1.83$, CI [1.45, 2.30] for lesbian and bisexual women, respectively); 8+ drinks ($aOR = 3.86$, CI [2.39, 6.24], $aOR = 2.07$, CI [1.39, 3.07]); and 12+ drinks ($aOR = 3.81$, CI [1.77, 8.19], $aOR = 2.54$, CI [1.25, 5.14]) in a single occasion in the past 30 days. Generally, gay and bisexual men were no more likely than heterosexual men to report standard or high-intensity binge drinking. However, bisexual men were more likely than heterosexual men to consume 15+ drinks, $aOR = 1.76$, 95% CI [1.01, 3.06]. Rates of standard and high-intensity binge drinking were similar between heterosexual and unsure men and women. Men and women who indicated “other” sexual identities were generally less likely than heterosexuals to report standard and high-intensity binge drinking with the exception of 4+ drinks for women and 10+ drinks for men.

Conclusions—In the USA, sexual minority women are more likely, and sexual minority men are equally likely, to drink at standard and high-intensity binge drinking levels as their heterosexual counterparts.

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Introduction

There has been growing attention to the health status and health behaviors of lesbian, gay, and bisexual people. [1–3] One area of concern is the disproportionate rate of alcohol use among sexual minority youth and adults. A robust and growing body of research indicates that sexual minorities have elevated risk across a variety of alcohol-related behaviors including early initiation, [4] frequency of use, [5] heavy episodic drinking, [6] alcohol-related problems, [7] and alcohol use disorders [8,9]. The studies documenting sexual orientation disparities in alcohol use also typically find larger differences between sexual minority and heterosexual women than between sexual minority and heterosexual men. [10–13]

Given its short- and long-term health consequences, heavy episodic (binge) drinking is an important health risk behavior. [14–16] Researchers have recently proposed that the commonly used standard binge drinking measure of 4+ drinks for women and 5+ drinks for men may mask the prevalence and consequences of high-quantity alcohol consumption. [17–19] A substantial proportion of binge drinkers, particularly young adults, consume two- or three-times the standard 4+/5+ binge drinking level. [18–21] Hingson and colleagues [21], for example, found that 8% of US adults reported drinking at two-times the standard binge level and 3% reported drinking at three-times the standard level. Over a third reported drinking those amounts at least once a month and 16% at least once a week. Studies have also identified meaningful differences in the correlates (e.g., sex, age), antecedents (e.g., day of the week, drinking expectancies, drinking contexts), and consequences (e.g., injury, blackouts, driving after drinking) [22] of high-intensity binge drinking relative to those who meet but do not exceed the standard 4+/5+ cutoff. [21,23,24] Importantly, high-intensity binge drinking is on the rise. In 2001, 5% and 3% of US adults reported drinking at two- and three-times the standard binge rate, respectively, compared to 8% and 5% in 2012.[21] Findings suggest the need for prevention and intervention strategies that specifically focus on high-intensity binge drinking and those most at risk for high-intensity binge drinking.

Despite demonstrated risk for alcohol use and alcohol-use disorders among sexual minorities relative to heterosexuals, [10,11] researchers have yet to examine whether sexual-orientation-related disparities exist at these higher levels of alcohol use. Notwithstanding the evident short- (i.e., alcohol poisoning, injury, accidental death) and long-term (i.e., liver damage, alcohol dependence) consequences of high-intensity binge drinking, [14–16] established sex differences in sexual-orientation-related disparities in alcohol use are also cause for concern. That is, unlike gender differences observed in studies of the general population, sexual minority women (SMW) are as likely or more likely to drink and drink heavily as sexual minority men (SMM). [10,12,13] Although not well-understood, this “gender paradox” in sexual orientation alcohol use disparities may be related to the rejection of traditional gender norms among sexual minorities, whereby SMW may be more likely, and SMM less likely, to engage in the traditionally masculine behavior of heavy drinking compared to same-gender heterosexual peers. [10] The elevated risk for SMW is particularly important for health outcomes due to women’s physiological vulnerability to alcohol use relative to men [25–27]. Therefore, understanding SMW’s risk for high-intensity binge drinking has important public health implications.

Considering the documented sexual-orientation-related alcohol-use disparities, investigations of high-intensity binge drinking may yield important information about which groups are most likely to engage in this pattern of drinking and, thus, which groups are most vulnerable to alcohol-related health consequences. The current study uses data from a national US sample of adults to estimate sexual identity differences in the prevalence of standard binge drinking (4+/5+ drinks for women and men, respectively) and high-intensity binge drinking (8+/10+ drinks and 12+/15+ drinks for women and men, respectively).

Methods

Data Source and Sample

Data were from the 2014 and 2015 Behavioral Risk Factor Surveillance Survey (BRFSS), [28] an annual state-based, random-digit-dialed telephone health survey of noninstitutionalized US adults, ages 18+, conducted by the US Centers for Disease Control and Prevention (CDC), which collects data from different participants in each survey cycle. Nineteen states in 2014 and 22 states in 2015 included measures of sexual identity. Based on CDC recommendations [29] the current analytic sample includes respondents who were from states that assessed sexual orientation in both 2014 and 2015 (i.e., Delaware, Hawaii, Idaho, Kansas, Maryland, Minnesota, Nevada, New York, Ohio, Pennsylvania, Virginia, and Wisconsin) and who provided a valid response to questions about sexual identity and binge drinking. Analyses were stratified by sex ($n = 86,459$ men, $n = 120,139$ women) given research findings that document sex differences in the presence and magnitude of sexual-orientation-related disparities in alcohol use [9,10,12] and based on National Institute on Alcohol Abuse and Alcoholism recommendations [30] for different definitions of binge drinking (4+ drinks for women and 5+ drinks for men).

Measures

Standard and high-intensity binge drinking—Standard and high-intensity binge drinking were measured using a single item: “During the past 30 days, what is the largest number of drinks you have had on any occasion?”. Responses were coded to reflect past 30-day *standard binge drinking* as 4+ for women and 5+ for men ($no = 0$, $yes = 1$). Two *high-intensity binge drinking* thresholds were categorized for women and men to reflect drinking at 2- and 3-times the standard cutoff rate: 8+ and 12+ drinks for women and 10+ and 15+ drink for men ($no = 0$, $yes = 1$). [17,18] Alcohol quantity questions were only asked of past 30 day drinkers; participants who reported no alcohol use in the past 30 days were coded as not meeting the criteria for high-intensity binge drinking across thresholds ($no = 0$).

Sexual identity—Sexual identity was assessed using a single item in which participants were asked to indicate whether they were straight, lesbian or gay, bisexual, other, or don’t know/not sure.

Background characteristics—Background characteristics included age (18–24, 25–34, 35–44, 45–54, 55–64, 65+), race/ethnicity (white, black, Hispanic, multiracial, and other), education (less than high school, high school, some college, and college graduate or higher),

relationship status (married, divorced, widowed, separated, never married, coupled), and whether or not they had a child living in the home with them (yes, no).

Statistical Analysis

All analyses were design-based and conducted using sampling weights to account for the BRFSS complex survey design. First, Rao-Scott chi-square tests were conducted to estimate sexual identity differences in standard and high-intensity binge drinking for men and women. Second, a series of logistic regression analyses were conducted to compare rates of standard binge drinking and high-intensity binge drinking by sexual identity, adjusted for age, race/ethnicity, education, relationship status, child presence, and survey collection year (2014 vs 2015). All analyses were conducted using Stata 12.4. [31] Multiple imputation was used to account for missing data on the covariates.

Results

Demographic characteristics and rates of high-intensity binge drinking are presented in Table 1 and demographic differences by sexual identity are presented in Table 2. Generally, sexual minorities were more racially and ethnically diverse, younger, were less likely to be married and less likely to have a child living in the home than heterosexuals. Weighted estimates indicated that, among women, 1.13% identified as lesbian, 2.45% as bisexual, 0.45% as other, and 1.24% as unsure of their sexual identity. Among men, 1.86% identified as gay, 1.38% as bisexual, 0.34% as other, and 0.87% as unsure. Almost 11% of women in the overall sample reported drinking 4 or more drinks on at least one occasion in the past 30 days, 1.65% consumed 8 or more drinks, and 0.46% consumed 12 or more drinks. Among men, 25.73% reported consuming 5 or more drinks, 6.52% consumed 10 or more drinks, and 2.05% consumed 15 or more drinks on any one occasion in the prior 30 days.

Weighted estimates for standard and high-intensity binge drinking by sexual identity are displayed in Table 3. Lesbian and bisexual women reported significantly higher rates of standard and high-intensity binge drinking than heterosexual women. Women unsure of their sexual identities had the lowest rates of binge drinking across outcomes, with the exception of the 12+ threshold, where women reporting an “other” sexual identity indicated the lowest rate. Sexual minority and heterosexual men were mostly similar on rates of standard and high-intensity binge drinking at the bivariate level. However, bisexual men were significantly more likely than heterosexual men to report consuming 15+ drinks. Compared to all other men, “other” and unsure men were less likely to consume 5+ drinks on any one occasion in the past 30 days, but did not differ from heterosexual men on rates of high-intensity binge drinking.

Table 4 displays adjusted odds ratios for standard and high-intensity binge drinking thresholds for women and men. Compared to heterosexual women, lesbian women had 1.5 times the odds of drinking four or more drinks and nearly four times the odds of drinking at the 8+ and 12+ thresholds. Bisexual women were 1.8 times as likely as heterosexual women to report drinking four or more drinks on at least one occasion in the past 30 days, and 2 and 2.5 times as likely to report drinking at the 8+ and 12+ threshold, respectively. Women who identified as “other” were significantly less likely than heterosexual women to report

drinking 8+ or 12+ drinks during a single occasion. Compared to heterosexual men, gay, bisexual, and unsure men were equally likely to report standard and high-intensity binge drinking. The exception here was bisexual men, who were 1.8 times as likely as heterosexual men to report drinking at the 15+ threshold. Men who indicated their sexual identity as “other” were significantly less likely than heterosexual men to drink 5+ or 15+ drinks.

Discussion

To our knowledge, this is the first study to examine sexual-orientation-related differences in high-intensity binge drinking. Results provide compelling evidence for sexual-orientation-related disparities in high-intensity binge drinking among women, but not men. Lesbian women were more than 3.8 times as likely as heterosexual women to report drinking at 2- and 3-times the standard threshold of 4+ drinks during a single drinking occasion in the past 30 days. Bisexual women were 2 to 2.5 times as likely as heterosexual women to report high-intensity binge drinking in the past 30 days. Conversely, gay and bisexual men were generally similar to heterosexual men in their likelihood of standard and high-intensity binge drinking, except for bisexual men who were more likely to indicate consuming 15+ drinks in a single occasion in the past 30 days. Notably, among women, sexual orientation disparities in high-intensity binge drinking were more robust relative to the standard 4+ cutoff. Findings validate the need for more nuanced measures of heavy alcohol use and suggest that researchers using the standard 4+ drink measure may underestimate the risk for heavy alcohol use among lesbian and bisexual women.

Findings are consistent with the general literature on sexual-orientation-related disparities in alcohol use in that sexual-identity differences in heavy drinking in the current study were more pronounced among women than among men. We extend this literature by showing that these sexual identity and sex differences persist even at high levels of risk (i.e., high-intensity binge drinking). Interestingly, the proportion of SMW who indicated drinking at 2- and 3-times the standard binge drinking thresholds were similar to, but in some cases exceeded, the estimated prevalence among heterosexual men. Specifically, 8.7% of lesbian women reported drinking 2 times the standard threshold compared to 6.6% of heterosexual men and 2.4% of lesbian women reported drinking 3-times the standard threshold relative to 2.0% of heterosexual men. Such sex by sexual identity differences in alcohol use have been referred to by Hughes and colleagues [10] as a “gender paradox” and are hypothesized to stem, at least partially, from SMW’s and SMM’s rejection of traditional gender roles. That is, SMW are less likely to adopt traditional feminine gender roles that limit women’s drinking (e.g., bearing and caring for children [32]) and SMM may be less pressured to engage in traditionally masculine behaviors like heavy drinking. [10] Findings regarding elevated risk of high-intensity binge drinking among SMW is particularly concerning given the physiological impact of alcohol consumption on women, relative to men. Women who drink large quantities of alcohol are more susceptible to acute risk via motor movement impairment and alcohol-related injuries, as well as chronic conditions such as liver damage, cardiovascular disease, and some cancers. [14,24,25,33] Even intermittent high-quantity alcohol consumption contributes to poor immediate and long-term health consequences, [16,34] suggesting the importance of understanding factors that contribute to SMW’s risk

for high-intensity binge drinking. Such information is essential in the development of focused interventions for these groups.

Despite its contributions, the current study has several limitations that merit consideration. First, given that high-intensity binge drinking is a relatively low prevalence behavior and the number of sexual minorities in national population-based samples is generally relatively small, we were unable to investigate other demographic characteristics that may contribute to elevated rates of binge drinking. Future studies, with larger numbers of sexual minorities, are needed to consider how other factors known to influence alcohol use, such as race/ethnicity [35], relationships status [36], socioeconomic status [37] and employment [36], impact high-intensity binge drinking. Second, we were unable to assess the frequency of standard and high-intensity binge drinking using available BRFSS data. Given the potential acute consequences of binge drinking, [15,18] even one episode of high-intensity binge drinking is of concern. However, future research should endeavor to understand how often this pattern of drinking occurs among SMW and SMM to better understand the implications for health. Finally, the BRFSS data do not provide an opportunity to assess mechanisms underlying high-intensity binge drinking or the contexts in which these behaviors occur. As such, we are unable to draw definitive conclusions as to why SMW are more likely to engage in high-intensity binge drinking than either heterosexual women or gay/bisexual men. Future studies should look to identify the mechanisms that influence high-intensity binge drinking among SMW (i.e., stigma, discrimination) [10] in order to illuminate unique strategies to reduce sexual-orientation-related alcohol disparities among SMW.

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Table 1

Pooled Sample Demographic Characteristics: Behavioral Risk Factor Surveillance System, United States, 2014–2015

	Women (52.13%)			Men (47.87%)		
	<i>n</i>	% _w	[95% CI]	<i>n</i>	% _w	[95% CI]
Sexual Identity						
Heterosexual	117,838	94.73	[94.45, 95.00]	85,724	95.56	[95.31, 95.81]
Lesbian/Gay	1,187	1.13	[1.02, 1.24]	1,597	1.86	[1.71, 2.01]
Bisexual	1,874	2.45	[2.25, 2.66]	1,018	1.38	[1.24, 1.53]
Other	431	0.45	[0.38, 0.54]	255	0.34	[0.26, 0.43]
Unsure	1,273	1.24	[1.11, 1.38]	674	0.87	[0.76, 1.00]
Race/Ethnicity						
White, NH	99,468	72.20	[71.68, 72.72]	72,224	72.47	[71.87, 73.06]
Black, NH	10,153	12.43	[12.05, 12.81]	5,420	11.10	[10.68, 11.54]
Hispanic	5,317	8.67	[8.32, 9.04]	4,010	9.00	[8.57, 9.44]
Other, NH	5,129	5.29	[4.98, 5.61]	4,647	5.92	[5.60, 6.25]
Multiracial, NH	3,327	1.41	[1.31, 1.51]	2,716	1.51	[1.40, 1.64]
Age						
18–24	5,055	11.33	[10.87, 11.81]	5,473	12.79	[12.31, 13.28]
25–34	10,241	14.92	[14.50, 15.35]	8,387	16.18	[15.68, 16.68]
35–44	14,013	15.48	[15.09, 15.87]	10,654	16.09	[15.63, 16.56]
45–54	20,624	17.87	[17.49, 18.26]	15,903	18.45	[18.01, 18.90]
55–64	29,102	17.73	[17.39, 18.08]	21,507	17.71	[17.32, 18.11]
65+	45,977	22.67	[22.30, 23.04]	28,748	18.78	[18.41, 19.17]
Education						
< High school	7,879	11.90	[11.47, 12.34]	5,813	12.95	[12.45, 13.46]
High school	35,717	29.27	[28.79, 29.76]	26,008	31.96	[31.40, 32.53]
Some college	35,685	31.70	[31.21, 32.20]	23,220	28.31	[27.77, 28.85]
College	45,365	27.13	[26.72, 27.54]	35,360	26.78	[26.33, 27.24]
Relationship Status						
Married	62,797	50.49	[49.96, 51.02]	53,447	53.71	[53.11, 54.31]
Divorced	18,391	11.20	[10.91, 11.49]	10,952	9.81	[9.49, 10.15]

	Women (52.13%)			Men (47.87%)		
	<i>n</i>	% _w	[95% CI]	<i>n</i>	% _w	[95% CI]
Widowed	21,897	10.46	[10.21, 10.71]	5,783	3.60	[3.44, 3.78]
Separated	2,403	2.51	[2.35, 2.68]	1,462	2.12	[1.95, 2.31]
Never married	15,912	21.50	[20.98, 22.04]	16,131	26.35	[25.77, 26.95]
Coupled	2,816	3.84	[3.61, 4.09]	2,407	4.40	[4.11, 4.71]
Child in House _{Yes}	32,449	37.81	[37.28, 38.35]	22,647	34.12	[33.53, 34.72]
BRFSS Year						
2014	63,678	51.65	[51.14, 52.16]	45,670	51.76	[51.19, 52.34]
2015	61,334	48.35	[47.84, 48.86]	45,002	48.24	[47.66, 48.81]
4+/5+ Threshold	10,021	10.82	[10.48, 11.18]	19,378	25.73	[25.19, 26.28]
8+/10+ Threshold	1,360	1.65	[1.51, 1.81]	4,137	6.52	[6.20, 6.86]
12+/15+ Threshold	369	0.46	[0.39, 0.55]	1,208	2.05	[1.86, 2.25]

Note. Survey demographic characteristics and rates of standard and high-intensity binge drinking did not statistically vary across years.

Pooled Sample Demographic Characteristics by Sexual Identity Among Women: Behavioral Risk Factor Surveillance System, United States, 2014–2015

Table 2

	Heterosexual		Gay/Lesbian		Bisexual		Other		Unsure		χ^2	p
	%	[95% CI]	%	[95% CI]	%	[95% CI]	%	[95% CI]	%	[95% CI]		
WOMEN												
Race/Ethnicity												
White, NH	73.68	[73.15,74.21]	70.53	[65.55,75.05]	62.25	[57.91,66.40]	49.43	[40.62,58.26]	32.24	[27.62,37.23]	54.15,	<.0001
Black, NH	12.41	[12.03,12.80]	14.86	[11.37,19.19]	17.45	[14.05,21.45]	12.64	[8.12,19.14]	5.77	[3.92,8.42]		
Hispanic	7.62	[7.28,7.98]	7.56	[5.09,11.10]	8.88	[6.84,11.45]	25.00	[17.02,35.14]	44.67	[38.99,50.50]		
Other, NH	4.93	[4.63,5.25]	4.45	[2.68,7.29]	7.30	[5.23,10.11]	11.66	[7.42,17.86]	16.78	[12.09,22.82]		
Multiracial, NH	1.36	[1.26,1.46]	2.60	[1.71,3.95]	4.12	[2.88,5.87]	1.27	[0.44,3.58]	0.54	[0.23,1.22]		
Age												
18–24	10.74	[10.27,11.24]	20.37	[15.95,25.64]	37.66	[33.39,42.14]	16.52	[10.47,25.10]	5.28	[2.61,10.37]	39.37,	<.0001
25–34	14.55	[14.13,14.99]	18.10	[14.50,22.36]	29.16	[25.43,33.20]	14.80	[8.92,23.55]	15.29	[11.59,19.89]		
35–44	15.56	[15.17,15.97]	15.56	[12.37,19.39]	13.07	[10.87,15.65]	13.89	[8.18,22.60]	17.17	[13.10,22.18]		
45–54	18.16	[17.77,18.55]	22.54	[18.95,26.58]	8.75	[6.94,10.97]	10.58	[6.73,16.24]	13.82	[10.27,18.36]		
55–64	18.06	[17.71,18.42]	14.07	[11.66,16.89]	5.81	[4.75,7.08]	20.00	[13.88,27.96]	14.39	[11.03,18.56]		
65+	22.92	[22.54,23.30]	9.36	[7.36,11.85]	5.54	[4.43,6.92]	24.20	[18.91,30.41]	34.06	[29.39,39.06]	67.61,	<.0001
Education												
< High school	10.51	[10.08,10.95]	5.72	[3.86,8.39]	16.85	[13.27,21.15]	39.90	[31.27,49.20]	53.84	[48.35,59.24]		
High school	29.45	[28.96,29.95]	26.35	[22.12,31.07]	28.58	[24.94,32.52]	22.80	[17.32,29.41]	26.73	[22.36,31.59]		
Some college	32.21	[31.70,32.73]	35.84	[30.97,41.01]	35.05	[31.17,39.14]	24.09	[17.08,32.83]	11.60	[8.27,16.03]		
College	27.83	[27.40,28.26]	32.09	[28.25,36.19]	19.52	[16.96,22.36]	13.21	[9.30,18.43]	7.83	[5.56,10.92]	58.67,	<.0001
Relationship Status												
Married	51.80	[51.25,52.34]	20.85	[17.47,24.69]	23.96	[20.78,27.47]	31.31	[23.93,39.78]	45.29	[39.79,50.91]		
Divorced	11.37	[11.07,11.67]	7.98	[6.10,10.38]	7.95	[6.62,9.52]	6.67	[4.24,10.34]	9.32	[6.69,12.84]		
Widowed	10.50	[10.24,10.77]	1.60	[0.94,2.70]	2.76	[2.10,3.63]	14.33	[10.16,19.84]	19.15	[15.97,22.79]		
Separated	2.30	[2.15,2.46]	2.77	[1.63,4.67]	4.14	[2.86,5.95]	4.37	[2.20,8.48]	8.22	[5.23,12.70]		
Never married	20.64	[20.10,21.18]	46.99	[42.03,52.01]	52.05	[47.87,56.21]	30.64	[23.02,39.50]	11.26	[7.72,16.12]		
Coupled	3.40	[3.17,3.64]	19.81	[16.52,23.55]	9.13	[7.13,11.63]	12.67	[6.61,22.94]	6.76	[4.20,10.70]	7.44,	<.0001
Child in House												

	Heterosexual		Gay/Lesbian		Bisexual		Other		Unsure		χ^2	p		
	%	[95% CI]	%	[95% CI]	%	[95% CI]	%	[95% CI]	%	[95% CI]				
No	62.29	[61.73,62.84]	72.40	[67.59,76.74]	55.20	[50.96,59.36]	61.48	[51.95,70.20]	56.32	[50.61,61.88]	32.52,	< .0001		
Yes	37.71	[37.16,38.27]	27.60	[23.26,32.41]	44.80	[40.64,49.04]	38.52	[29.80,48.05]	43.68	[38.12,49.39]				
MEN														
Race/Ethnicity														
White, NH	73.55	[72.94,74.15]	72.03	[67.79,75.91]	67.30	[61.69,72.45]	53.01	[40.59,65.07]	28.40	[23.12,34.34]	5.85	< .0001		
Black, NH	11.14	[10.71,11.59]	10.31	[7.70,13.68]	11.17	[7.85,15.64]	17.13	[9.30,29.43]	8.09	[5.08,12.65]				
Hispanic	8.11	[7.68,8.55]	12.46	[9.58,16.05]	8.26	[5.52,12.18]	14.04	[8.34,22.66]	48.74	[41.58,55.96]				
Other, NH	5.70	[5.39,6.03]	3.12	[1.92,5.01]	10.00	[6.93,14.23]	14.57	[6.40,29.83]	14.17	[10.48,18.89]				
Multiracial, NH	1.50	[1.38,1.62]	2.08	[1.39,3.10]	3.28	[1.74,60.70]	1.25	[0.63,2.47]	0.60	[0.21,1.68]				
Age														
18–24	12.68	[12.18,13.19]	17.23	[14.03,20.99]	25.66	[20.88,31.10]	10.11	[4.35,21.77]	8.34	[5.10,13.33]	34.49,	< .0001		
25–34	16.12	[15.61,16.65]	19.82	[16.42,23.73]	18.88	[14.99,23.50]	15.91	[7.25,31.43]	15.55	[10.71,22.02]				
35–44	16.17	[15.70,16.65]	14.93	[12.26,18.05]	10.30	[7.42,14.13]	19.39	[10.24,33.63]	19.81	[14.27,26.82]				
45–54	18.43	[17.98,18.89]	23.31	[20.17,26.78]	15.36	[12.01,19.44]	20.21	[13.13,29.80]	12.90	[9.51,17.28]				
55–64	17.77	[17.37,18.18]	14.82	[12.53,17.45]	15.53	[12.21,19.56]	9.93	[6.10,15.77]	15.42	[10.78,21.57]				
65+	18.82	[18.44,19.22]	9.89	[8.29,11.77]	14.26	[11.45,17.62]	24.45	[17.20,33.52]	27.99	[22.99,33.60]				
Education														
< High school	12.17	[11.67,12.69]	8.42	[5.87,11.95]	11.35	[7.98,15.90]	33.26	[22.41,46.22]	53.04	[46.24,59.73]	39.57,	< .0001		
High school	32.25	[31.68,32.83]	21.61	[18.38,25.23]	34.36	[29.38,39.71]	35.83	[25.11,48.18]	25.42	[20.55,30.99]				
Some college	28.64	[28.08,29.20]	31.38	[27.66,35.35]	30.98	[26.13,36.29]	15.27	[7.99,27.22]	12.73	[9.12,17.50]				
College	26.94	[26.47,27.42]	38.59	[34.90,42.41]	23.31	[19.73,27.32]	15.64	[10.06,23.51]	8.81	[6.33,12.14]				
Relationship Status														
Married	54.85	[54.23,55.47]	15.46	[12.97,18.32]	28.81	[24.38,33.70]	35.48	[25.37,47.08]	53.52	[46.51,60.39]	29.67,	< .0001		
Divorced	10.00	[9.67,10.35]	3.96	[2.93,5.34]	9.43	[7.24,12.20]	10.02	[5.73,16.96]	8.64	[5.31,13.77]				
Widowed	3.55	[3.38,3.72]	0.84	[0.47,1.50]	4.02	[2.58,62.20]	8.03	[4.41,14.17]	8.20	[5.76,11.55]				
Separated	2.08	[1.90,2.27]	1.07	[0.61,1.88]	2.99	[1.51,58.60]	2.03	[0.43,9.00]	2.51	[1.08,5.70]				
Never married	25.47	[24.88,26.08]	62.12	[58.27,65.83]	47.56	[42.24,52.94]	41.98	[29.75,55.29]	18.64	[13.49,25.19]				
Coupled	4.05	[3.76,4.36]	16.54	[13.84,19.64]	7.18	[4.83,10.55]	2.46	[0.86,6.84]	8.49	[4.60,15.16]				
Child in House														
No	65.35	[64.74,65.96]	90.38	[87.42,92.70]	72.33	[66.79,77.26]	70.98	[59.26,80.44]	62.73	[55.58,69.37]				

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<i>p</i>	Unsure		Other		Bisexual		Gay/Lesbian		Heterosexual	
	χ^2	[95% CI]	%	[95% CI]	%	[95% CI]	%	[95% CI]	%	[95% CI]
Yes			37.27	[30.63,44.42]	29.02	[19.56,40.74]	27.67	[22.74,33.21]	9.62	[7.30,12.58]
									34.65	[34.04,35.26]

Estimates for Binge Drinking and High-Intensity Binge Drinking by Sexual Identity for Women and Men: Behavioral Risk Factor Surveillance System, United States, 2014–2015

Table 3

	Women			Men		
	% _w	[95% CI]	χ^2	p	% _w	[95% CI]
4+/5+ Threshold			43.19,	< .001		
Heterosexual	10.60	[10.25, 10.96]			26.02	[25.46, 26.58]
Lesbian/Gay	22.00	[17.71, 26.99]			28.76	[25.26, 32.54]
Bisexual	25.10	[21.39, 29.22]			26.39	[21.93, 31.40]
Other	8.08	[4.37, 14.46]			9.38	[5.09, 16.64]
Unsure	4.02	[2.31, 6.91]			15.25	[10.03, 22.52]
8+/10+ Threshold			60.98,	< .001		
Heterosexual	1.51	[1.37, 1.67]			6.58	[6.25, 6.92]
Lesbian/Gay	8.73	[5.80, 12.93]			6.27	[4.56, 8.55]
Bisexual	6.01	[4.30, 8.36]			9.46	[6.62, 13.36]
Other	0.06	[0.01, 0.36]			4.06	[1.36, 11.50]
Unsure	0.35	[0.11, 1.12]			4.88	[2.01, 11.39]
12+/15+ Threshold			21.43,	< .001		
Heterosexual	0.41	[0.34, 0.50]			2.02	[1.83, 2.23]
Lesbian/Gay	2.44	[1.20, 4.90]			2.16	[1.24, 3.74]
Bisexual	2.00	[1.08, 3.69]			4.57	[2.76, 7.45]
Other	0.01	[0.00, 0.06]			0.34	[0.06, 1.83]
Unsure	0.19	[0.03, 1.21]			3.63	[1.12, 11.12]

Adjusted Odds Ratios for Binge Drinking and High-Intensity Binge Drinking Thresholds for Women and Men: Behavioral Risk Factor Surveillance System, United States, 2014–2015

	Women						Men					
	4+ Threshold		8+ Threshold		12+ Threshold		5+ Threshold		10+ Threshold		15+ Threshold	
	<i>aOR</i>	[95% CI]	<i>aOR</i>	[95% CI]	<i>aOR</i>	[95% CI]	<i>aOR</i>	[95% CI]	<i>aOR</i>	[95% CI]	<i>aOR</i>	[95% CI]
Sexual Identity												
Heterosexual	1.00		1.00		1.00		1.00		1.00		1.00	
Lesbian/Gay	1.57	[1.18, 2.09]	3.86	[2.39, 6.24]	3.81	[1.77, 8.19]	0.87	[0.72, 1.06]	0.70	[0.49, 1.00]	0.83	[0.46, 1.49]
Bisexual	1.83	[1.45, 2.30]	2.07	[1.39, 3.07]	2.54	[1.25, 5.14]	0.90	[0.69, 1.16]	1.16	[0.77, 1.75]	1.76	[1.01, 3.06]
Other	0.85	[0.45, 1.63]	0.04	[0.01, 0.21]	0.02	[0.00, 0.13]	0.33	[0.16, 0.69]	0.63	[0.19, 2.13]	0.17	[0.03, 0.95]
Unsure	0.73	[0.40, 1.30]	0.40	[0.12, 1.37]	0.66	[0.09, 4.60]	0.74	[0.45, 1.21]	0.96	[0.39, 2.38]	2.07	[0.62, 6.88]
Age												
18–24	1.00		1.00		1.00		1.00		1.00		1.00	
25–34	1.02	[0.88, 1.19]	0.96	[0.71, 1.30]	1.12	[0.62, 2.03]	1.24	[1.09, 1.40]	1.06	[0.89, 1.27]	1.06	[0.78, 1.42]
35–44	0.79	[0.67, 0.93]	0.60	[0.43, 0.84]	0.82	[0.42, 1.61]	0.95	[0.83, 1.08]	0.88	[0.72, 1.07]	0.84	[0.60, 1.17]
45–54	0.56	[0.48, 0.66]	0.49	[0.36, 0.67]	0.63	[0.35, 1.13]	0.63	[0.55, 0.71]	0.44	[0.35, 0.54]	0.37	[0.26, 0.54]
55–64	0.28	[0.24, 0.33]	0.15	[0.10, 0.23]	0.11	[0.06, 0.22]	0.42	[0.37, 0.48]	0.22	[0.17, 0.28]	0.15	[0.09, 0.26]
65+	0.11	[0.09, 0.13]	0.07	[0.04, 0.15]	0.19	[0.05, 0.65]	0.18	[0.16, 0.21]	0.05	[0.04, 0.07]	0.03	[0.02, 0.05]
Race/Ethnicity												
White, NH	1.00		1.00		1.00		1.00		1.00		1.00	
Black, NH	0.57	[0.50, 0.66]	0.46	[0.32, 0.67]	0.38	[0.19, 0.77]	0.48	[0.43, 0.55]	0.40	[0.31, 0.53]	0.36	[0.21, 0.60]
Hispanic	0.64	[0.54, 0.77]	0.63	[0.42, 0.95]	0.80	[0.40, 1.58]	0.82	[0.71, 0.94]	0.68	[0.54, 0.85]	0.67	[0.46, 0.99]
Other, NH	0.31	[0.24, 0.40]	0.44	[0.24, 0.81]	0.54	[0.19, 1.52]	0.41	[0.35, 0.48]	0.33	[0.25, 0.45]	0.42	[0.26, 0.67]
Multiracial, NH	0.98	[0.79, 1.23]	1.75	[1.12, 2.75]	2.69	[1.38, 5.25]	0.78	[0.64, 0.96]	0.89	[0.68, 1.16]	0.89	[0.58, 1.35]
Education												
High school	1.00		1.00		1.00		1.00		1.00		1.00	
< High school	0.65	[0.53, 0.81]	0.71	[0.45, 1.13]	0.55	[0.28, 1.07]	0.72	[0.63, 0.82]	0.97	[0.77, 1.21]	1.33	[0.94, 1.86]
Some college	1.23	[1.11, 1.36]	1.07	[0.85, 1.34]	0.80	[0.54, 1.20]	1.15	[1.07, 1.24]	0.97	[0.85, 1.11]	0.98	[0.78, 1.23]
College	1.37	[1.24, 1.51]	0.83	[0.63, 1.09]	0.71	[0.38, 1.32]	1.17	[1.09, 1.26]	0.72	[0.63, 0.82]	0.63	[0.49, 0.81]
Relationship Status												

	Women				Men			
	4+ Threshold		8+ Threshold		5+ Threshold		10+ Threshold	
	aOR	[95% CI]	aOR	[95% CI]	aOR	[95% CI]	aOR	[95% CI]
Married	1.00		1.00		1.00		1.00	
Divorced	1.25	[1.12, 1.40]	1.68	[1.26, 2.23]	1.34	[1.21, 1.47]	1.96	[1.63, 2.36]
Widowed	0.91	[0.77, 1.09]	1.04	[0.60, 1.80]	1.03	[0.87, 1.22]	1.75	[1.10, 2.80]
Separated	1.38	[1.11, 1.72]	2.43	[1.47, 4.03]	1.36	[1.09, 1.69]	2.00	[1.37, 2.90]
Never Married	1.35	[1.21, 1.51]	2.04	[1.58, 2.64]	1.12	[1.02, 1.23]	1.42	[1.21, 1.67]
Coupled	1.38	[1.15, 1.64]	1.36	[0.92, 2.02]	1.36	[1.15, 1.60]	1.66	[1.28, 2.16]
Child in House [Yes]	0.64	[0.58, 0.70]	0.68	[0.54, 0.87]	0.83	[0.77, 0.90]	0.73	[0.64, 0.83]
BRFSS Year^[2015]	1.03	[0.95, 1.11]	0.85	[0.70, 1.03]	1.02	[0.96, 1.09]	1.03	[0.92, 1.15]
							1.02	[0.84, 1.25]