

Changes in American Adults' Reported Same-Sex Sexual Experiences and Attitudes, 1973-2014

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Abstract

We examined change over time in the reported prevalence of men having sex with men and women having sex with women and acceptance of those behaviors in the nationally representative General Social Survey of U.S. adults (n 's = 28,161 to 33,728, ages 18 to 96 years), 1972-2014. The number of U.S. adults who had at least one same-sex partner since age 18 doubled between the early 1990s and early 2010s (from 3.6% to 8.7% for women and from 4.5% to 8.2% for men). Bisexual behavior (having sex with both male and female partners) increased from 3.1% to 7.7%, accounting for much of the rise, with little consistent change in those having sex exclusively with same-sex partners. The increase in same-sex partners was larger for women than for men, consistent with erotic plasticity theory. Attitudes toward same-sex sexual behavior also became substantially more accepting, $d = .75$, between the early 1970s and early 2010s. By 2014, 49% of American adults believed that same-sex sexual activity was "not wrong at all," up from 11% in 1973 and 13% in 1990. Controlling for acceptance reduced, but did not eliminate, the increase in same-sex behavior over time. Mixed effects (hierarchical linear modeling) analyses separating age, time period, and cohort showed that the trends were primarily due to time period. Increases in same-sex sexual behavior were largest in the South and Midwest and among Whites, were mostly absent among Blacks, and were smaller among the religious. Overall, same-sex sexual behavior has become both more common (or at least more commonly reported) and more accepted.

Keywords: Gay, Lesbian, Bisexual, Same-sex, Sexual Partners, Homosexuality, Birth Cohort, Time Period

Introduction

Estimates of the population of gay, lesbian, and bisexual individuals and the prevalence of same-sex sexual behaviors vary widely. These estimates are influenced by the dimension of sexual orientation assessed (identity as gay, lesbian, or bisexual; attraction to same and/or other sex partners; and/or behavior), definitions of sexual activity (broadly defined vs. more specific sexual acts), and time referents (e.g., past 12 months, past five years, since the age of 18, lifetime). Discrepancies between estimates of identity vs. behavior may speak to the prevalence of same-sex sexual behavior among those identifying as heterosexual (Reback & Larkins, 2010; Vrangalova & Savin-Williams, 2010), engagement in same-sex sexual behavior as a component of the development of sexual orientation (Calzo, Antonucci, Mays, & Cochran, 2011), and/or the capacity for fluidity in sexual identity and behavior over one's lifespan (Diamond, 2008; Hu, Xu, & Tornello, 2016). Given the limitations of identity-based questions, assessing same-sex sexual behavior (including bisexual behavior) captures a wider range of individuals, thus facilitating a better understanding of sexual behavior patterns and changes in those patterns over time.

Understanding rates of same-sex sexual behavior and attitudes toward it is important for a number of reasons. From a policy perspective, accurate estimates of same-sex sexual behavior are necessary to conduct policy analysis and make critical public policy decisions (Black, Gates, Sanders, & Taylor, 2000). Research has found complex associations between dimensions of sexual orientation and health behavior and outcomes (Eisenberg, 2001; McCabe, Hughes, Bostwick, & Boyd, 2005; Przedworski, McAlpine, Karaca-Mandic, & VanKim, 2014), making accurate estimates of same-sex sexual behavior critical for assessments of disparities in health behavior and outcomes and the appropriate targeting of public health prevention and intervention efforts. Finally, accurately identifying populations of individuals at risk for sexuality-related

discrimination and related consequences (e.g., Hatzenbuehler, 2011; Hatzenbuehler, Corbin, & Fromme, 2011) is key to informing research, public health, and policy efforts. Understanding attitudes toward same-sex sexual behavior is also important because these attitudes may impact patterns of sexuality-related discrimination (Morrison & Morrison, 2011) and violence (Hudepohl, Parrott, & Zeichner, 2010; Stotzer & Shih, 2012). Further, research indicates that internalized homophobia (the internalization of anti-gay attitudes among sexual minorities) and experiences of homophobia are associated with psychological distress and HIV risk and protective behaviors among sexual minorities (Glick, Cleary, & Golden, 2015; Hatzenbuehler, Dovidio, Nolen-Hoeksema, & Phillips, 2009; Huebner, Kegeles, Rebchook, Peterson, Neilands, Johnson, & Eke, 2013). As such, more positive attitudes about same-sex sexual behavior are likely associated with better health among sexual minorities through multiple pathways. For each of these reasons, it is critical to understand current behavioral patterns, change over time in behavior and attitudes toward that behavior, and the mechanisms of those temporal changes.

Behavioral and attitudinal change over time can involve three different processes (Campbell et al., 2015; Schaie, 1965; Yang, 2008). First, change can be due to age or development. For example, the percentage of people who have had same-sex sexual experience is likely to increase with age and life experience. Second, change can be due to time period, or a cultural change that affects people of all ages. Perhaps more Americans of all ages have engaged in same-sex sexual behavior. Third, changes in prevalence could be due to cohort (also known as generation), a cultural change that affects young people the most. Perhaps more young Americans in recent cohorts have engaged in same-sex sexual behavior, but older people have not. Recently introduced mixed-effects models based on hierarchical linear modeling (HLM)

allow the separation of the three effects using a technique known as age-period-cohort analysis (APC: Yang, 2008; Yang & Land, 2013).

Time period and cohort differences are generally considered indicators of cultural change within a country or region (Campbell et al., 2015). One of the largest and most pervasive cultural changes in the U.S. in the last few decades is the increase in individualism, a cultural system that places more emphasis on the self and less on social rules. Increasing individualism may be at the root of several cohort differences, including more positive self-views, less empathy, and a more dismissive view of relationships (Konrath et al., 2011, 2014; Twenge et al., 2012; for a review, see Twenge, 2014). On the more positive side, higher levels of individualism have also co-occurred with increased acceptance of equal roles for women (Donnelly et al., 2016) and more tolerance of different opinions and lifestyles (Twenge, Carter, & Campbell, 2014). These trends suggest that same sex sexual experiences will become more accepted and perhaps also more common.

In addition, social norms and values influence sexual behaviors, so changing attitudes about same-sex sexual behavior (and relationships) may increase the likelihood that individuals will engage in same-sex sexual behavior and the likelihood that they will report such behavior. Previous research suggests that acceptance of same-sex sexual behavior and relationships have increased. For example, support for same-sex marriage increased from 27% to 60% between 1996 and 2015 (Gallup, 2015b), and support for a gay man giving a speech, teaching at a local college, or having a book in the local library increased substantially between the 1970s and the 2010s (Twenge et al., 2014). In an analysis of General Social Survey (GSS) data and National Health and Social Life Survey data, Butler (2005) found that shifts in attitudes accounted for some of the changes in same-sex sexual partnering between 1988-2002, as did Turner et al.

(2005), though neither found that controlling for acceptance eliminated the effect, suggesting there are additional explanations. Second, changes in policies and laws regarding employment, marriage, and families may have increased the perceived feasibility of same-sex partnerships, which are now offered unprecedented legal and economic protections in the U.S. and globally. Finally, recent changes in the visibility of gays and lesbians (and same-sex sexual behavior more generally: Netzley, 2010) and the popularity and increased use of online social and sexual networking to meet potential sex partners (i.e, chat rooms, Craigslist, Adam4Adam, Manhunt, etc.: Grov, Breslow, Newcomb, Rosenberger, & Bauermeister, 2014) may have increased access to potential same-sex partners and may also have provided support in coming out as LGBT (lesbian, gay, bisexual, or transgender; Bolding, Davis, Hart, Sherr, & Elford, 2007; Mustanski, Lyons, & Garcia, 2011). Finally, since the 1980s, bisexuality has become more visible and viable as an identity and behavior option, as evidenced by increased networking opportunities, scholarship around bisexuality, and bisexuality activism both within and outside of lesbian and gay activist circles (Steinman, 2001).

Previous theory and research suggests that change over time in same-sex sexual behavior is likely to be larger for women than for men. Prevalence estimates of same-sex sexual experience among men and women are conflicting, with some research indicating more same-sex sexual experience among women (e.g., Villarroel et al., 2006) and some suggesting more among men (e.g., Berg & Lien, 2006). However, most research indicates that same-sex sexual experience has increased more among women than men (Butler, 2005; Gartrell, Bos, & Goldberg, 2012; Turner et al., 2005). Age effects may also differ between men and women; the idea of LUG (lesbian until graduation) or BUG (bisexual until graduation) suggests that women would be especially likely to experience same-sex activity while young (Diamond, 2008).

Further, attitudes about gays and lesbians or about same-sex sexual behavior may account for changes in behavior for men more than for women (Butler, 2005), indicating that a variety of other factors may better predict and explain increases in same-sex sexual behavior over time for women compared to men. First, as Baumeister (2000) concluded in an extensive review and analysis, female sexuality is more “plastic” or changeable than male sexuality, particularly in response to changing social norms and contexts. Further, women report more change over the life course in their sexual attractions than do men (Kinnish, Strassberg, & Turner, 2005) and also report more changes in behavior and identity over time (Diamond, 2000, 2003), demonstrating fluidity in sexual attractions, identity, and behavior.

Economic and social factors may also be at work. For example, Butler (2005) speculated that increased economic and legal independence for women may have decreased women’s reliance on heterosexual partnerships, and that lesbian culture gained visibility and public approval more rapidly than gay male culture. While we could not find evidence to support Butler’s speculations about changes over time in lesbian visibility and public approval, surveys that assess attitudes towards gay men and lesbians consistently find more positive attitudes and affective responses towards lesbians when compared to gay men, particularly among heterosexual men (Herek, 2000, 2002; Lamar & Kite, 1997; Ratcliff, Lassiter, Markman, & Snyder, 2006), perhaps due to the eroticization of lesbian sex (Louderback & Whitley, 1997). Much of this change may be due to bisexual behavior. Same-sex and opposite sex attractions tend to be more mutually exclusive in men than in women (Chivers, Rieger, Latty, & Bailey, 2004; Lippa, 2007; Rieger, Chivers, & Bailey, 2005). Bisexual behavior among women is often eroticized in popular media (Diamond, 2005; Netzley, 2010; Thompson, 2006), with some women reporting pressure to perform for men who eroticize same-sex sexual behavior between

women (Fahs, 2009). In short, greater sexual plasticity and fluidity among women, coupled with profound cultural shifts in the acceptance and eroticization of same-sex sexuality among women, would predict greater changes for women than for men.

Factors other than gender may also moderate the trends, such as region of the U.S., race and ethnicity, educational attainment, and religiosity. State and regional differences in public policies related to LGBT issues may also play a role in behavior (and reports of behavior). Just as LGBT-related policies impact the health of LGBT individuals (Hatzenbuehler, 2011; Hatzenbuehler, Keyes, & Hasin, 2009; Hatzenbuehler, Wieringa, & Keyes, 2011), local policy and cultural climates may also influence the likelihood of engaging in and/or reporting having engaged in same-sex sexual behavior. As research has documented lower levels of approval of homosexuality among Black Americans (Lewis, 2003), social norms in those communities may negate the impact of larger social trends, resulting in less change in same-sex sexual behavior among Blacks and other racial and ethnic groups with similar attitudes. Further, some research indicates that the changes in attitudes towards gays and lesbians have largely occurred among White Americans (Baunach, 2012; Loftus, 2001).

Education has also been identified as a key factor in attitudes toward gays and lesbians (Ohlander, Batalova, & Treas, 2005) and a factor in changing attitudes (Loftus, 2001), though other research indicates that the impact of education may be decreasing over time as support for same-sex relationships and behavior becomes more broad-based (Kozloski, 2010). Same-sex sexual behavior may also be more likely among those with higher levels of education (Turner, Villarroel, Chromy, Eggleston, & Rogers, 2005), though that effect may depend on gender. Research has consistently found that religious individuals are less accepting of same-sex sexual behavior and marriage (Sherkat, Powell-Williams, Maddox, & De Vries, 2011; Whitley, 2009).

While some research indicates lower levels of religiosity among LGB-identified individuals (Herek, Norton, Allen, & Sims, 2010), less research has examined the role of religion in predicting same-sex sexual experiences. An analysis of GSS data through 2002 found that those who did not attend religious services at all were more likely to report same-sex sexual experience than those reporting frequent or even infrequent attendance at religious services (Turner et al., 2005), which may be a result of sexual minorities leaving religious traditions due to stigmatization of same-sex sexual behavior.

Previous Research and the Current Study

Even when using similar metrics of same-sex sexual behavior, surveys have generated conflicting estimates of the prevalence of same-sex sexual experience. According to the National Health and Social Life Survey (NHSLs), conducted in 1992, 7% of participants reported same-sex sexual behavior since puberty (Laumann, Gagnon, Michael, & Michaels, 1994). Berg and Lien (2006), who attempted to statistically account for misreporting and non-response, estimated that 7.1% of men and 4.1% of women had at least one same-sex sexual partner in the past five years in data collected between 1991 and 2000. In the nationally representative 1999 College Alcohol Study, 6% of students reported same-sex sexual behavior, broadly defined (Eisenberg & Wechsler, 2003). Using more specific behavioral measures of same-sex sexual contact, the National Survey of Sexual Health Behaviors, conducted in 2009, found that between 6.3% and 14.9% of men reported ever engaging in oral sex with another man (estimates depended on age group and whether the individual gave or received oral sex), whereas between 2% and 16.8% of women reported oral sex with another woman in their lifetimes (Herbenick et al., 2010).

Some of the variation in these estimates might be due to time period or cohort. For example, Butler (2000, 2005) found increases in reports of same-sex sexual partners in the GSS

between 1989 and 2002 for both men and women. The National Survey of Family Growth (NSFG) also showed increases in same-sex sexual behavior (though only among women) between the 2002 and 2006-2008 data collections (Gartrell, Bos, & Goldberg, 2012). However, to our knowledge, no study has examined the full range of years in the GSS data now available on sexual partners, between 1989 and 2014. This includes 12 recent years of data not analyzed by Butler (2005). In addition, Butler did not perform an APC analysis to separate the effects of age, period, and cohort, nor did Gartrell et al. (2012) or Turner et al. (2005).

Previous research suggests that attitudes toward same-sex sexual behavior and relationships have changed (Loftus, 2001). For example, compared to 54.8% of GSS participants in 2008, 40.1% of participants believed that “sexual relations between two adults of the same sex” was “always wrong” in 2014 (Glick et al., 2015). However, this study did not calculate an effect size, examine moderators of the effect, or perform an APC analysis to separate the effects of age, time period, and cohort. The only APC study on attitudes toward sexuality found a cohort effect for change in a combined index of approval of non-marital sex (premarital, teen, homosexual, and extramarital) through 2012, but did not examine attitudes toward same-sex sexual behavior separately in the APC analysis (Twenge, Sherman, & Wells, 2015). It is clear that Americans have become more accepting of same-sex sexual behavior and relationships, but it is unclear how universal those changes are and whether they are due to age, time period, or cohort.

In this study, we examined change over time in 1) reports of adult same-sex sexual experience (including bisexual behavior), and 2) attitudes toward same-sex sexual behavior by examining the percentage of Americans who report having at least one same-sex partner. Note that these data measure number of partners, not number of sex acts; thus, it documents those who

have had at least one same-sex partner regardless of the number of times they have engaged in same-sex activity. We draw from the GSS, a nationally representative sample of American adults that has included questions on sexual partners since 1989. Because sexual behavior was self-reported, trends can be due to either changes in actual behavior or changes in reporting. For the sake of brevity, we will refer to “behavior” rather than “self-reported behavior” in most instances. We examine whether trends in reported same-sex sexual behavior remain when controlling for the acceptance of these behaviors.

We also aimed to determine whether those trends, and trends in the acceptance of same-sex sexual behavior, are due to age, period, or cohort. In addition, we sought to explore whether trends in attitudes and behavior differ by gender, race, region, education, and religious service attendance.

Method

Participants

The GSS is a nationally representative sample of Americans over 18 years of age, collected every year or every other year between 1972 and 2014 ($N = 56,859$; for the questions in the current analysis, $N = 28,161$ for behavior and $N = 33,728$ for attitudes). The GSS data and codebooks are available online (Smith et al., 2013). As suggested by the GSS administrators, we weighted the descriptive statistics by the variable WTSSALL to make the sample nationally representative of individuals rather than households and to correct for other sampling biases. Also as suggested by the administrators, we excluded the Black oversamples collected in 1982 and 1987 to make the samples nationally representative for those years.

Measures

Beginning in 1989, GSS asked several questions about sexual behavior. Two questions asked about sexual partners since age 18: “Now thinking about the time since your 18th birthday (including the past 12 months) how many female partners have you had sex with?” and “Now thinking about the time since your 18th birthday (including the past 12 months) how many male partners have you had sex with?” Participants were categorized as having a same-sex sexual experience if men (for male partners) or women (for female partners) responded with any number 1 or greater or received the codes “1 or more, number unknown,” “several,” or “many, lots.” Codes for “dash or slash” were recorded as 0, and codes for “X,” “garbled text,” “N.A.,” “Refused,” “Don’t know,” and “No answer” were considered missing values. Nearly all participants responded to the questions about “how many” sexual partners with a number; these other codes were used less than 2% of the time. We also recorded whether an individual had both male and female partners (bisexual behavior). We also examined the number of same-sex partners, both the raw mean and transformed onto a 0-8 scale: zero partners = 0, 1 = 1, 2 = 2, 3 = 3, 4 = 4, 5-10 partners = 5, 11-20 partners = 6, 21-100 partners = 7, and more than 100 partners = 8.

Since 1973, the GSS included four items about attitudes toward specific sexual behaviors. The section begins “There’s been a lot of discussion about the way morals and attitudes about sex are changing in this country.” It then asks if four different sexual situations are “wrong or not wrong,” one of which is “sexual relations between two adults of the same sex.” Response choices, coded 1-4, were: “always wrong,” “almost always wrong,” “wrong only sometimes,” and “not wrong at all.” Thus, higher numbers indicate more acceptance.

The GSS also included demographic variables, making it possible to determine if changes in sexual attitudes and behavior differed by group. We analyzed moderation by gender (men vs.

women), race (White, Black, and Other), education level (high school graduate and below vs. 2-year college degree and above), U.S. region (Northeast, Midwest, South, and West), and religious participation (attending religious services once a month or more, versus not).

Statistical Analysis

As initial steps, we report descriptive statistics, inferential statistics, and effect sizes in the tables. Data collected over time can be analyzed in many ways, including grouping by 20-year generation blocks, by decades, or by individual year. We felt that separating the data into 5-year intervals provided the best compromise between specificity and breadth. We report the effect sizes (d , or difference in terms of SDs) comparing the first group of years to the last and from the lowest point to the highest, but also provide the means and SDs for the 5-year intervals between these endpoints, so fluctuations at other times are apparent. We also provide figures with some year-by-year results.

To better separate the effects of age, time period, and cohort, we performed APC analyses on same-sex sexual experience and attitudes toward same-sex sexual behavior. Following the recommendations of Yang and Land (2013), we estimated mixed effects models allowing intercepts to vary across time periods (years) and cohorts (birth years). Thus, effectively, an intercept (mean) score was calculated (using empirical Bayes) for each cohort and each survey year. In addition, a fixed intercept (grand mean) was estimated along with fixed linear, quadratic, and cubic effects of age. This model has three variance components: One for variability in intercepts due to cohorts (τ_{u0}), one for variability in intercepts due to period (τ_{v0}), and a residual term containing unmodeled variance within periods and cohorts. Variance in the intercepts across time periods and cohorts indicates period and cohort differences, respectively.

Effectively, this allows us to estimate the mean experience or attitude for each period and cohort that are independent of each other and age.

Changes in same-sex sexual behavior were examined using generalized mixed effects models because the outcome variables were dichotomous. Changes in attitudes towards same-sex sexual behavior were examined using a linear mixed effects model because these scores could range from 1 to 4. Only a quadratic effect of age was estimated here because preliminary analyses indicated that model fit only improved with a quadratic parameter. Weighting could not be used for the mixed-effects analyses for either variable because proper probability weighting for variance component estimation requires taking into account pairwise selection probabilities, which is not possible with current statistical software (we used the lme4 package in R: Bates, Maechler, Bolker, & Walker, 2015).

To focus on the general trends, we grouped birth cohorts by decade with the exception of the first cohort (1883-1889) and the last cohort (1990-1996) as they did not make complete decades by themselves. In describing the trends in the text and tables, we will sometimes employ common labels for the generations such as the G.I. or “Greatest” generation (born 1900-1924), Silent (1925-1945), Boomers (1946-1964; some argue 1943-1960), GenX (1965-1979 or 1961-1979), and Millennials (1980-1994; for reviews, see Strauss & Howe, 1991; Twenge, 2014. Those born 1995 and later are technically iGen, the generation after the Millennials, but we group them with Millennials for ease of analysis). These birth year cutoffs are arbitrary and are not necessarily justified by empirical evidence, but are useful labels for those born in certain eras.

Results

Changes in Behavior

The percentage of American adults reporting at least one same-sex partner since age 18 increased between the early 1990s and the early 2010s ($d = .15$ for men and $d = .22$ for women). Due to the relatively low base rate, the small effect sizes conceal substantial increases in practical terms. The percentage of women who had sex with at least one other woman more than doubled between the early 1990s and the 2010s, from 3.6% to 8.7% (a 142% increase) and the percentage of men who had sex with at least one other man nearly doubled, from 4.5% to 8.2% (an 81% increase; see Tables 1 and 2 and Fig. 1). The increase in same-sex sexual experience appeared consistently across all age groups up to those in their 50s and inconsistently for those in their 60s, 70s, and up. The increase over time appeared across all generations as they aged for same-sex sexual experiences among men, but for same-sex sexual experiences among women, only Generation X increased. In the 2010s, GenX men were the most likely to have had a same-sex sexual experience (9%), while Millennial women were the most likely to have had a same-sex sexual experience (12%; see Tables 1 and 2). Increases in the number of same-sex partners on a 0-8 scale are about the same magnitude as the increase in having any same-sex partners, with a smaller increase in the raw mean. The mean number of same-sex partners rose from .60 in the early 1990s to 1.65 in the 2010s for men, and from .25 to .38 for women (see Tables 1 and 2).

The increase in same-sex experience appears to be largely driven by those who had both male and female partners (see Table 3). The increase in bisexual behavior was larger among women ($d = .25$) than among men ($d = .18$). Across all eras, men who had sex exclusively with other men were 1.7% of the population, while women who had sex exclusively with other women were .9% of the population, both substantially smaller than the number of individuals with bisexual experience (4% of men and 5% of women across all years, 7% of men and 8% of women in 2014; however, the base rates for those who have sex exclusively with members of the

same sex were low, so these numbers should be interpreted with caution). The percent of those having sex exclusively with same-sex partners did not change consistently over time, suggesting that much of the increase in same-sex sexual behavior occurred among individuals who have sex with both men and women. For example, the correlation between year and the prevalence of bisexual behavior was $r(26707) = .08, p < .001$, whereas the correlation between year and the prevalence of men who have sex exclusively with men was $r(12,054) = .01, ns$, and the prevalence of women who have sex exclusively with women was $r(14,652) = .00, ns$.

Changes in Acceptance

Acceptance of same-sex sexual behavior increased even more substantially than same-sex behavior itself, $d = .75$, since the early 1970s and $d = .81$ from its low point in the late 1980s (see Table 3 and Fig. 1). In 1973, only 11% of Americans believed that same-sex sexual behavior was “not wrong at all,” which changed very little by 1990 (when it was 13%). By 2014, however, nearly half (49%) of Americans believed it was not wrong. All age groups increased in acceptance of same-sex sexual behavior between the 1970s and the 2010s, with the largest shift from the late 1980s to the 2010s among 18- to 29-year-olds ($d = 1.10$); only 15% of 18- to 29-year-olds believed same-sex behavior was “not wrong at all” in 1990, which rose to 63% in 2014. Those born before 1924 did not change their attitudes over time, while the other cohorts did, with GenX changing the most ($d = .75$).

Changes in Behavior Controlled for Acceptance

We then sought to explore whether the increase in acceptance of same-sex sexual behavior accounted for the rise in self-reports of same-sex sexual behavior. The correlation between year and men’s reports of sex with men remained when controlled for acceptance, $r(7710) = .05, p < .001$, and was only slightly different from the bivariate correlation without the

control, $r(12854) = .06, p < .001$. The correlation between year and women's reports of sex with women remained when controlled for acceptance, $r(8715) = .05, p < .001$, and was only slightly different from the bivariate correlation without the control, $r(15307) = .07, p < .001$. The correlation between year and bisexual behavior remained when controlled for acceptance, $r(15620) = .06, p < .001$, only slightly different from the bivariate correlation without the control, $r(26707) = .08, p < .001$ (the partial correlation was also similar for men, $r[7261] = .07, p < .001$, and women, $r[8357] = .05, p < .001$). Thus, the increase in reports of same-sex sexual behavior was not entirely due to acceptance.

Separating Age, Time Period, and Cohort

APC analyses separating the effects of age, period, and cohort showed that change over the years in same-sex sexual behavior was due almost entirely due to time period (SDs = .26 for men and .39 for women) with zero variance due to cohort (SDs = .00 for men and women). Time period effects were substantial for both men and women (see Figs. 2 and 3). With age and cohort controlled, in 1989, 6.7% of men reported a same-sex sexual experience, which dipped to 4.9% in 1993. By 2014, 10.4% of men reported a same-sex sexual experience (a 112% increase, or a doubling). In 1989, 5.7% of women reported a same-sex sexual experience, which dipped to 3.4% in 1991. By 2014, 10.2% of women reported a same-sex sexual experience (a 200% increase, a tripling).

When controlled for age and cohort, time period increases in the number of same-sex partners on a 0-8 scale are about the same magnitude as the increase in having any same-sex partners, with a smaller increase in the raw mean. The mean number of same-sex partners rose from 1.38 in 1993 to 1.76 in 2012 (1.48 in 2014) for men, and from .16 in 1991 to .56 in 2010 (.28 in 2014) for women.

Bisexual behavior also increased over the years, primarily via time period (see Fig. 4). Bisexual behavior nearly tripled (a 191% increase) from the low of 3.3% in 1994 to the high of 9.6% in 2014. The change was about the same among women and men, depending on the end points of comparison. Bisexual behavior among women rose from a low of 2.9% in 1994 to a high of 9.8% in 2014, compared to a low of 2.9% for men in 1993 and a high of 10.0% in 2008 (8.7% in 2014).

Age effects for same-sex experience differed for men and women. The age effect for men was fairly small and quadratic ($b_{\text{linear}} = .004$, $z = 1.50$; $b_{\text{quadratic}} = -.0003$, $z = -2.86$), with men in their 50s the most likely to report same-sex experience (see Fig. 5). The age effect for women was larger and cubic ($b_{\text{linear}} = -.04$, $z = -7.70$; $b_{\text{quadratic}} = -.0007$, $z = -4.80$; $b_{\text{cubic}} = .00002$, $z = 2.24$), with the percentage having at least one female partner rising from age 18 to age 30 and declining thereafter (see Fig. 6).

Changes in attitudes towards same-sex sexual behavior were also primarily driven by time period effects ($SD = .34$) with less variability in attitudes by cohort ($SD = .09$). With age and cohort controlled, in 1973 the average attitude towards same-sex sexual behavior on the 4-point scale was 1.60 and stayed relatively flat until 1991, when it was 1.68 ($d = .06$). Acceptance then rose to 2.68 in 2014 ($d = .79$ since 1991; see Fig. 7). Cohort effects were smaller though still notable, with the largest difference between those born in the 1930s (the Silent generation) and those born in the 1980s-1990s (Millennials), with Millennials more accepting of same-sex sexual behavior than Silents ($d = .21$).

Moderators

We will report moderators of changes in same-sex behaviors and their acceptance in both the descriptive analyses and the time period effect in the APC analyses.

Race

In the descriptive analyses, the increase in reporting a same-sex sexual experience in adulthood was fairly consistent across races (see Table 1). In the APC analyses controlling for age and cohort, however, Black Americans did not differ in same-sex experience (or bisexual experience) by time period, suggesting that changes among White Americans and those of other races drove the increase.

In the descriptive analyses, acceptance of same-sex sexual behavior increased more among White Americans, resulting in a main effect for race in recent years. For example, 30% of Black Americans believed that same-sex sexual behavior was “not wrong at all” in the 2010s, compared to 49% of White Americans. Similarly, in the APC analyses, attitudes changed more among whites ($d = .91$, compared to $d = .41$ for Black Americans).

Region

Residents of the Midwest and South showed a larger increase in same-sex sexual experience (see Tables 1-3). In the APC analyses, the increase among men was by far the largest in the Midwest (increasing from 3.1% in 1993 to 13.1% in 2014), followed by the South (5.0% in 1993 to 8.2% in 2014), with changes of only two percentage points in the East and West. Among women, the shift was largest in the Midwest (2.5% in 1993 to 7.6% in 2014), followed by the South (3.4% in 1994 to 8.0% in 2014), with smaller shifts in the East and West. Bisexual behavior also increased the most in the Midwest, from 1.8% in 1993 to 9.5% in 2012 (9.2% in 2014).

Residents of the South did not increase in acceptance of same-sex behavior as much as those in other regions, and acceptance remained lower than in other regions (see Table 3). In the 2010s, 22% of Southerners believed that same-sex sexual behavior was “not wrong at all,”

compared to 46% of Easterners. In the APC analyses, Southerners did not increase in acceptance as much ($d = .66$ since 1987, compared to $d = .85$ in the Midwest, $d = .88$ in the East, and $d = .89$ in the West).

Education level

In the descriptive analyses, the increase in reporting a same-sex sexual experience in adulthood was fairly consistent across education level. Among women, same-sex sexual experiences increased more among those with a high school degree or less (see Table 2). In the APC analyses, the time period increase in same-sex sexual experience was larger among those without a college education.

In the descriptive analyses, increases in acceptance were larger for those without a college education. In the APC analyses, increases were stronger for those with a college education ($d = .95$ since 1987) compared to those without ($d = .74$). This discrepancy likely occurs because of the control for cohort, as younger cohorts are more likely to have attended college.

Religious service attendance

The increase in same-sex sexual experience among men was about the same depending on religious service attendance, but the increase in same-sex sexual experience among women was larger among those who did not attend religious services often (see Tables 1 and 2). In the APC analyses, the increase in same-sex behavior was about the same among those rarely attending religious services and those attending services often.

As for acceptance, 25% of those who attended religious services more than once a month believed that same-sex sexual behavior was “not wrong at all” in the 2010s, compared to 58% of

those who attended less often. In the APC analyses, the religious ($d = .58$) increased in acceptance less than those rarely attending religious services ($d = 1.03$).

Gender

Women's attitudes changed more than men's; by 2014, 54% of women believed that same-sex behavior was "not wrong at all" compared to 44% of men. In the APC analyses controlling for age and cohort, acceptance of same-sex sexual behavior increased more among women ($d = .93$, versus $.77$ for men since 1987). Men's and women's attitudes were fairly similar in 1987 (Z 's = $-.24$ and $-.25$ respectively) but had diverged more by 2014 (Z 's = $.53$, $.68$).

Discussion

Between 1989 and 2014, the number of Americans reporting having at least one same-sex partner as an adult doubled. Much of that increase was due to more individuals having sex with both men and women (bisexual behavior), with little consistent change in those having sex exclusively with same-sex partners. As predicted by erotic plasticity theory (Baumeister, 2000), the increases over the years were larger for women, as were changes with age. Attitudes have also changed: Between 1973 and 2014, the number of Americans believing that sex between two adults of the same sex was "not wrong" more than quadrupled. However, reports of same-sex sexual behavior still increased even after acceptance was controlled.

APC analyses separating the effects of age, time period, and cohort showed that the changes in both behavior and attitudes were primarily due to time period, suggesting that adults of all ages changed over time. This is in contrast to the stronger cohort effects in attitudes toward premarital sex and trends in number of sexual partners found in previous research (Twenge et al., 2015). Apparently, attitudes toward premarital sex are formed at a young age and retained, while

change over the years in attitudes toward same-sex sexual activity (and perhaps same-sex behavior as well) occur among those of all ages.

Why has same-sex sexual experience become more common? One obvious explanation is that it is more socially acceptable, as seen in the large increase in Americans believing such behavior is acceptable. With the stigma around same-sex behavior fading, people may be more willing to engage in it. However, we found that controlling for acceptance did not eliminate the increase in reports of same-sex behavior (though it did reduce it somewhat), suggesting it is only a partial explanation for the rise (consistent with Butler, 2005; Turner et al., 2005). It is also possible that people perceive the change in acceptance as even larger than it has been—perhaps due to media portrayals—leading to more same-sex sexual behavior.

Another reason for the increase in same sex sexual experience, particularly among women, may be the rise of hook-up culture, which provides opportunities (and perhaps pressure) for sexual behavior between women, ranging from women kissing in public for male entertainment to threesomes (Fahs, 2009; Rupp, Taylor, Regev-Messalem, Fogarty, & England, 2014). The stronger age effect for women's same-sex experiences is one possible indicator of this, with reports peaking around age 30. This suggests a possible performance effect or “lesbian until graduation” effect for recent cohorts in which women engage in sex with other women while young (often in college) and subsequently have sex with men (e.g., Diamond, 2003, 2008). This trend does not appear for men's same-sex experiences.

The increased visibility of non-heterosexual people and behavior in the media may have provided behavioral and relational models for sexual behavior and relationships that were previously absent, while also conveying the acceptability of same-sex sexual and romantic partnering (Gomillion & Giuliano, 2011). Finally, the abundance of technologies that facilitate

access to potential same-sex sexual partners (i.e., chat rooms in the 1990s and social and sexual networking websites in the early 2000s) may also help explain the increased prevalence of same-sex sexual experience.

The question of socially desirable responding is also relevant. The increase in reports of same-sex sexual behavior could be caused by actual changes in behavior and/or by increased honesty in reporting such behavior. Increasing acceptance might lead more people to be willing to self-report same-sex sexual behavior. Most GSS data are collected via in-person interviews, though the sexual behavior questions were self-reported to increase the likelihood of honest reporting of sensitive behaviors (Smith, 1992; these questions were asked via paper-and-pencil questionnaire in early years and later via computerized assessment). Though research indicates that reports of same-sex sexual behavior are more likely in self-administered questionnaires (Fielding, Lam, & Hedley, 2006; Turner et al., 1998) when compared to interviewer-administered formats (Des Jarlais et al., 1999; Ghanem, Hutton, Zenilman, Zimba, & Erbeding, 2005; Kurth et al., 2004), some individuals may still deny same-sex sexual behavior for fear of breach of confidentiality, to avoid cognitive dissonance when behaviors are not consistent with attitudes, or to manage impressions (Catania, 1999; Krumpal, 2013).

Further, potential demographic differences in honestly reporting sensitive behavior (Berg & Lien, 2006; Fenton, Johnson, McManus, & Erens, 2001) is a concern in making conclusions related to demographic differences and trends in sexual behavior. However, in an analysis of non-response rates, one indicator of response editing to sensitive questions (Tourangeau & Yan, 2007), Butler (2005) found no significant change over time in non-response to the same-sex sexual behavior questions in the GSS; these rates were also extremely low (less than 1%). However, a change in willingness to admit to same-sex sexual behavior, would also indicate

social change, perhaps more in attitudes and perceptions of stigma than in behavior. The pattern of change, with time period as the primary driver, suggests that willingness to admit to behavior may play a role. Arguably, most people would have same-sex sexual experiences while young, causing a cohort effect. But if they had those experiences and only felt free to admit to them in later decades, that would appear as a time period effect (which is what we found). Alternatively, older generations may have felt more free to engage in same-sex sexual behavior in later decades.

The GSS data were somewhat limited as they only asked about sexual experiences after the age of 18. Research indicates that the average age of first sexual behavior is younger than 18 (Gartrell, Box, & Goldberg, 2012; Haydon, Herring, Prinstein, & Halpern, 2012; Wells & Twenge, 2005), suggesting that some same-sex sexual behavior may occur before turning 18. Thus, the estimate here is likely to be lower than the total number of Americans who have had a same-sex sexual experience. In the future, more age-comprehensive estimates of lifetime same-sex sexual behavior should extend the age range to better assess history of consensual same-sex sexual experience. In addition, the survey asks about number of partners, not number of sex acts, so we can only examine whether participants had same-sex partners, and not the number of times they had sex with them. We did, however, also examine total number of same-sex partners.

The data we present here do not assess identification as gay, lesbian, or bisexual. The GSS began asking about sexual identity in 2008 (with response options of gay, lesbian, or homosexual; bisexual; heterosexual or straight; don't know; and no answer), thus preventing analyses of changes in sexual identity over a longer span. In 2014, 4.3% of participants identified as gay, lesbian, or bisexual in the GSS, about half of the 9% who had a same-sex sexual experience as an adult. This suggests that about half of those who have same-sex sexual

experiences identify as heterosexual. This is also consistent with our finding that bisexual behavior accounts for much of the increase in same-sex sexual behavior. Like previous research (Baldwin et al., 2015; Chandra, Copen, & Mosher, 2013; Thompson & Morgan, 2008), this suggests that sexual identities and behaviors can be distinct.

We found that trends in same-sex sexual behavior and acceptance of that behavior were moderated by several factors. Similar to other findings (Baunach, 2012; Sherkat et al., 2011), religion moderated changes over time in attitudes towards same-sex sexual behavior, with larger increases in acceptance among those who did not regularly attend religious services, though increases in same-sex sexual behavior occurred across different levels of religious participation. Thus, the marked decline in religious participation over time among GSS participants (Twenge, Sherman, Exline, & Grubbs, 2016) may have accelerated the increase in acceptance of same-sex sexuality. Illustrating the importance of religious attitudes, research finds that LGB youth residing in a county with a religious climate that was LGB-supportive exhibited better health behavior than those in counties with less supportive religious climates (Hatzenbuehler, Pachankis, & Wolff, 2012).

Perhaps related to religious factors (Sherkat, De Vries, & Creek, 2010) and mirroring other findings (Baunach, 2012; Glick et al., 2015), few changes appeared among Black Americans in behavior or acceptance, likely due to the continued stigmatization of same-sex sexual behavior in the Black community. However, acceptance of same-sex behavior among Black Americans increased from 19% in the late 2000s to 30% in the early 2010s, suggesting that further change in attitudes, and perhaps behaviors, will follow. These findings may have implications for the epidemiology of HIV, in light of the role that attitudes about same-sex behavior play in the HIV epidemic among Black men who have sex with men (MSM), who are

disproportionately infected with and impacted by HIV (Maulsby et al., 2014; Millett, Peterson, Wolitski, & Stall, 2006). Among Black MSM, homophobia and sexuality-related discrimination negatively impact HIV risk and protective behaviors (Huebner et al., 2013; Scott et al., 2014), thus fueling an epidemic that is also fueled by structural components of racism and homophobia, such as access to healthcare and other socioeconomic resources (Huebner et al., 2013; Levy et al., 2014; Millett et al., 2012; Scott et al., 2014).

Larger increases in same-sex sexual behavior appeared in the South and Midwest, perhaps owing to increased networking opportunities that preserve privacy and do not rely on proximity to urban centers (i.e., sexual and social networking websites). In other words, while those in the East and West may have long had access to potential sexual partners via urban centers with strong LGB communities and venues, those in the South and Midwest may have benefited more from the emergence of sexual networking technologies in terms of access to potential partners. However, regional distinctions in attitude changes did not mirror regional trends in same-sex sexual behavior. In fact, the South experienced a smaller increase in acceptance of same-sex sexual behavior compared to other regions, even as more people in the South reported engaging in same-sex sexual behavior. The contradiction in attitudes and behaviors speaks to the complexity of the association between attitudes and behavior and to the potential for behavior to change before attitudes do.

Implications

The GSS data provide a base rate for same-sex sexual experience from a nationally representative sample, showing that (as of 2014) about 9% of American adults have had at least one same-sex sexual experience in adulthood. A substantial majority of these individuals had also had at least one partner of the other sex (bisexual experience, reported by 8% in 2014).

Accurate estimates of same-sex sexual behavior (and attraction and sexual minority identity) are critical as they are (and/or should be) utilized to inform public policy analyses and initiatives, to determine health disparities, and to accurately assess the prevalence of discrimination, health outcomes (both positive and negative), and associations among discrimination, health behavior, and health outcomes.

It is also important to determine how trends in adult same-sex sexual behavior translate into more recent experience and into identity and larger trajectories of sexual orientation development and fluidity. For example, Black et al. (2000) found that, in pooled GSS and NHSLs data, among those who reported same-sex sexual experience since the age of 18, only 28% of women and 42% of men report exclusive same-sex contact in the year prior to the survey. This is mirrored in the age effects here, especially for women (with the peak in reports of same-sex behavior around age 30). Further, in light of our findings that changes in same-sex sexual behavior can be attributed to time period (rather than cohort effects), it is also critical to think about the role of developmental factors in trajectories of sexual orientation development. For example, while some research indicates that youth today are “coming out” as gay, lesbian, or bisexual at earlier ages than previous cohorts (e.g., Grov, Bimbi, Nanin, & Parsons, 2006), our findings suggest that many people may be engaged in coming out processes—or at least same-sex behavior—later in life. That may be particularly true for men having sex with men. The navigation of these experiences may be very different for young adults compared to middle-aged or older adults (Floyd & Bakeman, 2006; McCormack, Anderson, & Adams, 2014), highlighting the need for research to inform therapeutic efforts to assist in coming out processes across the developmental spectrum.

Conclusions

In a nationally representative survey of American adults, same-sex sexual experience has doubled, and acceptance has quadrupled. This suggests that the cultural change of the last few decades extends beyond simple tolerance of gay, lesbian, and bisexual individuals and their civil rights to include acceptance of same-sex sexuality and the freedom to engage in same-sex sexuality—or at least the freedom to report one has done so on a survey. Either way, Americans have experienced a fundamental shift toward acceptance of same-sex sexual behavior and a greater willingness to engage in it.

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Table 1: Men having sex with at least one other male since turning 18, U.S., 1989-2014

	<i>n</i>	1989-1994	1995-1999	2000-2004	2005-2009	2010-2014	<i>d^c</i> (<i>1st</i> to <i>last</i>)	<i>d</i> (<i>max</i>)
All men (%)	12,854	4.53% (.21) ^b	4.62% (.21)	5.79% (.23)	6.90% (.25)	8.18% (.27)	.15	.15
All men (number of male partners)	12,807	.60 (9.25)	1.21 (14.51)	1.09 (15.71)	1.61 (22.62)	1.65 (21.24)	.07	.07
All men (0-8 scale of partners)	12,807	.15 (.83)	.17 (.97)	.22 (1.03)	.26 (1.13)	.32 (1.25)	.17	.17
Age groups (time-lag design = cohort + time period)								
18-29	3,081	4.47% (.21)	4.94% (.22)	5.62% (.24)	4.96% (.22)	7.45% (.26)	.13	.13
30-39	2,734	5.01% (.23)	5.01% (.22)	7.23% (.26)	6.04% (.24)	9.02% (.29)	.16	.16
40-49	2,602	4.05% (.19)	5.11% (.22)	5.22% (.23)	9.76% (.30)	8.44% (.28)	.20	.20
50-59	2,016	4.93% (.22)	3.98% (.20)	6.32% (.24)	8.24% (.28)	8.47% (.28)	.14	.18
60-69	1,370	4.53% (.21)	4.57% (.21)	3.90% (.19)	5.79% (.23)	7.74% (.27)	.13 ^d	.17
Over 70	1,051	3.96% (.20)	1.95% (.14)	5.37% (.23)	5.71% (.23)	7.80% (.27)	.17	.26
Generation/cohort groups (quasi-longitudinal design = age + time period)								
Greatest and Silent (pre-1945)	2,965	4.35% (.20)	3.74% (.19)	4.90% (.22)	5.88% (.24)	7.53% (.26)	.15	.18
Boomers (1946-1964)	5,061	4.54% (.21)	5.09% (.22)	5.96% (.24)	8.81% (.28)	8.19% (.27)	.16	.16
Generation X (1965-1981)	3,770	4.83% (.21)	4.74% (.21)	5.95% (.24)	6.38% (.25)	9.00% (.29)	.17	.17
Millennials (1982-1996)	1,047	----- ^a	-----	7.09% (.26)	4.32% (.20)	7.54% (.26)	.02	.13
Race								
White	10,522	4.16% (.20)	4.47% (.21)	5.86% (.24)	7.15% (.26)	7.43% (.26)	.15	.15
Black	1,308	6.81% (.26)	6.68% (.25)	6.03% (.24)	7.02% (.26)	11.93% (.32)	.18	.18
Other	1,024	7.21% (.26)	3.65% (.21)	4.70% (.21)	5.10% (.22)	9.35% (.29)	.08	.21
Education								
High school degree or less	8,420	4.48% (.21)	4.24% (.21)	6.18% (.25)	6.76% (.25)	8.60% (.28)	.17	.17
2-year college degree or more	4,411	4.70% (.23)	5.47% (.23)	5.11% (.23)	7.14% (.26)	7.46% (.26)	.11	.11
Region								
East	2,314	5.58% (.24)	4.08% (.20)	7.15% (.26)	7.32% (.26)	4.48% (.21)	-.05	.14
Midwest	3,176	3.70% (.19)	4.16% (.20)	5.98% (.24)	8.83% (.29)	10.18% (.30)	.27	.27
South	4,421	4.34% (.20)	4.46% (.21)	5.55% (.24)	6.22% (.24)	9.40% (.29)	.21	.21
West	2,943	4.89% (.22)	5.87% (.24)	4.69% (.22)	6.00% (.24)	7.09% (.26)	.09	.10
Religiosity								
Attend once a month or more	4,286	4.94% (.22)	3.84% (.19)	4.68% (.21)	5.19% (.22)	8.16% (.27)	.13	.18
Attend less than once a month	8,446	4.29% (.20)	4.87% (.22)	6.25% (.24)	7.79% (.27)	8.21% (.27)	.14	.14

NOTES: a. Dashes = $n < 100$.

b. Standard deviations in parentheses.

c. d = difference in standard deviations. d (max) = d from lowest mean to the highest mean.

d. d 's in italics failed to reach statistical significance at $p < .05$. All other d 's are significantly different at $p < .05$.

Table 2: Women having sex with at least one other female since turning 18, U.S., 1989-2014

	<i>n</i>	1989-1994	1995-1999	2000-2004	2005-2009	2010-2014	<i>d^c</i> (<i>Ist</i> to <i>last</i>)	<i>d</i> (<i>max</i>)
All women (%)	15,307	3.61% (.19) ^b	5.10% (.23)	5.58% (.23)	6.61% (.25)	8.74% (.28)	.22	.22
All women (number of female partners)	15,281	.25 (3.97)	.20 (1.56)	.25 (2.84)	.26 (2.43)	.38 (4.08)	.03	.06
All women (0-8 scale of partners)	15,281	.10 (.66)	.13 (.70)	.14 (.71)	.17 (.77)	.21 (.83)	.15	.15
Age groups (time-lag design = birth cohort + time period)								
18-29	3,339	4.74% (.21)	6.22% (.24)	8.98% (.29)	10.47% (.31)	12.21% (.33)	.29	.29
30-39	3,354	4.59% (.21)	6.24% (.24)	7.61% (.27)	8.49% (.28)	12.69% (.33)	.32	.32
40-49	3,223	3.69% (.19)	6.43% (.25)	5.11% (.22)	5.38% (.23)	9.51% (.29)	.26	.26
50-59	2,384	1.95% (.14)	2.52% (.17)	2.49% (.16)	5.85% (.23)	6.73% (.25)	.24	.24
60-69	1,553	2.77% (.16)	1.95% (.14)	3.28% (.18)	2.90% (.17)	3.94% (.19)	.07 ^d	.11
Over 70	1,455	1.31% (.11)	2.20% (.15)	1.42% (.12)	2.61% (.16)	2.66% (.16)	.10	.10
Generation groups (quasi-longitudinal design = age + time period)								
Greatest and Silent (pre-1945)	3,721	2.00% (.14)	2.54% (.17)	2.04% (.14)	2.91% (.17)	2.43% (.15)	.02	.05
Boomers (1946-1964)	5,997	4.99% (.22)	5.80% (.24)	4.83% (.21)	5.20% (.22)	6.35% (.24)	.06	.06
Generation X (1965-1981)	4,450	3.60% (.19)	6.37% (.25)	8.18% (.28)	8.77% (.28)	11.16% (.31)	.29	.29
Millennials (1982-1996)	1,101	----- ^a	-----	8.46% (.28)	10.34% (.31)	12.37% (.33)	.12	.12
Race								
White	12,171	3.21% (.18)	5.30% (.23)	5.68% (.23)	6.47% (.25)	9.25% (.29)	.27	.27
Black	2,045	5.68% (.23)	4.47% (.21)	4.73% (.21)	5.51% (.23)	7.40% (.26)	.07	.12
Other	1,091	5.71% (.25)	3.90% (.19)	5.95% (.24)	9.49% (.29)	7.10% (.26)	.05	.22
Education								
High school degree or less	10,324	3.51% (.18)	4.65% (.22)	5.62% (.23)	6.22% (.24)	9.78% (.30)	.27	.27
2-year college degree or more	4,963	3.84% (.19)	6.09% (.24)	5.46% (.23)	7.29% (.26)	6.92% (.25)	.14	.14
Region								
East	2,842	3.63% (.19)	6.10% (.24)	5.60% (.23)	6.09% (.24)	7.93% (.27)	.20	.20
Midwest	3,647	2.15% (.15)	3.63% (.19)	4.51% (.21)	6.80% (.25)	7.44% (.26)	.27	.27
South	5,481	3.85% (.19)	5.03% (.22)	4.92% (.22)	4.83 (.21)	8.30% (.28)	.19	.19
West	3,337	4.99% (.22)	5.84% (.24)	7.89% (.27)	9.54% (.29)	11.29% (.32)	.23	.23

Religiosity									
Attend once a month or more	6,796	2.80% (.17)	2.32% (.15)	3.57% (.19)	4.44% (.21)	5.61% (.23)	.15		.17
Attend less than once a month	8,354	4.47% (.21)	7.58% (.26)	7.11% (.26)	8.28% (.28)	11.02%	.25		.25
						(.31)			

NOTES: a. Dashes = $n < 100$.

b. Standard deviations in parentheses.

c. d = difference in standard deviations. d (max) = d from lowest mean to the highest mean.

d. d 's in italics failed to reach statistical significance at $p < .05$. All other d 's are significantly different at $p < .05$.

Table 3: Adults having sex with both men and women since turning 18, U.S., 1989-2014

	<i>n</i>	1989-1994	1995-1999	2000-2004	2005-2009	2010-2014	<i>d^c</i> (<i>1st</i> to <i>last</i>)	<i>d</i> (<i>max</i>)
All adults	26,707	3.08% (.17) ^b	3.40% (.18)	4.16% (.20)	5.98% (.24)	7.70% (.27)	.22	.22
Age groups (time-lag design = birth cohort + time period)								
18-29	6,278	3.69% (.19)	3.45% (.18)	5.50% (.23)	7.02% (.26)	7.66% (.27)	.18	.18
30-39	5,857	3.73% (.19)	4.49% (.21)	5.65% (.23)	6.49% (.25)	10.30% (.30)	.23	.23
40-49	5,522	3.34% (.18)	3.96% (.20)	3.50% (.18)	6.45% (.25)	8.47% (.28)	.22	.22
50-59	4,073	2.04% (.14)	2.37% (.15)	2.69% (.16)	6.68 (.25)	7.22% (.26)	.26	.26
60-69	2,691	1.98% (.14)	2.20% (.15)	2.81% (.17)	3.01% (.17)	5.42% (.23)	.19	.19
Over 70	2,287	1.70% (.13)	1.30% (.11)	2.25% (.15)	3.54% (.19)	4.83% (.21)	.19	.21
Generation groups (quasi-longitudinal design = age + time period)								
Greatest and Silent (pre-1945)	6,203	2.01% (.14)	2.17% (.15)	2.34% (.15)	3.26% (.18)	4.55% (.21)	.16	.16
Boomers (1946-1964)	10,445	3.82% (.19)	3.96% (.20)	3.71% (.19)	6.08% (.24)	6.92% (.25)	.15	.15
Generation X (1965-1981)	7,923	3.41% (.18)	3.67% (.19)	5.22% (.22)	7.25% (.26)	9.56% (.29)	.41	.41
Millennials (1982-1996)	2,094	----- ^a	-----	7.17% (.26)	6.06% (.24)	7.91% (.27)	.03 ^d	.07
Gender								
Men	12,055	3.19% (.18)	3.10% (.17)	3.65% (.19)	6.15% (.24)	6.91% (.25)	.18	.18
Women	14,652	2.99% (.17)	3.65% (.19)	4.59% (.21)	5.84% (.23)	8.33% (.27)	.25	.25
Race								
White	21,617	2.75% (.16)	3.53% (.18)	4.08% (.20)	6.08% (.24)	7.45% (.26)	.24	.24
Black	3,085	4.77% (.21)	3.43% (.18)	4.67% (.21)	5.71% (.23)	8.60% (.28)	.15	.22
Other	2,006	5.77% (.23)	1.74% (.13)	4.35% (.20)	5.51% (.23)	8.30% (.28)	.10	.29
Education								
High school degree or less	17,738	2.99% (.17)	3.01% (.17)	4.44% (.21)	5.70% (.23)	8.62% (.28)	.27	.27
2-year college degree or more	8,929	3.33% (.18)	4.25% (.20)	3.63% (.19)	6.47% (.25)	6.10% (.24)	.13	.13
Region								
East	4,857	3.38% (.18)	3.55% (.19)	4.36% (.20)	5.15% (.22)	5.46% (.23)	.10	.10
Midwest	6,528	2.16% (.15)	2.76% (.16)	3.47% (.18)	6.36% (.24)	7.95% (.27)	.29	.29
South	9,319	3.04% (.17)	3.05% (.17)	3.85% (.19)	5.33% (.22)	8.01% (.27)	.24	.24
West	6,004	3.99% (.20)	4.52% (.21)	5.33% (.22)	7.07% (.26)	8.47% (.28)	.19	.19
Religiosity								
Attend once a month or more	10,485	2.58% (.16)	1.70% (.13)	2.89% (.17)	4.26% (.20)	6.27% (.24)	.18	.24
Attend less than once a month	15,961	3.48% (.18)	4.59% (.21)	4.92% (.22)	7.07% (.26)	8.56% (.28)	.23	.23

NOTES: a. Dashes = $n < 100$.

b. Standard deviations in parentheses.

c. d = difference in standard deviations. d (max) = d from lowest mean to the highest mean.

d. d 's in italics failed to reach statistical significance at $p < .05$. All other d 's are significantly different at $p < .05$.

Table 4: Acceptance of same-sex sexual activity among adults (1-4 scale), 1972-2014

	<i>n</i>	1973- 1974	1975- 1979	1980- 1984	1985- 1989	1990- 1994	1995- 1999	2000- 2004	2005- 2009	2010- 2014	<i>d^c</i> (<i>1st</i> <i>to last</i>)	<i>d</i> (<i>max</i>)
All adults	33,728	1.60 (1.07) ^b	1.65 (1.12)	1.60 (1.10)	1.56 (1.08)	1.73 (1.21)	2.03 (1.34)	2.09 (1.36)	2.21 (1.40)	2.56 (1.42)	.75	.81
Age groups (time-lag design = cohort + time period)												
18-29	8,021	2.02 (1.25)	1.98 (1.27)	1.76 (1.17)	1.68 (1.15)	1.94 (1.32)	2.43 (1.40)	2.39 (1.41)	2.54 (1.42)	3.01 (1.30)	.77	1.10
30-39	6,898	1.61 (1.07)	1.78 (1.20)	1.85 (1.25)	1.78 (1.22)	1.88 (1.28)	2.13 (1.37)	2.19 (1.39)	2.41 (1.44)	2.70 (1.42)	.85	.85
40-49	6,345	1.58 (1.06)	1.52 (.98)	1.54 (1.04)	1.63 (1.10)	1.79 (1.23)	2.00 (1.31)	2.11 (1.36)	2.22 (1.40)	2.55 (1.43)	.75	.82
50-59	5,274	1.37 (.88)	1.51 (1.04)	1.43 (.99)	1.36 (.89)	1.58 (1.11)	1.94 (1.32)	2.15 (1.36)	2.13 (1.37)	2.41 (1.44)	.85	.85
60-69	3,825	1.29 (.79)	1.42 (.94)	1.32 (.86)	1.35 (.90)	1.51 (1.05)	1.58 (1.11)	1.78 (1.20)	2.02 (1.34)	2.44 (1.42)	.97	.97
Over 70	3,365	1.15 (.55)	1.19 (.67)	1.25 (.76)	1.22 (.73)	1.30 (.82)	1.49 (.99)	1.51 (1.03)	1.53 (1.07)	1.92 (1.30)	.73	.73
Generation/cohort groups (quasi-longitudinal design = age + time period)												
G.I. (pre-1924)	5,030	1.30 (.80)	1.37 (.90)	1.31 (.85)	1.28 (.81)	1.30 (.82)	1.43 (.92)	1.33 (.87)	-----	-----	.04 ^d	.06
Silent (1925-1945)	8,667	1.64 (1.09)	1.64 (1.10)	1.53 (1.05)	1.48 (1.00)	1.57 (1.10)	1.70 (1.20)	1.81 (1.22)	1.73 (1.20)	2.04 (1.35)	.34	.51
Boomers (1946-1964)	12,687	2.02 (1.25)	1.98 (1.27)	1.81 (1.21)	1.76 (1.20)	1.86 (1.27)	2.05 (1.33)	2.11 (1.36)	2.18 (1.38)	2.43 (1.43)	.30	.52
Generation X (1965-1981)	5,408	----- ^a	-----	-----	1.57 (1.06)	1.97 (1.33)	2.40 (1.40)	2.32 (1.41)	2.43 (1.43)	2.56 (1.43)	.75	.75
Millennials (1982-1996)	1,849	-----	-----	-----	-----	-----	-----	2.38 (1.41)	2.49 (1.42)	2.99 (1.32)	.45	.45
Gender												
Men	15,650	1.59 (1.06)	1.66 (1.12)	1.57 (1.09)	1.53 (1.05)	1.66 (1.16)	1.95 (1.29)	2.04 (1.34)	2.09 (1.36)	2.40 (1.41)	.64	.71
Women	18,078	1.61 (1.08)	1.65 (1.12)	1.62 (1.10)	1.59 (1.10)	1.80 (1.25)	2.10 (1.37)	2.15 (1.37)	2.31 (1.42)	2.69 (1.42)	.89	.90
Race												

White	27,748	1.62 (1.08)	1.66 (1.13)	1.63 (1.11)	1.59 (1.10)	1.78 (1.23)	2.07 (1.35)	2.18 (1.37)	2.31 (1.41)	2.65 (1.42)	.81	.78
Black	4,076	1.44 (.98)	1.55 (1.07)	1.36 (.93)	1.38 (.96)	1.51 (1.08)	1.74 (1.22)	1.63 (1.17)	1.68 (1.20)	2.05 (1.36)	.51	.56
Other	1,905	-----	-----	-----	1.45 (.93)	1.57 (1.09)	2.08 (1.36)	2.06 (1.33)	2.18 (1.38)	2.56 (1.38)	.89	.89
Education												
High school degree or less	25,030	1.58 (1.12)	1.55 (1.05)	1.48 (1.00)	1.42 (.97)	1.58 (1.11)	1.88 (1.29)	1.95 (1.32)	2.02 (1.35)	2.36 (1.42)	.61	.81
2-year college degree or more	8,687	2.34 (1.38)	2.25 (1.30)	2.13 (1.33)	2.06 (1.29)	2.17 (1.36)	2.36 (1.39)	2.42 (1.39)	2.58 (1.41)	2.91 (1.37)	.42	.63
Region												
East	6,632	1.93 (1.29)	1.84 (1.21)	1.81 (1.22)	1.82 (1.23)	1.97 (1.31)	2.34 (1.37)	2.45 (1.39)	2.57 (1.42)	2.99 (1.34)	.80	.93
Midwest	8,626	1.63 (1.16)	1.62 (1.09)	1.58 (1.06)	1.52 (1.04)	1.67 (1.17)	1.96 (1.32)	2.11 (1.36)	2.34 (1.41)	2.58 (1.43)	.73	.88
South	11,833	1.45 (1.01)	1.40 (.93)	1.39 (.93)	1.36 (.89)	1.47 (1.02)	1.75 (1.21)	1.77 (1.24)	1.83 (1.26)	2.17 (1.39)	.58	.72
West	6,715	1.94 (1.32)	1.95 (1.28)	1.76 (1.21)	1.73 (1.19)	2.07 (1.34)	2.29 (1.40)	2.30 (1.40)	2.47 (1.42)	2.85 (1.37)	.67	.86
Religiosity												
Attend once a month or more	14,110	1.38 (.89)	1.37 (.88)	1.33 (.84)	1.31 (.84)	1.46 (1.01)	1.57 (1.10)	1.62 (1.13)	1.67 (1.19)	1.89 (1.31)	.46	.56
Attend less than once a month	19,343	1.78 (1.17)	1.87 (1.23)	1.81 (1.22)	1.77 (1.20)	1.95 (1.31)	2.36 (1.39)	2.41 (1.40)	2.58 (1.41)	2.95 (1.34)	.92	.92

NOTES: a. Dashes = $n < 100$.

b. Standard deviations in parentheses.

c. d = difference in standard deviations. d (max) = d from lowest mean to the highest mean.

d. d 's in italics failed to reach statistical significance at $p < .05$. All other d 's are significantly different at $p < .05$.

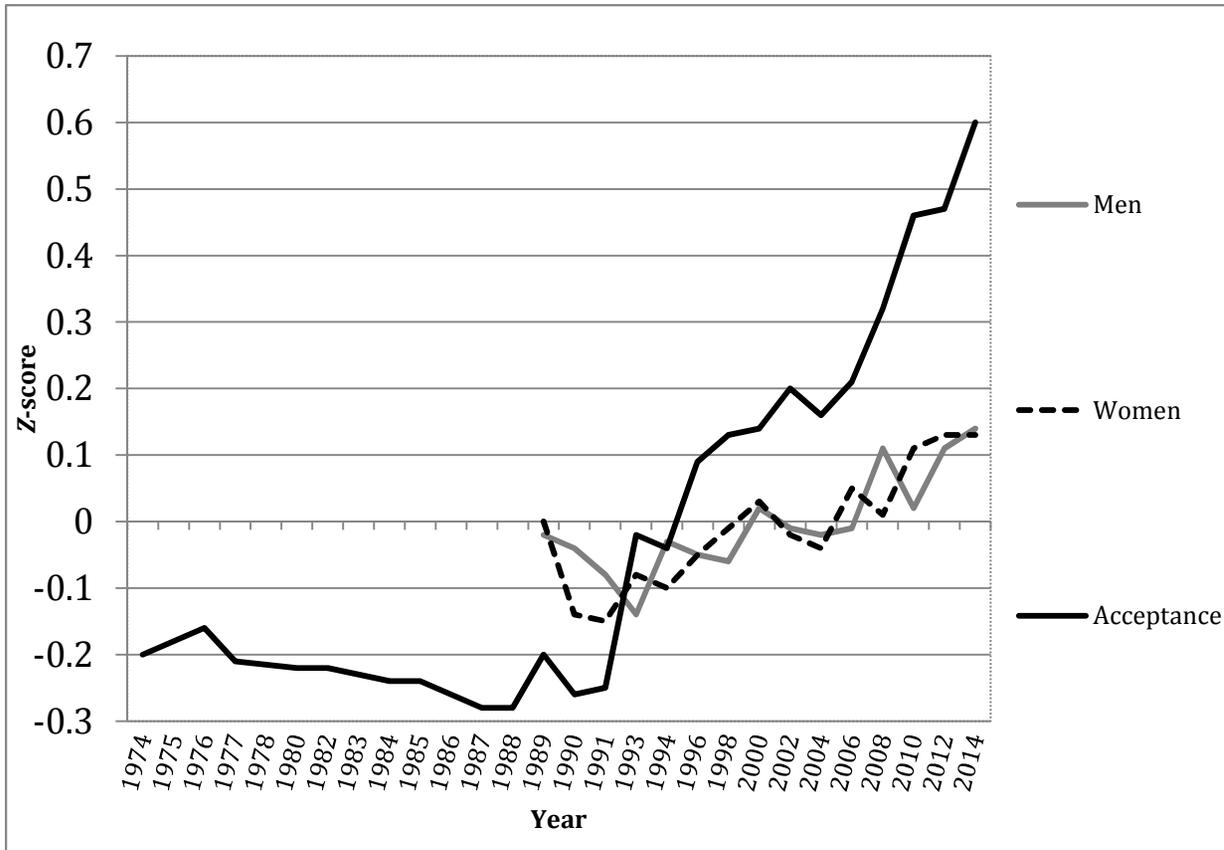


Fig. 1: Same-sex sexual experience after age 18 for men and women and acceptance of adult same-sex activity by year (Z-scores), U.S. adults, General Social Survey, 1973-2014

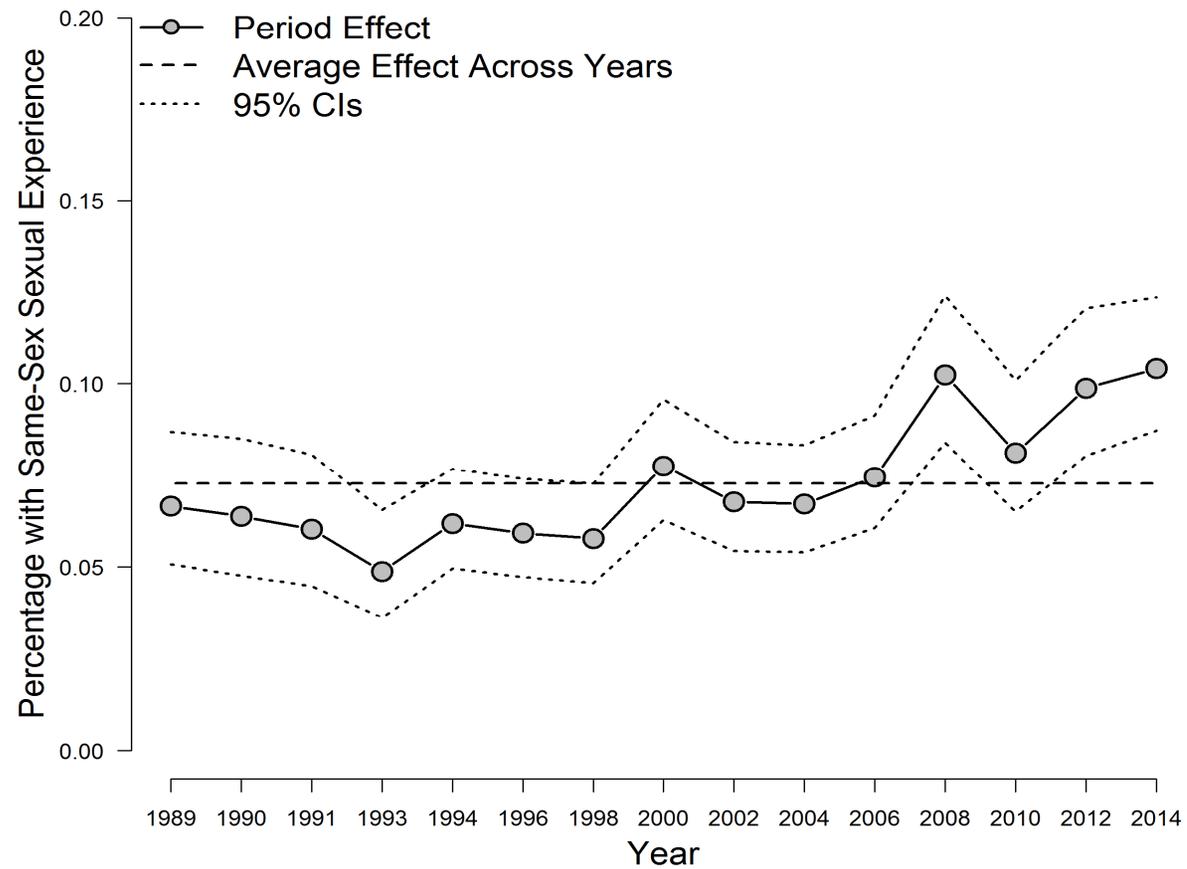


Fig. 2: Same-sex sexual experience among men, time period effect controlling for age and cohort in APC analyses, General Social Survey, 1989-2014

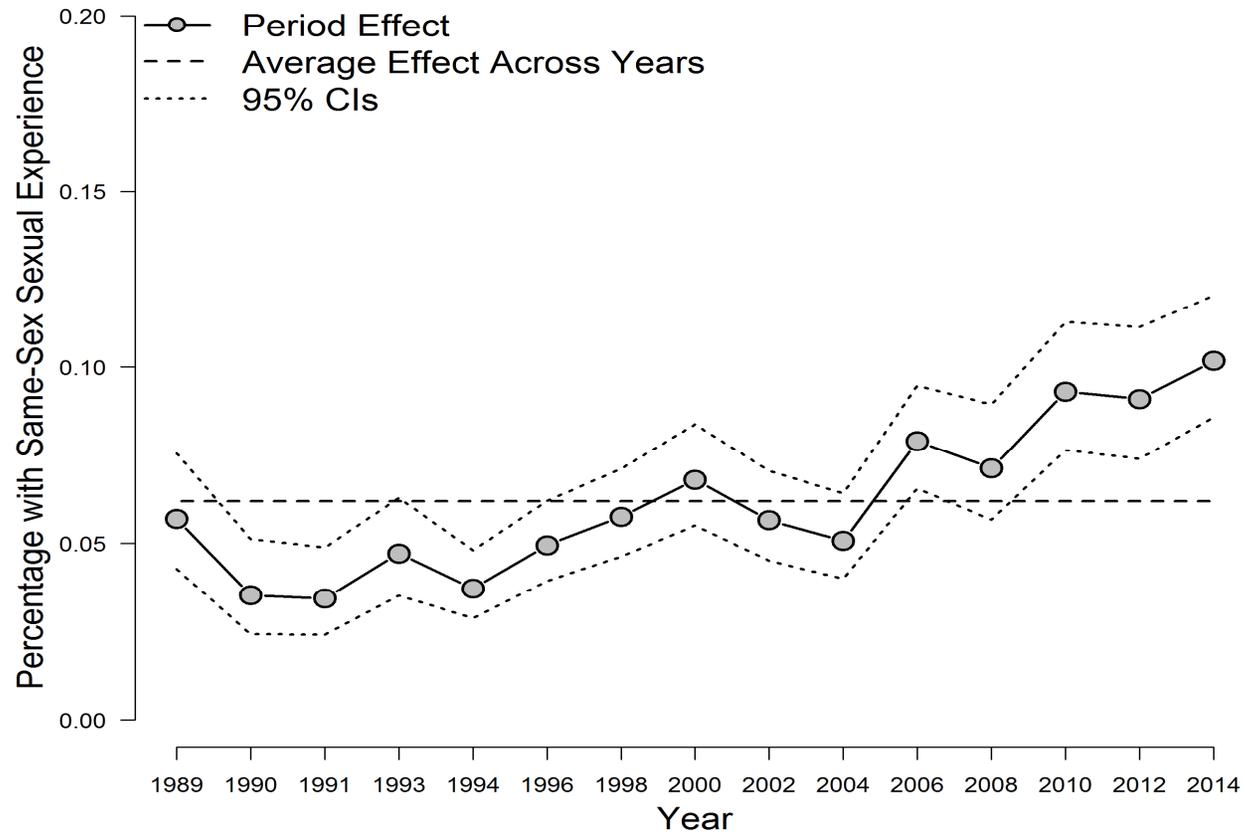


Fig. 3: Same-sex sexual experience among women, time period effects controlling for age and cohort in APC analyses, General Social Survey, 1989-2014

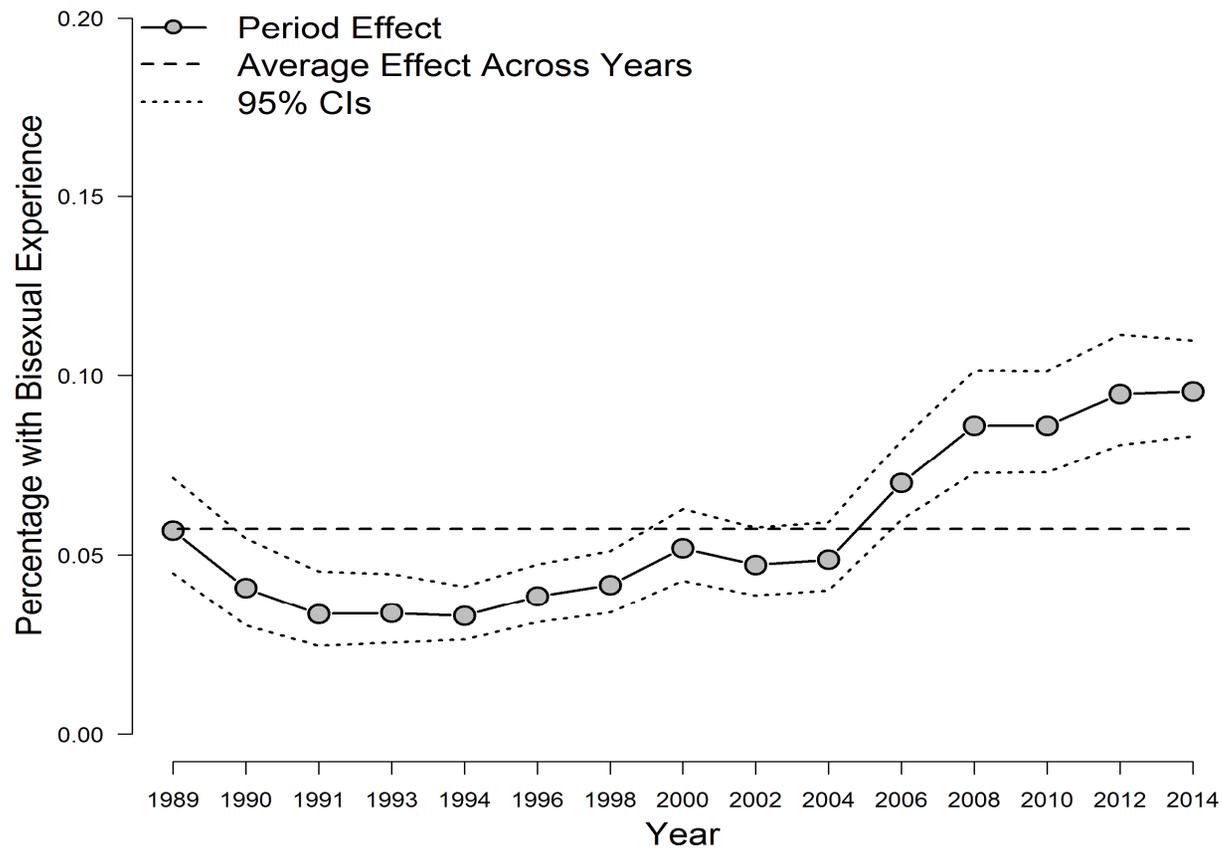


Fig. 4: Adult Americans reporting both male and female partners (bisexual behavior), time period effects controlling for age and cohort in APC analyses, General Social Survey, 1989-2014

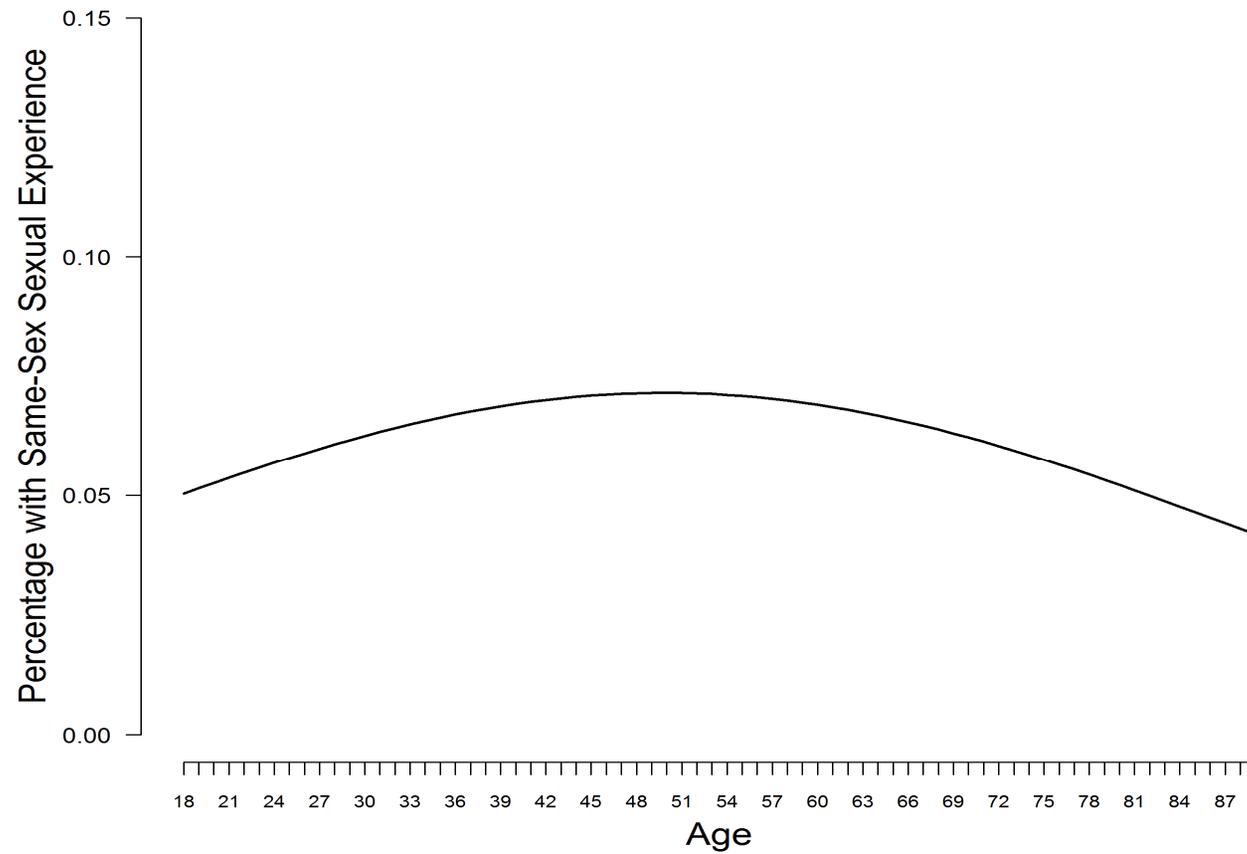


Fig. 5: Same-sex sexual experience among men, age effect controlling for time period and cohort in APC analyses, General Social Survey, 1989-2014

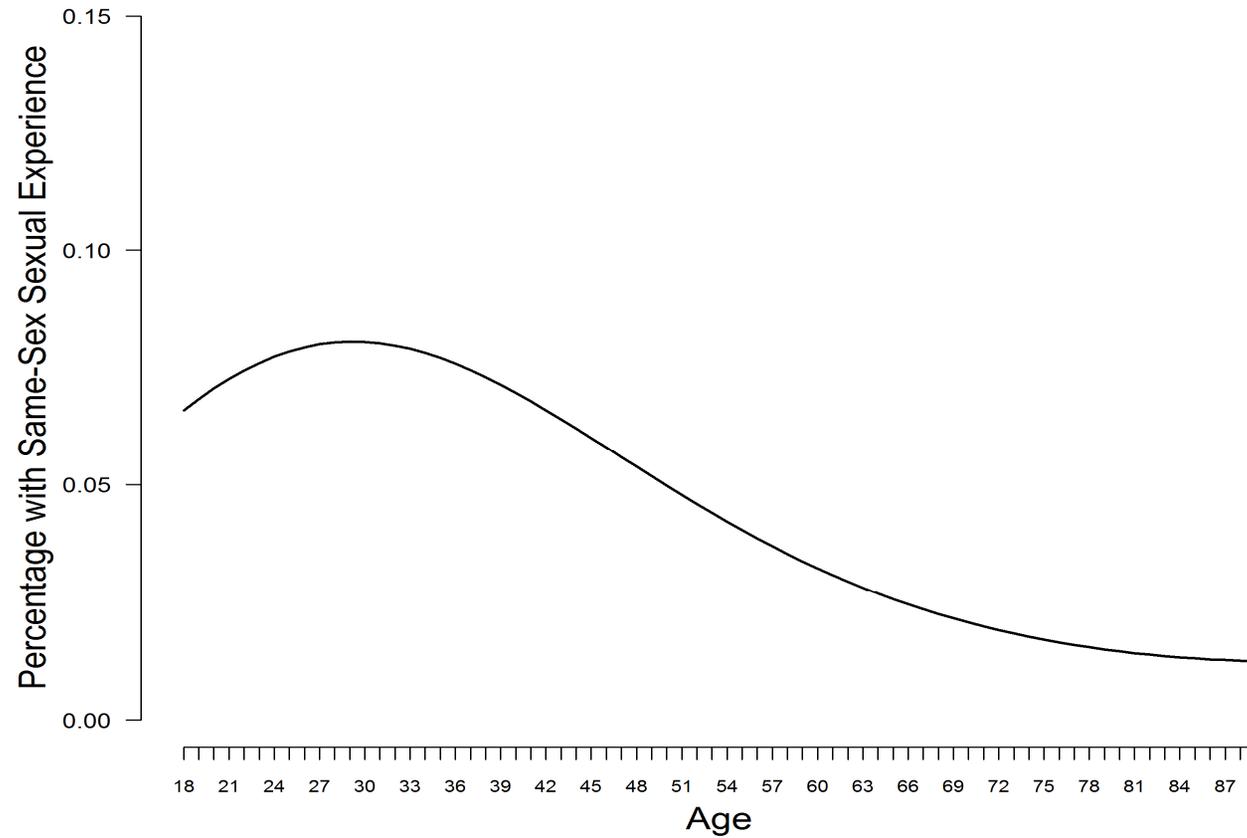


Fig. 6: Same-sex sexual experience among women, age effect controlling for time period and cohort in APC analyses, General Social Survey, 1989-2014

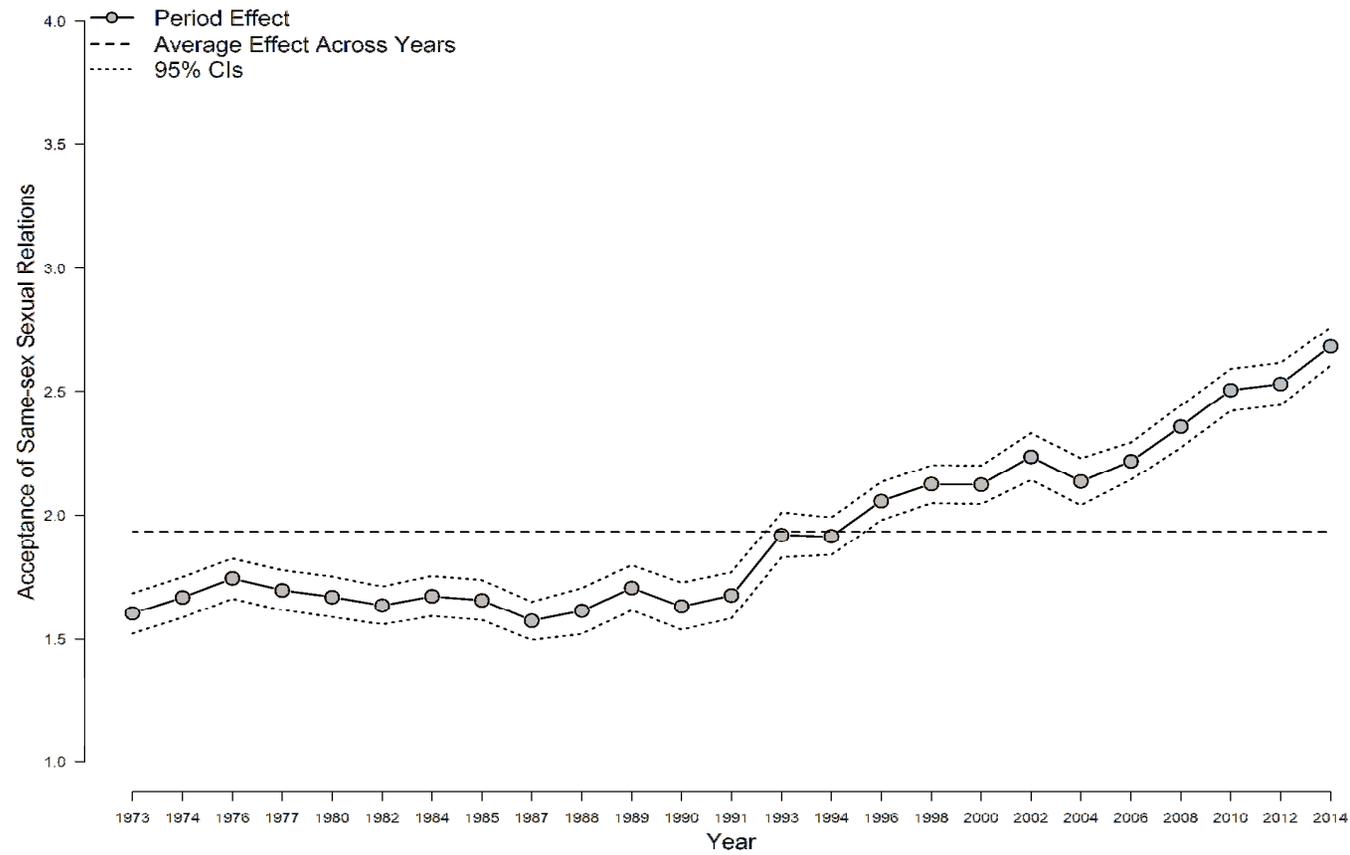


Fig. 7: Acceptance of same-sex sexual activity among adults, time period effect controlling for age and cohort in APC analyses, General Social Survey, 1973-2014