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Homosexual Behavior in the United States, 1988-2004:
Quantitative Empirical Support for the Social Construction Theory of Sexuality

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ABSTRACT

How prevalent was same-sex sexual contact in the United States from 1988 to 2004? Do people who belong to different subpopulations in the United States express different levels of homosexual behavior? Does empirical data support the social construction theoretical perspective of sexuality? Addressing these research questions, the present study analyzed data collected in 11 rounds of the *General Social Survey* conducted between 1988 and 2004 ($N = 10,767$ men and 13,868 women). Using simple cross-tabulations, the prevalence of homosexual contact in America was estimated by sex, year, and various sociodemographic variables. The subsequent results of three estimation models (OLS, logit, and probit) revealed a statistically significant causal effect of the urbanization character of an individual's residential environment at age 16 on the likelihood that the same individual would engage in homosexual behavior as an adult. The results empirically confirm the idea that sexuality is socially constructed, thus bringing quantitative social scientific inquiries about human sexuality closer to relevant theoretical perspectives.

KEY WORDS

homosexuality, essentialism, social constructionism, national sample, population estimates, surveys, United States

INTRODUCTION

Previous quantitative social scientific studies of same-sex sexual behavior in the United States have mainly focused on estimating its prevalence and analyzing its trends over time, primarily because such studies have been conducted under the impetus of providing insights for effective HIV/STD prevention strategies. Even when regression techniques are employed, which is rather rare, these studies have explicitly avoided inferring causal relationships between various sociodemographic variables and homosexual practices, though their positive *correlations* have been frequently reported (Anderson & Stall, 2002; Billy, Tanfer, Grady, & Klepenger, 1993; Binson et al., 1995; Black, Gates, Sanders, & Taylor, 2000; Butler, 2005; Davis, 1929; Fay, Turner, Klassen, & Gagnon, 1989; Johnson et al., 2001; Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953; Laumann, Gagnon, Michael, & Michaels, 1994; Rogers & Turner, 1991; Spira, Bajos, & le groupe ACSF, 1993; Turner, Villarroel, Chromy, Eggleston, & Rogers, 2005; Wellings, Field, Johnson, & Wadsworth, 1994). As such, the present research project contributes to this larger body of social scientific literature in three unique ways.

First and foremost, this article will study homosexual behavior in the United States through a quantitative causal analysis approach. Specifically, it investigates the causal relationship between two main variables—geographical urbanization and homosexual behavior—testing the significance of the causal direction from the former variable to the latter by using three different statistical models, one linear and two non-linear. Unlike previous studies that have paid relatively little attention to the causal connections between homosexuality and other socio-demographic variables, the central goal of this thesis study is to establish a causal relationship that can be explicitly examined using statistical methods in which geographical

urbanization functions as a variable that causally determines the prevalence of same-sex sexual contact in the United States.

In addition, although the present study was designed to draw data from the *General Social Survey* (from 1988 to 2004) like what most of the other researchers have done thus far, a distinct feature of this study is its incorporation of the recently updated 2004 *General Social Survey* (GSS) dataset. Although the 2004 GSS dataset was already made available to all researchers by 2005, one of the latest major social scientific publications dealing with the subject of homosexual practice in the United States, although comprehensive and broad in its scope of analysis, did not utilize the 2004 dataset (Turner et al., 2005). This is because the data for measuring the degree of urbanization of the respondent's residential area was publicly released in January 2006. The present study takes advantage of this newly released set of information and integrates this dataset into the estimations of the prevalence of homosexual behavior in the nation and the analysis of the hypothesized causal model.

Finally, through a simple quantitative causal modeling approach in exploring the relationship between geographical urbanization and homosexual behavior, the present study takes a provisional stand in the larger essentialism versus social constructionism debate about homosexuality and sexuality in general. When dealing with the topic of homosexuality, quantitative social scientists have often neglected offering any explicit claim with respect to the debate, except for incidences in which some researchers only mention that their results *suggest* or *hint at* the more plausible theoretical perspective of social constructionism (Laumann et al., 1994). In contrast, the quantitative analyses carried out in the present study are intended to speak to the debate between essentialism versus social constructionism. If the hypothesized path of causality from geographical urbanization to homosexual behavior is found to be statistically

significant, this finding would broach the high contingency of the behavioral expressions of homosexuality upon the social contexts in which they occur, and thus favor the social constructionist side of the debate. The method of quantitative causal analysis allows the idea that sexuality is socially constructed to be assessed empirically, bridging the gap between theoretical perspectives and quantitative findings that pervasively characterize current social scientific inquiries on human sexuality.

Before entering the essentialism versus social constructionism debate explicitly, however, the present study will first estimate the prevalence of homosexual behavior in the United States by incorporating the newly released GSS 2004 dataset, providing fresh insights into its trends across time and by sociodemographic variables that many others have investigated. As such, in the order of investigation, my quantitative analyses seek to answer three specific research questions:

1. How prevalent was same-sex sexual contact in the United States between 1988 and 2004?
2. Do people who belong to different subpopulations in the United States express different levels of homosexual behavior?
3. Does empirical data support the social construction theoretical perspective of sexuality?

Background to the Essentialism versus Social Constructionism Debate

Most contemporary discussions about homosexuality, in one way or another, contribute to the larger debate between the essentialist and the social constructionist understanding of sexuality. For people who think of sexuality from the perspective of essentialism, sexuality represents a biological drive, a natural given. Therefore, sex differences or differences between homosexuals and heterosexuals are scientifically concrete and distinguishable. Moreover,

essentialists believe that any form of sexual desire is trans-historical and trans-cultural.

According to this line of reasoning, modern typologies of sexuality, regardless of when they are invented, can be applied to people living in different times, regions, and cultures. For instance, proponents of essentialism in sexuality studies argue that the concept of “homosexuality” can be associated with the sexual behavior, desire, and even identity of those individuals who lived their lives prior to the coinage of the term (Boswell, 1980, 1989, 1995; Katz, 1976; Rich, 1983).

Social constructionists often engage themselves with the task of criticizing the assumptions made by essentialists and argue that sexuality is not a biological given but a cultural construct. While essentialists view categories such as “gay” and “straight” as universally objective, social constructionists understand them as subjective in the sense that the labeling process itself carries a whole host of specific cultural connotations and social interpretations that are neither universally coherent nor historically identical. What “gay” means today at the dawn of the twenty-first century, for constructionists, is drastically different from what “sexual inversion” meant a century ago. Similarly, as Halperin (1990) has pointed out, it is not convincing to argue that “because feudal peasants work with their hands and factory laborers work with their hands, feudal peasantry was the form that proletarianism took before the rise of industrial capitalism” (p. 46). Whereas essentialists often believe that biological forces, such as genetics, hormones, or the brain, determine sexual drive, social constructionists argue that the ways in which essentialists attempt to identify the determining forces of sexuality already function within a socially constructed epistemological framework.

The debate between essentialism versus social constructionism has been one of the central concerns among historians of sexuality, and most historians of sexuality today view themselves as part of the constructionist camp (some even identify themselves as participants of

the larger school called “new historicism”). The groundbreaking study on female romantic friendships in the nineteenth century by Smith-Rosenberg (1975), later complimented by Rotundo’s (1993) work on homoromance (without sexual identity) among Victorian male youths, demonstrated that the way same-sex intimacy was understood in nineteenth century America dramatically differs from the way it is conceived today (see also Taylor & Lasch, 1963). While Foucault (1978) and Weeks (1977, 1981, 1985, 1989a, 1989b, 2002) placed a heavy emphasis on how the concept of “homosexuality” was introduced by the medical elites and the sexual scientists in the late nineteenth century, Faderman’s (1978a, 1978b, 1978c, 1992, 1994) historical study of lesbianism similarly asserted that the major contribution of the sexologists at the turn of the twentieth century was precisely the modern pathologization and morbidification of female same-sex intimacy (see also Davidson, 1987; Rosario, 1996, 1997, 2002; Terry, 1999). Contrary to this perspective, Chauncey’s (1985, 1994) research showed that male sexual identities in the working-class community in the first half of the twentieth century were constructed irrespective of how sexuality was classified and defined in the medical discourse. Together, the works of these historians, among many others, exemplify the power and value of the social constructionist approach. By thinking of sexuality not merely as a reflection of nature but as a product of social knowledge, social constructionism brings into light that the ways in which “desire” is conceptualized both by the living actors of a particular time period and by historians who study it are always contingent upon cultural context.

One of the major debates among social constructionists who study the history of homosexuality is the precise time period in which the concept of “homosexual” as an identity first emerged. The earliest piece of literature that introduced the social constructionist view of homosexuality appeared in 1968 and was written by a labeling theorist, McIntosh. In her article,

McIntosh (1986) maintained that the homosexual role first emerged from the bourgeoning of homosexual transvestite clubs in London in the late *seventeenth* century (see also Bray, 1995; Oaks, 1978; Talley, 1996; Thompson, 1989; Trumbach, 1977, 1989a, 1989b, 1990, 1991). Instead of making the same claim as McIntosh, as mentioned above, Foucault and Weeks argued that the concept of homosexual identity was really solidified by medical science in the second half of the nineteenth century (“homosexuality” was first coined in 1869 in the European sexological literature). Whereas McIntosh’s piece received minimal attention from scholars interested in gender and sexuality studies at the time of its publication in the late 1960s, Foucault and Weeks’ studies were immediately canonized as soon as they were published in the mid to late-1970s, largely due to the rising influences from feminism and the gay liberation movement around that time. Having political forces and intellectual inquiries working together, social constructionist writings after the mid-1970s only questioned Foucault and Weeks’ claim but not McIntosh’s.

For example, after the mid-1970s, many historians with a social constructionist orientation have together suggested that conceptualizing an identity based on same-sex desire was actually first enabled in the late *eighteenth* century (perhaps into the early nineteenth century) with the expansion of the wage labor sector occasioned by the societal transformation from household economy to industrial capitalism (Adams, 1985; D’Emilio, 1993; Fernbach, 1976; Greenberg & Bystryn, 1984; Pearce & Roberts, 1973). As D’Emilio (1993) has argued, “capitalism has created the material conditions for homosexual desire to express itself as a central component of some individuals’ lives” (p. 474). Therefore, according to this group of historians, the concept of homosexual identity was made possible by the economic transition to industrial capitalism and the growth of urban population in the eighteenth century, not the

subsequent medicalization of sexuality during the late nineteenth century. Whether the concept of homosexual identity first developed in the late 17th century from homosexual transvestite clubs in major cities like London, in the late 18th century from the intense social transition of economic structure to industrial capitalism, or in the late 19th century from the discourse of sexual medical-science, at the most fundamental level, all social constructionists agree that “homosexuality” as a concept of identity is a relatively recent invention in Western societies.

Disagreement among social constructionists is certainly not limited to the time periods in which certain types of sexuality or sexual identity first emerged. The complexity of social construction theory can be better understood when it is broken down into different levels, as demonstrated by Vance (1989):

At minimum, all social construction approaches adopt the view that physically identical sexual acts may have varying social significance and subjective meaning depending on how they are defined and understood in different cultures and historical periods...A further step in social construction theory posits that even the direction sexual desire itself, for example, object choice or hetero/homosexuality, is not intrinsic or inherent in individual but is constructed...The most radical form of constructionist theory is willing to entertain the idea that there is no essential, undifferentiated sexual impulse, “sex drive” or “lust,” which resides in the body due to physiological functioning and sensation.

Sexual impulse itself is constructed by culture and history. (pp. 18-19)

I will add that there is yet another level of theorization that exists between the first and the second step of social construction theory outlined by Vance. Combining Vance’s illustration with my own extension results in the following (more comprehensive) four levels of social construction theory, from the least radical position to the most:

1. The social significance, cultural interpretation, and subjective meaning of people's sexual activities vary across time, culture, and place.
2. While people's erotic interest or desire is inherently fixed, its level of expression and behavioral forms may change over time, culture, and place depending on the prevailing social norms.
3. Even the direction of people's sexual interest or sexual impulse is socially constructed and culturally shaped, and thus there is no intrinsic or inherent, biologically or naturally discrete, quality to people's sexual desire.
4. The conception of "sexuality" is itself a cultural formulation. In other words, what counts as "sexual" or a form of "desire" is never identical across time, culture, and place.

The fact that social constructionists differ from one another in degrees of theoretical radicalism indicates that they may argue and disagree with one another as much as with scholars who belong to the essentialist camp.

It is evident from the four levels of social construction theory listed above that the essentialism versus social constructionism debate is not the same as the nature versus nurture debate. With respect to homosexuality, the nature versus nurture debate features a discussion about the causes of same-sex desire or behavior. Though proponents of the nurture side of the debate significantly resemble those scholars who adopt social construction theory, one of the central impetuses of social constructionism is to call into question the very way in which the nature versus nurture debate is framed. In other words, while the nature versus nurture debate engages with the question of whether homosexual persons are born with or learned their homosexuality, the essentialism versus social constructionism debate deals with the larger

question of whether or not such categories as “homosexuality” or the “homosexual” are even valid to be regarded as universal, trans-historical, and trans-cultural. Though the arguments put forth by essentialists often strongly parallel the arguments made by nature-advocates, essentialists are ultimately making the general claim that one can actually identify a particular “sexualized” type of individual that existed across time and space. On the other hand, nature-advocates make the more specific claim that the *causes* of a particular “sexualized” type of individual reside in certain natural, biological factors. In short, the essentialism versus social constructionism debate involves an epistemological question, whereas the nature versus nurture debate deals with an etiological one. Because the two debates consider overlapping issues that differ in very subtle ways, many people, including professional academics, have often incorrectly conflated them.

The essentialism versus social constructionism debate, however, is not only a theoretical matter but also, if not more importantly, an empirical one. When the popular press, the lay public, or even the scientific community searches for a single estimate of the prevalence of homosexuality in the nation, the underlying assumption strictly denotes an essentialist standpoint. As Laumann et al. (1994) have carefully commented upon in their national study, “While a single estimate is one of a number of possible summary measures for a whole population, it may not accurately reflect the situation of a specific subgroup within that population” (p. 307). Hence, strong empirical predictions of the prevalence of homosexuality require a serious consideration of its trends over time as well as its possible different distributions across various social and demographic variables.

As such, by using the GSS data, my study will contribute to the essentialism versus social constructionism debate through three systematic investigations. First, I will estimate the

prevalence of homosexual behavior in the United States from 1988 to 2004, assessing the evidence for whether certain quantitative patterns may have changed over time. After working in a temporal framework, I will then proceed to an analysis of the prevalence of same-sex sexual contact in the country across various socio-demographic variables, examining whether the data warrant the assumption that a single estimate of the prevalence of homosexuality across the nation is useful for understanding its distribution in the real American social context. Finally, and most importantly, among these sociodemographic variables, geographical urbanization is central to my subsequent quantitative estimations of its effect on the expressions of homosexual behavior by using three statistical models. Specifically, in this last section of this study, I will test the statistical significance of the assumed causal effect of the urbanization character of an individual's residential environment at age 16 on the likelihood (or probability) that the same individual would engage in homosexual behavior as an adult. If the association parameter is found to be statistically significant, this finding would at least support some aspects of the *second level* of social construction theory that I have defined above: While people's erotic interest or desire is inherently fixed, its level of expression and behavioral forms may change over time, culture, and place depending on the prevailing social norms. Although it is almost impossible for surveys to capture whether or not people's sexual interest is culturally shaped (the *third level* of social construction theory), my research attempts to test the notion that sexual *expression* or *behavior* can vary across different social contexts, regardless of the rigidity of people's erotic interest (here I am primarily concerned with sexual-object preference not sexual-aim or sexual-practice preference). Again, the method of quantitative causal modeling allows the theory that sexuality is socially constructed to be assessed empirically, bridging the gap between

theoretical perspectives and quantitative findings that pervasively characterizes current social scientific inquiries on human sexuality.

DATA AND METHODS

Sample

In order to address the research questions listed in the introduction, this article utilizes the data collected in 11 rounds of the *General Social Survey* (GSS) conducted between 1988 and 2004 ($N = 10,767$ men and 13,868 women). The GSS itself is a personal in-home interview conducted with participants aged 18 and older throughout the entire nation at one-to-two year intervals since 1972 by the National Opinion Research Center in Chicago. The annual GSS sample is a multistage area probability sample to the segment or block level. At the block level, households are enumerated and a full national probability sample is drawn. As such, the GSS samples are fairly representative national samples over time. Specifically, the 11 rounds of GSS data used in this paper were collected in 1988, 1989, 1990, 1991, 1993, 1994, 1996, 1998, 2000, 2002, and 2004, where each year the GSS sampled a different set of individuals. In 2002, the GSS underwent a significant change in survey mode. From 1972 to 2000, the GSS survey was administered in a paper-and-pencil format; beginning in 2002, however, the survey was conducted by computer-assisted personal interviewing (see Appendix B of the GSS 1972-2004 cumulative codebook). In 2004, the GSS adopted a new sample frame based on the 2000 United States census (for more on changes in the GSS sampling design in 2004, see Appendix A of the cumulative codebook). Response rates and missing data for the survey questions relevant to this article will be discussed in more detail later.

Measures

Homosexual Behavior

In order to measure the key theoretical outcome variable—same-sex sexual contact, this article uses the data collected for three questions asked in the GSS about the participant’s past homosexual experience. First, from 1988 to 2004, all 11 rounds of the GSS survey asked a question that allowed me to identify whether or not a participant had engaged in homosexual behavior in the *past 12 months* at the time of interview. The exact wording of the question was: “How many sex partners have you had in the last 12 months? No partners, 1 partner, 2 partners, 3 partners, 4 partners, 5-10 partners, 11-20 partners, 21-100 partners, more than 100 partners? Have your sex partners in the last 12 months been exclusively male, both male and female, exclusively female?” The total response rate to this question in the cumulative dataset, merging the data collected between 1988 and 2004, was nearly 66%. Because I was interested in the measurement of the prevalence of same-sex sexual contact, in recoding the three possible response outcomes to the last part of the survey question into a new dichotomous (yes, no) outcome variable that simply captured whether or not an individual had engaged in same-sex sexual behavior in the past year, I included the “both male and female” response as part of the “yes” category of the new variable. In other words, a participant who reported to have had both male and female sex partners in the past 12 months was now counted simply as someone who had same-sex sexual experience at some point in the last year (at the time of interview).

From 1989 onward, the GSS also included a question that allowed me to identify participants who reported a same-sex sexual partner *since age 18*. The question wording was: “Now thinking about the time since your 18th birthday (including the past 12 months), how many female [male] partners have you had sex with?” As shown, there were two versions of this question that were asked. The GSS first asked the respondent about the number of opposite-sex

partners that he/she has had since age 18, followed by the number of same-sex partners. The total response rate to both questions in the cumulative dataset, combining the data collected between 1989 and 2004, was approximately 76%. The participant answered both questions with a number, so in recoding the responses to the question about same-sex partners into a dichotomous (yes, no) outcome variable that simply measures whether or not a respondent had engaged in same-sex sexual contact since the age of 18, I collapsed any response ≥ 1 into the “yes” category of the new variable, omitting missing values such as “don’t know,” “N/A,” etc.

Finally, starting in 1991, a question was included in the GSS that allowed me to determine those participants who had sexual contact with another individual of the same sex in the *past 5 years*. The exact wording of the question was: “Now think about the past five years—the time since [month/year], and including the past 12 months, how many sex partners have you had in that five-year period? No partners, 1 partner, 2 partners, 3 partners, 4 partners, 5-10 partners, 11-20 partners, 21-100 partners, more than 100 partners? Have your sex partners in the last five years been exclusively male, both male and female, exclusively female?” The total response rate to this question in the cumulative dataset, merging the data collected from 1991 to 2004, was 59%. Similar to what I have done for the first question that asked about the participant’s sexual history in the past 12 months, I collapsed the response categories “exclusively male” and “both male and female” into one category for men (“exclusively female” and “both male and female” for women) in order to produce a dichotomous (yes, no) outcome variable that merely measured whether or not the participants engaged in same-sex sexual behavior in the past 5 years.

Sociodemographic Variables

In addition to the variables measuring homosexual behavior, my analyses used a range of sociodemographic variables. Specifically, these were birth cohort, education, race, religion, secularism, marital status, current geographical urbanization, and geographical urbanization at age 16. All of these variables were measured explicitly in the GSS survey questionnaire, except for secularism. The GSS survey questionnaire only measured the participant's frequency of attending religious services, and I recoded this variable by reversing its level of response category in order to generate a new variable that measured secularism. Thus, if a respondent attended religious services frequently, then he/she would score low on the new secularism scale.

Statistical Analysis

All of the statistical analyses executed for this project were conducted on unweighted observations using the statistical software package Stata version 9.1 (2005). The first two parts of this study involved simple cross-tabulations to estimate the prevalence of homosexual experience, with the chi-square statistical test of independence included only in the second part. In the third part, because the outcome variable (whether or not the participant had engaged in homosexual behavior in the past) was measured on a dichotomous level, I used three models to estimate the effect of geographical urbanization at age 16 on past homosexual experience since 18: one linear (ordinary least squares) and two non-linear (logit and probit).

RESULTS

Prevalence of Homosexual Behavior by Year

Table 1 presents the estimated prevalence (in percentages) of American adults who reported homosexual experience in the past 12 months, in the past 5 years, and since age 18. For the estimations of same-sex sexual behavior in the past 12 months, men reported the highest

number of such an experience in 1998—4.67 percent; women reported the highest number of such an experience in 2002—4.03 percent. On the other hand, men reported the lowest frequency of engaging in same-sex sexual practice in the past year at the time of interview in 1989, at 1.6 percent; women reported the lowest frequency of engaging in a same-sex sexual relation in the past year at the time of interview in 1988, the first year when this survey question was asked, at 0.18 percent. Together, these numbers strongly suggest that, over time, both men and women reported a higher prevalence of same-sex sexual experience in the last year at the time of interview, with the most obvious exception of women in 2004, when the number suddenly dropped down to 1.29 percent from the 4.03 percent reported two years earlier.

A similar trend for women can be found for the estimations of homosexual incidence in the past 5 years at the time of interview. While only 1.51 percent of the women sample in 1991 reported a homosexual encounter in the past 5 years, the percentage rose to 4.83 by 2002. However, in 2004, there was a drop in the percentage to 1.88 percent. As for men, the highest number who reported participation in same-sex sexual activity in the past 5 years at the time of interview was in 2000, 5.39 percent; the lowest number was reported in 1993, at 2.90 percent. Although the high and low for men together might imply a similar steady increasing trend in reporting same-sex sexual experience in the past 5 years over time like for women, Fig. 1 clearly shows that the trend in reporting incidences of male homosexual behavior in the past 5 years was, in fact, much more stable over time than the trend for women.

Finally, for the estimations of past homosexual experience since the age of 18 among United States adults, both men and women reported the highest number of incidence in 2004—10.47 percent of the men and 7.21 percent of the women. Interestingly, both numbers were also the highest among the estimations of same-sex sexual activity across all three measures for all 11

rounds of GSS administered since 1988. As for the lowest estimations of past same-sex sexual encounter since the age of 18, fewest men (3.51 percent) reported such an incidence in 1993, and fewest women (2.80 percent) reported such an incidence in 1991.

Table 1 and Fig. 2 suggest that, similar to the findings for reported female homosexuality in the past year and the past 5 years at the time of interview, there appears to be a steady trend of increased reporting of female homosexual behavior since age 18 in the nation over time, with the exception of a high estimate in 1989 (5.52 percent), when the question regarding this aspect of the respondent's sexual history was first introduced into the GSS. And over time, there appears to be a fairly stable proportion of men reporting homosexual encounters since 18, with the most obvious exception of the estimate in 2004, when the number of men who reported past same-sex sexual experience since adulthood represented the peak of the estimations. Situating all of these figures in a larger chronological trajectory, Fig. 1 and Fig. 2 together indicate that there is a definite increasing trend of reporting same-sex sexual activity nation-wide among women, but this pattern applies to men less significantly.

Another interesting pattern, though not entirely consistent, is that there appears to be a drop in the reporting of homosexual experience in one method of measurement whenever a new method of measurement is introduced in the GSS survey. For example, when the question about past homosexual activity since 18 was first asked in 1989, the number of men who reported same-sex sexual experience in the past 12 months was less than half of the number computed for the previous year. Although in the same year, the number of women who reported homosexual encounters in the past year increased in magnitude significantly, the number dropped again in 1991, when the new question about same-sex sexual experience in the past 5 years was first introduced. In fact, in 1991, women reported the second lowest number among all of the

estimates in Table 1. Indeed, when this question about participation in same-sex sexual practice in the past 5 years was first introduced in 1991, all of the other estimates dropped except for the increase in men's reporting of homosexual encounter in the past year by approximately 0.52 percent in magnitude.

Another approach to understanding the effect of introducing a new method of measuring past homosexual activity is by looking at the trend of missing data on homosexual experience over time. Table 2 shows that when the question that asked about the respondent's same-sex sexual encounter since 18 was first introduced in 1989, the percentage of missing data on both men and women's homosexual encounter in the past 12 months increased slightly. Similarly, missing data for all other measurements except for female homosexual experience since 18 increased in 1991, when the respondent's same-sex sexual encounter in the past 5 years was measured for the first time. These findings perhaps together suggest that the logic behind the effect of a newly introduced instrument of measurement is still worth exploring by survey experts.

Two other observations can be made based on the proportion of missing data tabulated and presented in Table 2. First, the numerous large values estimated in Table 2 strongly suggest that there are a significant portion of respondents who intentionally avoided answering questions regarding their past sexual experience with persons of the same sex. In the period between 1988 and 2004, the estimated percentage of individuals in the entire population (of the given gender) who did not answer those questions ranged from 12.70 to 41.96. Fig. 3 presents a histogram distribution of the estimated percentages of missing data from Table 2. Since the shape of the distribution is fairly close to normal (bell-shaped), the best estimate of the central tendency of the distribution is perhaps the mean—27.52 percent (with 7.28 percent SD). This number indicates

that for all 11 rounds of GSS and for all three measurements of homosexual experience, there is 27.52 percent of missing data collected on average. This large number of missing data, alongside the fact that the GSS questions on the respondent's previous homosexual encounters attempt to collect data about a kind of behavior that is highly sensitive and stigmatized in American society, provides compelling grounds to believe that the numbers presented in Table 1 and Table 3 are no doubt lower-bound estimates.

Second, the figures in Table 2 suggest that the information collected about the respondent's past sexual behavior with persons of the same sex since the age of 18 is perhaps the best out of the three GSS measurements of homosexual behavior, because this question, for both men and women, had consistently received the lowest amount of missing data in comparison to the other two questions that were asked from 1989 onward, with the exceptions of 1996 and 2000 for men. Alternatively put, the second and third columns of Table 1 and Table 3 perhaps provide the best estimations of the prevalence of homosexual behavior in the United States from 1989 to 2004, since the second and third columns of Table 2 include the lowest estimates of missing data systematically throughout that period with the two exceptions mentioned. Meanwhile, the question that asked for women's homosexual experience in the past year had consistently been the question that was avoided the most and with the highest estimated proportion of missing data throughout all 11 rounds of GSS from 1988 to 2004. As such, this (sixth) column of Table 1 and Table 3 probably present the least favorable estimates of the prevalence of homosexual behavior in the United States for that period.

Prevalence of Homosexual Behavior by Sociodemographic Variables

Merging the GSS datasets collected in the period from 1988 to 2004, Table 3 presents the estimated prevalence (in percentages) of homosexual behavior among different American

subpopulations defined by various sociodemographic variables. When U.S. adults were subdivided by birth cohort, people who were born later (e.g., in the 1980s) were more likely to report homosexual contact than people who were born earlier (e.g., in the pre-1920s). This steady increasing trend in the reporting of same-sex sexual behavior as the generational group of respondents gets younger is especially the case for women who reported homosexual experience since 18. Whereas 7.53 percent of women who were born in the 1980s reported same-sex sexual experience since 18, only 1.36 percent of women who were born before the 1920s reported such an experience. The increasing trend in the reporting of same-sex sexual contact as the cohort group decreases in age was less significant for men. Surprisingly, while men who were born in the 1980s reported the highest frequency of homosexual experience since 18 (7.73 percent), their numbers in the same year were significantly less than the ones reported by men belonging to several generations before them when past homosexual experience was measured in the context of in the past year (see the seventh column in Table 3) or in the past 5 years (see the fifth column in Table 3).

In contrast, when U.S. adults were subdivided by different levels of education, a steady trend in increased reporting of past same-sex sexual contact as the respondents belong to a more educated group was more evident for men than for women. Consistently across the three measurements of same-sex behavior, for men who have reported previous engagement in homosexual activity, there was approximately a 2 percentage difference between the percentage of those who hold a graduate degree (7.01, 5.37, and 4.43 respectively) and the percentage of those who received an educational level that was less than high school (5.03, 3.33, and 2.73 respectively). For women, on the other hand, based on the numbers in columns 2, 4, and 6 in

Table 3, it is more difficult to detect a specific pattern for the relationship between levels of education and reported homosexual experience.

When U.S. adults are divided by race into three subgroups—white, black, and other, the data in Table 3 clearly illustrate that, among men, those who are black report the highest incidences of same-sex sexual experience, followed by those who belong to races other than white or black. White men reported the lowest incidences of homosexual contact. Among women, those who belong to races other than white or black reported the highest incidences of same-sex sexual experience, followed by those who are black. Like the results for men, in terms of race, homosexual activity among those who are white was the least prevalent among women. These observations for men and women uniformly hold for all three GSS approaches to measuring the prevalence of homosexual behavior in the nation.

Regarding religion, the highest percentages of men and women who reported homosexual experience were by people with no religion or individuals affiliated with a type of religion other than Protestantism, Catholicism, or Judaism. One exception to this observation is that Jewish men reported a higher percentage of same-sex sexual encounter in the past year (4.14 percent) than men who have religious affiliation other than Protestantism, Catholicism, and Judaism (3.64 percent; see last column in Table 3). In using religious affiliation as the central means to subdivide United States adults, the largest difference in the reported percentages across the three measurements of homosexual behavior for a given gender was the difference among Jewish women between the percentage of those who reported same-sex sexual activity in the past 5 years (0.61 percent) and the percentage of those who reported same-sex sexual activity since 18 (5.10 percent), a difference of 7.36 proportionate increase (increased by 736 percent from the former figure to the latter).

That the percentage of respondents who reported homosexual experience generally increases as an American subpopulation is defined by a higher degree of secularism (opposite of religiosity, which was measured by the respondents' frequency of attending religious services) quite comprehensively captures the trends of figures reported in Table 3 across all three GSS methods of measuring the prevalence of homosexual behavior, for both men and women when they are divided into subgroups defined by degrees of secularism. When they are subdivided by marital status—either currently married or not, many more currently unmarried respondents report same-sex sexual behavior than currently married respondents, and this is true again for both sexes.

Table 3 also shows that, across all three measurements of previous homosexual encounter, there was a higher percentage of people who at the time of interview lived within a highly urbanized residential environment, in comparison to those who lived in less metropolitan areas, reporting homosexual behavior. One notable exception to this generalization was that fewer women who live in top 12 central cities in the country than those who live in the next 88 central cities report engagement in same-sex sexual activity since age 18, in the past year, and in the past 5 years at the time of interview (see Table).

The relationship between geographical urbanization and different levels of expression of homosexual behavior was somewhat different when the population was subdivided into groups based on the character of their place of residence at age 16. The figures presented in Table 3 for the last sociodemographic variable indicate that there was a higher percentage of people who lived within a more urbanized social environment at age 16 than those who lived in a more suburbanized geographical area at age 16 reporting experience of same-sex sexual encounter, except that past homosexual experience was more prevalent among respondents who lived in

(non-farm) country-like places than those who lived in farm-like areas. This pattern was true across all three ways of measuring an individual's past homosexual behavior and for both men and women.

Thus far, the numbers presented in Table 3 have been interpreted in terms of basic quantitative comparisons, such as between extreme values, ranking order, absolute differences in percentages, relative differences in percentages/proportions, or overall quantitative trends/patterns. In addition to these crude comparisons, for each of the cells in Table 3, I computed a *p*-value from conducting a chi-square test of independence between the variable reported homosexual behavior (yes or no) and the corresponding sociodemographic variables. Table 4 summarizes the results of all chi-square tests of statistical significance that were carried out for each of the cells in Table 3.

Because of the cross-sectional nature of the GSS datasets, inferring causality from any of the sociodemographic variables to the outcome variable—expression of homosexual behavior—would invariably involve the problem of endogeneity, meaning that the reverse causal process between the variables cannot be entirely separated from the assumed forward causal process. The only exception, to which I have tried to draw attention by highlighting the cell boxes in Table 4, is the relationship between the geographical urbanization at age 16 explanatory variable and the past homosexual behavior since age 18 outcome variable. The assumed causal direction from an individual's place of residence at age 16 to his/her homosexual encounter since age 18 has to be one that does not involve the problem of endogeneity, because the reverse direction of causality—that whether or not an individual has expressed homosexual behavior since 18 would influence where he resided at age 16—is temporally impossible.

Furthermore, Table 4 shows that, the p -values calculated for the two corresponding cells (one for men and one for women) in Table 3 that represent the specific association between geographical urbanization at 16 and homosexual experience since 18 is $< .05$, meaning that the null hypothesis that the two variables are independent can be rejected. As indicated in Table 4, among the listed sociodemographic variables, the variable geographical urbanization at age 16 is the only one of its kind insofar as the variable has *only one* cell in which the captured bivariate dependent relationship is statistically significant for men and *only one* for women, with both cells representing a causal relationship between an identical pair of variables. Anchoring upon this statistical uniqueness, in addition to the solid theoretical ground on which the chronological order between geographical urbanization at 16 and past homosexual experience since 18 is established, the data analyses executed in the next section assume a causal direction from the former variable to the latter, and provide the effects of the former on the latter by employing different estimation techniques.

The Effect of Place of Residence at Age 16 on Homosexual Experience since Age 18

To be more precise, as mentioned in the introduction, in this section I am interested in studying the causal effect of the urbanization character of an individual's residential environment at age 16 on the likelihood (or probability) that the same individual would engage in homosexual behavior as an adult. This means that even though the underlying assumption of the statistical estimations executed for this section involves a causal inference, they do not function as empirical support for the "nurture" side of the nature versus nurture debate over the etiological causes of homosexuality (i.e., whether biological predisposition or upbringing determines one's homosexual orientation). Rather, the analyses presented in this section are intended to respond to the essentialism versus social constructionism debate: the causal effects measured here only

speak to the idea that sexual acts, behaviors, and practices can vary depending on certain characters of the social contexts in which they occur; the assumed causal direction in this study rejects the essentialist notion that the differences in the level of homosexual expression, such as between people living in urban cities versus people living in non-urban cities, is predetermined by some immutable biological factor.

I do not impose a “homosexual” identity on those respondents who have reported participation in homosexual activity since 18—they can very well self-identify as a homosexual, bisexual, queer, man who has sex with men, woman who has sex with women, gay, even straight, heterosexual, or some other identity category and still have had conducted sexual practice with person(s) of the same sex at some point in their adulthood. Alternatively, they do not necessarily view themselves as expressing homosexuality or even agree that what they have done defines or is defined as homosexuality. Simply by measuring the sexual *behavior* of a national adult sample, I am not presenting data that show the causes of homosexuality, but simply demonstrating how an individual’s expression of sexual behavior (or temporary/permanent sexual object choice) is highly contingent upon the social context in which such an expression occurs, an argument in line with the social constructionist theoretical perspective.

Having emphasized the standpoint from which causality is inferred in my quantitative analyses, I can more comfortably interpret the results presented in Table 5, which compares different estimations of the effect of an individual’s place of residence at age 16 on past homosexual experience since age 18. Because the dependent variable is measured on a dichotomous level, the estimations are calculated by using three different models: the OLS regression model (linear), the logit model (non-linear), and the probit model (non-linear). Table 5 indicates that the results computed from employing all three estimation techniques together

establish the statistical significance of the causal effect of geographical urbanization at 16 on past homosexual behavior since 18 for both women ($p < .001$) and men ($p < .01$).

In the present case with a dichotomous outcome variable, as one would expect, the non-linear models are more desirable models than the linear model in predicting the effects of the explanatory variable, because they reveal how a one unit increase in the independent variable is not always associated with an identical amount of increase in the dependent variable. For instance, based on the estimates obtained from the OLS model, a .0047 proportional increase in the likelihood that an adult woman would engage in same-sex sexual behavior is associated with a one unit increase in the degree of urbanization of her residential environment at 16, irrespective of whether the one unit increase in geographical urbanization is from 0 to 1 (from non-farm, country-like places to farm-like areas) or 3 to 4 (from medium city to large city). Whereas, the logit model predicts a .0039 proportional increase in the likelihood that a female adult would participate in homosexual activity as the geographical urbanization of her place of residence at age 16 increases in one unit from 0 to 1 (from non-farm, country-like places to farm-like areas), but a .0051 proportional increase in the likelihood that she would engage in same-sex sexual contact as an adult when the urbanization character of her residential environment at age 16 increases from 3 to 4 (from medium city to large city). The discrete effects estimated by the probit model for the above two cases are .0040 (instead of .0039) and .0050 (rather than .0051) respectively, which confirm the commonly accepted notion that the logit and probit functional bases are almost identical except for the tails of their respective distributions. Other discrete estimates obtained from the logit model and the probit model presented in Table 5 can be interpreted in a similar fashion as above.

The marginal effects reported in Table 5 represent the effects of the independent variable (geographical urbanization at age 16) on the dependent variable (homosexual experience since age 18) when the independent variable is held at its mean. Therefore, based on the logit model, when the geographical urbanization of a woman's residential environment at age 16 is 2.52 (the mean value for women, which denotes somewhere between small town and medium city), the likelihood for her to engage in same-sex sexual practice in adulthood is .47% on average; when the urbanization character of a man's place of residence at 16 is 2.47 (the mean value for men, which again denotes somewhere between small town and medium city), the likelihood for him to engage in homosexual behavior in adulthood is also .47% on average. On the other hand, while the probit model yields the same marginal effect for women (a probability of .0047 at the mean value of geographical urbanization at 16), it yields a slightly higher marginal effect (a probability of .0048) for men.

DISCUSSION

In the introduction, I described the potential contributions that this study can bring to the current body of social scientific literature on homosexual behavior in the United States, stressing its value in terms of establishing a connection between theory and empirical findings. These contributions can be recapitulated here in terms of statistical versus substantive significance.

Using 11 rounds of GSS data, I first estimated the prevalence of male and female homosexual behavior in the United States from 1988 to 2004, conducting a systematic investigation of quantitative trends and patterns over time for each of the three GSS measurements of past homosexual experience. In interpreting these trends over time, I rely on changes with substantive significance. For instance, I compare those percentage changes with

considerable magnitude when making the general inference that over time both men and women report a higher prevalence of same-sex sexual experience in the last year at the time of interview. A similar trend for women was found for the estimations of homosexual incidence in the past 5 years at the time of interview, but, in comparison, the trend for men was much more stable over time. Plotting out the figures presented in Table 1, Figs. 1 and 2 demonstrate that the prevalence of homosexual behavior vary across time and gender. One might argue that the problem with inferring the changing prevalence of homosexual behavior over time is that the increased reporting of same-sex sexual contact over time may simply be a function of increasing tolerance of same-sex behavior in American society. However, as Turner et al. (2005) have argued compellingly, “If changes in response bias due to growing societal tolerance were responsible for the increased reporting of female-female sex over the twentieth century, one might have expected a similar trend among males” (p. 460).

By merging these 11 rounds of GSS data, I then estimated the prevalence of male and female past homosexual experience among American subpopulations defined by various socio-demographic variables, including birth cohort, education, race, religion, secularism, marital status, current place of residence, and place of residence at age 16. Table 4 summarizes the statistical significance of the bivariate dependent relationships between these variables and homosexual behavior, and I have discussed the unique grounds on which the association between an individual’s geographical urbanization at age 16 and past homosexual experience since 18 offers room for further causal interpretations, which I explored subsequently in the third part of my study. In summary, for this second part of my study, I relied on both statistical significance (the chi-square test) and substantive significance (for basic quantitative comparisons) in

interpreting how the levels of expression of homosexual behavior vary across different subpopulations in the United States.

The first two sections of my study provide implicit empirical support for the social construction theory of sexuality insofar as they represent quantitative estimations of the prevalence of homosexuality that prioritize the mapping of its trends over time as well as its different distributions across various social and demographic variables, rejecting the essentialist search for a single estimate of the prevalence of homosexuality in the nation. Alternatively put, what the first two sections of my study demonstrate is precisely that no single estimate adequately applies to the entire national population. For example, the estimate for women and the estimate for men are themselves already different, let alone how both increase differently over time and vary for different subpopulations defined by specific socio-demographic characteristics.

The third part of my study explicitly tests the social construction theory by testing the statistical significance of the hypothesized causal effect of the urbanization character of an individual's residential environment at age 16 on the likelihood (or probability) that the same individual would engage in homosexual behavior as an adult. Table 5 indicates that the results computed from employing all three estimation techniques—OLS, logit, and probit—together establish the statistical significance of this causal effect for both women ($p < .001$) and men ($p < .01$). This finding supports some elements of the *second level* of social construction theory that I have defined in the introduction: While people's erotic interest or desire is inherently fixed, its level of expression and behavioral forms may change over time, culture, and place depending on the prevailing social norms. While it is almost impossible for surveys to capture whether or not people's sexual interest is culturally shaped (the third level of social construction theory), my

research simply demonstrates that sexual *expression* or *behavior* can vary across different social contexts, regardless of the rigidity of people's erotic interest.

Limitations of the Social Construction Theory

Though the value of social construction approach is evident in that it allows room for understanding "sexuality" in dynamic and complex ways, it is by no means without problems. The major criticism of social constructionism concerns with its weakness in accounting for a stable, "naturalized" identity around which an effective political movement could be organized. If certain groups of people suffer from social oppression, such as women or sexual minorities like gays and lesbians, many political activists argue that it is necessary to adhere to an essentialist understanding of identity in order to make successful rights-based claims in the legal arena. Without stipulating that women or gays and lesbians are a group of "essentialized" individuals ("they are *born* with their sexual orientation"), it is difficult to imagine how their rights to be protected under the law and to be treated equally as any other citizens could be articulated. Without rendering identity categories like "gays and lesbians" as stable and natural, the task of defending the political/legal interests of sexual minorities appears to be almost untenable.

Another issue with social construction theory involves the tendency of constructionists to eliminate altogether the role of the psychic. As commented upon by Fuss (1989), social constructionism often "foreclose[s]...the question of how desire comes to be articulated within a particular social formation" (p. 110). Without acknowledging individual agency or intentionality, as what most radical constructionists do, the ways in which people negotiate their self-understanding and their experiences in the social world become unaccounted altogether. The third and the fourth level of social construction theory that I have outlined in the introduction

make it abundantly clear that what is critically missing in social constructionism is “any dynamic sense of how society comes to dwell within individuals or how individuality comes to be socially constituted” (Epstein, 1987, p. 23).

Finally, the major problem with the social constructionist perspective is that even the most compelling constructionist arguments ultimately rely on essentialist assumptions. As Fuss (1989) takes great pains to prove this point, simply put, “essentialism is *essential* to social constructionism” (p. 1). For example, with respect to the history of homosexuality, the social constructionist debate over the precise historical period in which the concept of homosexual identity was made possible necessitates the fundamental assumption that there is such an essential category as “same-sex sexuality” or at least “same-sex desire.” The only method for historians to identify a historical moment in which “homosexuality” emerged requires, from the very outset, the acceptance of the idea that same-sex desire or behavior could be correctly identified as a stable and coherent concept across time without hesitation. To push this problem even further, the social constructionist approach to studying *any* history of sexuality presupposes that the category of “sexuality” is itself universal, trans-historical, and trans-cultural. Therefore, paradoxically, any social constructionist study inherently reduces its subject of investigation to an essentialist category.

CONCLUSION

From the estimation of the prevalence of homosexual behavior in the United States over time, it is worth noting that the percentage of men who reported past homosexual experience since 18 based on the GSS 2004 sample represents the highest percentage estimate of same-sex sexual contact in the context of modern America after the 1980s. For examples, Laumann et al.’s

(1994) cross-sectional study reported a figure of approximately 9 percent (for male homosexual contact) as their highest estimate of same-sex sexual behavior across the nation at that time; drawing from 10 rounds of GSS data, Turner et al.'s (2005) study provided a weighted number of 6.61 percent (for female homosexual contact) for the year of 2000 as their highest estimation of same-gender sex among U.S. adults in the period between 1988 and 2002. In comparison to these numbers, the unweighted 10.47 percent of men in 2004 who reported past homosexual experience since the age of 18 computed in this study (see Table 1) exemplifies an unprecedented figure among contemporary quantitative estimations of the prevalence of same-sex sexual activity.

Other researchers have addressed the issue with large proportions of missing data as reported in Table 2 by re-weighting the samples and imputing the probability of reporting past homosexual experience for cases in which no data were reported. The most recent publications by Turner et al. (2004, 2005) have carefully taken into consideration this problem and evaluated the impact of missing responses to the GSS questions that asked for past same-sex sexual experience since 18, in the last year, and in the past 5 years. They concluded that “The substantial similarity of [the] alternative estimates [that we have carried out] suggests that non-response to these questions can be classified as *substantively ignorable* [italics added]...Given the similarity of prevalence estimates derived with and without those imputations, we confine subsequent analyses to respondents’ reports of same-gender sex without imputation of missing responses” (2004, p. 4). Likewise, throughout my data analyses, I have estimated the prevalence of homosexual behavior in the United States using the GSS raw data, excluding the data for those respondents who did not answer questions about their same-sex sexual behavior history.

It is perhaps worth re-emphasizing here that with respect to studying homosexuality, or homosexual behavior more specifically, my research only engages with the essentialism versus social constructionism debate but not the nature versus nurture debate. Alternatively put, my findings do not, in any sense, offer an explanation of the *causes* of homosexual behavior. Finding a positive causal connection between geographic urbanization and homosexual behavior only indicates how levels of sexual acts, behaviors, and expressions can change depending on certain characters of the social contexts in which they occur; the association dismisses the essentialist notion that the differences in the level of homosexual expression, such as between people living in urban cities versus people living in non-urban cities, is predetermined by some biological predispositions at the individual level. My study neither suggests that the choice to live in urban places is caused by homosexuality nor implies that living in urban areas is an etiological cause of homosexuality. Rather, I am merely making the claim that urbanized environments are social contexts in which same-sex sexual behavior has a higher chance/likelihood/probability to be expressed, an argument in line with the social constructionist theoretical perspective. Accordingly, to the extent that the present study finds empirically support for the social constructionist understanding of same-sex behavior, it answers an epistemological question about human sexuality and not an etiological one.

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Figure 1 Estimated Prevalence of U.S. Men Reporting Homosexual Experience by Year

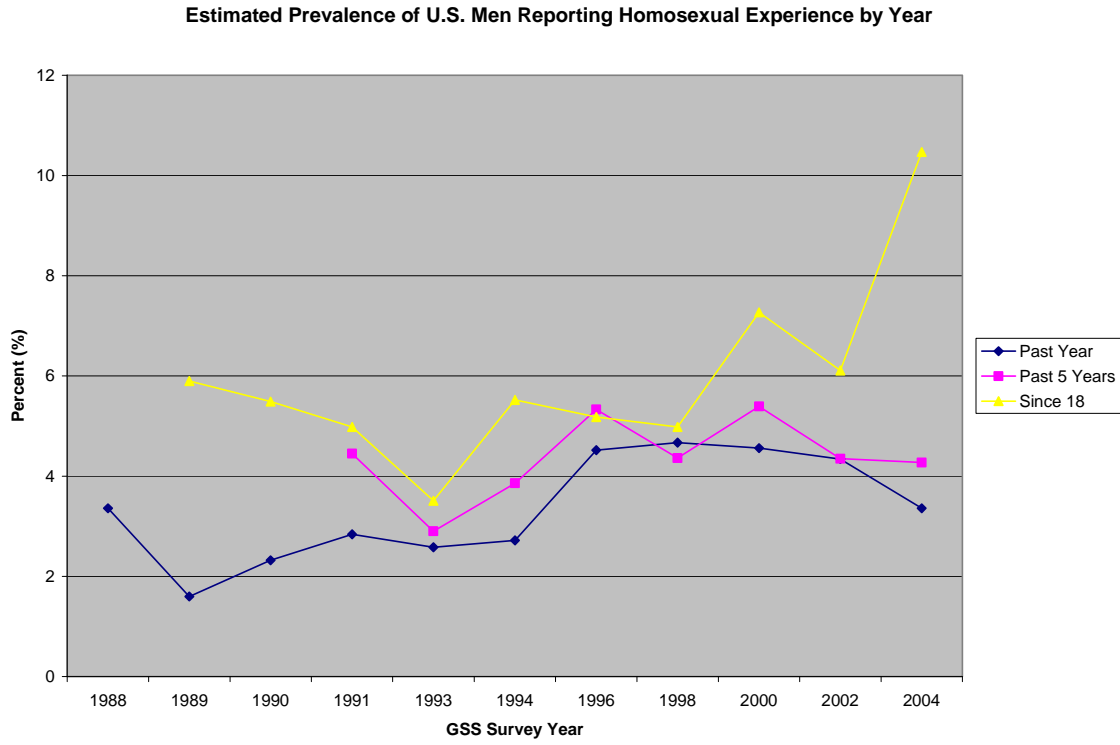


Figure 2 Estimated Prevalence of U.S. Women Reporting Homosexual Experience by Year

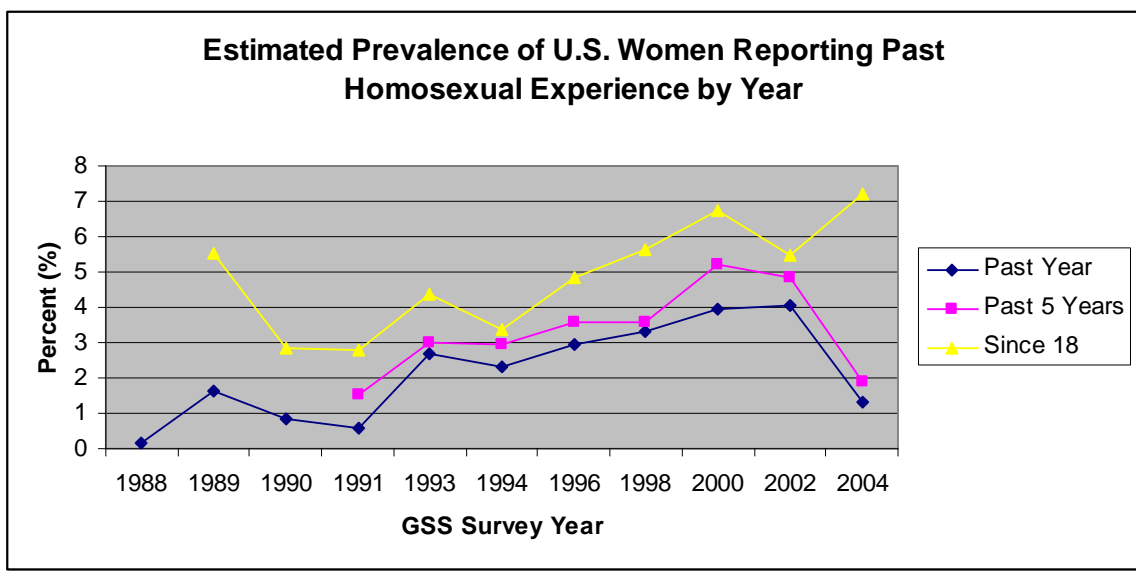


Figure 3 Distribution of Estimated Percentage of Missing Data

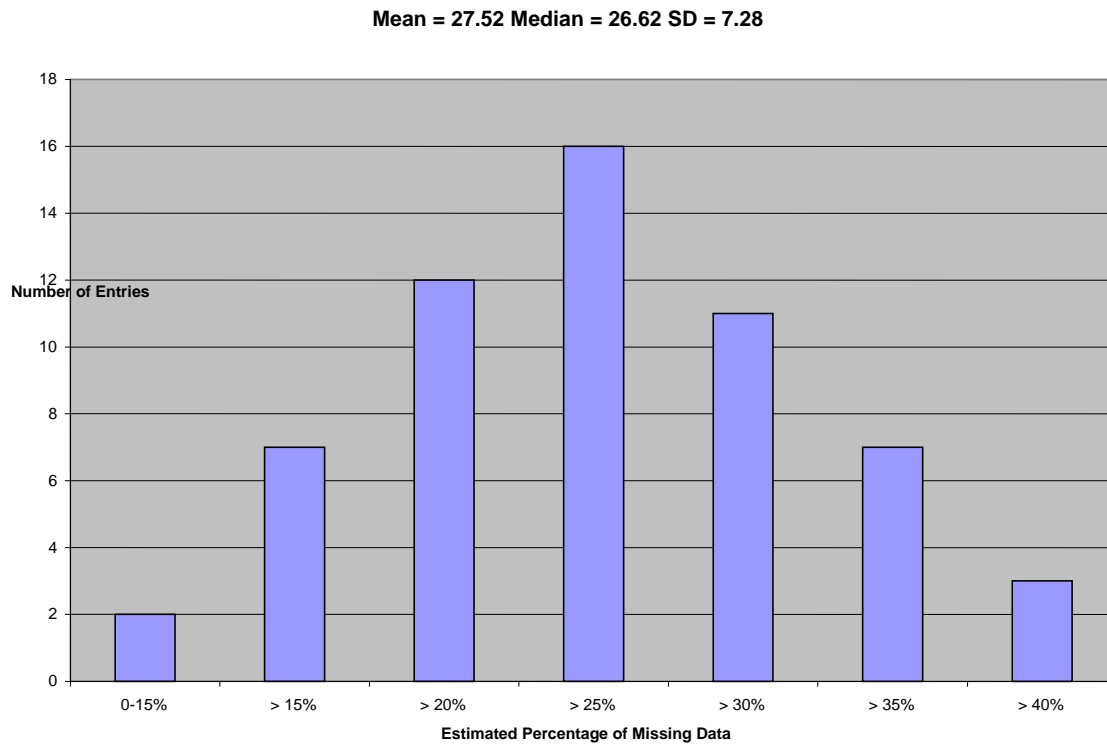


Table 1

Estimated Prevalence of U.S. Adults Reporting Past Homosexual Experience by Gender and GSS Survey Year (1988-2004)

Year	Since 18		Last 5 Years		Last Year	
	Female % ^a (N ^b)	Male % (N)	Female % (N)	Male % (N)	Female % (N)	Male % (N)
1988	- ^c	-	-	-	.18 (543)	3.36 (476)
1989	5.52 (688)	5.90 (559)	-	-	1.61 (560)	1.60 (499)
1990	2.86 (560)	5.49 (474)	-	-	0.86 (467)	2.32 (430)
1991 ^d	2.80 (678)	4.98 (482)	1.51 (598)	4.45 (472)	0.57 (523)	2.84 (422)
1993	4.36 (802)	3.51 (598)	2.98 (670)	2.90 (552)	2.68 (597)	2.58 (505)
1994	3.39 (1,355)	5.52 (1,051)	2.93 (1,263)	3.86 (1,034)	2.34 (1,112)	2.72 (957)
1996	4.86 (1,296)	5.18 (1,024)	3.60 (1,164)	5.33 (1,051)	2.93 (1,057)	4.52 (974)
1998	5.65 (1,257)	4.98 (964)	3.58 (1,088)	4.36 (918)	3.33 (992)	4.67 (856)
2000	6.72 (1,131)	7.27 (894)	5.21 (1,038)	5.39 (908)	3.96 (936)	4.56 (834)
2002	5.45 (1,211)	6.11 (965)	4.83 (993)	4.35 (897)	4.03 (892)	4.34 (828)
2004	7.21 (1,207)	10.47 (1,032)	1.88 (1,008)	4.27 (913)	1.29 (932)	3.36 (834)

Note. The values represent raw, unweighted estimates computed from the GSS 1972 to 2004 cumulative dataset. Missing data including the ones for people who did not answer the relevant survey questions were simply excluded from the above analysis.

^a Estimated percentage of individuals in the given gender population who have engaged in same-sex sexual behavior, including those who have answered that their past sex partners included both sexes.

^b Unweighted total number of respondents in the given gender population who have responded to the survey question pertaining to each cell.

^c Dashes in the table indicate that data were not collected because the survey question pertaining to the cell was not asked for the given year.

^d According to Turner et al. (2005), the 1991 GSS asked respondents to report the total number of their past sexual partners in the past year and the past 5 years as either a number or using the response categories 0, 1, 2, 3, 4, 5-10, 11-20, 21-100, 100+. Turner et al. reported that there are no significant differences in the likelihood for both men and women reporting a same-sex partner in the past 5 years using either format. However, while the same results (that there is no significant difference whether the response is in one format or the other) applied to men for the questions on sexual experience in the past 1 year, women in 1991 were less likely to report a same-sex partner in the past year when questioned using the free response format rather than the coded format.

Table 2
Estimation of Missing Data on Homosexual Experience by Gender and GSS Survey Year (1988-2004)

Year	Since 18		Last 5 Years		Last Year	
	Female % ^a (N ^b)	Male % (N)	Female % (N)	Male % (N)	Female % (N)	Male % (N)
1988	- ^c	-	-	-	35.59 (843)	25.39 (638)
1989	21.55 (877)	15.30 (660)	-	-	36.15 (877)	25.56 (660)
1990	27.08 (768)	21.52 (604)	-	-	39.19 (768)	28.80 (604)
1991	23.04 (881)	24.21 (636)	32.12 (881)	25.79 (636)	40.64 (881)	33.65 (636)
1993	12.92 (921)	12.70 (685)	27.25 (921)	19.42 (685)	35.18 (921)	26.28 (685)
1994	20.39 (1,702)	18.53 (1,290)	25.79 (1,702)	19.84 (1,290)	34.67 (1,702)	25.81 (1,290)
1996	19.95 (1,619)	20.31 (1,285)	28.10 (1,619)	18.21 (1,285)	34.71 (1,619)	24.20 (1,285)
1998	21.44 (1,600)	21.75 (1,232)	32.00 (1,600)	25.49 (1,232)	38.00 (1,600)	30.52 (1,232)
2000	28.78 (1,588)	27.26 (1,229)	34.63 (1,588)	26.19 (1,229)	41.06 (1,588)	32.14 (1,229)
2002	21.21 (1,537)	21.41 (1,228)	35.39 (1,537)	26.95 (1,228)	41.96 (1,537)	32.57 (1,228)
2004	21.21 (1,532)	19.38 (1,280)	34.20 (1,532)	28.67 (1,280)	39.16 (1,532)	34.84 (1,280)

Note. The values represent raw, unweighted estimates of missing data computed from the GSS 1972 to 2004 cumulative dataset.

^a Estimated percentage of individuals in the entire population of the given gender who have not answered the question pertaining to each cell.

^b Unweighted total number of respondents in the entire population of the given gender.

^c Dashes in the table indicate that data were not collected because the survey question pertaining to the cell was not asked for the given year.

Table 3

Estimated Prevalence of U.S. Adults Reporting Past Homosexual Experience by Gender and Selected Socio Socio-Demographic Variables (by Merging GSS 1988 to 2004 Datasets)

Variables	Since 18 (1989-2004)		Last 5 Years (1991-2004)		Last Year (1988-2004)	
	Female % ^a (N ^b)	Male % (N)	Female % (N)	Male % (N)	Female % (N)	Male % (N)
Birth Cohort						
Pre-1920	1.36 (590)	4.79 (334)	3.81 (105)	2.01 (149)	0.00 (115)	2.12 (189)
1920s	1.96 (869)	5.26 (570)	1.65 (364)	2.95 (373)	0.77 (390)	2.03 (444)
1930s	2.60 (962)	6.35 (772)	1.28 (626)	3.28 (640)	1.08 (651)	2.10 (715)
1940s	3.63 (1,544)	6.30 (1,317)	1.82 (1,207)	4.49 (1,092)	1.32 (1,363)	2.72 (1,324)
1950s	6.14 (2,295)	6.10 (1,853)	3.40 (1,973)	4.60 (1,609)	2.45 (2,243)	3.66 (1,860)
1960s	6.65 (2,286)	6.45 (1,845)	3.82 (2,043)	4.95 (1,635)	3.06 (2,354)	4.67 (1,883)
1970s	7.19 (1,376)	5.98 (1,137)	5.50 (1,290)	5.30 (1,057)	3.81 (1,287)	4.50 (1,023)
1980s	7.53 (239)	7.73 (207)	5.61 (196)	2.87 (174)	2.06 (194)	2.96 (169)
	$p < .0001$		$p < .0001$		$p < .0001$	$p < .005$
Education						
Less than high school	5.83 (1,474)	5.03 (1,133)	4.65 (904)	3.33 (870)	2.73 (1,062)	2.73 (1,025)
High school graduate	4.50 (5,606)	6.34 (4,151)	2.96 (4,398)	4.32 (3,520)	2.05 (4,876)	3.35 (3,966)
Junior college graduate	4.84	5.29	4.39	4.27	3.15	3.65

Bachelor degree	(744) 5.04 (1,666)	(548) 6.47 (1,423)	(615) 2.82 (1,347)	(468) 5.30 (1,208)	(666) 2.38 (1,431)	(521) 4.33 (1,339)
Graduate degree	8.48 (672) $p < .0001$	7.01 (770)	5.37 (540) $p < .005$	5.30 (660)	3.89 (565) $p < .05$	4.43 (745)
Race						
White	4.97 (8,287)	5.94 (6,834)	3.39 (6,224)	4.20 (5,621)	2.38 (6,896)	3.36 (6,378)
Black	5.30 (1,378)	7.97 (790)	3.57 (1,150)	5.99 (734)	2.43 (1,233)	4.91 (815)
Other	6.15 (520)	6.21 (419)	3.60 (445)	5.25 (381)	2.90 (482)	4.05 (420)
Religion						
Protestant	3.97 (6,148)	5.52 (4,297)	2.71 (4,505)	3.85 (3,528)	1.99 (5,016)	3.10 (4,060)
Catholic	4.67 (2,419)	5.34 (1,948)	3.09 (1,910)	4.23 (1,606)	1.90 (2,161)	3.25 (1,846)
Jewish	5.10 (196)	5.42 (166)	0.61 (163)	4.00 (150)	1.18 (170)	4.14 (169)
None	11.15 (951)	8.69 (1,208)	7.25 (841)	6.37 (1,067)	5.54 (867)	5.49 (1,130)
Other	9.30 (441) $p < .0001$	9.00 (400) $p < .0001$	6.38 (376) $p < .0001$	5.52 (362) $p < .01$	4.28 (374) $p < .0001$	3.64 (385) $p < .005$
Secularism (Measured by Frequency of Attending Religious Service)						
More than once per week	2.96 (879)	5.75 (452)	1.84 (597)	3.39 (384)	1.10 (634)	2.30 (434)
Every week	2.96 (2,093)	6.30 (1,223)	2.01 (1,441)	4.62 (975)	1.30 (1,613)	3.84 (1,119)

Nearly every week	2.72 (625)	3.97 (378)	1.94 (465)	2.95 (305)	1.17 (512)	2.90 (345)
2-3 times per month	4.35 (989)	5.38 (595)	2.15 (791)	3.31 (513)	1.35 (887)	3.32 (603)
Once per month	5.21 (730)	5.60 (571)	3.32 (602)	4.41 (476)	2.38 (671)	3.35 (568)
Several times per year	5.52 (1,267)	6.37 (1,084)	3.38 (1,036)	4.55 (924)	2.40 (1,167)	3.37 (1,039)
Once per year	6.75 (1,214)	5.17 (1,258)	4.47 (1,006)	3.96 (1,060)	2.96 (1,114)	2.72 (1,213)
Less than once per year	6.09 (755)	5.36 (746)	3.06 (588)	3.73 (643)	2.46 (651)	2.81 (713)
Never	8.73 (1,478) <i>p</i> < .0001	7.81 (1,627)	6.93 (1,169) <i>p</i> < .0001	5.97 (1,357)	5.31 (1,244) <i>p</i> < .0001	5.30 (1,472) <i>p</i> < .05
Marital Status						
Married	3.32 (4,824)	3.43 (4,344)	1.71 (4,267)	1.71 (3,736)	1.01 (5,125)	1.26 (4,528)
Not Married	6.66 (5,359) <i>p</i> < .0001	9.36 (3,697) <i>p</i> < .0001	5.49 (3,552) <i>p</i> < .0001	7.87 (2,998) <i>p</i> < .0001	4.48 (3,486) <i>p</i> < .0001	6.94 (3,083) <i>p</i> < .0001
Geographical Urbanization						
Top 12 central cities (CCs)	5.33 (807)	13.39 (545)	3.54 (621)	11.32 (486)	2.45 (654)	9.28 (517)
Next 88 central cities	7.47 (1,513)	7.58 (1,161)	5.32 (1,185)	6.80 (1,014)	4.04 (1,239)	5.82 (1,083)
Suburbs top 12 CCs	5.86 (1,161)	7.17 (962)	3.46 (926)	4.33 (808)	2.24 (1,026)	3.64 (935)
Suburbs next 88 CCs	5.55 (1,441)	5.83 (1,217)	4.11 (1,096)	4.61 (998)	3.10 (1,291)	3.26 (1,196)
Other urban areas	4.12 (4,123)	4.68 (3,336)	2.77 (3,173)	2.80 (2,781)	1.94 (3,446)	2.41 (3,110)
Other rural areas	3.77	4.62	2.20	2.62	1.26	1.55

	(1,140) <i>p</i> < .0001	(822) <i>p</i> < .0001	(818) <i>p</i> < .0001	(649) <i>p</i> < .0001	(955) <i>p</i> < .0001	(772) <i>p</i> < .0001
Geographical Urbanization (at 16)						
Country (non-farm)	4.45 (1,124)	5.03 (975)	3.79 (897)	3.88 (825)	2.55 (979)	3.21 (936)
Farm	3.12 (1,252)	4.49 (1,114)	2.16 (787)	3.55 (874)	1.58 (888)	2.37 (1,014)
Small town	5.06 (3,341)	6.44 (2,516)	3.21 (2,527)	3.94 (2,106)	2.27 (2,820)	3.33 (2,372)
Medium city	5.17 (1,684)	6.19 (1,180)	3.13 (1,373)	4.85 (989)	2.28 (1,490)	3.62 (1,133)
Large city	6.22 (1,237)	6.99 (1,073)	3.73 (991)	4.99 (941)	2.45 (1,104)	4.40 (1,022)
Metropolitan area	6.14 (1,530)	7.22 (1,178)	4.47 (1,230)	5.92 (996)	3.34 (1,319)	4.60 (1,130)
	<i>p</i> < .01	<i>p</i> < .05				

Note. The values represent raw, unweighted estimates computed from the GSS 1988 to 2004 cumulative dataset. Missing data including the ones for people who did not answer the relevant survey questions were simply excluded from the above analysis. *P*-values are Pearson chi-square test of independence in the 2 x *R* table of reported homosexual behavior since 18, in the last 5 years, or in the past year (yes, no) by the *R* categories of the socio-demographic variable.

^a Estimated percentage of individuals in the given gender population who have engaged in same-sex sexual behavior (for the given category of the socio-demographic variable), including those who have answered that their past sex partners included both sexes.

^b Unweighted total number of respondents in the given gender population (for the given category of the socio-demographic variable) who have responded to the survey question pertaining to each cell.

Table 4
Summary of Significant Chi-Square Test Results from Table 3

Variables	Female			Male		
	Since 18	Last 5 Years	Last Year	Since 18	Last 5 Years	Last Year
Birth Cohort	*	*	*	-	-	*
Education	*	*	*	-	-	-
Race	-	-	-	-	-	-
Religion	*	*	*	*	*	*
Secularism	*	*	*	-	-	*
Marital Status	*	*	*	*	*	*
Geographical Urbanization	*	*	*	*	*	*
Geographical Urbanization (at 16)	*	-	-	*	-	-

Note. Asterisk (*) indicates that the p-value computed from the Pearson chi-square test of independence for the corresponding cell in Table 3 is less than 0.05. Dash indicates that the p-value for the corresponding cell in Table 3 is not statistically significant (> 0.05).

Table 5
Comparison of Estimations of the Effect of Place of Residence at Age 16 on Past Homosexual Experience since Age 18

	Female					Male				
	Linear Model	Non-Linear Models				Linear Model	Non-Linear Models			
	OLS	Logit		Probit		OLS	Logit		Probit	
Geographical Urbanization (at 16) ^a		Discrete Effect	Marginal Effect	Discrete Effect	Marginal Effect		Discrete Effect	Marginal Effect	Discrete Effect	Marginal Effect
0-1	.0047** [3.25]	.0039	.0047** [3.27]	.0040	.0047** [3.25]	.0048* [2.77]	.0041	.0047* [2.78]	.042	.0048* [2.77]
1-2		.0043		.0043			.0044		.045	
2-3		.0046		.0047			.0047		.048	
3-4		.0051		.0050			.0051		.050	
4-5		.0055		.0054			.0054		.054	

Note. Values represent the predicted estimates of the effect of an individual's place of residence at age 16 on past homosexual experience since age 18 (dichotomous outcome: yes or no) for the given estimation model. N = 9955 for women; N = 8010 for men. The mean value for women's geographical urbanization at age 16 is 2.5210; the mean value for men's geographical urbanization at age 16 is 2.4717.

^a Geographical urbanization (at age 16) was measured on an ordinal level, with response categories 0 = country/non-farm, 1 = farm, 2 = small town, 3 = medium city, 4 = large city, and 5 = metropolitan area.

* $p < .01$

** $p < .00$

