LGBT Health

An innovative approach to the design of a national probability sample of sexual minority adults

Journal:	*LGBT Health*
Manuscript ID	LGBT-2019-0145.R3
Manuscript Type:	Original Article
Date Submitted by the Author:	n/a
Complete List of Authors:	Meyer, Ilan; UCLA School of Law, The Williams Institute Marken, Stephanie; Gallup Inc Russell, Stephen; University of Texas at Austin, Department of Human Development and Family Sciences Frost, David; University College London, Department of Social Science Wilson, Bianca; University of California Los Angeles, Law;
Keywords:	Adulthood, Research design and statistics, Survey design or survey methodology
Manuscript Keywords (Search Terms):	Sampling, LGBT populations, Methods

An Innovative Approach to the Design of a National Probability Sample of Sexual Minority Adults

Ilan H. Meyer, PhD,[1] Stephanie Marken,[2] Stephen T. Russell, PhD,[3] David M. Frost, PhD,[4] and Bianca D.M. Wilson, PhD[1]

[1]The Williams Institute, School of Law, University of California, Los Angeles, Los Angeles, California.

[2]Gallup, Washington, District of Columbia.

[3]Department of Human Development and Family Sciences, The University of Texas at Austin, Austin, Texas.

[4]Department of Social Science, University College London, London, United Kingdom.

Address correspondence to:
Ilan H. Meyer, PhD
The Williams Institute
1060 Veteran Ave., Suite 134
Box 957092
Los Angeles, CA 90095-7092
meyer@law.ucla.edu
Tel: (310) 267-4382

Running head: A U.S. probability sample of sexual minority adults

Keywords: LGBT populations, methodology, sampling, survey

Word count and number of items: Abstract 246 words, manuscript 4,714 words; 37 references, 3 tables, 1 figure.

A U.S. probability sample of sexual minority adults

Abstract

Purpose: Sampling lesbian, gay, and bisexual (LGB) people to recruit a national probability sample is challenging for many reasons, including the low base rate of LGB people in the population. To address this challenge, researchers have relied on diverse approaches to sampling LGB people. We aimed to test an innovative method to assemble a U.S. national probability sample of LGB people.
Methods*:* Our approach used two phases. In Phase 1, we identified potential LGB respondents in a probability general population sample. To achieve this, general population respondents were queried about their sexual orientation using a short screening question that identifies LGB respondents. In Phase 2, the identified LGB respondents completed the targeted survey online or on a mailed questionnaire.
Results*:* In Phase 1, using random-digit dialing, a nationally representative sample of 366,644 respondents were screened in a brief telephone interview. Of them, 3.5% (n = 12,837) identified as LGB or transgender. Phase 2 was based on eligibility requirements (age, race and ethnicity, and educational restrictions). Of those eligible, 81% (n = 2840) agreed to participate in the study (78% agreed to use the web version and 22% the mailed questionnaire) and 49% of web surveys and 46% of mailed surveys were completed. The final sample included 1331 respondents.
Conclusions*:* The benefits of this approach include the ability to assess LGB-specific content in a national probability sample; challenges include high cost and low base rates for Asian and American Indian or Alaska Native individuals in the United States.

A U.S. probability sample of sexual minority adults

Introduction

Knowledge about sexual minority people[i] in the United States has come primarily from two types of studies. The first type includes studies that use nonprobability methods to recruit study participants from sources in the lesbian, gay, bisexual, and transgender (LGBT) community. These studies have been a staple of lesbian, gay, and bisexual (LGB) scholarship for decades. They have evolved from simple, single-source recruitment (such as LGBT pride events) to more sophisticated methods, including respondent-driven sampling, time–space sampling, diverse recruitment-source sampling, and, increasingly, internet sources.[1-4] The second type includes studies that use probability samples. These are, typically, general population samples that include questions that enable researchers to identify sexual minority people and, therefore, allow comparisons of sexual minority and heterosexual respondents. Since 2000, such studies have provided important information about the health and well-being of LGB people, especially regarding health disparities between LGB and heterosexual people in the United States.[5-10]

Studies of transgender populations follow similar patterns but have a more recent history.[11] Because this article focuses on sexual minority adults, we limit our review to the sexual minority population. We also exclude discussion of the use of clinical samples, which has a long history in both LGB and transgender health studies.[2,12]

Probability and nonprobability samples of sexual minority people

Both types of studies, using nonprobability and probability samples, have limitations. The first type—nonprobability, community-sourced samples—are limited because researchers do not know (and cannot control) probability of respondents' inclusion. This raises potential for biases in the representation of the population and therefore, the findings. For example, level of contact with the LGBT community is correlated with the probability of being recruited—the more contact a person has with the LGBT community, the greater the probability that they would be reached and included in a sample. Thus, people recruited through contacts in the LGBT community may be more likely than people not reached using this method to be active participants in the community, but also to have more social contacts in general, to be more politically informed, or to have special (e.g., political) motivations for agreeing to participate in studies.[1,13] Statistical and methodological approaches, such as respondent-driven sampling, have been designed to more accurately estimate population parameters than in more traditional community-based samples, but because probability of recruitment is not knowable, unknown bias sources remain.[4]

The main strength of the second type of studies, which use probability samples, is that they reduce potential sources of biases, such as those related to level of LGBT community participation, because respondents are selected independent of their participation in the community. Other potential biases, for example, response bias, can be controlled by weighing and other statistical methods because researchers control and can correct the probability of respondents' inclusion. However, because these studies target the general public, not sexual

[i] We use the generic term *sexual minority* to refer to people who are not heterosexual, including lesbian women, gay men, and bisexual (LGB) individuals, and those who identify by other terms, such as queer. We use the term *LGBT community* to refer to the community as a whole when not specifying a particular subgroup, such as LGB or transgender people.

minority people specifically, their research topics and survey questions are not tailored to sexual minority respondents. Thus, general population studies are unlikely to include measures of special interest to sexual minority populations,[14] such as minority stressors related to anti-LGB prejudice,[15] which are risk factors for compromised health among sexual minority people.[16,17]

Because of these limitations, investigators have developed other innovative approaches to target sexual minority populations specifically. Early in the AIDS epidemic, investigators compiled a probability sample of 16 census tracts in California's Bay Area, where gay and bisexual men, the target population, resided in greater concentration.[18] Other investigators selected areas with high-density populations of men who have sex with men and used random-digit dialing (RDD) to recruit panels with the aim of representing the total U.S. population. [19,20] Cochran and Mays followed up with LGB respondents from a California general-population probability sample to administer specialized survey questions that were unavailable in the original survey.[21]

There are several challenges to both probability and nonprobability sampling of sexual minority people. First, it is reasonable to suspect that social stigma may lead to reluctance among some sexual minority people to identify themselves ("come out"). In addition, an important challenge affecting studies that attempt to sample sexual minority people among respondents in general population probability samples is that the sexual minority population is small, estimated at 2.3%[10] to 4.5%[22] of the U.S. adult population (the latter estimate includes transgender individuals, which are about 0.5% of the U.S. population), with substantial variation by age. Therefore, using a national probability sample to study sexual minority individuals would require a large sample to identify a sufficiently sized subsample of sexual minority respondents.

The need for LGB-targeted studies that use probability samples

The authors identified a need for a new data collection approach. We aimed to collect a sample representative of the U.S. sexual minority population for a study of issues specific to sexual minority people. We developed the sampling methodology reported here for the *Generations* study. In that study we aimed to test the general premise that an improved social and legal environment for sexual minority people would lead to less exposure to minority stress (i.e., stress related to prejudice and stigma) among younger sexual minority people and, hence, improved health outcomes, as compared with the minority stress experienced by older sexual minority people.[23]

In this article we introduce an approach to sampling sexual minority study respondents from the general population that combines the benefits of the two types of studies: probability sampling of the general population to identify sexual minority people together with a tailored survey that is specific to this population. We describe the sampling approach only; substantive topics related to the study hypotheses, and publications addressing those, can be found on the *Generations* study website.[23]

Methods

Sample

We used a two-phase recruitment procedure. In Phase 1, utilizing a question asked of all Gallup respondents (see Measures), we identified LGBT individuals in a U.S. probability sample. Respondents who identified as LGBT were assessed for additional eligibility criteria for participation in the study. In Phase 2, eligible sexual minority respondents were invited to participate in a self-administered survey.

The survey was conducted by Gallup, Inc., using the Gallup Daily Tracking Survey as the initial contact. Phase 1 recruitment lasted one year, between March 28, 2016, and March 30, 2017. In this article, we do not report the results of an oversampling of Black and Latino respondents recruited by extending the recruitment period for these respondents by another year. Gallup's Daily Tracking Survey was a daily (350 days a year) telephone interview of a national probability sample of 1000 adults aged 18 or older from all 50 U.S. states and the District of Columbia. A phone interviewer administered the interview, inquiring about topics including the respondents' politics, economics, and general well-being. In 2018, Gallup changed the Daily survey and rebranded it as the "U.S. Gallup Poll." Approximately, 5% of Gallup interviews for the Gallup Daily Tracking survey were conducted in Spanish for Spanish-only speakers, but because we projected a very small gain in the total number of sexual minority respondents, Spanish-only speakers were not included in the current study.

In Phase 1, Gallup used a dual-frame sampling procedure, which included RDD to reach both landline and cellphone users, and an additional random selection method for choosing a respondent within a household (if more than one). Gallup stratified the RDD list to ensure that the unweighted samples were proportionate by time zone in the U.S. Census region. Every day, Gallup weighted the data to compensate for disproportionalities in nonresponse and selection probabilities.

Respondents were eligible to participate in Phase 2, the self-administered survey, if they identified as sexual minorities but were not transgender. Respondents who were transgender, regardless of their sexual orientation, were screened for participation in a companion study, *TransPop* (not reported in this article), which included questions to address issues that are specific to transgender people (e.g., transitioning). Respondents who were sexual minorities and gender nonbinary, but did not identify as transgender, were included in the *Generations* study and in this article.

Eligibility was restricted to three age cohorts of interest in the *Generations* study (18–25, 34–41, or 52–59) because the scientific focus of *Generations* was on differences among age cohorts related to the social environment when the respondents were children. Eligibility was also limited to the three largest U.S. racial and ethnic groups (Black, Latino, or White, or multiple racial and ethnic identities that included at least one of these) because estimates showed that we would not be able to recruit a sufficient number of respondents who were Asian (5.9% of U.S. population) or Native American/Alaskan Native (1.3%) to satisfy power requirements for *Generations*. Eligibility was restricted to English-speaking people with above 5th-grade education to ensure they are competent to self-administer of the survey questionnaire.

Eligible respondents who agreed to receive the Phase 2 survey were emailed or mailed a survey questionnaire to complete by self-administration via a web link or printed questionnaire, respectively. The surveys took 30–45 minutes to complete. Respondents received $25 in a gift

certificate by email, or cash by mail, in advance, along with their survey materials. Respondents who received the survey via email submitted the web survey online; respondents with mailed surveys returned the questionnaires using a preaddressed, pre-stamped envelope. After the initial invitation, unless they responded, respondents received four reminders by email or mail, each four calendar days apart.

The study procedures and respondents' protections were reviewed and approved by the University of California, Los Angeles institutional review board (IRB), the Gallup IRB, and collaborating IRBs. Respondents reviewed the consent information, and their consent was indicated if they continued to complete the survey questionnaire; no signed consent forms were collected. The investigators have access only to de-identified data.

Measures

Sexual and gender identities

LGBT question. Gallup asked all respondents this question: "Do you, personally, identify as lesbian, gay, bisexual, or transgender?" with response options "yes, do" or "no, do not." Because this question combines LGB and transgender identities, we followed this with a three-question screen to determine who was LGB and who was transgender to correctly direct sexual minority respondents to the *Generations* study. All respondents who said "yes" to the LGBT question were then asked the following screen questions.

Sexual identity screen. To assess sexual orientation, respondents were asked, "Which of the following best describes your current sexual orientation?" with the response options, "straight/heterosexual," "lesbian," "gay," "bisexual," "queer," "same-gender loving," or "other"; if they chose any responses other than heterosexual, they were defined as sexual minorities at this point. Respondents who were eligible and completed the *Generations* study were asked to elaborate on their sexual identity further by writing in other identities, such "asexual," "pansexual," etc. (see Table 3).

Gender identity screen. A two-step gender identity question asked, first, "On your original birth certificate, was your sex assigned as female or male?" with the response options of "female" or "male," and then, "Do you currently describe yourself as a man, woman, or transgender?" with the response options of "man," "woman," and "transgender." Respondents who said they were transgender were then asked, "Are you trans woman (male-to-female), trans man (female-to-male), or nonbinary/genderqueer." Respondents were classified as transgender if they said they were transgender in the second step or if their current gender identity (second step) was different than their sex assigned at birth (first step).

Other survey questions

In Phase 1 (Gallup Daily) respondents were asked various other questions, including about their race and ethnicity, highest school grade attained, and age, which were used in determining eligibility. Eligible respondents, who moved on to Phase 2, were asked to complete the *Generations* questionnaire, which included questions related to stress, community, health care utilization, and health outcomes (the full questionnaire is available online).[23]

Weighting

A major obstacle to achieving representative samples of sexual minority people is that sexual orientation is not assessed by census. In addition to nonresponse adjustment for the entire Gallup sample, nonresponse adjusted weights were post-stratified to targets for the LGBT

population using data collected by Gallup on the LGBT population since 2012.[22, 24] Weights adjusted for age, gender, education, race/ethnicity, and geographic region. Additional information on the weighting procedure is available in the *Generations* methods technical notes online.[23]

Results

In Phase 1, 366,644 respondents were screened in the brief telephone interview. Of them, 3.5% (n = 12,837) identified as LGBT and 3525 were eligible to participate in the *Generations* study based on that study's age group, race and ethnicity, and educational restrictions. The response rate for the Gallup study was 9.5% (AAPOR Response Rate 3).[25] Of those eligible, 81% (n = 2840) agreed to participate in the *Generations* study (78% of them were sent the web version and 22% the mailed questionnaire); 49% of web surveys and 46% of mailed surveys were completed (Figure 1). The final cooperation rate (proportion of completed out of all who were eligble) was 39%. During data cleaning, 38 people were removed because on their responses to the survey questionnaire they were deemed not eligible (different from the original screen), including 24 who were classified as transgender and 14 who were not in the eligible age categories. The final sample included 1331 respondents.

Table 1 shows the proportion of LGBT individuals in the U.S. population and participation rates by gender, race and ethnicity, and age group. The table shows few differences between men and women in the proportion of the population identifying as LGBT and in participation rates (the proportion of transgender people was about 0.2%, so most people in this LGBT group were sexual minorities). Both the proportion of the population identifying as LGBT and participation rates differed by race and ethnicity, with a smaller proportion of White respondents identifying as LGBT but a larger proportion of White LGBT individuals completing the survey. Fewer older respondents (aged 52–59) identified as LGBT, but they had the highest participation rate (50%).

Table 2 shows the demographic characteristics of respondents who completed the questionnaire versus those who did not among all who agreed to participate. Compared with nonrespondents, respondents were more likely to be White, older, of higher education, and have higher annual household income. Respondents were as likely as nonrespndents to be employed and were evenly distributed across regions of the United States.

Table 3 shows characteristics of *Generations* respondents for the whole sample and by age cohort. Overall, reflecting the overrepresentation of young people in the LGBT population,[18] our sample comprised more young people, with 60.7% (SE = 1.6%) in the younger cohort, 21.2% (SE = 1.3%) in the middle cohort, and 18.1% (SE = 1.0%) in the older cohort. Also consistent with demographics of LGBT people in the population, the proportion of women was larger in the younger and middle cohorts but reversed, with more men, in the older cohort. Younger people, because of their age, were more likely to have only a high school education than members of the older cohorts. The younger cohort also had more people whose gender was nonbinary or genderqueer, more bisexual individuals, and more people who reported a sexual identity that is different than LGB (e.g., queer, asexual). As expected, older people were more likely to be male, and married or in a civil union or domestic partnership and less likely to be unemployed. Most people, across age cohorts, said that their political affiliation was Democrat or independent, with a very small minority identifying as Republican but younger cohort people were more likely to be independent than members of other cohorts. The majority of people resided within 60 miles of

an LGBT center, which are typically in large urban centers, but about a quarter of the sample did not.

Discussion

This study reported on an innovative approach to collecting data on a sample that is representative of the U.S. population of sexual minority adults. For the purpose of the current study, we focused on three discrete age groups of sexual minority people. Our sampling approach adds to a growing toolkit available to researchers interested in sexual minority adults.[1] Our approach was successful in recruiting a large probability sample of sexual minority people that allowed researchers to learn about issues relevant to sexual minority health covered in this study. Because the U.S. has no census data on the sexual minority population, it is impossible for us to assess the accuracy with which our sample achieved representation of the true sexual minority population; we used general U.S. population and data on LGBT respondents collected by Gallup over years of study to correct the sample for response biases with weighting.

This two-phase approach is designed for investigators who are interested in targeting specific topics in the sexual minority population, which has been historically underrepresented in socio-behavioral and health research and is small in prevalence and difficult to reach. For example, the *Generations* study was concerned with issues related to identity and minority stress that are unique to sexual minority respondents and are therefore not included in general population surveys. Although this study included only sexual minority respondents, the approach could be adjusted to simutaneusly recruit a comparison sample of heterosexual respondents.

Limitations and future studies

Despite the advantage of this approach—namely, the ability to estimate population parameters for the population of sexual minority adults—the sampling approach has limitations. First, due to the small population base rate of sexual minority people (estimated at approximately 2.3%–4.5% of the U.S. population), this approach is laborious and costly. In our case, we opportunistically utilized the Gallup Daily survey, which collected the information about sexual identity (Phase 1) and we added the Phase 2 survey (tailored to LGB respondents). Our cost was limited to additional screening questions in Phase 1 and the Phase 2 survey of the LGB respondents. We therefore were able to fund the study with a regular National Institutes of Health R01 grant mechanism. For this reason, we had to rely on the question used by Gallup at Phase 1 even though we had no data on its performance except that it has been used by Gallup for several years by the time of our survey.[22,24] The cost of the study would be greatly increased if researchers were to underwrite the cost of screening the entire population.

Our sample is limited in that it excluded people whose identity was Asian, American Indian, or Alaska Native. This was done because our estimates showed that even with the large expected Phase 1 sample (of more than 350,000 respondents), we would not be able to recruit a sufficient number of sexual minority people who are members of these ethnic groups due to the small base rate of both LGBT status and Asian, American Indian, or Alaska Native status. This challenge was exacerbated by our study's need to recruit only select age groups and have sufficient numbers of men and women in each age cohort. Broader inclusion criteria might ameliorate this limitation somewhat. Similarly, longer recruitment periods would help, although

much longer recruitment periods—we estimated that we would need up to 5 years of recruitment for some of our desired cells—would have implications for cost and the integrity of the sample in terms of the effect of history on different segments of the sample.

Our approach also has several of the same limitations that affect any large population survey; for example, the increased difficulty of recruiting respondents using telephone RDD methods. In a related study, we used address-based sampling and found the basic approach worked well (Meyer IH, Marken S, Auter Z, et al.: Asking about sexual orientation in a national general population survey: Do expanded response options improve survey performance with sexual minority respondents? Paper presented at the 2019 meeting of the American Association of Public Opinion Research, Toronto, Canada).

Another limitation that affects all studies of sexual minority individuals is the reliance on self-identification of the population of interest: Respondents must tell the researchers that they identify as a sexual minority to be included in the sample. Despite improved methodologies for asking questions about sexual orientation, some limitations persist. For example, respondents may feel apprehensive about identifying themselves as sexual minority persons due to stigma. For this reason, we and other researchers studying sexual minority respondents work to safeguard the confidentiality of respondents' information and hope that respondents are reassured by confidentiality procedures. Researchers also have to address variability in the terms used to describe minority sexual orientation. As our results show, this is increasingly an issue for young people who use more diverse identity terms (e.g., queer, asexual) then do older LGB people.[26,27] For this reason, researchers have to continue to invest in developing and improving measures for the identification of sexual minority individuals.

Conclusions

We described a new method that has successfully yielded the first national probability sample of LGB adults in the United States. This approach adds to existing models that include sexual minorities in general population probability samples. The new approach improves on general population studies in that it targets sexual minority population and researchers can administers surveys specifically designed to this population. This two-phase sampling approach offers a new model potentially relevant to other understudied or marginalized populations and represents a distinct step forward in the field of sexual minority sampling methodology.

Acknowledgement

The authors thank Evan Krueger and Zac Auter for data analysis and Eric Lindberg for copy editing.

Disclaimer

Portions of this article were presented as an oral presentation in a panel at the annual meeting of the American Association for Public Opinion Research in Denver, Colorado, May 17, 2018. The content in this report is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

A U.S. probability sample of sexual minority adults

Author Disclosure Statement

No competing financial interests exist.

Funding Information

Research reported in this publication was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development of the National Institutes of Health under Award Number R01HD078526 and through supplemental grants from the National Institutes of Health, Office of Behavioral and Social Sciences Research, and the Office of Research on Women's Health. The Generations investigators are: Ilan H. Meyer, PhD (PI), David M. Frost, PhD, Phillip L. Hammack, PhD, Marguerita Lightfoot, PhD, Stephen T. Russell, PhD, and Bianca D.M. Wilson, PhD (Co-Investigators, listed alphabetically). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

1. Meyer IH, Wilson PA: Sampling lesbian, gay, and bisexual populations. J Couns Psychol 2009;56:23-31.
2. Rothblum ED: From science fiction to computer-generated technology: Sampling lesbian, gay, and bisexual individuals. In: *The Health of Sexual Minorities: Public Health Perspectives on Lesbian, Gay, Bisexual and Transgender Populations*. Edited by Meyer IH, Northridge ME. New York, NY, Springer, 2007, pp. 442-454.
3. Muhib FB, Lin LS, Stueve A, et al.: A venue-based method for sampling hard-to-reach populations. Public Health Rep 2001;116(Suppl 1):216-222.
4. Heckathorn DD: Snowball versus respondent-driven sampling. Sociol Methodol 2011;41:355-366.
5. Andersen JP, Blosnich J: Disparities in adverse childhood experiences among sexual minority and heterosexual adults: Results from a multi-state probability-based sample. PLoS One 2013;8:e54691.
6. Kann L, McManus T, Harris WA, et al.: Youth Risk Behavior Surveillance - United States, 2017. MMWR Surveill Summ 2018;67:1-114.
7. Conron KJ, Mimiaga MJ, Landers SJ: A population-based study of sexual orientation identity and gender differences in adult health. Am J Public Health 2010;100:1953-1960.
8. Hatzenbuehler ML, McLaughlin KA, Keyes KM, Hasin DS: The impact of institutional discrimination on psychiatric disorders in lesbian, gay, and bisexual populations: A prospective study. Am J Public Health 2010;100:452-459.

9. Krueger EA, Meyer IH, Upchurch DM: Sexual orientation group differences in perceived stress and depressive symptoms among young adults in the United States. LGBT Health 2018;5:242-249.
10. Ward BW, Dahlhamer JM, Galinsky AM, Joestl SS: Sexual orientation and health among U.S. adults: National Health Interview Survey, 2013. Natl Health Stat Report 2014;15:1-10.
11. Henderson ER, Blosnich JR, Herman JL, Meyer IH: Considerations on sampling in transgender health disparities research. LGBT Health 2019;6:267-270.
12. Miner MH, Bockting WO, Romine RS, Raman S: Conducting Internet research with the transgender population: Reaching broad samples and collecting valid data. Soc Sci Comput Rev 2012;30:202–211.
13. Meyer IH, Colten ME: Sampling gay men: Random digit dialing versus sources in the gay community. J Homosex 1999;37:99-110.
14. Russell ST, Muraco JA: The use of representative data sets to study LGBT-parent families: Challenges, advantages, and opportunities. In: *LGBT-Parent Families: Innovations in Research and Implications for Practice*. Edited by Goldberg AE, Allen KR. New York, NY, Springer, 2013, pp. 343-356.
15. Frost DM, Lehavot K, Meyer IH: Minority stress and physical health among sexual minority individuals. J Behav Med 2015;38:1-8.
16. Institute of Medicine (US) Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gaps and Opportunities: The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding. Washington, DC, National Academies Press, 2011.

17. Meyer IH: Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. Psychol Bull 2003;129:674-697.

18. Catania JA, Coates TJ, Kegeles S, et al.: Condom use in multi-ethnic neighborhoods of San Francisco: the population-based AMEN (AIDS in Multi-Ethnic Neighborhoods) Study. Am J Public Health 1992; 82:284-287. 2010;

19. Stall R, Mills TC, Williamson J, et al.: Association of co-occurring psychosocial health problems and increased vulnerability to HIV/AIDS among urban men who have sex with men. Am J Public Health 2003;93:939-942.

20. Herek GM: Hate crimes and stigma-related experiences among sexual minority adults in the United States: Prevalence estimates from a national probability sample. J Interpers Violence 2009;24:54-74.

21. Cochran SD, Mays VM: Physical health complaints among lesbians, gay men, and bisexual and homosexually experienced heterosexual individuals: Results from the California Quality of Life Survey. Am J Public Health 2007;97:2048-2055.

22. Newport F: In U.S., estimate of LGBT population rises to 4.5%. Gallup, 2018. Available at https://news.gallup.com/poll/234863/estimate-lgbt-population-rises.aspx Accessed March 20, 2019.

23. *Generations*: A Study of the Life and Health of LGB People in a Changing Society. Available at www.generationsstudy.com/methods Accessed June 28, 2019.

24. Gates GJ, Newport F: Special report: 3.4% of U.S. adults identify as LGBT: Inaugural Gallup findings based on more than 120,000 interviews. Gallup, 2012. Available at https://news.gallup.com/poll/158066/special-report-adults-identify-lgbt.aspx Accessed March 20, 2019.

25. The American Association for Public Opinion Research (AAPOR). 2016. *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 9th edition*. Available at https://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf Accessed January 2020.

26. Rothblum ED, Krueger EA, Kittle KR, Meyer IH: Asexual and non-asexual respondents from a U.S. population-based study of sexual minorities. Arch Sex Behav 2019 Jun 18. doi: 10.1007/s10508-019-01485-0. [Epub ahead of print]

27. Goldberg, S. K., Rothblum, E. D., Russell, S. T., & Meyer, I. H. (2019). Exploring the Q in LGBTQ: Demographic characteristic and sexuality of queer people in a U.S. representative sample of sexual minorities. *Psychology of Sexual Orientation and Gender Diversity.* Advance online publication. https://doi.org/10.1037/sgd0000359

A U.S. probability sample of sexual minority adults

Figure Captions

Figure 1: Two-phase recruitment of LGB respondents: *Generations* study flow chart

Table 1. Weighted proportions of the U.S. population identified as sexual minority people and response rates by gender, race and ethnicity, and age cohort: *Generations* study

			Gender		Race and Ethnicity			Age Cohort		
Study Phase	Variable	All	Men	Women	Black	Latino	White	18-25	34-41	52-59
1	Identify as LGBT[a]	3.5	3.6	3.4	4.1	5.6	3.2	9.1	3.9	3.2
1	Agreed to participate among those eligible[b]	81	80	83	85	80	82	81	83	82
2	Completed survey of those who agreed to participate	48	48	47	35	38	53	43	52	61
	Total completion among all eligible	39	38	39	30	30	43	35	43	50

[a]In the Phase 1 screen, we selected respondents who answered yes to the question, "Do you personally identify as lesbian, gay, bisexual, or transgender."

[b]After administering the screen for eligibility for the *Generations* study, only eligible sexual minority people were invited to participate in the *Generations* study (see text for additional information).

Table 2. Core demographic characteristics of Gallup respondents who completed (N = 1,369) vs. did not complete (N = 1,471) the survey in the *Generations* study, among those who agreed to participate, Gallup national phone survey participants recruited 2016–2017

Variable	Completed *n* (%)	Did not complete *n* (%)	χ^2
Race and ethnicity			114.42**
White	986 (72.0)	782 (53.2)	
Hispanic	204 (14.9)	355 (24.2)	
Black	158 (11.5)	316 (21.5)	
Asian	16 (1.2)	13 (0.9)	
Other	5 (0.4)	3 (0.2)	
Age			63.37**
15–24	497 (36.3)	716 (48.7)	
25–34	139 (10.2)	151 (10.3)	
35–49	276 (20.2)	288 (19.6)	
50 or older	457 (33.4)	314 (21.4)	
Employment			3.42
Full time (employer)	783 (66.4)	790 (64.9)	
Full time (self)	70 (6.1)	71 (5.8)	
Part time (voluntary)	97 (8.4)	110 (9.0)	
Part time (involuntary)	149 (13.0)	150 (12.3)	
Unemployed	70 (6.1)	96 (7.9)	
Education			91.92**
High school or less[a]	290 (21.2)	530 (28.9)	
Some college	415 (30.3)	435 (29.6)	
College graduate	399 (29.1)	305 (20.8)	
Postgraduate work or degree	265 (19.4)	199 (13.5)	
Household annual income			41.94**
Under $24,000	199 (16.2)	281 (23.3)	
$24,000–$47,999	268 (21.8)	293 (24.3)	
$48,000–$89,999	315 (25.7)	295 (24.4)	
$90,000–$119,999	128 (10.4)	107 (8.9)	

$120,000–$179,999	177 (14.4)	106 (8.8)	
$180,000 or more	140 (11.4)	126 (10.4)	
Census region			3.50
Northeast	292 (21.3)	307 (20.9)	
Midwest	265 (19.4)	267 (18.2)	
South	443 (32.4)	523 (35.6)	
West	369 (27.0)	372 (25.3)	

[a]Including technical or vocational school.

Table 3: Select demographic characteristic by age cohort: *Generations* national probability sample respondents (*n* = 1331)

	Total (*n* = 1331)		Younger (*n* = 570)		Middle (*n* = 317)		Older (*n* = 444)		
	n	% (*SE*)	*n*	% (*SE*)	*n*	% (*SE*)	*n*	% (*SE*)	*F*
Gender									16.42**
Female	652	53.82 (1.70)	300	57.93 (2.40)	161	54.52 (3.35)	191	39.99 (2.65)	
Male	596	38.51 (1.62)	217	31.57 (2.19)	139	41.50 (3.31)	240	57.19 (2.68)	
Nonbinary or genderqueer	83	7.67 (0.98)	53	10.50 (1.55)	17	3.98 (0.99)	13	2.82 (0.85)	
Race									7.09**
White	981	71.51 (1.53)	366	67.04 (2.24)	234	73.54 (2.96)	381	83.44 (2.18)	
Black or African American	153	11.31 (1.03)	76	11.56 (1.44)	45	13.58 (2.28)	32	7.95 (1.56)	
Latino or Hispanic	197	17.18 (1.30)	128	21.39 (1.95)	38	12.89 (2.26)	31	8.61 (1.71)	
Education									40.55**
High school or less	260	42.01 (1.82)	182	54.77 (2.36)	29	23.33 (3.67)	49	22.49 (2.77)	
Employment									9.78**
Unemployed	68	7.87 (1.08)	47	9.92 (1.60)	11	6.61 (2.12)	10	2.78 (0.99)	
Sexual orientation									9.43**
Lesbian or gay	739	47.08 (1.70)	211	35.90 (2.34)	171	49.59 (3.39)	357	79.79 (2.20)	
Bisexual	428	39.90 (1.73)	259	48.07 (2.47)	106	38.94 (3.38)	63	15.02 (1.97)	
Queer	78	5.53 (0.70)	49	6.69 (1.05)	25	6.68 (1.46)	4	0.53 (0.27)	
Pansexual	32	2.98 (0.60)	26	4.39 (0.97)	6	1.66 (0.72)	0		
Same-gender loving	22	1.11 (0.27)	3	0.45 ((0.30)	6	1.40 (0.62)	13	2.87 (0.85)	
Asexual	19	1.90 (0.53)	16	2.90 (0.87)	2	0.54 (0.41)	1	0.28 (0.28)	
Straight	8	1.22 (0.49)	5	1.33 (0.68)	1	1.19 (1.18)	2	0.86 (0.67)	
Anti-label	4	0.26 (0.17))	1	0.27 (0.27)	0	0	3	0.53 (0.34)	
Other	1	0.02 (0.02)	0	0	0	0	1	0.12 (0.12)	
Marital status									
Legally married, civil union, domestic partner	292	16.02 (1.10)	27	4.90 (1.07)	106	30.38 (2.99)	159	35.29 (2.59)	69.56**
Born in United States	1241	95.58 (0.63)	539	96.51 (0.82)	289	93.11 (1.57)	413	95.38 (1.04)	2.80

Political affiliation									3.38*
Republican	59	5.96 (0.91)	28	6.04 (1.25)	6	5.32 (2.18)	25	6.44 (1.30)	
Democrat	759	56.53 (1.82)	299	52.25 (2.59)	183	59.05 (3.63)	277	67.38 (2.74)	
Independent	383	37.51 (1.80)	192	41.71 (2.58)	95	35.63 (3.50)	96	26.18 (2.62)	
Reside 60+ miles from LGBT center	342	26.95 (1.54)	161	28.58 (2.23)	82	27.20 (3.07)	99	21.54 (2.20)	2.01

Percentages are weighted.
*$p < .05$. **$p < .001$.

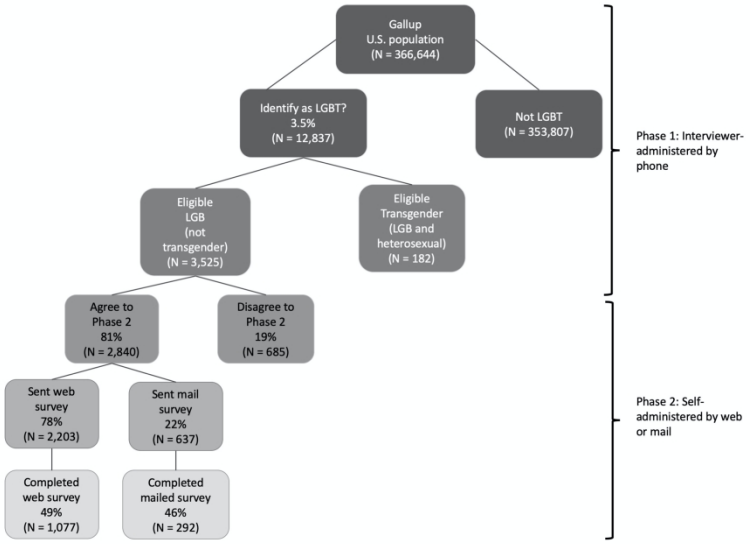
Gallup
U.S. population
(N = 366,644)
Identify as LGBT?
3.5%
(N = 12,837)
Not LGBT
(N = 353,807)
Eligible
LGB
(not
transgender)
(N = 3,525)
Eligible
Transgender
(LGB and
heterosexual)
(N = 182)
Agree to
Phase 2
81%
(N = 2,840)
Disagree to
Phase 2
19%
(N = 685)
Sent web
survey
78%
(N = 2,203)
Sent mail
survey
22%
(N = 637)
Completed
web survey
49%
(N = 1,077)
Completed
mailed survey
46%
(N = 292)
Phase 1: Interviewer-administered by phone
Phase 2: Self-administered by web or mail

Figure 1