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## Count Me In: Response to Sexual Orientation Measures Among Older Adults

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### Abstract

Health disparities exist among sexual minority older adults. Yet, health and aging surveys rarely include sexual orientation measures and when they do, they often exclude older adults from being asked about sexual orientation. This is the first population-based study to assess item nonresponse to sexual orientation measures by age and change over time. We compare response rates and examine time trends in response patterns using adjusted logistic regressions. Among adults aged 65 and older, the nonresponse rate on sexual orientation is lower than income. While older adults show higher nonresponse rates on sexual orientation than younger adults, the nonresponse rates have significantly decreased over time. By 2010, only 1.23% of older adults responded don't know/not sure, with 1.55% refusing to answer sexual orientation questions. Decisions to not ask sexual orientation among older adults must be reconsidered, given documented health disparities and rapidly changing social trends in the understanding of diverse sexualities.

### Keywords

sexual minority health; measurement; sexual orientation; LGB; LGBT; older adults; aging

### Introduction

As the U.S. population undergoes dramatic demographic shifts, it is becoming increasingly diverse (U.S. Census, 2011; Vincent & Velkoff, 2010). As part of the increasing diversity, lesbian, gay, and bisexual (LGB) adults are estimated to comprise between 3.4% of the population based on sexual orientation identity (Gates & Newport, 2012) and up to 11.0% when sexual attraction is also considered (Gates, 2011). The Institute of Medicine (2011) reports that little is known about the health of lesbian, gay, bisexual, and transgender (LGBT) older adults. *Healthy People 2020* states research on sexual orientation is needed to inform and shape future health initiatives (U.S. Department of Health and Human Services, 2012).

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#### Declaration of Conflicting Interests

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Based on the inclusion of sexual orientation measures in some epidemiologic national health surveys, elevated risk of poor mental health is found among young and middle-aged LGB adults (Cochran, Mays, & Sullivan, 2003); higher likelihood of problematic alcohol consumption and drug use among lesbian and bisexual women and higher tobacco use among bisexual women (Drabble & Trocki, 2005); and higher prevalence of obesity among lesbians (Boehmer, Bowen, & Bauer, 2007). In addition, there is mounting evidence of mental and physical health disparities among LGB adults from state-level population-based health surveys. For example, LGB adults are at elevated risk of poor health, including a greater number of physical health conditions (Boehmer et al., 2007; Cochran & Mays, 2007; Dilley, Simmons, Boysun, Pizacani, & Stark, 2010), functional limitations (Conron, Mimiaga, & Landers, 2010; Fredriksen-Goldsen, Kim, & Barkan, 2012), and mental distress (Cochran & Mays, 2007; Dilley et al., 2010) compared to heterosexual adults.

Findings emerging from state-level population-based studies suggest that many of the health disparities that have been identified among LGB adults of younger age (Conron et al., 2010) persist into middle and older adulthood (Fredriksen-Goldsen, Kim, Barkan, Muraco, & Hoy-Ellis, 2013; Wallace, Cochran, Durazo, & Ford, 2011). While the inclusion of sexual orientation measures in public health surveys has provided evidence that young and middle-aged adults respond to sexual orientation questions (Ridolfo, Miller, & Maitland, 2012; VanKim, Padilla, Lee, & Goldstein, 2010), to what extent older adults respond to these questions is not yet known.

The knowledge of health disparities is crucial to inform the development of efficacious interventions to improve health. Yet, the field of LGB adult health, especially among older adults, is stymied by the lack of pertinent data collected. In fact, most national and state-level health surveys do not ask sexual orientation measures, and among the population-based surveys that include sexual orientation measures, many only ask them of young and middle-aged adults, excluding older adults (Redford & Van Wagenen, 2012). For example, the National Health and Nutrition Examination Survey (2011) asks about sexual orientation only among those aged 18–59. The National Survey of Family Growth (2012) also includes measures of sexual orientation, but the survey is only conducted with adults aged 18–44. Even in state-level health surveys, few include sexual orientation measures, and among those that do, many exclude older adults. The California Health Interview Survey, the largest state health survey, asks sexual orientation measures to adults but only up to the age of 70 (UCLA Center for Health Policy Research, 2012).

The rationale for not asking older adults sexual orientation identity questions seems to be anchored by several assumptions, including that older adults will neither understand nor respond to such measures and that such measures are “too sensitive” for older age-groups. For example, in a state-based health survey, only adults aged 18–64 were asked about sexual orientation measures based on the following rationale: “Surveyors reported that some older respondents seemed confused when asked the sexual orientation measure. A significantly higher percentage of adults aged 65 and older responded ‘don’t know’” (VanKim et al., 2010, p. 2393). The Williams Institute concludes “surveys that include sexual orientation measures are focused primarily on middle-aged adults” (The Sexual Minority Assessment Research Team, 2009, p. 27).

Despite the growing evidence that adults respond to sexual orientation questions with a low item nonresponse rate, little remains known about the response patterns to sexual orientation questions by age and changes over time. The Behavioral Risk Factor Surveillance System for Washington State (BRFSS-WA) was one of the earliest population-based studies to include a self-report sexual orientation measure for adults of all ages, providing a unique opportunity to investigate item response patterns by age and changes over time. In this article, we will utilize data from the BRFSS-WA to examine the following research questions:

Are their differences in item nonresponse rates on sexual orientation measures between differing age-groups (18–49; 50–64; and 65 and older)?

Are the item nonresponse rates on sexual orientation similar with those observed on other demographic measures?

How have item nonresponse patterns to sexual orientation measures changed over time among adults of differing ages?

## Method

In this study, we utilized data from the BRFSS-WA, an annual telephone survey examining health behaviors and conditions of noninstitutionalized adults aged 18 and older, with core measures developed by the Centers of Disease Control and Prevention (CDC) and state-added questions. Further information can be found at <http://www.cdc.gov/brfss>. Washington State included a state-added measure of sexual orientation in 2003; so for this study, we aggregated data from 2003 to 2010, with a total unweighted N of 172,628 (2003:  $n = 18,644$ ; 2004:  $n = 18,587$ ; 2005:  $n = 23,302$ ; 2006:  $n = 23,760$ ; 2007:  $n = 25,881$ ; 2008:  $n = 22,532$ ; 2009:  $n = 20,294$ ; and 2010:  $n = 19,628$ ).

In terms of sexual orientation, BRFSS-WA asks respondents the following question: “Now I’m going to ask you a question about sexual orientation. Do you consider yourself to be heterosexual, that is straight; homosexual, that is gay or lesbian; bisexual, or something else? Remember your answers are confidential.” In the event that respondents asked for clarification or inquired why such questions were being asked, the interviewer responded: “Research has shown that some sexual minority community members have important health risk factors, such as smoking. We are collecting information about sexual orientation to learn whether this is true in Washington. You don’t have to answer any question if you don’t want.” The sexual orientation question is followed by the CDC core questions including health status, health care access, health conditions, health behaviors, and sociodemographic information. Nonresponses consist of those who answered “don’t know” or “not sure” and those who refused to answer.

Age was categorized into three groups, adults aged 18–49, 50–64, and 65 and older. For the purpose of understanding background characteristics of survey respondents by age, we examined sexual orientation (lesbian/gay, bisexual, heterosexual, and other), gender (men vs. women), income (  $< 200\%$  federal poverty level [FPL] vs.  $> 200\%$  FPL), education ( high school vs. some college), and race/ethnicity (Hispanic, Non-Hispanic White, African American, Asian American/Pacific Islander, American Indian, Multiracial, and Other).

## Statistical Analysis

Stata version 11.0 (StataCorp LP, College Station, TX) was used for data analyses. Data were weighted to adjust for the unequal probability of respondent selection and telephone noncoverage to ensure sample representativeness of the population. Comparisons of weighted prevalence were conducted utilizing 95% confidence intervals (CIs); a difference between two weighted prevalence rates is significant at the  $\alpha$  level of .05 if corresponding 95% CIs do not overlap. First, we estimated overall weighted prevalence of background characteristics by age-groups including age 18–49, 50–64, and 65 and older. Second, nonresponse rates (either “don’t know/ not sure” or “refuse to answer;” not including missing data due to partial completion of the survey) on sexual orientation, income, education, and race/ethnicity and their 95% CI were estimated for the three age-groups. A logistic regression was applied to examine to what extent age was associated with nonresponse on sexual orientation, after controlling for gender, income, education, and race/ethnicity. In addition, specific types of nonresponses on sexual orientation were further examined by estimating weighted prevalence of “don’t know/not sure” and “refuse to answer.” Finally, weighted rates of “don’t know/not sure” along with 95% CIs on sexual orientation among the three age-groups were estimated by the survey year. Adjusted logistic regressions were applied to assess whether the rates of “don’t know/not sure” change by the survey year in each age-group, after controlling for gender, income, education, and race/ethnicity. The same adjusted logistic analyses were applied to the rates of “refuse to answer” on sexual orientation.

## Results

### Background Characteristics

Table 1 presents key background characteristics by the three age-groups. The weighted estimates of women significantly increase by age when 95% CIs for adults aged 18–49, 50–64, and 65 and older are compared. Adults aged 65 and older are less likely than those aged 18–49, but more likely than those aged 50–64 to report their household income at or below 200% FPL. The education level for adults aged 65 and older is similar with that for adults aged 18–49 but is lower than that for adults aged 50–64. Racial and ethnic diversity decreases as age increases. The prevalence of non-Hispanic Whites for adults aged 65 and older is significantly higher than that for both adults aged 18–49 and 50–64, and the prevalence of Hispanics, African Americans, Asian Americans or Pacific Islanders, American Indian/Alaska Natives, and those multiracial significantly decreases as age increases.

The prevalence of lesbians/gay males and bisexuals decreases with increased age. The rates of lesbians/gay males and bisexuals among adults aged 65 and older are 0.58% and 0.32%, respectively, and these rates are significantly lower than the rates of lesbians/gay males and bisexuals among adults aged 50–64, which are 1.48% and 0.65%, respectively. In addition, the prevalence rates of lesbians/gay males and bisexuals for adults aged 50–64 are significantly lower than those for adults aged 18–49, which are 1.88% and 1.83%, respectively. The rates of identifying as “other” were not different between the three age-groups. The overall response rates on sexual orientation measures from 2003 to 2010 are

98.43% (95% CI = [98.28, 98.56]) among adults aged 18–49, 98.50% (95% CI = [98.35, 98.63]) among adults aged 50–64, and 95.96% (95% CI = [95.73, 96.19]) among adults aged 65 and older.

### Nonresponse Rates on Sexual Orientation

Next, we estimate nonresponse rates on sexual orientation including responding “don’t know/not sure” and “refuse to answer” compared with estimated nonresponse rates on other demographic questions. Table 2 demonstrates that when considering 95% CIs, the nonresponse rate on sexual orientation is notably lower than the nonresponse rates on income, whereas the nonresponse rate on sexual orientation is slightly higher than that on education and race/ethnicity. This pattern is observed across all three age-groups. For example, among adults aged 65 and older, the nonresponse rates on sexual orientation, income, education, and race/ethnicity are 4.04%, 17.68%, 0.28%, and 0.91%, respectively.

Additional analyses reveal that those who did not respond to income, education, and race/ethnicity show higher likelihood of nonresponse on sexual orientation. While nonresponse rates on sexual orientation among those who responded to income, race/ethnicity, and education are 1.52% (95% CI = [1.43, 1.62]), 1.85% (95% CI = [1.76, 1.95]), and 1.94% (95% CI = [1.85, 2.04]), nonresponse rates on sexual orientation among those who did not respond to the other demographic measures are 5.33% (95% CI = [4.92, 5.76]), 12.69% (95% CI = [10.50, 15.26]), and 26.02% (95% CI = [18.77, 34.87]), respectively.

As Table 2 demonstrates, adults aged 65 and older show significantly higher nonresponse rates, than younger age-groups, on sexual orientation as well as income and education when 95% CIs are compared. We found that the association between nonresponse on sexual orientation and age remains significant, even after controlling for gender, income, education, and race/ethnicity; the adjusted odds of nonresponse on sexual orientation for adults aged 18–49 (adjusted odds ratio [AOR] = 0.31;  $p < .001$ ) and 50 to 64 (AOR = 0.43;  $p < .001$ ) were significantly lower than those for adults aged 65 and older.

The specific types of nonresponse to sexual orientation are illustrated in Table 2. Overall, 0.75% responded “don’t know/not sure” and 1.18% refused to answer. Those aged 65 and older were more likely to respond “don’t know/not sure” and to “refuse to answer” than the younger population groups, including those aged 18–49 and those aged 50–64, when 95% CIs are compared.

### Trends in Nonresponse Rates on Sexual Orientation

Figure 1 depicts the rates of “don’t know/not sure” by survey year and age-groups. In 2003, the rate of “don’t know/not sure” nonresponse for adults aged 65 and older (2.42%; 95% CI = [1.90, 3.07]) is significantly greater than that for those aged 18–49 (0.67%; 95% CI = [0.46, 0.99]) and for those aged 50–64 (0.45%; 95% CI = [0.26, 0.78]). The rates for those aged 65 and older significantly decrease over time, and it dropped to 1.23% (95% CI = [0.96, 1.58]) in 2010. The result of an adjusted logistic regression indicates that among adults aged 65 and older, the odds of responding “don’t know/not sure” significantly decreased with each survey year (AOR = 0.88;  $p < .001$ ), even after adjusting for gender,

income, education, and race/ethnicity. We did not observe significant changes of “don’t know/not sure” rates over time among adults aged 18–49 and 50–64.

The rates of “refuse to answer” on sexual orientation by survey year and age-groups demonstrate similar patterns (Figure 2). The refusal rate for adults aged 65 and older (4.07%; 95% CI = [3.34, 4.95]) is higher than those for adults aged 18–49 (0.75%; 95% CI = [0.56, 0.99]) and 50–64 (1.28%; 95% CI = [0.91, 1.78]) in 2003. The difference in the refusal rates by age-groups decreased and became more narrow over time; the refusal rate for adults aged 65 and older decreased to 1.55% (95% CI = [1.23, 1.97]) in 2010. According to adjusted logistic regressions, among adults aged 65 and older, the odds of refusing to answer significantly decreased by survey year (AOR = 0.87;  $p < .001$ ). The refusal rates for both adults aged 18–49 and 50–64 are low at approximately 1% and do not show significant change over the specified years.

## Discussion

Existing research illustrates that LGB adults experience systematic health disparities (Conron et al., 2010; Dilley et al., 2010; Fredriksen-Goldsen, Emler, et al., 2013; Fredriksen-Goldsen, Kim, et al., 2013; Institute of Medicine, 2011; Wallace et al., 2011). Obtaining quality data on LGB adults of all ages is necessary to address health disparities and identify modifiable factors. Yet, sexual orientation measures are rarely included in public health surveys and when included, they are often only asked of younger and middle-aged adults, with age-based restrictions resulting in the exclusion of older adults. Yet, our findings not only confirm that most adults, including those aged 65 and older, respond to sexual orientation measures (with 98% response rate in 2003 through 2010), the response rate on sexual orientation is more than 10% higher than that of household income.

These findings mirror those found among adults, 18 and older, in other studies. For example, in New Mexico BRFSS, adults aged 18 and older are also less likely to refuse to answer on sexual orientation measures compared to income (VanKim et al., 2010). In the Nurses’ Health Study II, less than 1% of adult women refused to respond to sexual orientation measures, and the refusal to answer such questions did not result in the refusal to complete the remaining survey questions (Case et al., 2006). Among adults in general, measures of sexual orientation, when included as part of a standard demographic set of questions, have been found to be no more sensitive than other demographic questions (Scout & Senseman, 2011).

Some argue that survey respondents fail to respond to sexual orientation questions not because the questions are too “sensitive,” but because they have rarely thought about or do not understand sexual orientation identity (Miller & Ryan, 2011; Ridolfo et al., 2012). Our findings suggest that there has been significant societal change and only a very small number of respondents do not understand sexual orientation measures. Concomitant with such changes, field testing of sexual orientation measures have been conducted for inclusion in the National Health Interview Survey (The Office of Minority Health, 2011).

This study identified important nonresponse patterns by age-group, which may reflect age and/or cohort effects, taking into account both historical and social context. While those aged 18–49 compared to 50–64 have comparable response rates to sexual orientation measures, those aged 65 and older are significantly more likely to answer “don’t know/not sure” or to “refuse to answer.” Perhaps, more importantly, however, within an 8-year period, the nonresponse rates among adults aged 65 and older on sexual orientation measures declined significantly. The “don’t know/not sure” rate among adults aged 65 and older was, by 2010, only 1.23%, and the refusal rate was low at 1.55%. The rapid change we found in the response to sexual orientation measures among older adults may reflect the rapid social change that is occurring in our society and the increasing understanding of diverse sexual orientations across growing segments of the population. In fact, the findings presented here show a relatively steeper drop in nonresponse in 2006, which was when the state of Washington debated and passed statewide nondiscrimination legislation prohibiting discrimination by sexual orientation and gender identity.

Despite age-group differences, the findings reveal that the vast majority of older adults aged 65 and older do respond to sexual orientation measures. Interestingly, in pilot research, we found that a small proportion of older adults, across differing sexual orientations, did not understand specific terms used to describe sexual orientation since they may not be familiar with categories such as heterosexual, lesbian, gay, or bisexual. An earlier study, also, found that some older respondents do not understand the term heterosexual (Haseldon & Joloza, 2009). More recently, a preliminary study using cognitive interviewing, conducted by Redford and Van Wagenan (2012), assessed the feasibility of sexual orientation measurement tools for older adults and found most adults aged 65 and older comprehend the meaning of sexual orientation categories, concluding that such questions are appropriate to ask on population-based surveys.

The findings in this study support the elimination of age restrictions to sexual orientation measures in research and public health and aging-related surveys. In order to respond to the growing needs of LGBT adults, including LGBT older adults, it is imperative that quality data on both sexual orientation and gender identity be collected and that age restrictions be eliminated. Both New Mexico BRFSS in 2009 (VanKim & Padilla, 2010) and Massachusetts BRFSS in 2010 (Interuniversity Consortium for Political and Social Research News, 2010), for example, removed the previous age-based restriction of 64 years on the sexual orientation questions and also began collecting data on gender identity.

In *Healthy People 2020*, it states that “There is growing recognition that data sources are limited for certain subpopulations of older adults, including the aging lesbian, gay, bisexual, and transgender populations” (U.S. Department of Health and Human Services, 2012). Yet, most recent population estimates indicate that nearly 100 million Americans are aged 50 and older (U.S. Census Bureau, 2011), with exponential growth expected over the next few decades. Based on population estimates and adjusting for nonresponse bias, we estimate that 2.4% of adults aged 50 and older identify as lesbian, gay, bisexual, or transgender, accounting for more than 2.4 million older adults. Given that the number of older adults in the United States is projected to more than double by 2030, LGBT adults aged 50 and older will account for more than 5 million people.

While this study highlights findings regarding the response patterns of older adults to sexual orientation measures, limitations must be considered. The data used are only representative of Washington State and not generalizable to the U.S. population. Further research is needed to examine variation by state and to determine when and under what conditions people of all ages self-report sexual orientation in surveys. The BRFSS relies on a telephone survey with English- and Spanish-speaking callers, and the method may not reach persons who do not have a landline or who do not speak English or Spanish.

As we move forward, a comprehensive approach to data collection is needed to better understand health and sexual orientation among diverse populations. Assessment of multiple dimensions of sexuality is needed, including sexual orientation identity, sexual behavior and function, attraction, and romantic and intimate relationships. In future research, it is essential to consider how intersecting identities influence response patterns to sexual orientation identity measures. The inclusion of gender identity measures is also desperately needed because transgender adults (Institute of Medicine, 2011), including transgender older adults, evidence pronounced health disparities (Fredriksen-Goldsen, Cook-Daniels, et al., 2013; Fredriksen-Goldsen, et al., 2011). Innovative ways of measuring sexual orientation and behavior and gender identity are needed to reduce age and cultural biases in health and aging-related surveys.

Population-based data to estimate prevalence of health indicators for LGBT populations of all ages are needed. Given national health objectives (U.S. Department of Health and Human Services, 2012), it is imperative that population-based surveys integrate sexual orientation identity and related measures for all ages. Moreover, nonresponse patterns that emerge should not be simply ignored, but fully investigated so measures can be constructed to mitigate potential age and cultural biases. Existing myths that sexual orientation identity measures are too sensitive or controversial for older adults are unfounded and decisions to not ask such questions must be reconsidered in light of rapidly changing social trends and increasing awareness of diverse sexualities.

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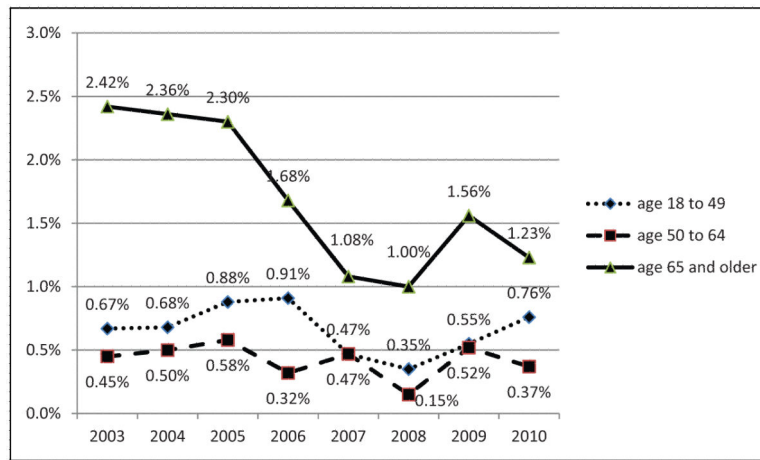
with Pride, with a focus on the intersection of health disparities, aging, and caregiving in marginalized communities.

**Hyun-Jun Kim** is a research scientist and the director of the National Health, Aging and Sexuality Study: Caring and Aging with Pride at the School of Social Work, University of Washington. His research focuses on health disparities and social determinants in historically disadvantaged older adult communities.

## References

- Boehmer U, Bowen DJ, Bauer GR. Overweight and obesity in sexual-minority women: Evidence from population-based data. *American Journal of Public Health*. 2007; 97:1134–1140. doi:10.2105/AJPH.2006.088419. [PubMed: 17463369]
- Case P, Austin S, Hunter D, Willett W, Malspeis S, Manson J, Spiegelman D. Disclosure of sexual orientation and behavior in the Nurses' Health Study II: Results from a pilot study. *Journal of Homosexuality*. 2006; 51:13–31. doi: 10.1300/J082v51n01\_02. [PubMed: 16893824]
- 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. *American Journal of Public Health*. 2007; 97:2048–2055. doi:10.2105/AJPH.2006.087254. [PubMed: 17463371]
- Cochran SD, Mays VM, Sullivan JG. Prevalence of mental disorders, psychological distress, and mental health services use among lesbian, gay, and bisexual adults in the United States. *Journal of Consulting and Clinical Psychology*. 2003; 71:53–61. doi:10.1037/0022-006X.71.1.53. [PubMed: 12602425]
- Conron KJ, Mimiaga MJ, Landers SJ. A population-based study of sexual orientation identity and gender differences in adult health. *American Journal of Public Health*. 2010; 100:1953–1960. doi: 10.2105/AJPH.2009.174169. [PubMed: 20516373]
- Dilley JA, Simmons KW, Boysun MJ, Pizacani BA, Stark MJ. Demonstrating the importance and feasibility of including sexual orientation in public health surveys: Health disparities in the Pacific Northwest. *American Journal of Public Health*. 2010; 100:460–467. doi:10.2105/AJPH.2007.130336. [PubMed: 19696397]
- Drabble L, Trocki K. Alcohol consumption, alcohol-related problems, and other substance use among lesbian and bisexual women. *Journal of Lesbian Studies*. 2005; 9:19–30. doi:10.1300/J155v09n03\_03. [PubMed: 17548282]
- Fredriksen-Goldsen KI, Emler CA, Kim H-J, Muraco A, Erosheva EA, Goldsen J, Hoy-Ellis CP. The physical and mental health of lesbian, gay male and bisexual (LGB) older adults: The role of key health indicators and risk and protective factors. *The Gerontologist*. 2013; 53:664–675. doi: 10.1093/geront/gns123. [PubMed: 23034470]
- Fredriksen-Goldsen KI, Kim HJ, Barkan SE. Disability among lesbian, gay, and bisexual adults: Disparities in prevalence and risk. *American Journal of Public Health*. 2012; 102:e16–e21. doi: 10.2105/AJPH.2011.300379. [PubMed: 22095356]
- Fredriksen-Goldsen KI, Kim H-J, Barkan SE, Muraco A, Hoy-Ellis CP. Health disparities among lesbian, gay male, and bisexual older adults: Results from a population-based study. *American Journal of Public Health*. 2013; 103:1802–1809. doi:10.2105/AJPH.2012.301110. [PubMed: 23763391]
- Fredriksen-Goldsen KI, Cook-Daniels L, Kim H-J, Erosheva EA, Emler CA, Hoy-Ellis C, Muraco A. Physical and mental health of transgender older adults: An at-risk and underserved population. *The Gerontologist*. 2013; 54:488–500. doi:10.1093/geront/gnt021. [PubMed: 23535500]
- Fredriksen-Goldsen, KI.; Kim, H-J.; Emler, CA.; Muraco, A.; Erosheva, EA.; Hoy-Ellis, CP.; Petry, H. *The aging and health report: Disparities and resilience among lesbian, gay, bisexual, and transgender older adults*. Institute for Multigenerational Health; Seattle, WA: 2011.
- Gates, GJ. *How many people are lesbian, gay, bisexual, and transgender?*. The Williams Institute; Los Angeles, CA: 2011.

- Gates, GJ.; Newport, F. Special report: 3.4% of U.S. adults identify as LGBT. 2012. Gallup. Retrieved from <http://www.gallup.com/poll/158066/special-report-adults-identify-lgbt.aspx>
- Haseldon, L.; Joloza, T. Measuring sexual orientation: A guide for researchers. Office for National Statistics; London, England: 2009.
- Interuniversity Consortium for Political and Social Research News. Massachusetts BRFSS to collect LGBT data on Older Adults. 2010. Retrieved January 25, 2013, from <http://icpsr.blogspot.com/2010/03/massachusetts-brfss-to-collect-lgbt.html>
- Institute of Medicine. The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding. The National Academies Press; Washington, DC: 2011.
- Miller, K.; Ryan, JM. Design, development and testing of the NHIS sexual identity question. 2011. Retrieved February 11, 2012, from <http://www.lgbttobacco.org/files/Final%20Report%20Sexual%20Identity.pdf>
- National Health and Nutrition Examination Survey. 2009—2010 Data documentation, codebook, and frequencies: Sexual behavior (SXQ\_F). 2011. Retrieved January 25, 2013, from [http://www.cdc.gov/nchs/nhanes/nhanes2009-2010/SXQ\\_F.htm](http://www.cdc.gov/nchs/nhanes/nhanes2009-2010/SXQ_F.htm)
- National Survey of Family Growth. 2006-2010 NSFG: Public Use Data Files, Codebooks, and Documentation. 2012. Retrieved January 25, 2013, from [http://www.cdc.gov/nchs/nsfg/nsfg\\_2006\\_2010\\_puf.htm](http://www.cdc.gov/nchs/nsfg/nsfg_2006_2010_puf.htm)
- Redford, J.; Van Wagenen, A. Measuring sexual orientation identity and gender identity in a self-administered survey: Results from cognitive research with older adults; Paper presented at the Population Association of America: 2012 Annual Meeting; San Francisco, CA. 2012. Retrieved from <http://paa2012.princeton.edu/abstracts/122975>
- Ridolfo H, Miller K, Maitland A. Measuring sexual identity using survey questionnaires: How valid are our measures? *Sexuality Research and Social Policy*. 2012; 9:113–124. doi:10.1007/s13178-011-0074-x.
- Scout; Senseman, SE. Cognitive testing of an LGBT surveillance question. 2011. Retrieved October 31, 2011, from <http://www.lgbttobacco.org/files/Cognitive%20Testing%20on%20an%20LGBT%20Surveillance%20Question.pdf>
- The Office of Minority Health. Improving data collection for the LGBT community. 2011. Retrieved January 10, 2014, from <http://minorityhealth.hhs.gov/templates/content.aspx?lvl=2&lvlid=209&id=9004>
- The Sexual Minority Assessment Research Team. Best practices for asking questions about sexual orientation on surveys. The Williams Institute; Los Angeles, CA: 2009.
- UCLA Center for Health Policy Research. California health interview survey: CHIS questionnaires. 2012. Retrieved January 25, 2013, from <http://healthpolicy.ucla.edu/chis/design/Pages/questionnaires.aspx>
- U.S. Census. Age and Sex Composition: 2010. 2011. Retrieved June 30, 2014 from <http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf>
- U.S. Department of Health and Human Services. Healthy people 2020 objectives. 2012. Retrieved January 28, 2013, from <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=31>
- VanKim, NA.; Padilla, JL. New Mexico's progress in collecting sexual orientation health data and its implications for addressing health disparities. 2010. Retrieved January 24, 2010, from <http://nmhealth.org/erd/pdf/ER%20Sexual%20Orientation%20051910.pdf>
- VanKim NA, Padilla JL, Lee JG, Goldstein AO. Adding sexual orientation questions to statewide public health surveillance: New Mexico's experience. *American Journal of Public Health*. 2010; 100:2392–2396. doi:10.2105.AJPH.2009.186270. [PubMed: 20966370]
- Vincent, GA.; Velkoff, VA. The next four decades: The older population in the United States: 2010 to 2050, current population reports, P25–1138. U.S. Census Bureau; Washington, DC: 2010.
- Wallace SP, Cochran SD, Durazo EM, Ford CL. The health of aging lesbian, gay and bisexual adults in California. *Policy Brief UCLA Center Health Policy Research*. 2011:1–8. (PB2011-2).



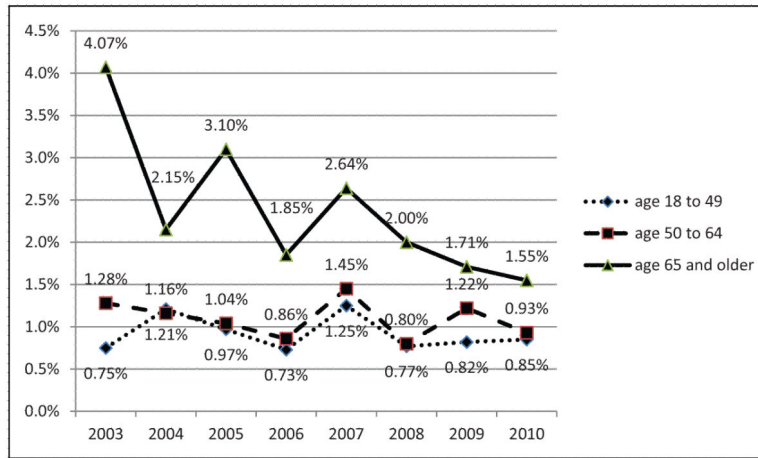
**Figure 1.** Time trends in rates of “don’t know/not sure” on sexual orientation by age: Washington state behavioral risk factor surveillance system, 2003–2010 (unweighted  $n = 172,628$ ).

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**Figure 2.** Time trends in rates of “refuse to answer” on sexual orientation by age: Washington state behavioral risk factor surveillance system, 2003–2010 (unweighted  $n = 172,628$ ).

**Table 1**

Weighted Prevalence Estimates of Background Characteristics by Age: Washington State Behavioral Risk Factor Surveillance System (BRFSS-WA), 2003–2010.

| Background                         | Total                  | 18–49                  | 50–64                  | 65 and older           |
|------------------------------------|------------------------|------------------------|------------------------|------------------------|
|                                    | Weighted %<br>[95% CI] | Weighted %<br>[95% CI] | Weighted %<br>[95% CI] | Weighted %<br>[95% CI] |
| Gender, women                      | 50.55 [50.19, 50.90]   | 49.12 [48.60, 49.64]   | 50.20 [49.65, 50.75]   | 56.77 [56.19, 57.36]   |
| Income, 200% federal poverty level | 32.39 [32.03, 32.76]   | 37.29 [36.75, 37.84]   | 20.93 [20.46, 21.41]   | 31.97 [31.38, 32.57]   |
| Education, high school             | 32.44 [32.10, 32.79]   | 35.14 [34.63, 35.66]   | 23.56 [23.10, 24.03]   | 36.16 [35.61, 36.71]   |
| Race/ethnicity                     |                        |                        |                        |                        |
| Hispanic                           | 7.88 [7.66, 8.11]      | 11.38 [11.02, 11.74]   | 3.18 [2.97, 3.39]      | 1.63 [1.48, 1.79]      |
| Non-Hispanic White                 | 81.96 [81.65, 82.27]   | 76.25 [75.77, 76.72]   | 89.17 [88.79, 89.53]   | 93.02 [92.69, 93.33]   |
| African American                   | 1.82 [1.71, 1.93]      | 2.22 [2.06, 2.40]      | 1.34 [1.20, 1.49]      | 0.99 [0.87, 1.13]      |
| Asian American/Pacific Islander    | 3.89 [3.72, 4.07]      | 5.04 [4.78, 5.32]      | 2.49 [2.28, 2.71]      | 1.59 [1.42, 1.78]      |
| American Indian                    | 1.24 [1.16, 1.33]      | 1.42 [1.31, 1.55]      | 1.13 [1.02, 1.25]      | 0.70 [0.61, 0.81]      |
| Multiracial                        | 2.86 [2.73, 2.99]      | 3.30 [3.11, 3.50]      | 2.40 [2.24, 2.57]      | 1.85 [1.70, 2.01]      |
| Other                              | 0.34 [0.30, 0.40]      | 0.39 [0.32, 0.47]      | 0.30 [0.24, 0.37]      | 0.22 [0.17, 0.29]      |
| Sexual orientation                 |                        |                        |                        |                        |
| Heterosexual                       | 96.87 [96.73, 97.01]   | 96.06 [95.83, 96.27]   | 97.68 [97.51, 97.84]   | 98.82 [98.68, 98.94]   |
| Gay or lesbian                     | 1.59 [1.50, 1.69]      | 1.88 [1.75, 2.03]      | 1.48 [1.36, 1.62]      | 0.58 [0.50, 0.68]      |
| Bisexual                           | 1.31 [1.22, 1.42]      | 1.83 [1.68, 2.00]      | 0.65 [0.56, 0.74]      | 0.32 [0.26, 0.39]      |
| Other                              | 0.23 [0.19, 0.27]      | 0.23 [0.17, 0.30]      | 0.19 [0.16, 0.23]      | 0.28 [0.22, 0.35]      |

Note. CI = confidence interval. 95% CIs were computed to compare population estimates of background characteristics by age-groups.

**Table 2**

Weighted Item Nonresponse Rates on Sexual Orientation, Income, and Education by Age: Washington State Behavioral Risk Factor Surveillance System (BRFSS-WA), 2003–2010.

| Age             | Total<br>Weighted %<br>[95% CI] | Sexual orientation                         |   | Income<br>Weighted %<br>[95% CI] | Education<br>Weighted %<br>[95% CI] | Race/ethnicity<br>Weighted %<br>[95% CI] |                   |
|-----------------|---------------------------------|--|---|----------------------------------|-------------------------------------|--|-------------------|
|                 |                                 | Don't know/not<br>sure<br>AOR <sup>a</sup> | Refuse to<br>answer<br>Weighted %<br>[95% CI] |                                  |                                     |  |                   |
| Total           | 1.93 [1.84, 2.03]               | —  | 0.75 [0.69, 0.82]                             | 1.18 [1.11, 1.25]                | 12.16 [11.91, 12.42]                | 0.16 [0.14, 0.19]                        | 1.16 [1.08, 1.25] |
| 18–49           | 1.57 [1.44, 1.72]               | 0.31***                                    | 0.66 [0.57, 0.76]                             | 0.92 [0.82, 1.02]                | 11.77 [11.40, 12.16]                | 0.14 [0.11, 0.19]                        | 1.25 [1.13, 1.38] |
| 50–64           | 1.50 [1.37, 1.65]               | 0.43***                                    | 0.41 [0.34, 0.50]                             | 1.09 [0.98, 1.21]                | 9.69 [9.37, 10.03]                  | 0.13 [0.10, 0.18]                        | 1.10 [0.99, 1.23] |
| 65 and<br>older | 4.04 [3.81, 4.27]               | (ref)                                      | 1.68 [1.54, 1.84]                             | 2.35 [2.18, 2.54]                | 17.68 [17.24, 18.14]                | 0.28 [0.22, 0.35]                        | 0.91 [0.81, 1.03] |

Note. CI = confidence interval; AOR = adjusted odds ratio; nonresponse rates on income, education, and race/ethnicity included both the rates of “don't know/not sure” and rates of “refuse to answer;” 95% CIs of weighted estimates were computed to compare item nonresponse rates by age-groups.

<sup>a</sup> An adjusted logistic regression was applied to examine to compare the odds of item nonresponse on sexual orientation by age-groups with coding age 65 and older as the reference group and after controlling for gender, income, education, and race/ethnicity.

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 $p < .001$ .