Refusal Rates to Sexual Orientation and Gender Identity Items in the Behavioral Risk Factor Surveillance System, 2014–2019

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See also Jans, p. 366.

Objectives. To explore trends in sexual orientation and gender identity (SOGI) item refusal in the Behavioral Risk Factor Surveillance System (BRFSS).

Methods. We used annual data from 7 US states that implemented the SOGI module of the BRFSS from 2014 to 2019 to examine prevalence of sexual orientation (n = 373 332) and gender identity (n = 373 336) item refusal. Analyses included the weighted Wald χ^2 test of association between refusal and year and logistic regressions predicting refusal by year. We weighted analyses to account for complex sampling design.

Results. We found low SOGI item refusal rates, significant declines in these refusal rates over time, and differences in refusal rates by age, sex, race, education, and language. We also found that Hispanic group membership did not explain SOGI item refusal when accounting for interview language; interview language was strongly associated with both sexual orientation and gender identity item refusal.

Conclusions. Our results indicate acceptance of SOGI measurement and empirically support continuation of SOGI in health surveillance surveys. Findings indicate a need to further investigate the association between survey translation and item refusal. (*Am J Public Health*. 2022;112(3):443–452. https://doi.org/10.2105/AJPH.2021.306625)

Despite a decade passing since the Institute of Medicine called for health surveillance for sexual and gender minority (SGM) populations[1] and more recent calls by the Biden administration,[2] National Academies of Science, Engineering, and Medicine,[3] and Healthy People 2030,[4] sexual orientation and gender identity (SOGI) data collection in US federal health surveys remains inconsistent. Federal health surveys are uniquely positioned to routinely assess population health with probability-based samples across vast geographic units. Nationally representative results inform policy and advise public health initiatives. Thus, incomplete inclusion of SOGI questions stunts the progression of health equity research for SGM populations.

Sensitive questions in surveys, with income being a prime example,[5] may result in various forms of item nonresponse (e.g., refusal to answer, answering "don't know"), contributing to missing data. Although nonresponse to sensitive questions has been attributed to respondent-level variation,[5,6] research has identified differences in item acceptability over time and across groups.[7–10] Whereas "don't know" responses may suggest item comprehension issues, refusals to answer may indicate that, despite comprehension, respondents find survey items unacceptable.

Unacceptability of SOGI items—specifically, concerns among survey administrators that participants could refuse to answer items or stop the interview if they consider items too personal to answer—has been cited as a potential reason for persistent gaps in SOGI item administration in federal surveys.[7,11]

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Previous research has examined sexual orientation item comprehension and acceptability, including higher nonresponse by adults aged 65 years and older,[8] Asian, Hispanic, and African American,[9] and Spanish- and Asian-language respondents.[10] Language, with authors suggesting translation and comprehension issues,[12] may explain higher rates of sexual orientation item nonresponse among Hispanic and Asian respondents.[10] In sum, evidence indicates that, at least up until 2011, there were population differences in and generally declining nonresponse to sexual orientation items in various population health surveys.

However, these trends have been primarily assessed in individual US states and have not been replicated in the past decade, to our knowledge. Furthermore, only 1 article, using National Crime Victimization Survey data,[13] has assessed nonresponse to gender identity items. Besides that assessment, a focus group study identified cisgender respondent discomfort with the gender identity item because of unfamiliarity with listed genders, the cisgender option being listed last, and disbelief in nonbinary identities.[14] This gap in information about gender identity item nonresponse hampers efforts to understand item implementation in federal health surveys.

We explored trends in SOGI item refusal in the Behavioral Risk Factor Surveillance System (BRFSS) over a 6-year period. We considered group trends by sex, race and ethnicity, age, language, and education. To our knowledge, our study is unique in its inclusion of multiple US states, its focus on the acceptability of both SOGI items, and its ability to test trends across pooled independent cross sections over 6 years.

METHODS

The Centers for Disease Control and Prevention (CDC) conducts the BRFSS on a monthly and annual basis, producing one of the largest publicly available data sets in the United States. The survey comprises cross-sectional probability-based samples of adults aged 18 years and older from all US states and territories. Respondents complete computer-assisted telephone interviews on their demographics, health behaviors, and medical history. BRFSS sampling and survey administration include both landline and cellular telephones. The BRFSS includes a standardized core survey administered by all US states and territories, and the CDC offers optional modules. Since 2014, a SOGI optional module, officially created by the CDC, has been available for states and territories to administer with their core surveys. Although state-added questions about sexual orientation occurred before 2014, state-added data are not available in the CDC's public use BRFSS data set.[15] Thus, 2014 was the first year in which SOGI data became available. We procured data for this study from the BRFSS Web site, which the CDC provides to the public.

Because we examined SOGI item refusal among BRFSS respondents between 2014 and 2019, we imposed 2 inclusion criteria. First, because of the voluntary status of the SOGI module, use varies among states and territories annually. To focus on trends in the SOGI module over time, we included only the 7 states (Delaware, Hawaii, Minnesota, New York, Ohio, Virginia, and Wisconsin) that consistently implemented the SOGI module from 2014 to 2019 (no US territory met this criteria). These criteria helped reduce potential bias associated with inconsistent implementation across geographic regions. Second, because ordering of the SOGI module in the larger survey is unclear, we included only complete case data. As we focused on item refusal, we needed certainty that respondents had been administered the SOGI items.

The BRFSS reports response rates are based on American Association for Public Opinion Research response rate 4, which counts both complete and partial respondents in the numerator and estimates eligibility of cases of unknown eligibility in the denominator.[16,17] Median response rates in the 7 states from 2014 to 2019 were approximately 45.7% (2014: median = 46.4% [range = 33.0–54.4]; 2015: median = 45.0% [range = 34.5–57.6]; 2016: median = 43.0% [range = 36.3–55.2]; 2017: median = 44.6% [range = 32.9–51.7]; 2018: median = 46.6% [range = 39.8–51.7]; 2019: median = 49.4% [range = 37.3–73.1]).

Outcome Items

From 2014 to 2017, the sexual orientation item was worded as follows:

Do you consider yourself to be

- straight,
- lesbian or gay,
- bisexual,
- other (not read aloud),
- don't know/not sure (not read aloud),
- refused (not read aloud).

In the 2018 and 2019 surveys, this item changed to more closely resemble the National Health Interview Survey item.[18] The changes included the following:

1. rewording the question to "Which of the following best represents how you think of yourself?";

2. showing male and female respondents the response options "gay" and "lesbian or gay," respectively;
3. replacing "straight" with "straight, that is, not gay," with "or lesbian" added for female respondents;
4. replacing "other" with "something else"; and
5. replacing "don't know/not sure" with "I don't know the answer."

The Spanish-language interview underwent analogous edits. For our study's purposes, we recoded the 2 male- and female-dependent sexual orientation variables into a single item to facilitate comparison across survey years.

The gender identity item in the BRFSS is a single question, by contrast with best practices recommended in the field,[19] that assesses whether respondents are or are not transgender. The item is worded as follows:

Do you consider yourself to be transgender?

- yes, transgender, male-to-female;
- yes, transgender, female-to-male;
- yes, transgender, gender nonconforming;
- no;
- don't know (not read aloud); and
- refused (not read aloud).

We dichotomized each of the SOGI variables into item response versus item refusal (0/1). Item response included respondents who stated, "don't know/not sure," as these responses could convey that the respondent is questioning 1 of their identities or that they did not comprehend the question. Missing responses (not including refusal and responding "don't know") remained missing in analyses. Missingness for the SOGI items ranged between 0.01% and 0.19% and between 0.01% and 0.15%, respectively, across the 6 years. We excluded missing responses from analyses because missingness for these items is not explained by CDC documentation, and so we could not interpret missingness as refusals.

Covariates

We included sex, race and ethnicity, age, educational attainment, state, and interview language as covariates, given previous research indicating varying SOGI nonresponse by these characteristics.[8,10] We included state because of variation across sociopolitical landscapes for SGM populations.[20] We designated New York as the reference state, as it typically had the highest prevalence of refusal for both SOGI items and had the largest total state subsample. All interviews were conducted in either English or Spanish in the 7 states in the sample.

We marked refusals to answer demographic questions as missing and did not include them in our analyses. Data missing on race and ethnicity and educational attainment were minimal (0.23%–1.87%). Sex included male and female responses only. The CDC recoded race/ethnicity into 5 groups: non-Hispanic White, non-Hispanic Black, non-Hispanic other (a composite of American Indian/Alaska Native, Asian, Native Hawaiian/other Pacific Islander, and other race), non-Hispanic multiracial, and Hispanic. The age variable included 6 categories: 18–24, 25–34, 35–44, 45–54, 55–64, and 65 years or older. We maintained these age categories for χ^2 testing; however, we treated the age variable continuously in logistic regression analyses to provide more interpretable odds ratios (ORs).

Education level included the following: did not graduate from high school, graduated from high school, attended some college or technical school, and graduated from college or technical school (these last 2 options are abbreviated in the tables as "attended college" and "graduated from college").

Analyses

We used the weighted Wald χ^2 test to test associations between prevalence of item refusal and survey year for each state, race and ethnicity, sex, age, language, and education subgroup. Our goal with these χ^2 analyses was to assess whether trends in specific subgroups drove potential population declines in refusal. We used the Benjamini-Hochberg test[21] with a false discovery rate of 0.05 to account for error inflation with repeated testing.

We then conducted logistic regressions to test whether item refusal declined over time. We used 2 separate models to test associations between survey year and refusal for the sexual orientation item and for the gender identity item. We used the *F*-adjusted Hosmer-Lemeshow test to assess goodness of fit. Given changes to the sexual orientation item in 2018 to 2019, we conducted a post hoc sensitivity analysis omitting data from 2018 to 2019. We weighted all analyses to account for the complex sampling design and conducted all analyses using Stata/SE version 16.1 (StataCorp LP, College Station, TX).

RESULTS

The sexual orientation refusal analysis included 373 332 respondents, and the gender identity refusal analysis included 373 336 respondents. The

largest proportions of respondents were female, non-Hispanic White, college or technical school graduates, and aged 65 years or older (Table 1).

Sexual Orientation

Wald χ^2 analyses (Figure 1, Table A, and Figure A show results [the latter two are available as a supplement to the online version of this article at http://www.ajph.org]) examining within-group associations between prevalence of refusal and time revealed significant associations for male ($P < .01$) and female ($P < .01$) respondents. We also found significant associations between prevalence of refusal and time among Hispanic respondents ($P < .01$), respondents who had not graduated from high school ($P < .01$), and respondents aged 25–34 ($P < .01$), 55–64 ($P < .01$), and 65 years or older ($P < .01$). We found significant associations for Spanish-language respondents ($P < .01$), but not for English-language respondents. Finally, we identified significant associations between refusal and time among New York respondents ($P < .01$). A final χ^2 for the full survey sample indicated an overall significant association between refusal and year ($P < .01$).

When we adjusted for state, race and ethnicity, sex, age, language, and education, we found that each increase in year was significantly associated with a 9% reduced odds of item refusal (adjusted odds ratio [AOR] = 0.91; 95% confidence interval [CI] = 0.89, 0.94; Table 2 presents adjusted results of all logistic regression analyses).

In the logistic regression on sexual orientation item refusal, female respondents were at increased odds of refusal (AOR = 1.35; 95% CI = 1.22, 1.51) compared with male respondents. Age was also a significant predictor of sexual orientation item refusal, with the odds of refusal increasing by 20% for each decade in age (AOR = 1.20; 95% CI = 1.16, 1.25). Compared with those who had attained less than a high school education, the odds of refusing to answer the sexual orientation question were greatly reduced for high school graduates (AOR = 0.60; 95% CI = 0.51, 0.70), those with some college experience (AOR = 0.39; 95% CI = 0.33, 0.43), and college graduates (AOR = 0.36; 95% CI = 0.30, 0.43). However, beyond all other variables in the analysis, Spanish-language response was the strongest predictor of refusal to answer the sexual orientation item, with Spanish-language respondents having 705% increased odds of refusal compared with English-language respondents (AOR = 8.05; 95% CI = 6.45, 10.04). Non-Hispanic other race respondents were at greater odds for refusal (AOR = 3.26; 95% CI = 2.61, 4.08) than were non-Hispanic White respondents, but there were no other significant differences between racial and ethnic groups in odds of refusal.

Given changes to the sexual orientation item in 2018, we conducted a post hoc analysis omitting the 2018 to 2019 data (Table C [available as a supplement to the online version of this article at http://www.ajph.org]) to test for change in prevalence of refusal to answer the sexual orientation item between only 2014 and 2017. This post hoc analysis revealed no significant change in prevalence of refusal over time (AOR = 1.00; 95% CI = 0.94, 1.05), adjusting for all other covariates. Covariate results did not notably differ in the sensitivity analysis from the main model. Across all sexual orientation analyses, Hosmer-Lemeshow tests indicated problematic fit (i.e., $P < .05$), suggesting that model misspecification may be an issue. We probed interactions to examine whether model fit might improve, but the addition of interactions did not improve fit.

Gender Identity

Wald χ^2 analyses (Figure 2, Table B, and Figure A present the results [the latter two available as a supplement to the online version of this article at http://www.ajph.org]) examining within-group associations between prevalence of refusal and year revealed significant associations for male ($P < .01$) and female ($P < .01$) respondents. We also found significant associations among non-Hispanic White ($P < .01$), non-Hispanic Black ($P = .01$), and Hispanic respondents ($P < .01$), but not among non-Hispanic other and multiracial respondents. Prevalence of refusal was significantly associated with year for respondents with less than a high school diploma ($P < .01$) and a college degree ($P < .01$), and for respondents aged 55 to 64 ($P < .01$) and 65 years or older ($P = .01$). We found significant associations for both English- and Spanish-language respondents (both $P < .01$). Finally, we identified significant associations between refusal and time among respondents in Minnesota ($P < .01$), New York ($P < .01$), and Virginia ($P < .01$). A final χ^2 for the full survey sample indicated an overall significant association between refusal and year ($P < .01$).

Logistic regression revealed that the odds of refusal to answer the gender identity item, adjusting for covariates, decreased by 16% annually (AOR = 0.84; 95% CI = 0.80, 0.88), indicating that decline in refusal to answer the gender identity item can be uniquely

TABLE 1— Weighted Demographics From 7 US States' Behavioral Risk Factor Surveillance System Surveys That Included the Optional Sexual Orientation and Gender Identity Module: 2014–2019

	2014	2015	2016	2017	2018	2019
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Sex						
Male	23 726 (42.9)	24 182 (42.6)	33 754 (44.1)	25 579 (44.8)	36 352 (45.7)	25 294 (45.4)
Female	31 596 (57.1)	32 586 (57.4)	42 874 (56.0)	31 555 (55.2)	43 135 (54.3)	30 391 (54.6)
Race/ethnicity						
Non-Hispanic White	42 375 (77.8)	43 914 (78.6)	60 508 (80.3)	42 650 (76.0)	60 973 (77.9)	41 934 (76.7)
Non-Hispanic Black	3 843 (7.1)	3 877 (6.9)	4 288 (5.7)	3 967 (7.1)	5 104 (6.5)	3 573 (6.5)
Non-Hispanic other[a]	3 584 (6.6)	3 471 (6.2)	4 322 (5.7)	4 009 (7.2)	5 421 (6.9)	4 181 (7.7)
Non-Hispanic multiracial	2 410 (4.4)	2 083 (3.7)	2 504 (3.3)	2 156 (3.8)	2 262 (2.9)	1 814 (3.3)
Hispanic	2 263 (4.2)	2 557 (4.6)	3 746 (5.0)	3 321 (5.9)	4 566 (5.8)	3 141 (5.8)
Education						
Did not graduate from high school	3 485 (6.3)	3 402 (6.0)	5 034 (6.6)	3 410 (6.0)	4 997 (6.3)	3 122 (5.6)
Graduated from high school	15 508 (28.1)	15 686 (27.7)	21 749 (28.5)	15 046 (26.4)	21 744 (27.3)	14 521 (26.2)
Attended college	15 253 (27.7)	15 754 (27.8)	20 917 (27.4)	15 743 (27.7)	22 094 (27.8)	15 398 (27.8)
Graduated from college	20 927 (37.9)	21 761 (38.4)	28 703 (37.6)	22 742 (39.9)	30 683 (38.6)	22 441 (40.5)
Age, y						
18–24	2 867 (5.2)	2 884 (5.1)	3 966 (5.2)	3 062 (5.4)	4 588 (5.8)	3 118 (5.6)
25–34	5 217 (9.4)	4 989 (8.8)	7 398 (9.7)	5 536 (9.7)	8 171 (10.2)	5 300 (9.5)
35–44	6 639 (12.0)	6 354 (11.2)	8 386 (10.9)	6 543 (11.5)	9 567 (12.0)	6 326 (11.4)
45–54	9 781 (17.7)	9 609 (16.9)	12 592 (16.4)	9 144 (16.0)	12 955 (16.2)	8 090 (14.5)
55–64	13 104 (23.7)	13 325 (23.5)	17 917 (23.4)	12 895 (22.6)	17 588 (22.1)	11 808 (21.2)
≥ 65	17 714 (32.0)	19 607 (34.5)	26 371 (34.4)	19 959 (34.9)	26 910 (33.7)	21 043 (37.8)
Interview language						
English	55 421 (98.4)	55 971 (98.6)	75 219 (98.2)	55 896 (97.8)	78 331 (98.2)	54 568 (98.0)
Spanish	901 (1.6)	797 (1.4)	1 411 (1.8)	1 243 (2.2)	1 448 (1.8)	1 117 (2.0)
State of residence						
Delaware	4 064 (7.4)	3 629 (6.4)	3 683 (4.8)	3 608 (6.3)	4 574 (5.7)	3 106 (5.6)
Hawaii	6 338 (11.5)	6 041 (10.6)	6 916 (9.0)	6 512 (11.4)	6 639 (8.3)	6 455 (11.6)
Minnesota	14 770 (26.7)	14 673 (25.9)	14 718 (19.2)	14 440 (25.3)	14 649 (18.4)	12 556 (22.6)
New York	5 696 (10.3)	9 932 (17.5)	28 898 (37.7)	9 683 (17.0)	30 048 (37.7)	11 017 (19.8)
Ohio	10 076 (18.2)	10 060 (17.7)	10 710 (14.0)	10 415 (18.2)	11 038 (13.8)	10 824 (19.4)
Virginia	8 633 (15.6)	7 645 (13.5)	7 546 (9.9)	8 089 (14.2)	8 882 (11.1)	7 950 (14.3)
Wisconsin	5 745 (10.4)	4 788 (8.4)	4 159 (5.4)	4 392 (7.7)	3 949 (5.0)	3 777 (6.8)

[a]Non-Hispanic other includes American Indian/Alaska Native, Asian, Native Hawaiian/other Pacific Islander, and other.

explained by the passage of time. Gender identity refusal was extremely low in general but, nonetheless, underwent significant declines.

In the logistic regression on gender identity item refusal, age was a significant predictor of refusal to answer the gender identity item, with the odds of refusal increasing by 20% for each decade in age (AOR = 1.20; 95% CI = 1.13, 1.28). Compared with those who had attained less than a high school education, the odds of refusing to answer the gender identity question were greatly reduced for high school graduates (AOR = 0.62; 95% CI = 0.47, 0.83), those with some college education (AOR = 0.39; 95% CI = 0.29, 0.52), and college graduates (AOR = 0.42; 95% CI = 0.31, 0.56). Although it was not to the same extent as the sexual

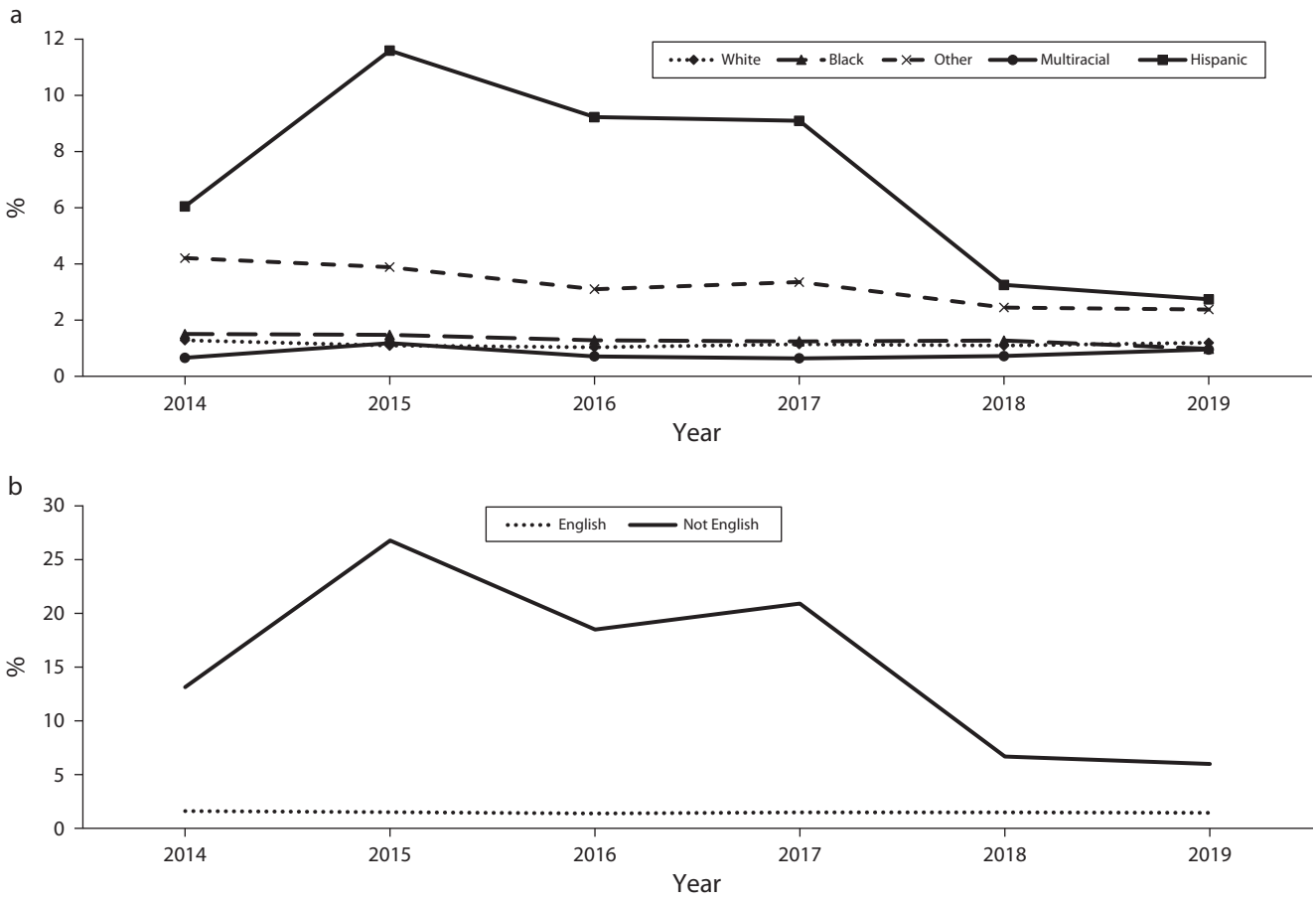

FIGURE 1— Prevalence of Sexual Orientation Item Refusal Over Time From 7 US States' Behavioral Risk Factor Surveillance System Surveys That Included the Optional Sexual Orientation and Gender Identity Module, by (a) Race and Ethnicity and (b) Survey Language: 2014–2019

Note. Exact rates displayed here can be viewed in Supplemental Table A (available as a supplement to the online version of this article at http://www.ajph.org).

orientation item, Spanish-language response was a strong predictor of refusal to answer the gender identity item, with Spanish-language respondents having 122% increased odds of refusal compared with English-language respondents (AOR = 2.22; 95% CI = 1.49, 3.31). Non-Hispanic Black (AOR = 1.32; 95% CI = 1.01, 1.74) and non-Hispanic other race (AOR = 2.42; 95% CI = 1.63, 3.59) respondents had higher odds of refusal than did non-Hispanic White respondents. As with the sexual orientation analyses, Hosmer-Lemeshow tests indicated problematic fit (i.e., $P < .05$); probing interactions did not yield improvements in model fit.

DISCUSSION

Refusal to answer SOGI items was low and significantly declined from 2014 to 2019. In addition to declining refusal over time generally, there were specific trends over time by demographic subgroups. The results suggest that SOGI items are increasingly acceptable to respondents in this federally sponsored health survey. More widespread adoption of these items would produce the critical mass of data needed to understand key health equity and disparities issues for SGM populations, fulfilling priorities set by the Biden administration,[2] a National Academies report,[3] and key benchmarks set in Healthy People 2030.[4]

Although decline in refusal was observed across all covariates, specific areas may require further research. Previous research found that, compared with non-Hispanic White respondents, Hispanic respondents had been refusing to answer sexual

TABLE 2— Adjusted Logit Model Results Predicting Sexual Orientation and Gender Identity Item Refusal by Year Among 7 US States' Behavioral Risk Factor Surveillance System Surveys: 2014–2019

	Sexual Orientation Refusal (n = 373 332), AOR (95% CI)	Gender Identity Refusal (n = 373 336), AOR (95% CI)
Year	0.91 (0.89, 0.94)	0.84 (0.80, 0.88)
Sex (Ref: male)	1.35 (1.22, 1.51)	1.18 (0.99, 1.40)
Race/ethnicity (Ref: non-Hispanic White)		
Non-Hispanic Black	1.00 (0.83, 1.20)	1.32 (1.01, 1.74)
Non-Hispanic other	3.26 (2.61, 4.08)	2.25 (1.51, 3.35)
Non-Hispanic multiracial	1.01 (0.67, 1.51)	0.83 (0.53, 1.31)
Hispanic	1.00 (0.80, 1.24)	1.22 (0.86, 1.74)
Education (Ref: did not graduate from high school)		
Graduated from high school	0.60 (0.51, 0.70)	0.62 (0.47, 0.83)
Attended college	0.39 (0.33, 0.47)	0.39 (0.29, 0.52)
Graduated from college	0.36 (0.30, 0.43)	0.42 (0.31, 0.56)
Age	1.20 (1.16, 1.25)	1.20 (1.13, 1.28)
Interview language (Ref: English)	8.05 (6.45, 10.04)	2.22 (1.49, 3.31)
State (Ref: New York)		
Delaware	0.53 (0.45, 0.62)	0.82 (0.65, 1.02)
Hawaii	0.21 (0.16, 0.27)	0.27 (0.18, 0.40)
Minnesota	0.52 (0.46, 0.59)	0.81 (0.68, 0.97)
Ohio	0.51 (0.44, 0.59)	0.63 (0.50, 0.79)
Virginia	0.44 (0.37, 0.51)	0.58 (0.45, 0.73)
Wisconsin	0.39 (0.31, 0.49)	0.53 (0.38, 0.74)

Note. AOR = adjusted odds ratio; CI = confidence interval.

orientation items at higher rates.[9] We, similarly, noted higher SOGI item refusal among Hispanic respondents compared with other racial groups from 2014 to 2017, although the disparity largely closed in 2018 to 2019. However, Hispanic respondents were not at higher odds of refusal in either of the regression analyses when controlling for interview language, indicating that this disparity in refusal may be because of the large proportion of Hispanic respondents (32.0%) who completed the survey in Spanish.

The BRFSS is not alone in this disparity in sexual orientation item refusal, given calls by a 2016 federal interagency working group to research and improve Spanish translation[22] and noted issues in item translation for the National Survey of Family Growth.[23] The higher odds of gender identity item refusal in Spanish may indicate that translation and comprehension present similar issues for this item. Further research is needed to determine the causes of these disparate odds of refusal to answer SOGI items when asked in Spanish.

Although the reasons for declines in item refusal over time were beyond the scope of this study, generally increasing acceptance of SGM individuals in the United States likely has some influence.[24–26] The observation period for this study was marked by major accomplishments for LGBTQ (lesbian, gay, bisexual, transgender, queer or questioning) communities, including marriage equality and a continuing transgender rights movement. These movements may have shifted understanding of and reception to being asked about SOGI. Although we did not assess the reasons for such declines, factors such as knowing an SGM person and the effect of shifting social policies pertaining to the rights of SGM people may be contributing factors.

Although not an initial focus of the study, differences in prevalence of refusal between SOGI items emerged, with higher prevalence of refusal to answer the sexual orientation item than the gender identity item in each survey year. Given the lack of previous attention in the literature to gender identity item refusal, explanations for

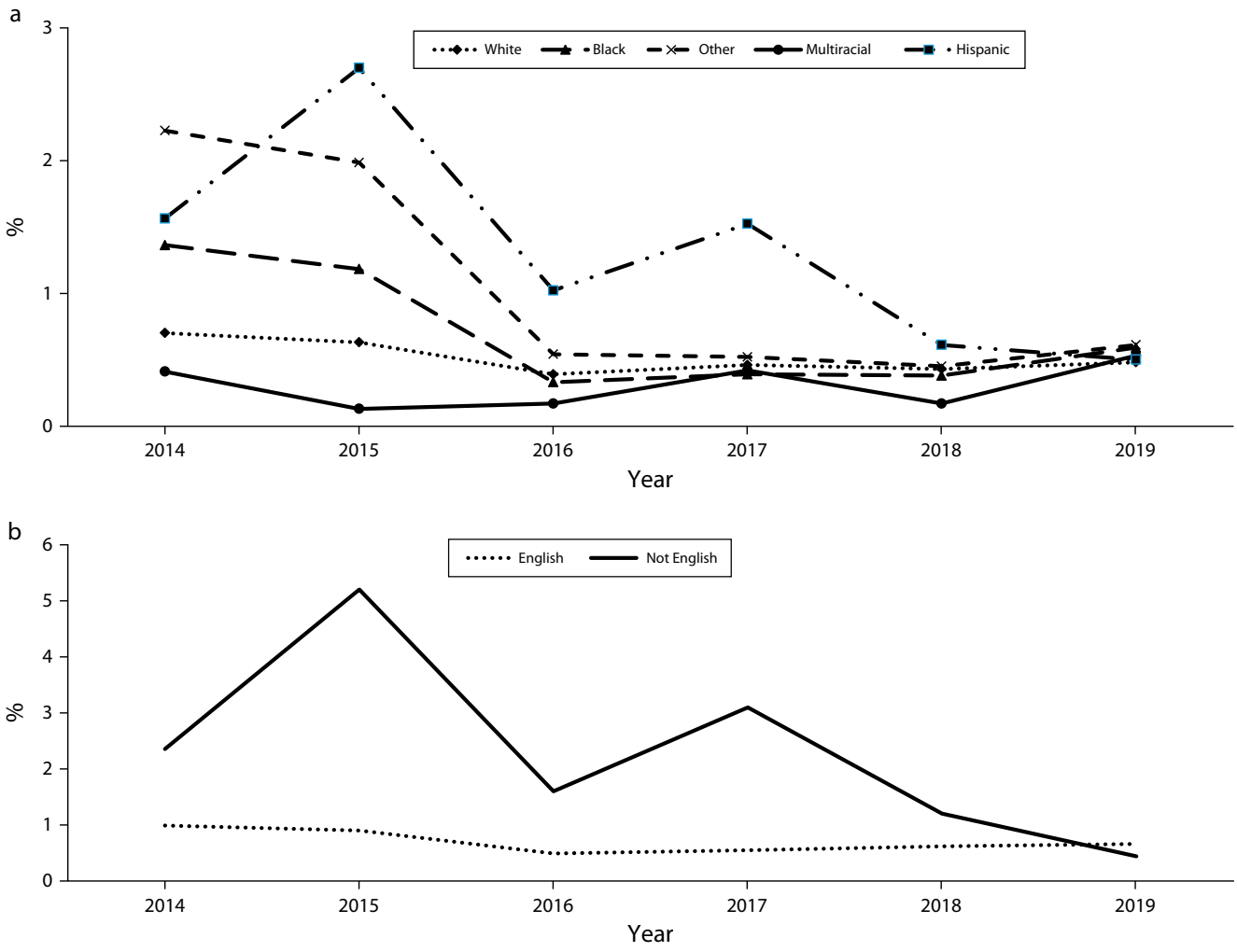

FIGURE 2— Prevalence of Gender Identity Item Refusal Over Time From 7 US States' Behavioral Risk Factor Surveillance System Surveys That Included the Optional Sexual Orientation and Gender Identity Module, by (a) Race and Ethnicity and (b) Survey Language: 2014–2019

Note. Exact rates displayed here can be viewed in Supplemental Table B (available as a supplement to the online version of this article at http://www.ajph.org).

this difference in prevalence of refusal remain unexplored. One study that investigated sexual orientation nonresponse noted differences in interpretation and nonsalience of particular sexual orientations, for example, "straight."[23] Although further research needs to be done to understand gender identity item interpretation, it may be that the "yes, transgender . . ." and "no" responses are easier for respondents to understand and respond to.

Refusal to answer SOGI items in this period was low and declining, providing evidence to support SOGI items being added to standard demographic questions in the core BRFSS survey. These results add to previous findings that respondents are generally willing to answer SOGI items in public health surveys and corroborate evidence that SOGI survey item refusals are not as high as income, which ranged between 4.2% and 6.1% in the assessment of VanKim et al. of the New Mexico Adult Tobacco Survey and BRFSS.[7] Although only 7 states met inclusion criteria for this study, more states and territories are implementing the module each year, with 29 states including the module in 2018 and 31 in 2019. Considering low and declining item refusal, increased uptake of the module, and the pressing public health need for population data on LGBTQ health, there is ample

evidence and public health need to support integrating SOGI items into the BRFSS core survey for nationwide implementation.

Limitations

We note several study limitations. Limiting this study to 7 states, although geographically diverse, means results may not be nationally representative. Our use of complete case data may have underestimated refusal; we could not ascertain whether respondents broke off early without being asked the SOGI module because of its placement in the survey. Unfortunately, the BRFSS provides data on complete or partial interviews but not on when break off occurs or individual states' ordering of optional survey modules. Goodness-of-fit tests indicated potential poor model fit, which could be because of omitted variable bias. Item refusal is a complex phenomenon to predict solely from demographic characteristics, and data not collected in the BRFSS (e.g., political affiliation) may be more informative for item refusal. The binary sex variable, whereby respondents answered the question "Are you male or female?" could plausibly include respondents answering in terms of either their sex assigned at birth or gender identity. Changes to the sexual orientation item in 2018 to 2019 may have affected refusal, as suggested by the sensitivity analysis.

More consecutive years of data with the new wording are needed to further investigate trends. Future analyses should take into account that, overall, survey response rates have been declining over time.[6,27] Such analyses may offer clear implications of the relationship between survey response rates and item refusal rates. Finally, the BRFSS strives for nationally representative samples of adults who are not living in institutional settings (e.g., military facilities, long-term care facilities, homeless shelters), so results may not generalize to these groups.

Public Health Implications

Our results refute concerns about sizeable proportions of respondents refusing to answer SOGI items in surveys. Health equity research about SGM populations has been hampered for decades by the general lack of SOGI data in federal surveys and was deemed "public health malpractice"[11] because of the languishing of a minority population's need for representation in data. In recent years, there has been much progress with additions not only to the BRFSS but also to other surveys, such as the National Survey of Drug Use and Health, the National Crime Victimization Survey, and the National Health Interview Survey.

Unfortunately, the progress of including SOGI data is not a settled matter in the United States. In 2018, the CDC had to issue clarification that the Trump administration was not attempting to omit the SOGI module from the BRFSS.[28] Similar speculation arose around the Trump administration's role in rescinding SOGI measures to be developed and implemented in the 2020 Census.[29] Thus, it is critical that researchers document evidence for scientifically informed decisions. Consequently, something as seemingly simple as illustrating response and refusal to survey items can speak volumes for the progression of health equity research. AJPH

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R. P. O'Brien conducted the analyses and led the writing of the article with J. R. Blosnich's support and direction. J. R. Blosnich reviewed the analyses, supported the interpretation of findings, and contributed to editing the article. The authors conceptualized the study together.

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CONFLICTS OF INTEREST

The authors have no potential or actual conflicts of interest to disclose.

HUMAN PARTICIPANT PROTECTION

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