Transgender Demographics: A Household Probability Sample of US Adults, 2014

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Objectives. To estimate the proportion of US adults who identify as transgender and to compare the demographics of the transgender and nontransgender populations.

Methods. We conducted a secondary analysis of data from states and territories in the 2014 Behavioral Risk Factor Surveillance System that asked about transgender status. The proportion of adults identified as transgender was calculated from affirmative and negative responses (n = 151 456). We analyzed data with a design-adjusted χ^2 test. We also explored differences between male-to-female and nontransgender females and female-to-male and nontransgender males.

Results. Transgender individuals made up 0.53% (95% confidence interval = 0.46, 0.61) of the population and were more likely to be non-White (40.0% vs 27.3%) and below the poverty line (26.0% vs 15.5%); as likely to be married (50.5% vs 47.7%), living in a rural area (28.7% vs 22.6%), and employed (54.3% vs 57.7%); and less likely to attend college (35.6% vs 56.6%) compared with nontransgender individuals.

Conclusions. Our findings suggest that the transgender population is a racially diverse population present across US communities. Inequalities in the education and socioeconomic status have negative implications for the health of the transgender population. (*Am J Public Health.* 2017;107:213–215. doi:10.2105/AJPH.2016.303571)

See also Landers and Kapadia, p. 205.

In 2011, the Institute of Medicine described data on the proportion of people in the United States who identify as transgender as "sorely lacking" and called for research on transgender demographics.[1] Transgender is a term for individuals whose gender expression and gender identity do not align with cultural expectations and gender norms associated with their sex assignment at birth.[1] National surveys have not historically included questions about transgender identity. To date, estimates of the proportion of individuals who identify as transgender have been calculated from data such as disclosure of transgender status to a medical provider and single-state or nonprobability surveys.[2–7] Recently, the inclusion of a question about transgender status in the Centers for Disease Control and Prevention (CDC) Behavioral Risk Factor Surveillance System (BRFSS) survey has provided a novel opportunity to learn more about the US adult transgender population. In a white paper published in June 2016, Flores et al.[8] used BRFSS data from 19 states to estimate that 0.5% of the respondents identified as transgender and imputed that 0.6% of adults identify as transgender nationwide.

Beyond data on the portion of individuals identified as transgender, information about the demographics of the transgender population is needed to identify inequities; facilitate public health efforts to address health disparities, including disproportionately high rates of HIV, suicide, and violence against the transgender community[9]; and lend data to policies focused on the transgender population. Our objective was to provide estimates of the demographic characteristics of the US adult transgender population compared with the nontransgender population.

METHODS

Data were obtained from the BRFSS, an annual cross-sectional landline and cellular telephone state-based health survey conducted by the CDC in all US states and 3 US territories.[10] A complex probability sampling technique is used to sample English- and Spanish-speaking US residents at least 18 years of age.

The BRFSS includes optional modules that states may choose to include in their annual survey. In 2014, an optional "gender identity" module was adopted by 19 states and a territory (Delaware, Guam, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Minnesota, Missouri, Nevada, New York, Ohio, Pennsylvania, Vermont, Virginia, Wisconsin, Wyoming). Survey respondents (n = 169 392) were asked, "Do you consider yourself to be transgender?" A definition of transgender was read to those who expressed confusion. Individuals who identified as transgender were asked, "Do you consider yourself to be male-to-female (MTF), female-to-male (FTM), or gender nonconforming?"

Demographic covariates of interest included age (18–29, 30–49, and ≥ 50 years), race/ethnicity (White, Black, Hispanic, and other including "not sure" and "refused to answer"), marital status (married vs divorced, widowed, separated, never married, partnered), education (some college attendance vs less than college), employment (unemployed [out of work], not in

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workforce [homemaker, student, retired, unable to work], or employed [employed for wages, self-employed]), and living in a rural setting (as determined by metropolitan statistical area). We calculated household percentage of the poverty line by using household size and income recoded to the midpoint for each income range and to the 80th percentile ($112 262) for those in the highest income category.[11] We divided recoded income by size-specific poverty thresholds.[11]

We restricted the analytic sample to states and territories that asked about, and individuals who provided, their transgender status (excluding 15 330 with missing responses, 1468 who declined to respond, and 1138 who responded "don't know"). We used this subpopulation (n = 151 456) to calculate the proportion of individuals who identify as transgender. We used Stata version 14.0 (StataCorp LP, College Station, TX) to perform a design-adjusted χ^2 test of the association of transgender identity with demographic covariates. All results were weighted. Tests of statistical association were 2-tailed ($\alpha = 0.05$).

RESULTS

Transgender individuals made up 0.53% (95% confidence interval [CI] = 0.46, 0.61) of the population, with a larger proportion of individuals identifying as male-to-female (0.28% of the population; 95% CI = 0.23, 0.33) than female-to-male (0.16%; 95% CI = 0.12, 0.21) or gender nonconforming (0.08%; 95% CI = 0.06, 0.13). Overall, transgender respondents were not significantly different from the nontransgender population with regard to age, living in a rural area, marital status, or employment (Table 1). Male-to-female transgender respondents were more likely to live in rural areas (36.2%; 95% CI = 24.0, 50.4) compared with nontransgender females (22.3%; 95% CI = 21.8, 22.8). Race/ethnicity and transgender status were associated with a greater proportion of transgender individuals identifying as non-White compared with the nontransgender population (Table 1). Nontransgender

TABLE 1—Weighted Demographic Characteristics of US Adult Participants, by Transgender Status: Behavioral Risk Factor Surveillance System, 2014

Characteristic	Transgender (n = 691), % (95% CI)	Nontransgender (n = 150 765), % (95% CI)	*P*	Transgender, male-to-female (n = 363), % (95% CI)	Nontransgender female (n = 88 679), % (95% CI)	*P*	Transgender, female-to-male (n = 212), % (95% CI)	Nontransgender male (n = 62 086), % (95% CI)	*P*	Gender nonconforming (n = 116), % (95% CI)
Age, y			.83			.82			.95	
18–29	18.4 (13.0, 25.4)	19.8 (19.3, 20.3)		16.7 (10.4, 25.8)	18.5 (17.8, 19.2)		20.0 (9.9, 36.0)	21.2 (20.5, 21.9)		20.7 (9.5, 39.2)
30–49	34.3 (27.8, 41.5)	32.5 (32.0, 33.0)		34.6 (26.0, 44.4)	32.0 (31.3, 32.6)		35.0 (23.7, 48.4)	33.1 (32.4, 33.8)		32.2 (17.9, 50.9)
≥ 50	47.3 (40.2, 54.5)	47.7 (47.3, 48.2)		48.7 (39.6, 57.8)	49.6 (48.9, 50.2)		45.1 (32.1, 58.7)	45.8 (45.0, 46.5)		47.1 (28.6, 66.5)
Race/ethnicity			.008			.70			.003	
White, non-Hispanic	60.0 (52.2, 67.3)	72.7 (72.2, 73.2)		67.4 (58.0, 75.6)	72.7 (72.1, 73.4)		46.7 (34.0, 59.8)	72.7 (71.9, 73.4)		60.8 (38.8, 79.2)
Black, non-Hispanic	15.3 (11.0, 20.9)	11.8 (11.5, 12.2)		15.2 (10.0, 22.3)	12.4 (12.0, 12.9)		15.9 (8.2, 28.7)	11.1 (10.6, 11.7)		14.5 (5.9, 31.6)
Hispanic	13.7 (8.0, 22.5)	7.6 (7.3, 8.0)		8.7 (4.0, 17.9)	7.4 (7.0, 7.9)		19.7 (9.0, 37.9)	7.8 (7.3, 8.4)		18.5 (4.5, 52.5)
Other[a]	11.0 (6.9, 17.3)	7.9 (7.6, 8.2)		8.7 (4.7, 15.7)	7.4 (7.0, 7.9)		17.7 (8.1, 34.5)	8.4 (8.0, 8.9)		6.1 (2.9, 13.5)
Living in rural area[b] (n = 99 993[c])	28.7 (20.6, 38.4)	22.6 (22.2, 23.0)	.15	36.2 (24.0, 50.4)	22.3 (21.8, 22.8)	.020	22.4 (12.6, 36.6)	23.0 (22.3, 23.7)	.92	13.1 (6.4, 25.0)
Married	50.5 (43.3, 57.7)	47.7 (47.2, 48.2)	.45	55.0 (45.7, 63.9)	50.4 (49.7, 51.0)	.33	42.6 (29.9, 56.4)	54.4 (53.6, 55.1)	.09	44.6 (25.9, 65.0)
Any college	35.6 (29.5, 42.1)	56.6 (56.1, 57.1)	< .001	40.8 (32.2, 49.9)	58.7 (58.0, 59.3)	< .001	25.4 (17.6, 35.1)	54.4 (53.6, 55.1)	< .001	37.5 (22.8, 55.0)
Employment status			.57			.21			.37	
Unemployed	7.6 (4.2, 13.5)	6.0 (5.8, 6.3)		6.6 (3.6, 11.6)	5.6 (5.3, 5.9)		10.0 (2.7, 30.5)	6.5 (6.1, 7.0)		6.5 (2.6, 15.1)
Not in workforce	38.2 (31.4, 45.4)	36.3 (35.8, 36.7)		34.9 (26.5, 44.3)	42.6 (41.9, 43.2)		37.0 (25.8, 49.7)	29.4 (28.7, 30.0)		50.6 (31.7, 69.4)
Employed	54.3 (46.9, 61.4)	57.7 (57.2, 58.2)		58.6 (49.2, 67.3)	51.8 (51.2, 52.5)		53.1 (39.4, 66.3)	64.1 (63.4, 64.8)		42.9 (25.6, 62.2)
Percentage poverty line[d] (n = 131 493[c])			< .001			.09			< .001	
0–99	26.0 (19.2, 34.1)	15.5 (15.1, 16.0)		26.1 (17.8, 36.7)	17.6 (17.1, 18.2)		32.4 (18.8, 49.9)	13.3 (12.7, 13.9)		13.2 (6.4, 25.2)
100–199	31.6 (24.7, 39.5)	24.9 (24.5, 25.4)		23.7 (17.4, 31.3)	26.4 (25.8, 27.0)		39.9 (26.0, 55.5)	23.4 (22.8, 24.1)		43.3 (23.0, 66.1)
≥ 200	42.4 (35.1, 50.1)	59.6 (59.0, 60.1)		50.2 (40.4, 60.0)	56.0 (55.3, 56.7)		27.7 (18.4, 39.5)	63.3 (62.5, 64.1)		43.5 (24.9, 64.2)

Note. CI = confidence interval. All percentages and CIs were design-adjusted; sample sizes were not design-adjusted.

[a]"Other" race/ethnicity includes Asian, American Indian, Alaska and Hawaii natives, Pacific Islanders, and other/multiracial non-Hispanic.

[b]Data not collected in 2 states/territories.

[c]Sample size corresponds to sum of transgender and nontransgender respondents (columns 1 and 2). Data missing for > 10% of respondents.

[d]Federal poverty thresholds set by the US Census Bureau in 2014.

individuals were more likely to have gone to college and less likely to be in poverty than were transgender respondents (Table 1).

DISCUSSION

Consistent with findings from the Williams Institute white paper,[8] we found that approximately 1 in 189 US adults identifies as transgender. Our findings suggest that the transgender population is racially diverse, with higher rates of poverty and lower rates of college attendance than in the nontransgender population.

Given the high rates of discrimination and harassment transgender individuals face in school, inequalities in educational attainment are not surprising.[9,12] However, these findings, as well as the racial composition of the transgender population, differ in comparison with the largest US nonprobability sample of transgender individuals,[9] which found a higher proportion of White respondents (76%) and higher rates of college attendance (83%). Although convenience sample data have contributed significantly to our understanding of the transgender population, these differences highlight the potential biases of convenience data and the importance of probability samples.

Demographic comparison of male-to-female individuals with nontransgender females and female-to-male individuals with nontransgender males generally reflected the overall transgender to nontransgender comparison. However, no statistically significant difference in poverty was found when comparing the male-to-female population with nontransgender females. This may reflect sample size limitations, overall pay suppression for individuals with feminine genders, and the influence of low poverty rates among nontransgender males on the poverty gap between transgender and nontransgender individuals. Unexpectedly, we also found that male-to-female individuals were more likely to live in rural areas than were nontransgender females; more research is needed to explore this finding.

Our estimate of the proportion of individuals who identify as transgender has several limitations, which may result in an underestimation. Respondents may have denied transgender identity because of concerns about privacy, safety, or transphobia. Our estimate does not capture individuals who have transitioned and do not identify as transgender (e.g., natal females who identify as men) or gender-nonconforming individuals who do not identify as transgender (potentially including those who responded "don't know" for transgender status).

The national generalizability of our findings may have been affected by incomplete participation of states, missing responses for transgender status, and telephone survey bias toward affluent participants. Our findings also were limited by potential collinearity and the lack of validation of the transgender status question.

PUBLIC HEALTH IMPLICATIONS

This demographic description of the transgender population provides opportunities for public health practitioners to design programming to meet the needs of this historically marginalized population and for public policy officials to better understand the effect of legislation (e.g., regarding bathroom access). Disparities in educational attainment and socioeconomic status have negative health implications for the transgender community, may intersect with racial inequalities, and provide support for tackling factors deterring transgender individuals from continuing education, including harassment and discrimination.[9] Public health professionals can play a critical role in expanding our understanding of the transgender community by including separate measures of natal sex, gender identity, and transgender status in survey work. AJPH

CONTRIBUTORS

H. P. Crissman proposed the research project and refined the question and analysis with the assistance of M. B. Berger and V. K. Dalton. H. P. Crissman prepared the first draft of the article and the table. M. B. Berger, L. F. Graham, and V. K. Dalton provided substantive and editorial feedback on multiple revisions of the article. All authors approved the final version of the article before submission.

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HUMAN PARTICIPANT PROTECTION

Institutional review board approval was not required because the study used a de-identified, publicly available data set.

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