

ICPSR 37229

2015 U.S. Transgender Survey (USTS)

Methodology Report

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Methodology Report

Questionnaire Design, Data Collection Methods, Data Cleaning Procedures, Weights, and Other Technical Information

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Introduction to the 2015 U.S. Transgender Survey (USTS) and Public Use Dataset (PUDS)

The 2015 U.S. Transgender Survey (USTS) is the largest survey ever conducted to examine the experiences of transgender people in the United States. The survey instrument had thirty-two sections that covered a broad array of topics. The survey was developed by a team of researchers and advocates and administered online to transgender adults residing in the United States. The survey was distributed through extensive, community-based outreach and was made accessible via any web-enabled device (e.g., computer, tablet, netbook, smart phone), accessible for respondents with disabilities (e.g., through screen readers), and made available in English and Spanish. Rankin & Associates Consulting hosted the survey on several secure servers. The survey was accessed exclusively through a website created specifically for the promotion and distribution of the survey (www.ustranssurvey.org). The survey included questions related to the following topics (in alphabetical order): accessing restrooms; airport security; civic participation; counseling; education; employment; family and peer support; health and health insurance; HIV; housing and homelessness; identity documents; immigration; income; intimate partner violence; military service; police and incarceration; policy priorities; public accommodations; faith; sex work; sexual assault; substance use; suicidal thoughts and behaviors; unequal treatment, harassment, and physical attack; and voting.

Data was collected over a 34-day period in the summer of 2015, between August 19 and September 21, 2015. The final sample included 27,715 respondents from all fifty states, the District of Columbia, American Samoa, Guam, Puerto Rico, and U.S. military bases overseas. The survey contained mainly closed-ended questions, but respondents were also offered the opportunity to provide write-in responses to fifty-three of the survey questions. To view the survey questions, please see the questionnaire, which appears in Appendix B of *The Report of the 2015 U.S. Transgender Survey* (available online at www.ustranssurvey.org) and is also included in the documentation provided with the USTS public use dataset.

The 2015 USTS dataset is made available by the National Center for Transgender Equality (NCTE) for the use of researchers and other interested parties. Requests to use the 2015 USTS dataset can be submitted via the 2015 USTS website (www.ustranssurvey.org). Requests to use the 2015 USTS are subject to approval by NCTE and the execution of a data use agreement between NCTE and the Principal Investigator or lead researcher for each study that will utilize the 2015 USTS dataset.

The 2015 USTS public use dataset was created using Stata 14 and is available in Stata, SPSS, and SAS formats. The dataset was converted from Stata 14 to SPSS (v. 18+) and SAS (v. 9) file formats using StatTransfer 13.2. The SAS version of the dataset includes a data file and a separate file for labels. The public use dataset will include the data files in the requested format along with the following documentation: 2015 USTS questionnaire, list of variables and labels, methodology report, and codebook.

Questionnaire Design

The USTS questionnaire was developed over the course of a year by a core team of researchers and advocates in collaboration with dozens of individuals with lived experience, advocacy and research experience, and subject-matter expertise. When developing the survey instrument, the research team focused on creating a questionnaire that could provide data to address both current and emerging needs of transgender people while gathering information about disparities that often exist between transgender people and non-transgender people in the U.S. To achieve this, questions were included that would allow comparisons between the USTS sample and known benchmarks for the U.S. population. Consequently, questions were selected to best match those previously asked in federal government or other national surveys on a number of measures, such as measures related to income and health. Questions in the USTS survey instrument were drawn from national population-based surveys, either exactly as they appeared in the source survey or with modifications, as follows:

USTS Questions	Source Survey
2.16–2.22; 11.1 & 11.2	American Community Survey (ACS)
2.24 & 2.25; 15.1–15.12; 16.1–16.5	National Survey on Drug Use and Health (NSDUH)
7.1–7.14	Current Population Survey (CPS)
12.1; 12.4; 12.6; 12.17; 14.4	CDC’s Behavioral Risk Factor Surveillance System (BRFSS)
12.2 & 12.3; 14.1; 14.3	National Health Interview Survey (NHIS)
16.6–16.12	National Comorbidity Survey Replication (NCS-R)
17.7 & 17.8	National Crime Victimization Survey (NCVS)
18.1–18.3; 19.2 & 19.3	National Intimate Partner and Sexual Violence Survey (NISVS)
28.10–28.17	National Inmate Survey (NIS)
29.1–29.4	Current Population Survey (CPS) 2014 November Supplement
30.4–30.6	Gallup Daily Tracking Poll (U.S. Political and Economic Daily Tracking)

Some changes were made to the language of questions derived from these population-based surveys to more appropriately reflect issues pertaining to transgender people and language in common use in the transgender community, while maintaining comparability to the best extent possible. However, in many cases, original language from the source surveys was preserved to ensure that responses to a USTS question would remain comparable to these surveys, such as the American Community Survey and Current Population Survey. More information about modifications to survey questions can be found in the “Accessible Language and Question Comparability” section below.

The survey instrument was reviewed by researchers, members of the transgender community, and transgender advocates at multiple intervals throughout the development process. This included thorough reviews of sections that addressed specific subject matter and the entire questionnaire. The questionnaire was revised based on feedback from dozens of reviewers.

Pilot Study

Prior to finalizing the survey instrument and launching the survey in the field, a pilot study was conducted. The purpose of the pilot study was to provide both a substantive and technical evaluation of the survey. The pilot study was administered through an online test site using the same platform and design as the final survey. The pilot study was conducted with a small group of individuals who met the criteria for inclusion in the survey. The research team aimed to recruit a pilot sample that was demographically and regionally diverse. The pilot sample was recruited among individuals known to the research team and through using existing networks of individuals to reach potential participants. No incentives were provided to participate.

Approximately one hundred individuals were invited to complete and evaluate the survey online during a specified period of time. In order to receive access to the pilot study test site, invitees were required to confirm their participation by indicating that they met the following pilot study criteria: they were (1) 18 years or older, (2) transgender, (3) willing to provide feedback that would be used to make improvements to the survey, (4) available to take the survey online during specified dates, and (5) agreed not to share the survey questions in the pilot study with anyone so as to not compromise the study. Forty individuals confirmed their participation and received access to the pilot study test site. Thirty-two people completed the study and submitted feedback on the questionnaire, including participants in fifteen states ranging in age from 19 to 78. Forty-four percent (44%) of pilot participants identified as a woman or trans woman (MTF), 41% as a man or trans man (FTM), and 16% as non-binary or genderqueer. In regard to racial and ethnic identities, 34% of pilot participants identified as people of color, including American Indian, Asian, multiracial, Black, Latino/a, and other racial/ethnic identities.

After completing the pilot survey, respondents were asked to provide general feedback on individual questions and the entire questionnaire. Pilot study participants were asked to address specific questions as part of their evaluation, including: (1) how long it took to complete the survey, (2) what they thought about the length of the survey, (3) whether any questions were confusing or difficult to answer, (4) whether they found any questions offensive or thought they should be removed or fixed, (5) whether they experienced technical or computer issues while taking the survey, and (6) what they thought about the statement explaining why the term “trans” was used throughout the survey.¹ All participant feedback was compiled, discussed, and used to refine and further develop the questionnaire, such as through the revision of language and the addition of questions to more thoroughly examine an issue.

Survey Length

The final survey questionnaire contained a total of 324 possible questions in thirty-two discrete sections addressing a variety of subjects, such as experiences related to health and health care

¹ The following statement was provided in the survey to explain why the word “trans” was used throughout the survey: “We know that not everyone is comfortable with the word ‘transgender,’ but for this survey, we must use one word to refer to all trans and non-binary identities. Because of this, we will use the word ‘trans’ in this survey to refer to all trans and non-binary identities.”

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access, employment, education, housing, interactions with law enforcement, and places of public accommodation. The online survey used skip logic, which created unique pathways through the questionnaire, with each next step in a pathway being dependent on an individual respondent's answer choices. This allowed respondents to move seamlessly through the questionnaire, receiving only questions that were appropriate for them. For example, respondents who reported that they had served in the U.S. Armed Forces, Reserves, or National Guard received a series of questions about their military service, but those who had not served did not receive those questions. Due to the customized nature of the survey using skip patterns, the length varied greatly between respondents, and no respondent received all possible questions. Prior to the pilot study, estimates indicated a survey-completion time of 30–45 minutes. The estimated completion-time estimate was extended to 60 minutes based on feedback from pilot study participants, and it was consistent with many reports during the final fielding period. A notable exception to the 30–60 minute estimate for completing the survey occurred during the first days of the survey's availability when a high volume of survey takers overwhelmed the computer servers, which caused lengthy delays when completing the survey. This is discussed further in the "Data Collection Methods" section below.

Through multiple reviews and evaluations of the survey instrument—including the pilot study—reviewers and pilot participants reported that the length was appropriate for a survey addressing such a wide range of issues, and the need for data outweighed concerns about the overall length of the survey. Survey instrument length was assessed throughout its development to ensure it would be manageable for as many participants as possible.

Accessible Language and Question Comparability

Throughout the questionnaire development, the use of accessible language was balanced with preserving the intended meaning of each question to the greatest extent possible. This was of particular importance in maintaining comparability with questions from existing surveys that would allow comparisons between the USTS sample and the U.S. population. In order to make assessments about USTS survey respondents in relation to the U.S. population, it was important that USTS respondents had similar interpretations of questions from population-based surveys as respondents would from the U.S. general population. In some questions, language was revised to use terminology that would most appropriately speak to individuals in the many communities for which the USTS was intended. However, several questions required difficult choices about keeping language that may have caused discomfort for some respondents.

Throughout the questionnaire, language was avoided that could be interpreted as stigmatizing or characterized as a value judgment wherever possible, while maintaining the original intended meaning of the question. For example, at times survey questions referred to work or activities that were "currently considered illegal." Eliminating technical language (e.g., jargon) was also necessary, unless it was widely used and accepted in transgender communities, such as some medical terminology regarding transition-related surgical care. Short descriptions or parenthetical explanations were provided whenever technical language was used for those who may not have been familiar with those terms. Additionally, hyperlinked explanations of specific terms were included when those terms could be interpreted in several ways or if similar

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explanations were provided in the federal surveys from which the questions were taken. For example, explanations were provided for the terms “active duty” when asking about military service and “household” when asking about income.

The research team remained conscious of individual and collective identities throughout the survey instrument drafting process, and attempted to use language that acknowledged the breadth and significance of individual identities, while also making the questions accessible to the widest range of transgender people possible across the U.S. and in the territories. The questionnaire was reviewed and revised for consistent readability at an eighth-grade literacy level, where possible, although several terms used in the survey remained at a considerably higher literacy level.² This included places where language was preserved for comparability with other surveys and when language describing transgender-specific experiences or procedures was used. Additionally, community members and researchers reviewed the survey and suggested revised language throughout the development process. This collaborative process was beneficial in providing collective insight on the best language to use in each particular instance based on lived experience and research expertise. The research team acknowledges, however, a continuing need to work towards identifying suitably inclusive terminology within an evolving community for future iterations of the survey.

The questionnaire was translated into Spanish by a translation service, and several native-Spanish-speaking community members and NCTE staff and interns reviewed and revised the language to use terminology that was most prevalent in Spanish-speaking transgender communities in the U.S. In many instances, it was difficult to find language that accurately captured the meaning of a question or specific terms, but, in each case language was selected to convey meaning as close to the English-language question as possible.

Institutional Review Board

This study, including the pilot study, was reviewed and approved through a full board review by the University of California – Los Angeles (UCLA) North General Institutional Review Board (IRB) (IRB#15000961). The IRB review process is meant to protect the rights and welfare of individuals participating in a research study. As a requirement of approval, the questionnaire began with a study information sheet describing aspects of the study and rights of individuals as participants in the study.³ To participate in the study, participants were required to indicate their consent at the end of the information sheet. This process established that participants were fully informed about the risks and benefits of participating in the study and that their participation was voluntary. The UCLA IRB also reviewed and approved all recruitment materials leading up to the launch of the survey and throughout the time the survey was in the

² The initial literacy level review and revision was conducted by a certified copy editor proficient in reading levels, and the questionnaire was determined, overall, to be at an eighth grade reading level.

³ Due to IRB requirements, the language in the study information sheet was generally at a higher literacy level than the rest of the questionnaire.

field. This included all materials aimed at recruiting participants to enroll in this study, such as website pages, flyers, emails, and social media messages.

Data Collection Methods

Population of Interest

The population of interest for this study included individuals who identify as transgender, trans, genderqueer, non-binary, and other identities on the transgender identity spectrum. Although “transgender” was defined broadly for the purposes of this study as being inclusive of a wide range of identities—such as genderqueer, non-binary, and crossdresser—the research team recognized that many individuals for whom the study was intended may have used different terminology or definitions and might have assumed that the term “transgender” did not include them. To address this, recruitment materials affirmed that the survey was inclusive of all transgender, trans, genderqueer, and non-binary people. Additionally, recruitment materials specified that the survey was for adults at any stage of their lives, journey, or transition to encourage participation among individuals with diverse experiences regarding their transgender identity. An in-depth description of survey respondents is available in the chapter “Portrait of USTS Respondents” in *The Report of the 2015 U.S. Transgender Survey* (available online at www.ustranssurvey.org).

The study included individuals ages 18 and older at the time of survey completion. The study was not offered to individuals under the age of 18 due to limitations created by specific risk factors and recommendations associated with research involving minors. These considerations, including requirements for parental/guardian consent, would have impacted the survey’s scope and content and also reduced the literacy level at which the survey could be offered.⁴ Furthermore, the current experiences and needs of transgender youth often differ from those of adults in a number of key areas, including experiences related to education, employment, accessing health care, and updating identity documents. Many of these experiences or needs could not be adequately captured in a survey that was not specifically tailored to transgender people under the age of 18.

The sample was limited to individuals currently residing in a U.S. state or territory, or on a U.S. military base overseas, since the study focused on the experiences of people who were subject to U.S. laws and policies at the time they completed the survey. Individuals residing outside of the U.S. may have vastly different experiences across a number of outcome measures based on

⁴ See e.g., The GenIUSS Group. (2014). In J. L. Herman (Ed.), *Best Practices for Asking Questions to Identify Transgender and Other Gender Minority Respondents on Population-Based Surveys* (p. vii). Los Angeles, CA: Williams Institute. (“Adolescents may have particular difficulties with complex vocabulary and sentences. Therefore, questions designed for adolescents should take extra care to use plain language and simple sentences. Terms used in measures of sex and gender should be defined since adolescents, and cisgender (non-transgender) adolescents in particular, conflate the terms sex and gender, and have varying understanding of the term transgender, masculine, and feminine.”). Given the need to collect data about the unique experiences of transgender youth, it is important to design and conduct future studies focusing on the issue areas and needs most applicable to transgender youth.

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each respective country's laws, policies, and culture, particularly in the areas of education, employment, housing, and health care. Additionally, many survey questions were taken from U.S. federal government surveys for purposes of comparing the USTS sample to the U.S. general population. U.S. federal surveys are designed for individuals living in the U.S. and reflect the law, policy, and cultural context of the U.S.

The survey was produced and distributed in an online-only format after the research team determined that it would not be feasible to offer it in paper format due to the length and the complexity of the skip logic used throughout the questionnaire. With so many unique possibilities for a customized survey experience for each respondent, the intricate level of navigation through the survey would have created an undue burden and confusion for many respondents if the skip logic were presented in the form of detailed instructions for a paper survey. This could have led to questions being answered unnecessarily or being skipped completely, which could have increased the potential for missing data in the final dataset.⁵ This made online programming the best option for ensuring that respondents received all of the questions that were appropriate for them and decreasing the probability of missing data.

However, the potential impact of internet survey bias on obtaining a diverse sample has been well documented in survey research,⁶ with findings that online and paper surveys, coupled with differences in outreach, may reach transgender respondents with “vastly different health and life experiences.”⁷ With those considerations in mind, outreach efforts were focused on addressing potential demographic disparities in our final sample that could result from online bias and other issues relating to limited computer and internet access. Although the intention of the data collection activities was to recruit a sample that was as representative as possible of transgender people in the U.S., respondents in this study were not recruited via random sampling and the actual population characteristics of transgender people in the U.S. are not known. Therefore, it is not appropriate to generalize the findings in this study to all transgender people.

Advisory Committee

NCTE convened the USTS Advisory Committee (UAC) to increase community engagement in the survey project and raise awareness by connecting with transgender people in communities across the country through a variety of networks. The UAC was comprised of eleven individuals

⁵ Post-NTDS analysis of respondents who had completed that survey online or in paper format found that surveys completed online were less likely to have missing data, providing further support for the decision to only offer the survey online. See Reisner, et al. (2014). Comparing in-person and online survey respondents in the U.S. National Transgender Discrimination Survey: Implications for transgender health research. *LGBT Health*, 1(2), 98–106.

⁶ See Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method* (4th ed.). Hoboken, NJ: John Wiley & Sons.

⁷ Reisner et al., p. 98. See note 5. This analysis also found that “[a] higher proportion of in-person respondents were young, male-to-female, people of color, publicly insured, with lower incomes and lower educational attainment than online respondents (all $p < 0.05$). In-person respondents also were more likely than online respondents to be current daily smokers, to endorse substance use to cope with mistreatment, and to self-report as HIV-positive (all $p < 0.05$).”

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with advocacy, research, and lived experience from a wide range of geographical locations.⁸ Members were invited to join the committee as advisors on survey outreach to facilitate the collection of data that would best reflect the range of narratives and experiences of transgender people in the U.S. Each member brought unique skills and expertise to contribute to the committee's objectives. UAC members participated in five monthly calls with members of the USTS outreach team from May to September 2015. UAC monthly calls focused on providing project updates and identifying pathways by which outreach could be conducted to increase the survey's reach and promote participation from a diverse sample. Members suggested organizations, individuals, and other avenues through which to conduct survey recruitment, shared ideas and strategies for improving outreach to specific populations of transgender people, and spread the word about the survey through their professional and personal networks.

Recruitment Objective and Activities

The main recruitment objective was to provide broad and equal opportunity to participate in the survey for as many transgender individuals as possible across the U.S. and its territories. Additionally, outreach efforts focused on reaching people who may have had limited access to the online platform and who were at increased risk of being underrepresented in this study. This included, but was not limited to, people of color, seniors, people residing in rural areas, and low-income individuals. The recruitment strategy was a multi-pronged approach to reach transgender people through various connections and "points-of-access," including transgender- or LGBTQ-specific organizations, support groups, health centers, and online communities.

Outreach efforts began approximately six months prior to the launch of the data-collection period with a variety of tactics designed to raise awareness of the survey, inform people when it would be available, and generate opportunities for community engagement, participation, and support. A full-time Outreach Coordinator worked for a period of six months to develop and implement the outreach strategy along with a team of paid and volunteer interns and fellows. An initial phase of outreach involved developing lists of active transgender, LGBTQ, and allied organizations who served transgender people. These organizations would eventually be asked to support the survey by spreading the word through multiple communication platforms and in some cases providing direct access to the survey at their offices or facilities. Establishing this network of "supporting organizations" was an essential component of reaching a wide, diverse sample of transgender people. Over 800 organizations were contacted by email, phone, and social media, and they were asked if they would support the survey by sharing information about it with their members and contacts. Specifically, supporting organizations were asked to share information through email blasts and social media channels, and the research team provided language and graphics for organizations to use in an effort to recruit appropriate respondents into the study.

⁸ Information about UAC members can be found in the Acknowledgements section of *The Report of the 2015 U.S. Transgender Survey* (available online at www.ustranssurvey.org).

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Of the organizations contacted, approximately half responded to requests for support, resulting in direct recruitment correspondence with nearly 400 organizations at regular intervals during the pre-data-collection period and while the survey was in the field.⁹ These organizations performed outreach that contributed to the far reach of the survey and unprecedented number of respondents.¹⁰ The organizations were also featured on the survey website so potential respondents could determine whether organizations they knew and trusted had pledged support for the survey. Nearly 400 organizations responded to outreach efforts and confirmed their support for the survey. The remaining organizations did not respond directly to invitations to learn more about the survey and become supporters. Consequently, these organizations did not receive correspondence aimed at directly recruiting respondents prior to the survey launch or during the data-collection period. It is possible, however, that survey respondents were still made aware of the survey through those organizations. Since there is no information regarding whether these organizations shared information about the survey through their networks, it is difficult to assess the full scope of those outreach efforts.

Communications for the survey required a multifaceted approach and a coordinated effort with the recruitment strategy to most effectively reach a wide range of transgender people and ensure a robust sample size. The goals of survey communications were to: (1) inform people that NCTE would be conducting a survey to further the understanding of the experiences of transgender people in the U.S initially gleaned through the National Transgender Discrimination Survey, (2) communicate when the survey would be available to complete and how it could be accessed, and (3) find creative ways of reaching diverse populations of potential respondents. This involved raising awareness of the survey through several communication methods, including email, social media, and print media, as well as through additional unique campaigns. Many survey promotional materials were produced in English and Spanish to increase the accessibility of the survey. Overall, the recruitment activities resulted in the largest survey sample of transgender adults in the U.S. to date, representing about 2% of the estimated U.S. adult transgender population.¹¹ For comparison, the CDC's Behavior Risk Factor Surveillance System surveys about 0.2% of U.S. adults annually. The sections below describe the strategies employed to recruit participants or facilitate recruitment.

Survey Website

A website was created and designed specifically for the promotion and distribution of the survey (www.us.transsurvey.org). This website served as a platform for providing information

⁹ A total of 827 organizations received at least one outreach email, and organizations received additional outreach emails and/or phone calls if no response was received. Out of those organizations, 392 confirmed their support, and 435 did not respond to any communications. Correspondence included almost one dozen emails with asks to spread the word about the survey and with various information about the availability of the survey.

¹⁰ The research team attempted to ascertain the level of outreach engagement of supporting organizations; however, the limited amount of information received about the outreach did not allow a calculation of a response rate. Of the 392 organizations that pledged their support, 58 (15%) reported information on their outreach activities and estimated reaching over 20,000 transgender people through their channels.

¹¹ Flores, A.R., Herman, J.L., Gates, G.J., & Brown, T.N.T. (June 2016). *How Many Adults Identify as Transgender in the United States?* Los Angeles, CA: The Williams Institute.

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about the survey starting several months prior to its release in the field, such as a description of the survey, information about the team working on the survey, frequently asked questions, and sample language and graphics for individuals and organizations to use for email and social media communications, including sample Facebook and Twitter postings. The website also featured an interactive map, which included information about organizations that had pledged to support the survey. Additionally, the map distinctly indicated information about organizations that were hosting survey-taking events, including the date, time, and location of such events. The website later served as the only platform through which the survey could be accessed and provided English and Spanish links to enter the survey.

Survey Pledge

The survey pledge campaign was developed to raise awareness about the survey and generate investment in the project. The survey pledge was a critical method of both informing people that the survey would be launching and sustaining engagement with potential respondents in the months leading up to the fielding period. Pledges received reminders about the survey launch date and availability through email communications. Beginning in January 2015, pledge palm cards were distributed at a variety of events across the country, including conferences and speaking engagements. The cards contained information about the upcoming survey and asked people to sign up to help by committing to: (1) spread the word about the survey; and/or (2) take the survey. Transgender and non-transgender individuals were asked to complete the pledge information, either through a palm card or directly online through the survey website. Individuals who completed pledge information received email communications throughout the pre-data-collection phase. Pledge information was collected continuously for several months, and by the time of the survey launch, 14,005 people had pledged to take the survey. Additionally, 561 people pledged to promote the survey among their transgender friends and family. The pledge proved to be an effective method of assessing how many people had learned about the survey and were interested in completing it, where potential survey respondents were distributed geographically, and how more potential respondents could be effectively engaged.

Photo Booth Campaign

In January 2015, a photo booth campaign was launched as another method for engaging people and raising awareness about the survey. Individuals and groups were asked to take photos holding one of two signs with messages expressing support for the survey. Photo booth participants could choose from one of two signs indicating that the survey was coming in the summer of 2015 and stating the following: (1) “My Voice Counts: I’m Taking the #USTransSurvey” or (2) “Every Voice Counts: Spread the Word About the #USTransSurvey.” USTS photo booths were conducted at several conferences and events across the country. More than 300 photos were collected and shared directly through NCTE’s Facebook page. Photos were also sent to most photo booth participants so they could conduct their own promotion using their photos.

Social Media

With the increased use of social media in recent years, it was important to conduct recruitment activities via these outlets to further the reach of the survey. Facebook and Twitter became the primary social media outlets used throughout the survey project, and their use significantly amplified awareness, increasing the number of people who were exposed to the survey. The Twitter hashtag used to promote the survey was #USTransSurvey. A series of social media postings provided the ability to rapidly and succinctly communicate with individuals and groups who had an interest in contributing to the survey's success by completing the survey and spreading the word about it. Although social media reach fluctuated during the months leading up to the survey launch, over 96,000 Facebook users were estimated to have received NCTE's post announcing that the survey was live and available for completion on August 19, 2015.

USTS Awareness Week

Prior to launching the survey in the field, communication was maintained with thousands of individuals and organizations who fell into three categories: (1) people who had signed up to take or spread the word about the survey ("pledge list"), (2) organizations that had committed to support the survey through outreach efforts ("supporting organization list"), and (3) people who had signed up to be in communication with NCTE about the organization's work and projects ("NCTE list"). Communication with the individuals and groups on these lists through targeted messages occurred at various intervals; however, one of the most important methods for promoting the survey was through USTS Awareness Week. This campaign was designed to share a significant amount of information about the survey over a concentrated period of time in close proximity to the launch of the survey. Awareness Week occurred during the week of July 27, 2015 and highlighted different aspects of the survey focusing on a different medium each day, including social media, email, and blogs. Awareness Week was introduced to the communication lists on July 15, and recipients were invited to access and download a planning kit for the campaign, which was available on the survey website. The planning kit included language and graphics for email and social media communications. Communications were sent on each of the days devoted to social media, email, and blogs, with appeals for organizations to share the information with their membership and individuals to share the information through their personal networks.¹²

Awareness Week proved to be one of the most effective methods for increasing the number of individuals who pledged to take the survey and likely increased the number of eventual respondents. The number of individuals who pledged to take the survey on the pledge list increased from approximately 7,700 when the initial Awareness Week email was sent on July

¹² For social media day, recipients received one of the following requests, based on whether they were organizations or individuals: (1) "Use the hashtag #USTransSurvey on social media asking your social networks to join us" or (2) "Please join Social Media day. We have sample copy and a variety of photos and graphics." For email day, recipients received one of the following requests, based on whether they were organizations or individuals: (1) "Email a friend explaining why this is so important to you" or (2) "Download the sample email and send it to your membership list today." For blog day, recipients were invited to share a blog written by Outreach Coordinator, Ignacio Rivera, cross post the blog on an organization's blog site, or draft a blog about the importance of the survey.

15 to over 14,000 at the time of the survey launched in the field. The 82% increase in the numbers of survey pledges is likely due to the increased exposure generated by Awareness Week communications.

Survey-Taking Events

In an effort to increase accessibility of the survey, the outreach team worked with organizations across the country to organize events or venues where people could complete the survey. Survey-Taking Events,¹³ or “survey events,” were spaces in which organizations offered their resources to provide access to the survey, such as computers or other web-enabled devices. These organizations provided a location in which to take the survey at one particular time or over an extended period of time, such as during specified hours or over the course of several days.¹⁴ The events were created with the intention of providing access to individuals with limited or no computer or internet access, those who may have needed assistance when completing the survey, or those who needed a safe place to take the survey. Additionally, the population that had previously been identified as being more likely to take a paper survey than an online survey were considered, and the events were developed to target those individuals.¹⁵

Given the potential variety of these survey events—including the types of available resources and times at which they were conducted— guidelines were needed to maintain consistency across the events and preserve the integrity of the data collection process. A protocol was developed outlining the rules for hosting a survey event to advise hosts on best practices for ensuring a successful data collection process, including guidelines to prevent the introduction of bias into survey responses. The protocols described the steps for becoming a survey-event host and tips for how to conduct outreach about the event. The protocol also specified that hosts should inform NCTE of their event prior to hosting and report on how many people attended the event and how many people completed and submitted the survey. This was helpful information for evaluating the relative success and benefits of these events.

All confirmed supporting organizations were invited to become survey event hosts, and those who accepted the invitation were sent the survey event protocol. Seventy-one (71)

¹³ These events were promoted as “Survey-Taking Events” on recruitment materials and described accordingly (see note 12). However, it is possible that the name did not appropriately capture the nature of these vastly differing events. A lack of clarity about the nature of the events may have decreased the number of people who attempted to access the survey through organizations who offered space or computers to complete the survey online.

¹⁴ Survey-Taking Events were described as “a function in which an organization or group opens its doors and provides access to its facilities (such as community centers and office buildings) to allow trans survey participants use of its resources (including computers, tablets, and internet access) to complete the USTS. This will occur during specified periods of time or throughout the time the survey is available on a drop-in basis. For example, a community center might participate by setting aside one Saturday from 9am–6pm where some or all of its computers are available for survey takers to use, or it might host people on Monday–Friday from 5pm–9pm each evening for a week, or longer.”

¹⁵ A total of 435 NTDS respondents completed the survey in paper format (7% of the sample) and were found to differ from online survey takers in sociodemographic characteristics, health outcomes, and life experiences. Reisner et al., p. 98, 103. See note 5.

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organizations accepted the invitation and confirmed the date(s) and time(s) of their events.¹⁶ Survey events were promoted on the survey website and given a specific designation on the supporting organization map (described further in the “Survey Website” section below), including information about where and when people could attend. Hosts were encouraged to promote their event through multiple channels and consider outreach methods beyond online avenues, such as direct mail or flyers, to better reach transgender people with limited or no internet access. Additionally, hosts were provided with flyer templates so they could promote the events in their facilities or through communications with their members or constituents. Of the organizations who confirmed their survey events, 46 reported information about attendance at the event. The hosts reported that 341 people attended their events, including transgender and non-transgender friends, family, and volunteers. Approximately 199 respondents completed the survey at these events.¹⁷ However, survey responses indicate that additional unreported survey events or similar gatherings may have been held where participants had an opportunity to complete the survey.¹⁸ Event-related information submitted by organizations following the fielding period was not comprehensive enough to make a thorough determination as to whether the events had achieved their previously stated objectives.¹⁹

Additional Recruitment Activities

The overall approach to survey recruitment was multi-faceted. In addition to the previously stated campaigns, projects, and events, recruitment activities involved working with a variety of individuals such as bloggers, artists, advocates, and others to create print blogs and videos promoting the survey. Op-eds were another medium that contributed to survey promotion, and media consultants and traditional media sources aided in expanding the survey’s reach even further. Approximately 50 articles, blogs, and op-eds focused on the survey were produced and distributed by organizations, including NCTE, and individuals prior to the launch of the survey and during the data collection period. The wide variety of communications approaches contributed to the number of individuals who were reached and likely impacted the final number of respondents in the sample.

¹⁶ Although only 71 organizations confirmed their events, based on information reported at various intervals throughout the data-collection period, it appeared that more organizations hosted survey events or similar gatherings to complete the survey without reporting them to the survey outreach team. Additionally, it is also possible that individuals and organizations held informal parties where groups of friends could gather to complete the survey at the same time. Data regarding this sort of activity was not collected or received.

¹⁷ This completion rate is a conservative estimate based on anecdotal reports that some individuals started the survey at the event and then left to complete it on their own at a later time.

¹⁸ Four hundred and seventeen (417) respondents answered “yes” in response to the following survey question: “Are you taking this survey at a survey event or meeting, such as one hosted by an LGBTQ or Trans organization or meeting?”

¹⁹ In future iterations of the USTS and other research studies, the research team suggests a more robust approach towards organizing, conducting, and monitoring survey events to increase the reach and availability of such events in providing access to the survey. Researchers are also encouraged to conduct follow-up analyses to determine the demographic characteristics of individuals who completed the survey at events and whether these events were successful in capturing a similar demographic to those who had completed paper surveys in the previous survey. See Reisner, et al., note 5, (discussing the demographics of online and paper respondents in the NTDS).

Incentives

As an incentive for completing the survey, participants were offered a cash-prize drawing. Incentives, such as cash prizes are widely accepted as a means by which to encourage and increase participation in survey research.²⁰ Studies have shown that such incentives may have a positive effect on survey response rate, which is the proportion of individuals in the population of interest that participates in the survey.²¹ Research has also found that lottery-style cash drawings may be beneficial in online surveys, since they offer a practical method for providing incentives in surveys with a large number of respondents by eliminating the potential high cost of both the cash incentive and prize distribution.²² USTS respondents were offered the opportunity to enter into a drawing for one of three cash prizes upon completion of the survey, including one \$500 cash prize and two \$250 cash prizes.²³ After completing and submitting their anonymous survey responses, USTS respondents were redirected away from the survey hosting site to a web page on the NCTE-hosted USTS website. In addition to being thanked for their participation on this page, respondents received a message confirming that their survey had been submitted and any further information they gave would not be connected to their survey responses. Only individuals who completed and submitted the survey were eligible for one of the cash prizes. To enter into the prize drawing, respondents were required to check a box giving their consent to be entered.²⁴ Respondents were also asked to provide their contact information in order to be notified if selected in the drawing. The final drawing contained 17,683 entrants. Each entrant was assigned a number, and six numbers were randomly chosen by a non-NCTE party: three numbers for the prize winners and three for alternates if necessary. The three prize winners were contacted and awarded their prizes upon acceptance.

Survey Hosting

The survey was hosted by Rankin & Associates Consulting, under the supervision of USTS Co-Principal Investigator, Dr. Susan Rankin. Access to the survey was provided exclusively through links posted on the USTS website (www.ustranssurvey.org). All programming of the online questionnaire and administration of the survey was handled through Rankin & Associates

²⁰ See e.g., Göritz, A. S. (2006). Incentives in web studies: Methodological issues and a review. *International Journal of Internet Science*, 1(1), 58–70, (finding that “material incentives increase the odds of a person responding by 19% over the odds without incentives”).

²¹ Pedersen, M. J. & Nielsen, C. V. (2016). Improving survey response rates in online panels: Effects of low-cost incentives and cost-free text appeal interventions. *Social Science Computer Review*, 34(2), 229–243.

²² Pedersen et al., pp. 237–238; Singer, E. & Ye, C. (2013). The use and effects of incentives in surveys. *The ANNALS of the American Academy of Political and Social Science*, 645(1), 123–124.

²³ Participants were informed of the cash prize incentives in several ways. The study information sheet at the beginning of the survey contained the following statement: “You will receive no payment for your participation. You will have the option to voluntarily enter a drawing to win one of three cash prizes: one prize of \$500 and two prizes of \$250.” The frequently asked questions section of the survey website also offered the following statement: “When you complete the survey, you will have the option to enter a drawing to win one of three cash prizes: one prize of \$500 and two prizes of \$250. Because thousands of trans people across the country will complete the survey, we cannot offer payment to each participant.” Additionally, some recruitment materials mentioned the cash-prize drawing, including email blasts.

²⁴ The check box stated: “Enter me in the drawing for one of three cash prizes: one prize of \$500 and two prizes of \$250!”

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Consulting, which managed the process of collecting and storing the survey data throughout the 34-day fielding period.

The survey was anonymous, and maintaining privacy and confidentiality in the collection and storage of survey data was an important component of preserving participants' anonymity. Furthermore, as a condition of IRB approval, the research team was required to ensure that confidentiality protections were in place for the study and demonstrate sufficiency of data security protocols. Accordingly, data from online participants was submitted through seven secure firewalled servers with forced 256-bit SSL (Secure Sockets Layer) security and Security-Enhanced Linux (SELinux) security extensions to encrypt and protect the survey data. Given the volume of traffic on the seven servers during the initial launch of the survey, an eighth server was added. The survey was stored in a SQL database that could only be accessed locally. The servers themselves were only accessible using encrypted SSH (Secure Shell) connections originating from the local network. The servers were also in RAID (Redundant Array of Inexpensive Disks), which is a data storage virtualization technology that combines multiple physical disk drive components into a single logical unit for the purposes of data redundancy, performance improvement, or both, and to reduce the chance of any data loss due to hardware failure. The servers performed nightly security audits from data acquired via the system logs and notified the system administrators of audit results.

It is important to note issues that occurred in the initial days of the survey data collection period, given the potential impact on the data collection activities and the final sample. Prior to the survey launch, the online platform had been assessed and capacity was predicted for the seven dedicated servers based on reasonable estimated response rates. However, in the first days of the data collection period, exceptionally high levels of traffic to the servers far exceeded the predicted response rates and overwhelmed the capacity of the servers, causing significant delays in accessing and completing the survey. The resulting server delays occurred within hours of the survey launch on August 19, 2015, producing unusually long page-loading times and may have served as a barrier to completing the survey. The research team received reports that it took some individuals up to several hours to complete the survey on the first day, and others reported that they were not able to complete or submit their survey at all due to the technical issues. The survey team notified potential respondents of the delays through email and social media communication and updated the first page of the online survey questionnaire with a note about the issues and information about the continued availability of the survey.²⁵ The hosting team added one additional server to process the high level of traffic and returned the survey to normal loading speeds within a couple days of the initial reports. Although high numbers of survey submissions were received throughout these days, it is likely that the server

²⁵ The following note was added to the first page of the survey (in English and Spanish) to notify respondents of the delay: "Our servers have been overwhelmed by the number of enthusiastic participants and some are experiencing unusual delays. We apologize for the inconvenience as we work to address this issue. You can complete the survey now but may experience delays. However, the survey will be available to complete through at least September 21st. If you experience delays, we encourage you to return to this site in the coming days. If the survey is slow to respond, you can leave the page open and return later. If the survey times out, you can hit the 'back' button. However, if you close your browser, you may have to restart the survey."

delays affected the completion and submission of some surveys or may have discouraged individuals from attempting to take the survey. Additionally, a longer outreach period may have resulted in reaching more individuals in communities that are often underrepresented in online surveys.

Data Cleaning and Recoding Procedures

Data Cleaning

Data cleaning is the process of detecting and removing some survey responses (e.g., duplicate responses, incomplete responses, illogical responses) to improve the quality of the sample.²⁶

Cleaning of the USTS data proceeded in the following steps: (1) flagging and removal of respondents not eligible to take the survey, (2) flagging and removal of incomplete responses, (3) flagging and removal of duplicate responses, and (4) flagging and removal of illogical responses. The first step was to remove survey responses from individuals who did not meet basic eligibility criteria for the survey. Respondents had to consent to take the survey, be at least 18 years of age, and reside in the U.S., a U.S. territory, or on a U.S. military base. Additionally, respondents needed to identify as transgender—including non-binary identities—or meet other criteria related to their gender identity or expression. Additionally, respondents were asked if they had already completed this survey before. Respondents who indicated that they had completed the survey before were also ineligible to take the survey. Skip logic was added to the survey to send ineligible respondents to one of two disqualification pages notifying them of their ineligibility and providing them with either an opportunity to visit the survey website for more information or an opportunity to give information about their gender identity or expression and experiences related to their gender identity or expression. These ineligible respondents were included in the initial dataset and, thus, had to be removed.

Additional analyses of the dataset were completed to remove ineligible respondents who were not automatically disqualified through the survey's skip logic. Respondents who provided a month and year of birth that indicated they were under 18 at the time they took the survey were flagged and removed from the dataset. Additional analyses of responses related to gender identity and transition status in Sections 1 and 2 of the survey were completed to flag additional ineligible respondents, which included those who did not identify as transgender or with a range of other gender-related experiences associated with transgender communities. Please see the "Variable Recoding Process" section below for a more detailed description of this process. In all, 10,304 ineligible respondents were removed from the initial dataset.

Incomplete responses were then removed from the sample based on a requirement that respondents minimally complete Section 1 and specific demographic questions in Section 2 of the questionnaire. Missing data was otherwise allowed provided respondents completed these required questions. The required Section 2 questions were as follows: 2.1, 2.3, 2.6, 2.8, 2.9, either 2.13 or 2.14, 2.15, 2.18, 2.19, 2.22, and 2.23. It was determined that these questions

²⁶ Rahm, E. & Do, H. (2000). Data cleaning: Problems and current approaches. *IEEE Data Engineering Bulletin*, 23(4), 3–13.

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would provide key information about respondents, including questions used to determine eligibility, and these questions were used to set a minimal level of survey “completeness” the research team was willing to accept for a respondent to remain in the dataset. In all 515 respondents were removed due to incomplete survey responses. After removing incomplete responses, duplicate survey responses were then flagged and removed. Duplicates were determined based on all quantitative responses in the survey. Qualitative (“write-in”) responses were not considered when determining whether a response was a duplicate. In all, 329 survey responses were considered duplicates and were removed from the final dataset.

Finally, respondents who provided more than one illogical response were flagged and removed from the final dataset. An illogical response is one that provides information that contradicts other information provided by a respondent. For instance, the USTS survey included 16 questions related to respondents’ age, including current age, age they first disclosed to others they are transgender, age of suicide attempts, and ages of other milestones or experiences. An example of an illogical response would be a respondent who reported they attempted suicide at an age older than their current age. An illogical response could be due to an accidental miscode on the part of the respondent, meaning they accidentally filled out a question incorrectly, or could be evidence that a respondent is not taking the survey in earnest. The research team considered a respondent having more than one illogical response as evidence that the respondent may not have been taking the survey in earnest. In all, 53 respondents had more than one illogical response and were removed from the final dataset.

Respondents sometimes provided responses that seemed unlikely, for instance running away from home at a very young age, such as two years old. These types of responses were only considered to be illogical responses if they contradicted other responses the respondent had provided. In the case of responses that were considered unlikely, but did not contradict other information provided by the respondents, they were allowed to remain in the dataset. These outliers were negligible in the overall findings in that only a handful of outliers are found in any given variable and, therefore, they do not skew the findings in any substantial way. Findings based on age and other variables are often presented in ranges, which also helps to mitigate any influence of outliers.

Counts of Responses Removed from USTS Dataset, by reason for removal	
Total initial sample:	38,916
Total responses removed:	11,201
Did not consent to take survey	223
Not eligible: under 18 years of age	6,168
Not eligible: had already taken survey	1,072
Not eligible: did not live in U.S., territory, or military base	1,052
Not eligible: gender identity or expression did not meet criteria	1,789
Duplicate responses	329
Incomplete responses	515
Illogical responses	53
Final sample:	27,715

Missing Data and Imputation

When a dataset has substantial amounts of missing data, such as over 5% missing data, researchers should consider techniques to impute the missing data.²⁷ The research team conducted an analysis to determine whether missing data should be imputed in the USTS dataset. The percentage of missing data due to item non-response (not including intentionally missing data due to skip logic) on any original quantitative variable (not including recoded variables or “write-in” variables) was less than 5%, with the exception of only a few variables. For instance, question 14.4 regarding the month of respondents’ last HIV test had 5.9% missing data (Q. 14.4: “Not including blood donations, in what month was your last HIV test?”). This item may have had relatively higher item non-response because respondents may have been more likely to recall the year of their last HIV test, which was also requested in Q. 14.4, than the month. Question 7.11 regarding respondents’ sources of income had 6.2% missing data (Q. 7.11: “What are your current sources of income?”). This may reflect a general reluctance to provide financial information that is routinely found in item non-response to income related questions in population-based surveys. The research team determined that due to the low amount of missing data, including minimal missing data on questions that routinely have high item non-response in population-based surveys (e.g., individual and household income), imputation of missing data was not necessary for this report. Future researchers are encouraged to investigate the impact of data imputation when using this dataset.

Variable Recoding Process

The initial final dataset contained 1,140 unique variables based on a total of 324 items respondents could have received in the survey. Most of these variables required quantitative or qualitative recoding for use in the study. Quantitative recodes, such as for creating variables to reflect how “out” a respondent was about their transgender identity, were completed by one primary researcher and the syntax for that recode was reviewed by another researcher. Any errors in the syntax that were found in the review were submitted to the primary researcher in order to make corrections. The primary researcher completed any corrections and the variable was then considered a final recode. In all, the research team produced over 2,000 recodes used to generate the findings presented in *The Report of the 2015 U.S. Transgender Survey* (available online at www.ustranssurvey.org).

Respondents to the survey had many opportunities to write in responses to questions by selecting an answer such as “none of the above” and writing in a unique response or responding to an open ended question. The research team reviewed approximately 80,000 write-in responses for recoding. The recoding process included two coding teams that conducted initial coding, which was reviewed by another coding team and areas of disagreement were flagged. A simple percent agreement score was calculated to assess interrater reliability. For nearly all variables that were recoded, the coding team and the review team had 90% or higher agreement, two variables had agreement between 80% and 90%, and three fell below 80% agreement (Q. 1.7 (79%), Q. 9.3 (67%), and Q. 21.11 (70%)).

²⁷ Dong, Y. & Pang, C. Y. J. (2013). Principled missing data methods for researchers. *SpringerPlus*, 2, 222.

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In the case of a question with write-in responses where only one answer option was allowed, write-in responses were reviewed to see if they could be recoded into existing answer options. If substantial numbers of respondents wrote in the same response, a new answer option could be added to the question to reflect those responses. If it was not feasible for a response to be recoded into an existing answer option or to be combined with others to create a new answer option, the response remained in the “none of the above” category as a unique response. In the case of a question that allowed multiple choices, a similar process took place. However, if a substantial number of responses could be grouped into a new answer option and a new variable was created to describe those responses, those respondents also remained in the “none of the above” category. Therefore, new answer options based on write-in questions that allowed multiple answer choices should be viewed as a subset of the “none of the above” category.

A different recoding process was established in order to recode respondents into four gender identity categories that were used in the report: transgender women, transgender men, non-binary people, and crossdressers. To categorize respondents based on gender identity, the research team relied on respondents’ self-selected gender category in Q. 2.3, which was cross-tabulated with Q. 2.1 to identify transgender men and transgender women. For instance, the researchers would categorize someone assigned female at birth in Q. 2.1 who identifies as a man in Q. 2.3 as a transgender man and would categorize someone assigned male at birth in Q. 2.1 who identifies as a woman in Q. 2.3 as a transgender woman. In a few cases (n=439), a respondent selected female in Q. 2.1 and woman in Q. 2.3 or selected male in Q. 2.1 and man in Q. 2.3. These respondents required additional analysis of their survey responses in order to determine if they met the eligibility criteria for the survey, and if so, to categorize them as transgender men, transgender women, non-binary people, or crossdressers. The research team relied on questions in Sections 1, 2, and 12 to help make these determinations. Members of the research team completed initial recoding of these respondents to indicate whether they were eligible for the survey, and if so, in which of these categories they should be included. These initial recodes were reviewed by other members of the research team. When initial recoders and reviewers were not in agreement on a recode, the team met to discuss the disagreements and made a final decision on the recode as a group. In all, 250 respondents were determined to be ineligible for the survey based on this recoding and review process and were removed from the final dataset. These 250 responses are included in the chart on page 17 in the category “Not eligible: gender identity or expression did not meet criteria.”

Weights

The USTS sample was a purposive sample that was created using direct outreach, modified venue-based sampling, and “snowball” sampling. As a non-probability sample, generalizability is limited, meaning it is unclear whether the findings presented in this report would hold true for the transgender population of the U.S. as a whole. In addition, prior research has found that online surveys have a known bias, particularly in regard to demographic representation. Online

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samples tend to over-represent those who are white, young, more highly educated, and with higher incomes.²⁸ In order to address these biases, at least in part, the research team created and utilized weights to adjust the USTS sample in certain ways in order to better represent what is believed to be the actual population characteristics of transgender people in the U.S. and in order to make more accurate comparisons with population-based samples of the U.S. population.

Prior research using probability samples of transgender adults have found that transgender adults differ from the general population in regard to race and ethnicity and age, with those that identify as transgender being more likely to be people of color and younger than the general population.²⁹ These studies have found either no difference in educational attainment or lower educational attainment and have found lower incomes among transgender people as compared to non-transgender people. The USTS sample has a higher percentage of white, young, and more highly educated respondents than the U.S. general population, which may be due, at least in part, to internet survey bias. However, the younger average age of the USTS sample is also likely due to the transgender population being younger overall than the U.S. population. The USTS sample also has higher prevalence of low incomes as compared to the U.S. population, which goes against the typical internet survey bias. Based on the existing research about the transgender population, there is not adequate information available to attempt to correct for bias in the sample based on age, educational attainment, or income. However, there is sufficient evidence to indicate that the race and ethnicity of the USTS sample does not reflect the racial and ethnic makeup of the U.S. transgender population as a whole.

“Weighting” is a common statistical technique used to adjust data drawn from a sample of a population to be more representative of the population from which the sample was drawn. To help correct for hypothesized sampling bias in the USTS sample in regard to race and ethnicity, U.S. population weights based on the American Community Survey for race and ethnicity were created as part of the standard weight applied to all findings presented in *The Report of the 2015 U.S. Transgender Survey* (available online at www.ustranssurvey.org). This means that the racial and ethnic composition of the USTS sample was adjusted to reflect the racial and ethnic

²⁸ Online survey bias is related to demographic differences in internet access. See e.g., Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method* (4th ed.). Hoboken, NJ: John Wiley & Sons; Smith, A. (2014). *African Americans and Technology Use: A Demographic Portrait*. Washington, DC: The Pew Research Center; Herman, J. L. & Hess, D. R. (2009). *Internet Access and Voter Registration*. Washington, DC: Project Vote.

²⁹ See e.g., Flores, A. R., Brown, T. N. T., & Herman, J. L. (2016). *Race and Ethnicity of Adults who Identify as Transgender in the United States*. Los Angeles, CA: Williams Institute; Conron, K. J., Scott, G., Stowell, G. S., & Landers, S. J. (2012). Transgender health in Massachusetts: Results from a household probability sample of adults. *American Journal of Public Health, 102*(1), 118–122; Meyer, I. H., Brown, T. N. T., Herman, J. L., Reisner, S. L., & Bockting, W. O. (2017). Demographic characteristics and health outcomes among transgender adults in select regions in the Behavioral Risk Factor Surveillance System. *American Journal of Public Health, 107*(4), 582-589; Harris, B.C. (2015). Likely Transgender Individuals in U.S. Federal Administrative Records and the 2010 Census, Working Paper #2015-03. Washington, DC: Center for Administrative Records Research and Applications Working Papers. Available at: https://www.census.gov/srd/carra/15_03_Likely_Transgender_Individuals_in_ARs_and_2010Census.pdf.

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composition of the U.S. While this may still over-represent white respondents relative to the makeup of the transgender adult population, this weighting procedure brings the sample closer to what is believed to be the true population distribution for race and ethnicity for transgender people in the U.S.

The standard weight also includes an adjustment to the 18-year-old category, described in more detail below. Additional survey weights were created for the purposes of comparability with federal government and national data sources, including weights for age and educational attainment. The weights for race/ethnicity, age, and educational attainment were each created based on the Census Bureau's 2014 American Community Survey (ACS). For the survey report, these weights were applied in addition to the standard weight ("supplemental weight") when comparing the USTS sample to the U.S. population for items that are sensitive to age and educational attainment, such as individual and household income. Weighted percentages for these and other variables can be found in the "Portrait of USTS Respondents" chapter in the survey report. Unweighted frequencies and percentages for these and other variables can be found in Appendix A (Characteristics of the Sample) in the survey report. Weights were created based on national proportions only and were not created based on state-level or local-level demographics. Researchers should consider which weights would be appropriate for use in future studies and consider developing new weights to address the unique needs of those studies.

In addition to the potential biases described above, the USTS had a high volume of respondents who indicated that their age was 18 years old, and respondents who, based on their birth date, were 17 years old. It should be noted that respondents who reported an age younger than 18 were removed from the final dataset and, therefore, are excluded from all reporting because they were not eligible to participate in the study. It was suspected that the increased "binning" of 18-year-olds may be attributable to multiple factors, including a higher prevalence of respondents who were younger than 18 at the time of the survey who selected the youngest answer option available in the age question (Q. 2.13). This resulted in 18-year-olds comprising 9% of the sample, compared to 19-year-olds comprising 6% of the sample. It is impossible to determine the source of this binning entirely, but in order to correct for it, the research team created a weight to adjust the 18-year-olds in the sample so that they appeared more like the 19-year-old respondents in both sample size and other demographics.

The rationale behind this adjustment is that a person's year of birth is likely randomly distributed around the date in which they took the survey. This would imply that the composition of 18-year-olds should strongly match the composition of 19-year-olds. A sample matching and weighting procedure was used to balance the composition of 18-year-old respondents to 19-year-old respondents. This process is done by using the Covariate Balance Propensity Score (CBPS), which treats the 18-year-olds as a "treatment group" and 19-year-olds as a baseline "control group."³⁰ The estimation procedure then tries to achieve balance on

³⁰ Imai, K. & Ratkovic, M. (2014). Covariate balancing propensity score. *Journal of the Royal Statistical Society, Series B*, 76(1), 243–263.

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covariates used in the model while simultaneously accounting for the conditional probability of being in one group over the other. The former process reduces observable differences among 18-year-olds to make their demographic composition reflect 19-year-olds.³¹ The latter process weights the data such that the two groups are of equivalent size. After weighting, the size of the 18-year-old sample comprises 6%, which is the same as the 19-year-old sample. Any observed demographic differences between 18- and 19-year-olds were minimized, and many failed to reach statistical significance.

The goal of this weighting process is to up-weight respondents who are most likely 18 years old by making them observationally equivalent to the age cohort closest to them (i.e., 19-year-olds) and to down-weight respondents who are less likely to actually be 18 years old. This way, if respondents who were binned at 18 years of age are really younger than 18 years of age, it would be expected that their responses would diverge from 19-year-olds as that age gap increases.³² The weighting process down-weights 18-year-old respondents as they diverge from 19-year-olds, minimizing the influence of that group on the survey's findings. This adjustment for 18-year-olds was included in the standard survey weight applied to all findings in the survey report. When conducting analyses with this dataset, researchers should determine which, if any, weights should be applied based on what adjustments they deem appropriate for their study. However, it is strongly recommended that researchers use the weight to adjust the 18-year-olds (PUDS variable name: weight18yr) in their analyses.

Replicating the Report

The 2015 USTS Public Use Dataset (PUDS) includes many of the unique recodes that were used to produce the findings in *The Report of the 2015 U.S. Transgender Survey* (available online at www.ustranssurvey.org). For instance, recodes were created that combined several variables (such as a measure of “outness” created using Section 4) and/or utilized scales that were “scored” and recoded into categories for analysis (such as the Kessler-6 scale for psychological distress in Q. 12.2). Findings in the report can be replicated by utilizing the appropriate original variables or recoded variables, adjusting the denominator(s) as described in the report (i.e., full sample vs. sub-sample, with missing responses and/or “not applicable” responses removed), and applying the appropriate weight.

³¹ Variables used for covariate balance were based on the following questions: Q. 1.4; Q. 1.10; Q. 1.11; Q. 1.12; Q. 1.14; Q. 1.16; Q. 1.17; Q. 1.18; Q. 2.1; Q. 2.3; Q. 2.4; Q. 2.5; Q. 2.6; Q. 2.7; Q. 2.9; Q. 2.16; Q. 2.17; Q. 2.18; Q. 2.19; Q. 2.22; Q. 2.23; Q. 3.1; Q. 3.2; Q. 3.3; Q. 4.1; Q. 4.3; Q. 4.5; Q. 6.1; Q. 7.7; Q. 7.12; Q. 7.13; Q. 7.14; Q. 10.1; Q. 11.1; Q. 11.2; Q. 12.1; Q. 12.8; Q. 12.12; Q. 12.20; Q. 13.1; Q. 14.1; Q. 15.2; Q. 15.9; Q. 16.3; Q. 16.8; Q. 17.1; Q. 17.2; Q. 17.4; Q. 17.5; Q. 17.6; Q. 17.3; Q. 17.9; Q. 18.1; Q. 18.3; Q. 19.1; Q. 20.1; Q. 20.2; Q. 20.7; Q. 21.1; Q. 21.2; Q. 21.7; Q. 23.1; Q. 23.2; Q. 26.1; Q. 26.6; Q. 27.1; Q. 28.1; Q. 28.2; Q. 29.1; Q. 29.2; Q. 30.4; and Q. 30.6.

³² Prior to weighing, the demographic characteristics of 18-year-olds were more similar to respondents who were identified as being 17 years of age and had less similarity to 19-year-olds. After weighting, there are many more similarities between 18- and 19-year-olds and far less commonality with 17-year-olds.

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To create the findings for the survey report, the data was first analyzed to tabulate individual responses to each of the questions in the survey. The respondents included in each tabulation differed throughout the survey due to certain questions only being asked of a particular subset of respondents and/or due to some respondents choosing not to answer a question (missing data). Analyses were then performed to explore how survey responses differed based on demographic characteristics— such as race, gender, and income—and non-demographic factors—such as experience with sex work, HIV status, and experiences of family support or rejection.

All findings in the report are presented as weighted percentages of the entire sample or of the subgroups being examined. For example, educational attainment is presented as a percentage of the whole sample, while much of the data related to HIV care represent percentages of those respondents who are living with HIV. In limited instances, unweighted frequencies are included where the additional information could be informative and to provide context for the weighted percentages reported. The standard survey weight (PUDS variable name: surveyweight) was applied throughout the report, except where noted. The survey supplemental weight (PUDS variable name: surveyfullweight) was applied when making certain comparisons to U.S. population-based surveys. It is noted in the report where the supplemental weight was applied instead of the standard survey weight.

Percentages in the report are rounded to whole numbers, except in cases where a more exact comparison to U.S. population-based data sources was desired or where more precision was needed due to the reported percentages being small. When rounding to whole numbers, the following convention was generally followed: findings containing decimals of 0.50 and above were rounded up, and findings with 0.49 and below were rounded down (e.g., 1.50% was rounded to 2% and 1.49% was rounded to 1%). Additionally, a finding of 0.49% and below was generally labeled “less than 1%” or “<1%.”

Throughout the report, results are presented in various figures and tables. The percentages in these figures and tables do not always add up to 100% due to respondents being able to select more than one answer to a question (“mark all that apply”) or due to rounding. Throughout the report, U.S. population findings are provided for comparison to USTS findings or to provide context for USTS findings, where available and/or applicable. Where USTS data is compared to data from existing research, the data source is specified. When providing U.S. population comparisons, the research team made efforts to limit the comparisons to adults (18 years and older) to most appropriately match the USTS sample. Whenever that was not possible, notes as to age ranges or other limitations are provided. Additionally, calculations made by the research team when necessary to present U.S. population findings are noted.

Findings in the report are presented without information regarding statistical testing. Due to the large sample size, bivariate statistical tests largely result in statistically significant differences among the groups being compared. Small group differences often will be found to be statistically significant, even when the differences are small and, therefore, not particularly

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meaningful. In writing the report, the research team considered other measures when pointing out meaningful differences among groups, such as a particular cell's contribution to an overall chi-square test statistic and effect sizes. These tests are on file with the research team. Future researchers are encouraged to use additional bivariate and multivariate modeling to provide more nuanced understanding of group differences.