October 8, 2018

Ms. Suzanne H. Plimpton
Reports Clearance Officer
National Science Foundation
2415 Eisenhower Ave., Suite W18253
Alexandria, VA 22314
Via regulations.gov and email

RE: National Science Foundation; Intent To Seek Approval To Renew An Information Collection For Three Years; Notice and request for comments; 2019 Survey of Doctorate Recipients **(Federal Register Doc. 2018-17359)**

Dear Ms. Plimpton:

We are grateful for the opportunity to comment on the National Science Foundation's proposed information collection request related to the 2019 Survey of Doctorate Recipients (SDR). *See* 83 Fed. Reg. 40340 (August 14, 2018). We are a group of 17 scientific organizations and associations of higher education, including the American Association for the Advancement of Science and American Association of University Professors, and 243 scientists and engineers, including 17 members of the National Academies, committed to promoting diversity in science, technology, engineering, and math (STEM) fields and inclusion of under-represented groups in our nation's STEM workforce. We write jointly with 8 scholars at the Williams Institute and other institutions who have long worked with federal agencies to improve data collection on the U.S. population and have produced widely-cited best practices for the collection of sexual orientation and gender identity information on population-based surveys.[1] The Williams Institute is an interdisciplinary center at the UCLA School of Law dedicated to rigorous and independent research on sexual orientation and gender identity, including on employment and education of lesbian, gay, bisexual, and transgender (LGBT) people.

Our comments address the importance and feasibility of including sexual orientation and gender identity measures on the SDR and related surveys administered by the National Science Foundation's National Center for Science & Engineering Statistics, including the National Survey of College Graduates (NSCG) and the Survey of Earned Doctorates (SED). Incorporating measures of sexual orientation and gender identity into the SDR, NSCG, and SED would enhance the quality and utility of the information collected, because doing so would provide vital

[1] *See* Sexual Minority Assessment Research Team (SMART), Williams Institute, *Best Practices for Asking Questions about Sexual Orientation on Surveys* (2009), https://williamsinstitute.law.ucla.edu/wp-content/uploads/SMART-FINAL-Nov-2009.pdf; Gender Identity in U.S. Surveillance (GenIUSS) Group, Williams Institute, *Best Practices for Asking Questions to Identify Transgender and Other Gender Minority Respondents on Population-Based Surveys* (2014), https://williamsinstitute.law.ucla.edu/wp-content/uploads/geniuss-report-sep-2014.pdf.

data on the participation of LGBT people, also called sexual and gender minorities, in STEM education and their representation in our nation's STEM workforce.

Like race, sex, and other personal demographic data already collected on the SDR, NSCG, and SED,[2] data on the sexual orientation and gender identity of college graduates and doctoral degree holders in STEM fields would enhance the ability of the National Science Foundation, the Census Bureau, the National Science Board, and the surveys' co-sponsoring agencies – the National Institutes of Health, Department of Education, Department of Agriculture, National Endowment of the Humanities, and National Aeronautics and Space Administration – to improve the understanding of the U.S. STEM workforce. Collecting sexual orientation and gender identity information would increase the utility of official reports, including the National Science Board's *Science & Engineering Indicators* report and the National Science Foundation's *Women, Minorities, and Persons with Disabilities in Science and Engineering* report. These reports and data from the SDR, NSCG, and SED more generally are used not only by their sponsoring agencies but also by policymakers, the Office of Management and Budget, the Office of Science and Technology Policy, state and local government agencies, and educational and research institutions across the nation. Adding sexual orientation and gender identity information would further these reports' goals of providing important information on the condition and progress of the nation's STEM fields, including demographic trends, and of understanding and strengthening the participation of under-represented groups in the U.S. STEM workforce and U.S. undergraduate and graduate programs.

I. Including Sexual Orientation and Gender Identity Measures in the SDR, NSCG, and SED Would Enhance the Quality and Utility of the Information Being Collected

As in previous versions of the survey, the proposed 2019 SDR would collect some types of personal information from respondents, including race, ethnicity, sex, age, income, and disability status,[3] which we support. However, while the proposed SDR would collect a variety of personal demographic information from respondents, it would not collect data on respondents' sexual orientation or gender identity. Including measures of sexual orientation and gender identity in the SDR (as well as the NSCG and SED) would enhance the quality and utility of the information being collected.

There has been a growing recognition of the need to measure sexual orientation and gender identity in the STEM workforce.[4] As summarized last month in the scientific journal *Nature*, recent studies show that LGBT people are experiencing disadvantages and disparities in STEM fields similar to other under-represented groups, such as racial and ethnic minorities and

[2] We note that some demographic information (e.g., race, sex) is not re-collected on the NSCG or SDR if already collected from a given respondent in a previous survey cycle (or, for the SED, if previously collected from the SDR). Throughout our comment, by collection of demographic information we refer to the availability of that information, whether it is collected on a present or previous cycle.

[3] National Science Foundation, National Center for Science and Engineering Statistics, *Survey of Doctorate Recipients* (2018), https://www.nsf.gov/statistics/srvydoctoratework

[4] Wimberly, G. L. (2015). Conclusion and recommendations for further research. In G.L. Wimberly (Ed.), *LGBTQ Issues in Education: Advancing a Research Agenda*, pp. 237–251. American Educational Research Association. https://books.google.com/books?hl=en&lr=&id=2YElDwAAQBAJ

women.[5] Estimates suggest that LGBT people are approximately 20% less represented in STEM fields than expected based on their prevalence in the U.S. population.[6] A 2018 study found that sexual-minority undergraduates were 8% more likely than their heterosexual counterparts to drop out of STEM majors, even though they were more likely to pursue relevant research experience – a pattern commonly associated with difficulties in retaining women and racial and ethnic minorities in STEM fields due to a non-supportive STEM culture.[7]

Indeed, several studies have shown that LGBT people encounter non-supportive environments in STEM fields. LGBT people report more negative workplace experiences in STEM fields than do non-LGBT people in those same fields, or than do LGBT people in non-STEM industries.[6] Among sexual-minority STEM faculty members who are 'out' about their sexual orientation, 69% report feeling uncomfortable in their academic department, which is related to exclusion and harassment they report.[8] Some STEM fields, such as chemistry, have conducted surveys on the professional environment that included questions of sexual orientation and gender identity. In a 2016 survey in chemistry, 44% of LGBT people reported that they were harassed, intimidated, or excluded at work.[9]

As noted by the 2018 National Academies' *Measuring the 21st Century Science and Engineering Workforce Population: Evolving Needs* report, the science and engineering workforce "is becoming increasingly diverse…in terms of gender, race/ethnicity, and other characteristics".[10] In this respect, the report highlights an evolving need:

> Future recruitment, growth, and development of the nation's scientists and engineers will depend on greater understanding not only of the diverse composition of the science and engineering workforce but also of the factors that facilitate or impede the entry, retention, and advancement of underrepresented groups in the workforce.[10]

Inclusion of sexual orientation and gender identity measures on the SDR, NSCG, and SED would directly address such evolving needs identified by the National Academies. Doing so would provide important data regarding how LGBT people navigate the STEM environment – from their undergraduate and graduate education through to the workforce – and where they may experience barriers to entering or remaining in STEM fields. Such data would also provide information about the experiences of LGBT people in STEM more generally, including, for

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[5] Freeman, J. B. LGBTQ scientists are still left out, 36 *Nature*, *559*, pp. 27-28 (July 3, 2018).
[6] Cech, E. A., and Pham, P.V. Queer in STEM organizations: Workplace disadvantages for LGBT employees in STEM related federal agencies. *Social Sciences* 6.1 (2017); Cech, Erin A. "LGBT professionals' workplace experiences in STEM-related federal agencies." *Proceedings of the 2015 American Society for Engineering Education (ASEE) National Conference, Seattle, WA, USA*. 2015., https://peer.asee.org/lgbt-professionals-workplace-experiences-in-stem-related-federal-agencies
[7] Hughes, B.E., 2018. Coming out in STEM: Factors affecting retention of sexual minority STEM students. *Science advances*, *4*(3), p.eaao6373.
[8] Patridge, E.V., Barthelemy, R.S. and Rankin, S.R., 2014. Factors impacting the academic climate for LGBQ STEM faculty. *Journal of Women and Minorities in Science and Engineering*, *20*(1).
[9] Wang, L (2016) LGBT chemists seek a place at the bench. *Chemical Engineering and News, 94:41*, 18–20.
[10] National Academies, *Measuring the 21st Century Science and Engineering Workforce Population: Evolving Needs* (2018), https://www.nap.edu/catalog/24968/measuring-the-21st-century-science-and-engineering-workforce-population-evolving

example, whether they are satisfied with their jobs, receiving sufficient professional support, or experiencing pay inequality.

There are many potential uses of sexual orientation and gender identity data in STEM workforce surveys. For example, such data would inform institutions, agencies, and researchers developing strategies to address under-representation or career or educational barriers experienced by LGBT people. Reports based on SDR, NSCG, and SED data, including the *Science & Engineering Indicators* and *Women, Minorities, and Persons with Disabilities in Science and Engineering* reports, are routinely used by policymakers overseeing diversity initiatives at educational and research institutions across the nation and at funding agencies, including the National Science Foundation and National Institutes of Health. Data on LGBT representation could therefore similarly inform such diversity programs, as these programs may be interested to address under-representation of LGBT people in specific STEM fields and career stages, if and where it exists. As with other under-represented groups, such diversity initiatives could include fellowships for doctoral students, scholarships for undergraduate students, or recruitment strategies for faculty, graduate students, and/or postdoctoral researchers. More generally, the data would also inform research aimed at developing interventions or paradigms to reduce disadvantages experienced by LGBT scientists and engineers.

In short, including sexual orientation and gender identity measures in the SDR, NSCG, and SED would increase the quality and utility of the information collected, because such data would enhance the understanding of diverse and under-represented groups' participation in STEM education and their representation in the STEM workforce.

II. Importance of Governmental Data Collection on Sexual Orientation and Gender Identity (SO/GI); SO/GI Data Collection is Becoming Increasingly Common

Adding sexual orientation and gender identity measures to the SDR, NSCG, and SED would reflect a growing trend among federal, state, and other data collections that include demographic measures. This trend is responsive to a need succinctly described by the Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys:

> At a time when sexual and gender minority (SGM) populations are becoming more visible in social and political life, there remains a lack of data on the characteristics and well-being of these groups. In order to understand the diverse needs of SGM populations, more representative and better quality data need to be collected.[11]

A growing number of federal government surveys allow people to voluntarily disclose their sexual orientation and/or gender identity. Examples of federal government surveys that collect these data include the National Health Interview Survey, Behavioral Risk Factor

[11] Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys, *Current Measures of Sexual Orientation and Gender Identity in Federal Surveys* (2016), https://s3.amazonaws.com/sitesusa/wp-content/uploads/sites/242/2014/04/WorkingGroupPaper1_CurrentMeasures_08-16.pdf.

Surveillance System, Youth Risk Behavior Surveillance System, National Survey for Family Growth, and National Crime Victimization Survey, among others.[11] Further, several state and local government surveys also collect data on sexual orientation and gender identity, such as the California Health Interview Survey,[12] as do several large surveys administered by private entities, most notably Gallup through its Daily Tracking Survey.[13]

While more and better data are needed, governmental and other data collections that include measures of sexual orientation and gender identity have allowed researchers to begin to describe the size of the LGBT population and LGBT people's demographics; employment, housing, and family circumstances; health and well-being; and the discrimination and disparities they face. These data are vital to policymaking in order to ensure that stereotypes and myths are not driving policies that impact LGBT people, and so that programs and services are appropriately targeted at vulnerable LGBT populations. For example, we now know that there are an estimated 11 million LGBT individuals living in the U.S.[13] We also know from the data that the LGBT population is remarkably diverse and that the experiences of LGBT people are not uniform but, rather, are shaped by factors such as race, ethnicity, socioeconomic status, geographical location, primary language, education, disability, religion, family composition, and age.[14] We have also learned that LGBT people are more likely to be in poverty than non-LGBT people,[15] contrary to the popular stereotype of LGBT affluence, and that LGBT people face persistent and pervasive discrimination in employment, housing, educational, and other important settings.[16] Noting the disadvantages LGBT people are facing in STEM fields (see Section I), the inclusion of sexual orientation and gender identity measures in STEM workforce surveys (SDR, NSCG, and SED) would provide similarly vital information about the experiences, career trajectory, and representation of LGBT people in STEM fields.

III. Experience Indicates SDR, NSCG, and SED Respondents Would Willingly and Accurately Disclose Their Sexual Orientation And Gender Identity

Federal and other population-based surveys that collect sexual orientation and gender identity data indicate SDR, NSCG, and SED respondents would be willing and are able to answer questions about their sexual orientation and gender identity, and doing so would not raise privacy or other concerns. As an initial matter, we note that the National Science Foundation's National Center for Science & Engineering Statistics and the Census Bureau (who directly administers the NSCG) remove respondents' names and other identifying information, in

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[12] National Cancer Institute, Division of Cancer Control and Population Sciences, *National Health Interview Survey* (2018), https://healthcaredelivery.cancer.gov/chis

[13] Gallup, *In U.S., Estimate of LGBT Population Rises to 4.5%* (2018), https://news.gallup.com/poll/234863/estimate-lgbt-population-rises.aspx

[14] Institute of Medicine, *The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding* (2011), http://www.iom.edu/Reports/2011/The-Health-of-Lesbian-Gay-Bisexual-and-Transgender-People.aspx.

[15] Badgett et al., Williams Institute, *New Patterns of Poverty in the Lesbian, Gay, and Bisexual Community* (2013), http://williamsinstitute.law.ucla.edu/wp-content/uploads/LGB-Poverty-Update-Jun-2013.pdf.

[16] *See, e.g.*, Pizer et al., Evidence of Persistent and Pervasive Workplace Discrimination Against LGBT People, 45 Loy. L.A. L. Rev 715 (2012); James et al., Nat'l Ctr. for Transgender Equality, *Report of the 2015 U.S. Transgender Survey* 44-45 (2016), http://www.transequality.org/sites/default/files/docs/usts/USTS%20Full%20Report%20-%20FINAL%201.6.17.pdf.

addition to other measures, to protect respondents' confidentiality. And federal law protects the confidentiality of individually identifiable information collected by these agencies.[17]

Experience shows that respondents are willing to answer questions about their LGBT status. Indeed, the Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys has explained that "[m]ost surveys incorporating [sexual orientation and gender identity] items have not found higher nonresponse rates than other 'sensitive' questions, such as personal or household income."[18] Likewise, federal surveys incorporating these measures and other research demonstrate that including sexual orientation and gender identity questions does not cause survey breakoff.[19]

Although nearly all college graduates and doctoral degree holders taking the SDR, NSCG, and SED are adults, the sample includes those who would be considered young adults. Experiences with other federal government and population-based surveys show that youth and young adults are capable and willing to answer questions about sexual orientation and gender identity. For example, as the Sexual Minority Assessment Research Team report explained, "[s]exual orientation questions have been asked on large-scale school-based surveys of adolescents around the world since the mid-1980's."[1] For instance, the National Survey of Youth in Custody includes a measure of sexual orientation,[20] and the National Youth Risk Behavior Survey successfully includes respondents as young as 13 and has included sexual orientation measures since 2015. The National Survey of Family Growth, which includes respondents as young as 15, has included a sexual orientation behavior measure for many years.[21]

While sexual orientation and gender identity data should be treated with the same concern for confidentiality of respondents as any other demographic category, there is no rational basis to single out the questions on sexual orientation and gender identity as warranting special concern about the sensitivity of this type of information. As noted above, sexual orientation and gender identity measures do not have materially higher non-response rates than other potentially

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[17] U.S. Census Bureau, National Survey of College Graduates, Frequently Asked Questions (2018), https://www.census.gov/programs-surveys/nscg/respondent/faqs.html

[18] Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys, *Current Measures of Sexual Orientation and Gender Identity in Federal Surveys* (2016), https://s3.amazonaws.com/sitesusa/wp-content/uploads/sites/242/2014/04/WorkingGroupPaper1_CurrentMeasures_08-16.pdf; *see also* Saewyc, E.M. et al., Measuring sexual orientation in adolescent health surveys: Evaluation of eight school-based surveys, 35 *J. of Adolescent Health* 345 (2004) ("These studies indicate that orientation items, although sensitive questions, are no more sensitive or more likely to be skipped than other sexual risk behavior questions. This finding can reassure researchers and school administrators who are concerned that such items might be too sensitive for most students to answer, and who worry that nonresponse rates will render the results inaccurate and of limited use.").

[19] *See, e.g.*, Landers et al., Presentation: Developing Data for Advocacy (National LGBTI Health Summit: 2007); Case, *Disclosure of Sexual Orientation and Behavior in the Nurses' Health Study II: Results from a Pilot Study*, 51 J. Homosexuality 13 (2006).

[20] Bureau of Justice Statistics, Data Collection: National Survey of Youth In Custody (NSYC), https://www.bjs.gov/index.cfm?ty=dcdetail&iid=321 (last visited May 5, 2018); Bureau of Justice Statistics, NYSC Questionnaire—Younger Youth 5 (2011) https://www.bjs.gov/content/pub/pdf/nsyc_yy12.pdf; Bureau of Justice Statistics, NYSC Questionnaire—Older Youth, 5 (2011), https://www.bjs.gov/content/pub/pdf/nsyc_oy12.pdf.

[21] *See* Anjani Chandra et al., Sexual Behavior, Sexual Attraction, and Sexual Identity in the United States: Data From the 2006–2008 National Survey of Family Growth, 36 *National Health Statistics Reports* 1 (Mar. 3, 2011), https://www.cdc.gov/nchs/data/nhsr/nhsr036.pdf.

sensitive personal questions. Moreover, according to the Federal Interagency Working Group, "[the] perceived sensitivity of questions can affect the willingness of survey practitioners to include [sexual orientation and gender identity] questions even when inclusion of these measures would support agency mission and data needs."[22] In this case, the inclusion of these measures strongly supports the mission of the National Science Foundation and furthers the goals of several federal agencies, as described in Section I.

We recognize that sexual orientation and gender identity questions could be sensitive for certain respondents, although there is no reason to believe they would be more sensitive than other questions, such as income or disability status. And even if the sexual orientation and gender identity questions would be sensitive for some respondents, the questions would be voluntary, as is the case in other federal government surveys and recommended by the Federal Interagency Working Group. Thus, no respondent would be forced to answer these questions. In other federal government surveys, these questions frequently have "don't know" and "something else" or "none of these" response options, giving respondents options for responding to these questions if they are uncomfortable disclosing or unsure about their sexual orientation or gender identity.[1] In addition, as described earlier, responses are highly confidential and are strongly protected under federal law.

In short, previous experiences in governmental and other data collection suggest that SDR, NSCG, and SED respondents will not encounter any issues in willingly and accurately disclosing information about sexual orientation and gender identity. Nor will such disclosures introduce issues of confidentiality or privacy, a high non-response rate, or survey breakoff.

IV. The SDR, NSCG, and SED Have Sufficiently Large Samples to Produce Reliable Estimates Related to Sexual Orientation And Gender Identity

The Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys cautions that small samples may lead to significant errors in estimation and description and/or an inability to produce reliable estimates related to sexual orientation and gender identity.[22] However, the current sample sizes of the SDR, NSCG, and SED are all sufficiently large, and thus there is no rational basis for concerns related to small sample sizes in the context of these STEM workforce surveys.

For instance, recent versions of other federal government surveys, such as the National Health Interview Survey and National Survey of Family Growth, entailed sample sizes of approximately 87,500 [23] and 10,000,[24] respectively, and both surveys currently collect information about sexual orientation. Sample sizes of the SDR, NSCG, and SED are far larger:

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[22] Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys, *Evaluations of Sexual Orientation and Gender Identity Survey Measures: What Have We Learned?* (2016), https://s3.amazonaws.com/sitesusa/wp-content/uploads/sites/242/2014/04/Evaluations_of_SOGI_Questions_20160923.pdf.

[23] Center for Disease Control and Prevention, *National Health Interview Survey* (2018), https://www.cdc.gov/nchs/nhis/about_nhis.htm

[24] Center for Disease Control and Prevention, *National Survey of Family Growth* (2018) https://www.cdc.gov/nchs/nsfg/about_nsfg.htm

the NSCG has a sample of approximately 135,000, the SDR approximately 120,000, and the SED approximately 55,000.[10] Thus, concerns of small sample size are unwarranted.

The SDR, NSCG, and SED routinely ask about race and ethnicity information, and many of the race and ethnicity classifications have a prevalence in the U.S. population that is smaller than that of LGBT people. For instance, the 2017 *Women, Minorities, and People with Disabilities in Science and Engineering* report provides recent estimates of each race and ethnicity classification's prevalence in the U.S. population, so as to permit comparison with corresponding percentages in science and engineering fields. For the following four race and ethnicity classifications included in the 2017 report (and collected in the SDR, NSCG, and SED), their prevalence estimate in the U.S. population is:

- Asian: 5.3%
- American Indian or Alaska Native: 0.7%
- Native Hawaiian or other Pacific Islander: 0.2%
- Two or more races (not Hispanic): 2.0% [25]

Despite being quite small, STEM workforce surveys currently provide full data on each of these race and ethnicity classifications. Most recent estimates of the prevalence of LGBT people in the U.S. adult population, according to the Gallup's 2017 Daily Tracking Survey (n=340,604), is 4.5%.[13] This prevalence is roughly on par or only slightly smaller than that of the U.S. Asian population, and is considerably higher than those of the other three race and ethnicity classifications. Thus, the SDR, NSCG, and SED currently collect information on race and ethnicity classifications that have expected samples smaller than those of LGBT people.

Finally, reports of SDR, NSCG, and SED data, such as the *Women, Minorities, and People with Disabilities in Science and Engineering* report, typically suppress a cell of data only if the sample constituting that data cell is less than 0.1% (due to concerns of an unreliable estimate or that so few respondents raises concerns of identifiability), and this is far lower than 4.5%. Dividing into specific subgroups and intersections with other demographic information in theory could lead to subgroup samples constituting less than 0.1% or where concerns of unreliability of identifiability are relevant. However, as with the race and ethnicity classifications currently collected with even smaller samples, such specific LGBT subgroup data could be suppressed wherever necessary. That certain subgroups or intersections may have overly small sample sizes does not warrant the wholesale exclusion of sexual orientation and gender identity information more generally.

Given that federal surveys with smaller sample sizes than the SDR, NSCG, and SED already currently collect sexual orientation and gender identity information, and that these STEM workforce surveys routinely collect information related to race and ethnicity classifications that have smaller prevalence in the U.S. population than LGBT people, concerns of unreliable or invalid estimates of LGBT people in STEM workforce surveys have no substantive support.

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[25] National Science Foundation, National Center for Science & Engineering Statistics, *2017 Women, Minorities, and Persons with Disabilities in Science and Engineering Report* https://www.nsf.gov/statistics/2017/nsf17310/data.cfm

V. Conclusion

The National Science Foundation is committed to promoting diversity in STEM fields and providing resources to ensure that science and engineering are inclusive to all.[26] Collecting sexual orientation and gender identity data on the SDR, NSCG, and SED would provide vital information about LGBT participation in the STEM pipeline – from undergraduate and graduate education through to the workforce – and LGBT representation among our nation's scientists and engineers. This information would enhance the ability of the National Science Foundation and other federal agencies to provide critical data and support to the scientific community and to advance the future of the U.S. STEM workforce.

Thank you for your consideration. We look forward to opportunities to discuss with you further. Please direct any correspondence to jon.freeman@nyu.edu.

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American Educational Research Association (AERA)

American Psychological Association (APA)

Association of Population Centers (APC)

[26] National Science Foundation, Office of the Director, *Broadening Participation* (2018), https://www.nsf.gov/od/broadeningparticipation/bp.jsp

American Society for Engineering Education (ASEE)

Consortium of Social Science Associations (COSSA)

Federation of Associations in Behavioral and Brain Sciences (FABBS)

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