

March 4, 2021

OMB Desk Officer for National Science Foundation
Office of Information and Regulatory Affairs
White House Office of Management and Budget
725 17th Street, NW
Washington, DC 20503

Ms. Suzanne H. Plimpton
Reports Clearance Officer
National Science Foundation
2415 Eisenhower Ave.
Alexandria, VA 22314

CC: Office of the U.S. Chief Statistician, *via* Dr. Dominic Mancini, Acting Administrator,
OMB Office of Information and Regulatory Affairs

Office of the U.S. Chief Technology Officer, *via* Mr. Kei Koizumi, Acting Director,
White House Office of Science and Technology Policy

Via reginfo.gov and email

RE: National Science Foundation; Notice of Submission for OMB Review; 2022-
2023 Survey of Earned Doctorates (**Federal Register Doc. 2021-02449**)

Dear OMB and NSF Officials:

We are writing to request that the Office of Management and Budget (OMB) require amendment of the National Science Foundation's (NSF) proposed information collection request related to the 2022 and 2023 Survey of Earned Doctorates (SED) to allow for inclusion of sexual orientation and gender identity (SOGI) demographic questions. *See* 86 Fed. Reg. 8385 (February 5, 2021). This public comment is in line with our previous comments regarding the SED and other NSF National Center for Science & Engineering Statistics (NCSES) surveys, including the National Survey of College Graduates (NSCG) and Survey of Doctorate Recipients (SDR), which were submitted to the Federal Register in August 2018, June 2020, and October 2020 and are appended below. Our initial comment was cosigned by 17 scientific organizations and authorities in higher education research, including the American Association for the Advancement of Science (AAAS) and the American Educational Research Association (AERA), and 244 scientists, engineers, and legal and policy scholars, including 17 members of the National Academies.

We urge OMB and NSF to work together to ensure, prior to OMB's approval, that NSF either 1) add SOGI demographic questions to the SED; or 2) initiate piloting of a sexual

orientation measure for NCSES surveys, complementing NSF's recently initiated piloting of a gender identity measure. We also urge OMB and NSF to encourage the interagency Equitable Data Working Group established by Executive Order 13985 and co-chaired by the U.S. Chief Statistician and U.S. Chief Technology Officer to include federal-wide SOGI data in its purview; this would not only facilitate SOGI questions on NCSES surveys, but further promote LGBTQ equity in higher education, the STEM workforce, and American society at large (see Section I).

OMB has already approved the use of SOGI questions for highly similar surveys of other federal agencies, such as the Department of Education's 2016-2020 Baccalaureate & Beyond Longitudinal Study¹, among many others.² NSF has also stated to OMB³ and publicly to the media⁴ that it would initiate piloting of SOGI questions. Stakeholders urgently need SOGI data, and further delays will incur costs for the U.S. STEM enterprise and lead NSF to fall short of its Congressionally mandated responsibilities. A recent National Academies' 2020 report documented the importance of SOGI data collection across the federal government and explicitly recommended that NSF add SOGI questions to NCSES surveys, including the SED.⁵

Key Takeaways:

- I. NCSES should immediately initiate piloting of a sexual orientation measure for its surveys; OMB and NCSES should also urge the Equitable Data Working Group established by Executive Order 13985 to include federal-wide SOGI data in its purview.
- II. Stakeholders urgently need SOGI data from NCSES surveys, and further delays will incur costs for the U.S. STEM enterprise.
- III. NCSES' stated concerns about adding SOGI questions (i.e., small samples and estimation; sensitivity, privacy, and confidentiality; identifiability) are not supported by evidence.
- IV. OMB has already approved SOGI questions for many population-based surveys, and federal statistical experts have studied them and recommend their inclusion.

I. NCSES Should Pilot a Sexual Orientation Measure, And OMB and NCSES Should Urge the Equitable Data Working Group to Include Federal-Wide SOGI Data In Its Purview

NCSES initially stated at an October 2018 meeting that it would begin piloting SOGI questions, which was estimated to take two months and produce preliminary results by early 2019. NCSES delayed the piloting for two years, citing limited time and resources.⁶ Finally, as was publicly reported, NSF has indicated that NCSES will be piloting a two-step gender identity measure as part of the 2021 NSCG's non-production survey panel ($n = 5,000$).⁷ While we are grateful that NCSES heeded the recommendations of our October 2020 public comment with respect to piloting gender identity, NCSES' continued omission of a sexual orientation measure from the pilot when it had the clear opportunity to add such a measure is unfortunate.

Numerous other agencies, including the Census Bureau and Department of Education, have already extensively piloted and implemented both sexual orientation and gender identity questions for similar surveys (see Section IV). Asking about sexual orientation on NCSES surveys does not raise unique concerns of sensitivity, privacy, confidentiality, or identifiability (see Section III), and many other population-based federal surveys collect data on sexual orientation, such as the Baccalaureate & Beyond Longitudinal Study¹ and National Health Interview Survey² (see Section IV). Moreover, analyses of such federal surveys have already

demonstrated alarming disparities in STEM related to sexual orientation (see Section II) that inclusion in NCSES surveys would help address.⁸ NCSES' omission also directly contradicts the National Academies' 2020 recommendation that NCSES add SOGI items to its surveys.⁵ Thus, NCSES should immediately initiate piloting of a sexual orientation measure. Specifically, a sexual orientation measure (as well as a two-step gender identity measure) should be included in the upcoming 2021 SDR's non-production survey panel ($n = 5,000$) (*see* 86 Fed. Reg. 8384).

We understand that NCSES may prefer to delay adding SOGI questions to its surveys until federal-wide standards on SOGI data collection are established. Indeed, such federal-wide standards would have enormous benefits for LGBTQ equity in American society and could be implemented in a manner similar to OMB Statistical Policy Directive No. 15, which standardized federal data collection of race and ethnicity.⁹ Last year, the U.S. Supreme Court ruled that the 1964 Civil Rights Act prohibits LGBTQ discrimination in employment,¹⁰ and President Biden's Executive Order (EO) 13988 strengthened LGBTQ anti-discrimination protections and extended them into the domains of education, housing, and immigration.¹¹ Thus, adding SOGI questions not only to NCSES surveys but other employment, education, housing, and immigration-related data collections across the federal government will be necessary to fully enforce such protections; this underscores the need for federal-wide SOGI data standards. Such standards will also be crucial in meeting new federal LGBTQ equity requirements established by President Biden's EO 13985 on advancing equity.

With President Biden's signing of EO 13985 on equity,¹² OMB and NCSES have a critical opportunity to facilitate the development of federal-wide SOGI data standards. EO 13985 established an interagency Equitable Data Working Group (EDWG), co-chaired by the U.S. Chief Statistician and U.S. Chief Technology Officer.¹² Its members include the OMB Director and agency representatives as to be determined by the co-chairs. The EDWG is tasked with "expand[ing] and refin[ing] the data available to the Federal Government to measure equity and capture the diversity of the American people." While EO 13985, Sec. 2, defines equity as including that of LGBTQ people, SOGI are not explicitly described as demographic variables under the EDWG's purview. Instead, EO 13985, Sec. 9, where such variables are described, is ambiguous in only stating that "[m]any Federal datasets are not disaggregated by race, ethnicity, gender, disability, income, veteran status, or other key demographic variables" and that "[t]his lack of data has cascading effects and impedes efforts to measure and advance equity."

We urge OMB and NCSES to encourage the EDWG to include SOGI data as part of its purview, including federal-wide SOGI data standards. This would not only facilitate the inclusion of SOGI questions on NCSES surveys, but further promote LGBTQ equity in STEM, higher education, and American society more broadly. In anticipation of their appointments, OMB and NCSES should convey their interest in federal-wide SOGI data to the Office of the Chief Statistician (OMB) and the Office of the Chief Technology Officer (White House Office of Science and Technology Policy). The OMB Director is already represented on the EDWG, and NCSES should call for its representation on the EDWG as well. The urging of federal-wide SOGI data standards via the EDWG should occur in parallel with NCSES' own piloting of SOGI questions, including NCSES initiating piloting of a sexual orientation measure by including SOGI items on the upcoming 2021 SDR's non-production survey panel (*see* 86 Fed. Reg. 8384).

II. Stakeholders Urgently Need Sexual Orientation and Gender Identity (SOGI) Data: Further Delays Will Incur Costs for the U.S. STEM Enterprise

For years, the U.S. STEM enterprise has faced a crisis, with the demand for STEM jobs having rapidly outpaced its supply.¹³ For instance, some estimates suggest that a total of 2.4 million STEM jobs went unfilled in 2018 due to a lack of qualified STEM workers.¹³ Although the long-term effects of the coronavirus pandemic on STEM labor markets remain uncertain, it is reasonable to assume that U.S. STEM fields will continue to face urgent STEM talent gaps. A key solution identified by Congress is to broaden the participation of underrepresented groups, as “underrepresented populations are the largest untapped STEM talent pools in the United States”, with Congress declaring in 2015 that “the United States should encourage full participation of individuals from underrepresented populations in STEM fields” (42 U.S.C. § 1862).

Although NCSES has not tracked the STEM participation of LGBTQ people via its surveys, evidence for LGBTQ people’s underrepresentation in STEM and other disparities is now substantial. LGBTQ people are estimated to be 17-21% less represented in STEM fields than statistically expected, and they are less likely than non-LGBTQ people to major in STEM, persist in STEM, earn STEM degrees, and be in STEM occupations.⁸ Estimates suggest that the U.S. may have lost approximately 54,000-121,000 LGBTQ people who would currently otherwise be in the STEM workforce.⁸ Data suggest that these disparities are due to non-supportive STEM environments and harmful biases.⁸ For instance, LGBTQ people in STEM are far more likely to face career barriers, workplace harassment, and professional devaluation than their non-LGBTQ counterparts in STEM.¹⁴

Unlike NCSES, other agencies that collect data on scientific workers such as the National Institutes of Health (NIH) have regularly included SOGI questions on surveys. For instance, a 2019 NIH survey found that across the NIH research workforce LGBTQ people faced some of the highest amounts of harassment and discrimination.¹⁵ Because NCSES omits SOGI questions, researchers have been forced to look to other population-based federal surveys that do collect SOGI data, such as the National Health Interview Survey, to examine these issues; such analyses have demonstrated large and robust LGBTQ disparities in STEM.¹⁶ By not collecting and properly tracking SOGI data, NCSES is preventing NSF, NIH, other federal agencies, Congress, and STEM stakeholders from addressing the challenges and educational and career barriers LGBTQ people are facing in STEM. As such, NSF is falling short of its mandate to “[ensure] the full use of human resources in science and engineering” (42 U.S.C. § 1885).

III. NCSES’ Stated Concerns About SOGI Questions Are Not Supported by Evidence

NCSES initially raised two concerns regarding SOGI questions. It stated in July 2018 that its survey populations “are not likely to have sufficient sample to produce reliable estimates. The comparatively small population of [LGBTQ] persons in the United States suggests that relatively small sampling or reporting errors can lead to significant errors in estimation and description.” NCSES’ second concern was that “[g]ender and sexuality can be sensitive topics in American society, and the privacy and confidentiality of respondents must be handled with care.” These concerns were addressed in our August 2018 comment and in our meeting with NCSES leadership in October 2018, after which NCSES stated piloting of SOGI questions would be

initiated. In NCSSES' July 2020 response to our more recent public comment, it identified a new concern: "A challenge is that some of our respondent populations are small and specialized when compared to populations surveyed by other agencies. These population attributes raise identifiability concerns. Developing and evaluating new questions requires us to calibrate federal requirements for accuracy with a need to protect privacy. In particular, we want to include the most accurate questions possible while avoiding a significant likelihood that the resulting data can be used to identify individual persons. Given the nature of our respondent populations, this calibration exercise is a significant task." We address each concern below.

Concern of small samples and estimation issues. The current sample sizes of the SED and other NCSSES surveys are all sufficiently large. Other federal surveys, such as the National Health Interview Survey; the Census Barriers, Attitudes, and Motivators Survey; and the Baccalaureate & Beyond Longitudinal Study, entailed sample sizes of 87,500, 55,000, and 28,000, respectively, and these surveys routinely collect SOGI information. The sample sizes of NCSSES surveys are far larger: SED $n = 55,000$; NSCG $n = 164,000$; SDR $n = 120,000$. Moreover, many of the race and ethnicity classifications tracked by NCSSES surveys have a prevalence in the U.S. population that is far smaller than that of LGBTQ people. The most recent estimate of the prevalence of LGBTQ people in the U.S. population is 5.6%.¹⁷ Thus, LGBTQ people have a higher prevalence in the U.S. than several other racial and ethnic groups that have long been measured in NCSSES surveys, including Asians (5.3%), American Indians or Alaska Natives (0.7%), and Native Hawaiian or other Pacific Islanders (0.2%).¹⁸ As NCSSES surveys have larger samples than other federal surveys currently collecting SOGI data, and NCSSES surveys have long tracked race and ethnicity classifications that are less prevalent in the U.S. than LGBTQ people, NCSSES' concerns of small samples and estimation issues are unwarranted.

Concern of sensitivity, privacy, and confidentiality. Government surveys on the U.S. population have allowed respondents to voluntarily disclose SOGI data for many years, and the privacy and confidentiality of any personally identifiable data in NCSSES surveys are strongly protected by federal law. NCSSES and the Census Bureau (who administers the NSCG) remove names and all identifying information, as well as take other measures out of an abundance of caution (e.g., suppress data cells with too few respondents), to protect confidentiality. In fact, the Federal Interagency Working Group on Improving Measurement of SOGI in Federal Surveys warned that it is these types of misguided concerns that often prevent federal agencies from adopting SOGI measures even when "inclusion of these measures would support agency mission and data needs" and even though the concerns are inconsistent with past survey experience.¹⁹ For instance, SOGI questions in federal surveys do not cause issues such as survey break-off or high non-response rates, and they behave on par with other potentially sensitive questions, such as income or disability. Moreover, SOGI questions are voluntary, and options such as "I don't know" or "I don't wish to respond" are always available.¹⁹ NCSSES' singling out of SOGI questions as raising unique concerns of sensitivity, privacy, or confidentiality is not justified.

Concern of identifiability. OMB provides clear guidance on the issue of identifiability in Statistical Policy Working Paper 22, including detailed procedures for federal statistical agencies to use, namely data suppression techniques, and NCSSES already uses such techniques in the data it makes available.²⁰ As mentioned earlier, many of the race and ethnicity classifications measured by NCSSES surveys have a prevalence in the U.S. that is smaller than that of LGBTQ

people, including Asians, American Indians or Alaska Natives, and Native Hawaiian or other Pacific Islanders. Neither do OMB guidance or the Interagency SOGI Working Group suggest piloting to calibrate identifiability issues; instead, such issues are handled per OMB guidance using suppression techniques for data cells lacking sufficient sample. Moreover, as federal statistical experts have described, SOGI piloting at other agencies has not been used to address identifiability issues.²¹ Thus, the claim that SOGI questions raise special concerns of identifiability as compared with other demographic data has no rational basis.

IV. OMB Has Already Approved SOGI Questions for Surveys, and Federal Statistical Experts Have Studied SOGI Questions and Recommend Their Inclusion

SOGI questions have already been extensively piloted by other federal agencies. In 2015-2016, the Census Bureau conducted debriefing questionnaires, focus groups, and targeted interviews, and found that respondents reacted favorably to SOGI items, did not have any difficulty understanding them, and non-response and break-off rates were extremely low.²¹ Numerous federal surveys, including education- and employment-related surveys similar to NCSSES surveys, have included SOGI questions for years, including the Baccalaureate & Beyond Longitudinal Study and High School Longitudinal Study (Department of Education), Current Population Survey (Department of Labor), National Health Interview Survey (Center for Disease Control & Prevention), and National Crime Victimization Survey (Department of Justice).² Moreover, recent surveys of NIH (a major sponsor of NCSSES surveys), which are conducted on similar samples of scientific workers, have also included SOGI questions, such as the 2019 Workplace Climate & Harassment Survey¹⁵ and 2020 Workforce COVID-19 Impact Survey²³.

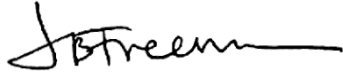
Given the extensive precedents, OMB has tended to approve agencies' use of SOGI questions on surveys without requiring new piloting, so long as identical questions are taken from existing surveys. Moreover, recent reviews on SOGI measurement by federal statistical experts²² and the latest 2020 white paper from the Interagency SOGI Working Group²⁴ all urge agencies to adopt SOGI measures; they do not recommend agencies to wait for any additional directives, nor is it in the purview of the Interagency SOGI Working Group to make such directives.²⁵ Given that OMB guidance states that agencies "need to weigh the importance and use of pretests against the time and resources needed to conduct them",²⁶ we hope that NCSSES carefully considers whether it requires additional piloting in order to implement SOGI questions.

V. Conclusion

The U.S. STEM enterprise and its stakeholders cannot afford to wait for further delays in the piloting and inclusion of SOGI demographic questions for NCSSES surveys. With NCSSES not providing stakeholders the necessary SOGI data to understand LGBTQ disparities in STEM and the estimated 54,000-121,000 LGBTQ scientists and engineers who are missing from STEM fields, NSF is falling short of its responsibilities to ensure the full use of human resources in STEM fields and to broaden the participation of the largest untapped STEM talent pools in the U.S.: underrepresented populations (42 U.S.C. § 1862, 1885). While we applaud NCSSES for heeding our call in piloting a two-step gender identity measure, we urge NCSSES to immediately begin piloting a sexual orientation measure. We also urge OMB and NCSSES to encourage the Equitable Data Working Group established by Executive Order 13985 to include federal-wide

SOGI data in its purview; this would not only facilitate SOGI questions on NCSES surveys, but further promote LGBTQ equity in STEM, higher education, and American society more broadly. Thank you for your consideration. Please direct any correspondence to jon.freeman@nyu.edu.

Respectfully Submitted,



Jonathan B. Freeman, PhD
Associate Professor of Psychology and Neural Science
New York University



Felice J. Levine, PhD
Executive Director
American Educational Research Association (AERA)



Sudip S. Parikh, PhD
Chief Executive Officer and Executive Publisher, *Science*
American Association for the Advancement of Science (AAAS)

Notes

1. National Center for Education Statistics (2020). Baccalaureate and Beyond Longitudinal Study (B&B). <https://nces.ed.gov/surveys/b&b>
2. Federal Interagency Working Group on Improving Measurement of SOGI in Federal Surveys (2016). Current Measures of SOGI in Federal Surveys. <https://nces.ed.gov/FCSM/pdf/buda5.pdf>
3. National Center for Science & Engineering Statistics (2018). SF-83-1 Supporting Statement for 2019 Survey of Doctorate Recipients. <https://www.reginfo.gov/public/do/DownloadDocument?objectID=93221603>
4. *Science Magazine* (2018). NSF moves to pilot LGBT questions on national workforce surveys. <https://www.sciencemag.org/careers/2018/11/nsf-moves-pilot-lgbt-questions-national-workforce-surveys>
5. National Academies of Sciences, Engineering, & Medicine (2020). *Understanding the Well-Being of LGBTQI+ Populations*. <https://www.nap.edu/catalog/25877/understanding-the-well-being-of-lgbtqi-populations>. See Table 4-1 and Recommendation 1.
6. National Center for Science & Engineering Statistics (2020). SF-83-1 Supporting Statement for 2021 National Survey of College Graduates, Part A. <https://www.reginfo.gov/public/do/DownloadDocument?objectID=104929301>
7. *Science Magazine* (2020). How many scientists are LGBTQ? Federal survey delays frustrate researchers. <https://www.sciencemag.org/careers/2020/12/how-many-scientists-are-lgbtq-federal-survey-delays-frustrate-researchers>
8. Freeman, J.B. (2020). Measuring and resolving LGBTQ disparities in STEM. *Policy Insights from the Behavioral & Brain Sciences*, 7, 141-148. https://www.freemanlab.org/s/2020_Freeman_PIBBS.pdf
9. Office of Management & Budget (1977). Statistical Policy Directive No. 15: Standards for the Classification of Federal Data on Race and Ethnicity. https://nces.ed.gov/programs/handbook/data/pdf/Appendix_A.pdf
10. U.S. Supreme Court (2020). *Bostock v. Clayton County*. https://www.supremecourt.gov/opinions/19pdf/17-1618_hfci.pdf
11. Executive Order on Preventing and Combating Discrimination on the Basis of Gender Identity or Sexual Orientation (2021). <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-preventing-and-combating-discrimination-on-basis-of-gender-identity-or-sexual-orientation/>
12. Executive Order On Advancing Racial Equity and Support for Underserved Communities (2021) <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/>
13. Smithsonian Science Education Center (2018). The STEM Imperative. <https://ssec.si.edu/stem-imperative>;
14. National Science & Technology Council (2018). *Charting a Course for Success: America's Strategy for STEM Education*. <https://www.whitehouse.gov/wp-content/uploads/2018/12/STEM-Education-Strategic-Plan-2018.pdf>
15. Cech, E.A. & Waidzun, T.J. (2021). Systematic inequities for LGBTQ professionals in STEM. *Science Advances*, 7, eabe0933. <https://advances.sciencemag.org/content/7/3/eabe0933>
16. National Institutes of Health (2019). NIH Workplace Climate & Harassment Survey Key Findings. https://diversity.nih.gov/sites/coswd/files/images/docs/ACD_Climate_and_Harassment_survey.pdf
17. Sansone, D. & Carpenter, C.S. (2020). Turing's Children: Representation of Sexual Minorities in STEM. *PLoS ONE*, 15, e0241596. <https://doi.org/10.1371/journal.pone.0241596>
18. Gallup (2021). LGBT Identification Rises to 5.6% in Latest U.S. Estimate. <https://news.gallup.com/poll/329708/lgbt-identification-rises-latest-estimate.aspx>
19. U.S. Census Bureau. (2020). National Population by Characteristics: 2010-2019. <https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html>
20. Federal Interagency Working Group on Improving Measurement of SOGI in Federal Surveys (2016). Evaluations of Sexual Orientation and Gender Identity Survey Measures: What Have We Learned? https://nces.ed.gov/FCSM/pdf/Evaluations_of_SOGI_Questions_20160923.pdf
21. Office of Management & Budget (2005). Statistical Policy Working Paper 22: Report on Statistical Disclosure Limitation Methodology. <https://nces.ed.gov/FCSM/pdf/spwp22.pdf>
22. Truman, J.L., Morgan, R.E., Gilbert, T., & Vaghela, P. (2019). Measuring sexual orientation and gender identity in the National Crime Victimization Survey. *Journal of Official Statistics*, 35, 835-858. <https://content.sciendo.com/view/journals/jos/35/4/article-p835.xml>; Ellis, R., Virgile, M., Holzberg, J., Nelson, D.V., Edgar, J., Phipps, P., & Kaplan, R. (2017). Assessing the feasibility of asking about SOGI in the Current Population Survey: Results from cognitive interviews. <https://www.bls.gov/osmr/research-papers/2017/html/st170210.htm>
23. Bates, N., Steinmetz, S., & Fischer, M. (2019). Introduction to the special issue on measuring LGBT populations. *Journal of Official Statistics*, 35, 699-707. <https://content.sciendo.com/downloadpdf/journals/jos/35/4/article-p699.xml>
24. National Institutes of Health (2020). NIH Workforce COVID-19 Impact Survey. <https://diversity.nih.gov/building-evidence/COVID-workplace-survey>
25. Federal Interagency Working Group on Improving Measurement of SOGI in Federal Surveys (2020). Updates on Terminology of SOGI Survey Measures. https://nces.ed.gov/FCSM/pdf/FCSM_SOGI_Terminology_FY20_Report_FINAL.pdf
26. Federal Committee on Statistical Methodology (2016). SOGI Research Group Charter. https://nces.ed.gov/FCSM/pdf/SOGI_RG_Charter.pdf
27. Office of Management & Budget (2016). Q&A when designing surveys for information collections. https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/assets/OMB/inforeg/pmc_survey_guidance_2006.pdf

OUR PREVIOUS PUBLIC COMMENTS TO FOLLOW

October 25, 2020

OMB Desk Officer for National Science Foundation
Office of Information and Regulatory Affairs
Office of Management and Budget
725 17th Street, NW
Washington, DC 20503

Ms. Suzanne H. Plimpton
Reports Clearance Officer
National Science Foundation
2415 Eisenhower Ave., Suite W18200
Alexandria, VA 22314

Via reginfo.gov and email

RE: National Science Foundation; Notice of Submission for OMB Review; 2021
National Survey of College Graduates (**Federal Register Doc. 2020-21156**)

Dear OMB and NSF Officials:

We are writing to request that the Office of Management and Budget (OMB) require amendment of the National Science Foundation's (NSF) proposed information collection request related to the 2021 National Survey of College Graduates (NSCG) to allow for inclusion of sexual orientation and gender identity (SOGI) demographic questions. *See* 85 Fed. Reg. 60494 (September 25, 2020). This public comment is in line with our previous comments regarding the NSCG and other NSF National Center for Science & Engineering Statistics (NCSES) surveys, including the Survey of Doctorate Recipients (SDR) and Survey of Earned Doctorates (SED), which were submitted to the Federal Register on August 13, 2018 and June 29, 2020 and are appended below. Our initial comment was cosigned by 17 scientific organizations and authorities in higher education research, including the American Association for the Advancement of Science and the American Educational Research Association, and 244 scientists, engineers, and legal and policy scholars, including 17 members of the National Academies.

We urge OMB and NSF to work together to ensure, prior to OMB's approval, that NSF either 1) add SOGI demographic questions to the 2021 NSCG; or 2) initiate piloting of SOGI questions by including SOGI items as part of NSF's testing of new survey modifications via its proposed NSCG non-production survey sample (see Section B-4 of SF-83-1 Supporting Statement). OMB has already approved the use of SOGI questions for highly similar surveys of other federal agencies, such as the Department of Education's 2016-2020 Baccalaureate & Beyond Longitudinal Study¹, among many others.² NSF has also stated to OMB³ and publicly to the media⁴ that it would initiate piloting of SOGI questions. Stakeholders urgently need SOGI data, and further delays will incur costs for the U.S. STEM enterprise and lead NSF to fall short of its Congressionally mandated responsibilities. A recent National Academies' 2020 report

documented the importance of SOGI data collection across the federal government and explicitly recommended that NSF add SOGI questions to NCSES surveys.⁵

Key Takeaways:

- I. We applaud NCSES' proposed testing of non-binary gender options, but a methodologically accurate measure of gender identity as well as sexual orientation is needed.
- II. Stakeholders urgently need SOGI data from NCSES surveys, and further delays will incur costs for the U.S. STEM enterprise.
- III. NCSES' stated concerns about adding SOGI questions (i.e., small samples and estimation; sensitivity, privacy, and confidentiality; identifiability) are not supported by evidence.
- IV. OMB has already approved SOGI questions for many population-based surveys, and federal statistical experts have studied them and recommend their inclusion.
- V. Conclusion: For the NSCG piloting sample, we urge NCSES to adopt the "two-step" method of measuring gender identity and to add a sexual orientation item to the pilot.

I. Testing Non-Binary Gender Options is Commendable, But a Methodologically Accurate Measure of Gender Identity As Well As Sexual Orientation Is Needed

NCSES initially stated at a October 31, 2018 meeting that it would begin piloting SOGI questions, which was estimated to take two months and produce preliminary results by early 2019. NCSES has delayed the piloting for two years, citing limited time and resources.⁶ Finally, NCSES has proposed to pilot three survey changes to the NSCG using a representative, non-production sample ($n = 5,000$), including modifying its gender item "to offer response options beyond the binary responses of male and female".⁷ We applaud NCSES for its interest in testing better and more accurate measures of gender. However, NCSES' approach raises methodological concerns. We strongly urge NCSES to both revise its measurement approach to gender identity and add a sexual orientation measure to the pilot. Appendix A provides a suggested revision to Section B-4 of NCSES' Supporting Statement in line with these changes, and Appendix B provides suggested SOGI question wording that NCSES could consider testing.

Gender identity. NCSES' proposed approach of expanding its gender item to include non-binary options is inconsistent with recommendations from both federal statistical experts and the independent research community. The Federal Interagency Working Group on Improving Measurement of SOGI in Federal Surveys concluded that surveys should adopt the "two-step" method, i.e., using two separate questions to ask respondents' assigned sex at birth and current gender identity.⁸ For instance, extensive piloting at the Census Bureau suggests that, if a standard gender item is merely expanded to include transgender or non-binary options as NCSES proposes, a sizeable portion of transgender respondents will tend not to use those options and instead select the binary option associated with their gender identity.⁹ The approach NCSES proposes will likely introduce measurement error, adversely affect trends data, and underestimate the transgender population. The independent research community also recommends use of the two-step method, as outlined in the 2014 report on *Best Practices for Asking Questions to Identify Transgender and Other Gender Minority Respondents on Population-Based Surveys*.¹⁰

Sexual orientation. We are concerned that NCSES has omitted sexual orientation from its proposed piloting. Other agencies, including the Census Bureau and Department of

Education, have already extensively piloted both sexual orientation and gender identity questions for similar surveys, and agencies have used the results of these precedents to add SOGI questions without new agency-specific piloting (see Section IV). Asking about sexual orientation on NCSES surveys does not raise unique concerns of sensitivity, privacy, confidentiality, or identifiability (see Section III), and many other population-based federal surveys collect data on sexual orientation, such as the Baccalaureate & Beyond Longitudinal Study¹ and National Health Interview Survey² (see Section V). Moreover, analyses of such federal surveys have already demonstrated alarming disparities in STEM related to sexual orientation (see Section II) that inclusion in NCSES surveys would help address.¹¹ NCSES' omission also directly contradicts the National Academies' recent recommendation that NCSES add SOGI items to its surveys.⁵

II. Stakeholders Urgently Need Sexual Orientation and Gender Identity (SOGI) Data: Further Delays Will Incur Costs for the U.S. STEM Enterprise

For years, the U.S. STEM enterprise has faced a crisis, with the demand for STEM jobs having rapidly outpaced its supply.¹² For instance, some estimates suggest that a total of 2.4 million STEM jobs went unfilled in 2018 due to a lack of qualified STEM workers.¹² Although the long-term effects of the coronavirus pandemic on STEM labor markets remain uncertain, it is reasonable to assume that U.S. STEM fields will continue to face urgent STEM talent gaps. A key solution identified by Congress is to broaden the participation of underrepresented groups, as “underrepresented populations are the largest untapped STEM talent pools in the United States”, with Congress declaring in 2015 that “the United States should encourage full participation of individuals from underrepresented populations in STEM fields” (42 U.S.C. § 1862).

Although NCSES has not tracked the STEM participation of LGBTQ people, also called sexual and gender minorities, via its surveys, evidence for LGBTQ people's underrepresentation in STEM and other disparities is now substantial. LGBTQ people are estimated to be 17-21% less represented in STEM fields than statistically expected, and they are less likely than non-LGBTQ people to major in STEM, persist in STEM, earn STEM degrees, and be in STEM occupations.¹¹ Estimates suggest that the U.S. may have lost approximately 54,000-121,000 LGBTQ people who would currently otherwise be in the STEM workforce.¹¹ Data suggest that these disparities are due to non-supportive STEM environments and harmful biases, and are not due to a lack of interest among LGBTQ people; to the contrary, LGBTQ people show greater signs of interest in STEM than their non-LGBTQ peers.¹¹

Unlike NCSES, other agencies that collect data on scientific workers such as the National Institutes of Health (NIH) have regularly included SOGI questions on surveys. For instance, a 2019 NIH survey found that across the NIH research workforce LGBTQ people faced some of the highest amounts of harassment and discrimination.¹³ Because NCSES omits SOGI questions, researchers have been forced to look to other population-based federal surveys that do collect SOGI data, such as the National Health Interview Survey, to examine these issues; such analyses have demonstrated large and robust LGBTQ disparities in STEM.¹⁴ By not collecting and properly tracking SOGI data, NCSES is preventing NSF, NIH, other federal agencies, Congress, and STEM stakeholders from addressing the challenges and educational and career barriers LGBTQ people are facing in STEM. As such, NSF is falling short of its mandate to “[ensure] the full use of human resources in science and engineering” (42 U.S.C. § 1885).

III. NCSES' Stated Concerns About SOGI Questions Are Not Supported by Evidence

NCSES initially raised two concerns regarding SOGI questions. It stated on July 16, 2018 that its survey populations “are not likely to have sufficient sample to produce reliable estimates. The comparatively small population of [LGBTQ] persons in the United States suggests that relatively small sampling or reporting errors can lead to significant errors in estimation and description.” NCSES’ second concern was that “[g]ender and sexuality can be sensitive topics in American society, and the privacy and confidentiality of respondents must be handled with care.” These concerns were addressed in our August 13, 2018 comment and in our meeting with NCSES leadership on October 31, 2018, after which NCSES stated piloting of SOGI questions would be initiated. In NCSES’ July 17, 2020 response to our more recent public comment, it identified a new concern: “A challenge is that some of our respondent populations are small and specialized when compared to populations surveyed by other agencies. These population attributes raise identifiability concerns. Developing and evaluating new questions requires us to calibrate federal requirements for accuracy with a need to protect privacy. In particular, we want to include the most accurate questions possible while avoiding a significant likelihood that the resulting data can be used to identify individual persons. Given the nature of our respondent populations, this calibration exercise is a significant task.” We address each concern below.

Concern of small samples and estimation issues. The current sample sizes of the NSCG and other NCSES surveys are all sufficiently large. Other federal surveys, such as the National Health Interview Survey; the Census Barriers, Attitudes, and Motivators Survey; and the Baccalaureate & Beyond Longitudinal Study, entailed sample sizes of 87,500, 55,000, and 28,000, respectively, and these surveys routinely collect SOGI information. The sample sizes of NCSES surveys are far larger: NSCG $n = 164,000$; SDR $n = 120,000$; SED $n = 55,000$. Moreover, many of the race and ethnicity classifications tracked by NCSES surveys have a prevalence in the U.S. population that is far smaller than that of LGBTQ people. The most recent estimate of the prevalence of LGBTQ people in the U.S. population is 4.5%, which rises to 8.2% among early-career age people (18-37 year-olds).¹⁶ Thus, LGBTQ people have a higher prevalence in the U.S. than several other racial and ethnic groups that have long been measured in NCSES surveys, including Asians (5.3%), American Indians or Alaska Natives (0.7%), and Native Hawaiian or other Pacific Islanders (0.2%).¹⁵ As NCSES surveys have larger samples than other federal surveys currently collecting SOGI data, and NCSES surveys have long tracked race and ethnicity classifications that are less prevalent in the U.S. than LGBTQ people, NCSES’ concerns of small samples and estimation issues are unwarranted.

Concern of sensitivity, privacy, and confidentiality. Government surveys on the U.S. population have allowed respondents to voluntarily disclose SOGI data for many years, and the privacy and confidentiality of any personally identifiable data in NCSES surveys are strongly protected by federal law. NCSES and the Census Bureau (who administers the NSCG) remove names and all identifying information, as well as take other measures out of an abundance of caution (e.g., suppress data cells with too few respondents), to protect confidentiality. In fact, the Federal Interagency Working Group warned that it is these types of misguided concerns that often prevent federal agencies from adopting SOGI measures even when “inclusion of these measures would support agency mission and data needs” and even though the concerns are inconsistent with past survey experience.¹⁶ For instance, SOGI questions in federal surveys do

not cause issues such as survey break-off or high non-response rates, and they behave on par with other potentially sensitive questions, such as income or disability. Moreover, SOGI questions are voluntary, and options such as “I don’t know” or “I don’t wish to respond” are always available.¹⁶ NCSSES’ singling out of SOGI questions as raising unique concerns of sensitivity, privacy, or confidentiality is not justified.

Concern of identifiability. OMB provides clear guidance on the issue of identifiability in Statistical Policy Working Paper 22, including detailed procedures for federal statistical agencies to use, namely data suppression techniques, and NCSSES already uses such techniques in the data it makes available.¹⁷ As mentioned earlier, many of the race and ethnicity classifications measured by NCSSES surveys have a prevalence in the U.S. that is smaller than that of LGBTQ people, including Asians, American Indians or Alaska Natives, and Native Hawaiian or other Pacific Islanders. Neither do OMB guidance or the Federal Interagency Working Group suggest piloting to calibrate identifiability issues; instead, such issues are handled per OMB guidance using suppression techniques for data cells lacking sufficient sample. Moreover, as federal statistical experts have described, SOGI piloting at other agencies has not been used to address identifiability issues.⁹ Thus, the claim that SOGI questions raise special concerns of identifiability as compared with other demographic data has no rational basis.

IV. OMB has Already Approved SOGI Questions for Surveys, and Federal Statistical Experts Have Studied SOGI Questions and Recommend Their Inclusion

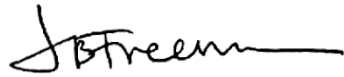
SOGI questions have already been extensively piloted by other federal agencies. In 2015-2016, the Census Bureau conducted debriefing questionnaires, focus groups, and targeted interviews, and found that respondents reacted favorably to SOGI items, did not have any difficulty understanding them, and non-response and break-off rates were extremely low.⁹ Numerous federal surveys, including education- and employment-related surveys similar to NCSSES surveys, have included SOGI questions for years, including the Baccalaureate & Beyond Longitudinal Study and High School Longitudinal Study (Department of Education), Current Population Survey (Department of Labor), National Health Interview Survey (Center for Disease Control & Prevention), and National Crime Victimization Survey (Department of Justice).² Moreover, recent surveys of NIH (a major sponsor of NCSSES surveys), which are conducted on similar samples of scientific workers, have also included SOGI questions, such as the 2019 Workplace Climate & Harassment Survey¹³ and 2020 Workforce COVID-19 Impact Survey¹⁸.

Given the extensive precedents, OMB has tended to approve agencies’ use of SOGI questions on surveys without requiring new piloting, so long as identical questions are taken from existing surveys. Moreover, recent reviews on SOGI measurement by federal statistical experts¹⁹ and the latest 2020 white paper from the Federal Interagency Working Group⁸ all urge agencies to adopt SOGI measures; they do not recommend agencies to wait for any additional directives, nor is it in the purview of the Federal Interagency Working Group to make such directives.²⁰ Given that OMB guidance states that agencies “need to weigh the importance and use of pretests against the time and resources needed to conduct them”,²¹ we hope that NCSSES carefully considers whether it requires additional piloting in order to implement SOGI questions.

V. Conclusion

The U.S. STEM enterprise and its stakeholders cannot afford to wait for further delays in the piloting and inclusion of SOGI demographic questions for NCSES surveys. With NCSES not providing stakeholders the necessary SOGI data to understand LGBTQ disparities in STEM and the estimated 54,000-121,000 LGBTQ scientists and engineers who are missing from STEM fields, NSF is falling short of its responsibilities to ensure the full use of human resources in STEM fields and to broaden the participation of the largest untapped STEM talent pools in the U.S.: underrepresented populations (42 U.S.C. § 1862, 1885). While we applaud NCSES' proposed piloting of non-binary gender options, we strongly urge NCSES instead to pilot a methodologically accurate measure of gender identity via the two-step method and to add a sexual orientation item to the pilot (see Appendices), as recommended by both the National Academies and federal statistical experts. The piloting and inclusion of SOGI questions for NCSES surveys is critical to resolving the current challenges faced by the STEM workforce. Thank you for your consideration. Please direct any correspondence to jon.freeman@nyu.edu.

Respectfully Submitted,



Jonathan B. Freeman, PhD
Associate Professor of Psychology and Neural Science
New York University



Felice J. Levine, PhD
Executive Director
American Educational Research Association



Sudip S. Parikh, PhD
Chief Executive Officer and Executive Publisher, *Science*
American Association for the Advancement of Science



Laura E. Durso, PhD
Executive Director and Chief Learning Officer
Whitman-Walker Institute

Notes

1. National Center for Education Statistics (2020). Baccalaureate and Beyond Longitudinal Study, Instruments. <https://www.regulations.gov/contentStreamer?documentId=ED-2019-ICCD-0162-0008&attachmentNumber=3&contentType=pdf>
2. Federal Interagency Working Group on Improving Measurement of SOGI in Federal Surveys (2016). Current Measures of SOGI in Federal Surveys. <https://nces.ed.gov/FCSM/pdf/buda5.pdf>
3. National Center for Science & Engineering Statistics (2018). SF-83-1 Supporting Statement for 2019 Survey of Doctorate Recipients. <https://www.reginfo.gov/public/do/DownloadDocument?objectID=93221603>
4. *Science Magazine* (2018). NSF moves to pilot LGBT questions on national workforce surveys. <https://www.sciencemag.org/careers/2018/11/nsf-moves-pilot-lgbt-questions-national-workforce-surveys>
5. National Academies of Sciences, Engineering, & Medicine (2020). *Understanding the Well-Being of LGBTQI+ Populations*. <https://www.nap.edu/catalog/25877/understanding-the-well-being-of-lgbtqi-populations>. See Table 4-1 and Recommendation 1.
6. National Center for Science & Engineering Statistics (2020). SF-83-1 Supporting Statement for 2021 National Survey of College Graduates, Part A. <https://www.reginfo.gov/public/do/DownloadDocument?objectID=104929300>
7. National Center for Science & Engineering Statistics (2020). SF-83-1 Supporting Statement for 2021 National Survey of College Graduates, Part B. <https://www.reginfo.gov/public/do/DownloadDocument?objectID=104929400>
8. Federal Interagency Working Group on Improving Measurement of SOGI in Federal Surveys (2020). Updates on Terminology of SOGI Survey Measures. https://nces.ed.gov/FCSM/pdf/FCSM_SOGI_Terminology_FY20_Report_FINAL.pdf
9. Truman, J.L., Morgan, R.E., Gilbert, T., & Vaghela, P. (2019). Measuring sexual orientation and gender identity in the National Crime Victimization Survey. *Journal of Official Statistics*, 35, 835-858. <https://content.sciendo.com/view/journals/jos/35/4/article-p835.xml>; Ellis, R., Virgile, M., Holzberg, J., Nelson, D.V., Edgar, J., Phipps, P., & Kaplan, R. (2017). Assessing the feasibility of asking about SOGI in the Current Population Survey: Results from cognitive interviews. <https://www.bls.gov/osmr/research-papers/2017/html/st170210.htm>
10. UCLA Williams Institute, GenIUSS Group (2014). *Best Practices for Asking Questions to Identify Transgender and Other Gender Minority Respondents on Population-Based Surveys*. <https://williamsinstitute.law.ucla.edu/wp-content/uploads/Survey-Measures-Trans-GenIUSS-Sep-2014.pdf>
11. Freeman, J.B. (2020). Measuring and resolving LGBTQ disparities in STEM. *Policy Insights from the Behavioral & Brain Sciences*, 7, 141-148. https://www.freemanlab.org/s/2020_Freeman_PIBBS.pdf
12. Smithsonian Science Education Center (2018). The STEM Imperative. <https://ssec.si.edu/stem-imperative>;
13. National Science & Technology Council (2018). *Charting a Course for Success: America's Strategy for STEM Education*. <https://www.whitehouse.gov/wp-content/uploads/2018/12/STEM-Education-Strategic-Plan-2018.pdf>
14. National Institutes of Health (2019). NIH Workplace Climate & Harassment Survey Key Findings. https://diversity.nih.gov/sites/coswd/files/images/docs/ACD_Climate_and_Harassment_survey.pdf
15. Sansone, D. & Carpenter, C.S. (2020). Turing's Children: Representation of Sexual Minorities in STEM. <https://arxiv.org/abs/2005.06664>
16. U.S. Census Bureau. (2020). National Population by Characteristics: 2010-2019. <https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html>
17. Federal Interagency Working Group on Improving Measurement of SOGI in Federal Surveys (2016). Evaluations of Sexual Orientation and Gender Identity Survey Measures: What Have We Learned? https://nces.ed.gov/FCSM/pdf/Evaluations_of_SOGI_Questions_20160923.pdf
18. Office of Management & Budget (2005). Statistical Policy Working Paper 22: Report on Statistical Disclosure Limitation Methodology. <https://nces.ed.gov/FCSM/pdf/spwp22.pdf>
19. National Institutes of Health (2020). NIH Workforce COVID-19 Impact Survey. <https://diversity.nih.gov/building-evidence/COVID-workplace-survey>
20. Bates, N., Steinmetz, S., & Fischer, M. (2019). Introduction to the special issue on measuring LGBT populations. *Journal of Official Statistics*, 35, 699-707. <https://content.sciendo.com/downloadpdf/journals/jos/35/4/article-p699.xml>
21. Federal Committee on Statistical Methodology (2016). SOGI Research Group Charter. https://nces.ed.gov/FCSM/pdf/SOGI_RG_Charter.pdf
22. Office of Management & Budget (2016). Q&A when designing surveys for information collections. https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/assets/OMB/inforeg/pmc_survey_guidance_2006.pdf

Appendix A

Section B-4 of NCSES' Supporting Statement⁷, p. 18, currently reads:

Questionnaire and Survey Content

The 2021 NSCG bridge panel questionnaire will include content similar to the new sample questionnaire included in Appendix E with three modifications:

- 1) The educational history section will first ask respondents to provide a roster of each degree earned, and then use this roster to solicit their degree history.
- 2) For the questionnaire items that were modified for 2021 to include coronavirus pandemic response options (i.e., employment status, part-time employment, job benefits, earnings, and conference attendance), the question wording from 2019 without the coronavirus pandemic response options will be used.
- 3) The questionnaire item measuring gender will be modified to offer response options beyond the binary responses of male and female.

We suggest that it be replaced with the following (**bold** text reflects changes):

Questionnaire and Survey Content

The 2021 NSCG bridge panel questionnaire will include content similar to the new sample questionnaire included in Appendix E with three modifications:

- 1) The educational history section will first ask respondents to provide a roster of each degree earned, and then use this roster to solicit their degree history.
- 2) For the questionnaire items that were modified for 2021 to include coronavirus pandemic response options (i.e., employment status, part-time employment, job benefits, earnings, and conference attendance), the question wording from 2019 without the coronavirus pandemic response options will be used.
- 3) **The questionnaire item measuring gender will be modified so that it refers to assigned sex at birth. An additional questionnaire item will be added asking about gender identity, which will offer response options beyond the binary responses of male and female.**
- 4) **An additional questionnaire item will be added asking about sexual orientation.**

Appendix B

Extensive piloting conducted by the Census Bureau (who administers the NSCG) provides a firm foundation for using the following SOGI items in NCSES surveys, which are currently used in numerous population-based federal surveys, such as the Current Population Survey.⁹

Which of the following best represents how you think of yourself?

- Gay or Lesbian
- Straight, that is, not gay, lesbian, or bisexual
- Bisexual
- Something else

Was your sex recorded as male or female at birth?

- Male
- Female

Do you describe yourself as male, female, or transgender?

- Male
- Female
- Transgender

The Department of Education also conducted extensive piloting and uses similar questions in its Baccalaureate & Beyond Longitudinal Study and High School Longitudinal Study. Below are SOGI items from the 2016-2020 Baccalaureate & Beyond Longitudinal Study.¹

Which of the following best represents how you think of yourself?

- Lesbian or gay, that is, homosexual
- Straight, that is, heterosexual
- Bisexual
- Another sexual orientation
- Questioning or unsure

What sex were you assigned at birth (what the doctor put on your birth certificate)?

- Male
- Female

What is your gender? (Your gender is how you feel inside and can be the same or different from your biological or birth sex.)

- Male
- Female
- Transgender, male-to-female
- Transgender, female-to-male
- Genderqueer or gender nonconforming
- A different gender identity
- Questioning or unsure

June 29, 2020

Ms. Suzanne H. Plimpton
Reports Clearance Officer
National Science Foundation
2415 Eisenhower Ave., Suite W18200
Alexandria, VA 22314
Via regulations.gov and email

RE: National Science Foundation (NSF); Notice of Intent to Seek Approval to Extend an Information Collection for Three Years; 2021 National Survey of College Graduates
(Federal Register Doc. 2020-09000)

Dear Ms. Plimpton:

We are writing to comment on NSF's proposed information collection request related to the 2021 National Survey of College Graduates (NSCG). *See* 85 Fed. Reg. 23537 (April 28, 2020). This public comment is in line with our previous comment regarding the 2019 NSCG that was submitted to the Federal Register on August 13, 2018 and is appended below. Our previous comment was cosigned by 17 scientific organizations and authorities in higher education research, including the American Association for the Advancement of Science and the American Educational Research Association, and 244 scientists, engineers, and legal and policy scholars, including 17 members of the National Academies.

Following our previous comment, we were grateful to have had the opportunity to meet with the leadership of NSF's National Center for Science & Engineering Statistics (NCSES) to discuss the inclusion of sexual orientation and gender identity (SOGI) measures in NCSES surveys, most notably the NSCG, Survey of Doctorate Recipients (SDR), and Survey of Earned Doctorates (SED). We were pleased to learn in October 2018 that NCSES was planning to conduct internal methodological piloting of SOGI measures for NCSES surveys, which was expected to begin with the NSCG and produce preliminary results by early 2019. We hope that the piloting was a success and that SOGI measures will be added to the 2021 NSCG and other future NCSES surveys. We write now to reaffirm the importance, feasibility, and precedent of including SOGI measures in NCSES surveys.

As you know, NSF is responsible for broadening the participation of underrepresented groups in STEM as it is "in the national interest to promote the full use of human resources in science and engineering" (42 U.S.C. § 1885). Although NSF has not tracked the STEM participation of LGBTQ people, also called sexual and gender minorities, via NCSES surveys, evidence for LGBTQ disparities in STEM is now substantial. Studies estimate that LGBTQ people are 17-21% less represented in the STEM workforce than statistically expected.¹ In the U.S., LGBTQ people currently comprise 4.5% of the population, and this number rises to 8.2%

¹ As cited in Freeman, J.B. (2018). LGBTQ scientists are still left out. *Nature*, 559, 27-28

for those 18-37 years of age.² Thus, early-career age LGBTQ people have a higher prevalence in the U.S. than several other groups whose disparities have long been carefully tracked via NCSES surveys, including Black women (7.0%), Asians (5.9%), and Native Americans (1.3%).³ Indeed, LGBTQ people are “one of the largest, but least studied, minority groups in the workforce”.⁴ With a U.S. STEM workforce size of 7 million people,⁵ these findings suggest that the U.S. may have lost approximately 54,000 to 121,000 LGBTQ people who would currently otherwise be in STEM.⁶ Adding SOGI measures to NCSES surveys is critically needed to track LGBTQ people from U.S. undergraduate and graduate programs through to the STEM workforce, and to understand and address the challenges they face along the way.

Indeed, the challenges for LGBTQ individuals begin early in the STEM pipeline. A 2016 study of 87,996 undergraduates across 18 research universities found that LGBTQ students were significantly less likely to major in STEM fields than their non-LGBTQ peers.⁷ Among undergraduates at 78 universities who declared a STEM major in their freshman year, sexual minority students (i.e., lesbian, gay, bisexual, and queer) were more likely than their heterosexual peers to leave STEM for a non-STEM major by their senior year. This was true despite the fact that sexual minority students showed greater engagement in STEM (e.g., lab participation) than their heterosexual peers, suggesting that they left STEM due to non-supportive STEM environments.⁸ Data from the 2009-2018 American Community Survey (ACS) and 2013-2018 National Health Interview Survey (NHIS) showed that sexual minorities were less likely to earn a bachelor’s degree in STEM and to hold a STEM occupation, relative to their heterosexual counterparts.⁹ The sexual orientation gap for STEM degrees was smaller than the gender gap (i.e., less STEM degrees for women than men) but larger than the race gap (i.e., less STEM degrees for Black people than White people).

Non-supportive STEM environments and harmful biases and stereotypes appear to be partly responsible for these disparities. LGBTQ people report more negative workplace experiences in STEM fields than do non-LGBTQ people in those same fields, or than do LGBTQ people in non-STEM industries.¹ Among sexual minority STEM faculty members who are out at work, 70% report feeling uncomfortable in their academic department.¹⁰ Some STEM fields have

² Gallup (2018). In U.S., Estimate of LGBT Population Rises to 4.5%.

<https://news.gallup.com/poll/234863/estimate-lgbt-population-rises.aspx>

³ U.S. Census Bureau. (2020). National Population by Characteristics: 2010-2019.

<https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html>

⁴ Ragins, B.R. (2004). Sexual orientation in the workplace: The unique work and career experiences of gay, lesbian and bisexual workers. In J. Martocchio (Ed.), *Research in personnel and human resources management*, 23, 35–129.

⁵ National Science Board (2020). The State of U.S. Science & Engineering. <https://ncses.nsf.gov/pubs/nsb20201>

⁶ Freeman, J.B. (2020). Measuring and Resolving LGBTQ disparities in STEM. *Policy Insights in the Behavioral & Brain Sciences*.

⁷ Greathouse M. et al. (2018). Queer-spectrum and trans-spectrum student experiences in American higher education: The analyses of national survey findings. <https://rucore.libraries.rutgers.edu/rutgers-lib/60802/PDF/1/>

⁸ Hughes, B.E., 2018. Coming out in STEM: Factors affecting retention of sexual minority STEM students. *Science advances*, 4(3), p.eaa06373.

⁹ Sansone, D., & Carpenter, C.S. (2020). Turing's Children: Representation of Sexual Minorities in STEM. arXiv, <https://arxiv.org/abs/2005.06664>. For the ACS, sexual orientation was inferred via those in a same-sex couple.

¹⁰ Patridge, E.V., Barthelmy, R.S. and Rankin, S.R. (2014). Factors impacting the academic climate for LGBTQ STEM faculty. *Journal of Women and Minorities in Science and Engineering*, 20.

conducted internal surveys that included SOGI questions. In U.S. physics, more than 20% of LGBTQ people reported being excluded, intimidated, or harassed at work due to their LGBTQ identity, and 15-30% reported feeling uncomfortable at work, and these negative experiences predicted a desire to leave the field.¹¹

In assessing the feasibility of asking SOGI questions on surveys, NCSES may be concerned that SOGI measures are too sensitive to include. However, government surveys on the U.S. population have already successfully collected SOGI data for years, including federal surveys with smaller sample sizes than NCSES surveys (e.g., the NHIS, which as mentioned earlier has already been used to provide evidence for LGBTQ disparities in STEM). The Federal Interagency Working Group on Improving Measurement of SOGI in Federal Surveys has warned that federal agencies may perceive SOGI questions as overly sensitive, which hinders them from adopting SOGI measures even when “inclusion of these measures would support agency mission and data needs” and even though that perception is inconsistent with past survey experience.¹² For instance, SOGI questions in federal surveys do not cause issues such as survey break-off or high non-response rates, and they are voluntary.¹² Options such as “I don’t wish to respond” are always available; and for those who do wish to respond, federal law protects the confidentiality of individually identifiable data. Thus, SOGI questions cannot expose respondents to potential discrimination, nor do they impact the statistical robustness of the data collected.

Adding SOGI measures has value for other important efforts at NCSES. The National Academies’ 2018 report on *Measuring the 21st Century Science and Engineering Workforce Population: Evolving Needs* recommended that NCSES develop a sexual harassment and discrimination module for its surveys,¹³ and NSF’s Broad Agency Announcement (BAA) on March 6, 2020 indicates that NCSES is seeking new measures on the incidence and experience of sexual harassment and discrimination.¹⁴ Clearly, SOGI measures – which have already been vetted by the Federal Interagency Working Group – are a necessary component to any measurement of sexual harassment, as respondents’ sexual harassment experiences can only be correctly interpreted in the context of their sexual orientation and gender identity.¹⁵ Indeed, NSF’s BAA defines sexual harassment as “not only related to sex but gender identity”,¹⁴ and under federal law sexual harassment and discrimination of employees includes adverse behavior “because of gender identity, including transgender status, or because of sexual orientation”.¹⁶ Existing federal surveys that include sexual harassment modules, such as the Merit Principles Survey (MPS), also regularly include SOGI questions.¹⁷ Thus, adding well-studied SOGI

¹¹ American Physical Society (2016). LGBT Climate in Physics.

<https://www.aps.org/programs/lgbt/upload/LGBTClimateinPhysicsReport.pdf>

¹² FCSM (2016). Evaluations of Sexual Orientation and Gender Identity Survey Measures: What Have We Learned?

https://nces.ed.gov/FCSM/pdf/Evaluations_of_SOGI_Questions_20160923.pdf

¹³ NASEM (2018), *Measuring the 21st Century Science and Engineering Workforce Population: Evolving Needs*. www.nap.edu/catalog/24968/measuring-the-21st-century-science-and-engineering-workforce-population-evolving

¹⁴ National Science Foundation, Broad Agency Announcement for National Center for Science & Engineering Statistics (March 6, 2020). <https://beta.sam.gov/opp/4265001c1dc242b38f718bc61aebf7a0/view>

¹⁵ NASEM (2018), *Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine*. <https://www.ncbi.nlm.nih.gov/books/NBK519455/>

¹⁶ U.S. Equal Employment Opportunity Commission (2020). <https://www.eeoc.gov/sex-based-discrimination>

¹⁷ U.S. Merit Systems Protection Board. 2016 Merit Principles Survey. <https://www.mspb.gov/foia/SurveyData.htm>

demographic measures now to the 2021 NSCG and other NCSES surveys would be a necessary change to ensure high-quality assessment of sexual harassment and discrimination in the future.

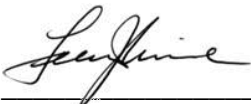
In short, we cannot reduce disparities if we do not measure them. It has become clear that LGBTQ people – who comprise an estimated 4.5% of the U.S. population (and 8.2% among early-career age individuals) – are facing educational and career barriers in STEM fields. However, the lack of SOGI measures in NCSES surveys is hindering our ability to understand and address these barriers. Including SOGI measures in the 2021 NSCG and future NCSES surveys is paramount to resolving the challenges faced by the U.S. STEM workforce, while also highly feasible and with clear precedent in other federal agencies.

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

Respectfully Submitted,



Jonathan B. Freeman, PhD
Associate Professor of Psychology and Neural Science
New York University



Felice J. Levine, PhD
Executive Director
American Educational Research Association



Sudip S. Parikh, PhD
Chief Executive Officer and Executive Publisher, *Science*
American Association for the Advancement of Science



Laura E. Durso, PhD
Executive Director and Chief Learning Officer
Whitman-Walker Institute

August 13, 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; Notice of Intent To Seek Approval To Extend a Current Information Collection; Notice and request for comments; 2019 National Survey of College Graduates (**Federal Register Doc. 2018-12622**)

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 National Survey of College Graduates (NSCG). *See* 83 Fed. Reg. 27354 (June 12, 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 236 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 NSCG and related surveys administered by the National Science Foundation's National Center for Science & Engineering Statistics, including the Survey of Doctorate Recipients (SDR) and the Survey of Earned Doctorates (SED). Incorporating measures of sexual orientation and gender identity into the NSCG, SDR, and SED would enhance the quality and utility of the information collected, because doing so would provide vital data on the

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>.

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 NSCG, SDR, 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 NSCG, SDR, 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 NSCG, SDR, and SED Would Enhance the Quality and Utility of the Information Being Collected

As in previous versions of the survey, the proposed 2019 NSCG 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 NSCG 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 NSCG (as well as the SDR 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, *National Survey of College Graduates* (2018), <https://www.nsf.gov/statistics/srvygrads>.

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=2YEIDwAAQBAJ>

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 NSCG, SDR, 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

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 LGBTQ 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 NSCG, SDR, 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 NSCG, SDR, 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 NSCG, SDR, 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 (NSCG, SDR, and SED) would provide similarly vital information about the experiences, career trajectory, and representation of LGBT people in STEM fields.

III. Experience Indicates NSCG, SDR, 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 NSCG, SDR, 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

¹² National Cancer Institute, Division of Cancer Control and Population Sciences, *National Health Interview Survey* (2018), <https://healthcaresdelivery.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 NSCG, SDR, 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.”²⁰ 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

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 NSCG, SDR, 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 NSCG, SDR, 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 NSCG, SDR, 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 87,500²³ and 10,000,²⁴ respectively, and both surveys currently collect information about sexual orientation. Sample sizes of the NSCG are far larger: the NSCG has a

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

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 NSCG, SDR, 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 NSCG, SDR, 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 NSCG, SDR, and SED currently collect information on race and ethnicity classifications that have expected samples smaller than those of LGBT people.

Finally, reports of NSCG, SDR, 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 NSCG, SDR, 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.

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 NSCG, SDR, 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.

Respectfully Submitted,

Jonathan B. Freeman, PhD
Associate Professor of Psychology and Neural Science
New York University

Adam P. Romero, JD
Arnold D. Kassoy Scholar of Law
Director of Legal Scholarship and Federal Policy
Williams Institute, UCLA School of Law

Laura Durso, PhD
Vice President, LGBT Research and Communications
Center for American Progress

Institutional Signatories:

American Association for the Advancement of Science (AAAS)

American Association of University Professors (AAUP)

American Anthropological Association (AAA)

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)

Inter-university Consortium for Political and Social Research (ICPSR)

Linguistic Society of America (LSA)

National Organization of Gay and Lesbian Scientists and Technical Professionals (NOGLSTP)

Out in Science, Technology, Engineering, and Mathematics (oSTEM)

Population Association of America (PAA)

Society for Experimental Social Psychology (SESP)

Society for Personality and Social Psychology (SPSP)

Society for Research in Child Development (SRCD)

Individual Signatories (members of the National Academies listed first):

Natalie G. Ahn, PhD

Member, National Academy of Sciences
Professor of Chemistry and Biochemistry
University of Colorado at Boulder

Mahzarin R. Banaji, PhD

Member, National Academy of Sciences
Richard Clarke Professor of Social Ethics
Harvard University

Carolyn R. Bertozzi, PhD

Member, National Academy of Sciences
Anne T. and Robert M. Bass Professor of Chemistry
Stanford University

Axel Brunger, PhD

Member, National Academy of Sciences
Professor of Molecular and Cellular Physiology
Stanford University

Lynn Ann Conway, PhD
Member, National Academy of Engineering
Professor of Electrical Engineering and Computer Science, Emerita
University of Michigan, Ann Arbor

Ronald S. Duman, PhD
Member, National Academy of Medicine
Elizabeth Mears and House Jameson Professor of Psychiatry, Professor of Neuroscience
Yale School of Medicine

Susan T. Fiske, PhD
Member, National Academy of Sciences
Eugene Higgins Professor of Psychology and Public Affairs
Princeton University

Susan A. Gelman, PhD
Member, National Academy of Sciences
Heinz Werner Distinguished University Professor
University of Michigan

Richard L. Huganir, PhD
Member, National Academy of Sciences
Bloomberg Distinguished Professor
Johns Hopkins University School of Medicine

Raymond Jeanloz, PhD
Member, National Academy of Sciences
Professor of Earth & Planetary Sciences and Astronomy
University of California, Berkeley

Jay D. Keasling, PhD
Member, National Academy of Engineering
Professor of Chemical & Biomolecular Engineering and Bioengineering
University of California, Berkeley

John H. Krystal, MD
Member, National Academy of Medicine
Robert L. McNeil, Jr. Professor of Translational Research, Professor of Psychiatry
Yale School of Medicine

Robert C. Malenka, MD, PhD
Member, National Academy of Sciences
Member, National Academy of Engineering
Member, National Academy of Medicine
Nancy Friend Pritzker Professor in Psychiatry and Behavioral Sciences
Stanford University

Eric J. Nestler, MD, PhD
Member, National Academy of Medicine
Nash Family Professor of Neuroscience
Icahn School of Medicine at Mount Sinai

James T. Randerson, PhD
Member, National Academy of Sciences
Ralph J. and Carol M. Cicerone Professor of Earth System Science
University of California, Irvine

Henry L. Roediger, III, PhD
Member, National Academy of Sciences
James S. McDonnell Distinguished University Professor
Washington University in St. Louis

Elizabeth S. Spelke, PhD
Member, National Academy of Sciences
Marshall L. Berkman Professor of Psychology
Harvard University

Christian N. Adames, AB
Clinical Psychology Graduate Student
Teachers College, Columbia University

Alex Aslam Ahmed
Doctoral Student
Northeastern University

David M. Amodio, PhD
Associate Professor of Psychology
New York University

Derek Applewhite, PhD
Assistant Professor of Biology
Reed College

Joshua Aronson, PhD
Associate Professor of Applied Psychology
New York University

Emily Balcetis, PhD
Associate Professor of Psychology
New York University

Lisa Feldman Barrett, PhD
University Distinguished Professor of Psychology
Northeastern University

Laura Baumgartner , PhD
Instructor of Biology
Front Range Community College

Jay Van Bavel, PhD
Associate Professor of Psychology
New York University

Mark Baxter, PhD
Professor of Neuroscience
Icahn School of Medicine at Mount Sinai

Lauren B. Beach, JD/PhD
Postdoctoral Research Fellow
Northwestern University

Elliot Berkman, PhD
Associate Professor of Psychology
University of Oregon

Rick A. Bevins, PhD
Chair and Professor of Psychology
University of Nebraska - Lincoln

Benjamin de Bivort, PhD
Thomas D. Cabot Associate Professor of Organismic and Evolutionary Biology
Harvard University

Bronwyn H. Bleakley, PhD
Associate Professor of Biology
Stonehill College

Walter Bockting, PhD
Professor of Medical Psychology (in Psychiatry and Nursing)
Columbia University

Adair Borges, BS
Graduate Student
University of California, San Francisco

Nathaniel Braffman
PhD Candidate
Harvard University

Natalie Brito, PhD
Assistant Professor
New York University

Catherine Brown, MA
Graduate Student
University of Nebraska-Lincoln

Christina M. Brown, PhD
Associate Professor of Psychology
Arcadia University

William R Buchanan, PhD
Executive Director
Performing Arts & Creative Education Solutions Consulting

Tyler Burleigh, PhD
Research Scientist
Data Cubed LLC

Carlos Cardenas-Iniguez, MA
Graduate Student, Psychology
University of Chicago

Anna Carter, PhD
Postdoctoral Research Associate
Iowa State University

Stephen J. Ceci, PhD
Helen L. Carr Professor of Developmental Psychology
Cornell University

Pauline Charbogne, PhD
Postdoctoral fellow
Johns Hopkins University

Robert S. Chavez, PhD
Assistant Professor of Psychology
University of Oregon

Jacqueline M. Chen, PhD
Assistant Professor of Psychology
University of Utah

Nicholas D. Chiappini, BA
Graduate Student
Stanford University

Jason C. Chow, PhD
Assistant Professor of Special Education
Virginia Commonwealth University

Joseph Cimpian, PhD
Associate Professor of Economics and Education Policy
Chair, Scholars and Advocates for Gender Equity in Education Research (AERA)
New York University

Andrei Cimpian, PhD
Associate Professor of Psychology
New York University

Jasmin Cloutier, PhD
Assistant Professor of Psychological & Brain Sciences
University of Delaware

Kim Cobb, PhD
Georgia Power Chair and ADVANCE Professor
Professor of Earth and Atmospheric Sciences
Georgia Tech

Shana Cole, PhD
Assistant Professor of Psychology
Rutgers University

Anthony G. Collins
University President
Clarkson University

Kent Connell, BS
PhD Candidate in Ecology
Kansas State University

Matthew Davis, MSc
PhD Candidate
University of New South Wales

Sarah DeArmond, PhD
Associate Professor of Management & Human Resources, Department Chair
University of Wisconsin Oshkosh

Jasmine DeJesus, PhD
Assistant Professor of Psychology
University of North Carolina at Greensboro

Amanda B. Diekman, PhD
Professor of Psychological & Brain Sciences
Indiana University

Roland Dunbrack, PhD
Professor of Biochemistry and Molecular Biophysics
Fox Chase Cancer Center

James Dunlea, BS, MS
Graduate Student
Columbia University

Fred Duong, MA
Graduate Student
Northeastern University

Juan F. Duque, PhD
Assistant Professor of Psychology
Arcadia University

Alice H. Eagly, PhD
Professor of Psychology
Northwestern University

Neville Eclov, PhD
Radiation Therapy Physics Resident
Duke University

Roberto Efrain-Diaz
Graduate Student
University of California, San Francisco

Anke A. Ehrhardt, PhD
Professor of Medical Psychology (in Psychiatry)
Columbia University

Tanya Marie Evans, PhD
Assistant Professor of Education
University of Virginia

Dominic Fareri, PhD
Assistant Professor of Psychology
Adelphi University

Brian Feinstein, PhD
Research Assistant Professor
Northwestern University

Melissa Ferguson, PhD
Professor of Psychology
Cornell University

Timothy Fessenden, PhD
Postdoctoral Fellow
Massachusetts Institute of Technology

Kara Finnigan, PhD
Professor of Educational Leadership
University of Rochester

Sarah Fischer, MA
Graduate Student
University of Nebraska-Lincoln

Andrew R. Flores, PhD
Assistant Professor of Political Science, Mills College
Visiting Scholar
Williams Institute, UCLA School of Law

Stephen J. Flusberg, PhD
Associate Professor of Psychology
Purchase College, SUNY

Heather Forsythe
Graduate Student
Oregon State University

Emily Foster-Hanson
PhD Student
New York University

Kathryn Fox, MA
PhD Student
Harvard University

Kurt Fraser, BS, MA
Graduate Student
Johns Hopkins University

Paolo Gabrielli, PhD
Research Scientist
The Ohio State University

Sarah Gaither, PhD
Assistant Professor of Psychology
Duke University

Alexia Galati, PhD
Assistant Professor of Psychological Science
University of North Carolina at Charlotte

Siddharth Garg, PhD
Assistant Professor of Electrical and Computer Engineering
New York University

Nanette Gartrell, MD
Visiting Distinguished Scholar
Williams Institute, UCLA School of Law

Jason C. Garvey, PhD
Assistant Professor of Higher Education and Student Affairs
University of Vermont

Dylan Gee, PhD
Assistant Professor of Psychology
Yale University

Jennifer Glass, PhD
Assistant Professor of Earth & Atmospheric Sciences
Georgia Institute of Technology

Miriam B Goodman, PhD
Professor of Molecular & Cellular Physiology
Stanford University

Adam D. Gracz, PhD
Assistant Professor of Genetics
University of North Carolina at Chapel Hill

Deanna J. Greene, PhD
Assistant Professor of Psychiatry
Washington University School of Medicine

Oliver Grundmann, PhD
Clinical Associate Professor of Medicinal Chemistry
University of Florida

Joshua A Haby, MA, MLS
Graduate Student
University of Nebraska-Lincoln

Kathryn Hamilton, PhD
Assistant Professor of Pediatrics
Children's Hospital of Philadelphia

Nicholas R Harp, BA
Graduate Student in Psychology
University of Nebraska-Lincoln

Michelle Harran, BS
Graduate Student
Johns Hopkins University

Eric Hehman, PhD
Assistant Professor of Psychology
McGill University

Jody L. Herman, PhD
Scholar of Public Policy
Williams Institute, UCLA School of Law

Melissa Herman, PhD
Assistant Professor of Pharmacology
University of North Carolina, Chapel Hill

Joscelin Rocha Hidalgo
PhD Student
Georgetown University

Mary Himmelstein, PhD
Postdoctoral Fellow
University of Connecticut

Jennifer S. Hirsch, PhD
Professor of Sociomedical Sciences
Columbia University, Mailman School of Public Health

Mark Hoffarth, PhD
Postdoctoral Fellow
New York University

Mirya R. Holman, PhD
Associate Professor of Political Science
Tulane University

Olivia L. Holmes, PhD
Assistant Professor of Psychology
Tennessee State University

Charles Phillip Holmes II, BS
PhD Student, Oceanography
Texas A&M University

Nicole Horenstein, PhD
Associate Professor of Chemistry
University of Florida

Tonda L. Hughes, PhD, RN, FAAN
Henrik H. Bendixen Professor of International Nursing, Professor of Nursing (in Psychiatry)
Columbia University Medical Center

Allison Hung
Undergraduate
Columbia University

Jeffrey M. Hunger, PhD
Postdoctoral Fellow
University of California, Los Angeles

Ian Hussey
Postdoctoral Fellow
Ghent University, Belgium

Scott Imberman, PhD
Professor of Economics and Education Policy
Michigan State University

Tiffany Ito, PhD
Professor of Psychology and Neuroscience
University of Colorado Boulder

Anne Jefferson, PhD
Associate Professor of Geology
Kent State University

J. David Jentsch, PhD
Empire Innovation Professor of Psychology
Binghamton University

Kerri Johnson, PhD
Professor of Psychology
University of California, Los Angeles

Camille Johnson, PhD
Acting Director, School of Management
San Jose State University

Kenneth Joseph, PhD
Assistant Professor of Computer Science and Engineering
SUNY Buffalo

John T Jost, PhD
Professor of Psychology and Politics
New York University

Sophie Jurgensen, BS, BA
Graduate Student, NSF GRF Fellow
Louisiana State University

Mike Kaiser, PhD
Instrument Manager
California State University at Northridge

Shamus Khan, PhD
Professor of Sociology, Department Chair
Columbia University

Laura A. King, PhD
Curators' Distinguished Professor
University of Missouri Columbia

Olivia Kirtley, PhD
Postdoctoral Fellow
KU Leuven

Mark Krzmarzick, PhD
Assistant Professor of Civil and Environmental Engineering
Oklahoma State University

Candace Lapan, PhD
Assistant Professor of Psychology
Wingate University

Gina Lee-Glauser, PhD
Vice President for Research & Scholarship
Clarkson University

Nikki Legate, PhD
Assistant Professor of Psychology
Illinois Institute of technology

Cynthia Levine, PhD
Postdoctoral Fellow
Northwestern University

Neil Lewis, Jr., PhD
Assistant Professor of Communication and Social Behavior
Cornell University

Julie Libarkin, PhD
Professor of Earth and Environmental Sciences
Michigan State University

Phui Cheng Lim, PhD
Postdoctoral Fellow
University of Nebraska-Lincoln

Corinna Loeckenhoff, PhD
Associate Professor of Human Development
Cornell University

Jason Londo, PhD
Adjunct Associate Professor of Integrative Plant Science
USDA/Cornell

Debbie S. Ma, PhD
Associate Professor of Psychology
California State University Northridge

Christy Mallory, JD
Director of State and Local Policy
Williams Institute, UCLA School of Law

Tara M. Mandalaywala, PhD
Assistant Professor of Psychological and Brain Sciences
University of Massachusetts Amherst

Freddie Marquez, BS
Graduate Student
University of California, Irvine

Joshua Martin, PhD
Assistant Professor of Biology
Colby College

Sara E. Mason, PhD
Associate Professor of Chemistry
University of Iowa

Allison Master, PhD
Research Scientist, Institute for Learning & Brain Sciences
University of Washington

Elisabetta Matsumoto, PhD
Assistant Professor of Physics
Georgia Tech

Justin L. Matthews, PhD
Assistant Professor of Psychology
California State University, Monterey Bay

Iris Mauss, PhD
Associate Professor of Psychology
UC Berkeley

Gary McDowell, PhD
Executive Director
Future of Research

Matthew McGill, PhD
Research Scientist
Goddard Space Flight Center

Patrick McGonigal, BA
Graduate Student in Clinical Psychology
University of Nebraska Lincoln

Matthias Mehl, PhD
Professor of Psychology
University of Arizona

Pranjal Mehta, PhD
Senior Lecturer of Experimental Psychology
University College London

Peter Mende-Siedlecki, PhD
Assistant Professor of Psychology
University of Delaware

Ilan H. Meyer, PhD
Williams Distinguished Senior Scholar of Public Policy
Williams Institute, UCLA School of Law

Seth J. Meyer, LMSW, PhD
Assistant Professor of Political Science
Bridgewater State University

Paul Meyer, PhD
Associate Professor of Psychology
University at Buffalo

Heino F. L. Meyer-Bahlburg, PhD
Professor of Clinical Psychology (in Psychiatry)
Vagelos College of Physicians & Surgeons of Columbia University

Nicholas M Michalak, MS
PhD Candidate
University of Michigan

Kalina Michalska, PhD
Assistant Professor of Psychology
University of California, Riverside

Alyssa Mikytuck, MPP
Graduate Student
Georgetown University

David I. Miller, PhD
Researcher
American Institutes for Research

Daniel Lee Millimet, PhD
Professor of Economics
Southern Methodist University

Tessa Montague, PhD
Postdoctoral Fellow
Harvard University

Jin Montclare, PhD
Professor of Chemical and Biomolecular Engineering
New York University

Katherine Moore, PhD
Assistant Professor of Psychology
Arcadia University

Ethan Morgan, PhD
Postdoctoral Fellow
Northwestern University

David Moskowitz, PhD
Research Assistant Professor
Northwestern University

Corinne Alison Moss-Racusin, PhD
Assistant Professor of Psychology
Skidmore College

Mary C. Murphy, PhD
Associate Professor and Associate Vice Provost for Student Diversity and Inclusion
Indiana University

Maital Neta, PhD
Assistant Professor of Psychology
University of Nebraska-Lincoln

John M. Nicoludis, PhD
Postdoctoral Fellow
University of California, San Francisco

Julie K Norem, PhD
Hamm Professor of Psychology
Wellesley College

Danielle Findley-Van Nostrand, PhD
Assistant Professor of Psychology
Roanoke College

James S. Nowick, PhD
Professor of Chemistry
University of California, Irvine

Tehila Nugiel, MS
Graduate Student
The University of Texas at Austin

Philip Nussenzweig
MD/PhD Student, Clinical Fellow
The Rockefeller University

Jessica O'Brien
Undergraduate
New York University

Paul A. O'Keefe, PhD
Assistant Professor of Psychology
Yale-NUS College

Allison P. O'Leary, PhD
Assistant Professor of Psychology
Brevard College

Kristina Olson, PhD
Associate Professor of Psychology
University of Washington

Christina Padilla, MPP
PhD Student
Georgetown University

Elizabeth Levy Paluck, PhD
Professor of Psychology and Public Affairs
Princeton University

Dr. Shauna M Paradine, PhD
Assistant Professor of Chemistry
University of Rochester

Dipanwita Pati, PhD
Postdoctoral Fellow
UNC-Chapel Hill

Karl J. Petersen, PhD
Researcher
Curie Institute

Rachel Pizzie, PhD
Postdoctoral Fellow
Georgetown University

Nick D. Pokorzynski, BSc
Graduate Student
Washington State University

Morgan Polikoff, PhD
Associate Professor of Education
University of Southern California

Marisa Putnam, MPP
Graduate Student
Georgetown University

Kimberly Quinn, PhD
Associate Professor of Psychology
DePaul University

Kristina Rapuano, PhD
Postdoctoral Fellow
Yale University

Thomas Remble, MS, MPH, DHS
Director of Research, IMPACT
Northwestern University

Kelly Rentscher, PhD
Postdoctoral Scholar
University of California, Los Angeles

Shawn Rhoads, BA.
PhD student
Georgetown University

Abigail Riemer, MA
Doctoral Student, NSF Fellow
University of Nebraska-Lincoln

Charles Samuel Henry Robinson, BS, MSc
PhD Candidate
The University of New Mexico

Troy A. Roepke, PhD
Associate Professor of Animal Sciences
Rutgers University

Fred Rubino
Graduate Student
Harvard University

Stephen T. Russell, PhD
Priscilla Pond Flawn Regents Professor in Child Development
Chair, Department of Human Development and Family Sciences
University of Texas at Austin

Jocelyn Samuels, JD
Executive Director and Roberta A. Conroy Scholar of Law
Williams Institute, UCLA School of Law

Eric J. Schelter, PhD
Professor of Chemistry
University of Pennsylvania

Eric W. Schrimshaw, PhD
Associate Professor of Sociomedical Sciences
Columbia University

Gabriel Schwartz
PhD Candidate
Harvard University

John Sciarappo
Graduate Student
New York University

Heather Sheridan, PhD
Assistant Professor of Psychology
University at Albany, State University of New York

Jeffrey Sherman, PhD
Professor of Psychology
UC Davis

Margaret Shih, PhD
Professor of Psychology
University of California, Los Angeles

Wolfgang Sigmund, PhD
Professor of Materials Science and Engineering
University of Florida

Jennifer Silvers, PhD
Assistant Professor of Psychology
University of California, Los Angeles

Gale M. Sinatra, PhD
Stephen Crocker Professor of Education
University of Southern California

Christofer Skurka, MS
PhD Candidate in Communication
Cornell University

Pamela K. Smith, PhD
Associate Professor of Economics and Strategic Management
University of California, San Diego

Jeanine Stefanucci
Associate Professor of Psychology
University of Utah

Janet D. Stemwedel, PhD
Professor of Philosophy
San Jose State University

Steven J. Stroessner, PhD
Professor of Psychology
Barnard College

Daphna Stroumsa, MD, MPH
Clinical Lecturer in Obstetrics & Gynecology
University of Michigan

Brittany Lynne Sutherland, PhD
Postdoctoral Fellow
University of Arizona

Abigail L. S. Swann, PhD
Associate Professor of Atmospheric Science and Biology
University of Washington

Elise Swanson
Graduate Student
University of Arkansas

Courtney Sobers Swindell, PhD
Assistant Teaching Professor
Rutgers University-Newark

Rae Thomas, MA
Behavioral Health Counselor - ERC
University of Nebraska - Lincoln

Amy O. Tsui, PhD
Professor of Population, Family and Reproductive Health
Johns Hopkins Bloomberg School of Public Health

Lucina Uddin, PhD
Associate Professor of Psychology
University of Miami

James S. Uleman, PhD
Professor of Psychology
New York University

Fernanda Vasconcelos, PhD
Postdoctoral Fellow
University of Florida

Bess Vlasisavljevic, PhD
Assistant Professor of Chemistry
University of South Dakota

Austin Wadle, BA
PhD Student
Duke University

Abraham Waldman, PhD
Postdoctoral Fellow
Stanford University

Micaiah Ward, BSc
PhD Candidate in Cellular and Molecular Biology
Florida State University

Omar Wasow, PhD
Assistant Professor of Politics
Princeton University

Ryan Watson, PhD
Assistant Professor of Human Development and Family Studies
University of Connecticut

Bradley M. Weisz, PhD
Assistant Professor of Psychology
California State University, Long Beach

Brenton M. Wiernik, PhD
Assistant Professor of Psychology
University of South Florida

Katie Wilkinson, PhD
Associate Professor of Biological Sciences
San Jose State University

Wendy M. Williams, PhD
Professor of Human Development
Cornell University

Bianca D.M Wilson, PhD
Rabbi Barbara Zacky Senior Scholar of Public Policy
Williams Institute, UCLA School of Law

Joseph P. Wilson, PhD
Senior Education Consultant
American Institutes for Research

Matthew Wipperman, PhD
Research Scholar
Memorial Sloan Kettering Cancer Center

Daniela Witten, PhD
Professor of Statistics and Biostatistics
University of Washington

Lisa Xu
PhD Candidate
Harvard University

Jeffrey M Yau, PhD
Assistant Professor of Neuroscience
Baylor College of Medicine

Jeremy B. Yoder, PhD
Assistant Professor of Biology
California State University Northridge

Joshua Zosky, BA
Psychology graduate student
University of Nebraska-Lincoln

Arnold M. Zwicky, PhD
Distinguished University Professor of Linguistics, Emeritus
The Ohio State University