Undergraduate Physics and Astronomy (TEAM-UP).[33] Based on student and department head surveys, site visits to high-performing physics departments, and interviews with African American students, the report identified five key factors for their success: (1) fostering a sense of belonging, (2) creation of a physics identity, (3) effective teaching and academic support, (4) personal financial support, and (5) leadership to create environments, policies, and structures to maximize African American student success. The report's goal is to at least double the number of African American physics and astronomy bachelor's degree recipients by 2030, and to transform the field into one that welcomes, includes, and values all people.[34]

The panel believes that the Profession must apply the same level of regard it demonstrates in studying the universe toward the recognition of how human and social interactions contribute to knowledge and workplace culture. Just as the Profession relies on its technicians to constantly update computational resources and software to keep pace with science capabilities, it must also work with social scientists to help it foster the social, psychological, structural, and cultural environment where all who ponder the universe can share in the production and validation of that knowledge.

N.5 A VALUES STATEMENT FOR THE PROFESSION OF ASTRONOMY AND ASTROPHYSICS

Guiding Principle: The pursuit of science, and scientific excellence, is inseparable from the humans who animate it.

The construction of the astronomy and astrophysics decadal survey is itself a demonstration of the inseparability of humans and the science they produce. Each decadal survey, delivered for congressional review, is the product of an internal set of weighted priorities determined by a selected group of people with an assumed broad set of astrophysical expertise. This interplay between (1) the *people* who influence and create the Profession; (2) the *processes*, norms, structures, and systems that govern and are reflected by everyday activities; and (3) the consensus-based *priorities* and desired outcomes they advocate for, are artifacts of the culture[35] of astronomy. All scientific disciplines are knowledge communities, with ways of knowing, distinctive language, and beliefs about what types of questions are most important to pursue. The knowledge that communities produce, including scientific communities, are therefore cultural knowledge.[36] Stated another way, "scientific knowledge is but a particular form of cultural knowledge."[37]

As recent National Academies reports[38] have emphasized, *the climates and cultures of science are inseparable from the advancement of scientific knowledge and investments*. Previous decadal surveys

[33] See https://www.aip.org/sites/default/files/aipcorp/files/teamup-full-report.pdf.

[34] The AIP National Task Force to Elevate African American Representation in Physics and Astronomy (TEAM-UP), 2019, *The Time Is Now: Systemic Changes to Increase African Americans with Bachelor's Degrees in Physics and Astronomy*, College Park, MD: American Institute of Physics.

[35] Culture is the "languages, customs, beliefs, rules, arts, knowledge, and collective identities and memories developed by members of all social groups that make their social environments meaningful" (American Sociological Association). See https://www.asanet.org/topics/culture#:~:text=jpg,make%20their%20social%20environments%20meaningful, accessed 18 August 2020.

[36] R.K. Merton, 1973, quoting Max Weber, in "Science and the Social Order (1938)," in *The Sociology of Science: Theoretical and Empirical Investigations*, Chicago: University of Chicago Press.

[37] L. Chambers, 2019, A different kind of dark energy: Evidence for placing race and gender in physics, white paper submitted to the Astro2020 Decadal Survey, https://baas.aas.org/pub/2020n7i162/release/1.

[38] NASEM (National Academies of Sciences, Engineering and Medicine), 2018, *Sexual Harassment of Women*, Washington, DC: The National Academies Press; NASEM, 2019, *The Science of Effective Mentorship in STEMM*, Washington, DC: The National Academies Press; NASEM, 2018, *Graduate STEM Education for the 21st Century*, Washington, DC: The National Academies Press; NASEM, 2020, *Addressing the Underrepresentation of Women in Science, Engineering, and Medicine*, Washington, DC: The National Academies Press.

have prioritized technical resources to produce the best science, but they did not include written insight into the nontechnical factors that guided their ranked selection. This resource prioritization includes the implicit values that have historically guided astronomy's culture and are demonstrated by its composition, behaviors, and rituals. While implicit cultural values can be learned over time, this favors those already living within these norms and thus embeds structural inequity. By leaving implicit the values that have guided past decadal surveys' scientific priorities, the Profession failed to move forward together toward a more equitable future, as described Section N.2, above. Therefore, an explicit statement of equity-advancing values—(1) equitable access, (2) multimodal expertise, (3) responsible stewardship, and (4) accountability, which are further described below—will enable the Profession to foster engagement, increase opportunities for equitable participation in the field, and lay the foundation for lasting scientific excellence in a more diverse nation.[39,40,41,42]

For example, the Profession's inherently hierarchical structure, based on assumed individual superiority of innate scientific capacity, perpetuates in part by casting the structure of opportunity as a "scientific meritocracy." Meritocracies are well-known to reproduce structural inequities by defining merit using metrics that favor historically privileged groups and disadvantage those with different or emerging forms of leadership and expertise.[43] The Profession demonstrates commitment to scientific rigor in its pursuit of understanding the universe by conceptualizing and launching successful missions, as prioritized in this and previous decadal surveys. However, the Profession has not prioritized equitable access to the resources available from federal sponsoring agencies in pursuit of that understanding, as evidenced by the large gap between the demographic profile of the Profession and the U.S. population.[44] Given that intellect is distributed equally across the entire human population, any deviation from the country's demographic composition in the Profession delineates structural inequities[45] along the pathways to full participation in the field. These structural inequities include, but are not limited to, racism, sexism, ableism, homophobia, xenophobia, neurotypical bias, and the intersecting oppression, often with multiplicative deterring effects on those holding multiple marginalized identities. The history of this country and the Profession encode discrimination and structural oppression into virtually every system.[46,47] The Profession must proactively remove these systems and replace them with evidence-based, equity-advancing ones. The field must evolve narrow definitions of scientific rigor into scientific excellence. The panel defines scientific excellence as the equitable optimization of knowledge, infrastructure, and innovations, and includes technical and nontechnical contributors and stakeholders,

[39] S.A. Hewlett, M. Marshall, and L. Sherbin, 2013, How women drive innovation and growth, *Harvard Business Review–HBR Blog Network*, August 23.

[40] A. Kezar, 2013, *How Colleges Change: Understanding, Leading, and Enacting Change*, New York: Routledge.

[41] A.J. Kezar and E.M. Holcombe, 2017, *Shared Leadership in Higher Education*, Washington, DC: American Council on Education.

[42] A. Kezar and D. Maxey, 2014, Faculty matter: So why doesn't everyone think so, *Thought and Action* 2014:29–44.

[43] J.R. Posselt, 2016, *Inside Graduate Admissions: Merit, Diversity, and Faculty Gatekeeping*, Cambridge, MA: Harvard University Press.

[44] Population Census, 2019, U.S. demographics (White: 60 percent; Asian or Asian American: 6 percent; Hispanic or Latino: 18.5 percent; Black or African American: 14 percent; American Indian or Alaska Native: 1.5 percent), https://www.census.gov/quickfacts/fact/table/US/PST045219.

[45] C. Miller and K. Stassun, 2014, A test that fails, *Nature* 510:303–304.

[46] C. Miller and K. Stassun, 2014, A test that fails, *Nature*, 510:303–304.

[47] S.C. Wilder, 2013, *Ebony and Ivy: Race, Slavery, and the Troubled History of America's Universities*, New York: Bloomsbury Press.

which produce higher quality[48,49,50,51] and more innovative[52] outcomes. By this definition, true scientific excellence is not possible without equitable participation.[53]

There is no better time to take stock of the Profession than in a drastically changing world. The impacts of the "COVID era"[54] have not been experienced in recent history: millions of deaths worldwide, widespread shelter-in-place, and a severe recession. Add to this the international demonstrations of millions of people in support of the Movement for Black Lives—a response to often unprosecuted police-sanctioned and vigilante murders of Black people (see Box N.2). Taken together, the sense that the world is irreversibly changing cannot be denied, and as members of the astronomical and global community, the Profession is unquestionably affected by these events. In this context, the relationships between product and person and between individual and community are being interrogated in unprecedented ways that are directly relevant to the survival and success of professional astrophysics.

Clearly articulated values are necessary to guide policy development. This is demonstrated by the founding and amended legislation (hereafter, the founding documents) that outline the congressionally mandated goals of the sponsoring agencies. The sponsoring agency values[55] identified are: (1) innovation (e.g., NASA Act 2008; Section 102.d.5[56]); (2) economic prosperity (e.g., NSF Act 2018; Section 1862.a.1[57]); (3) health and well-being (e.g., DOE Act 2014; Section 7111.2[58]); and (4) broadening participation (e.g., DOE Act 2014; Section 7141.b[59]). These values connect the well-being of individuals in and adjacent to the Profession to the national interest.

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[48] H.H. Friedman, L.W. Friedman, and C. Leverton, 2016, Increase diversity to boost creativity and enhance problem solving, *Psychosociological Issues in Human Resource Management*, 4(2):7–33.

[49] K.A. Jehn, G.B. Northcraft, and M.A. Neale, 1999, Why differences make a difference: A field study of diversity, conflict and performance in workgroups, *Administrative Science Quarterly*, 44(4):741–763.

[50] T.H. Cox and S. Blake, 1991, Managing cultural diversity: Implications for organizational competitiveness, *The Executive*, 5(3):45–56, *JSTOR*, www.jstor.org/stable/4165021, accessed 18 August 2020.

[51] S.A. Hewlett, M. Marshall, and L. Sherbin, 2013, How women drive innovation and growth, *Harvard Business Review–HBR Blog Network*, August 23.

[52] B. Hofstra, B., et al., 2020, The diversity–innovation paradox in science, *Proceedings of the National Academy of Sciences* 117(17):9284–9291.

[53] B. Hofstra, B., et al., 2020, The diversity–innovation paradox in science, *Proceedings of the National Academy of Sciences* 117(17):9284–9291.

[54] E. Yong, 2020, How will the coronavirus end? *Atlantic*, 25 March, https://www.theatlantic.com/health/archive/2020/03/how-will-coronavirus-end/608719/, accessed 18 August 2020.

[55] The sponsoring agency values identified here are not an exhaustive list of the priorities as outlined in their respective founding documents, but are indicative of priority convergence as determined by this panel.

[56] NASA Act, 2008, "The preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to the conduct of peaceful activities within and outside the atmosphere."

[57] NSF Act, 2018, "The Congress finds that the fundamental research and related education program supported by the Federal Government and conducted by the Nation's universities and colleges are essential to our national security, and to our health, economic welfare, and general well-being."

[58] DOE Act, 2014, "The Congress of the United States finds that this energy shortage and our increasing dependence on foreign energy supplies present a serious threat to the national security of the United States and to the health, safety and welfare of its citizens."

[59] DOE Act, 2014, "The Director shall have the duty and responsibility to advise the Secretary on the effect of energy policies, regulations, and other actions of the Department and its components on minorities and minority business enterprises and on ways to insure that minorities are afforded an opportunity to participate fully in the energy programs of the Department."

BOX N.2 Black Lives Matter

The members of the State of the Profession and Societal Impacts Panel unequivocally affirm that Black lives matter. This needs to be manifested in the treatment of Black people indirectly and directly connected to this Profession. Current data[1] and the historical record[2] tell us that much progress remains urgently to be made. The brutality and systemic racism that have resulted in an ever-growing list of slain Black people, including[3] George Floyd, Ahmaud Arbery, and Breonna Taylor, have necessitated mass demonstrations and strikes in which many individual astronomers and astronomical organizations and societies have participated.

To those of us who identify as both Black and astronomers, the traumatizing effects of anti-Black racism are no different whether experienced inside or outside the classroom, in the laboratory or on the street getting to and from the places where we do our science.[4] We cannot bring our full and best selves to astronomical inquiry when simply getting to work can be frightening, injurious, or fatal. Many existing reports,[5] first-person accounts,[6,7] and news coverage[8] make it clear that the same anti-Black racism that exists in society also persists within professional spaces and professions—including astronomy.[9,10]

This is but one facet of a complex and overlapping web of the institutionalized marginalization and oppression of many people influencing and influenced by the Profession.[11] All aspects of structural oppression need to be thoughtfully and consistently addressed before we can truly say that we have an inclusive field of astronomy and astrophysics.

[1] See https://mappingpoliceviolence.org/aboutthedata, accessed 26 August 2020.
[2] See https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6080222/, accessed 26 August 2020.
[3] See https://interactive.aljazeera.com/aje/2020/know-their-names/index.html, accessed 26 August 2020.
[4] E. Armah, 2012, Emotional justice, *Network Journal*, 19(2):68.
[5] See https://www.nature.com/articles/d41586-020-01741-7, accessed 26 August 2020.
[6] See https://twitter.com/BlackInTheIvory.
[7] See https://www.nature.com/articles/d41586-020-01741-7, accessed 26 August 2020.
[8] See https://www.chronicle.com/article/I-Was-Fed-Up-How/248955, accessed 26 August 2020.
[9] See https://www.buzzfeednews.com/article/stephaniemlee/university-florida-astronomy-racism-emails, accessed 26 August 2020.
[10] See https://www.buzzfeednews.com/article/stephaniemlee/yale-astronomy-systemic-racism-emails, accessed 26 August 2020.
[11] See https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2017JE005256?_ga=2.68586385.1242262924.1598481211-1505064369.1598481208, accessed 26 August 2020.

Motivated by these documents, the panel explicitly defines a set of human-centered, equity-advancing values that present an opportunity for current and potential astronomers to equitably contribute to scientific excellence. These equity-advancing values are: (1) equitable access, (2) multimodal expertise, (3) responsible stewardship, and (4) accountability, and the panel describes them here with their connection to sponsoring agency values. These values were not developed in isolation, but were gleaned from best practices as reported in the literature (described below), from submitted white papers, public town halls for the present decadal survey, expertise of the panel, and numerous National Academies reports and consensus studies. In short, the panel has sought to summarize, synthesize, and clarify a minimum set of values that would increase equity in the field of astronomy and astrophysics.

Some readers may find the terms and concepts included in this values section new and uncomfortable. However, extensive sociological, psychological, pedagogical, and organizational development literature indicates that it is precisely this confrontation of new concepts and ideas that leads to unexpected insights. The panel notes that there is a strong evidentiary basis in research on change about the importance of sensemaking, that is, making new meaning around concepts through a variety of

inputs.[60,61] The reader is urged to attempt to inhabit a different and perhaps unfamiliar perspective in trying to interpret these ideas. These short paragraphs represent decades of research, experiences, and expertise, only a small fraction of which can be presented here. The reader is invited to explore the literature cited here and throughout the report.

Equitable access is the set of practices, procedures, norms, and structures that ensure that all current and future astronomy community members can contribute their unique talents and perspectives to the field, while having fair use of all necessary and available resources. An equitable professional structure has to include an "analysis of existing decision-making, agenda-setting power structures and the degree to which those structures are proximal to those with collective, implementation-level knowledge of how those large-scale decisions impact the members with lowest institutional power."[62] This requires the identification and acknowledgement of the ways that individuals and institutions contribute to scientific excellence and how relationships among various actors impact the Profession. Equitable access accounts for the extent to which there is equity *within the organizations* that educate the next generation, for whom training is a prerequisite to access career opportunities in the Profession. Cultivating equitable access allows the Profession to fully contribute to the agencies' value of equitable participation by anyone in the United States.

Multimodal expertise is the multiple ways of prioritizing, assessing[63] and evaluating knowledge, including the science and research objectives of the field. In the humanities, it is termed "epistemology."[64] Multimodal learning[65,66] and leadership[67] styles are well known in the social sciences, STEM education, and management/leadership literatures. Such expertise will expand the scope of inquiry in unexpected ways,[68]and require the development of broader skill sets for many members of the Profession. Valuing it will also require recognition of many who already demonstrate such skills and leadership abilities. This includes technical, individual, interpersonal, cultural, and systems-thinking practices such as active listening, open-mindedness, attention to universal design,[69] cultural humility[70] and literacy, social justice, and growth mindsets. The Profession historically prizes objective, rational thinking in the pursuit of scientific rigor. Yet, how it approaches research questions, determines funding priorities, locates sites of research and investigation, conducts the research, and interprets the results are all dependent on the

[60] See https://www.aip.org/sites/default/files/aipcorp/files/teamup-full-report.pdf

[61] S. Elrod and A. Kezar, 2016, *Increasing Student Success in STEM*, Washington, DC: Association of American Colleges and Universities.

[62] M. Dones, et al., "Systems Transformation," *National Innovation Service*, https://www.nis.us/systems-transformation, accessed 18 August 2020.

[63] L. Winig and R. Livingston, "Values-Based Leadership Across Difference: The Life and Legacy of Nelson Mandela," *Harvard Business Review*, https://values-based-leadership-across-difference-the-life-and-legacy-of-nelson-mandela/KS1238, accessed November 9, 2020.

[64] S.G. Harding, ed., 1987, *Feminism and Methodology: Social Science Issues*, Bloomington: Indiana University Press.

[65] E.F. Keller, 1984, *A Feeling for the Organism, 10th Anniversary Edition: The Life and Work of Barbara McClintock*, New York: Macmillan.

[66] A. Lightman, 2018, *Searching for Stars on an Island in Maine*, New York: Vintage.

[67] J. Alvehus, 2019, Emergent, distributed, and orchestrated: Understanding leadership through frame analysis, *Leadership*, 15(5):535–554, doi:10.1177/1742715018773832.

[68] J. Posselt, 2016, *Inside Graduate Admissions: Merit, Diversity, and Faculty Gatekeeping*, Cambridge, MA: Harvard University Press.

[69] "Universal design is the design and composition of an environment so that it can be accessed, understood, and used to the greatest extent possible by all people regardless of their age, size, ability, or disability." See https://universaldesign.ie/Built-Environment/Shared-Space/Shared-Space-Full-Report.pdf.

[70] Cultural humility is a "lifelong commitment to self-evaluation and self-critique, to redressing the power imbalances … , and to developing mutually beneficial and non-paternalistic clinical and advocacy partnerships with communities on behalf of individuals and defined populations." M. Tervalon and J. Murray-Garcia, 1998, Cultural humility versus cultural competence: A critical distinction in defining physician training outcomes in multicultural education, *Journal of Health Care for the Poor and Underserved*, 9(2):117–124.

communities of individuals that are animating those processes. This becomes increasingly important as large collaborations become more prominent. Increasing the number of perspectives, expertise, experiences, and cultural touchpoints makes the process of collaborative work more difficult,[71] but the outcomes more just,[72,73] innovative,[74] and of higher quality.[75,76,77,78] This productive friction will encourage scientific excellence while increasing equitable access. Multimodal expertise maps directly to the sponsoring agency value of innovation. The Profession's increasing complexity will require broader skill sets than simply technical expertise; valuing these skills will produce innovative outcomes.

Responsible stewardship is the reciprocal care for the environment, land, and people in relation to resources consumed by the Profession. Responsible stewardship requires that the Profession recognize the "*common but differentiated responsibilities and respective capabilities*"[79] held throughout astronomy. The actions taken by the Profession impact living beings and the environment. Practicing responsible stewardship in the Profession can lead to the agencies' value of economic prosperity by supporting the learning and development of its membership and prioritizing environmentally, financially, and socially responsible scientific inquiries.

Accountability is the clear articulation of thoughtful, rigorous, site- and context-specific, effective guidelines to protect the members of the Profession with less privilege and power, while providing clear actions to take when infractions are suspected or perpetrated. Accountability holds community members responsible for realizing the stated equity-advancing values. The privileging of personal autonomy without systems of accountability has been a major impediment to the realization of ethical, excellent science, a concept that Indigenous Hawaiians refer to as "Imi Pono."[80] Accountability requires that the Profession assess and modify distribution of power, and allow for restorative justice processes that are responsive to the needs of those who have been victimized when considering commensurate consequences.[81] Discriminatory, inequitable, and unethical systems and people must be addressed, including a punitive response for consistent and/or egregious violations of ethical policies. Demonstrated accountability must be structural, data-driven, and site-specific, and include active learning and listening opportunities for all community members. Accountability fosters collective professional well-being, in support of sponsoring agency values, by decisively and quickly addressing infractions when they occur, and supporting structures necessary to reduce the likelihood for such infractions to occur in the first place. This will reduce attrition in the field and increase the vitality of the Profession.

These human-centered, equity-advancing values have been embedded into this report's suggestions, ensuring alignment between the proposed growth of the profession and the guiding

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[71] C.Y. Tang and C. Byrge, 2016, Ethnic heterogeneous teams outperform homogeneous teams on well-defined but not ill-defined creative tasks, *Innovation*, 2.

[72] See https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2837428/.

[73] K.W. Phillips, et al., 2014, How diversity works, *Scientific American*, 311(4):42–47.

[74] B. Hofstra, et al., 2020, The diversity–innovation paradox in science, *Proceedings of the National Academy of Sciences*, 117(17):9284–9291.

[75] H.H. Friedman, L.W. Friedman, and C. Leverton, 2016, Increase diversity to boost creativity and enhance problem solving, *Psychosociological Issues in Human Resource Management*, 4(2):7–33.

[76] K.A. Jehn, G.B. Northcraft, and M.A. Neale, 1999, Why differences make a difference: A field study of diversity, conflict and performance in workgroups, *Administrative Science Quarterly*, 44(4):741–763.

[77] T.H. Cox and S. Blake, 1991, Managing cultural diversity: Implications for organizational competitiveness, *Executive*, 5(3):45–56, *JSTOR*, www.jstor.org/stable/4165021, accessed 18 August 2020.

[78] S.A. Hewlett, M. Marshall, and L. Sherbin, 2013, How women drive innovation and growth, *Harvard Business Review–HBR Blog Network*, August 23.

[79] United Nations Framework Convention on Climate Change, 1992 Treaty, 2015, "Common but Differentiated Responsibilities and Respective Capabilities," 30 July, https://climatenexus.org/climate-change-news/common-but-differentiated-responsibilities-and-respective-capabilities-cbdr-rc/, accessed 18 August 2020.

[80] A. Kalili, quoted in B. Lewis, "Plenary Lecture: The Stewardship of Maunakea's Legacy from the Perspective of the Hawaiian and Astronomical Communities," https://astrobites.org/2020/01/07/astrobites-at-aas-235-day-2/, accessed 27 August 2020.

[81] See http://restorativejustice.org/, accessed 18 August 2020.

principles of the federal agencies. The astronomical community will ultimately be responsible for the acceptance and implementation of these values; they cannot be successfully implemented if deployed in a "top down" fashion.[82] *The hope is that the Profession moves forward from the challenges of 2020 with a collective commitment to equity and scientific excellence, a clear plan as laid out in the following suggestions, and benchmarks for progress that can be evaluated in the future.*

N.6 GOALS AND SUGGESTIONS

The panel's overarching goal is to invigorate the Profession through training and workplaces that reflect equity-advancing values and allow the full human diversity of the nation to meaningfully and maximally contribute to the field. The panel's suggestions regarding the state of the Profession are situated within the current landscape and are intended to be actionable within the decade. As is typical for a decadal survey, the primary actors for most of these recommendations are the funding agencies that sponsored Astro2020. However, the panel also includes recommendations for the academic departments, private foundations, observatories, professional societies, government laboratories, and research centers where astronomers work.

In the following sections, the panel presents 7 goals with a total of 18 suggestions considered critical to begin to create a profession that promotes equity-advancing values in order to achieve scientific excellence. Each section follows the same format: first, research findings are presented to motivate each suggestion, and then example methods are provided that can help to carry out the given suggestion, identifying actors, impact, and estimated costs. The findings, suggestions, and methods that are presented in this report are not intended to be prescriptive but may include detail for clarity. Each agency would need to adapt the suggestions to work within their own context to achieve the proposed goals.$$

N.6.1 Goal 1: Collecting, Evaluating, and Acting on Demographic Data

Collect and analyze demographic data wherever astronomy research, education, or training is conducted and create internal agencies or society offices to review data and suggest policy change.

To achieve a diverse and inclusive profession requires a robust mechanism to (1) collect data pertinent to the values the Profession espouses, (2) report those data for transparency and accountability, and (3) use the data to compare outcomes to the desired state and adjust as needed. Without data, it is not possible to fully assess the state of the Profession or determine progress toward desired outcomes.

N.6.1.1 Current Practices in the Collection of Demographic Data

The panel requested data on astronomy-related programs from NASA, NSF, DOE, and management organizations for major astronomical facilities. Demographics of staff, contractors, review panels, proposers, awardees of grants and fellowships, and proposal success rates were also requested. Last, the panel sought data on agency programs and funding to promote broader access to opportunities and reduce barriers to achieving success in the field for underrepresented groups.

Minimal data were produced by the federal agencies. While all three agencies collect some demographic data (gender, race, ethnicity) on staff and applicants for funding, several issues are clear. First, the agencies do not collect and track the same quantity or categories of demographic data. NSF collects demographic information, but publishes it only at the highest level of aggregation, and data on

[82] F. Dobbin and A. Kalev, 2018, Why doesn't diversity training work, *Anthropology Now* 10(2):48–55.