

Improving the equity landscape at U.S. academic institutions: 10 strategies to lead change

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Abstract

In the United States, disparities with respect to race, ethnicity, and gender are common across academic institutions, particularly those that are large and have health research-oriented missions. Disparity-affected issues include leadership roles, funding, tenure, and salary. This paper presents a review of the current literature describing those disparities, with a focus on health professions

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serving major universities in the United States, and proposes approaches to create greater diversity, equity, inclusion and belonging (DEIB) within them. While many organizations nationally are working to address DEIB disparities, academic institutions can benefit from implementing structured approaches and training to nurture their cultures, foster DEIB, and promote psychological safety. We present a literature-based 10-component approach institutions can adopt with relative ease and thus positively support advancing their DEIB engagement. These 10 strategies include the following: Clearly stating DEI values; Conducting gap analyses to identify issues; Using incentives to propel change; Removing bias from recruiting processes; Implementing blind applications processes; Diversifying selection committees; Creating inter-institutional partnerships that truly represent shared power; Developing people and the pipeline; Formalizing mentorship and sponsorship programs; and instituting anti-bias training. Easily implementable strategies can both foster change and build the will and confidence to pursue larger DEIB goals in the future.

Keywords

diversity, equity, inclusion, and belonging, diversifying leadership, institutional culture, diversity, equity, inclusion, and belonging strategies

Introduction

United States (U.S.) academic institutions, particularly those that are large and focus on a research mission, such as those with major health professions schools (schools of medicine, nursing, pharmacy, allied health, public health, etc.), are currently contending with wide-ranging disparities that have surfaced with respect to research funding, tenure awards, salary, and leadership roles along racial, ethnic, and gender lines (Frechtling et al., 2012). There are clear opportunities for improvement and yet the complexity of these massive organizations presents challenges to both creating and tracking meaningful change, particularly in the increasingly highly politicized environment. The literature presents a strong case for structural issues associated with lack of fairness and inequity in selection, pay and promotion based on gender and race in higher education in America.

Across the United States, institutions are examining their policies, priorities, and actions in the renewed focus on diversity, equity, inclusion, and belonging (DEIB) and the lack of representation of faculty, staff and leaders that

reflect the diverse population of the country. For example, the American Medical Association (AMA) included embedding racial justice and health equity into its 2021–23 strategic plan (American Medical Association, 2021). Similarly, the National Institutes of Health developed a 2022–2026 strategic plan to promote scientific workforce diversity (National Institutes of Health, 2022). Inequities, sometimes profound, all long-standing, stimulate these reviews and inquiries since organizations seem to be struggling to meet their DEIB goals and representing the heterogeneity in the populations they serve. As a structural example, most U.S. institutions of higher education still have decision making, budgetary duties, and control of hiring and promotion practices, which constitute a great deal of power, concentrated in the hands of a very narrow demographic which has historically held such power in these institutions as well as in larger society (National Center for Education Statistics, 2021; Frechtling et al., 2012). Concentrations of power create cultural norms that can markedly complicate the path to leadership for those from different demographic or cultural groups, such as race, ethnicity, or gender

(Association of American Medical Colleges, 2019; Ginther et al., 2016; Lisnic et al., 2019) as exemplar groups of focus here. Most notably, a culture of whiteness is perpetuated when opportunities for career advancement, mentorship and resources in academic institutions is segregated to the dominant (white) group which then reinforces white privilege. The antecedents of white privilege assumes white groups are superior and further sustains imbalances in academic mobility between minoritized populations and whites in leadership positions (Rodriguez, Tumen, and Campbell, 2021). Given this, federally funded research enterprises, particularly those related to the health professions, have implemented mandates to support and foster leadership in research opportunities that benefit the diverse body of residents of the US (Odedina and Stern, 2021).

Examining the university landscape in the United States

While the proportion of students in U.S. higher education has diversified, with the racial make-up as of 2020 being approximately 46% non-White students compared to approximately 37% in 2010 (National Center for Education Statistics, 2021), diversity among faculty and leadership in those same universities lags tremendously behind. In the fall of 2017, only 21.5% of the 711,000 full-time faculty employed at higher education institutions were members of racially minoritized groups (Taylor et al., 2020). By the fall of 2020, the numbers were largely unchanged at 21.9% racially minoritized groups (10.9% Asian/Pacific Islander, 5.7% Black, and 5.3% Hispanic) as compared to 67.4% white for full-time faculty at U.S. post-secondary institutions (Taylor et al., 2020). University leadership follows a similar trend with 16.8% of university presidencies held by members of racially minoritized groups (Espinoza et al., 2020).

Academic institutions also struggle with equitable gender representation in tenured or leadership positions, with 64.9% of faculty holding the academic rank of “professor” listed as male and more than 35% of full-time faculty positions being held by White males (National Center for Education Statistics, 2021). When the focus is narrowed to medical schools, the discourse and the numbers are similar: Ginther and colleagues found that just 38.1% of medical school faculty were women. However, when they layered in the additional variable of racial identity, the researchers found that only 3.7% of medical school faculty were Hispanic and 2.6% were Black (Ginther et al., 2016). Tiako et al. (2022) explains these grave disparities in career trajectories for underrepresented populations who attended U.S. medical schools based on the theory of racialized organizations. They found that within these institutions, structural biases in the language used in their performance assessments, perceptions of standardized test scores and the ability to advance in the medical profession, selection criteria for entrance and residency applications, in addition to a racially contentious environment, impacted retention rates, mental health and residency matching (Tiako et al., 2022). Minoritized medical trainees who expressed an interest in surgical specialties disclosed that they experienced a lack of belonging or support through mentorship in U.S. medical institutions and studies showed that mentees were more likely to be employed in their mentor’s role, especially if their profession was economically lucrative (Tiako et al., 2022).

Further illustrating the complex intersections between gender and race, in the fall of 2020, the NCES found that women in minoritized groups account for only 1.69% of full professors, 3.20% of associate professors, and 4.28% of assistant professors (National Center for Education Statistics, 2021). Vickers and Ruffin studied 15,000 faculty members, finding that for medical school surgical faculty, fewer than 1% were Black women (0.79%) and even fewer (0.54%) had tenure (Vickers and Ruffin, 2020), while June & O’Leary (2021) found that only

2.1% of tenured and associate professors were Black women (June and O'Leary, 2021). Tao also found that men had twice the likelihood of receiving full professorships compared to women (Tao, 2018). Not a single department chair position (of 372) was held by Black women (Tao, 2018). In medical academic leadership, in 2018 women made up only 18.9% of all academic medicine departmental chairs. As of fall 2020, the percentage of full-time faculty awarded tenure is 53.9% of male faculty and 40.9% of female faculty (National Center for Education Statistics, 2021). White women filled 78% of basic science and 74% of clinical science chairs (Association of American Medical Colleges, 2019). At higher levels of academic leadership gender and race differences persist as in 2016, racially minoritized females represented only 5.1% of university presidencies (Espinosa et al., 2020).

A similarly stark disparity exists with respect to faculty salary across gender and racial lines in institutions of higher education in the US. Large and historically well-funded institutions of higher learning, typically Predominantly White Institutions (PWI), also have significant salary differences when compared to their Historically Black Colleges and Universities (HBCU) counterparts, with full professors at HBCUs being paid approximately half of what full professors are paid at PWI institutions (Edwards, 2018). With respect to gender alone, in 2016 the pay gap between men and women in the United States was 20%, with women earning 8.4% less than men (Chen and Crown, 2019). These disparities are mirrored in STEM academic fields where White and Hispanic women experienced a 17% pay gap compared to men, and Asian American and Black women experienced a 19% pay gap as compared to men in the field (Tao, 2018). A 2019 study of faculty salaries at The Ohio State University, an 1862 land grant university, found a gender wage gap among tenured faculty of 11%, with women making \$28,000–\$32,000 less than men in the same faculty rank (Chen and Crown, 2019). NCES data reveal that in 2020, female full-time

professors on a 9-month contract earned 14.73% less in their salary than male counterparts (\$115,047 vs \$134,899, respectively) (National Center for Education Statistics, 2021).

Given that this grim landscape of lack of diversity in the US institutions of higher education (Chen and Crown, 2019; Edwards, 2018; Espinosa et al., 2020; June and O'Leary, 2021; Tao, 2018; Taylor et al., 2020; Vickers and Ruffin, 2020), it is unsurprising that the 2020 annual meeting of the US Centers for Translational Science Awards (Fernandez et al., 2022; Taylor et al., 2023) included an examination of recommendations to create tangible DEI culture change to increase racial diversity in leadership positions in their home institutions, which specialize in the health professions and research. Among the recommendations considered the highest priority areas towards structural changes in the DEI culture in CTSA, transparency in organizational policies, benchmarking and clearly defined pathways to leadership positions were noted. In those institutions, not only does the aforementioned salary gap persist, but there is a stark under-representation of women in senior scientific leadership roles (Magliano et al., 2020). Magliano and colleagues found that a pre-COVID gender gap remains in authorship, with an under-representation of women for senior authorship and single-authored papers. Further, these authors found that manuscripts authored by women are less frequently cited than those by men. Just in the first year of the pandemic, authorship for women scientists plunged by 23% (Vincent-Lamarre et al., 2020). Furthermore, women are less likely to receive conference invitations, speak in seminar series, and speak up in meetings (Magliano et al., 2020).

As was noted at this meeting of scientists from leading US research centers as well as the data reviewed above, bias presents a significant problem in US institutions of higher education. In controlled studies, men are preferentially selected over women for leadership positions by both men and women, even when credentials are identical and despite field studies demonstrating

women's equivalent or slightly better leadership effectiveness (Carnes and Bland, 2007). Of 865 faculty leaders of CTSA institutions surveyed from 2006 to 2013, only 12% (108/865) were members of racial or ethnic groups underrepresented in medicine (Sweeney et al., 2017). A series of evaluations of the CTSA program found that 43% of participants in CTSA's education and training programs are male and 56% are female, and 70% of participants identify as white (Frechtling et al., 2012). One area that is consistently identified in surveys of CTSA affiliates as needing improvement is the diversity of scholars, trainees, and mentors (Boulware et al., 2022a, 2022b; Frechtling et al., 2012).

Thus far, we have examined the disparities in faculty positions, tenure, salary, and leadership in higher education, with the keenest focus on institutions with medical schools. An examination of the literature also highlights disparities in research programs sponsored by the National Institutes of Health (NIH). In 2010, only 5% of NIH-funded principal investigators (PIs) were Black/African American, Hispanic/Latino, Native Hawaiian/Pacific Islander, or American Indian/Alaska Native, even though these groups comprise approximately 30% of the U.S. population (National Institutes of Health, 2020). Furthermore, underrepresented racial and ethnic minorities with PhDs also comprise a disproportionately smaller number of R01 applications to NIH (Harawa et al., 2017). A 2011 and 2019 analysis revealed that grant applications to the NIH by Black PIs were 1.7 times less likely to be funded compared to applications by White PIs (Taffe and Gilpin, 2021). The NIH's first Inaugural Director's Pioneer Award witnessed a male application pool of 80%, with male applicants comprising 90% of finalists and 100% of winners. It is notable that 94% of the panel members selecting the awardees were also male (Mervis, 2004). In 2020, the R01 grant applications funded by the NIH consisted of 31.3% of White applicants ($n = 19,919$), 27.5% of Hispanic applicants ($n = 1554$), 27.4% of Asian applicants ($n = 7791$), 24.6% of American Indian/Alaska Native applicants ($n = 65$), 23.6% of African American/Black

($n = 703$), and 10.3% of Native Hawaiian/Pacific Islander applicants ($n = 29$) (NIH Workforce Profile, 2020).

After this discouraging review of the literature, the obvious question becomes "What can institutions—or even an individual leader—do to create change?" It can feel insurmountable to bring about a culture of fairness and equity given the complexities and often the politicization surrounding structural whiteness and gender inequities, particularly in large and complex organizations, such as institutions of higher learning.

Despite the daunting challenge, there are several actions leaders can take that have been shown to be helpful in fostering change. This paper provides 10 such evidence-based strategies for leaders to consider to decentralize dominant paradigms and monolithic viewpoints in academic institutions. While these strategies can be used in isolation, they are likely to have a greater impact when several of them are deployed in conjunction within the department, group, or division. These strategies start with a greater focus on transformative leadership actions affecting the unit and the latter strategies are focused more strongly on the level of developing individuals.

Strategies for creating a path forward: Breaking free from past structures and embracing a new paradigm

State the group's values clearly

The most foundational step leadership needs to take is to publicly embrace the principles of fairness through explicitly creating and including a values statement reflecting DEIB in the charter at whatever level they lead, be that the team, office, organization, division, or enterprise. By making this commitment, leaders both send a signal to their employees and also contribute to fostering such actions at the larger levels of their institutions by making such declarations of values around fairness feel "normal" and ethically appropriate (Errida and Lotfi, 2021: 5).

Conduct a gap analysis

Units within universities need to analyze the diversity of their organizations through conducting gap analyses, thus rooting out hidden disparities by an unflinching look at their HR data (NIH Office of Human Services, 2022). Making these data public fosters accountability and helps signal that the unit is committed to addressing disparities and transparent about the issues that exist, helping to create a pathway for change. Showing evidence of such disparities at a sub-unit level could help highlight issues mirrored at the larger institutional level. Further, as success is achieved, such benchmarks serve to provide inspiration or impetus for the larger institution to match in acknowledging and addressing disparities. A recent commentary examining gender equity in six World Health Organization regions worldwide echoes the importance of both using detailed analyses to examine structural inequities and using monitoring and evaluation tools, such as benchmarks, to ensure accountability in reaching equity goals (Newman et al., 2023). Additionally, the White House released an executive order in January 2021 that includes a section aimed at “Establishing an Equitable Data Working Group,” which will work on disaggregating federal data by race, ethnicity, and other demographic variables in order to better measure federal level efforts in advancing equity (The White House, 2021).

Incentives are crucial

Since cultural change is slow and difficult in most organizations, real incentives will be required to affect change. Research shows that incentives are powerful for creating change at the individual and team level (Destler, 2016). Leaders should be incentivized to achieve change and evaluated against their successes, with categories including interviewing, hiring, training, mentoring, and promoting people from diverse backgrounds. The Berkeley Rubric, developed by the University of California

Berkeley, can be useful in measuring knowledge, commitment to and actionable steps leaders take to engage in meaningful change (UC Berkeley Office for Faculty Equity & Welfare, n.d.). Traditional incentives for leadership responsible for hitting established organizational goals include bonuses, raises, promotions, titles, retention in the role, head count, discretionary funds, etc.

Examine recruitment strategies for possible bias

Leaders need to examine recruiting procedures and advertising mechanisms for bias. Having clear criteria and a rubric that is applied to assess all candidates has been demonstrated to improve equity in hiring (Bhalla, 2019). Both the location of recruitment information and the verbiage used sends signals of who is invited to apply and desired for the opportunity. For example, Newman and Lyon found that formal recruiting methods, such as career fairs, employment agencies, etc., appealed more strongly to minoritized groups and women. Advertising positions using images of diverse employees and peers were also more likely to garner applications from those groups (Newman and Lyon, 2009). Broadening the number of candidate packets with search committees can facilitate the consideration of a more diverse candidate pool (Bhalla, 2019). Additionally, unit leaders can broker these conversations with HR representatives, asking for institutional commitment in supporting DEIB through communications about job opportunities for their teams.

Blind application procedures help create fairer opportunity

Blind application procedures that mask gender, ethnicity, and external signals (such as institutions where candidates earned degrees) should be employed to prevent implicit bias against candidates and thus ensure that a broader field of

candidates for both positions and for funding opportunities are in the pipeline (Rinne, 2018). On a global level, blind application and recruitment procedures in Australia, Germany, the Netherlands, Sweden, and Canada have been shown to reduce hiring discrimination (Rinne, 2018). Again, unit leaders can request HR managers supply blinded information to the selection committees.

Diverse selection committees help diversify selected candidate pools

Diversifying the selection committees that review candidates for open positions, for faculty selection committees, for leadership selection committees, as well as for the kinds of applications that are selected for funding can help broaden the final pool (Kayes, 2006). While ensuring that the committee have as diverse as possible representation with respect to gender and race, it can also be helpful to have even broader perspectives at the table. For example, an often overlooked component of diversification is to include community-based perspectives from the group for whom the proposed research is intended to benefit, to help ensure that scientific research is engaged, meaningful, and represents clinical advancements for diverse audiences through featuring communities as the expert of their lived experience (Martinez et al., 2020). In the US, this approach is referred to as Community Based Participatory Research. Leaders at all levels within higher education can play a significant role in the design of the selection committees, which should embrace diverse perspectives and representatives. Leaders can establish performance metrics at the recruitment level, such that at least 50% of their selection committees could consist of women and minoritized populations and a modified approach of the Rooney rule would secure diversity in candidate pools, as noted by Dossett, et al. (2019).

Create meaningful partnerships

Organizations desiring to enhance their diversity should partner in meaningful ways, including sharing power with minority-serving institutions which are likely to be less well-funded and potentially less robustly staffed. Mutually agreed-upon goals and scientific partnerships across institutions will unilaterally strengthen the programs and expand the capacity to serve the clinical research needs benefitting broader populations. Such a partnership was recently announced from North Carolina A&T, the nation's largest HBCU, and the University of North Carolina at Chapel Hill, in their Looking Forward funding program (UNC Research, 2022). Funding is awarded to teams with equal representation from each institution and who are focused on impacting pressing issues in the state. Models such as this can support meaningful and mutually beneficial partnerships. Additionally, factors that garner the success of such partnerships, over time can be measured using the Measurement Approaches to Partnership Success (MAPS) instrument, which Israel, et al. (2020) recommends to evaluate established Community Based Participatory Research partnerships with health equity goals (Israel et al., 2020). The 2018 Innovators, Collaborators, and Leaders Conference identified institutional and faculty partnerships across HBCUs, NASIs, and PWIs, as a primary way to increase diversity in student bodies, leadership, and research (Dannels et al., 2008). These partnerships could increase the number of underrepresented minorities (URMs) in STEM, provide a more equitable distribution of resources, create more opportunities for mentorship and professional development, recruit URM scholars into faculty roles, and boost funding for research at HBCUs and NASIs (Dannels et al., 2008). Additionally, Treadwell et al. found that collaboration with HBCUs can serve as an important leverage point for change in science academic leadership, as HBCUs award around 25% of undergraduate degrees received by Black students and 16% of all Black

students who graduated medical school in 2006 completed their undergraduate education at an HBCU (Treadwell et al., 2009). Another successful equity-focused leadership development program of the Association of Public and Land Grant Universities (APLU) is the Food Systems Leadership Institute (FSLI). The FSLI program has served 79% of the 1862 Land Grant Universities (mainly PWI institutions), 68% of the 1890 Land Grant Universities (HBCUs), and 12% of the 1994 (Native American Serving Institutions (NASI)) Institutions in the US (Fernandez et al., 2021a). The FSLI program has been a model of striving for equity through refusing to leave behind non-research intensive institutions through financial commitments that support meaningful participation across sectors. The FSLI program has also actively recruited women, with nearly one-third of its graduates (as of 2019) being women and 51 (30.2%) of all of the position advancements for program alumni being awarded to women (Fernandez et al., 2021a).

Development pipelines create impact

Faculty, researchers, and scientists in the pipeline need to be engaged in professional development initiatives that foster their equity-centered leadership skills (Corbie et al., 2022a, 2022b; Fernandez et al., 2021b) as well as their skills in community-engaged implementation science (Kayes, 2006). Unit leaders can encourage and support such development initiatives and advocate for them at the higher levels of the institution. An example of this effort is underway at the University of North Carolina CTSA, which offers a highly successful pipeline program for the research workforce (NC TraCS, n.d.). Another example of a highly successful diversity-impacting program is the Hedwig Van Ameringen Executive Leadership in Academic Medicine (ELAM). This leadership development program focuses on increasing gender diversity in academia. ELAM develops women leaders in the faculty of US and Canadian medical schools. An analysis

of the program found that 63.5% of women in the ELAM program reached positions of department chair or higher as compared to 37% of women in the control group (Dannels et al., 2008). These leadership development programs that collaborate across PWIs, HBCUs, and NASIs and include women and underrepresented minorities have been shown to increase leadership diversity and are important interventions moving forward.

Mentoring and sponsorship programs are effective

Instituting formal mentoring and sponsorship programs can help faculty, scientists, as well as outreach and engagement staff grow in both their scholarly or scientific acumen as well as expand their skills in leadership and management required to successfully foster their careers or build a research profile. Formal mentoring programs have been found to be more effective than diversity training (National Center for Education Statistics, 2021). While mentoring provides gentle career insight or advice, sponsorship takes an even more active approach and involves assigning an individual to purposefully guide and influence the career development of a more junior team member. Sponsorship can be required because talented individuals who are different from the historical culture or demographics can remain on the sidelines despite mentoring—they need an advocate and coach who can help them continue to progress in their careers, understand the culture and partner to help expand that culture to be more inclusive. Miller (2016) argues that “white sanction,” or the acknowledgment, endorsement, and brokerage by a white individual, is vital in a scientist’s progression in their career (Miller, 2016). Additionally, Rodriguez, Tumen, and Campbell (2021) claims that since white men possess the dominant advantage, especially in PWI’s, they are well poised to share their power by coaching minoritized populations in leadership positions (Rodriguez, Tumen, and

Campbell, 2021). For example, a mentor might suggest participation in a leadership development program while a sponsor would agree to pay the tuition for that program. Mentors and sponsors themselves are likely to need orientation, training, and support as well (Deanna et al., 2022). Although research measuring the effectiveness of such mentoring programs has been challenging to quantify, organizational development researchers recommend providing incentives to mentors by alleviating some administrative or departmental responsibilities (Bath et al., 2022; Deanna et al., 2022). Davies, et al. (2021) suggest a holistic valuation assessment, which extends beyond metrics from only evaluating mentee productivity to include other dimensions to capture impact such as skills acquired, career commitment and mentee satisfaction (Davies et al., 2021). Suggested mentors should be assessed for potential bias or prior experience on diversity and mentorship training (Bath et al., 2022).

Anti-bias training can help illuminate an all too human characteristic

Anti-bias training can help team members understand that while having a bias might be part of the human condition, awareness can be key to avoiding a hidden bias becoming an unfair barrier that stunts the opportunities or success of others (Enders et al., 2022). While all individuals have bias, awareness of that bias is not universal. Anti-bias training included in performance goals and attached to funding eligibility and work performance requirements will help team members understand how their inherent “lens” through which they view the world might be missing or misunderstanding others, simply through their own experience, or even lack thereof. For example, the National Institutes of Health in the US offers Implicit Bias Training courses for all researchers and staff employed at this federal agency (National Institutes of Health, 2023). While bias training has been found to be highly effective (Girod

et al., 2016; Jackson et al., 2014; Shah and Bohlen, 2023) and is now widely available, it is not intended as a “turnkey” solution or as a panacea which will be equally effective across all situations and over time. Bias is complex, multifaceted, highly personal, and can potentially lead to shame along with a greater sense of self-awareness and enlightenment. Bias training is also quite different from diversity training or cultural competence training, which tends to be less effective by comparison (Jernigan et al., 2016).

Discussion

These 10 practical strategies can help large and complex organizations collectively achieve the goal of meaningful ground-level impacts in ways that resonate with the real challenges that women and racial and ethnic communities encounter in academia, with unending forms of inequalities and discriminatory practices which obstruct mobility. Embracing sound pedagogy and engagement, along with steps shown to improve DEIB conditions, can help effectuate advancements in diverse leadership, fuel innovation and create a sustainable platform for institutions to face complex challenges with DEIB which will continue to emerge in the future.

From an international context, studies from academic institutions in Canada, demonstrate that the strategies we outline in this paper support conventional thinking around solutions to DEIB (Mascarenhas, et al., 2017). A qualitative study was conducted at a Canadian University, research-based hospital to understand gender gap perspectives among research scientists. The study concluded that 54.2% more males compared to females, represented their full-time staff of clinical scientists. Consistent with the strategies described in this paper, the participants attributed staff inequities to unconscious bias in hiring practices and an institutional dominant work culture that was impartial to work life balance. They recommended that leadership establish mentorship

programs for female scientists at multiple levels in their career stages (i.e., empowering new potential scientists, early stage, junior level). Participants also suggested that the networks used to recruit applicants should consist of a pool of potential female applicants. Additionally, they called for greater transparency in the recruitment process to identify if biases are occurring before or after the selection process.

Another separate research study on Canadian Universities purported solutions to transformative DEI initiatives undeviating from the strategies we described. The work of [Mugo and Puplampu \(2022\)](#) concluded that to circumvent inequities in hiring and retaining women and racial and ethnic minorities, investing in trainings on consciousness-raising, cultural competency and introspection is paramount to the discourse along with institutional accountability to measure discrete outcomes of candidate hires and faculty promotions ([Mugo and Puplampu, 2022](#)). These researchers also endorsed value statements in academic institutions that reflect DEI language and to include this language in strategic planning efforts—all of which provides various ways to socialize DEI concepts among faculty.

Apart from academia and healthcare institutions at the global level, in the U.S., Federal Agencies, such as the U.S. Military demonstrated historic patterns of a segregated labor force based on occupation status ([Calkins, et al., 2023](#)). The U.S. has guidance in place for Federal Agencies to ensure diversity in their workforce through equal opportunity programs ([U.S. Equal Employment Opportunity Commission, 2023](#)). Pursuant to amendments to Title VII of the Civil Right Act of 1964, Management Directive 715, U.S. Federal agencies must adhere to reporting requirements annually to assess gender and racial and ethnic composition of their labor force by occupational status. Studies show that gender and racial/ethnic inequities in select occupations exist within the military and these differences were associated with higher paygrades. In the Department of the Air Force (DAF), there was an

overrepresentation of minorities who were enlisted compared to a significantly higher representation of White males as pilots, which is considered among the most prestigious position in the DAF. In fact, there was a greater disparity in the racial composition in white male pilots in the Air Force even relative to pilots in the civilian population. Consistent with the strategies in this paper, the Department of the Air Force established Development Teams who were tasked to conduct a gap and barrier analysis to observe any adverse hiring and workplace conditions that could impede career advancement based on gender or race/ethnicity. While these teams were noted to fall short of their goals, similar to our companion paper ([Taylor et al., 2023](#)), benchmarking military career fields was added as a recommendation to minimize disparities in military personnel at higher occupational levels. Additionally, women and minorities were more likely to report adverse race and gender discrimination issues compared to other groups. To address such issues, the Biden Administration passed executive orders to include D&I training and education on anti-bias and racism and systemic discrimination in the Armed Services ([Congressional Research Service, 2021](#)).

A multi-country study analyzed gender inequities in health education institutions and how the World Health Organizations' global strategy on Human Resources for Health (HRH) interventions could inarguably present an opportunity to establish transformational policies that can both equalize incomes and counter discriminatory practices in the workplace ([Newman et al., 2023](#)). From a theoretical lens, gender is recognized as a socially constructed identity, and therefore, a defined hierarchy of power structures inevitably positions women in distinct roles where they are perceived as caregivers, of lesser value and inferior to men ([World Health Organization, 2011](#)). In health education institutions in low- and middle-income countries, the prevalence of gender as a social construction resulted in gender differentiation, stratification of women into highly

segregated occupations and exclusionary practices. The multi-national study revealed that career advancement for women was compromised by a lack of institutional support for family and work life balance and the dominant perception of female incompetency, which relegated women into stalemate occupations in the healthcare workforce (Newman et al., 2023). Sexual harassment, exploitation, and the quid pro quo of sex for grades or employment in health education systems prompted fear of violence and enhanced drop-out rates, which further dismantled the pipeline for women into leadership positions in the health sector (Newman et al., 2023). The authors of this study concluded that HRH policy planners and managers can use the evidence from this study to design and implement effective policies that will mitigate targeted pathways (i.e., recruitment and retention) to gender inequities and exacerbate the shortages in the healthcare workforce (Newman et al., 2023). While this multi-country study focused on gender and HRH analysis to inform policy-making, their recommendations correlated with one of our aforementioned strategies, which is to develop pipelines that create impact and is further in alignment with the United Nations, fifth Sustainable Development goals (United Nations, no date).

Conclusion

While higher education in the US and worldwide, struggle with the current problem of demographic disparity, the future can follow a different course if institutions commit to employing strategies to nourish the careers of a much wider variety of teachers, scientists, extension, and clinical or research-focused faculty and staff. Leaders of sub-units within a university or academic medical center can affect change, even when the larger institution lags behind. For example, Nooraie and colleagues saw that CTSA's, as organizations within an academic medical center and focused on scientists and clinical research managers, "may be

well suited to provide a fitting infrastructure and setting to bring greater focus on health equity and [diversity and inclusion]" (Nooraie et al., 2020: 169).

While there are dozens of possible approaches to support DEIB concerns, finding straightforward strategies that can work successfully at multiple levels within institutions will be key to fostering measurable change. Many sub-units of larger universities, such as our exemplar CTSA's, possess sufficient mass to truly create their own culture within their systems, despite the dominant culture or influences. Forging a path forward to embrace DEIB within the ranks of faculty, scientists, research teams, teachers, outreach and engagement staff, and organizational leadership can contribute to contextual factors which support equity and the community-aware approaches to recruitment, implementation, and dissemination of learning and scientific advancement.

The steps listed above, coupled with using established methods to understand gaps in DEIB, validated instruments to evaluate progress, incentives, or rubrics to measure incremental success (Taylor et al., 2023), can largely be engaged in at the level of sub-unit, team leader, and even at the principal investigator level on a funded project, even despite the larger institution lagging behind the units that comprise it. Visionary leadership can help steer the course to create sub-units that embrace and nourish diverse representation at all levels and reimagine how community and diversity is represented and included in the work of teaching, research, and engagement.

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References

- American Medical Association (2021) *Organizational Strategic Plan to Embed Racial Justice and Advance Health Equity*. Available at: <https://www.ama-assn.org/system/files/2021-05/ama-equity-strategic-plan.pdf> (accessed 12 January 2023).
- Association of American Medical Colleges (2019) 2018–2019 the state of women in academic medicine: exploring pathways to equity. Available at: <https://www.aamc.org/data-reports/data/2018-2019-state-women-academic-medicine-exploring-pathways-equity> (accessed 28 April 2022).
- Bath EP, Brown K, Harris C, et al. (2022) For us by us: instituting mentorship models that credit minoritized medical faculty expertise and lived experience. *Frontiers of Medicine* 9: 966193.
- Bhalla N (2019) Strategies to improve equity in faculty hiring. *Molecular Biology of the Cell* 30(22): 2744–2749.
- Boulware LE, Corbie G, Aguilar-Gaxiola S, et al. (2022a) Combating structural inequities—diversity, equity, and inclusion in clinical and translational research. *New England Journal of Medicine* 386(3): 201–203.
- Boulware LE, Vitale A, Ruiz R, et al. (2022b) Diversity, equity and inclusion actions from the NCATS clinical and translational science awarded programs. *Nature Medicine* 28(9): 1730–1731.
- Calkins A, Berglund T, Schulker D, et al. (2023) Benchmarking demographic diversity in air force functional areas against near-equivalent civilians. In: *The Air Force Occupational Diversity Benchmarking Workbooks*. Santa Monica, CA: RAND.
- Carnes M, and Bland C (2007) Viewpoint: a challenge to academic health centers and the national institutes of health to prevent unintended gender bias in the selection of clinical and translational science award leaders. *Academic Medicine* 82(2): 202–206.
- Chen JJ, and Crown D (2019) The gender pay gap in academia: evidence from the Ohio State University. *American Journal of Agricultural Economics* 101(5): 1337–1352.
- Congressional Research Service (2021) Diversity and inclusion training for military personnel. Available at: <https://crsreports.congress.gov/product/pdf/IN/IN11703>
- Corbie G, Brandert K, Fernandez CSP, et al. (2022a) Leadership development to advance health equity: an equity-centered leadership framework. *Academic Medicine* 97(12): 1746–1752.
- Corbie G, Brandert K, Noble CC, et al. (2022b) Advancing health equity through equity-centered leadership development with interprofessional healthcare teams. *Journal of General Internal Medicine* 37(16): 4120–4129.
- Dannels SA, Yamagata H, McDade SA, et al. (2008) Evaluating a leadership program: a comparative, longitudinal study to assess the impact of the executive leadership in academic medicine (ELAM) program for women. *Academic Medicine* 83(5): 488–495.
- Davies SW, Putnam HM, Ainsworth T, et al. (2021) Promoting inclusive metrics of success and impact to dismantle a discriminatory reward system in science. *PLoS Biology* 19(6): e3001282.

- Deanna R, Merkle BG, Chun KP, et al. (2022) Community voices: the importance of diverse networks in academic mentoring. *Nature Communications* 13(1): 1681–1687.
- Destler KN (2016) Creating a performance culture: incentives, climate, and organizational change. *The American Review of Public Administration* 46(2): 201–225.
- Dossett LA, Mulholland MW, and Newman EA, Michigan Pro and Mise Working Group for Faculty Life Research (2019) Building high-performing teams in academic surgery: the opportunities and challenges of inclusive recruitment strategies. *Academic Medicine* 94(8): 1142–1145.
- Edwards C (2018) Faculty salary (in)equity: a review of the literature. Available at: <https://oaks.kent.edu/node/9986> (accessed 26 April 2022).
- Enders FT, Golembiewski EH, Orellana MA, et al. (2022) Changing the face of academic medicine: an equity action plan for institutions. *Journal of Clinical and Translational Science* 6(1): e78.
- Errida A, and Lotfi B (2021) The determinants of organizational change management success: literature review and case study. *International Journal of Engineering Business Management* 13: 184797902110162.
- Espinosa L, Turk J, Taylor M, et al. (2020) Race and ethnicity in higher education: 2020 Supplement. Race and ethnicity in higher education. Available at: <https://www.equityinhighered.org/resources/report-downloads/race-and-ethnicity-in-higher-education-2020-supplement/> (accessed 28 April 2022).
- Fernandez CS, Corbie-Smith G, Green M, et al. (2021a) Clinical scholars: effective approaches to leadership development. In: Fernandez CS and Corbie-Smith (eds) *Leading Community Based Changes in the Culture of Health in the US-Experiences in Developing the Team and Impacting the Community*. London: IntechOpen.
- Fernandez CS, Esbenshade CR, and Martin CM (2021b) Career trajectory in academic leadership: experiences of graduates of the food systems leadership institute (FSLI). *Journal of Leadership Education* 20(3): 75–84.
- Fernandez CSP, Taylor MM, Dave G, et al. (2022) Accelerating diversity, equity, and inclusion goals: a qualitative assessment from the lens of scientists at the 2020 clinical translational science awards annual meeting. *Journal of Clinical and Translational Science* 7(35): e35–e36.
- Frechtling J, Raue K, Michie J, et al. (2012) The CTSA national evaluation final report. Westat, 3 April.
- Ginther DK, Kahn S, and Schaffer WT (2016) Gender, race/ethnicity, and National Institutes of health R01 research awards: is there evidence of a double bind for women of color? *Academic Medicine* 91(8): 1098–1107.
- Girod S, Fassiotto M, Grewal D, et al. (2016) Reducing implicit gender leadership bias in academic medicine with an educational intervention. *Academic Medicine* 91(8): 1143–1150.
- Harawa NT, Manson SM, Mangione CM, et al. (2017) Strategies for enhancing research in aging health disparities by mentoring diverse investigators. *Journal of Clinical and Translational Science* 1(3): 167–175.
- Israel BA, Lachance L, Coombe CM, et al. (2020) Measurement approaches to partnership success: theory and methods for measuring success in long-standing community-based participatory research partnerships. *Progress in community health partnerships: Research, Education, and Action* 14(1): 129–140.
- Jackson SM, Hillard AL, and Schneider TR (2014) Using implicit bias training to improve attitudes toward women in STEM. *Social Psychology of Education* 17: 419–438.
- Jernigan VB, Hearod JB, Tran K, et al. (2016) An examination of cultural competence training in us medical education guided by the tool for assessing cultural competence training. *Journal of health disparities research and practice* 9(3): 150–167.
- June AW, and O’Leary B (2021) How many black women have tenure on your campus? In: *The Chronicle of Higher Education*. Denton, Texas; University of North Texas Press. Available at: <https://www.chronicle.com/article/how-many-black-women-have-tenure-on-your-campus-search-here> (accessed 26 April 2022).

- Kayes PE (2006) New paradigms for diversifying faculty and staff in higher education: uncovering cultural biases in the search and hiring process. *Multicultural Education* 14(2): 65–69.
- Lisnic R, Zajicek A, and Morimoto S (2019) Gender and race differences in faculty assessment of tenure clarity: the influence of departmental relationships and practices. *Sociology of Race and Ethnicity* 5(2): 244–260.
- Magliano DJ, Macefield VG, Ellis TM, et al. (2020) Addressing gender equity in senior leadership roles in translational science. *ACS Pharmacology & Translational Science* 3(4): 773–779.
- Sprague Martinez L, Rapkin BD, Young A, et al. (2020) Community engagement to implement evidence-based practices in the HEALing Communities Study. *Drug and Alcohol Dependence* 217: 108326.
- Mascarenhas A, Moore JE, Tricco AC, et al. (2017) Perceptions and experiences of a gender gap at a Canadian research institute and potential strategies to mitigate this gap: a sequential mixed-methods study. *CMAJ Open* 5(1): E144–E151.
- Mervis J (2004) National Institutes of Health. Male sweep of new award raises questions of bias. *Science* 306(5695): 595.
- Miller P (2016) ‘White sanction’, institutional, group and individual interaction in the promotion and progression of black and minority ethnic academics and teachers in England. *Power and Education* 8(3): 205–221.
- Mugo S, and Pupilampu KP (2022) Beyond tokenism and objectivity: theoretical reflections on a transformative equity, diversity, and inclusion agenda for higher education in Canada. *SN social sciences* 2(10): 209.
- National Center for Education Statistics (2021) *Digest of Education Statistics*. Tarawa, Kiribati: Republic of Kiribati, Ministry of Education, 2021. Available at: https://nces.ed.gov/programs/digest/2021menu_tables.asp (accessed 26 April 2022).
- National Institutes of Health (2020) NIH workforce profile FY20Q4. Available at: <https://www.edi.nih.gov/people/resources/advancing-racial-equity/nih-workforce-profile-fy20q04#03> (accessed 26 April 2022).
- National Institutes of Health (2022) NIH chief officer for scientific workforce diversity (COSWD) strategic plan. Available at: https://diversity.nih.gov/sites/coswd/files/images/NIH_COSWD_Strategic_Plan_for_Fiscal_Years_2022-2026_508c.pdf (accessed 28 April 2022).
- National Institutes of Health (2023) Implicit bias training course. Available at: <https://diversity.nih.gov/sociocultural-factors/implicit-bias-training-course> (accessed 13 June 2023).
- Newman DA, and Lyon JS (2009) Recruitment efforts to reduce adverse impact: targeted recruiting for personality, cognitive ability, and diversity. *Journal of Applied Psychology* 94(2): 298–317.
- Newman C, Nayebare A, Gacko NMNN, et al. (2023) Systemic structural gender discrimination and inequality in the health workforce: theoretical lenses for gender analysis, multi-country evidence and implications for implementation and HRH policy. *Human Resources for Health* 21(1): 1–12.
- NIH Office of Human Services (2022) Workforce planning: gap analysis. Available at: <https://hr.nih.gov/workforce/workforce-planning/gap-analysis> (accessed 18 January 2023).
- Yousefi Nooraie R, Kwan BM, Cohn E, et al. (2020) Advancing Health Equity through CTSA programs: opportunities for interaction between health equity, dissemination and implementation, and Translational science. *Journal of Clinical and Translational Science* 4(3): 168–175.
- North Carolina Translational and Clinical Science Institute (NC TraCS). UNC school of medicine (n.d.) services by category. Available at: <https://tracs.unc.edu/index.php/services-by-category/view-all-services> (accessed 27 January 2023).
- Odedina FT, and Stern MC (2021) Role of funders in addressing the continued lack of diversity in science and medicine. *Nature Medicine* 27: 1859–1861.
- Rinne U (2018) Anonymous job applications and hiring discrimination. *IZA World of Labor*. Available at: <https://ofew.berkeley.edu/recruitment/contributions-diversity/rubric-assessing-candidate-contributions-diversity-equity> (accessed 26 August 2022).

- Rodríguez JE, Tumin D, and Campbell KM (2021) Sharing the power of white privilege to catalyze positive change in academic medicine. *Journal of Racial and Ethnic Health Disparities* 8(3): 539–542.
- Shah HS, and Bohlen J (2023) Implicit bias. In: *StatPearls*. Treasure Island, FL: StatPearls Publishing.
- Sweeney C, Schwartz LS, Toto R, CTSA Mentored-to-Independent Investigator Transition Working Group, et al. (2017) Transition to independence: characteristics and outcomes of mentored career development (KL2) scholars at clinical and translational science award institutions. *Academic Medicine/Colleges* 92(4): 556–562.
- Taffe MA, and Gilpin NW (2021) Racial inequity in grant funding from the US national institutes of health. *Elife* 10: 65697.
- Tao Y (2018) Earnings of academic scientists and engineers: intersectionality of gender and race/ethnicity effects. *American Behavioral Scientist* 62(5): 625–644.
- Taylor M, Turk JM, Espinosa LL, et al. (2020) The state of race and ethnicity in higher education. *Change: The Magazine of Higher Learning* 52(2): 27–31.
- Taylor MM, Fernandez CS, Dave G, et al. (2023) Implementing measurable goals for diversity, equity, and inclusion in clinical and translational science awards leadership. *Equity in Education and Society* 2(0): 198–205.
- The White House (2021) Executive order on advancing racial equity and support for underserved communities through federal government. Available at: <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/> (accessed 13 June 2023).
- Tiako MJ, Ray V, and South EC (2022) Medical schools as racialized organizations: how race-neutral structures sustain racial inequality in medical education—a narrative review. *Journal of General Internal Medicine* 37(9): 2259–2266.
- Treadwell HM, Braithwaite RL, Braithwaite K, et al. (2009) Leadership development for health researchers at Historically Black Colleges and universities. *American Journal of Public Health* 99 Suppl 1(S1): S53–S57.
- UC Berkeley Office for Faculty Equity & Welfare (n.d.). *Rubric for Assessing Candidate Contributions to Diversity, Equity, Inclusion, and Belonging*, Berkeley, CA: UC Regents. Available at: <https://ofew.berkeley.edu/recruitment/contributions-diversity/rubric-assessing-candidate-contributions-diversity-equity> (accessed 26 April 2022).
- UNC Research (2022) Carolina and N.C. A&T researchers partner to table critical issues in our state with new award. Available at: <https://www.unc.edu/posts/2022/06/09/carolina-and-n-c-at-researchers-partner-to-tackle-critical-issues-in-our-state-with-new-award/> (accessed 28 August 2022).
- United Nations. The 17 Goals. Available at: <https://sdgs.un.org/goals#History> (accessed 11 Sept 2023).
- US. Equal Employment Opportunity Commission (2023) Frequently asked questions about management directive - 715. Available at: <https://www.eeoc.gov/federal-sector/management-directive/frequently-asked-questions-about-management-directive-715> (accessed 5 Sept 2023).
- Vickers SM, and Ruffin J (2020) Recognizing and addressing the disparities in research funding for underrepresented minorities and women. *Annals of Surgery* 272(1): 30–31.
- Vincent-Lamarre P, Sugimoto CR, and Larivière V (2020) The decline of women’s research production during the coronavirus pandemic. *Nature Index*. Accessed at: <https://www.nature.com/nature-index/news-blog/decline-women-scientist-research-publishing-production-coronavirus-pandemic> (accessed 15 January 2023).
- World Health Organization (2011) Gender mainstreaming for health managers: a practical approach. Available at: <https://apps.who.int/iris/bitstream/handle/10665/44516/?sequence=1> (accessed 11 Sept 2023).