ADVANCING DIVERSITY, EQUITY, AND INCLUSION IN THE HEALTH SERVICES AND POLICY RESEARCH WORKFORCE: LESSONS AND IMPLICATIONS FROM CASE STUDIES ON DIVERSITY, EQUITY, AND INCLUSION INTERVENTIONS

Horizon Scan

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ABOUT THIS HORIZON SCAN

This report provides an overview of existing diversity, equity, and inclusion (DEI) programs and practices to ultimately stimulate conversations and action that can advance DEI within health services and policy research (HSR). In this report, we present four cases highlighting DEI program interventions or practices within academia and the scientific workforce: career development/training programs, cluster hiring, career mentorship, and community-based participatory research. Each case summary provides an overview of the program or approach, outcomes, lessons applicable to HSR, and implications to consider as HSR continues to advance its capacity to address structural barriers to achieving workforce equity.

ABOUT THE PARADIGM PROJECT

The Paradigm Project is a concerted, collaborative effort to increase the relevance, timeliness, quality, and impact of health services research (HSR). Convened by AcademyHealth and funded by the Robert Wood Johnson Foundation, the project is ideating and testing new ways to ensure HSR realizes its full potential to improve health and the delivery of health care. The Paradigm Project is designed to push HSR out of its comfort zone—to ask what works now, what doesn't, and what might work in the future.

Learn more at www.academyhealth.org/ParadigmProject.

EXECUTIVE SUMMARY

Individuals from historically marginalized groups in the United States are disproportionately underrepresented and underserved at all levels of the scientific workforce (National Science Foundation, 2019), including the multi-disciplinary, multisectoral field of health services and policy research (Frogner, 2018). As part of an overall commitment to the advancement of equitable health and well-being, the need to address DEI within the health services and policy research workforce is critical (Edmunds et al., 2015). The diverse backgrounds and lived experiences of professionals within the HSR workforce foster scientific innovation and robust learning environments, improve the quality of research, enhance our global competitiveness, and advance equitable health and career outcomes among underserved populations. (National Institutes of Health, 2019). Yet, strategies to achieve DEI in the HSR workforce often fall short, and at times may continue to reproduce or exacerbate disparities with respect to full participation in HSR.

The purpose of this report is to examine practices that have resulted in improvements in workforce diversity in academia and the scientific workforce. We highlight innovative science, technology, engineering, and mathematics (STEM) intervention programs and strategies that are well-funded or well-known for their success in improving the recruitment, retention, and advancement of underrepresented groups (URG). The first case draws on the National Cancer Institute's (NCI) CURE Program to highlight diversity and inclusion efforts within academic medicine, and to provide tangible lessons for recruitment and retention across educational and academic career stages. The second case draws on the growing practice of cluster hiring in recruiting and retaining scientific diversity within academia. The third case draws on mentoring programs to underscore the importance of mentorship for early- and mid-career researchers. The fourth case highlights the value of community partnerships for improving the rigor of work and reach of health services and policy researchers. We discuss key lessons that may be transferable and/or adapted to the field of HSR. We provide recommendations and underscore the need to acknowledge and address systemic barriers that URGs encounter along the HSR career pathways.

ACRONYMS

CBPR = community-based participatory research

DEI = diversity, equity, and inclusion

ESI = early-stage investigator

HSR = health services and policy research

MSI = minority-serving institution

NCI = National Cancer Institute

NIH = National Institutes of Health

NSF = National Science Foundation

STEM = science, technology, engineering, and mathematics

URGs = underrepresented groups

WRGs = well-represented groups

ENHANCING DEI IN CANCER RESEARCH: THE CURE TRAINING PROGRAM

The NCI-funded Umbrella of Research Experiences (CURE) program aims to diversify the biomedical sciences and cancer health disparities workforce by providing educational, career development, and funding opportunities across the continuum from middle school to junior investigator (National Cancer Institute, 2020). The distinct funding, training, and mentoring supports across the educational and career pathway promote competitiveness among students and enhance the recruitment and retention of the health-focused workforce. Since its inception, the CURE program has awarded an estimated 5,000 grants, reaching nearly 2,600 students and early-career researchers (Center to Reduce Cancer Health Disparities, 2011). The impact and productivity of the CURE program has grown exponentially, such that, in 2010, CURE trainees had authored 175 peer-reviewed publications, relative to 25 publications in 2006 (Center to Reduce Cancer Health Disparities, 2011). Across all career stages, CURE scholars have authored over 1,700 peer-reviewed publications. The strong commitment to workforce diversity among high-profile leaders and federal agencies, coupled with the use of a life-course approach contributed to the success of the CURE program.

Lesson: Although the CURE program is a highly-regarded NCI program, it is important to note that individual-level programs alone are not sufficient to address workforce diversity issues. To address workforce diversity challenges, a multi-pronged approach must be implemented. Although individual-level training programs are useful in moving the needle, recognizing and addressing the social structures and institutional cultures that produce and reproduce these persistent inequities are necessary to advance DEI.

CLUSTER HIRING: FOREGROUNDING DEI TO ATTRACT & SUPPORT A DIVERSE AND ACADEMICALLY EXCEPTIONAL CANDIDATE POOL

Cluster hiring has the potential to increase the likelihood of retention, enhance socialization, and minimize feelings of isolation among faculty hires from URGs. We review the cluster hire experience at the College of Arts and Sciences at Emory University. From 2014 – 2017, the College of Arts and Sciences hired 65 tenure-track faculty members; 85% of the hires were from well-represented groups (WRGs), whereas only 15% were from URGs (Freeman, 2019). These disparities led to the College of Arts and Sciences at Emory University to turn to cluster hiring as a way to increase diversity among their faculty. The search committee foregrounded a commitment to minority students by requiring all candidates to write a statement about their experiences with and vision for diversity, and to discuss how candidates foster diversity and mentor diverse populations (Freeman, 2019). Candidates with strong mentoring statements were selected for the next stage of review, which assessed research excellence using traditional indicators, such as publications, scholarly independence, and grant funding (Freeman, 2019). After these modifications to the faculty search, the College of Arts and Sciences hired 80 tenure-track faculty members, with 51% of new hires from URGs during 2017 – 2019 (Freeman, 2019).

Lesson: While cluster hiring may achieve many DEI goals, several systemic issues should also be considered in order to avoid reifying inequities in faculty hiring and retention.

THE POWER OF PINPOINTING MENTORSHIP TO SUPPORT RESEARCH CAREER ADVANCEMENT

The National Research Mentoring Network (NRMN) provides trainees across the biomedical, behavioral, clinical, and social sciences with evidence-based mentorship and professional development (Sorkness et al., 2017, p. 172). The NRMN piloted four coaching programs. The pilot programs have shown a significant improvement in participants' grant writing self-efficacy (Thorpe et al., 2020), significantly accelerating participants' average time to grant proposal submission by 148.6 days (Hall et al., 2018). The programs are also starting to expand nationwide, such that the NRMN introduced five new locations to host one of the grant writing programs, scaling impact to reach new participants and faculty coaches. Several lessons from the NRMN programs in particular and mentoring more broadly can inform mentoring within HSR. First, leaders in HSR can allocate resources and support for comprehensive mentoring programs for early- and mid-career HSR researchers. Second, as mentorship for early-career and mid-career professionals should not be limited to grant writing support alone, leaders within HSR can conduct research to pinpoint additional areas where and for whom disparities exist along the HSR career paths. Third, leaders can advocate for federal agencies to direct funds toward advancement of historically marginalized groups in HSR.

Lesson: While this case focused primarily on the NRMN grant writing program, we expand upon lessons from this case to the larger practice of mentorship initiatives for early- and mid-career scholars who may work in a broad range of settings. As the HSR sector encompasses those who work in corporate, policy centers, and governmental agencies as well, there is a need to develop several mentorship opportunities that highlight the various viable career options within HSR. This inclusivity can work to retain early- and mid-career professionals within HSR.

THE PROMISE OF COMMUNITY-BASED PARTICIPATORY RESEARCH AND COMMUNITY PARTNERSHIPS FOR ADVANCING DEI IN HSR

The HSR field has increasingly conducted research where the data are (e.g., hospitals, universities, integrated primary care), focusing on hospital claims data and electronic health records data (Whicher et al, 2018). As such, the National Academy of Medicine urges the HSR workforce to move research into communities, in an effort to bridge health and social services to improve access to care (Whicher et al, 2018). Fostering partnerships with community partners can minimize persistent health disparities, improve the quality of research, and advance DEI within the HSR workforce. This case study focuses on the methodological approach of community-based participatory research (CBPR) and the partnership between academic researchers and *promotoras* to produce rigorous community-based research. *Promotoras* are lay health workers; they are under the community health worker umbrella (Centers for Control and Disease Prevention, 2019). CBPR is an orientation that emphasizes equitable engagement of partners throughout the research process, builds on strengths and resources within the community, fosters a collaborative, equitable partnership throughout all phases of research, and fosters an empowering and power-sharing process to respond to social inequalities (Minkler, Garcia, Rubin, & Wallerstein, 2012; Cacari-Stone, Wallerstein, Garcia, & Minkler, 2014). Corazón y Carácter, a *promotora* organization, partnered with academic researchers to co-lead a qualitative research study on the workforce experiences of

promotoras. They presented their work at local settings and national conferences (Marquez et al., 2019) and published their findings to extend the scientific literature (Gutierrez et al, 2020). Applying a CBPR approach yielded several benefits: high quality research that was informed by community members' and scientific priorities, fostering equitable and horizontal partnerships, and fostering career development for both academic and community partners.

Lesson: Partnering with community organizations and community partners, such as *promotoras*, can ultimately enhance scientific rigor. Moreover, partnering with *promotoras* can enhance recruitment science, which can mitigate the documented challenges in recruitment and retention of participants in HSR studies (Asch, Connor, Hamilton, & Fax, 2000).

RECOMMENDATIONS

1. Implement multi-pronged approaches targeting the individual, community, state, and federal levels. This is essential to shift the culture of the HSR workforce. Multi-pronged approaches should continue to focus on individual and local level efforts, but should also address structural barriers in workforce diversity. Multi-pronged approaches must also recognize the crucial role of leadership in advancing DEI.

2. Implement long-term and targeted approaches to advance DEI within distinct levels of an organization (e.g., entry-level, intermediate level, and leadership positions). For instance, targeting approaches can involve: (1) promoting and advancing a welcoming climate that supports DEI; (2) addressing negative climate by mitigating hostility and discrimination grounded in race, sex, or other federally protected characteristics; (3) promoting research that informs and addresses the breadth of inequities in HSR; and (4) reassessing who is able to participate in knowledge production within HSR.

3. Increase exposure to the multidisciplinary field of HSR early on. To introduce potential talented researchers to the field of HSR, programs aimed to recruit and retain potential HSR professionals must consider training, mentoring, and support as early as middle-school and high school. Financial support, training and mentorship must be catered to various stages along an HSR career path.

4. Track progress toward DEI goals through investing in continuous data collection and assessment of efforts. Track and analyze data on intersectional identities and multiple markers of identities that may also be underserved locally.

1. INTRODUCTION

Individuals from historically marginalized groups are disproportionately underrepresented and underserved at all levels of the scientific workforce (National Science Foundation, 2019), including the multi-disciplinary, multisectoral field of health services and policy research (HSR) (Frogner, 2018). As part of an overall commitment to the advancement of equitable health and well-being, the need to address DEI within the HSR workforce is critical (Edmunds et al., 2015). The diverse backgrounds and lived experiences of professionals within the HSR workforce foster scientific innovation and robust learning environments, improve the quality of research, enhance our global competitiveness, and advance equitable health and career outcomes among underserved populations. (National Institutes of Health, 2019). AcademyHealth recognizes the systemic, institutional, and historical factors that work against diversity and equity in HSR and the larger HSR workforce (Edmunds et al., 2015) and is committed to actively promoting best practices to increase the participation of underrepresented groups (URG) in the field of HSR. Yet, strategies to achieve DEI in the HSR workforce often fall short, and at times may continue to reproduce or exacerbate workforce disparities for URGs.

The COVID-19 pandemic and the increased attention to racist police violence sparked by the murders of Black victims George Floyd and Breonna Taylor further highlight the significant impacts of racism on population-level morbidity and mortality disparities (Benjamin, 2020). These events in 2020 sparked several national health and federal science organizations (e.g., the American Medical Association, American Public Health Association, National Institutes of Health, National Science Foundation), to explicitly name plans to address structural racism and racial inequity (American Medical Association, 2020; American Public Health Association, 2020; Collins, 2021; National Science Foundation, 2020). These calls underscore the urgent need to acknowledge and address structural inequities in health care and science. Moreover, as HSR is a multidisciplinary field, advancing DEI within HSR will require an understanding of (1) the historical and current social context of exclusionary practices within the field and (2) the unique histories of structural inequity within each sector that comprises HSR. Simply put, advancing DEI efforts in the HSR workforce will require a continuous and critical reassessment of DEI programs, practices, and policies to account for, and address the differential opportunities to access and advancement in the field.

The purpose of this report is to re-examine practices that have resulted in measurable DEI progress in academia and the scientific workforce. Since strategies for increasing DEI within HSR likely overlap with effective approaches already being implemented in academia and the scientific workforce more broadly, successful efforts to combat systemic barriers in science, technology, engineering, and mathematics (STEM) fields can provide key lessons to consider. We highlight innovative strategies that have been successful in improving the recruitment, retention, and advancement of groups who are underrepresented in HSR, and reflect on how these well-known models and practices can be improved when considering structural inequity.

In this report, we provide an overview of four cases that have been well-funded or well-known among STEM intervention programs. These cases provide lessons to measurably enhance DEI. The first case draws on the National Cancer Institute's (NCI) CURE Program to highlight DEI efforts within academic medicine, and to provide tangible lessons for recruitment and retention across educational and academic career stages. The second case draws on the growing

practice of cluster hiring in recruiting and retaining scientific diversity within academia. The third case draws on mentoring programs to underscore the importance of mentorship for early- and mid-career researchers. The fourth case highlights the value of community partnerships for improving the rigor of work and reach of health services and policy researchers.

For each case, we call attention to innovative strategies that have shown promise in improving the recruitment, retention, and advancement of underrepresented groups within that sector. We also consider the limitations associated with the strategies and approaches implemented. Underscoring these strategies is an overarching recommendation that practices must acknowledge and specifically address systemic barriers that URGs encounter along the HSR career pathways. Since the HSR workforce is not solely employed in academia, we expand upon lessons and nuanced considerations to encompass a broad range of sectors.

2. ENHANCING DEI IN CANCER RESEARCH: THE CURE TRAINING PROGRAM

Health disparities research has well-documented a disproportionately high burden of disease, including high rates of cancer, among racial and ethnic minorities (Smith et al., 2009). Moreover, racial and ethnic minorities, women, individuals with disabilities, and individuals from disadvantaged backgrounds (e.g., low-income first-generation students) are underrepresented in the biomedical, clinical, behavioral, and social sciences workforce (National Institutes of Health, 2020). The lack of diversity in the health workforce translates to inequitable access to care and to medical advances through diverse mechanisms, such as implicit racial/ethnic bias among health care providers (Maina, Belton, Ginzberg, Singh, & Johnson, 2018), medical mistrust and low satisfaction with health care services (Lopez-Cevallos, 2014), and limited generalizability of findings (Salman, Nguyen, Lee, & Cooksey-James, 2016).

Dr. Francis Collins, director of the NIH, underscored the need to reduce health disparities by stating, “If we don’t include as part of this agenda a very major focus on health disparities, we [will] have failed at one of our most important missions at NIH—a problem that has to be understood and ultimately solved” (Center to Reduce Cancer Health Disparities, 2011). As the NCI is committed to increasing equity in the medical advances identified through cancer research (Center to Reduce Cancer Health Disparities, 2011), the NCI houses the Continuing Umbrella of Research Experiences (CURE) program. The CURE program aims to diversify the biomedical sciences and cancer health disparities workforce by providing educational, career development, and funding opportunities across the continuum from middle school to junior investigator (National Cancer Institute, 2020). Consequently, we review the CURE program as a case study for training throughout the educational and career pathway.

Distinct training, mentoring, and funding mechanisms are geared toward targeted educational and career stages. For instance, research education programs (R25s) are geared towards middle school, high school, and undergraduate students. Diversity research supplements (PA-20-022) and National Research Service Awards (NRSA, F31) are geared towards pre-doctoral graduate students. Diversity research supplements (PA-20-022), mentored career development awards (K01and K08), and re-entry research supplements are geared towards postdoctoral early stage investigators. Diversity research supplements (PA-20-022), mentored career development awards (K01, K08), non-mentored career development awards (K22), exploratory grant awards (R21), and re-entry research supplements (PA-18-592) are geared towards

investigators. The distinct funding, training, and mentoring supports across the educational and career pathway promote competitiveness among students and enhance the recruitment and retention of the health-focused workforce.

Since its inception, the CURE program has awarded an estimated 5,000 grants, reaching nearly 2,600 students and early-career researchers (Center to Reduce Cancer Health Disparities, 2011). The impact and productivity of the CURE program has grown exponentially. For instance, in 2010, CURE trainees had authored 175 peer-reviewed publications, relative to 25 publications in 2006 (Center to Reduce Cancer Health Disparities, 2011). Across all career stages, CURE scholars have authored over 1,700 peer-reviewed publications and 27% of CURE scholars engage in cancer health disparities research (Center to Reduce Cancer Health Disparities, n.d.). As of 2011, 27 CURE trainees became assistant professors, 11 associate professors, four full professors, one professor of surgery, and one senior vice president for clinical research (Franco et al., 2011). Collectively, these data suggest that CURE trainees are scientifically productive and are steadily advancing in their career stages. Nevertheless, publicly available evaluations of the CURE program are dated and more recent evaluations are needed to fully assess whether the CURE program continues to have a positive impact on the publication productivity and career progression of its trainees.

The CURE program's success has resulted in other institutions implementing similar programs. For instance, Northwestern University's Feinberg School of Medicine used the CURE program as a model for the Students Engaged in Elder Research (SEER) project (Center to Reduce Cancer Health Disparities, 2011).

LESSONS FOR THE HSR SECTOR

Several factors contributed to the success of the CURE program. First, the strong commitment to workforce diversity among high-profile leaders (e.g., Dr. Francis Collins) and federal agencies (e.g., National Cancer Institute) resulted in the allocation of resources for the various funding mechanisms and programs that support the CURE program. Buy-in from organizational leaders can have tremendous implications for the allocation of resources to promote workforce diversity.

Second, the CURE program used a life-course approach (Elder, Johnson, & Crosnoe, 2003), where CURE scholars were mentored and supported across a range of educational and professional stages in their career trajectory. The CURE program tailored mentoring, training, and funding based on career stage, which ultimately fostered recruitment, retention, and career progression among trainees. By starting at the early stages of education (e.g., middle school) and providing support up to early-stage investigator status, the CURE program was able to provide training, funding, and mentorship during critical career junctures that require training and acumen to navigate. While not all training programs have the resources to employ a life-course approach to developing talented researchers, a modified life-course approach might focus on specific training and small grants for graduate students, postdoctoral scholars, researchers entering their first year as full-time scholars and/or faculty, and early career-researchers who may be considering options for their next career step.

Third, the CURE program, along with other local, state, and federal programs, can identify best practices by routinely conducting program evaluations. Ultimately, program evaluations can identify which facets of the program (e.g., mentoring, grant writing, and funding) have the largest impact on scientific productivity and career progression.

Although the CURE program is a highly-regarded NCI program, it is important to note that individual-level programs alone are not sufficient to address workforce diversity issues. Although individual-level training programs are useful in moving the needle, recognizing and addressing the social structures and institutional cultures that produce and reproduce these persistent inequities are necessary to advance DEI. For instance, scholars have identified socioeconomic status (SES) and racism as fundamental causes of health disparities (Phelan, Link, & Tehranifar, 2010; Phelan & Link, 2015). Recent research suggests early-life SES also shapes workforce inequities. A survey among 7,218 professors across eight disciplines in PhD-granting departments across the U.S. found that nearly one-quarter of faculty have at least one parent who holds a PhD and that faculty at elite departments are 54% more likely to have a PhD-holding parent than faculty at less prestigious institutions (Morgan, LaBerge, Larremore, Galesic & Clauset, 2021). Collectively, these findings underscore the need to address structural, intergenerational, and intersectional factors producing and reproducing workforce inequities.

Lessons from the NCI CURE Program to Promote DEI in the HSR Workforce:

- Commitment to enhancing DEI among institutional leaders
- Employ a life course approach to training programs in order to provide tailored mentoring, training, and support based on trainees' career stages
- Routinely conduct program evaluations to identify which components of the program have the largest impact on career progression

3. CLUSTER HIRING: FOREGROUNDING DEI TO ATTRACT & SUPPORT A DIVERSE AND ACADEMICALLY EXCEPTIONAL CANDIDATE POOL

Cluster hiring is an important initiative to investigate due to its potential to address racial and gender gaps in faculty hiring and retention. While empirical evidence regarding various outcomes associated with cluster hiring are still being explored, several studies suggest that how cluster hiring is utilized can make a difference in creating a climate where newly-hired faculty can be successful while also diversifying the professoriate. One campus that reported successful outcomes is the College of Arts and Sciences at Emory University. From 2014 – 2017, the College of Arts and Sciences hired 65 tenure-track faculty members; 85% of the hires were from well-represented groups (WRGs), whereas only 15% were from underrepresented groups URGs (Freeman, 2019). These disparities led to the College of Arts and Sciences at Emory University to turn to cluster hiring as a way to increase DEI among their faculty.

The cluster hire experiment consisted of an open-rank, open-field search across eight STEM units in the college of Arts and Sciences and involved over 30 faculty members from various departmental search committees (Freeman, 2019). The search committee foregrounded a commitment to minority students by requiring all candidates to write a statement about their experiences with and vision for diversity, and how candidates foster diversity and mentor diverse populations (Freeman, 2019). Candidates with strong mentoring statements were selected for the next stage of review, which assessed research excellence using traditional

indicators (e.g., publications, scholarly independence, and grant funding) (Freeman, 2019). After the changes, the College of Arts and Sciences hired 80 tenure-track faculty members, with 51% of new hires (n = 41) from URGs during 2017 – 2019 (Freeman, 2019).

The success Emory experienced and the growing attention to cluster hiring (Bhalla, 2019; Flaherty, 2017; Sgoutas-Emch, Baird, Myers, Camacho, & Lord, 2016) resulted in NIH approving the Faculty Institutional Recruitment for Sustainable Transformation program, which is a 9-year, $241 million initiative that provides funding to institutions that pledge to hire ten or more early career faculty members within a two-year period (Mervis, 2020).

LESSONS FOR THE HSR SECTOR

The College of Arts and Sciences at Emory University serves as a case study that was able to attract a diverse and academically exceptional pool of candidates. First, Emory foregrounded a commitment to DEI and talent development through prioritizing candidates' mentoring statements in the selection process. Even when intentional planning and resources cannot be allocated to a cluster hire, faculty hiring committees can change their faculty hiring process to, at minimum, prioritize a faculty candidate's knowledge, skills, and potential to be inclusive and equity-minded in their approach to teaching and mentoring students.

Second, Emory's success with cluster hiring was largely shaped by the involvement of senior leaders (e.g., senior associate dean of the college of arts and sciences) and collaborations with over 30 faculty members from diverse departments. The senior associate dean of faculty at Emory University's College of Arts and Sciences underscores the fact that successful cluster hiring necessitates a combination of purposeful outreach, cross-campus collaboration, and funding (Freeman, 2019). Cluster hiring is an enormous undertaking that necessitates many resources, such as funding, buy-in from institutional leaders, departmental commitment, and a time commitment from those involved.

Finally, there is growing support for cluster hiring because of its potential to increase the likelihood of retention, enhance socialization, and minimize feelings of isolation among underrepresented faculty hires. Thus, it is critical to ensure that newly-hired faculty are given support and resources to mitigate the systemic barriers they may encounter as faculty members, particularly if they are from marginalized backgrounds. Considering the interdisciplinary nature of HSR, support to conduct a health services-related cluster hire and to retain the newly-hired faculty members could foster the group's capacity to develop innovative and culturally responsive research for the HSR field.

While cluster hiring may achieve many DEI goals, several systemic issues should also be considered in order to avoid reifying inequity in faculty hiring and retention. Indeed, the inclusion of diversity statements in the faculty search is gaining recognition for its success at other institutions, such as Boston University and the University of California, Riverside (Bhalla, 2019; Flaherty, 2017). However, it is important to ensure that the application process is framed in a manner where candidates with one or multiple marginalized identities can share how their lived experiences and commitment to DEI are assets to be valued, rather than forcing candidates to restate experiences of discrimination and trauma in order to justify their candidacy. Worse still, committees should refrain from messaging and framing that signals that one's candidacy is solely about contributions to diversity, as if candidates from marginalized groups are presumed less capable than candidates from WRGs to contribute to student success, the department, institution, and their respective academic field at large via scholarship, teaching, and service.

Lessons from Faculty Cluster Hiring to Promote DEI in the HSR Workforce:

- Include hiring materials/practices that glean insight into candidates' capacity for mentorship and commitment to DEI
- Involve leadership, as well as several collaborators, in order to obtain buy-in to support an interdisciplinary HSR cluster hire
- Ensure that resources (financial, HR, structural) will be in place to support the hired faculty
- At all stages of cluster hiring, consider how to mitigate framing that can reify inequity

4. THE POWER OF PINPOINTING MENTORSHIP TO SUPPORT RESEARCH CAREER ADVANCEMENT

In 2014, the National Institutes of Health (NIH) launched a broad, trans-institutional initiative to enhance the participation of historically marginalized groups in biomedical research careers. One component of this initiative was the creation of the National Research Mentoring Network (NRMN) to provide trainees across the biomedical, behavioral, clinical, and social sciences with evidence-based mentorship and professional development (Sorkness et al., 2017, p. 172). Given that grant awards are considered a reliable indicator of future success and advancement in academic science (Bhalla, 2019), the NRMN aimed to address the lack of mentorship for historically underrepresented early-career investigators (ESIs) as they develop grant proposals. The NRMN's grant writing coaching programs have seen initial success in increasing the number of scientists from diverse backgrounds successfully obtaining R01 research grants.

NRMN GRANT WRITING COACHING PROGRAMS

The NRMN's grant writing coaching program was launched in response to a study conducted in 2011, which documented that scientists from racial and ethnic minority groups are awarded research grants from the NIH at significantly lower rates than white scientists (Ginther et al., 2011). Having evidence-based research to pinpoint specific areas where racial disparities existed was a turning point that led to the NIH's decision to allocate funding to mentorship, and to specifically support the mentorship of early-career scientists.

NRMN piloted four coaching programs: two models prioritized scientists who were ready to write grant proposals, and two models targeted postdoctoral fellows and early-career faculty who needed extensive guidance in developing grant proposals. The diversity of program models allowed for opportunities to tailor initiatives to local contexts, such as availability of senior-level faculty coaches and a focus on early-career postdoctoral scholars or mid-career faculty. All programs also recruited faculty as Coaches-in-Training in an effort to create sustainability of efforts once grant-funded programs ended (Jones et al., 2017).

While still in the pilot stage, the programs are starting to document some success in increasing participation of historically underserved groups in academia. Black and Latinx populations comprised most of the coaching program participants (over 30% and over 20% respectively), followed by white (18%) and Asians (13%). Native-American and Hawaiian Pacific Islanders

comprised 6% of the cohorts. The pilot programs have shown a significant improvement in participants' grant writing self-efficacy (Thorpe et al., 2020), significantly accelerating participants' average time to grant proposal submission by 148.6 days (Hall et al., 2018). The programs are also starting to expand nationwide, such that the NRMN introduced five new locations to host one of the grant writing programs, scaling impact to reach new participants and faculty coaches.

ADVANCING UNDERSTANDING OF MENTORING NEEDS AND STRATEGIES THAT WORK

Funders and leaders in STEM disciplines have made it a priority to advance knowledge production and dissemination of successful mentoring models. In 2016, the Morehouse School of Medicine, one of the NRMN's collaborative partners, conducted a survey of national STEM leaders and hosted a policy workshop in order to assess the field's policies and activities that advance research mentoring. Additionally, the National Academies of Sciences, Engineering, and Medicine (NASEM) released a report featuring best practices for mentoring in scientific and medical disciplines. The report covers mentoring across the full career pathway, with a recommendation to support various types of mentoring structures based on local resources and opportunities (NASEM, 2019). For example, organizations with few diverse senior-level mentors can develop mentoring networks that allow for the sharing of mentorship activities across several people and spanning across several institutions and organizations. Advances in what works within certain contexts and institutional constraints can inform future efforts to successfully mentor HSR professionals at a critical point in their career.

LESSONS FOR THE HSR SECTOR

While this case focused primarily on the NRMN grant writing program, we expand upon lessons from this case to the larger practice of mentorship initiatives for early- and mid-career scholars who may work in additional settings aside from faculty roles at research universities. First, leaders in HSR can allocate resources and support for comprehensive mentoring programs for early- and mid-career HSR researchers. To increase sustainability of mentorship, curricula can either be developed into modules and hosted on an organization or institutional website (e.g., see AcademyHealth, 2016), or structured as a "train-the-trainer" program, where senior HSR leaders obtain training to become mentors. Second, as mentorship for early-career and mid-career professionals should not be limited to grant writing support alone, leaders within HSR can conduct research to pinpoint additional areas where and for whom disparities exist along the HSR career paths. These efforts can inform where to direct funding to enhance career development and advancement. Third, leaders can advocate for federal agencies to direct funds toward advancement of historically marginalized groups in HSR. For example, National Science Foundation (NSF) ADVANCE grants are aimed at supporting leadership of women in more advanced stages of STEM academic professions and have led to successful outcomes for women's advancement. Leaders within the scientific disciplines are currently calling for federal funding to develop a similar grant aimed at supporting Black scientists who continue to face significant barriers to advancement in STEM (Hrabowski, Tracy, & Henderson, 2020). Lastly, HSR might consider organizing a forum of senior leaders in the field to develop ideas for general guidance on ways to shift reward structures and policies and disseminate successful practices from local interventions to support mentorship in advanced career stages.

While grant writing and career mentorship are important, institutions must also consider ways to support and retain members of the HSR workforce who may not want to pursue the narrow pathway of becoming research faculty and obtaining federally-funded research grants in order to advance in their field. As the HSR sector encompasses those who work in corporate, policy centers, and governmental agencies as well, there is a need to develop several mentorship opportunities that highlight the various viable career options within HSR. This inclusivity can work to retain early- and mid-career professionals who are interested in staying in HSR. Additionally, institutions must also consider how rebalancing incentives for academic research will lead to intended effects rather than unintended outcomes promoting a negative research culture (Grant, 2021) or exacerbating disparities between URGs and WRGs in their capacity for retention and promotion in HSR.

Lessons from the NRMN Grant Writing Coaching Program to Promote DEI in the HSR Workforce:

- Develop tailored mentorship programs for early-career and mid-career HSR professionals
- Pinpoint areas at your institution where early- and mid-career faculty are not advancing. Use these data to clarify specific contextual barriers to advancement in order to develop appropriate support systems
- Advocate for federal agencies to direct funds to early- and mid-career professional development
- Organize a forum of senior leaders in HSR and early- and mid-career professionals to develop guidance for mentorship

5. THE PROMISE OF COMMUNITY-BASED PARTICIPATORY RESEARCH AND COMMUNITY PARTNERSHIPS FOR ADVANCING DEI IN HSR

Racial and ethnic minorities, among other historically underrepresented groups, are less likely to participate in research studies and clinical trials (Yancey, Ortega, & Kumanyika, 2006; Gilmore-Bykovskyi et al, 2019). Moreover, those from historically URGs (e.g., racial and ethnic minorities, first-generation low-income students) are less likely to be members of the HSR workforce, relative to those from WRGs (e.g., Non-Hispanic whites). The lack of diversity in the participation of research and the HSR workforce undermine equitable access to research advances and resources that promote health and overall well-being, which ultimately exacerbate health disparities. Moreover, the HSR field has increasingly conducted research where the data are (e.g., hospitals, universities, integrated primary care), focusing on hospital claims data and electronic health records data (Whicher et al., 2018). As diverse social determinants of health shape population-level outcomes, the National Academy of Medicine urges the HSR workforce to move research into communities, in an effort to bridge health and social services to improve access to care (Whicher et al., 2018).

Fostering partnerships with community partners is one approach to minimize persistent health disparities, to improve the quality of research, and to increase diversity and inclusion within the HSR workforce. This case study focuses on the promise of community-based participatory research (CBPR) and community partnerships for promoting diversity and inclusion in HSR both the HSR workforce and the pool of participants in HSR studies. Specifically, this case study focuses on the methodological approach of CBPR and the partnership between academic researchers and *promotoras* to produce rigorous community-based research. *Promotoras* are lay health workers; they are under the community health worker umbrella (Centers for Control and Disease Prevention, 2019).

COMMUNITY-BASED PARTICIPATORY RESEARCH

CBPR is an orientation that emphasizes equitable engagement of partners throughout the research process (Cacari-Stone, Wallerstein, Garcia, & Minkler, 2014). CBPR builds on strengths and resources within the community, fosters a collaborative, equitable partnership throughout all phases of research, fosters an empowering and power-sharing process to respond to social inequalities, cultivates co-learning and capacity building among all partners, embodies cultural humility, and balances research and action (Minkler, Garcia, Rubin, & Wallerstein, 2012). CBPR involves collaborating with diverse partners, such as researchers, grassroots community leaders, advisory boards, government task forces, and *promotoras* (Cacari-Stone et al, 2014; Wilkinson-Lee, Armenta, Leybas Nuño, Moore-Monroy, Hopkins, A., & Garcia, 2018).

COMMUNITY-BASED PARTICIPATORY RESEARCH PARTNERSHIPS WITH PROMOTORAS

Prior research has documented the benefits of partnering with *promotoras* to promote health and minimize health disparities. *Promotoras* are valued research members for their unique access to underserved populations (e.g., undocumented individuals), and the important perspective they provide to research teams, particularly in health interventions and community-based research. Corazón y Carácter (CyC) is a *promotora*-based organization based in Los Angeles, CA (Corazón y Carácter, 2020). The members of CyC have a long track record of partnering with universities, clinics, and non-profit organizations to promote community health and extensive experience implementing outreach and education for health promotion efforts and collecting data for community-based studies. The CyC members sought opportunities to conduct research and co-led a qualitative research study on the workforce experiences of *promotoras*, presented their work at local settings and national conferences (Marquez et al., 2019), and published their community-based work to extend the scientific literature (Gutierrez et al., 2020).

By applying a CBPR approach to their partnerships with university researchers, several benefits materialized. First, the *promotora* and university partners were able to produce high quality research, which was informed by community members' and scientific priorities. Second, applying a CBPR orientation fostered a horizontal partnership rather than a vertical partnership and underscored the value that diverse communities contribute to the conceptualization of research questions, the collection of high quality data among underserved populations, the interpretation of results, and the dissemination of research findings. Third, by applying a CBPR approach, both partners were able to engage in rigorous research while simultaneously fostering career development (e.g., presenters at national conferences, co-authors in peer-reviewed publications) among the *promotora* partners. As prior research has highlighted, the

majority of attention on *promotoras*' career development focuses on training and certifications (Nebeker, Kalichman, Talavera, & Elder, 2015), but often overlooks their long-term career development needs. As such, employing a CBPR approach and partnering with community-based organizations can strengthen the reach and quality of HSR studies, while also advancing the career development of marginalized members of the public health workforce.

LESSONS FOR THE HSR SECTOR

Although CBPR can be time and labor intensive and can involve conflict related to power dynamics (Leung, Yen, & Minkler, 2004; Minkler, 2005), engaging in CBPR improves health services and policy research in several ways. First, engaging in CBPR improves the quality of research. For instance, implementation research is one domain within HSR. *Promotoras* can work as valuable members of the research team to identify effective ways to deliver high quality care. Furthermore, because *promotoras* are well-known for their unique access to vulnerable, underrepresented, and "hard-to-reach" populations (Otiniano, Carroll-Scott, Toy, & Wallace, 2012), partnering with *promotoras* can increase the representation of underrepresented groups in research. Specifically, partnering with *promotoras* can enhance recruitment science, which can mitigate the documented challenges in recruitment and retention of participants in HSR studies (Asch, Connor, Hamilton, & Fax, 2000). Second, engaging in CBPR elevates the voices of community groups and promotes equitable collaborations between academic and community partners. As engaging in CBPR occurs across a continuum, even small improvements in including community partners can lead to high quality research that addresses communities' priorities and needs. Third, engaging in CBPR with *promotora* patterns expands who is considered under the HSR workforce. *Promotoras*, and other community partners, hold expertise that can meaningfully contribute to advancing the HSR field. For instance, in addition to the aforementioned research collaborations, *promotoras* can engage with health care consumers through several avenues, such as case management and health navigation (Whicher et al., 2018). Prior research documents *promotoras*' desire for professional growth (e.g., career advancement opportunities, appropriate compensation) (Gutierrez et al., 2020). This desire for growth, paired with the need for the HSR field to increase research in the communities (Whicher et al., 2018), underscores the compatibility and value of *promotoras* becoming valuable partners and members of the HSR workforce.

Lessons from CBPR to Promote DEI in the HSR Workforce:

- Conduct research that is informed by both community and scientific priorities
- Partnering with *promotoras* can enhance access to vulnerable and historically underrepresented groups in HSR studies
- Recognize that *promotoras*, and other community partners, hold expertise that can meaningfully contribute to advancing the HSR field
- Engage in CBPR elevates the voices of community groups and promotes equitable collaborations between academic and community partners, thereby building trust between research institutions and local communities

6. LOOKING TOWARD THE FUTURE: IMPLICATIONS FOR ADVANCING EFFORTS TOWARD DEI IN HSR

While this report presented strategies for promoting DEI from a range of science disciplines within academia, lessons from these case studies can be useful in highlighting what is possible when reflecting and reevaluating efforts from a structural inequity lens. Advancing DEI in HSR will require an equity-minded approach where there is genuine commitment and infrastructural support from leaders in positions of authority to determine priorities and resource allocation, investment in long-term and targeted approaches, and consistent evaluation of processes and outcomes to reduce structural barriers to HSR and participation in the HSR workforce. We present several overall recommendations for practice:

EMPLOY MULTI-PRONGED APPROACHES TO ADDRESS STRUCTURAL BARRIERS TO DEI

While we have shared case studies of promising practices from various fields to provide tangible guidance, no singular case study or program is enough to dismantle structural inequities in the HSR workforce. Multi-pronged approaches targeted at the individual, community, state, and federal levels are essential to address structural barriers within all sectors and disciplines of the HSR workforce.

It was evident that leadership from senior administrators is an important driver of either launching or supporting a DEI practice or initiative. Leadership that supports DEI is critical, as those in leadership positions are able to reframe an organization or institution's approach to DEI as one in which structural barriers within HSR are acknowledged and addressed, rather than placing the onus of persisting and succeeding in HSR on individuals from marginalized backgrounds. Leaders have the capacity to enact practices to enhance DEI at multiple levels of an organization. For example, several of the cases featured leaders who either initiated or supported tangible diversity goals. Senior-level academic deans and leaders of research organizations have the capacity to prioritize diversity efforts and reallocate resources toward achieving such goals. Additionally, HSR leaders from URGs, such as the collaborative partners (e.g. *promotoras*) in CBPR projects, have the lived experience and knowledge to uniquely inform plans to increase diversity within a broad range of HSR work. Expanding our understanding of expertise in HSR and recognizing that communities hold a wealth of expertise that can meaningfully contribute to reducing persistent challenges in HSR (e.g., lack of workforce diversity, lack of diversity in research and clinical trials, poor treatment/service of URGs in medical settings) is an important next step towards advancing DEI.

USE TARGETED APPROACHES WITH SHORT-TERM, MEDIUM-TERM, AND LONG-TERM GOALS TO ADVANCE DEI

Since DEI challenges occur at all stages of the educational and career trajectory into the HSR workforce, targeted approaches with short-term, medium-term, and long-term goals are necessary to both expand and specify DEI goals in HSR. For instance, it is critical to specify concrete DEI goals within sub-areas, such as: (1) promoting and advancing a welcoming climate that supports individuals with one or more marginalized identities (i.e. creating a welcoming and supportive environment); (2) addressing negative climate by mitigating hostility and discrimination grounded in race, sex, or other federally protected characteristics (i.e. reducing overt forms of discrimination); (3) promoting research that informs and addresses the breadth of inequities in HSR; and (4) reassessing who gets to participate in knowledge production within HSR (i.e. rethinking power structures, hierarchy, and access to power). We argue that all

of these goals are important, however an organization may need to identify one or two areas to prioritize first in order to have the most impact locally. For example, mentorship programs would address an organization's need to create a more supportive environment focused on retention and career advancement if there is a pattern of underrepresented HSR professionals leaving the organization at rates higher than their well-represented counterparts.

INCREASE HSR AWARENESS, EXPOSURE, AND MENTORSHIP AT EARLIER STAGES

Expansion of areas for DEI interventions would allow for individuals with interests in health or science to gain exposure to the multidisciplinary field of HSR at an earlier phase, when more options for educational and career preparation are available to them. Long-lasting DEI involves targeting distinct career stages within an organization (e.g., entry-level, intermediate level, and senior level positions) for interventions that reduce barriers to accessing the next stage of the HSR career trajectory. Programs aimed to recruit and retain potential HSR professionals must also consider training, mentoring, and support as early as middle school and high school to expose students to the field of HSR in order to give them the opportunity to see the field as a viable career path where they feel they belong and are valued. Additionally, financial support, training and mentorship must be catered to various stages along an HSR career path, such as provision of training along the life-course with the CURE program model, and implementing grant writing coaching programs for early-career and mid-career faculty who conduct HSR research.

TRACK DEI EFFORTS THROUGH CONTINUOUS DATA COLLECTION AND ASSESSMENT

Several cases identified the need to track progress toward diversity goals through investing in continuous data collection and assessment efforts. Recurring evaluations of data on recruitment, retention, and perceptions of climate for URGs are critical to assess for improvements, stagnation, or declines in DEI outcomes. Several of the cases also highlight the importance of tracking and analyzing data on intersectional social identities (e.g. sexual orientation and gender, race and disability status, etc.) and multiple markers of identities that may also be underserved locally. A report on diversity in the tech sector by Conway and colleagues (2016) provides examples of intersectional reporting of data (e.g., women of color in the technology sector). Additionally, improved data efforts may also include tracking progress on other categories of diversity, such as disability status, age, sexual orientation, and level of advancement within the work organization.

CONCLUSION

Promising practices aimed at supporting DEI must acknowledge and specifically address systemic barriers that historically marginalized groups encounter along the HSR career pathways. The burden to overcome systemic barriers cannot be left to URGs alone. Employers within the HSR field must acknowledge how leadership, policies, and structures can create and maintain unwelcoming work environments (Griffin, 2019). HSR organizations must work to increase awareness of the ways that URGs are disadvantaged in access to education and training, HSR job recruitment, vulnerability to harassment and discrimination in the workplace, and career retention and advancement (e.g., teaching evaluations, service overload, implicit bias). Only after recognizing the sociopolitical context producing and reproducing these systematic disparities can efforts to promote DEI be more effective in addressing the root of the inequity. Collectively addressing multi-level barriers to equity in the HSR workforce will expand and enhance research on access to health care and increase the representation and impact of leaders and policymakers who can meet the needs of a diverse population, which will ultimately advance both health equity and workforce diversity.

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