ABSTRACT

Background: The NIH Diversity Administrative Supplement is a funding mechanism that provides support for diverse early-stage researchers. There is limited guidance on how to apply for these awards.

Purpose: We describe perspectives of NIH program/diversity officers and university research administrators offering recommendations for diversity supplement submission.

Methods: This article is the product of a working group exploring diversity in research. Nursing faculty from an R2 Historically Black College and University and an R1 research intensive university conducted stakeholder interviews with NIH program/diversity officers and university research administrators. We used content analysis to categorize respondents' recommendations.

Findings: Recommendations centered on harmonizing the applicant with the program announcement, communication with program/diversity officers, mentor/mentee relationship, scientific plan, and systematic institutional approaches to the diversity supplement.

Discussion: Successful strategies in submitting diversity supplements will facilitate inclusion of diverse researchers in NIH-sponsored programs. Systematic approaches are needed to support development of diverse voices to enhance the scientific community.


"Research has shown that diverse groups are more effective at problem solving than homogeneous groups, and policies that promote diversity and inclusion will enhance our ability to draw from the broadest possible pool of talent, solve our toughest challenges, maximize employee engagement and innovation, and lead by example by setting a high standard for providing access to opportunity to all segments of our society.”

- President Barack Obama (2016)
Introduction

Context and Policy Initiatives Addressing Research Workforce Diversity

President Joseph Biden’s executive order of June 25, 2021 addressed racial and ethnic diversification of the workforce as a primary strategy for addressing the persistence of disparities in the federal workforce (Biden, 2021). However, racial and ethnic diversity remains poor across most professions, including academia (Abelson et al., 2018; Jones-London, 2020). In some instances, representation is even declining. For example, the proportion of faculty from minoritized groups in medical schools was lower in 2018 than it was in 1990 (Abelson et al., 2018). The same is true for many health-related professions such as public health (Kahn et al., 2019) and surgical specialty residencies (Abelson et al., 2018; Nehemiah et al., 2021).

Nursing continues to be particularly challenged in recruitment and retention of racially and ethnically diverse professionals’ representative of national demographics of the United States (U.S.) (Phillips & Malone, 2014). The lack of diversity in nursing faculty prevents growth of a diverse nursing workforce and threatens efforts to reduce racial and ethnic health disparities (Beard, 2014; Yingling, Cotler, & Hughes, 2017). Despite the allocation of significant resources to increase the representation of minoritized groups in nursing, little, if any gains have been made.

Minoritized populations have been systematically excluded from research training and academic advancement, prompting an apology and call to action by the National Institutes of Health (NIH) (Heggeness, Evans, Pohlhaus, & Mills, 2016). NIH’s definition of diversity includes, “populations that are nationally underrepresented in biomedical, clinical, and behavioral and social sciences” (National Institutes of Health, 2019). As part of their mission, NIH is committed to fostering a pool of diverse scientists that can leverage their “backgrounds and lived experiences” to catalyze scientific inquiry and innovation in a variety of settings (National Institutes of Health, 2019).

The NIH introduced the UNITE initiative to acknowledge and end structural racism in biomedical research on February 21, 2021 (National Institutes of Health, 2021). Structural racism refers to a complex interaction of institutional policies and behaviors that over time produces consequences with racialized effects (Powell, 2008). UNITE outlines five activities to combat structural racism in biomedical research through: Understanding stakeholder experiences through listening and learning; New research on health disparities, minority health, and health equity; Improving the NIH culture and structure for equity, inclusion and excellence; Transparency, communication, and accountability with internal and external stakeholders; and Extramural research ecosystem: changing policy, culture and structure to promote workforce diversity (National Institutes of Health, 2022).

One opportunity to amplify the UNITE initiative is the Diversity Administrative Supplement (diversity supplement), an NIH funding opportunity created in 1989 to address disparities in the scientific research workforce (Hill, Desai, Chaudhry, Nguyen, & Boatright, 2021). This mechanism serves to match early-stage researchers (mentees) of diverse backgrounds with Principal Investigators (PIs) of existing NIH funded research grants (mentors). According to the funding announcement (PA-21-071), the goal of the mechanism is “to improve the diversity of the research workforce by recruiting and supporting post-baccalaureate, predoctoral students, post-doctorates, and eligible early-stage investigators from groups that have been shown to be underrepresented in health-related research” (Hill et al., 2021).

While this unique and potentially career-changing opportunity has increased in popularity over the past decade, and most applicants are awarded funding, only 4.5% of NIH-funded Research Project Grant(s) (R01) in 2020 included a diversity supplement (Hill et al., 2021). Underutilization of the diversity supplement is a missed opportunity that reinforces inequity in the scientific community through a failure to identify and nurture diverse early-stage researchers. Many are unaware of the mechanism of this funding opportunity; therefore, an overview is provided.

Overview of the Diversity Supplement

The diversity supplement is a funding opportunity for early-stage health researchers from underrepresented backgrounds as defined by the National Science Foundation (2017). This includes those from racial/ethnic minorities as well as those who come from historically disadvantaged backgrounds, such as individuals with disabilities as defined by the American Disabilities Act of 1990 (Khan et al., 2019; National Science Foundation, 2017). The definition of racial/ethnic minority varies among different NIH institutions. For example, those of Asian descent may qualify as a minority in one institute but not another. The information that specifies racial and ethnic prerequisites is not always readily available on a program announcement or an NIH institute website; therefore, applicants need to contact the program officer of the funded project to verify. Nevertheless, any applicant, regardless of race/ethnicity, may qualify for the diversity supplement opportunity if they have two or more of the following indicators of being from a disadvantaged background: history of homelessness; history of placement in foster care as a minor; eligibility for federal free and reduced lunch program for applicants for two or more years; eligible for Federal Pell grants; receiving support from Supplemental Nutrition program for Women, Infants and Children; and those who grew up in designated neighborhoods of low socioeconomic status.
The diversity supplement is one of many early NIH training opportunities (Figure 1). Although the diversity supplement offers a seemingly straightforward funding mechanism to address disparity in the biomedical workforce, the process is unfamiliar to many early stage and established researchers. When compared to popular funding mechanisms, such as R- or K-series grants, the diversity supplement is “neither fish nor fowl”. Applicants propose a research project that dovetails with an existing NIH funded research grant (e.g., R- or P-series) and a training plan to develop a research skillset, similar to the F-, T-, or K-grant mechanisms.

Diversity supplements establish the applicant with a research project, an invested research mentor to provide career guidance, as well as exposure to the scientific and administrative ecosystem of an individual NIH institute or center (IC). Funding is granted through the IC of the parent grant and not another IC. Individuals from a broad range of educational backgrounds, from high school through PhD trained faculty, are eligible to apply. However, each IC differs in their preferred applicant profile, and most awards appear to be granted to those at the higher end of the educational spectrum, commonly those seeking a PhD, post-doctoral fellowship, or junior faculty. At the end of the experience, early-stage researchers move forward with enhanced expertise in their scientific area and are well-prepared to advance to the next level of a research career.

There are key distinctions between the Diversity Supplement and other NIH training mechanisms (F-, T-, and K-series). Submission of the diversity supplement is rolling, that is, the application may be submitted at any time during the academic year. One caveat is that there is limited money budgeted for diversity supplement programs within each IC. Compared to a full-scale NIH grant application, NIH review of the diversity supplement includes an administrative, rather than competitive review, resulting in reduced administrative requirements, proposal length, and application processing time. Furthermore, this review is conducted by program officers in consultation with IC directors rather than a full scientific council with institutional review. Reducing administrative barriers allows nascent researchers with fewer institutional resources a more direct path to NIH funding. The budget of diversity supplements may have both NIH and IC-level restrictions. Traditionally, it may be funded up to the annual amount of the parent grant (depending on the NIH institution); however, each IC may impose restrictions on what costs may or may not be included. These differences expedite the submission process and have the potential to sidestep slower timelines of the traditional NIH grant submission mechanisms.

The benefits to submitting and receiving a diversity supplement are developmental, practical, and financial. Most importantly, the applicant is poised to

**NIH Funding Opportunities at the Early Career Stage**

![Overview of funding opportunities leading up to the early career stage](image-url)
develop two valuable research relationships. First, applicants must establish a relationship with an NIH-funded mentor who is invested in advancing historically excluded applicants. The character of this relationship is paramount to the success of the joint venture. Additionally, the applicant begins an institutional relationship with NIH funding partners who have a vested interest in fostering diverse researchers. These partnerships may then serve as the springboard for early-stage researchers to advance in a scientific research career in a field which has not historically provided equal support to those from diverse backgrounds.

While the diversity supplement has the potential to address inequity in research training for historically excluded individuals, a number of challenges have resulted in a lack of awareness and underutilization among potential applicants, mentors, and universities, thus perpetuating the imbalance of traditional scientific content which often fails to address the needs of diverse populations. Inadequate development of talented researchers from diverse backgrounds results in a loss of impact and innovation to the entire scientific community secondary to diminished perspectives necessary to uncover the full spectrum of scientific ideas (AlShebli, Rahwan, & Woon, 2018).

The purpose of this article is to demystify the diversity supplement application process by providing guidance from informed stakeholders, specifically NIH program/diversity officers and university research administrators. We hope that by providing clarity on the process of applying for diversity supplements and offering strategies that lead to successful applications this will contribute to an increase in the inclusion of diverse perspectives within the academic research workforce.

**Methods**

*Writing group / Interviewees*

This work stems from a collaborative writing workgroup established between an R2 (high research-activity) Historically Black College and University - Howard University College of Nursing and Allied Health Sciences, and an R1 (very high research-activity) university - New York University Rory Meyers College of Nursing. A group of seven academic researchers from both institutions met with the objective of exploring diversity in research, arriving at the topic of underuse of NIH diversity supplements. We searched the literature on diversity supplement policy and procedures, academic submission efforts, and research initiatives that provided insight into the facilitators and barriers of submitting a diversity supplement. There was a paucity of information; therefore, we interviewed stakeholders to obtain guidance on deconstructing the diversity supplement application process. These interviews were deemed exempt by the university institutional review board.

*Stakeholders / Interviewees*

Interviews explored the perspectives of twelve stakeholders (NIH program/diversity officers, university research administrators, faculty members with NIH funding, and early-stage diverse researchers seeking academic development). This article presents the perspectives of five NIH program/diversity officers and university research administrators. The perspectives of the seven other stakeholders (faculty members with NIH funding, and early-stage diverse researchers seeking academic development) are described in a complementary article (Travers et al., in press). Convenience sampling was used, email invitations were sent to potential respondents, and those who responded to requests were interviewed.

*Process*

Stakeholders provided verbal assent to be interviewed and recorded. Using a semi-structured interview guide (Supplemental Figure 1), we conducted 30–60-minute interviews by teleconference between April 26, 2021, and November 1, 2021. Areas of focus included: 1) NIH program officer suggestions to support NIH application development by mentors and early-stage researchers and 2) university research administrator perspectives on systematic approaches that could be used by research and academic institutions to better identify and support applicants and lower barriers to submission. Our goal was to summarize insights supporting successful navigation of the NIH diversity supplement submission process. Interviews were recorded and reviewed iteratively with note-taking (not a verbatim transcript). Thematic notes were the unit of analysis for which content analysis was used to categorize and report the recommendations from the respondents (Elo & Kyngäs, 2008).

*Findings*

Five stakeholders, three NIH officers and two university research administrators, completed interviews with members of the writing group. The racial/ethnic breakdown of the sample was: two African American and one Latinx NIH officers, and two white university research administrators.

We identified five categories of recommendations: preliminary steps to the application; communication with NIH program/diversity officers; the mentor/mentee relationship; the scientific plan; and systematic institutional approaches to the diversity supplement. These categories are detailed below. Additionally, Table 1 provides a summary of additional individual pieces of advice from NIH program and diversity officers (not university administration) in response to the
Table 1 – Program Officer Diversity Supplemental Recommendations

<table>
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<th>Recommendation</th>
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<tr>
<td>1</td>
<td>“Your Program Officer is federally mandated by taxpayer dollars to talk to you.” Each NIH institute has different priorities. A conversation among the PI, diversity applicant, and the program officer at the NIH institute of funding is vital and may possibly be the most important component of submitting an application and receiving funding for a diversity supplement.</td>
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<td>2</td>
<td>“Start early - Do you have enough time on the parent grant?” There should be at least 1–2 years of funding left on the parent grant. Without this, an applicant may not have sufficient time to receive the training necessary to meet the overarching goal of the mechanism.</td>
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<td>3</td>
<td>“Don’t start too early - NIH will not back a losing horse.” Adequate progress on the parent grant must be demonstrated, often through publication of the results of the first aim of the parent grant. Failure to demonstrate success in the initial grant is a strong disincentive for the funding agency.</td>
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<td>4</td>
<td>“Do not share information you wouldn’t feel comfortable putting on a postcard.” Diverse applicants come from a range of challenging backgrounds which contribute to their perspective. While NIH considers this an asset to the broadened perspective of the scientific community, a decision must be made by that applicant to disclose these factors. Mentors and mentees must evaluate whether the applicant is willing to disclose factors that may make them feel vulnerable and exposed, such as past experience with having a disability, originating from a low SES, and homelessness (Refer to article 2).</td>
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<td>5</td>
<td>“Avoid the Sequential Fallacy.” The funding opportunity is nested within the primary grant. It is considered a “concurrent project” rather than a second grant written to follow up as the next funding opportunity, but the PI of the parent grant is also PI of the diversity supplement. The responsibility of the supplement application and administration must not be handed over to the diverse applicant even though the diverse applicant will play a substantial role in the grant writing process.</td>
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<td>6</td>
<td>“Do no harm to the parent grant.” Grants require resources, and supervision of the diversity candidate must not pull away from the resources allocated to the parent grant. Ensure that the resources for the parent grant are secure. Program officers will seek to protect the funded parent grant and not fund the supplement that puts its successful completion in the balance.</td>
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<td>7</td>
<td>Funding: “Seek the appropriate level of support” &amp; “We do not give financial aid!” The supplement largely provides salary support for the diversity candidate with only a small amount for study expenses. Applicants may not request more funding than the limits set forth by the parent grant funding. While this may not be a concern for larger grants (RO1 – large operating budget), the limits of grants with smaller annual caps may not ensure complete support for a full-time salary. In fact, some NIH institutions believe they are providing stipend support, and PIs believe it is full-time salary. This disconnect has the potential to leave a diversity applicant under-supported. A PI may need to consider additional funding to support financially challenged applicants. However, it must be said that the NIH funding opportunity is an administrative research supplement and not a mechanism through which to pay tuition. As such, moneys may be allocated for position salary commensurate with a comparable dollar per hour amount in a regionally similar position. (RA salary, graduate/post-doctoral fellowship, junior faculty salary).</td>
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<td>8</td>
<td>“Do not double dip with funding.” The applicant must not be funded on the parent grant. A cardinal sin is supplementing a post-doc or research salary with the diversity supplement when they are already supported by the parent grant.</td>
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<td>9</td>
<td>“Do not double dip with specific aims.” The aims of the diversity supplement must not usurp, conflict, or replicate the aims of the parent grant. Unique angles, different analysis, working with data that has been collected but not assigned to address the aims of the parent grant are excellent directions in which to craft a diversity supplement proposal. This is especially true when used to address the health needs of those from diverse backgrounds in which the diversity supplement applicants may have wisdom from their academic path to inform their scientific inquiry. This is to the benefit of the entire academic community.</td>
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<tr>
<td>10</td>
<td>“Follow the steps.” Each funding opportunity announcement outlines the pertinent information for the supplement application. Avoid administrative desk rejection by adhering to the well-described, detailed information included in the announcement of the opportunity.</td>
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question, “What do you want diversity supplement applicants to know before submitting?”

Harmonizing the Applicant with the Program Announcement

Identifying the Correct Program Announcement
A diversity supplement program announcement (PA) number is required to identify the correct NIH funding opportunity and specifications for the application mechanism. As one program officer emphasized, “The (initial) key is to get the right funding opportunity program announcement.” In 2022, the PA number is PA-16-287 (Hill et al., 2021). The diversity supplement PA is issued each year but may be re-issued with different PA numbers and parameters depending on NIH processes.

Matching Program Announcement and Applicant
Applicants should ensure that they have identified the correct PA and that the applicant’s level of education and desired training have been met prior to pursuing further steps. For example, a post-doctoral early-stage researcher would be ill-advised to pursue a PA that targets the training of high school students.
Being the Right Applicant
Regardless of educational background, the early-stage diverse researcher must demonstrate the desire to pursue research. As stated by one program officer, “The diversity supplement is a little golden key that provides a precious opportunity to a deserving diverse applicant. In order to pick the right person, we need to see that spark of scientific passion that compelled them to seek this path.” Ultimately, program officers voiced a preference to select applicants who show promise as a future independently funded NIH grant recipient.

Communication with NIH Program/Diversity Officers

Program/Diversity Officer as a Guide
Traditionally, the roles of the program officer in NIH grant funding management are those of institutional expert, shepherd of scientific talent, builder of relationships, and liaison between the applicant and NIH. Program/diversity officers have the most current information on the diversity supplement opportunity. They play matchmaker behind the scenes to connect diversity applicants and mentors with research and training opportunities ensuring they align with the priorities of the specific NIH Institute. One program officer explained, “...priorities change and you won’t know that or what we are looking for unless you contact me (the program officer).”

Examples of these changes include the variable definitions of which ethnic minorities may be considered “diverse” and historical funding patterns of specific types of research questions that have and have not been funded by the individual institution. The program officers have insider information with which to guide the mentor/mentee dyad.

Program/Diversity Officer as Arbiter
In the diversity supplement application process, program/diversity officers assume outsized roles in the progression and funding approval. The relationship among the PI, early-stage researcher, and program/diversity officer has an impact on the decision about who receives a funded opportunity. Unlike the standard application process (e.g.: R- and K-series) that includes an internal review by a scientific review committee, the mentor’s parent grant is already approved. Therefore, the diversity supplement goes through an expedited process that is not subject to the same scrutiny and is granted according to the review of the program/diversity officers along with the institutional directors. Consequently, local rules and culture dictate the process. All interviewed program/diversity officers encouraged applicants to reach out to them as they are key arbiters as to which diversity supplement applications advance to the status of funded projects.

Matchmaking and the Mentor/Mentee Relationship

Identifying a Mentor/Mentee
The relationship between mentors and mentees is vital and program/diversity officers highlighted important characteristics of this relationship. First, the relationship is traditionally initiated by the early-stage researcher with a mentor at their own institution. However, program officers did suggest an alternative approach. Using information from the NIH Reporter website, https://reporter.nih.gov, early-stage researchers may identify potential mentors through the database. This resource provides information on currently funded NIH programs of research and is searchable based on the research interests of the potential mentee. An applicant may identify funded NIH grants (R and P-series grants), research abstracts, PIs’ identities, funding status, and contact information. After reviewing the funded research, an applicant can use this information to reach out to the NIH-funded investigator by email. A program officer suggested, “Ideally the applicant would contact a funded researcher with language that make it difficult for the mentor to say ‘no.’” (See Figure 2 for an example of the Program Officer’s suggested formatted letter). Alternatively, a funded researcher may identify a potential applicant with an academic research ambition (“the rising star”) to inquire if they are interested in working with them through the diversity mechanism.

Ensuring the Right Match
Once this relationship is established, it is recommended that the applicant and mentor have a formal discussion about expectations, what they hope to achieve, a schedule of communication, and the nature of the relationship. Both program/diversity officers and university research administrators identified the process of mentor/mentee matchmaking as the foundation for writing the application. Matchmaking occurs at two levels. First, within a university, a mentor and mentee must be matched based on the mentees’ goals, the availability of projects that support an NIH-funded grant, and the track record and bandwidth of a mentor. Second, this pair must be appropriately matched with the funding priorities and budgets of the individual IC at NIH. These vary each year and confirming eligibility through communication with program/diversity officers early in the process will strengthen the viability of the application.

Scientific Plan

Identifying a Topic
Administrative requirements of the diversity supplement opportunity vary by individual NIH institutions; however, the fundamental overarching scientific objective of all NIH institutions is common: to advance the science of the funded researcher (mentor) while supporting the development of diverse researchers (mentee). Although early-stage diverse researchers...
Template for a Potential Diversity Applicant Seeking Mentorship from an NIH-Funded Researcher

Subject line: Diversity Administrative Supplement Applicant (a.k.a. I am interested in seeking a high yield funding opportunity that benefits you, potential mentor)

Dear Dr. Mentor,

"I am a passionate high school student/ambitious student at an HBCU/PhD graduate student in a modest research environment seeking a post-doctoral fellowship in a research-intensive university/a junior faculty member with a PhD in X field who would like to further develop a program of research/a person who always wanted to be a researcher and has gotten this far through determination, intelligence, sacrifice, and emotional strength/who may not have had the resources others have had).

I have always wanted to become an independent academic researcher in the field of X. I'm very impressed with your program of research after reading the abstract of your NIH funded grant (Grant # and title found in NIH Reporter).

Would you be available to meet by Zoom/phone to discuss mentorship opportunities with the potential of writing an NIH administrative diversity supplement? I have attached my c.v and am available at the following 5 times (a, b, c, d, and e)."

I look forward to your response,

NAME,
(*write position/education - high school student, college student, RN, BSN, MSN, CNS, NP, MD, PhD, PhD/RN)

Figure 2 – Template for a Potential Diversity Applicant Seeking Mentorship from an NIH-Funded Researcher.

...often propose research aims related to diverse populations, the scientific plan need not expressly address diverse populations. More importantly, the scientific plan must balance the demands of the parent grant and the interests of the mentee, while guiding the development of scientific training that supports the development of a future NIH-funded independent researcher. In doing so, the mentor and mentee must work together to identify a set of scientific questions that are related to but not redundant of those of the parent grant.

Time Considerations
Time is a limiting factor for both the availability of funding on the parent grant as well as the educational trajectory of the mentee. As stated by one program officer,

The supplement is time-limited, and ideal projects are often those with data that has already been collected. However, conceptually, unique research questions may be developed through the unique lens of equity, disparity, social determinants of health nuanced patient or community needs, culture, communication, patient centeredness or other facets of quality care addressing historically excluded samples.

As with other training grants, an ambitious project with an ambitious timeline, in the eyes of a program officer, may detract from the suitability of the project. The scientific and mentorship plan should be relatively limited in scope and must be completed within the parameters of the applicants’ educational trajectory and the length of the funded parent grant. Secondary data analysis is looked upon favorably as the mentee can invest the limited training time to develop analytical and writing skills. While the mentee may participate in the development of both the scientific and training portions of the application, this mentored opportunity relies heavily on the guidance of the mentor.

Collaboration and Commitment
Mentors and mentees should collaboratively develop the application. While the balance of contributions to the scientific plan may vary, mentors have established themselves as successful grant writers as reflected by their NIH-funded status. They are intimately familiar with the science and remain the PI of the parent grant and all supplements, therefore, their input is paramount. Program/diversity officers and university research administrators both noted that an uncommitted mentor is easily identified in diversity supplement applications. Ideally, the mentor will have previous mentoring experience, preferably with diverse early-stage researchers. A mentor must establish that they are experienced, committed, and have the time for the applicant and project. As stated by one program officer,

You have to see the fingerprints of the mentor on the application. We can always tell when it is created only by the mentee, and it is not a good sign that they will receive strong mentorship.

In collaboratively writing the application, the mentor/mentee dyad can demonstrate to the funding agency their ability to work together.
Systematic Institutional Approaches to the Diversity Supplement

We asked stakeholders to share their impressions of the need for systematic or institutional approaches to support the development of early-stage researchers through diversity supplement opportunities. The responses were mixed. One program officer stated, “If individuals follow the process, use the program announcement, contact their program and diversity officers, that should address most of their needs.” Others recognized the challenge of approaching this opportunity individually. One administrator stated, “We really could do a better job coordinating between institutions to support the pipeline.” Proposed solutions included continued but possibly enhanced outreach between NIH ICs and universities, partnerships between R1 research universities and Historically Black Colleges and Universities, and systematic approaches within departments and colleges that match talented, early-stage diverse researchers with the full slate of researchers who have NIH funding and the bandwidth to mentor. Most stakeholders agreed, “We can do more to address this at a higher level.”

University administrators suggested a college-level or department-level approach to match potential applicants to the full slate of NIH-funded investigators at individual colleges and universities. One research administrator noted, “Typically, investigators know that diversity supplements exist, but there are these other (systematic) barriers which make them less likely to submit for these opportunities.” Collectively, stakeholders identified that in order to create systematic change, there is a need to develop systematic “top-down” approaches rather than “individual” ones that only emphasize knowledge gaps.

Discussion

This work highlights policies, processes, procedures, and strategies that researchers may consider when applying for NIH Diversity Supplements. There is an absence of guidance in the extant literature. This paper is novel in that it provides concrete information for diversity supplement applicants from stakeholders within the NIH and university settings. Program/diversity officers and university administrators often work “behind the scenes” and rarely have the opportunity to share their wisdom in peer-reviewed literature. Insights obtained through stakeholder interviews revealed details of a process not easily navigated by novices. We have framed these findings in the context of factors which disproportionately impact diverse early-stage researchers who are the focal point of the diversity supplement mechanism.

Although a limitation of this study is that perspectives were drawn from a few participants with limited representation, our findings affirm what others have stated: while outreach policies that enhance access and knowledge of disadvantaged individuals are broadly effective in identifying development opportunities, they are most effective when they include active counseling or simplify the university application process (Herbaut & Geven, 2020). We were reminded of the underutilization of a unique opportunity for early-stage researchers from underrepresented groups, but also that little to no resources have been put forth to ensure the success, let alone use, of this opportunity developed to diversify the research workforce. What our findings did not uncover were systematic rather than individual approaches to support diverse applicants. More work is needed to fully utilize diversity supplements in a way that will diversify the workforce.

Too often, solutions are presented to mitigate the lack of diversity in the workplace, health care, and academia, but they often stop short of achieving their purported purpose because systems are not in place to address historical inequity such that the scales remain unbalanced. While the diversity supplement does offer an outstanding opportunity for funding, it assumes minoritized individuals have access and knowledge to resources that many have not been afforded. There is a scarcity of minoritized individuals at research-focused institutions, with faculty who are willing to and understand the process of applying for a diversity supplement, as demonstrated by the current utilization. Access and opportunity require systematic approaches to enhance the availability of knowledge and resources to balance the scales.

Systematic Approaches Targeting Diversity Supplement Submission

Many national organizations put forth the mandate to expand the inclusion and training of diverse voices in the biomedical field. However, there is minimal guidance in the literature with respect to systematic approaches to write diversity supplements. Boston University Medical Center (Preis, Safaty, Tepperberg, Torres, & Walkey, 2020) published an executive summary of a grant proposal that describes their intention to promote and enhance faculty diversity within their research infrastructure. Leveraging university strategic priorities to support diverse researchers, they propose an exploration of stakeholders, resources, and infrastructure to enhance diversity supplement applications (Preis et al., 2020). At individual academic institutions, there are opportunities to develop systematic approaches which must be shared with the scientific community in order to share procedural advances that streamline inclusion and training.

At the government level, NIH promotes the diversity supplement offering through statements regarding workforce training and development. For example, The National Institute of Environmental
Health Sciences Superfund Research Program (NINDS) identifies development of researchers through diversity supplements as a core strategy to recruit and prepare the next generation of neuroscience researchers. Ninety-four percent of their diversity supplement recipients remained in the biomedical research workforce after training (Jones-London, 2020). NINDS recognizes and acknowledges the diversity supplement as a key component of their model for multidisciplinary training of the next generation of environmental health scientists (Carlin, 2018). In this example, published policy extends the reach of biomedical diversification beyond a diversity funding announcement. The inclusion of diversity metrics within IC’s is necessary to identify processes which are and are not effective at expanding the pipeline early-stage diverse researchers.

While each of these institutions implement diversity supplement efforts as strategic components of efforts to develop diverse scientists, these programs are uncommon. Furthermore, the evidence of the successes of these programs is not accompanied with insight regarding how to successfully navigate the application process. This information is subject to the administrative memory offered through home-grown resources often housed within individual university research programs (Mustanski, 2019) or generic application guidance from NIH sources (Mustanski, 2019; National Institutes of Minority Health and Health Disparities, 2020). Historically, mentors and mentees navigate the process de novo with little to no evidence to guide them.

Unfortunately, most of these individual approaches reinforce a “one and done” solution to a complicated systemic problem which requires greater consideration for systemic racism. For example, a successfully funded diversity supplement may launch a single minoritized researcher onto an academic pathway. However, the lack of diverse faculty in the workforce may also be a barrier to mentoring other historically underrepresented groups of scholars. A broader view of race, equity, the structure of academic training, and structural racism may enhance the systems that have made it challenging for minoritized populations to successfully navigate research professions.

Systematic approaches address structural racism and discrimination, which until recently, were terms not often used in academic spaces. Structural racism recognizes unequal treatment based on membership in a particular minoritized group that arises from systems, structures, or expectations that have become established and normalized by the majority within society or an institution (Bailey, Feldman, & Bassett, 2021). Given that the factors that contribute to this problem are systemic, we suggest systematic approaches to address them. There is an opportunity to highlight the existing diversity supplement program and enhance its impact to address structural racism.

Conclusion

Diversity enhances effectiveness and efficiency, and leads to increased creativity and productivity (Gomez & Bernet, 2019). Diversity can improve quantity and quality of invention and innovation. Increasing the visibility and use of diversity supplements stands to do the same in academia and the scientific community. An increased investment in the diversity supplement at the individual and systemic level within institutions is an opportunity to enhance diversity in the scientific workforce. This paper continues the conversation by offering introductory information and guidance regarding the mechanism and the application process.

Collectively, systemic problems require systematic solutions. Our findings support the need for individual approaches by mentees and mentors committed to improving the representation of diverse researchers in the scientific community. However, in addition to the concrete suggestions provided by our stakeholders, we also recommend a systemic approach in which diversity supplement programs are addressed holistically at the NIH IC level and/or university level. Institution-level collaboration between NIH, Historically Black Colleges and Universities, and research-intensive institutions has the potential to elevate individual level pursuit of supplemental funding to address systemic racism.

Authors’ Contributions

Daniel David, Melissa L. Weir, Nkechi Enwerem, Dena Schulman-Green, Priscilla O. Okunji, Jasmine L. Travers, Maya N. Clark-Cutaia: Conceptualization, methodology, investigation, writing - review and editing; Daniel David, Maya N. Clark-Cutaia: Writing - original draft preparation. Supervision: Daniel David, Melissa L. Weir, and Dena Schulman-Green.

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Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.outlook.2022.08.006.


