

Strategies for Building Capacity at Minority Serving Institutions for Advancing Research and Research Impacts

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INTRODUCTION

Diverse participation in scientific research has widespread benefits to the national research ecosystem and requires leveling the playing field for all researchers, thereby enhancing innovation and research productivity. To effectively broaden participation, it is essential to create an environment more supportive of, and aligned with, the interests and needs of Minority Serving Institutions (MSIs) including, Historically Black Colleges and Universities (HBCUs), Tribal Colleges and Universities (TCUs), Hispanic-Serving Institutions (HSIs), Alaska Native- and Native Hawaiian-Serving Institutions (ANNH), Asian American and Native American Pacific Islander-Serving Institutions (AANAPISI), Predominantly Black Institutions (PBIs), and Native American-Serving, Nontribal Institutions (NASNTI) (Espinosa et al. 2018). According to a National Academies of Science (2019) report on MSIs, there are 709 MSIs in the United States serving approximately 5 million students (Espinosa et al. 2018).

Social justice scholars have long pointed to the historical roots and the perpetuation of inequality, along with bias that shows up in policy and practice (Brest and Oshige 1995; Williams and Davis 2019; Broady et al. 2021; Carnevale et al. 2023). Many have pointed to the funding disparity between MSIs and other institutions (Ginther et al. 2011, 2012; Wahls 2016; Williams and Davis 2019; Broady et al. 2021; Lauer and Roychowdhury 2021; Chen et al. 2022). But as described above, broadening participation in the scientific enterprise has value beyond the obvious need to address the fair distribution of resources.

Despite the funding disparity, many MSIs have achieved high levels of research productivity (Curry et al. 2023; Sampson 2023). Additionally, it is important to acknowledge that MSIs may participate in the research enterprise in a variety of ways, many of which will look different from the ways R1 institutions participate. Respecting and celebrating this diversity is an essential element of cultivating a more inclusive and equitable national research ecosystem. As a result of systemic inequities and historic underfunding, MSIs often lack the infrastructure required to be competitive for extramural funding, which limits their ability to fully participate in the scientific ecosystem. These barriers to access and inclusion not only disadvantage MSIs in terms of research participation; they also reduce the visibility of the many innovations and successes at MSIs, which is a detriment to society as potential solutions to wide-ranging issues are being lost.

It is important to note that while MSIs have achieved impressive outcomes through ingenuity, creativity, and strategic innovation, learning to “do more with less” is not a solution for sustainable growth. Innovation in this environment comes at a tremendous cost to the wellbeing of MSI faculty and administrators (Smith et al. 2023). Addressing the root causes of these inequities will not only make the field more sustainable and attractive to current and future MSI leaders, but it will also allow MSIs to redirect their focus to the research itself, thereby enhancing the national research ecosystem through broader MSI participation.

As highlighted by Eck (2023) and updated here with the latest data, the Higher Education Research & Development Survey (HERD Survey) indicates that the 150 Institutions of Higher Education (IHEs) with the highest total research expenditures in 2022 (roughly those IHEs categorized as research-intensive universities or “R1s,” and large health sciences research centers) have experienced

consistent year-over-year growth resulting in a 70% increase in total research expenditures since 2010 (NCSES 2023). The remaining 500+ IHEs reporting to the NSF HERD, including many MSIs, all HBCUs, and by definition, all emerging research institutions (ERIs), have experienced a mere 5% increase in total research expenditures (see figure 1).

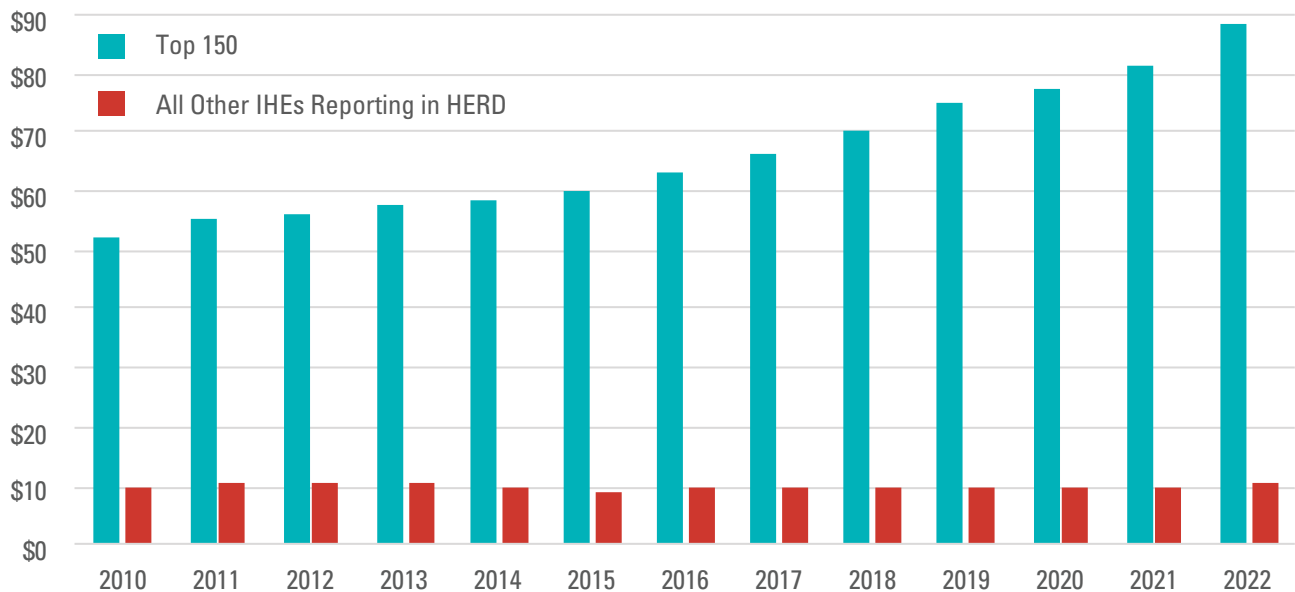


Figure 1: Total Research Expenditures from 2010–2022 (\$ in Billions)

From 1973 to 2010, the top 150 IHEs and all other IHEs reporting in the HERD grew at roughly the same rate as each other for all historically reported sources of funding, i.e. federal, institutional, business, state and local government. The research expenditures from the top 150 IHEs hovered around three times the research expenditures from all other IHEs reporting for these sources of funding. In 2010, the

top 150 IHEs began to grow faster than all other IHEs. Figure 2 depicts the ratio of research expenditures from different funding sources comparing the Top 150 institutions against other IHEs. The steep incline indicates how the growth of the research expenditures among the Top 150 institutions rapidly outpaced the relatively consistent research expenditures of the other IHEs, collectively.

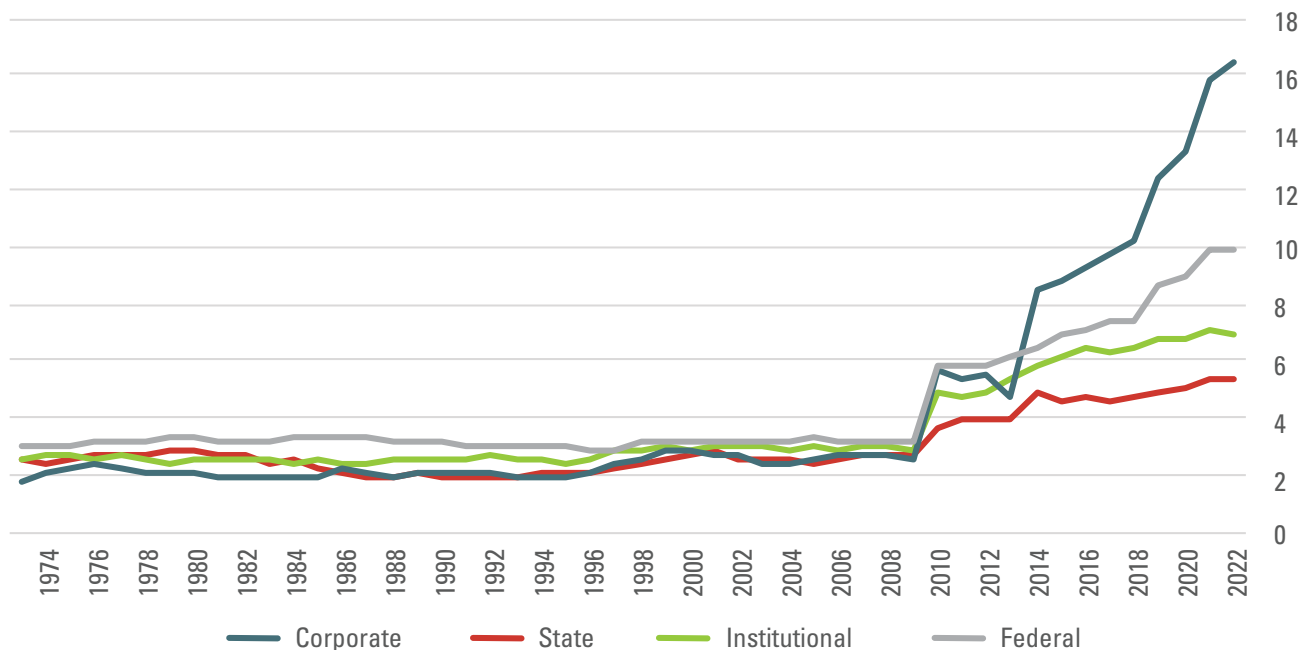


Figure 2: Ratio of Top 150 vs Rest Research Expenditures by Source of Funding 1973–2022 (\$ in Billions, only even years are labeled)

In 2012-2015, for the first time in HERD history, overall federally-sponsored research expenditures (the largest component of total research expenditures) decreased. Contemporaneous reports from the time noted that this decrease corresponded with the tail-end of the one-time American Recovery and Reinvestment Act investments of 2009, which

supported multi-year projects that peaked in 2011 (figure 3) (NSF NCSES 2013). While the top 150 IHEs experienced a dip in federal funding, they recovered by 2017. The impact on all other IHEs was collectively much worse. In 2022, their federal research expenditures still had not returned to 2010 levels nor their earlier peak (see figure 3).

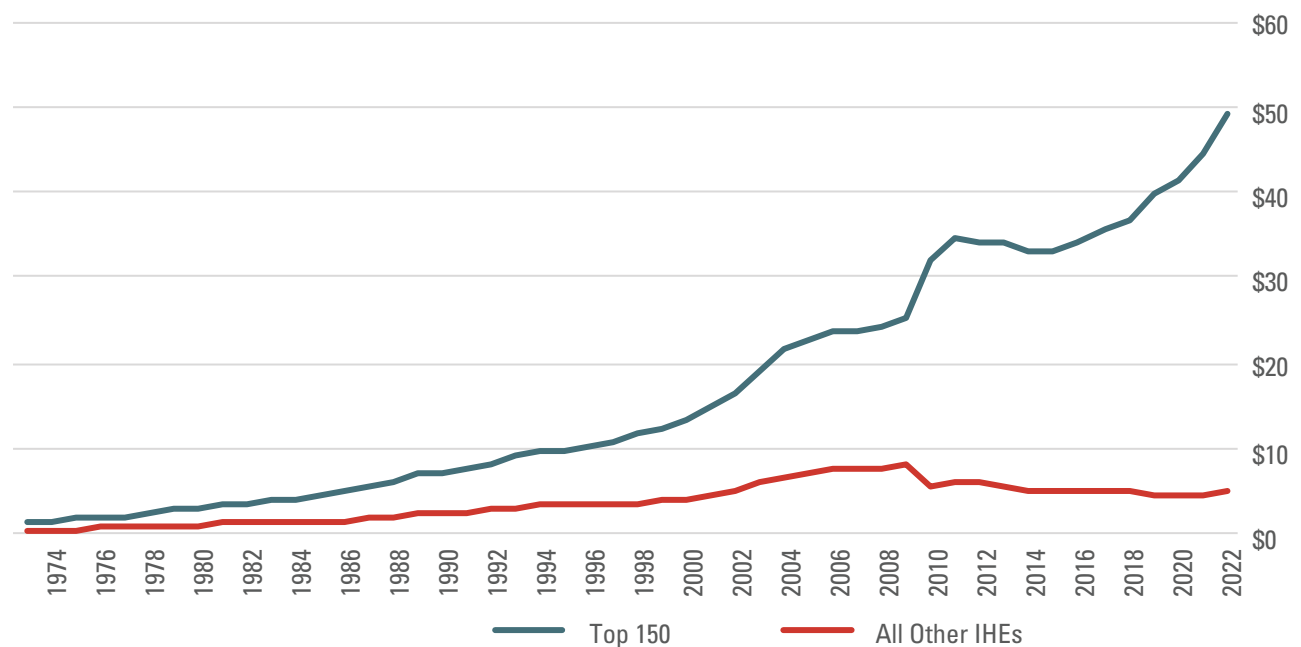


Figure 3: Federally-Sponsored Research Expenditures from 1973–2022
(\$ in Billions, only even years are labeled)

As noted earlier, despite the decrease in federally-sponsored research expenditures, the top 150 IHEs experienced year-over-year growth in their total research expenditures. The primary driver of this growth was institutionally-funded research expenditures, which includes three components: 1) institutionally financed research (the largest component), 2) cost sharing on sponsored projects, and 3) unrecovered indirect costs on sponsored projects. From 2010-2022, the top 150 IHEs more than doubled their institutionally-funded research expenditures adding nearly \$11.5B to their total research expenditures (see figure 4).

Though some of the growth in institutionally-funded research expenditures is attributable to improved accounting of internally funded R&D through new

financial systems and reorganizations, much of it is a reflection of the investment in research infrastructure at large research institutions.

Taken together, the above data not only show the funding gap (figures 1 and 2) but also demonstrate the stark contrast between the resilience of the top 150 IHEs which recovered from the funding dip of 2012-2015, whereas their less resourced counterparts did not recover from the setback (figure 3). The advantage of being well-resourced is even more notable in the comparison between institutionally-funded research expenditure of the top IHEs and their less resourced counterparts (figure 4). These data clearly speak to the need to address the funding gap between the top 150 IHEs and the remaining IHEs including MSIs.

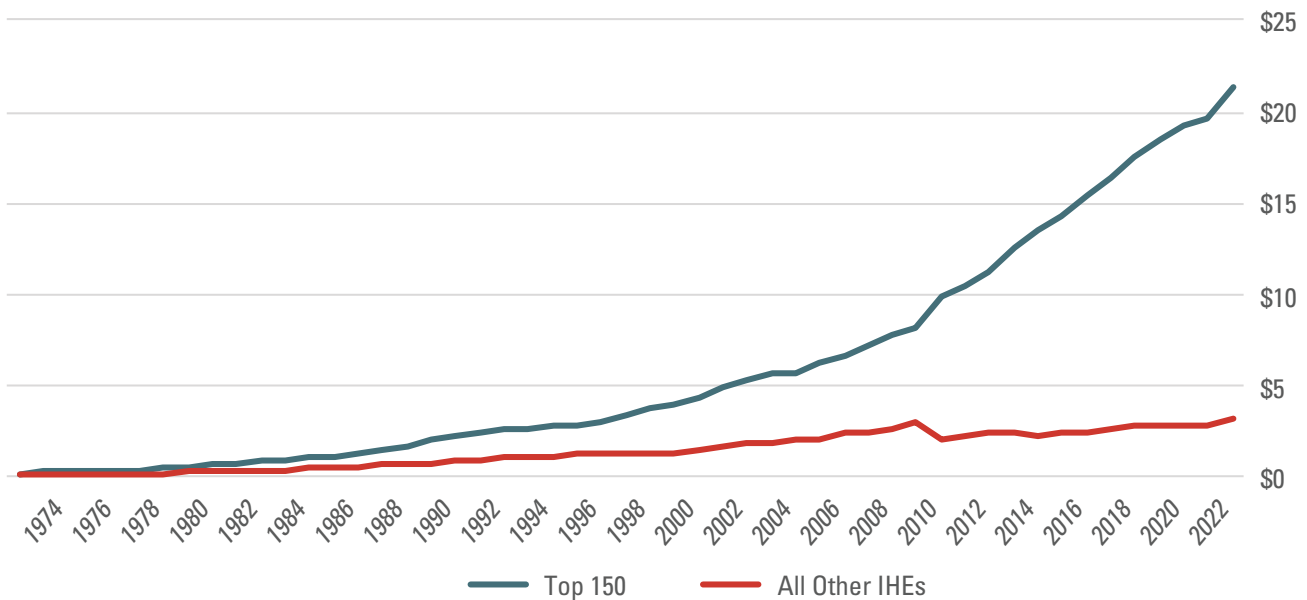


Figure 4: Institutionally-Funded Research Expenditures from 1973–2022
(\$ in Billions, only even years are labeled)



CONVENING

To address systemic barriers to inclusion, including bias, inequitable partnerships, and limited research support and service capacity, leaders from Spelman College, a historically Black women's college, the National Organization of Research Development Professionals (NORDP), and the Center for Advancing Research Impact in Society (ARIS) partnered as a Design Team to facilitate a process to gather insights from leaders at MSIs about their experiences in scientific research. The process convened 34 representatives from HSIs, HBCUs, AANAPISI, and PBIs, as well as research development (RD) and broader impacts (BI) professionals in two virtual listening sessions in March and April 2023, and an in-person convening in June 2023 at Spelman College.

Participants elevated the importance of celebrating successes at MSIs while also acknowledging the systemic barriers and challenges MSIs continue to face. It became clear that MSIs' abilities to conduct groundbreaking research and train students with far less funding than R1 institutions was both a testament to MSIs' expertise and creativity as well as a symptom of systemic inequities rooted in a history of bias and barriers. Systemic inequities prevent MSIs from having access to resources, thereby limiting opportunities for professional development of researchers at MSIs.

Participants argued that by investing in MSIs, we can ensure that a diverse range of perspectives and experiences are included in the research process.

This not only promotes equity and inclusion but also helps us address the specific needs and challenges of diverse communities. Many minority communities face disparities in healthcare, education, economic opportunities, and other areas. By strengthening research capacity at MSIs, we can focus on tackling these disparities and developing innovative solutions that directly benefit these communities. This translates to a more fair and just society, where resources are allocated to address the needs of all citizens.

By investing in research capacity at MSIs, we expand the overall scientific community, bringing in new perspectives, ideas, and expertise. This often leads to breakthroughs and advancements in various fields. By having a diverse range of institutions engaged in research, we enhance creativity and innovation, ultimately enhancing scientific knowledge and benefiting society as a whole.

MSIs often play a crucial role in their local communities, serving as economic anchors and engines for growth (Espinosa et al. 2018). By investing in research capacity at these institutions, we can stimulate economic development by attracting research funding, creating partnerships with industry, and fostering innovation and entrepreneurship. This generates job opportunities, enhances local infrastructure, and strengthens the overall economy.

Investing in building research capacity at MSIs is thus correlated to the "public good" because it promotes inclusivity, addresses disparities, advances



Participants at the June 2023 Convening at Spelman College.

knowledge, enhances educational opportunities, and fosters economic development. It ensures that public resources are used in a way that benefits diverse communities and contributes to a more equitable and prosperous society.

The Supreme Court's decision to effectively end Affirmative Action in June 2023 will likely lead to larger enrollments in MSIs, placing a greater strain on the under-resourced institutions and necessitating "a new science and technology agenda that includes historically underserved people" (Graves et al. 2023).

These circumstances have created a sense of urgency to develop an action plan to build capacity at MSIs, including those MSIs' that seek to become an "R1 institution". Though not all MSIs seek to attain the R1 status, those that do, point out that becoming an "R1 institution" or a university with high levels of research activity, can offer several advantages for MSIs, which include increased funding opportunities, enhanced reputation, and expanded resources for faculty and students. R1 status can also lead to greater visibility and influence in shaping inclusive research agendas and equitable policies.



STRENGTHS AND STRATEGIES FOR SUCCESSES

MSIs have a proven track record in student training and advancing knowledge (Laden 2001; Voorhees 2004; Curry et al. 2023; Sampson 2023). For example, student retention outcomes at HBCUs are better than that of their counterparts when student preparation and socioeconomic background is taken into account (Richard and Awokoya 2012). These institutions have succeeded by playing to their strengths (Laden 2001; Voorhees 2004; Mcgee et al. 2021) and focusing on:

- A. Cultivating Partnerships for Collaborations and Resource Sharing
- B. Student Development
- C. Faculty Development
- D. Targeted Research Agenda

A. CULTIVATING PARTNERSHIPS FOR COLLABORATIONS AND RESOURCE SHARING

Many MSIs have been successful at establishing partnerships that are mutually beneficial both internally and externally. Commonly shared resources include equipment and core facility access, and occasionally human resources such as research administrators and other support positions. Fostering collaborative cultures internally

can often be accomplished within the existing operational infrastructure of the institution and may not require external grant funding, thereby making it a sustainable strategy in some cases. Pooling resources across co-located institutions (e.g., regional consortia) has the potential to increase the number of people who benefit from these resources and reduce risk by spreading costs across many institutions, but complementary institutional needs, contexts and priorities are necessary for such collaborations to be successful.

Examples of successful collaborative partnership strategies include:

- Curating teaching environments that create space for faculty to connect with and learn from one another, which helps to crowd-source ideas and increase problem-solving opportunities.
- Fostering community and research relationships among underrepresented and minoritized faculty through affinity groups, writing support activities, and writing retreats.
- Developing cross-institutional alliances, sometimes through collaborative grants, in which resources at institutions within the alliance are available at discounted rates to other alliance members.
- Identifying cross-disciplinary partnership opportunities, especially those that may not be obvious at the outset, to reduce silos and duplication of effort.



Student training is a particular strength of MSIs. Pictured above are Spelman College students in a Chemistry Department research lab.
Photo credit: Dr. Michelle Gaines.

- Offering virtual professional development activities for researchers at institutions.
- Bringing faculty on tours of local community-based organizations to build connections may potentially lead to collaborations or future grant opportunities. This may also provide opportunity for additional professional development through course exchanges and specialty courses.
- Knowledge sharing to advance research administration capacity: For example, the National Sponsored Programs Administrators Alliance (NSPAA) (<https://www.naspaa.org/>) of HBCUs facilitates workshops with federal funding agencies.

Success through Partnerships: Example 1

The Atlanta University Center Consortium Dual Degree Engineering Program is an example of a cross-institutional partnership (Jackson 2007). In collaboration with corporate partners and engineering schools, the Consortium-wide program complements those at its member institutions: Clark Atlanta University, Morehouse College and Spelman College, increasing student success and engagement in their chosen fields (Sidbury et al. 2015).

Success through Partnerships: Example 2

The HBCU STEM Undergraduate Success Research Center or STEM US as it is known in short seeks to serve as a national resource for understanding the value and impact of HBCUs.

The STEM US Research Center strives to develop a center-based, systematic investigation to explain how HBCUs with diverse academic cultures successfully graduate African American students at a higher rate than other institutions, produce a higher rate of African American STEM students receiving doctorates, and instill students with a greater sense of self-efficacy.

The HBCU STEM Undergraduate Success Research Center operates from its base in Morehouse College. Other partner institutions include Spelman College and Virginia State University. Together they are committed to conducting a systematic and comprehensive investigation on the contribution of HBCUs to student development and training in STEM (<https://stemuscenter.org>).

B. STUDENT DEVELOPMENT

Cultivating training and other resources for students on research-related topics has been another successful and relatively low-cost way to increase institutional research capacity at MSIs. Examples of strategies targeting students include:

- Developing programs and partnerships providing students exposure to research. These opportunities may be tailored for specific student groups such as freshman, biomedical scholars, first-generation students, etc. and inspire these groups to explore research as a potential future path.
- Raising the visibility of on-campus research or summer opportunities for students and supporting faculty-student research collaborations, including research in the classroom.

Success at Student Development

At Georgia Gwinnett College, an AANAPISI and HSI, faculty-mentored collaborative research opportunities are available to students beginning freshman year. Students may explore a variety of topics through classes and projects such as service learning and internships. The institution provides research experiences through partnerships enabling service learning and internships (USG STEM initiative Annual Report 2013-2014; Anfuso et al. 2022).

C. FACULTY DEVELOPMENT

Targeted training and other resources for faculty has been a means for increasing institutional research capacity at MSIs. Examples of professional development targeting faculty include:

- Mentoring junior faculty in proposal development, time management, and other research-related skills by establishing a committee of senior-level faculty and recently retired tenured faculty/alumni.
- Coaching faculty to calibrate their research agenda to their institution's current infrastructure and helping them develop "doable" research projects that can be accomplished on their campus and/or with local participants.
- Enhancing writing productivity for faculty through writing-focused programs and spaces such as those at Montana State and Jackson State, or the Write-On-Site model developed by the National Center for Faculty Development & Diversity (NCFDD) (<https://www.ncfdd.org/>).
- Implementing grant-writing boot camps as part of faculty onboarding and continued professional development.

Success at Faculty Development

One interesting example of a faculty-centered intervention is from Morehouse College in Atlanta, GA. The College employed a strategy of hiring a critical mass of early-career faculty in a relatively short period of time (approximately five years) (Hendrickson and Haynes 2019). This created a cohort of faculty that could be trained at the same time and offer each other support. Most of the hires were trained in the teacher-scholar model through the NIH Fellowships in Research and Science Teaching (FIRST) postdoctoral program based at Emory University and the Atlanta University Center Consortium institutions. The development of those early-career faculty began with institutional support facilitated by the dean of the Division of Science and Mathematics (<https://med.emory.edu/education/postdoctoral-training/first/>).

D. TARGETED RESEARCH AGENDA

Faculty and students at MSIs often have a research agenda that is guided by the mission of their institution and the needs of the populations they serve. This can lead to faculty at MSIs exploring niche research topics. For example, African-American communities experience many health disparities, and faculty at HBCUs may select research topics that target addressing the health disparities.

Success through Targeted Research: Example 1

In the Chemistry department at Spelman College, a women's HBCU, one faculty member whose research is in material sciences, studies the structural properties of "black hair" (Gaines 2023). This is a research topic of unique interest to the population of students at the college (Gaines 2023).



MSI faculty often have niche research agenda. Dr. Michelle Gaines at Spelman College, studies structural properties of "black hair". *Photo credit: Dr. Michelle Gaines.*

Success through Targeted Research: Example 2

Another faculty member in the Environmental Science department at Spelman College co-founded the West Atlanta Watershed Alliance to study the environmental stressors to the watershed in West Atlanta, which is home to a primarily African-American population (see also Jelks 2008; Diaz-Pascacio et al. 2022; Johnson & Jelks 2023).

Having a targeted research agenda enables MSI faculty to make unique contributions to advancing knowledge.



BARRIERS TO PARTICIPATION

MSIs are not monoliths and as such vary significantly in the extent to which they are research oriented. Some describe themselves as teaching-focused institutions, whereas, others aspire to expand their research portfolios to be comparable to R1 institutions (North Carolina A & T, University of California-Merced) (Weissman 2022). Thus, the quantity of research varies depending on the above, however regardless of the research orientation, all MSIs face substantial systemic and structural barriers to participation in scientific research.

The conversations summarized below explore the barriers to inclusion faced by all MSIs. Discussions focused on four primary barriers to participation:

- A. Research Support Infrastructure Limitations
- B. Implicit and Explicit Bias
- C. Inequitable Partnerships
- D. Funding Process and Proposal Review

A. RESEARCH SUPPORT INFRASTRUCTURE LIMITATIONS

Many MSIs are in the process of building effective research support infrastructure for successful acquisition of external funding and appropriate

research portfolios that relate to faculty expertise/capabilities and interest.

Evolving Research Agenda: Driven by studies that show research experiences enhance student outcomes, many institutions, including MSIs have evolved from a primarily teaching-centered institution to embrace the identity of an emerging research institution. The evolving research agenda necessitates that MSIs develop strategies to build research infrastructure that includes effective systems and processes tailored to the needs of the specific institution. Challenges related to systems and processes for effective research support infrastructure may include technology systems, facilities and equipment, professional development, pre- and post-award support, research policies, and personnel.

Faculty Time and Expectations: Faculty at MSIs have heavy course loads, which limits their ability to prioritize grant writing while also maintaining teaching requirements. The trend of heavy teaching and service loads alongside limited support staff for grant writing and management puts an unrealistic burden on faculty to maintain both teaching requirements and a research portfolio. Faculty who do not have experience submitting proposals are especially constrained by the length of time from the notice of funding opportunity release date to the due date for the proposal.

B. IMPLICIT AND EXPLICIT BIAS

Implicit Bias. Implicit biases “are unconscious and/or automatic mental associations made between the members of a social group (or individuals who share a particular characteristic) and one or more attributes (implicit stereotype) or a negative evaluation (implicit prejudice)” (FitzGerald et al. 2019). On the other hand, explicit biases are conscious mental associations made between members of a group (or individuals who share a particular characteristic) and one or more attributes or a negative evaluation (Glaser et al. 2014). For this report, we use the definition used by FitzGerald et al. (2019) that an “implicit association (prejudice or stereotype) counts as implicit bias for our purposes only when it is likely to have a negative impact on an already disadvantaged group”— in our case faculty, students, and staff at MSIs.

Reputational Bias. Studies show that structural biases in funding mechanisms lead to a small proportion of institutions having a disproportionately large funding success with federal funding for research (see figures 1-4) (Ginther et al. 2011, 2012; Wahls 2016; Kaiser 2023). “Reputational bias” may influence reviewers to favor investigators and institutions that have a good reputation, which

impacts MSIs disproportionately (Kaiser 2023). Many faculty have experienced bias against MSIs, ERIs, and R2s at the agency level, which affects what they apply for or whether they apply at all (Chen et al. 2022; Lauer and Roychowdhury 2021; Kaiser 2023). As one participant put it, a common sentiment is: “We don’t have a chance.”

Minoritized Research. Faculty at MSIs are often from minoritized communities and conduct research that is responsive to issues that disproportionately affect minority communities. There is a perception that the federal funding system does not support that work. In addition to ongoing and enhanced implicit bias training for agency review panels, having translators on research development staff to help faculty find verbiage that federal agencies are looking for without doing harm to research design is an opportunity to consider.

Cumulative Effect. Studies demonstrate that these biases result in cumulative effects on the careers of scientists from minoritized groups including: smaller institutional start-up funds, smaller and less beneficial collaboration networks, disproportionate service expectations, lower salaries, increased scrutiny and tokenization, added stressors in suboptimal work environments, gaps in citations, publications, promotions, and peer recognition that increase with career stage (from Chen et al. 2022).

C. INEQUITABLE PARTNERSHIPS

Partnerships between MSIs and larger, more-resourced institutions such as R1s often begin from a place of inequality (King-Jupiter 2019). Many institutions have antiquated partnership models that don't work well with MSIs, which leads to inequitable and, in some cases, extractive or harmful partnerships.

Incorrect Assumptions: Inequitable partnerships often start with the wrong assumptions where one partner sees themselves as an expert and the other as a passive recipient of knowledge that is handed down rather than as an equal contributor. There is also a frequent lack of attempt to understand the capacities and resources available to the MSI partner and/or the intellectual value of contributions from diverse perspectives and context. Wrong assumptions about what assets MSIs have, coupled with a lack of clear definition around partnership expectations and roles, creates a sense that MSIs have been relegated to a "lower" tier in the relationship. Limiting the ways MSIs can contribute to the partnership by excluding MSI faculty participants from co-PI and research administration leadership training/mentorship opportunities perpetuates patterns of exploitation, thereby stifling the full potential of the partnership and disincentivizing MSIs from participating fully.

Communication and Timelines: Involvement of MSI partners during planning, inception, conception phases is not commonly established before a proposal, but instead, attempted at the last minute when time for authentic relationship-building is not possible. This means MSIs invited into partnerships are not included in shaping the product, which creates an unequal dynamic at the outset. Without a pre-existing relationship, there is limited or no time to co-create expectations or stipulations of the partnership, which can lead to uneven distribution of resources and, ultimately, erosion of the trust necessary for effective collaboration.

Power and Funding Dynamics: MSI collaborations often involve marginalized groups who don't feel comfortable or equipped to fight a preexisting power dynamic that disadvantages them. This limits MSIs' ability to advocate for their own needs, which are often not considered in the grant proposal. Often, these partnerships focus on students, but may not support MSI faculty scholarship or needs, such as course buyouts, publications, and research. Without infrastructure in place to advocate for MSI faculty needs, the onus to ensure a fair partnership is placed on the individual researchers from the MSI, which comes at a high risk with significant professional and emotional costs. Entering an imbalanced relationship that may provide access to resources, even if that relationship is unhealthy, puts further undue burden on MSIs.

D. FUNDING PROCESS AND PROPOSAL REVIEW

Review criteria are not appropriately tailored to what makes MSIs unique. Although there is often a huge difference in resources and facilities at MSIs and R1s, the metrics for grant review are the same when applying for most grants and evaluating faculty. Structurally, that is a very unrealistic target for faculty and staff at smaller institutions. It would be helpful to establish more nuance in how institutional eligibility is presented in solicitations.

Exclusionary Funding Patterns: Funding decisions are often made to minimize risk, which means funds often go to known entities, which excludes new researchers and leads to a myopic pool of funded work. Without a higher risk tolerance and an intentional effort to engage new or lesser-known grantees, MSIs will continue to be excluded from funding opportunities, thereby reducing their ability to contribute to the national research ecosystem. The perception that the institution may not have the capacity to do the work often goes unaddressed and results in explicit bias against MSIs.

Costs of Participation: An underacknowledged challenge in the current federal grant structure is the professional and emotional cost of participating — or choosing not to participate — in proposal review. The need to participate to gain access to relationships and resources that will fund research is not currently coupled with support structures that allow MSI faculty to backfill their missed teaching work or take necessary rest time. Yet, the choice not to participate risks a missed opportunity to access knowledge that can lead to funding.



RECOMMENDATIONS AND ADDITIONAL OPPORTUNITIES FOR CHANGE

The recommended strategies to build capacity for research among HBCUs and MSIs will require meaningful change from many participants in the research ecosystem; therefore these recommendations are addressed to different influential components of the research ecosystem. Following the recommendations, we offer additional suggestions and opportunities for change that reflect the breadth of our discussion.

RECOMMENDATION 1

Partnerships with Minority Serving Institutions should be intentional and equitable. To break the pattern of inequitable partnerships, work with collaborators to co-create formal and equitable partnership plans between organizations.

Strategy 1.1: Co-Created, equitable partnership plans

A process should be established that requires partnerships to be formalized, such as through an MOU or code of partnership conduct that include clear implementation plans. Elements in a checklist for equitable partnerships should include, but are not limited to: reasonable timeline to establish communication (e.g., at least 3 months

before a proposal is due); clear scope of work and budget information; plan for co-creation of knowledge; shared governance including data and intellectual property; time for intentional relationship development; salary and resource support (shared infrastructure); and evaluation and shared outcomes. This work may be facilitated by a long-term liaison or 'research partnership advocate' who supports equitable partnerships between institutions.

RECOMMENDATION 2

Funding agencies should evaluate and modify the proposal review process and incentivize partner institutions to construct equitable partnerships.

The risk-averse nature of federal funding is incongruent with what has historically led to substantial advances in science. Innovation often comes from a willingness to fail, but a culture of risk-aversion disproportionately excludes MSIs. Strategies that funding agencies could undertake in response to Recommendation 2 include the following four strategies.

Strategy 2.1: Diversify review panels

Reviewers are currently drawn from places with pre-established relationships, meaning new faculty, institutions, and communities continue to be excluded. Diversifying review panels by bringing grant reviewers from communities the funding seeks to serve is an opportunity to disrupt this exclusionary pattern. Although some funding agencies offer remuneration, it does not fully cover the time spent preparing and writing reviews. Compensation for unpaid or underpaid review work is critical. To accomplish this, agencies could consider providing funding to buy out faculty time from MSIs (e.g. as a 0.25 FTE IPA or Expert) to serve on panels and conduct ad hoc reviews.

Strategy 2.2: Enhance reviewer training

Reframing what constitutes good research and a good research institution is necessary to reduce bias that inhibits MSIs' ability to acquire resources for research. Professional development modules, workshops, or mentors that equip reviewers with tools to help surface and mitigate bias are high-impact opportunities. Equitable review is a skill that

serves the development of good science. These activities would begin to systematically address bias in a measurable way that can be inclusive of all those who participate in the research enterprise. MSI representatives should be involved with the design and dissemination of these trainings.

Strategy 2.3: Evaluate the review process

Ongoing evaluation of the review process needs to be standard practice and include identifying and codifying promising practices that make the process more equitable. In addition, accountability measures need to be implemented to ensure those practices are followed real-time in panels.

Strategy 2.4: Establish partnership requirements in proposals and reports

When partnerships are a key part of a funding opportunity, agencies could create a separate section for partnerships that include documentation and proof of meaningful engagement such as a formal and equitable partnership plan between organizations.



RECOMMENDATION 3

Research capacity-building organizations, such as NORDP, ARIS, NCURA, SRAI, and other organizations should partner with Minority Serving Institutions and funding agencies to support research growth and provide professional and research development services.

Strategy 3.1: Provide introductory overviews and advanced training appropriate for different target audiences

Capacity-building organizations should provide a suite of offerings targeting different audiences, including leadership, faculty, staff, and governing boards. These offerings should employ user-centric design principles, which may require multiple organizations to partner on a single comprehensive training for each audience. Organizations should consider offering a mix of training modalities so that some trainings can be accessed for free or very low costs (e.g. pre-recorded webinars) while other modalities (e.g. in-person with travel required) might be offered at a modest cost that is subvented by funding agencies for MSIs.

Strategy 3.2: Partner with funding agencies to support MSI applicants seeking funding

Capacity-building organizations should seek to partner with funding agencies to provide research development support to MSI applicants during live competitions. Although funding agencies provide information sessions, host office hours, and post frequently asked questions, most cannot provide individual coaching to applicants. However, funding agencies could fund capacity-building organizations to provide individual coaching and 1-1 proposal development support. Funding agencies can use existing tools such as preliminary applications to ensure that the number of applicants seeking support is manageable.



CONTRIBUTORS

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