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Bolstering the Role of HBCUs in Federal Research and Development

Equitable R&D funding is key to unleashing HBCUs' wellspring of innovation to improve America's health, economic growth, and national security.

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Introduction and summary

A cutting-edge cybersecurity tool to monitor intrusions on data networks, an innovative system to improve stormwater management, and a new imaging system to improve detection of skin cancers[1] are all recent U.S. patents awarded to Morgan State University, one of the nation's 107 historically Black colleges and universities (HBCUs). In 2023, Morgan State, located in Baltimore, Maryland, received 13 patents, a record for the number awarded to an HBCU in a single year.[22]

Although the number of patents granted for innovations created by HBCUs has accelerated in recent years, historically Black colleges and universities still receive a disproportionately low share of federal research funding.[3] HBCUs received less than 1 percent—0.91 percent—of the approximately $60 billion in federal research and development (R&D) expenditures at colleges and universities in fiscal year 2023, despite the fact that they constitute 3.2 percent of U.S. four-year, degree-granting colleges and universities.[4] (see Figure 1)

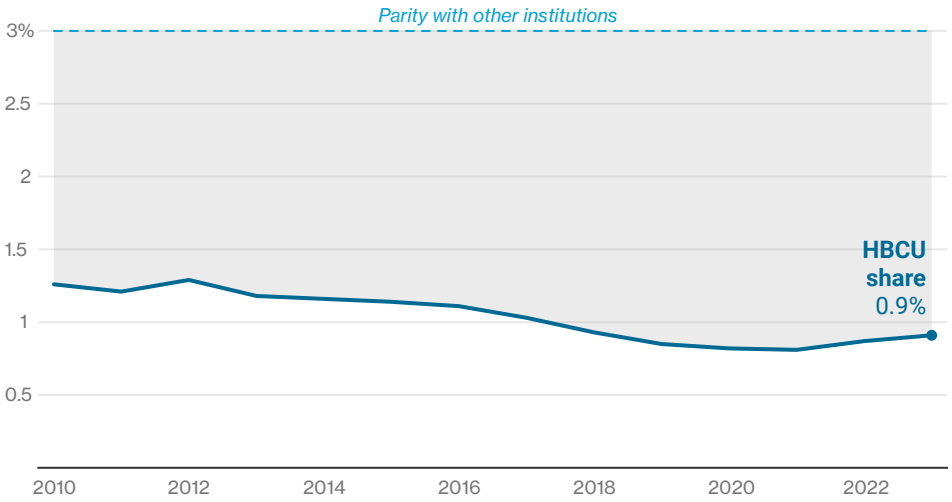
The last time that HBCUs received more than 1 percent of federal R&D funding was in FY 2017.[5] Combined, the 57 HBCUs that received federal R&D awards in FY 2023 accounted for about $539.5 million in funding or approximately 16 percent of the funding that the highest-ranked federal R&D award recipient, Johns Hopkins University, received, which was more than $3.3 billion.[6] Florida A&M University ranked highest among HBCUs for federal research awards, receiving $54.3 million in federal R&D funds in FY 2023, putting it in 169th place among U.S. colleges and universities.[7]

Since 2018, the share of federal R&D funding received by HBCUs has averaged 0.87 percent, far below the 3.2 percent level that would represent parity.[8] There has been a steady decline in federal R&D funding for HBCUs, which reached a high of 1.29 percent in 2012, although there was a slight upward tick beginning in 2022 and 2023.[9]

FIGURE 1

Since 2010, the share of federal research and development (R&D) funding historically Black colleges and universities (HBCUs) have received has consistently remained below 3 percent, which would represent parity

Share of federally funded R&D awards to institutions of higher education that HBCUs received, fiscal years 2010–2023



Note: The table does not include data for institutions that received less than $1 million in research funding that filled out the short-form survey because the survey does not include data disaggregated by agency. Institutions that filled out the short-form survey received about 0.3 percent of federal grant funding in 2023..

Source: Authors' calculations based on National Center for Science and Engineering Statistics, "Higher Education Research and Development (HERD) Survey," data files for custom analysis, 2010-2023, available at https://ncses.nsf.gov/explore-data/microdata/higher-education-research-development.

These disparities in federal research spending should be understood in the wider context of funding disparities for HBCUs at both the state and federal levels, which have persisted since the founding of the first HBCUs in the late 1830s.[10] The historic underfunding of HBCUs has affected every operational facet of these essential institutions, including the resources available to pay staff, provide student financial aid, maintain facilities, and develop research infrastructure.

Federal R&D propels U.S. economic growth

Colleges and universities are critical venues for innovation and knowledge development and account for nearly 40 percent of federal research and development that occurs outside of the federal government.[11] Research and development is a set of activities defined by the National Center for Science and Engineering Statistics as "creative and systematic work undertaken to increase the stock of knowledge—including knowledge of humankind, culture, and society—and to devise new applications of available knowledge."[12] Research leads to discoveries, while development formulates practical applications for these breakthroughs. This research also informs public policy for everything from health care to education and the environment, providing an evidence base for best practices in both the public and private sectors.

Research cuts, grant freezes, and anti-DEI initiatives threaten the R&D ecosystem

Shortly after taking office for his second term, President Donald Trump issued two executive orders directing agencies to terminate "equity-related" grants and end all programs and activities linked to diversity, equity, and inclusion (DEI).[13] Quickly thereafter, the administration announced a funding freeze affecting thousands of programs across dozens of federal agencies to ensure that they complied with these directives.[14] In addition, on February 14, 2025, the Trump administration issued a "Dear Colleague" letter, or sub-regulatory guidance, that prohibited DEI programs in education. In August 2025, a district court found that the U.S. Department of Education did not follow the necessary procedures for issuing such guidance.[15] Further, in July, the U.S. Department of Justice issued a memorandum that further framed DEI programs as being in violation of antidiscrimination law, an interpretation that many legal experts reject and has not yet been upheld in court.[16]

As a part of the Trump administration's wide-ranging efforts to halt DEI programs, grants and contracts viewed as in opposition to that stance across the federal government have been targeted for termination. As a consequence,

many have been canceled, frozen, or remain in limbo.[17] According to a recent Center for American Progress analysis, more than 4,000 grants issued to 600 universities in states across the country have been affected by the administration's actions, totaling between $3.3 billion and $3.7 billion in estimated cuts.[18] These include more than 1,000 National Science Foundation grants that were terminated in May 2023 because they were deemed to advance diversity, equity, and inclusion.[19]

In addition, affected grants comprise numerous HBCU projects and programs, including programs that help underrepresented students earn degrees in STEM fields, climate-focused agricultural initiatives, and programs that assist minority-owned small businesses.[20] For example, National Science Foundation grants to HBCUs were frozen for a program at Alabama A&M University that exposed students to careers in the semiconductor workforce; for a Prairie View A&M University initiative that funded academic support to help more students earn STEM degrees; and for a program at Clark Atlanta University that supported graduate research in biomedical sciences for underrepresented students.[21]

Separate from the announced grant terminations, other federal actions – many directed at individual institutions, along with those enacted by the Department of Government Efficiency (DOGE), including layoffs at federal agencies and changes to the federal grantmaking processes – have created R&D funding challenges.[22] For example, the application process for the Research and Development Infrastructure (RDI) grant program, an important program providing funding for research infrastructure at HBCUs, has not yet opened for 2025, even though funding was appropriated by Congress in the FY 2025 continuing resolutions and applications have been due in July in previous years.[23]

Learn more:
https://www.americanprogress.org/article/mapping-federal-funding-cuts-to-us-colleges-and-universities/

Finally, the president's proposed budget for FY 2026 has massive cuts to federal research, including a 57 percent cut to the National Science Foundation, a 40 percent cut to the National Institutes of Health (NIH), a 53 percent cut to the Centers for Disease Control, and a 47 percent to NASA's science budget.[24] These cuts would decimate agencies that conduct some of the world's most important medical and scientific research and hinder the entire scientific and research community, including researchers at HBCUs.

These cuts would affect not just the present, but also the future of scientific research and the U.S. economy. One study estimates that a 25 percent cut to federal R&D spending would result in a 3.8 percent reduction in gross domestic product over the course of two to three decades, an effect comparable to that of the Great Recession.[25]

The federal R&D ecosystem is a key pillar of the U.S. economy, as it fosters innovation and economic growth and helps build a highly trained workforce. The Trump administration should continue to support federal research and development and distribute the funds that Congress has appropriated for its intended purposes, including to ensure HBCUs can continue their mission to research, innovate, and train the country's future workforce.

The societal benefits of R&D are immense and wide-ranging. Research and development efforts drive economic growth, spur technological innovation, raise living standards, and improve human health.[26] Institutions of higher education spent $109 billion on R&D in 2023, of which $60 billion was federally funded.[27] Federally funded R&D at universities has contributed to the creation of new technologies such as touch screens, batteries, smartphones, and electric vehicles; medical breakthroughs, including new antibiotics and gene editing; and agricultural advances such as crop genetics, to name a few.[28]

Read more:
Attacks on the U.S. Innovation Ecosystem Are an Attack on a Wellspring of American Prosperity

TABLE 1

A vast majority of federal research and development (R&D) funding at universities supports scientific research, with more than half supporting life sciences fields such as health and medicine

Share of federal R&D funding distributed to institutions of higher education by academic field, 2023

Field	Share of federal R&D funding
Life sciences	56.90%
Engineering	18.30%
Physical sciences	7.80%
Geosciences, atmospheric sciences, and ocean sciences	4.50%
Computer and information sciences	4.10%
Non-science and engineering	2.90%
Social sciences	2.00%
Psychology	1.60%
Mathematics and statistics	1.10%
Other sciences	0.80%

Source: Authors' calculations based on National Center for Science and Engineering Statistics, "Higher Education Research and Development (HERD) Survey," data files for custom analysis, 2010-2023, available at https://ncses.nsf.gov/explore-data/microdata/higher-education-research-development.

Federal R&D spending is principally conducted in the sciences; more than half (57 percent) is in the life sciences, which primarily represents medical and other health research. The second largest category, representing 18 percent of expenditures, is in the field of engineering, with the electrical, computer, mechanical, aerospace, and biomedical engineering subfields receiving the most funding. Smaller shares go to the physical sciences (8 percent), geosciences (5 percent), computer sciences (4 percent), and mathematics (1 percent). Relatively small shares of expenditures go to psychology and other social science fields (4 percent) and non-science and engineering fields (3 percent).

R&D spending, therefore, primarily represents investments in the country's health, technology, and scientific knowledge. It helps researchers solve problems, discover new tools, improve efficiency, and increase human knowledge in a variety of fields, both theoretical and practical. Many of the discoveries made by university researchers are transferred to the private sector, which then allows businesses, consumers, and the public to benefit.[29] R&D activities drive emerging industries and create new technologies that contribute to economic growth and improve international competitiveness.[30]

When the share of R&D funds awarded to HBCUs is disaggregated by agency, nearly all the individual agencies also fall below the aforementioned 3 percent target funding level that would reflect parity in the higher education space.[31] (see Table 2) The U.S. Department of Agriculture, which distributes statutorily required funding to land-grant HBCUs—also called 1890 institutions, for the year of their founding legislation—is an exception, with about 6.5 percent of its R&D funding going to HBCUs, primarily in the agricultural sciences.[32] However, because the 19 HBCU land-grant universities (LGUs) comprise 17 percent of the nation's 112 LGUs, the share of funding received by HBCUs still falls below a proportional level.[33] With several major grant programs targeting HBCUs, the Department of Education also awards a relatively high share of its R&D funding to HBCUs at 5.33 percent.[34] The Small Business Administration, which has a track record of partnering with HBCUs since at least the 1980s, also ranked highly, with 5.49 percent of its funding going to HBCUs.[35] Of the 43 federal agencies that distributed R&D funding to institutions of higher education in 2023, 17 agencies (40 percent) allocated no funding to HBCUs. (see Table 2)

The federal R&D landscape is highly concentrated at the top. The 69 American universities comprising the membership of the Association of American Universities (AAU), an association representing the top U.S. research universities, received $37.8 billion, or 63 percent of all federal R&D funds, in 2023, despite

accounting for only 2.5 percent of four-year, degree-granting institutions in the United States.[36] Currently, there are no HBCUs with research production levels high enough to be included as members of the AAU.[37]

Accounting for 55.5 percent of federal R&D funding in 2023, the U.S. Department and Health and Human Services (HHS) awards a *de minimis* share of its funding to HBCUs (0.54 percent).[38] Most of the federal R&D funding from HHS is used for medical and health research through the NIH. By comparison, AAU members received $21.9 billion or 66 percent of HHS funding in FY 2021.[39] The U.S. Department of Defense (DOD), which accounted for the second-highest share of federal R&D funding in 2023 with 15.2 percent, also awards a minuscule share—0.40 percent—of its funding to HBCUs.[40] Similarly, members of the AAU received 64 percent of total R&D funding from DOD in 2023.[41] Because these two agencies together account for $7 out of every $10 that go to universities for R&D, it is essential that they are prioritized in efforts to achieve R&D funding parity for HBCUs.[42]

TABLE 2

The agencies that award the most R&D funding, the departments of Health and Human Services and Defense, provide disproportionately low shares to HBCUs, while 17 agencies did not award any funds to HBCUs

Total R&D funding awarded to institutions of higher education and share received by HBCUs, by federal agency, 2023

Rank	Agency	Total funding	HBCU share
1	Department of Health and Human Services	$33.1B	0.54%
2	Department of Defense	$9B	0.40%
3	National Science Foundation	$6.7B	1.48%
4	Department of Energy	$2.7B	0.65%
5	National Aeronautics and Space Administration	$2.3B	0.93%
6	Department of Agriculture	$1.7B	6.55%
7	Department of Commerce	$934.1M	1.37%
8	Department of Education	$735.2M	5.33%
9	Department of Transportation	$513.9M	1.07%
10	Other agencies not listed	$442.1M	0.09%
11	Department of the Interior	$344.4M	0.51%
12	U.S. Agency for International Development	$231M	0.07%
13	Department of Homeland Security	$197.1M	1.84%
14	Department of Justice	$129.2M	0.16%
15	Department of Veterans Affairs	$112.9M	0.14%

continues

Rank	Agency	Total funding	HBCU share
16	Environmental Protection Agency	$107.4M	0.49%
17	Department of State	$60.8M	0.52%
18	Department of the Treasury	$55.2M	1.80%
19	Department of Labor	$34M	2.80%
20	Office of the Director of National Intelligence	$27.8M	0.00%
21	Small Business Administration	$24.7M	5.49%
22	National Endowment for the Humanities	$20M	2.17%
23	Department of Housing and Urban Development	$19.3M	2.02%
24	Social Security Administration	$18.1M	0.18%
25	Central Intelligence Agency	$7.1M	0.00%
26	Corporation for National and Community Service	$6.8M	1.98%
27	Institute of Museum and Library Services	$6.1M	2.31%
28	Nuclear Regulatory Commission	$6.1M	0.00%
29	Executive Office of the President	$5.1M	0.00%
30	Smithsonian Institution	$3.2M	0.00%
31	Millennium Challenge Corporation	$3M	0.00%
32	National Endowment for the Arts	$2.9M	0.00%
33	Tennessee Valley Authority	$2.9M	0.28%
34	Office of Personnel Management	$2.5M	0.00%
35	Consumer Product Safety Commission	$2.1M	0.00%
36	National Archives and Records Administration	$2M	0.00%
37	General Services Administration	$1.5M	0.00%
38	Appalachian Regional Commission	$1.5M	0.00%
39	Federal Communications Commission	$922K	0.00%
40	Election Assistance Commission	$421K	0.00%
41	Northern Border Regional Commission	$412K	0.00%
42	U.S. Institute of Peace	$260K	0.00%
43	Administrative Office of the U.S. Courts	$64K	0.00%

Note: The table does not include data for institutions that received less than $1 million in research funding that filled out the short-form survey because the survey does not include data disaggregated by agency. Institutions that filled out the short-form survey received about 0.3 percent of federal grant funding in 2023.

Source: Authors' calculations based on National Center for Science and Engineering Statistics, "Higher Education Research and Development (HERD) Survey," data files for custom analysis, 2010-2023, available at https://ncses.nsf.gov/explore-data/microdata/higher-education-research-development.

Federal R&D investments can take the form of grants or contracts. Grants offer financial assistance to an external party to carry out a defined set of objectives, while contracts are how the federal government procures goods or services from an external party.[43] As business transactions, contracts represent more reciprocal and sustainable long-term investments in an institution. While contracts represented 24 percent of externally financed R&D spending by non-HBCUs in 2023, the share of this spending that was contracts for HBCUs was 9 percent.[44] Increasing the relative share of R&D contracts for HBCUs relative to grants is also an essential part of building institutional capacities to engage in the federal R&D enterprise more fully.

Investing in R&D at HBCUs for global competitiveness, racial equity, and economic impact

Ensuring equitable opportunities for historically Black colleges and Universities to engage in R&D has a variety of positive benefits. Increasing federal funding to HBCUs will diversify and strengthen research outcomes, foster U.S. global competitiveness, bolster investment in underresourced institutions and communities, and provide more economic mobility for students of color from low-income families.

Allowing more HBCU faculty to actively contribute to academic research fosters diversity in research fields, which in turn strengthens research outcomes. This is because people of different backgrounds bring different knowledge, experiences, and approaches to their work based in part on their lived experiences.[45] Strong evidence shows that diverse teams perform better in problem-solving and innovation and that companies with more diverse staff outperform their peers financially.[46] In health care settings, for example, workforce diversity improves patient outcomes and quality of care.[47] Because so much research is collaborative, within and across institutions, allowing more faculty members from diverse backgrounds to contribute to these activities will further strengthen the U.S. R&D ecosystem.

Artificial intelligence (AI) provides a prime example of the need for diversity in the research and development of new technologies. The tendency of AI tools to exhibit gender, racial, and other biases is well-documented: For example, one study that simulated the use of large language models for resume screening found that the tools favored white-associated names in 85 percent of cases and female-associated names in only 11 percent of cases.[48] The study showed that Black males were disadvantaged in 100 percent of cases. Biases emerge in this type of technology due in part to the fact that the underlying information upon which these tools are trained contain real-world biases and may, in some cases, even amplify these tendencies algorithmically.[49] The impacts of such issues are already being felt, as one class action lawsuit claims that an AI applicant screening tool engaged in discrimination.[50] AI researchers recommend involving diverse perspectives in developing and deploying these tools, as well as the ethical frameworks that stakeholders use to create them, to help mitigate discriminatory tendencies in

new technologies.[51] Already, researchers from HBCUs are helping lead the way in addressing these challenges through research that investigates and combats racial bias in artificial intelligence.[52]

HBCU-based research is also more likely to focus on and seek solutions for underrepresented communities. For example, HBCUs lead the way in areas such as environmental justice, racial health disparities, and affordable housing.[53] Many HBCUs are located in underresourced communities, allowing their researchers direct experience with the needs of these areas. This dynamic highlights the opportunities HBCU-based research presents to develop policy solutions that are more deeply informed by the experiences of those directly affected by a given issue.

Federal research and development funding creates opportunities for faculty, graduates, and undergraduate students to participate in scientific research and pursue research careers. HBCUs enroll diverse bodies of students and boast much more diverse faculty workforces than predominantly white institutions. Seventy-six percent of students at HBCUs identify as Black, compared with 13 percent of postsecondary students overall.[54] More than half (55 percent) of faculty members at HBCUs are Black or African American and 72 percent are nonwhite, compared with 6 percent and 26 percent at predominantly white institutions, respectively.[55] A 2019 study by the National Academies of Sciences, Engineering, and Medicine concluded that minority-serving institutions, including HBCUs, are "valuable resources for producing talent to fulfill the needs of the nation's current and future STEM workforce," which will in turn strengthen the nation's "economic growth, national security, and global prosperity."[56]

Finally, investing in R&D at HBCUs helps to build strong undergraduate education programs, providing greater resources and higher-quality education to the students these institutions enroll, ultimately fostering economic mobility. Research shows that strong university research programs also correlate with student success, particularly undergraduate graduation and retention rates.[57] R&D funding allows institutions to build laboratories, hire faculty, develop graduate programs, and provide undergraduate research opportunities. More robust, well-funded STEM programs also increase opportunities for undergraduate student engagement with research—a high-impact practice that can promote engagement, success, and completion and create pipelines into the STEM workforce.[58]

HBCUs play an outsize role in diversifying the STEM workforce and creating opportunities for economic mobility for low-income students. About 70 percent of HBCU undergraduates receive Pell Grants—need-based federal financial aid

for low- and middle-income students—compared with about 31 percent of undergraduates overall.[59] While enrolling 8.5 percent of Black undergraduate students, HBCUs produce almost 18 percent of Black STEM bachelor's degrees recipients.[60] HBCUs, therefore, play an essential role in providing pathways to upward economic mobility for Black graduates, as STEM workers earn more than 50 percent more than non-STEM workers on average—$64,000 annually compared with $40,000, respectively, in 2020.[61] Increasing the number of students from diverse backgrounds who enter STEM and other research areas grows and strengthens the labor force in these fields, contributing to U.S. global competitiveness.

Investing in R&D at HBCUs also contributes to the financial health and long-term sustainability at these underresourced institutions. Federal grants and contracts are a significant source of funding for institutions of higher education, accounting for 8.5 percent of revenues for public institutions and 13.5 percent for private nonprofit institutions.[62] Across higher education institutions, revenue from federal grants and contracts accounted for an average of $5,459 per full-time equivalent student across four-year institutions.[63] By helping HBCUs build research capacity and successful track records, federal investment in R&D may also help to attract additional private R&D investment in universities.

The economic activity generated by R&D activities also fosters growth in the local communities where colleges and universities are located. Approximately 85 percent of HBCUs are in historically underutilized business zones, areas designated by the Small Business Administration as economically underdeveloped as measured by median income and employment rates.[64] Universities have a direct impact on their communities by creating jobs, growing the tax base, and attracting students and staff who patronize local businesses. University expenditures on facilities, equipment, maintenance, housing, meals, and transportation, for example, create demand for goods and services from the surrounding communities.[65] Additional there are indirect spillover effects for communities, including increased manufacturing productivity, employment growth, and the entry of new businesses.[66]

Research and development expenditures, specifically, have been linked to economic growth as well: One study found that $1 million in research expenditures at a rural university yielded $710,000 in additional economic impact and $160,000 in tax revenue. For a metropolitan university, the economic impact figure rose to $945,000.[67] Fostering the growth and development of HBCUs through federal R&D funding and other revenue streams, therefore, is a dynamic pathway to help create jobs and promote growth in areas that have fallen behind economically.

Efforts to address inequities in federal R&D funding

Inequities in federal R&D funding is a long-recognized issue that Democratic and Republican presidential administrations alike and congressional lawmakers on both sides of the aisle have sought to address. In a demonstration of bipartisan support, every U.S. president since Jimmy Carter has issued an executive order to remove barriers to accessing federal R&D funding and to "encourage" federal agencies to improve their engagement with HBCUs.[68]

In April of this year, the Trump White House issued an executive order that reestablishes the White House Initiative on Historically Black Colleges and Universities and "elevate[s] the value and impact of our Nation's HBCUs as beacons of educational excellence and economic opportunity."[69] Further, it encourages private sector partnerships with HBCUs and directs agencies to implement the HBCU Propelling Agency Relationships Towards a New Era of Results for Students Act (PARTNERS) Act, including the development of individual agency plans to "strengthen the capacity of HBCUs to participate or be eligible to participate in the programs and initiatives" of each agency.[70]

Under the Biden-Harris administration, HBCUs were recipients of significant new R&D grants and investments, including $188 million in grants for R&D capacity building; the first ever HBCU-led University Affiliated Research Center, which is led by Howard University and funded by the Department of Defense; a grant program for campus information technology needs; and NASA-funded programs for AI education at eight HBCUs, among many others.[71] The first Trump administration similarly touted a commitment to HBCUs and signed important legislation supporting them, including the Fostering Undergraduate Talent by Unlocking Resources for Education (FUTURE) Act and the HBCU PARTNERS Act.[72]

Key congressional efforts to address the needs of HBCUs include the FUTURE Act, the HBCU PARTNERS Act, and the Farm Bill. The FUTURE Act, spearheaded by Rep. Alma Adams (D-NC) and Sen. Tim Scott (R-SC) and signed into law in 2019, made an additional $85 million per year in funding for HBCUs permanent.[73]

The HBCU PARTNERS Act, also led by Scott and Adams and signed into law in 2020, "requires agencies to develop and submit annual plans for "strengthening the capacity of HBCUs to participate in federal programs." These plans must "establish how the agencies intend to increase the capacity of HBCUs to compete effectively for grants, contracts, or cooperative agreements."[74] Furthermore, between FY 2023 and FY 2024, the RDI grant program allocated more than $45 million to HBCUs for transformative investments in research and development infrastructure on campus.[75]

In addition, investments in historically Black land-grant universities through the Farm Bill have seen significant increases in recent years. The bipartisan 2018 Farm Bill created six centers of excellence at 1890 institutions, research centers that focus on in-demand fields and the needs of underserved farming communities.[76] Other funding in the Farm Bill and awarded annually to 1890 institutions includes the 1890 Capacity Building grants program, which provides funding to strengthen research, teaching, and extension capacity needed to advance agricultural sciences; the Evans-Allen program, which supports agricultural research programs at 1890 institutions; and the 1890 Scholars program, which provides full scholarships for students from rural or underserved communities to attend HBCU land-grant institutions.[77]

All of these efforts represent meaningful, bipartisan intentions to increase research capacity at HBCUs. However, this incremental approach has failed to yield substantive, long-lasting change, as HBCUs' share of federal R&D funding has remained stagnant or declined in recent history. In particular, the lack of specific, measurable goals and statutorily required benchmarks has prevented meaningful improvements in achieving parity.

Ongoing barriers to accessing in federal R&D funding at federal agencies

In May 2024, the White House National Science and Technology Council (NSTC) released an interagency report that surveyed the challenges HBCUs, Tribal colleges and universities, and other minority-serving institutions face in accessing federal research and development funding.[78] That report identified a range of barriers throughout the award process, including challenges finding funding opportunities, difficulties preparing applications, a lack of transparency about successful past applications, and biases in the review process.[79]

HBCUs face greater capacity constraints across the R&D enterprise because of their historical underfunding.[80] A consequence of this underfunding is a lack of infrastructure, such as labs and libraries, and a greater need for updates and repairs to existing facilities. A 2024 survey of HBCUs conducted by the Thurgood Marshall College Fund found an average of $96 million in deferred maintenance expenses alone at HBCUs.[81] Disparities in research capacity create a feedback loop: Institutions with greater resources are awarded more grants and contracts, enabling them to build more facilities, hire more faculty, and establish track records with federal agencies, giving them a competitive advantage over under-resourced institutions.[82] Efforts to address disparities in R&D capacity, therefore, should consider the historical scope of underfunding and include broad investments to help HBCUs gain lost ground.

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The 2023 Farm Bill Must Address Inequities in the Land-Grant University System

The ramifications of underinvestment show up not only in HBCUs' physical infrastructure, but also in their organizational capacity. At major research universities, sponsored research offices are staffed with administrators and technical writers specializing in winning and managing R&D awards. These professionals help researchers identify opportunities, prepare applications, comply with regulations, provide financial administration, and report progress to funders. By contrast, researchers at HBCUs may have little to no support in this arena, depending on their institution and research field.[83] Finally, faculty at HBCUs often have greater teaching responsibilities than faculty at other research universities, limiting the time they can spend applying for funding and undertaking research.

Recommendations

While policymakers have long acknowledged the need to increase the role of HBCUs in federal R&D programs, previous efforts have thus far fallen short. The recommendations below provide concrete steps that Congress, the White House, and federal agencies can take to ensure this underutilized sector of the higher education community is fully supported in achieving its essential role as an innovator and engine of economic opportunity.

1. The Trump administration should commit to measurable goals and benchmarks for HBCU inclusion in the federal R&D enterprise and issue an executive order to that effect

Efforts to increase the share of R&D awards granted to HBCUs, such as the HBCU PARTNERS Act and numerous executive orders, seek to address the problem but lack specific mandated goals for participation or accountability for noncompliance.

HBCUs have consistently received less than 1 percent of federal research funding awarded to all institutions of higher education, despite the fact that they account for 91 (3.2 percent) of the 2,806 total four-year, degree-granting postsecondary institutions in the United States.[84] (see Table 2)

Guaranteeing HBCUs receive a proportional share of federal research funding by the end of this term should be a stated goal of the Trump administration. This goal should be included in any future executive order on HBCUs issued by the administration and be accompanied by revamped agency plans that lay out the pathway to achieve parity within this timeframe. These benchmarks should be included for individual agencies as well as on the aggregate level, with specific plans for how the agencies that award the largest shares of R&D funding—the departments of Health and Human Services and Defense—plan to meet these required funding levels for HBCUs.

Agencies should be required to reach this level of parity through both grants and contracts rather than through grants alone. Contracts provide a more sustainable, long-term investment and a greater level of partnership between the institution and the federal government, therefore gradually increasing the share of contracts received by HBCUs relative to non-HBCUs.

In addition, the Trump administration can set requirements for subgrantees and subcontracting to smaller institutions and institutions with smaller R&D programs to help those colleges and universities build their research programs. While this is not a substitute for an institution being the primary award recipient, it can help an institution fund researcher salaries and provide student research and training opportunities. It can also give an institution firsthand experience with federally funded research that can better position it to win future grants and contracts.

Specific and concrete benchmarks in grants, contracts, and sub-awards will make parity for HBCUs a requirement in federal R&D funding, rather than an empty promise.

2. Congress should pass legislation that invests broadly in HBCUs to help build research capacity and address historical underfunding, potentially through an HBCU endowment fund

The incredible success of HBCUs has been achieved despite more than a century of significant underfunding from public and private sources. Too often, HBCUs are forced to navigate the obstacles created by that underfunding while also lacking access to alternate sources of capital available to other institutions. [85]

The Institutional Grants for New Infrastructure, Technology, and Education for HBCU Excellence (IGNITE HBCU Excellence) Act—led by Bipartisan HBCU Caucus co-chairs Sen. Tim Scott (R-SC), Sen. Chris Coons (D-DE), Rep. Alma Adams (D-NC), and Rep. French Hill (R-AR)—would provide the critical support and investment needed by HBCUs to develop the capacity and infrastructure needed to cultivate more robust R&D programs. It provides support for HBCUs to invest in campus facilities such as labs and classroom spaces, procure equipment and technology, and attract additional private and public investment. Congress should pass this legislation and consider models that would create sustainable and long-term investments in HBCUs.

One model that should be considered is the creation of an endowment fund for HBCUs, which advocates argue could help to rectify the patterns of historical underfunding and support the long-term financial sustainability of HBCUs, large and small.[86] The Tribal College Endowment Fund, created by Congress in 1994 through the Equity in Educational Land-Grant Status Act, is another such model for Congress to consider.[87] Like the Tribal College Endowment Fund, an HBCU endowment fund could be an interest-bearing account managed by the U.S. Treasury that distributes interest annually to HBCUs on a formula basis. The fund could be built through annual appropriations from Congress or, as another potential revenue stream, from a share of the revenue that results from patents and licenses that derive from federally funded research at universities. This revenue share could be captured at the point at which the technology is transferred from universities to the private sector, either as a percentage of the payment for the patent or licensing fee or a share of the resulting revenues. Under the legal framework created by the Bayh-Dole Act of 1980, recipients of federal R&D funding retain patent rights on inventions developed with federal funding.[88] While this does aid in the transfer of technology to the private sector, none of the revenues that result from taxpayer-funded research are returned directly to the taxpayer. Capturing a small share of this revenue to reinvest in federal research would help promote further innovation and accomplish the goals outlined in this report. A previous CAP report, "Redesigning Federal Funding of Research and Development: The Importance of Including Black Innovators," outlined several other models this revenue capture could take.

In addition, existing programs that support R&D on HBCU campuses should be continued and strengthened. The RDI grant program and the research, teaching, and extension programs included in the Farm Bill are critical to ensuring HBCUs have the capacity to compete for additional research awards from the public and private sectors.

3. Agencies and future legislation should seek to diversify the R&D opportunities available to help grow smaller and earlier-stage research programs

Federal R&D funding opportunities should better address the capacity needs of a wider range of institutions, including HBCUs. Changes that could help a wider range of institutions include:

- Bolstering funding for HBCU-focused research infrastructure programs such as the Department of Education's RDI grant program to increase the level of investment awarded in each grant and the number of institutions that receive an award[89]
- Increasing opportunities for earlier-stage research needs, such as planning grants, seed grants, and exploratory grants
- Creating grant opportunities to fund cluster hires, in which multiple researchers at different career stages in similar or related fields help jump-start the staffing capacity at an institution[90]

Finally, grants and contracts should help grantees build and sustain capacity at sponsored research offices, which are integral to successfully winning funding and executing research projects. The funding should be sufficiently flexible to allow institutions to hire dedicated staff to apply for and manage contracts and grants.

These changes can help ensure that HBCUs and a range of other institutions with less established R&D programs can successfully compete for grants and win contracts.

4. Agencies should improve their processes for awarding grants and contracts

There are a range of improvements federal agencies can institute to ensure greater outreach, engagement, and success for HBCUs in the award process.

Centralizing, simplifying, and streamlining the application process

Currently, the opacity of research opportunities, technical and legal language, and complexity of the process serve as barriers for less experienced researchers and administrators or those from underfunded institutions to identifying, completing, and successfully winning funding.[91]

Increasing outreach and technical assistance, including within agency programs that advance DEI efforts

While many agencies have undertaken outreach programs in recent years, including the Path to Excellence & Innovation Initiative (PEI) and Engagement and Access for Research-Active Institutions (EARA) at the NIH, these efforts must continue and evolve to ultimately close gaps in R&D funding access.[92] The PEI and EARA programs both increase outreach to HBCUs by offering resources such as informational webinars, technical assistance, and training opportunities to help

HBCU-based researchers navigate the agency funding processes. Building ongoing relationships between agencies and institutions can help HBCUs become aware of funding opportunities well in advance of deadlines, giving them adequate time to prepare stronger applications and apply.

The status of these two programs, as well as other programs that serve and engage underrepresented communities, is unclear in light of the Trump administration's executive orders and sub-regulatory guidance banning DEI programs, as well as other executive actions that have imperiled federal research and development.[93] While the PEI program website remains active, the EARA website is no longer accessible.[94]

Programs that help to better engage researchers, students, and communities underrepresented in scientific and other research fields is crucially important to U.S. global competitiveness and helps to grow the economy. The Trump administration should rescind executive orders 14151 and 14173, which seek to end DEI efforts in federal programs, and instead work to evaluate best practices and the impact of these programs to ensure they are serving the needs of HBCU and other underrepresented researchers to increase the efficacy of programs.

Including HBCU faculty on review committees and improving the training of reviewers to help combat bias

The 2024 NSTC interagency report found that review committees may hold biases against HBCUs as institutions, perceiving their research and education programs as less rigorous than those of their peers.[95] Furthermore, studies show that research proposals from Black researchers are less likely to win awards. Research on funding rates at the NIH found that applications from white principal investigators were about 1.7 times more likely to be successful than applications from Black investigators.[96] While data on the composition of review committees are limited, one study found that 2.4 percent of NIH reviewers between 2011 and 2015 identified as Black or African American.[97] Including more reviewers from HBCUs or those with awareness of the institutional context of HBCUs, along with providing reviewers with more information to accurately assess capacity differences and combat bias in the review process, can help to ensure decisions are more fair for researchers and institutions nationwide.

Conclusion

HBCUs are engines of economic mobility for students, of economic impact for communities, and of economic growth for the United States. While there have been meaningful bipartisan efforts to ensure HBCUs can fully engage in the federal research and development enterprise, these initiatives have, to date, lacked the concrete benchmarks and meaningful targets that would help to move the needle in the share of R&D funding these critical institutions of higher learning receive. The Trump administration should make changes to federal grant and contract award processes to ensure HBCUs have a fair chance to compete for these opportunities. Meanwhile, Congress should increase its investments to help HBCUs build research capacity and ensure that the American workforce is robust and globally competitive. The recommendations outlined in this report are an essential first step to fully engage the breadth of the higher education sector, with a greater and more equitable emphasis on HBCUs, in the R&D activities that are key to driving innovation in the U.S. economy.

Endnotes

1 Morgan State University Office of Technology Transfer and Intellectual Property, "Morgan's U.S. Issued Patents," available at https://www.morgan.edu/technology-transfer-and-intellectual-property/issued-patents (last accessed February 2025).

2 Ibid.

3 Mirtha Donastorg, "HBCUs Continue to Get New Patents, Though Disparities Remain," The Plug, November 3, 2021, available at https://tpinsights.com/hbcus-continue-to-get-new-patents-though-disparities-remain/; The Plug, "New Intellectual Property Granted at HBCUs Experienced an Uptick Since 2010," October 21, 2021, available at https://tpinsights.com/new-intellectual-property-granted-at-hbcus-experienced-an-uptick-since-2010/#:~:text=In%20our%20last%20data%20story%2C%20we%20explored,dive%20into%20the%20database%20to%20determine%20how.

4 Author's calculations based on National Science Foundation, "Higher Education Research and Development (HERD) Survey," fiscal years 2010-2023, available at https://ncses.nsf.gov/surveys/higher-education-research-development/2023 (last accessed March 2025); National Center for Education Statistics Integrated Postsecondary Education Data System, Institutional Characteristics survey, 2023, available at https://nces.ed.gov/ipeds/use-the-data.

5 National Science Foundation, "Higher Education Research and Development (HERD) Survey."

6 Ibid.

7 Ibid.

8 Ibid.

9 National Science Foundation, "Higher Education Research and Development (HERD) Survey."

10 Sara Partridge, "The 2023 Farm Bill Must Address Inequities in the Land-Grant University System," Center for American Progress" (Washington: Center for American Progress, 2023), available at https://www.americanprogress.org/article/the-2023-farm-bill-must-address-inequities-in-the-land-grant-university-system/.

11 About 38 percent of federal R&D is conducted "intramurally," that is, by federal agencies themselves or by private-public partnership research centers, known as Federally Funded Research and Development Centers. The remaining 62 percent is conducted "extramurally," through grants and contracts to businesses (50 percent of extramural funding), higher education (39 percent), nonprofit organizations (10 percent), state and local governments (0.8 percent) and foreign entities (0.7 percent). National Center for Science and Engineering Statistics, "Table 8: Preliminary federal obligations for research and experimental development, by agency and performer: FY 2023," Survey of Federal Funds for Research and Development, 2022-2023, available at https://ncses.nsf.gov/surveys/federal-funds-research-development/2022-2023#data.

12 National Center for Education Statistics, "Definitions of Research and Development: An Annotated Compilation of Official Sources," May 19, 2022, available at https://ncses.nsf.gov/pubs/ncses22209#iv-u-s-higher-education-r-d-and-r-d-by-nonprofit-organizations.

13 The White House, "Ending Illegal Discrimination and Restoring Merit-Based Opportunity," January 21, 2025, available at https://www.whitehouse.gov/presidential-actions/2025/01/ending-illegal-discrimination-and-restoring-merit-based-opportunity/; The White House, "Ending Radical and Wasteful Government DEI Programs and Preferencing," January 20, 2025, available at https://www.whitehouse.gov/presidential-actions/2025/01/ending-radical-and-wasteful-government-dei-programs-and-preferencing/.

14 Jennifer Scholtes, "Trump administration targets thousands of programs in funding freeze," Politico, January 28, 2025, available at https://www.politico.com/news/2025/01/28/omb-funding-freeze-trump-00200943.

15 Associated Press, "Block on Trump's executive orders restricting DEI programs is lifted," NPR, March 14, 2025, available at https://www.npr.org/2025/03/14/nx-s1-5328791/trump-diversity-executive-order-block.

16 Education Counsel, "Misguidance: Analyzing the U.S. Department of Justice's 7/29/25 Civil Rights Guidance," August 2025, available at https://drive.google.com/file/d/1q3H65H29Z0_kRdgnKlUWx-CuX_EcVzxy_/view.

17 Laura Barrón López, Shrai Popat, and Courtney Norris, "Trump administration rescinds grant freeze memo that set off confusion and legal battles," PBS News Hour, January 29, 2025, available at https://www.pbs.org/newshour/show/trump-administration-rescinds-grant-freeze-memo-that-set-off-confusion-and-legal-battles; Nate Raymond, "US states tell judge Trump not fully following order blocking funding freeze," Reuters, February 6, 2025, available at https://www.reuters.com/legal/us-states-tell-judge-trump-not-fully-following-order-blocking-funding-freeze-2025-02-06/; Elena Moore, "A second federal judge has ruled to block the Trump administration's spending freeze," NPR, March 6, 2025, available at https://www.npr.org/2025/03/06/nx-s1-5312069/trump-federal-funding-freeze-court-order; Lisa Larrimore Ouellette, "The Trump Administration's Multi-Front Assault on Federal Research Funding," Just Security, July 9, 2025, available at https://www.justsecurity.org/116486/trump-assault-federal-research-funding/.

18 Greta Bedekovics and Will Ragland, "Mapping Federal Funding Cuts to U.S. Colleges and Universities," Center for American Progress, July 25, 2025, available at https://www.americanprogress.org/article/mapping-federal-funding-cuts-to-us-colleges-and-universities/.

19 Education Counsel, "E-Update for May 23, 2025," May 23, 2025, available at https://educationcounsel.com/our_work/e-updates/all/e-update-for-may-23-2025.

20 USAspending.gov, "Grant to Howard University," available at https://www.usaspending.gov/award/ASST_NON_T34GM145513_7529 (last accessed August 2025). USAspending.gov, "Grant to Central State University," available at https://www.usaspending.gov/award/ASST_NON_NR243A750004G003_12C3 (last accessed August 2025); USAspending.gov, "Grant to Benedict College," available at https://usaspending.gov/award/ASST_NON_MB23OBD0340310_1352 (last accessed August 2025).

21 USAspending.gov, "Grant to Alabama A&M University," available at https://www.usaspending.gov/award/ASST_NON_2346906_4900 (last accessed August 2025); USAspending.gov, "Grant to Prairie View A&M University," available at https://www.usaspending.gov/award/ASST_NON_2306753_4900 (last accessed August 2025); USAspending.gov, "Grant to Clark Atlanta University," available at https://www.usaspending.gov/award/ASST_NON_T32GM148395_7529 (last accessed August 2025).

22 Dhruv T. Patel and Grace E. Yoon, "HHS Freezes $60 Million in Federal Grants to Harvard in Third Round of Trump Cuts," The Harvard Crimson, May 20, 2025, available at https://www.thecrimson.com/article/2025/5/20/hhs-60-million-cut/; Rob Stein and others, "'Your RIF notice is not cancelled.' Inside a chaotic week of massive layoffs at HHS," April 5, 2025, available at https://www.npr.org/sections/shots-health-news/2025/04/05/g-s1-58312/hhs-layoffs-rif-cdc-fda-nih; Cristin Dorgelo and Jacob Leibenluft, "DOGE Interference in Federal Grantmaking Adds Burden, Uncertainty, and Risk," Center on Budget and Policy Priorities, May 28, 2025, available at https://www.cbpp.org/research/federal-budget/doge-interference-in-federal-grantmaking-adds-burden-uncertainty-and-risk.

23 Full-Year Continuing Appropriations and Extensions Act, H.R.1968, 119th, 1st sess. (2025), available at https://www.congress.gov/bill/119th-congress/house-bill/1968/text; U.S. Department of Education, "Research and Development Infrastructure Grant Program," available at https://www.ed.gov/grants-and-programs/grants-higher-education/improvement-of-postsecondary-education/research-and-development-infrastructure-grant-program (last accessed August 2025).

24 Ouelette, "The Trump Administration's Multi-Front Assault on Federal Research Funding."

25 Ignacio Gonzalez Garcia, Juan Montecino, and Vasudeva Ramaswamy, "Preliminary Estimates of the Macroeconomic Costs of Cutting Federal Funding for Scientific Research" (Washington: Institute for Macroeconomic and Policy Analysis, 2025), available at https://aura.american.edu/articles/report/Preliminary_Estimates_of_the_Macroeconomic_Costs_of_Cutting_Federal_Funding_for_Scientific_Research/28746446?file=53480237.

26 Luisa R. Blanco, Ji Gu, and James E. Prieger, "The Impact of Research and Development on Economic Growth and Productivity in the U.S. States," *Southern Economic Journal* 82 (3) (2016): 914–934, available at https://www.jstor.org/stable/pdf/44283482.pdf?casa_token=4keMKBhB5zEAAAAA:eyKdolsQdm8Ajf-ZlAbrwEqF_p4l37hBxaOjF9AKwXb-PS9yltNR8kc3sXscaogl1j4xuBbVqEpq8X7aB-3h6EMDzBs88QnolNHT5G9OUHsgeKxrO32myn; Andrew J. Fieldhouse and Karel Mertens, "Government-funded R&D produces long-term productivity gains," Federal Reserve Bank of Dallas, February 13, 2024, available at https://www.dallasfed.org/research/economics/2024/0213; "The Value, Importance, and Oversight of Health Research," in Sharyl J. Nass, Laura A. Levit, and Lawrence O. Gostin, eds., *Beyond the HIPAA Privacy Rule: Enhancing Privacy, Improving Health Through Research* (Washington: National Academies Press, 2009), available at https://www.ncbi.nlm.nih.gov/books/NBK9571/.

27 National Center for Science and Engineering Statistics, "Table 1: Higher education R&D expenditures, by sources of funds: FYs 1953–2023," available at, https://ncses.nsf.gov/pubs/nsf25314/table/1 (last accessed March 2025).

28 Association of Public and Land-Grant Universities, "How does public university research and community engagement benefit society at large?", available at https://www.aplu.org/our-work/4-policy-and-advocacy/publicuvalues/research-engagement/ (last accessed September 2025).

29 Christian E. Weller and others, "Redesigning Federal Funding of Research and Development: The Importance of Including Black Innovators" (Washington: Center for American Progress, 2020), available at https://www.americanprogress.org/article/redesigning-federal-funding-research-development/.

30 Government Accountability Office, "Funding Has Grown since 2012 and Is Concentrated within a Few Agencies," December 2022, available at https://www.gao.gov/assets/gao-23-105396.pdf.

31 Authors' calculations based on National Science Foundation, "Higher Education Research and Development (HERD) Survey," 2023.

32 Ibid.

33 National Institute of Food and Agriculture, "Land-grant University Website Directory," available at https://www.nifa.usda.gov/about-nifa/how-we-work/partnerships/land-grant-colleges-universities (last accessed February 2025).

34 U.S. Department of Education, "Historically Black Colleges and Universities (HBCUs) and Predominantly Black Institutions (PBIs)," available at https://www.ed.gov/grants-and-programs/grants-higher-education/grants-hbcus (last accessed March 2025).

35 U.S. Government Accountability Office, "Opportunities Exist to Strengthen Engagement with Historically Black Colleges and Universities" (Washington: 2019), available at https://www.gao.gov/products/gao-20-41.

36 Association of American Research Universities, "About AAU," 2023, available at https://www.aau.edu/sites/default/files/AAU-Images/AAU-By-The-Numbers/AAU%20BTN%202023%20Final.pdf; authors' calculations based on National Center for Education Statistics Integrated Postsecondary Student Data System, "Institutional Characteristics Survey 2023," available at https://nces.ed.gov/ipeds/use-the-data (last accessed March 2025).

37 Association of American Universities, "AAU Member Universities By Year of Entry," November 20, 2024, available at https://www.aau.edu/who-we-are/our-members/aau-member-universities-year-entry.

38 Authors' calculations based on National Science Foundation, "Higher Education Research and Development (HERD) Survey," 2023.

39 Association of American Research Universities, "About AAU."

40 Authors' calculations based on National Science Foundation, "Higher Education Research and Development (HERD) Survey," 2023.

41 Association of American Research Universities, "About AAU."

42 Authors' calculations based on National Science Foundation, "Higher Education Research and Development (HERD) Survey," 2023.

43 U.S. Department of Transportation, "How Grants Differ from Other Federal Funding and Financing," available at https://www.transportation.gov/rural/grant-toolkit/funding-and-financing/grants-vs-other-federal-funding (last accessed March 2025).

44 Authors' calculations based on National Science Foundation, "Higher Education Research and Development (HERD) Survey," 2023. While it is not possible based on HERD survey data as published to break down the share of grants and contracts by source of funds (e.g., federal government, institutional funds, state and local funds, or funding from businesses or nonprofit organizations), federal R&D spending accounts for 55 percent of externally financed R&D spending for non-HBCUs and 70 percent for HBCUs, suggesting that these disparities likely exist in federal R&D funding. Regardless, the federal government can lead the way in helping HBCUs to build their capacities to apply for and win grant contracts.

45 Talia H. Schwarz and others, "The Science and Value of Diversity: Closing the Gaps in Our Understanding of Inclusion and Diversity," *The Journal of Infectious Diseases* 220 (2) (2019): 33–41, available at https://academic.oup.com/jid/article/220/Supplement_2/S33/5552350.

46 Scott E. Page, *The Diversity Bonus: How Great Teams Pay off in the Knowledge Economy* (Princeton, NJ: Princeton University Press, 2019), available at https://press.princeton.edu/books/paperback/9780691191539/the-diversity-bonus?srsltid=AfmBOopl3vakeYnndh9I-qGi1AW-jHkuCar-MTCXkEXrk3cC_fkZEwVjC; Dame Vivian Hunt, Dennis Layton, and Sara Prince, "Why diversity matters," McKinsey & Company, January 1, 2015, available at https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/why-diversity-matters.

47 L.E. Gomez and Patrick Bernet, "Diversity improves performance and outcomes," *Journal of the National Medical Association* 111 (4) (2019): 383–392, available at https://doi.org/10.1016/j.jnma.2019.01.006; Monica E. Peek, "Increasing Representation of Black Primary Care Physicians – A Critical Strategy to Advance Racial Health Equity," JAMA Network Open, April 14, 2023, available at https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2803903.

48 Destiny J. Hunter, "Artificial Intelligence & the Capacity for Discrimination: The Imperative Need for Frameworks, Diverse Teams & Human Accountability," IgMin Research (2) (10) (2024): 801–806, available at https://www.igminresearch.com/articles/html/igmin250; Kyra Wilson and Aylin Caliskan, "Gender, Race, and Intersectional Bias in Resume Screening via Language Model Retrieval," Proceedings of the Seventh AAAI/ACM Conference on AI, Ethics, and Society, 2024, available at https://ojs.aaai.org/index.php/AIES/article/view/31748/33915.

49 Emilio Ferrera, "Fairness and Bias in Artificial Intelligence: A Brief Survey of Sources, Impacts, and Mitigation Strategies," *Sci* 6 (1) (2024), available at https://doi.org/10.3390/sci6010003.

50 Sasha Rogelberg, "Workday and Amazon's alleged AI employment biases are among myriad 'oddball results' that could exacerbate hiring discrimination," Fortune, July 5, 2025, available at https://fortune.com/2025/07/05/workday-amazon-alleged-ai-employment-bias-hiring-discrimination/.

51 Rifat Ara Shams, Didar Zowghi, and Muneera Bano, "AI and the quest for diversity and inclusion: a systematic literature review," *AI and Ethics* 5 (2023): 411–438, available at https://link.springer.com/article/10.1007/s43681-023-00362-w; Eduart Fosch-Villaronga and Adam Poulsen, "Diversity and Inclusion in Artificial Intelligence," *Law and Artificial Intelligence*, Information Technology and Law Series 35 (2022), available at https://www.researchgate.net/profile/Eduard-Fosch-Villaronga/publication/361783049_Diversity_and_Inclusion_in_Artificial_Intelligence/links/65ae30db7fe0d83cb549c78d/Diversity-and-Inclusion-in-Artificial-Intelligence.pdf.

52 US Black Engineer Information Technology, "HBCU professor hopes to increase representation of minorities in AI/ML research," available at https://www.blackengineer.com/imported_wordpress/hbcu-professor-hopes-increase-representation-minorities-ai-ml-research/ (last accessed July 2025); Deborah Lynn Blumberg, "AI bias harms Black families and businesses. Howard University is working to change that," Mastercard, January 25, 2022, available at https://www.mastercard.com/news/perspectives/2022/howard-university-data-science-center-ai-bias/; Jada Ingleton, "HBCUs Propel the Next Generation of Black Leaders in AI, Digital Literacy," The Washington Informer, March 31, 2025, available at https://www.washingtoninformer.com/hbcus-advancing-artificial-intelligence/.

53 Texas Southern University Bullard Center for Environmental and Climate Justice, "Who We Are," available at https://www.bullardcenter.org/about/who-we-are (last accessed February 2025); Meharry Medical College, "Health Disparities Research Center of Excellence," available at https://www.meharryresearch.org/research/innovation-centers/community-public-health/health-disparities-research-center-of-excellence/ (last accessed February 2025); Center of Excellence for Innovation in Affordable Housing and Sustainable Communities, "Home," available at https://www.ciahsc.com/ (last accessed February 2025).

54 In 2022, 219,327 of the 289,426 students enrolled at HBCUs identified as Black. National Center for Education Statistics, "Total fall enrollment and enrollment of Black students in degree-granting historically Black colleges and universities, by sex of student and level and control of institution: Selected years, 1976 through 2022," available at https://nces.ed.gov/programs/digest/d23/tables/dt23_313.20.asp (last accessed March 2025); National Center for Education Statistics, "Characteristics of Postsecondary Students," available at https://nces.ed.gov/programs/coe/indicator/csb/postsecondary-students (last accessed March 2025).

55 U.S. Department of Education Integrated Postsecondary Education Data System, "Full-time instructional staff by academic rank, faculty and tenure status, race/ethnicity and gender," Human Resources survey, 2023, available at https://nces.ed.gov/ipeds/use-the-data.

56 National Academies of Sciences, Engineering, and Medicine, "Minority Serving Institutions: America's Underutilized Resource for Strengthening the STEM Workforce" (Washington: National Academies Press, 2019), pp. 1–2, available at https://doi.org/10.17226/25257.

57 Erin Lynch, "Why Ramping up Research at HBCU's is Critical for Improved Academic Innovation and Scholarship," in Camacia Smith-Ross, ed., *The Effect of the Covid-19 Pandemic on HBCUs' Academic and Social Culture* (Lewiston, New York: Mellen Press, 2022), available at https://mellenpress.com/book/The-Effect-of-the-Covid-19-Pandemic-on-HBCUs-Academic-and-Social-Culture/9676/; Erin Lynch, Tangela Towns, and Louise Allen, "Research: The New Frontier for All HBCUs," *About Campus: Enriching the Student Learning Experience* 26 (5) (2021), available at https://doi.org/10.1177/1086482220953220.

58 Shari Lanning and Mark Brown, "Undergraduate Research as a High Impact Practice in Higher Education," *Education Sciences* (2019), available at https://files.eric.ed.gov/fulltext/EJ1230962.pdf; Matea Pender and others, "The STEM Pipeline: The Role of Summer Research Experience in Minority Students' Ph.D. Aspirations," *Education Policy Analysis Archives* 18 (30) (2010): 1–36, available at https://pmc.ncbi.nlm.nih.gov/articles/PMC3155261/.

59 Denise A. Smith, "The Facts on HBCUs: Top 10 Facts about Historically Black Colleges and Universities," The Century Foundation, September 19, 2022, available at https://tcf.org/content/commentary/the-facts-on-hbcus-top-10-facts-about-historically-black-colleges-and-universities/; National Center for Education Statistics, "Financial Aid: What is the percent of undergraduate students awarded Pell grants?", available at https://nces.ed.gov/ipeds/trendgenerator/app/build-table/8/35?cid=5 (last accessed February 2025).

60 National Science Foundation, "Ideas Labs to advance research capacity at the nation's historically Black colleges and universities," September 12, 2024, available at https://new.nsf.gov/news/ideas-labs-advance-research-capacity-nations-historically.

61 National Science Foundation, "Diversity in STEM: Women, Minorities, and Persons with Disabilities" (Washington: 2023), available at https://nsf-gov-resources.nsf.gov/doc_library/nsf23315-report.pdf?VersionId=OfErRcu.MTEp_KCzcuAfyfIkh0cU_XQO.

62 National Center for Education Statistics, "Finance: Revenues by source of public institutions using GASB standards, selected years," available at https://nces.ed.gov/ipeds/SummaryTables/report/1500?templateId=150001&years=2022,2021,2020,2019,2018,2017,2016,2015,2014,2013&expand_by=0&amount_percent=0&tt=aggregate&instType=1&sid=f029479b-f503-4af7-92c4-e78bf78f6089 (last accessed March 2025); National Center for Education Statistics, "Finance: Revenues by source of private nonprofit using FASB standards , selected years," available at https://nces.ed.gov/ipeds/SummaryTables/report/1520?templateId=152001&years=2022,2021,2020,2019,2018,2017,2016,2015,2014,2013&expand_by=0&amount_percent=0&tt=aggregate&instType=1&sid=f029479b-f503-4af7-92c4-e78bf78f6089 (last accessed March 2025).

63 National Center for Education Statistics, "Total revenue of public degree-granting postsecondary institutions, by source of revenue and level of institution: Selected fiscal years, 2007-08 through 2021-22," available at https://nces.ed.gov/programs/digest/d23/tables/dt23_333.10.asp (last accessed March 2025).

64 HUBZone Contractors National Council, "Partnering with HBCUs," available at https://hubzonecouncil.org/HUBZone-HBCUs (last accessed March 2025); HUBZone Contractors National Council, "SBA HUBZone Program," available at https://hubzonecouncil.org/HUBZone-Program (last accessed February 2025); Cornell Law School Legal Information Institute, "13 CFR § 126.103 - What definitions are important in the HUBZone program?", available at https://www.law.cornell.edu/cfr/text/13/126.103 (last accessed March 2025).

65 Arizona State University Office of the Economist, "Traditional Economic Impact Analysis of Universities," available at https://economist.asu.edu/universities-knowledge/traditional_economic-impact-universities#:~:text=One%20way%20to%20conceptualize%20the,also%20purchase%20goods%20and%20services (last accessed February 2025).

66 Naomi Hausman, "University Innovation, Local Economic Growth, and Entrepreneurship" (Washington: U.S. Census Bureau Center for Economic Studies, 2012), available at https://www2.census.gov/ces/wp/2012/CES-WP-12-10.pdf; Shimeng Liu, "Spillovers from universities: Evidence from the land-grant program," *Journal of Urban Economics* 87 (2015): 25–41, available at https://ideas.repec.org/a/eee/juecon/v87y2015icp25-41.html?utm_source=substack&utm_medium=email; Joowon Kim, "Essays on the Determinants of Public Funding for Universities and the Impact on Innovation and Entrepreneurship" (Durham, NC: Duke University, 2019), available at https://dukespace.lib.duke.edu/items/5b31cb06-5313-495d-92db-6122e33a8be6.

67 Jenny L. Apriesnig and others, "Regional economic impact of university research expenditures," *Studies in Higher Education* 50 (7) (2024): 1382–1407, available at https://doi.org/10.1080/03075079.2024.2376262.

68 Thurgood Marshall College Fund, "Executive Orders," available at https://www.tmcf.org/policy-advocacy/executive-orders/ (last accessed February 2025).

69 The White House, "White House Initiative To Promote Excellence And Innovation At Historically Black Colleges And Universities," April 23, 2025, available at https://www.whitehouse.gov/presidential-actions/2025/04/white-house-initiative-to-promote-excellence-and-innovation-at-historically-black-colleges-and-universities//.

70 HBCU PARTNERS Act, Public Law 270, 116th Cong., 2nd sess. (2020), available at https://www.congress.gov/bill/116th-congress/senate-bill/461.

71 The American Presidency Project, "FACT SHEET: Biden-Harris Administration Announces $1.3 Billion in Additional Funding and a Record of Over $17 Billion in Total Support for Historically Black Colleges and Universities (HBCUs)," September 16, 2024, available at https://www.presidency.ucsb.edu/documents/fact-sheet-biden-harris-administration-announces-13-billion-additional-funding-and-record.

72 Sara Weissman, "Did Trump Get HBCUs 'All Funded'?", Inside Higher Education, July 19, 2024, available at https://www.insidehighered.com/news/institutions/minority-serving-institutions/2024/07/19/did-trump-really-get-hbcus-all-funded.

73 FUTURE Act, Public Law 91, 116th Cong., 1st sess. (2019), available at https://www.congress.gov/bill/116th-congress/house-bill/536.

74 HBCU PARTNERS Act.

75 Author's calculations based on U.S. Department of Education, "Research and Development Infrastructure Grant Program," available at https://web.archive.org/web/20250706095038/https://www.ed.gov/grants-and-programs/grants-higher-education/improvement-postsecondary-education/research-and-development-infrastructure-grant-program#home (last accessed February 2025).

76 Katherine Knott, "Farm Bill Proposals Boost Research Facilities and HBCUs," Inside Higher Ed, June 13, 2025, available at https://www.insidehighered.com/news/government/science-research-policy/2024/06/13/farm-bill-proposals-boost-research-facilities; National Institutes of Food and Agriculture, "Centers of Excellence at 1890 Institutions (1890 COEs)," available at https://www.nifa.usda.gov/grants/funding-opportunities/centers-excellence-1890-institutions-1890-coes (last accessed March 2025).

77 National Institute of Food and Agriculture, "1890 Institution Teaching, Research and Extension Capacity Building Grants Program," available at https://www.nifa.usda.gov/grants/funding-opportunities/1890-institution-teaching-research-extension-capacity-building-grants (last accessed February 2025); National Institute of Food and Agriculture, "Agricultural Research at 1890 Land-grant Institutions," available at https://www.nifa.usda.gov/grants/programs/capacity-grants/agricultural-research-1890-land-grant-institutions (last accessed February 2025); U.S. Department of Agriculture, "USDA 1890 National Scholars Program," available at https://www.usda.gov/about-usda/general-information/staff-offices/office-partnerships-and-public-engagement/minority-serving-higher-education-institutions/1890-program/usda-1890-national-scholars-program (last accessed July 2025).

78 National Science and Technology Council, "Advancing Research Capacity at High Research Activity Historically Black Colleges and Universities" (Washington: 2024), available at https://bidenwhitehouse.archives.gov/wp-content/uploads/2024/05/CoSTEM-HBCU-Report.pdf.

79 Ibid.

80 Denise A. Smith, "Achieving Financial Equity and Justice for HBCUs," The Century Foundation, September 14, 2021, available at https://tcf.org/content/report/achieving-financial-equity-justice-hbcus/.

81 Thurgood Marshall College Fund, "HBCU Infrastructure Needs," May 2024, available at https://tmcf.org/wp-content/uploads/HBCU-Infrastructure-Needs-Fact-Sheet-2024-Updated-Finals-2.pdf.

82 Partridge, "The 2023 Farm Bill Must Address Inequities in the Land-Grant University System."

83 National Science and Technology Council, "Advancing Research Capacity at High Research Activity Historically Black Colleges and Universities."

84 Authors' calculations based on National Science Foundation, "Higher Education Research and Development (HERD) Survey," 2023.

85 Democratic House Committee on Education and Labor, U.S. House of Representatives. 2019. "Investing in Economic Mobility: The Important Role of HBCUs, TCUs, and MSIs in Closing Racial and Wealth Gaps in Higher Education" (Washington: 2019), available at https://democrats-edworkforce.house.gov/imo/media/doc/Ed_and_Labor_HBCU_TCU_and_MSI_Report_FINAL.pdf.

86 Smith, "Achieving Financial Equity and Justice for HBCUs"; Denise Smith, "It's Time to Create a Federal HBCU Endowment Fund," The B|E Note, January 30, 2024, available at https://thebenote.substack.com/p/its-time-to-create-a-federal-hbcu.

87 Eleni G. Bickell, "1994 Land-Grant Universities: Background and Selected Issues," Congressional Research Service, January 4, 2022, available at https://www.congress.gov/crs-product/IF12009#:~:text=The%20Tribal%20College%20Endowment%20Program,Competitive%20Grants%20for%201994%20Institutions.

88 Emily G. Blevins and Kevin J. Hickey, "Pricing and March-In Rights Under the Bayh-Dole Act," Congressional Research Service, December 3, 2024, available at https://www.congress.gov/crs-product/IF12582.

89 U.S. Department of Education, "Research and Development Infrastructure Grant Program."

90 Urban Universities for HEALTH, "Faculty Cluster Hiring for Diversity and Institutional Climate" (2015), available at https://www.aplu.org/wp-content/uploads/faculty-cluster-hiring-for-diversity-and-institutional-climate.pdf.

91 National Science and Technology Council, "Advancing Research Capacity at High Research Activity Historically Black Colleges and Universities."

92 White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity through Historically Black Colleges and Universities, "Annual Plan to Increase Support and Opportunities for HBCUs, FY 2024" (Washington), available at https://sites.ed.gov/whhbcu/files/2024/06/Combined-FY24-HBCU-Plans_508.pdf (last accessed March 2025); National Institutes of Health, "The NIH Path to Excellence & Innovation Initiative," available at https://oamp.od.nih.gov/nih-small-business-program-office/nih-path-to-excellence-innovation-initiative (last accessed February 2025); National Institutes of Health National Institute of Neurological Disorders and Stroke, "Research Capacity Building for Resource Limited Institutions," available at https://www.ninds.nih.gov/funding/about-funding/types-research-support/research-capacity-building-resource-limited-institutions (last accessed March 2025).

93 Louis Miyara, "Diversity, Equity and Inclusion: Under Scrutiny, But Still Viable," The National Law Review, April 11, 2025, available at https://natlawreview.com/article/diversity-equity-and-inclusion-under-scrutiny-still-viable.

94 National Institutes of Health, "The NIH Path to Excellence & Innovation Initiative"; See https://diversity.nih.gov/build/engagement-and-access-research-active-institutions-eara, which is not currently accessible. A December 15, 2024, version of the website can be accessed via the Wayback Machine at https://web.archive.org/web/20241215040436/https://diversity.nih.gov/build/engagement-and-access-research-active-institutions-eara (last accessed July 2025) and at https://web.archive.org/web/20241015000000*/https://diversity.nih.gov/build/engagement-and-access-research-active-institutions-eara (last accessed July 2025).

95 National Science and Technology Council, "Advancing Research Capacity at High Research Activity Historically Black Colleges and Universities."

96 Ibid.

97 Travis A. Hoppe and others ,"Topic choice contributes to the lower rate of NIH awards to African-American/black scientists," *Science Advances* 5 (10) (2019), available at https://www.science.org/doi/10.1126/sciadv.aaw7238.

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