The State of the Science 1 Year On: *Academia and Research*

The past year was a shock to the U.S. higher education system. The coming year may see even more jolts.

Overview

In its first year, the second administration of President Donald Trump has taken numerous actions, in the form of both sweeping policy initiatives and directives targeted at specific groups or institutions, to reshape academia and higher education. Many have affected academic scientists' funding and ability to pursue their research across an array of disciplines; others have presented new challenges and burdens for current and aspiring students.

These actions have not gone unchallenged. Insiders and observers have called out threats to academic freedom and autonomy, and some schools, states, professional organizations, and individuals have pushed back on campuses and in the courts. Others have negotiated with the administration in their attempts to navigate the rapidly shifting landscape of U.S. higher education.

Funding Cuts Hit Research Hard

Among the highest-profile actions of the Trump administration aimed at academia have been its attempts to cancel or claw back billions of dollars in federal funding awarded to specific universities, including grants for scientific and medical research. The administration has also raised taxes on wealthy universities and, at times, threatened the tax-exempt status of some (most notably Harvard University) as punishments for alleged wrongdoings or ideological differences. These schools have responded in different ways to try to preserve their funding.

When the administration announced in March that it would review federal contracts and grants with Harvard—and soon thereafter demanded a litany of changes to the school's hiring, admissions, and operations policies to "maintain Harvard's financial relationship with the federal government"—Harvard rejected the demands, with university president Alan Garber saying the school would not "surrender its independence." The administration countered by freezing more than $2 billion in grants. Harvard then sued, arguing the administration was improperly overreaching with its funding cuts.

Most other universities threatened with funding pullbacks have at least partially acceded to administration demands to reinstate federal research money. Columbia University agreed in July to pay a $200 million fine and change hiring and admissions practices to restore $400 million in funding. Brown University similarly made a deal to preserve more than $500 million by agreeing to make administrative policy changes and to put $50 million toward state workforce programs.

Cornell University and Northwestern University later struck agreements too.

Federal judges have handed some victories to schools, victories that may be temporary if rulings are appealed. In response to lawsuits filed by faculty groups at the University of California, Los Angeles, and the American Association of University Professors (AAUP), for example, a judge issued several orders to block a $1.2 billion fine and restore hundreds of grants from the National Science Foundation (NSF) and National Institutes of Health (NIH). And in September, Harvard prevailed in its suit against the government.

Even with court victories and negotiated deals reinstating funding, the turmoil, uncertainty, and interruptions from monthslong—and in some cases ongoing—conflicts with the administration have slowed or stalled scientific research projects on campuses. They have also led numerous universities and colleges to cut spending through hiring freezes and layoffs.

Academic science has been under pressure not only through the administration's targeting of universities directly but also through its efforts to remake the federal grantmaking process, reduce the amounts and types of external research funded, and reduce budget appropriations for scientific research by more than 20% through large-scale cutbacks and reorganizations in federal science agencies. Unsurprisingly, the administration's actions are having ripple effects for higher education, business (among companies who supply scientific products, for instance), and public health.

Substantial changes at NSF, which provides roughly a quarter of federal funds for basic research at colleges and universities, began almost immediately upon Trump's return to office. Expert grant review panels were canceled in late January. By early Febru-

ary, staffers were reviewing keywords in thousands of existing projects to screen for any language that might conflict with early executive orders related to the recognition of genders and curtailing diversity, equity, and inclusion (DEI) efforts. Grant pauses and holdups continued through spring as reviews expanded to target awards for research on climate change, environmental and social justice, and misinformation. In May, NSF announced plans to abolish dozens of divisions. And in December, the administration said it would dismantle the NSF-sponsored National Center for Atmospheric Research (NCAR). The decision elicited strong criticism—and support for NCAR—from numerous scientists, including many attending AGU's Annual Meeting when the announcement was made.

Despite the upheaval, NSF still provided more than $8 billion in funding in fiscal year (FY) 2025, according to an analysis by *Science*. Yet the many changes in grant reviews and awards slowed the process considerably and created confusion both within the agency and among researchers who depend on it. The changes also led to the termination of thousands of existing grants as well as a 20% reduction in the number of new grants awarded.

The turmoil, uncertainty, and interruptions from monthslong conflicts with the administration have slowed or stalled scientific research projects on campuses.

Other agencies experienced upheavals in funding, grantmaking, and staffing. At NOAA, these upheavals included the proposal to eliminate the agency's primary research arm (the Office of Oceanic and Atmospheric Research) as well as funding for climate research facilities and grants. Further, multiple key datasets and data products used by scientists, decisionmakers, and companies—such as the Billion-Dollar Weather and Climate Disasters product and the Sea Ice Index (maintained by the National Snow and Ice Data Center)—have been discontinued or lost support. These losses prompted grassroots efforts by scientists and institutions both domestically and internationally, as well as a push in Congress, to preserve imperiled datasets.

At NASA, concerns over near-term funding and policy directions led to delayed calls for grant requests, a decrease in grants awarded, substantial staff cuts, and facility closures. Uncertainties about the status of ongoing and future science missions have also left the availability of mission datasets up in the air.

Meanwhile, the Department of Energy (DOE), the country's single biggest funding agency for physical science, is collapsing six scientific panels into a single Office of Science Advisory Committee. The new committee will, according to an agency statement, still include "leaders from academia, industry, and National Laboratories," but the news left some scientists concerned about losing important avenues of input to the agency and the possibility that political appointees may have greater say over DOE science.

At the EPA and NIH, too, significant reductions in force, uncertainty stemming from proposals to end data collection (e.g., through EPA's Greenhouse Gas Reporting Program), and changes and cutbacks in grantmaking are affecting research inside and outside these agencies. EPA and NIH each ended hundreds of awards, most supporting work on administration-targeted topics such as environmental justice, climate, DEI, and transgender health.

However, federal judges halted some grant terminations, and NIH agreed to review grant proposals that were previously denied, withdrawn, or frozen because of administration directives.

To go along with the thousands of individual research projects lost or limited by terminated grants, cuts at federal agencies have also hit projects involving and serving scientists across sectors. Support has been pulled for, among other projects, the Cosmic Microwave Background Stage 4, which would have built new radio telescopes to detect clues about the origins of the universe, as well as the country's only icebreaker supporting Antarctic research.

And in April, the government announced it was canceling funding for and releasing scientists involved in producing the next National Climate Assessment (NCA), due to be released in 2028. Published quadrennially through the U.S. Global Change Research Program (which the administration also ended), the previous five NCAs represented the consensus, science-based evaluation of how climate change is and will continue affecting the country's environment, economy, and people. In response to the cancellation, AGU and the American Meteorological Society announced they were partnering to create a special research collection "to sustain the momentum of the sixth National Climate Assessment almost a year into the process."

New Obstacles for Students

A signature goal of Trump's second administration—and one that was aggressively advanced during its first year—is to dismantle the Department of Education (ED) as much as possible.

In mid-February, Linda McMahon, during her confirmation hearing to become secretary of education, signaled how the administration would aim to relocate ED programs to other departments. That announcement came on the heels of hundreds of millions of dollars in cuts to an ED office track-

ing student progress and Trump saying he wanted McMahon to "put herself out of a job." In March, an executive order directed McMahon to "facilitate the closure" of ED.

Authority to abolish the department ultimately rests with Congress, but the administration has nonetheless been able to push its agenda forward through dramatic cuts and reorganizations. It reshaped department advisory boards, for example, such as those focused on education science and the accreditation of higher education institutions. The administration also ended funding to grant programs designated specifically for minority-serving institutions and selectively terminated or rejected grants to schools that mentioned DEI in their grant applications.

In November, ED said it would move several offices, including the Office of Postsecondary Education, to the Department of Labor (DOL). Critics argued that moving programs does little to clear red tape and instead imperils services because DOL is not equipped to run them.

Disruptions to federal education funding are not limited to ED. After NSF gave out far fewer awards than usual through its Graduate Research Fellowship Program (GRFP) in the spring, for example, its months-delayed release of guidance for the next round of awards caused substantial confusion among would-be applicants. When the GRFP guidance was released in September, students learned they had less time than usual to complete applications and that second-year Ph.D. students were no longer eligible to apply.

Many of the Trump administration's actions regarding higher education and academic research have been aimed at pressuring the administrators and faculty to reshape their schools' curricula and programming.

The major shift in GRFP policy left thousands of budding scientists—some of whom purposefully waited until their second year of graduate school to apply to improve their chances of success—without an opportunity to even be considered. Earlier in the year, funding uncertainties at NSF also frustrated undergraduates as the agency reduced support to schools through its Research Experiences for Undergraduates program.

The One Big Beautiful Bill, signed into law in July, as well as subsequent decisions made significant changes to student loan and loan forgiveness plans, including borrowing maximums, the types and lengths of loan repayment plans available, and student eligibility for Pell Grants. And even before July, administration moves to slow or stop the application process for loan forgiveness under certain conditions led to new confusion for borrowers and drew a lawsuit from the American Federation of Teachers, which resulted in a settlement to resume processing loan forgiveness applications.

International students already in the United States or looking to apply have found themselves in limbo as well because of the administration's approaches to immigration, research security, and other concerns. Early in the year, alongside incidents of international students being arrested and detained, the administration revoked visas for more than 1,500 students. These actions sowed confusion and fear among the nation's international student body, which numbers more than 1 million. International students account for only about 6% of enrollment in U.S. colleges but make up the majority in many graduate science, technology, engineering, and mathematics fields.

Even after restoring most of the canceled visas in April, the administration suggested it would continue pursuing revocations. Indeed, just a month later it announced it would temporarily stop scheduling interviews for new student visas and would start revoking visas for Chinese students studying in "critical fields" out of concern that these students' access to U.S. training and funding were benefiting China's government.

These measures appear to have had a chilling effect on the interest or ability of students from abroad to study in the United States. International student applications dropped 9% compared to the prior year, according to the Institute of International Education, and the size of the international student body in graduate programs dropped by 12%.

The new obstacles for both domestic and international students, combined with lost funding and research support, contributed to decisions by graduate programs at many schools to scale back or altogether forgo admissions of new students. "If this keeps up," one scientist told *Nature*, "it would be really devastating for the field, because this is where the next generation of experts comes from."

Fears for Academic Freedom

Many of the Trump administration's actions regarding higher education and academic research have been aimed at pressuring administrators and faculty to reshape their schools' curricula and programming. Critics saw these actions as open threats to academic freedom.

In May, Trump issued an executive order on "Restoring Gold Standard Science." It calls out a supposed crisis of public confidence in science amid perceived misuses of data and purportedly seeks to bolster re-

search that is reproducible and transparent. Although these are widely accepted qualities of good science, critics argued the order would only undermine confidence in science while opening the door to greater administration control over federally funded research.

In August, Trump issued another, more focused executive order on "Improving Oversight of Federal Grantmaking," which stipulates that senior political appointees review and approve new funding opportunities and grant applications.

When the president threatened to punish university accrediting organizations for focusing on DEI-related criteria, the AAUP accused the administration of weaponizing the accreditation process and called it "another attempt to dictate what is taught, learned, said and done by college students and instructors."

Trump's 2025 campaign to reshape universities reached a crescendo in early October when it sent letters to nine schools asking them to sign a "Compact for Academic Excellence in Higher Education" in exchange for "multiple positive benefits." The compact comprised a long list of administration goals, such as banning consideration of demographics in admissions, aid, and hiring decisions; ending "institutional units that purposefully punish, belittle, and even spark violence against conservative ideas"; and recognizing strict definitions of gender. The compact's touted benefits included greater access to funding, higher payments for overhead costs, and administration acknowledgment that schools "are complying with civil rights law and pursuing Federal priorities with vigor."

Trump's campaign to reshape universities reached a crescendo in early October when it sent letters to nine schools asking them to sign a "Compact for Academic Excellence in Higher Education."

Seven of the nine schools rejected the letter soon after receiving it, and reactions from the higher education community to the compact, which the administration indicated could be extended to any interested schools, were overwhelmingly negative.

Many university leaders, education organizations, and faculty and student groups voiced alarm, for example, about clear infringements on academic freedom (the document explicitly states that "academic freedom is not absolute") and the fact that the compact would reward schools on the basis of loyalty to the administration rather than merit. Some schools, however, engaged with the administration to provide feedback about the initial compact and have been reluctant to share details of their positions; a few expressed interest in signing it.

The administration has also sought to oust specific administrators and pressure researchers into compliance. The administration's attacks on University of Virginia president James Ryan over the school's DEI programming, for example, led Ryan to resign in June. Individual academics, particularly those researching misinformation, cybersecurity, and other politically sensitive topics, were also targeted and, at times, succumbed to pressure to leave their positions.

Another thrust of the pressure campaign on researchers has involved examining and limiting their freedom to work with foreign scientists, as well as influencing foreign scientists themselves. In May, for example, NIH announced a new policy barring scientists from providing funding—in the form of subawards from grants given to U.S. researchers—to international collaborators. In the fall, Congress considered legislation amounting to an outright prohibition on U.S. scientists collaborating with researchers or advising students "affiliated with a hostile foreign entity," specifically China, Iran, North Korea, and Russia.

That bill drew substantial pushback from academia and failed to gain traction, although in December, the House passed the 2026 National Defense Authorization Act, which still includes security restrictions for U.S. researchers.

Some foreign scientists themselves have been subjected to sweeping travel bans and denials of entry into the United States for allegedly criticizing the Trump administration. Scientists abroad who receive U.S. funding were sent surveys probing whether their research aligns with the administration's agenda. In addition, foreign scientists seeking employment in the United States, including as postdocs and faculty at universities, now face a much steeper barrier to entry because of a new policy requiring employers to pay $100,000—instead of just a few thousand dollars—to secure an H-1B visa for their would-be hire.

Meanwhile, numerous U.S.-based researchers have contemplated trying to find employment in other countries, raising widespread concerns of a brain drain from the country's scientific enterprise. In March, *Nature* reported that 75% of roughly 1,600 respondents to a poll they conducted said they were "considering leaving the United States following the disruptions prompted by Trump." And spurred by interest from other countries—from Canada to Europe to Asia—to entice U.S scientists with opportunities for employment abroad, at least some scientists have departed.

Resolute Resistance

The array of actions taken by the Trump administration to impose its will on the academic community

prompted strong resistance and a multitude of rebuttals, many taking shape in courtrooms.

Major private and public universities initiated or joined lawsuits to try to win back canceled grants and contracts, challenge caps on reimbursements of research overhead costs, and fight limitations on enrolling international students.

Organizations representing higher education—such as AAUP, the Association of American Universities, and the American Association of Colleges and Universities—issued multiple statements about executive orders and the administration's punitive actions against universities. Some organizations also led legal challenges.

Major private and public universities initiated or joined lawsuits to try to win back canceled grants and contracts, challenge a cap on reimbursements, and fight limitations on enrolling international students.

State governments, too, joined forces to fight the administration's education cuts in court. Some have also tried to fill gaps created by the cuts, such as in Oregon, where lawmakers looked to preserve and expand education programs like the state's Tribal Student Grant program.

In many cases, faculty themselves stepped up to call individuals and their institutions to action and take the government to court. In April, more than 1,900 scientists—all elected members of the National Academies of Sciences, Engineering, and Medicine—signed an open letter calling out the "real danger" posed to science by the administration's actions. The same month, faculty groups at Big Ten universities began issuing resolutions asking their institutions to enter a mutual defense pact under which they could pool legal and financial resources in the event the administration targeted any of the schools.

Individual researchers have also instigated lawsuits to fight grant terminations they said were unjust and unexplained. Four scientists from institutions across the country, for example, joined with several organizations to file suit over terminated NIH and NSF grants. (An initial U.S. District Court ruling in their favor was partly put on hold by the Supreme Court.)

In another case, a federal judge sided in June with a small group of researchers from the University of California, Berkeley, who, aided by colleagues from the university's law school, sued over their own canceled grants. Alongside these legal challenges, other researchers have entered the fray by helping to track and organize information about terminated grants and by ramping up efforts to communicate about their science directly to the public.

What's on the Horizon?

The first year of the second Trump administration was a colossal shock to the higher education system in the United States. The second year may follow suit. The lasting effects of the record-long 43-day federal shutdown will not be clear for weeks or months. The shutdown cut off communications with furloughed federal researchers, halted processing of grant applications, and, in some cases, limited researchers' ability to draw existing grant funds.

Uncertainties around funding have been compounded by the fact that Congress has not settled on a full FY2026 budget and that it faces the potential for another shutdown in late January. House and Senate versions of the budget include substantially higher funding for science than was included in Trump's budget request, but specific allocations remain unknown.

Furthermore, numerous lawsuits challenging the legality of recent executive orders and administration efforts to cancel grants, curtail specific fields of research, and limit who is eligible for future funding—and even just to be on U.S. campuses—are still working their way through the courts. Rulings to date have predominantly been in favor of plaintiffs, a good sign for higher education institutions, but their ultimate outcomes are yet to be seen.

Curated Links

Key resources for this report and people interested in this topic:

American Council on Education (2025), Higher education & the Trump administration, www.acenet.edu/Policy-Advocacy/Pages/2025-Trump-Administration-Transition.aspx.

Blake, J. (2025), Tracking key lawsuits against the Trump administration, *Inside Higher Ed*, 17 Nov., www.insidehighered.com/news/government/politics-elections/2025/09/30/tracking-key-lawsuits-against-trump-administration.

Blinder, A. (2025), How universities are responding to Trump, *New York Times*, 7 Nov., www.nytimes.com/article/trump-university-college.html.

Garisto, D., M. Kozlov, and H. Ledford (2025), Scientists take on Trump: These researchers are fighting back, *Nature*, 645, 298–300, https://doi.org/10.1038/d41586-025-02811-4.

Herrman, J. (2025), Politicizing the federal grantmaking process, *Government Executive*, 19 Aug., www.govexec.com/management/2025/08/politicizing-federal-grantmaking-process/407558/.

Jones, B. (2025), AGU and AMS join forces on special collection to maintain research momentum supporting the US National Climate assessment, *From the Prow*,

2 May, fromtheprow.agu.org/nca-science-will-not-be-silenced/.

Jones, B. (2025), All that's gold does not glitter, *From the Prow*, 20 Aug., fromtheprow.agu.org/all-thats-gold-does-not-glitter/.

Moldwin, M. (2025), Senior scientists must stand up against attacks on research and education, *Eos*, 106, https://doi.org/10.1029/2025EO250180.

National Association of Independent Colleges and Universities (2025), Executive orders affecting higher education, www.naicu.edu/policy-advocacy/advocacy-resources/fact-sheet-executive-orders-affecting-higher-education/.

Ro, C. (2025), The economic effects of federal cuts to US science — in 24 graphs, *Nature*, 25 June, https://doi.org/10.1038/d41586-025-01830-5.

van Deelen, G. (2025), U.S. National Climate Assessment likely dead after contract canceled, *Eos*, 9 Apr., eos.org/research-and-developments/u-s-national-climate-assessment-likely-dead-after-contract-canceled.

van Deelen, G. (2025), Universities reject Trump funding universities-reject-trump-funding-deal.

Wallack, T., M. Javaid, and S. Svrluga (2025), How foreign student enrollment is shifting in the U.S., in 6 charts, *Washington Post*, 17 Nov., www.washingtonpost.com/education/2025/11/17/foreign-student-enrollment-data/.

Witze, A. (2025), 75% of US scientists who answered *Nature* poll consider leaving, *Nature*, 640, 298–299, https://doi.org/10.1038/d41586-025-00938-y.