BROADER IMPACTS:

An Analysis of Media Coverage of the National Science Foundation

(January 2025–January 2026)

Societal Well-being

Analysis of Media Coverage

This analysis examines the sentiment and substance of media coverage of the National Science Foundation in over 3,800 articles published from January 2025 through January 2026. It explores how a range of media sources — magazines, newspapers, and other news outlets as well as television stations, radio stations, and university websites — have portrayed the agency's broader impacts and value amidst budget cuts and project terminations. While media coverage often focuses on the "Intellectual Merit" of scientific achievements, this analysis focuses on NSF's "Broader Impacts" — the tangible benefits to society that matter most to the public including improvements in daily life and stronger communities.

This series is organized around six key Broader Impacts dimensions:
- Economic Competitiveness and Innovation
- National Security
- STEM Education
- Workforce Development
- Societal Well-being
- Research Infrastructure

The findings illustrate that NSF remains a vital engine for maintaining America's strength, fostering innovation, and building a foundation for families to thrive across every state.

Societal Well-being

Societal well-being may not be the first thing that comes to mind when people think about NSF, but it is among NSF's most tangible contributions. NSF-funded projects improve the daily lives of Americans working to live healthy, productive, and fulfilling lives. Through its investments, NSF connects basic science to the real world in ways that shape individual and community well-being.

The basic research projects NSF funds are long-term investments that lay the groundwork for medical and public-health breakthroughs. Without the sustained support and funding to translate findings to application, new treatments and diagnostic tools would never reach patients or providers who need them. NSF's investments also help keep Americans healthy by protecting them from illness. Research on clean drinking water, air quality, and food systems protect Americans from avoidable illness. This in turn reduces health care costs and keeps people in the workforce.

> NSF advances societal well-being by turning foundational science into real-world solutions that protect health, strengthen communities, and improve daily life across the country.

NSF also enhances Americans' well-being by protecting their living environments. Through investments in weather forecasting, flood and drought modeling, wildfire prediction, and water management, NSF helps farmers protect crops, homeowners protect property, and local communities make management decisions.

By supporting foundational science with real-world applications, NSF investments deliver practical returns that improve the health, safety and strength of communities across the country.

75 Years of NSF Health Moonshots

By investing in research that may take decades to mature—NSF has transformed abstract curiosity into powerful tools.

The Physics of Pediatric Safety: MRI

Modern medical imaging is rooted in NSF's 1966 support for chemist Paul Lauterbur's fundamental research in Nuclear Magnetic Resonance (NMR). NSF-funded researchers made the conceptual leap to spatial encoding, birthing Magnetic Resonance Imaging (MRI). Today, 40 million MRI scans are performed annually in the U.S., providing non-invasive diagnostics for tumors and strokes without the ionizing radiation of CT scans. This distinction is critical for pediatric safety, protecting children who require frequent monitoring.

From Yellowstone to Global Well-being: PCR

Tracing its origins to the thermal pools of Yellowstone, NSF funded discoveries that became the core of the Polymerase Chain Reaction (PCR), which now powers an $800 billion biotechnology industry. PCR provides essential well-being benefits: it underpins forensic justice and exonerations and ensures food safety by identifying pathogens in hours.

Transforming Breast Cancer Outcomes

NSF-funded researchers are currently redefining breast cancer screening and surgery. At Kean University, Assistant Professor Kuan Huang is leveraging artificial intelligence to develop highly accurate diagnostic tools for early cancer detection. In the operating room, an NSF-supported MIT spinout developed Lumicell DVS, a real-time visualization system. It identifies residual cancer cells in patients during surgery that standard care might have missed, reducing the physical and emotional trauma of second surgeries.

Restoring the Human Connection: Bionics and Bioengineering

By coining the term "Tissue Engineering" in 1987 and funding early interdisciplinary work on 3-D biodegradable scaffolds, NSF seeded a field now worth $22 billion that provides skin grafts for burn victims and bone regeneration. Simultaneously, the agency funded the engineering and signal-processing breakthroughs required for Cochlear Implants. Today, over 600,000 individuals can hear through these devices.

The Surgeon's New Hands

NSF funded the "Remote Center of Motion" mathematics that allows robotic arms to pivot precisely around tiny incisions. Commercialized as the Da Vinci system, this innovation has enabled 14 million procedures, reducing patient recovery times from days to hours.

Curing the Incurable

NSF funded Jennifer Doudna to study bacterial immunity, not human disease, leading to the discovery of CRISPR. This "blue-sky" science is now contributing to the cure of Sickle Cell Disease—providing a functional cure for a neglected population and potentially eliminating up to $9 million in lifetime care costs per patient.

The Quiet Backbone of Societal Well-being

NSF provides the invisible architecture that keeps our cars safe, our water clean, and our communities connected.

Immediate Safety

- The $5 Chip That Saved 28,000 Lives: Early airbags were expensive and mechanically unreliable. NSF funded the "wild" idea of using silicon as a mechanical machine (MEMS), creating a tiny accelerometer chip that senses a crash in milliseconds. This technology, now standard in every vehicle, has saved an estimated 28,000 lives.

- The Call That Must Go Through: As 911 centers transition from landlines to digital networks, they become vulnerable to cyberattacks. NSF researchers are currently hardening 5G infrastructure to ensure that when Americans dial 911, the system is secure and available.

- Born in the Rubble: The field of disaster robotics was effectively born at Ground Zero on 9/11. NSF-funded "shoebox" robots went where humans and dogs could not to search for survivors. Today, from nuclear accidents to the Surfside Condo collapse, these robots are standard first responders.

Environmental Guardians: Water, Air, and Energy

- The Time We Saved the World: In the 1980s, the ozone layer was collapsing. NSF-funded scientist Susan Solomon led the expedition that found the "smoking gun" (clouds reacting with CFCs). This science underpinned the Montreal Protocol, preventing an estimated 443 million cases of skin cancer in the U.S. alone.

- Drinking from the Sea: NSF supported the foundational work of Loeb and Sourirajan at UCLA to create the first practical Reverse Osmosis membrane. This technology made desalination economically viable, providing a critical water security lifeline for the drought-stricken West.

- The "Impossible" Blue Light: When industry gave up on creating the blue LEDs needed for white light, NSF funded the contrarian materials science that cracked the code. The resulting LED revolution now saves U.S. households an average of $225 per year in energy costs.

Hidden Connections: Inclusion and Insight

- A Voice for Millions: For decades, American Sign Language was mischaracterized as "inferior" to spoken language. NSF funded the linguistic research that proved ASL is a fully structural language, a finding that revolutionized Deaf education and secured opportunities for Deaf learners.

- The People's Science: NSF seeded platforms like eBird, which turn birdwatchers into data collectors. This citizen science approach builds massive environmental datasets that professional scientists could never gather alone.

The Invisible Infrastructure of Prosperity

NSF's Social, Behavioral, and Economic (SBE) directorate has contributed to societal well-being tremendously.

The $233.5 Billion Algorithm: Before 1994, the FCC gave away public airwaves via chaotic lotteries that yielded zero revenue. NSF-funded game theorists Paul Milgrom and Robert Wilson proved that efficient markets don't just happen—they must be engineered. They designed the *Simultaneous Ascending Auction*, transforming a government giveaway into a precise optimization algorithm. The result? A global standard for allocating 5G resources that has generated over $233.5 billion for the U.S. Treasury.

The Evidence Engine: For decades, governments guessed at which antipoverty programs worked. NSF-funded economists—including Nobel laureates Esther Duflo, Abhijit Banerjee, and Michael Kremer—revolutionized social policy by advancing Randomized Controlled Trials (RCTs). Just as in medicine, this "evidence engine" rigorously tests interventions. It exposed that "obvious" fixes often fail, while directing billions in funding toward proven solutions that have saved millions of lives.

Engineering Human Dignity: Standard economics once assumed humans were hyper-rational. NSF-funded psychologists Daniel Kahneman and Amos Tversky revealed the deep cognitive biases, like inertia, that derail our best intentions. Economist Richard Thaler applied this "Nudge Theory" to the national retirement crisis. By simply switching 401(k) plans from "opt-in" to "opt-out," this research harnessed human behavior to build wealth, adding an estimated $800 billion to American nest eggs.

Algorithms as Medicine: In the late 1990s, thousands of kidneys were "wasted" because willing donors were biologically incompatible with their loved ones. Economist Alvin Roth used NSF support to adapt matching theory to human organs. His algorithms unlocked "chains" of exchange, allowing incompatible pairs to swap donors across the country. Today, this logic facilitates over 1,000 transplants annually, saving lives while cutting Medicare costs by $270,000 per patient compared to lifelong dialysis.

The National Sensor Network: Just as satellites track weather, nations need sensors for social storms. For decades, NSF has funded the Panel Study of Income Dynamics (PSID), the General Social Survey (GSS), and the American National Election Studies (ANES). These are the "national sensors" for economic mobility, societal trends, and democratic health. From tracking polarization to proving the value of the Earned Income Tax Credit (EITC), this infrastructure ensures legislation is built on hard reality rather than anecdote.

Coverage related to societal well-being illuminated how NSF investments translate to benefits for Americans in their daily lives. For example, news station KTBS in Shreveport reported that Louisiana State University Health received a five-year, multi-million-dollar NSF grant to establish a new center where researchers will study how cells regulate the body's conversion of nutrients into energy. Using advanced technologies like gene editing, stem cell models and machine learning, researchers aim to generate new insights into widespread and costly health challenges such as diabetes, obesity, and liver disease.

Other coverage described NSF's role in protecting public health through environmental monitoring. The *Prairie Research Institute* reported on a grant enabling people to monitor the quality of their drinking water in their own homes. Researchers at Washington University in Missouri are collaborating with partners at the University of Illinois to translate their research into a service they call "Trusted Tap." Households using Trusted Tap will be able to assess the quality of their drinking water which can help them avoid adverse health outcomes.

Environmental well-being was another prominent theme, with multiple articles focused on NSF investments in wildfire management, water management, food systems and their associated economic impacts. *Florida International University News* reported on a new grant focused on long-term ecological research in the Everglades. In addition to restoring the Everglades, the project brings together researchers, local economists, business leaders and members of the Miccosukee Tribe to understand how Everglades restoration is affecting the local communities. The goal is to ensure that South Floridians are connected to the ecosystem they depend on for their water, food systems, and real estate values.

In Arizona, researchers are looking to the skies to better protect people from the ill effects of air pollution. The University of Arizona reports that NSF has funded a project that will bring together computer scientists and atmospheric scientists to reimagine how pollution and wildfire smoke are tracked. Working with the NSF National Center for Atmospheric Research, the University at Albany, and the University of Iowa, they seek to develop new technologies that will lead to "..a more flexible, community-driven system designed to better protect people from rising air pollution."

NSF investments also extend to protecting Americans' homes and property. Rowan University in New Jersey for example received a grant to study how sea-level rise and coastal flooding affect property values while researchers at the University of Texas at Arlington are developing a model to mitigate hurricane damage to homes on the Texas coast. The Texas team is creating a user-friendly app that will recommend structural retrofits and estimate associated costs based on a home's location and structure. Project leader Dr. Nur Yazdani explains, "We hope to provide information that will allow homeowners to make the optimum decisions for their property and financial situation."

In Oklahoma researchers are also setting out to protect Americans' property. The University of Oklahoma reported on a grant focused on assessing the risk of tree damage during storms. Project leader Aikaterini Kypioti explains, "We want to create guidance that says which trees might be dangerous in a neighborhood so they can be looked at closely." Community engagement is a key part of this work with emergency managers, first responders, tribal representatives, local officials, nonprofit organizations and homeowners all providing input on the work.

NSF-funded researchers across the U.S. are developing community-driven tools—from tracking air pollution and wildfire smoke to protecting homes from floods, hurricanes, and storm-damaged trees—to help people better manage environmental risks.

Despite the clear benefits, grants that support Americans' well-being have not been immune from NSF terminations. One terminated project was a collaboration between the University of Arizona and UC Berkeley, Navajo Technical University and others. Their work aimed to help Native Americans develop sustainable self-sufficient systems for food, energy and water. Also terminated were an award to Harvard focused on better understanding how forests will respond to different environmental conditions in the future; an award to the University of Arizona examining associations between the state and federal legal environment and infant and maternal health and mortality; an award to the University of Kentucky researching interventions to increase the mental health of undergraduate engineering majors; and a grant to the University of Nevada at Las Vegas focused on developing affordable and efficient energy use strategies as well as the impacts of energy usage on human health.

Together, these terminations underscore how reductions or eliminations of NSF support can disrupt research that addresses health, living conditions, and workforce development, areas of priority importance to Americans.
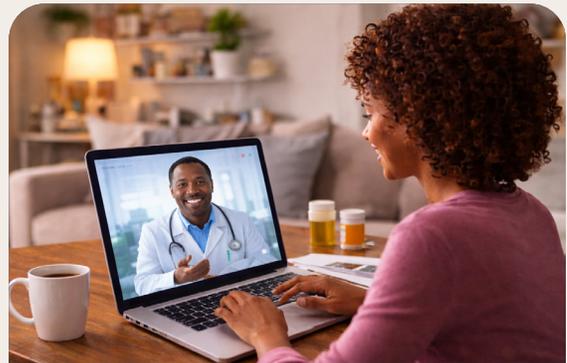
The Foundation of Digital Well-being: Making Technology Human-Scale

While commercial giants dominate the headlines, much of the "operating system" of modern society—the interface, the cloud, and the intelligence—was seeded by NSF's patient capital. Beyond Google and Qualcomm, NSF investments have transformed computing capacity into accessible, human-centered capabilities that define daily life.

Democratizing the Web: In the early 1990s, the internet was a powerful but exclusive tool for experts. In 1993, NSF-funded researchers at the University of Illinois changed everything by developing Mosaic, the first freely available browser to display images inline with text. Mosaic didn't just upgrade the internet; it democratized it, gaining over a million users in 18 months. But visual access wasn't enough. In 1997, NSF provided the seed funding for the Web Accessibility Initiative (WAI), leading to the global standards (WCAG) that ensure the digital world remains open to users who are blind, deaf, or have cognitive disabilities.

Behind today's web, cloud, and AI breakthroughs lies decades of NSF investment—democratizing internet access, securing digital trust, and teaching computers to see in ways that power everyday life.

The Cloud and Cryptography: The flexible, on-demand computing we rely on today—for remote work, telemedicine, and streaming—rests on NSF-funded breakthroughs. In the early 2000s, NSF supported the development of Xen, the open-source virtualization software that became the foundation for massive public clouds like Amazon Web Services, and PlanetLab, which served as the training ground for the engineers who architected the modern cloud. Underpinning this infrastructure is the "invisible shield" of cryptography. Long-term NSF research in number theory drove the encryption standards that now secure global financial systems and private medical records, enabling the trust required for modern society to function.

Teaching Computers to See: For decades, AI was "blind." In 2007, an NSF CAREER award supported Fei-Fei Li to build ImageNet, a massive database that triggered the deep learning revolution. Today, this computer vision technology underpins automated medical diagnostics, driver safety systems, and visual aids for the blind, turning the abstract ability to "sift signals from noise" into life-saving tools for everyday people.

What Do Polls Say?

According to Science Coalition polling, a strong majority of American voters express concern that recent proposed cuts at NSF could undermine societal well-being. In particular, voters are concerned about the long-term erosion of scientific capacity needed to address pressing challenges such as disease prevention, climate impacts, infrastructure safety, and technological risks. More than nine in ten voters (92%) say it is important to invest in developing new medicines to prevent or cure diseases that impact millions of Americans, including cancer, heart disease, and Alzheimer's. Nearly nine in ten voters (88%) say it is important to invest in research to identify the best ways to protect the environment and ensure clean air and water. Similarly, ASTC polling shows that Americans view federal funding for science research and innovation as critical to societal well-being, with top concerns about funding cuts including diminished ability to solve real-world problems, slower progress on health and environmental challenges, and reduced quality of life for communities nationwide.

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The Power of Accessible Language Learning

While Duo the green owl is a pop-culture icon, Duolingo began as a National Science Foundation project to solve a complex computer science challenge: how to harness human brainpower for computation. As detailed in a November 2025 retrospective by the Union of Concerned Scientists, Luis von Ahn's early NSF-funded work on "Games with a Purpose" transformed into a platform that makes language acquisition accessible to everyone.

This accessibility has profound implications for societal well-being. As highlighted by the NSF, the platform uses its NSF-funded AI backbone to democratize a skill. By offering free, high-quality instruction, it breaks down critical economic barriers for refugees, immigrants, and job seekers worldwide. This NSF investment did not just support building an app; it created a vital pathway for millions of people to navigate new societies, secure better employment, and build connections across cultures.
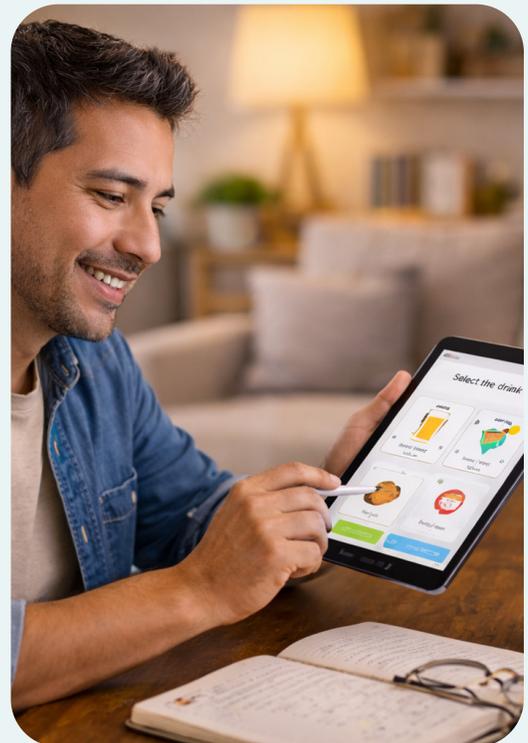
Translating Scientific Discovery to Practical Application

At the University of Tennessee, researchers are turning what in the past seemed like science fiction into medical innovation.

Today's Medical Developments reported on a new grant that brings together professor of biomedical engineering Jindong Tan with physician Dr. Gregory Mancini to develop a 'smart' surgical camera that enables surgeons to have previously impossible views inside the body.

The robot-controlled camera uses AI technologies to improve visibility in small, unlit areas. "We are talking about less incisions, faster recovery time, less blood loss…it's a camera that provides a super vision for surgeons to achieve the best surgical outcome possible," Professor Tan explains.

Ultimately, the team wants to integrate pre-surgical information with live imagery during surgical procedures and create a tool that can be further developed and commercialized for widespread use. Professor Tan explains, "NSF grants are grants that are really trying to solve problems. They're usually not as close to being in place right away. But the way that the AI technology is moving along, this is something we think is going to have much more real application by the end of this project."

Working with Technology and Communities to Manage Wildfires

If we could forecast wildfires and predict the disruptions and damage that comes with them, we could save American lives and help them better protect their belongings and livelihoods. Dr. Yushun Dong at Florida State University (FSU) is leading an NSF-funded effort to take on this challenge.

Dr. Dong is bringing together computer scientists, fire researchers, engineers and educators to study how hurricanes change wildfire behavior by focusing on wildfires in the "wildland-urban interface," where forests meet homes and other infrastructure. As reported in the *Florida State University News* the project builds on the long-standing practice of "prescribed burns" and is positioned to make the next great leap in wildfire risk management.

The grant is enabling FSU to apply "cutting-edge AI to urgent, real-world problems in our region…"
The team will develop an AI platform that will help address Florida's hurricane and wildfire challenges while also furthering AI research. Dr. Dong and his colleagues are also launching workforce development initiatives in AI and disaster resilience to train the next generation of scientists working to improve public safety through technology.

Researchers at Washington State University are also tackling wildfire concerns with NSF support. There, Associate Professor Ji Yun Lee is leading a project designed to help local communities better prepare for and respond to wildfire-related power outages. *WSU Insider* reports wildfires and the electric power grid have a complex two-way relationship: the "grid can cause devastating wildfires while wildfires can also cause power outages."

The project aims to develop a wildfire simulation and outage prediction tool that accounts for local geography and community characteristics. As the article notes, wildfires differ widely depending on the location. Forested areas have different considerations than ones near rural housing and wildfires near urban areas have their own characteristics.

As part of the project, researchers are establishing collaborative community groups that include utility companies, local agencies and health and energy organizations to provide input on "actionable, science-based solutions." These strategies may include vegetation management, micro-grids or buried utility lines - practical steps that can reduce wildfire risk.

Working for the Future in the Wake of Disaster

In 2022, floods in Kentucky killed dozens of people and left thousands without homes. More recently, heavy rains in February and April of 2025 killed dozens more. With support from NSF, geologists at the University of Kentucky are working to understand what happened so they can improve early warning systems and better identify future flood risks.

Geologist Ryan Thigpen is leading a group of earth scientists who so far have documented over 3,000 landslides triggered by the 2022 flooding. This is part of a broader statewide effort to increase climate resiliency while also supporting economic growth. Last year, Kentucky received a $24 million dollar NSF research grant distributed across eight Kentucky institutions which has "created dozens of science jobs and hundreds of new student opportunities." The funding supports the equipment the team needs to collect data for improving prediction and warning systems.

This work is part of a larger plan to create a southern Appalachian flood and hazard center focused on helping mountain communities prepare for extreme weather and reduce the risks of flooding and landslides. Sara Johnson, a landslide expert, explains "We're not sitting in an ivory tower making money from research. The work we do is about making communities safer. "

Bringing Water to Rural America

Nevada Today reported on a new six-million dollar grant from NSF's Established Program to Stimulate Competitive Research (EPSCoR) program supporting a partnership between researchers at Louisiana Tech University, Jackson State University and the University of Nevada, Reno. The project focuses on nanomaterials and electrochemistry to develop mobile energy-water reuse systems (MEWRS) for communities with limited access to clean water.

The scientists are working in collaboration with members of local rural communities who can provide insights that ensure the developed systems are practical and effective. As one project leader, David Hanigan noted, their work "is a step toward giving rural areas the tools they need to maintain essential services independently."

A $6M NSF grant supports rural clean water solutions, combining mobile energy-water systems with workforce training in sustainable technologies.

In addition to addressing water challenges, the project also has education and workforce development components. Students will receive training in water treatment chemistry, energy storage and advanced materials, important skills for careers in clean energy and sustainable water systems. As the article sums up, "With a focus on improving access to essential services and supporting economic growth, MEWRS is expected to have a lasting impact on communities throughout Nevada, Louisiana, Mississippi and beyond."

KEY TAKEAWAYS

- NSF investments act as the "invisible architecture" of modern life, connecting basic science to tangible daily benefits. From the algorithms in our phones to the crash sensors in our cars, NSF-funded breakthroughs make American lives healthier, safer, and more productive.

- Research on environmental resilience directly protects lives, property, and real estate. By advancing wildfire prediction, flood modeling, and air quality monitoring, NSF empowers homeowners and local communities to safeguard their physical and financial investments against escalating risks.

- "Blue-sky" research delivers practical health solutions, from surgical robotics to accessible disease treatments. Investments in fundamental science—like the physics behind MRI or the computing behind Duolingo—translate into life-saving and life-changing tools that reduce costs and expand access for millions.

- NSF projects prioritize community engagement, ensuring solutions work for the people who need them most. By funding initiatives like citizen water testing and rural workforce development, the NSF ensures that scientific discoveries translate into practical, locally relevant applications.

Conclusion

This analysis of 3,800 articles confirms that the NSF provides the "invisible architecture" of modern life. Coverage highlights that curiosity-driven research is not an abstract luxury, but the primary source of the tangible societal benefits that define our daily well-being. From the patient capital that built the digital world to the environmental models protecting real estate markets, NSF investments bridge the gap between scientific discovery and the kitchen table.

Media reports warn that dismantling this ecosystem threatens more than just academic careers; it erodes the essential safety net for public health and community resilience. Terminations of projects focused on water quality, disease prevention, and disaster response leave Americans more vulnerable to emerging risks.

Ultimately, the coverage suggests America faces a stark choice: decisively invest in the NSF research that keeps our families safe and healthy, or risk facing tomorrow's challenges without the tools to solve them.

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About the authors

Dr. Jeanne Century is the founder of Outlier Research & Evaluation at the University of Chicago and a Senior Research Fellow at the University's Data Science Institute. Century's work has almost exclusively focused on advancing equity in education primarily through applied research collaborations with leaders in large and small urban school districts. During her nearly 38-year career, Century has been the principal investigator of numerous federal and foundation research grants focusing on a range of topics including inquiry science instruction, computer science education, STEM schools, sustainability of reform and data science education. Century's primary research focus is on understanding, measuring, and supporting education innovation implementation, spread and endurance through implementation science and component-based research approaches. Century has also conducted numerous evaluations on out-of-school and in-school programs, district and state reform efforts, higher education, teacher preparation, and civic leadership. In addition to research, Century has developed instructional materials, supported professional learning efforts for teachers and administrators and has provided technical assistance and strategic planning for leaders at the school, district, and state levels. Century also has policy experience at all education system levels including serving on a Presidential transition team where she was responsible for STEM education as well as the U.S. Department of Education Agency Review.

Dr. Eric M. Tucker is the President and CEO of the Study Group. He has served as President of Equity by Design, Superintendent and Executive Director of Brooklyn Laboratory Charter Schools, CEO of Friends of Brooklyn LAB, Cofounder of Educating All Learners Alliance, Senior Research Scientist at UCLA Center for Research on Evaluation, Standards, and Student Testing (CRESST), Cofounder and Executive Director of InnovateEDU, director at the Federal Reserve Bank of New York, Executive Director and Chief Academic Officer of the National Association for Urban Debate Leagues, and Founder of the Rhode Island Urban Debate League. As an entrepreneurial, strategic, and impact-focused leader, Dr. Tucker has 25 years of experience building catalytic partnerships in education, securing over $300 million of investments for enterprises and initiatives that have transformed outcomes for diverse learners and educators. Dr. Tucker has expertise in measurement and assessment system innovation, inclusive and advanced R&D, analytics, and human infrastructures for improvement. Dr. Tucker co-edited The Sage Handbook of Measurement and the Handbook for Assessment in the Service of Learning, Volume I, II & III. He earned a doctorate and a masters of science in measurement sciences from the University of Oxford and bachelors degrees from Brown University.

About the Study Group

The Study Group exists to advance the best of artificial intelligence, assessment, and data practice, technology, and policy; uncover future design needs and opportunities for educational systems; and generate recommendations to better meet the needs of students, families, and educators.