

**DIRECTORATE FOR SOCIAL, BEHAVIORAL, AND ECONOMIC SCIENCES (SBE)**

**\$330,210,000**  
**+\$48,100,000 / 17.0%**

**SBE Funding**  
(Dollars in Millions)

	FY 2021			FY 2023 Request	Change over FY 2021 Actual	
	FY 2021 Actual	ARP Actual	FY 2022 (TBD)		FY 2021 Actual	Percent
Division of Behavioral and Cognitive Sciences (BCS)	\$99.42	\$7.63	-	\$113.14	\$13.72	13.8%
Division of Social and Economic Sciences (SES)	102.91	7.63	-	114.56	11.65	11.3%
Nat'l Ctr. for Science and Engr. Statistics (NCSES)	55.46	-	-	74.89	19.43	35.0%
SBE Office of Multidisciplinary Activities (SMA)	24.32	2.90	-	27.62	3.30	13.6%
<b>Total</b>	<b>\$282.11</b>	<b>\$18.16</b>	<b>-</b>	<b>\$330.21</b>	<b>\$48.10</b>	<b>17.0%</b>

**About SBE**

SBE researchers examine fundamental questions about the dynamic abilities of humans, the strength and resilience of essential institutions, the creation of jobs and industries, national security and relations between nations, and finding new ways to improve quality of life for all Americans. SBE supported research empowers America’s private and public sectors to grow the economy, secure the homeland, improve the health and safety of American families, enhance equitable decision making, and increase the competitiveness of farms, offices, and factories across the Nation.

SBE aggressively seeks opportunities to build a better future. One way it does this is by investing in a new and increasingly diverse, dynamic, and skilled generation of young SBE researchers. SBE support for early career investigators, undergraduates, graduate students, and post-doctoral research fellowships trains and prepares young scholars to develop rigorous and effective new ways to capitalize on the increasing availability of massive amounts of data to advance knowledge about human behavior. SBE researchers, for example, will have increasing opportunity to use and combine data from surveys, administrative records, brain imaging, and biospecimens, as well as output from behavioral, environmental, and geographic sensors to help others learn about how to create opportunity and improve life outcomes. America’s young SBE researchers have limitless potential to produce transformative, socially beneficial science of this kind.

SBE is also home to the National Center for Science and Engineering Statistics (NCSES). NCSES is one of only 13 principal statistical agencies in the federal government, and is the Nation’s source for science and engineering information in a global context. NCSES collects, analyzes, and disseminates information on representation across the scientific enterprise; research and development; innovation; the Science and Engineering (S&E) workforce; the condition and progress of science, technology, engineering, and mathematics (STEM); and U.S. competitiveness in science, engineering, technology, and research and development.

SBE’s FY 2023 Request is shaped by three guiding principles:

**Support fundamental research that advances key national priorities.** The research emphases include enhancing national security and preparedness; understanding, mitigating, and adapting to climate and global change; strengthening American infrastructure; broadening participation (BP) in STEM and studying the causes of, impacts on, and practices for addressing inequity throughout

society; creating new economic opportunities for populations adversely affected by change; and empowering American innovation through research in artificial intelligence (AI) with a focus on worker productivity and well-being in a growing range of work environments, including industries of tomorrow; reliability of information networks; and improving quality of life for communities across the country.

**Support NCSES, the Nation's premier source for information on the science and engineering enterprise.** The Foundations for Evidence-Based Policy Act (Evidence Act), and other initiatives to improve the performance of federal agencies and the productivity of America's S&E enterprise as a whole, require our Nation to make more effective use of the types of data that NCSES collects, analyzes, and disseminates. Increased support for NCSES allows the Nation to be more informed, more effective, and more agile in converting America's incredible talent and ability into better educational outcomes, more opportunity, greater productivity, and higher rates of innovation in all areas of American life.

**Support and advance cross-directorate activities that address urgent national challenges.** Whether the topic is creating the new jobs and industries that will yield an economic recovery that helps everyone, increasing national security through tools that better identify new and emerging threats, improving community resilience by improving response to natural disasters and pandemics, protecting consumers and institutions against misinformation and other attacks on vital infrastructure, broadening opportunity, or understanding the people involved is critical. SBE works with all of NSF and other agencies to support research that solves big problems by putting people first.

In FY 2023, SBE will prioritize and maximize support in its disciplinary and interdisciplinary programs that support Administration and NSF-wide priorities including activities that contribute to shaping the industries of tomorrow, including advanced manufacturing research; build capacity and enhance research productivity at underrepresented institutions; expanding the STEM talent pool through increased funding for post-doctoral research fellowships; AI; United States Global Research Change Program (USGCRP); and, significantly, to support NCSES's role as the Program Management Office (PMO) for the Standard Application Process (SAP) required under the Evidence Act and for work related to building a National Secure Data Service (NSDS).

The FY 2023 Request includes continued support for investments that integrate the social, behavioral, and economic sciences into multi-directorate and multi-disciplinary activities that address issues of major scientific, national, and societal importance. These include research related to Brain Research through Advancing Innovative Neurotechnologies (BRAIN); National AI Research Institutes; SaTC; Smart and Connected Communities (S&CC); democracy affirming technologies; Smart Health and Biomedical Research in the Era of Artificial Intelligence and Advanced Data Science (SCH); and Dynamics of Integrated Socio-Environmental Systems (DISES). Understanding the human element is essential to safety, security, growth, and well-being. SBE is committed to supporting the science that will help America's innovators improve quality of life for all its citizens.

In FY 2023, SBE will continue to support the next generation of scholars poised to produce transformative and societally beneficial science. SBE will continue its support for early career investigators—Faculty Early Career Development (CAREER); undergraduates—Research Experiences for Undergraduates (REU); graduate students—Doctoral Dissertation Research Improvement Grants

(DDRIG); and post-doctoral research fellows through its SBE Postdoctoral Research Fellowships (SPRF) program.

SBE’s FY 2023 Request includes increased support for NCSES. Consistent with recent Executive Orders that highlight the importance of objective and trustworthy data, funding will help NCSES modernize systems and data tools, develop a new website, and address requirements of the Evidence Act.

SBE provides approximately 64 percent of the federal funding for basic research at academic institutions in the social, behavioral, and economic sciences.

## Major Investments

Area of Investment <sup>1,2</sup>	FY 2021 Actual	FY 2022 (TBD)	FY 2023 Request	Change over	
				FY 2021 Actual Amount	Percent
Advanced Manufacturing	\$0.50	-	\$3.50	\$3.00	600.0%
Artificial Intelligence	15.06	-	19.59	4.53	30.1%
Biotechnology	2.04	-	1.50	-0.54	-26.5%
Climate: USGCRP	18.25	-	25.14	6.89	37.8%
Build and Broaden	6.30	-	8.00	1.70	27.0%
SBE Postdoctoral Research Fellowships	5.91	-	9.00	3.09	52.3%
Secure & Trustworthy Cyberspace	4.00	-	4.00	-	-
Strengthening American Infrastructure	6.16	-	8.00	1.84	29.9%

<sup>1</sup> Major investments may have funding overlap and thus should not be summed.

<sup>2</sup> This table reflects this directorate's support for selected areas of investment. In other directorate narratives, areas of investment displayed in this table may differ and thus should not be summed across narratives.

**Advanced Manufacturing (\$3.50 million):** SBE will invest in advanced manufacturing-related activities through support for fundamental research in the social and economic sciences that contribute to the development of new methods, processes, analyses of new or existing manufacturing systems or processes. In addition, SBE is a partner in the Future Manufacturing program.

**AI (\$19.59 million):** SBE will increase support for AI research. Key areas of investment include such activities as advancing Machine Learning (ML); developing natural language processing models; integrating ML advances using big data with learning mechanisms developed in cognitive science; developing new statistical inferences and algorithms for the analysis of large data sets; and understanding the ethical, legal, and societal implications (ELSI) of AI. SBE’s AI investment includes support for National AI Research and Development Institutes as well as NITRD-related AI.

**Build and Broaden (B2) (\$8.0 million):** SBE will continue investments in B2, an innovative program that supports research collaborations and partnerships between scholars at MSIs and scholars in other institutions or organizations. B2 supports research projects that: 1) build capacity and enhance research productivity in the SBE sciences at MSIs; 2) provide researchers with new ways to diversify and sustain collaborations; 3) foster partnerships that strengthen career and research trajectories for faculty at MSIs; 4) broaden participation of underrepresented individuals, organizations and

geographies in STEM entrepreneurship and innovation; and 5) contribute to stronger, more innovative science by diversifying research and widening the STEM pathways.

USGCRP (\$25.14 million): In FY 2023, SBE will increase funding activities that are encompassed by the USGCRP. Foundational research in the SBE sciences include advancing the fundamental understanding of humans as a component of the Earth system to improve knowledge of the causes and consequences of global change; improving and developing advanced models that integrate across all components of the Earth system, the human with the physical, chemical, and biological; increasing understanding of human and community resilience to global change; improving risk communications; and improving the deployment and accessibility of the SBE sciences to inform mitigation and adaptation decisions. In addition to supporting core programs that support research in this portfolio (including DISES), a portion of SBE’s FY 2023 funding will be directed to Coastlines and People (CoPe), which seeks convergent science at the nexus between coastal sustainability, human dimensions, and coastal processes, to transform understanding of interactions among natural, human-built, and social systems in coastal, populated environments.

SBE Postdoctoral Research Fellowship (SPRF) (\$9.0 million): In FY 2023, SBE will increase its commitment to SPRF, which promotes fundamental research in the SBE sciences by providing opportunities for recent doctoral graduates to obtain additional training and gain research experience; targets and enhances the participation of underrepresented groups in science and engineering; and encourages doctoral-level scientists (who are not yet in full-time positions) to take advantage of the two-year fellowship to prepare for scientific careers in academia, industry or private sector, and government. FY 2023 funding will expand support for broadening participation with an emphasis on PIs from underrepresented groups, states, and institutions.

SaTC (\$4.0 million): SBE will sustain its investment in SaTC to support the foundational research on human beings that can improve and strengthen efforts to increase cybersecurity. SBE research can contribute to society’s attempts to build infrastructure that facilitates innovation at the same time that it protects individuals, families, communities, and a full array of private and public sector institutions.

Strengthening American Infrastructure (\$8.0 million): In FY 2023, SBE will increase its commitment to this investment that links experts on physical, computational, and material aspects of infrastructure design with scientists whose fundamental research explains how humans will – and will not – use infrastructure that we build. This human-centered approach to infrastructure is a critical component to building better, smarter, and more cost-effective roads, electric grids, hospitals, and more. Improving infrastructure in these ways spurs private-sector innovation, grows the economy, and is essential to national competitiveness.

### SBE Funding for Centers Programs and Major Facilities

SBE Funding for Centers Programs					
(Dollars in Millions)					
	FY 2021	FY 2022	FY 2023	Change over	
	Actual	(TBD)	Request	FY 2021 Actual	
				Amount	
				Percent	
Artificial Intelligence Research Institutes (BCS, SMA)	\$1.02	-	\$1.02	-	-

For detailed information on individual centers programs, please see the NSF Centers Programs narrative in the NSF-Wide Investments – Cross Theme Topics chapter.

## Funding Profile

<b>SBE Funding Profile</b>			
	FY 2021		
	Actual	FY 2022	FY 2023
	Estimate	(TBD)	Estimate
<b>Statistics for Competitive Awards:</b>			
Number of Proposals	3,956	-	4,000
Number of New Awards	918	-	900
Regular Appropriation	759		900
ARP	159		
Funding Rate	23%	-	23%
<b>Statistics for Research Grants:</b>			
Number of Research Grant Proposals	3,190	-	3,200
Number of Research Grants	638	-	670
Regular Appropriation	591		670
ARP	47		
Funding Rate	20%	-	21%
Median Annualized Award Size	\$135,479	-	\$135,000
Average Annualized Award Size	\$174,028	-	\$174,000
Average Award Duration, in years	2.9	-	3.0

SBE supports investment in core research and education activities as well as research infrastructure. In FY 2023, SBE will continue to fund research in areas such as the NSF Big Ideas, AI, BRAIN, and cybersecurity research while continuing to prioritize its disciplinary and interdisciplinary investigator-led research areas. In FY 2023, SBE expects to award approximately 900 competitive grants, including nearly 670 research grants.

## People Involved in SBE Activities

<b>Number of People Involved in SBE Activities</b>				
	FY 2021	FY 2021		
	Actual	ARP Actual	FY 2022	FY 2023
	Estimate	Estimate	(TBD)	Estimate
Senior Researchers	2,354	166	-	2,700
Other Professionals	508	36	-	600
Postdoctoral Associates	274	20	-	300
Graduate Students	1,368	185	-	1,500
Undergraduate Students	1,178	480	-	1,300
<b>Total Number of People</b>	<b>5,682</b>	<b>887</b>	<b>-</b>	<b>6,400</b>

**DIVISION OF BEHAVIORAL AND COGNITIVE SCIENCES (BCS)**

**\$113,140,000**  
**+\$13,720,000 / 13.8%**

**BCS Funding**  
(Dollars in Millions)

	FY 2021 Actual	FY 2022 (TBD)	FY 2023 Request	Change over	
				FY 2021 Actual Amount	Percent
<b>Total</b>	<b>\$99.42</b>	<b>-</b>	<b>\$113.14</b>	<b>\$13.72</b>	<b>13.8%</b>
<b>Research</b>	<b>93.51</b>	<b>-</b>	<b>108.20</b>	<b>14.69</b>	<b>15.7%</b>
CAREER	12.44	-	5.00	-7.44	-59.8%
Centers Funding (total)	0.25	-	0.25	-	-
Artificial Intelligence Research Institutes	0.25	-	0.25	-	-
<b>Education</b>	<b>0.86</b>	<b>-</b>	<b>0.44</b>	<b>-0.42</b>	<b>-48.8%</b>
<b>Infrastructure</b>	<b>5.05</b>	<b>-</b>	<b>4.50</b>	<b>-0.55</b>	<b>-10.9%</b>
Research Resources	5.05	-	4.50	-0.55	-10.9%

**About BCS**

BCS supports fundamental research that examines the sources of the human condition and the character of thinking and behavior. Its programs examine these issues at multiple levels of analysis, ranging from genetics and brain activity to social, cultural, and environmental contexts. Core analyses of human language, perception, and cognition are critical to understanding human behavior and to the development of new approaches to learning, decision making, and problem solving for individuals and groups.

BCS-supported research informs a range of pressing national issues. Exploring how thought and behavior respond to changing situations, environmental characteristics, and cultural differences provides important information for improving disaster response, addressing climate change, and supporting improved security and preparedness. Research on sources of bias in human interaction and strategies for their mitigation are critical to expanding diversity and inclusion across the STEM disciplines. Understanding human thinking is essential for the design and improvement of advanced technologies and built infrastructure. For example, through its Science of Learning and Augmented Intelligence program, BCS research explores how collaborative activities among humans and emerging technologies, especially artificial intelligence, can enhance human cognition and productivity.

BCS also manages infrastructure-related activities in Human Networks and Data Science, which seek to advance relevant analytical techniques and develop user-friendly, large-scale, next-generation data resources to improve quality of life for all Americans. These activities are complemented by active involvement in funding competitions and development of partnerships that support collaborative and cross-disciplinary projects that increase understanding of the human brain, mind, and behavior.

In general, about 83 percent of the BCS portfolio is available to support new research grants. The remaining 17 percent supports research grants made in prior years and the research infrastructure needed by this community.

**DIVISION OF SOCIAL AND ECONOMIC SCIENCES (SES)**

**\$114,560,000**  
**+\$11,650,000 / 11.3%**

**SES Funding**  
(Dollars in Millions)

	FY 2021 Actual	FY 2022 (TBD)	FY 2023 Request	Change over	
				FY 2021 Actual Amount	FY 2021 Actual Percent
<b>Total</b>	<b>\$102.91</b>	<b>-</b>	<b>\$114.56</b>	<b>\$11.65</b>	<b>11.3%</b>
<b>Research</b>	<b>86.87</b>	<b>-</b>	<b>108.57</b>	<b>21.70</b>	<b>25.0%</b>
CAREER	4.44	-	5.00	0.56	12.6%
<b>Education</b>	<b>0.21</b>	<b>-</b>	<b>0.50</b>	<b>0.29</b>	<b>138.1%</b>
<b>Infrastructure</b>	<b>15.83</b>	<b>-</b>	<b>5.49</b>	<b>-10.34</b>	<b>-65.3%</b>
NNCI	0.40	-	0.40	-	-
Research Resources	15.43	-	5.09	-10.34	-67.0%

**About SES**

SES is concerned with the growth and flourishing of our Nation through the provision of goods, services, opportunities, and wellbeing. The Division therefore supports research on how people live, work, and prosper together in productive businesses and other organizations. Priority topics include: management tools, risk assessment, and strategic planning; workforce measurement, training, and development; fundamental questions about markets, competition, and the economy; social trends, attitudes, and demographics; security and preparedness; accountable institutions and behaviors; the science of and the legal and regulatory aspects of innovation, technology, and science; the safety and trustworthiness of new technologies; as well as the statistics, modeling, and other methodologies that enable such vital research. These techniques are used to study the scientific enterprise itself with the goal of enhancing the rate, value, and communication of basic discoveries. This work thus helps grow the economy, secure the homeland, improve the health and safety of American families, and increase the competitiveness of America’s farms, offices, and factories.

SES supports widely used data infrastructure such as the Panel Study of Income Dynamics, the American National Election Studies, and the General Social Survey. These surveys are national resources for research and teaching and have become models for data collections in other fields. The division also supports innovations in data and methodological infrastructure that advances survey science and technology, such as data collection via different platforms and statistical methods that allow adequate sampling of underrepresented groups.

SES is actively involved in partnerships to increase the value to the public of NSF- and SBE-funded research. One recent major collaboration is The Societal Experts Action Network (SEAN), which consists of experts available via the National Academies of Sciences, Engineering, and Medicine to develop evidence-based recommendations, based on evidence from the SBE sciences, to support local, state, and national responses to urgent policy matters and questions.

In general, about 83 percent of the SES portfolio is available to support new research grants. The remaining 17 percent supports research grants made in prior years and the research infrastructure needed by this community.

**NATIONAL CENTER FOR SCIENCE AND ENGINEERING  
STATISTICS (NCSES)**

**\$74,890,000  
+\$19,430,000 / 35.0%**

**NCSES Funding**  
(Dollars in Millions)

	FY 2021 Actual	FY 2022 (TBD)	FY 2023 Request	Change over	
				FY 2021 Actual Amount	Actual Percent
<b>Total</b>	<b>\$55.46</b>	<b>-</b>	<b>\$74.89</b>	<b>\$19.43</b>	<b>35.0%</b>
<b>Research</b>	<b>0.93</b>	<b>-</b>	<b>-</b>	<b>-0.93</b>	<b>-100.0%</b>
<b>Infrastructure</b>	<b>54.53</b>	<b>-</b>	<b>74.89</b>	<b>20.36</b>	<b>37.3%</b>

**About NCSES**

NCSES is one of the federal government’s 13 principal statistical agencies with a mission to provide information regarding the S&E enterprise in a global context. NCSES provides policymakers, researchers, and the public high-quality data and analysis on R&D, innovation, the education of scientists and engineers, and the S&E workforce. NCSES also supports research; the education and training of researchers; statistical methodology and data quality improvement efforts; and information compilation and dissemination to meet the statistical and analytical needs of a diverse user community.

NCSES was originally created within NSF as the Division of Science Resources Statistics. In 2010, the agency’s mandate was expanded, and it was renamed as NCSES by Section 505 of the America COMPETES Reauthorization Act of 2010 (P.L. 111-358). The Act mandates that NCSES collect data on R&D trends, the science and engineering workforce, U.S. competitiveness, and the condition and progress of the Nation’s STEM education. This includes the preparation of two congressionally mandated biennial reports—*Science and Engineering Indicators (SEI)*; and *Women, Minorities, and Persons with Disabilities in Science and Engineering (WMPD)*. WMPD is a unique source of data and analysis on participation across the science and engineering enterprise. Additionally, the Evidence Act assigned expanded responsibilities to NCSES and other Federal statistical agencies to advance evidence building,

The FY 2023 Request supports NCSES leadership of government-wide evidence building activities and initiatives required of the federal statistical agencies under the Evidence Act. These include standing up the first-ever standard application process for applying to access restricted-use data from statistical agencies and units, as well informing the proposed National Secure Data Service through America’s DataHub. The request also supports NCSES’s core data collection and analytic activities, including nationally representative surveys of U.S. investment in R&D, innovation, the education of scientists and engineers, and the science and engineering workforce, and preparation of the aforementioned *SEI and WMPD* reports. In FY 2023, NCSES will expand and continue initiatives related to:

- Leading development of the Standard Application Process (SAP)—The SAP is simplifying and easing the process of evidence building by allowing users to securely apply for access to the restricted data they need from statistical agencies in one place.
- Expanding America’s DataHub—The DataHub is an NCSES-led collaboration of industry, academia,



non-profits, and government that is expanding the government's capacity for innovation, and which will help to inform the development of a National Secure Data Service.

- Improving the data and informational infrastructure around understanding racial equity and participation by reimagining the WMPD report and supporting efforts to gather data necessary to inform government-wide equity efforts.
- Enhancing the experience of users of NCSES data and information through a robust data, IT, and dissemination infrastructure.
- Furthering the Nation's understanding of the impact of R&D funding on the U.S. and global scientific enterprises.
- Improving the government's classification and measurement of the cybersecurity workforce.
- Informing U.S. policy on the foreign-trained S&E workforce by filling important gaps in knowledge of foreign-born and foreign-degreed scientists and engineers.
- Studying the Skilled Technical Workforce (STW)—with emphasis on the STW's current and potential future relevance to economic recovery and emerging industries such as, but not limited to AI, the bioeconomy, and future manufacturing.
- Using of administrative and organic data to inform efforts to increase government effectiveness and efficiency through increased data integration.
- Furthering the understanding and application of statistical methodologies and experimental survey data collections through funded research.
- Modernizing systems and data tools to ease data access.

A corresponding increase of six FTE and related funding, associated with the SAP and NSDS, is included for FY 2023 in this request. Additional details regarding this staffing increase, can be found in the Personnel, Compensation, and Benefits section of Organizational Excellence chapter.

**SBE OFFICE OF MULTIDISCIPLINARY ACTIVITIES (SMA)**

**\$27,620,000**  
**+\$3,300,000 / 13.6%**

**SMA Funding**  
(Dollars in Millions)

	FY 2021 Actual	FY 2022 (TBD)	FY 2023 Request	Change over	
				FY 2021 Actual Amount	Actual Percent
<b>Total</b>	<b>\$24.32</b>	<b>-</b>	<b>\$27.62</b>	<b>\$3.30</b>	<b>13.6%</b>
<b>Research</b>	<b>13.18</b>	<b>-</b>	<b>15.56</b>	<b>2.38</b>	<b>18.1%</b>
CAREER	1.52	-	-	-1.52	-100.0%
Centers Funding (total)	0.77	-	0.77	-	-
Artificial Intelligence Research Institutes	0.77	-	0.77	-	-
<b>Education</b>	<b>10.94</b>	<b>-</b>	<b>12.06</b>	<b>1.12</b>	<b>10.2%</b>
<b>Infrastructure</b>	<b>0.20</b>	<b>-</b>	<b>-</b>	<b>-0.20</b>	<b>-100.0%</b>
Research Resources	0.20	-	-	-0.20	-100.0%

**About SMA**

SMA provides a focal point for the wide range of activities that cut across SBE and NSF disciplinary boundaries. SMA supports efforts and activities that seek to improve the scale and effectiveness of the scientific workforce. It supports REU Sites, the Ethical and Responsible Research (ER2) program, and the SPRF program. In FY 2023, SMA will play a major role in several crosscutting NSF investments as well as interdisciplinary research and training, via activities such as the SPRF-Fundamental Research and BP tracks. As the lead directorate for managing the ER2 program, with support from other NSF directorates, SBE coordinates the Online Ethics Center for Engineering and Science award. While all SBE divisions pursue interdisciplinary work, SMA assists with seeding multidisciplinary activities for the future, such as leveraged and targeted co-funding directed towards national, NSF, and directorate priorities.

In general, about 40 percent of the SMA portfolio is available to support new research grants. The remaining 60 percent supports research grants made in prior years.