DIRECTORATE FOR SOCIAL, BEHAVIORAL AND ECONOMIC SCIENCES (SBE)

$291,460,000
+$19,260,000 / 7.1%

SBE Funding
(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate	
				Amount	Percent
Social and Economic Sciences (SES)	$95.87	$97.72	$105.13	$7.41	7.6%
Behavioral and Cognitive Sciences (BCS)	93.10	94.47	101.79	7.32	7.7%
National Center for Science and Engineering Statistics (NCSES)	39.73	50.76	54.31	3.55	7.0%
SBE Office of Multidisciplinary Activities (SMA)	28.14	29.25	30.23	0.98	3.4%
Total, SBE	**$256.84**	**$272.20**	**$291.46**	**$19.26**	**7.1%**

Totals may not add due to rounding.

About SBE

SBE's mission is to promote the understanding of people and their lives by supporting research that reveals basic facets of human behavior; to encourage research that addresses important societal questions and problems; to work with other scientific disciplines ensuring that basic research and solutions to problems build upon the best multidisciplinary science; and to provide mission-critical statistical information about science and engineering (S&E) in the U.S. and the world through the National Center for Science and Engineering Statistics (NCSES). SBE supports long-term research across a diverse range of sciences that includes anthropology, archaeology, economics, geography, linguistics, neuroscience, political science, psychology, sociology, and statistics. SBE combines these sciences in interdisciplinary activities linking these fields to each other and to other science and engineering fields. SBE is a significant partner in cross-directorate programs that connect the social and behavioral sciences to priority investments across the agency.

SBE's FY 2016 Request is informed by three key priorities: (1) enhancing research investments that advance fundamental knowledge in the social, behavioral, and economic sciences broadly; (2) sustaining the directorate's ongoing strategic transformation through support for interdisciplinary research and training; and (3) participating in cross-directorate and NSF-wide priority activities in which a comprehensive understanding of human behavior – at the individual, group, and/or organizational level, across different scales of space and time – is central. In addition, SBE is home to NCSES, the Nation's leading provider of statistical data on the S&E enterprise. NCSES collects and analyzes data on research and development, the S&E workforce, the condition and progress of Science, Technology, Engineering, and Mathematics (STEM) education, and U.S. competitiveness in science, engineering, technology, and research and development.

SBE's budget plan for FY 2016 includes terminations in several investments and subsequent redeployment of the recovered resources to other cross-directorate and NSF-wide priority activities. The graduation of the final cohort of Science of Learning Centers (SLCs) after ten years of support frees up resources that will be invested in a number of other initiatives in FY 2016. These include the Science of Learning program, initiated in FY 2015, and Understanding the Brain (UtB), which includes cognitive science, neuroscience, and the BRAIN Initiative. In FY 2016, SBE will terminate its investment in Science, Engineering, and Education for Sustainability (SEES) as that program continues to ramp down.

This will allow SBE to make an initial investment in the new NSF-wide Innovation at the Nexus of Food, Energy, and Water Systems (INFEWS) portfolio. SBE will continue to invest in the Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP) program, which focuses on the key social and behavioral research questions that are relevant for understanding risk and resilience of both designed and natural systems and of individuals interacting within and affected by these systems. Finally, SBE will invest in the NSF-wide effort to increase participation of underrepresented groups in STEM fields, the Inclusion across the Nation of Communities of Learners that have been Underrepresented for Diversity in Engineering and Science (NSF INCLUDES) program.

SBE's FY 2016 Request includes increased investment to support new projects in NCSES. The increased investment will be used to support (1) development of enhanced data access tools, techniques, and visualizations; (2) new data collection techniques building on administrative data and other "big data" sources; and (3) questionnaire redesign and survey improvements supporting current research and policy community needs, such as improved data on pathways for scientists and engineers and measures of innovation.

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

SBE Subactivity Funding
(Dollars in Millions)
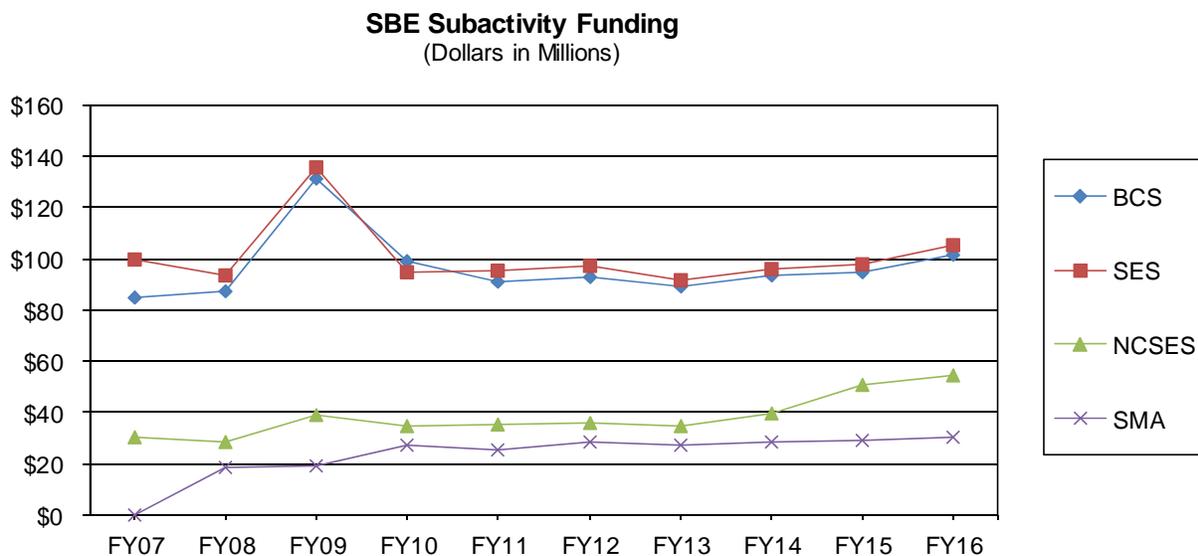
FY 2009 funding reflects both the FY 2009 omnibus appropriation and funding provided through the American Recovery and Reinvestment Act of 2009 (P.L. 111-5).

FY 2016 Summary by Division

- SES's FY 2016 Request reflects its strong contribution to the unifying themes in the FY 2016 NSF Budget Request. This includes an initial investment in two new activities: the NSF-wide INFEWS program and the emerging Urban Science activity. SES will also: increase investments in Cyberinfrastructure Framework for 21st Century Science, Engineering, and Education (CIF21) to address critically important issues related to reproducibility, data access, and privacy; increase support for CRISP as part of the Risk and Resilience investment; and sustain investment in Secure and Trustworthy Cyberspace (SaTC) through the Cyber Economic Incentives theme within Control,

Networks, & Computational Intelligence (CNCI). SES will continue efforts to build the scientific foundation and research evidence base needed for future programmatic efforts in broadening the participation of women, underrepresented minorities, and people with disabilities in S&E (via SBE's Science of Broadening Participation (SBP) and investment in the new NSF INCLUDES program). SES will maintain its commitment to existing programs and continue support for surveys that provide unique insights into U.S. social, economic, and political life while providing funding for new research that has the potential to transform the social and economic sciences and contribute to effective policy development.   SES will increase funding for the Faculty Early Career Development program (CAREER).   To enhance interdisciplinary research and training, SES will participate in the Interdisciplinary Behavioral and Social Science Research (IBSS) program.   SES will maintain investment in the National Nanotechnology Coordinated Infrastructure (NNCI), the successor to the National Nanotechnology Infrastructure Network (NNIN).

- In FY 2016, BCS will be a major partner in two new interdisciplinary activities: the NSF-wide INFEWS emphasis and the emerging multi-directorate Urban Science activity. BCS will invest in CRISP as part of the Risk and Resilience portfolio. BCS will increase investments in Understanding the Brain, CIF21, and CAREER, and will continue its investment in the Science of Learning. BCS will expand support for behavioral, cognitive, anthropological, and geographic research that informs understanding of critical issues facing the Nation, such as terrorism, pandemics, sustainability, and forensic science. In its ongoing programs, BCS will operate in an interdisciplinary context, providing support for research on the complex ways people think, adapt, and interact with social, natural, and built environments. BCS support for CNCI will enable research about cognitive and behavioral aspects of threats to cybersecurity. BCS will continue efforts to broaden the participation of women, underrepresented minorities, and people with disabilities in science and engineering via SBE's Science of Broadening Participation (SBP) and investment in the new NSF-wide NSF INCLUDES program. BCS will continue to participate in the IBSS program to enhance interdisciplinary research and training. BCS will continue to fund basic research that advances understanding of cognition and behavior through various research mechanisms.

- For FY 2016, NCSES will maintain its core programmatic data collection and publication activities. NCSES will initiate new projects that support (1) development of enhanced data access tools, techniques, and visualizations including a new interface to the Scientists and Engineers Statistical Data System (SESTAT) and WebCASPAR, a database that provides easy access to a large body of statistical data resources for S&E at U.S. academic institutions; (2) new data collection techniques building on administrative data and other "big data" sources and expanding standardized tagging efforts; and (3) questionnaire redesign and survey improvements to support improved data on measures of innovation and educational and career pathways for scientists and engineers. Additionally, NCSES will continue to pursue significant and strategic targeted improvements, which began in FY 2015, in its statistical and analytic programs.   NCSES will continue to develop and test new measures from the Survey of Doctorate Recipients (SDR) that address data gaps related to understanding the relationship between federal support for graduate education and student outcomes, such as employment. NCSES will continue work to close a growing gap in its national estimates for research and development by fielding a survey of nonprofit organizations. NCSES will expand the scope of administrative records sources that could potentially augment its existing surveys and will implement a pilot project establishing collaboration among several federal agencies to assess the feasibility of using agencies' administrative records to measure research and development (R&D) activity, with a longer-term goal towards developing a common repository for government-wide R&D information.   Responding to recommendations in the Committee on National Statistics report, *Capturing Change in Science, Technology and Innovation,*[1] NCSES will develop and test potential

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[1] www.nap.edu/catalog/18606/capturing-change-in-science-technology-and-innovation-improving-indicators-to

indicators of innovation. To better answer questions about new or emerging science and technology (S&T) topics and provide a flexible format for testing new questions for the Center's surveys, NCSES will design and test the capacity to collect small, quick turnaround survey data. Throughout, NCSES will work to improve international comparability, particularly on the S&E workforce.

- SMA provides a focal point for programmatic activities that cut across NSF and SBE boundaries. In addition, SMA assists with seeding interdisciplinary activities for the future. In FY 2016, SMA will increase investment in the Science of Learning, building on the momentum generated by the Science of Learning Centers that will have graduated and the Science of Learning Collaborative Networks initiated in FY 2015. SMA will increase investment in Understanding the Brain and CIF21. SMA will continue to play an important role in the expansion of interdisciplinary training and broadening participation as part of SBE 2020, with continued support and management of the SBE Postdoctoral Research Fellowships (SPRF) program. Support for enhancing the research experience for students will continue via sustained investments in the Research Experiences for Undergraduates (REU) Sites and Supplements programs. SMA will continue support of interdisciplinary activities associated with the Science of Science and Innovation Policy program (SciSIP), as well as efforts to make NSF-funded research available to the public through the Public Access Initiative. SMA will participate in NSF Innovation Corps (I-Corps™), Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE), and SaTC (through the Cyber Economic Incentives theme within CNCI, a multi-agency priority).

SBE Major Investments
(Dollars in Millions)

Area of Investment	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate	
				Amount	Percent
CAREER	$7.89	$7.84	$8.34	$0.50	6.4%
CIF21	6.00	6.00	7.26	1.26	21.0%
I-Corps™	0.35	0.50	0.50	-	-
NSF INCLUDES	-	-	0.50	0.50	N/A
INFEWS	-	-	5.00	5.00	N/A
INSPIRE	0.02	1.00	1.00	-	-
NRT[1]	3.38	2.52	3.12	0.60	23.8%
Public Access Initiative	1.45	1.75	1.75	-	-
Risk and Resilience	-	2.00	8.50	6.50	325.0%
Science of Learning	-	5.00	7.00	2.00	40.0%
SciSIP	10.56	11.05	11.05	-	-
SEES	3.01	3.50	-	-3.50	-100.0%
SaTC	4.20	4.00	4.00	-	-
Understanding the Brain	20.56	22.00	25.00	3.00	13.6%
Urban Science	-	-	2.00	2.00	N/A

Major investments may have funding overlap and thus should not be summed.

[1] Outyear commitments for Integrative Graduate Education and Research Traineeship (IGERT) are included in the NRT line and are $3.38 million in FY 2014, $420,000 in FY 2015, and $2.62 million in FY 2016.

- CAREER: SBE supports CAREER (+$500,000 to a total of $8.34 million) with awards to young investigators in social and behavioral sciences who exemplify the role of teacher-scholar through the integration of education and research.

- CIF21: Funds (+$1.26 million, to a total of $7.26 million) will continue to support development of

user-friendly, large-scale, next-generation data resources and relevant analytical techniques to advance fundamental SBE research through increased investment in the Resource Implementations for Data Intensive Research in the Social, Behavioral, and Economic Sciences (RIDIR) program. SBE will enhance its investments in Data Science Pilots, in collaboration with the Division of Advanced Cyberinfrastructure (ACI) within the Directorate for Computer and Information Sciences and Engineering (CISE), to address critically important issues related to reproducibility and data access.

- I-Corps™: SBE will maintain its investment of $500,000 in continuing support of a multiyear effort to strengthen collaboration between SBE scientists in academia and the technological, entrepreneurial, and business communities and practitioners.

- NSF INCLUDES: SBE will make an initial investment of $500,000 in a new NSF-wide effort to increase participation of underrepresented groups in STEM fields, beginning with the NSF INCLUDES program.

- INFEWS: SBE will make an initial investment of $5.0 million in this NSF-wide initiative to enhance capacity to explore the interactions among food, energy, and water systems.

- INSPIRE: SBE will maintain its investment of $1.0 million in INSPIRE.

- NSF Research Traineeship (NRT): In FY 2016, SBE will decrease participation (-$1.60 million, to a total of $500,000) in the NSF-wide NRT program, which is the successor to the Integrative Education and Research Traineeship (IGERT) program.

- Public Access Initiative: Continued investment of $1.75 million will further NSF's efforts, which began in FY 2013, to make the results of the NSF-funded research available to the public. This initiative aligns with OSTP policy memorandum, "Increasing Public Access to the Results of Federally Funded Scientific Research."

- Risk and Resilience: SBE will increase investment (+$6.50 million to a total of $8.50 million) in CRISP to focus on the key social and behavioral research questions that are relevant for interdisciplinary perspectives on risk and resilience of social, designed, and natural systems.

- Science of Learning: SBE will increase investment (+$2.0 million to a total of $7.0 million) in the Science of Learning, building on the momentum generated by the Science of Learning Centers (SLCs) that will have graduated and the Science of Learning Collaborative Networks initiated in FY 2015. Funding from the sunsetted SLC program (-$5.38 million total) will be redeployed to support this increased investment in the Science of Learning and to increase support for Understanding the Brain.

- Science of Science and Innovation Policy (SciSIP): SciSIP funding is held constant with the FY 2015 Estimate at $11.05 million. SciSIP will continue to support research and data collections related to innovation and R&D spending.

- SEES: In FY 2016, SBE will terminate (-$3.50 million) its investment in Science, Engineering, and Education for Sustainability (SEES) as that program ramps down.

- SaTC: SBE will sustain investment ($4.0 million) in Secure and Trustworthy Cyberspace (SaTC) through the Cyber Economic Incentives theme within CNCI.

- Understanding the Brain: SBE's investments in cognitive science/neuroscience and the BRAIN Initiative will increase (+$3.0 million, to a total of $25.0 million), in support of Administration and Congressional priorities, enhancing efforts to gain an integrative and comprehensive understanding of the brain and its function in context and in action. SBE will enhance support of research in cognitive science at the interface of computational and engineering science and education research.

- Urban Science: SBE will make an initial investment of $2.0 million in the Urban Science program. In partnership with CISE and the Directorate for Engineering (ENG), SBE will support research that addresses organizational, social, psychological, political, geographic, and economic issues associated with rapidly developing and evolving smart city ecosystems.

SBE Funding for Centers Programs and Facilities

SBE Funding for Centers Programs
(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate Amount	Change Over FY 2015 Estimate Percent
Total, Centers Programs	**$15.07**	**$5.98**	**$0.60**	**-$5.38**	**-90.0%**
Nanoscale Science & Engineering Centers (BCS, SES)	1.17	0.60	0.60	-	-
Science of Learning Centers (BCS, SMA)	13.90	5.38	-	-5.38	-100.0%

Totals may not add due to rounding.

For detailed information on individual centers, please see the NSF-Wide Investments chapter.
- The Science of Learning Centers (SLC) program funding terminates (-$5.38 million) as the six existing centers will have reached the conclusion of their ten-year funding cycle by the end of FY 2015.

SBE Funding for Facilities
(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate Amount	Change Over FY 2015 Estimate Percent
Total, Facilities	**-**	**$0.40**	**$0.40**	**-**	**-**
National Nanotechnology Coordinated Infrastructure (NNCI)	-	0.40	0.40	-	-
National Nanotechnology Infrastructure Network (NNIN)	0.40	-	-		

Totals may not add due to rounding.

For detailed information on individual facilities, please see the Facilities chapter.

Summary and Funding Profile

SBE supports investments in core research and education as well as research infrastructure. In FY 2016, the number of research grant proposals is anticipated to increase by about 100 and SBE expects to award

approximately 650 research grants. The average annualized award size is estimated to increase slightly over the FY 2015 Estimate and duration will be held constant.

In FY 2016, funding for centers accounts for about 0.20 percent of SBE's Request. Center funding decreases $5.38 million from the FY 2015 Estimate, and only includes support for the Nanoscale Science and Engineering Centers. FY 2016 funding for facilities accounts for less than one percent of SBE's Request, equal to FY 2015, and only includes support for the National Nanotechnology Coordinated Infrastructure.

SBE Funding Profile

	FY 2014 Actual Estimate	FY 2015 Estimate	FY 2016 Estimate
Statistics for Competitive Awards:			
Number of Proposals	4,507	4,800	5,000
Number of New Awards	995	1,120	1,140
Funding Rate	22%	23%	23%
Statistics for Research Grants:			
Number of Research Grant Proposals	3,203	3,300	3,400
Number of Research Grants	618	630	650
Funding Rate	19%	19%	19%
Median Annualized Award Size	$108,903	$109,000	$109,000
Average Annualized Award Size	$133,578	$144,900	$145,500
Average Award Duration, in years	2.6	2.6	2.6

Program Monitoring and Evaluation

Workshops and Reports:
- As the Science of Learning Centers graduate from NSF support, SBE, CISE, ENG, and the Directorate for Education and Human Resources (EHR) are launching the next phase of NSF investments in the Science of Learning in FY 2015 with the issuance of a new solicitation for proposals to create new collaborative networks of investigators to conduct exploratory, basic and/or translational research in the Science of Learning. This solicitation was informed by reports from the SBE Advisory Committee (AC) Subcommittee on the Future of the Science of Learning, several workshops held in 2012-2013, and the *International Convention on Science of Learning,*[2] which addressed how Science of Learning research can facilitate human learning, and inform educational practice and policy (co-organized by NSF, the Organization for Economic Cooperation and Development (OECD) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO), in collaboration with the East China Normal University, Shanghai Normal University and the University of Hong Kong; March 2014). A February 2015 workshop, *Science of Learning: Integration and Synthesis,* will inform future Science of Learning activities and contribute to the program's overarching goal of creating, on a national scale, an integrated Science of Learning community.

- During FY 2015, SES plans examine the future trajectories for the three major ongoing social science surveys SES supports − the American National Election Studies (ANES), General Social Survey (GSS), and Panel Study of Income Dynamics (PSID). The 2014 report from the SBE AC

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[2] http://sol.edu.hku.hk/international-convention-science-learning/

Subcommittee on Advancing SBE Survey Research will be supplemented by additional assessment to inform SES decisions about the support of social science surveys in FY 2016 and beyond.

- The SBE AC Subcommittee on Replicability in Science organized a workshop, *Robust Research in the Social, Behavioral, and Economic Sciences*, in February 2014 that brought together researchers, journal editors, science administrators, institutional administrators, and funding agency staff to discuss the challenge and make recommendations to address the issue of scientific replicability. The panels addressed the scope and magnitude of the problem; recommendations for scientific practice; education and training; editorial/journal policies and procedures; institutional policies and procedures; and funding agency opportunities and policies. The Subcommittee presented its draft report at the SBE AC meeting in October 2014. The report is currently under revision with release planned for spring of 2015, after which SBE will consider its recommendations and plan future activities.

- BCS and the Division of Physics within the Directorate for Mathematical and Physical Sciences (MPS) sponsored a workshop, *Quantitative Theories of Learning, Memory and Prediction,*[3] in May 2014. This workshop brought together experts in theoretical physics, computational modeling, data acquisition, and cognitive neuroscience to discuss and identify the next frontiers in theoretical models of higher order cognitive processes. The results of this workshop will inform the division's investments in Understanding the Brain.

- In December 2014, NCSES convened a panel of statisticians with expertise in survey sampling methods to review proposed plans and to determine the best strategy to expand the sample of the Survey of Doctorate Recipients (SDR). The input from the panel will be used to determine the best strategy to meet NCSES's near and longer-term objectives for the survey.

- In June of 2014, a Human Resources Expert Panel meeting was conducted to help NCSES's Human Resources Statistics Program assess two strategies for improving occupational history data that support a growing demand for research examining job mobility, occupational change, and career pathways of the S&E workforce. Panel results will help shape the Scientists and Engineers Statistical Data System, a unique source of information on the education and employment of the college-educated U.S. science and engineering workforce that are collected through two longitudinal biennial surveys – the National Survey of College Graduates and the Survey of Doctorate Recipients.

- In February of 2014, the National Academies Committee on National Statistics (CNSTAT) convened a first meeting of the project's appointed expert steering committee to consider the conceptual and design issues for a new NCSES survey of R&D performed and funded by U.S. nonprofit organizations and plan for a larger workshop on the topic in late 2014. This effort follows a recommendation received in a 2013 CNSTAT report. The findings and recommendations of this steering committee meeting served as key inputs for planning a June 30 – July 1, 2014 CNSTAT workshop, *Measuring Research and Development Expenditures in the U.S. Nonprofit Sector: Conceptual and Design Issues.*[4] The recommendations from these workshops are being used to help NCSES draft a pilot survey for nonprofit organizations, expected to be tested in early FY 2016.

- NCSES hosted an expert panel in September of 2014 to continue to assist the Research and Development Statistics Program (RDS) with the planning and design of the new survey of R&D within nonprofit organizations. The panel included those who direct or lead nonprofit organizations or their research operations, have expertise in survey methodology, or have expertise in nonprofit tax

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[3] http://physicsoflivingsystems.org/workshops/learningmemoryprediction/
[4] http://sites.nationalacademies.org/DBASSE/CNSTAT/CurrentProjects/DBASSE_087257

data. The panelists' views and recommendations are being used to help NCSES draft the pilot survey, expected to be tested in late 2015.

- In December of 2014, NCSES convened an expert panel to identify and consider new avenues for refining, expanding, and reshaping the national innovation data NCSES presently collects. As part of the NCSES mission, NCSES is developing a series of projects regarding the measurement of innovation in the national economy. NCSES currently collects data on the incidences of innovation through the annual Business R&D and Innovation Survey and plans to include questions on this topic in the forthcoming Microbusiness Innovation Science and Technology survey.

Committees of Visitors (COV):
- In late FY 2015, a Committee of Visitors (COV) will review the SBE Office of Multidisciplinary Activities. The COV report and the division's response will be presented to the SBE AC in the spring of 2016.

- The SES COV convened June 3-5, 2013. The COV's report and the division's response to it was reviewed and approved by the SBE Advisory Committee in spring 2014. The next SES COV will convene in FY 2017.

- BCS will convene a COV in late FY 2015/early FY 2016 to review and evaluate its core programs and cross-directorate activities. The COV report and the division's response will be presented to the SBE AC in the spring of 2016.

The Performance chapter provides details regarding the periodic reviews of programs and portfolios of programs by external Committees of Visitors and directorate Advisory Committees. Please see this chapter for additional information.

Number of People Involved in SBE Activities

	FY 2014 Actual Estimate	FY 2015 Estimate	FY 2016 Estimate
Senior Researchers	1,878	2,000	2,200
Other Professionals	490	500	500
Postdoctorates	276	300	300
Graduate Students	1,857	2,000	2,000
Undergraduate Students	784	900	1,000
Total Number of People	**5,285**	**5,700**	**6,000**

DIVISION OF SOCIAL AND ECONOMIC SCIENCES (SES) $105,130,000
                                                        +$7,410,000 / 7.6%

SES Funding

(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate	
				Amount	Percent
Total, SES	**$95.87**	**$97.72**	**$105.13**	**$7.41**	**7.6%**
Research	**83.83**	**87.80**	**94.76**	**6.96**	**7.9%**
CAREER	2.64	4.20	4.45	0.25	6.0%
Centers Funding (total)	0.99	0.42	0.42	-	-
Nanoscale Science & Engineering Centers	0.99	0.42	0.42	-	-
Education	**3.17**	**2.52**	**2.97**	**0.45**	**17.9%**
Infrastructure	**8.86**	**7.40**	**7.40**	**-**	**-**
National Nanotechnology Coordinated Infrastructure (NNCI)	-	0.40	0.40	-	-
National Nanotechnology Infrastructure Network (NNIN)	0.40	-	-	-	N/A
Research Resources	8.46	7.00	7.00	-	-

Totals may not add due to rounding.

SES supports research and related activities, conducted within the U.S. and globally, that improve understanding of economic, political, and social institutions and how individuals and organizations behave within them. SES funds activities investigating risk assessment and decision-making by individuals and groups; the nature and development of science and technology and their impact on society; methods and statistics applicable across the social, economic, and behavioral sciences; scholarly career development; and broadening participation in the social, behavioral, and economic sciences. Discipline-based programs include sociology, economics, and political science, while interdisciplinary programs support fields such as decision-making and risk management; law and social sciences; methods, measurement, and statistics; science of organizations; and science, technology, and society. In many of its programs, SES is the major, if not only, source of federal funding for fundamental research, making important investments in the data resources and methodological advances that produce transformative research.

In general, 71 percent of the total SES portfolio is available for new research grants and 29 percent is available for continuing grants.

FY 2016 Summary

All funding decreases/increases represent change over the FY 2015 Estimate.

<u>**Research**</u>

Overall, support for SES disciplinary and interdisciplinary research increases (+$6.96 million, to a total of $94.76 million).

- SES will increase support for Risk and Resilience through CRISP, which focuses on the key social and behavioral research questions that are relevant for interdisciplinary perspectives on risk and resilience of social, designed, and natural systems. SES support for this activity is increased by $3.25 million, to a total of $5.25 million.
- CAREER funding in FY 2016 increases by $250,000, to a total of $4.45 million. This investment is consistent with SES's emphasis on supporting early career researchers.

- CIF21 support increases by $730,000, to a total of $4.23 million, to support development of user-friendly, large-scale, next- generation data resources and relevant analytical techniques to advance fundamental SBE research through increased investment in the RIDIR program. SES will enhance its investments in Data Science Pilots, in collaboration with the Division of Advanced Cyberinfrastructure (ACI), within the Directorate for Computer and Information Sciences and Engineering (CISE), to address critically important issues related to reproducibility and data access.
- Support for SEES ends (-$2.0 million) as this program sunsets as planned.
- Support for interdisciplinary research, training, and integration opportunities through SBE 2020 (via SBE's IBSS program) is decreased by $750,000, to a total of $6.35 million.
- Continued support of $2.0 million for SaTC is provided through support for the Cyber Economic Incentives and other themes within CNCI.
- Funding for SES's Science of Broadening Participation (SBP) investment is maintained at the level of $750,000. This investment supports efforts to build the scientific foundation and research evidence base needed for future broadening participation efforts. Investing in research that informs the science of broadening participation spans education and the SBE sciences, and engages all of NSF.
- SES will make an initial investment of $2.50 million in INFEWS. This investment will enhance capacity to explore the interactions among water, food, and energy systems.
- SES will make an initial investment of $250,000 in the new NSF-wide effort to increase participation of underrepresented groups in STEM fields, beginning with the NSF INCLUDES activity.
- Funding for the Nanoscale Science and Engineering Centers (NSEC) will continue at $420,000.
- SES will make an initial investment of $1.0 million in the Urban Science activity. In partnership with ENG and CISE, and in cooperation with BCS, SES will support research that addresses organizational, social, psychological, political, and economic issues associated with rapidly developing and evolving smart city ecosystems.
- A general increase to core program investments of $4.24 million will result from a reinvestment of funds from concluded programs.

Education
- Support for the ADVANCE program is maintained at $600,000, and REU supplements ($500,000) remain constant with the FY 2015 Estimate level.
- In an effort to establish a better balance between the responsibilities and demands of work lives and family lives for social and behavioral scientists, SES will maintain its investment of $20,000 to support the Career-Life Balance (CLB) initiative.
- NRT and IGERT: SES FY 2016 funding for IGERT ($1.56 million total) supports continuing grant increments. In FY 2014, IGERT evolved into a new program, NRT, which encourages the development of bold, new, potentially transformative, and scalable models for STEM graduate training that ensure that graduate students develop the skills, knowledge, and competencies needed to pursue a range of careers within and outside academia. SES will invest $40,000 (a decrease of $64,000 from the FY 2015 Estimate) in NRT.

Infrastructure
- SES will invest $400,000 in NNCI, the successor to NNIN.
- SES research resources activities are funded at the FY 2015 Estimate, for a total of $7.0 million. Funding supports multi-million dollar survey awards such as the American National Election Studies (ANES), the Panel Study of Income Dynamics (PSID), and the General Social Survey (GSS). These surveys are national resources for research, teaching, and decision-making and have become models for similar undertakings in other fields. $2.0 million of the research resources funding supports SES' CIF21 investment inclusive of support for the RIDIR solicitation, which seeks to develop user-friendly, large-scale, next- generation data resources and relevant analytical techniques to advance fundamental SBE research.

DIVISION OF BEHAVIORAL AND COGNITIVE SCIENCES (BCS)

$101,790,000
+$7,320,000 / 7.7%

BCS Funding

(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate	
				Amount	Percent
Total, BCS	**$93.10**	**$94.47**	**$101.79**	**$7.32**	**7.7%**
Research	**89.15**	**91.34**	**98.01**	**6.67**	**7.3%**
CAREER	5.22	3.64	3.89	0.25	6.9%
Centers Funding (total)	4.84	1.81	0.18	-1.63	-90.1%
Science of Learning Centers	4.66	1.63	-	-1.63	-100.0%
Nanoscale Science & Engineering Centers	0.18	0.18	0.18	-	-
Education	**2.64**	**1.99**	**2.64**	**0.65**	**32.7%**
Infrastructure	**1.31**	**1.14**	**1.14**	**-**	**-**
Research Resources	1.31	1.14	1.14	-	-

Totals may not add due to rounding.

BCS supports research and related activities that advance fundamental understanding in the behavioral, cognitive, anthropological, and geographic sciences. Strong core programs are complemented by active involvement in competitions that support collaborative and cross-disciplinary projects. The division seeks to advance scientific knowledge and methods focusing on human cognition and behavior, including perception, thought processes, language, learning, and social behavior across neural, individual, family, and group levels. BCS supports activities focusing on human variation at the scales of society, culture, and biology, and how these variations and related patterns develop and change across time and space. The division aims to increase basic understanding of geographic distributions and relationships as well as the capabilities to explore them, with an emphasis on interactions among human and natural systems on the Earth's surface. BCS research is helping to prepare for and mitigate the effects of natural and human-initiated disasters, predict and address how people respond to stressors, improve methods for effective learning, enhance the quality of social interaction, and respond to issues such as globalization, terrorism, and environmental change.

In general, 75 percent of the total BCS portfolio is available for new research grants and 25 percent is available for continuing grants.

FY 2016 Summary
All funding decreases/increases represent change over the FY 2015 Estimate.

Research
Overall, support for BCS disciplinary and interdisciplinary research increases (+$6.67 million to a total of $98.01 million).

- BCS will increase support for Risk and Resilience through CRISP, which focuses on the key social and behavioral research questions that are relevant for interdisciplinary perspectives on risk and resilience of social, designed, and natural systems. BCS support for this activity is initiated at $3.25 million.
- Increased support of $1.0 million, to a total of $18.60 million, for UtB will enhance efforts to gain an integrative and comprehensive understanding of the brain and its function in context and in action.
- CAREER funding in FY 2016 increases by $250,000, to a total of $3.89 million. This investment is consistent with BCS's emphasis on supporting early career researchers.

- CIF21 support increases by $340,000, to a total of $1.94 million, to support development of user-friendly, large-scale, next-generation data resources and relevant analytical techniques to advance fundamental SBE research through increased investment in the RIDIR program. BCS will enhance its investments in Data Science Pilots, in collaboration with CISE/ACI, to address critically important issues related to reproducibility and data access.
- Support for SEES ends (-$1.50 million) as this program ramps down as planned.
- Support for interdisciplinary research, training, and integration opportunities through SBE 2020 (via SBE's IBSS program) is decreased by $250,000, to a total of $4.15 million.
- BCS support for Cyberlearning and Future Learning Technologies is terminated (-$500,000).
- Continued support of $1.20 million for SaTC is provided through support for the Cyber Economic Incentives and other themes within CNCI.
- Funding for BCS's Science of Broadening Participation investment is maintained at the level of $750,000. This investment supports efforts to build the scientific foundation and research evidence base needed for future broadening participation efforts. Investing in research that informs the science of broadening participation spans education and the SBE sciences, and engages all of NSF.
- BCS will make an initial investment of $2.50 million in INFEWS. This investment will enhance capacity to explore the interactions between water, food, and energy systems.
- BCS will make an initial investment of $250,000 in the new NSF-wide effort to increase participation of underrepresented groups in STEM fields, beginning with the NSF INCLUDES activity.
- Support for the SLCs terminates (-$1.63 million) as all six of the existing centers will have reached the conclusion of their ten-year funding cycle by the end of FY 2015.
- BCS support ($4.0 million) for the Science of Learning will fund interdisciplinary research on the science of learning, with an overarching goal of creating, on a national scale, an integrated Science of Learning community.
- BCS will make an initial investment of $1.0 million in the Urban Science activity. In partnership with ENG and CISE, and in cooperation with SES, BCS will support research that addresses organizational, social, psychological, political, geographic and economic issues associated with rapidly developing and evolving smart city ecosystems.
- A general increase to core program investments of $2.37 million will result from a reinvestment of funds from concluded programs.

Education
- BCS support for the ADVANCE program is maintained at $400,000.
- REU supplements ($440,000) remain constant with the FY 2015 Estimate.
- In an effort to establish a better balance between the responsibilities and demands of work lives and family lives for social and behavioral scientists, BCS will maintain its investment of $30,000 to support the CLB initiative.
- NRT and IGERT: BCS FY 2016 funding for IGERT ($1.06 million) supports continuing grant increments. In FY 2014, IGERT evolved into a new program, NRT, which encourages the development of bold, new, potentially transformative, and scalable models for STEM graduate training that ensure that graduate students develop the skills, knowledge, and competencies needed to pursue a range of careers within and outside academia. BCS support for the NRT effort is decreased from the FY 2015 Estimate by $600,000, to a total of $460,000.

Infrastructure
- FY 2016 support for infrastructure activities is continued at $1.14 million. Funding supports BCS's CIF21 investment inclusive of support for the RIDIR competition, which seeks to develop user-friendly, large-scale, next- generation data resources and relevant analytical techniques to advance fundamental SBE research.

NATIONAL CENTER FOR SCIENCE AND ENGINEERING STATISTICS (NCSES)

$54,310,000
+$3,550,000 / 7.0%

NCSES Funding

(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate Amount	Percent
Total, NCSES	**$39.73**	**$50.76**	**$54.31**	**$3.55**	**7.0%**
Research	**0.67**	**0.64**	**0.61**	**-0.03**	**-4.7%**
Infrastructure	**39.06**	**50.12**	**53.70**	**3.58**	**7.1%**

Totals may not add due to rounding.

The National Center for Science and Engineering Statistics (NCSES) was established within the National Science Foundation by Section 505 of the America COMPETES Reauthorization Act of 2010 (P.L. 111-358). The Act provides NCSES with the legislative mission to "…serve as the central federal clearinghouse for the collection, interpretation, analysis, and dissemination of objective data on science, engineering, technology, and research and development." NCSES is called on to support the collection of statistical data on research and development trends, the science and engineering workforce, U.S. competitiveness, and the condition and progress of the Nation's STEM education; to support research using the data it collects and on methodologies in areas related to the work of the Center; and to support the education and training of researchers in the use of its own and other large-scale, nationally representative data sets.

As one of the thirteen principal federal statistical agencies, NCSES has broad responsibility for statistics regarding the science and engineering enterprise. NCSES designs, supports, and directs a coordinated collection of periodic national surveys and performs a variety of other data collections and research, providing policymakers, researchers, and other decision makers with high quality data and analysis on R&D, innovation, the education of scientists and engineers, and the science and engineering workforce. The work of NCSES involves survey development, methodological and quality improvement efforts, data collection, analysis, information compilation, dissemination, web access, and customer service to meet the statistical and analytical needs of a diverse user community. It prepares two congressionally mandated biennial reports — *Science and Engineering Indicators (SEI)* and *Women, Minorities, and Persons with Disabilities in Science and Engineering*. The data collected by NCSES serve as an important resource for researchers in SBE's SciSIP program.

The funding portfolio for NCSES includes ongoing, cyclical surveys; data, reports and other products; and projects accomplished primarily through contracts and grants.

FY 2016 Summary
All funding decreases/increases represent change over the FY 2015 Estimate.

Infrastructure
At the FY 2016 Request, support for NCSES infrastructure activities increases by $3.55 million, to an overall total of $54.31 million. Funding at this level maintains NCSES's core programmatic activities and supports significant targeted improvements in NCSES's statistical and analytic programs.

Additional resources will be used to support (1) development of enhanced data access tools, techniques, and visualizations; ($1.0 million); (2) new data collection techniques building on administrative data and

other "big data" sources ($750,000); and (3) questionnaire redesign and survey improvements supporting current research and policy community needs, such as improved data on pathways for scientists and engineers and measures of innovation ($1.80 million).

SBE OFFICE OF MULTIDISCIPLINARY	**$30,230,000**
ACTIVITIES (SMA)	**+$980,000 / 3.4%**

SMA Funding

(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate	
				Amount	Percent
Total, SMA	**$28.14**	**$29.25**	**$30.23**	**$0.98**	**3.4%**
Research	**19.67**	**20.65**	**21.63**	**0.98**	**4.7%**
CAREER	0.03	-	-	-	N/A
Centers Funding (total)	9.23	3.75	-	-3.75	-100.0%
Science of Learning Centers	9.23	3.75	-	-3.75	-100.0%
Education	**6.29**	**5.95**	**5.95**	**-**	**-**
Infrastructure	**2.18**	**2.65**	**2.65**	**-**	**-**
Research Resources	0.73	0.90	0.90	-	-
Research Resources - Public Access Initiative	1.45	1.75	1.75	-	-

Totals may not add due to rounding.

SMA provides a focal point for programmatic activities that cut across SBE and NSF disciplinary boundaries. SMA houses three programs: Science of Science and Innovation Policy (SciSIP), Research Experiences for Undergraduates (REU) Sites, and SBE Postdoctoral Research Fellowships (SPRF). SMA will play a critical role in several NSF areas of emphasis in FY 2016: cyberinfrastructure and computer science (via CIF21); national security (via CNCI); innovation (via I-Corps™); interdisciplinary research and training (via INSPIRE and SBE 2020 activities, such as the IBSS competition and the SPRF-IBSS track); the Science of Learning; and Understanding the Brain (UtB). These investments reflect newly requested funds and a significant redeployment of resources previously committed to other cross-directorate and NSF-wide priority activities. Co-funding with other divisions in SBE and with other directorates is typical for SMA. While all SBE divisions pursue interdisciplinary work, SMA assists with seeding multidisciplinary activities for the future. All areas of SBE sciences are represented in the SMA portfolio.

In general, 43 percent of the total SMA portfolio is available for new research grants and 57 percent is available for continuing grants.

FY 2016 Summary
All funding decreases/increases represent change over the FY 2015 Estimate.

Research
Overall, support increases for basic research activities (+$980,000 to a total of $21.63 million).
- Support for the SLCs terminates (-$3.75 million) as all six of the existing centers will have reached the conclusion of their ten-year funding cycle by the end of FY 2015.
- SMA will increase investment in the Science of Learning (+$2.0 million, for a total of $3.0 million). Funding will support integrative, interdisciplinary research on the Science of Learning and the overarching goal to create, on a national scale, an integrated Science of Learning community.
- Increased support of $2.0 million for UtB (to a total of $6.40 million) will enhance efforts to gain an integrative and comprehensive understanding of the brain and its function in context and in action.

- SMA will continue to invest $1.0 million to support INSPIRE, an NSF priority aligned with SBE 2020.
- Investment in I-Corps™ is maintained at $500,000.
- SMA support for Cyberlearning and Future Learning Technologies is terminated (-$500,000). Funds will be redeployed to support the Science of Learning.
- Funding for the SciSIP disciplinary research activities is held at the FY 2015 Estimate level of $6.10 million.
- With a continued investment of $800,000, SMA will partner with CISE in devoting resources to the SaTC initiative through support for the Cyber Economic Incentives theme within CNCI. This investment will support research at the interstices of the economic and computer sciences to achieve secure practices through market mechanisms and behavioral incentives.
- CIF21 support increases by $190,000, to a total of $1.09 million, for enhanced investments in Data Science Pilots, to address critically important issues related to reproducibility and data access.

Education

Support for education activities in SMA is held at the FY 2015 Estimate of $5.95 million.

- SMA investments in the Research Experiences for Undergraduates (REU) Sites ($2.89 million) and REU supplement ($60,000) programs are continued at the FY 2015 Estimate. Funding will support enhanced research experiences for students in their first two years of college, as recommended by the President's Council of Advisors on Science and Technology (PCAST) in their report, *Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, and Mathematics*[5].
- The SBE Postdoctoral Research Fellowship (SPRF) has two tracks: broadening participation (SPRF-BP), which replaces the former SBE Minority Postdoctoral Fellowships; and interdisciplinary research (SPRF-IBSS) which aligns with SBE 2020 activities. FY 2016 Request funding for these programs is unchanged at $1.50 million for each activity.

Infrastructure

- Continued investment of $1.75 million in NSF's Public Access Initiative will support efforts to make NSF-funded research available to the public, including developing outreach and guidance materials.
- Support for research resources is held constant with the FY 2015 Estimate at $900,000. Funding supports SMA's CIF21 investment inclusive of support for the RIDIR competition, which seeks to develop user-friendly, large-scale, next-generation data resources and relevant analytical techniques to advance fundamental SBE research.

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[5] www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-executive-report-final_2-13-12.pdf