

**Social and Economic Sciences (SES)
Committee of Visitors (COV) Final Report
July 11-13, 2016**

**Karen S. Cook, Chair
Art Goldsmith, Co-Chair**

Section 1. Key Findings and Issues Identified by the Committee of Visitors

^ The SES programs within the SBE directorate are well run, carefully managed and represent the gold standard in peer review, supporting the strong reputation of the NSF in the world of science funding.

^ The SES division, as well as other divisions within the SBE directorate, are well positioned to contribute significantly to the major NSF wide research priorities for the future.

^ Engagement, including taking a leadership role, of the SBE Directorate and the SES Division in agency-wide efforts to support and develop practices resulting in more reliable and robust science was encouraged, building on recent workshops and advisory committee reports.

^ A number of important topics for future research investments were identified including those related to increasing polarization, social conflict, the migration of people across the globe, political, social and economic disparities within the U.S., and the long-term security of the nation with respect to resources (such as food, water and energy) and the environment, among others.

^ Additional efforts to co-fund research proposals with other directorates in NSF and other governmental agencies were encouraged in the context of tight funding constraints for the SES division and the SBE directorate.

^ Enhancement of the ongoing efforts at NSF to require stronger data management plans and the development of mechanisms to support data sharing and open science more broadly, including in graduate education, is suggested in the report as a high priority.

^ A strong preference was voiced among COV members for the retention of in-person meetings for panels when final funding decisions are at stake for research proposals.

^ There is some concern that transitions among program officers and terms of office should be considered as potential areas of improvement.

Section 2. Overview of the Evaluation Process

Date of COV: July 11 - 13, 2016
Division: Social and Economic Sciences (SES)
Directorate: Social and Behavioral, and Economic Sciences (SBE)
Number of actions reviewed: 1031 Awards: 486 Declinations: 539 Other: 6
Total number of actions within Program/Cluster/Division during period under review: 6029 Awards: 1598 Declinations: 4358 Other: 73
Manner in which reviewed actions were selected: Sample Pool: The initial pool of actions sampled for each program included all competitive awards, declines, and returned proposals for FYs 2013-2015. In order to prevent oversampling of collaborative projects, lead proposals were included but sub-proposals were not (although the non-lead collaboratives are linked to the leads and made available within the eJacket module). Non-competitive actions, such as continuing grant increments of multi-year awards, and transfers between PIs or Institutions were excluded. Random Sampling Method: Using a random integer function, all proposals in the sample pool were randomly assigned a number. Lists were then sorted and the first 45 awards/ 45 declines/returns were selected, for a total of 90 actions per program. <u>Exceptions:</u> Some programs, such as SoO, SaTC, and CCE STEM had fewer than 45 awards, in that case, all of the awards and 45 declines/RWR were selected. The Political Science; Sociology; Science, Technology, and Society; and the Law and Social Sciences programs have a separate DDRIG competition and their sample sizes were adjusted to provide a holistic picture of the program, and those actions were sampled separately from the regular/senior proposals. COIs: for sampled actions in which a relevant committee member had been a PI, or had an institutional conflict of interest, the action was removed and replaced with the proposal assigned the next highest random number.

COV Membership

	Name	Affiliation
COV Chair/ Co-Chairs:	Karen S. Cook Art Goldsmith John Hagan	Stanford University Washington and Lee University Northwestern University
COV Members:	James Alt Brian Borstein Kenneth Brown Gretchen Chapman Wendy Tam Cho Rayvon Fouche John Freeman Laura Gomez Matthew Keefer Maria Krysan Adriana Kugler Martha Lampland Wayne Lutters Fred Oswald Florenz Plassmann Brian Powell Hank Smith-Jenkins Elizabeth Stuart Kai Zeng	Harvard University University of Nebraska University of Iowa Rutgers University University of Illinois, Urbana-Champaign Purdue State University University of Minnesota University of California, Los Angeles University of Missouri, St. Louis University of Illinois Georgetown University University of California, San Diego University of Maryland, Baltimore County Rice University Binghamton University Indiana University University of Oklahoma John Hopkins University University of California, Irvine

Section 3. Integrity and Efficiency of Processes and Management

In general, the COV finds that the programs are very well managed and that the integrity of the merit and program review processes are excellent. Overall, the review methods including ad hoc and panel reviews work well and support the mission of the National Science Foundation of providing high quality scientific review. The NSF merit review process remains the gold standard in scientific communities worldwide

Section 3.1 Quality and Effectiveness of the Programs' use of the Merit Review Process

Proposal Review Process:

While there is wide variation in the number and quality of the reviews received on proposals for each program in the SES portfolio, members of the review teams determined that overall the reviews were thorough and informative. There is some indication that the reviewer pool may need to be replenished more frequently in some fields as the number of declines to review goes up, but the program officers work hard to obtain an adequate number of thorough reviews as input to the final decision making process.

The reviews typically contain relevant substantive comments on the content and methods of the proposed research and provide the program officers with the kind of information that allows them to produce appropriate rationales for funding decisions. The panel summaries are viewed similarly, as complete and informative with respect to the proposals under review. In addition, panel analyses produced by the program officers for internal purposes were viewed as excellent.

We suggest that some of the information in the review analysis done by the program officers be provided in the responses to the PIs, especially for early career applicants who might benefit from more extensive feedback. This would be especially helpful in the cases where there are mixed reviews or when proposals are declined due to triage.

Several of the review teams noted that in some cases (up to one-third in one program) there was not adequate information provided in the reviews obtained on the broader impacts of the proposed study.

We suggest that NSF might consider it useful to move the broader impact criterion to the top of the review form to encourage reviewers to address this aspect of the project more fully. In addition, we suggest that the divisions give specific examples of what is meant by broader impacts for each program (or examples perhaps derived from prior work).

With respect to efficiency, the COV encourages the program officers to continue the various "triage" processes that have been developed to reduce the workload and to help reduce the burden on ad hoc and panel reviewers.

Recommendation 1: We support the 2013 SES COV recommendation that triage occur early in the review process by program officers to avoid spending too much time on proposals that have little chance of funding.

The specific mode of triage is best determined by the program officers, given the existing variation in size of programs and proposal loads. In particular, we support not using panel time for the discussion of “low probability of funding” proposals.

Other topics:

The COV in general supports efforts to increase the efficiency of the review process, but a significant number of the review teams were not supportive of virtual meetings, indicating that the in-person panel meetings are very important to the quality and integrity of the overall decision-making process with respect to funding decisions. In our view in-person meetings contribute greatly to both the effectiveness and the excellence of NSF peer review.

Recommendation 2: Restrict virtual meetings to panels that request it and find it a reasonable way of operating. Continue regular in-person panel meetings especially for the annual or bi-annual major sessions during which research proposals are discussed and decisions made about funding.

In addition to the issue of virtual meetings, team members in most cases were not supportive of reducing the number of reviews obtained given the brevity of some of those received. This may vary from program to program. For those programs in which some of the reviews obtained are insufficient one team suggested that SES post a “model” review on its website (with proper approvals).

Members of some of the COV teams were concerned about the relative lack of diversity of the reviewers and panel members both with respect to career stage and with respect to gender, race and ethnicity. There is variation in the level of concern that is correlated with the nature of the demographics of the disciplines involved. We recommend that program officers continue their efforts to diversify the reviewer pool as well as those who serve on panels. In particular, the COV noted the absence of early career academics on panels and recommended that programs consider shorter-term tours of duty on panels (and even one-panel-only) engagements of these faculty members to introduce them to the process and facilitate their development as scholars and as potential future recipients of NSF funding.

Section 3.2 Selection of Reviewers

Securing high quality reviews of project proposals is fundamental to the effective allocation of NSF funds to support research. The COV was impressed with the quality of the reviewers supplying evaluations across the range of SES Programs. However, a key concern is the prevalence of “decline to review” among persons extended an invitation to serve as an external evaluator to the panel. The consequence of this is a smaller pool of reviewers leading to a worry of “reviewer fatigue” over time due to utilizing the same group of reviewers across consecutive evaluation cycles, which could reduce the quality and detail of external reviews provided to the panel.

Programs have historically addressed this issue to some extent through the arrival of rotating program officers who often obtain reviews from scholars who have not previously served as external evaluators. However, developing a larger pool of regular reviewers through the infusion of a stable and substantial set of external evaluators who are sufficiently skilled and interested in contributing to the NSF’s proposal evaluation process would be ideal.

A group that is currently underutilized is successful scholars at smaller liberal arts colleges who would likely be encouraged to serve the public interest by participating as an external reviewer. One way to gauge the usefulness of this approach would be to invite them to provide external reviews to a single panel allowing program officers to assess the quality of the reviews provided by this set of reviewers. It was also noted, as stated above, that members of other underrepresented groups should be called upon as reviewers and also encouraged to serve on panels. We address this issue in greater detail in Section 5 of this report.

Recommendation 3: The 2016 COV recommends that SES Program Officers write to relevant department chairs at well regarded liberal arts colleges to ask for recommendations from their faculty of external reviewers, along with their CVs, after explaining the time commitment and skill set needed to provide high quality external reviews.

Ideally, the program officers should keep track of the acceptance/decline to review rate for invitations to this set of potential reviewers. Moreover, for those who provide reviews the program officers could provide a brief assessment of the quality of their reviews. In addition, if any of these reviewers submit proposals following their provision of reviews this should be noted and tracked if possible in a database. In the process, of selecting reviewers from liberal arts colleges securing contributions from a diverse group of reviewers in terms of ethnicity, gender, race, geographical location and other factors should be highly valued.

Program officers should be encouraged to provide these reviewers with information on the nature of reviews and make available to them a redacted set of strong reviews to serve as models to clarify the ideal level of detail and the proper use of the rating scale system.

Section 3.3 Assessment of the Management of the Programs

3.3.1 Management of the programs

There is broad consensus and appreciation of the overall management of the SES programs, particularly in the context of limited resources. Some concern was expressed about the need to rely on rotators to fill successive periods when permanent program officers have been unable to provide program leadership. This can present problems of continuity and consistency within programs, although rotators are also a source of innovation and expansion of networks, for example, in soliciting reviewers. When successive rotators are required within programs, it may be important to build in advisory mechanisms that minimize the loss of continuity and consistency of direction and the start-up challenges of building and sustaining internal and external networks for programs.

Recommendation 4: It is recommended that transitions in rotating program officers be managed effectively to avoid lack of continuity and to maintain quality of the programs involved.

3.3.2 Responsiveness of the programs to emerging research & opportunities

SBE programs are responsive and proactive in nurturing emerging areas of promising research and in seeking research support across SBE programs and beyond. For example,

the Law & Social Sciences Program has developed a co-funding agreement with the National Institute of Justice within the Department of Justice. While this co-funding stream is still developing, it illustrates the possibilities for further such collaborations, for example, involving the Bureau of Justice Statistics and Civil Rights Division within the Department of Justice, as well as a wide range of other government departments and agencies.

A number of other programs within the division have experience with co-funding with many government agencies. We encourage the continued development of these linkages both within the foundation and between the foundation and other government agencies to facilitate the funding of important research endeavors of value to all parties involved.

3.3.3 Program planning and prioritization processes (internal and external) that guided the development of the portfolio

The planning and prioritization of programs is a great source of vitality in the overall development of the SBE portfolio. One source of concern in this development, however, is a gap in the funding success rate of minority applicants, and beyond this there is the corresponding challenge of attracting more minority applicants for SBE grants.

Recommendation 5: the COV recommends that programs initiate additional proactive efforts to broaden the base of minority applications across the portfolio of programs.

We address this issue in greater detail in Section 5.

3.3.4 Responsiveness of programs and division to previous COV comments and recommendations

In general, the programs and the division have been responsive to previous COV comments and recommendations. An exception is the failure of the division to appoint a permanent program officer for Law and Social Sciences and the need for this program to rely on the successive leadership of rotators. A series of effective rotator appointments has sustained the trajectory of this well-managed and productive program, but the Committee recommends that the Law and Social Sciences Program should have a permanent program officer to sustain and institutionalize its well-managed and productive administration. This repeats a recommendation from the 2013 COV. An alternative the review committee recommends is the establishment of longer terms for rotators (i.e. five years) with carefully planned transitions.

Section 4. Emerging Issues and Areas for Potential Support

Section 4.1 Emerging Issues/Lines of Inquiry and Infrastructure

While we have identified a number of new emerging issues and lines of inquiry, we begin by offering our support for the topics identified in the 2013 SES COV report, which the division has already taken action to acknowledge in new division wide initiatives and engagement with other relevant directorates at NSF. We simply list those topics here as reminders that they remain very significant lines of inquiry in the social, behavioral and economic sciences.

These topics include:

1. Interactions of human and natural systems
2. Socio-genomics and other biological/social interactions
3. Big Data and related developments
4. Human security
5. Human factors in the development, adoption, and impact of new technologies
6. Systems Science

In 2016 our committee members identified a number of other (with some overlap) large issues of emerging science and trends in society that benefit from the research done by those in the SBE sciences.

1. Polarization, Incivility and Tensions in Civil Society

The emergence and re-emergence of social, economic, and political polarization is a feature of U.S. society and many of the world's wealthier nations. These developments, many of which were documented in Thomas Piketty's *Capital in the Twenty First Century* lead to conflict and tension, which have the capacity to undermine civil society. The COV 2016 suggests that the NSF look for ways to inspire proposals that explore the sources and impact of the cleavages that have opened in our communities that reveal themselves in a myriad of spheres including: gaps across groups in incarceration, self-efficacy, experiences in the work place and in the development and maintenance of human capital, social capital, and soft skills. This could take the form of workshops on this topic or a newsletter encouraging grant applications addressing these issues. As part of this effort to promote research on political, economic, and social stratification tearing at the fabric of civil society scholarship using mixed methods such as ethnography and survey data analysis should be valued.

2. Exploring a World in Motion: Shifting Borders and the Flow of People

The COV also suggests a significant investment in infrastructure to support the study of "a world in motion": the worldwide breakdown (i.e., shifting) of borders and movement of people within and between changing political jurisdictions. A central feature of this initiative might be support for the collection and assembly of data on events – including political, social, and economic developments – potentially associated with the relocation of people and the alteration of borders. This would enable scholars to chart the outbreak, spread, and consequences of civil war for families, political institutions firms, and community structures. This endeavor would also allow, for the first time, theories of civil war to be meaningfully tested and extended. Moreover, this project would likely lead to a better understanding of the reasons for and effects of the migration of people in anticipation of, during, and after civil war. This would be an important development since migration has enormous impacts on institutions, human security, labor markets and human capital stocks, and understandings of community. NSF investments would enrich both SES programs like Sociology, Anthropology, and Political Science as well as SBE programs like Psychology and Geography and Spatial Science.

3. Food, Water, Energy, the Environment and Security over the Life Course

The challenges of providing sufficient and sustainable sources of food, water, and energy are paramount. Although technological advances and the growth of skills have held at bay the catastrophic predictions advanced by Thomas Robert Malthus in his famous “Essay on the Principle of Population,” resource pressures are evident today across both poor and highly developed nations. Research on the interconnections between – food, water, and energy – development and utilization along with the effects on the environment are essential to the development of sound policies and procedures regarding resource availability. Moreover, new research in biology and epigenetics suggests that stress caused by resource shortages can have long lasting effects on mental and emotional development. Thus, research on these big questions should be encouraged, especially cross-disciplinary explorations.

4. “People of Difference” and the Consequences of Social, Economic and Political Disparities

“People of difference”, along race and other dimensions or social axis, have gained a greater voice in the U.S. Evidence of this fact is resonating in the legal arena, in the options and ways persons choose to identify themselves and in new characterizations of social norms. What does this mean for our understanding of family, for interpersonal connections, for social justice in the workplace, for political coalitions, and for the provision of health care and high quality education? Additional research on the meaning and importance of multiple and alternative forms of personal identity and the impact of differences in ascriptive features and identities on social, economic and political experiences over the life course is essential. This is a period of social transition and a deeper understanding of the forces driving these changes and their implications, including prospects for reducing discrimination linked to social differences should be encouraged and valued by the NSF.

5. Policing, Public Disorder, and Social Conflict.

Police encounters with citizens and suspects are potential and recurring flashpoints in society, yet we have relatively little systematic knowledge about their macro- and micro-level variation across time, place, and space. In particular, we know less than is essential about the variation and regulation of the lethal and non-lethal police use of force. Our dependence on policing in response to conflict and disorder makes this a crucial area for expanded research.

6. Data Quality, Availability and Cost Issues in the Era of Big Data

The last COV (2013) listed Big Data and related developments as an area of emerging science that will have lasting impact on the social and behavioral sciences and we agree. We also believe that issues of data quality, availability and data collection costs are just as significant. Data collection costs, for example, continue to rise especially for standard surveys of randomly selected samples of individuals and the data produced by major national surveys such as the ANES, the GSS, and the PSID, have been critical resources for generations of graduate students and faculty, even for undergraduates engaged in research. However, the cost of conducting such surveys continues to increase making it hard to obtain the proper level of funding for them year after year. In addition, the cost of other surveys

(not based on random samples) is also increasing, even though they provide information that is frequently of lower quality.

Costs associated with qualitative data collection are also rising and may affect the capacity of social scientists to engage in mixed methods research which adds richness to the work of more quantitatively oriented scholars. Cost is not the only issue we face. Data availability may become even more problematic when it involves matters of confidentiality and data security. Data from government sources, as well as that from private sources, will all have to be protected in ways that guarantee the rights of those whose data are being accessed and analyzed. Research on new and creative methods of providing such protection will be increasingly important for the future of the social, behavioral and economic sciences in the era of big data. Working with government agencies the research community supported by NSF should help provide the kinds of methods and services that will enable the interconnection of various data archives to facilitate better, more comprehensive research and likely yield important insights into policy options (often referred to as “evidence based policy”).

Recommendation 6: The COV recommends that the SBE Division continue to invest in research that will improve data availability and access, help to lower costs, as well as provide new approaches to data security and privacy.

Section. 4.2 Data Sharing and Public Access

In January of 2016, NSF funded a workshop on “Public Access to NSF-Funded Research Data for the Social, Behavioral, and Economic Sciences” (Workshop Report, May 2016). The workshop was responsive to the White House Office of Science and Technical Policy memorandum on *Increasing Access to the Results of Federally Funded Scientific Research*. This memorandum directed each Federal agency with over \$100 million in annual research and development expenditures to develop a plan to increase public access to the results of research funded by the federal government, while further encouraging support for the storage and accessibility of the digitally formatted scientific data used in this research.

The COV affirms the actions of SBE in mandating practices for the sharing of products of funded research, and in response to the OSTP memorandum, offers several recommendations that are intended to further instill and expand on a strong culture of data sharing and public access that already exists within SBE.

Recommendation 7: The COV recommends that public access to NSF funded research occur at the point of publication through compliance of researchers with journal encouragement and requirements to specify provisions for deposition of and access to relevant data and metadata used and reported in their published research.

Recommendation 8: The COV recommends NSF funded research require regular and complete reporting of these resulting publications and incorporated DOIs in annual and final reports, for up to three years following submission of final reports.

Recommendation 9: The COV recommends that SBE consider including data management plans along with merit and impact statements in the front matter of proposals and in proposal reviews, with the intent to foreground rather than

background the attention of researchers to mandated compliance with provisions for data sharing and access.

Recommendation 10: The COV recommends that SBE further consider mandating discussion and review of issues and mechanisms for data access and sharing at the regular meetings of program review committees, as a means of further institutionalizing the awareness, understanding, and observance of best practices of data sharing and public access.

Section 4.3 Replicability, Reproducibility, and Generalization

The Social, Behavioral and Economic Sciences (SBE) directorate should continue to pursue the many ways in which social and behavioral scientists can address increasing concerns across the scientific fields of inquiry over issues of replicability and reproducibility. Not only are these important characteristics of a robust and reliable national scientific enterprise, they are topics that those in the social and behavioral sciences study. The sociology of science and studies of scientific practices, for example, are long-standing fields that have examined how science is done, as well as the nature of the challenges to the scientific methods and the results of scientific investigations. Controversy often fuels debate over findings in various fields, from neuroscience to political science, and from evolutionary science to environmental science.

From our perspective, SBE is well positioned to continue to address these concerns and to offer leadership as well as expertise to NSF more generally on these topics. We have two specific recommendations in this respect derived from our committee's deliberations. Our second recommendation actually suggests that it might be time for NSF to put more punch into its requirement for adequate data management and sharing plans.

Recommendation 11: The SBE directorate should continue to foster engagement of the social science community with NSF-wide efforts to assure robust and reliable science.

Recommendation 12: The COV recommends that adequacy of the Data Management and Sharing Plan be listed as a third criterion (along with broader impact and intellectual merit) for proposal review and that the plan be explicitly rated and evaluated in the review process.

These efforts should enhance the possibility for replication and reproducibility, in addition to fostering efforts to generalize the findings of NSF funded research.

Section 4.4 Developments in Graduate Education

With respect to graduate education, we did not have enough time to fully address this issue but several key recommendations came out of our discussion of various issues related to this topic. First, we wondered if the division would benefit from a closer examination of all of the ways in which graduate students are supported by divisional funds (and by NSF more broadly, if we include NSF Doctoral Fellowships). This would include collecting some data on the amounts of funding by program (and division) on support for graduate students embedded in regular research grants, in workshops and short-term training programs (e.g.

EITM, Racial Democracy and Criminal Justice - RDCJ - mentoring program, etc.), as well as in doctoral dissertation grants.

Recommendation 13. We recommend that these graduate student support data be made available to the next COV and that consideration be given to the adequacy and effectiveness of the various forms of support in conjunction with data on graduate student outcomes (completion, employment, etc.).

Given the changing landscape of the employment options for graduate students in many scientific fields, but especially in many of the SBE fields, we think such an effort is timely. We know NSF is looking at graduate education now and we encourage those involved in this endeavor to hold workshops on these issues, bringing in people from universities and industry, as well as NGOs and other potential employers, to explore the evolving nature of graduate education in an ever-changing economy.

We also focused on the inclusion of best scientific practices related to data sharing, human subjects' protection and privacy issues, as well as research designs and methods that increase the potential for replicability, reproducibility, and generalization. The NSF SBE funded workshops on these issues are an important step in the direction of creating standards and more complete understanding of the relevant issues involved in various styles of research and their implications for graduate training. Thus we would like to see greater connection between the consideration of these matters by NSF and other scientific bodies with a focus on improvements in graduate training to facilitate the creation of more robust and reliable science in future generations of scientists and to sustain best practices.

Supporting a culture of robust science and effectively creating norms that enforce it are important aspects of holding science and scientists to the highest of standards, the hallmark of NSF. Graduate training should be enhanced to include not only best practices to support robust and reliable science, but also to provide introductions to professional associations and other scientific bodies that support efforts to build the kind of "open science" that creates opportunities for greater sharing of methods, procedures, preliminary data, and the results of completed investigations prior to publication to further collaborative efforts across the globe to advance science and provide findings that will eventually improve the lives of all.

Section 5. Other Topics

5.1 General Diversity Issues

Despite many efforts of a wide variety across the foundation and within the programs in SES and the SBE Directorate more broadly, it remains a fact that the funding rates for minority scholars in many of our fields are less than ideal. Using data provided by Program Directors, the NSF Staff developed a table – at the request of the 2016 COV – that displayed the number of grants applied for in 2015 and 2014 and the funding rates, by multiple measures of PI diversity including race and gender. Inspection of this information revealed that in virtually every program a quarter or more of the grant applicants are female whereas very few black scholars are applying for research grants from the NSF.

Although there is evidence indicating that progress has taken place in securing applications from female scholars, a substantial gap between the share of women in a discipline and the

share applying for NSF funding remains across the range of SBE programs. Thus, we suggest that additional efforts be mounted at the program level and at the divisional level to further encourage a diverse pool of applicants for SBE programs, including workshops, dissertation grants, regular grants, and calls for special initiatives. Investments in additional outreach, whenever possible, are also worth greater attention by NSF. The new **NSF Includes** program is a step in the right direction, but it is likely underfunded at this point.

Diversity, in its many forms, has long been important to the NSF when it selects panel members and ad-hoc reviewers. Scholars from different regions of the country, and who differ by race, ethnicity, age, social orientation, and family background may well hold alternative perspectives on the importance of various research questions. Thus, the process of evaluating relevance and broad impact of different research programs benefits from a diverse set of evaluators.

Unfortunately, the NSF has incomplete information on the diversity of panel and ad-hoc reviewers because many of them choose not to provide this information. The 2016 COV believes that the NSF can, and should, rectify this concern. We suggest that the NSF program directors engage the panel and ad-hoc evaluators in a conversation about the importance of evaluator diversity to the review process. We believe this will lead to greater provision of the missing information. Moreover, the COV suggests that the NSF keep records of this information on an ongoing basis, and that it share the contents of this database internally over the next three years, and provide this database to the next COV.

5.2 Agency-wide Issues to be addressed by NSF to help improve the programs

The primary agency-wide issue identified in our review process that might benefit from further consideration at the agency level is the research on robust and reliable science. The SBE directorate has much to contribute to the study of the practice of science and to standard setting for the social and behavior sciences in terms of best practices for creating a robust and reliable science. The prior COV recommended the formation of an NSF wide committee to move conversations about best scientific practices forward and we concur that this is a very important endeavor, which should include a range of social and behavioral scientists familiar with the issues related to scientific rigor and integrity, including those who study the conduct of science in all forms. The SBE directorate has already made progress in moving in this direction by organizing and funding a number of workshops and subcommittee reports that are very informative. See, for example, the relevant discussion in the 2013 COV report, the report of the workshop on robust and reliable science and the subcommittee reports of the SBE Advisory Committee on related topics.

5.3 Comments on the COV review process

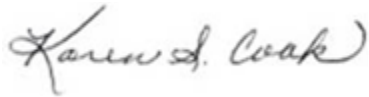
In general the COV review process was flawless, with appropriate and very effective guidance from the NSF SBE directorate. We have just a few relatively minor suggestions that might improve the process for the next round of reviews.

1. Provide all data in the same templates for each program so that they are easily comparable across programs. (An example is data on the demographics of applicants. There are other examples.) In addition, it might be useful for key data

- points to provide the COV with aggregated data for the division (including all of the programs under review) as a whole.
2. One subcommittee suggested that a chart giving an overview of all of the data and reports that are being provided to each review team be created so that team members could more easily keep track of the large amounts of data and related reports that are circulated to them prior to arriving for the COV review.
 3. The co-chairs believe, after being through the process that it might be wise to have at least one, if not two, Skype meetings for an hour or so among the co-chairs to prepare for the COV meeting and to discuss what might be needed in addition to the material circulated in advance. This call could include a former COV chair or co-chair and likely the Division Director and Deputy Director.

We conclude by thanking all those involved in managing the COV process at NSF for all of the support and guidance we received while at the foundation. We could not have completed such an extensive review in two and a half days without this support. We are truly grateful and we hope our report will be of service to the division and its many successful programs.

SIGNATURE BLOCK:

A handwritten signature in cursive script that reads "Karen S. Cook".

For the SES COV 2016
Dr. Karen Cook, Chair

COV 2016 Report Appendix

APPENDIX 1.

FY 2015 REPORT TEMPLATE FOR NSF COMMITTEES OF VISITORS (COVs)

**Cultivating Cultures of Ethical STEM
INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT**

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

<p>QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS</p>	<p>YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE</p>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: Yes, though see comment I 2. Below</p>	
<p>2. Are both merit review criteria addressed</p> <p>a) In individual reviews?</p> <p>b) In panel summaries?</p> <p>c) In Program Officer review analyses?</p> <p>Comments: Overall, the reviews appear to be high quality. There is an adequate and consistent range of reviews (4) from diverse disciplinary fields (appropriate here). Almost all panel summary reviews I read did an excellent job of summarizing the 4 individual reviews. There were one or two exceptions as mentioned below.</p> <p>CCE STEM does not make use of ad hoc reviewers. The up side of using 4 reviewers who also serve as panelists is that the program has a consistent number of reviews for each proposal (i.e., 4 in almost all cases). The down side is that</p>	

<p>similar people are doing a lot of work together (so there is a possibility for some insularity). One suggestion might be to use at least one ad hoc review per proposal to (1) address this <i>possible</i> concern and, (2) provide a pipeline to assess the quality of reviews for possible future invitations to ad hoc reviewers to serve as panelists.</p> <p>As noted by other COVs sometimes the broader impact is sometimes omitted esp. in individual reviews.</p>	
<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: The quality of some individual reviews vary (as might be expect) but on the whole they were very good often excellent quality.</p>	
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: Usually very much so. The occasional exception.</p>	
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments: Yes in almost all cases consistent with both individual reviews and panel. Sometimes one link will be weak, say, a poor summary description from the panel for a decline, but in one instance this was nicely made up for by a strong Review Analysis. (Of course my understanding is that this is not passed along to the PIs.)</p> <p>The Review Analysis generally provides the rational for the final decision and in those relatively rare instances when the POs do not agree with the Panel the reasons for the discrepancy is made apparent. (Though see comment III 1. regarding program management.) There is perhaps one exception to this point.</p> <p>It appears that sometimes (not often) POs will ask the PIs to clarify certain concerns and request adjustments in their project (that were raised by reviewers). This is of course an excellent idea for projects recommended for funding as it makes good use of the considerable expertise of the reviewers (every project can benefit from a little tweaking).</p> <p>However, there also appear to be cases where the PO asks for clarification of concerns <i>in order to determine whether or not to fund the project</i>. This is a very different situation that should be sharply distinguished from the former scenario.</p>	

<p>Concerns include: Is the procedure fair? E.g., how does the POs determine which proposals should be given the opportunity (this is not clear). PIs, when asked should do so, will do an excellent job of justifying their work and making the requested adjustments. Also asking a PI to do this would, I think, make it unlikely that the PO will not accept justifications/adjusts and therefore <i>not</i> fund the project. Is there data here – e.g., how many proposals did PO ask for justification/adjustments contingent on funding? How many did they subsequently fund/not fund? (My guess is 100% funded. If so, is there a fair procedure?)</p>	
<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments: As noted (several times) I read many instances of excellent feedback to guide PIs who may be interested in making another submission. Most individual reviews were quite extensive and, on the whole, the panel review provides a quality synthesis of those critiques.</p>	
<p>7. Additional comments on the quality and effectiveness of the program’s use of merit review process:</p> <p>Mostly excellent as mentioned above. As noted perhaps not using ad hoc reviews leads to be a relatively small cadre of reviewers.</p>	

II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

SELECTION OF REVIEWERS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p>	

Comments: The quality of the content of the many reviews read by this COV attest to the qualifications of the reviewers. Several of the reviewers are well known, well cited, and have made significant contributions to the field. There was also a mix of early career reviewers in the mix.	
2. Did the program recognize and resolve conflicts of interest when appropriate? Comments: Yes.	
3. Additional comments on reviewer selection: No.	

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Comments: In terms of the overall management and funding of the program, CCE STEM is somewhat unique. As stated in the program narrative the “CCE-STEM is a cross directorate program and is administered by a working group of program officers.” Funding for CCE STEM comes from several directorates and allocations are made mostly based on history (what was given in the past, not necessarily the size, etc. of the directorate). Funding has remained relatively constant (which is good given the importance of the program). However, it does appear that this funding model has some unique effects on the administration of the program. In particular, some POs may feel that is important to ‘justify’ awards supported by funds from their directorate normally by appeal to the content area of the ethics proposal (though sometimes this might be a general match like the online ethics center). This would be in contrast to a funding model in which funding is, as it were, put in the pot and all POs simply focus on funding the highest quality proposals independent of any concern about the content area. Since the solicitation for the CCE STEM program does not specify specific content areas (other than STEM and even this is a bit of misnomer as it includes really any of the content areas that are under the purview of the many participating directorates) this would make sense.

In contrast, requiring awards be aligned with a particular directorate’s funding could potentially effect the integrity of the program since the need to match content might come at this expense of the quality of some of the proposals submitted. The extent to which this is a significant problem is difficult to determine and my understanding is that some directorate PO do not feel the need to tie their funds to specific content areas.

However, I would also note that in 2015 five awards were rated by the panelists as Highly Competitive and, from my informal tabulation, only two were funded. (I do not have all of the declined proposals but I did find one HC declined in those that I do have.) Are the highest ranked proposals consistently funded? Perhaps.

This is not to deny that the POs of the participating directorates and the PO for CCE STEM form a cohesive 'working group' where consensus is reached for all awards. Still, the variation in the attitudes toward the purpose of funds from the participating directorates should be noted for its *potential* effects on program integrity. This COV would suggest that the 'put all the money in one pot and decide' model would probably be best to ensure that the highest quality proposals are funded.

Of course, it should be noted that having directorates push that their funding match their content area provides a check that the CCE STEM addresses a broad range of content areas. Yet, I believe there could be better ways of accomplishing this goal if the participating directorates deem it important.

Another concern pertaining to program management is that the PO for CCE STEM is a 'rotator' and not a permanent NSF employee. Perhaps this is a disadvantage for this particular program given the unique challenges of the program's funding model mentioned above. It is recommended that the NSF consider whether a permanent employee might be better situated to establish and maintain the relationships needed to manage this program (e.g., to advocate for program integrity over control of participating directorates based primarily on content issues).

2. Responsiveness of the program to emerging research and education opportunities.

Comments: My view is that the Cultivating Cultures of Ethics is still an excellent concentration for the program given our understanding of the importance of focusing on larger, i.e., macro, issues in ethical systems. Ethics research and practical applications have been guided by more individualistic approaches for decades. Clearly new research is showing that there is more to be gained by improving the ethical culture of disciplines than efforts applied to individuals' ethical reasoning or behavior.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: The program narrative provides an account of this process which is adequate to the task.

4. Responsiveness of program to previous COV comments and recommendations.

Comments: The CCE STEM is a new program. N/A

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

<p align="center">RESULTING PORTFOLIO OF AWARDS</p>	<p align="center">APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE</p>
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments: See comments in III 1 above. This program is unique. Given its small size it is neither possible nor optimal that the program attempt a balance of awards across disciplines. Plus, there are many ethics projects that could likely be adapted or generalized easily to new content or disciplinary areas.</p>	
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: Yes. The institutional awards will need to be monitored (only one just funded).</p>	
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments: Reviewing the proposals I believe there are many innovative projects proposed and funded that match the program goals. The program narrative supports this claim. I am less confident making claims regarding the quality of individual proposals (as my review was not targeted for that purpose – a concern I raised with the COV community). I would say that I was especially impressed with a project investigating the extent to which diversity in team composition (widely construed) may be a key contextual factor in efficiency of team science. I believe we need to move beyond consideration of diversity essential in terms of representation and focus on a better scientific understanding of its component relations.</p>	
<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments: Yes. Ethics projects are well suited for collaborations of this sort and the CCE STEM portfolio reflects that trend.</p>	

<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments: Again, given the small number of awards it is not possible to have much of a geographical range. Awards are spread across the nation with the exception of three awards in one state (Indiana). This is perhaps due to the fact Indiana is a hub for practical ethics (e.g. Association for Practical and Professional Ethics housed in Bloomington).</p>	
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments: Yes, it was good to see a relative balance. Of course, research intensive public universities are the largest recipients but privates and non-research intensive are represented.</p>	
<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants.) An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award.</p> <p>Comments: Yes, very nicely balanced here. Intentionally serving junior faculty relative to the number of awards received (and declined).</p>	
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments: The program has funded the occasional workshop (these requests are not reviewed and difficult to evaluate – more information would be helpful here). The other grants are classified as research but the nature of the proposals in this program almost invariably have practical or applied benefits. Also, the attention to broader impact provides for educative opportunities.</p>	

<p>9. Does the program portfolio have appropriate participation of underrepresented groups¹? Comments: The numbers and percentages appear to be quite good compared with what I have heard from other participants and their programs. Always room for improvement.</p>	
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports. Comments: Yes.</p>	
<p>11. Additional comments on the quality of the projects or the balance of the portfolio: Some proposals dealing with ethical infrastructure or atmosphere in major research intensive (well-funded) universities receive awards (often even noting that the institution has good buy in from university administrators). This indeed could make it more likely the project will be successful but also raises concerns. If there is buy in why doesn't the administration fund it? There are lower tiered schools that need the support to build ethical infrastructure but do not have the financial support. Plus there is perhaps greater need to study how to build capacity in those schools.</p>	

¹ NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

V. Questions for Division Level Discussion. Please provide comments on both scientific and management aspects of the following division-specific questions:

DIVISION LEVEL DISCUSSION	
1.	Looking forward, what is your vision for the intellectual future of SES? If money were no object, what type of infrastructure would be needed to attain this vision?
2.	<p>Issues of replicability, reproducibility, and robust science have been the focus of discussion within the SBE directorate and across the Foundation. In your opinion, what role should funding agencies play in promoting robust science?</p> <p>It would be important to continue (increase?) funding for ethics research and education, especially to help foster the success of this focus. Also, the research findings and materials that have been generated from RCR research should prove a valuable resource. Note though researchers in the disciplines need support for how to integrate and make good use of RCR (and related) ethics materials in their disciplines.</p>
3.	<p>A related issue is one of data management, public access and data –sharing. What steps should SES take, if any, to promote a climate of data-sharing with its scientific communities?</p> <p>CCE STEM shares the concerns voiced by other programs in this COV. Note however that Ethics research has been exemplary in fostering public assess and management of resource materials, findings, etc. E.g., online ethics center (anchor award).</p>

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

See comment III 1.

2. Please provide comments as appropriate on the program’s performance in meeting program-specific goals and objectives that are not covered by the above questions.

Can’t think of any.

3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

4. Please provide comments on any other issues the COV feels are relevant.

5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

I think it would be useful to have an opportunity to speak with one's particular PO prior to the COV visit. The orientation prior to the visit is so general that it can be disorienting. The first discussion with the PO was most helpful.

The Committee of Visitors is part of a Federal advisory committee. The function of Federal advisory committees is advisory only. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the Advisory Committee, and do not necessarily reflect the views of the National Science Foundation.

SIGNATURE BLOCK:

X /s/ Matthew Keefer

For the Cultivating Cultures of Ethical STEM Program

Decision, Risk and Management Sciences
INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments:</p> <p>Comments: Starting in spring 2013, DRMS started a new triage method in order to reduce panel burden and focus panel efforts on the more competitive proposals. All proposals are evaluated by at least four ad hoc (mail) reviews. Those that receive at least one "E" or two "VG" scores are then evaluated by the full panel. This method is an efficient approach to handling large numbers of proposals. Our analysis of the e-Jackets did not identify a notable difference in triage rates for under-represented investigators (women, minority scholars) vs other investigators. The triage system does not result in missed fundable research proposals, because prior to 2013, there were essentially no proposals funded that did not receive 1 E or 2 VGs from ad hoc reviewers. The triage system may have changed the assessment of dissertation grant proposals, however (see below).</p> <p>The DRMS panel meets twice each year to evaluate the proposals that are not triaged. Each proposal is assigned to two panelists who evaluate it in detail, the proposal is discussed by the full panel, and a member of the panel writes a panel summary detailing the panel's evaluation of intellectual merit and broader impacts of the proposal. The panel categorizes each research proposal into one of four categories: highly competitive, competitive, not competitive but encouragement to resubmit, or not competitive. The panel places dissertation proposals into "fund" or "decline to fund" categories.</p> <p>After each panel meeting, the program officers make a decision about the disposition of each proposal and make a recommendation to the division director.</p>	<p>Yes</p>

<p>We note that funding rates for DDRIGs have fallen over the years. From 2010 to 2016 the rates were 65%, 44%, 21%, 28%, 22%, 30%. It may be that now that panelists do not see the weakest proposals (due to the triage system), they evaluate the remaining proposals more thoroughly, resulting in a raised bar. This results in fewer funded DDRIG proposals, which is unfortunate because (a) these are relatively inexpensive to fund and (b) DDGRIs represent an investment in future scholars. A solution could be to use more evaluation categories than simply “fund” and “do not fund” for DDRIGs. The panel could place these proposals into 4 categories, similar to the research proposals: highly competitive, competitive, has potential if changes were made, and not competitive. Program offers would then have discretion to recommend funding for proposals from the top 1, 2, or even 3 categories to achieve a target funding rate of, say, 40%. This would provide the Directors with greater flexibility to (a) encourage positive changes in the proposals and fund them, and (b) provide encouragement (and funding) for underrepresented graduate students who, with experience could diversify to pool of successful DRMS applicants in the future.</p> <p>Data source: Jackets, interview with program officer, review of proposals not in Jacket sample</p>	
<p>2. Are both merit review criteria addressed</p> <p>d) In individual reviews? Not always</p> <p>e) In panel summaries? Always</p> <p>f) In Program Officer review analyses? Always</p> <p>Comments: Individual reviewers do not always mention both review criteria. When there is an omission, it is almost always the broader impacts that are not mentioned. In some cases if the reviewer does not view the proposal as competitive on intellectual merit, s/he will not deem it relevant to discuss broader impact.</p> <p>The panel summaries always mention both criteria, and it is clear that panels make a point of discussing both.</p> <p>Program Officer review analyses also always mention both criteria, and indeed follow a template and ensures that both criteria are substantively discussed.</p> <p>Data source: Jackets</p>	<p>Yes with exceptions</p>

<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: Reviews of unfunded dissertation proposals tended to be longer and somewhat more substantive than reviews of funded dissertation proposals. This provides some useful feedback to PIs of unfunded dissertation proposals on how to improve the work.</p> <p>Reviews of Research Grants were universally substantive and were frequently quite long and detailed. Reviewers and panelists are clearly devoting a lot of time to evaluating proposals.</p> <p>Reviews of the workshop proposals tended to be brief and succinct while still explaining their evaluative assessment.</p> <p>Data source: Jackets</p>	<p>Yes</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: Over the 2013-2015 period, panel summaries were very clear in communicating their recommendations to the PI because the recommendation category (competitive, competitive, not competitive but encouragement to resubmit, or not competitive) is listed at the top of the summary. This clear and unambiguous communication to the PI is very helpful.</p> <p>The 2013 COV report comments on the uneven quality of panel summaries. As a result, DRMS program officers developed a template for panelists to use when writing the panel summary. Consequently, our review of panel summaries showed a consistently solid quality of summaries that identifies the strengths and weaknesses of the intellectual merit and broader impacts of the proposal.</p> <p>The 2013 COV report also commented on inconsistent panel summaries given to proposals reviewed by two different panels. We noted some cases like this as well, but think there is no way to avoid this. The two panels work independently, often draw from different intellectual traditions, and do not know of the other's evaluation, making it impossible (and undesirable) for them to coordinate. A division-level solution would be for a program officer to offer to write a synthesis report for the PI.</p> <p>Data source: Jackets</p>	<p>Yes</p>

<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments: The review analysis is an internal document in the jacket that universally gives a thorough documentation of the rationale for the award/decline decision. This highly useful document lists the reviewer ratings, summarizes the key strengths and weaknesses of the proposal, and gives the program officer’s recommendation for the disposition of the proposal. The review analysis statements by the program officer also do an excellent job of synthesizing disparate reviewer evaluations. So, for example, if most reviewers gave high marks to a proposal but one gave a fair, the program officer will explain why that reviewer saw things differently and how the panel discussion took stock of the range of views to form an overall evaluation.</p> <p>Data source: Jackets</p>	<p>Yes</p>
<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments: The PI does not have access to the program officer’s review analysis. In most cases, the panel summary (for proposals that were reviewed by the panel) makes clear the panel’s recommendation. In some cases, however, a proposal rated “competitive” by the panel is ultimately not funded. It is a reality that DRMS does not have the budget to fund all proposals rated as competitive. Presumably, PIs of competitive proposals that were not funded were told of the bad news by the program officer via email or a phone call, but this is not always documented in the diary notes. We assume there is substantial communication between PIs and program officers that is not recorded in eJacket.</p> <p>Proposals that are triaged do not receive a panel summary. PIs of these proposals receive ad hoc reviews and a context statement explaining the triage system. From this the PI learns that the panel chose not to discuss (or fund) the proposal.</p> <p>As noted in the 2013 COV report, PIs do not have access to the review analysis and the useful information it contains. For example, they do not see the program officer’s synthesis of disparate reviewer evaluations (in cases where that occurs) or recommendations for funding that differ from panel recommendations (in cases where that occurs).</p> <p>Data source: Jackets</p>	<p>Yes with exceptions</p>

<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>On the whole, the adjustments made (use of triage, provision of review templates) appear to have reduced the workload for reviewers, and the variability of information provided in the reviews.</p>	
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II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

SELECTION OF REVIEWERS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: DRMS program officers work hard to construct appropriate panels. They try to assure that at least two members each have extensive expertise in the fields of decision making, risk communication and risk perception, and management science and organizational behavior. In addition, the program directors appoint at least one experimental economist, one expert in quantitative operations research, and one individual familiar with survey methodology. Finally, the program directors monitor trends in the types of proposals submitted to the program and add panelists with expertise in emerging areas. For example, given the recent increase in interest in neuro-economics and neuropsychology, the program directors have added at least one individual with a background in these two areas. During FY 2013-2015 20 men and 11 women, one scholar from an EPSCoR state, one Canadian, two African-Americans, and one member of mixed-race served on the panel. The disciplinary representation is also broad.</p> <p>In order to increase the race/ethnicity diversity of the panel, we recommend that funded minority PIs be considered to serve on the panel.</p> <p>In addition to panelists, all proposals are also reviewed by ad hoc reviewers who have appropriate expertise and represent great diversity in the stage of their careers, their racial and ethnic background, and their sex. Whereas the members of the advisory panel are uniformly senior faculty with strong and often distinguished careers, the ad hoc reviewers are often at an earlier stage of their career and teach at non-Carnegie 1 institutions. Almost every proposal has at least one female reviewer. The ad hoc reviews both provide invaluable insights about proposals and</p>	<p>Yes</p>

<p>serves as a form of outreach. We recommend that minority PIs of unfunded proposals be invited to serve as ad hoc reviewers where appropriate. This practice will continue to diversify the pool of ad hoc reviewers and will also provide a valuable experience to as-yet-unfunded PIs about the NSF review system that may help them with future proposals.</p> <p>Source: program officers' report</p>	
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: Prior to selecting ad-hoc reviewers, the program directors review the Biographical Sketches of the PI and co-PIs to avoid selecting reviewers with conflicts of interests (COI). When requested reviewers notify the program directors of a conflict, they are removed from the reviewer list. As each proposal is received, the program directors review the section on "Conflict of Interest". If a conflict is noted, the review is marked as "un-releasable" and excluded from the review process. In cases where there is uncertainty regarding a COI, the program directors consult appropriate officials at NSF before including the review.</p> <p>Upon receipt of proposals for a given round, the program directors ask panelists to identify those proposals for which they have a COI. If a panelist has a COI with any of the proposals, the panelist does not review the proposal. NSF staff also marks panelist' COI's in the computer system, resulting in a panelist's inability to access the proposal and its reviews. During the meeting, NSF staff members provide panelists with a briefing on COI procedures at the beginning of the panel meeting, and each panelist signs a COI statement. If a panelist has a COI with any of the proposals, the panelist leaves the room during the discussion of the conflicted proposal. Any panelist who has a COI on a given proposal does not participate in any part of the review or decision process for that proposal.</p> <p>If the program director has a COI with a proposal, the program director does not participate in any part of the review process for that proposal. The conflicted program director leaves the room during panel discussion of the conflicted proposal, and the program director that has managed the review process for that proposal oversees the panel discussion of the proposal.</p> <p>Source: program officers' report</p>	
<p>3. Additional comments on reviewer selection:</p> <p>We are overall quite impressed with the selection of reviewers and the quality of reviews those reviewers produced.</p>	

III. Questions concerning the management of the program under review. Please comment on the following:

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Comments: DRMS successfully processes a large number of research proposals, with cumulative decisions regarding 558 proposals across multiple categories of submissions from 2013-2015. The directors made efforts to reduce reviewer burden by introducing the triage system for proposal review, as discussed earlier in this report. Overall, 17% of the submitted proposals were funded. We should note that the average “dwell time” – the time between submission and final decisions – is less than 6 months for over 90% of the submitted proposals. We view this level of performance, in light of the large number of proposals processed, as evidence of excellent management of the program.

As mentioned above, funding rates for the DDRIGs dropped significantly with the introduction of the triage system of reviews – from 43% between 2010-2012 to 27% between 2013-2016. In part this may be due to the “fund/don’t fund” categorization of the DDRIG proposals that reach the panel. As noted above in this report, we recommend that the panels utilize the broader range of review categories for DDRIGs (highly competitive, competitive, etc.) to provide greater flexibility in funding in this relatively inexpensive but valuable category of submissions.

Data source: program officers’ report

2. Responsiveness of the program to emerging research and education opportunities.

Comments: Most DRMS proposals are submitted in response to the DRMS Program Solicitation. DRMS is an inherently interdisciplinary area, and thus many of the proposals are in cross-cutting research areas. A number of these proposals capitalize on emerging research and education opportunities that fit the DRMS mission statement: to “support scientific research directed at increasing the understanding and effectiveness of decision making by individuals, groups, organizations, and society.” For example, as stated above, an increasing number of proposals received has been in the emerging area of neuro-economics.

In addition, DRMS has been involved in reviewing and funding proposals across the directorate, in particular, the Integrated NSF Support Promoting Interdisciplinary Research and Education—INSPIRE program. As the INSPIRE call for proposals states, “the program was established to address some of the most complicated and pressing scientific problems that lie at the intersection of traditional disciplines. It is intended to encourage investigators to submit bold, exceptional proposals that some may consider to be at a disadvantage in a standard NSF review process...” DRMS funded one INSPIRE award during the 2013-2016 period.

DRMS was also involved in the Collaborative Research in Computational Neuroscience (CRCNS) call for proposals and helped fund two proposals in the 2014 competition, one involving a US–German collaboration and the other a US-French collaboration.

Source: program officers’ report

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments:

DRMS has a cutting-edge interdisciplinary portfolio that is not driven by a plan for particular topics to be funded. Instead it funds the best proposals that are submitted. One suggestion, however, is to re-balance the mix of research grant and dissertation grants by increasing the number of dissertation grants that are funded (as the funding rate of the latter has fallen in recent years).

4. Responsiveness of program to previous COV comments and recommendations.

Comments: One continuing challenge for DRMS (and other) programs is to obtain balanced reviews for both the intellectual merit and broader impacts of the individual proposals. The templates introduced by DRMS, and the emphasis on balanced reviews, appear to have resulted in reasonably balanced reviews (as discussed above in this report).

The quality of the panel summaries, and the overall feedback to proposal submitters, is good. We noted that, for those proposals that were cut in the triage stage of reviews, substantially less feedback is provided. In the interest of encouraging stronger proposals in the future, particularly for investigators in underrepresented groups and from institutions with less research infrastructure, we suggest that the directors consider whether a more thorough (and, where appropriate, encouraging) “review summary” might be generated for this category of proposals.

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

RESULTING PORTFOLIO OF AWARDS	APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments: DRMS is an inherently interdisciplinary program area, and thus even proposals that are solely DRMS-funded often constitute interdisciplinary research. As a result, a wide range of disciplines are represented. The home departments of funded PIs includes: internal medicine, clinical medicine, psychology, philosophy, economics, political science, public affairs, mathematics, law, geography, and many interdisciplinary fields as well such as forest ecology, environmental sciences, and social and decision sciences. In our</p>	<p>appropriate</p>

<p>view, this diverse range of disciplines demonstrates an appropriate balance of awards across disciplines and sub-disciplines.</p> <p>Data source: Jackets</p>	
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: Of the 80 awards where DRMS was the sole or lead funder, it funded 53 research grants averaging about 3 years in duration with an average budget of about \$450,000, 22 dissertation grants averaging 1.79 years and \$20,000, and 5 workshops averaging 1.50 years and \$50,000. We view the size and duration of awards as appropriate.</p>	Appropriate
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments: Transformative research yields unexpected results, has the potential to alter accepted theories and perspectives, and could lead to entirely new fields. DRMS has a strong track record of funding innovative and potentially transformative research.</p> <p>One potentially transformative funded study considers how neurobiological development in adolescents interacts with fundamental social processes during the adolescent period. Further, it considers how the quality of relationships with parents and peers affects susceptibility to parent and peer influence.</p> <p>An example of a potentially transformative funded dissertation award is a cross-cultural study in Panama that compares concepts of moral agency among Indigenous Ng be and mainstream (Latino, Euro-American) communities. The hypothesis tested is that these two group have different concepts of nonhumans as causal agents and that this different has consequences for solving environmental dilemmas and resource conflicts.</p> <p>Both of these proposals break the usual disciplinary boundaries. They map concept from disparate theoretical frames into resolving a common set of problems. The first proposal takes social concepts (peer and parent influence) and looks for neurobiological substrates, consequently shedding light on both sides of the equation. The second project takes concepts from moral reasoning and puts them in a cross-cultural context to expand the basic theoretical space on moral reasoning and examine the implications of these concepts for solving real world resource allocation problems.</p>	Yes
<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments: DRMS does a great deal of co-funding with programs within the Directorate of Social, Economic and Behavioral Sciences (i.e., with programs in the Division of Social and Economic Sciences and ones is the Division of</p>	Yes

<p>Behavioral and Cognitive Sciences) and with other directorates such as Engineering. In the past 3 years, a total of 56 awards were co-funded with DRMS either receiving or contributing funds from/to other programs. Compare that to the 93 total new awards that DRMS made during the same 3-year period as sole or lead funder to see the sizable fraction of DRMS awards that are co-funded with another program.</p> <p>We find this pattern of co-funding indicative of a strong DRMS commitment to interdisciplinary funding, consistent with the mission of the Division.</p>	
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments: In the past 3 years, awards were made to universities in half the states in the US. States with large number of awards tend to be those with large numbers of Ph.D. granting institutions (i.e., California, New York, Illinois, and Texas) or those with concentrations of researchers doing work on decision making and risk (New Jersey, Washington, and Oregon). Thus, the patterns of geographical clustering are not surprising but the result of where the proposals (and especially the high quality proposals) tend to originate.</p>	Appropriate
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments: Seventy-one percent of awards went to research-intensive PhD institutions; however, 62% of the submissions came from those institutions. Thus, research-intensive PhD institutions are only slightly over-represented in the number of awards. Similarly, non-profit institutes submitted 8% of the proposals and received 9% of the awards, so they are not over-represented in awards. Thus, if DRMS would like to see more awards to 4-year or Masters-level colleges, it would need to solicit more applications from them, as these institutions have a funding rate that is only slightly lower than that experienced by research-intensive PhD institutions. The reason for the low numbers of awards to 4-year or Masters-level colleges is that few proposals were submitted from these categories of institutions.</p>	Yes
<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants.) An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award.</p>	Appropriate

<p>Comments: The funding rate for senior PIs is notably higher than that for junior PIs. Specifically, the funding rate for regular proposals and dissertation grants combined is 14% for PIs within 7 years of PhD and 21% for more senior PIs. Part of that difference, however, is due to the fact that dissertation grants (which fund the most junior investigators—graduate students) have the highest funding rate, and yet are likely to have senior faculty as the PI. Furthermore, CAREER awards, which fund only junior faculty, have the lowest funding rate of all: 6% of new CAREER submissions were funded.</p> <p>Although dissertation grants have a higher funding rate than regular research grants, as discussed above, the funding rate for dissertation grants has fallen in recent years—although it is still higher than the funding rate for regular research grants. As stated above, we would like to see the DDRIG funding rate come back up, and we provided a suggestion that may facilitate that.</p> <p>Although this differential funding rate between junior and senior investigators may seem problematic, we think it largely stems from the categorization for DDRIGs as “senior investigator” grants. By our rough calculations, if DDRIGs were excluded from the comparison, then 2/3 of awards are going to senior faculty while 1/3 are going to junior investigators. If the DDRIGs are counted as funding junior investigators, then approximately equal numbers of awards are going to junior and senior investigators. This balance strikes us as appropriate and a wise investment in future and developing scholars.</p>	
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments: DRMS funded or co-funded 3 CAREER proposals which by definition integrate research and education.</p> <p>Some other funded proposals also included educational components. One project aimed to increase efforts to increase participation of women by founding a disciplinary group.</p> <p>In addition, by our estimate from the sample of proposals that we reviewed, most included an educational component, such as developing interdisciplinary programs and enhancing undergraduate and graduate education. A representative example is a proposal that plans to inform climate change communication curriculum and graduate and undergraduate student training and research.</p>	<p>Appropriate</p>

<p>9. Does the program portfolio have appropriate participation of underrepresented groups²?</p> <p>Comments: 39% of proposals have female PIs. The funding rate for women (21%) and men (18%) is very similar. Furthermore, the funding rate for regular grants where a woman is either the PI or co-PI (16.4%) is similar to the overall average. Similarly, the funding rate for dissertation grants where a woman is either the PI or co-PI (27.8%) is similar to base rates.</p> <p>However, the funding rate for white PIs (22% n=327, 95%CI [17%, 25%]) is notably higher than for Asian PIs (7%, n=67, 95%CI [1%, 13%]), African American PIs (0%, n=11) and Hispanic PIs (10%, n=29, 95%CI [0%, 21%]). Furthermore, the funding rate for regular grants where a person of color is either the PI or co-PI (6.4%) is lower than the overall average. Similarly, the funding rate for dissertation grants where a person of color is either the PI or co-PI (11.1%) is lower than base rates.</p> <p>We have several recommendations.</p> <p>NSF could fund an investigator (though an EAGER or a dear colleague letter) to analyze EIS data thoroughly to understand the patterns of funding of white and minority investigators and the reasons for the funding rate discrepancies. For example, do reviewer ratings predict funding outcomes equally well for white and minority PIs? How have institutional changes over time (e.g., the triage process) differentially affected the rate of awards to white vs. minority investigators? What characteristics of white vs. minority investigators can statistically explain the gap in funding rates (e.g., PhD institution, current institution, topic studied, characteristics of the reviewers assigned). Results of this study could inform recommendations for NSF review policy. For example, if the review process disadvantages minority investigators, blind review might be considered. In contrast, if proposals from minority investigators tend to be weaker, then efforts aimed at developing grant writing skills for minority investigators earlier in the pipeline may be the solution.</p> <p>A second recommendation is that NSF could pilot some interventions even before the results of this study are complete. Specifically, NSF could fund a grant writing workshop for aspiring PIs of color with NSF-funded mentors who would help the PIs workshop their proposals prior to submission.</p> <p>NSF could also pilot a blind review panel to test the feasibility and implications of using blind review. Although a single panel is too small a dataset to see if blind review increases the rate of funding for minority PIs, it would allow program officers and panelists to explore the logistics of using this system.</p>	<p>No. Work on this issue is needed</p>
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² NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

<p>As discussed above, investigators of color who have submitted to DRMS can be recruited as reviewers. Those who have been funded can be considered as panelists. Those who have not been funded can be considered as ad hoc reviewers. Serving as a reviewer can provide a valuable insider view into the NSF grant review process, assisting an investigator in developing a higher quality proposal for her or his next submission.</p> <p>Additionally, DRMS could fund professional societies (e.g., SJD, SRA) to provide travel fellowships to researchers of color. DRMS program officers could write to PIs of color who have applied for DRMS funding in the past to recommend that they apply for these travel fellowships. Attending professional society meetings to network and develop collaborative relationship, which in turn would help minority PIs develop stronger future grant proposals.</p> <p>A final suggestion is to pay particular attention to DDRIG proposals that fall in a gray area that could be fundable if improved. If DRMS could provide a rapid turn-around system that would allow graduate students to revise and resubmit, this would allow DRMS to fund more DDRIGs. This initiative could result in the funding of more minority graduate students, thus developing the pool of future investigators who will later submit high quality proposals.</p>	
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: The NSF 2014-2018 Strategic Plan outlines three goals for the Agency:</p> <ol style="list-style-type: none"> 1. Transform the Frontiers of Science and Engineering 2. Stimulate Innovation and Address Societal Needs through Research and Education 3. Excel as a Federal Science Agency <p>As discussed in Section IV, #3, DRMS funds transformative research, making it relevant to the first goal of the Agency’s mission. DRMS-funded research is particularly relevant to the second goal, specifically to the first strategic objective under that goal: “Strengthen the links between fundamental research and societal needs.” DRMS regularly funds research that bring together basic science and critical societal needs – for example, topics such as communicating the risks of terrorism, the effects of poverty of decision making, or decision making about climate change. Some awards funded in the past three years that illustrate this include:</p> <p>A study of perceptions and behaviors in response to infectious diseases;</p> <p>A study of perceptions and behavioral responses to heat waves (currently the leading cause of weather-related deaths in the US);</p>	<p>Yes</p>

<p>A study of risk perceptions of Ebola, and effective risk communication to avoid over- and under-reaction to the threat of Ebola;</p> <p>An interdisciplinary study of impacts of repeated weather-related hazards – such as hurricanes and heat-waves -- on the vulnerability and resilience of affected regions of the US;</p> <p>A collaborative international symposium on understanding and addressing “social amplifications” of natural and technological hazards, using the case of the 2011 Great Eastern Japan Earthquake (GEJE), resulting tsunami, and Fukushima Dai-ichi power plant safety systems failures;</p> <p>In short, DRMS directly addresses pressing agency national priorities and needs.</p>	
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p>	

Questions for Division Level Discussion. Please provide comments on both scientific and management aspects of the following division-specific questions:

DIVISION LEVEL DISCUSSION
<p>1. Looking forward, what is your vision for the intellectual future of SES? If money were no object, what type of infrastructure would be needed to attain this vision?</p>
<p>2. Issues of replicability, reproducibility, and robust science have been the focus of discussion within the SBE directorate and across the Foundation. In your opinion, what role should funding agencies play in promoting robust science?</p>
<p>3. A related issue is one of data management, public access and data –sharing. What steps should SES take, if any, to promote a climate of data-sharing with its scientific communities?</p>

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

The big issue in need of future study and intervention in the gap in funding rates between white and minority PIs. We have outlined our recommendations about this above.

2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

No further comments. The program offices have done a commendable job at achieving goals and objectives.

3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

NSF has a large database of submissions, reviews, and awards. This valuable dataset could be used more profitably to understand how peer review is conducted. Our suggestions on how to explore the reasons for the gap in funding rates between white and minority PIs relate to the opportunity to use this unique dataset, but the opportunity is much larger than that. NSF should seek other opportunities for how its dataset could be used for publishable research on judgment, evaluation, inter-rater reliability, and similar topics.

4. Please provide comments on any other issues the COV feels are relevant.

Program-specific COV reviews are not needed every 3 years. They could be done every 6 years with directorate-wide COV reviews done on the off cycles.

5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

The Committee of Visitors is part of a Federal advisory committee. The function of Federal advisory committees is advisory only. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the Advisory Committee, and do not necessarily reflect the views of the National Science Foundation.

SIGNATURE BLOCK:

X /s/ Gretchen Chapman

X /s/ Hank Jenkins-Smith

For the Decision, Risk and Management Sciences Program

Economics
**INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT**

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: The Economics Program uses ad-hoc reviewers and panel reviewers. Each proposal is evaluated by at least 3 reviewers, including at least two panel reviewers. For the 50 proposals from the 6 rounds of proposals that were made available to the COV, the number of reviews varied between 3 and 10, with a mean of 5.3. The mean number of reviews for the 40 accepted proposals was 5.28 and the mean number of reviews for the 10 declined proposals was 5.4.</p> <p>The program officers select a diverse group of ad-hoc reviewers, including both junior and senior faculty, economists outside the U.S., economists working in policy positions for government agencies, and scholars in other disciplines as appropriate.</p> <p>Panel reviewers consist of experts in a variety of areas in economics. Panelists generally serve a term of up to 4 panel meetings. Membership on the panel rotates so that there is always some continuity in panel membership while a few new panelists join each meeting.</p> <p>Panel meetings occur twice a year; they are conducted as "split sessions", with two sub-groups of panelists meeting concurrently to discuss proposals in a particular area of economics. During the past three years, the program directors experimented with "virtual panels" for econometrics proposals, where panelists discussed these proposals via a teleconference. If panelists agree that the reviews of a proposal are not strong enough to merit discussion (receiving no more than one V from an ad-hoc reviewer), then the proposal is marked as 'Not Competitive' without further discussion.</p>	<p>Yes</p>

<p>Similarly to a few other programs, the Economics Program has adopted a two-step process of review within a review cycle. If after soliciting external ad hoc reviews, these indicate that the proposal lacks intellectual merit and broader impact then the proposal is declined without going to panel. This has resulted in a smaller number of proposals assigned to the panel. Moreover, the adoption of this “did not get to panel” practice has required fewer panelists and the number of panelists has gone down from 17 to 14, improving the panel experience and allowing more time to discuss each proposal that have a chance to be funded. We also noted that panel loads for members of the Economics Program is higher and this has also allowed the reductions in costs and number of panelists.</p> <p>Another good development has been the creation of a separate review process for infrastructure investments into Research Data Centers. These reviews are now done jointly by the Economics, Sociology and MMS programs instead of having separate reviews. The expertise of the panel reviewing these proposals has increased in quality and brings an inter-disciplinary perspective for the use of these Centers.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative and Jackets</p>	
<p>3. Are both merit review criteria addressed</p> <p>Comments:</p> <p>g) In individual reviews?</p> <p>The program officers ask all reviewers to assess both intellectual merit and broader impact and the Fastlane interface has separate text boxes for intellectual merit and broader impact. They do not ask reviewers to rework their review if they do not write explicitly about both criteria.</p> <p>Of the 50 proposals that we reviewed, about 2/3 of the individual reviews addressed the broader impact explicitly. The bulk of the comments are about the proposal’s intellectual merit. However, as explained below, the PO always addresses both intellectual merit and broader impact in the feedback provided to the PI.</p> <p>h) In panel summaries?</p> <p>All 50 panel summaries that we reviewed adequately address both review criteria. Most summaries address the two criteria separately, although some summaries focus primarily on one of the criteria (either intellectual merit or broader impact), presumably reflecting the bulk of the panel discussion.</p> <p>i) In Program Officer review analyses?</p>	<p>Yes</p>

<p>All 50 review analyses that we reviewed adequately address both review criteria in separate and very detailed paragraphs.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative and Jackets</p>	
<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: The reviews vary in length, and some are (much) more detailed and useful than others. However, for each of the proposals that we reviewed, the vast majority of reviews were detailed and useful. There were only a handful of reviews, which provided superficial feedback on the proposals. Moreover, the panel and POs often put less weight on reviews with extreme scores (e.g., E and F) but with insufficient detail or without concrete feedback.</p> <p>Data Source: Jackets</p>	Yes
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: The economics panel summaries are short, especially in comparison with the panel summaries from other programs that co-reviewed some the proposals. However, given the very large number of proposals in the economics panels (especially in comparison with some of the other panels) and the short amount of discussion time that can be allocated to each proposal, this observation is not surprising. Nonetheless, the panel summaries are clear about the reasons for the decisions and often the panel summaries refer to comments made in the individual reviews, which is helpful.</p> <p>Data Source: Jackets</p>	Yes
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments: Yes. The documentation is fully sufficient to understand the award decision. The program officers have followed the suggestion made by the previous COV to use form statements in the program reviews for proposals for which the individual reviews provide a good rationale for why the proposals were not funded. The Economics Program reviews for the funded proposals and the non-funded proposals in the competitive category are very detailed and do a good job justifying the reasons for the decisions.</p> <p>Data Source: Jackets</p>	Yes

<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments: The information that is accessible to the PI in form of a context statement, individual reviews, a panel summary, and—if requested—an explanation by the program officer always provides a rationale for the decision whether positive or negative.</p> <p>Data Source: Jackets</p>	<p>Yes</p>
<p>7. Additional comments on the quality and effectiveness of the program’s use of merit review process:</p> <p>On quality, given that external ad-hoc reviewers often omit an assessment on the broader impact, it may be good to highlight in the invitation to review sent to external reviewers that this is of special interest to NSF and that would want the reviewer to ensure that they comment on it.</p> <p>On effectiveness, the data in III.1 shows that dwell time in the Economics Program is longer than in other programs. It may be worthwhile to use more frequent “nudges” with reviewers to ensure that reviews are sent sooner. Also, following the previous COV’s recommendation, it would be recommendable to use software, such as editorial express, to keep track of potential reviewers and to enable identification of future reviewers.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative and Jackets</p>	<p>Yes</p>

II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

<p style="text-align: center;">SELECTION OF REVIEWERS</p>	<p style="text-align: center;">YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE</p>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: Panel reviewers consist of experts in a variety of areas in economics. Panelists generally serve a term of up to 4 panel meetings. Membership on the panel rotates so that there is always some continuity in panel membership while a few new panelists join each meeting.</p> <p>During FY2012-2015, with the exception of one panelist from the World Bank, all panelists were from US universities with PhD-granting Economics Departments. Moreover, the World Bank panelist is a member of the Research Department at this institution and is an active researcher himself.</p> <p>The FY2012-2015 panel was very balanced.</p> <p>(1) Only 4 schools had more than one representative on the panel.</p> <p>(2) 10 of the 35 panelists were women (28.6%). This percentage compares favorably with the representation of women on the economics panel during FY 2010-2012 (23.1%) as well as with the overall average of women in the economics profession; according to the 2014 report of the <i>Committee on the Status of Women in the Economics Profession</i>, about 12.1% of the full professors and 23.5% of the tenured associate professors in PhD granting departments in economics are women.</p> <p>Of the ad hoc reviewers, only about 25% self-reported their gender, their ethnicity, and whether or not they have a disability. Of those who provided this information, about 25% were women and about 10% were from under-represented groups.</p> <p>Both the panel reviewers and the individual ad-hoc reviewers include well-established researchers in the sub-discipline relevant to the proposal.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative and Jackets</p>	<p>Yes</p>

<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: The program has adopted good procedures to minimize the chance that COIs will taint the review process.</p> <p>When the panel discusses proposals during the panel meeting, a panelist with a COI leaves the room and does not participate in those discussions. When a program officer has a COI, the proposal is assigned to a different program officer to manage the process, including seeking reviews, running the panel discussion during the meeting, writing the review analysis, and making the final recommendation.</p> <p>The program officers try to prevent inviting ad-hoc reviewers who have a COI with a proposal by examining the bio sketch section of the proposal. On the rare occasion in which a reviewer submits a review and the COI is identified later, panelists are told that there is a COI and that the review should not be considered when they make their recommendation and the review is not taken into consideration in the program officer's funding decision.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative and Jackets</p>	<p>Yes</p>
<p>3. Additional comments on reviewer selection:</p> <p>Two recommendations from the previous COV were to include more junior faculty in panels as well as members from other disciplines. Bringing members from other disciplines may not work well given that these members would only be qualified to comment on a small sub-set of the proposals. Instead, sending inter-disciplinary proposals to be reviewed by other programs seems to be a better solution. As for junior faculty, there is value for junior faculty to serve in NSF panels but it is not worthwhile to over-burden junior faculty with heavy service. Our recommendation is to consider inviting junior faculty to serve on individual panels rather than service for a full two-year term.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative and Jackets</p>	

III. Questions concerning the management of the program under review. Please comment on the following:

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Comments: Nancy Lutz took over the leadership of the program in September 2009 and continued in this role during the time period covered by this COV. Rotating Program Directors were: Michael Reksulak and Niloy Bose (both FY 2013), as well as Georgia Kosmopoulou and Sudipta Sarangi (both FY14 - FY15).

The Economics Program is very well managed. The career director is doing an outstanding leadership job, and the rotators provide great outside insights and ensure that the program has the appropriate additional support given the high volume of submissions received by the Economics Program. We echo the sentiments of the FY2010-2012 COV that the economics research community is fortunate to have such an outstanding team to manage the program.

Time to Decision: "Dwell Time" is the time from when a proposal is submitted to NSF (or due, if the proposal is submitted before the due date) and the day the Division Director approves the program's recommendation. Proposal actions map onto fiscal years. For example, a proposal received in January 2013 counts as a FY2013 proposal action if the recommendation is approved no later than September 30, 2013. If the proposal is formally recommended for decline in October 2014, then it counts as an FY2014 action. Three things are clear from the data. First, there was a large number of seriously overdue (more than 12 month) actions in FY2014. These were actions that had "piled up" from previous fiscal years for multiple reasons. For example, a number were mis-assigned in the database system when former rotators left and new rotators joined the program. Because they were not assigned to any program director, the programs directors were not aware that they were still pending a formal decision. Others were late because of difficulty getting three external reviews. Still others were delayed because of workload; the PIs had informal information that they were not planning to recommend funding, but formal write-ups were delayed.

Second, in all three years a substantial fraction of proposals take 6 - 9 months for decision. This is largely because the program regularly holds some proposals from the Fall round for a later funding decision for two reasons. First, it allows program directors to compare proposals "on the bubble" in the Fall round to similar proposals from the Spring round. Second, it gives flexibility in dealing with substantial budget uncertainty. During the period of this COV, the program had final word on total budget amounts in June or even July of the fiscal year. This meant that program directors have a practice of holding some proposals from the Fall round for funding decisions late in the fiscal year; the alternative is to decline some proposals in the Fall round (because they were warned about the possibility of a 10% cut in the program budget), only to find later in the Spring that they did indeed have funds to make the award. While proposals can be 'undeclared', this is a cumbersome process at best.

Third, the numbers show substantial improvement in FY2015 over the previous fiscal years. This happened because the program took some specific efforts to improve dwell times after the FY2014

experience. This included: (a) reallocating proposal workloads across the three program staffers; (b) working to move proposals from the 6-9 month to the under-6 month category by prioritizing rapidly declining proposals shortly after the panel meeting with simplified language for the review analysis; (c) careful monitoring of how proposals are assigned to replacement program directors when a rotator leaves the program. We consider the standardized language for the review analysis is a good practice.

Data Source: Program Information for SES COV members, Econ Narrative and Jackets

2. Responsiveness of the program to emerging research and education opportunities.

Comments: It has been the long-standing policy of the Economics Program to follow a 'bottom up' approach. As long as the economics research community continues to develop new and potentially transformative ideas, the program officers see their job as keeping abreast of what is happening in the community, helping economists understand different possible sources of NSF funding, and developing a portfolio of awards that is broadly balanced across a variety of dimensions.

We echo the sentiment of the FY2010-2012 COV that this approach has served the Economics Program and the economics profession as a whole very well. We encourage the program to continue this practice.

Data Source: Program Information for SES COV members, Econ Narrative and Jackets

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: The economics community needs to be well aware of the type of proposals that NSF seeks to fund, including any changes in priorities and practices. Hence we consider outreach to be an essential part of any well-functioning NSF program.

The program officers are already doing a fair amount of outreach, mostly at large conferences and through the American Economics Association. It would be desirable to extend this outreach to be able to reach members of the economics community who are not tied so closely into the existing networks, namely economists at 4-year colleges and institutions that grant Master degrees but not PhDs.

Unfortunately, the increase in the number of proposals and the cuts in budget make it difficult for the program directors to engage in additional outreach. We share and echo the concerns of the previous CoVs regarding program officer workload. We understand the budgetary issues, but we would like to point out that starting new initiatives and new programs without substantial new funds comes at the cost of making the established programs worse. We encourage NSF to find ways to restore some of the funding power (in real terms) that the established programs used to have.

Data Source: Program Information for SES COV members, Econ Narrative; and Jackets

4. Responsiveness of program to previous COV comments and recommendations.

Comments: The FY2010-2012 COV raised the following points:

- (1) The number of highly competitive proposals that were not funded because of overall low funding

The program has done well in asking proposals to revised budgets in order to spread out funding across more proposals.

- (2) A desire to see more competitive proposals being submitted by non-highly intensive PhD granting institutions, especially those serving underrepresented populations.

It would be helpful to reach out to non-PhD granting institutions to encourage submissions from a more diverse group of researchers.

- (3) A request that the program staff use the longer and larger data sets of proposals that the program has available to test whether there are differential award rates by state or type of institution, and whether they may be biases in the review process.

Our understanding is that this has not been done. We encourage the Economics Program to pursue this analysis.

- (4) Reduce the workload of program officers by streamlining the review process: better information system to identify reviewers

Like the previous CoV, we recommend to use a software system, such as editorial express, that allows to better track reviewers and will allow to reach out to a broader set of reviewers overall.

- (5) Move the big infrastructure programs from the disciplines to a long-term infrastructure cluster

Proposals of Research Data Centers (RDC's) are now considered jointly by the Economics, Sociology and MMS programs rather than by the individual programs. This has allowed to have better suited panelists who can have sole expertise on data security issues relevant for this grant funding.

Data Source: Program Information for SES COV members, Econ Narrative; and Jackets

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

<p style="text-align: center;">RESULTING PORTFOLIO OF AWARDS</p>	<p style="text-align: center;">APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE</p>
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments: The program officers use 12 different ‘field’ categories in managing proposals by research area: (1) Theory, (2) Econometrics, (3) Macroeconomics, (4) International, Development, (5) Finance, (6) Industrial Organization (IO), (7) Environmental, (8) Labor, (9) Public and Regional, (10) Economic History, (11) Behavioral Economics, and (12) Infrastructure.</p> <p>There is a generally a good balance across sub-disciplines, though theory, macro, econometrics and international have the highest rates and labor, history and especially environmental receive a much lower percentage of projects. Given that women and minorities tend to be over-represented in these more applied fields and under-represented in theory and econometrics, this also has implications for the funding rates for women and minorities. However, the percentage of environmental projects has grown tremendously over the past few years.</p> <p><u>Economic Theory:</u> These projects develop and analyze formal mathematical models of decision making (by individuals and by organizations such as firms and governments), models of strategic behavior, and models of economic systems from small scale systems, such as a single market, to large scale work in general equilibrium modeling that considers entire economies. Work in this area is increasingly incorporating insights from other social and behavioral sciences. One PI is developing new ways to use game theory to analyze situations where individuals and groups interact under conditions of strategic uncertainty. This field also includes some projects in mechanism design. Another PI is working to develop general principles for market design in decentralized market settings, in order to better understand when decentralized markets are likely to improve efficiency relative to a centralized trading market.</p> <p><u>Econometrics:</u> These awards fund research that develops new methods for the analysis of data. Some of these projects are quite applied in their focus, including both the development of new methods and the immediate application of the methods. Two PIs are developing new nonparametric and semiparametric statistical procedures that will lead to more reliable estimates. Another is working on new econometric methods that will allow others to test hypotheses about the effects of network relationships on decisions made by individuals, households, and firms.</p>	<p>Yes</p>

Macroeconomics and Financial Markets: The award portfolio in this area includes work that analyzes economic systems as a whole; increasing this area also includes studying financial markets, so for the purposes of managing the program we are now including more finance-focused proposals in this category. Several PIs developed a method to measure the financial soundness of individual firms and look for a relationship between financial soundness and US business cycles. Another is working on macroeconomic amplification mechanisms, with a focus on liquidity traps and the pro-cyclicality of leverage ratios. Yet another works on the interaction between liquidity, asset prices, and aggregate economic activity.

International: This group of awards is particularly broad. It includes some work on the macroeconomics of international finance, and work in microeconomics on specific markets affected by international trade, and projects that examine questions in development economics. A PI is developing new methods to evaluate the benefits of trade integration to an economy as a whole, methods that take into account that competition from imports can force domestic sellers to keep prices closer to costs. Other PIs are working in a project to further our understanding of firm networks in international trade by linking firm level trade data in the US to firm level trade data in China and Columbia. Understanding the mechanism through which importers and exporters match with each other, how those relationships change in the face of shocks, and the pattern of those relationships to other economic phenomena opens new transformative frontiers in trade research.

Industrial organization: Awards in this field include projects in mechanism design that are focused on specific applications rather than broad new methods, as well as empirical projects that evaluate the effectiveness of specific kinds of market designs and tests theories about market competition. This field of research also includes projects in innovation and technical change. A PI is bringing econometric methods developed for auction analysis to the study of bank refinancing auctions and US Treasury auctions; by using these ideas from industrial organization, he gets new ways to measure not only the financial health of individual banks but also the costs and benefits of the primary dealer system used in the US. Some PIs are using data from North American internet service providers to estimate the demand for internet service and the size of externalities created by network congestion.

Environmental and Resource Economics: This has been a relatively small area for the program over the past several decades, but the program officers are seeing an increasing number of high quality proposals fueled by current policy concerns. A PI is investigating the impact of renewable electricity generation methods like wind power and solar power on electricity markets; this includes incorporating strategic behavior by energy producers into the models. A number of projects not included in this category are in part about the environment; Several PIs examine how economic incentives, social learning, and subjective beliefs affect the decision to use clean-burning cook stoves.

Labor: This field includes not just work on the economics of labor supply and demand, but research on a variety of factors that influence both supply and demand. For example, several PIs have embarked on an ambitious project to collect data from 55,000 manufacturing plants across the US on IT use. Combined with existing Census microdata, the PIs (and other scholars since the data are available

through Research Data Centers) will be able to describe both causes and effects of the use of IT and how it affects innovation and productivity. This category also includes work in education and health economics. One PI explores the policy implications of a model of the US market for higher education that includes competing public and private higher education sectors. His general equilibrium model aims to improve our understanding of how federal financial aid policies influence educational outcomes. A PI is using large scale administrative data to examine how health insurance affects the labor market and financial outcomes.

Public/Regional/Political Economy: This category includes research in public finance, work that focuses on the effects of taxes on behavior and government revenues, research that looks at the effects of public expenditures, work that uses economic theory and methods to study political behavior, and work that looks at regional and urban economics. Several PIs' work is using historical geographic data to study the emergence of racial segregation in American cities. A number of awards support work by PIs who use government administrative data to measure the effects of location on intergenerational economic mobility.

History: Awards in economic history focus on projects that use or develop historical data sources to test economic theory in significant ways. Several PIs are developing a database that includes bankruptcy cases filed between 1898 and 1990; the data gives researchers a new source for testing hypotheses about the effects of macroeconomic fluctuations, medical debt, and changes in legal practice on bankruptcy filings and bankruptcy outcomes. A PI is gathering data on the personal characteristics of Italian immigrants to the US between 1907 and 1925, linking the data to Census records to determine the nature and determinants of their productivity after immigration.

Behavioral/Experimental: Work in behavioral economics has become increasingly integrated with other fields of economics research, and experimental methods are now used in a number of fields. The program officers continue to fund projects in behavioral economics, often in collaboration with the Decision, Risk, and Management Science program. PIs are using surveys and experiments to measure if, relative to men, women are more likely to receive and agree to requests for work-related tasks that are unlikely to lead to promotion. PIs are using brain imaging techniques to measure neural activity while subjects participate in a market trading game designed to encourage bubbles. They want to test whether neural activity can predict how large a bubble will become and how long it will last.

Infrastructure: This category includes three different components. The first is NSF support for large data collection efforts. The second is sponsoring conferences and workshops, and the third is projects designed to assist in the education of future economists.

The single largest award made by the Economics Program funds the Panel Study of Income Dynamics (PSID), a longitudinal survey initiated in 1968 of a nationally representative sample for U.S. individuals and the family units in which those individuals reside.¹⁶ The panel provides shared-use databases, research platforms, and educational tools on intergenerational and life-cycle measures of economic and social behavior. The data are not available elsewhere (no other data set

<p>combines intergenerational data on families and adult children from those families, life course observations on the same families for thirty-seven years, observations on a comprehensive national sample of U.S. families) and they are critical for research on poverty, savings, fertility, labor supply, and intergenerational relations. Although the PSID is used predominantly in economics, sociology and demography, the data are available and have been used throughout the social and behavioral sciences. Articles based on PSID data have appeared in 315 different journals from a variety of other scientific disciplines, including geography, psychology, child development, management and organizational development, survey methods, statistics, gerontology, food and nutrition and epidemiology. The PSID is co-funded by a consortium of government agencies including HHS/ASPE, NIA, NICHD, and HUD.</p> <p>The program also partners with the MMS program and other NSF programs to make awards providing seed funding for new Census Research Data Centers (RDCs), which grant secure access for academics to confidential Census administrative data. The program also contributes to other data infrastructure projects, such as the Luxembourg Income Study and the Penn World Tables, and provide seed funding for other data collection initiatives. The program continues to fund a number of different conference and workshop series that meet each year and involve researchers from across the United States.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative</p>	
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: The mean award amount among the 40 funded proposals available in the jackets was \$11,738 for dissertation proposals and \$307,169 for non-dissertation proposals (average duration about 3 years). These amounts are fully in line with those funding during the periods of past COVs.</p> <p>Data Source: Jackets</p>	Yes
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments: It has been the long-standing policy of the Economics Program to follow a 'bottom up' approach. As long as the economics research community continues to develop new and potentially transformative ideas, the program officers see their job as keeping abreast of what is happening in the community, helping economists understand different possible sources of NSF funding, and developing a portfolio of awards that is broadly balanced across a variety of dimensions.</p>	Yes

<p>The projects listed in our response to question IV.1 represent very innovative research, and there is a good chance that several of them will ultimately be seen as being transformative.</p> <p>During the period 2013-15, the Economics Program has supported innovative research to develop new methodologies, generate new data, and address important issues on the recent financial crisis and the environment. We commend the Economics Program for funding several projects that generated new data that other can use and address important issues regarding replicability. These are valuable efforts given the general discussion regarding data sharing as well as the reproducibility and robustness of results.</p> <p>During the time period of the COV, researchers funded by the Economics Program have won several prestigious awards:</p> <p>(1) Al Roth, Lloyd Shapley, Eugene Fama, Lars Hansen, Robert Shiller, and Jean Tirole all won the Sveriges Riksbank Prize in Economic Science in Memory of Alfred Nobel.</p> <p>(2) Raj Chetty, Matthew Gentzkow, and Roland Fryer, Jr., all won the John Bates Clark award of the American Economic Association for the best American economist under the age of 40.</p> <p>(3) The teams of Preston McAfee/Paul Milgrom/Robert Wilson and Alvin Roth/David Gale/Lloyd Shapley won Golden Goose Awards for their NSF-funded research that led to major breakthroughs in auction and market design.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative and Jackets</p>	
<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments: The Economics Program has strong relationships with other programs in SES, BCS, and SMA and frequently co-reviews proposals submitted to other programs. Proposals that are well-reviewed in more than one program are generally co-funded (that is, they are funded jointly by several programs working together. The most active co-review relationships are with MMS (Methodology, Measurement and Statistics) for econometrics research, Sociology for research on education and also for some infrastructure awards, and DRMS (Decision, Risk, and Management Science) for behavioral economics.</p> <p>The following table gives information on co-funded awards. "Econ Primary" means that the listed NSF program contributed funding to an award managed by Economics; "Econ Secondary" means that Economics contributed funding to an award managed by another program.</p>	<p>Yes</p>

	Econ Primary	Econ Secondary	
Decision Risk and Management Sciences	3	3	
Law and Social Science	1	1	
Method, Measurement, and Statistics	12	4	
Political Science	1	0	
Science of Organizations	3	0	
Sociology	3	6	
Geography and Spatial Sciences	1	0	
Science of Science Policy	3	0	
Science Resources Statistics	2	0	
Research in Networking Tech	0	1	
<p>Among the 40 funded proposals in the jackets, 9 proposals (22.5%) were co-funded with other programs.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative; and Jackets</p>			
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments: There is a concentration of awards in a few states, but this is because most of the proposals come from these few states in the North East, CA, IL, VA and NC. We repeat the suggestion made by the previous COV and encourage the Economics Program to analyze if there are disparities in the success rates by location. Importantly, we also encourage the Economics Program to reach out to universities in the South, Midwest and West to encourage applications from other parts of the country.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative, and Jackets</p>			Yes
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments: Research-intensive PhD-granting institutions submit most of the proposals, and they receive most (83.9%) of the awards. Most of the rest of the proposals from non-PhD granting institutions come from non-University proposals. Institutions such as the NBER and the Brookings Institution are included in the "Non-University" category, but most of the NBER proposals are in fact submitted by faculty in PhD-granting institutions.</p> <p>Proposals submitted by minority-serving institutions rarely get funded because they turn out not to be competitive. We echo the sentiment expressed by the FY</p>			Yes

<p>2010-2012 COV that the program officers do an excellent job in ensuring that all proposals are reviewed fairly. However, we encourage the POs to reach out to minority serving institutions to inform and support faculty in submissions of proposals since these institutions may not have an internal infrastructure to support the development and submission of proposals.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative</p>	
<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants). An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award. Mid-career investigator is defined as someone between 8 and 14 years of receiving degree at time of award.</p> <p>Comments: For FY 2013-2015, the average percentage of awards on which the Lead PI or co-PI are new investigators was 56.7%. The previous COV lists the funding rate for projects with at least one new PI as “23 percentage points lower than that of projects submitted by veteran PIs,” thus suggesting an average funding rate for new PIs of about 38% for FY 2010-2012. Hence the Economics Program has increased the funding rate for new PIs considerably.</p> <p>For FY 2013-2015, the average percentage of awards with early-career Lead PIs was 32.9%. The American Economic Association’s Universal Academic Questionnaire for the AY2014-2015 (AER, 2015, Vol.105(5), p.681) shows the distribution of ranks in 112 PhD granting institutions:</p> <ul style="list-style-type: none"> - Assistant Professors 26.2% - Associate Professors 21.8% - Full Professors 52.1% <p>Assuming that most early-career investigators are assistant professors, the Economics Program is funding early-career Lead PIs at a somewhat higher rate than their representation in PhD granting departments.</p> <p>The percentage of awards for researchers between 8 and 14 years after receiving their Ph.D.’s is about 21% between 2013-15, which in in line with the share of Associate Professors in the Economics profession.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative American Economic Association Universal Academic Questionnaire Summary Statistics, AER: Papers and Proceedings 2015, 105(5): 679-681.</p>	<p>Yes</p>

<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments: Almost every proposal includes support for graduate students. Dissertation funding is generally low in the Economics Program compared to Sociology or Political Science. We recommend that the Economics Program encourage more submissions for dissertation awards. Aside from supporting young researchers, this would also help to increase the pipeline of women and minorities in the profession.</p> <p>Data Source: Jackets</p>	<p>Yes</p>
<p>9. Does the program portfolio have appropriate participation of under-represented groups³?</p> <p>Comments: On average over the last three years, the percentage of awards given to PIs or co-PIs in under-represented groups is 8.7%</p> <p>The American Economic Association’s Universal Academic Questionnaire for the AY2014-2015 (AER, 2015, Vol.105(5), p.681) shows the percentages of Blacks and Hispanics in 112 PhD granting institutions:</p> <ul style="list-style-type: none"> - Assistant Professors 8.9% - Associate Professors 8.7% - Full Professors 4.0% - Other 11.9% <p>The AEA does not provide information about Native Americans. Hence, the Economics Program is funding members from underrepresented groups at about the same percentage as their representation at PhD granting institutions. Thus, the low number and shares of awards is due to smaller number of applications and generally the smaller pipeline due to the few minority faculty in the Profession.</p> <p>On average over the last three years, the percentage of awards given to female PIs or co-PIs is 18.6%</p> <p>The American Economic Association’s Universal Academic Questionnaire for the AY2014-2015 (AER, 2015, Vol.105(5), p.681) shows the percentages of female tenured/tenure-track faculty at 112 PhD granting institutions:</p> <ul style="list-style-type: none"> - Assistant Professors 30.6% - Associate Professors 24.2% - Full Professors 11.7% - Other 38.1% 	<p>Yes</p>

³ NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

<p>The most recent information from the AEA's Committee on the Status of Women in the Economics Program is that 18.9% of tenured/tenure-track faculty in doctoral-granting Economics Departments are women (See CSWEP Annual Report for 2014, Table 5, data from 124 surveyed departments).</p> <p>Hence, the Economics Program is funding women at about the same percentage as their representation in tenure-track lines at PhD granting institutions.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative American Economic Association Universal Academic Questionnaire Summary Statistics, AER: Papers and Proceedings 2015, 105(5): 679-681.</p>	
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: The program focuses on funding projects of foremost importance for the nation and the world. The program has funded many projects in the 2013-15 period focusing on the financial crisis and the Great Recession trying to understand the drivers and channels that led to these. Moreover, the Economics program has recently increased its focus on environmental projects and the welfare consequences of environmental policies. In addition, most of research funded by the Economics Program has important implications beyond the specific application or theory being studied. The studies funded generate generalizable knowledge and allows for new applications or lessons to be learned in other contexts.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative and Jackets</p>	
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p> <p>The number of projects focused on development economics is limited, even though much of the fieldwork required in this sub-discipline is costly and the finding from randomized control trials developing contexts can be of relevance to the U.S. context or other countries. The Economics Program funds a small number of development proposals with very high budget budgets. We encourage continued funding of projects in this area, which has contributed to the profession methodologically and has helped to encourage the use of RCTs in other applied areas in recent years.</p> <p>Continuing to encourage and support research in environmental economics is important given the high relevance of these issues in the policy world.</p> <p>In addition, we encourage more emphasis on the funding of dissertations. The funding of these low cost proposals would allow emerging scholars to receive recognition within the profession and to potentially increase the pipeline of women and minorities in the profession.</p> <p>Data Source: Program Information for SES COV members, Econ Narrative and Jackets</p>	

V. Questions for Division Level Discussion. Please provide comments on both scientific and management aspects of the following division-specific questions:

DIVISION LEVEL DISCUSSION	
1.	Looking forward, what is your vision for the intellectual future of SES? If money were no object, what type of infrastructure would be needed to attain this vision?
2.	Issues of replicability, reproducibility, and robust science have been the focus of discussion within the SBE directorate and across the Foundation. In your opinion, what role should funding agencies play in promoting robust science?
3.	A related issue is one of data management, public access and data –sharing. What steps should SES take, if any, to promote a climate of data-sharing with its scientific communities?

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

I. The economics profession is much less homogeneous than other academic fields—most of the proposals submitted as well as funded come from the top 30 schools, in the same way as a large percentage of papers published in the top economics journals come from researchers from the top 30 schools. We encourage the program officers to think about ways to increase geographical diversity as well as diversity by type of institution. We are fully aware that there are no low-hanging fruits and that the program is balanced so as to reach its goals in very effective ways. Nevertheless, we consider it worthwhile to think about whether the benefits of our suggestions outweigh the cost.

(a) The percentage of women and minorities among economics graduate students is much larger than among economics faculty. Currently the economics program funds far fewer dissertation proposals than other programs, for example, sociology and political science. Funding more dissertations would be a straightforward way of providing more women and minorities with the funds to write better dissertations and hence make it easier for them to enter academics and increase diversity in the profession.

We are fully aware that the economics program officers cannot handle the additional burden related to receiving many more dissertation proposals (sociology and political science receive several hundred such proposals every year). We urge NSF to supply the program with the resources necessary to implement this suggestion.

(b) The vast majority of funded proposals come from Ph.D.-granting universities and the NBER (representing academics from mostly Ph.D.-granting universities). Our understanding is that most of the proposals submitted come from these places as well, so we do not fault the program officers. It would be highly desirable to increase submissions of viable proposals from four-year colleges and economics departments that grant MA degrees. In addition, there are many Ph.D.-granting universities, which do not currently submit many proposals and do not receive awards. This requires additional outreach targeted at both at non-Ph.D. granting institutions but also at less well connected Ph.D. granting schools (and hence is different from the current type of outreach that takes place mainly at larger conferences). We suggest two ways of doing outreach aside from having PDs do their usual outreach:

(i) Pro-actively send Dear Colleague letters about new grant opportunities.

(ii) Allow grant funding for proposals that sponsor NSF grant-writing workshops run by previous experienced panelists or PDs.

II. We have three suggestions to improve the process of inviting reviewers that could improve quality and promptness of the response to review. First, we are concerned that the overly long e-mail discourages especially new invitees who have not reviewed for NSF before from accepting the invitation. We hence encourage the program officers to experiment, and possibly do pilot, with different formats that will make the e-mail more inviting. We understand that many of the items in the e-mail need to be addressed, which could be handled by an initial invitation block that ends with a thank you from the program officer and a second part that covers the necessary boilerplate.

Second, the fact that there is no button that invitees can click to accept or decline an invitation to review adds to the program directors' workload. The software of every single journal in economics has the capability to incorporate such automated acceptances and declines. It is incomprehensible that it is not possible for NSF to incorporate such automated responses into their system, and we encourage NSF to remedy this simple problem. Then, this system would automatically send more detailed instructions to those who accept reviewing, allowing the first invitation e-mail to remain brief.

Third, only about two-thirds of the ad-hoc reviewers address the proposal's broader impact. It would be good to find inviting language that emphasizes to reviewers the importance of addressing the broader impact. It is also important to spell out briefly what constitutes broader impact as it applies to economics (including policy impact, creation of new datasets, generalizable methods and results, graduate student support).

III. We encourage NSF to generate a database of previous and potential reviewers similar to those generated by journals. We encourage the adoption of software, such as editorial express, to catalog and keep track of reviewers and reviewer activity to help the PD's identify reviewers and facilitate the reviewer process.

IV. We encourage for NSF to more forcefully encourage data sharing.

1. We encourage adding an additional future enforcement of data management plans through two mechanisms:
 - a. Adding a new field for compliance with data Management Plans in the project outcomes reports
 - b. Revise the Grant Proposal Guide to ask reviewers to report on their Data management Plan compliance for previously funded projects.
2. We also believe that more generally all programs should create a centralized system to share information on data by either putting links to data-sharing sites (including personal sites and journal sites) or, preferably creating an NSF repository of all data generated through NSF funding. This would require additional resources.

V. We encourage the economics program to collect the type of time-series data that will make it easier to track how well the program achieves its goals over time. Most specifically, it will be valuable to know, for every funding cycle, the numbers of economics proposals

- (a) Submitted by each institution
- (b) Funded at each institution
- (c) Submitted in each of the 12 fields within economics (It would be perfectly acceptable to classify individual proposals by multiple fields, which would reduce inconsistencies when the classification is done by different persons in different years.)
- (d) Submitted in each of the 12 fields, separated by gender and race of the PIs

VI. We also encourage the economics program to think about whether the current field classification system still reflects the profession. Specifically, is it still appropriate to classify Development Economics and International Economics as a single field? (The same applies to Public Economics and Regional Economics). We understand that the program uses the current classification mainly to divide proposals among the three program officers. It should be straightforward to maintain this purpose with an expanded classification system.

2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.
3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

Previous CoVs have commented on the insufficiency of funding for the economics program as well as on the workload of the three program officers. We share their concerns.

The program officers have made a great effort to run the program as efficiently as possible, but we recognize that they do not have the time to undertake additional work in terms of outreach, collection of additional data, funding of dissertations, and revising the submission process. Increased numbers of proposals to the economics program (for example, an increase of more than 30 percent from 2013 to 2014) contribute to highly undesirable dwell times. We are concerned that the high workload makes it impossible for the program officers to implement many of our suggestions.

With regard to the overall budget, we note that economics research has become more expensive in recent years as economists have added field experiments to their empirical toolkits, in fields like development economics, labor economics, and public finance. To keep the costs low, such experiments are often undertaken in developing countries. Nevertheless, these types of research are much more expensive than much of economics research in the past. We commend the program officers for having funded a fair amount of these highly innovative projects in the past. However, their high costs make it impossible to fund enough of such projects, and funding such projects without a higher budget comes necessarily at the expense of cheaper projects. We are concerned that the lack of increase in the economics budget has a notable effect on the types of such experimental research that the profession can undertake.

4. Please provide comments on any other issues the COV feels are relevant.
5. NSF would appreciate your comments on how to improve the COV review process, format and report template.
 - a. Include question on “Dwell times” or “response times” in the template.
 - b. Send e-Jackets with more time before CoV meeting.

The Committee of Visitors is part of a Federal advisory committee. The function of Federal advisory committees is advisory only. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the Advisory Committee, and do not necessarily reflect the views of the National Science Foundation.

SIGNATURE BLOCK:

X /s/ Adriana Kugler _____

X /s/ Florenz Plassmann _____

For the Economics _____ Program

Law and Social Sciences
INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: The method of jointly using ad hoc and panel reviewers is appropriate and consistent with general NSF practice. As noted by the 2013 COV, the number of reviews for co-reviewed proposals can be excessive, resulting in duplication of effort, inconsistent feedback to PIs, and increased workload. Better coordination between programs/divisions could alleviate this inefficiency.</p> <p>Site visits not applicable.</p>	YES
<p>4. Are both merit review criteria addressed</p> <p>j) In individual reviews? Criteria were addressed, usually explicitly, but occasionally implicitly. The amount of detail was highly variable; some reviews were pretty cursory.</p> <p>k) In panel summaries? Criteria were explicitly addressed most of the time, though in the "triaged" proposals, PIs were merely referred to the reviews.</p> <p>l) In Program Officer review analyses? Explicitly addressed.</p> <p>Comments: Triage?</p>	YES

<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: The comments in individual reviews are generally substantive, but there is some variation in both the quantity and quality of the comments.</p>	<p>YES</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: The panel summaries generally do a good job of providing the rationale, including a discussion of any disagreements on the panel that arose. There was some evidence of “cherry picking,” where the summary highlighted positive aspects of the reviews in proposals recommended for funding and highlighted negative aspects of reviews in declined proposals. In some cases, where the reviews expressed disagreement, the panel summaries were less detailed and explanatory than we would have liked; more explanation would provide greater guidance to the PI.</p>	<p>YES</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments: The review analyses usually do a good job of summarizing the panel summary(ies) and providing the rationale. In a number of cases of co-reviewed proposals, the panels disagreed in their evaluation and recommendation. In these cases, the review analysis addressed the disagreement and explained the rationale behind the decision, though the disparate panel summaries could have been grappled with at a deeper level.</p>	<p>YES</p>
<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments: In the majority of cases, the rationale is provided to the PI in the context statement and panel summary. In some cases, where a triaged proposal received very limited panel discussion, the panel summary merely referred the PI to the individual reviews. In these cases the rationale was contained in the reviews, but the PI would have no way of discerning which components of the reviews were</p>	<p>YES</p>

more/less central to the panel's decision. Greater explanation by the PO in these cases would help PIs in revising their proposals or in conducting future work.	
<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>Some of our comments in this section would require additional work on the part of the PO (e.g., taking more time to reconcile disagreeing panel summaries, providing more explanation for declined proposals that receive little discussion). We recognize the enormous demands on POs' time and generally think they do an excellent job; we also see the benefits of triaging proposals. Our recommendations address a minority of proposals and are in the interest of providing PIs with the most valuable feedback.</p>	

II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

SELECTION OF REVIEWERS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: Our comments throughout this section refer to both ad hoc and panel reviewers, but focus on the former. The reviewers who are chosen have appropriate expertise. Looking at the disciplinary background of reviewers (based on their listed affiliation), the proportion of reviewers from various disciplines is roughly proportional to the proportion of proposals from different disciplines (the data for this assessment were not in our original documents but were provided by program staff on request; we encourage more systematic tracking of reviewers and proposers by discipline, to further LSS's multi- and interdisciplinary goals).</p>	YES
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: The process for identifying COIs is very thorough, with reviewers and staff working hard to identify conflicts at multiple stages of the process.</p>	YES

<p>3. Additional comments on reviewer selection:</p> <p>More than two-thirds of reviewers did not indicate their gender, race/ethnicity, or disability status. Given NSF's emphasis on diversifying scientific research, we need better data on these reviewer characteristics. There was also some indication that a handful of reviewers were overused. Twenty-seven scholars did ad hoc reviews of three or more proposals during the COV period (and two scholars each did 9+). No doubt that is because those reviewers have certain expertise, but our inspection of the data indicates that these "repeat players" are disproportionately White and male. We encourage LSS to continue to develop outreach mechanisms to increase the diversity of the reviewer pool.</p> <p>In discussion with the PO we talked about involving more junior faculty in the panel review process, but without creating a big service burden for them. Other programs (e.g., political science) have experimented with a reduced workload for junior faculty, which would benefit both the faculty themselves and NSF. We recommend discussion of something similar.</p> <p>The 2013 SES COV recommended implementing measures to make co-review more efficient, primarily by reducing the number of reviewers for co-reviewed proposals. In one sense, more feedback is better, but it reaches a point of diminishing returns, and disparity in the number of reviews creates procedural fairness concerns. The issue, as we see it, is a) the disparity in the number of reviews between co-reviewed and non-co-reviewed proposals raises fairness issues, and b) a large number of reviews exposes some proposals to greater scrutiny than others. We therefore second this recommendation, with the caveat that the disparity could be reduced either by reducing the number of reviews for co-reviewed proposals or increasing the number of reviews for non-co-reviewed proposals (a number of LSS proposals had only 3 reviews, which appears to be fewer than most of the other programs).</p>	
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III. Questions concerning the management of the program under review. Please comment on the following:

<p>MANAGEMENT OF THE PROGRAM UNDER REVIEW</p>
<p>1. Management of the program.</p> <p>Comments: Overall, the program seems well-managed. This is impressive, considering the large number of proposals (third most standard proposals in SES, and fourth most DDRIGs) and the fact that the program does not have a permanent PO. Consistent with the recommendation of the three previous COVs, there should be one permanent and one rotating program officer instead of two rotating program officers. This would lend more institutional memory to LSS, and LSS is the only SES program without a permanent PO. Institutional memory is important for many reasons, including information on past funding decisions, the budget for LSS, awardees who did not submit their data after funding (and</p>

therefore should not receive another NSF grant), and so on. Failing moving to a combined permanent/rotator model, the division should consider having one rotator serve a longer term (e.g., 5 years), for the benefits of institutional memory and capitalizing on relationships both inside and outside SES that can come from serving a longer term. At minimum, SES should make every effort to have rotating POs overlap, rather than have both POs start at the same time.

The mean dwell time is acceptable and better than most programs within the division.

2. Responsiveness of the program to emerging research and education opportunities.

Comments: The program has addressed this primarily through workshops and REUs, many of which focus on interdisciplinary and cross-national collaborations, as well as education. We encourage the POs to continue soliciting workshop proposals that focus on interdisciplinarity and that increase representation of underserved individuals and institutions. As these are relatively inexpensive mechanisms, they are ways to get a good amount of “bang for the buck.” LSS also appears to have taken advantage of other emerging opportunities, as exemplified by the NSF-NIJ MOU. This collaboration makes sense in terms of LSS’s mission; however, it looks like all the work to further the collaboration is done by the respective POs; it might be good to make it clearer to PIs how to target and take advantage of this opportunity.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: The planning and priorities seem more implicit than explicit. However, they are very consistent with the overall mission of LSS, and the diverse disciplines covered by the program are all represented in the portfolio, in terms of external reviewers, panel members, and PIs.

4. Responsiveness of program to previous COV comments and recommendations.

Comments:

COVs analyzing LSS operations over the past 12 years have concurred that a permanent PO is needed. As noted above, we strongly agree. We acknowledge that it is not within the power of the program to make this change. We strongly urge the SES Division and SBE Directorate to be responsive to this recommendation.

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

<p align="center">RESULTING PORTFOLIO OF AWARDS</p>	<p align="center">APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE</p>
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments: The documents we were initially provided did not have a clear breakdown of proposals/awards by PI’s primary discipline, but the PO provided us with this information during the meeting. Both submitted proposals and awards appear to come from a very broad array of disciplines (the largest number come from political science, psychology, criminal justice, sociology, and law). Funding rates are fairly comparable across disciplines, roughly 15-20%. We encourage the program to do more to track submissions and awards by discipline</p>	<p align="center">APPROPRIATE</p>
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: In general, the size and duration of awards are appropriate to the specific projects. Longer projects receive more money, as appropriate. Excluding DDRIGs and workshops, the means are 2.68 yrs. and \$240K. It would be interesting to know what the funding rate is as a function of budget request, but we did not have the data available. Discussion with the PO indicated that, not surprisingly, proposals with very large budgetary requests are less likely to be funded, in the interest of supporting a larger number of high-quality proposals.</p> <p>Requests to reduce the budget for funded proposals were not uncommon. This is an understandable way of stretching limited dollars, but it runs the risk of negatively affecting the intellectual merit of the proposals (i.e., what the researchers are able to accomplish). The vast majority of proposals do not appear to have padded budgets, meaning that cuts potentially go into the meat and not merely the fat.</p> <p>Overall, the LSS program is very judicious in balancing the priority of the topic, the quality of the proposal, and the appropriate funding level for funded projects.</p>	<p align="center">APPROPRIATE</p>
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments: Given the high bar for funding and the obvious broader impacts (e.g., implications for public policy and the justice system) of work in the LSS</p>	<p align="center">APPROPRIATE</p>

<p>portfolio, practically any funded project is innovative and potentially transformative. In addition, the workshops and collaborative research awards appear to have unusually high potential to accomplish these goals.</p> <p>One way that the program portfolio supports innovative research is in supporting research on legal problems and legal systems around the world. For example, the portfolio for the reviewed period includes studies of the Russian and Chinese legal systems, as well as pressing legal problems (e.g., migration, environmental issues) in Latin America (e.g., Guatemala and Ecuador).</p> <p>The program’s reach encompasses many pressing social problems, and the COV was impressed with the program’s collaborative initiatives, especially the jointly funded projects with NIJ (e.g., one project that explores adolescents’ engagement with their attorneys and chances to avoid later recidivism).</p>	
<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments: LSS is explicitly multidisciplinary. The key questions, then, are 1) how does inter-disciplinarity differ from multi-disciplinarity (and trans-disciplinarity), and which of these terms best characterizes the LSS portfolio? 2) are multiple social science disciplines included in individual projects, or are multiple disciplines merely represented across the portfolio as a whole? 3) are some combinations of disciplines or interdisciplinary approaches included to the exclusion of others?</p> <p>From our conversations with one of the POs, we know that these questions are being explored within LSS. All of these questions are difficult to answer, because of both data limitations and the complexity of the questions (e.g., the subtle differences between multi- and inter-disciplinarity). Relatively few proposals have PIs from different disciplines. LSS should encourage more such proposals, especially more involving legal scholars. LSS could do more to be a leader in NSF’s efforts to be more inter- and transdisciplinary and to collect baseline data on the issue (i.e., the nature of teams submitting and receiving awards).</p> <p>The number of awards in which LSS either received (25) or provided (38) funding from/to another program/division/agency suggests evidence of additional inter-disciplinarity, but in the context of the overall portfolio, the amount of co-funding seems relatively modest. More co-funding dollars came in than went out, which is good for the financial health of the program as a whole.</p>	<p>APPROPRIATE</p>
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments: Awardees come from 30 states and DC, including 12 EPSCOR states. The distribution appears to track states’ population and # of institutions, with CA and NY receiving far more awards than other states, followed by other populous states like IL, MI, and PA. The substantial number of states with no</p>	<p>APPROPRIATE</p>

<p>awards is a concern, especially considering that a) many of these states are fairly well populated (e.g., VA, NC, GA, CO, IA, MO), and b) the “no-award” states cluster in certain regions (South, Plains, Mountain West). POs should make more of an effort to meet with grant officers and prospective PIs at institutions in these states.</p>	
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments: Few awards go to non-PhD institutions, but those institutions submit relatively few proposals. The funding rate is slightly lower for non-PhD institutions, especially compared to research-intensive PhD institutions. We would have liked to have seen data exploring the number of submissions from minority-serving institutions; our hunch is that those institutions are more likely to be non-PhD institutions, and therefore differences between PhD-granting and non-PhD institutions could have disparate impact on researchers at minority-serving institutions and/or their trainees.</p>	<p>APPROPRIATE</p>
<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants.) An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award.</p> <p>Comments: The range of award types contributes to achieving a good balance, especially the use of DDRIGs, REUs, CAREER awards, and Interdisciplinary Postdoctoral fellowships.</p> <p>The program receives many submissions from new PIs, and the funding rate for new PIs (18.9%) is pretty comparable to that for prior PIs (25.7%). The data on DDRIGs are somewhat hard to interpret, because the PI is the faculty mentor, not the student; but there appears to be a good number of submissions (~50/yr., or 23% of all processed proposals), funded at a rate of 25-40%. DDRIG costs are driven up unnecessarily by institutions’ requirement of assessing full F&A on DDRIGs, which are small and typically require very little in the way of institutional overhead costs. We recommend that NSF negotiate a reduced F&A rate for this category of grants.</p> <p>There have apparently been very few Interdisciplinary Postdoctoral Fellowships. These fellowships are a good way of supporting early-career investigators while also advancing interdisciplinary work and achieving other aims (e.g., increasing representation of women and minorities, getting more</p>	<p>APPROPRIATE</p>

<p>junior investigators in the extramural funding pipeline). LSS should take steps toward encouraging more submissions.</p>	
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments: As with the previous question, the breadth of award types contributes greatly to the educational mission, especially the REUs, DDRIGs, and Postdoc awards. In addition, the vast majority of standard proposals have an educational component, in that they fund research by undergraduate and graduate students.</p>	<p>APPROPRIATE</p>
<p>9. Does the program portfolio have appropriate participation of underrepresented groups⁴?</p> <p>Comments: Roughly half of submitting PIs are women, but women are funded at a higher rate than men (26.9% v. 18.75%).</p> <p>Approximately 21% of submitting PIs are non-White. Among minority groups, Hispanic and Asian PIs are more numerous than Blacks, with very little representation from other minorities. Because of the small number of proposals submitted by minorities, it is hard to tell whether there is much difference in outcome across race/ethnicity, but there does not appear to be much if any: funding rate is 26% for White PIs, 14% for Hispanic PIs, 22% for Black PIs, and 36% for Asian PIs. However, the funding rate for research grants involving a minority PI or co-PI is only 9.9%, which is below the overall average.</p> <p>Demographic data on investigators are problematic. For example, 9-21% (depending on year) are not indicating their race/ethnicity. We wondered whether, to some extent, this reflects the form differing from U.S. Census categories for race/ethnicity. Inasmuch as NSF has the goal of broadening its programs to underrepresented minorities, we suggest that PIs be encouraged to provide this information.</p> <p>We also encourage the division and NSF to explore revising the Hispanic ethnicity and race categories to conformity with contemporary Census practices. A related problem involves including only the traditional male/female categories for gender. We encourage LSS/SES to start discussions about whether gender categories on the form should be more inclusive (recognizing that this might be an NSF-wide issue that transcends LSS/SES).</p>	<p>APPROPRIATE</p>

⁴ NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: LSS is well situated to address national priorities, such as legal, domestic, and foreign policy; national security; and the civil and criminal justice systems (e.g., improving access to justice, administration of justice procedures, and outcomes resulting from involvement with the justice system)</p> <p>The program’s portfolio is entirely consistent with the NSF mission to promote advanced scientific research; advance the national health, prosperity, and welfare; secure the national defense; and develop the knowledge workforce by educating future scientists. It accomplishes these goals both directly, as in funding specific research projects that address topics like national security and that fund students (e.g., REUs and DDRIGs); and indirectly, in funding theoretically and practically important research on legal institutions.</p>	
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p> <p>Every program presumably wants more money, especially given the large number of proposals deemed competitive that cannot be funded. However, this problem seems especially acute in LSS, considering that a) the operating budget for the past three years has stayed basically flat, at approx. \$5.5m; b) the operated plan for the most recent 3-yr period is a half-million dollars less than the previous 2 years; and c) of the 10 standing programs in SES, only Economics and STS receive more senior/standard proposals. In light of the ever-increasing costs of doing research, in terms of both direct and indirect costs (e.g., institutions’ rising F&A rate), this means that the amount of research the program can fund has been steadily decreasing.</p>	

V. Questions for Division Level Discussion. Please provide comments on both scientific and management aspects of the following division-specific questions:

DIVISION LEVEL DISCUSSION
1. Looking forward, what is your vision for the intellectual future of SES? If money were no object, what type of infrastructure would be needed to attain this vision?
2. Issues of replicability, reproducibility, and robust science have been the focus of discussion within the SBE directorate and across the Foundation. In your opinion, what role should funding agencies play in promoting robust science?
3. A related issue is one of data management, public access and data –sharing. What steps should SES take, if any, to promote a climate of data-sharing with its scientific communities?

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

We use this space to reiterate our specific recommendations made in the above document:

- a. LSS should have a permanent PO, to aid in overall administration of the program. As an alternative, one PO should have a longer (e.g., 4-5-yr) term. At a minimum, POs should serve staggered terms.
- b. POs should provide a more detailed rationale for the award/decline decision in “triaged” proposals, as a service to the PIs.
- c. LSS should collect more systematic data on the disciplinary background of reviewers, PIs, and co-PIs.
- d. Increase the diversity of the reviewer pool.
- e. Develop a pilot program to increase involvement of junior faculty in review panels, as by assigning them a reduced workload.
- f. Reduce disparity in number of reviews for co-reviewed and non-co-reviewed proposals.
- g. LSS should systematically explore questions regarding the differences among inter-, multi-, and transdisciplinarity.
- h. LSS should meet with prospective PIs in the South, Plains, and Mountain West regions of the U.S.
- i. Collect data on submissions from minority-servicing institutions.
- j. LSS should more strongly encourage submissions for its Interdisciplinary Postdoctoral Fellowships.

k. SES and NSF as a whole should consider revising their demographic form (gender, race/ethnicity) and should consider directing PIs to participate more actively in providing demographic data.

2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

See above.

3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

As noted above, we recommend changes to how NSF collects demographic data on PIs and reviewers.

4. Please provide comments on any other issues the COV feels are relevant.

LSS is efficient and well-run, especially considering the workload and absence of a permanent PO. The LSS POs provided valuable information before the COV meeting, and they and other staff were extremely accessible, responsive, and helpful throughout the COV process. They made our job much easier than it would have been otherwise.

5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

The process was very well-run and well-organized. The COV Chair and co-chairs did an excellent job running the large group meetings, and NSF staff from the directorate, division, and program were all very professional and helpful. It was a lot of work, but that is just the nature of the beast, and it proceeded about as efficiently as possible.

The Committee of Visitors is part of a Federal advisory committee. The function of Federal advisory committees is advisory only. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the Advisory Committee, and do not necessarily reflect the views of the National Science Foundation.

NSF program staff were accessible and helpful throughout the process.

SIGNATURE BLOCK:

X /s/ Brian Bornstein

X /s/ Laura Gomez

For the Law and Social Sciences Program

Methodology, Measurement, and Statistics
INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: The Methodology, Measurement and Statistics (MMS) Program relies on a two-tiered review process for the majority of its proposals. Ad hoc external reviewers are recruited and once these reviews are available then proposals are discussed by panels (where at least two panel members submit additional full reviews). A subset of the regular proposals is also reviewed by other programs within SES (or occasionally within another NSF unit).</p> <p>Data supplied in the MMS narrative indicates that the average number of reviews per proposal is over 6.5 and some with more than 10. A few had approximately 15 reviews; these tended to be large data infrastructure grants.</p> <p>We believe the use of both ad hoc and panel reviews is appropriate. The panel discussion is extremely important because of the interdisciplinary nature of the MMS program. The use of ad hoc reviewers facilitates the involvement of individuals with specialized expertise to complement the panel. Proposals that are not highly regarded within a particular discipline may be highly regarded by the MMS panel (or vice versa).</p> <p>Other types of proposals (e.g., conferences, dissertation awards) are reviewed only by members of the panel. In addition, proposals the panel finds meritorious that may be of interest to the Federal statistical agencies (e.g., those focused on survey methods research) are shared with agency representatives. The Federal statistical agencies provided approximately \$225,000 per year to support such projects during the review period. In summary, the COV believes the review methods used by MMS are appropriate given the nature and the goals of the program.</p>	<p>Yes</p>

<p>2. Are both merit review criteria addressed</p> <p style="padding-left: 40px;">a) In individual reviews?</p> <p>Data provided by the Program Officer in the program narrative indicates that the large majority of reviewers address both criteria. On average, more than 5 reviews for each proposal address both merit review criteria. As explained in the Program's statistical narrative the average number reported by the NSF data system is an underestimate of the degree to which reviewers meet this requirement because some reviewers may address both criteria in a summary rather than in the appropriate place.</p> <p style="padding-left: 40px;">b) In panel summaries?</p> <p>The two criteria were consistently addressed in all panel summaries examined by the COV.</p> <p style="padding-left: 40px;">c) In Program Officer review analyses?</p> <p>The two criteria were consistently addressed in all review analyses examined by the COV.</p> <p>Recommendation: We recommend that consideration be made to how to further encourage reviewers to answer questions on both intellectual merit and broader impact. For example, reviewers could be reminded <i>at the time they are actually doing the review</i> (e.g., in the review form itself) that they should respond to all questions in the review (e.g., on broader impact and intellectual merit). Currently reviewers receive a long introductory email with that request (and a lot of other information), but that information may be forgotten by the time they fill out the actual review and the form does not currently remind reviewers to fill out every section. Another option is to not allow a reviewer to electronically submit their review until all relevant sections are filled in.</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p>
<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: We examined a large number of reviews for the sampled proposals. There is considerable variation in length and level of details of the reviews but overall, we found the reviews to be useful and informative. However, there were a number that had only minimal comments.</p> <p>Recommendation: NSF should consider developing a system for maintaining records of the timeliness and quality of reviews provided. This may help identify reviewers at the review stage and can also be used to encourage and incentivize more good reviewers by providing recognition of exemplary service. This is now becoming common in journals where associate editors can rate the timeliness and utility of every referee report on a simple 3-point scale, and each year some journals publish a listing of exemplary reviewers. Another potential type of</p>	<p>Yes</p>

<p>recognition would be to send a letter to the reviewer’s department chair in recognition of their service, when they do a particularly good job.</p>	
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: The panel summaries reviewed by the COV consistently summarized the proposals' strengths and weaknesses and the rationale for the panel's recommendation regarding funding. It is worth considering whether there are ways to increase the amount of detail and information provided, especially regarding any disagreements between panel members that contributed to the ultimate decision.</p>	<p>Yes</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments: The review analyses that we examined provided a very clear summary of the ad hoc and panel reviews followed by a careful description of the rationale for the award/decline decision. In some cases where two panels had somewhat different opinions there was a clear statement of why the decision was made one way, despite the other panel being of a differing opinion.</p>	<p>Yes</p>
<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments: As described above, the individual reviews are generally useful for the PI. Each PI also receives a context statement summarizing the panel's approach and providing fairly detailed information about the number of proposals reviewed and the number recommended for funding. One nice feature is that, where appropriate, decline decisions are also accompanied by suggestions from the program office for improvement (and possible resubmission) of the proposal.</p> <p>Recommendation: When a proposal is declined, efforts should be made to communicate the reasons for that as clearly as possible, especially if the decision seems contradictory to a panel recommendation or if two panels disagreed in their assessment of the proposal.</p>	<p>Yes</p>

<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>Comments: The process seems to be fair and well-run. No additional comments.</p>	<p>NA</p>
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II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

<p style="text-align: center;">SELECTION OF REVIEWERS</p>	<p style="text-align: center;">YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE</p>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: MMS reviewers include both ad hoc reviewers and panelists. During the review period, 25 individuals served on the panel. These individuals are all methodology researchers and they cover a wide range of social science disciplines (economics, psychology, statistics, geography, political science, sociology). As the MMS program is focused on supporting research that is likely to be useful across multiple disciplines, it is extremely important to have this broad representation.</p> <p>Those individuals who served on the MMS panel during the review period and are known to the COV reviewers (more than two-thirds) are extremely strong methodological researchers. The panel reviewers represent many top academic programs.</p> <p>In all cases we examined, the ad hoc reviewers (those who were invited to review and those that provided reviews) seem appropriate. They are experts in different aspects of the subject matter covered by the proposals. The program officer seems to do a particularly good job at ensuring that each proposal is reviewed by individuals from a variety of appropriate disciplines.</p>	<p>Yes</p>
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: The Review Record indicates that the MMS program director is diligent about identifying conflicts of interest and reporting these when they occur. While there are not written procedures, there are established protocols. Conflicts are identified at the initial reviewer request stage as well as later in the process after reviews are received. The number of individuals with conflicts is reported on the review summary. The Review Record report of reviewers clearly identifies panel</p>	<p>Yes</p>

<p>members or invited ad hoc reviewers with a conflict of interest. The reviews indicate that some of the reviews were identified as conflicts of interest after they were submitted. These reviews are marked as conflicted, not available to the panel, and not used in the decision process.</p>	
<p>3. Additional comments on reviewer selection:</p> <p>Recommendation: In the interest of diversifying the reviewer pool (e.g., geographically, institution-wise, career stage, underrepresented minority status) it is worth encouraging more directly that existing reviewers provide suggestions of other appropriate reviewers, and explicitly ask them to consider diversity of various types in their recommendations. This may be particularly useful for identifying ad hoc reviewers. We note that there is already a line for this in the review form but noticed that very few reviewers filled it out. It would be good to more directly encourage that, especially encouraging providing names of junior or underrepresented minority researchers, or researchers at institutions that may not be on the radar screen of the program officer as much. Another potential way to identify reviewers may be to send a quick online survey to department chairs requesting nominations.</p>	<p>NA</p>

III. Questions concerning the management of the program under review. Please comment on the following:

<p>MANAGEMENT OF THE PROGRAM UNDER REVIEW</p>
<p>1. Management of the program.</p> <p>Comments: The COV finds that Program Director Dr. Cheryl Eavey, does an outstanding job managing the MMS program. From the quality of the panels to the quality of the review analyses she is efficient at every step of the review process. Director Eavey uses her limited resources to maximum effect by partnering with other programs within NSF and by partnering with the Federal statistical agencies where appropriate.</p> <p>The NSF performance goal is that 70% of proposals have funding decisions within six months of proposal receipt or deadline or target date. Within MMS across the three-year review period 83-89% of the proposals received decisions within six months, easily surpassing the performance goal. Data provided indicates that the average "dwell time" for MMS proposals during the three-year review period is less than six months, and in 2015 was less than 5 months. The average dwell time for awarded proposals is longer than the average dwell time for declined proposals. Approximately 10-15% of proposals had dwell times between 6 and 9 months, with fewer than 2% having a dwell time less than 12 months. There are specific reasons why one might expect resolution of some MMS awards to take longer than six months. Many MMS proposals are reviewed by disciplinary programs in addition to MMS, which can add processing time. In addition, the MMS Program Director seeks funding from other programs (and the Federal statistical agencies), which can add time to the process.</p>

2. Responsiveness of the program to emerging research and education opportunities.

Comments: Director Eavey is aware of emerging research areas and pays attention to opportunities for MMS to contribute. An obvious area for this is interdisciplinary work, as much of the work funded by MMS is inherently interdisciplinary.

The MMS program has not traditionally utilized the RAPID or EAGER mechanisms for quick turn-around of proposals. This may be in part because of the types of work funded by MMS. However, one possible use of those mechanisms within MMS would be if MMS identifies a proposal that other individual disciplines are not willing to support because it is seen as too innovative or risky but that has the potential for methodological contributions and interdisciplinary connections. We saw one example of this in a proposal that was jointly reviewed by MMS and another panel but there may be other opportunities.

A fruitful partnership that has allowed MMS to have a significant impact on an important research area is its partnership with the Federal statistical agencies. Proposals can be submitted to MMS for consideration by the agencies. These typically focus on survey methodology topics. These proposals receive the usual MMS ad hoc and panel review and then a panel of agency representatives further reviews meritorious proposals. During the review period 13 projects received nearly \$650,000 from the federal agencies to supplement MMS funds.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: MMS tries to attract a broad array of methodological research proposals. These research proposals, though typically motivated by research in one disciplinary area, will often have significant impact on other disciplines. The data we have reviewed suggests that the program is successful in attracting a wide range of research topics. This is done in part through interactions between the Program Director and MMS researchers, counterparts at NSF, and individuals at the Federal agencies. The Program Director attempts to balance projects in her portfolio across disciplinary areas and across different types of investigators (junior/senior investigators, participants from underrepresented groups). The list of funded projects suggests good success in this effort. The Program Director actively seeks to develop an MMS community through the support of workshops and through her participation in other NSF-sponsored activities and her attendance at national meetings. Input from members of that community informs the program offer's prioritization process. When the Program chooses to highlight a particular area that is done through "Dear Colleague" letters or workshops on particular topics.

4. Responsiveness of program to previous COV comments and recommendations.

Comments: The Program Director was responsive to the comments and recommendations of the previous COV, particularly related to the first Recommendation. The previous COV had two recommendations for the MMS program. The first was to continue efforts to develop a cross-disciplinary MMS community and to participate in "Big Data" initiatives and activities. The second was that NSF find ways to increase support of the MMS program, including post-doctoral and CAREER awards in MMS and the social sciences more generally.

With respect to the first recommendation, MMS has continued efforts to develop a cross-disciplinary MMS community. Specifically, the MMS Program supported in FY15 a workshop on methodological challenges across the SBE sciences. Follow-up activities from the workshop, which was held in early 2015, are planned and include a jointly authored manuscript for publication and perhaps a follow-on conference. Given that big data is a “hot topic,” there has been no need to issue a separate call to explicitly encourage applications in that area. In FY15 a few projects address big data issues and several other projects also allude to big data.

To the extent that data access is part of big data, the Program continued support for restricted-access research data centers. The MMS Program also manages for SBE the award for a CNSTAT Standing Committee on the Future of Major NSF-Funded Social Science Surveys. And some or most of the research supported by the NSF-Census Research Network would fall under the rubric of big data. In addition, the Program Director is the SBE representative for Data Infrastructure Building Blocks (DIBBs), one of several data intensive special competitions led by the CISE Directorate. SBE-type projects were supported during the first year of this competition (FY14). The second year the competition was restructured and SBE did not participate. This fiscal year the competition was more in line with FY14, and SBE actively participated in the review of proposals. DIBBs awards for FY16 will be announced at the end of the fiscal year.

There seems to have been less action relevant to the second recommendation, which is outside the purview of the MMS program itself. The MMS budget has not been increased substantially since 2013 and there has not been an increase in CAREER or post-doctoral awards.

Recommendation: One aspect of big data that would fall naturally under MMS is the development of computationally intensive methods for analyzing data. This would draw in more work from computer science and operations research that, given the rise of big data, would be a natural addition to the statistical work that has already found a home in MMS. It would also continue to hone MMS’s mission regarding cross-disciplinary work.

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

RESULTING PORTFOLIO OF AWARDS	APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments: The MMS portfolio supports methodological research across a large number of scientific domains. Among awards where MMS is the primary funding program we find awards that support methodological development in anthropology (e.g., cultural consensus theory), psychology (e.g., psychometrics), political science (e.g., social network models), geographic and spatial sciences (e.g., spatial Markov Chains), economics</p>	<p>Appropriate</p>

<p>(e.g., Bayesian hypothesis testing and causal inference), statistics (e.g., survey methodology), and methodological research for replication (e.g., record linkage and privacy preservation, dealing with publication bias in meta-analysis). The awards funded in this manner are also well balanced among the various disciplinary programs within SES (Economics, Sociology, and Political Science), other interdisciplinary program within SES (DRMS, LSS), programs in BCS (Cultural Anthropology, Geographic and Spatial Sciences, Perception, Analysis and Cognition) and occasionally programs from outside the SBE Directorate. The COV is especially impressed by the Program Directors' ability to balance awards across disciplines and topics.</p>	
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: During the review period there are 58 awards for which MMS is the primary funder. The average award amount is \$254,100 with 12 between \$0 and \$100,000 (some DDRIG and workshop grants), 7 awards between \$100,000 and \$200,000, 15 awards between \$200,000 and \$300,000, 8 awards between \$300,000 and \$400,000, 5 between \$400,000 and \$500,000, and 4 larger awards. During 2013-2015 MMS was a secondary funder of 31 awards; MMS contributed over \$2,000,000 during the review period to awards managed by other programs. In terms of duration most of the regular MMS awards are two or three year awards. The size and duration of awards appears to be appropriate for the mission and goals of the program.</p>	<p>Appropriate</p>
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments: The Program Director identifies a number of awards that reviewers have identified as potentially transformative. As they should be, the panel was judicious in its use of the term transformative. Over the three-year period, they identified three projects as potentially transformative, including a project on split questionnaire design, research on applications of quantum probability theory to human causal reasoning, work on dynamic tools for analyzing irregularly spaced longitudinal affect data, and work on record linkage and privacy-preserving methods for big data.</p>	<p>Appropriate</p>
<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments: As has been noted in several other locations in this review it is an explicit goal of MMS to support research projects that are of interest across disciplinary boundaries. Though some of these projects are motivated and funded within a single discipline, MMS funds many inter-disciplinary and multi-disciplinary projects. Examples can be found among MMS primary awards (where for example a project that jointly supports a statistician and a political scientist was funded) and among the many instances in which projects are jointly funded by two or more programs. MMS is a secondary funder for 31 projects during the review period; a large share, especially given MMS' size.</p>	<p>Appropriate</p>

<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comment: MMS has funded programs in a large number of states. A large number of proposals are funded in states that have a large number of Ph.D. granting institutions (e.g., Michigan, North Carolina, New York, California, Illinois, Texas). There are some awards to EPSCoR states (8 during the review period). It is our understanding that the MMS Program Director seeks EPSCoR support when appropriate.</p>	<p>Appropriate</p>
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments: The vast majority of the funded proposals are from research-intensive PhD granting institutions (the top 100 research institutions). MMS awards about 7% of its awards to institutions characterized as "business, state and local, foreign, other." These are primarily survey companies and research organizations. The balance of awards across different institution types is as expected.</p>	<p>Appropriate</p>
<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants.) An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award.</p> <p>Comments: The MMS funding rate for early career investigators varied quite a bit across years, from 11% to 27%. In 2013 and 2014, the rate was lower than that for more senior investigators but was actually higher in 2015 (27% vs. 21%). This variability is likely due in part to the high variance that results from relatively small number of proposals in these categories.</p>	<p>Appropriate</p>
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments: It is common for MMS supported research projects to include support for undergraduate students, graduate students and postdoctoral researchers. During the three-year review period, on average in each year, MMS projects supported 5 undergraduate students, 39 graduate students, and 3 post-docs.</p> <p>MMS also provides some support for doctoral dissertation research proposals.</p>	<p>Appropriate</p>

<p>During the three-year review period, MMS supported 6 such awards. No CAREER awards were funded during the time period but some unsuccessful CAREER applicants were encouraged to apply for regular research grants, with some success.</p> <p>Given the limited resources available to MMS, this is strong support for research efforts that contribute to training the next generation of scientists.</p>	
<p>9. Does the program portfolio have appropriate participation of underrepresented groups⁵?</p> <p>Comments: Women were PIs on approximately 20-30% of MMS proposals. The funding rate for proposals with women PIs ranged from 10-27% across the 3 years, which was sometimes lower and sometimes higher than the overall rate. (The more recent years had more success for women than for men).</p> <p>Minorities were involved in 9.6% of MMS proposals. The funding rate for proposals with minority involvement was 30%, which is a little higher than the 27% overall funding rate for the program. This is also higher than the overall funding rate within SES for proposals with minority involvement (23%).</p> <p>The MMS review process appears to include many underrepresented groups.</p> <p>We caution that these numbers should be judiciously interpreted given the small numbers involved (16-24 total awards funded in each year).</p>	<p>Appropriate</p>
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: MMS supports methodological or statistical research. The funded projects contribute to society primarily through the application of developed methods in a variety of fields.</p> <p>Examples include a project to model publication bias in meta-analysis, a project developing improved methods for drawing causal inferences from observational studies which are important to public health, and a project on privacy-preserving methods for big data.</p> <p>There are at least two ways in which MMS projects directly address important needs of the federal government. First, there are a number of survey research projects that are supported by MMS and the Federal Statistical Agencies. These projects develop methods to enhance the government surveys that play a</p>	<p>Appropriate</p>

⁵ NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

<p>critical role in a large number of federal programs. Second, MMS provides financial support to the National Academies of Science standing Committee on National Statistics. This body works with a range of federal agencies to support their priorities. The panel and workshop reports generated by the Committee are widely disseminated.</p>	
<p>11. Additional comments on the quality of the projects or the balance of the portfolio: No additional comments.</p>	<p>NA</p>

V. Questions for Division Level Discussion. Please provide comments on both scientific and management aspects of the following division-specific questions:

DIVISION LEVEL DISCUSSION

1. Looking forward, what is your vision for the intellectual future of SES? If money were no object, what type of infrastructure would be needed to attain this vision?

- More facilitation of interdisciplinary research, e.g., by encouraging more multi-PI or co-Investigator roles, with researchers from multiple disciplines. Very few proposals we examined had deep involvement from multiple individuals, and even fewer from multiple fields. That interdisciplinary nature should also be defined more broadly, beyond tradition SES areas. These other areas could include engineering, biostatistics, computer science, and operations research.

2. Issues of replicability, reproducibility, and robust science have been the focus of discussion within the SBE directorate and across the Foundation. In your opinion, what role should funding agencies play in promoting robust science?

- Science is all about making progress and building on previous work, with the recognition that no single study will answer all questions. Thus, there should be recognition that there may be very good reasons for variability in findings, and that in some ways figuring out why is where the new insights come from.
- The key should be funding good people with good ideas who recognize how their work fits in the broader literature.
- One area for funding could be for more methods work on how to formalize the process of studies building on each other, e.g., more sophisticated meta-analysis type methods. (For example, methods to combine experimental and non-experimental study evidence on a policy question of interest).
- It will also be important to communicate with other fields about these areas, such as engineering, medicine, and biostatistics, in order to integrate learning and advances.

3. A related issue is one of data management, public access and data-sharing. What steps should SES take, if any, to promote a climate of data-sharing with its scientific communities?

- A plan for infrastructure is needed, with protocols and enforcement of the protocols. e.g., grant proposals often say they will put data on their website, but this is never checked or enforced. (And it is difficult to find).
- There is generally a lack of consensus in the field about this, which makes it difficult to change norms.
- Ways to give researchers more “credit” for creating datasets or doing primary data collection would help with changing norms.

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

The COV is extremely impressed by the coverage of the MMS program. Program Director Eavey does an excellent job of covering a wide range of methodological research areas and a wide range of disciplines with limited resources. Dr. Eavey continues to express interest and enthusiasm for creating a "Measurement, Methods and Statistics" community, including a funded workshop in 2015 on facilitating inter-disciplinary work related to MMS. We support this initiative and strongly encourage her to continue efforts in this area.

We also encourage MMS to continue its efforts in the area of "big data." As noted above we encourage the inclusion of computational methods within that broad area.

Recognizing the importance to NSF of reproducibility and replicability we think that the MMS program can play a particular role in that area in terms of the methods for reproducibility and replicability. Given MMS's emphasis on interdisciplinary work we encourage SES, in general, and MMS, in particular, to also take advantage of methods development in this area in related fields, such as biostatistics and engineering. A cross-disciplinary workshop on existing methods may help highlight needed areas for further development.

Recommendation: The COV encourages the Program Director to continue supporting a broad range of areas and her efforts to develop a cross-disciplinary MMS community. The COV encourages MMS to participate actively in "Big Data" activity through support of proposals in this broad area and through partnerships with other relevant programs.

2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

No additional comments.

3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

Methodological research plays a critical role in social and economic science research and the degree to which this is true will only increase in coming years. There is interest across all disciplines in leveraging the large amounts of data that are becoming available. The National Science Foundation has a gem of a program in MMS, where methodology is developed in a way that ensures it benefits disciplinary research in the social sciences and beyond. Dr. Eavey provides outstanding leadership for the MMS program.

It would be ideal for NSF to provide additional financial support for the MMS program. This may be particularly important given the need for more methodological advances relative to reproducibility and replicability. Moreover, we endorse a suggestion made by the previous COVs that NSF (and especially SBE) stress and highlight the role of methodological research in the various special initiative programs that it offers and, to the degree that it is feasible, offer special funding tracks for relevant methodological developments that cross disciplines.

Recommendations: The COV recommends that NSF find ways to provide additional financial support for the MMS program through either direct funds or through targeted methodology funding in various special initiatives.

4. Please provide comments on any other issues the COV feels are relevant.

No additional comments.

5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

The process could be presented with more clarity. This is as simple as presenting the main document that should be filled in by the COV reviewers for each program, highlighting the report with useful summaries from the program officers, and supplying the material ahead of time. With clear directions and available materials, the COV reviewers could be more productive in advance of the face-to-face meeting, making the face-to-face meeting more productive and efficient. Although all of these materials were available there was almost too much information presented, which made it difficult to parse through and find the actually relevant pieces and determine the steps to complete the work. There was a lot of information and material to wade through, and at times we felt that we were spending our time on minor logistical things and data/information management, rather than thinking through the big ideas and topics. The e-Jacket system was also somewhat cumbersome. It may be useful to have one big pdf that combines all of the information on a particular proposal (e.g., at least the reviews, the proposal itself, the correspondence, and the review analysis).

As one specific idea, it would be useful to organize the MMS program narrative (“Program information for SES COV members”) more directly around the specific questions in the template, with the information for a given question presented with that question.

More specific guidance on how to wade through things and work as a team would be useful, such as best practices for filling in all of the needed information in the template.

It also seems as if creating a secure shared folder would make sense, so the Chair and co-Chair could see the document as we work on it. This would very much facilitate their knowing about all of the issues being raised, rather than relying on relatively short group conversations.

The Committee of Visitors is part of a Federal advisory committee. The function of Federal advisory committees is advisory only. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the Advisory Committee, and do not necessarily reflect the views of the National Science Foundation.

SIGNATURE BLOCK:

X /s/ Elizabeth Stuart

X /s/ Wendy Tam Cho

For the Methodology, Measurement, and Statistics Program

Political Science
INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: The number of reviews is variable but satisfactory, generally between 4 and 8. It may be slightly higher for successful applications, but this could well be due to the propensity of mail reviewers to decline to review weaker proposals. In any event, many of the reviews are very detailed, with assessments of the quality, feasibility, and impact of the proposed research, along with very constructive suggestions as to how to improve it. The COV believe that the amount of reviewer input obtained was satisfactory overall.</p>	YES
<p>4. Are both merit review criteria addressed</p> <p style="padding-left: 20px;">a) In individual reviews?</p> <p style="padding-left: 20px;">b) In panel summaries?</p> <p style="padding-left: 20px;">c) In Program Officer review analyses?</p> <p>Comments: Both criteria are virtually always addressed in panel summaries and program officer analyses; they are both often but not always addressed (particularly broader impact) in individual reviews. The Program Officers find this situation frustrating and the COV found it to be a significant weakness. The previous COV recommended new guidelines to PIs to provide more explicit guidance in addressing the criteria of broader impact. This guidance was provided to PIs in a number of forums including workshops at national and regional</p>	YES

<p>meetings of the political science profession. In addition, the current COV find the incorporation of unrepresented groups rarely mentioned in the broader impact statements, let alone explained. Explanations of the policy implications proposed research also, often are not explained. These issues are always raised in panel but panels take their lead from what is in reviews that often do not. The COV recommends making a multi-pronged effort, asking past and present rotators to write a template for what constitutes a satisfactory treatment of broader impact, using the five NSF-enunciated criteria and publicizing it in the discipline beginning with inclusion in a relevant short course at this year's APSA meeting, perhaps following up with an articles in PS and a brief letter to reviewers that could include more detail on what is expected.</p>	
<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: Often they are quite detailed, but even the briefest reviews are usually well on point and helpful. The COV note the unevenness in quality and number of reviews but believe this is largely due to the frequency of "decline to review", regrettably often from specialists in the subfield whose advice would be most valuable. Program officers report occasional regret over number of declined reviews, but timing and high numbers of proposals make it hard to slot in a replacement. The COV also notes that fewer reviews appear in jackets in this period, in part, because co-reviews were not allowed during this time. When co-funding was possible (often with MMS and Sociology where Political Science is usually primary as well as with Law and Social Science and Economics) satisfactory review materials from other programs were routinely provided.</p>	<p>YES</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: Panel summaries are often terse but they are very effective in identifying the key issues – positive and negative – in the proposals. The Political Science panels are conscientious in addressing both intellectual merit and broader impact. The Review Analysis invariably revealed sufficient information for the COV to determine that the reasons for decision were clear and justified, but some relevant information understandably was not included in panel summaries, often to preserve reviewer anonymity.</p>	<p>YES</p>

<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments: The program review analyses were excellent, both in providing summaries of the reviewers' reports and the panel discussions and in laying out any point at which the officers agree and disagree with reviewers' and panels' assessments. Explicit attention was always given to why the best (worst) reviews were ignored in the case of proposals that were declined (awarded), a practice that the COV recommend be continued. At some point every element in the jacket was helpful to the COV, even if that information could not be revealed in the public materials.</p>	<p>YES</p>
<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments: The comment on the previous item applies: investigators receive more and more useful feedback than they do in many funding competitions. And, as points #4 and #5 make clear, there are compelling reasons for non-disclosure of some relevant information.</p>	<p>YES</p>
<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process: Again the COV agrees with its predecessor: in the combination of reviews by panels, ad hoc reviewers, and program officers, the NSF peer review process remains the gold standard for impartial and detailed assessment of social scientific research. In terms of review by program directors alone, the COV examined funded RAPID and EAGER projects and found the quality and justification of awards satisfactory. The COV note that contra to NSF's Perspectives report, few meaningful designs for robustness checks are ever included in political science proposals, though these checks often are recommended by reviewers and panelists. Again the COV recommend that the program (and SBE generally) take steps to remind scholars that attention to this is expected in proposals. Replication and reproduction of data now occurs in political science on a regular basis, and is backed by leading field journals. However, rarely is replication and reproduction the aim of proposals submitted to the program.</p>	

II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

<p style="text-align: center;">SELECTION OF REVIEWERS</p>	<p style="text-align: center;">YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE</p>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: The Program Officers work jointly to select reviewers, and the COV observe that this arrangement results in increased diversity of the included reviewer pool with respect to gender, race, and inclusion of more junior scholars. Discussion with other COVs makes clear that the Political Science program is exemplary in this respect, and deserves commendation for it. The combination of panelist reviews and ad hoc reviews provides both inside the subfield and outside the subfield perspectives on the research, which broadens the assessment of intellectual merit and broader impact.</p>	<p>YES</p>
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: The COV note that the program goes out of its way to recognize and resolve conflicts of interest. The program provides very explicit guidelines and examples to make sure that reviewers, panelists, and program officers recused themselves from decisions in instances of conflict. There are several examples in the eJackets of recusals of reviewers, panelists, and program officers. The COV found no examples of “missed” COIs.</p>	<p>YES.</p>
<p>3. Additional comments on reviewer selection:</p> <p>The COV particularly commend the Program Officers for achieving a panelist pool over the three years reviewed that was over 50% female, in a discipline where female professors number about 30%. The diversity of the officers has been helpful in achieving the inclusion of scholars from other underrepresented minorities in the process, and the COV commends the program for its creative efforts in this regard. To repeat, the Political Science program has been proactive – commendably so – in recruiting reviewers and panelists from underrepresented groups (with particular success in the case of women) and inclusion of a broad range of institutions. The creative use of limiting burdens on panelists at early career stages is also particularly noteworthy, in view of broader and updated views of the discipline that younger scholars bring to the process and the potential educative “network”</p>	

<p>benefits of increased representation in decision-making. While difficulties of discerning the racial and ethnic and other identities of reviewers inhibits the abilities of the program and COV to audit the achievement of diversity in some cases, the COV recommendation to the program is an emphatic “keep it up!” The COV suggests that to overcome the justifiable hesitation of younger scholars to commit time to the review process, the program give some consideration to communicating with administrators at universities about the value that it places on the services of these younger (and sometimes overworked minority) scholars.</p>	
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II. Questions concerning the management of the program under review. Please comment on the following:

MANAGEMENT OF THE PROGRAM UNDER REVIEW
<p>1. Management of the program.</p> <p>Comments: The COV commends the program for its adept and flexible performance under restrictions imposed by the Consolidated and Continuing Appropriation Act of 2013. They are to be congratulated for minimizing the damage to the discipline that could have occurred. The implications for “dwell time”, co-funding, and other indicators of program management are all too evident in the Report of the Program Officers. Ignoring FY 2014 (impacted by the cancellation of the second 2013 and first 2014 reviews that resulted in some proposals being held for an extra five months), the Political Science program maintains a dwell time of under six months, so applicants continue receive a timely response in “normal” times. As noted above, the program continues to make extraordinary efforts to develop new constituencies, to respond to needs for training and information, and to be visible to intellectual leaders in the discipline, both current and emerging. Innovations in managing the workload of the dissertation grants program more efficiently (both the “failed” experiment of going to two reviews a year, now reversed and restored to one a year) again reveals the flexibility and responsiveness to suggestions of the program officers.</p>
<p>2. Responsiveness of the program to emerging research and education opportunities.</p> <p>Comments: The program continues to be exemplary in its funding of new vehicles and approaches in research and education, responding promptly to shifting methodological and theoretical currents in the discipline. Recent advances include advanced training in genetics and quantitative and qualitative analysis, shared use of survey and other kinds of instruments (e.g., through the TESS project or support for internet alternatives in ANES and CCES), and workshops in emerging research areas. The current leadership has been active in outreach to cultivate the “exploitation of research opportunities” by appearing at disciplinary meetings and summer institutes to encourage further proposals. Relevant grants in emerging areas include a workshop on experiments which addressed ethical and practical aspects of field experiments and another on ethics in experimental research. Finally, a Political Science program officer participated in a <i>PS: Political Science</i> symposium (2016: 49(No. 2)) on social science experiments and institutional review boards. The 2013 COV identified the political implications of rapid urbanization in developing countries as an emergent research area. NSF’s Smart and Connected Communities solicitation is likely to spur some interest in this topic. Several funded research projects</p>

relate to aspects of political arrangements in population centers, including political communication and distribution of resources. On gender issues, consider recent awarded projects on gender and political representation and cross-national experimental research on women and leadership. Finally, the Program supports several projects directly addressing the persistence of autocratic rule (despite recent waves of democratization): these include one which examines how countries use electoral fraud, another which examines the use of censorship to control mobilization, several others which examine the effect of religion on political behavior, and several which examine how governments use internal security forces to minimize protest.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: The approach of the program officers is appropriately grounded in the discipline and in cognate disciplines. The officers respond well to good ideas and cultivates areas that are important to the scientific progress of political science but do not yet have a large constituency, like behavioral genetics. In periods when co-funding was possible it was extensively used, with the program sometimes taking the lead and sometimes following. Program officers regret the lack of policy-related proposals they receive (though, from time to time, they consider co-funding policy related proposals with other programs like DRMS). The lack of policy related proposals to political science, in the judgment of the COV, reflects the fact that policy oriented political scientists believe other NSF programs are more appropriate for applied research rather than a failing of the political science program.

4. Responsiveness of program to previous COV comments and recommendations.

Comments: The previous COV report was very positive, and the program leadership was very open and responsive to the few concerns that it raised. That 2013 COV sought more work in experimental political science which has clearly been achieved. It suggested international initiatives. In response, the political science program funded projects involving collaborations with scholars in Colombia, Russia, and China.

The political science program also supported research in recommended areas like socio-genomics and other biological/social interactions: for example, on potential linkages between genes and political/social behavior, a project examined social scientists' training in statistical methodologies related to twin studies. In another project, the PI examined how African Americans differ in their reactions to traumatic events involving members of their race, using physiological responses to measure the strengths of political and social attitudes.

Another recommended area was human security. The program funded the creation and updating of several large datasets on international conflict. Related projects include fragile states, factors leading to lasting settlements between rebels and states in civil wars, the relationship between poverty and violence, and the expression of grievances and political stability, among others. In terms of ongoing conflicts, the Ukraine was a hotspot and several projects related to politics. Finally, potential threats to human security were studied on a subject by subject basis: e.g., human trafficking and immigration. Finally, on the recommendation to fund Systems Science, the program has funded training and networking opportunities as well as research, including the yearly workshop on Political Networks and a workshop on behavioral models. These will help to create networks of scholars who can and will interact in the future. Finally, a research project uses a unique housing arrangement for students at Rice University to examine the formation of networks and their impact on social/political attitudes and actions.

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

<p align="center">RESULTING PORTFOLIO OF AWARDS</p>	<p align="center">APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE</p>
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments: The Program Officers report that they try to maintain an overall balance across subfields, and overall, while the distribution of submissions by subfield varies from year to year, over the period of several years the distribution of awards reflects the distribution of applications. Again, the 2013 Consolidated and Continuing Appropriations Act on created an imbalance in funded international relations projects, especially on topics of security studies and international political economy. But the Program Officers were aware of this problem, and they worked diligently to rectify it. As for new directions for research, the COV believe that an SBR-wide initiative on the spread of civil wars and the connection to migration and immigration is worth pursuing. This idea is discussed further below (V.1).</p>	<p align="center">APPROPRIATE</p>
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: Awards are appropriate given the evaluations of the merits of the proposals by panels and program officers. The program uses its (limited) opportunities to generate economies in its support for infrastructure (particularly archives and large databases), which consume 50% of its budget but serves diverse constituencies. The COV believe the program should consider setting up small panel to investigate overlap in training support: see Other Topics, below.</p>	<p align="center">APPROPRIATE</p>
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments: The support of the Political Science Program for younger scholars reflects the overall positive approach to innovation. The spending on innovative (e.g. networks, “Visions”) and potentially transformative (e.g. behavioral genetics), training programs is characteristic. The growing, now frequent use of RAPIDS is another reflection of this, despite the added burden these place on program officers.</p>	<p align="center">APPROPRIATE</p>
<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments: A number of the proposals in the Political Science portfolio (e.g., TESS) received joint reviews and received funding from other NSF programs as</p>	<p align="center">APPROPRIATE</p>

<p>well (within and beyond SES). Several of the large platform projects (e.g., ANES) have been active in outreach to scholars in cognate disciplines.</p>	
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments: In the period the COV reviewed, despite constraints, the program made awards in a majority of the 50 states. The COV reviewed, discussed with the Program Officers, and broadly approved awards where the infrequent receipt of funding was an element in the decision. Generally, the geographic distribution of applications and awards reflects the size of populations and the density of research universities in the several states but the Political Science program goes out of its way to encourage applications from institutions in smaller states and attends to geographic distribution in making awards.</p>	<p>APPROPRIATE</p>
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments: The Political Science program is proactive in soliciting submissions from research-active faculty in colleges and universities that are not in the Research I category. For example, it funded projects from scholars at Macalester College, Jackson State University and North Dakota University. In addition, one of the officers regularly holds information sessions about the NSF political science program for scholars from HBCUs. The program goes out of its way to include panelists from a broad range of institutions. It encourages and funds the participation of undergraduates in research. It attends to the distribution across institutional type in making awards: its portfolio includes RUI awards. Of course, reflecting the distribution of proposals and relative experience of PIs, research universities are the source of most applications and recipients of most awards for research funding.</p>	<p>APPROPRIATE</p>
<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants.) An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award.</p> <p>Comments: In 2015, the only “normal” year reviewed by the COV, the program received 60% of its proposals from new PIs, and the acceptance rate for new female PIs reached 20%, above the overall program average across the years the COV reviewed. This result reflects the fact that the Program Officers are proactive in soliciting applications from new scholars and coaching them in the</p>	<p>APPROPRIATE</p>

<p>construction of proposals. Of course, scholars who have shown the ability previously to propose and execute research are more likely to receive funding again from the program. However, the ratio of acceptance rates of prior to new PIs is a healthy 2:1. In 2015 43% of awards went to new PIs.</p>	
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments: The EITM program is exemplary for incorporating explicit mentoring of ongoing graduate student research in a teaching/training context. Several projects support the development of research capabilities of graduate students and junior faculty or integrate graduate and undergraduate students into research activities.</p>	<p>APPROPRIATE</p>
<p>9. Does the program portfolio have appropriate participation of underrepresented groups⁶?</p> <p>Comments: The Political Science program helps scholars from underrepresented groups apply effectively. The continuing support for minority scholars in the Bunche Institute is noteworthy, as is the program's inclusion of women scholars as reviewers and panelists. Overall, Political Science receives a healthy number of applications from scholars in under-represented groups, particularly applications from women for regular research grants. As example of support for under-represented groups in training, note the support given to a workshop on women of color in political science (not in sample) or the support given to the Methodology Society for emphasizing under-represented groups in its Summer meetings.</p>	<p>APPROPRIATE</p>
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: NSF Political Science consistently supports research which addresses the national security interests of the United States that advances the</p>	<p>APPROPRIATE</p>

⁶ NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

<p>understanding of trade relations and other topics relevant to the economic interests of the United States, and promotes an understanding of democracy in the United States and abroad. The Political Science program has supported research on political change in the Middle East, on terrorism and violent insurgencies, on people's responses to economic disruption and uncertainty, on the development of electoral processes in autocracies and new democracies, and on the responsiveness of political institutions to public opinion.</p>	
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p> <p>See below, Other topics.</p>	

V. Questions for Division Level Discussion. Please provide comments on both scientific and management aspects of the following division-specific questions:

<p>DIVISION LEVEL DISCUSSION</p>
<p>1. Looking forward, what is your vision for the intellectual future of SES? If money were no object, what type of infrastructure would be needed to attain this vision?</p> <p>The COV recommends a significant investment in infrastructure to support the study of “a world in motion”: the world-wide breakdown (shifting) of borders and movement of people within and between (changing) political jurisdictions. The initiative might have two foci: one is the micropolitics of civil war. Advances in natural language processing and computer science soon will allow us to automatically (machine) code, in real time, massive amounts of English language and non-English language text. The coded text will yield data on multiple dimensions of events (source-action-target-location-time strings) and hence allow us to chart the outbreak, spread, and consequences of civil war for spatially and temporally disaggregated units of analysis like municipalities and departments. In turn, for the first time, theories of civil war will be meaningfully tested and extended. And the reasons for and effects of the migration of people in anticipation, during, and after civil war will be better understood. Numerous new, conventionally coded data sets will enrich this analysis of civil war and migration. The second focus is on the rise in (im)migration of people between regions of the world including the influx of refugees and asylum seekers in Europe and the United States. This (im)migration has enormous impacts on institutions, human security, labor markets and human capital stocks, and understandings of community. Both foci require investments from SES programs like Sociology, Anthropology, and Political Science as well as from SBE programs like Psychology and Geography and Spatial Science. As for the political science program, it already funded a DDRIG project on the micro consequences of civil war in Colombia, another project evaluating US implementation and enforcement of the UN Trafficking Protocol, EAGER research on how certain primes and types of framing affect the apparent mutual accommodation of national majorities and ethnic minorities (including Middle Eastern and North African refugees), and other research on the world in motion.</p>

2. Issues of replicability, reproducibility, and robust science have been the focus of discussion within the SBE directorate and across the Foundation. In your opinion, what role should funding agencies play in promoting robust science?

Programs should require robustness checks (against multiple indicators, alternative model specifications, etc.) as part of research designs. We are less confident that all SES programs ought to invest scarce research dollars on projects aimed at replication and reproduction of existing results. Replication and reproduction are important enterprises but they are regularly carried out in political science, often by graduate students, who seek to refine and extend significant pieces of research.

3. A related issue is one of data management, public access and data –sharing. What steps should SES take, if any, to promote a climate of data-sharing with its scientific communities?

We found tremendous variation in how PIs planned to share data and code. Some planned to create a personal website for this purpose. A good number promised to share data and code on their local, university website; Harvard’s Dataverse was another popular choice. In other cases, PIs promised to share data through the ICPSR. We are unclear how easy it is to search all these sites/sources via the internet. We also are unsure if NSF is willing or able to force PIs to use a single common source, or whether requiring posting data for public access at an NSF-managed site would provide benefits that justify the cost.

Note: In medicine apparently researchers are sharing experimental results in real time on laboratory websites. The wisdom of this practice is a source of debate among scholars (See The Economist March 19, 2016, pps. 85-6). We do not know if this practice is common for SES sponsored research, but it seems consistent with the goals of RAPIDs and even EAGERs, particularly in terms of generating value from comments of other researchers.

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

-The status of ANES in SES and in the political science program needs to be resolved. ANES takes a substantial part of the political science budget. It is not clear to the COV that there is significant value added in the data projects that seek to supplement the ANES like the Cooperative Congressional Election Study. The political science program needs to set clearer criteria and priorities for maintaining and extending existing data series like the ANES, CSES, CCES, and MIDS. At the margin, the costs of maintaining them all may exceed the benefits of (co)funding several additional high quality senior and (or) DDRIG proposals.

-Funding for training projects like the EITM and PMS needs to be prioritized as well, with a view to avoiding costly duplication of effort. The COV agree that these training projects have been innovative at times, and have also served to improve the training of underrepresented groups. But both have been funded for a long time, which suggests that they have become parts of a more routine, less innovative, training program that could be expected to be more self-sustaining if valuable. The COV see a need for some more rigorous evaluation, perhaps with the assistance of a small external panel. With respect to EITM, PIs should enumerate clear advances in theory or estimation generated by the project, as originally promised by its NSF founders. Similarly, the Political Methodology Society needs to regularly explain the new and important statistical advances that their group has produced and how these advances have led to specific accomplishments in the way of tests of leading theories, new measures of theoretically important concepts, more accurate forecasts, and so on. Finally,

more systematic evaluations of the training in these ventures themselves ought to be conducted. Other smaller scale, more recent training activities like the Political Network Group, Journeys, or Visions could be included in a systematic review of training activities if that were to be sought.

2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

No additional points.

3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

No additional points

4. Please provide comments on any other issues the COV feels are relevant.

In past years when jackets were read *during* the COV meeting, 2.75 days was justified. It is not clear to us that now, when jackets and related documents are read and reports are both drafted prior to coming to the NSF, that 2.75 days are needed to complete the work of the COV.

5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

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- a. The COV should have access to a list of funded projects in its coverage period, not just to the random sample of jackets.
- b. To get a more accurate picture of the extent of graduate student support, programs should supply the COV with a breakdown comprising graduate training, graduate dissertation research, and support for graduate students in research proposals.

SIGNATURE BLOCK:

X /s/ John Freeman

X /s/ James Alt

For the _____ Political Science _____ Program

Science of Organizations
INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: SoO reviewers and panelists reflected the multidisciplinary fields and domains of expertise that it supports (e.g., organizational theory and behavior; industrial and organizational psychology; human resource management; information sciences; sociology; and industrial engineering). The typical proposal was reviewed by 5 experts and was discussed at panel. No competitive research proposal had fewer than 3 reviewers.</p> <p>Data Source: EIS/SoO Program COV Narrative</p>	Yes
<p>c. Are both merit review criteria addressed</p> <p style="padding-left: 20px;">a) In individual reviews?</p> <p style="padding-left: 20px;">b) In panel summaries?</p> <p style="padding-left: 20px;">c) In Program Officer review analyses?</p> <p>Comments: Both criteria were addressed at all three stages of review. Some individual reviews combined discussion of criteria in a single section, such as the summary.</p> <p>Data Source: Jackets</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p>

<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: Although a few reviews were sparse, each proposal received detailed comments from multiple reviewers.</p> <p>Source: Jackets</p>	<p>Yes</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: Panel summaries provided clear indication of the consensus recommendation and the reason for it.</p> <p>Source: Jackets</p>	<p>Yes</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments: Documentation provided clear statements for why or why not a proposal was funded.</p> <p>Source: Jackets</p>	<p>Yes</p>
<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments: Materials sent to PI provided clear statements for why or why not a proposal was funded.</p> <p>Source: Jackets</p>	<p>Yes</p>

<p>7. Additional comments on the quality and effectiveness of the program’s use of merit review process:</p> <p>Comments: The average number of reviewers in the selected proposals was close to 5, exceeding the recommended minimum of 3. The review process was thorough and yielded high quality feedback on all submitted proposals.</p>	
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II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

SELECTION OF REVIEWERS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: Proposals were often interdisciplinary, which required breadth in reviewer expertise. Reviewers were appropriately diverse and well-qualified. The program officers ensured diversity was represented in panelists as well.</p> <p>Source: EIS/SoO Program COV Narrative</p>	Yes
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: The NSF policy and procedures for handling conflicts of interest are rigorous and routinely enforced. A few proposals had conflicts of interest (with panelists, the program officer, or some combination of both), and those proposals were noted and dealt with appropriately.</p> <p>Source: Jackets, EIS/SoO Program COV Narrative</p>	Yes
<p>3. Additional comments on reviewer selection:</p> <p>Reviewer selection was thoughtful and resulted in an appropriately diverse and qualified set of reviewers for all submitted proposals.</p>	

III. Questions concerning the management of the program under review. Please comment on the following:

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Comments: The program was efficient and well-run. The lowest annual average 6-month dwell time was 89%, well above the 70% guideline. The number of proposals has grown substantially over the last year yet average dwell time declined from 5.1 months to 3.4 months on average. In the busiest year (2015), 95% of proposals were completed within 6 months.

Source: EIS/SoO Program COV Narrative

2. Responsiveness of the program to emerging research and education opportunities.

Comments: The program co-sponsored a number of awards with other programs, including for example DRM, I-Corps and Economics. In addition, the SoO program funded a RAPID award for Ebola research and cutting-edge conferences on topics including “Future directions in the Science of Organizations,” “Enhancing scientists’ capacities for catalyzing policy innovation,” “Leading organizational change,” and “Computational modeling for individual and organizational science.”

Source: Jackets, EIS/SoO Program COV Narrative

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: The funded portfolio included a workshop on future directions for the Science of Organizations program, which allowed for direct input into planning future funding. The program officers were visible at national conferences and accessible to interested parties, which also helped shape program priorities. SoO has been intentionally multi-disciplinary and multi-method in focus and the funded portfolio reflected these priorities.

Source: Jackets, SoO Program COV Narrative

4. Responsiveness of program to previous COV comments and recommendations.

Comments: SoO has been responsive to previous COV comments and recommendations on a number of fronts. Regarding intellectual vision, SoO supported funding for proposals on big data, human security, human factors in the adoption of new technology, and systems science (the latter referring to systems involving teams; intersections between science and policymaking). The program has also been responsive to the data access and infrastructure suggestions about interoperability and capacity building via joint project funding across a range of directorates and programs. Finally, regarding review innovations, SoO made extensive use of diverse panels in assessing its array of equally diverse proposals submissions.

Source: Jackets, SoO Program COV Narrative, SES Response to the 2013 COV Report

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

<p style="text-align: center;">RESULTING PORTFOLIO OF AWARDS</p>	<p style="text-align: center;">APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE</p>
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments: SoO is interdisciplinary and provided awards across programs and directorates. There is no defined set of sub-disciplines; the sets of disciplines underlying the proposals and the panelists were diverse, reflecting the broad vision of the program.</p> <p>Source: Jackets, SoO Program COV Narrative</p>	<p style="text-align: center;">Appropriate</p>
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: Projects solely funded by SoO in FY 2013-2015 consisted of 28 distinct projects, with a mean of 2.4 years at \$127,213 per year. This dollar amount is low compared to the typical mean SES budgets of \$149,448 per year. This pattern may reflect the small pool of funds that were available to SoO program officers relative to the number of high-quality submissions.</p> <p>Source: EIS/SoO Program COV Narrative/SES Program COV Narrative</p>	<p style="text-align: center;">Appropriate</p>
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments: Both funded and non-funded projects reflected innovative and potentially transformative ideas. Submissions included timely and societally important topics such as safety culture in police, capitalizing on benefits of diversity in teams, and big data approaches to risk assessment in organizations.</p> <p>Source: Jackets</p>	<p style="text-align: center;">Appropriate</p>

<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments: SoO is inherently interdisciplinary in nature, and submitted projects came from a variety of departments, including but not limited to organizational psychology, sociology, political science, communications, management, engineering, economics, public policy, and environmental studies. Just as important, funded programs were likely to have built capacity for future inter-disciplinary collaborations.</p> <p>Source: Jackets</p>	<p>Appropriate</p>
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments: Funding was awarded to PI's in 19 states, including 3 EPSCoR states.</p> <p>Source: EIS/SoO Program COV Narrative</p>	<p>Appropriate</p>
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments: The majority of awards was provided to research-intensive (78%), but these institutions are the most appropriate recipients for major research funding.</p> <p>Source: EIS/SoO Program COV Narrative</p>	<p>Appropriate</p>
<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants.) An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award.</p> <p>Comments: Funding rates for junior investigators (Ph.D. granted in the past 7 years) was similar to funding rates for more senior PIs.</p> <p>Source: EIS/SoO Program COV Narrative</p>	<p>Appropriate</p>

<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments: SoO funded a number of workshops that allowed graduate student attendance. In addition, many of the projects support the research and education of doctoral students.</p> <p>Source: Jackets</p>	<p>Appropriate</p>
<p>9. Does the program portfolio have appropriate participation of underrepresented groups⁷?</p> <p>Comments: Based on the information available to us, it appears that SoO incorporated diverse participants in the review and panel processes. Among applicants, funding rates for whites and Asians were similar, averaged across years. No projects were funded for Black/African American, Hispanic, or Multiracial; however, the total number of proposals from PIs in these groups was low, so differences in funding rates should be interpreted with caution.</p> <p>Source: EIS/SoO Program COV Narrative</p>	<p>Appropriate</p>
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: SoO funds evidence-based research relevant to organizations and the well-being and security of the nation. Given that NSF seeks to stimulate innovation and address societal needs through research and education, the SoO program is well-aligned to the mission and has a proven track-record of funding important scholarly work.</p> <p>Source: Jackets, NSF Strategic Plan for 2014-2018</p>	<p>Appropriate</p>
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p> <p>The portfolio was well-aligned with NSF and national priorities, and increases in the number and size of awards would be consistent with these priorities. Investments in SoO fostered inter-disciplinary and problem-focused research with potential to benefit organizations and society at large.</p>	

⁷ NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

V. Questions for Division Level Discussion. Please provide comments on both scientific and management aspects of the following division-specific questions:

DIVISION LEVEL DISCUSSION
<p>1. Looking forward, what is your vision for the intellectual future of SES? If money were no object, what type of infrastructure would be needed to attain this vision?</p> <p>NSF, the SES included, should be the primary advocate of both rigorous and relevant scholarly work. Following the Bollen et al report, NSF should set expectations that all projects follow established guidelines for such research or provide an explanation for why they cannot. In SES, this effort could take the shape of expectations for all funded projects to make all key materials available to the public (for reproducibility) and to use multiple methods and analytical techniques (for robustness). In addition, NSF should fund research specifically on advancing science and the effective dissemination of scientific findings.</p>
<p>2. Issues of replicability, reproducibility, and robust science have been the focus of discussion within the SBE directorate and across the Foundation. In your opinion, what role should funding agencies play in promoting robust science?</p> <p>NSF should advocate for and establish criteria that promote robust science in all funded proposals. These criteria should be flexible enough to encourage early stage, exploratory, and qualitative research studies. Scholars should be expected to follow these guidelines or provide an explanation for why they cannot.</p>
<p>3. A related issue is one of data management, public access and data –sharing. What steps should SES take, if any, to promote a climate of data-sharing with its scientific communities?</p> <p>NSF should require data-sharing of some kind for all funded projects. All data management plans should include details about how data and other research materials will be made available to the public (or a rationale for why materials cannot be made available). Final funding payments should be withheld until data sharing, per the contracted agreement, is executed.</p>

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

We believe the SoO program is well-designed and has been well-run. The only operational concern we had was in the delayed transition between program officers in 2014. Having a full-time program officer in place (as occurred in 2013 and 2015) has been critical for ensuring high quality proposals and timely decision-making.

2. Please provide comments as appropriate on the program’s performance in meeting program-specific goals and objectives that are not covered by the above questions.

The program has been very effective at attracting and funding multi-disciplinary projects that align well with national and NSF priorities. The program would benefit from additional funding, for reasons previously enumerated: increasing numbers of high-quality proposals, lower funding per proposal relative to other SES areas, and high multidisciplinary focus.

3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

We believe the SoO program is generally well-supported, yet would benefit from additional funding that supports its continued mission of conducting inter-disciplinary and problem-focused research.

4. Please provide comments on any other issues the COV feels are relevant.

We appreciate the opportunity to learn more about the SoO program and the SES directorate, and to meet leaders of each. We appreciate the other committee members, committee leadership, and professional staff, who made this an enjoyable learning experience.

5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

NSF provides a lot of information to COV members. The amount of information is overwhelming and members would benefit from a single flow chart of the key steps involved in signing on, preparing, and completing COV work. Such a summary graphic would help COV members understand the information and prioritize their efforts.

The Committee of Visitors is part of a Federal advisory committee. The function of Federal advisory committees is advisory only. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the Advisory Committee, and do not necessarily reflect the views of the National Science Foundation.

SIGNATURE BLOCK:

X /s/ Fred Oswald

X /s/ Kenneth Brown

For the Science of Organizations Program

Science and Technology and Society
INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: We found the program's panel method to work well. The review methods are well organized and thorough. Panelists are responsible for approximately 15 proposals for review, with two panelists per proposal. We were concerned that having only two panelists review a proposal was insufficient for full assessment and appropriate review. On the other hand, we know that increasing the number of panelists assigned to each proposal would increase the panelists' workload and be a disincentive to participation.</p> <p>Careful attention is paid to ensure that the diverse forms of expertise required by the interdisciplinary work of STS is properly vetted. The Ad hoc reviewers augment the strengths of the panel and effectively support the review process.</p> <p>All in all, the panel review process is well designed to assess the quality of proposals. The composition of the panel—8 social scientists, 4 historians, and 4 philosophers—represents the range of intellectual resources on which the field of Science and Technology Studies has been built, ensuring that the inherent interdisciplinary quality of the field be sustained.</p> <p>In response to an earlier COV review, program managers revised the text of the solicitation to broaden the scope of potential proposal submissions. It has been successful in doing so.</p>	<p>Yes</p>

<p>2. Are both merit review criteria addressed</p> <p>a) In individual reviews?</p> <p>b) In panel summaries?</p> <p>c) In Program Officer review analyses?</p> <p>Comments: Both the intellectual merit and broader impacts of the research were considered when panelists evaluated proposals. The reviews also made explicit efforts to address both merit criteria.</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p>
<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: With a few exceptions, reviewers provided substantive comments explaining their views. The reviewers are thorough in their analyses, consistently situating the proposal's contribution in relation to the broader STS literature. Concerns about analytic approach, case selection, and methodological issues are clearly articulated, so that even in cases when the proposal has been rated highly competitive, the PIs are able to improve upon their research protocol.</p> <p>In the rare cases where the Ad hoc reviewers submitted brief or shortened commentaries, the panel summaries provided PIs with substantive analysis for the improvement of proposals.</p>	<p>Yes</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments:</p> <p>Panel summaries regularly cite comments made by panelists in the course of the discussion, augmenting the assessments provided in written reviews. Divergent views are also discussed in the summaries, giving PIs a full picture of the panelists' deliberations.</p>	<p>Yes</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments: It is easy to see how decisions were made based on the documentation in the jacket. Information provided on revised budgets was helpful in understanding how resources were more fairly distributed in the final stages of making awards.</p>	<p>Yes</p>

<p>6. Does the documentation to the PI provide the rationale for the award/decline decision? [Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments: PIs are offered extensive comments on the proposal. Virtually all the information recorded in the panel summary is provided to the PI, making the review process transparent.</p>	<p>Yes</p>
<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process:</p>	

II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

<p>Selection of Reviewers</p>	<p>YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE</p>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: Reviewers were well qualified, and their selection allowed for divergent views to be expressed.</p>	<p>Yes</p>
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: Overall, throughout the review process very few conflicts of interest arose, and when they did, were dealt with appropriately.</p>	<p>Yes</p>
<p>3. Additional comments on reviewer selection:</p>	

III. Questions concerning the management of the program under review. Please comment on the following:

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Comments: Overall, the program is well managed. The program staff effectively supports high impact research engaging a broad spectrum of Science & Technology Studies. The program supports work that applies methods from a diverse set of disciplinary and interdisciplinary fields that include anthropology, communications, environmental studies, history, informatics, peace studies, philosophy, political science, sociology, technology studies, and women and gender studies.

The program benefits from having one permanent program officer and one rotating officer to manage program activities. The officers have shown a willingness to communicate with PIs and prospective PIs through the entire proposal and award process. The program officers also have the additional responsibilities of managing the CES STEM program and collaborating with the National Nanotechnology Initiative, the Synthetic Biology Working Group, the Emergent Behaviors of Integrated Cellular Systems STC at MIT, the National Robotics Initiative Working Group, and NSF/NEA/NEH Working Group.

The program offers Scholars Awards, Post-Doctoral Fellowships, Doctoral Dissertation Research Improvement Grants, Workshop and Conference Grants, Standard Grants, and Grants for Collaborative Research. The program also attempts to award one grant from the NSF wide Faculty Early Career Development (CAREER) Program and participates in the INSPIRE program.

The program manages its proposal load well with a good majority of proposals handled within a 6 month period. STS has collaborated with a number of other programs, such as SES and BCS (Cultural Anthropology and GSS), as well as programs outside of the directorate (BIO, MPS, and ENG). It also has used RAPID funding as a mechanism to supplement existing grants.

Structurally, the program changed the number of competitions for DDRIGs from twice a year to once a year, with an August deadline. This change decreased panelist workload and reduced the travel costs for panels.

2. Responsiveness of the program to emerging research and education opportunities.

Comments: STS program directors are open to meeting with PIs to discuss their projects and keep up with new trends in STS. Discussions among the panelists and comments by reviewers provided valuable insights into emerging areas of research. Program staff regularly attend professional conferences to keep up with the current state of the field and to see what kinds of new avenues of research are being explored.

The field of Science and Technology Studies has grown exponentially over the last decade, expanding beyond the dominance once exercised by several prominent departments and programs—Cornell, MIT, RPI, UC San Diego, UC Santa Cruz, Virginia Tech. This is true both in

relation to faculty research and graduate training. For this reason, we suggest that greater efforts be expended in publicizing the availability of funds—research and dissertation awards—to professional societies associated with more traditional disciplinary foci, which have not regularly looked to the NSF STS program for support. Knowing that the program staff is willing and able to assist newcomers to the NSF funding world with writing a successful proposal will surely help outreach.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: In 2012, the program revised its announcement to be more responsive to the changing nature and composition of the field. The ability to adjust to evolutions in the field is critically important because this program supports an intellectually diverse community of scholars who study the multifaceted social, cultural, and political impacts of humanity's relationships with science and technology.

The program currently divides research proposals into three areas of concentration: history of science (HS), philosophy of science (PS), and social studies of science (SS). This configuration seems to currently work, yet there is concern how this configuration maps onto the field in general. With the expansion of the field, it has become harder to firmly delineate the intellectual borders of STS. Nevertheless, the program has effectively shown its ability to support research pushing the boundaries of STS research and scholarship.

The program should consider opening a discussion within the field regarding its continual evolution and the key areas of inquiry and key themes or terms that motivate the submission of proposals from researchers that may feel their scholarship is not central to the program's aims.

4. Responsiveness of program to previous COV comments and recommendations.

Comments: Many of the recommendations from the previous COV were related to the difficulties posed by the 27% reduction in the program's budget, a constraint that hampered the ability of the program to fulfill its mission. This continues to be a problem for the successful promotion of the program, as resources are limited.

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

RESULTING PORTFOLIO OF AWARDS	APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments: As the example of a general panel proposal set makes clear, a variety of disciplines and sub-disciplines are represented. They continue to be categorized by the four sub-areas that the previous report had suggested be dropped.</p>	Yes
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: Though it is difficult to fully evaluate what is the appropriate size or duration for an award during the period in review, the awards appear to adequately support the research funded. The program officers have distributed the funds equitably across the variety of awards granted. Specifically, the program has been able to fund more proposals by having PIs trim their budgets by 10% or 20%, an approach we find commendable. This reduction in budgets does not appear to negatively impact the proposed research.</p>	Yes
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>The program has supported proposals that can substantively change the field.</p>	Yes
<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments: As an interdisciplinary field, STS is driven by inter/multi/trans-disciplinary research. STS co-funded 53 proposals between 2013 and 2015. Fields represented include Cultural Anthropology, Nanoscale Engineering, Science Policy, Sociology and STAR Metrics.</p>	Yes
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments: The geographical distribution of PIs is limited to a number of states, and has declined between 2013 and 2015. As would be expected, states on the two coasts are consistently</p>	Yes

<p>represented, as is Texas. Sixteen states were not represented at all in the distribution.</p> <p>Broader efforts at outreach may mitigate the problem with better distribution across the country. But we also feel that the problem of the geographic distribution of awards is one that the STS program cannot address or rectify on its own, since it is a consequence of the location of research intensive universities in select regions of the country.</p>	
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments: All five levels of institutions were represented among the awardees, though PhD granting and Research Intensive PhD granting institutions received the large majority of awards.</p>	Yes
<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants.) An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award.</p> <p>Comments: The program was able to strike a fairly good balance in the distribution of awards to investigators who had received prior funding and those new to NSF. In fact, the ratio of new investigators to previous awardees increased between 2013 and 2015. We find this a commendable change.</p>	
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments: The proposals submitted for conferences and workshops all aimed to share research with engaged audiences. Many of the other awards included graduate training that supported a multitude of methods and approaches relevant to STS.</p> <p>The program awards approximately one grant per year from the Faculty Early Career Development Program (CAREER) which primarily supports graduate training in a PI's research area.</p> <p>Many proposals required graduate students participate in all phases of data collection, analysis, and dissemination of</p>	Yes

<p>research. Under the mentorship of PIs, graduate students will gain critical research and writing skills through collaborative effort.</p>	
<p>9. Does the program portfolio have appropriate participation of underrepresented groups [1]? Comments: It is difficult to assess the participation of underrepresented groups, since many PIs choose not to identify themselves by race/ethnicity. In regard to the research proposals themselves, it is clear that many important influences in STS, notably the foundational role of feminist theorists in debates over epistemology and ontology, are not reflected in research topics. Innovative work in critical race studies, sexuality studies, gender studies, queer theory, disability studies and postcolonial scholarship do not appear among the proposals either. We suggest that program managers write a Dear Colleague letter to encourage people working in these areas to submit proposals to the STS Program. We think this would enhance the participation of underrepresented groups, as well as improve the scholarship in STS on these crucial social and political issues.</p>	
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports. Comments: The STS program is directly involved in research and education efforts that address central issues of national policy. The program is invested in studying the intersections between the human condition and emerging science and technology. These include research on environmental health issues, innovations in medical practice, and new technologies in transportation, communication and energy extraction. A range of questions consider sustainability, such as the viability of habitats under duress, innovations in the use of renewable resources, and improvements in health outcomes. Research is conducted across the globe, in regions from the Americas and Asia to Africa.</p>	<p>Yes</p>
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p>	

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.
2. Please provide comments as appropriate on the program’s performance in meeting program-specific goals and objectives that are not covered by the above questions.

Issues of robust and reliable science were a recurring topic of discussion within the COV. The 2015 report on robust and reliable science did a good job of distinguishing

the meanings between reproducibility, replicability and generalizability in scientific practice. Unfortunately, however, the focus on these features of scientific practice left the impression that science is defined by these practices alone. Many conducting research in Science and Technology Studies use methods that were not represented in the report, such as ethnography, textual analysis, and historical studies (usually but not always identified as archival work). The scientific integrity of these methods needs to be recognized and supported.

For many working in the field, the entire methodological apparatus of replicability, reproducibility and generalizability is an important research topic in itself. This is true for two reasons. The first concerns the longstanding philosophical debates about scientific method that continue to vex scholars; the second relates to the actual practices of scientists, i.e. whether and how they practice the principles of replicability, reproducibility and generalizability. We suggest that the STS Program encourage the submission of more proposals exploring the character of scientific methods in everyday practice. This would improve our understandings of how methods are achieved day by day, and consider in fact whether these methodological prescriptions are in fact doable, e.g. the recent debate about replicability in psychology.

Scholars in STS are also devoting attention to data sharing practices, both in terms of constructing the epistemic and technological infrastructure to assist sharing data from disparate methodological traditions, as well as exploring the consequences of relying on new forms of data collection that raise questions about the relationship between the collection and selection of data and the analytic projects they serve. We would suggest that research on trends in big data collection and analysis be encouraged, since new directions of scholarship will be significantly impacted by the use and misuse of these resources.

3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.
4. Please provide comments on any other issues the COV feels are relevant.
5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

Regarding the COV process, more specific guidance prior to the meeting would be greatly helpful.

From our perspective, speaking with the previous STS COV reviewers, even briefly, would have been extremely helpful. This conversation would have provided a level of continuity and context to the review process and the program. Furthermore, we could have gained a great deal of clarity regarding prior recommendations for the program.

A few of the questions (3.2, 4.2, 4.3, 4.4, 4.8) on the COV report form appear to be overly vague or obvious to elicit substantive discussion. For example, question 4.4, "Does the program portfolio include inter- and multi-disciplinary projects?" is a bit strange for a program driven by inter/multi/trans- disciplinary research.

Report recommendations:

1. We recommend that the program managers consider having three panelists review a proposal, rather than two, so that the complexities of interdisciplinary work be adequately assessed.
2. We recommend that greater efforts be expended in publicizing the availability of funds—research and dissertation awards—to professional societies associated with more traditional disciplinary foci, which have not traditionally looked to the NSF STS program for support.
3. We recommend that the program consider opening a discussion within the field regarding the key areas of inquiry and key themes or terms to motivate the submission of proposals from scholars that may feel their scholarship is not central to the program’s aims.
4. We recommend that program managers write a Dear Colleague letter to encourage people working in the areas of feminist theory, gender studies, critical race studies, sexuality studies, queer theory, disability studies and postcolonial approaches to submit proposals to the STS Program.
5. We recommend that research on trends in big data collection and analysis be encouraged, since new directions of scholarship will be significantly impacted by the use and misuse of these resources.

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[1] NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

SIGNATURE BLOCK:

X /s/ Marth Lampland

X /s/ Rayvon Fouche

For the Science and Technology and Society Program

Sociology

**INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT**

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: Regular research proposals are reviewed twice/year with target dates on August 15 and January 15th. There is a new process for dissertation reviews, whereby there is one open competition annually (October 15), and a second competition in February open only to those invited to Revise and Resubmit from the fall competition. CAREER awards are received once/year in the last week in July. Workshop/conference, RAPIDS and EAGER proposals are submitted any time. Upon receipt, NSF staff review proposals for compliance with NSF regulations and a program staff is identified as PO. Regular research and CAREER competitions draw on both ad hoc reviewers and panel member reviews. The panel meets for two days at NSF's Arlington office (except for Spring dissertation panel, which meets for one day) and discusses all proposals. For each proposal, two or three panelists prepare, in advance of the meeting, written reviews. Each proposal is discussed at the panel meeting, with those assigned as reviewers leading the discussion, and also bringing in the ad hoc reviews. Dissertation proposals are reviewed only by panel members.</p> <p>The 2016 program information indicates that there has been a difference between the rotator and the permanent PO with regards to whether ad hoc reviewers were assigned when proposals were deemed weak. Some of the rotators tended not to seek ad hoc reviewers, while the permanent PO continued the past practice of seeking six ad hoc reviewers to all proposals.</p> <p>We believe that the PO's practice of soliciting several ad hoc reviewers increases the quality of the review process and recommend that greater efforts be made to ensure that panel discussions are informed by a robust number of ad hoc</p>	

<p>reviewers since those reviewers are able to provide the substantive and/or methodological expertise that may be more limited on the panel itself.</p> <p>Regular proposals are placed in one of four categories (high funding priority, medium funding priority, low funding priority, do not fund); dissertation proposals are placed in one of three categories: fund, invited to revise and resubmit, and do not fund. During the three year period, proposals that were funded received an average of 5.46 reviews; those that were delinked had an average of 5.3 reviews.</p> <p>Data Source: Jackets and COV Module</p>	
<p>Are both merit review criteria addressed</p> <p>a) In individual reviews?</p> <p>b) In panel summaries?</p> <p>c) In Program Officer review analyses?</p> <p>Comments:</p>	<p>a.) YES</p> <p>b.) YES</p> <p>c.) YES</p>
<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: The COV notes that there is quite a bit of variability in the quality of reviews. Some are detailed and give very clear justifications for the evaluation and give very useful feedback to the proposals that will strengthen the research design of successful proposals or will help improve those that are declined. However, there are others that merely re-state the proposal's goals, indicate that it is an important research topic, and generally do not provide constructive feedback or detailed explanations justifying the overall rating. It is difficult to know how to fix this problem, but it is of concern as it may result in variability in the rigor of the review. Panel Summaries and Review Analysis, however, do seem to go some distance toward compensating for reviews that are more or less rigorous. This variability is another reason why we recommend a robust number of reviews for each proposal.</p>	
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: As with the quality of the reviews, there was variability in the quality of the panel summaries. However, of the summaries we reviewed the rationale for the panel consensus (or lack thereof) was explained.</p>	<p>YES</p>

<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments:</p>	<p>YES</p>
<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments: The PIs receive all of the reviews, as well as panel summaries and a context statement that summarizes the panel proceedings with respect to number of proposals considered and number ranked in each of the categories by the panel. With this information, the PIs are given sufficient information about the decision that was made.</p>	<p>YES</p>
<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>Overall, the review process is very effective and thorough. That said, there was variation in the quality of the reviews that in tandem with what were occasionally a small number of reviews, made it more challenging for panels to make decisions.</p> <p>Given the small number of program officers, and the great deal of turnover, the overall thoroughness of the review process is particularly impressive. Moreover, the end result is a portfolio of funded projects that span the breadth of sociology and include methodological diversity.</p>	

II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

<p style="text-align: center;">SELECTION OF REVIEWERS</p>	<p style="text-align: center;">YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE</p>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: Ad hoc reviewers and panelists typically provided reviews for research grants, while panelists typically provided reviews for the Dissertation Research Improvement Grants. We are impressed by the overall selection of both ad hoc reviewers and panelists. Although, as discussed above, there is variation in the review quality, the program effectively identified reviewers whose expertise and qualifications should have positioned them to offer careful and insightful assessments of the research proposals. We were disappointed, however, by the large number of declines among the invited ad hoc reviewers.</p> <p>The selection of panelists is especially careful. Panelists are highly respected scholars, and the areas of expertise on the panel are varied and reflective of the core subareas and methodological approaches of the discipline of sociology. As might be expected, panelists reviewing Doctoral Dissertation Research Improvement Grants occasionally were asked to review dissertation research proposals on topics that were not entirely consistent with the panelists' expertise. After reading reviews by these panelists, we do not consider this a concern: the panelists take an expansive view of and appear to be broadly knowledgeable of sociological topics and methods.</p> <p>Data Source: Jackets</p>	<p>YES</p>
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: The Sociology Program takes great effort to recognize and resolve conflicts of interest. The program officers begin each panel meeting with comments and guidance regarding conflict of interest, after which each panelist is asked to identify potential conflicts of interest regarding any proposal (in these cases, the panelist recuses her/himself from panel discussions of the proposal). In cases in which a Program Director has a conflict of interest, the proposal is reassigned to another Program Director.</p> <p>In selecting external reviewers, the Sociology Program closely examines the biosketch of each PI and co-PI to reduce the likelihood that an external reviewer has a conflict of interest. In examining the list of the reviewers for the sociology proposals, we were impressed by the small number of cases in which the reviewers indicated a conflict of interest. Given the great potential of conflict of interest, this</p>	<p>YES</p>

<p>small number suggests that the program did an admirable job in identifying potential conflicts of interests before requesting reviews.</p> <p>Data Source: Jackets</p>	
<p>3. Additional comments on reviewer selection:</p> <p>We recognize the difficulties in identifying a pool of reviewers who can provide the quality of reviews that the NSF and we would expect, as well as the difficulties in encouraging these reviewers to accept the invitation to review. We also recognize that these challenges are especially daunting for new rotators. Given the amount of staffing changes that it has experienced, the Sociology Program’s ability to identify and successfully recruit reviewers is notable. We expect that the selection process could be even stronger when there is more continuity in staffing. The Program also should be commended for its efforts in identifying a diverse group of reviewers.</p>	

III. Questions concerning the management of the program under review. Please comment on the following:

<p>MANAGEMENT OF THE PROGRAM UNDER REVIEW</p>
<p>1. Management of the program.</p> <p>Comments: As with prior reports, the COV observes that the Sociology Program is managed very effectively given the nature of the staffing—which strikes us as having, during this review period, been both insufficient and lacking continuity. Over the three year COV review period, the permanent PO was on a one-year sabbatical (March 2014-2015). Other than the permanent program officer, there were five different rotators/program officers during the COV period. One of the rotators was offsite and specifically tasked with processing proposals. This lack of continuity no doubt has consequences for the quality of the review process, the dwell time, and the variation in the style of Review Analyses. This lack of continuity, along with what we see as understaffing, seems a persistent problem, one that has been raised repeatedly in COV reviews. It appears that some efforts have been made to experiment with different approaches (bringing experienced, past rotators back on board for short periods of time, or teleworking).</p> <p>These efforts may facilitate the processing of proposals, which should improve the dwell time. However, they are less likely to address the core needs of the program with respect to things like broadening participation, ensuring quality reviews, providing developmental feedback to PIs, and increasing interdisciplinary linkages both within NSF and other agencies.</p> <p>That being said, other changes in NSF practices have created challenges for the management of the program. Broadly, these changes reflect what we see as an increase in the centralization of responsibility and a decrease in the autonomy of the program staff. We worry that these types of shifts may have unintended consequences on the ability of program staff to apply its expertise and broad knowledge of the discipline to implement quality review processes.</p>

2. Responsiveness of the program to emerging research and education opportunities.

Comments: The Sociology Program is responsive to emerging research opportunities. The portfolio includes research addressing important and emerging social issues, such as immigration, economy, increasing stratification, social movements and the like. Research on immigration, for example, was pursued in concert with the Law and Social Science Program; and there appears to be robust collaborative research with other units.

With respect to educational opportunities, the Sociology Program continues to administer one of the most robust dissertation grant programs, thus contributing to the development of the scholars of the future as well as supporting innovative research, often aligned with the central themes of the regular research grants. The Sociology Program also, in partnership with ASA and other entities, is deeply involved in initiatives to broaden participation in science. The Sociology Program made forays into a Post-Doc program spanning this COV review period (2010-2015) and a review of the program is due in 2016. The COV review panel hopes that the evaluation will provide clear guidance on whether to continue the program and whether it is the best use of NSF funds. Although there were no CAREER grants awarded during the 3 year COV period, several of the applicants received important guidance from the program officer in revising their proposals for a regular research grant (a more appropriate mechanism), and several were subsequently funded. This kind of guidance is a hallmark of the Sociology Program and is no doubt one of the reasons its portfolio is so varied and theoretically and methodologically ambitious.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: The Sociology Program prioritizes maintaining a strong research portfolio, and with its mix of grants, (substantive, disciplinary, and interdisciplinary), as well as its efforts at addressing methodological issues, it plays an important role in supporting Sociology and encouraging innovation within it. Efforts like the time-consuming work to oversee major data infrastructure projects, as well as sponsoring workshops that translate into focused attention on new and emerging areas (environmental sociology and big data), reflect a diverse portfolio and the efforts of the program staff, through outreach and the like. There is also clearly a substantial commitment to broadening participation in science, through its direct grants in support of those efforts in the discipline, as well as its solid track record of funding a diverse (by race/ethnicity, gender, geographical distribution, and PI status) group of scholars.

The prior COV noted that there were no EAGER or RAPID grants awarded while the Permanent PO was on leave. There has been an uptick in EAGER awards during the current COV review period. There have been four EAGER awards but there have been no RAPID awards.

4. Responsiveness of program to previous COV comments and recommendations.

Comments: The Sociology Program responded to the previous COV comments and recommendations, insofar as they were able to do. They re-vamped the Doctoral Dissertation grant review process to reduce the staff and reviewer time by holding one competition per year, but having a smaller spring competition open only to those from the fall competition who were invited to revise and resubmit.

The persistent issue of understaffing within the Sociology Program, which has apparently been raised by multiple COV reviews (certainly in the 2013 one), has not yet been resolved. If anything, it appears that

it may have worsened, with the lack of robust and continuous rotator positions. There appears to be an ad-hoc basis to the program officers, and this may impact the quality of the review process, and its timeliness. It is difficult to know the impact of this on the quality of the portfolio and the missed opportunities that might have been pursued had the staff been more robust and continuous. In short, the Division appears to not have been responsive to the calls for more staff for the Sociology program, an issue that continues to concern the COV panels.

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

<p align="center">RESULTING PORTFOLIO OF AWARDS</p>	<p align="center">APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE</p>
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments: The discipline of sociology is diverse in the topics covered and methodological approaches used to study these topics. These topics often are timely and correspond with the NSF’s mission to promote “the progress of science to advance national health, prosperity, and welfare; and to secure the national defense; and for other purposes.” In examining the list of funded projects, we believe that the Sociology Program does a commendable job in supporting a wide range of topics and methodological approaches that is reflective of the discipline and its sub-disciplines and that advances the NSF mission. Research funded by the NSF Sociology Program covers core topics such as immigration, changes in the economy and implications of these changes for the U.S. citizenry, economic mobility across generations, and social change both in the U.S. and worldwide. The Sociology Program also is supporting emerging topics and methodological approaches that are taking a more prominent role in sociology—among these, environmental sociology, big data and network analysis, and field experiments/audit studies.</p> <p>The Sociology Program also offers important support for data infrastructure, including the General Social Survey, the Beginning School Study, and the International Integrated Public Use Microdata Series, the Luxembourg Income Study Database and Luxembourg Wealth Study. The support of these data sets provides an invaluable opportunity for scholars from geographically and institutionally diverse affiliations to conduct data analysis on substantively diverse areas that they otherwise would not be able to conduct. These datasets have great value beyond sociology and extend to the social sciences in general.</p> <p>With particular respect to the GSS, its cross-disciplinary influence is among the reasons that we believe support for this program should come from multiple units and the division overall. We recognize that this practice already occurs, however given the increasing costs of survey collection a larger portion of the cost of support may need to be covered at the Division level while maintaining</p>	<p>APPROPRIATE</p>

<p>the current commitment that Sociology's share be held at no more than 20% of the program budget. It is also important to recognize the labor intensive nature of supporting these data infrastructure efforts on the part of the Sociology program staff. This invaluable service, however, makes it especially challenging for the program staff to continue to develop new initiatives and programs, without additional support.</p> <p>Data Sources: Jacket and Committee of Visitors Module</p>	
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: The average size of the research grants during the 2013-2015 fiscal years was \$104,487 per year and \$302,426 for the duration of the grants (note: the average size for grants awarded in 2014 was noticeably higher than average size for grants awarded in 2013 and 2015). The average size for the Doctoral Dissertation Improvement Research Grants was \$10,071. The size of these awards appears appropriate.</p> <p>While some might consider the Sociology Program's limit on faculty summer salary to \$15,000/year to be too low, this limit has the consequence of allowing more research projects to be funded. Given this tradeoff, we do not recommend any change in this limit. For similar reasons, we do not recommend that recipients of grants from the Sociology Program be provided with NSF funds to cover costs of publishing (e.g., journal page charges).</p> <p>The average duration for research grants other than dissertation grants was 2.57 years and for dissertation grants was 1.42 years. These durations are reasonable and consistent with the goals of NSF and the time needed to systematically collect and analyze the type of data from these research grants.</p> <p>Data Sources: Jacket and Committee of Visitors Module</p>	<p>APPROPRIATE</p>
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments: In addition to supporting projects that speak directly to the NSF mission, the Sociology Program supports projects that are substantively and/or methodologically innovative and transformative. Among these are projects on environmental sociology and projects that use novel approaches to the study of data analytics and network analysis. Several potentially transformative research projects are supported by the Early-concept Grants for Exploratory Research (EAGER): for example, projects that rely on field experiments and on the use of smartphones to capture individuals' experiences as they occur. For additional suggestions and examples, please see response to Question #10, Section IV.</p> <p>One of the challenges of collecting robust and reliable data in the social sciences is the increasing costs of survey data collection. Without sufficient funding, researchers may have to rely on data collection techniques that may or may not</p>	<p>APPROPRIATE</p>

<p>fully meet the scientific standards of the NSF. We believe that efforts to identify alternatives to the traditional modes of data collection, and ways to combine different approaches could have a transformative effect on data collection and the quality of the results. We recommend the Sociology Program, perhaps in partnership with other programs, convene a workshop of methodological experts and other stakeholders to make recommendations to address this issue.</p> <p>Data Sources: Jacket and Committee of Visitors Module</p>	
<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments: It is apparent that inter- and multi-disciplinary projects are valued by the Sociology Program, as indicated by the frequent partnerships it has with other NSF programs. Many of these collaborations are for infrastructure projects (e.g., the aforementioned General Social Survey), in which the Sociology Program is the primary partner. In these projects, other NSF programs and other federal agencies (e.g., the Center for Disease Control) participate as partners.</p> <p>Data Sources: Jacket and Committee of Visitors Module</p>	<p>APPROPRIATE</p>
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments: In examining the number of grants awarded to each state between 2013 and 2015 (and in looking at the proposals that were declined), we did not detect inappropriate geographical distribution in the awards. The differences in the number of awards by state can be attributed to the number and stature of research-intensive and other higher educational institutions in each state. It appears that the Sociology Program expends a great deal of energy in its outreach programs—programs that are intended to, among other goals, encourage scholars throughout the U.S. to submit grants.</p> <p>Data Sources: Jacket and Committee of Visitors Module</p>	<p>APPROPRIATE</p>
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments: Most of the proposals submitted for NSF review and, in turn, most of the awarded proposals are from research-intensive universities (76%) or other PhD-granting institutions (15%). That said, the Sociology Program has conducted outreach at regional sociology conferences so that scholars from other higher educational institutions, who may be more likely to attend regional conferences than national ones, have the opportunity to learn more about the NSF.</p> <p>Data Sources: Committee of Visitors Module</p>	<p>APPROPRIATE</p>

<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants.) An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award.</p> <p>Comments: The Sociology Program appears committed to supporting scholars at all stages of their academic career. Between 2013 and 2015, Doctoral Dissertation Improvement Grants constituted 62% of all grants awarded by the Sociology Program. We believe that this is a cost-effective and important investment in the future of the discipline and, more broadly, the social sciences. For regular grants, it does appear that previous recipients of NSF grants enjoy greater success than do new scholars, but such a pattern is expected and justifiable. There also is a success-rate difference between sociologists who earned their PhD more than seven years ago and their counterparts who earned their PhD seven years ago or less, although this difference is smaller (other than for FY 2015)</p> <p>Data Sources: Committee of Visitors Module</p>	<p>APPROPRIATE</p>
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments: The Sociology Program should be commended for its support of projects that both promote research and train students. Most of the regular research grants include some element of training—often in the form of research assistantship or apprenticeship—for graduate and undergraduate students. On average, each regular research grant supports one graduate student and three undergraduate students (from the Research Experiences for Undergraduates). We also consider the Sociology Program's substantial investment of time and funding for the Doctoral Dissertation Improvement Grant among the most cost-effective ways to integrate research and education. The Sociology Program also supported a multi-campus post-doctoral training program, “Collaborative Research: Understanding the Economic Crisis and Its Social Impacts thought Postdoctoral Fellowship,” between 2010 and 2015. Since the evaluation of this program has not been completed, it is premature to make any firm recommendations regarding future NSF-funded post-doctoral program.</p> <p>In contrast, we see clear educational benefits from the Sociology Program’s data infrastructure support for the General Social Survey and the Luxembourg Income Study Database and Luxembourg Wealth Study, among others. The General Social Survey, for example, is used in undergraduate and graduate sociology courses, including courses on statistics and data analysis.</p> <p>Data Sources: Committee of Visitors Module</p>	<p>APPROPRIATE</p>

<p>9. Does the program portfolio have appropriate participation of underrepresented groups⁸?</p> <p>Comments: The portfolio demonstrates that with respect to gender, there are robust numbers of applicants from women.</p> <p>We were, however, disappointed with the lack of minorities in the research application pool. It is encouraging that there is a more visible presence of minorities in the Doctoral Dissertation Research Improvement Grant pool is encouraging. This has the potential to provide a pipeline to future grant applications and thus a more diverse portfolio within regular research grants. But for this potential to be realized, there need to be concerted efforts to nurture these and other researchers from under-represented groups throughout their career. These efforts can be informed by social science research about how to effectively accomplish this goal.</p> <p>The number of proposals from individuals with disabilities is quite small, although without information about the number of sociologists with disabilities it is difficult to know whether this level is representative.</p> <p>Another window into this question is through the funding rates. For gender, there is almost no difference in funding rates for Doctoral Dissertation Research Improvement Grants between women and men. With respect to race/ethnicity, it is difficult to draw any firm conclusions given the small number of proposals with minority involvement. The funding rate is higher for those with disabilities, although given the small sample sizes, it is difficult to make strong conclusions about it.</p> <p>Data Sources: Committee of Visitors Module</p>	<p>APPROPRIATE</p>
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: The array of social issues addressed by the NSF portfolio of sociological research is inextricably linked to a range of national priorities and, by extension, the mission of NSF, and the interest of other stakeholders. For example, funded projects cover the pressing social issues of the day like immigration, globalization, the economy, stratification, social movements, labor markets, the environment, poverty, family dynamics, and intergroup relations. In addition, these projects also develop theoretical frameworks and innovative data collections that can be used to shed light on how to address them. One example is the project, "A Life History Perspective on Social Integration after Prison," a multi-methodological analysis that linked early life experiences with community adjustment of people released from prison. This research has had</p>	<p>APPROPRIATE</p>

⁸ NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

<p>broad impact as demonstrated by the media attention given to it. For example, it was the subject of an extended article in the New Yorker (May 2016). Similarly, "Building Data Infrastructure: The Beginning School Study Data Archive," is an ambitious archival project that will provide ready access to scholars, school officials, and policymakers interested in identifying factors that facilitate or impede educational progress among youth.</p> <p>Other projects the illustrate the Sociology Program's portfolio and its relevance to national priorities include:</p> <p>"Education Systems' Effects on Math and Science Achievement" "The integration of Immigrants into American Society" "Housing Instability, Foreclosures, and Family Health" "Social Mobility in Multiple Generations" "Fostering Cross-Disciplinary Research on Energy Development" "School Segregation and Resegregation: Using Case Studies and Public Polls to Understand Citizen Attitudes"</p> <p>Sociology's portfolio includes important support for data infrastructure, including the General Social Survey, the Beginning School Study, and the International Integrated Public Use Microdata Series, the Luxembourg Income Study Database and Luxembourg Wealth Study. These datasets provide the foundation for policy-relevant research by the social science community and for the public. Studies using the General Social Survey regularly appear in the public arena, thus illustrating its relevance to the community at large (http://gss.norc.org/gss-in-the-news). .</p> <p>Data Sources: Jackets and Committee of Visitors Module</p>	
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p>	

V. Questions for Division Level Discussion. Please provide comments on both scientific and management aspects of the following division-specific questions:

DIVISION LEVEL DISCUSSION
<p>1. Looking forward, what is your vision for the intellectual future of SES? If money were no object, what type of infrastructure would be needed to attain this vision?</p> <p>One of the keys to high quality and intellectually defensible scholarship is high quality data. To attain this visions, NSF needs to successfully identify cost-effective strategies for collecting high quality and systematic survey data.</p>
<p>2. Issues of replicability, reproducibility, and robust science have been the focus of discussion within the SBE directorate and across the Foundation. In your opinion, what role should funding agencies play in promoting robust science? See comments below (#4).</p>
<p>3. A related issue is one of data management, public access and data –sharing. What steps should SES take, if any, to promote a climate of data-sharing with its scientific communities? See comments below (#4).</p>

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

Given the role of sociology program staff in managing both the large volume sociology proposals and infrastructural support (e.g. GSS) the COV continues to be concerned about understaffing. During this review period, this staffing issue was even more salient given the lack of continuity in rotator staff. We recommend additional support for Sociology, as well as working with the permanent program staff to ensure both short term and long term continuity.

Given the importance of the GSS, we recommend agency-wide support at levels that ensure the continued high quality and comprehensiveness of this and other data collection efforts. At the same time, we recommend continuing the practice of capping the Sociology program's contribution to 20% of its budget, with other support coming from other divisions and programs in NSF.

Given the increasing costs of survey data collection, it is increasingly difficult for researchers to collect reliable and robust survey data. We recommend that the Sociology Program partner with other programs to convene a workshop focused on identifying innovative ways to combine traditional modes of data collection, and to explore alternative approaches to data collection, to address this issue.

2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

N/A

3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

As noted earlier in this report, we are concerned about the increasing centralization and corresponding decrease in autonomy of program officers. We worry that this apparent trend has the potential of compromising the review process and more broadly the overall goals of NSF.

We recommend that the NSF bring concerted efforts, based on social science evidence, to address means to increase the diversity of the application pool and to conduct more systematic analysis in identifying and addressing the barriers to successful proposals among underrepresented groups.

We also discourage the use of virtual panels (at least in the Sociology Program), which we believe will decrease the high quality of interaction and thoughtfulness of deliberation that is a hallmark of NSF in-person panels.

4. Please provide comments on any other issues the COV feels are relevant.

We believe the issue of Data Management Plans, their quality and the enforcement of them, deserve careful attention. There are a number of issues related to this, which other programs will have covered. One that we believe is particularly relevant to the Sociology Program is the question of data management strategies for qualitative data collection (this type of data ranges from ethnographic field notes to in-depth interviews to focus groups and others). We recommend that a panel be convened to take on this challenging task and to recommend best practices that are consistent with the goals of robust and reproducible science.

5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

The Committee of Visitors is part of a Federal advisory committee. The function of Federal advisory committees is advisory only. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the Advisory Committee, and do not necessarily reflect the views of the National Science Foundation.

SIGNATURE BLOCK:

X /s/ Maria Krysan _____

X /s/ Brian Powell _____

For the Sociology _____ Program

Secure and Trustworthy Cyberspace
INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: Proposals to the SaTC "SBE Perspective" (SaTC-SBE) were reviewed in three different methods, all of which were appropriate to the task.</p> <p>1.) There was one dedicated SaTC-SBE panel held annually. This focused primarily on "small" proposals submitted in response to the annual solicitation. Across the three years a core of external reviewers was developed which helped with organizational memory and continuity in review standards.</p> <p>2.) A few proposals were inserted for review on other panels in SBE and CISE. These included other sizes in response to the common solicitation (e.g., medium, large, Frontiers) as well as CAREER proposals.</p> <p>3.) The program has had a significant number of internally reviewed proposals, mostly EAGERs in response to two Dear Colleague Letters (DCL). There was a peak in 2014 and 2015 around two DCLs: "Enabling New Collaborations between Social Scientists and Computer Scientists" (15-005) and "Research on Privacy in Today's Networked World" (14-021). Submissions to the former were reviewed by a standing 4-person cross-directorate program officer panel. It was quite useful to formalize this structure. Submissions to the latter and other EAGERs, RAPIDs, and workshops were reviewed in the standard manner of the program officer soliciting specific internal or external expertise as needed.</p> <p>While this review process has been effective, there are many ways in which it could be improved. First, there could be more dedicated SaTC-SBE specific panels</p>	<p>YES</p>

<p>depending on proposal pressure. At a minimum, there should be one more that handles the other core submissions (medium, large, CAREER) that are now farmed out elsewhere. This is important to guarantee a fair review for these submissions. There is no guarantee that sufficient expertise is available on the other “guest” panels, and it is difficult for panelists to compare this to very different kinds of proposals in their panel. Second, when review in other panels is necessary, having some additional ability to recommend additional reviewers, both on the panel and ad hoc, would be useful.</p>	
<p>2. Are both merit review criteria addressed</p> <p>1. In individual reviews?</p> <p>Yes, always.</p> <p>2. In panel summaries?</p> <p>Yes, always.</p> <p>3. In Program Officer review analyses?</p> <p>Yes, always.</p> <p>Comments: Both the intellectual merit and broader impacts review criteria were comprehensively discussed in all individual reviews, panel summaries, and review analyses. In fact, the broader impacts were exceptionally well covered (in comparison to our experience with other programs).</p>	YES
<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: As with all panels, there was considerable variability across the individual reviews. In most of the problematically sparse cases it was clear that more substantive commentary could have been easily achieved with minimal additional effort. However, the COV understands there is little that POs can do to control this beyond instructing and encouraging best practices.</p>	YES
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: Yes, in general these were adequate.</p> <p>Given the cross-cutting nature of this program, the COV had a discussion about cultural differences between CISE and SBE, specifically regarding the norms for panel summaries. The SBE tradition is for sparser summaries, largely the result of panels with a larger reviewing load, while the CISE tradition requires more comprehensive summarization of the panel discussion and rationale for their</p>	YES

<p>recommendation category. Given the possibility for cross-directorate co-funding, the SaTC-SBE program evolved over these three years to more closely mirror the CISE norms. The result was more detailed capture of the panel deliberations and more robust feedback for the PIs.</p> <p>The review template had a section for SaTC-SBE specific review criteria. However, this was underutilized (only examples were in support of a TTC supplement). The COV would recommend removing this from future templates.</p>	
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments: Yes, the documentation was adequate to provide the rationale for the decision. The COV notes that early in the program the review analyses were overly parsimonious with a tendency for summarization instead of argumentation. Later in the COV review period these improved significantly, yielding some quite elegant, compelling, and evidence-based argumentation.</p>	YES
<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments: In general, yes, the feedback provided was sufficient.</p> <p>For proposals that received panel review, the PI received the individual reviews, the panel summary, and a context statement. The only challenge here was for the proposals that were reviewed on multiple panels (actually quite common) there was not feedback on how the results were synthesized to reach a unified funding decision -- this was internal to the review document.</p> <p>For proposals that were internally reviewed, there was significant feedback provided, well above and beyond the standard expectations. For the new collaborations -- DCL proposals specifically -- the PI received a context statement and a distillation of the review analysis that resulted from the four PO mini-panel.</p>	YES

<p>7. Additional comments on the quality and effectiveness of the program’s use of merit review process:</p> <p>This is a new program for SBE and the period under review for this COV revealed some growing pains as it developed its own review culture. Interdisciplinary research and co-funding across programs and across directorates are quite challenging. The POs are to be commended for the significant progress made in such a short period of time. The process in 2015 was substantially improved in almost all aspects over its start in 2012. This is a firm foundation for future growth.</p> <p>There are many difficult issues in dealing with differing organizational cultures, norms, and expectations. One such example was the panel summary template described above in question 4. Two other differences have emerged in this review.</p> <p>First, the COV notes a tendency early in the program to triage proposals with quite high individual review scores, even though this threshold lowered over the following years. The COV later learned that this was the result of the SBE policy of not having a panel discussion for any proposal that did not contain at least one “Excellent” rating clashing with the CISE policy of requiring discussion for all proposals that had any score higher than a “Fair.”</p> <p>Second, the COV notes that some proposals were recommended for funding with lower individual scores and panel rankings than other programs. These cases of “rescuing good work” were often accompanied by excellent review analyses that clearly explained the panel assessment, described the strengths of the proposal, and highlighted its importance in the program portfolio. The lower scores typically resulted on proposals that were reviewed on multiple cross-directorate panels or were “guests” interjected in other disciplinary panels. Here the diversity of the reviewers and their intellectual distance from the proposal were often to its detriment. The careful eye of a program officer was critical to ensuring that such high-quality work was not overlooked in a less than ideal review situation.</p>	<p>N/A</p>
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II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

<p style="text-align: center;">SELECTION OF REVIEWERS</p>	<p style="text-align: center;">YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE</p>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: It is evident that the program has done an admirable job recruiting reviewers for panels dedicated to SaTC-SBE. This body of reviewers generally possessed appropriate expertise and excellent qualifications. They were also adequately diversified, who represented institutions of a wide range of calibers, and researchers at different career stages. However, some SaTC-SBE proposals were assigned to panels convened to review for the other SBE or CISE programs. The COV notes that these panels often did not provide the full range of expertise necessary to review SaTC-SBE proposals. Further, the COV notes that SaTC-SBE had limited influence over the reviewer selection process on these panels, which may constrain its ability to ensure consistency in the review of all SaTC-SBE proposals.</p>	<p>YES</p>
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: Yes, the procedure of recognizing and resolving conflicts of interest during the review process appears to be appropriate. This was well documented in each review analysis.</p>	<p>YES</p>
<p>3. Additional comments on reviewer selection:</p> <p>The program may consider further expanding the institutional diversity in its reviewer pool to match proposals under review. The COV also notes concerns that for small research communities such as cybersecurity, the issue of conflicts of interest (CoI) may become eventually inevitable. This is especially true with certain NSF funding mechanisms encouraging cross-institutional collaborations. In any given year, the bulk of the reviewing pool may be conflicted and prohibited from contributing to the review process. Resolving the issue may require some novel, more creative systems than the current reviewer recruitment CoI-handling procedures. It would be prudent to proactively prepare for this future challenge.</p>	<p>N/A</p>

III. Questions concerning the management of the program under review. Please comment on the following:

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Comments: The management of SaTC-SBE program during this COV review cycle was excellent. The program has seen substantial growth in both volume and diversity of its portfolio. It is particularly worth noting that the budget of SaTC-SBE nearly doubled in the past three year. This increase was mainly because of the significant co-funding contributions made by other NSF directorates (e.g., CISE).

The current PO did an excellent job in conveying the value of SaTC-SBE proposals to other directorates and convincing their POs to commit contributing funds. This however raises a concern of the stability of the program when the current PO completes the rotation at NSF. Since SaTC-SBE is not a standing program, additional institutional stability in both budget and management is needed to minimize the variability that may be associated with differing individual traits of POs.

The COV notes that the program funded several proposals that received lower ratings from the review panel(s). After a careful read of these proposals, the COV believes that these proposals are of high promise, and their ratings might be reflective of the mismatched expertise of the review panels not dedicated to SaTC-SBE. The PO was correct in championing these for funding. This kind of careful advocacy is essential for cross-cutting programs.

2. Responsiveness of the program to emerging research and education opportunities.

Comments: The SaTC-SBE program has utilized the EAGER mechanisms to encourage new collaboration and capacity building, particularly seeking to foster new partnerships between social scientists and computer scientists. This was managed via two DCLs and has been extremely successful.

While SaTC-SBE is not yet a standing program, it managed to fund two CAREER proposals to invest in junior faculty development through a creative multi-year funding partnership with CISE. Given SaTC-SBE's modest budget, and restriction to only make standard awards (funding for all years paid up front in a lump sum), the program is restrained in making longer term awards out of an annual budget. While a program budget increase may not be feasible, providing a stable budget that would allow continuing awards to be made would be very useful and would reduce the exceptionally high dependence on co-funding. It is worth noting that most other SBE programs actually made fewer CAREER awards during this review cycle.

It is critically important to do capacity and community building in an emergent interdisciplinary space such as SaTC. The COV recommends that additional support for junior faculty, mid-career faculty making research transitions, and multi-year projects be strongly considered. Lastly, the fact that many SaTC-SBE proposals had co-funding from other NSF directorates indicates the interdisciplinary nature of the proposals that the program attracts.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: SaTC-SBE is a Foundation-wide cross-cutting program. Much of the vision, planning, and prioritization thus occurs in cross-directorate committees on which SaTC-SBE POs have a leadership capacity. As such, the full program is responsive to the NSF strategic plan for fiscal years 2011-2016 entitled “Empowering the Nation through Discovery and Innovation.”

Most practical privacy and security challenges are fundamentally sociotechnical in nature and thus it is critically important to have social science research at the core of the cybersecurity mission. SaTC-SBE is also responsive to the guidelines of two other critical government reports. First is the Federal Cyber Security Research and Development Strategic Plan (https://www.nitrd.gov/cybersecurity/publications/2016_Federal_Cybersecurity_Research_and_Development_Strategic_Plan.pdf) section 5.3 “Critical Dependencies: Human Aspects. The second is National Privacy Research Strategy out of the National Science and Technology Council (https://www.whitehouse.gov/sites/default/files/nprs_nstc_review_final.pdf) which clearly characterizes privacy as embedded in social systems.

4. Responsiveness of program to previous COV comments and recommendations.

Comments: SBE joined the Foundation-wide cross-cutting SaTC-SBE program in 2012 and thus was not included in the last round of COV assessment in 2013. This is the program’s inaugural assessment.

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

RESULTING PORTFOLIO OF AWARDS	APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments: The Foundation-wide SaTC cross-cutting program is broadly inter- and multi-disciplinary in focus. There are no specifically predefined research areas or target domains. In the most recent solicitation under review for this COV (15-575) the program highlights five general focus areas: Trustworthy Computing Systems Perspective, SBE Perspective, STARSS Perspective, Transition to Practice, and Education. Within SaTC-SBE the general call is for understanding the social dimensions of privacy and security with a diversity in levels of analysis, methodology, and theory base. Within this broad umbrella of guidance, the program was appropriately responsive to the research interests of the community. Awards have been made that support multiple strands of social science research that further our understanding of cybersecurity by</p>	<p>YES</p>

<p>foregrounding the human element. The COV, however, notes that certain research topics, such as the legal and ethical aspects of cybersecurity, have been underrepresented in the program’s portfolio in this review cycle.</p> <p>Given this nascent research domain, there remain many opportunities to build capacity and grow the research community. Most notably, to prompt it to look beyond the individual in analysis and design. Please refer to section IV.11 for specific COV comments about potential gaps in the current portfolio and opportunities for growth, including specific areas where SBE can contribute more meaningfully than other NSF directorates.</p>	
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: SaTC-SBE funded or co-funded a wide range of project types in this review cycle. Out of a total of 78 awards made during this period, there were 2 CAREER, 9 medium, 14 small, and 53 EAGER, RAPID, and other types of projects. The average funding size for the CAREER was \$475k; the average funding size for medium was \$655k; and the average funding size for small was \$400k. The average length of performance of standard research project award was 2.5 years. This is in line with Foundation averages. The program also provided contributing funds to a high-visibility, multi-million-dollar Frontier project. In general, these awards appear to be appropriate in size and duration for their proposed scopes.</p>	YES
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments: The very approach of foregrounding the social in cybersecurity is transformative. Seemingly intractable technical problems are often revealed to be deeply rooted in social phenomena. The SaTC-SBE program has already advanced a number of innovative and potentially transformative research projects. For example, a new approach -- economics of security -- has studied the incentive, communication, and profit mechanisms of attackers. Economic analysis of incentives has also helped explain why individuals and organizations do, and do not, take action in response to perceived cybersecurity threats. Social-psychological research has studied the impact of individual attributes such as age, gender, and ethnicity on promoting good citizenship with respect to cyberspace. Behavioral research on persuasion has identified methods to train, incentivize, or nudge end-users to improve their behavior regarding cybersecurity. Sociological research has examined indicators and motivators of insider threat and countermeasures to such threats among end-users and organizations. Socio-technical solutions have been developed to detect deception or adverse intentions relevant to attacks on cyberinfrastructure.</p>	YES

<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments: All SaTC-SBE proposals represent inherently interdisciplinary or multidisciplinary projects. This aspect was very well represented in the portfolio.</p> <p>A particular component of the SaTC-SBE program that the COV would like to highlight is the DCL 15-005 that sought to encourage new collaborations between social and computing scientists. These awards were primarily EAGERs and were used to fund preliminary or pilot research that would help develop the relationship between cross-disciplinary teams that had not previously worked together. The intent of this capacity and community building effort would be to develop a pipeline of established multi-disciplinary teams submitting innovative projects that was to be competitive in future SaTC-SBE competitions. In a review of the awards made, the COV believes that the first two years of this experimental effort were effective and impactful. The COV realizes that the program has been suspended pending program review (outside the window of our current evaluation), and we hope that this assessment will be useful in that regard.</p> <p>As noted elsewhere, the COV also believes that there can be other means to complement this approach to build capacity, including additional workshops, stand-alone teaming activities, and encouraging cross-fertilization and reconfiguration at the annual PI meeting.</p>	<p>YES</p>
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments: Principal Investigators funded by the SaTC-SBE program have thus far concentrated in a handful of states. This includes four EPSCOR states (Louisiana, Nevada, New Mexico, and Oklahoma). Certain geographical regions were underrepresented, especially the Mid-West. However, the COV notes that this may be because SaTC-SBE is a relatively young program, and the number of awards it has made is quite small. Also, the distribution is not at odds with the natural distribution of research universities in the USA.</p>	<p>YES</p>
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments: The balance of institutions receiving SaTC-SBE awards was quite healthy. In addition to the usual large research universities, the portfolio included full research awards to a historically black university (HBCU), two Hispanic-serving institutions (HSI), and a private primarily undergraduate institution.</p>	<p>YES</p>

<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants.) An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award.</p> <p>Comments: The COV notes a significant gap in SaTC-SBE’s current funding portfolio in supporting graduate student training and junior faculty development. The program has not provided any dissertation awards to date, and has only funded two CAREER projects. Therefore, the COV encourages SaTC-SBE invest more resources in the future in preparing next-generation scholars who have the passion and skills to advance human-centered research in cybersecurity.</p>	<p>YES</p>
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments: The integration of research and education is not part of the current mission for the Foundation-wide crosscutting program. However, educational activities were common among the broader impacts of these projects including developing coursework tied to the themes and practices of the funded research. Additionally, SaTC-SBE has co-funded two CAREER awards for which the integration of research and education is a central activity, and played a significant role in another EHR award that aimed to develop educational interventions on cybersecurity related issues for the general public. The Foundation-wide SaTC program has a focal area in cybersecurity education that is primarily funded by EHR, reducing the need for SaTC-SBE to make dedicated investments.</p>	<p>YES</p>
<p>9. Does the program portfolio have appropriate participation of underrepresented groups⁹?</p> <p>Comments: This was a very difficult question to assess given the sparse and uncertain data provided for the COV review (e.g., less than 50% of participants provided any demographic information). As a result, we cannot speak to overall percentages but only to specific demonstrated cases of success.</p>	<p>YES</p>

⁹ NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

<p>With regard to reviewers, the panels appear reasonably well balanced with gender near parity. With regard to investigators there have been multiple female leads on awards every year of the program. Both of these are significant accomplishments given the intense gender skew present in computing (many educational programs in cybersecurity contain 10% or fewer female students). The contributions of these perspectives to the overall SaTC-SBE program are critically valuable. However, in both areas of investigation not enough information was provided to assess minority or disability status.</p>	
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: SaTC-SBE is responsive to the guidelines of two critical government reports. First is the Federal Cyber Security Research and Development Strategic Plan (https://www.nitrd.gov/cybersecurity/publications/2016_Federal_Cybersecurity_Research_and_Development_Strategic_Plan.pdf) section 5.3 “Critical Dependencies: Human Aspects. SaTC-SBE is the only program in NSF with a focus on the social dimension of cybersecurity.</p> <p>The second is the National Privacy Research Strategy out of the National Science and Technology Council (https://www.whitehouse.gov/sites/default/files/nprs_nstc_review_final.pdf) which clearly characterizes privacy as embedded in social systems.</p> <p>Additionally, the current PO has taken a leadership role on multiple interagency working groups (e.g., via NITRD and OSTP). It is tremendously important to have both NSF and SBE leadership in this agenda setting. Too often the critically important social dimension to cybersecurity has been obscured by purely technical concerns.</p>	<p>YES</p>
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p> <p>In reviewing the sample of jackets and in consultation with the PO, the COV has identified some content gaps and opportunity for further growth.</p> <p>Firstly, the COV notes that the vast majority of the research projects awarded focused on the individual as the unit of analysis. This skew is understandable. Human-computer interaction (HCI) is a relevant bridging discipline between the social and computing sciences. Its roots in cognitive psychology have foregrounded research programs focused on individuals interacting with technology. While later maturation of the discipline (e.g., human-centered computing and design, represented by the Cyber-Human Systems program at NSF) have afforded a larger lens of computing in society it is still almost always from the viewpoint of the individual. Individual level data are relatively easy to collect and analyze in university setting.</p>	<p>N/A</p>

That said, the COV believes that SaTC-SBE could make a major contribution to the overall SaTC initiative by challenging investigators to look beyond the individual. More research should examine groups, communities, organizations, institutions, society, and culture. For example, projects could investigate organizational strategies for advancing cybersecurity or privacy, or examine organizational governance to map the role of cybersecurity and privacy investment and strategy. Additionally, projects could examine different cultural approaches to achieving privacy, difference in legal systems, and societal response to cybersecurity events. Only SaTC-SBE is likely to be able to lead the Foundation in the charge to explore these other levels of analysis that are critical to fully understanding our cybersecurity challenges.

Secondly, and related to the first point, the COV notes that the subjects of research were fairly uniform. We would like to see an effort made to fund projects with more diverse subject samples. More work that is grounded in field, ideally comparative studies of organizations would be useful. Likewise, it would be valuable to more fully address the needs of our diverse society by focusing on children and teens, the elderly, women, under-represented minorities, low-income families, and people with visual and physical impairments. SaTC-SBE is well positioned to argue the utility of critical diversity.

Thirdly, the COV would encourage the program to continue to advocate for novel methods to study and mitigating human vulnerabilities, especially in complex security ecosystems. Methods to identify motivators and indicators vulnerabilities and countermeasures to such vulnerabilities among individuals and organizations would be useful. Though relationships with programs like MMS, SaTC-SBE has greater access to cutting-edge social science research methods than any other program in the Foundation.

V. Questions for Division Level Discussion. Please provide comments on both scientific and management aspects of the following division-specific questions:

DIVISION LEVEL DISCUSSION	
<p>1. Looking forward, what is your vision for the intellectual future of SES? If money were no object, what type of infrastructure would be needed to attain this vision?</p>	<p>Discussed in the full COV and captured in the unified document. There are no SaTC-SBE specific responses to this question.</p>
<p>2. Issues of replicability, reproducibility, and robust science have been the focus of discussion within the SBE directorate and across the Foundation. In your opinion, what role should funding agencies play in promoting robust science?</p>	<p>Discussed in the full COV and captured in the unified document. There are no SaTC-SBE specific responses to this question.</p>
<p>3. A related issue is one of data management, public access and data –sharing. What steps should SES take, if any, to promote a climate of data-sharing with its scientific communities?</p>	<p>Discussed in the full COV and captured in the unified document.</p> <p>There was one SaTC-SBE specific potential innovation here. SaTC has an annual PI meeting and thus there is an opportunity to highlight particularly innovative data management practices including infrastructure for sharing and experiences with reuse.</p>

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.
2. Please provide comments as appropriate on the program’s performance in meeting program-specific goals and objectives that are not covered by the above questions.
3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.
4. Please provide comments on any other issues the COV feels are relevant.

5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

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SIGNATURE BLOCK:

X /s/ Kai Zheng

X /s/ Wayne Lutters

For the Secure and Trustworthy Cyberspace Program