

**Division of Science Resources Statistics  
Response to 2009 Committee of Visitors-Like Review**

**Part A. Integrity and Efficiency of SRS's Processes and Management**

**1. SRS as a Statistical Agency**

SBE appreciates the Committee's overall recognition that the Division of Science Resources Statistics (SRS) has continued to improve significantly in many aspects of its role as a federal statistical agency. As the report indicated, SRS has been working to improve the timeliness of its products and response rates and SRS will heed the Committee's advice to continue to pay attention to the timeliness issue. The Committee is correct that SRS does not have sufficient staff to work with all the slow and late responders to its surveys.

At several points in the report the Committee expresses concerns that SRS lacks a full fledged quality assurance/data quality program for its surveys, and that this must be addressed. This is a concern, but at this point SRS has neither the staff nor funding to support an ongoing quality assurance program for all its surveys. Similarly, SBE appreciates the Committee's statement that "SRS has done an impressive job of undertaking major redesigns of six large surveys and outlining plans for completing redesigns of its other surveys." The Committee then went on to indicate that SRS will need to prioritize its redesigns, as it does not have the resources to undertake all redesigns simultaneously. SBE agrees completely with this concern. Most significant to SBE, and high on its agenda to address is the need to work with the leadership of NSF to better address SRS's role within NSF as well as the broader S&E policy community.

The Committee notes that the panels of experts which SRS has established "did not provide an on-going means of consultation, supported within the NSF, to provide advice on current and future surveys. SBE and SRS may wish to consider the establishment of such an advisory function." SBE acknowledges that this is a very important point and has begun discussions on how to establish a better means of consultation, in addition to experts' panels, that would afford a stronger ongoing interchange between SRS and other components of NSF as well as the broader S&E community.

The Committee has recommended that SRS consider the value of using a subset of Data Documentation Initiative identified elements for documenting its data sets in the future. SRS will explore that suggestion.

SBE truly appreciates the Committee's commendation that SRS has been very creative in securing the control of the industrial R&D survey from the Census Bureau and concurrently maintaining a close cooperative working relationship with the Bureau.

## **2. Redesign of the Survey of Industrial Research and Development**

SBE appreciates the Committee's commendation that in addressing the 2005 National Research Council's recommendation for a redesign of the Survey of Industrial Research and Development SRS was highly responsive and employed systematically planned and phased-in actions. SRS specifically and intentionally included, as part of the redesign activities a very detailed set of activities. These included: initiation of joint planning activities with Census; extensive consultation and interaction with a wide set of individuals and organizations; meetings with data users; and consultations with data providers, which included convening and meetings of Business Expert Panels and several rounds of cognitive testing with prospective respondents of possible questions to be placed on the redesigned Business R&D and Innovation Survey (BRDIS).

SBE agrees with the Committee that the steps taken to inform the survey redesign should be formalized, including both (i) the implementation of an on-going or rotating panel of users who could inform the survey design process and (ii) regular and continuing site visits to companies. SRS intends to soon reestablish a business advisory panel consisting of both data users and company representatives. Further, as part of the evaluation process for the pilot survey, site visits and cognitive interviews are being planned with Census methodological staff. Pending available funds and staffing, SRS intends to personally participate on several of these site visits. Even though SRS agrees that continuing company visits will better inform the survey design process as well as educate SRS staff on what the survey measures, resource constraints may limit such activities.

SRS agrees that more work is needed on improving the web questionnaire. The use of the Census web software, Census Taker, has proven more successful than previously expected, but still has inherent limitations (for example, only one form can be sequentially used within a company) that need to be addressed. SRS is pleased that Census has directly involved us in the redesign of Census Taker (now called Centurion) and that SRS will be able to influence its development to specifically accommodate BRDIS data collection requirements.

In terms of question and topic coverage, SBE is pleased that the Committee concludes that the redesigned survey holds the promise of providing a much needed set of U.S. government statistics on important aspects of industrial R&D, including differentiation between R&D expenses (which are maintained in accounting terms) and R&D performance (which is the basis for international R&D reports), on domestic and international sources of industrial R&D, on collaborative R&D arrangements, on sources of new technologies, and on innovative behavior (as distinct from performance of R&D). In particular, the redesign effort emphasized research on and the development of new questions that will support analysis of R&D outsourcing to both domestic and foreign companies, and collecting R&D data at the line-of-business level—both strong recommendations of the 2005 NRC report. SBE agrees with the Committee that the development of BRDIS questions may help position the U.S. to influence subsequent

revisions to the Frascati Manual. At the upcoming June 2009 OECD meeting of National Experts on Science and Technology Indicators (NESTI), SRS will be presenting preliminary findings with respect to response rates, coverage, and potential problem areas on the questionnaire. In future international meetings, SRS will provide BRDIS results and survey recommendations stemming from our findings.

Acknowledging that Section 6 (Intellectual Property, Technology Transfer, and Innovation) of BRDIS was a "late addition" to the redesigned survey, SBE agrees that considerably more work is needed on addressing innovation questions (covered in greater depth in question 3, below). In particular, for future activities on innovation, SBE agrees with the COV report that "a well-defined, transparent consultative process" is needed, similar to the process employed in informing and redesigning the R&D funds, employee, and management questions that are the core of BRDIS. However, current staffing constraints probably limit moving aggressively forward in both consultations and the development of new questions.

### **3. Development of Information on Innovation**

SBE acknowledges and concurs with the Committee's observations that progress on collecting, analyzing, and promoting external research on innovation-related data is necessary but not yet well-developed. SBE also appreciates, however, the positive recognition that the Committee extends to SRS on the initial steps that have been taken. In particular, it is agreed that considerably more progress is needed in advancing innovation-related questions on BRDIS or other surveys. As noted by the Committee, SRS drew upon considerable international work to inform the process and product innovation question used in the pilot survey.

The Committee recommends that SRS "develop the internal capacity to analyze the data" and in subsequent rounds "probe organizational innovation and business practices and market development." Further, the Committee notes that SRS must develop a blueprint for future work and that "SRS staff will have to be deeply engaged in site visits with firms and with data users" in order to restore NSF to a leadership position in the OECD regarding innovation data. SBE agrees with each of these observations, and notes that the Committee's repeated admonition that such activities will require SRS to receive additional resources can not be over-estimated. For instance, under existing resource constraints (both staffing and budget), SRS may not be able to pursue the requisite systems approach for collecting innovation data that was implemented in redesigning the business R&D collection.

As recommended by the Committee, SRS is continuing its cooperation and interaction with other parts of NSF responsible with promoting the research community's development of science metrics. SBE agrees that such interactions will help inform SRS on the appropriate design of new survey innovation questions. It is agreed that such interaction should be expected with other SBE divisions and elsewhere in NSF. Subject to the availability of staff, SRS will investigate the possibility of a series of internal NSF meetings regarding innovation data and science metrics, as well as external meetings with potential data users, possibly utilizing the interagency working group on science policy.

Discussions have begun with OMB/ Statistical Policy, which will be followed up with future discussions with Census, on possible approaches for allowing researchers better access to data which SRS has supported. Most definitely this is an issue that cannot be solved by a single agency, but SBE is committed to moving forward in proposing new approaches to the Census Bureau. Researchers must however, realize that it will take considerable time and effort to effect changes at the Census Bureau.

## **Part B. Results of NSF Investments**

SBE appreciates the Committee's recognition that SRS, especially as a result of its major efforts in quality improvements and redesigns has not only enhanced SRS's standing as a federal statistical agency, but perhaps more significantly made the Division an important resource to the rest of the Foundation. SRS's data, especially as it redesigns the surveys, are as the Committee noted, an important part of the nation's research infrastructure. SBE acknowledges that SBE and SRS must determine how best to improve the Foundation's appreciation and utilization of the expertise and knowledge of SRS in NSF programs and planning activities.

Based on the suggestions of the COV, SRS has already created a new dissertation fellowship program under the rubric of the Science of Science and Innovation Policy (SciSIP) and is taking the appropriate steps to disseminate information on the program. The following is now on the SciSIP website: "For program specific guidelines on the Doctoral Dissertation Improvement Grants in SciSIP, please visit: [Doctoral Preparation Checklist](#). The [Division of Science Resources Statistics \(SRS\)](#) will provide special support for Doctoral Dissertation Research Improvement Grants that utilize SRS datasets." SRS is and will continue to expand its ongoing relationship with SciSIP especially to insure that SRS's data development activities taken the needs of SciSIP researchers into account. Just such an activity is taking place now as SRS works to add a series of American Recovery and Reinvestment Act (ARRA) related questions to its surveys for future SciSIP researchers.

## **Part C. Other Topics**

In Part C the Committee took an important prospective view of SRS's role in SBE and NSF and expressed a series of concerns directed specifically to NSF. As noted earlier, the Committee commended SRS for the major improvements it has undertaken but in this section the Committee stressed that there are costs to improving significantly and producing high quality work. The cost is that SRS will be called upon increasingly to provide a broad range of data and analyses about science, technology and innovation as these topics are becoming of major importance at the highest levels of the U.S. government. The Committee notes that SRS is severely underfunded and understaffed and stressed that it is very important for SRS to undertake a strategic planning exercise, exploring the mission, priorities, and activities of SRS within the Foundation. SBE has already begun to explore how best to address these concerns through a series of preliminary discussions with respect to the relationships of SRS with SciSIP, the SBE research divisions and the broader NSF context.

SRS, subject to resource constraints, will explore the Committee's suggestion to establish a panel study of selected firms in similar industries to help SRS both study the dynamics of innovation and to determine what data can and cannot be collected.